

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 March 2019**

(version 1.2)

Approved By	DRAFT
	_____ (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.

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EXECUTIVE SUMMARY

Introduction

1. This is the 29th 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 March 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	24	9	Under investigation	0	Refer to Appendix K & O
Groundwater Quality	1	4	0	0	Refer to Appendix K
Marine Water Quality	57	359	0	0	Refer to Appendix K
Groundwater Level Monitoring (Piezometer Monitoring)	0	N/A ¹	0	N/A ¹	N/A
Ecological	N/A	N/A	N/A	N/A	N/A
Cultural Heritage	0	0	0	0	N/A
Landfill Gas	0	0	0	0	N/A

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

Air Quality Monitoring

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

Construction Noise Monitoring

7. Twenty-four (24) Action Level exceedances were recorded due to the documented complaints received in this reporting month.
8. Nine (9) Limit Level exceedances were recorded in the reporting month.

Water Quality Monitoring

9. One (1) Action Level and Four (4) Limit Level exceedances in groundwater quality monitoring were recorded in the reporting month.
10. All marine water monitoring was conducted as scheduled in the reporting month. Additional suspended solids monitoring was conducted on 7 and 14 March 2019. There were Fifty-seven (57) Action Level and three hundred and fifty-nine (359) Limit Level exceedances in marine water quality monitoring.
11. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month.

Ecological Monitoring

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

Monitoring on Cultural Heritage

13. Monitoring of impacts on Cultural Heritage at Cha Kwo Ling Tin Hau Temple commenced in April 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 27, 21, 21, 19 and 21 March 2019 respectively. Details of the audit findings and implementation status are presented in **Section 10**.

Waste Management

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

Key Information in the Reporting Month

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

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status
	Number	Nature		
Complaint received by Project Team / Complaint referred by EPD (March 2019)	25	Noise nuisance/ Odour/ Mosquitos	Details refer to App O	On-going
Complaint received by Project Team / Complaint referred by EPD (February 2019)	20	Noise nuisance/ Dust / Smoke / Odour	Details refer to App O	On-going
Complaint received by Project Team / Complaint referred by EPD (January 2019)	39	Noise nuisance/ Construction dust/ Water Pollution	Details refer to App O	On-going
Complaint received by Project Team / Complaint referred by EPD (December 2018)	10	Noise nuisance/ Construction dust	Details refer to App O	On-going / Closed
Notifications of any summons & prosecutions received	0	---	N/A	N/A

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

19. Summary of key construction work in the reporting month is tabulated in **Table III**.

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

Contract No.	Project Title	Site Activities (March 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
		Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works
		TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Construction of U-trough structure at P2 CH411-CH500 3) Pre-bore works for decked U-trough at CH318 – CH363.5 4) Sheet pile works for decked U-trough at CH318.00 – CH363.50 5) Installation of 2100 storm water pipe at Portion IV / VII	

Contract No.	Project Title	Site Activities (March 2019)
		6) King post and de-watering system for proposed U-trough CH318.00 – CH363.50 at Portion V/VI 7) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 8) Street lighting duct installation works at Portion IV near Ocean Shores EVA 9) Backfilling of P2A retaining wall 10) ELS works for CH318 – CH363.50 11) Construction of manhole for 2100 pipe (upper part) 12) Surcharging at surcharge Areas 1a and 1b 13) Land band drain at surcharge Area 1b 14) Reclamation works at Portion IX 15) Reinstatement of existing seawall at Portion VII 16) Pre-drilling at P2 CH230 – CH264 17) Installation of socket H-pile at P2 CH290 – CH305
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Erection of scaffolding and construction Staircase 2
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored Piling 4) Dismantling Works for Temporary Working Platform 5) Construction of Temporary Working Platform
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Construction of Temporary carriageway 6) Modification of traffic Island 7) Pre-drilling 8) Construction of Temporary cycle track 9) Construction of drainage and watermain
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road, Tseung Kwan O

Future Key Issues

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

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

Contract No. and Project Title	Site Activities (April 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	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works	(B)
	TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Construction of U-trough structure at P2 CH411-CH500 3) Pre-bore works for decked U-trough at CH318 – CH363.5 4) Sheet pile works for decked U-trough at CH318.00 – CH363.50 5) Installation of 2100 storm water pipe at Portion IV / VII 6) King post and de-watering system for proposed U-trough CH318.00 – CH363.50 at Portion V/VI 7) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 8) Street lighting duct installation works at Portion IV near Ocean Shores EVA 9) Backfilling of P2A retaining wall 10) ELS works for CH318 – CH363.50 11) Construction of manhole for 2100 pipe (upper part) 12) Surcharging at surcharge Areas 1a and 1b 13) Land band drain at surcharge Area 1b 14) Reclamation works at Portion IX 15) Reinstatement of existing seawall at Portion VII 16) Pre-drilling at P2 CH230 – CH264 17) Installation of socket H-pile at P2 CH290 – CH305		(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Erect Steel frames and purlins for canopy at Staircase 2 2) Concreting of Pour 3 of Staircase		(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored piling 4) Dismantling Works for Temporary Working		(A) / (B) / (E) / (F) / (G)

Contract No. and Project Title	Site Activities (April 2019)	Key Environmental Issues *
	Platform 5) Construction of Temporary Working Platform	
NE/2017/02 – Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Construction of Temporary carriageway 6) Modification of traffic Island 7) Predrilling 8) Construction of Temporary cycle track 9) Construction of drainage and watermain	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor’s site accommodation and project signboard at Po Yap Road, Tseung Kwan O	(A) / (B) / (C) / (D) / (E) / (F) / (G) / (H)

Note:

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

1. INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was commissioned by Civil Engineering and Development Department (CEDD) as the Environmental Team (ET) to undertake environmental monitoring and auditing services for the Works Contracts involved in the implementation of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) project to ensure that the environmental performance of the Works Contracts comply with the requirements specified in the Environmental Permit (EP), Environmental Monitoring & Audit (EM&A) Manual, Environmental Impact Assessment (EIA) Report of the TKO-LTT project and other relevant statutory requirements. This is the 29th Monthly EM&A report summarizing the EM&A works for the Project in March 2019.

Purpose of the Report

- 1.2 This is the 29th Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in March 2019.

Structure of the Report

- 1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

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

Section 9: **Landfill Gas Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring

locations, monitoring results and Limit Levels and Action Plan

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

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

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

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

Section 14: **Conclusions and Recommendation**

2. PROJECT INFORMATION

Background

- 2.1 In 2002, Civil Engineering and Development Department (CEDD) commissioned an integrated planning and engineering study under Agreement No. CE 87/2001 (CE) “Further Development of Tseung Kwan O – Feasibility Study” (the “TKO Study”) to formulate a comprehensive plan for further development of TKO New Town. It recommended to further develop TKO to house a total population of 450,000 besides the district’s continuous commercial and industrial developments.
- 2.2 At present, the Tseung Kwan O Tunnel is the main connection between Tseung Kwan O (TKO) and other areas in the territory. To cope with the anticipated transport need, the TKO Study recommended the provision of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) (hereinafter referred to as “the Project”) and Cross Bay Link (CBL) to meet the long-term traffic demand between TKO and the external areas. The site layout plan for the Project is shown in **Figure 1**.
- 2.3 The Environmental Impact Assessment (EIA) Report for the TKO-LTT project was approved under the Environmental Impact Assessment Ordinance (EIAO) in July 2013. The corresponding Environmental Permit (EP) was issued in August 2013 (EP no.: EP-458/2013). Variations to the EP was applied and the latest EP (EP no.: EP-458/2013/C) was issued by the Director of Environmental Protection (DEP) in January 2017.
- 2.4 The commencement dates of construction of this Project are:
- Contract No. NE/2015/01 and Contract No. NE/2015/02: 7 November 2016.
 - Contract No. NE/2015/03: 29 May 2017.
 - Contract No. NE/2017/02: 15 March 2018.
 - Contract No. NE/2017/01: 23 April 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 (March 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
		Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works
		TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Construction of U-trough structure at P2 CH411-CH500 3) Pre-bore works for decked U-trough at CH318 – CH363.5 4) Sheet pile works for decked U-trough at CH318.00 – CH363.50 5) Installation of 2100 storm water pipe at Portion IV / VII 6) King post and de-watering system for proposed U-trough CH318.00 – CH363.50 at Portion V/VI 7) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 8) Street lighting duct installation works at Portion IV near Ocean Shores EVA 9) Backfilling of P2A retaining wall 10) ELS works for CH318 – CH363.50	

Contract No.	Project Title	Site Activities (March 2019)
		11) Construction of manhole for 2100 pipe (upper part) 12) Surcharging at surcharge Areas 1a and 1b 13) Land band drain at surcharge Area 1b 14) Reclamation works at Portion IX 15) Reinstatement of existing seawall at Portion VII 16) Pre-drilling at P2 CH230 – CH264 17) Installation of socket H-pile at P2 CH290 – CH305
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Erection of scaffolding and construction Staircase 2
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored Piling 4) Dismantling Works for Temporary Working Platform 5) Construction of Temporary Working Platform
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Construction of Temporary carriageway 6) Modification of traffic Island 7) Pre-drilling 8) Construction of Temporary cycle track 9) Construction of drainage and watermain
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road, Tseung Kwan O

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

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

Construction Works	Major Environmental Impact	Control Measures
As mentioned in Table 2.2	Noise, dust impact, water quality and waste generation	<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

		<ul style="list-style-type: none"> • Use of quiet plant and well-maintained construction plant • Provide movable noise barrier
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Status of Environmental Licences, Notification and Permits

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

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

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
Environmental Permit (EP)				
N/A	EP-458/2013/C	20/1/2017	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation				
NE/2015/01	EPD Ref no.: 405305	21/07/2016	N/A	Valid
	EPD Ref no.: 405582	28/07/2016	N/A	Valid
NE/2015/02	EPD Ref no.: 406100	12/08/2016	N/A	Valid
NE/2015/03	EPD Ref no.: 416072	26/04/2017	N/A	Valid
NE/2017/02	EPD Ref no.: 429867	19/01/2018	N/A	Valid
NE/2017/01	EPD Ref no.: 430070	25/01/2018	N/A	Valid
Billing Account for Construction Waste Disposal				
NE/2015/01	Account No. 7025431	11/07/2016	N/A	Valid
NE/2015/02	Account No. 7025654	16/08/2016	N/A	Valid
NE/2015/03	Account No. 7026805	30/12/2016	N/A	Valid
NE/2017/02	Account No. 7029651	22/12/2017	N/A	Valid
NE/2017/01	Account No. 7029994	01/02/2018	N/A	Valid
NE/2017/06	Account No. 7032520	22/11/2018	N/A	Valid
Vessel Billing Account under construction waste disposal charging scheme				
NE2015/01	Account No. 7027764	24/01/2019	10/05/2019	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

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
	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
NE/2015/03	WT00027295-2017	20/03/2017	18/04/2019	Valid
	WT00027266-2017	08/03/2017	18/04/2019	Valid
NE/2017/01	WT00030711-2018	11/04/2018	30/04/2023	Valid
	WT00030716-2018	23/05/2018	31/05/2023	Valid
NE/2017/02	WT00030654-2018	16/04/2018	30/04/2023	Valid
Construction Noise Permit (CNP)				
NE/2015/01	GW-RE0807-18	05/12/2018	04/03/2019	Expired on 4 Mar 2019
	GW-RE0881-18	24/12/2018	22/06/2019	Valid
	GW-RE0898-18	31/12/2018	30/03/2019	Expired on 30 Mar 2019
	GW-RE0102-19	26/02/2019	17/04/2019	Valid
	GW-RE0109-19	23/02/2019	22/04/2019	Valid
	GW-RE0188-19	20/03/2019	13/05/2019	Valid
	GW-RE0171-19	08/03/2019	07/06/2019	Valid
	GW-RE0202-19	31/03/2019	30/06/2019	Valid
NE/2015/02	GW-RE0680-18	11/10/2018	10/04/2019	Valid
	GW-RE0833-18	02/12/2018	01/06/2019	Valid
	GW-RE0004-19	30/01/2019	29/04/2019	Valid
	GW-RE0008-19	15/01/2019	14/07/2019	Valid
	GW-RE0755-18	07/11/2018	06/05/2019	Valid
NE/2015/03	GW-RE0254-18	28/04/2018	20/05/2018	Effective on 28 Apr 2019
Marine Dumping Permit				
NE/2017/01	EP/MD/19-064	01/12/2018	31/05/2019	Valid
	EP/MD/19-086	14/01/2019	13/07/2019	Valid
	EP/MD/19-102	01/03/2019	31/03/2019	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 March 2019.

3. AIR QUALITY

Monitoring Requirements

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

Monitoring Locations

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

Table 3.1 Locations for Air Quality Monitoring

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

Remarks: (1) For 1-hour TSP monitoring; (2) For 24-hour TSP monitoring

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

Monitoring Equipment

- 3.3 High Volume Samplers (HVS) were used to carry out 24-hour TSP monitoring. Direct reading dust meter were also used to measure 1-hour average TSP levels. The 1-hour sampling was determined periodically by HVS to check the validity and accuracy of the results measured by direct reading method.
- 3.4 Wind data monitoring equipment was set at rooftop (about 41/F) of Yau Lai Estate Bik Lai House for logging wind speed and wind direction such that the wind sensors are clear of obstructions or turbulence caused by building. The wind data monitoring equipment is re-calibrated at least once every six months and the wind directions are divided into 16 sectors of 22.5 degrees each. The location is shown in **Figure 2**.
- 3.5 **Table 3.2** summarizes the equipment to be used in the air quality monitoring. Copies of calibration certificates are attached in **Appendix B**.

Table 3.2 Air Quality Monitoring Equipment

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

Monitoring Parameters and Frequency

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

Table 3.3 Frequency and Parameters of Air Quality Monitoring

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

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

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

(Model LD3 / LD3B)

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

(AEROCET-531)

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Remove the red rubber cap from the AEROCET-531 inlet nozzle.
- Turn on the power switch that is located on the right side of the AEROCET-531.
- On power up the product intro screen is displayed for 3 seconds. The intro screen displays the product name and firmware version.
- Then the main counter screen will be displayed.
- Press the START button. Internal vacuum pump start running. After 1 minute the pump will stop and the 0.5 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.
- 3.22 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer at rooftop of Yau Lai Estate Bik Lai House (41/F). The location is shown in **Figure 2**. This weather information for the reporting month is summarized in **Appendix C**.
- 3.23 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendix E** and **Appendix F** respectively.
- 3.24 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

Table 3.4 Major Dust Source during Air Quality Monitoring

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

4. NOISE

Monitoring Requirements

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

Monitoring Locations

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

Table 4.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	Rooftop (41/F)/Refuge floor (26/F) [#]
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	Rooftop (41/F)
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	Rooftop (40/F)
CM4	Tin Hau Temple, Cha Kwo Ling	Ground Level
CM5	CCC Kei Faat Primary School, Yau Tong	Rooftop (6/F)
CM6(A)*	Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores	Ground Level
CM7(A)*	Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores	Ground Level
CM8(A)*	Park Central, L1/F Open Space Area	1/F

Remarks:

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

Monitoring location has changed from 41/f to 26/f on 23rd Nov 2018.

Monitoring Equipment

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

Table 4.2 Noise Monitoring Equipment

Equipment	Model and Make	Quantity
Integrating Sound Level Meter	SVAN 957/ 959 / 979	6
Calibrator	SV30A	1
	Brüel & Kjær 4231	1

4.4 **Table 4.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**. Additional weekly impact monitoring are carried out for evening time (1900 – 2300 hours) , night-time (2300 – 0700 hours) and daytime (0700- 1900 hours) during general holidays including Sundays for monitoring stations CM1, CM2, CM3 and CM4.

Table 4.3 Frequency and Parameters of Noise Monitoring

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

Monitoring Methodology and QA/QC Procedure

4.5 The monitoring procedures are as follows:

- The monitoring station was normally be at a point 1m from the exterior of the sensitive receivers building façade and be at a position 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. All records for free field noise levels was adjusted with a correction of +3 dB(A).
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time was set as follows:
 - frequency weighting: A
 - time weighting : Fast
 - measurement time : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement will be more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the

equipment.

- At the end of the monitoring period, the L_{eq} , L_{90} and L_{10} was recorded. In addition, noise sources was recorded on a standard record sheet.
- Noise monitoring will be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. Supplementary monitoring was provided to ensure sufficient data would be obtained.

Maintenance and Calibration

- 4.6 The microphone head of the sound level meter and calibrator was cleaned with a soft cloth at quarterly intervals.
- 4.7 The sound level meter and calibrator was checked and calibrated at yearly intervals.
- 4.8 Immediately prior to and following each noise measurement the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

- 4.9 Twenty-four (24) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Nine (9) Limit Level exceedances for night-time construction noise monitoring were recorded and they were considered due to the road traffic near Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related. No Limit Level exceedance for day time was recorded in the reporting month.
- 4.10 Noise monitoring results and graphical presentations are shown in **Appendix G**.
- 4.11 The major noise source identified at the noise monitoring stations are shown in **Table 4.4**.

Table 4.4 Major Noise Source during Noise Monitoring

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

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

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

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

(*) Noise Limit Level is 65 dB(A) during school examination periods.

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

Station	Baseline Noise Level, dB (A) (Evening time on all days (1900-2300 hrs) and Holidays (including Sundays) during daytime (0700-1900 hrs))	Noise Limit Level, dB (A) (Evening time on all days (1900-2300 hrs) and Holidays (including Sundays) during daytime (0700-1900 hrs))
CM1	64.4	70
CM2	62.2	
CM3	64.7	
CM4	57.0	
CM6(A)	60.2	

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		
CM4		
CM6(A)		

Current Tunnel Blasting Arrangement

- 4.13 The drill and blast method was evaluated as the most appropriate method and the general practice of this method was introduced during the EIA report assessment. The paragraphs 2.9.9 and 2.9.33 of the EIA Report mention that there might be one blast or multiple blasts and the maximum number of blast location per day would be determined by the Contractor to suite his method of working.
- 4.14 Notwithstanding the information provided by the Engineer at paragraphs 4.6.4 and 6.6.12 of the EIA Report, to minimize blast nuisance to the public and to respond to the community concerns, the tunnel blast should be arranged, where possible, avoiding the blast to be carried out during night time and shortening the blast duration by arranging various work fronts to be blasted at different time slots. Hence, it has become more desirable to split one tunnel blasting operation, which may consist of several blasting work fronts along the tunnels, into a total of two to three tunnel blasts per day. The tunnel blasts, which locate outside the MTR Protection Zone (RPZ) possessing insignificant risk to the MTR's structures would be carried out during day time and before 22:00. For the tunnel blasts within and in close vicinity to RPZ, Contractor's blasting assessment report revealed that those blasts have to be carried out after train service and, generally, at around 01:40.

5. WATER QUALITY

Monitoring Requirements

Groundwater Quality

- 5.1 Groundwater quality monitoring shall be conducted as identified in the EIA report (locations refer to **Figure 4**, Stream 1 to 3). According to the EM&A Manual, dissolved oxygen (DO), pH, temperature, turbidity, suspended solids (SS), 5-day biochemical oxygen demand (BOD₅), Total organic carbon (TOC), Total Nitrogen, Ammonia-N and Total Phosphate are the parameters for the monitoring. **Appendix A** shows the established Action and Limit Levels.
- 5.2 As stated in the Baseline Environmental Monitoring Plan submitted to EPD in September 2016, Groundwater quality monitoring could not be conducted at the other identified monitoring station in the EIA Report, Stream 4, as it was found to be not accessible due to safety reason. EPD has no further comment on the Plan in October 2016.

Marine Water Quality

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

Groundwater Level Monitoring (Piezometer Monitoring)

- 5.6 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan. The monitoring commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was

recorded in the reporting month.

Monitoring Locations

Groundwater Quality

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

Table 5.1 Groundwater Quality Monitoring Stations

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

Marine Water Quality

- 5.8 A total of twelve monitoring stations are designated for the water quality monitoring program according to EM&A Manual. One additional monitoring station (W1) is designated for monitoring of oxygen depletion in the embayed waters during the period when the fully enclosed barrier is installed. The locations are also summarized in **Table 5.2** and shown on **Figure 5** and **Figure 9**.

Table 5.2 Marine Quality Monitoring Stations

Monitoring Stations	Descriptions	Coordinates	
		Easting	Northing
M1	Junk Bay Coral Site – Junk Bay near Chiu Keng Wan	844255	817565
M2	Junk Bay Coral Site – Junk Bay	844076	817087
M3	Junk Bay Coral Site – Junk Island	844491	817890
M4	Junk Bay Coral Site – Chiu Keng Wan	843209	816416
M5	Junk Bay Coral Site – Fat Tong Chau	845463	815769
M6	Tseung Kwan O Salt Water Intake	845512	817442
C1	Control Station – Southeast	844696	814773
C2	Control Station – Northwest	842873	816014
G1	Gradient Station	844418	817560
G2	Gradient Station	844290	817384
G3	Gradient Station	844488	817735
G4	Gradient Station	844967	817551
W1	Ocean Shores (for WQM in temporary marine embayment)	844324	817791

Monitoring Equipment

- 5.9 For in-situ monitoring, a multi-parameter meter (Aquaread AP-2000-D) was used to measure Dissolved oxygen (DO) concentration, DO saturation (DO %), pH, temperature and turbidity. A sampler was used to collect water samples for laboratory analysis of SS, BOD₅, TOC, Total Nitrogen, Ammonia-N and Total Phosphate.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

- 5.10 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:
- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
 - a temperature of 0-45 degree Celsius.
- 5.11 It has a membrane electrode with automatic temperature compensation complete with a cable.
- 5.12 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.
- 5.13 Salinity compensation was built-in in the DO equipment.

Turbidity

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

pH

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

Water Depth Detector

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

Water Sampler

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

Sample Container and Storage

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

Calibration of In-Situ Instruments

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

- 5.20 For the on-site calibration of field equipment, the BS 1427:1993, "Guide to Field and on-site test methods for the analysis of waters" was observed.
- 5.21 Before each round of monitoring, a zero check in distilled water was performed with the turbidity probe of Aquaread AP-2000-D. The probe was then be calibrated with a solution of known NTU.
- 5.22 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.
- 5.23 **Table 5.3** summarizes the equipment used in the water quality monitoring program. Copies of the calibration certificates of the equipment are shown in **Appendix B**.

Table 5.3 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	1
Multi-parameter Water Quality System	YSI 6820-C-M	0
	Aquaread AP-2000-D	0
	YSI EXO1 Multiparameter Sondes	2
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	1
Water Depth Detector	Fishfinder 140	1

Monitoring Parameters and Frequency

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

Table 5.4 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
Groundwater Quality			
Stream 1- Stream 3	<ul style="list-style-type: none"> • DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Turbidity, NTU • SS, mg/L • BOD₅, mg O₂/L • TOC, mg-TOC/L • Total Nitrogen, mg/L • Ammonia-N, mg NH₃-N/L • Total Phosphate, mg-P/L 	Mid-depth	Biweekly (When the tunnel construction works are found within 50m of the location, weekly.)
Marine Water Quality			
M1 M2 M3 M4 M5 M6 C1	<u>In-situ:</u> Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity <u>Laboratory Testing:</u>	<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. 	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)

Monitoring Stations	Parameters, unit	Depth	Frequency
C2 G1 G2 G3 G4	Suspended Solids (SS)	<ul style="list-style-type: none"> 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> at the vertical level where the water abstraction point of the intake is located(i.e. approximately mid-depth level) 	
Water Quality Monitoring in Temporary Marine Embayment			
W1	<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

Groundwater Quality

- 5.25 At each monitoring location, two consecutive in-situ measurements for DO concentration, DO saturation, pH, temperature and turbidity were taken for water samples on site. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.
- 5.26 For SS, BOD₅, TOC, Total Nitrogen, Ammonia-N and Total Phosphate, measurement and grab samples of surface water was collected. Water samples of about adequate volume was collected and stored in high density polythene bottles. Following collection, water samples was stored in high density polythene bottles. Preservation H₂SO₄ was appropriately added for water samples for TOC, Total Nitrogen, Ammonia-N and Total Phosphate testing. Water samples was packed in ice and cooled to 4°C (without being frozen), delivered to the HOKLAS accredited laboratory, Wellab Limited and analyzed.

Marine Water Quality

- 5.27 The monitoring stations were accessed using survey boat by the guide of a hand-held Global Positioning System (GPS). The depth of the monitoring location was measured using depth meter in order to determine the sampling depths. Afterwards, the probes of the in-situ measurement equipment was lowered to the predetermined depths (1 m below water surface, mid-depth and 1 m above seabed) and the measurements was carried out accordingly. The in-situ measurements at predetermined depths was carried out in duplicate. In case the difference in the duplicate in-situ measurement results was larger than 25%, the third set of in-situ measurement would be carried out for result confirmation purpose.
- 5.28 Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples for SS at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4°C but without frozen and sent to the laboratory as soon as possible.

Laboratory Analytical Methods

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

Table 5.5 Methods for Laboratory Analysis for Water Samples

Parameters (Unit)	Proposed Method	Reporting Limit	Detection Limit
SS (mg/L)	APHA 2540 D	0.5 mg/L ⁽¹⁾	0.5 mg/L
BOD ₅ (mg O ₂ /L)	APHA 19ed 5210B	2 mg O ₂ /L	--
TOC (mg-TOC/L)	In-house method SOP020 (Wet Oxidation)	1 mg-TOC/L	--
Total Nitrogen (mg/L)	In-house method SOP063 (FIA)	0.6 mg/L	--
Ammonia-N (mg NH ₃ -N/L)	In-house method SOP057 (FIA)	0.05 mg NH ₃ - N/L	--
Total Phosphorus (mg-P/L) ⁽²⁾	In-house method SOP055 (FIA)	0.05 mg-P/L	--

Note:

1) Limit of Reporting is reported as Detection Limit for non-HOKLAS report.

2) Parameter Total Phosphorus represents the laboratory testing for total phosphate content in water which is the sum of all three forms of phosphates in water.

QA/QC RequirementsDecontamination Procedures

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

Sampling Management and Supervision

- 5.31 Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.
- 5.32 QA/QC procedures as attached in **Appendix J** are available for the parameters analysed in the HOKLAS-accredited laboratory, WELLAB Ltd.

Results and ObservationsGroundwater Quality Monitoring

- 5.33 Summary of groundwater quality monitoring results is shown in **Table 5.6**. Groundwater quality monitoring results, graphical presentations and laboratory testing reports are shown in **Appendix H**.
- 5.34 Other relevant data was also recorded, such as monitoring location / position, time, sampling depth, weather conditions and any special phenomena or work underway nearby.
- 5.35 Action and Limit Level for groundwater quality monitoring has been reviewed with consideration of monitoring results obtained from November 2016 to June 2017, as there was no tunnel boring or tunnel construction works from November 2016 to June 2017. A “Review Report for Action and Limit Levels of Groundwater Quality Monitoring” was submitted to EPD in August 2017. EPD has no further comment on the report and the updated Action and Limit Level is shown in **Appendix A**.

Table 5.6 Summary of Groundwater Quality Monitoring Results

Date	Location	Parameters (unit)								
		pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	SS (mg/L)	BOD ₅ (mg O ₂ /L)	TOC (mg-TOC/L)	Total Nitrogen (mg/L)	NH ₃ -N (mg NH ₃ -N/L)	Total Phosphorus (mg-P/L)
08 Mar 2019	Stream 1	7.6	9.3	1.0	2.5	<2	6	1.4	<0.05	<i><u>0.06</u></i>
	Stream 2	7.6	8.9	2.3	4	<2	6	1.6	<0.05	<i><u>0.07</u></i>
	Stream 3	7.6	8.7	0.9	0.9	<2	5	1.7	<0.05	<0.05
20 Mar 2019	Stream 1	8.0	8.6	1.8	<2.5	<2	5	0.8	<0.05	0.05
	Stream 2	7.9	8.9	1.9	3	<2	5	0.7	<0.05	<i><u>0.11</u></i>
	Stream 3	7.9	8.7	1.1	4	<2	5	0.7	<0.05	<i><u>0.06</u></i>
No. of Exceedance	Action Level	0	0	1	0	0	0	0	0	0
	Limit Level	0	0	0	0	0	0	0	0	4

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

- 5.36 One (1) Action Level and Four (4) Limit Level exceedances were recorded in the reporting month. The exceedances are considered due to human activities, therefore non-Project related. Details of the investigation are presented in **Appendix K**.

Marine Water Quality Monitoring

- 5.37 Marine water monitoring results and graphical presentations are shown in **Appendix I**. Other relevant data was also recorded, such as monitoring location / position, time,

- sampling depth, weather conditions and any special phenomena or work underway nearby.
- 5.38 Calculated Action and Limit Levels for Marine Water Quality is presented in **Appendix I**. Eighty-eight (88) Action Level and three hundred and fifty-nine (359) exceedance were recorded in marine water quality monitoring.
- 5.39 The exceedance in the reporting month was reported for the whole month and the key parameter was suspended solids (SS). As mentioned in the Monthly EM&A Report for December 2018, an emergency sand discharge incident within the Junk Bay occurred on 15 December 2018 due to damage of a sand hopper barge outside the double watergate of Contract No. NE/2015/02. Subsequently, the dumped sandfill was retrieved on 21 December 2018. As the elevation of SS concentration coincided with the hopper barge incident in December 2018, the SS exceedance was considered due to sandfill dumping and retrieval activities. However, it is abnormal that the exceedance lasted for a few months after sand retrieval. Therefore, the RE and ET have requested the Contractor of NE/2015/02 to carry out dive survey to confirm if there is any residual sand from the incident on the seabed. If affirmative, the Contractor should carry out remedial measure for restoring the water quality to baseline level.
- 5.40 Based on the findings from the dive survey conducted on 16 March, no sand was observed at and near the sand dumping area, confirming that no residual sand is present. On the other hand, sand was observed around the outfall near Lohas Park. A number of construction sites are present in Tseung Kwan O and sightings of silty water discharge from other outfalls in Junk Bay not managed by the Contractor of this project were reported. These suggests that there are other sources of suspended solids in the Junk Bay in addition to this Project. Since no major deficiency of the silt curtain and cofferdam of this project nor discharge of silty water was observed during site audits and water quality monitoring by the ET, there is no direct evidence that the recent exceedances were due to the ongoing reclamation activities of the Project.

Groundwater Level Monitoring (Piezometer Monitoring)

- 5.41 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.
- 5.42 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**.

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 April 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

- 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 105 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: 6, 13, 20 and 27 March 2019
 - Contract No. NE/2015/02: 7, 14, 21 and 28 March 2019
 - Contract No. NE/2015/03: 7, 14, 21 and 28 March 2019
 - Contract No. NE/2017/01: 5, 14, 19 and 28 March 2019
 - Contract No. NE/2017/02: 7, 14, 21 and 28 March 2019
- Monthly joint site inspection with the representative of IEC was conducted for NE/2015/01, NE/2015/02, NE/2015/03, NE/2017/01 and NE/2017/02 on 27, 21, 21, 19 and 21 March 2019 respectively.

Implementation Status of Environmental Mitigation Measures

- 10.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Implementation Schedule and Recommended Mitigation Measures is provided in **Appendix N**.
- 10.4 During site inspections in the reporting month, no non-compliance was recorded on reporting month. The observations and recommendations made during the audit sessions are summarized in **Appendix L**.

11. WASTE MANAGEMENT

- 11.1 Waste generated from this Project includes inert construction and demolition (C&D) materials, non-inert C&D materials and marine sediments. Inert C&D waste includes soil, broken rock, broken concrete and building debris, while non-inert C&D materials are made up of C&D waste which cannot be reused or recycled and has to be disposed of at the designated landfill sites. Marine sediment shall be expected from excavation and dredging works of this Project.
- 11.2 With reference to relevant handling records of this Project, the quantities of different types of waste generated in the reporting month are summarised and presented in **Appendix P**.
- 11.3 The Contractors are advised to minimize the wastes generated through the recycling or reusing. All mitigation measures stipulated in the approved EM&A Manual and waste management plans shall be fully implemented. The status of implementation of waste management and reduction measures are summited in **Appendix N**.

12. ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

- 12.1 Twenty-four (24) Action Level exceedances were recorded due to the documented complaints received in the reporting month. Zero (0) and nine (9) Limit Level exceedances of construction noise monitoring were recorded for day-time and 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 One (1) Action Level and four (4) Limit Level exceedances for groundwater quality monitoring were recorded in the reporting month. The Limit Level exceedances were considered due to rainfall or human activities, therefore non-Project related.
- 12.3 Eighty-eight (88) Action Level and three hundred and fifty-nine (359) exceedance were recorded in marine water quality monitoring.
- 12.4 Actions carried out in accordance with the Event and Action Plans in **Appendix M** are presented in **Appendix K** – Summary of Exceedance.

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

- 12.6 Twenty-five (25) environmental complaints were received in the reporting month. The Cumulative Complaint Log is presented in **Appendix O**. The investigation status and result is also reported in **Appendix O**.

Summary of Environmental Summon and Successful Prosecution

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

13. FUTURE KEY ISSUES

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

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

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

Contract No. and Project Title	Site Activities (April 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	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works	(B)
	TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Construction of U-trough structure at P2 CH411-CH500 3) Pre-bore works for decked U-trough at CH318 – CH363.5 4) Sheet pile works for decked U-trough at CH318.00 – CH363.50 5) Installation of 2100 storm water pipe at Portion IV / VII 6) King post and de-watering system for proposed U-trough CH318.00 – CH363.50 at Portion V/VI 7) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 8) Street lighting duct installation works at Portion IV near Ocean Shores EVA 9) Backfilling of P2A retaining wall 10) ELS works for CH318 – CH363.50 11) Construction of manhole for 2100 pipe (upper part) 12) Surcharging at surcharge Areas 1a and 1b 13) Land band drain at surcharge Area 1b 14) Reclamation works at Portion IX 15) Reinstatement of existing seawall at Portion VII 16) Pre-drilling at P2 CH230 – CH264 17) Installation of socket H-pile at P2 CH290 – CH305		(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin	1) Erect steel frames and purlins for canopy at Staircase 2 2) Concreting of Pour 3 of Staircase		(A) / (B) / (C) / (D) / (E)

Contract No. and Project Title	Site Activities (April 2019)	Key Environmental Issues *
Tunnel – Northern Footbridge		
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Installation of Precast Pile Cap Shell 2) Pre-drilling 3) Bored piling 4) Dismantling Works for Temporary Working Platform 5) Construction of Temporary Working Platform	(A) / (B) / (E) / (F) / (G)
NE/2017/02 – Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Bored Piles 5) Construction of Temporary carriageway 6) Modification of traffic Island 7) Predrilling 8) Construction of Temporary cycle track 9) Construction of drainage and watermain	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor’s site accommodation and project signboard at Po Yap Road, Tseung Kwan O	(A) / (B) / (C) / (D) / (E) / (F) / (G) / (H)

Note:

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

Key Issues for the Coming Month

13.3 Key environmental issues in the coming month include:

- Watering for dust generation from haul road, stockpiles of dusty materials, exposed site area, excavation works and rock breaking activities;
- Noisy construction activity such as rock-breaking activities and piling works;
- Runoff from exposed slope or site area;

- Wastewater and runoff discharge from site;
- Accumulation of silt, mud and sand along U-channels and sedimentation tanks;
- Set up and implementation of temporary drainage system for the surface runoff;
- Storage of chemicals/fuel and chemical waste/waste oil on site;
- Accumulation and storage of general and construction waste on site; and
- Marine water quality impact and indirect impact to coral communities due to marine construction for TKO-LTT reclamation.

14. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 14.1 This is the 29th Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in March 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 Twenty-four (24) 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. They were considered due to road traffic near the Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.
- 14.5 Zero (0) Limit Level exceedances was recorded for daytime construction noise in the reporting month.

Water Quality Monitoring

- 14.6 One (1) Action Level and One (1) Limit Level exceedances were recorded in the reporting month. The exceedances were considered due to rainfall or human activities, therefore non-Project related.
- 14.7 Eighty-eight (88) Action Level and three hundred and fifty-nine (359) Limit Level exceedances were recorded in marine water quality monitoring.
- 14.8 Tunnel construction activities are within +/- 50m of the piezometer gate in plan. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month. Details of the result are presented in **Appendix U**.

Ecological Monitoring

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

Monitoring on Cultural Heritage

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

Landscape and Visual Monitoring and Audit

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

Landfill Gas Monitoring

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

Environmental Site Inspection

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

Complaint, Prosecution and Notification of Summons

- 14.14 Twenty-f (24) 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 the barrier close to the breaking point for effective noise screening.
- To erect sound proof canvases on derrick lighter barge

Water Quality Impact

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

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.

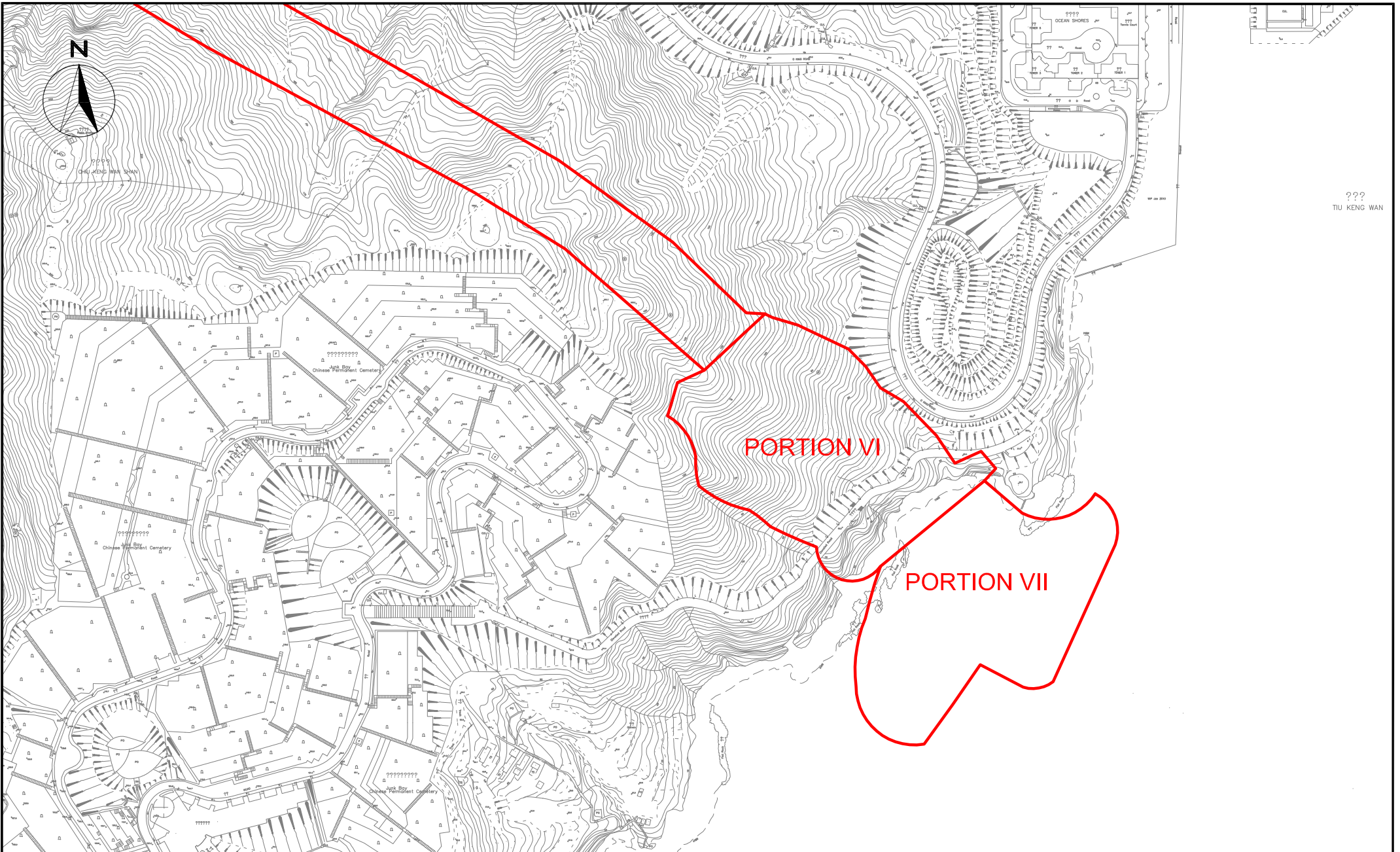
FIGURES



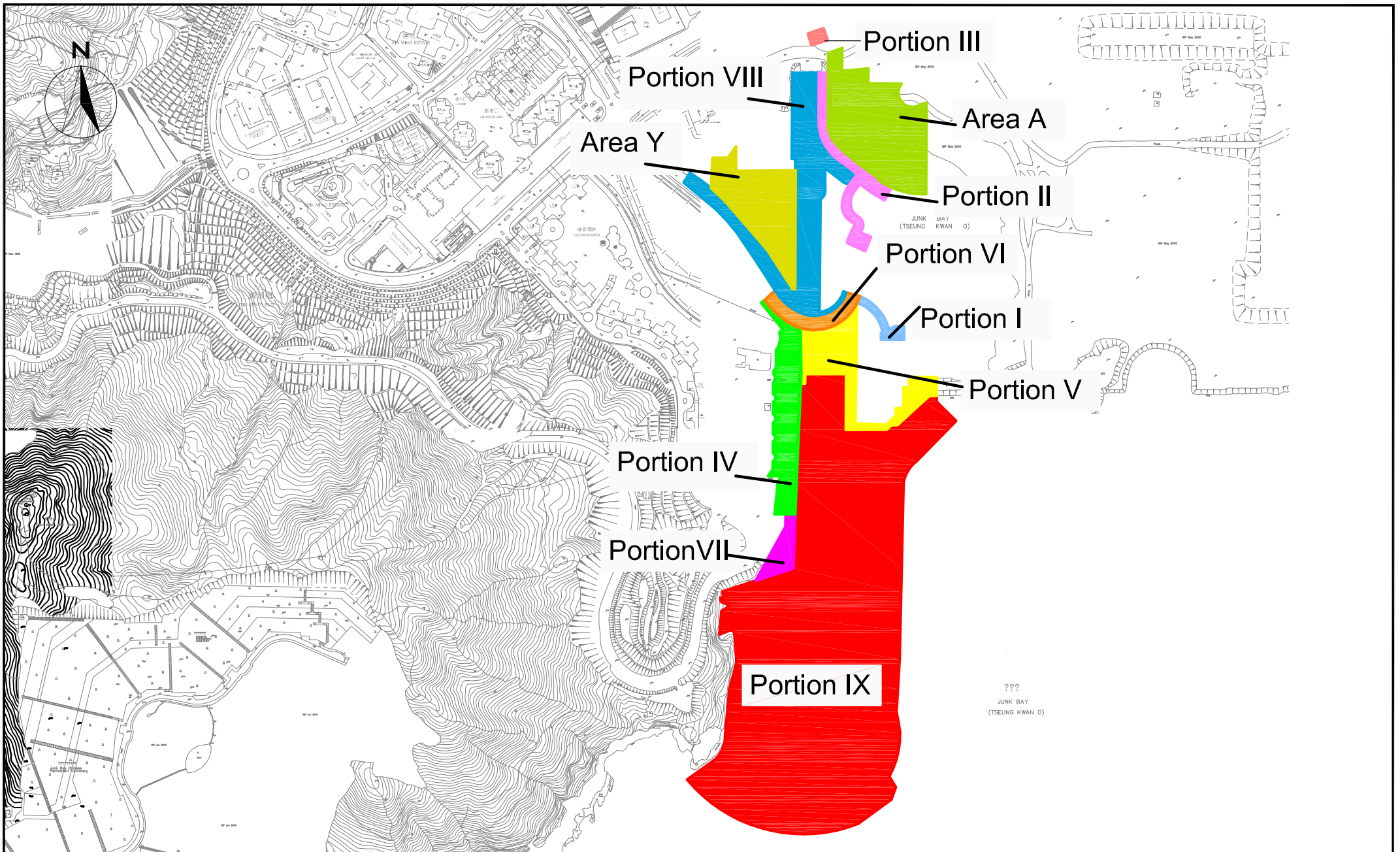
LEGEND:

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

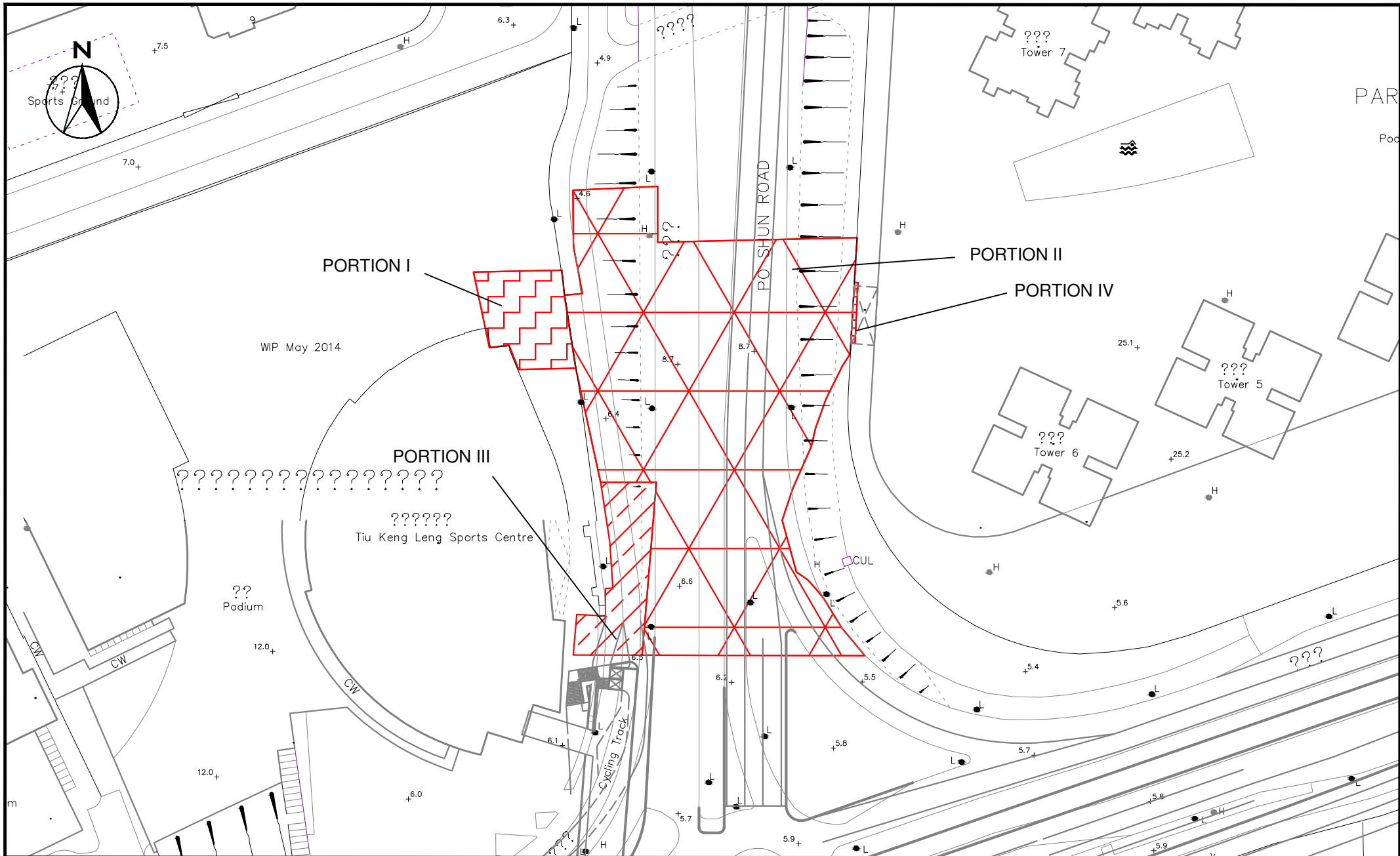
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JOB No.	MA16034	FIGURE NO.	1	REV -



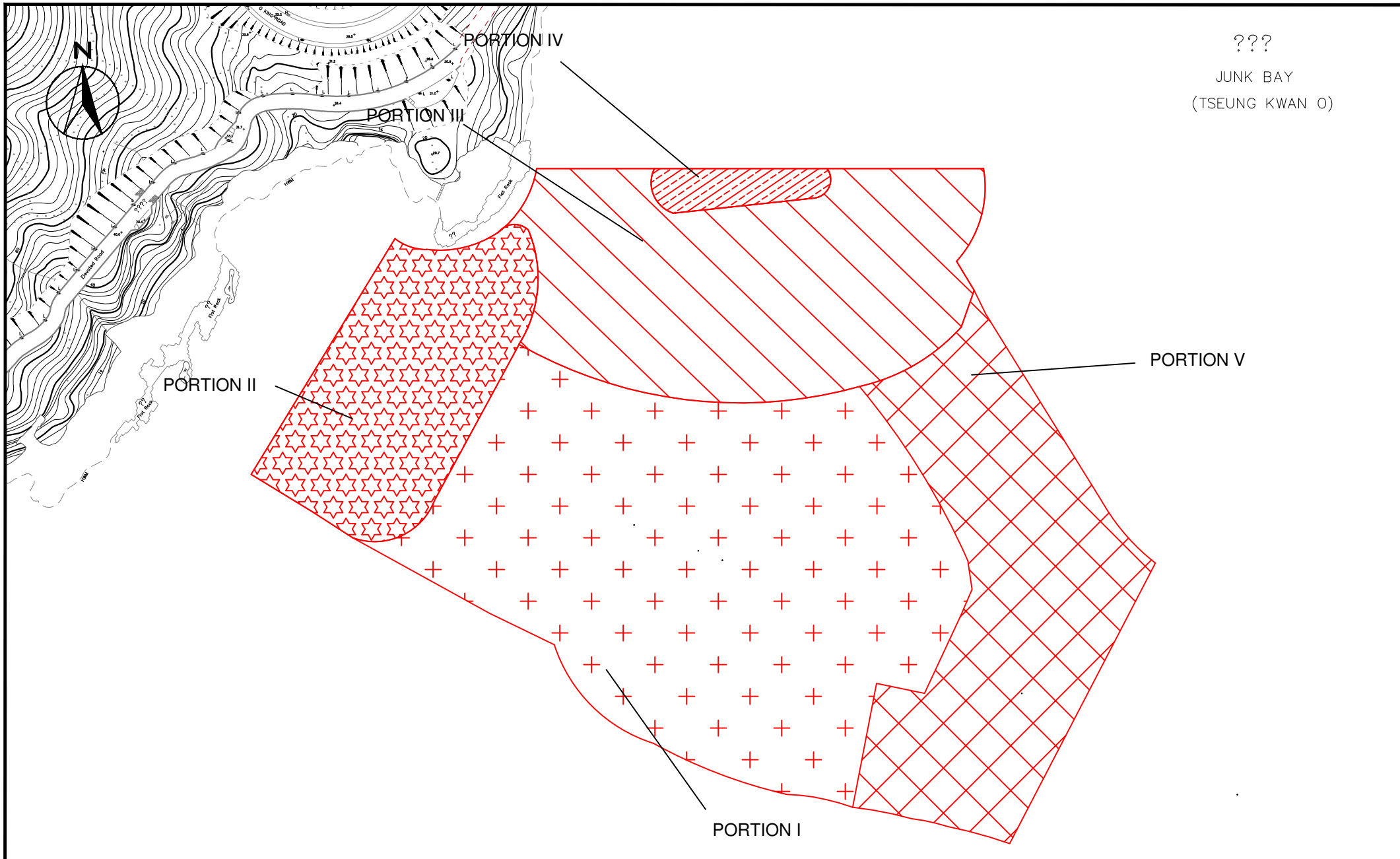
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JOB No.	MA16034	FIGURE NO.	1b	REV -



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JOB No.	MA16034	FIGURE NO.	1c	REV -



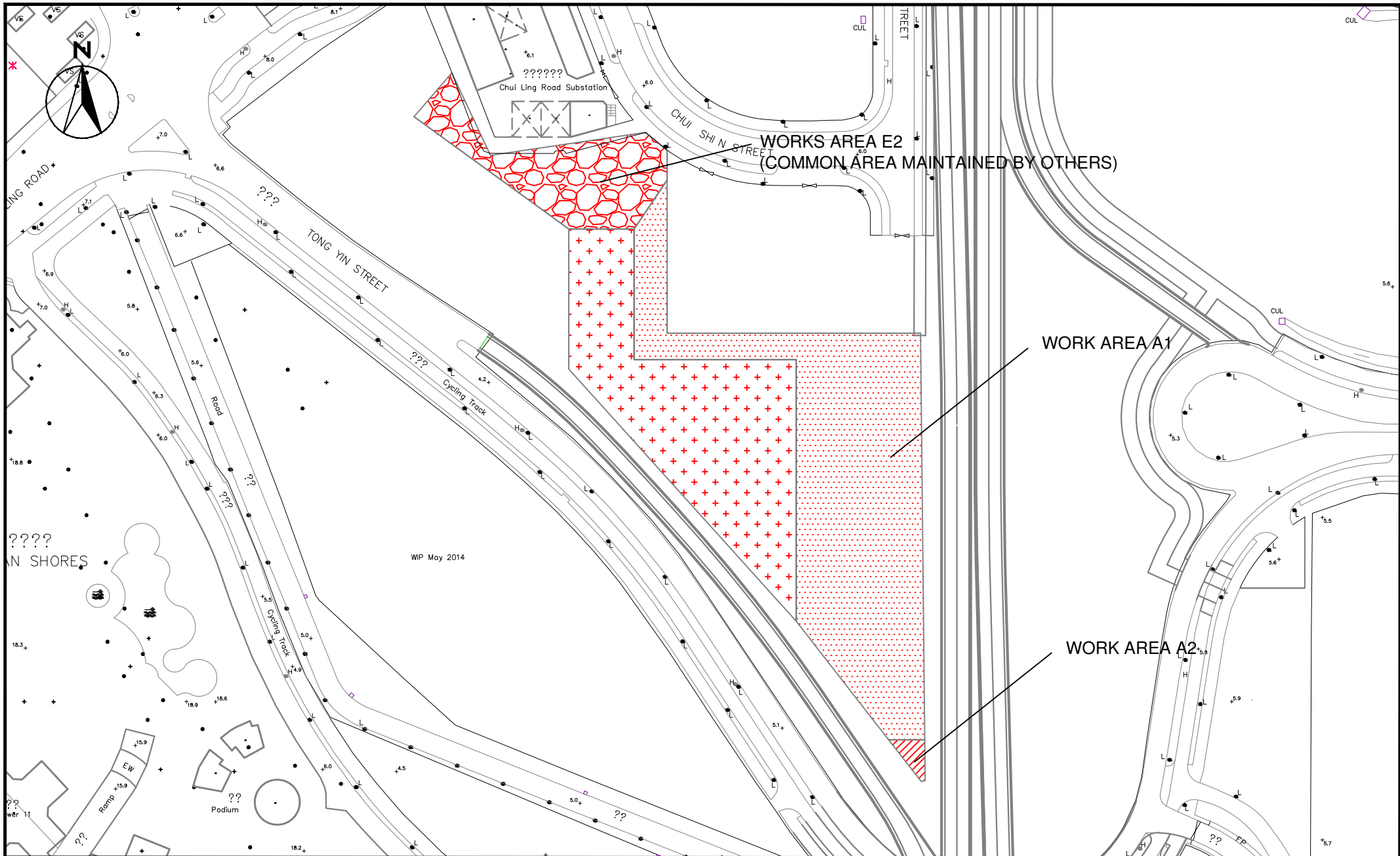
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		REV	-



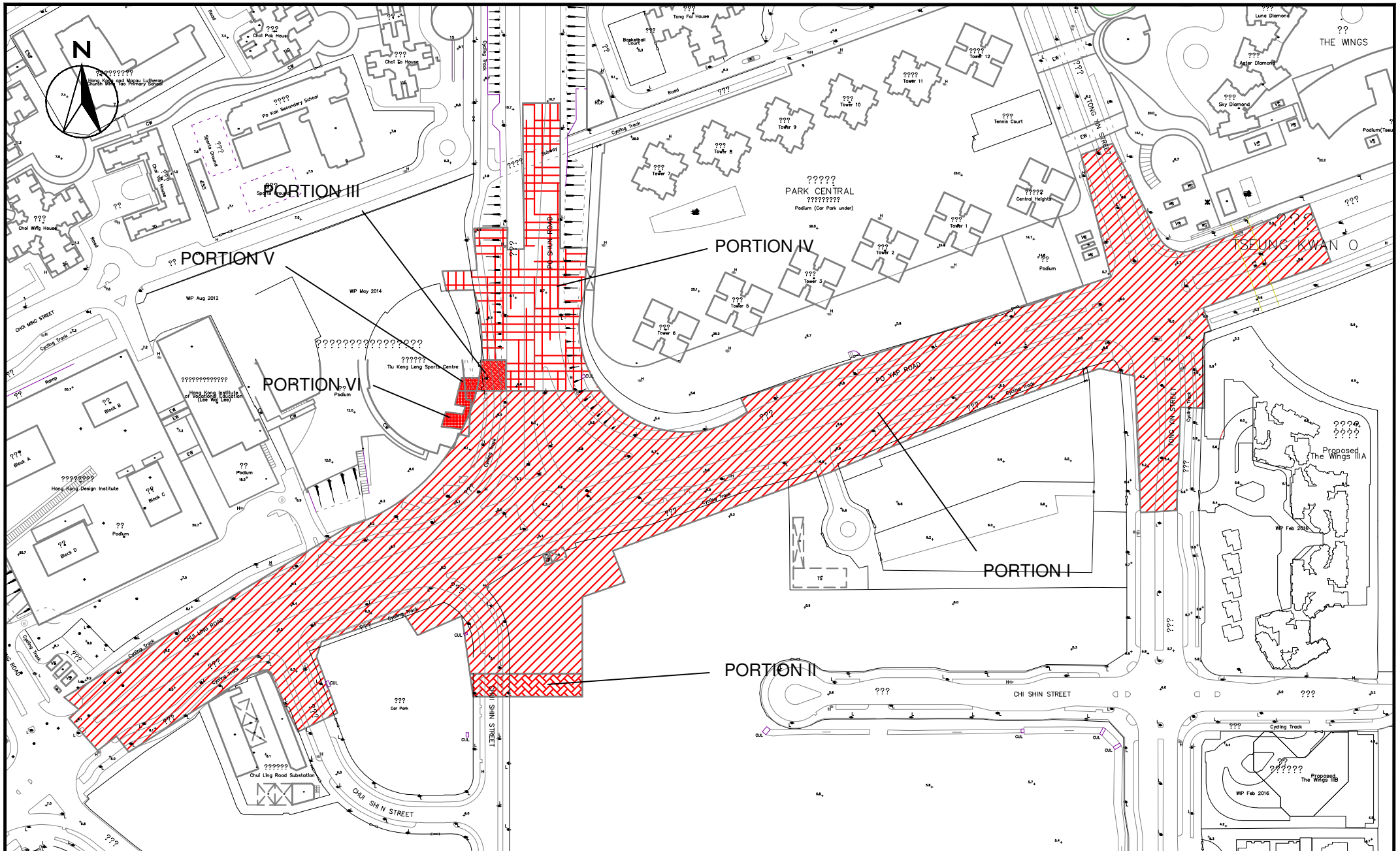
???

JUNK BAY
(TSEUNG KWAN O)

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JOB No.	MA16034	FIGURE NO.	1e
		REV	-

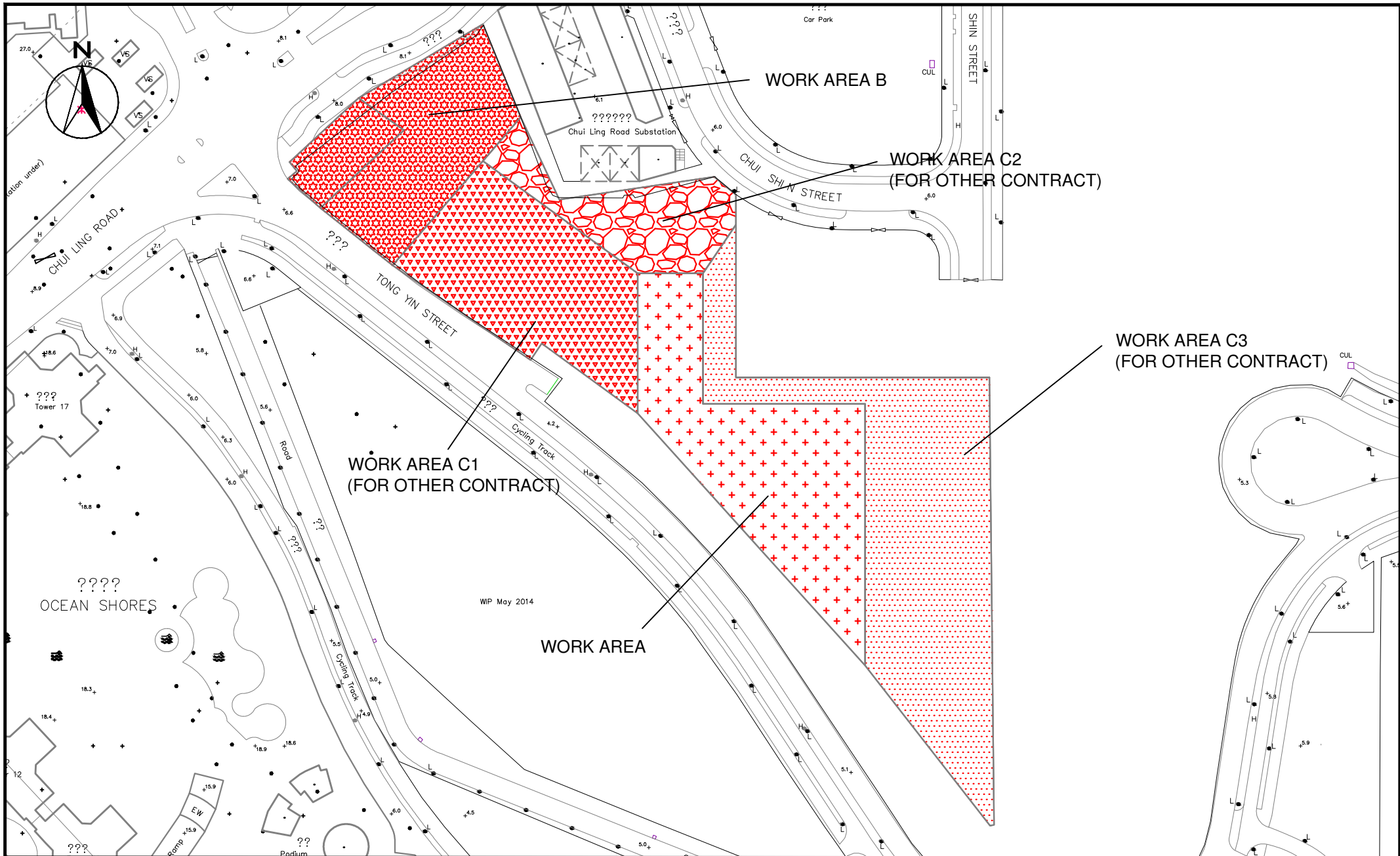


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JOB No.	MA16034	FIGURE NO.	1f	REV
				-

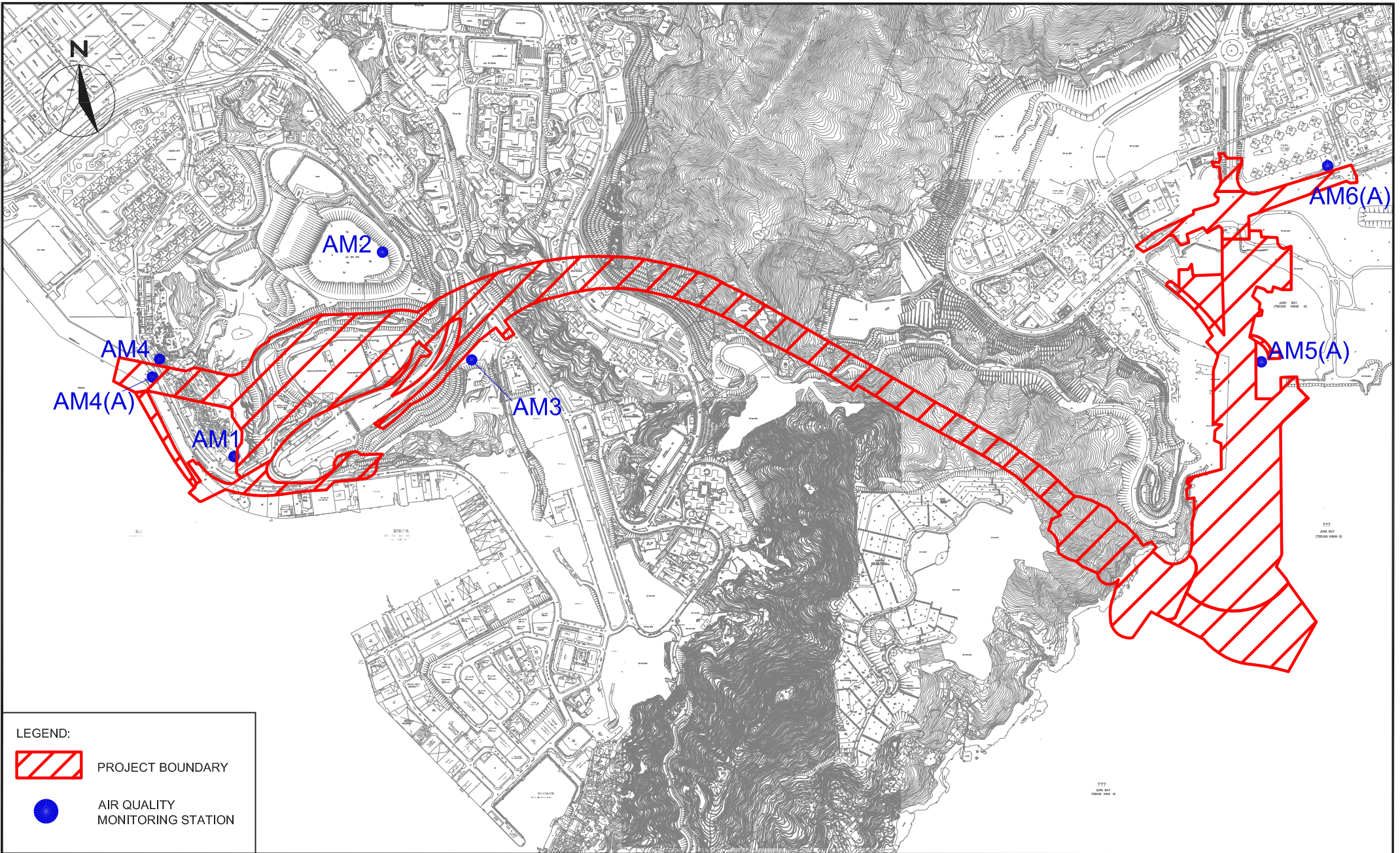


Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel
 - Design and Construction
 Site Portions under Work Contract No. NE/2017/02

SCALE	1:2500 @ A4	DATE	AUG 2018	
CHECK	VC	DRAWN	AC	
JOB No.	MA16034	FIGURE NO.	1g	REV
				-



SCALE	1:1500 @ A4	DATE	AUG 2018	
CHECK	VC	DRAWN	AC	
JOB No.	MA16034	FIGURE NO.	1h	REV
				-



LEGEND:

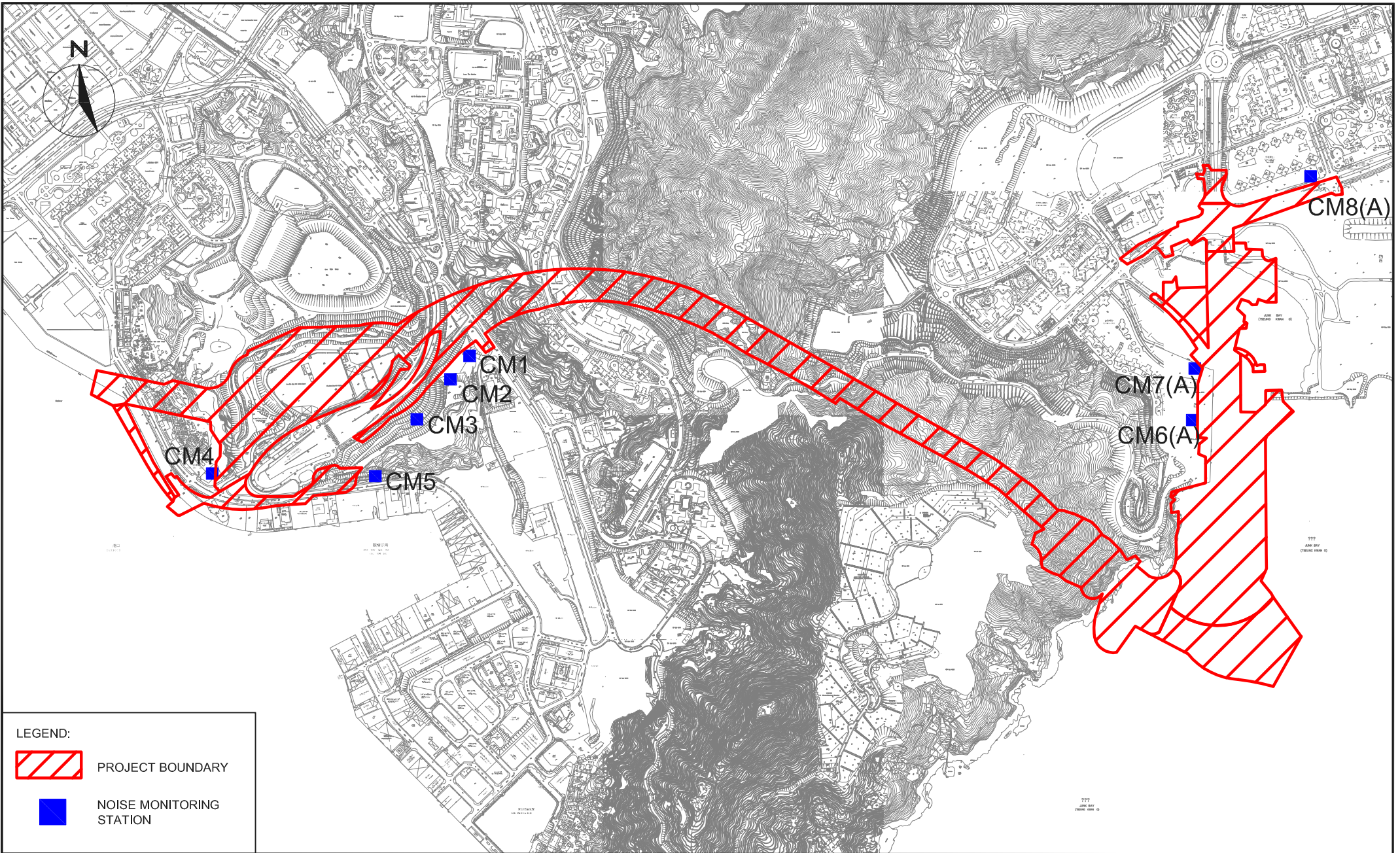


PROJECT BOUNDARY





AIR QUALITY MONITORING STATION

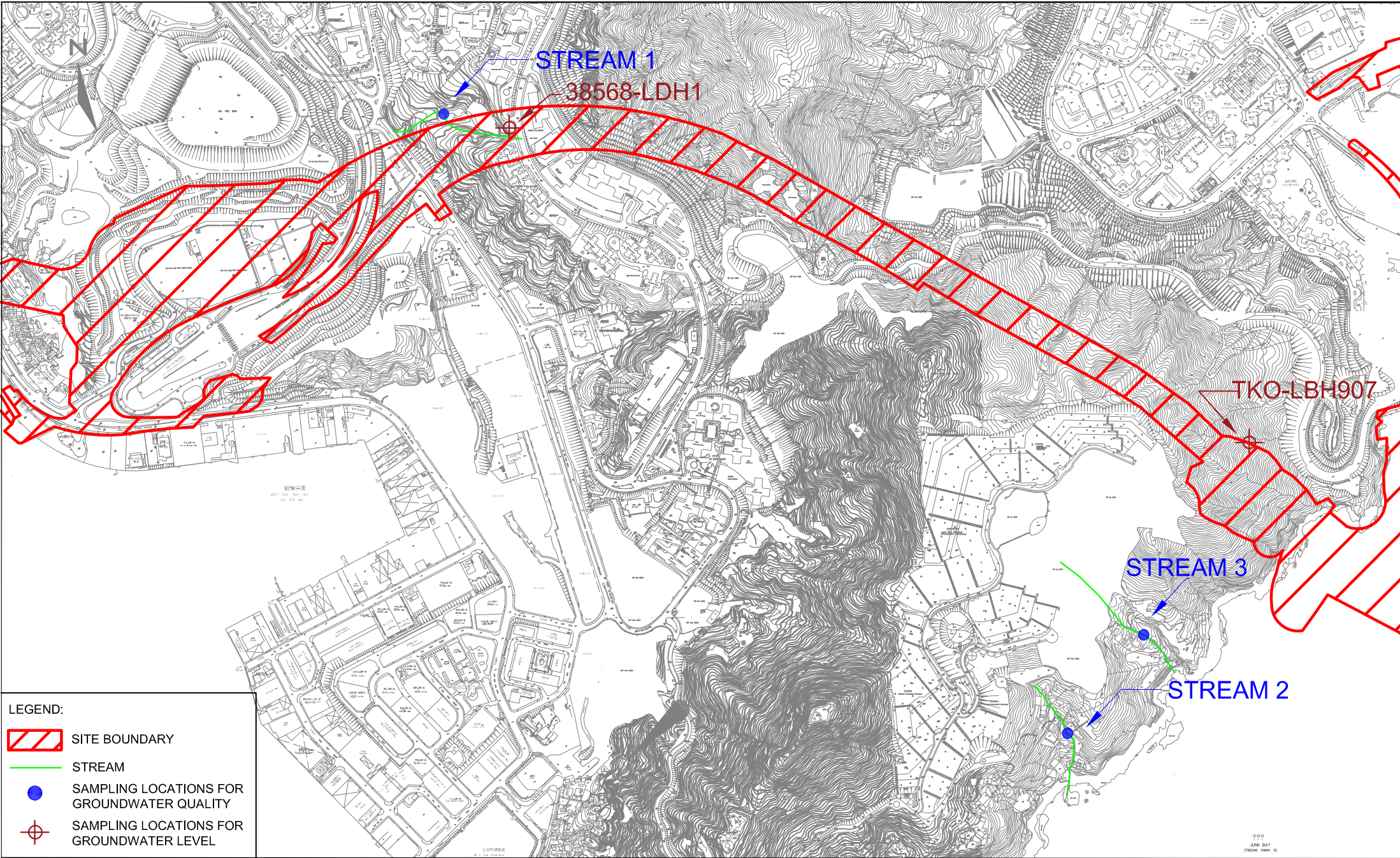
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CHECK	JF	DRAWN	JW	
JOB No.	MA16034	FIGURE NO.	2	REV -







LEGEND:

-  PROJECT BOUNDARY
-  NOISE MONITORING STATION

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JOB No.	MA16034	FIGURE NO.	3	REV -



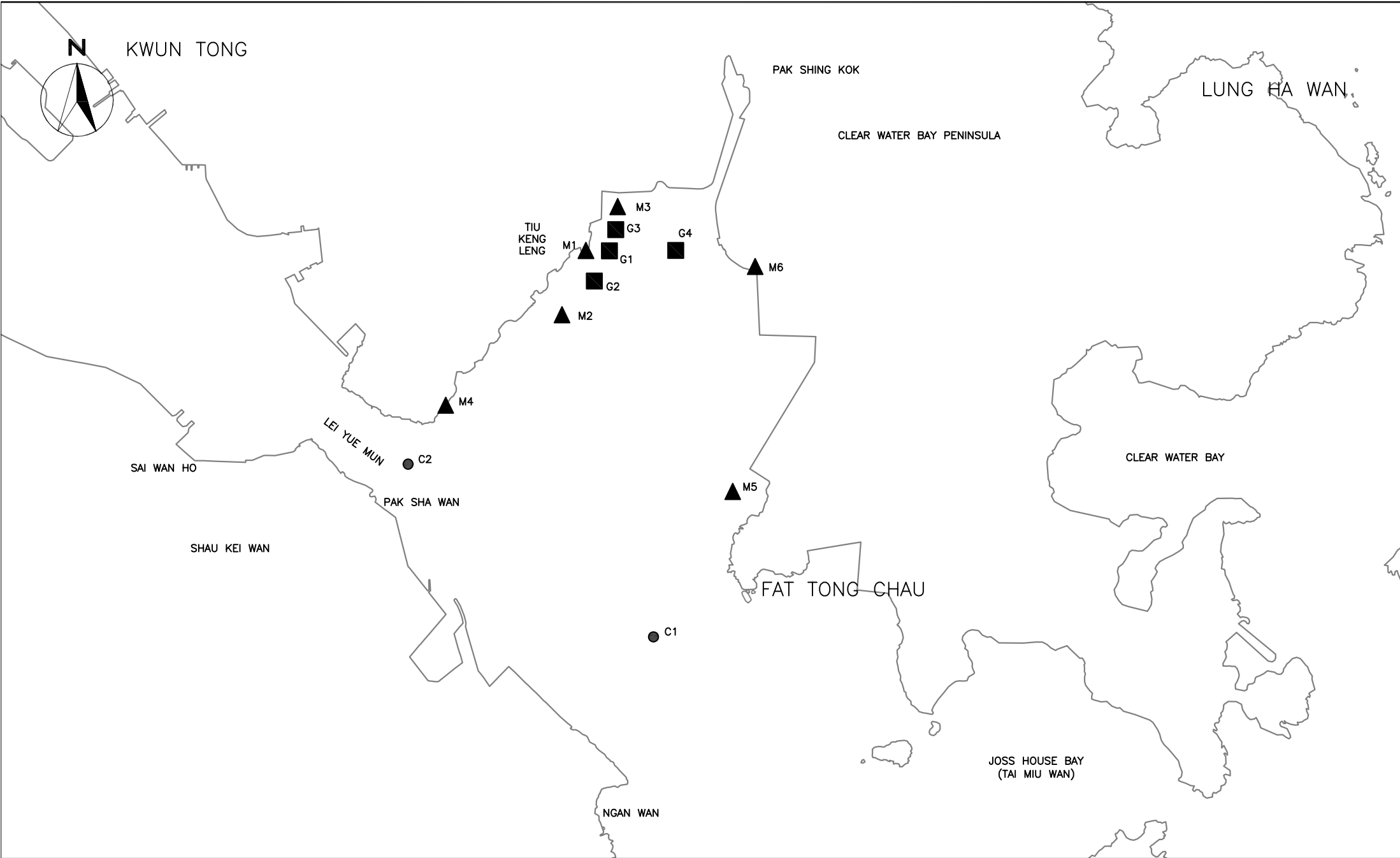
LEGEND:

-  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	
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JOB No.	MA16034	FIGURE NO.	4	REV
				-



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

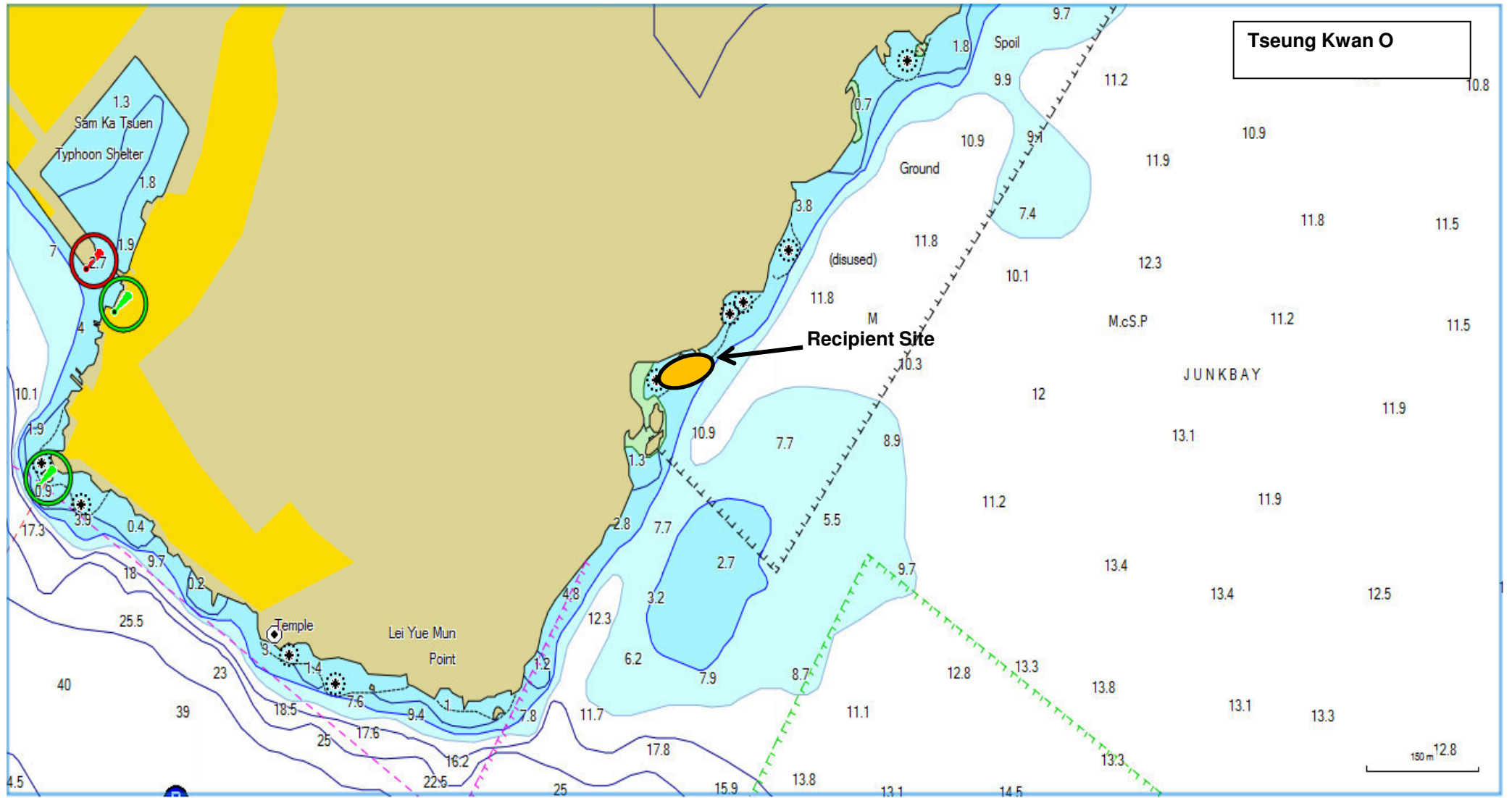


Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Locations of Landfill Gas Monitoring

Scale N.T.S
 Date Dec-16

Project No. MA16034
 Figure 6



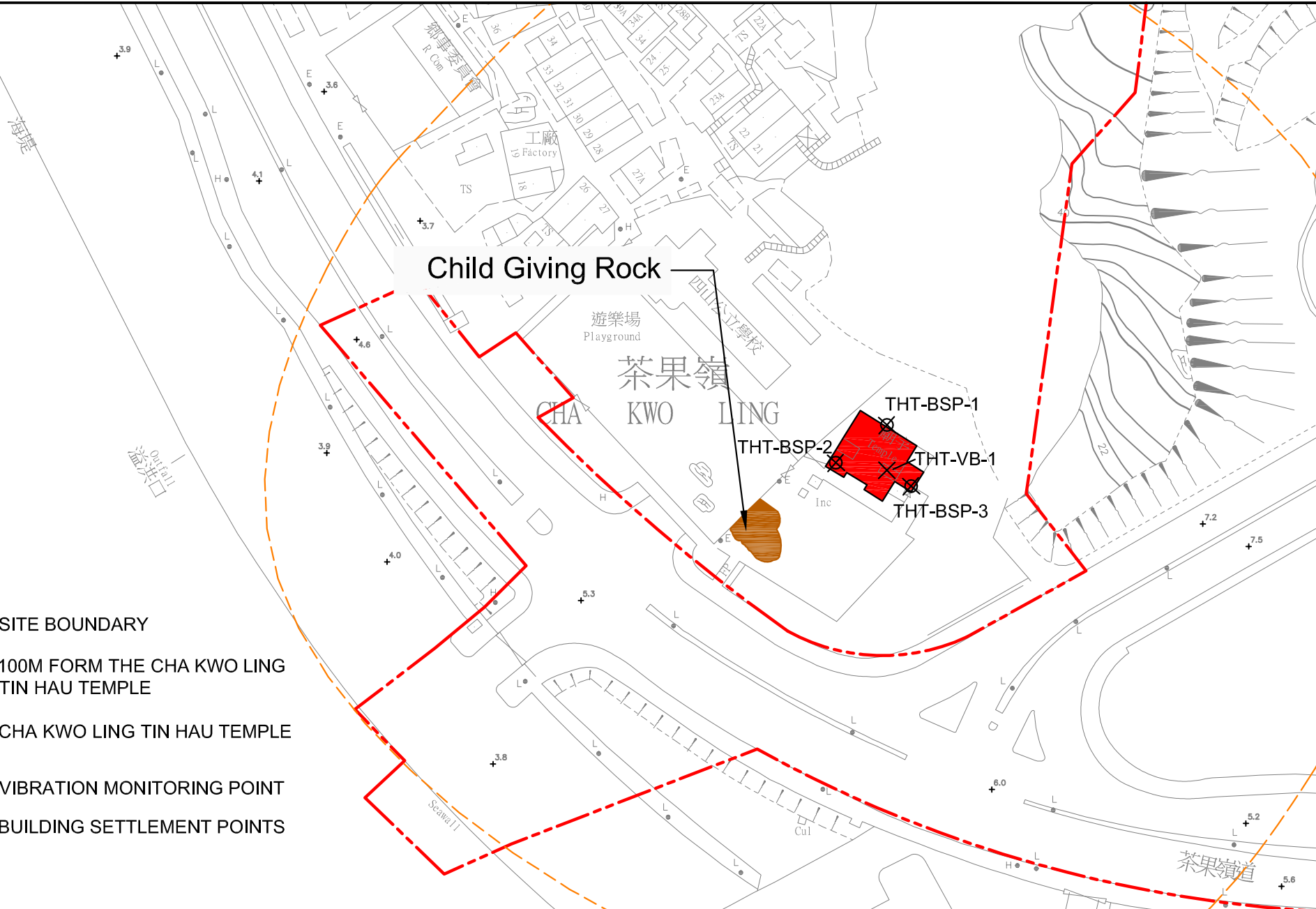
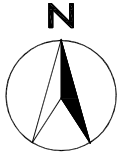


Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Location of Post-translocation Coral Monitoring

Scale N.T.S
 Date Mar-17

Project No. MA16034
 Figure 7

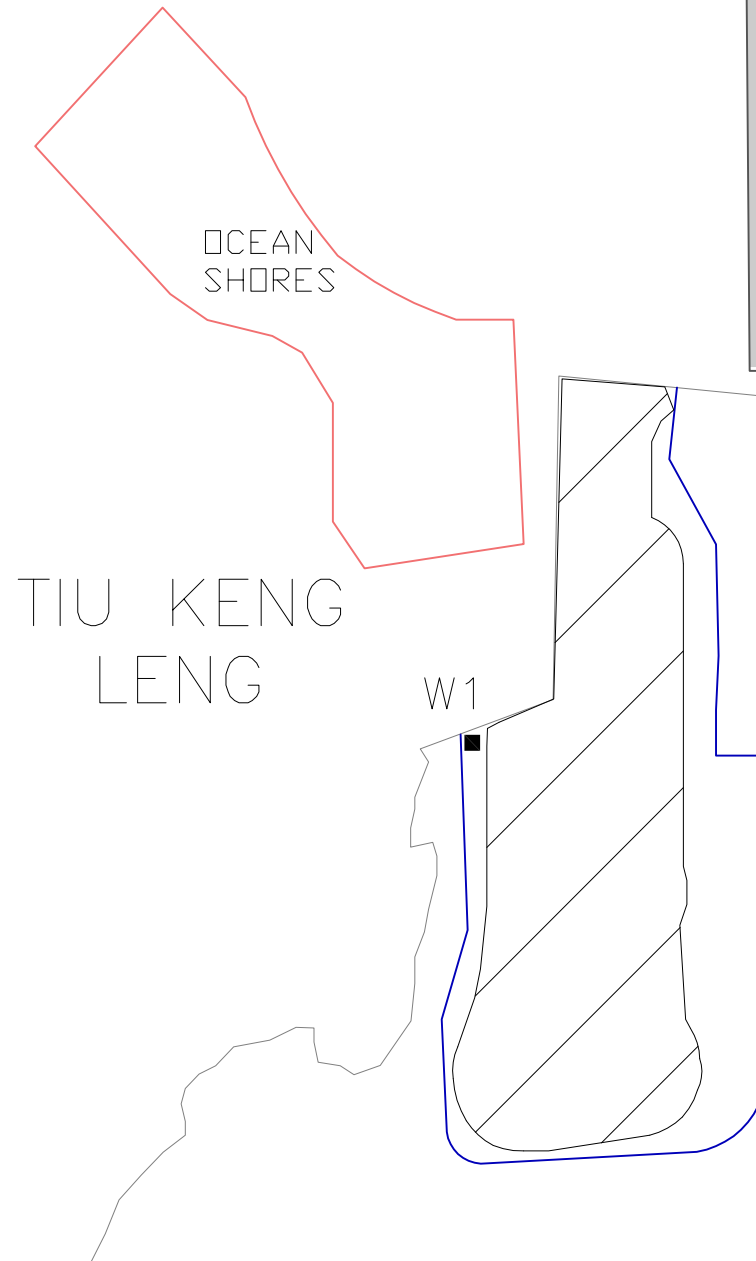
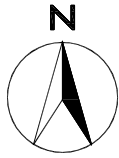




LEGEND

- - - SITE BOUNDARY
- - - 100M FORM THE CHA KWO LING TIN HAU TEMPLE
- CHA KWO LING TIN HAU TEMPLE
- × 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, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1	Tin Hau Temple	275	500
AM2	Sai Tso Wan Recreation Ground	273	
AM3	Yau Lai Estate Bik Lai House	271	
AM4	Sitting-out Area at Cha Kwo Ling Village	278	
AM5(A)	Tseung Kwan O DSD Desilting Compound	273	
AM6(A)	Park Central, L1/F Open Space Area	285	

24-hr TSP

Monitoring Stations	Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AM1	Tin Hau Temple	173	260
AM2	Sai Tso Wan Recreation Ground	192	
AM3	Yau Lai Estate Bik Lai House	167	
AM4(A)	Cha Kwo Ling Public Cargo Working Area Administrative Office	210	
AM5(A)	Tseung Kwan O DSD Desilting Compound	175	
AM6(A)	Park Central, L1/F Open Space Area	165	

Noise

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

¹ 70 dB(A) for schools and 65 dB(A) for schools during examination period.

² Acceptable Noise Levels for Area Sensitivity Rating of A/B/C

³ If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

Water Quality

Groundwater

Parameters	Action	Limit
DO in mg L ⁻¹	7.6	7.6
pH	6.0 – 8.9	6.0 – 9.0
BOD ₅ in mg L ⁻¹	2.0	2.0
TOC in mg L ⁻¹	Stream 1 and Stream 2: 9	Stream 1 and Stream 2: 9
	Stream 3: 6	Stream 3: 6
Total Nitrogen in mg L ⁻¹	2.0	2.1
Ammonia-N in mg L ⁻¹	0.15	0.20
Total Phosphate in mg L ⁻¹	0.05	0.05
SS in mg L ⁻¹	7.6	12.1
Turbidity in NTU	2.1	2.3

Notes:

1. For pH, non-compliance of the water quality limits occurs when monitoring result is out of the range of the limits.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, 5-day biochemical oxygen demand (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: Handheld Particle Counter Date of Calibration 13-Feb-19
 Manufacturer: Hal Technology Validity of Calibration Record 12-Apr-19
 Model No.: Hal -HPC301
 Serial No.: 3011701012
 Equipment No.: A-27-07
 High Volume Sampler No.: A-01-03
 Tisch Calibration Orifice No.: 3607


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	140	149.3
2	113	121.9
3	110	119.4
Average	121	130
By Linear Regression of Y on X Slope , mw = <u>1.0038</u> Intercept, bw = <u>8.7346</u> Correlation coefficient* = <u>0.9999</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	130	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	121	
Measureing time, (min)	60	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]		<u>1.08</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: Laser Dust Monitor Date of Calibration 26-Feb-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 25-Apr-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

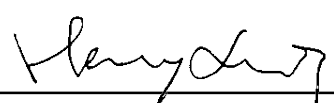
Calibration of 1 hr TSP			
Calibration Point	Laser Dust Monitor		HVS
	Total Count	Count / Minute X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	1887	31.45	87.1
2	1970	32.83	89.1
3	2056	34.27	91.5
Average		32.85	89.23
By Linear Regression of Y on X Slope, mw = <u>1.5611</u> Intercept, bw = <u>37.9527</u> Correlation coefficient* = <u>0.9992</u> Set Correlation Factor, SCF SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)] <u>0.0027</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

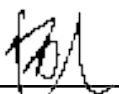
Description: Handheld Particle Counter Date of Calibration 26-Feb-19
 Manufacturer: Hal Technology Validity of Calibration Record 25-Apr-19
 Model No.: Hal -HPC300
 Serial No.: 30117011019
 Equipment No.: SA-01-03
 High Volume Sampler No.: A-01-03
 Tisch Calibration Orifice No.: 3607

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	37.4	87.1
2	43.2	89.1
3	51.3	91.5
Average	44.0	89.2
By Linear Regression of Y on X Slope , mw = <u>0.3153</u> Intercept, bw = <u>75.3725</u> Correlation coefficient* = <u>0.9991</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	89.2	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	44.0	
Measuring time, (min)	60	
Set Correlation Factor , SCF		
SCF = [K=High Volume Sampler / Dust Meter, ($\mu\text{g}/\text{m}^3$)]	<u>2.03</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 13-Feb-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 12-Apr-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

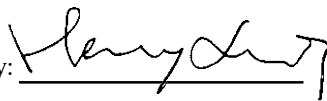
Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	74	149.3
2	60	121.9
3	58	119.4
Average	64	130
By Linear Regression of Y on X Slope , mw = <u>1.9013</u> Intercept, bw = <u>8.5158</u> Correlation coefficient* = <u>0.9992</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	130	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	64	
Measuring time, (min)	60	
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

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 13-Feb-19
 Manufacturer: Sibata Scientific Technology LTD. Validity of Calibration Record 12-Apr-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

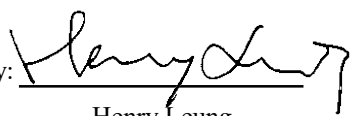
Calibration of 1 hr TSP		
Calibration Point	Laser Dust Monitor	HVS
	Mass Concentration ($\mu\text{g}/\text{m}^3$) X-axis	Mass concentration ($\mu\text{g}/\text{m}^3$) Y-axis
1	74	149.3
2	62	121.9
3	60	119.4
Average	65	130
By Linear Regression of Y on X Slope , mw = <u>2.1872</u> Intercept, bw = <u>-12.6977</u> Correlation coefficient* = <u>0.9984</u>		
Set Correlation Factor		
Particulate Concentration by High Volume Sampler ($\mu\text{g}/\text{m}^3$)	130	
Particulate Concentration by Dust Meter ($\mu\text{g}/\text{m}^3$)	65	
Measuring time, (min)	60	
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. MA16034/05/0016

Project No. AM1 - Tin Hau Temple
 Date: 19-Feb-19 Next Due Date: 18-Apr-19 Operator: SK
 Equipment No.: A-01-05 Model No.: GS2310 Serial No. 10599

Ambient Condition			
Temperature, Ta (K)	291.8	Pressure, Pa (mmHg)	764.9

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	3.63	62.10	8.1	2.89
2	9.2	3.08	52.71	5.8	2.44
3	7.8	2.83	48.57	4.9	2.24
4	4.9	2.24	38.58	3.3	1.84
5	2.8	1.70	29.26	2.1	1.47

By Linear Regression of Y on X

Slope, mw = 0.0429 Intercept, bw = 0.1934
 Correlation coefficient* = 0.9990

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.04

Remarks: _____

Conducted by: SK Wong Signature:  Date: 19 Feb 2019

Checked by: Henry Leung Signature:  Date: 19 Feb 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/08/0016

Project No. AM2 - Sai Tso Wan Recreation Ground
 Date: 19-Feb-19 Next Due Date: 18-Apr-19 Operator: SK
 Equipment No.: A-01-08 Model No.: GS2310 Serial No. 1287

Ambient Condition			
Temperature, Ta (K)	<u>291.8</u>	Pressure, Pa (mmHg)	<u>764.9</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>12.9</u>	3.64	62.34	<u>8.1</u>	2.89
2	<u>9.5</u>	3.12	53.55	<u>6.1</u>	2.50
3	<u>8.0</u>	2.87	49.18	<u>5.1</u>	2.29
4	<u>4.9</u>	2.24	38.58	<u>3.1</u>	1.79
5	<u>3.0</u>	1.76	30.28	<u>2.1</u>	1.47

By Linear Regression of Y on X

Slope, mw = 0.0448 Intercept, bw = 0.0886
 Correlation coefficient* = 0.9993

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.96

Remarks: _____

Conducted by: SK Wong Signature:  Date: 19 Feb 2019

Checked by: Henry Leung Signature:  Date: 19 Feb 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/03/0016

Project No. AM3 - Yau Lai Estate, Bik Lai House
 Date: 19-Feb-19 Next Due Date: 18-Apr-19 Operator: SK
 Equipment No.: A-01-03 Model No.: GS2310 Serial No. 10379

Ambient Condition			
Temperature, Ta (K)	291.8	Pressure, Pa (mmHg)	764.9

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	3.60	61.61	8.0	2.87
2	9.5	3.12	53.55	6.2	2.52
3	7.9	2.85	48.87	4.9	2.24
4	5.1	2.29	39.35	3.2	1.81
5	3.0	1.76	30.28	2.0	1.43

By Linear Regression of Y on X

Slope, mw = 0.0463 Intercept, bw = 0.0113
 Correlation coefficient* = 0.9989

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.91

Remarks: _____

Conducted by: SK Wong Signature:  Date: 19 Feb 2019

Checked by: Henry Leung Signature:  Date: 19 Feb 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/54/0016

Project No. AM4(A) - Cha Kwo Ling Public Cargo Working Area Administrative Office
 Date: 19-Feb-19 Next Due Date: 18-Apr-19 Operator: SK
 Equipment No.: A-01-54 Model No.: TE-5170 Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	<u>291.8</u>	Pressure, Pa (mmHg)	<u>764.9</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>13.0</u>	3.66	62.58	<u>8.5</u>	2.96
2	<u>9.8</u>	3.17	54.39	<u>6.5</u>	2.58
3	<u>7.9</u>	2.85	48.87	<u>5.3</u>	2.33
4	<u>5.3</u>	2.33	40.11	<u>3.4</u>	1.87
5	<u>3.2</u>	1.81	31.26	<u>2.2</u>	1.50

By Linear Regression of Y on X

Slope, mw = 0.0470 Intercept, bw = 0.0179
 Correlation coefficient* = 0.9993

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.05

Remarks: _____

Conducted by: SK Wong Signature:  Date: 19 Feb 2019
 Checked by: Henry Leung Signature:  Date: 19 Feb 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/37/0016

Project No. AM5(A) - Tseung Kwan O DSD Desilting Compound
 Date: 19-Feb-19 Next Due Date: 18-Apr-19 Operator: SK
 Equipment No.: A-01-37 Model No.: GS2310 Serial No. 1704

Ambient Condition			
Temperature, Ta (K)	<u>291.8</u>	Pressure, Pa (mmHg)	<u>764.9</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>13.5</u>	3.73	63.76	<u>8.6</u>	2.97
2	<u>10.1</u>	3.22	55.21	<u>6.6</u>	2.60
3	<u>8.1</u>	2.89	49.48	<u>5.3</u>	2.33
4	<u>5.5</u>	2.38	40.85	<u>3.5</u>	1.90
5	<u>3.4</u>	1.87	32.20	<u>2.4</u>	1.57

By Linear Regression of Y on X

Slope, mw = 0.0453 Intercept, bw = 0.0885
 Correlation coefficient* = 0.9990

*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: 19 Feb 2019

Checked by: Henry Leung Signature: Date: 19 Feb 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/07/0015

Project No. AM6 - Psrk Central
 Date: 21-Jan-19 Next Due Date: 20-Mar-19 Operator: SK
 Equipment No.: A-01-07 Model No.: GS2310 Serial No. 10592

Ambient Condition			
Temperature, Ta (K)	287	Pressure, Pa (mmHg)	765.8

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis
1	10.8	3.36	57.44	6.5	2.61
2	8.5	2.98	50.96	5.4	2.38
3	6.8	2.67	45.58	4.2	2.10
4	4.3	2.12	36.25	2.7	1.68
5	2.8	1.71	29.25	1.8	1.37

By Linear Regression of Y on X

Slope, mw = 0.0446 Intercept, bw = 0.0705

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation


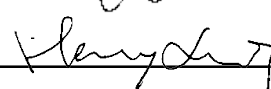
From the TSP Field Calibration Curve, take Qstd = 43 CFM

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 x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 3.77

Remarks: _____

Conducted by: SK Wong Signature:  Date: 21 January 2019
 Checked by: Henry Leung Signature:  Date: 21 January 2019

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET



File No. MA16034/07/0016

Project No. AM6 - Park Central
 Date: 20-Mar-19 Next Due Date: 18-May-19 Operator: SK
 Equipment No.: A-01-07 Model No.: GS2310 Serial No. 10592

Ambient Condition			
Temperature, Ta (K)	<u>296.2</u>	Pressure, Pa (mmHg)	<u>759.2</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>10.9</u>	3.31	56.70	<u>6.4</u>	2.54
2	<u>8.6</u>	2.94	50.41	<u>5.3</u>	2.31
3	<u>6.8</u>	2.61	44.87	<u>4.1</u>	2.03
4	<u>4.4</u>	2.10	36.18	<u>2.6</u>	1.62
5	<u>2.9</u>	1.71	29.45	<u>1.7</u>	1.31

By Linear Regression of Y on X

Slope, mw = 0.0459 Intercept, bw = -0.0374
 Correlation coefficient* = 0.9990

*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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.73

Remarks: _____

Conducted by: SK Wong Signature: Date: 20 March 2019

Checked by: Henry Leung Signature: Date: 20 March 2019



Certificate of Calibration

Calibration Certification Information			
Cal. Date: January 8, 2019	Rootsometer 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

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

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

Test conditions:

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

Test Specifications:

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

Methodology:

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

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Laboratory Manager

TEST REPORT

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

Results:

1. Performance check of anemometer

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

2. Performance check of wind direction sensor

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

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

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.:	29501
Date of Issue:	2018-08-27
Date Received:	2018-08-24
Date Tested:	2018-08-24
Date Completed:	2018-08-27
Next Due Date:	2019-08-26

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room 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.:	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.:	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/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.:	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

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.:	29817A
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28

ATTN: Mr. W.K. Tang

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
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Test Report No.:	30431C
Date of Issue:	2018-12-14
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-14

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-30
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO1 Sonde, 100 meter Depth, 4 Sensor ports	599501-02	16J100891
- EXO Optical DO Sensor, Ti	599100-01	16J100954
- EXO conductivity/Temperature Sensor, Ti	599870	16H100189
- EXO Turbidity Sensor, Ti	599101-01	16J101107
- EXO pH Sensor Assembly, Guarded, Ti	599701	17A105261

Test conditions:

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

Test Specifications:

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

Methodology:

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

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

Test Report No.:	30431C
Date of Issue:	2018-12-14
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-14

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings ($\mu\text{S}/\text{cm}$)	Acceptance Criteria	Comment
KCl stock solution (12890 $\mu\text{S}/\text{cm}$)	13000	12246-13534	Pass

Temperature performance checking

	Instrument Readings ($^{\circ}\text{C}$)	Correction ($^{\circ}\text{C}$)	Comment
Reference thermometer- E431 Readings ($^{\circ}\text{C}$)			
20.0	20.001	-0.001	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.02	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.84	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.08	$<0.1\text{mg}/\text{L}$	Pass

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Winkler Titration value (mg/L)			
8.00	7.96	Difference between Titration value and instrument reading $<0.2\text{mg}/\text{L}$	Pass

Turbidity performance checking

	Instrument Readings (NTU)	Acceptance Criteria	Comment
Turbidity stock solution			
10 NTU	10.02	9.0-11.0	Pass
50 NTU	50.04	45.0-55.0	Pass
100 NTU	99.6	90.0-110.0	Pass

Depth performance checking

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

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

TEST REPORT

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

Test Report No.:	30431F
Date of Issue:	2018-12-14
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-14

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-91
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO1 Sonde, 100 meter Depth, 4 Sensor ports	599501-02	17B100186
- EXO Optical DO Sensor, Ti	599100-01	17A105015
- EXO conductivity/Temperature Sensor, Ti	599870	17A105109
- EXO Turbidity Sensor, Ti	599101-01	17A104098
- EXO pH Sensor Assembly, Guarded, Ti	599701	16J101280

Test conditions:

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

Test Specifications:

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

Methodology:

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

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



PATRICK TSE

Laboratory Manager

TEST REPORT

Test Report No.:	30431F
Date of Issue:	2018-12-14
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-14

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings ($\mu\text{S}/\text{cm}$)	Acceptance Criteria	Comment
KCl stock solution (12890 $\mu\text{S}/\text{cm}$)	13000	12246-13534	Pass

Temperature performance checking

	Instrument Readings ($^{\circ}\text{C}$)	Correction ($^{\circ}\text{C}$)	Comment
Reference thermometer- E431 Readings ($^{\circ}\text{C}$)			
20.0	20.002	-0.002	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.02	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.85	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.08	$<0.1\text{mg}/\text{L}$	Pass

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Winkler Titration value (mg/L)			
8.00	8.01	Difference between Titration value and instrument reading $<0.2\text{mg}/\text{L}$	Pass

Turbidity performance checking

	Instrument Readings (NTU)	Acceptance Criteria	Comment
Turbidity stock solution			
10 NTU	10.02	9.0-11.0	Pass
50 NTU	50.00	45.0-55.0	Pass
100 NTU	99.7	90.0-110.0	Pass

Depth performance checking

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

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

CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE13853)
Part Number: 714A9701
Serial No.: BG16512
Calibration Date: 11 April 2018
Next Calibration Date: 11 April 2019
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: _____

(Wong, Keefe Solomon)

Date: 11 April 2018



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: 137333

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



Factory Calibration Date: 06/18/18

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	
↓ (Low)	10.00 %LEL	19.50 %VOL	25.00 PPM	10.00 PPM	25.00 PPM	
↑ (High)	20.00 %LEL	23.00 %VOL	100.00 PPM	15.00 PPM	50.00 PPM	
STEL			100.00 PPM	15.00 PPM	35.00 PPM	
TWA			25.00 PPM	10.00 PPM	25.00 PPM	
Calibrated Value	Methane 1.452 %VOL	O2 15.07 %VOL	CO 60.41 PPM	H2S 19.29 PPM	NH3 25 PPM	
Cylinder Lot #	122- 401120204-1	122- 401120204-1	122- 401120204-1	122- 401120204-1	216662	

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: S.Key

JIM HOFFMAN
QUALITY ENGINEER

APPENDIX C
WEATHER INFORMATION

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

I. Mean Wind Speed and Wind Direction

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 March 2019	20.8	89	0.4
2 March 2019	21.5	87	Trace
3 March 2019	23.5	85	6.3
4 March 2019	22.6	82	10.2
5 March 2019	26.7	88	30.3
6 March 2019	22.0	92	45.5
7 March 2019	20.5	93	29.6
8 March 2019	17.4	92	11.5
9 March 2019	18.7	95	14.5
10 March 2019	18.5	87	4.6
11 March 2019	22.6	58	7.6
12 March 2019	24.2	77	0.0
13 March 2019	22.9	71	0.0
14 March 2019	21.5	83	6.4
15 March 2019	20.0	81	0.4
16 March 2019	22.8	65	0.0
17 March 2019	22.7	77	0.0
18 March 2019	24.7	82	0.0
19 March 2019	27.4	84	0.0
20 March 2019	25.0	88	0.0

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

I. Mean Wind Speed and Wind Direction

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
21 March 2019	27.2	88	0.0
22 March 2019	27.5	84	Trace
23 March 2019	25.0	89	3.3
24 March 2019	18.2	88	0.3
25 March 2019	23.3	85	1.0
26 March 2019	24.6	85	0.0
27 March 2019	25.3	82	Trace
28 March 2019	27.8	84	0.0
29 March 2019	26.5	86	6.9
30 March 2019	24.0	86	Trace
31 March 2019	22.9	85	7.7

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

** Trace means rainfall less than 0.05 mm

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
1-Mar-19	00:00	0	ENE	2-Mar-19	12:00	2.5	NNE
1-Mar-19	01:00	0.4	ENE	2-Mar-19	13:00	2.7	ENE
1-Mar-19	02:00	0.9	NNE	2-Mar-19	14:00	2.9	ENE
1-Mar-19	03:00	1.3	NW	2-Mar-19	15:00	2.9	NE
1-Mar-19	04:00	1.3	NNW	2-Mar-19	16:00	2.7	NE
1-Mar-19	05:00	0.9	SE	2-Mar-19	17:00	2.7	N
1-Mar-19	06:00	0.9	ENE	2-Mar-19	18:00	2.1	NNW
1-Mar-19	07:00	0.9	E	2-Mar-19	19:00	2	NW
1-Mar-19	08:00	0.4	ENE	2-Mar-19	20:00	1.9	NNW
1-Mar-19	09:00	0.9	E	2-Mar-19	21:00	1.7	NW
1-Mar-19	10:00	0.9	NE	2-Mar-19	22:00	1.1	N
1-Mar-19	11:00	0.4	ENE	2-Mar-19	23:00	1.8	NNW
1-Mar-19	12:00	1.3	NE	3-Mar-19	00:00	1.5	NW
1-Mar-19	13:00	1.3	NNE	3-Mar-19	01:00	0.9	NE
1-Mar-19	14:00	1.3	NE	3-Mar-19	02:00	0.1	ENE
1-Mar-19	15:00	1.3	ENE	3-Mar-19	03:00	0.1	NNE
1-Mar-19	16:00	1.3	ENE	3-Mar-19	04:00	0.1	NE
1-Mar-19	17:00	0.9	N	3-Mar-19	05:00	0	ENE
1-Mar-19	18:00	1.3	ENE	3-Mar-19	06:00	0.1	E
1-Mar-19	19:00	0.9	NNE	3-Mar-19	07:00	0.1	SSW
1-Mar-19	20:00	0.9	NNE	3-Mar-19	08:00	0	N
1-Mar-19	21:00	1.3	NE	3-Mar-19	09:00	0.1	ENE
1-Mar-19	22:00	1.3	ENE	3-Mar-19	10:00	1.8	NE
1-Mar-19	23:00	0.9	ENE	3-Mar-19	11:00	1.7	ENE
2-Mar-19	00:00	0.9	E	3-Mar-19	12:00	1.5	S
2-Mar-19	01:00	0.4	E	3-Mar-19	13:00	2.3	S
2-Mar-19	02:00	0.4	ENE	3-Mar-19	14:00	1.3	SSE
2-Mar-19	03:00	0.4	NE	3-Mar-19	15:00	1.5	S
2-Mar-19	04:00	0.9	NE	3-Mar-19	16:00	0.9	S
2-Mar-19	05:00	0.9	ENE	3-Mar-19	17:00	0.1	SSE
2-Mar-19	06:00	1.3	ENE	3-Mar-19	18:00	0	SSW
2-Mar-19	07:00	0.4	NE	3-Mar-19	19:00	0.1	SSW
2-Mar-19	08:00	0.4	N	3-Mar-19	20:00	0.1	SSE
2-Mar-19	09:00	0.4	N	3-Mar-19	21:00	0.1	ENE
2-Mar-19	10:00	0.4	ENE	3-Mar-19	22:00	0	WNW
2-Mar-19	11:00	0.9	N	3-Mar-19	23:00	0.1	NW

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
4-Mar-19	00:00	0.1	SSE	5-Mar-19	12:00	1.3	W
4-Mar-19	01:00	0.1	ENE	5-Mar-19	13:00	1.3	NE
4-Mar-19	02:00	0.1	E	5-Mar-19	14:00	1.3	E
4-Mar-19	03:00	0.1	E	5-Mar-19	15:00	1.3	ENE
4-Mar-19	04:00	0	ENE	5-Mar-19	16:00	1.3	ENE
4-Mar-19	05:00	0.1	ENE	5-Mar-19	17:00	0.9	ENE
4-Mar-19	06:00	0.1	E	5-Mar-19	18:00	0.9	ENE
4-Mar-19	07:00	0.1	E	5-Mar-19	19:00	0	ENE
4-Mar-19	08:00	0.1	ENE	5-Mar-19	20:00	0	ESE
4-Mar-19	09:00	0.1	ENE	5-Mar-19	21:00	0	ESE
4-Mar-19	10:00	0.4	E	5-Mar-19	22:00	0	SW
4-Mar-19	11:00	2.2	W	5-Mar-19	23:00	0	S
4-Mar-19	12:00	2	ENE	6-Mar-19	00:00	0	SE
4-Mar-19	13:00	2.3	ESE	6-Mar-19	01:00	0	S
4-Mar-19	14:00	1.5	ENE	6-Mar-19	02:00	0	SSE
4-Mar-19	15:00	2.1	ENE	6-Mar-19	03:00	0	SE
4-Mar-19	16:00	2.5	ENE	6-Mar-19	04:00	0	SE
4-Mar-19	17:00	2.4	ENE	6-Mar-19	05:00	0	SE
4-Mar-19	18:00	2.1	ENE	6-Mar-19	06:00	0	SE
4-Mar-19	19:00	2.2	E	6-Mar-19	07:00	0	WNW
4-Mar-19	20:00	2	ENE	6-Mar-19	08:00	0	WNW
4-Mar-19	21:00	2	E	6-Mar-19	09:00	0.9	WNW
4-Mar-19	22:00	2.3	E	6-Mar-19	10:00	0	ENE
4-Mar-19	23:00	2.5	ENE	6-Mar-19	11:00	0.4	NNW
5-Mar-19	00:00	2.4	ESE	6-Mar-19	12:00	0	ENE
5-Mar-19	01:00	2.7	ENE	6-Mar-19	13:00	0	NNW
5-Mar-19	02:00	3	ENE	6-Mar-19	14:00	0	N
5-Mar-19	03:00	2.7	E	6-Mar-19	15:00	0	N
5-Mar-19	04:00	3.2	E	6-Mar-19	16:00	0	N
5-Mar-19	05:00	3.4	ENE	6-Mar-19	17:00	0.4	NNE
5-Mar-19	06:00	1.5	E	6-Mar-19	18:00	0	NNE
5-Mar-19	07:00	1.8	ENE	6-Mar-19	19:00	0	NNE
5-Mar-19	08:00	1.4	ESE	6-Mar-19	20:00	0	NNE
5-Mar-19	09:00	1.3	E	6-Mar-19	21:00	0	NNE
5-Mar-19	10:00	1.9	ENE	6-Mar-19	22:00	0	NNE
5-Mar-19	11:00	1.7	ENE	6-Mar-19	23:00	0	NNE

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

I. Mean Wind Speed and Wind Direction

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

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
10-Mar-19	00:00	0.4	NE	11-Mar-19	12:00	2.2	N
10-Mar-19	01:00	0.4	NE	11-Mar-19	13:00	2.2	NE
10-Mar-19	02:00	0.9	N	11-Mar-19	14:00	1.8	ENE
10-Mar-19	03:00	1.3	NNE	11-Mar-19	15:00	1.8	NE
10-Mar-19	04:00	0.9	NE	11-Mar-19	16:00	1.8	NE
10-Mar-19	05:00	0.4	NE	11-Mar-19	17:00	1.3	NE
10-Mar-19	06:00	0.9	ENE	11-Mar-19	18:00	1.3	NNW
10-Mar-19	07:00	0.4	NE	11-Mar-19	19:00	1.8	NE
10-Mar-19	08:00	0.4	ENE	11-Mar-19	20:00	1.8	NE
10-Mar-19	09:00	0.9	NE	11-Mar-19	21:00	2.2	NNE
10-Mar-19	10:00	1.3	NE	11-Mar-19	22:00	1.8	NNE
10-Mar-19	11:00	0.9	ENE	11-Mar-19	23:00	1.3	NE
10-Mar-19	12:00	1.3	NE	12-Mar-19	00:00	1.3	N
10-Mar-19	13:00	0.9	NE	12-Mar-19	01:00	1.8	WNW
10-Mar-19	14:00	0.9	NE	12-Mar-19	02:00	0.9	NNE
10-Mar-19	15:00	0.4	NNE	12-Mar-19	03:00	1.3	N
10-Mar-19	16:00	0.4	NE	12-Mar-19	04:00	0.4	NNE
10-Mar-19	17:00	0	NE	12-Mar-19	05:00	0.9	N
10-Mar-19	18:00	0.4	NNE	12-Mar-19	06:00	0.9	W
10-Mar-19	19:00	0	NE	12-Mar-19	07:00	0.4	NE
10-Mar-19	20:00	0.4	N	12-Mar-19	08:00	0.4	ENE
10-Mar-19	21:00	1.8	N	12-Mar-19	09:00	0.4	NE
10-Mar-19	22:00	1.3	ENE	12-Mar-19	10:00	0.4	NNE
10-Mar-19	23:00	0.9	NE	12-Mar-19	11:00	0.4	E
11-Mar-19	00:00	0.9	NNE	12-Mar-19	12:00	0	NE
11-Mar-19	01:00	0.4	NW	12-Mar-19	13:00	0	E
11-Mar-19	02:00	0.9	N	12-Mar-19	14:00	0	NE
11-Mar-19	03:00	0.9	NNW	12-Mar-19	15:00	0	NNE
11-Mar-19	04:00	0.4	NW	12-Mar-19	16:00	0	NNE
11-Mar-19	05:00	0.4	E	12-Mar-19	17:00	0.4	NE
11-Mar-19	06:00	0.4	NNE	12-Mar-19	18:00	0.4	NNE
11-Mar-19	07:00	0.4	NE	12-Mar-19	19:00	0.9	NW
11-Mar-19	08:00	0.9	E	12-Mar-19	20:00	0.4	WNW
11-Mar-19	09:00	1.8	NE	12-Mar-19	21:00	0	NW
11-Mar-19	10:00	2.2	ENE	12-Mar-19	22:00	0	N
11-Mar-19	11:00	1.8	E	12-Mar-19	23:00	0	WNW

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
13-Mar-19	00:00	0	NNW	14-Mar-19	12:00	0	NE
13-Mar-19	01:00	0.4	ENE	14-Mar-19	13:00	0	NNE
13-Mar-19	02:00	0	N	14-Mar-19	14:00	0	N
13-Mar-19	03:00	0.4	ESE	14-Mar-19	15:00	0	NE
13-Mar-19	04:00	0	N	14-Mar-19	16:00	0.4	NNE
13-Mar-19	05:00	0	NE	14-Mar-19	17:00	0.4	N
13-Mar-19	06:00	0	N	14-Mar-19	18:00	0	NE
13-Mar-19	07:00	0	E	14-Mar-19	19:00	0	N
13-Mar-19	08:00	0	NNE	14-Mar-19	20:00	0	NE
13-Mar-19	09:00	0	NE	14-Mar-19	21:00	0	ENE
13-Mar-19	10:00	0	ENE	14-Mar-19	22:00	0	E
13-Mar-19	11:00	0	NNE	14-Mar-19	23:00	0	NNE
13-Mar-19	12:00	0	NE	15-Mar-19	00:00	0	NNE
13-Mar-19	13:00	0.4	E	15-Mar-19	01:00	0	NNE
13-Mar-19	14:00	0	NE	15-Mar-19	02:00	0	N
13-Mar-19	15:00	0	ENE	15-Mar-19	03:00	0	NNE
13-Mar-19	16:00	0.4	S	15-Mar-19	04:00	0	NNW
13-Mar-19	17:00	0	SSW	15-Mar-19	05:00	0	W
13-Mar-19	18:00	0.4	S	15-Mar-19	06:00	0	WNW
13-Mar-19	19:00	0	NE	15-Mar-19	07:00	0	NNW
13-Mar-19	20:00	0	NNE	15-Mar-19	08:00	0	NW
13-Mar-19	21:00	0.4	SSE	15-Mar-19	09:00	0	N
13-Mar-19	22:00	0	NE	15-Mar-19	10:00	0	NNW
13-Mar-19	23:00	0	NNE	15-Mar-19	11:00	0.4	NE
14-Mar-19	00:00	0	NE	15-Mar-19	12:00	0.4	N
14-Mar-19	01:00	0	NNE	15-Mar-19	13:00	0.4	NW
14-Mar-19	02:00	0	NE	15-Mar-19	14:00	0.4	ENE
14-Mar-19	03:00	0	ENE	15-Mar-19	15:00	0.4	ENE
14-Mar-19	04:00	0.4	NE	15-Mar-19	16:00	0.4	ENE
14-Mar-19	05:00	0	NNE	15-Mar-19	17:00	0	ENE
14-Mar-19	06:00	0	NE	15-Mar-19	18:00	0.4	ENE
14-Mar-19	07:00	0	NNE	15-Mar-19	19:00	0	NE
14-Mar-19	08:00	0	NNE	15-Mar-19	20:00	0	NE
14-Mar-19	09:00	0	ENE	15-Mar-19	21:00	0	NE
14-Mar-19	10:00	0	E	15-Mar-19	22:00	0	NE
14-Mar-19	11:00	0	ENE	15-Mar-19	23:00	0	NE

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
Mar-16-19	0:00	0	ENE	Mar-17-19	12:00	0	E
Mar-16-19	1:00	0	ENE	Mar-17-19	13:00	0	ENE
Mar-16-19	2:00	0	ENE	Mar-17-19	14:00	0	WSW
Mar-16-19	3:00	0	ENE	Mar-17-19	15:00	0	W
Mar-16-19	4:00	0	ENE	Mar-17-19	16:00	0	SW
Mar-16-19	5:00	0.4	ENE	Mar-17-19	17:00	0	SW
Mar-16-19	6:00	0	ENE	Mar-17-19	18:00	0	W
Mar-16-19	7:00	0	ENE	Mar-17-19	19:00	0	ENE
Mar-16-19	8:00	0	ENE	Mar-17-19	20:00	0	ENE
Mar-16-19	9:00	0	ENE	Mar-17-19	21:00	0	ENE
Mar-16-19	10:00	0	NE	Mar-17-19	22:00	0	ENE
Mar-16-19	11:00	0.4	NE	Mar-17-19	23:00	0	E
Mar-16-19	12:00	0.4	E	Mar-18-19	0:00	0	E
Mar-16-19	13:00	0.4	ESE	Mar-18-19	1:00	0	NE
Mar-16-19	14:00	0.4	ESE	Mar-18-19	2:00	0	E
Mar-16-19	15:00	0	SE	Mar-18-19	3:00	0	ENE
Mar-16-19	16:00	0	NE	Mar-18-19	4:00	0	E
Mar-16-19	17:00	0.4	ENE	Mar-18-19	5:00	0	ENE
Mar-16-19	18:00	0.4	W	Mar-18-19	6:00	0	ENE
Mar-16-19	19:00	0.4	WSW	Mar-18-19	7:00	0.4	E
Mar-16-19	20:00	0.4	ENE	Mar-18-19	8:00	0	E
Mar-16-19	21:00	0	E	Mar-18-19	9:00	0	E
Mar-16-19	22:00	0.9	E	Mar-18-19	10:00	0	SE
Mar-16-19	23:00	0.9	E	Mar-18-19	11:00	0	ENE
Mar-17-19	0:00	0.4	E	Mar-18-19	12:00	0	ENE
Mar-17-19	1:00	0.4	ENE	Mar-18-19	13:00	0	WSW
Mar-17-19	2:00	0	ENE	Mar-18-19	14:00	0	ENE
Mar-17-19	3:00	0.4	E	Mar-18-19	15:00	0	NW
Mar-17-19	4:00	0.4	E	Mar-18-19	16:00	0	WNW
Mar-17-19	5:00	0.4	E	Mar-18-19	17:00	0	WNW
Mar-17-19	6:00	0.4	E	Mar-18-19	18:00	0	WNW
Mar-17-19	7:00	0.4	ENE	Mar-18-19	19:00	0	WNW
Mar-17-19	8:00	0.4	ENE	Mar-18-19	20:00	0	WNW
Mar-17-19	9:00	0.4	E	Mar-18-19	21:00	0	SE
Mar-17-19	10:00	0.4	E	Mar-18-19	22:00	0	S
Mar-17-19	11:00	0.4	E	Mar-18-19	23:00	0	ENE

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

I. Mean Wind Speed and Wind Direction

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

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

I. Mean Wind Speed and Wind Direction

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

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

I. Mean Wind Speed and Wind Direction

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

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
Mar-28-19	0:00	0.4	E	Mar-29-19	12:00	0.4	SW
Mar-28-19	1:00	0.4	E	Mar-29-19	13:00	0.4	SW
Mar-28-19	2:00	0.4	E	Mar-29-19	14:00	0.4	WSW
Mar-28-19	3:00	0.9	E	Mar-29-19	15:00	0.9	WSW
Mar-28-19	4:00	0	E	Mar-29-19	16:00	0	SSW
Mar-28-19	5:00	0	ENE	Mar-29-19	17:00	0.9	WSW
Mar-28-19	6:00	0	ENE	Mar-29-19	18:00	0.9	SW
Mar-28-19	7:00	0	ENE	Mar-29-19	19:00	0.4	S
Mar-28-19	8:00	0	E	Mar-29-19	20:00	1.3	SW
Mar-28-19	9:00	0	ENE	Mar-29-19	21:00	0.9	WSW
Mar-28-19	10:00	0	ENE	Mar-29-19	22:00	0	WSW
Mar-28-19	11:00	0	NE	Mar-29-19	23:00	0.4	W
Mar-28-19	12:00	0.4	E	Mar-30-19	0:00	0	WNW
Mar-28-19	13:00	0.9	E	Mar-30-19	1:00	0	WNW
Mar-28-19	14:00	0.4	E	Mar-30-19	2:00	0	WNW
Mar-28-19	15:00	0.9	ESE	Mar-30-19	3:00	0	SE
Mar-28-19	16:00	1.3	SW	Mar-30-19	4:00	0	WNW
Mar-28-19	17:00	0.9	W	Mar-30-19	5:00	0	WNW
Mar-28-19	18:00	0.9	SW	Mar-30-19	6:00	0	WNW
Mar-28-19	19:00	0.4	SSW	Mar-30-19	7:00	0	WNW
Mar-28-19	20:00	0	S	Mar-30-19	8:00	0	WNW
Mar-28-19	21:00	0	ESE	Mar-30-19	9:00	0.4	ENE
Mar-28-19	22:00	0	SE	Mar-30-19	10:00	0.9	ENE
Mar-28-19	23:00	0	WNW	Mar-30-19	11:00	0.9	E
Mar-29-19	0:00	0	WSW	Mar-30-19	12:00	1.3	E
Mar-29-19	1:00	0	WSW	Mar-30-19	13:00	1.3	ENE
Mar-29-19	2:00	0	WSW	Mar-30-19	14:00	0.9	E
Mar-29-19	3:00	0	WSW	Mar-30-19	15:00	0.4	E
Mar-29-19	4:00	0	WSW	Mar-30-19	16:00	0.9	ENE
Mar-29-19	5:00	0	WSW	Mar-30-19	17:00	0.4	E
Mar-29-19	6:00	0	WSW	Mar-30-19	18:00	0.4	E
Mar-29-19	7:00	0	WSW	Mar-30-19	19:00	0.4	E
Mar-29-19	8:00	0	WSW	Mar-30-19	20:00	0.4	ENE
Mar-29-19	9:00	0	WSW	Mar-30-19	21:00	0.4	E
Mar-29-19	10:00	0	WSW	Mar-30-19	22:00	0.4	ENE
Mar-29-19	11:00	0	SW	Mar-30-19	23:00	0.9	ENE

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

I. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m-s	Direction	Date	Time	Wind Speed m-s	Direction
Mar-31-19	0:00	0.4	ENE	Mar-31-19	12:00	2.2	E
Mar-31-19	1:00	0.4	ENE	Mar-31-19	13:00	2.2	E
Mar-31-19	2:00	0.4	ENE	Mar-31-19	14:00	1.8	ENE
Mar-31-19	3:00	0.4	ENE	Mar-31-19	15:00	1.3	ENE
Mar-31-19	4:00	0.4	ENE	Mar-31-19	16:00	0.9	ESE
Mar-31-19	5:00	0.9	ENE	Mar-31-19	17:00	1.8	E
Mar-31-19	6:00	1.3	SW	Mar-31-19	18:00	0.9	E
Mar-31-19	7:00	1.3	E	Mar-31-19	19:00	0.9	E
Mar-31-19	8:00	2.2	WSW	Mar-31-19	20:00	1.3	ENE
Mar-31-19	9:00	1.3	E	Mar-31-19	21:00	0.9	ESE
Mar-31-19	10:00	1.3	ENE	Mar-31-19	22:00	0.4	ENE
Mar-31-19	11:00	1.3	ENE	Mar-31-19	23:00	0.4	E

**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 (March 2019)

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

* for additional monitoring due to previous exceedances

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 Carriage 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 - Nza 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 Faai Primary School, Yau Tong
 CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores
 CM7(A) - Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores
 CM8(A) - Park Central, L1/F Open Space Area

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Mar	2-Mar
					Mid-Ebb Mid-Flood	N/A 14:02
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar
	Mid-Ebb 11:42 Mid-Flood 16:50		Mid-Ebb 12:44 Mid-Flood 18:10	<i>Mid-Ebb 12:56</i> <i>Mid-Flood 18:49</i>	Mid-Flood 8:00 Mid-Ebb 13:38	
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar
	Mid-Flood 9:04 Mid-Ebb 15:20		Mid-Flood 9:56 Mid-Ebb 16:47	<i>Mid-Ebb 10:28</i> <i>Mid-Flood 17:54</i>	Mid-Flood 11:33 Mid-Ebb 19:29	
17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar
	Mid-Ebb 10:34 Mid-Flood 15:49		Mid-Ebb 12:02 Mid-Flood 17:48		Mid-Flood 8:00 Mid-Ebb 13:19	
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar
	Mid-Flood 9:00 Mid-Ebb 15:21		Mid-Flood 10:05 Mid-Ebb 17:17		Mid-Flood 8:00 Mid-Ebb N/A	
31-Mar						

Italics stands for additional monitoring

Monitoring Station:

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Mar	2-Mar
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar
	Mid-Ebb 11:42 Mid-Flood 16:50					
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar
	Mid-Flood 9:04 Mid-Ebb 15:20					
17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar
	Mid-Ebb 10:34 Mid-Flood 15:49					
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar
	Mid-Flood 9:00 Mid-Ebb 15:21					
31-Mar						

Monitoring Station:
W1

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

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

Monitoring Location:
Stream 1, Stream 2, Stream 3

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

Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
6-Mar-19	9:00	Rainy	64.0
6-Mar-19	10:00	Rainy	94.0
6-Mar-19	11:00	Rainy	90.0
12-Mar-19	9:00	Fine	58.9
12-Mar-19	10:00	Fine	81.2
12-Mar-19	11:00	Fine	67.0
18-Mar-19	9:00	Sunny	91.4
18-Mar-19	10:00	Sunny	93.4
18-Mar-19	11:00	Sunny	101.5
22-Mar-19	9:00	Cloudy	94.8
22-Mar-19	10:00	Cloudy	96.8
22-Mar-19	11:00	Cloudy	94.4
28-Mar-19	9:00	Sunny	102.0
28-Mar-19	10:00	Sunny	94.0
28-Mar-19	11:00	Sunny	92.0
		Average	87.7
		Maximum	102.0
		Minimum	58.9

Location AM2 - Sai Tso Wan Recreation Ground			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
6-Mar-19	9:00	Rainy	48.0
6-Mar-19	10:00	Rainy	46.0
6-Mar-19	11:00	Rainy	52.0
12-Mar-19	9:00	Sunny	99.3
12-Mar-19	10:00	Sunny	97.1
12-Mar-19	11:00	Sunny	94.6
18-Mar-19	14:00	Sunny	54.0
18-Mar-19	15:00	Sunny	58.0
18-Mar-19	16:00	Sunny	59.0
22-Mar-19	13:00	Cloudy	85.3
22-Mar-19	14:00	Cloudy	97.4
22-Mar-19	15:00	Cloudy	113.7
28-Mar-19	13:30	Sunny	84.4
28-Mar-19	14:30	Sunny	87.8
28-Mar-19	15:30	Sunny	93.4
		Average	78.0
		Maximum	113.7
		Minimum	46.0

Appendix E - 1-hour TSP Monitoring Results

Location AM3 - Yau Lai Estate Bik Lai House			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
6-Mar-19	13:45	Rainy	46.0
6-Mar-19	14:45	Rainy	44.0
6-Mar-19	15:45	Rainy	44.0
12-Mar-19	13:45	Sunny	106.6
12-Mar-19	14:45	Sunny	110.3
12-Mar-19	15:45	Sunny	109.6
18-Mar-19	9:00	Sunny	60.0
18-Mar-19	10:00	Sunny	57.0
18-Mar-19	11:00	Sunny	55.0
22-Mar-19	9:00	Cloudy	136.0
22-Mar-19	10:00	Cloudy	154.3
22-Mar-19	11:00	Cloudy	146.1
28-Mar-19	13:15	Sunny	114.0
28-Mar-19	14:18	Sunny	110.0
28-Mar-19	15:18	Sunny	120.0
		Average	94.2
		Maximum	154.3
		Minimum	44.0

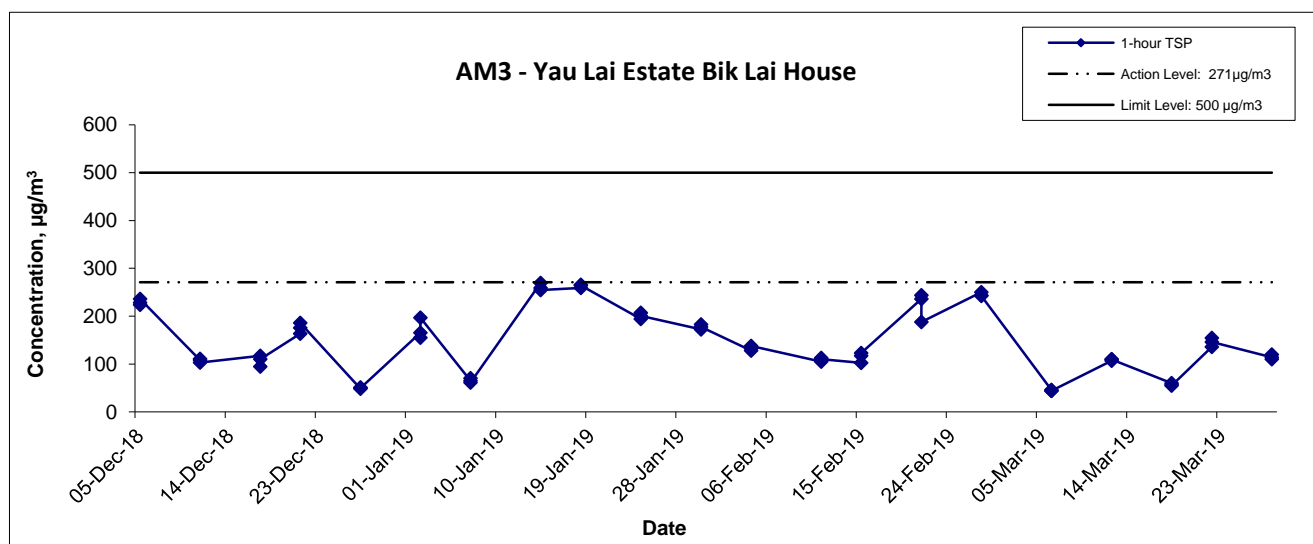
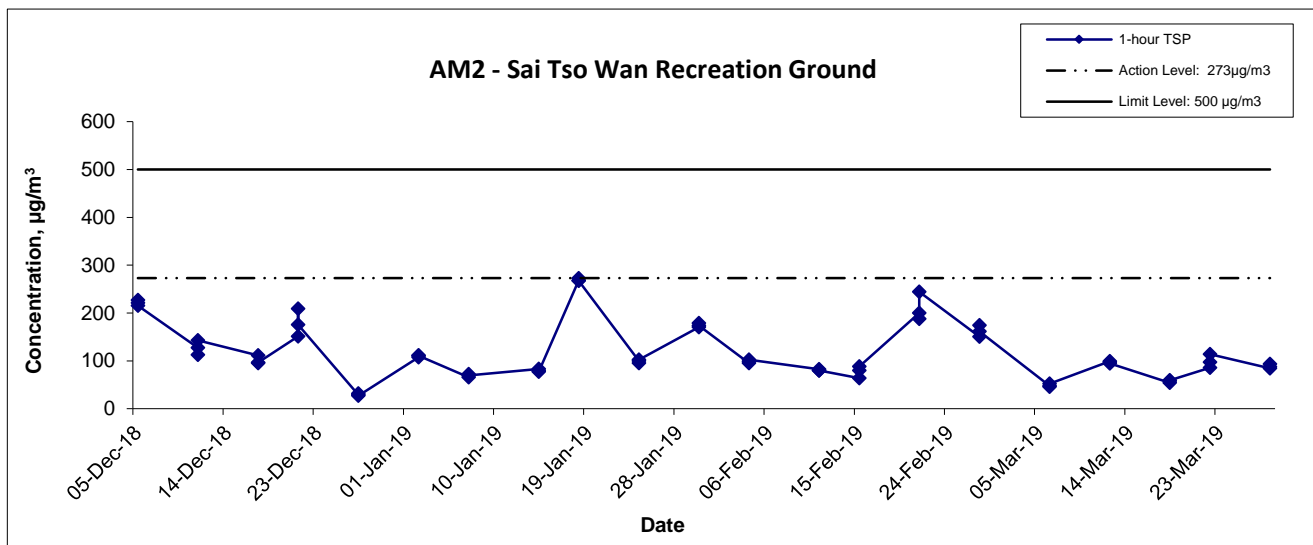
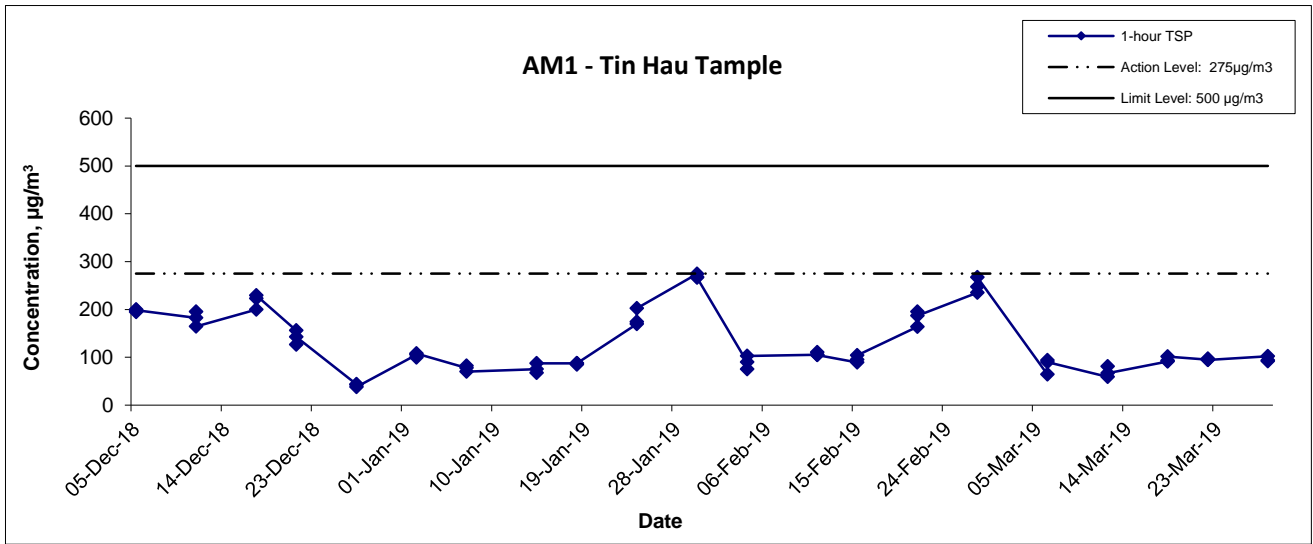
Location AM4 - Sitting-out Area at Cha Kwo Ling Village			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
6-Mar-19	13:00	Rainy	86.0
6-Mar-19	14:00	Rainy	94.0
6-Mar-19	15:00	Rainy	98.0
12-Mar-19	15:00	Fine	125.9
12-Mar-19	16:00	Fine	138.0
12-Mar-19	17:00	Fine	136.0
18-Mar-19	13:00	Sunny	105.6
18-Mar-19	14:00	Sunny	101.5
18-Mar-19	15:00	Sunny	107.6
22-Mar-19	13:00	Cloudy	93.4
22-Mar-19	14:00	Cloudy	94.6
22-Mar-19	15:00	Cloudy	93.9
28-Mar-19	9:00	Sunny	79.9
28-Mar-19	10:00	Sunny	83.3
28-Mar-19	11:00	Sunny	80.9
		Average	101.2
		Maximum	138.0
		Minimum	79.9

Appendix E - 1-hour TSP Monitoring Results

Location AM5(A) - Tseung Kwan O DSD Desilting Compound			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
7-Mar-19	13:00	Rainy	46.0
7-Mar-19	14:00	Rainy	48.0
7-Mar-19	15:00	Rainy	40.0
13-Mar-19	15:00	Cloudy	104.5
13-Mar-19	16:00	Cloudy	107.3
13-Mar-19	17:00	Cloudy	106.6
19-Mar-19	9:00	Sunny	58.0
19-Mar-19	10:00	Sunny	53.0
19-Mar-19	11:00	Sunny	62.0
25-Mar-19	13:00	Sunny	78.6
25-Mar-19	14:00	Sunny	80.6
25-Mar-19	15:00	Sunny	76.4
29-Mar-19	13:00	Fine	51.0
29-Mar-19	14:00	Fine	56.0
29-Mar-19	15:00	Fine	58.0
Average			71.8
Maximum			107.3
Minimum			40.0

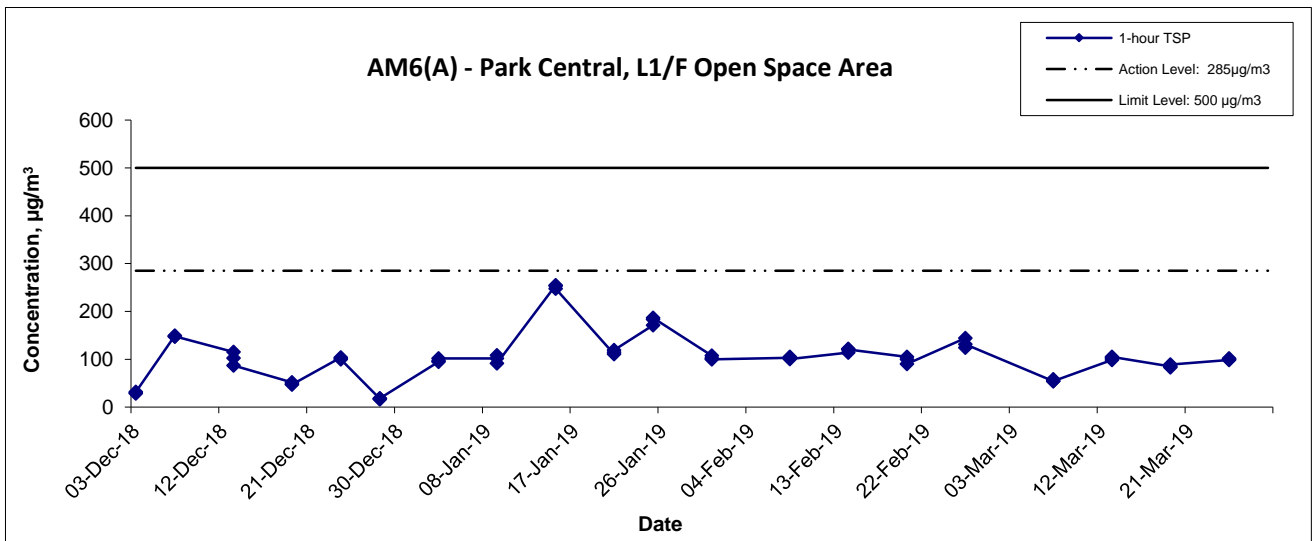
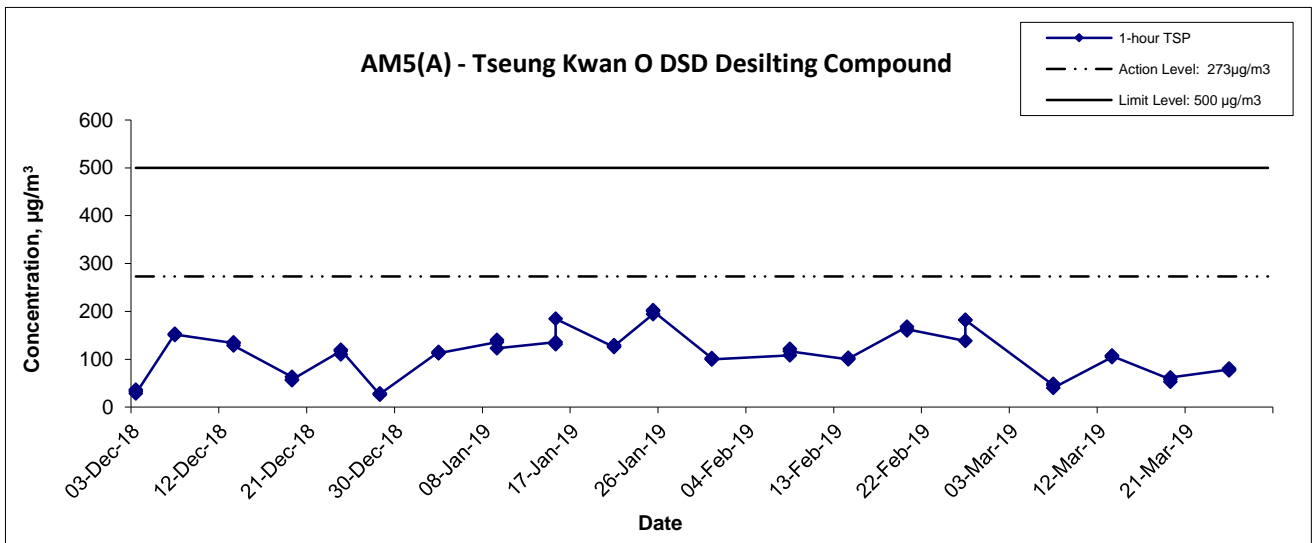
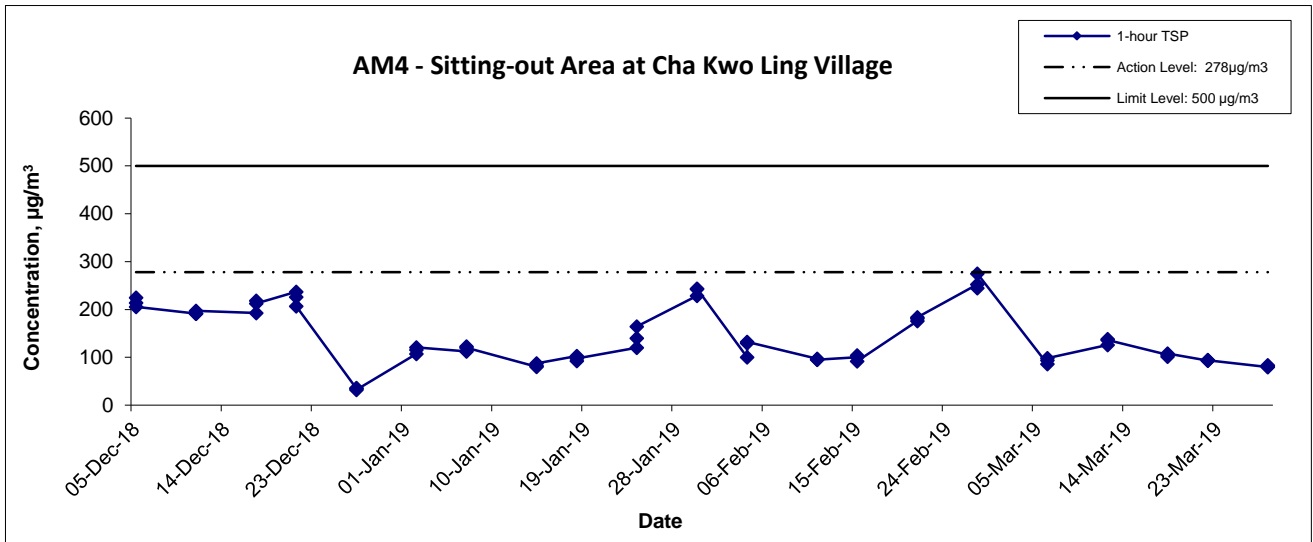
Location AM6(A) - Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
7-Mar-19	9:00	Rainy	54.0
7-Mar-19	10:00	Rainy	58.0
7-Mar-19	11:00	Rainy	54.0
13-Mar-19	9:00	Cloudy	98.6
13-Mar-19	10:00	Cloudy	102.5
13-Mar-19	11:00	Cloudy	104.9
19-Mar-19	14:00	Sunny	85.0
19-Mar-19	15:00	Sunny	83.0
19-Mar-19	16:00	Sunny	89.0
25-Mar-19	9:00	Sunny	98.4
25-Mar-19	10:00	Sunny	101.9
25-Mar-19	11:00	Sunny	99.7
29-Mar-19	9:00	Fine	59.0
29-Mar-19	10:00	Fine	56.0
29-Mar-19	11:00	Fine	61.0
Average			85.8
Maximum			104.9
Minimum			54.0

1-hr TSP Concentration Levels



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

1-hr TSP Concentration Levels



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

**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 Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
5-Mar-19	Rainy	294.4	759.8	2.9669	3.0441	0.0772	4991.4	5015.4	24.0	1.20	1.21	1.21	1737.1	44.4
11-Mar-19	Cloudy	292.3	762.0	3.0062	3.0824	0.0762	5015.4	5039.4	24.0	1.21	1.21	1.21	1746.9	43.6
16-Mar-19	Sunny	293.6	764.9	3.4430	3.5562	0.1132	5039.4	5063.4	24.0	1.21	1.21	1.21	1746.2	64.8
22-Mar-19	Cloudy	295.9	761.1	3.4723	3.5183	0.0460	5063.4	5087.4	24.0	1.20	1.21	1.20	1733.9	26.5
28-Mar-19	Sunny	297.4	758.9	3.5453	3.6260	0.0807	5087.4	5111.4	24.0	1.20	1.20	1.20	1726.2	46.8
													Min	26.5
													Max	64.8
													Average	45.2

Location AM2 - Sai Tso Wan Recreation Ground

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
5-Mar-19	Rainy	294.4	759.8	2.9615	3.1943	0.2328	25763.8	25787.8	24.0	1.21	1.21	1.21	1740.5	133.8
11-Mar-19	Cloudy	292.3	762.0	2.9894	3.0429	0.0535	25787.8	25811.8	24.0	1.22	1.21	1.22	1749.7	30.6
16-Mar-19	Sunny	293.6	764.9	3.4793	3.6054	0.1261	25933.3	25957.3	24.0	1.22	1.21	1.21	1749.1	72.1
22-Mar-19	Cloudy	295.9	761.1	3.4643	3.5096	0.0453	25957.3	25981.3	24.0	1.20	1.21	1.21	1737.4	26.1
28-Mar-19	Sunny	297.4	758.9	3.4898	3.6006	0.1108	25981.3	26005.3	24.0	1.20	1.20	1.20	1730.1	64.0
													Min	26.1
													Max	133.8
													Average	65.3

Location AM3 - Yau Lai Estate, Bik Lai House

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
5-Mar-19	Rainy	294.4	759.8	2.9953	3.0954	0.1001	167.8	191.8	24.0	1.21	1.21	1.21	1741.0	57.5
11-Mar-19	Cloudy	292.3	762.0	2.9988	3.0662	0.0674	191.8	215.8	24.0	1.22	1.21	1.22	1749.8	38.5
16-Mar-19	Sunny	293.6	764.9	2.9863	3.0993	0.1130	215.8	239.8	24.0	1.22	1.21	1.21	1749.2	64.6
22-Mar-19	Cloudy	295.9	761.1	2.9958	3.0803	0.0845	239.8	263.8	24.0	1.20	1.21	1.21	1738.0	48.6
28-Mar-19	Sunny	297.4	758.9	3.4888	3.5704	0.0816	263.8	287.8	24.0	1.20	1.20	1.20	1731.0	47.1
													Min	38.5
													Max	64.6
													Average	51.3

Appendix F - 24-hour TSP Monitoring Results

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

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
5-Mar-19	Rainy	294.4	759.8	2.9814	3.2822	0.3008	11132.0	11156.0	24.0	1.21	1.21	1.21	1739.9	172.9
11-Mar-19	Cloudy	292.3	762.0	2.9750	3.1153	0.1403	11156.0	11180.0	24.0	1.22	1.21	1.21	1748.8	80.2
16-Mar-19	Sunny	293.6	764.9	2.9827	3.2424	0.2597	11180.0	11204.0	24.0	1.22	1.21	1.21	1748.2	148.6
22-Mar-19	Cloudy	295.9	761.1	3.4229	3.6483	0.2254	11204.0	11228.0	24.0	1.20	1.21	1.21	1737.0	129.8
28-Mar-19	Sunny	297.4	758.9	3.4935	3.6660	0.1725	11228.0	11252.0	24.0	1.20	1.20	1.20	1729.9	99.7
													Min	80.2
													Max	172.9
													Average	126.2

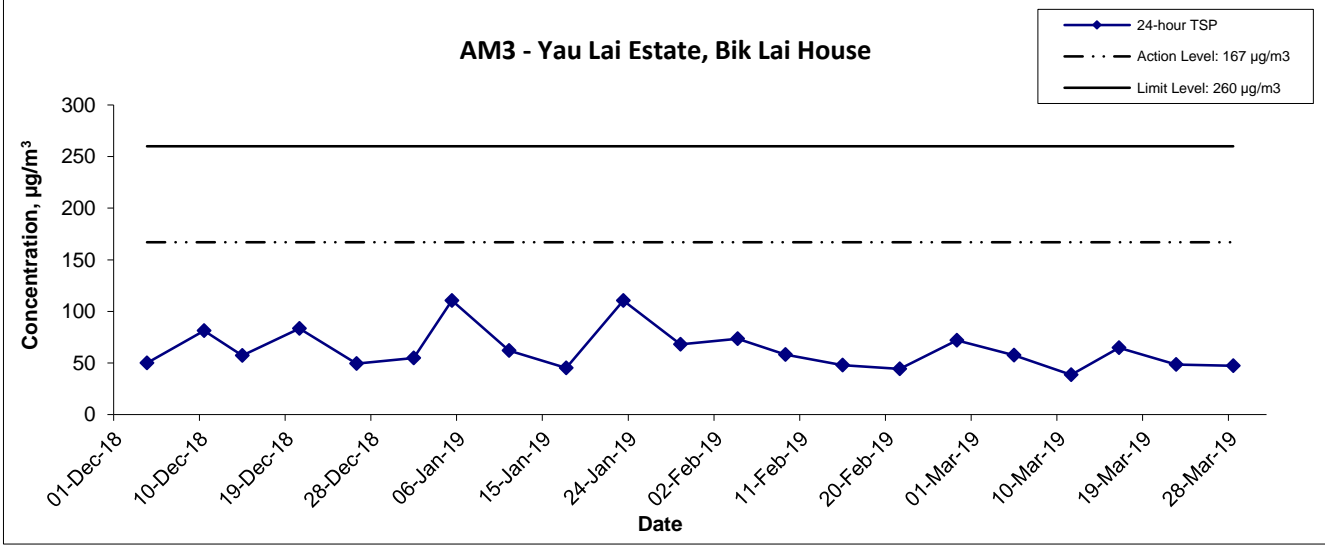
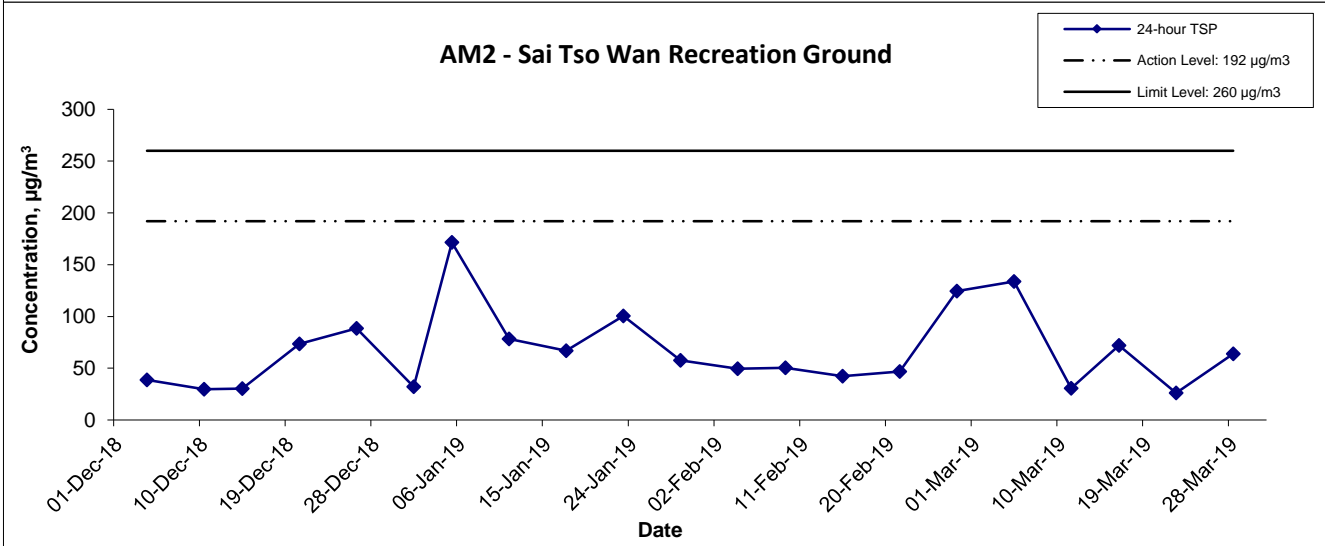
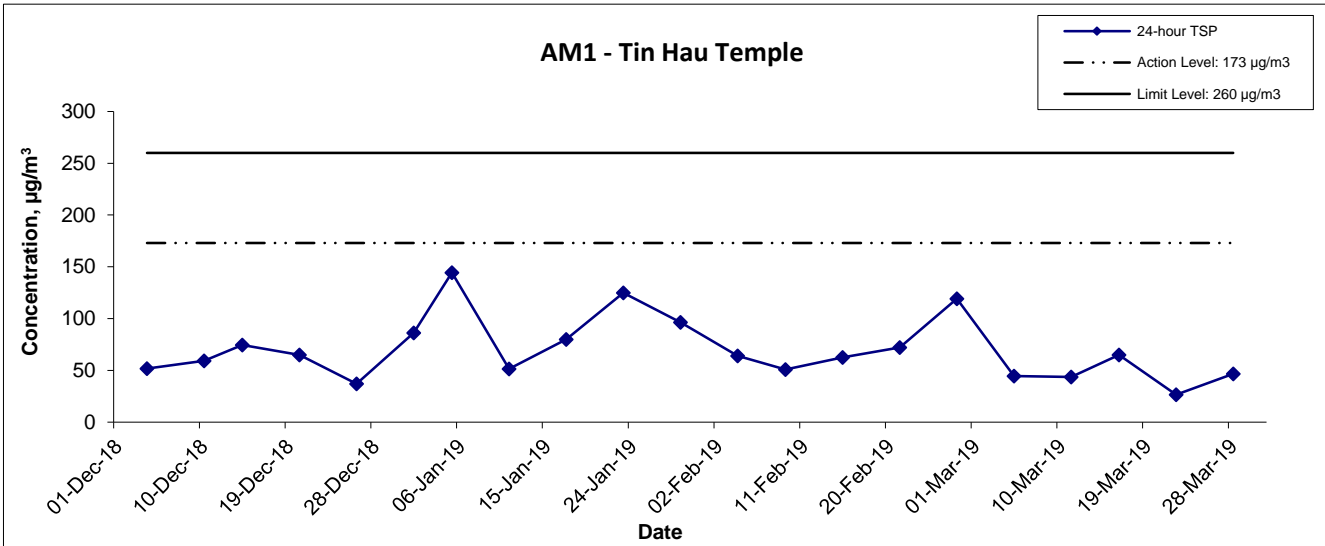
Location AM5(A) - Tseung Kwan O DSD Desilting Compound

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
5-Mar-19	Rainy	294.4	759.8	2.9796	3.2486	0.2690	27597.7	27621.7	24.0	1.20	1.21	1.21	1737.2	154.8
11-Mar-19	Cloudy	292.3	762.0	3.4492	3.5794	0.1302	27645.7	27669.7	24.0	1.21	1.21	1.21	1746.4	74.6
16-Mar-19	Sunny	293.6	764.9	2.9720	3.1605	0.1885	27669.7	27693.7	24.0	1.21	1.21	1.21	1747.2	107.9
22-Mar-19	Cloudy	295.9	761.1	3.5273	3.6812	0.1539	27693.9	27717.9	24.0	1.20	1.21	1.20	1734.1	88.7
28-Mar-19	Sunny	297.4	758.9	3.5161	3.6637	0.1476	27717.9	27741.9	24.0	1.20	1.20	1.20	1726.9	85.5
													Min	74.6
													Max	154.8
													Average	102.3

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

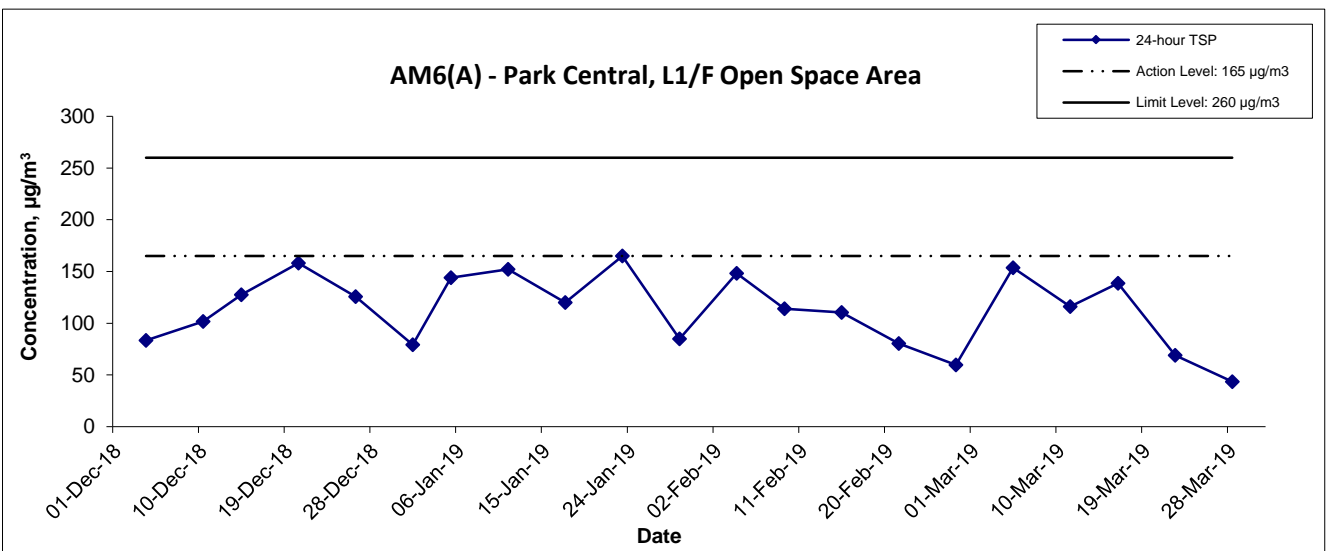
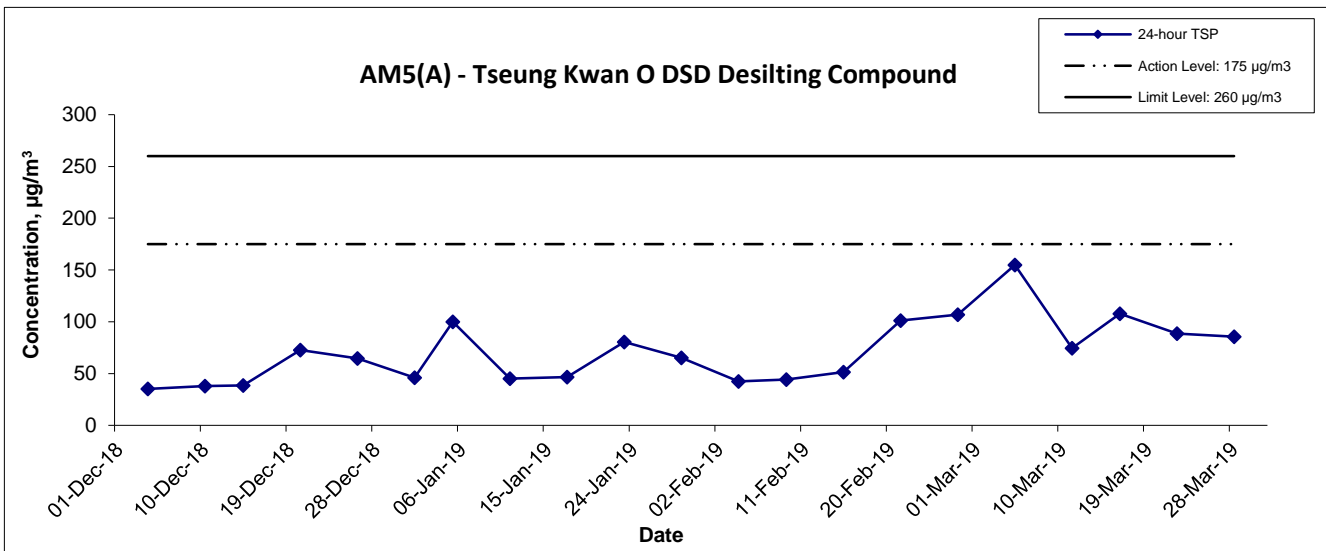
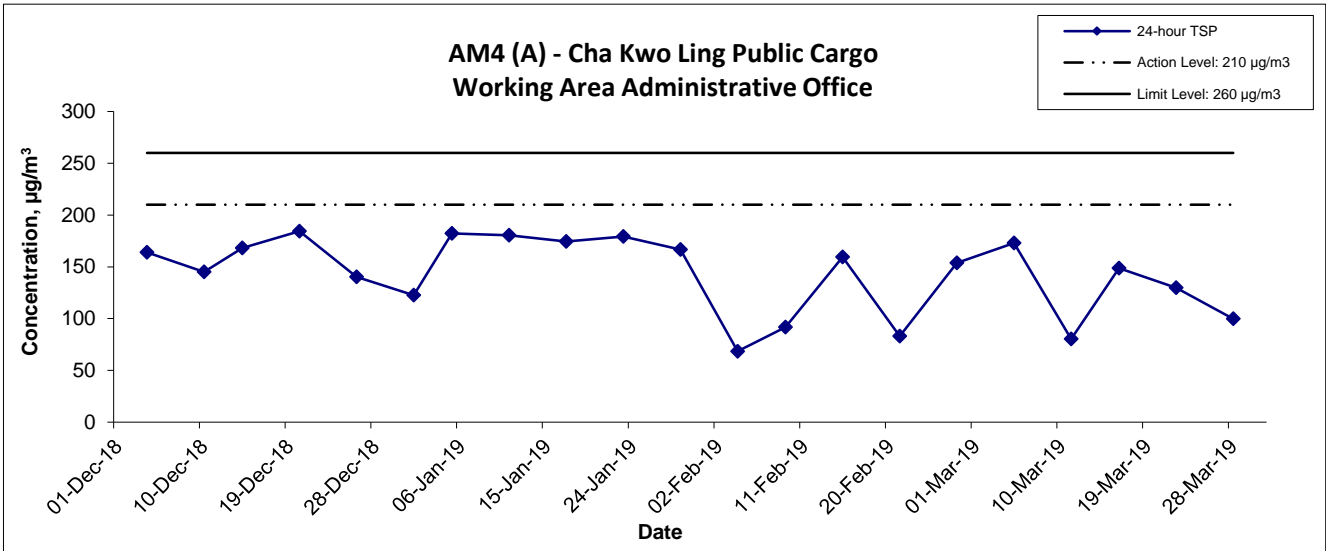
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
5-Mar-19	Rainy	294.4	759.8	3.0068	3.2713	0.2645	192.8	216.8	24.0	1.19	1.20	1.19	1720.4	153.7
11-Mar-19	Cloudy	292.3	762.0	3.4843	3.6851	0.2008	240.8	264.8	24.0	1.20	1.20	1.20	1729.4	116.1
16-Mar-19	Sunny	293.6	764.9	2.9898	3.2293	0.2395	265.0	289.0	24.0	1.20	1.20	1.20	1728.8	138.5
22-Mar-19	Cloudy	295.9	761.1	3.4890	3.6102	0.1212	289.0	313.0	24.0	1.21	1.23	1.22	1755.3	69.0
28-Mar-19	Sunny	297.4	758.9	3.5265	3.6027	0.0762	313.0	337.0	24.0	1.21	1.21	1.21	1748.4	43.6
													Min	43.6
													Max	153.7
													Average	104.2

24-hr TSP Concentration Levels



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

24-hr TSP Concentration Levels



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

**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}
6-Mar-19	13:00	Rainy	72.9	76.1	69.5	65.5	72
7-Mar-19	15:45	Cloudy	73.2	74.3	72.0		72
12-Mar-19	15:00	Sunny	70.9	73.0	68.5		69
18-Mar-19	09:12	Sunny	73.0	74.7	71.0		72
25-Mar-19	11:30	Sunny	59.1	60.8	56.9		59 Measured ≤ Baseline

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}
6-Mar-19	11:30	Rainy	74.6	76.3	72.2	63.6	74
12-Mar-19	14:00	Sunny	72.5	73.8	70.9		72
18-Mar-19	09:56	Sunny	72.3	73.7	70.5		72
25-Mar-19	10:46	Sunny	73.8	75.5	71.6		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}
6-Mar-19	14:00	Cloudy	70.6	73.6	66.3	65.6	69
12-Mar-19	16:00	Sunny	71.1	74.3	67.9		70
18-Mar-19	11:01	Sunny	73.3	75.3	70.4		72
25-Mar-19	10:08	Sunny	60.4	62.4	57.9		60 Measured ≤ Baseline

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}
6-Mar-19	09:00	Rainy	59.2	62.4	51.3	62.0	59 Measured ≤ Baseline
12-Mar-19	16:06	Sunny	67.4	70.0	63.2		66
18-Mar-19	15:15	Rainy	58.5	61.3	52.2		59 Measured ≤ Baseline
25-Mar-19	13:00	Sunny	61.7	64.6	56.2		62 Measured ≤ Baseline

Location CM5 - CCC Kei Faat Primary School, Yau Tong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
6-Mar-19	10:35	Rainy	66.3	70.1	63.9	68.2	66 Measured ≤ Baseline
12-Mar-19	13:00	Sunny	69.7	72.0	65.6		64
18-Mar-19	13:00	Sunny	67.8	70.5	63.4		68 Measured ≤ Baseline
25-Mar-19	09:22	Sunny	70.0	72.3	66.1		65

Appendix G - Noise Monitoring Results

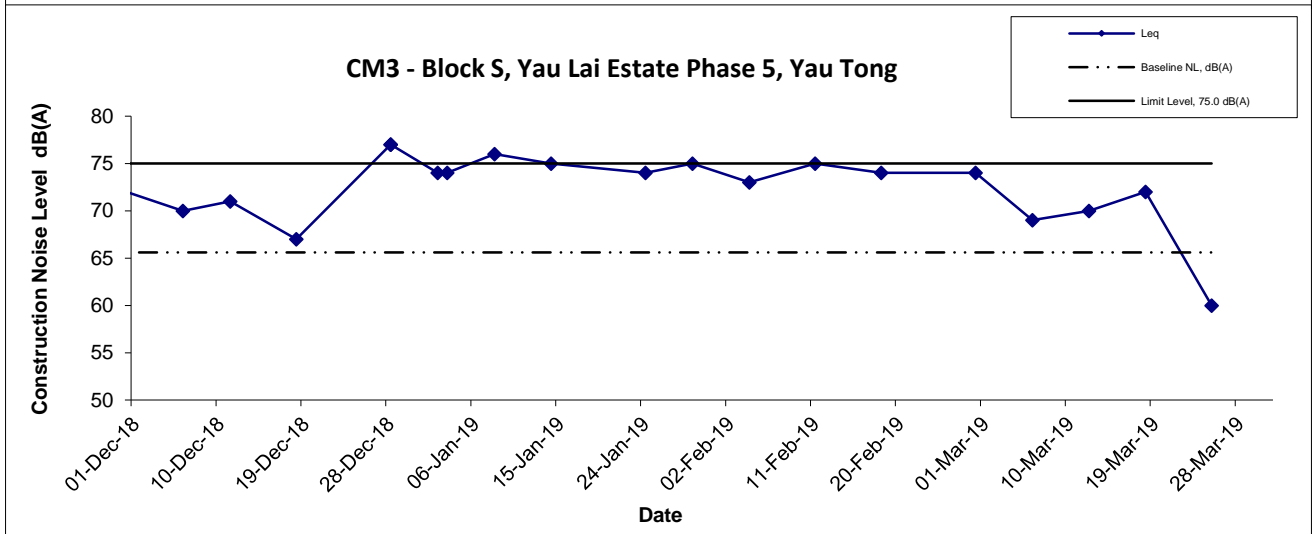
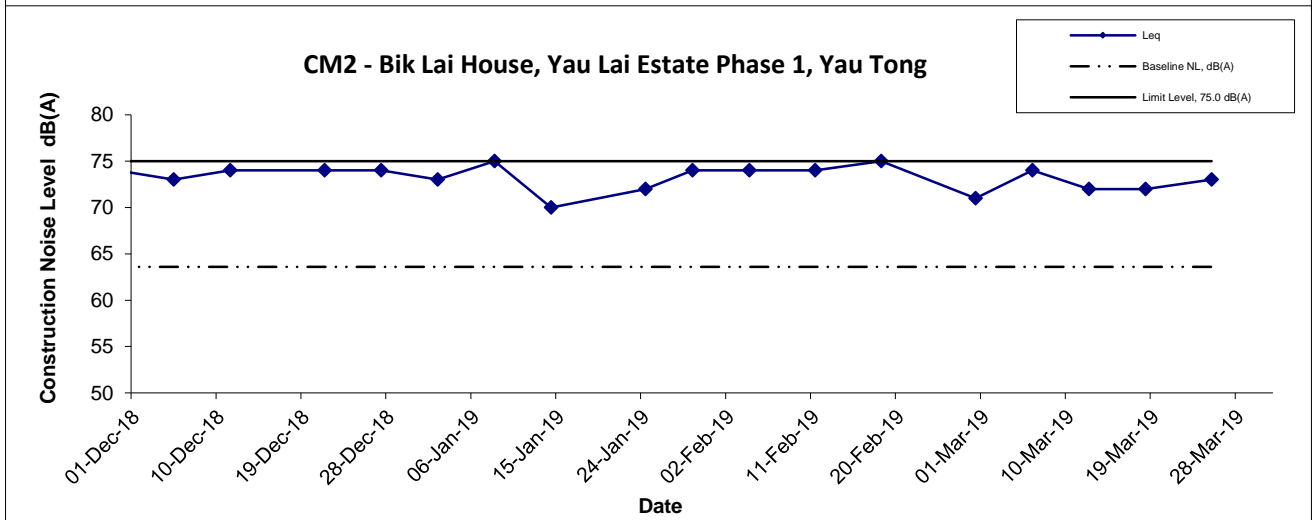
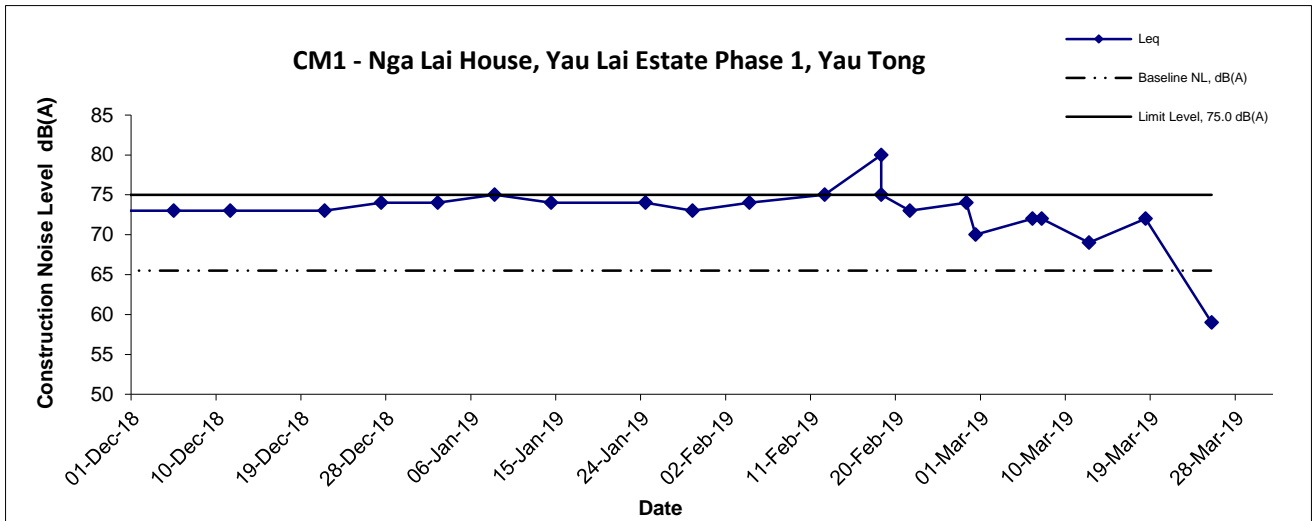
(0700-1900 hrs on Normal Weekdays)

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}
7-Mar-19	17:30	Cloudy	62.7	65.6	56.5	61.9	55
13-Mar-19	13:00	Cloudy	69.4	73.1	51.3		69
19-Mar-19	13:00	Sunny	64.9	67.0	61.2		62
25-Mar-19	15:00	Sunny	68.2	71.1	64.3		67

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}
7-Mar-19	16:45	Cloudy	57.5	60.6	53.3	58.3	58 Measured ≤ Baseline
13-Mar-19	13:45	Cloudy	65.6	69.3	51.7		65
19-Mar-19	11:30	Sunny	57.1	59.4	50.8		57 Measured ≤ Baseline
25-Mar-19	16:00	Sunny	67.8	70.8	64.1		67

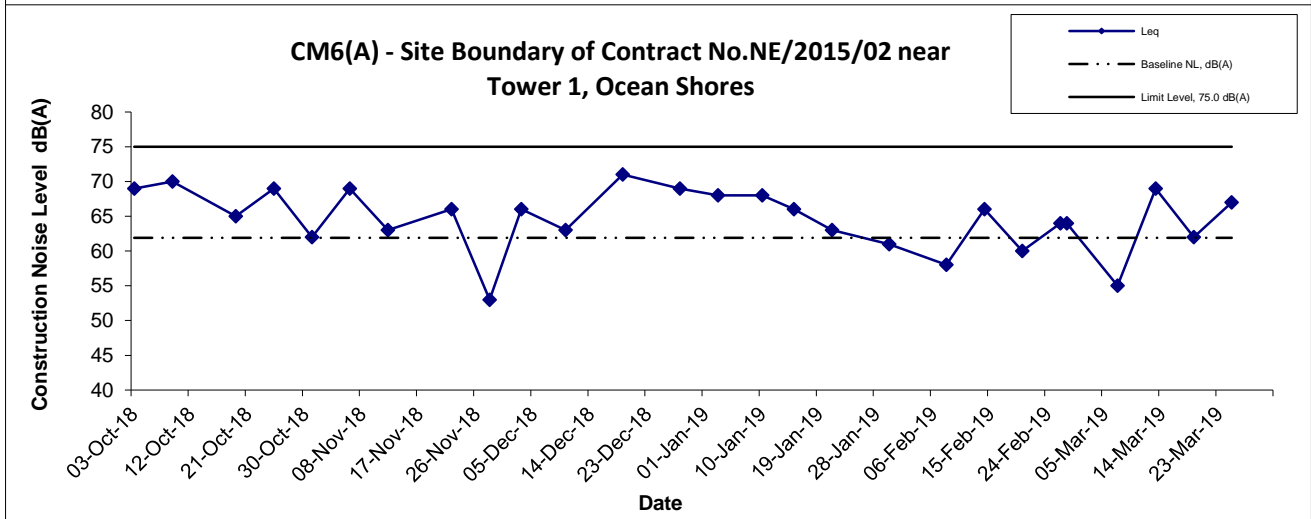
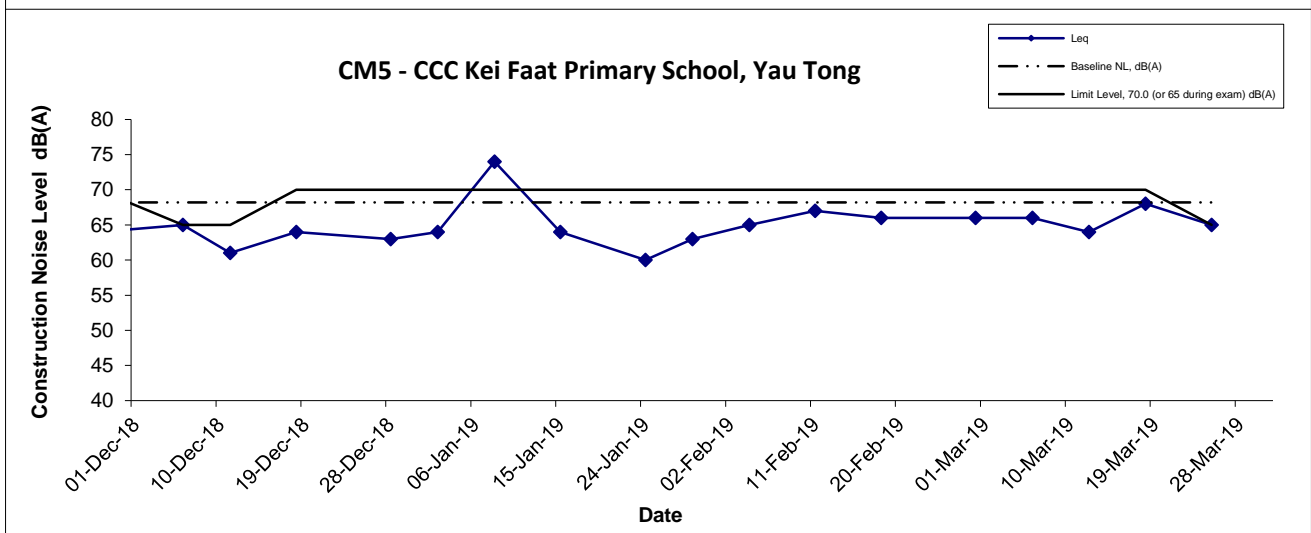
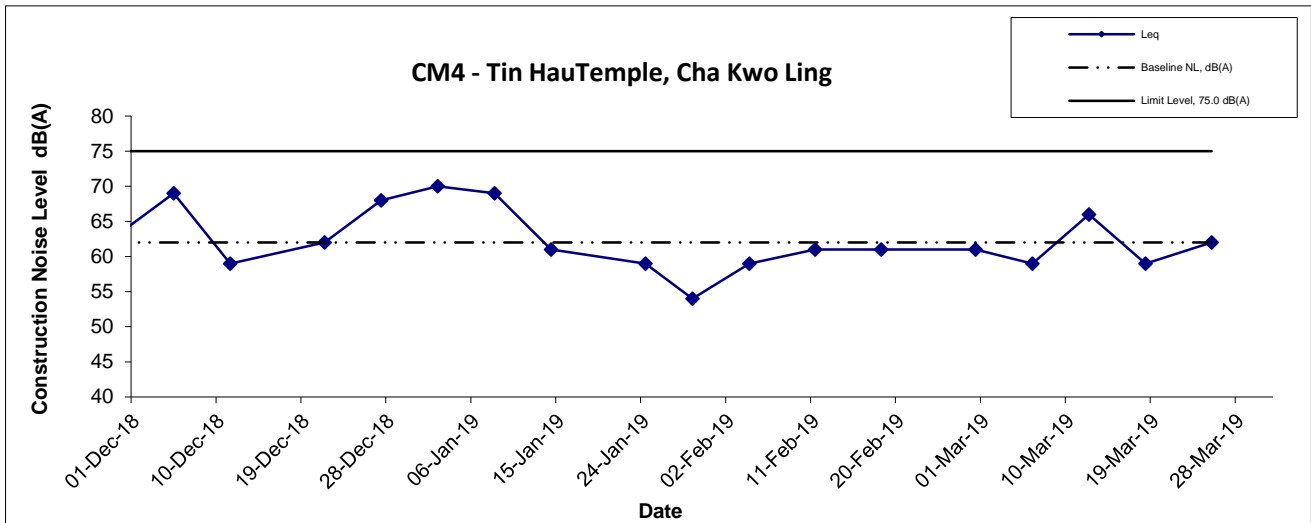
Location CM8(A) - Park Central, L1/F Open Space Area							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
8-Mar-19	09:20	Cloudy	66.8	68.7	59.8	69.1	67 Measured ≤ Baseline
13-Mar-19	09:00	Cloudy	61.8	64.5	54.5		62 Measured ≤ Baseline
19-Mar-19	00:00	Sunny	65.4	68.1	61.2		65 Measured ≤ Baseline
25-Mar-19	14:00	Sunny	72.4	76.2	67.5		70

Noise Levels



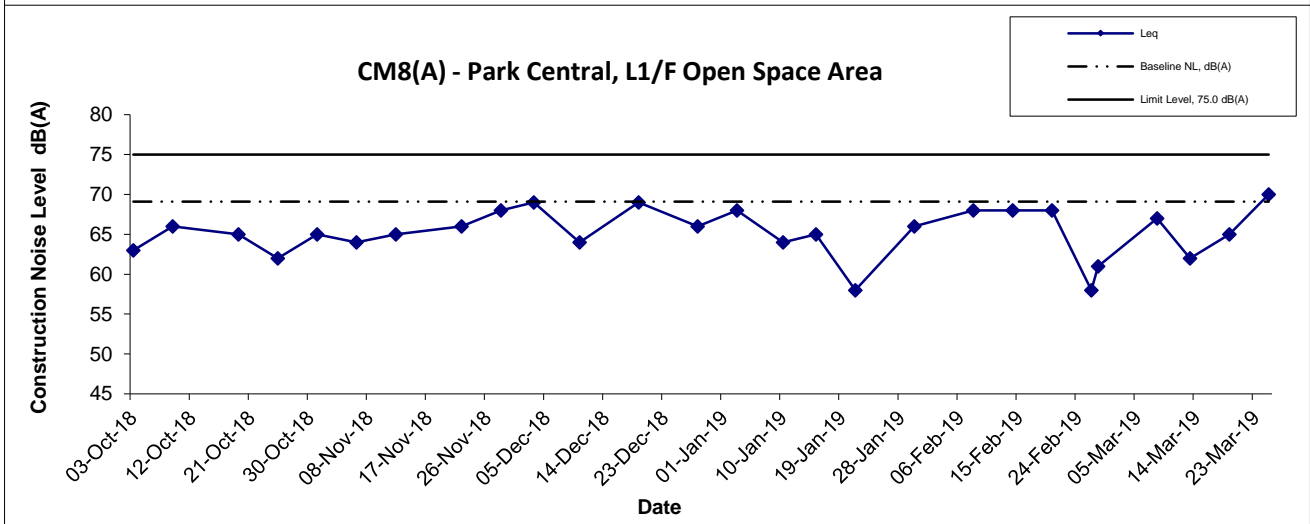
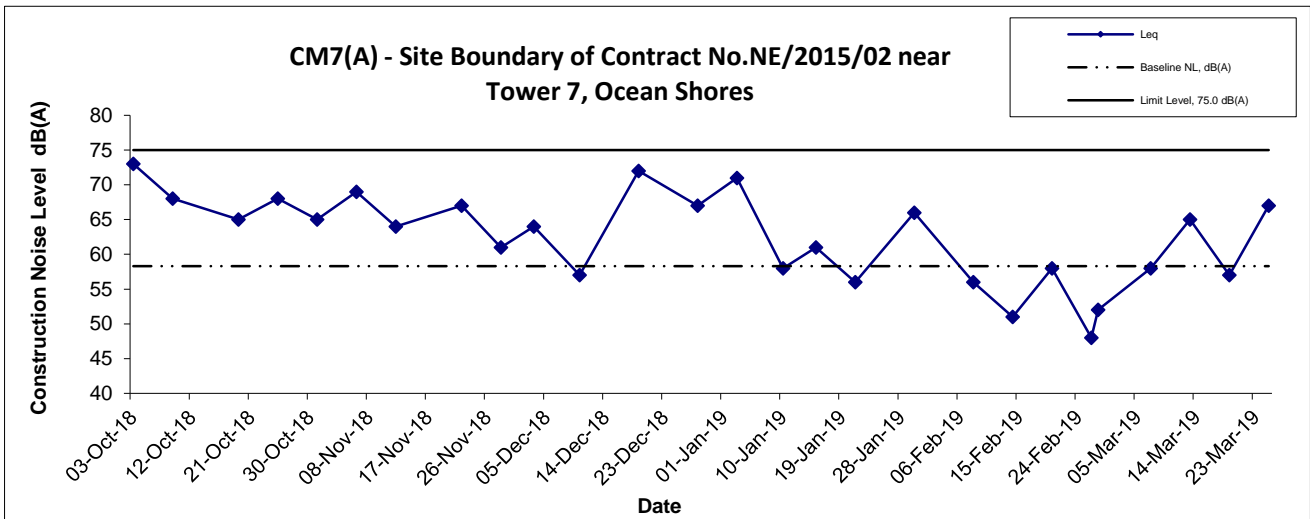
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale	Project	CINOTECH
	N.T.S	No. MA16034	
	Date Mar 19	Appendix G	

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
	N.T.S	No. MA16034	
	Date	Appendix	
	Mar 19	G	

Noise Levels

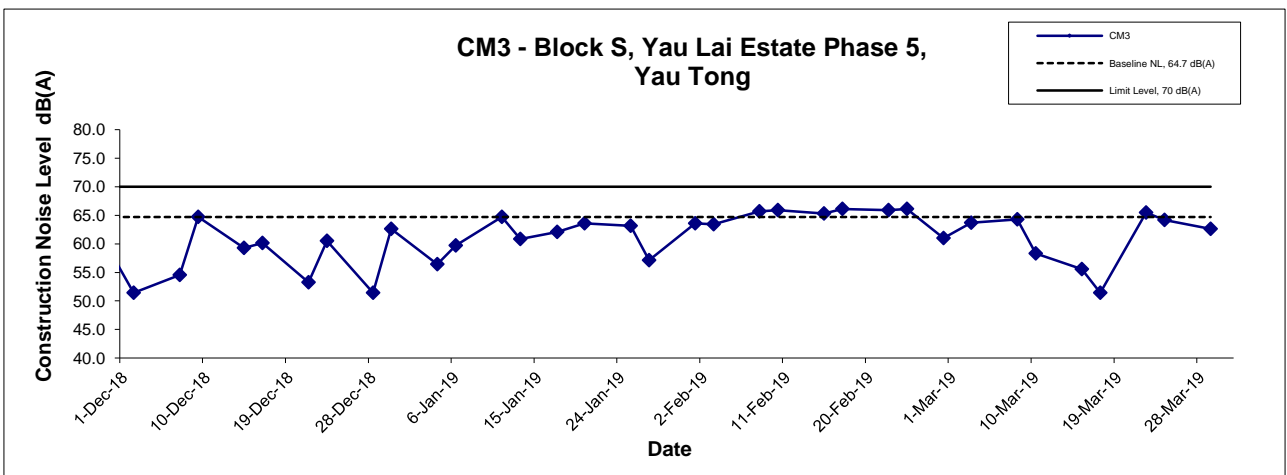
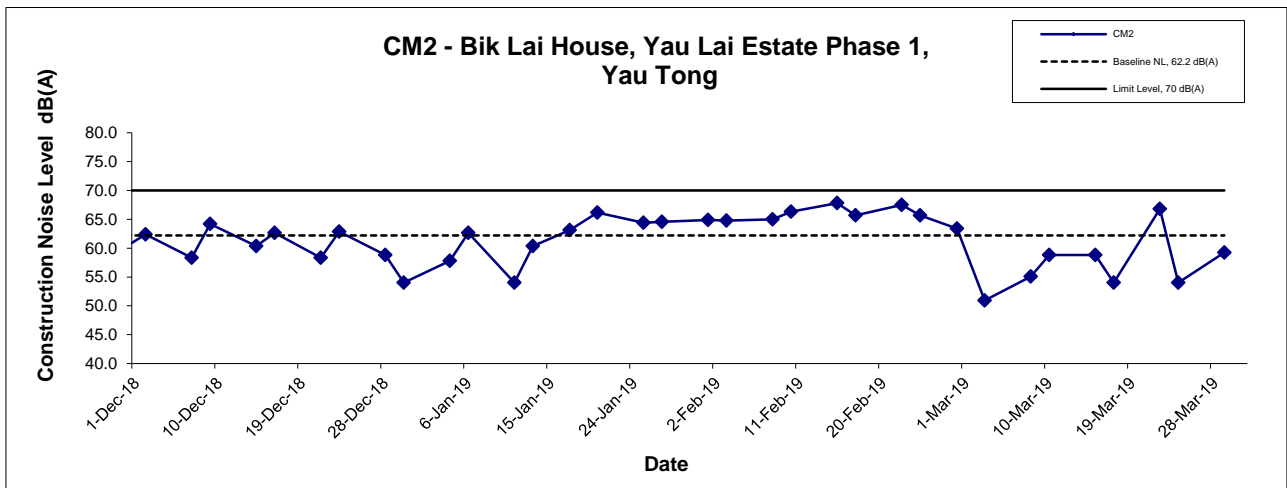
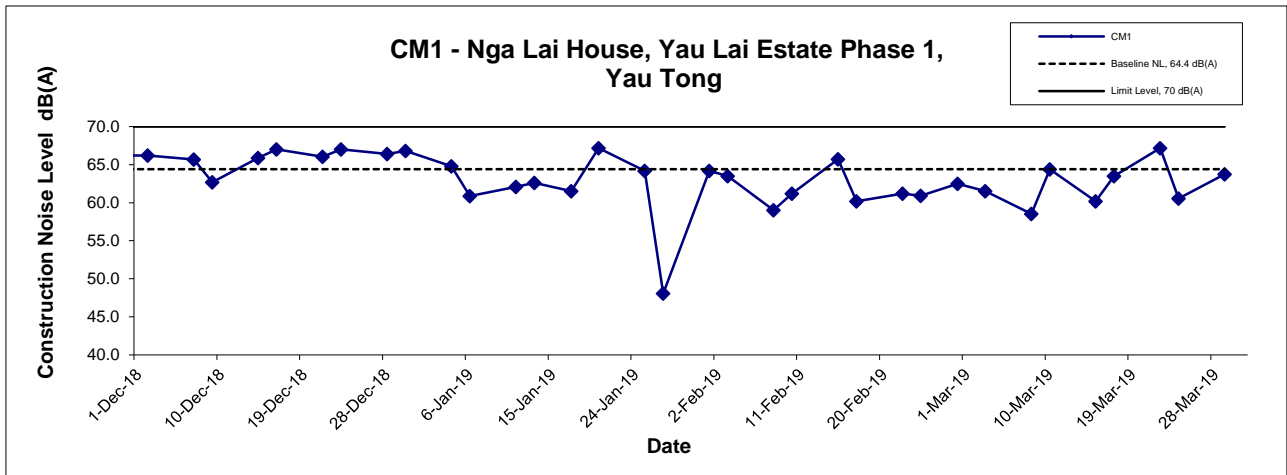


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	N.T.S	No. MA16034	
	Date	Appendix	
	Mar 19	G	

Appendix G - Noise Monitoring Results

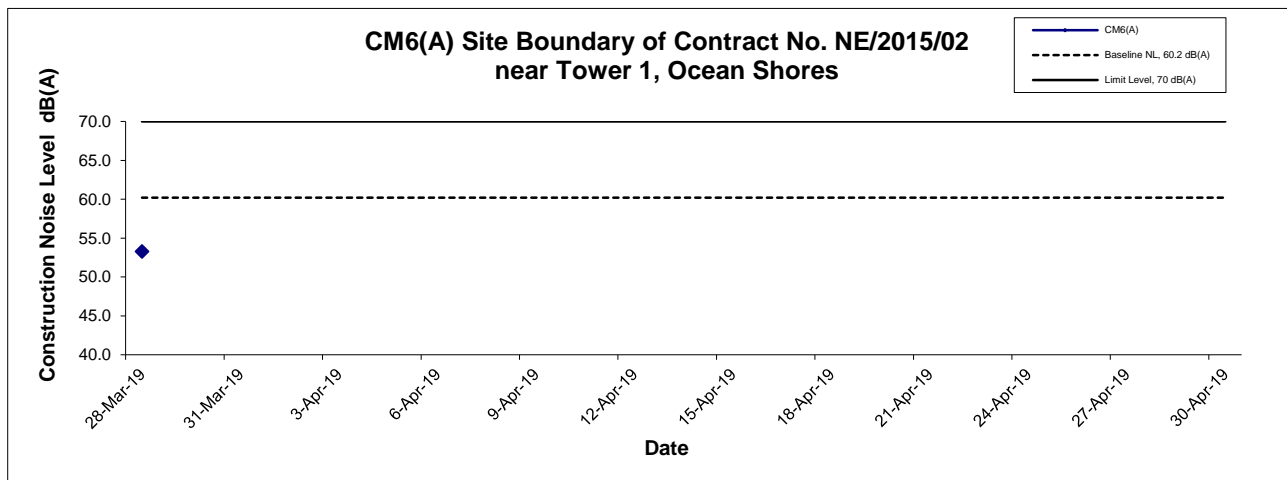
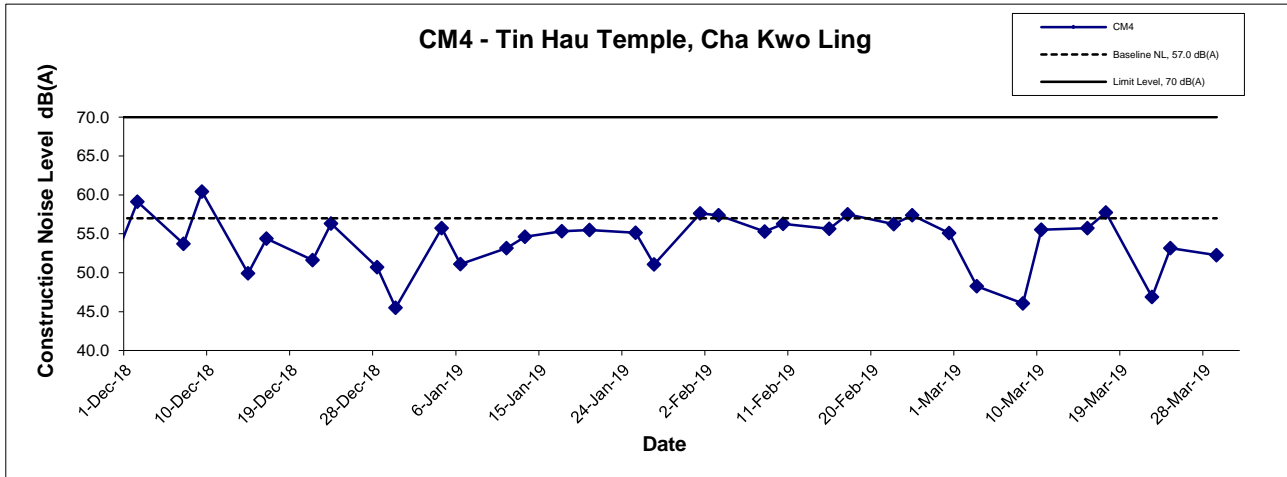
Location CM4 - Tin Hau Temple, Cha Kwo Ling								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
8-Mar-19	23:00	Rainy	57.0	60.2	46.9	57.1	55.6	52
	23:05		57.2	60.4	46.9			
	23:10		57.1	60.4	47.0			
16-Mar-19	0:30	Sunny	56.8	60.1	46.8	56.8	54.8	52
	0:35		56.6	60.3	47.1			
	0:40		56.9	59.9	47.2			
23-Mar-19	0:40	Sunny	57.1	59.2	50.1	57.1	54.8	53
	0:45		57.2	59.1	50.1			
	0:50		56.9	59.2	49.7			
30-Mar-19	0:30	Cloudy	52.1	54.2	49.8	51.9	54.8	52 Measured ≤ Baseline
	0:35		51.8	54.6	49.9			
	0:40		51.9	54.3	50.1			

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



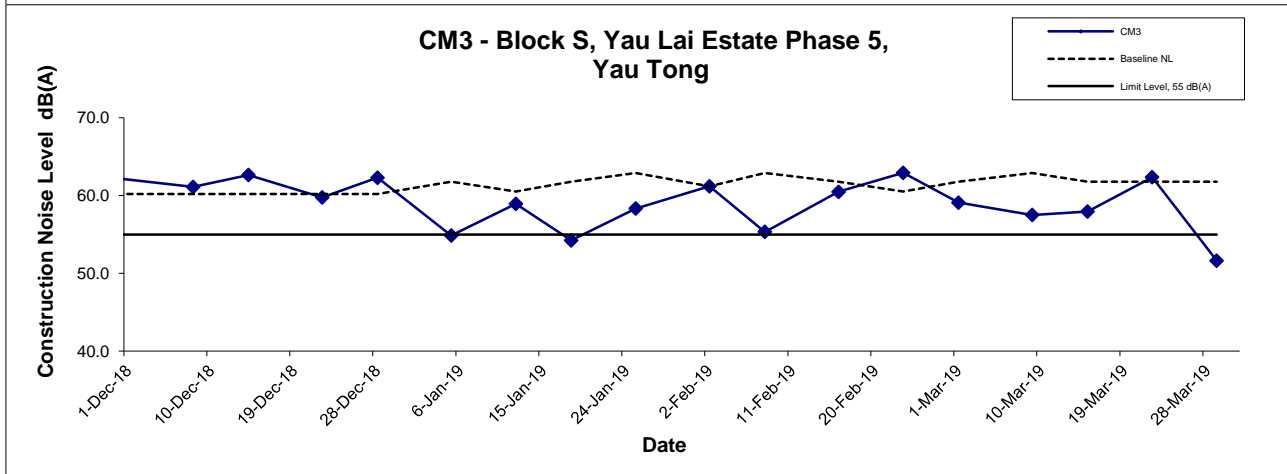
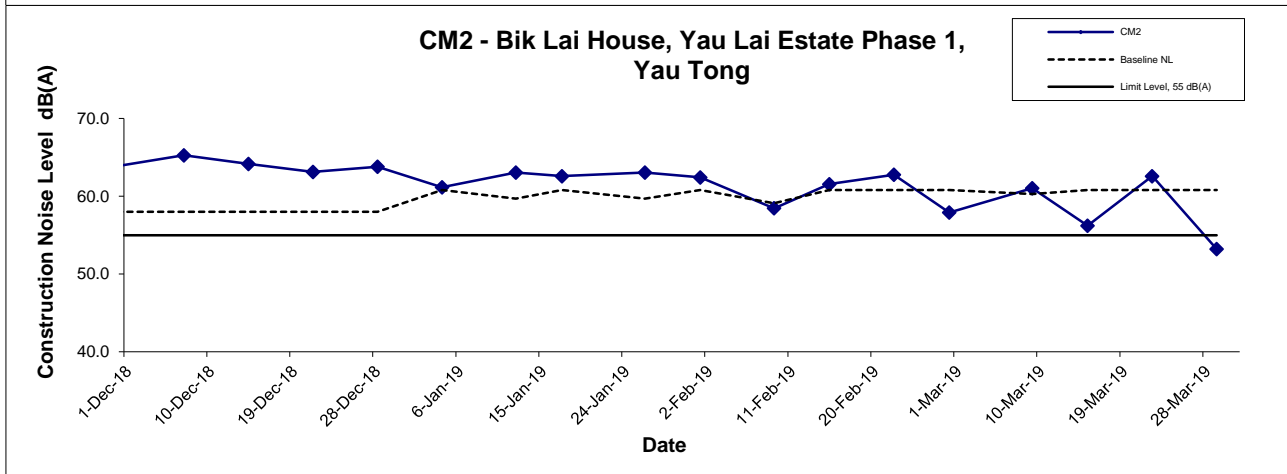
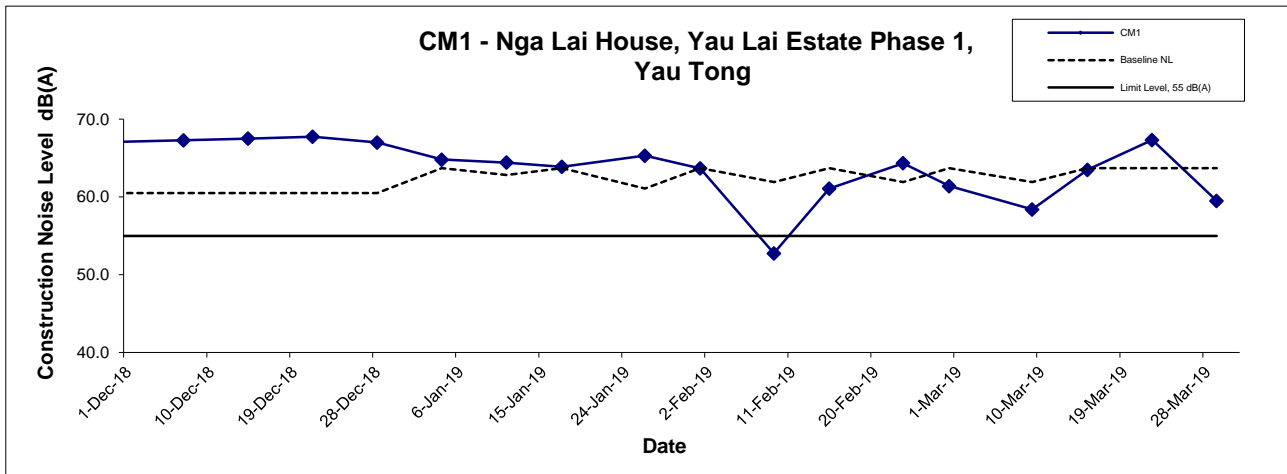
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Mar 19	Appendix G	

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



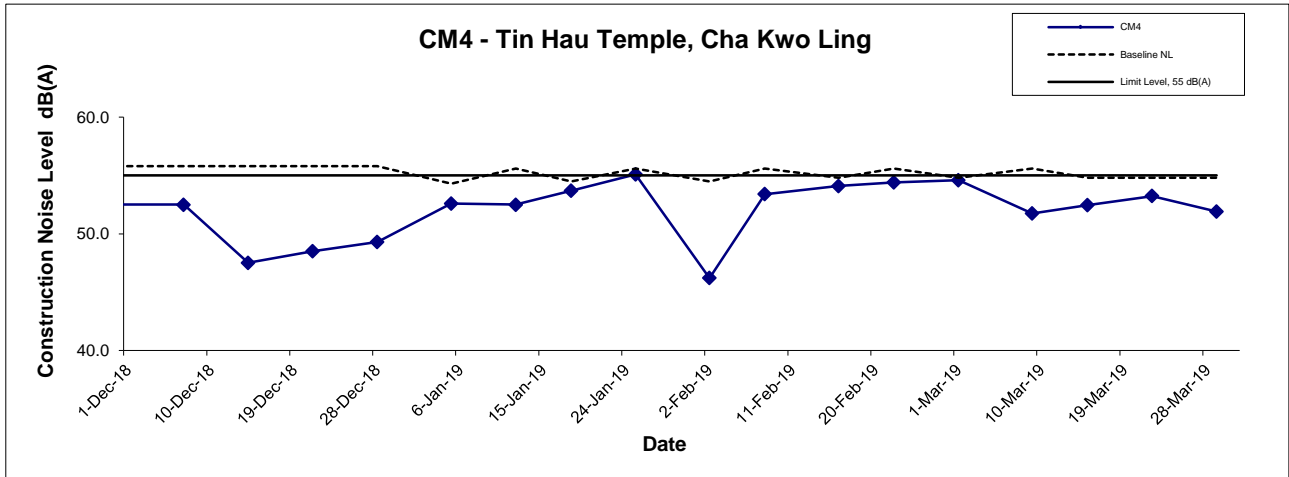
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Mar 19	Appendix G	

Noise Levels (Restricted Hours - 2300-0700 on all days)



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	Project No.	CINOTECH
	Date	Appendix	
	N.T.S	MA16034	
	Mar 19	G	

Noise Levels (Restricted Hours - 2300-0700 on all days)



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 Mar 19	Appendix G	

**APPENDIX H
GROUNDWATER QUALITY
MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

Agreement No. CE/59/2015 (EP)**Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction****Groundwater Quality Monitoring Results at Stream 1**

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
8-Mar-19	Fine	13:00	Surface	19.0	19.0	7.6	7.6	1.0	1.0	100.5	100.5	9.3	9.3	1.0	1.0
				19.0		7.6		1.0		100.5		9.3		1.0	
20-Mar-19	Fine	14:30	Surface	23.5	23.5	8.0	8.0	1.3	1.3	101.9	102.0	8.6	8.6	1.7	1.8
				23.5		8.0		1.3		102.0		8.6		1.9	

Groundwater Quality Monitoring Results at Stream 2

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
8-Mar-19	Fine	13:30	Surface	20.2	20.2	7.6	7.6	0.1	0.1	98.6	98.6	8.9	8.9	2.3	2.3
				20.2		7.6		0.1		98.6		8.9		2.4	
20-Mar-19	Fine	14:45	Surface	23.7	23.8	7.9	7.9	0.4	0.4	98.5	98.3	8.9	8.9	1.9	1.9
				23.8		7.9		0.4		98.1		8.9		1.9	

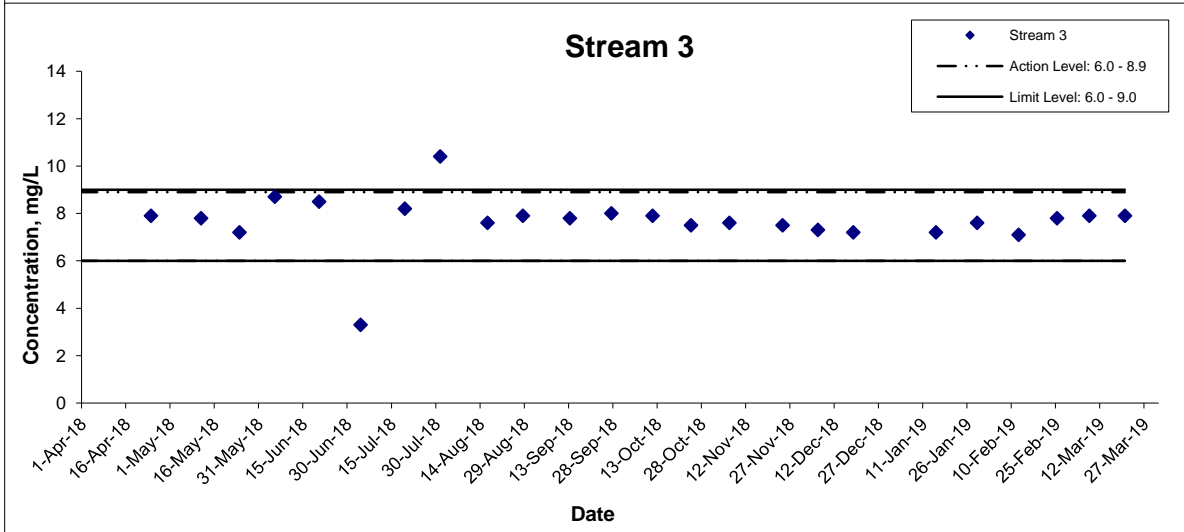
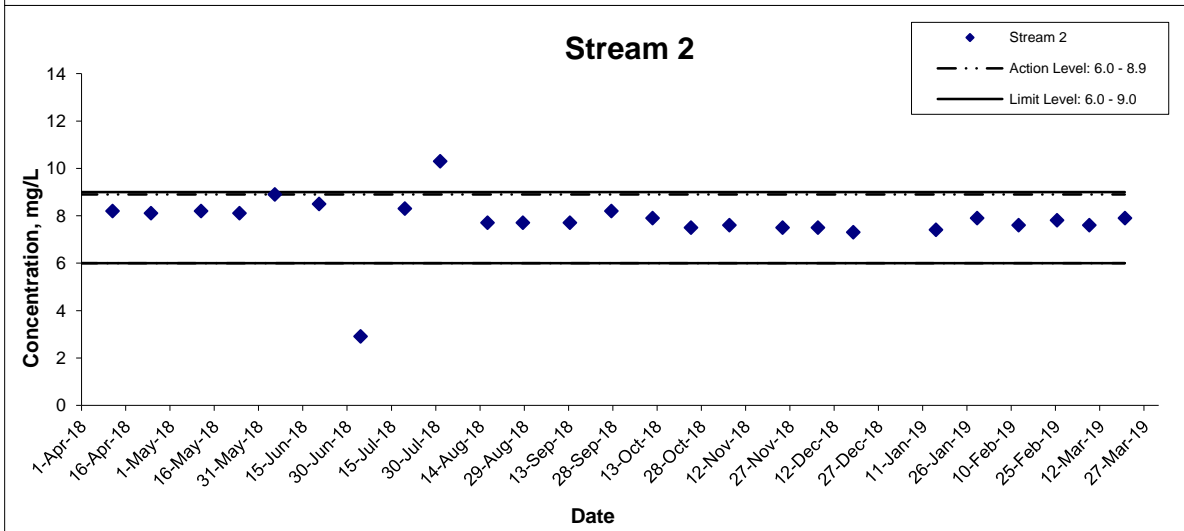
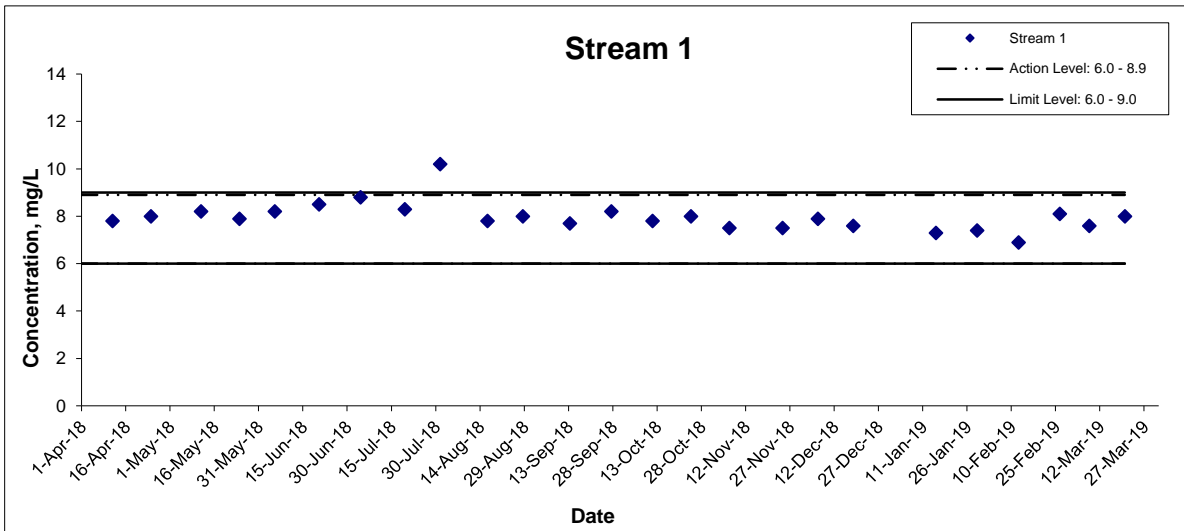
Groundwater Quality Monitoring Results at Stream 3

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
8-Mar-19	Fine	13:40	Surface	20.7	20.7	7.9	7.9	0.2	0.2	97.1	97.1	8.7	8.7	1.0	0.9
				20.7		7.9		0.2		97.1		8.7		0.9	
20-Mar-19	Fine	14:55	Surface	23.9	23.9	7.9	7.9	0.3	0.3	97.1	97.1	8.7	8.7	1.1	1.1
				23.9		7.9		0.3		97.1		8.7		1.1	

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

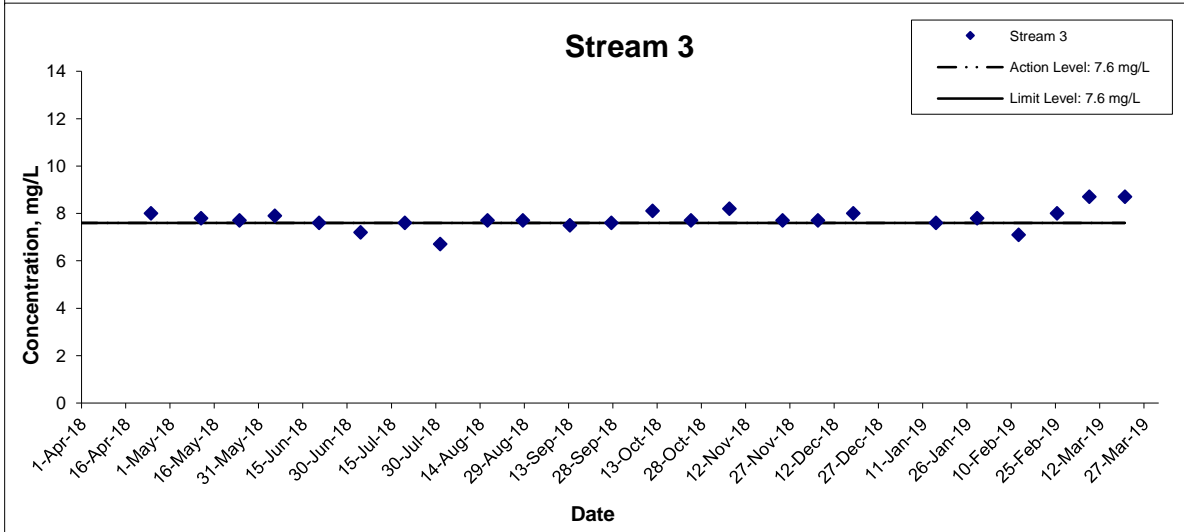
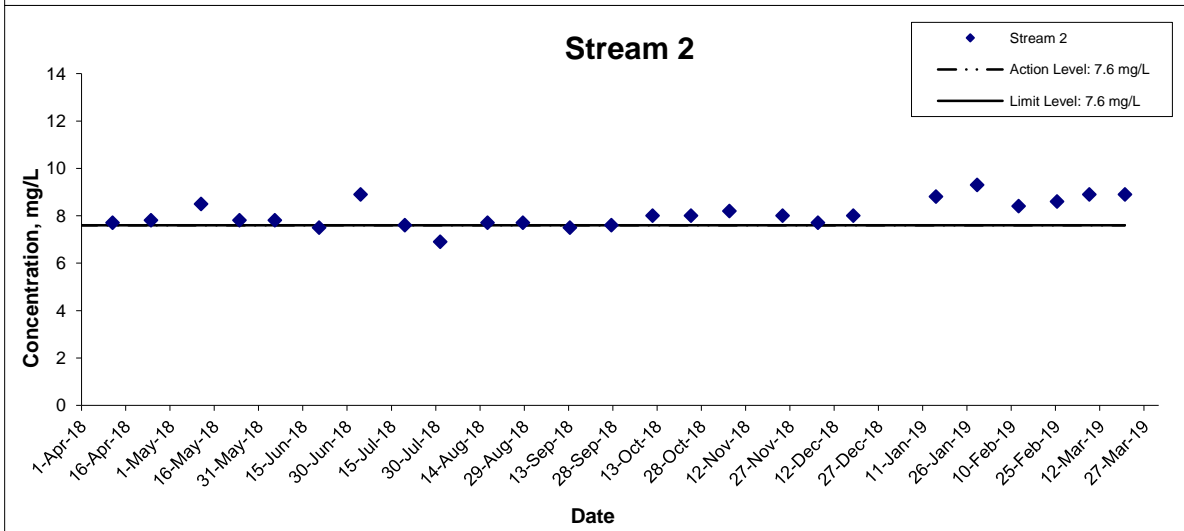
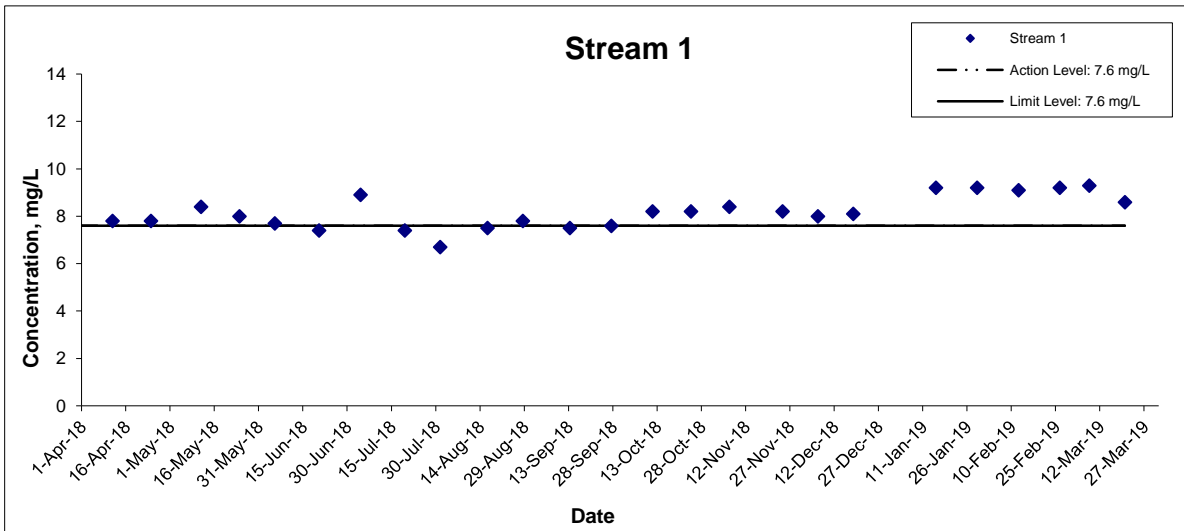
Date	Location	Parameters (unit)								
		pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	SS (mg/L)	BOD ₅ (mg O ₂ /L)	TOC (mg-TOC/L)	Total Nitrogen (mg/L)	NH ₃ -N (mg NH ₃ -N/L)	Total Phosphorus (mg-P/L)
08 Mar 2019	Stream 1	7.6	9.3	1.0	2.5	<2	6	1.4	<0.05	0.06
	Stream 2	7.6	8.9	2.3	4	<2	6	1.6	<0.05	0.07
	Stream 3	7.9	8.7	0.9	0.9	<2	5	1.7	<0.05	<0.05
20 Mar 2019	Stream 1	8.0	8.6	1.8	<2.5	<2	5	0.8	<0.05	0.05
	Stream 2	7.9	8.9	1.9	3	<2	5	0.7	<0.05	0.11
	Stream 3	7.9	8.7	1.1	4	<2	5	0.7	<0.05	0.06

pH



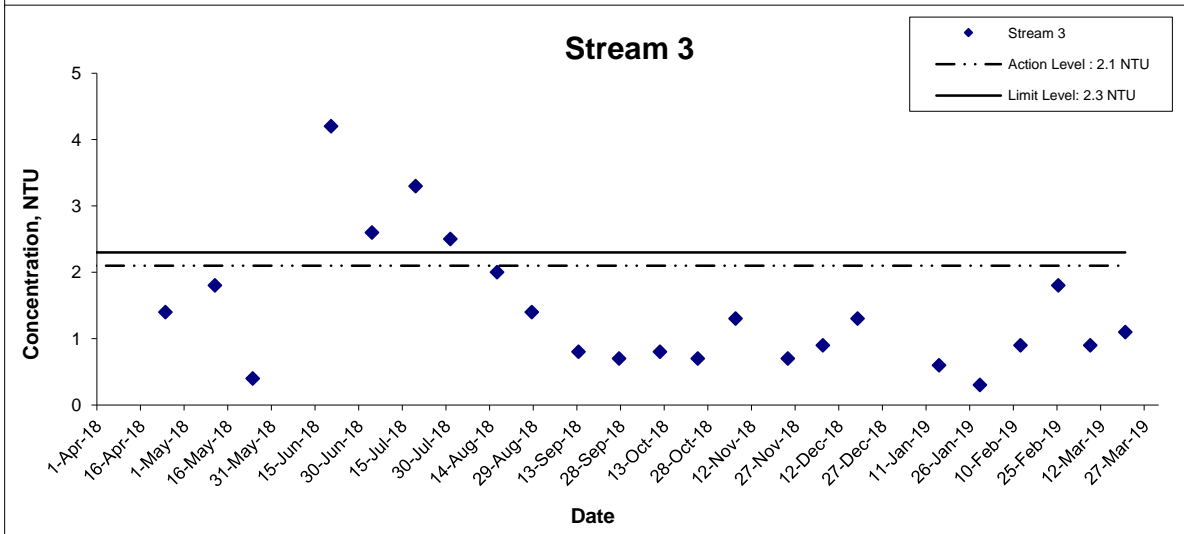
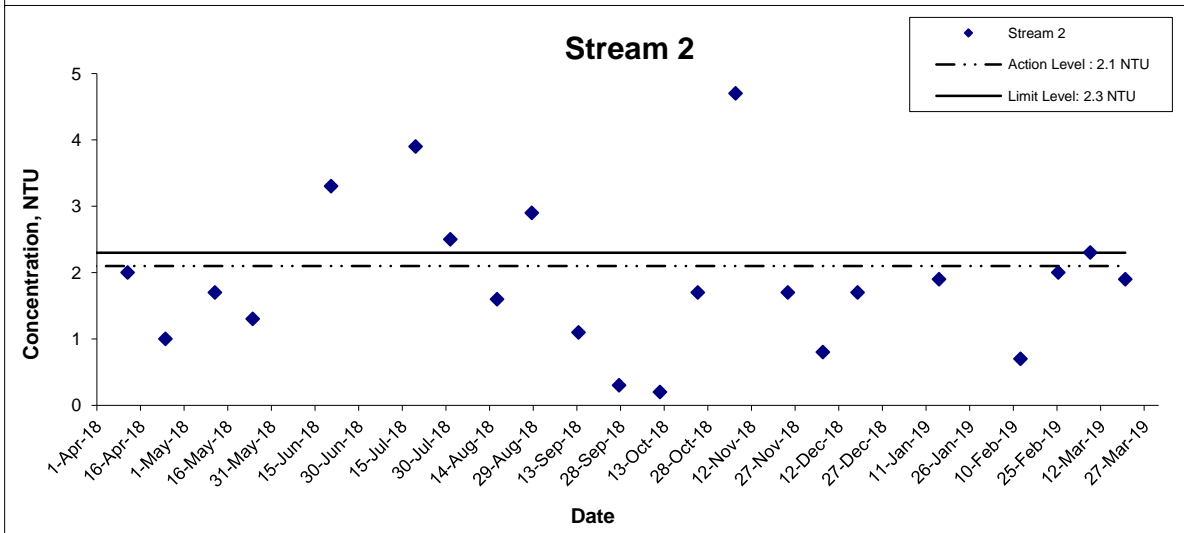
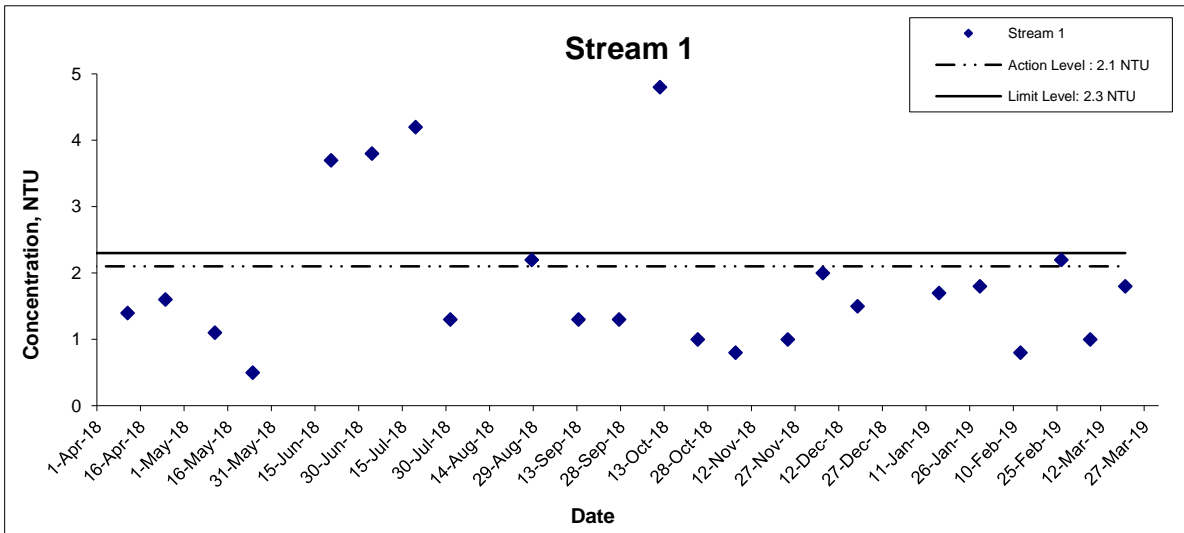
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale N.T.S	Project No. MA16034	
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Dissolved Oxygen



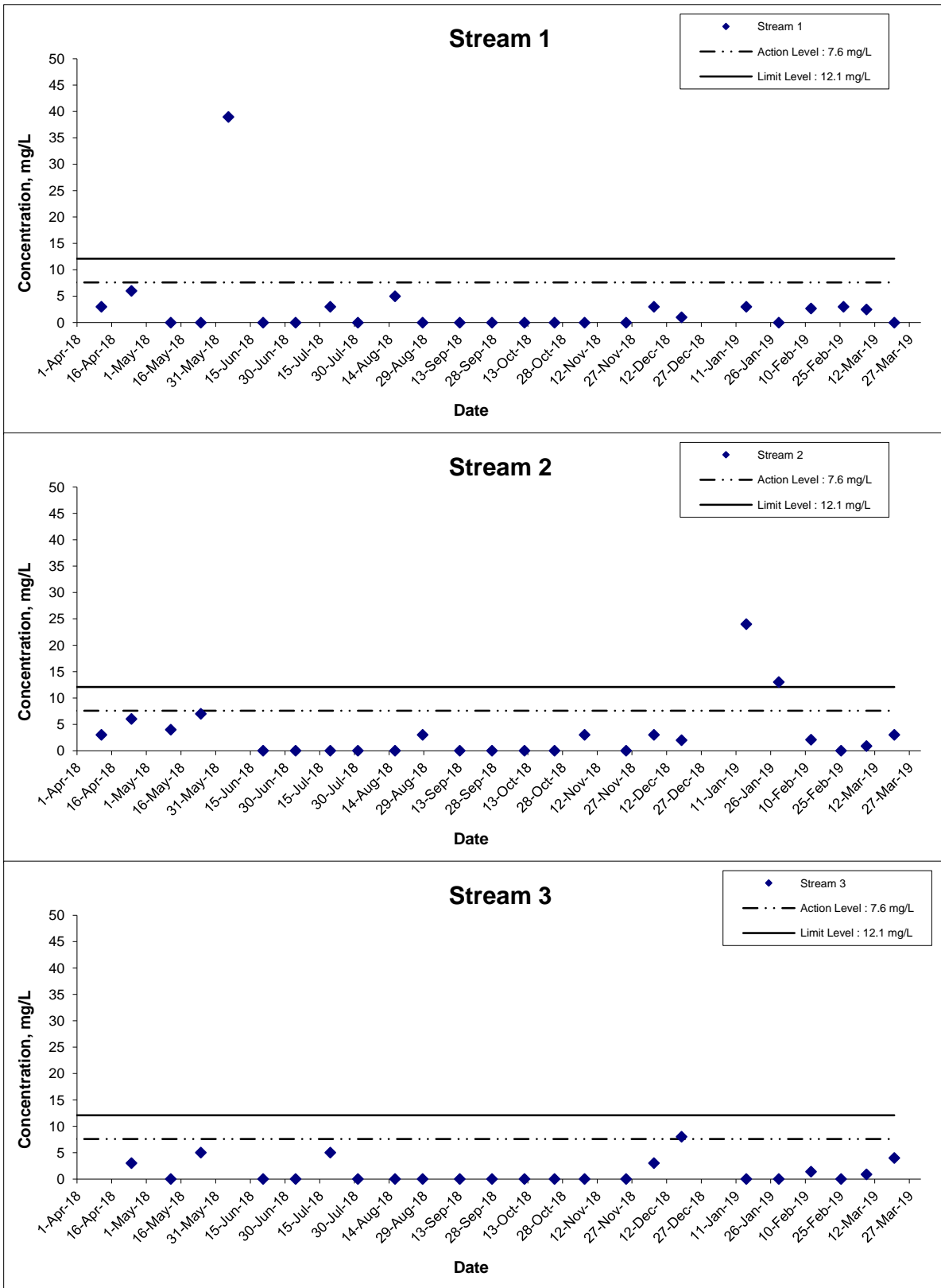
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale N.T.S	Project No. MA16034	
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Turbidity



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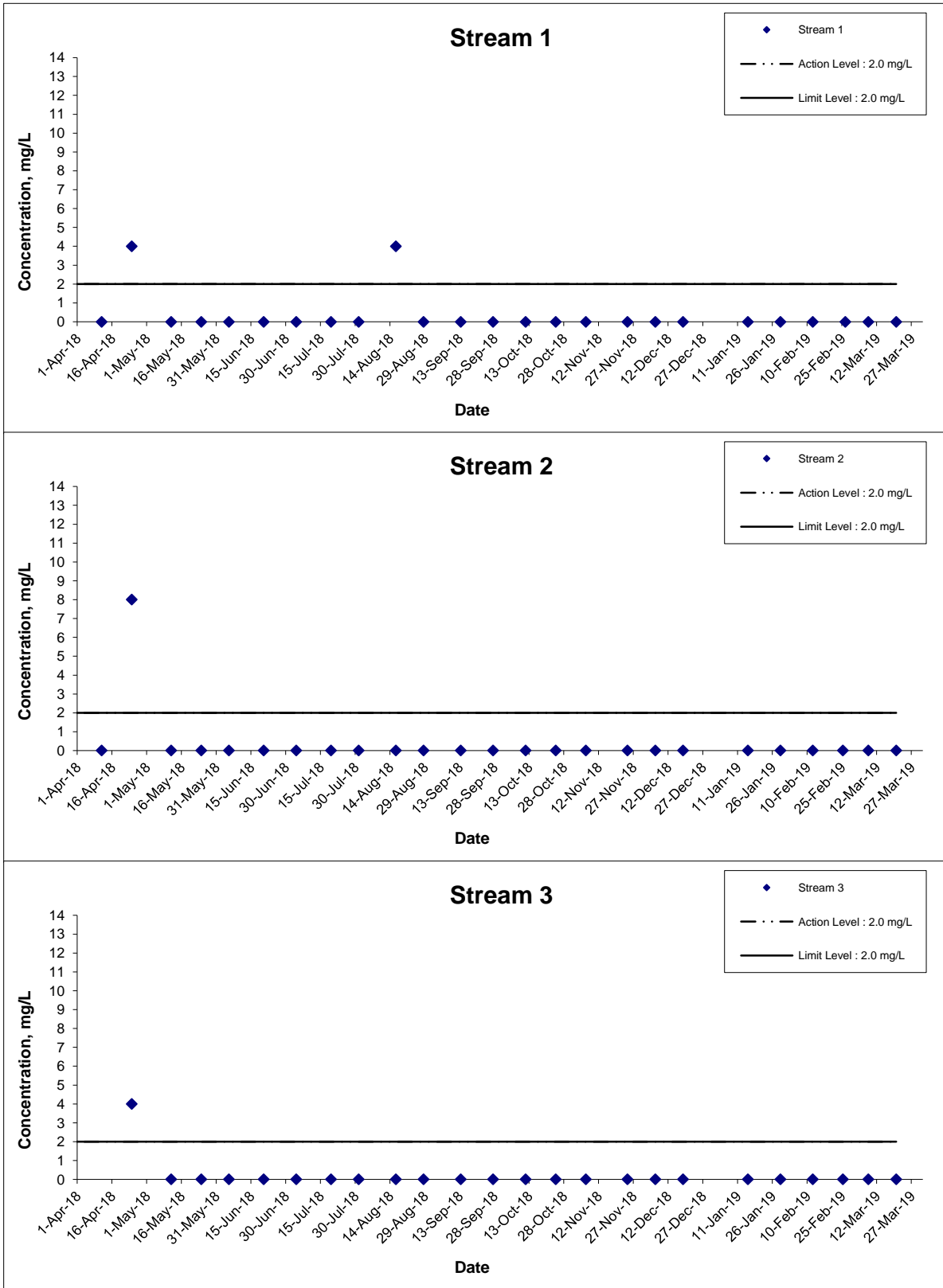
Suspended Solids



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

Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale N.T.S	Project No. MA16034	
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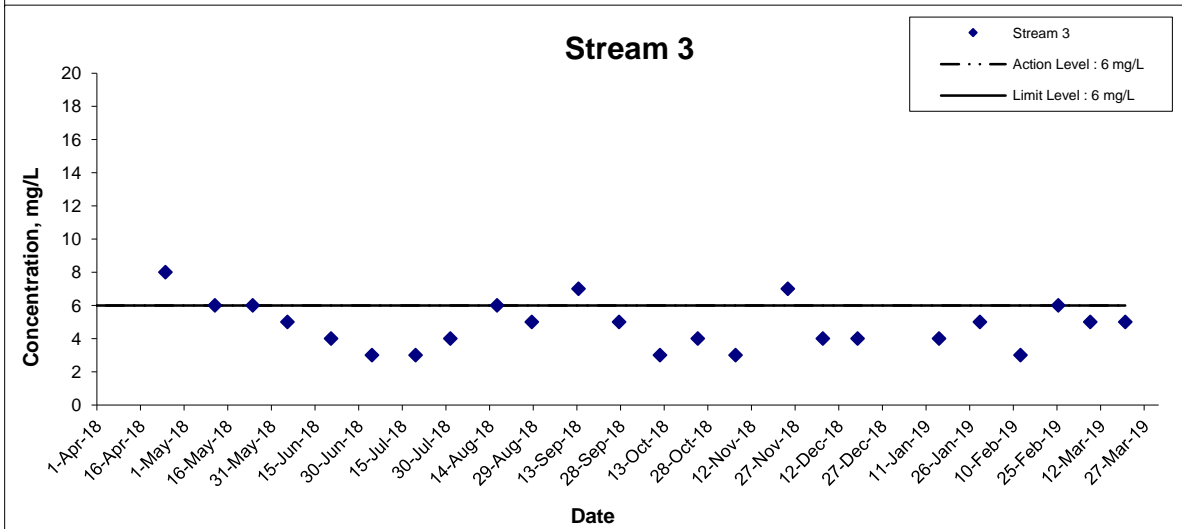
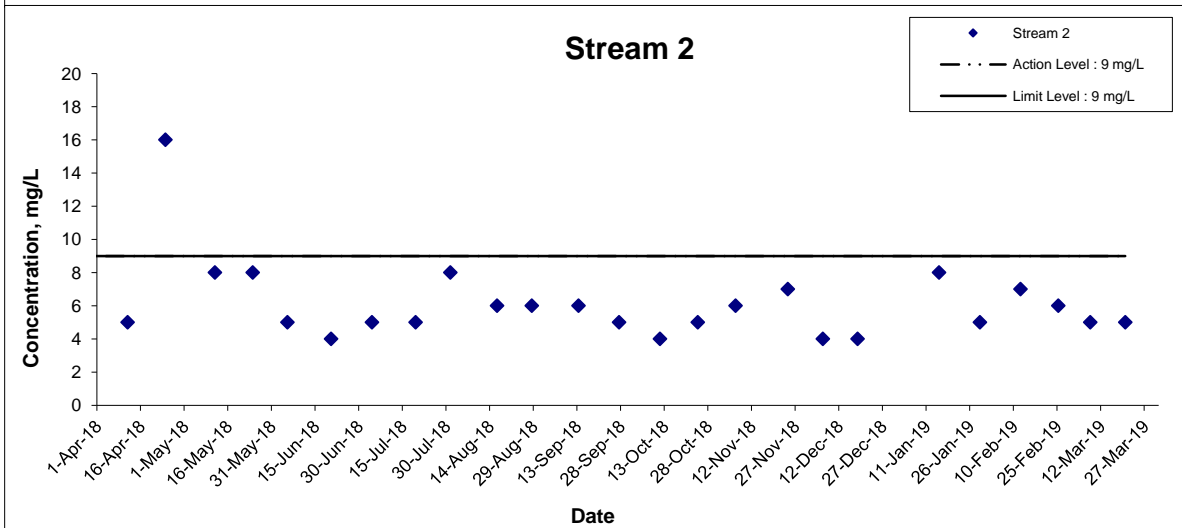
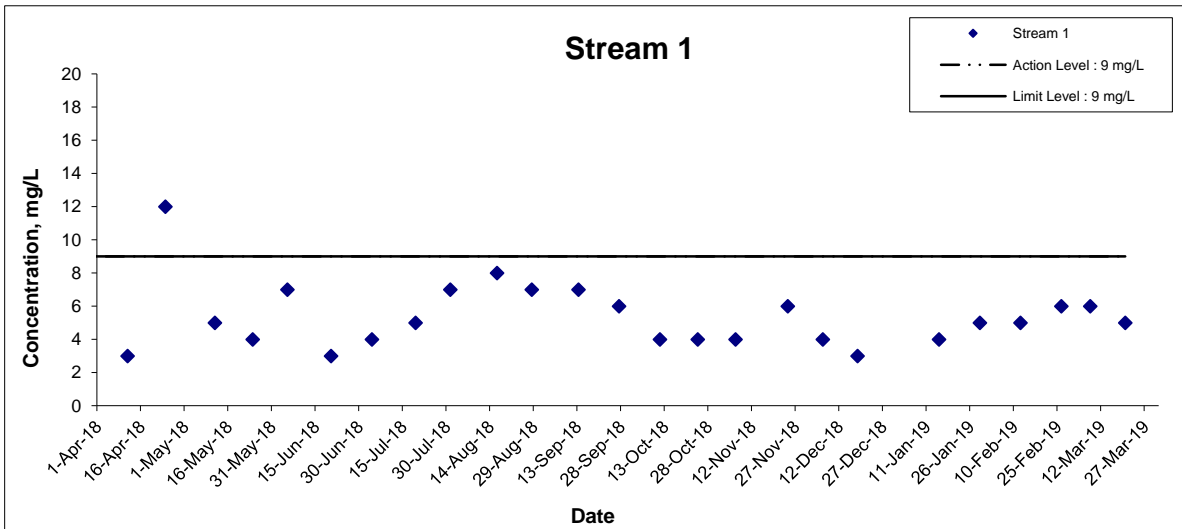
5-day Biochemical Oxygen Demand (BOD₅)



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

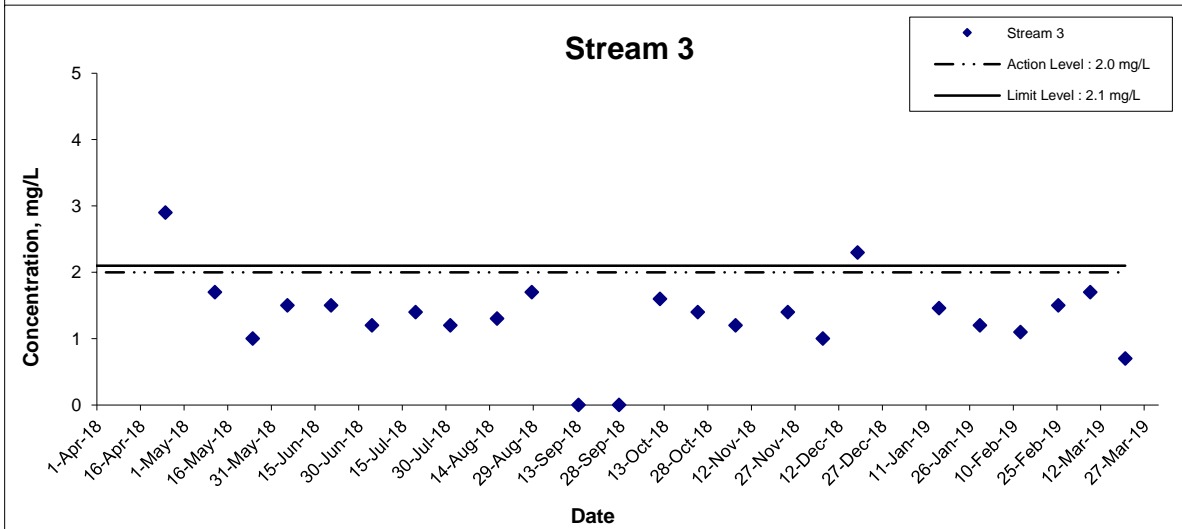
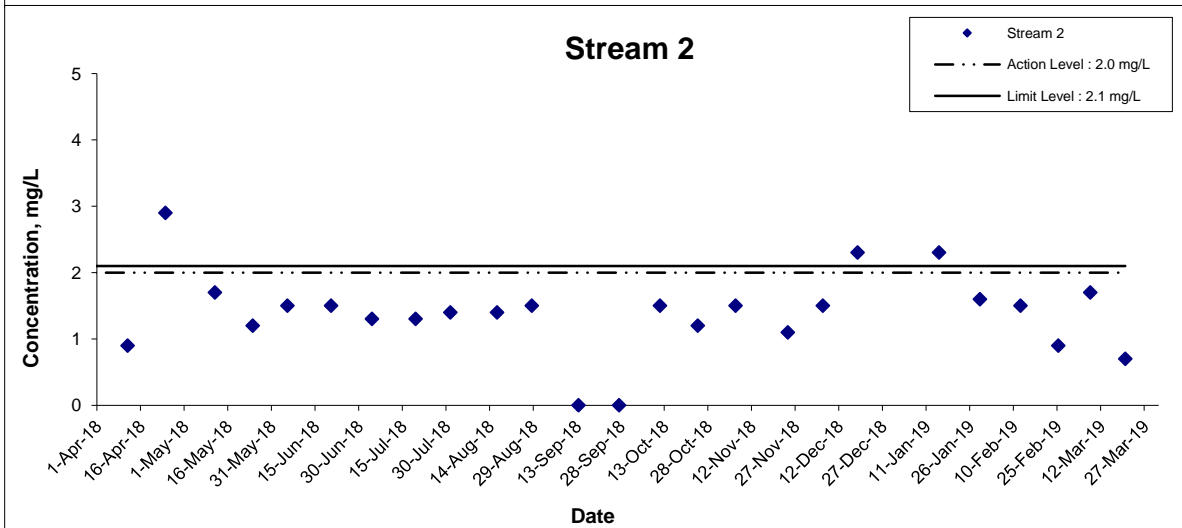
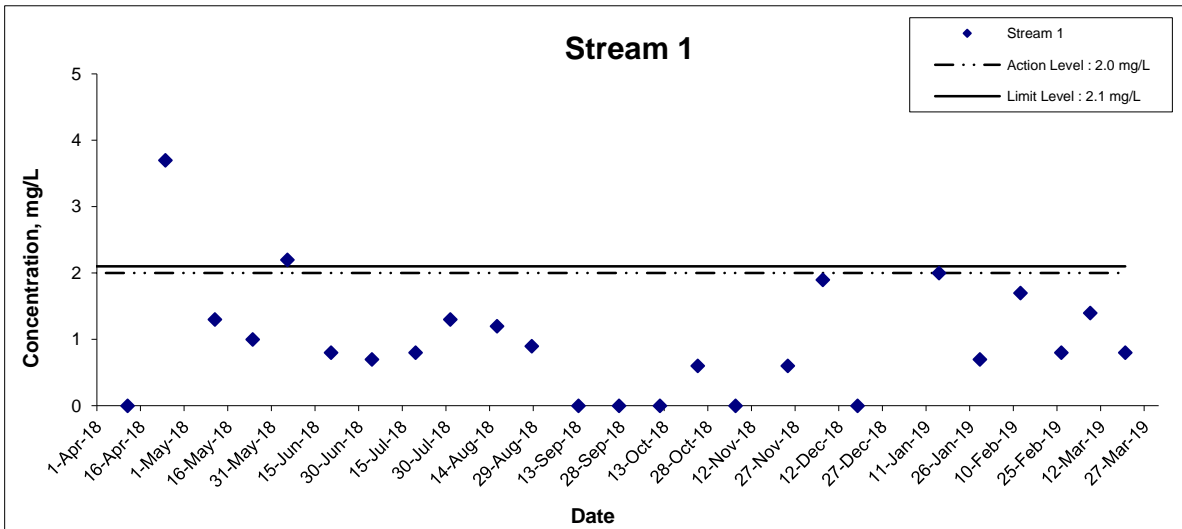
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale N.T.S	Project No. MA16034	CINOTECH
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Total Organic Carbon (TOC)



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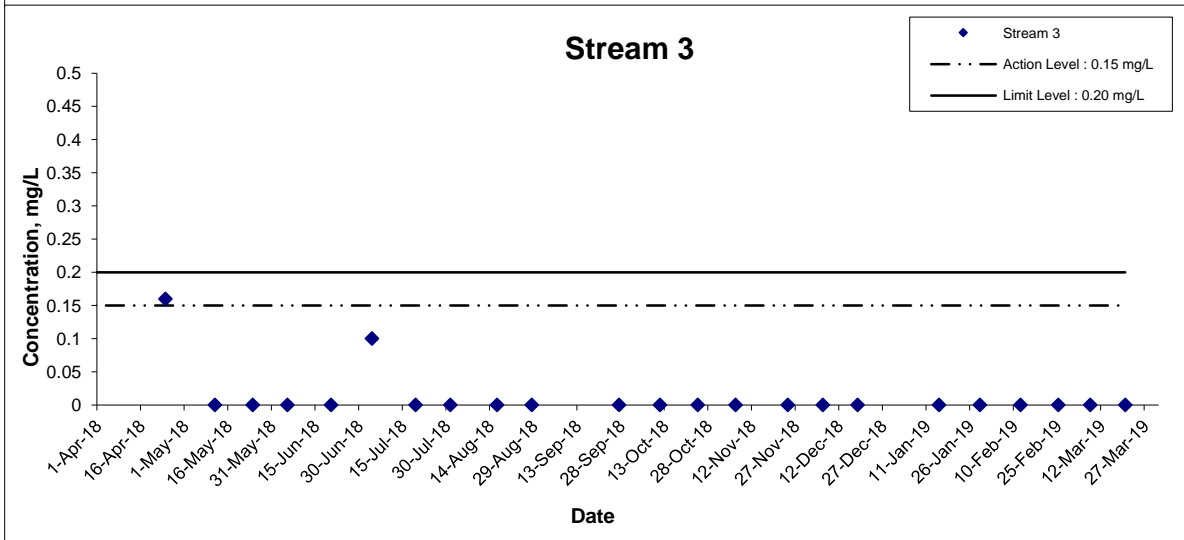
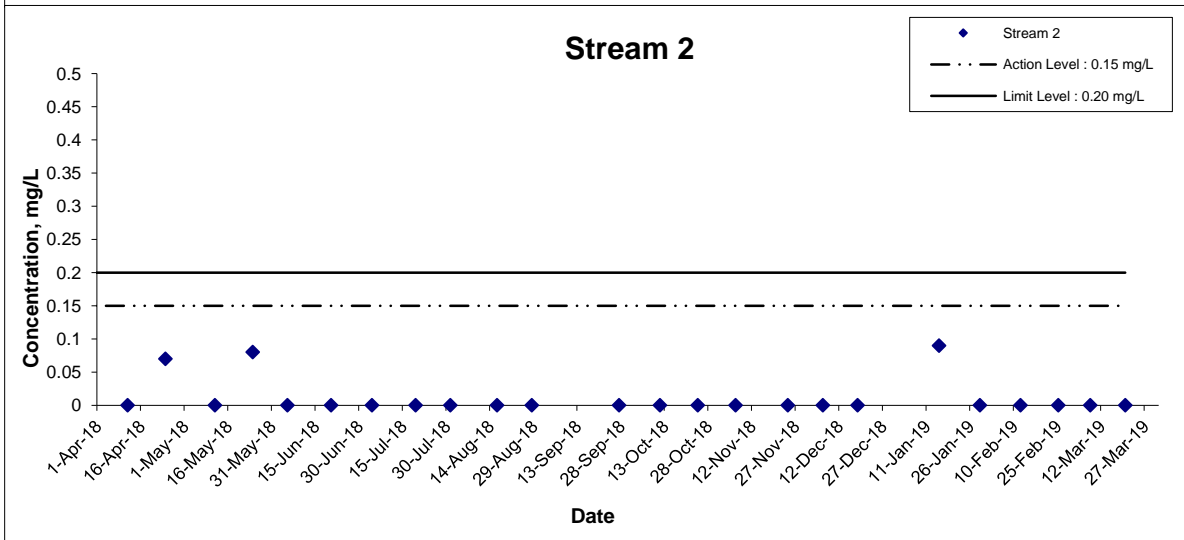
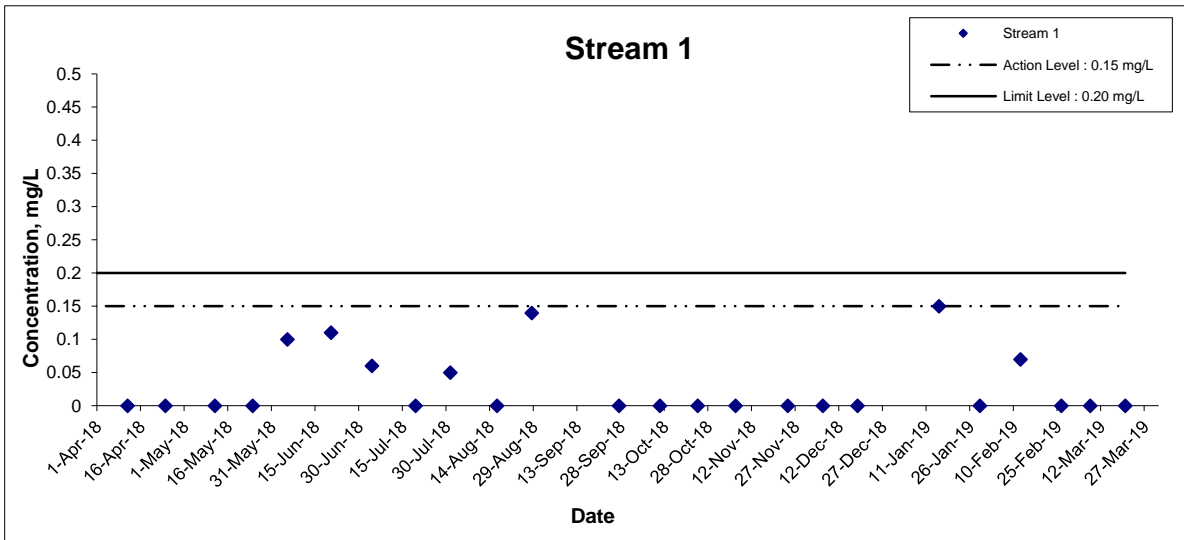
Total Nitrogen



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

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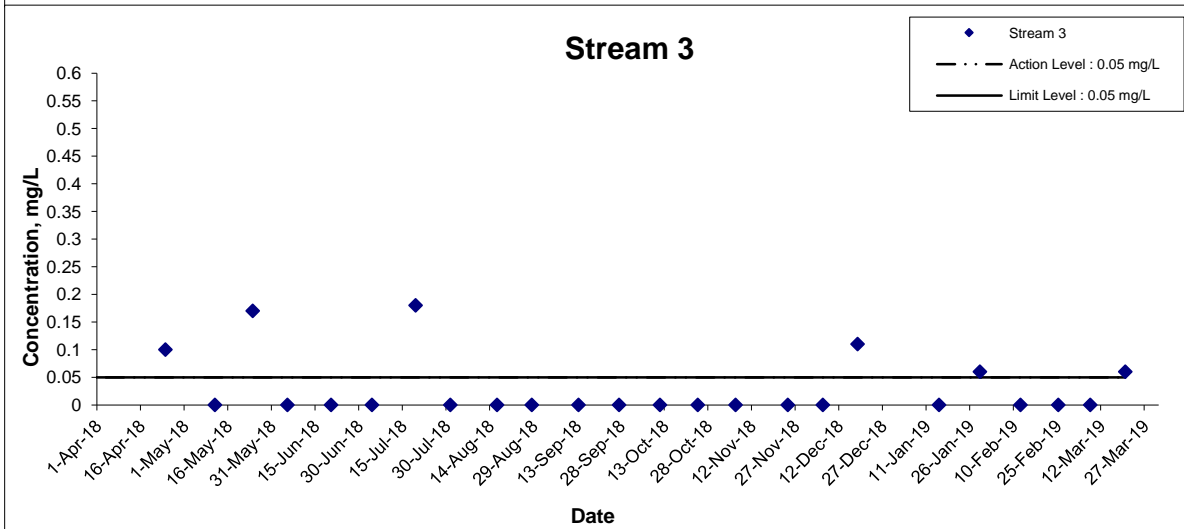
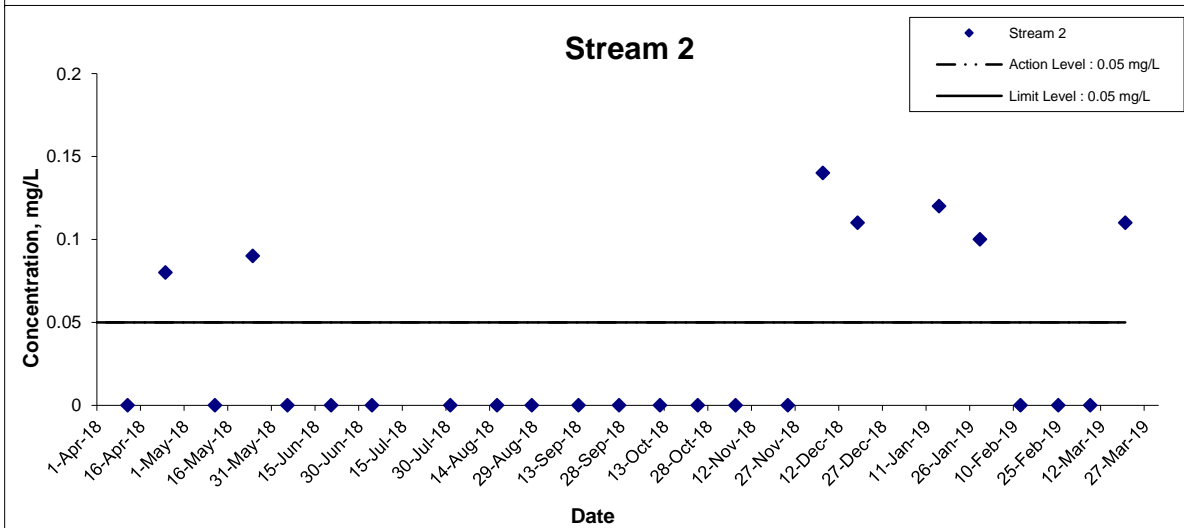
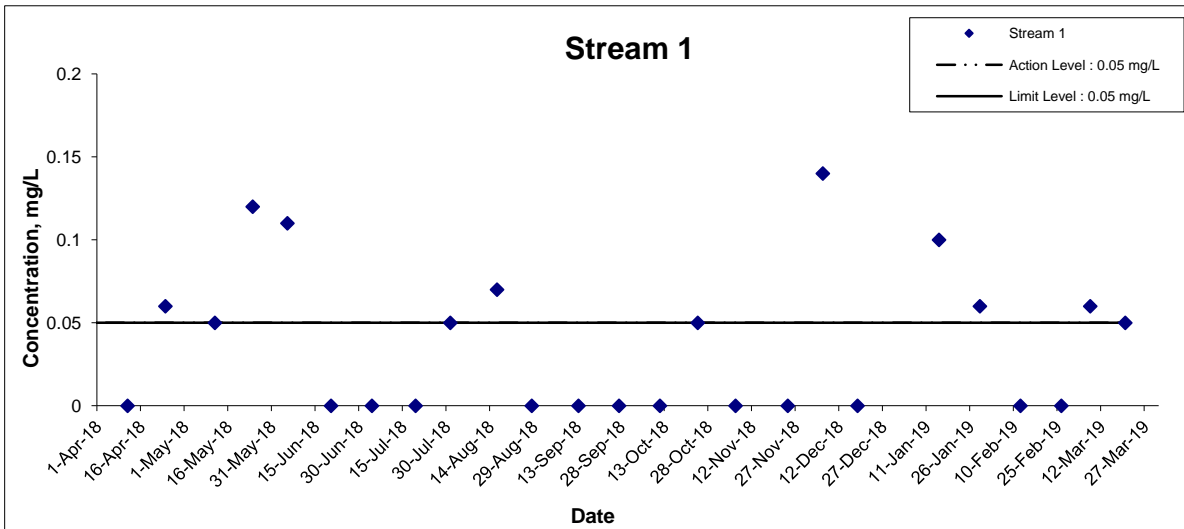
Ammonia-Nitrogen



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

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Total Phosphate



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

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

Appendix I - Action and Limit Levels for Marine Water Quality on 1 March 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: 0.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.6 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: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 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>CI: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 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>CI: 5.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 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 01 March 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	15:06	Surface	1.1	19.8 19.8	19.8	8.4 8.4	8.4	34.4 34.4	34.4	104.6 104.5	104.6	7.8 7.8	7.8	7.7	0.3 0.4	0.3	0.4	6.5 6.7	6.6	5.4
				Middle	9.0	19.6 19.6	19.6	8.3 8.4	8.3	34.4 34.4	34.4	100.5 101.8	101.2	7.5 7.6	7.6		0.3 0.4	0.3		5.4 5.5		
				Bottom	17.0	19.5 19.5	19.5	8.3 8.3	8.3	34.4 34.4	34.4	97.8 98.1	98.0	7.3 7.4	7.3		0.5 0.5	0.5		4.0 4.5		
C2	Cloudy	Moderate	13:58	Surface	1.0	19.7 19.7	19.7	8.2 8.3	8.3	34.4 34.4	34.4	103.5 103.9	103.7	7.7 7.8	7.7	7.7	0.3 0.4	0.3	0.4	6.9 7.6	7.3	4.5
				Middle	16.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	101.8 101.0	101.4	7.6 7.5	7.6		0.4 0.4	0.4		3.1 3.3		
				Bottom	31.0	19.5 19.5	19.5	8.3 8.3	8.3	34.4 34.4	34.4	98.9 99.4	99.2	7.4 7.4	7.4		0.4 0.4	0.4		2.8 3.2		
G1	Cloudy	Moderate	14:31	Surface	1.1	20.0 19.9	20.0	8.3 8.3	8.3	34.3 34.4	34.3	101.1 98.9	100.0	7.5 7.4	7.4	7.4	0.7 0.9	0.8	0.9	7.6 7.9	7.8	5.6
				Middle	4.0	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.3	34.3	99.8 100.5	100.2	7.4 7.5	7.5		0.8 0.8	0.9		4.7 4.1		
				Bottom	7.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	97.2 97.6	97.4	7.3 7.3	7.3		1.2 1.0	1.1		4.1 4.8		
G2	Cloudy	Moderate	14:19	Surface	1.0	19.6 19.8	19.7	8.3 8.3	8.3	34.6 34.4	34.5	100.7 102.0	101.4	7.5 7.6	7.6	7.6	0.5 0.5	0.5	0.5	7.6 8.4	8.0	7.0
				Middle	5.1	19.7 19.8	19.7	8.3 8.3	8.3	34.4 34.4	34.4	101.3 101.8	101.6	7.6 7.6	7.6		0.5 0.5	0.5		9.2 9.6		
				Bottom	9.1	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	99.5 99.6	99.6	7.4 7.4	7.4		0.6 0.7	0.6		3.4 3.8		
G3	Cloudy	Moderate	14:41	Surface	1.0	20.1 20.1	20.1	8.3 8.3	8.3	34.2 34.2	34.2	101.5 100.6	101.1	7.5 7.5	7.5	7.5	0.7 0.7	0.7	1.1	3.0 3.4	3.2	2.8
				Middle	4.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	100.8 100.5	100.7	7.5 7.5	7.5		0.7 0.7	0.7		3.5 4.4		
				Bottom	7.1	19.6 19.6	19.6	8.3 8.3	8.3	34.4 34.4	34.4	99.2 99.4	99.3	7.4 7.4	7.4		1.8 1.8	1.8		1.3 1.0		
G4	Cloudy	Moderate	14:46	Surface	1.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	99.9 100.0	100.0	7.4 7.5	7.4	7.4	0.9 0.9	0.9	0.9	4.1 4.2	4.2	4.9
				Middle	4.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	99.5 99.6	99.6	7.4 7.4	7.4		0.9 1.0	0.9		4.4 5.1		
				Bottom	7.0	19.6 19.6	19.6	8.3 8.3	8.3	34.4 34.4	34.4	98.9 99.4	99.2	7.4 7.4	7.4		0.8 0.8	0.8		5.1 5.9		
M1	Cloudy	Moderate	14:26	Surface	1.0	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.4	34.3	98.5 96.5	97.5	7.3 7.2	7.3	7.2	0.8 0.9	0.8	0.9	1.9 1.8	1.9	3.5
				Middle	3.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	96.6 96.2	96.4	7.2 7.2	7.2		0.9 0.9	0.9		5.4 6.3		
				Bottom	5.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	96.3 96.4	96.4	7.2 7.2	7.2		1.0 1.1	1.0		2.6 2.8		
M2	Cloudy	Moderate	14:13	Surface	1.0	19.9 19.9	19.9	8.3 8.3	8.3	34.4 34.4	34.4	102.8 103.3	103.1	7.7 7.7	7.7	7.7	0.5 0.4	0.4	0.5	3.8 4.8	4.3	3.8
				Middle	6.0	19.7 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	103.0 102.9	103.0	7.7 7.7	7.7		0.4 0.4	0.4		2.1 2.0		
				Bottom	11.1	19.6 19.6	19.6	8.3 8.3	8.3	34.4 34.4	34.4	99.9 99.9	99.9	7.5 7.5	7.5		0.8 0.8	0.8		4.7 5.6		
M3	Cloudy	Moderate	14:36	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	101.9 101.9	101.9	7.6 7.6	7.6	7.6	0.7 0.7	0.7	0.8	3.6 4.2	3.9	6.6
				Middle	4.0	19.9 19.9	19.9	8.3 8.3	8.3	34.4 34.4	34.4	101.5 101.5	101.5	7.6 7.6	7.6		0.8 0.7	0.8		5.0 5.7		
				Bottom	7.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	101.1 100.4	100.8	7.6 7.5	7.5		0.9 0.8	0.9		10.3 10.7		
M4	Cloudy	Moderate	14:06	Surface	1.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	103.0 103.8	103.4	7.7 7.7	7.7	7.7	0.5 0.4	0.4	0.6	4.7 4.9	4.8	7.3
				Middle	5.1	19.7 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	103.3 103.7	103.5	7.7 7.7	7.7		0.5 0.4	0.5		5.6 6.4		
				Bottom	9.1	19.6 19.6	19.6	8.3 8.3	8.3	34.4 34.4	34.4	100.0 99.9	100.0	7.5 7.5	7.5		0.8 0.9	0.8		10.6 11.5		
M5	Cloudy	Moderate	14:58	Surface	1.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	101.8 101.8	101.8	7.6 7.6	7.6	7.6	0.5 0.5	0.5	0.6	13.2 13.7	13.5	6.6
				Middle	5.1	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	101.3 101.3	101.3	7.6 7.6	7.6		0.6 0.6	0.6		2.9 3.4		
				Bottom	9.0	19.6 19.6	19.6	8.3 8.3	8.3	34.4 34.4	34.4	100.3 100.2	100.3	7.5 7.5	7.5		0.6 0.6	0.6		3.1 3.3		
M6	Cloudy	Moderate	14:53	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	0.8	-	-	5.0
				Middle	2.1	19.7 19.6	19.7	8.3 8.3	8.3	34.4 34.4	34.4	101.0 101.1	101.1	7.5 7.6	7.5		0.7 0.8	0.8		4.5 5.5		
				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 4 March 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: 0.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.3 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: 15.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 16.7 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>C2: 15.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 16.7 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>C2: 13.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 14.6 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.

Appendix I - Action and Limit Levels for Marine Water Quality on 4 March 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: 1.1 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.2 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>CI: 7.0 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: 7.0 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: 13.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 14.7 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 04 March 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	16:57	Surface	1.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	101.6 101.7	101.7	7.6 7.6	7.6	7.5	0.1 0.1	0.1	0.4	5.8 5.8	5.8	9.1
				Middle	9.0	19.7 19.7	19.7	8.3 8.3	8.3	34.5 34.5	34.5	99.1 99.0	99.1	7.4 7.4	7.4	0.1 0.1	0.1	11.1 10.3		10.2		
				Bottom	17.1	19.7 19.7	19.7	8.3 8.3	8.3	34.7 34.7	34.7	97.5 97.4	97.5	7.3 7.3	7.3	0.9 0.9	0.9	11.1 11.5		11.3		
C2	Sunny	Moderate	15:33	Surface	1.0	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.3	34.3	100.5 100.5	100.5	7.5 7.5	7.5	7.3	0.2 0.2	0.2	0.2	13.5 13.8	13.7	13.9
				Middle	16.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	96.1 96.1	96.1	7.2 7.2	7.2	0.3 0.3	0.3	16.4 17.2		16.8		
				Bottom	31.0	19.7 19.7	19.7	8.3 8.3	8.3	34.5 34.5	34.5	95.6 95.6	95.6	7.1 7.1	7.1	0.2 0.2	0.2	11.0 11.2		11.1		
G1	Sunny	Moderate	16:21	Surface	1.1	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	102.8 102.8	102.8	7.6 7.6	7.6	7.6	0.5 0.5	0.5	0.6	14.3 14.5	14.4	18.5
				Middle	4.1	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.3	34.3	101.6 101.6	101.6	7.6 7.6	7.6	0.6 0.6	0.6	26.5 27.3		26.9		
				Bottom	7.1	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	99.5 99.3	99.4	7.4 7.4	7.4	0.7 0.7	0.7	13.9 14.5		14.2		
G2	Sunny	Moderate	16:03	Surface	1.1	19.9 19.9	19.9	8.3 8.3	8.3	34.4 34.4	34.4	102.9 102.9	102.9	7.7 7.7	7.7	7.6	0.2 0.2	0.2	0.1	16.1 16.6	16.4	19.8
				Middle	5.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	102.1 102.0	102.1	7.6 7.6	7.6	0.1 0.1	0.1	26.3 26.9		26.6		
				Bottom	9.0	19.7 19.7	19.7	8.3 8.3	8.3	34.5 34.5	34.5	101.1 100.9	101.0	7.5 7.5	7.5	0.1 0.1	0.1	16.1 16.5		16.3		
G3	Sunny	Moderate	16:26	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	103.2 103.2	103.2	7.7 7.7	7.7	7.6	0.4 0.4	0.4	0.6	18.7 18.8	18.8	18.3
				Middle	4.1	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.3	34.3	102.1 102.1	102.1	7.6 7.6	7.6	0.5 0.5	0.5	21.8 22.1		22.0		
				Bottom	7.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	99.6 99.5	99.6	7.4 7.4	7.4	1.0 1.0	1.0	14.1 14.4		14.3		
G4	Sunny	Moderate	16:39	Surface	1.1	19.8 19.8	19.9	8.3 8.3	8.3	34.3 34.3	34.3	101.8 101.8	101.8	7.6 7.6	7.6	7.5	0.5 0.4	0.4	0.7	10.2 10.7	10.5	8.1
				Middle	4.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	99.2 99.2	99.2	7.4 7.4	7.4	0.7 0.7	0.7	4.4 4.4		4.4		
				Bottom	7.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	98.3 98.3	98.3	7.3 7.3	7.3	0.9 0.9	0.9	9.1 10.0		9.6		
M1	Sunny	Moderate	16:13	Surface	1.1	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.3	34.3	97.9 98.0	98.0	7.3 7.3	7.3	7.3	0.6 0.6	0.6	1.1	10.2 10.8	10.5	9.2
				Middle	3.1	19.8 19.7	19.8	8.3 8.3	8.3	34.4 34.4	34.4	97.3 97.3	97.3	7.3 7.3	7.3	1.4 1.4	1.4	7.8 8.2		8.0		
				Bottom	5.0	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	97.1 97.1	97.1	7.3 7.3	7.3	1.3 1.3	1.3	9.0 9.0		9.0		
M2	Sunny	Moderate	15:53	Surface	1.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	103.3 103.3	103.3	7.7 7.7	7.7	7.6	0.1 0.1	0.1	0.3	20.2 20.6	20.4	11.9
				Middle	6.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	102.1 102.1	102.1	7.6 7.6	7.6	0.1 0.1	0.1	7.9 8.5		8.2		
				Bottom	11.0	19.7 19.7	19.7	8.3 8.3	8.3	34.5 34.5	34.5	98.2 98.2	98.2	7.3 7.3	7.3	0.7 0.7	0.7	6.9 7.1		7.0		
M3	Sunny	Moderate	16:34	Surface	1.1	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	104.6 104.6	104.6	7.8 7.8	7.8	7.7	0.4 0.4	0.4	0.4	10.1 10.2	10.2	18.5
				Middle	4.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	101.4 101.4	101.4	7.6 7.6	7.6	0.3 0.4	0.3	21.4 22.2		21.8		
				Bottom	7.1	19.7 19.7	19.7	8.3 8.3	8.3	34.4 34.4	34.4	99.0 99.0	99.0	7.4 7.4	7.4	0.6 0.6	0.6	23.2 24.0		23.6		
M4	Sunny	Moderate	15:43	Surface	1.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	102.9 102.9	102.9	7.7 7.7	7.7	7.6	0.1 0.1	0.1	0.2	16.6 17.5	17.1	11.1
				Middle	5.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	102.3 102.3	102.3	7.6 7.6	7.6	0.2 0.2	0.2	4.4 4.7		4.6		
				Bottom	9.0	19.8 19.8	19.8	8.3 8.3	8.3	34.5 34.5	34.5	100.6 100.6	100.6	7.5 7.5	7.5	0.4 0.4	0.4	11.3 11.8		11.6		
M5	Sunny	Moderate	16:50	Surface	1.0	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	101.8 101.8	101.8	7.6 7.6	7.6	7.6	0.2 0.2	0.2	0.2	11.7 12.6	12.2	12.7
				Middle	5.1	19.7 19.7	19.7	8.3 8.3	8.3	34.5 34.5	34.5	100.9 101.0	101.0	7.5 7.5	7.5	0.2 0.2	0.2	15.5 15.6		15.6		
				Bottom	9.0	19.7 19.7	19.7	8.3 8.3	8.3	34.5 34.5	34.5	99.2 99.2	99.2	7.4 7.4	7.4	0.3 0.3	0.3	9.9 10.6		10.3		
M6	Sunny	Moderate	16:44	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-	-	11.2
				Middle	2.1	19.8 19.8	19.8	8.3 8.3	8.3	34.4 34.4	34.4	100.8 100.8	100.8	7.5 7.5	7.5	0.3 0.3	0.3	10.8 11.6		11.2		
				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 6 March 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: 0.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.5 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: 6.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.3 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: 6.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.3 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: 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>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 06 March 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	Rainy	Moderate	13:01	Surface	1.1	19.9 20.0	8.3 8.3	8.3	34.2 34.3	34.2	98.5 97.3	97.9	7.3 7.2	7.3	7.2	0.1 0.1	0.1	0.2	6.0 6.4	6.2	5.6
				Middle	9.0	20.0 20.0	8.3 8.3	8.3	34.4 34.3	34.4	97.0 97.0	97.0	7.2 7.2	7.2		0.2 0.2	0.2		6.6 7.0	6.8	
				Bottom	18.1	20.2 20.3	8.3 8.3	8.3	34.8 35.0	34.9	97.5 97.4	97.5	7.2 7.2	7.2		0.4 0.5	0.4		3.8 3.9	3.9	
C2	Rainy	Moderate	11:58	Surface	1.0	19.9 20.0	8.3 8.3	8.3	34.2 34.1	34.1	95.3 95.4	95.4	7.1 7.1	7.1	7.1	0.2 0.3	0.2	0.3	5.6 5.7	5.7	4.8
				Middle	16.0	19.9 19.9	8.3 8.3	8.3	34.4 34.4	34.4	96.3 96.0	96.2	7.2 7.1	7.2		0.1 0.2	0.1		3.3 4.2	3.8	
				Bottom	31.0	20.2 20.1	8.3 8.3	8.3	34.8 34.7	34.8	96.7 96.8	96.8	7.1 7.2	7.2		0.4 0.4	0.4		4.8 5.2	5.0	
G1	Rainy	Moderate	12:24	Surface	1.1	19.8 20.0	8.3 8.3	8.3	34.0 33.9	34.0	98.7 96.7	97.8	7.4 7.2	7.3	7.2	0.3 0.3	0.3	0.7	7.4 8.0	7.7	5.6
				Middle	4.0	20.0 20.0	8.3 8.3	8.3	34.2 34.1	34.2	96.7 96.6	96.7	7.2 7.2	7.2		0.6 0.6	0.6		4.6 5.4	5.0	
				Bottom	7.0	19.9 19.9	8.3 8.3	8.3	34.3 34.3	34.3	96.3 96.9	96.6	7.2 7.2	7.2		1.3 1.1	1.2		4.0 4.1	4.1	
G2	Rainy	Moderate	12:13	Surface	1.0	19.7 19.9	8.3 8.3	8.3	34.4 34.1	34.2	99.1 97.2	98.2	7.4 7.2	7.3	7.3	0.3 0.2	0.2	0.3	2.5 2.8	2.7	2.8
				Middle	5.1	19.9 19.9	8.3 8.3	8.3	34.3 34.4	34.4	97.2 97.4	97.3	7.2 7.2	7.2		0.2 0.2	0.2		2.6 2.7	2.7	
				Bottom	9.0	19.9 19.9	8.3 8.3	8.3	34.5 34.5	34.5	97.4 97.3	97.4	7.2 7.2	7.2		0.4 0.4	0.4		2.7 3.3	3.0	
G3	Rainy	Moderate	12:30	Surface	1.1	20.0 20.0	8.3 8.3	8.3	33.7 34.0	33.9	97.1 97.5	97.3	7.3 7.3	7.3	7.2	0.2 0.2	0.2	0.2	7.2 7.9	7.6	7.3
				Middle	4.0	20.0 20.0	8.3 8.3	8.3	34.1 34.1	34.1	96.5 96.7	96.6	7.2 7.2	7.2		0.2 0.2	0.2		7.5 8.0	7.8	
				Bottom	7.0	20.0 19.9	8.3 8.3	8.3	34.2 34.3	34.2	97.4 97.0	97.2	7.2 7.2	7.2		0.1 0.1	0.1		6.5 6.6	6.6	
G4	Rainy	Moderate	12:45	Surface	1.0	19.6 20.0	8.3 8.3	8.3	32.5 35.2	32.8	98.7 96.2	97.5	7.5 7.2	7.3	7.3	0.9 1.0	0.9	0.6	5.9 6.4	6.2	8.3
				Middle	4.1	20.0 20.0	8.3 8.3	8.3	34.1 34.2	34.2	97.0 96.8	97.0	7.2 7.2	7.2		0.3 0.3	0.3		9.1 9.6	9.4	
				Bottom	7.0	19.9 19.9	8.3 8.3	8.3	34.6 34.4	34.5	97.8 96.7	97.3	7.3 7.2	7.2		0.5 0.4	0.5		8.8 9.8	9.3	
M1	Rainy	Moderate	12:20	Surface	1.0	20.0 20.0	8.3 8.3	8.3	34.2 34.2	34.2	95.5 96.1	95.8	7.1 7.2	7.1	7.1	0.4 0.4	0.4	0.4	4.5 4.8	4.7	4.3
				Middle	2.9	19.9 20.0	8.3 8.3	8.3	34.4 34.2	34.3	96.8 95.0	95.9	7.2 7.1	7.1		0.3 0.4	0.4		4.5 5.2	4.9	
				Bottom	5.0	19.9 19.9	8.3 8.3	8.3	34.4 34.4	34.4	97.0 95.8	96.4	7.2 7.1	7.2		0.3 0.3	0.3		3.0 3.6	3.3	
M2	Rainy	Moderate	12:09	Surface	1.0	19.9 19.9	8.3 8.3	8.3	34.2 34.3	34.2	98.1 97.7	97.9	7.3 7.3	7.3	7.3	0.2 0.2	0.2	0.2	6.9 7.4	7.2	6.3
				Middle	6.1	19.9 19.9	8.3 8.3	8.3	34.3 34.3	34.3	97.5 97.5	97.5	7.3 7.3	7.3		0.2 0.1	0.1		6.8 7.5	7.2	
				Bottom	11.1	19.9 19.9	8.3 8.3	8.3	34.4 34.5	34.4	97.4 97.3	97.4	7.2 7.2	7.2		0.4 0.4	0.4		4.3 4.8	4.6	
M3	Rainy	Moderate	12:40	Surface	1.0	20.0 20.0	8.3 8.3	8.3	34.0 34.0	34.0	96.6 96.0	96.3	7.2 7.1	7.2	7.2	0.3 0.3	0.3	0.3	12.7 13.5	13.1	12.7
				Middle	4.0	20.0 20.0	8.3 8.3	8.3	34.1 34.2	34.1	96.3 95.6	96.0	7.2 7.1	7.1		0.2 0.3	0.3		12.5 12.9	12.7	
				Bottom	7.0	19.9 19.9	8.3 8.3	8.3	34.3 34.2	34.2	96.0 95.6	95.8	7.1 7.1	7.1		0.3 0.3	0.3		12.0 12.7	12.4	
M4	Rainy	Moderate	12:04	Surface	1.0	19.9 19.9	8.3 8.3	8.3	34.2 34.2	34.2	96.3 96.1	96.2	7.2 7.1	7.2	7.2	0.3 0.3	0.3	0.2	5.0 6.0	5.5	5.2
				Middle	5.0	19.9 19.9	8.3 8.3	8.3	34.3 34.2	34.3	96.6 96.1	96.4	7.2 7.1	7.2		0.2 0.2	0.2		5.0 5.8	5.4	
				Bottom	9.1	19.9 19.9	8.3 8.3	8.3	34.4 34.3	34.3	96.6 96.0	96.3	7.2 7.1	7.2		0.2 0.2	0.2		4.8 4.8	4.8	
M5	Rainy	Moderate	12:55	Surface	1.0	20.0 20.0	8.3 8.3	8.3	34.2 34.2	34.2	95.6 95.0	95.3	7.1 7.1	7.1	7.1	0.3 0.2	0.3	0.3	4.9 5.8	5.4	4.2
				Middle	6.0	19.9 19.9	8.3 8.3	8.3	34.3 34.3	34.3	94.9 94.7	94.8	7.1 7.1	7.1		0.3 0.3	0.3		3.3 4.3	3.8	
				Bottom	11.1	19.9 19.9	8.3 8.3	8.3	34.3 34.4	34.3	95.1 95.4	95.3	7.1 7.1	7.1		0.4 0.3	0.4		2.9 3.7	3.3	
M6	Rainy	Moderate	12:51	Surface	-	-	-	-	-	-	-	-	-	-	7.0	-	-	0.7	-	-	10.7
				Middle	2.0	20.0 20.0	8.3 8.3	8.3	34.3 34.3	34.3	94.5 94.6	94.6	7.0 7.0	7.0		0.7 0.7	0.7		10.6 10.7	10.7	
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 6 March 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: 0.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.9 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>CI: 4.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 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: 4.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 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: 4.0 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>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 06 March 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	Rainy	Moderate	17:57	Surface	1.1	20.1 20.0	20.0	8.3 8.3	8.3	33.7 33.9	33.8	92.4 93.6	93.0	6.9 7.0	6.9	6.9	0.7 0.7	0.7	0.6	3.5 3.8	3.7	3.7
				Middle	9.0	20.0 20.0	20.0	8.3 8.3	8.3	34.4 34.1	34.3	94.2 93.0	93.6	7.0 6.9	7.0		0.4 0.4	0.4		3.7 4.3	4.0	
				Bottom	17.0	20.4 20.4	20.4	8.3 8.3	8.3	35.1 35.1	35.1	96.7 96.9	96.8	7.1 7.1	7.1		0.7 0.7	0.7		3.1 3.6	3.4	
C2	Rainy	Moderate	16:52	Surface	1.0	20.1 20.0	20.1	8.1 8.3	8.2	33.7 33.8	33.8	92.8 93.3	93.1	6.9 6.9	6.9	7.0	0.5 0.5	0.5	0.4	5.2 6.1	5.7	5.0
				Middle	16.0	20.0 20.0	20.0	8.3 8.3	8.3	34.5 34.5	34.5	94.8 94.9	94.9	7.0 7.0	7.0		0.3 0.3	0.3		4.3 4.6	4.5	
				Bottom	31.0	20.0 20.0	20.0	8.3 8.3	8.3	34.6 34.6	34.6	95.0 95.3	95.2	7.0 7.1	7.1		0.5 0.4	0.5		4.5 5.1	4.8	
G1	Rainy	Moderate	17:23	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	33.8 33.9	33.8	98.2 97.9	98.1	7.3 7.3	7.3	7.3	1.1 0.9	1.0	0.7	6.3 6.8	6.6	9.1
				Middle	4.0	20.0 19.9	19.9	8.3 8.3	8.3	34.3 34.3	34.3	97.5 97.5	97.5	7.3 7.3	7.3		0.5 0.5	0.5		13.3 14.1	13.7	
				Bottom	7.0	19.9 19.9	19.9	8.3 8.3	8.3	34.5 34.5	34.5	97.3 97.1	97.2	7.2 7.2	7.2		0.7 0.7	0.7		6.6 7.4	7.0	
G2	Rainy	Moderate	17:10	Surface	1.1	19.9 19.9	19.9	8.3 8.3	8.3	34.2 34.2	34.2	98.9 97.7	98.3	7.4 7.3	7.3	7.3	0.1 0.1	0.1	0.1	8.9 9.7	9.3	7.2
				Middle	5.0	19.9 20.0	19.9	8.3 8.3	8.3	34.3 34.2	34.2	97.9 97.9	97.9	7.3 7.3	7.3		0.2 0.2	0.2		3.5 3.7	3.6	
				Bottom	9.0	19.9 19.9	19.9	8.3 8.3	8.3	34.4 34.4	34.4	97.2 97.2	97.2	7.2 7.2	7.2		0.2 0.1	0.1		8.3 9.0	8.7	
G3	Rainy	Moderate	17:29	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	33.8 34.1	34.0	96.5 97.1	96.7	7.2 7.2	7.2	7.2	0.9 0.7	0.8	0.7	5.6 6.1	5.9	6.0
				Middle	4.0	19.9 20.0	20.0	8.3 8.3	8.3	34.3 33.9	34.1	96.4 97.0	96.7	7.2 7.2	7.2		0.6 0.8	0.7		4.3 4.6	4.5	
				Bottom	7.0	19.9 19.9	19.9	8.3 8.3	8.3	34.5 34.5	34.5	96.4 96.8	96.6	7.2 7.2	7.2		0.8 0.7	0.7		7.3 7.8	7.6	
G4	Rainy	Moderate	17:43	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	34.0 34.1	34.1	97.3 97.3	97.3	7.2 7.2	7.2	7.2	0.3 0.3	0.3	0.3	21.7 22.4	22.1	13.1
				Middle	4.1	20.0 20.0	20.0	8.3 8.3	8.3	34.2 34.2	34.2	96.5 97.1	96.8	7.2 7.2	7.2		0.3 0.3	0.3		12.6 13.3	13.0	
				Bottom	7.0	20.0 20.0	20.0	8.3 8.3	8.3	34.5 34.5	34.5	97.3 98.2	97.8	7.2 7.3	7.3		0.3 0.3	0.3		4.0 4.5	4.3	
M1	Rainy	Moderate	17:16	Surface	1.1	20.0 20.0	20.0	8.3 8.3	8.3	33.8 33.8	33.8	94.5 94.6	94.6	7.0 7.1	7.0	7.1	6.0 5.0	5.5	6.3	12.6 13.3	13.0	12.6
				Middle	3.0	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.2	34.2	95.9 94.8	95.4	7.1 7.1	7.1		6.9 7.5	7.2		14.5 14.6	14.6	
				Bottom	5.1	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	95.8 95.5	95.7	7.1 7.1	7.1		5.9 6.2	6.0		9.7 10.7	10.2	
M2	Rainy	Moderate	17:06	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	33.8 34.2	34.0	99.0 97.9	98.5	7.4 7.3	7.3	7.3	0.2 0.2	0.2	0.3	6.2 6.8	6.5	6.4
				Middle	6.1	19.9 19.9	19.9	8.3 8.3	8.3	34.3 34.4	34.4	97.8 97.7	97.8	7.3 7.3	7.3		0.1 0.2	0.1		6.4 6.5	6.5	
				Bottom	11.1	19.9 19.9	19.9	8.3 8.3	8.3	34.5 34.6	34.5	97.5 97.4	97.5	7.3 7.2	7.2		0.5 0.6	0.5		6.0 6.2	6.1	
M3	Rainy	Moderate	17:37	Surface	1.0	20.0 19.9	20.0	8.3 8.3	8.3	34.1 34.2	34.1	95.6 95.3	95.5	7.1 7.1	7.1	7.1	0.5 0.6	0.6	0.8	5.1 5.5	5.3	7.0
				Middle	4.0	19.9 19.9	19.9	8.3 8.3	8.3	34.5 34.5	34.5	96.8 96.6	96.7	7.2 7.2	7.2		1.0 1.0	1.0		7.5 7.9	7.7	
				Bottom	7.0	19.9 19.9	19.9	8.3 8.3	8.3	34.5 34.5	34.5	96.8 96.8	96.8	7.2 7.2	7.2		0.8 1.0	0.9		7.8 8.2	8.0	
M4	Rainy	Moderate	17:00	Surface	1.1	20.0 20.0	20.0	8.3 8.3	8.3	33.9 34.0	34.0	99.1 98.4	98.8	7.4 7.3	7.4	7.3	0.2 0.2	0.2	0.2	4.4 4.5	4.5	3.7
				Middle	5.1	19.9 20.0	20.0	8.3 8.3	8.3	34.3 34.2	34.2	98.1 98.1	98.1	7.3 7.3	7.3		0.1 0.1	0.1		2.8 3.5	3.2	
				Bottom	9.0	19.9 19.9	19.9	8.3 8.3	8.3	34.5 34.5	34.5	96.7 97.1	96.9	7.2 7.2	7.2		0.4 0.4	0.4		3.1 4.1	3.6	
M5	Rainy	Moderate	17:52	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	34.1 34.2	34.1	95.8 95.5	95.7	7.1 7.1	7.1	7.1	0.3 0.3	0.3	0.3	6.6 6.9	6.8	5.5
				Middle	6.0	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	95.3 95.2	95.3	7.1 7.1	7.1		0.4 0.3	0.3		4.6 5.5	5.1	
				Bottom	11.0	20.0 20.0	20.0	8.3 8.3	8.3	34.3 34.3	34.3	95.3 95.0	95.2	7.1 7.1	7.1		0.4 0.4	0.4		4.6 4.7	4.7	
M6	Rainy	Moderate	17:47	Surface	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	0.5	-	-	11.4
				Middle	2.0	20.0 20.0	20.0	8.3 8.3	8.3	34.2 34.2	34.2	95.6 95.7	95.7	7.1 7.1	7.1		0.5 0.5	0.5		11.0 11.7	11.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 7 March 2019 (Mid-Ebb Tide)

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</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: 6.1 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>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: 6.1 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>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: 6.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
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 07 March 2019**

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
C1	Cloudy	Calm	13:55	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4	7.4	5.5	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		5.4
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8		3.7
C2	Cloudy	Calm	13:11	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	5.1	4.5	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2		2.9
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8		5.6
G1	Cloudy	Calm	13:32	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	5.6	6.9	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.9		11.0
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4		4.1
G2	Cloudy	Calm	13:24	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.3	7.3	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0		10.0
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2		5.7
G3	Cloudy	Calm	13:35	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.0	7.1	6.4	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9		5.8
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2		6.2
G4	Cloudy	Calm	13:41	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4	7.7	8.7	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1		8.0
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.3		10.5
M1	Cloudy	Calm	13:28	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0	7.6	7.5	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1		6.5
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4		8.4
M2	Cloudy	Calm	13:20	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	2.9	4.2	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		5.5
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4		4.3
M3	Cloudy	Calm	13:38	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8	19.0	8.7	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0		3.9
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3		3.3
M4	Cloudy	Calm	13:17	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	4.8	9.1	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1		8.1
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.1		14.5
M5	Cloudy	Calm	13:51	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.6	12.1	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.5		21.7
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8		8.0
M6	Cloudy	Calm	13:45	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.4	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.2		9.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5		-

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 7 March 2019 (Mid-Flood Tide)

<u>Parameter (unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</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: 3.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.0 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>CI: 3.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.0 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>CI: 20.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 22.5 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
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 07 March 2019**

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
C1	Cloudy	Calm	18:01	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	3.1	9.9	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0		9.2
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.5		17.3
C2	Cloudy	Calm	18:06	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.2	11.2	8.7	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2		7.5
				Bottom	27.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6		7.5
G1	Cloudy	Calm	17:40	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.3	11.4	7.9	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7		6.6
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		5.7
G2	Cloudy	Calm	17:32	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.3	4.8	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4		4.4
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5		4.6
G3	Cloudy	Calm	17:42	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	8.8	7.5	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9		5.8
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7		7.8
G4	Cloudy	Calm	17:48	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.2	16.6	11.9	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.8		15.8
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1		3.2
M1	Cloudy	Calm	17:36	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.7	9.5	10.2	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.2		13.3
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8		7.7
M2	Cloudy	Calm	17:29	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	7.6	4.7	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1		3.2
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5		3.4
M3	Cloudy	Calm	17:45	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4	15.2	9.6	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		5.8
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2		7.8
M4	Cloudy	Calm	17:20	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.4	10.1	8.1	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7		7.8
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7		6.4
M5	Cloudy	Calm	17:56	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	7.6	11.0	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.1		12.3
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.3		13.1
M6	Cloudy	Calm	17:51	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8		7.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2		-

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 March 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: 1.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.0 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: 7.6 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: 7.6 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: 11.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.6 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.

Appendix I - Action and Limit Levels for Marine Water Quality on 8 March 2019 (Mid-Flood 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>CI: 0.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.7 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: 9.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 10.1 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: 9.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 10.1 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: 4.2 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.

Appendix I - Action and Limit Levels for Marine Water Quality on 11 March 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: 0.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.7 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: 9.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 10.1 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: 9.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 10.1 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: 12.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 13.0 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 11 March 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*			
					Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value		
C1	Cloudy	Calm	16:23	Surface	1.0	20.4	20.4	8.2	8.2	34.2	34.2	87.9	86.6	6.5	6.4	6.4	6.5	0.5	0.9	0.5	0.5	7.6	10.2	10.3
				Middle	9.1	20.4	20.4	8.2	8.2	34.6	34.6	86.2	86.0	6.4	6.3		6.3	6.4		0.6	0.6		6.5	6.6
				Bottom	17.0	20.4	20.4	8.3	8.3	34.8	34.8	88.3	88.5	6.5	6.5		6.5	6.5		1.5	1.5		5.8	5.9
C2	Cloudy	Calm	15:11	Surface	1.0	20.4	20.4	8.1	8.1	34.1	34.2	82.1	82.2	6.1	6.1	6.1	6.1	0.4	0.5	0.4	0.5	7.0	7.7	7.8
				Middle	16.1	20.4	20.4	8.1	8.1	34.4	34.4	83.1	83.3	6.1	6.1		6.1	6.2		0.6	0.5		3.2	3.3
				Bottom	31.1	20.4	20.4	8.1	8.1	34.4	34.4	83.3	83.3	6.1	6.1		6.1	6.1		0.6	0.6		9.8	10.0
G1	Cloudy	Calm	15:51	Surface	1.0	20.6	20.5	8.2	8.2	34.3	34.3	91.2	91.0	6.7	6.7	6.7	6.7	0.4	0.6	0.4	0.4	4.7	7.2	7.3
				Middle	4.0	20.4	20.4	8.2	8.2	34.5	34.5	90.5	90.5	6.7	6.7		6.7	6.7		0.6	0.7		3.6	3.6
				Bottom	7.0	20.4	20.4	8.2	8.2	34.8	34.7	90.3	90.2	6.7	6.6		6.6	6.6		0.6	0.6		3.2	3.3
G2	Cloudy	Calm	15:37	Surface	1.0	20.6	20.6	8.2	8.2	34.5	34.5	92.1	92.0	6.7	6.8	6.7	6.7	0.2	0.4	0.2	0.2	8.4	2.5	2.5
				Middle	5.1	20.4	20.4	8.2	8.2	34.6	34.6	91.2	91.1	6.7	6.7		6.7	6.7		0.3	0.3		6.5	6.5
				Bottom	9.1	20.5	20.5	8.2	8.2	34.9	34.9	92.6	92.3	6.8	6.8		6.8	6.8		0.6	0.6		16.4	16.1
G3	Cloudy	Calm	15:55	Surface	1.0	20.5	20.5	8.2	8.2	34.2	34.2	93.3	92.1	6.9	6.8	6.7	6.7	0.5	0.6	0.5	0.5	3.9	4.3	4.3
				Middle	4.0	20.4	20.4	8.2	8.2	34.6	34.6	90.9	90.5	6.7	6.7		6.7	6.7		0.8	0.8		4.7	4.8
				Bottom	7.0	20.4	20.4	8.3	8.3	34.7	34.7	90.7	90.2	6.7	6.6		6.6	6.6		0.7	0.7		2.8	2.8
G4	Cloudy	Calm	16:07	Surface	1.1	20.7	20.7	8.2	8.3	34.2	34.2	92.7	92.8	6.8	6.8	6.8	6.8	0.6	1.0	0.6	0.6	9.2	6.3	6.4
				Middle	4.0	20.4	20.4	8.3	8.3	34.6	34.6	91.7	91.5	6.8	6.7		6.7	6.7		0.6	0.5		9.5	9.4
				Bottom	7.1	20.5	20.5	8.3	8.3	34.8	34.8	95.6	94.3	7.0	6.9		6.9	6.9		1.9	1.9		11.9	12.0
M1	Cloudy	Calm	15:45	Surface	1.0	20.6	20.6	8.2	8.2	34.0	34.1	91.0	90.7	6.7	6.7	6.7	6.7	0.8	0.7	0.8	0.8	3.3	2.2	2.2
				Middle	3.0	20.5	20.5	8.2	8.2	34.4	34.5	90.5	90.4	6.7	6.7		6.7	6.7		0.8	0.8		2.7	2.7
				Bottom	5.0	20.4	20.4	8.2	8.2	34.7	34.7	90.0	90.1	6.6	6.6		6.6	6.6		0.5	0.5		5.2	5.2
M2	Cloudy	Calm	15:31	Surface	1.0	20.6	20.6	8.2	8.2	34.5	34.5	93.6	92.6	6.9	6.8	6.7	6.7	0.1	0.2	0.1	0.1	4.7	5.9	6.0
				Middle	6.0	20.4	20.4	8.2	8.2	34.6	34.6	90.9	90.7	6.7	6.7		6.7	6.7		0.1	0.1		3.0	3.1
				Bottom	11.0	20.4	20.4	8.2	8.2	34.8	34.8	90.5	90.5	6.7	6.6		6.6	6.6		0.3	0.3		5.2	5.2
M3	Cloudy	Calm	16:01	Surface	1.1	20.4	20.4	8.2	8.2	34.4	34.4	86.8	87.4	6.4	6.4	6.5	6.4	0.6	0.6	0.6	0.6	6.3	10.2	10.3
				Middle	4.0	20.4	20.4	8.2	8.2	34.6	34.6	90.0	89.3	6.6	6.6		6.6	6.6		0.5	0.5		2.9	2.9
				Bottom	6.9	20.4	20.4	8.3	8.3	34.7	34.7	88.3	88.8	6.5	6.5		6.5	6.5		0.7	0.8		5.8	5.8
M4	Cloudy	Calm	15:23	Surface	1.0	20.5	20.5	8.2	8.2	34.6	34.6	90.7	90.7	6.7	6.7	6.6	6.7	0.4	0.5	0.4	0.4	7.4	10.9	10.8
				Middle	5.0	20.4	20.4	8.2	8.2	34.7	34.7	90.0	90.2	6.6	6.6		6.6	6.6		0.6	0.6		4.2	4.2
				Bottom	9.1	20.4	20.4	8.2	8.2	34.7	34.7	90.6	90.0	6.7	6.6		6.6	6.6		0.5	0.5		7.1	7.2
M5	Cloudy	Calm	16:18	Surface	1.0	20.5	20.5	8.2	8.3	34.6	34.6	90.5	90.5	6.7	6.7	6.7	6.7	0.7	0.6	0.7	0.7	7.6	11.6	11.7
				Middle	6.0	20.4	20.4	8.3	8.3	34.6	34.6	90.6	90.4	6.7	6.7		6.7	6.7		0.5	0.5		5.7	5.8
				Bottom	11.1	20.4	20.4	8.3	8.3	34.7	34.7	90.5	90.3	6.7	6.6		6.6	6.6		0.5	0.5		5.4	5.4
M6	Cloudy	Calm	16:13	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	2.3	20.3	20.3	8.3	8.3	34.6	34.6	92.7	92.1	92.4	6.8	6.8	6.8	6.8	0.5	0.5	7.8	7.9		
				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 11 March 2019 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	Stations G1-G4, M1-M5		
	Depth Average	<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>
	Station M6		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	Stations G1-G4, M1-M5		
	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: 1.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.0 NTU</u>
	Station M6		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	Stations G1-G4		
	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: 2.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 2.9 mg/L</u>
	Stations M1-M5		
	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: 2.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 2.9 mg/L</u>
	Stations G1-G4, M1-M5		
	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: 3.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.2 mg/L</u>
	Station M6		
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.

Appendix I - Action and Limit Levels for Marine Water Quality on 13 March 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: 0.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.8 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: 7.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.6 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: 7.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.6 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: 8.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.9 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.

Appendix I - Action and Limit Levels for Marine Water Quality on 13 March 2019 (Mid-Flood Tide)

<u>Parameter</u> <u>(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>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: 13.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 14.0 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>CI: 13.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 14.0 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>CI: 32.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 35.1 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.

Appendix I - Action and Limit Levels for Marine Water Quality on 14 March 2019 (Mid-Ebb Tide)

<u>Parameter (unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</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: 8.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.1 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: 8.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.1 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: 5.8 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. (Not used)
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 March 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	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6 4.8	4.7	4.8	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1 5.5		5.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2 4.7		4.5
C2	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2 6.8	7.0	5.3	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8 4.1		4.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8 4.8		4.8
G1	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2 4.2	4.2	8.0	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.2 16.6		16.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7 2.8		2.8
G2	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5 3.7	3.6	6.9	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1 6.6		6.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.0 10.2		10.6
G3	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2 3.8	4.0	3.8	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3 3.9		3.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8 3.9		3.9
G4	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0 2.8	2.9	3.2	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7 3.7		3.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3 2.9		3.1
M1	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8 3.3	3.6	6.2	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0 4.9		5.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0 10.2		10.1
M2	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0 3.9	4.0	3.9	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9 4.9		4.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8 2.8		2.8
M3	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4 5.2	5.3	5.3	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2 6.3		6.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5 4.0		4.3
M4	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3 5.9	6.1	4.3	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9 2.8		2.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9 3.7		3.8
M5	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8 11.8	11.8	8.4	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1 9.3		9.2
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3 4.1		4.2
M6	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7 6.0		6.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-

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

Appendix I - Action and Limit Levels for Marine Water Quality on 14 March 2019 (Mid-Flood Tide)

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</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: 4.5 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: 4.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.5 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: 14.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 16.1 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
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 March 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	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5 3.4	3.5	6.4		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7 3.0		3.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		12.5 12.3	12.4
C2	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.3 11.6	11.5	6.3		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8 4.3		4.1	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.6 3.3	3.5
G1	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9 2.2	2.6	3.3		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.3 3.0	3.2
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		4.4 4.1	4.3
G2	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.8 9.9	9.9	5.2		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.2 3.6	3.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		2.6 2.3	2.5
G3	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2 5.4	5.3	5.4		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		7.6 8.5	8.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		2.5 3.1	2.8
G4	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1 4.9	4.5	3.8		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.5 3.7	3.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.1 3.5	3.3
M1	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4 5.4	5.4	4.0		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		2.6 3.3	3.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.5 3.9	3.7
M2	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2 5.0	5.1	4.1		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.9 3.8	3.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.5 3.4	3.5
M3	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6 3.8	3.7	3.9		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.9 3.9	3.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.9 4.1	4.0
M4	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4 6.2	6.3	5.0		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		3.8 4.3	4.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		4.9 4.5	4.7
M5	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6 7.8	7.7	6.4		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		8.5 9.4	9.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		2.8 2.4	2.6
M6	Cloudy	Moderate	-	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		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.

Appendix I - Action and Limit Levels for Marine Water Quality on 15 March 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: 0.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.3 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: 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: 11.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.4 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 15 March 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	19:33	Surface	1.1	20.7 20.7	8.3 8.3	8.3	34.9 34.9	34.9	95.3 94.9	95.1	7.0 6.9	6.9	6.9	0.9 0.8	0.9	0.8	16.4 15.7	16.1	16.9
				Middle	9.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	94.5 94.7	94.6	6.9 6.9	6.9		0.9 0.8	0.9		20.5 21.3	20.9	
				Bottom	17.0	21.1 21.1	8.3 8.3	8.3	35.7 35.7	35.7	95.1 95.1	95.1	6.9 6.9	6.9		0.8 0.8	0.8		13.6 13.7	13.7	
C2	Cloudy	Moderate	18:20	Surface	1.0	20.5 20.6	8.3 8.3	8.3	34.8 34.8	34.8	93.9 93.7	93.8	6.9 6.9	6.9	6.9	0.4 0.3	0.3	0.3	6.7 7.4	7.1	7.4
				Middle	16.1	20.6 20.5	8.3 8.3	8.3	34.9 34.8	34.9	93.9 93.7	93.8	6.9 6.9	6.9		0.2 0.2	0.2		5.4 6.0	5.7	
				Bottom	31.1	20.6 20.6	8.3 8.3	8.3	34.9 34.8	34.9	93.8 93.6	93.7	6.9 6.9	6.9		0.3 0.2	0.2		9.5 9.5	9.5	
G1	Cloudy	Moderate	18:50	Surface	1.1	20.6 20.6	8.3 8.3	8.3	34.7 34.7	34.7	92.7 92.7	92.7	6.8 6.8	6.8	6.8	0.7 0.7	0.7	0.6	3.2 3.0	3.1	6.1
				Middle	4.1	20.7 20.7	8.3 8.3	8.3	34.9 34.9	34.9	92.4 92.4	92.4	6.8 6.8	6.8		0.6 0.6	0.6		9.9 9.2	9.6	
				Bottom	7.0	20.8 20.7	8.3 8.3	8.3	35.1 35.1	35.1	91.6 91.5	91.6	6.7 6.7	6.7		0.5 0.5	0.5		5.9 5.6	5.8	
G2	Cloudy	Moderate	18:35	Surface	1.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.1 95.0	95.1	7.0 6.9	6.9	6.9	0.7 0.8	0.7	0.7	7.7 7.7	7.7	9.6
				Middle	5.1	20.8 20.8	8.3 8.3	8.3	35.1 35.1	35.1	94.6 94.6	94.6	6.9 6.9	6.9		0.7 0.7	0.7		9.6 9.7	9.7	
				Bottom	9.0	20.9 20.9	8.3 8.3	8.3	35.3 35.3	35.3	93.6 93.6	93.6	6.8 6.8	6.8		0.7 0.7	0.7		11.3 11.4	11.4	
G3	Cloudy	Moderate	18:55	Surface	1.1	20.7 20.7	8.3 8.3	8.3	34.8 34.8	34.8	94.1 93.8	94.0	6.9 6.9	6.9	6.8	0.9 0.9	0.9	0.9	3.6 4.1	3.9	7.1
				Middle	4.0	20.7 20.7	8.3 8.3	8.3	34.9 34.9	34.9	93.4 93.3	93.4	6.8 6.8	6.8		0.9 0.9	0.9		7.9 7.6	7.8	
				Bottom	7.0	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	92.4 92.5	92.5	6.7 6.8	6.7		0.8 0.9	0.9		9.9 9.7	9.8	
G4	Cloudy	Moderate	19:13	Surface	1.0	20.6 20.6	8.3 8.3	8.3	34.8 34.8	34.8	95.3 95.2	95.3	7.0 7.0	7.0	7.0	0.5 0.5	0.5	0.8	4.8 4.4	4.6	6.7
				Middle	4.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.3 95.4	95.4	7.0 7.0	7.0		0.8 0.8	0.8		11.5 10.5	11.0	
				Bottom	7.0	20.9 20.9	8.3 8.3	8.3	35.3 35.3	35.3	92.8 92.7	92.8	6.7 6.7	6.7		1.0 1.0	1.0		4.6 4.4	4.5	
M1	Cloudy	Moderate	18:41	Surface	1.0	20.6 20.6	8.3 8.3	8.3	34.8 34.8	34.8	92.8 92.7	92.8	6.8 6.8	6.8	6.8	0.7 0.8	0.7	0.8	3.9 4.1	4.0	4.9
				Middle	3.0	20.7 20.7	8.3 8.3	8.3	34.9 34.9	34.9	91.8 91.8	91.8	6.7 6.7	6.7		0.9 0.8	0.8		5.8 6.3	6.1	
				Bottom	5.0	20.8 20.8	8.3 8.3	8.3	35.3 35.3	35.3	91.5 91.5	91.5	6.7 6.7	6.7		0.9 1.0	0.9		4.7 4.8	4.8	
M2	Cloudy	Moderate	18:30	Surface	1.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.0 94.8	94.9	6.9 6.9	6.9	6.9	0.1 0.1	0.1	0.3	5.0 5.2	5.1	5.7
				Middle	6.0	20.7 20.7	8.3 8.3	8.3	35.1 35.1	35.1	94.9 94.8	94.9	6.9 6.9	6.9		0.4 0.4	0.4		6.3 6.7	6.5	
				Bottom	11.0	20.8 20.7	8.3 8.3	8.3	35.2 35.1	35.1	94.3 94.8	94.6	6.9 6.9	6.9		0.4 0.4	0.4		5.3 5.9	5.6	
M3	Cloudy	Moderate	19:05	Surface	1.0	20.7 20.7	8.3 8.3	8.3	34.8 34.8	34.8	93.8 93.7	93.8	6.9 6.9	6.9	6.8	0.3 0.3	0.3	0.5	22.0 22.7	22.4	14.8
				Middle	4.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	91.0 91.1	91.1	6.7 6.7	6.7		0.6 0.5	0.5		14.4 15.3	14.9	
				Bottom	7.1	20.8 20.8	8.3 8.3	8.3	35.1 35.1	35.1	92.3 92.2	92.3	6.7 6.7	6.7		0.7 0.7	0.7		7.2 6.9	7.1	
M4	Cloudy	Moderate	18:26	Surface	1.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	94.2 94.1	94.2	6.9 6.9	6.9	6.9	0.4 0.5	0.5	0.4	4.7 5.5	5.1	5.6
				Middle	5.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	94.3 94.2	94.3	6.9 6.9	6.9		0.4 0.3	0.3		8.0 7.5	7.8	
				Bottom	9.1	20.7 20.7	8.3 8.3	8.3	35.1 35.0	35.0	94.0 94.2	94.1	6.9 6.9	6.9		0.5 0.4	0.5		3.6 4.3	4.0	
M5	Cloudy	Moderate	19:23	Surface	1.1	20.6 20.6	8.3 8.3	8.3	34.9 34.9	34.9	96.8 96.7	96.8	7.1 7.1	7.1	7.0	0.7 0.6	0.6	0.7	12.3 12.0	12.2	12.9
				Middle	6.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.3 95.3	95.3	7.0 7.0	7.0		0.7 0.7	0.7		11.0 11.5	11.3	
				Bottom	11.0	21.1 21.1	8.3 8.3	8.3	35.5 35.5	35.5	91.6 91.5	91.6	6.6 6.6	6.6		0.8 0.8	0.8		15.1 15.6	15.4	
M6	Cloudy	Moderate	19:18	Surface	-	-	-	-	-	-	-	-	-	-	6.9	-	-	0.5	-	-	6.7
				Middle	2.1	20.7 20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.0 95.0	95.0	6.9 6.9	6.9		0.5 0.5	0.5		6.7 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 15 March 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: 1.1 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.2 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>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: 8.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 9.6 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.

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Water Quality Monitoring Results on 15 March 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	11:29	Surface	1.0	20.7 20.7	20.7	8.3 8.3	8.3	34.9 34.9	34.9	95.9 95.4	95.7	7.0 7.0	7.0	6.9	0.9 0.9	0.9	0.9	8.4 9.0	8.7	8.6	
				Middle	9.0	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	94.5 94.5	94.5	6.9 6.9	6.9	6.9	6.9	0.9 0.9		0.9	10.2 7.1		9.8
				Bottom	17.0	21.1 21.1	21.1	8.3 8.3	8.3	35.6 35.6	35.6	95.1 95.1	95.1	6.9 6.9	6.9	6.9	6.9	1.0 0.9		0.9	7.6 7.4		7.4
C2	Cloudy	Moderate	10:15	Surface	1.0	20.5 20.5	20.5	8.0 8.3	8.1	34.7 34.8	34.7	93.9 93.9	93.9	6.9 6.9	6.9	6.9	0.3 0.3	0.3	0.4	12.6 12.5	12.6	7.5	
				Middle	16.1	20.7 20.5	20.6	8.3 8.3	8.3	35.0 34.8	34.9	93.9 93.9	93.9	6.9 6.9	6.9	6.9	6.9	0.3 0.3		0.3	3.7 4.2		4.0
				Bottom	31.1	20.8 20.6	20.7	8.3 8.3	8.3	35.2 34.9	35.0	94.1 94.1	94.1	6.9 6.9	6.9	6.9	6.9	0.4 0.4		0.4	6.2 5.7		6.0
G1	Cloudy	Moderate	10:50	Surface	1.1	20.6 20.6	20.6	8.3 8.3	8.3	34.7 34.7	34.7	92.7 92.7	92.7	6.8 6.8	6.8	6.8	0.7 0.7	0.7	0.8	18.0 17.8	17.9	16.1	
				Middle	4.0	20.7 20.7	20.7	8.3 8.3	8.3	34.9 34.9	34.9	92.5 92.5	92.5	6.8 6.8	6.8	6.8	6.8	0.6 0.6		0.6	22.2 22.2		22.2
				Bottom	7.0	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.1	35.0	91.9 91.9	91.9	6.7 6.7	6.7	6.7	6.7	0.9 1.0		0.9	8.4 8.2		8.3
G2	Cloudy	Moderate	10:37	Surface	1.1	20.6 20.7	20.7	8.3 8.3	8.3	34.9 35.0	35.0	96.1 95.1	95.6	7.0 7.0	7.0	7.0	0.6 0.6	0.6	0.7	13.8 13.6	13.7	11.0	
				Middle	5.0	20.7 20.7	20.7	8.3 8.3	8.3	35.1 35.1	35.1	94.8 94.7	94.8	6.9 6.9	6.9	6.9	6.9	0.7 0.7		0.7	8.5 8.3		8.4
				Bottom	9.0	20.9 20.9	20.9	8.3 8.3	8.3	35.3 35.3	35.3	93.7 93.6	93.7	6.8 6.8	6.8	6.8	6.8	0.8 0.7		0.7	11.0 11.0		11.0
G3	Cloudy	Moderate	10:55	Surface	1.1	20.7 20.7	20.7	8.3 8.3	8.3	34.8 34.8	34.8	94.3 94.2	94.3	6.9 6.9	6.9	6.9	0.8 0.8	0.8	0.9	11.8 11.3	11.6	12.1	
				Middle	4.0	20.7 20.7	20.7	8.3 8.3	8.3	34.9 34.9	34.9	93.4 93.4	93.4	6.8 6.8	6.8	6.8	6.8	0.9 0.9		0.9	5.6 5.9		5.8
				Bottom	7.0	20.8 20.7	20.7	8.3 8.3	8.3	35.1 35.1	35.1	92.5 92.4	92.5	6.8 6.7	6.7	6.7	6.7	1.0 1.0		1.0	19.0 18.9		19.0
G4	Cloudy	Moderate	11:07	Surface	1.0	20.6 20.6	20.6	8.3 8.3	8.3	34.8 34.8	34.8	95.9 95.6	95.8	7.0 7.0	7.0	7.0	0.4 0.5	0.4	0.5	4.6 4.3	4.5	11.2	
				Middle	4.0	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.2 95.3	95.3	7.0 7.0	7.0	7.0	7.0	0.5 0.5		0.5	6.0 5.9		6.0
				Bottom	7.0	20.8 20.9	20.8	8.3 8.3	8.3	35.2 35.2	35.2	94.4 94.0	94.2	6.9 6.8	6.9	6.9	6.9	0.6 0.5		0.5	23.3 23.1		23.2
M1	Cloudy	Moderate	10:41	Surface	1.1	20.6 20.6	20.6	8.3 8.3	8.3	34.8 34.8	34.8	93.2 92.9	93.1	6.8 6.8	6.8	6.8	0.8 0.8	0.8	1.0	9.5 9.7	9.6	8.6	
				Middle	3.1	20.7 20.7	20.7	8.3 8.3	8.3	34.9 34.9	34.9	91.8 91.8	91.8	6.7 6.7	6.7	6.7	6.7	1.1 1.0		1.0	9.2 8.7		9.0
				Bottom	5.1	20.8 20.8	20.8	8.3 8.3	8.3	35.2 35.2	35.2	91.6 91.5	91.6	6.7 6.7	6.7	6.7	6.7	1.2 1.3		1.3	7.3 7.3		7.3
M2	Cloudy	Moderate	10:29	Surface	1.1	20.6 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	97.1 95.1	96.1	7.1 7.0	7.0	7.0	0.6 0.7	0.7	0.6	6.0 6.2	6.1	11.6	
				Middle	6.1	20.7 20.7	20.7	8.3 8.3	8.3	35.1 35.0	35.1	95.4 95.4	95.4	7.0 7.0	7.0	7.0	7.0	0.5 0.4		0.5	21.0 20.5		20.8
				Bottom	11.0	20.8 20.7	20.7	8.3 8.3	8.3	35.1 35.1	35.1	95.0 94.0	94.5	6.9 6.9	6.9	6.9	6.9	0.6 0.6		0.6	8.0 7.9		8.0
M3	Cloudy	Moderate	11:00	Surface	1.0	20.7 20.7	20.7	8.3 8.3	8.3	34.8 34.8	34.8	94.4 93.9	94.2	6.9 6.9	6.9	6.9	0.3 0.3	0.3	0.6	7.0 7.3	7.2	12.5	
				Middle	4.0	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	90.8 90.9	90.9	6.6 6.6	6.6	6.6	6.6	0.8 0.8		0.8	15.4 15.0		15.2
				Bottom	7.0	20.8 20.8	20.8	8.3 8.3	8.3	35.1 35.1	35.1	92.2 92.3	92.3	6.7 6.7	6.7	6.7	6.7	0.9 0.9		0.9	15.1 15.3		15.2
M4	Cloudy	Moderate	10:24	Surface	1.1	20.6 20.7	20.6	8.3 8.3	8.3	35.0 35.0	35.0	96.3 94.4	95.4	7.0 6.9	7.0	7.0	0.4 0.4	0.4	0.5	5.6 5.6	5.6	15.1	
				Middle	5.1	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	94.7 94.4	94.6	6.9 6.9	6.9	6.9	6.9	0.4 0.4		0.4	11.5 11.3		11.4
				Bottom	9.0	20.7 20.7	20.7	8.3 8.3	8.3	35.1 35.1	35.1	92.9 93.4	93.2	6.8 6.8	6.8	6.8	6.8	0.7 0.7		0.7	27.9 28.4		28.2
M5	Cloudy	Moderate	11:23	Surface	1.1	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	97.4 97.3	97.4	7.1 7.1	7.1	7.1	0.7 0.7	0.7	0.8	5.3 5.6	5.5	6.2	
				Middle	6.1	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.5 95.4	95.5	7.0 7.0	7.0	7.0	7.0	0.8 0.7		0.8	5.3 5.7		5.5
				Bottom	11.0	21.1 21.1	21.1	8.3 8.3	8.3	35.5 35.5	35.5	91.9 91.7	91.8	6.7 6.6	6.6	6.6	6.6	0.8 0.8		0.8	7.5 7.5		7.5
M6	Cloudy	Moderate	11:15	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	9.9	
				Middle	2.1	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.0 95.0	95.0	6.9 6.9	6.9	6.9	6.9	0.4 0.4		0.4	10.0 9.7		9.9
				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 March 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: 0.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.3 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: 2.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 3.0 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: 2.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 3.0 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: 7.8 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>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.

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Water Quality Monitoring Results on 18 March 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	11:19	Surface	1.1	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	98.4 96.6	97.5	7.2 7.1	7.2	7.1	0.2 0.2	0.2	0.3	10.7 10.5	10.6	7.3
				Middle	9.0	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	95.3 95.4	95.4	7.0 7.0	7.0		0.5 0.5	0.5		5.6 5.5	5.6	
				Bottom	17.1	20.4 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	93.6 94.2	93.9	6.9 6.9	6.9		0.2 0.2	0.2		5.6 5.8	5.7	
C2	Fine	Moderate	10:26	Surface	1.0	20.6 20.6	20.6	8.0 8.3	8.1	34.9 34.9	34.9	89.7 89.9	89.8	6.6 6.6	6.6	6.6	0.2 0.2	0.2	0.2	1.8 2.8	2.3	4.5
				Middle	16.0	20.6 20.6	20.6	8.2 8.3	8.2	34.9 34.9	34.9	89.4 89.4	89.4	6.6 6.6	6.6		0.3 0.3	0.3		4.7 4.7	4.7	
				Bottom	31.0	20.6 20.6	20.6	8.2 8.3	8.2	34.9 34.9	34.9	89.4 89.3	89.4	6.6 6.5	6.5		0.3 0.2	0.2		6.3 6.7	6.5	
G1	Fine	Moderate	10:49	Surface	1.0	20.6 20.6	20.6	8.3 8.3	8.3	34.6 34.8	34.7	94.2 90.5	92.4	6.9 6.6	6.8	6.7	0.5 0.6	0.5	0.8	5.1 5.1	5.4	5.9
				Middle	4.1	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	90.1 90.7	90.4	6.6 6.6	6.6		0.9 0.8	0.8		2.7 2.6	2.7	
				Bottom	7.1	20.6 20.6	20.6	8.3 8.3	8.3	35.0 35.0	35.0	90.8 90.1	90.5	6.7 6.6	6.6		1.0 0.9	1.0		9.6 9.9	9.8	
G2	Fine	Moderate	10:42	Surface	1.1	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	96.5 96.7	96.6	7.1 7.1	7.1	7.1	0.5 0.5	0.5	0.5	3.9 3.9	3.9	7.7
				Middle	5.1	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	96.2 97.4	96.8	7.1 7.2	7.1		0.5 0.5	0.5		7.7 7.7	7.7	
				Bottom	9.1	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	96.3 95.7	96.0	7.1 7.0	7.1		0.4 0.4	0.4		11.5 11.3	11.4	
G3	Fine	Moderate	10:53	Surface	1.0	20.7 20.7	20.7	8.3 8.3	8.3	34.8 34.8	34.8	94.2 92.9	93.6	6.9 6.8	6.8	6.8	0.3 0.4	0.4	0.4	14.9 14.3	14.6	8.8
				Middle	4.0	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	92.5 92.1	92.3	6.8 6.7	6.8		0.4 0.4	0.4		8.1 8.1	8.1	
				Bottom	7.0	20.6 20.6	20.6	8.3 8.3	8.3	35.0 35.0	35.0	91.9 91.2	91.6	6.7 6.7	6.7		0.6 0.6	0.6		3.8 3.8	3.8	
G4	Fine	Moderate	11:03	Surface	1.0	20.7 20.7	20.7	8.3 8.3	8.3	34.9 35.0	34.9	97.0 95.3	96.2	7.1 7.0	7.0	7.0	0.3 0.4	0.4	0.7	8.3 8.3	8.3	9.6
				Middle	4.1	20.7 20.7	20.7	8.3 8.3	8.3	35.0 35.0	35.0	95.5 94.9	95.2	7.0 6.9	7.0		0.4 0.5	0.5		14.2 14.2	14.2	
				Bottom	7.0	20.7 20.7	20.7	8.3 8.3	8.3	35.1 35.0	35.0	94.7 94.6	94.7	6.9 6.9	6.9		1.3 1.3	1.3		6.2 6.2	6.2	
M1	Fine	Moderate	10:46	Surface	1.1	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	91.7 91.1	91.4	6.7 6.7	6.7	6.7	0.3 0.3	0.3	0.3	5.3 5.7	5.5	13.2
				Middle	3.1	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	91.3 90.9	91.1	6.7 6.7	6.7		0.3 0.3	0.3		12.8 12.1	12.5	
				Bottom	5.0	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	91.2 90.9	91.1	6.7 6.7	6.7		0.4 0.4	0.4		21.6 21.6	21.6	
M2	Fine	Moderate	10:37	Surface	1.1	20.4 20.4	20.4	8.3 8.3	8.3	34.9 34.9	34.9	96.8 96.5	96.7	7.1 7.1	7.1	7.1	0.7 0.5	0.6	0.4	14.0 14.1	14.1	9.1
				Middle	6.0	20.4 20.4	20.4	8.3 8.3	8.3	34.9 34.9	34.9	96.5 96.2	96.4	7.1 7.1	7.1		0.2 0.2	0.2		4.0 3.6	3.8	
				Bottom	11.0	20.4 20.5	20.4	8.3 8.3	8.3	34.9 34.9	34.9	95.7 96.0	95.9	7.0 7.1	7.0		0.5 0.4	0.4		9.3 9.6	9.5	
M3	Fine	Moderate	10:59	Surface	1.0	20.7 20.6	20.6	8.3 8.3	8.3	34.8 34.9	34.9	92.2 93.1	92.7	6.7 6.8	6.8	6.8	0.7 0.7	0.7	0.7	10.4 10.4	10.4	6.9
				Middle	4.1	20.6 20.6	20.6	8.3 8.3	8.3	35.0 34.9	34.9	92.9 92.8	92.9	6.8 6.8	6.8		0.7 0.8	0.8		5.6 5.9	5.8	
				Bottom	7.1	20.6 20.6	20.6	8.3 8.3	8.3	35.0 35.0	35.0	92.8 92.9	92.9	6.8 6.8	6.8		0.7 0.7	0.7		4.8 4.3	4.6	
M4	Fine	Moderate	10:33	Surface	1.0	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	90.9 90.3	90.6	6.7 6.6	6.6	6.6	0.2 0.2	0.2	0.3	3.4 3.7	3.6	3.4
				Middle	5.1	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	90.1 90.2	90.2	6.6 6.6	6.6		0.2 0.2	0.2		3.0 2.2	2.6	
				Bottom	9.1	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	89.9 90.0	90.0	6.6 6.6	6.6		0.4 0.4	0.4		4.1 4.2	4.2	
M5	Fine	Moderate	11:13	Surface	1.1	20.7 20.6	20.7	8.3 8.3	8.3	34.9 34.9	34.9	91.3 92.1	91.7	6.7 6.7	6.7	6.7	0.4 0.4	0.4	0.5	2.1 1.9	2.0	3.1
				Middle	6.1	20.5 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	90.8 90.6	90.7	6.7 6.6	6.6		0.5 0.4	0.5		3.2 2.8	3.0	
				Bottom	11.0	20.5 20.5	20.5	8.3 8.3	8.3	34.9 34.9	34.9	92.8 91.2	92.0	6.8 6.7	6.7		0.5 0.5	0.5		4.0 4.5	4.3	
M6	Fine	Moderate	11:08	Surface	-	-	-	-	-	-	-	-	-	-	6.6	-	-	0.3	-	-	12.2	
				Middle	2.1	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	34.9	91.9 89.6	90.8	6.7 6.6		6.6	0.3 0.3		0.3	12.3 12.0		12.2
				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 18 March 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: 0.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.5 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: 4.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 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: 4.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 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: 5.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 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 18 March 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	16:19	Surface	1.0	20.6 20.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	100.2 99.6	99.9	7.3 7.3	7.3 7.3	7.3	0.4 0.4	0.4 0.3	0.4	0.4	0.4	0.4	3.6 3.7	3.7	4.4		
				Middle	9.1	20.4 20.4	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	99.2 99.3	99.3	7.3 7.3	7.3 7.3		0.4 0.3	0.3								5.1 4.8	5.0
				Bottom	17.1	20.4 20.4	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	96.0 94.9	95.5	7.1 7.0	7.0		0.4 0.4	0.4								4.7 4.7	4.7
C2	Fine	Moderate	16:24	Surface	1.1	20.9 20.8	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	103.1 102.9	103.0	7.5 7.5	7.5 7.5	7.3	0.2 0.2	0.2 0.2	0.3	0.2	0.2	0.2	4.0 3.7	3.9	7.2		
				Middle	16.0	20.5 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	98.9 95.7	97.3	7.3 7.0	7.1		0.2 0.2	0.2								5.9 6.3	6.1
				Bottom	31.0	20.5 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	92.8 92.8	92.8	6.8 6.8	6.8		0.6 0.5	0.5								11.4 12.0	11.7
G1	Fine	Moderate	15:46	Surface	1.0	20.8 20.8	8.3 8.3	8.3 8.3	34.8 34.9	34.8 34.9	92.7 92.5	92.6	6.8 6.8	6.8 6.8	6.8	0.7 0.7	0.7 0.4	0.6	0.7	0.4	0.4	12.4 13.2	12.8	8.9		
				Middle	4.0	20.7 20.7	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	92.8 92.3	92.6	6.8 6.8	6.8		0.4 0.4	0.4								9.8 10.2	10.0
				Bottom	7.1	20.6 20.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	91.7 91.4	91.6	6.7 6.7	6.7		0.8 0.7	0.7								3.9 4.0	4.0
G2	Fine	Moderate	15:33	Surface	1.1	21.0 20.7	8.2 8.3	8.3 8.3	34.9 34.9	34.9 34.9	95.7 96.6	96.2	7.0 7.1	7.0 7.0	7.2	0.2 0.3	0.3 0.3	0.3	0.2	0.3	0.3	9.7 10.6	10.2	4.1		
				Middle	5.3	20.5 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	101.3 101.6	101.5	7.4 7.5	7.4		0.3 0.3	0.3								0.8 1.1	1.0
				Bottom	9.1	20.4 20.4	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	99.3 101.4	100.4	7.3 7.4	7.4		0.3 0.3	0.3								0.9 1.4	1.2
G3	Fine	Moderate	15:53	Surface	1.0	20.9 20.9	8.3 8.3	8.3 8.3	34.8 34.8	34.8 34.8	97.2 95.9	96.6	7.1 7.0	7.0 7.0	7.0	0.1 0.1	0.1 0.2	0.2	0.1	0.2	0.2	10.8 11.2	11.0	7.3		
				Middle	4.0	20.8 20.8	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	95.8 94.5	95.2	6.9 6.9	6.9		0.2 0.2	0.2								5.4 5.5	5.5
				Bottom	7.0	20.6 20.6	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	91.5 91.8	91.7	6.7 6.7	6.7		0.3 0.3	0.3								5.5 5.3	5.4
G4	Fine	Moderate	16:00	Surface	1.1	20.9 20.9	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	97.0 97.0	97.0	7.1 7.1	7.1 7.1	7.1	0.3 0.3	0.3 0.1	0.3	0.3	0.1	0.1	7.2 6.5	6.9	7.2		
				Middle	4.0	20.9 20.7	8.3 8.3	8.3 8.3	34.9 35.0	35.0 35.0	97.3 96.7	97.0	7.1 7.1	7.1		0.1 0.1	0.1								7.4 7.4	7.4
				Bottom	7.0	20.6 20.7	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	96.0 96.4	96.2	7.0 7.1	7.0		0.4 0.4	0.4								7.3 7.4	7.4
M1	Fine	Moderate	15:39	Surface	1.0	20.8 20.7	8.2 8.2	8.2 8.2	34.9 34.9	34.9 34.9	91.3 90.4	90.9	6.7 6.6	6.6 6.6	6.6	1.2 1.3	1.2 1.7	1.4	1.2	1.7	1.3	5.7 5.8	5.8	8.0		
				Middle	3.1	20.6 20.7	8.2 8.2	8.2 8.2	34.9 34.9	34.9 34.9	89.9 90.2	90.1	6.6 6.6	6.6		1.8 1.7	1.7								11.0 10.2	10.6
				Bottom	5.0	20.7 20.7	8.2 8.2	8.2 8.2	34.9 34.9	34.9 34.9	90.3 90.3	90.3	6.6 6.6	6.6		1.3 1.3	1.3								7.5 7.7	7.6
M2	Fine	Moderate	15:28	Surface	1.1	20.8 20.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	98.1 101.0	99.6	7.2 7.4	7.3 7.4	7.3	0.1 0.1	0.1 0.2	0.2	0.1	0.2	0.2	6.1 5.6	5.9	6.1		
				Middle	6.0	20.5 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	101.4 100.3	100.9	7.4 7.4	7.4		0.2 0.2	0.2								4.9 5.1	5.0
				Bottom	11.0	20.4 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	98.5 101.3	99.9	7.2 7.4	7.3		0.2 0.2	0.2								7.4 7.2	7.3
M3	Fine	Moderate	15:56	Surface	1.0	21.0 20.8	8.3 8.3	8.3 8.3	34.6 34.8	34.7 34.7	95.2 94.3	94.8	6.9 6.9	6.9 6.9	6.9	0.2 0.3	0.2 0.3	0.3	0.2	0.3	0.3	6.2 6.4	6.3	6.4		
				Middle	4.0	20.7 20.7	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	93.8 93.3	93.6	6.9 6.8	6.8		0.3 0.3	0.3								7.4 8.1	7.8
				Bottom	7.0	20.6 20.7	8.3 8.3	8.3 8.3	35.0 34.9	35.0 35.0	92.9 93.5	93.2	6.8 6.8	6.8		0.3 0.3	0.3								5.1 5.3	5.2
M4	Fine	Moderate	15:22	Surface	1.0	20.9 20.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	101.2 100.7	101.0	7.4 7.4	7.4 7.4	7.3	0.2 0.2	0.2 0.1	0.2	0.2	0.1	0.1	4.8 4.8	4.8	3.0		
				Middle	5.0	20.5 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	99.3 99.8	99.6	7.3 7.3	7.3		0.1 0.1	0.1								0.9 1.7	1.3
				Bottom	9.1	20.5 20.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	98.9 99.2	99.1	7.3 7.3	7.3		0.3 0.3	0.3								3.0 2.9	3.0
M5	Fine	Moderate	16:14	Surface	1.1	20.6 20.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	99.0 98.5	98.8	7.2 7.2	7.2 7.2	7.2	0.6 0.7	0.6 0.6	0.5	0.6	0.6	0.6	11.6 11.9	11.8	9.8		
				Middle	6.0	20.4 20.4	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	97.1 96.6	96.9	7.1 7.1	7.1		0.6 0.6	0.6								9.8 9.6	9.7
				Bottom	10.9	20.4 20.4	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	96.5 96.4	96.5	7.1 7.1	7.1		0.3 0.2	0.3								8.0 7.7	7.9
M6	Fine	Moderate	16:09	Surface	-	-	-	-	-	-	-	-	-	-	6.7	-	-	0.2	0.2	0.2	0.2	-	-	11.6		
				Middle	2.1	20.8 20.7	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	92.2 91.2	91.7	6.7 6.7	6.7		0.2 0.2	0.2								11.3 11.8	11.6
				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 20 March 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: 0.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.5 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: 5.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.4 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>C2: 5.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.4 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>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>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 20 March 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	12:52	Surface	1.0	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	90.2 91.0	90.6	6.6 6.6	6.6	6.6	0.2 0.2
Middle	9.1	20.9 20.9	8.3 8.3	8.3					34.8 34.8	34.8	90.0 90.4	90.2	6.6 6.6	6.6	0.2 0.2	0.2	14.0 14.2	14.1			
Bottom	17.1	20.8 20.8	8.3 8.3	8.3					34.9 35.0	34.9	91.5 92.4	92.0	6.7 6.7	6.7	0.6 0.6	0.6	8.7 8.4	8.6			
C2	Sunny	Calm	12:01	Surface	1.0	21.0 21.0	8.2 8.2	8.2	34.7 34.7	34.7	88.6 88.5	88.6	6.4 6.4	6.4	6.5	0.7 0.7	0.7	0.5	4.1 4.2	4.2	4.8
				Middle	16.0	20.8 20.8	8.3 8.2	8.2	34.9 34.9	34.9	91.2 90.3	90.8	6.7 6.6	6.6		0.4 0.4	0.4		5.8 5.9	5.9	
				Bottom	31.1	20.8 20.8	8.3 8.3	8.3	35.0 35.0	35.0	91.5 91.4	91.5	6.7 6.7	6.7		0.4 0.4	0.4		4.5 4.4	4.5	
G1	Sunny	Calm	12:23	Surface	1.1	21.0 21.0	8.2 8.3	8.3	34.6 34.7	34.7	94.2 92.4	93.3	6.8 6.7	6.8	6.7	0.7 0.6	0.6	0.8	8.5 8.6	8.6	7.0
				Middle	4.0	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	91.5 91.7	91.6	6.7 6.7	6.7		0.9 0.8	0.8		3.5 3.6	3.6	
				Bottom	7.0	20.9 20.8	8.3 8.3	8.3	34.9 34.9	34.9	91.3 91.4	91.4	6.7 6.7	6.7		0.8 0.9	0.8		8.8 8.7	8.8	
G2	Sunny	Calm	12:13	Surface	1.0	21.0 21.0	8.3 8.3	8.3	34.8 34.8	34.8	93.7 94.2	94.0	6.8 6.9	6.8	6.8	0.2 0.2	0.2	0.2	4.1 4.2	4.2	6.5
				Middle	5.1	20.9 20.9	8.3 8.3	8.3	34.9 34.9	34.9	93.9 94.0	94.0	6.8 6.9	6.8		0.2 0.2	0.2		10.0 10.1	10.1	
				Bottom	9.0	20.8 20.8	8.3 8.3	8.3	34.9 34.9	34.9	94.1 94.2	94.2	6.9 6.9	6.9		0.3 0.3	0.3		5.2 5.1	5.2	
G3	Sunny	Calm	12:27	Surface	1.0	21.1 21.0	8.3 8.3	8.3	34.6 34.7	34.6	93.0 92.4	92.7	6.8 6.7	6.7	6.7	0.5 0.5	0.5	0.7	4.3 4.3	4.3	3.8
				Middle	4.0	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	92.0 91.8	91.9	6.7 6.7	6.7		0.7 0.7	0.7		4.8 5.0	4.9	
				Bottom	7.1	20.8 20.8	8.3 8.3	8.3	34.9 34.9	34.9	91.4 91.2	91.3	6.7 6.7	6.7		0.9 1.0	0.9		2.2 2.2	2.2	
G4	Sunny	Calm	12:34	Surface	1.1	21.1 21.0	8.3 8.3	8.3	34.7 34.7	34.7	92.5 91.7	92.1	6.7 6.7	6.7	6.7	0.8 0.8	0.8	1.8	4.1 4.2	4.2	6.2
				Middle	4.0	20.9 21.0	8.3 8.3	8.3	34.8 34.8	34.8	91.7 91.6	91.7	6.7 6.7	6.7		1.5 1.4	1.4		7.4 7.1	7.3	
				Bottom	7.0	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	88.5 90.4	89.5	6.5 6.6	6.5		3.0 3.0	3.0		7.2 7.3	7.3	
M1	Sunny	Calm	12:19	Surface	1.0	21.1 21.0	8.3 8.3	8.3	34.8 34.8	34.8	89.7 90.3	90.0	6.5 6.6	6.5	6.5	0.7 0.7	0.7	1.1	3.8 3.9	3.9	7.0
				Middle	3.0	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	90.1 89.7	89.9	6.6 6.5	6.5		1.5 1.6	1.5		2.6 2.7	2.7	
				Bottom	5.0	20.8 20.6	8.3 8.3	8.3	34.9 34.9	34.9	90.9 90.4	90.7	6.6 6.6	6.6		1.1 1.1	1.1		14.5 14.4	14.5	
M2	Sunny	Calm	12:09	Surface	1.1	20.9 20.8	8.3 8.3	8.3	34.9 34.9	34.9	92.2 91.9	92.1	6.7 6.7	6.7	6.7	0.4 0.4	0.4	0.5	17.9 17.5	17.7	10.8
				Middle	6.0	20.8 20.8	8.3 8.3	8.3	34.9 34.9	34.9	92.1 92.0	92.1	6.7 6.7	6.7		0.4 0.4	0.4		6.1 6.0	6.1	
				Bottom	11.1	20.8 20.8	8.3 8.3	8.3	35.0 35.0	35.0	92.7 92.7	92.7	6.8 6.8	6.8		0.7 0.7	0.7		8.7 8.6	8.7	
M3	Sunny	Calm	12:31	Surface	1.1	21.1 21.1	8.3 8.3	8.3	34.7 34.7	34.7	91.9 92.3	92.1	6.7 6.7	6.7	6.7	0.1 0.2	0.1	0.5	12.5 12.4	12.5	10.8
				Middle	4.0	21.0 21.0	8.3 8.3	8.3	34.8 34.7	34.8	91.4 91.6	91.5	6.7 6.7	6.7		0.2 0.2	0.2		13.1 13.0	13.1	
				Bottom	7.1	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	91.2 91.2	91.2	6.6 6.6	6.6		1.2 1.2	1.2		6.6 6.9	6.8	
M4	Sunny	Calm	12:06	Surface	1.1	20.9 20.8	8.3 8.3	8.3	34.9 34.9	34.9	90.5 91.2	90.9	6.6 6.7	6.6	6.6	0.8 0.7	0.7	0.5	9.6 9.9	9.8	6.1
				Middle	5.0	20.8 20.8	8.3 8.3	8.3	34.9 34.9	34.9	91.0 90.9	91.0	6.6 6.6	6.6		0.4 0.5	0.5		3.2 3.2	3.2	
				Bottom	9.1	20.8 20.8	8.3 8.3	8.3	34.9 34.9	34.9	91.4 91.4	91.4	6.7 6.7	6.7		0.3 0.3	0.3		5.2 5.3	5.3	
M5	Sunny	Calm	12:42	Surface	1.1	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	90.8 90.8	90.8	6.6 6.6	6.6	6.6	0.6 0.6	0.6	0.7	5.0 4.9	5.0	5.5
				Middle	6.0	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	90.9 90.9	90.9	6.6 6.6	6.6		0.7 0.7	0.7		6.7 6.8	6.8	
				Bottom	11.0	20.8 20.8	8.3 8.3	8.3	34.9 34.9	34.9	91.3 91.5	91.4	6.7 6.7	6.7		0.6 0.7	0.7		4.9 4.9	4.9	
M6	Sunny	Calm	12:37	Surface	-	-	-	-	-	-	-	-	-	-	6.5	-	-	0.4	-	-	13.2
				Middle	2.1	20.9 20.9	8.3 8.3	8.3	34.8 34.8	34.8	89.7 89.7	89.7	6.5 6.5	6.5		0.4 0.4	0.4		13.2 13.2	13.2	
				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 20 March 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: 0.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.6 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: 12.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.3 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: 12.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.3 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: 10.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 11.1 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 20 March 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	17:15	Surface	1.0	21.1 21.1	21.1	8.3 8.3	8.3	34.7 34.7	34.7	90.7 90.7	90.7	6.6 6.6	6.6	6.6	0.6 0.6	0.6	0.5	10.1 10.3	10.2	8.9
				Middle	9.1	20.9 21.0	21.0	8.3 8.3	8.3	34.8 34.8	34.8	89.6 89.6	89.6	6.5 6.5	6.5		0.3 0.3	0.3		7.9 7.8	7.9	
				Bottom	17.0	20.9 20.8	20.8	8.3 8.3	8.3	34.9 34.9	34.9	90.2 90.3	90.3	6.6 6.6	6.6		0.5 0.5	0.5		8.7 8.3	8.5	
C2	Sunny	Calm	17:20	Surface	1.1	21.1 21.1	21.1	8.3 8.3	8.3	34.7 34.7	34.7	88.1 88.1	88.1	6.4 6.4	6.4	6.4	0.6 0.6	0.6	0.5	9.1 9.3	9.2	5.9
				Middle	16.1	21.0 21.0	21.0	8.3 8.3	8.3	34.8 34.8	34.8	88.7 88.7	88.7	6.5 6.5	6.5		0.3 0.3	0.3		4.9 5.2	5.1	
				Bottom	30.5	20.9 20.9	20.9	8.3 8.3	8.3	34.8 34.8	34.8	88.7 88.7	88.7	6.5 6.5	6.5		0.5 0.5	0.5		3.6 3.5	3.6	
G1	Sunny	Calm	16:47	Surface	1.0	21.1 21.1	21.1	8.3 8.3	8.3	34.6 34.6	34.6	94.9 94.9	94.9	6.9 6.9	6.9	6.9	0.5 0.5	0.5	0.5	11.7 11.8	11.8	7.9
				Middle	4.0	21.0 20.9	21.0	8.3 8.3	8.3	34.8 34.8	34.8	94.6 94.4	94.5	6.9 6.9	6.9		0.6 0.5	0.6		4.9 4.8	4.9	
				Bottom	7.0	20.8 20.8	20.8	8.3 8.3	8.3	34.9 34.9	34.9	93.1 93.3	93.2	6.8 6.8	6.8		0.5 0.6	0.5		6.9 7.2	7.1	
G2	Sunny	Calm	16:36	Surface	1.0	21.1 21.1	21.1	8.3 8.3	8.3	34.7 34.7	34.7	96.4 96.2	96.3	7.0 7.0	7.0	7.0	0.3 0.4	0.3	0.3	6.5 6.4	6.5	6.9
				Middle	5.0	20.9 21.0	21.0	8.3 8.3	8.3	34.9 34.8	34.9	95.5 95.8	95.7	7.0 7.0	7.0		0.3 0.2	0.2		4.1 4.0	4.1	
				Bottom	9.1	20.9 20.9	20.9	8.3 8.3	8.3	34.9 34.9	34.9	94.3 94.2	94.3	6.9 6.9	6.9		0.3 0.3	0.3		10.3 10.3	10.3	
G3	Sunny	Calm	16:53	Surface	1.0	21.2 21.2	21.2	8.3 8.3	8.3	34.7 34.7	34.7	96.4 95.7	96.1	7.0 7.0	7.0	7.0	0.5 0.5	0.5	0.7	8.8 9.3	9.1	7.8
				Middle	4.0	21.1 21.1	21.1	8.3 8.3	8.3	34.7 34.7	34.7	95.8 95.5	95.7	7.0 6.9	6.9		0.8 0.8	0.8		4.8 4.8	4.8	
				Bottom	7.0	20.9 20.9	20.9	8.3 8.3	8.3	34.8 34.8	34.8	93.9 94.1	94.0	6.8 6.9	6.8		0.8 0.9	0.8		9.5 9.3	9.4	
G4	Sunny	Calm	17:01	Surface	1.1	21.1 21.2	21.2	8.3 8.3	8.3	34.7 34.7	34.7	95.5 95.3	95.4	6.9 6.9	6.9	6.9	0.8 0.8	0.8	1.5	23.0 24.1	23.6	13.7
				Middle	4.1	20.9 21.0	21.0	8.3 8.3	8.3	34.8 34.8	34.8	93.3 94.1	93.7	6.8 6.8	6.8		1.1 1.1	1.1		12.1 12.3	12.2	
				Bottom	7.0	20.8 20.9	20.9	8.3 8.3	8.3	34.9 34.9	34.9	92.8 93.5	93.2	6.8 6.8	6.8		2.5 2.5	2.5		5.2 5.2	5.2	
M1	Sunny	Calm	16:41	Surface	1.1	21.3 21.1	21.2	8.3 8.3	8.3	34.7 34.6	34.6	92.6 94.1	93.4	6.7 6.8	6.8	6.7	0.6 0.6	0.6	0.9	6.0 6.0	6.0	9.5
				Middle	3.0	21.2 20.9	21.0	8.3 8.3	8.3	34.8 34.9	34.8	92.1 91.4	91.8	6.7 6.7	6.7		1.0 1.0	1.0		10.1 9.9	10.0	
				Bottom	5.1	20.9 20.9	20.9	8.3 8.3	8.3	34.9 34.9	34.9	91.4 91.3	91.4	6.7 6.7	6.7		1.3 1.2	1.2		12.6 12.5	12.6	
M2	Sunny	Calm	16:32	Surface	1.0	21.1 21.0	21.1	8.3 8.3	8.3	34.8 34.8	34.8	97.4 96.2	96.8	7.1 7.0	7.0	7.0	0.2 0.3	0.2	0.4	7.4 7.5	7.5	9.1
				Middle	6.1	20.8 20.9	20.8	8.3 8.3	8.3	34.9 34.9	34.9	94.0 94.8	94.4	6.9 6.9	6.9		0.2 0.2	0.2		7.3 7.5	7.4	
				Bottom	11.0	20.8 20.8	20.8	8.3 8.3	8.3	35.0 34.9	35.0	94.1 94.2	94.2	6.9 6.9	6.9		0.6 0.6	0.6		12.2 12.9	12.6	
M3	Sunny	Calm	16:57	Surface	1.1	21.2 21.0	21.1	8.3 8.3	8.3	34.7 34.8	34.7	94.8 94.6	94.7	6.9 6.9	6.9	6.8	0.3 0.3	0.3	1.1	4.3 4.2	4.3	4.2
				Middle	4.1	20.9 20.9	20.9	8.3 8.3	8.3	34.8 34.8	34.8	93.1 92.9	93.0	6.8 6.8	6.8		1.0 0.9	1.0		2.8 2.8	2.8	
				Bottom	7.0	20.8 20.8	20.8	8.3 8.3	8.3	34.9 34.9	34.9	90.5 91.0	90.8	6.6 6.6	6.6		2.0 2.0	2.0		5.7 5.5	5.6	
M4	Sunny	Calm	16:28	Surface	1.0	21.1 21.1	21.1	8.2 8.3	8.2	34.8 34.8	34.8	96.8 95.8	96.3	7.0 7.0	7.0	7.0	0.2 0.2	0.2	0.3	7.1 7.2	7.2	4.7
				Middle	5.0	20.9 21.0	20.9	8.2 8.3	8.3	34.9 34.9	34.9	94.8 95.7	95.3	6.9 7.0	6.9		0.3 0.3	0.3		3.6 3.5	3.6	
				Bottom	9.0	20.9 20.9	20.9	8.3 8.3	8.3	34.9 34.9	34.9	94.5 94.9	94.7	6.9 6.9	6.9		0.6 0.6	0.6		3.5 3.4	3.5	
M5	Sunny	Calm	17:11	Surface	1.0	21.1 21.1	21.1	8.3 8.3	8.3	34.8 34.8	34.8	92.0 92.0	92.0	6.7 6.7	6.7	6.7	0.5 0.5	0.5	0.5	5.7 5.7	5.7	8.3
				Middle	6.0	21.0 21.0	21.0	8.3 8.3	8.3	34.8 34.8	34.8	91.0 91.4	91.2	6.6 6.7	6.6		0.5 0.5	0.5		12.3 11.9	12.1	
				Bottom	11.0	21.0 21.0	21.0	8.3 8.3	8.3	34.8 34.8	34.8	91.0 91.0	91.0	6.6 6.6	6.6		0.4 0.4	0.4		7.0 6.9	7.0	
M6	Sunny	Calm	17:06	Surface	-	-	-	-	-	-	-	-	-	-	-	6.6	-	-	1.5	-	-	6.2
				Middle	2.1	21.0 21.0	21.0	8.3 8.3	8.3	34.8 34.8	34.8	91.3 91.3	91.3	6.6 6.6	6.6		1.5 1.5	1.5		6.2 6.1	6.2	
				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 22 March 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: 2.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 2.1 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>C2: 11.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.9 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: 11.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.9 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: 6.3 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>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 22 March 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	14:20	Surface	1.0	21.6 21.6	21.6 8.3	8.3 8.3	34.4 34.4	34.4 34.4	90.4 90.2	90.3 6.5	6.5 6.5	6.6	0.9 0.9	0.9	0.6	10.2 10.3	10.3	7.3			
				Middle	9.0	21.4 21.4	21.4 8.3	8.3 8.3	34.8 34.8	34.8 34.8	91.5 91.5	91.5 6.6	6.6 6.6								0.3 0.3	3.4 3.4	3.4
				Bottom	17.1	21.4 21.4	21.4 8.3	8.3 8.3	34.9 34.9	34.9 34.9	91.8 91.8	91.8 6.6	6.6 6.6										
C2	Sunny	Calm	13:18	Surface	1.0	21.5 21.5	21.5 8.2	8.2 8.2	34.2 34.2	34.2 34.2	87.4 87.4	87.4 6.3	6.3 6.3	6.4	0.2 0.2	0.2	0.7	9.9 9.9	9.9	6.8			
				Middle	16.0	21.4 21.4	21.4 8.3	8.3 8.3	34.8 34.8	34.8 34.8	90.7 90.8	90.8 6.6	6.6 6.6								0.4 0.4	5.0 5.2	5.1
				Bottom	31.0	21.4 21.4	21.4 8.3	8.3 8.3	34.9 34.9	34.9 34.9	91.2 91.2	91.2 6.6	6.6 6.6										
G1	Sunny	Calm	13:47	Surface	1.1	21.8 21.8	21.8 8.3	8.3 8.3	34.1 34.1	34.1 34.1	93.0 93.0	93.0 6.7	6.7 6.7	6.5	1.5 1.5	1.5	1.9	8.8 8.4	8.6	8.5			
				Middle	4.1	21.3 21.4	21.3 8.3	8.3 8.3	34.7 34.7	34.7 34.7	86.8 87.0	86.9 6.3	6.3 6.3								2.0 2.0	11.6 11.4	11.5
				Bottom	7.1	21.3 21.3	21.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	88.6 88.8	88.7 6.4	6.4 6.4										
G2	Sunny	Calm	13:35	Surface	1.0	21.6 21.6	21.6 8.3	8.3 8.3	34.6 34.6	34.6 34.6	93.0 93.0	93.0 6.7	6.7 6.7	6.7	0.4 0.4	0.4	0.3	10.0 9.9	10.0	8.3			
				Middle	5.0	21.5 21.5	21.5 8.3	8.3 8.3	34.7 34.7	34.7 34.7	92.5 92.5	92.5 6.7	6.7 6.7								0.1 0.1	8.1 8.4	8.3
				Bottom	8.9	21.4 21.4	21.4 8.3	8.3 8.3	34.9 34.9	34.9 34.9	92.6 92.6	92.6 6.7	6.7 6.7										
G3	Sunny	Calm	13:51	Surface	1.0	21.7 21.7	21.7 8.2	8.2 8.2	34.2 34.2	34.2 34.2	93.2 93.1	93.2 6.7	6.7 6.7	6.7	0.5 0.5	0.5	0.7	6.6 6.6	6.5	7.1			
				Middle	4.0	21.5 21.5	21.5 8.3	8.3 8.3	34.6 34.5	34.5 34.5	91.5 91.6	91.6 6.6	6.6 6.6								0.7 0.7	7.0 7.0	7.0
				Bottom	7.0	21.4 21.4	21.4 8.3	8.3 8.3	35.0 35.0	35.0 35.0	91.5 91.6	91.6 6.6	6.6 6.6										
G4	Sunny	Calm	14:02	Surface	1.0	21.6 21.5	21.6 8.3	8.3 8.3	34.3 34.3	34.3 34.3	90.7 90.6	90.7 6.5	6.5 6.5	6.5	0.2 0.2	0.2	0.5	4.2 4.3	4.3	10.3			
				Middle	4.0	21.4 21.4	21.4 8.3	8.3 8.3	34.7 34.7	34.7 34.7	90.4 90.4	90.4 6.5	6.5 6.5								0.6 0.6	10.0 10.2	10.1
				Bottom	7.0	21.4 21.4	21.4 8.3	8.3 8.3	35.0 35.0	35.0 35.0	93.8 93.8	93.8 6.8	6.8 6.8										
M1	Sunny	Calm	13:40	Surface	1.0	21.8 21.8	21.8 8.2	8.2 8.2	34.4 34.4	34.4 34.4	91.0 91.0	91.0 6.6	6.5 6.5	6.5	0.1 0.1	0.1	0.3	9.1 9.2	9.2	10.6			
				Middle	3.1	21.6 21.6	21.6 8.2	8.2 8.2	34.6 34.6	34.6 34.6	90.3 90.3	90.3 6.5	6.5 6.5								0.3 0.3	9.6 9.4	9.5
				Bottom	5.0	21.5 21.5	21.5 8.3	8.3 8.3	34.6 34.7	34.6 34.6	90.2 90.2	90.2 6.5	6.5 6.5										
M2	Sunny	Calm	13:31	Surface	1.0	21.5 21.5	21.5 8.3	8.3 8.3	34.8 34.8	34.8 34.8	93.9 93.9	93.9 6.8	6.8 6.8	6.8	0.1 0.1	0.1	0.1	13.9 13.3	13.6	7.1			
				Middle	6.1	21.4 21.4	21.4 8.3	8.3 8.3	34.9 34.9	34.9 34.9	93.8 93.8	93.8 6.8	6.8 6.8								0.1 0.1	4.4 4.5	4.5
				Bottom	11.0	21.4 21.4	21.4 8.3	8.3 8.3	35.1 35.1	35.1 35.1	94.7 94.7	94.7 6.8	6.8 6.8										
M3	Sunny	Calm	13:54	Surface	1.0	21.7 21.7	21.7 8.2	8.2 8.2	33.8 33.8	33.8 33.8	89.6 89.4	89.5 6.5	6.5 6.5	6.4	0.2 0.2	0.2	0.9	14.5 14.8	14.7	10.7			
				Middle	4.0	21.4 21.4	21.4 8.2	8.2 8.2	34.6 34.6	34.6 34.6	88.3 88.3	88.3 6.4	6.4 6.4								0.7 0.6	9.2 9.6	9.4
				Bottom	7.1	21.3 21.3	21.3 8.3	8.3 8.3	34.8 34.8	34.8 34.8	88.0 88.1	88.1 6.4	6.4 6.4										
M4	Sunny	Calm	13:25	Surface	1.0	21.5 21.5	21.5 8.3	8.3 8.3	34.7 34.7	34.7 34.7	92.1 91.9	92.0 6.7	6.6 6.6	6.7	0.7 0.7	0.7	0.6	7.1 7.1	7.1	7.2			
				Middle	5.1	21.5 21.5	21.5 8.3	8.3 8.3	34.9 34.9	34.9 34.9	92.9 92.9	92.9 6.7	6.7 6.7								0.4 0.4	6.8 6.8	6.8
				Bottom	9.0	21.4 21.4	21.4 8.3	8.3 8.3	35.1 35.1	35.1 35.1	94.2 94.2	94.2 6.8	6.8 6.8										
M5	Sunny	Calm	14:11	Surface	1.0	21.6 21.6	21.6 8.3	8.3 8.3	34.4 34.5	34.4 34.4	91.2 91.2	91.2 6.6	6.6 6.6	6.6	0.2 0.2	0.2	0.5	8.7 8.9	8.8	7.1			
				Middle	6.0	21.5 21.5	21.5 8.3	8.3 8.3	34.6 34.6	34.6 34.6	90.7 90.7	90.7 6.6	6.6 6.6								0.2 0.2	8.6 8.6	8.6
				Bottom	11.0	21.4 21.4	21.4 8.3	8.3 8.3	34.7 34.7	34.7 34.7	90.1 90.1	90.1 6.5	6.5 6.5										
M6	Sunny	Calm	14:06	Surface	-	-	-	-	-	-	-	-	-	6.5	-	-	0.3	-	-	13.4			
				Middle	2.0	21.6 21.6	21.6 8.2	8.2 8.2	34.4 34.4	34.4 34.4	90.2 90.2	90.2 6.5	6.5 6.5								0.3 0.3	13.4 13.4	13.4
				Bottom	-	-	-	-	-	-	-	-	-										

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

Appendix I - Action and Limit Levels for Marine Water Quality on 22 March 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: 1.2 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.3 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: 6.7 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>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: 6.7 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>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: 14.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 16.2 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 22 March 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	09:06	Surface	1.0	21.6 21.6	21.6	8.3 8.3	8.3	34.4 34.4	34.4	89.7 89.6	89.7	6.5 6.5	6.5	6.5
Middle	9.0	21.4 21.4	21.4	8.3 8.3	8.3					34.8 34.8	34.8	91.5 91.5	91.5	6.6 6.6	6.6	0.8 0.8	0.8	2.8 2.8	2.8			
Bottom	17.0	21.4 21.4	21.4	8.3 8.3	8.3					34.8 34.8	34.8	91.6 91.6	91.6	6.6 6.6	6.6	1.0 1.0	1.0	12.4 12.5	12.5			
C2	Sunny	Calm	08:04	Surface	1.0	21.6 21.6	21.6	8.2 8.2	8.2	34.2 34.2	34.2	86.9 86.9	86.9	6.3 6.3	6.3	6.4	0.4 0.4	0.4	0.6	12.6 12.3	12.5	9.6
				Middle	16.0	21.4 21.4	21.4	8.2 8.2	8.2	34.7 34.7	34.7	89.7 89.6	89.7	6.5 6.5	6.5		0.3 0.3	0.3		7.2 7.0	7.1	
				Bottom	31.0	21.4 21.4	21.4	8.3 8.3	8.3	35.0 35.0	35.0	91.2 91.2	91.2	6.6 6.6	6.6		1.0 1.0	1.0		9.0 9.5	9.3	
G1	Sunny	Calm	08:33	Surface	1.0	21.7 21.7	21.7	8.2 8.2	8.2	34.2 34.2	34.2	92.9 92.9	92.9	6.7 6.7	6.7	6.6	0.3 0.3	0.3	0.9	11.7 11.6	11.7	14.4
				Middle	4.0	21.3 21.4	21.3	8.3 8.3	8.3	34.7 34.7	34.7	89.5 89.8	89.7	6.5 6.5	6.5		1.0 1.0	1.0		20.5 20.5	20.5	
				Bottom	7.0	21.4 21.4	21.4	8.3 8.3	8.3	35.0 35.0	35.0	92.1 92.2	92.2	6.7 6.7	6.7		1.3 1.3	1.3		11.0 11.2	11.1	
G2	Sunny	Calm	08:21	Surface	1.0	21.7 21.7	21.7	8.3 8.3	8.3	34.6 34.6	34.6	92.1 92.1	92.1	6.6 6.6	6.6	6.7	0.3 0.3	0.3	0.4	4.9 4.8	4.9	5.0
				Middle	5.0	21.5 21.5	21.5	8.3 8.3	8.3	34.7 34.7	34.7	92.6 92.6	92.6	6.7 6.7	6.7		0.4 0.4	0.4		2.4 2.4	2.4	
				Bottom	9.0	21.4 21.4	21.4	8.3 8.3	8.3	35.0 35.0	35.0	93.0 93.0	93.0	6.7 6.7	6.7		0.5 0.5	0.5		7.6 7.7	7.7	
G3	Sunny	Calm	08:37	Surface	1.1	22.0 22.0	22.0	8.3 8.3	8.3	33.9 33.9	33.9	93.1 93.2	93.2	6.7 6.7	6.7	6.6	0.4 0.4	0.4	0.6	13.8 13.4	13.6	13.6
				Middle	4.0	21.4 21.4	21.4	8.3 8.3	8.3	34.6 34.6	34.6	90.7 90.8	90.8	6.6 6.6	6.6		0.3 0.3	0.3		15.9 16.2	16.1	
				Bottom	7.0	21.4 21.4	21.4	8.3 8.3	8.3	35.0 35.0	35.0	91.9 92.0	92.0	6.6 6.6	6.6		1.2 1.2	1.2		11.2 11.3	11.3	
G4	Sunny	Calm	08:48	Surface	1.0	21.7 21.7	21.7	8.3 8.2	8.2	34.2 34.2	34.2	91.2 91.3	91.3	6.6 6.6	6.6	6.5	0.2 0.2	0.2	0.9	20.6 20.7	20.7	14.2
				Middle	4.1	21.4 21.4	21.4	8.3 8.3	8.3	34.6 34.6	34.6	89.5 89.5	89.5	6.5 6.5	6.5		0.6 0.6	0.6		16.9 17.4	17.2	
				Bottom	7.1	21.4 21.4	21.4	8.3 8.3	8.3	35.0 35.0	35.0	92.0 92.2	92.1	6.6 6.7	6.6		2.0 2.1	2.0		4.7 4.9	4.8	
M1	Sunny	Calm	08:27	Surface	1.0	21.7 21.7	21.7	8.3 8.3	8.3	34.5 34.5	34.5	90.6 90.6	90.6	6.5 6.5	6.5	6.5	0.4 0.4	0.4	0.3	3.9 3.9	3.9	9.9
				Middle	3.0	21.6 21.6	21.6	8.3 8.3	8.3	34.6 34.6	34.6	90.2 90.3	90.3	6.5 6.5	6.5		0.3 0.3	0.3		11.3 11.5	11.4	
				Bottom	5.0	21.5 21.5	21.5	8.3 8.3	8.3	34.6 34.7	34.6	90.3 90.3	90.3	6.5 6.5	6.5		0.3 0.3	0.3		14.5 14.0	14.3	
M2	Sunny	Calm	08:17	Surface	1.0	21.5 21.5	21.5	8.3 8.3	8.3	34.8 34.7	34.7	93.8 93.8	93.8	6.8 6.8	6.8	6.7	0.1 0.1	0.1	0.2	20.3 20.4	20.4	11.6
				Middle	6.1	21.4 21.4	21.4	8.3 8.3	8.3	34.9 34.9	34.9	93.4 93.3	93.4	6.7 6.7	6.7		0.2 0.2	0.2		8.3 8.1	8.2	
				Bottom	11.0	21.4 21.4	21.4	8.3 8.3	8.3	35.1 35.1	35.1	94.6 94.6	94.6	6.8 6.8	6.8		0.4 0.4	0.4		6.2 6.3	6.3	
M3	Sunny	Calm	08:40	Surface	1.0	21.7 21.7	21.7	8.2 8.2	8.2	34.1 34.1	34.1	89.9 89.9	89.9	6.5 6.5	6.5	6.4	0.4 0.4	0.4	1.1	4.6 4.7	4.7	9.9
				Middle	4.0	21.3 21.3	21.3	8.2 8.2	8.2	34.7 34.7	34.7	88.3 88.3	88.3	6.4 6.4	6.4		0.7 0.7	0.7		9.6 9.4	9.5	
				Bottom	7.0	21.3 21.3	21.3	8.3 8.3	8.3	34.9 34.9	34.9	87.6 87.7	87.7	6.3 6.3	6.3		2.2 2.2	2.2		15.3 15.5	15.4	
M4	Sunny	Calm	08:11	Surface	1.1	21.5 21.5	21.5	8.2 8.2	8.2	34.6 34.6	34.6	89.9 89.9	89.9	6.5 6.5	6.5	6.5	0.6 0.6	0.6	0.6	7.7 7.6	7.7	6.7
				Middle	4.9	21.4 21.4	21.4	8.3 8.3	8.3	34.9 34.9	34.9	91.7 91.5	91.6	6.6 6.6	6.6		0.4 0.4	0.4		6.7 6.9	6.8	
				Bottom	9.0	21.4 21.4	21.4	8.3 8.3	8.3	35.1 35.1	35.1	94.0 94.0	94.0	6.8 6.8	6.8		0.7 0.7	0.7		5.6 5.7	5.7	
M5	Sunny	Calm	08:57	Surface	1.1	21.7 21.7	21.7	8.3 8.3	8.3	34.5 34.5	34.5	91.8 91.7	91.8	6.6 6.6	6.6	6.6	0.3 0.3	0.3	0.3	20.8 20.8	20.8	9.9
				Middle	6.1	21.4 21.4	21.4	8.3 8.3	8.3	34.6 34.6	34.6	91.0 91.0	91.0	6.6 6.6	6.6		0.2 0.2	0.2		2.5 2.5	2.5	
				Bottom	11.0	21.4 21.4	21.4	8.3 8.3	8.3	34.7 34.7	34.7	90.4 90.4	90.4	6.5 6.5	6.5		0.5 0.5	0.5		6.4 6.4	6.4	
M6	Sunny	Calm	08:52	Surface	-	-	-	-	-	-	-	-	-	-	6.5	-	-	0.4	-	-	7.7	
				Middle	2.0	21.6 21.6	21.6	8.3 8.3	8.3	34.4 34.4	34.4	90.4 90.4	90.4	6.5 6.5		6.5	0.4 0.4		0.4	7.6 7.7		7.7
				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 25 March 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: 2.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 3.0 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: 5.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.3 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: 5.8 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.3 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: 9.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 10.1 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 25 March 2019**

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
					C1	Cloudy	Calm	15:34	Surface 1.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.0 35.1	35.0 35.0	93.9 93.2	93.6 93.6	6.8 6.7	6.7 6.7	6.7	0.8 0.8
				Middle 9.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	93.7 93.4	93.6 93.6	6.7 6.7	6.7 6.7	6.7	0.9 0.8	0.9 0.9	1.2	9.6 9.7	9.7	
				Bottom 17.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.3	35.3 35.3	94.6 94.6	94.6 94.6	6.8 6.8	6.8 6.8	6.8	1.8 2.2	2.0 2.0	2.0	6.1 6.1	6.1	
C2	Cloudy	Calm	15:41	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	34.8 34.8	34.8 34.8	92.8 91.7	92.3 92.3	6.7 6.6	6.6 6.6	6.6	1.3 1.2	1.2 1.2	1.2	4.9 4.8	4.9	7.3
				Middle 16.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.0	35.0 35.0	92.3 91.9	92.1 92.1	6.6 6.6	6.6 6.6	6.6	1.4 1.2	1.3 1.3	1.3	9.2 9.3	9.3	
				Bottom 31.4	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	92.6 92.7	92.7 92.7	6.7 6.7	6.7 6.7	6.7	2.4 2.2	2.3 2.3	2.3	7.7 7.9	7.8	
G1	Cloudy	Calm	15:07	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	95.5 93.3	94.4 93.3	6.9 6.7	6.8 6.8	6.7	0.9 1.0	1.0 1.0	1.0	5.5 5.7	5.6	7.7
				Middle 4.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	92.6 91.7	92.2 92.2	6.7 6.6	6.6 6.6	6.6	1.7 1.9	1.8 1.8	1.8	7.2 7.1	7.2	
				Bottom 7.0	21.5 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.3	35.3 35.3	92.9 93.1	93.0 93.0	6.7 6.7	6.7 6.7	6.7	1.8 1.7	1.7 1.7	1.7	10.3 10.3	10.3	
G2	Cloudy	Calm	14:56	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	95.1 94.8	95.0 95.0	6.8 6.8	6.8 6.8	6.8	0.8 0.9	0.9 0.9	0.9	5.5 5.8	5.7	8.0
				Middle 5.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	94.7 94.6	94.7 94.7	6.8 6.8	6.8 6.8	6.8	1.1 0.9	1.0 1.0	1.0	12.7 12.9	12.8	
				Bottom 9.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.3	35.3 35.3	94.8 94.8	94.8 94.8	6.8 6.8	6.8 6.8	6.8	1.2 1.1	1.2 1.2	1.2	5.6 5.6	5.6	
G3	Cloudy	Calm	15:10	Surface 1.0	21.7 21.5	21.6 21.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	95.5 95.1	95.3 95.3	6.9 6.8	6.8 6.8	6.8	0.7 0.8	0.8 0.8	0.8	4.8 5.0	4.9	6.1
				Middle 4.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.2	35.1 35.1	92.7 92.5	92.6 92.6	6.7 6.7	6.7 6.7	6.7	1.8 1.5	1.6 1.6	1.6	6.0 6.2	6.1	
				Bottom 7.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	92.3 92.7	92.5 92.5	6.6 6.7	6.6 6.7	6.7	1.6 1.7	1.6 1.6	1.6	7.4 7.3	7.4	
G4	Cloudy	Calm	15:18	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	94.9 93.4	94.2 93.4	6.8 6.7	6.8 6.7	6.8	0.7 0.6	0.6 0.6	0.6	4.4 4.4	4.4	8.4
				Middle 4.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	93.8 93.4	93.6 93.6	6.8 6.7	6.8 6.7	6.7	0.4 0.4	0.4 0.4	0.4	6.6 6.4	6.5	
				Bottom 7.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	93.9 93.9	93.9 93.9	6.8 6.8	6.8 6.8	6.8	0.5 0.4	0.4 0.4	0.4	14.2 14.5	14.4	
M1	Cloudy	Calm	15:02	Surface 1.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	92.9 92.2	92.6 92.6	6.7 6.6	6.7 6.6	6.7	1.2 1.0	1.1 1.1	1.1	13.2 12.9	13.1	9.5
				Middle 3.0	21.4 21.4	21.4 21.4	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	91.5 91.0	91.3 91.3	6.6 6.6	6.6 6.6	6.6	1.7 1.8	1.7 1.7	1.7	6.7 6.9	6.8	
				Bottom 5.1	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	91.7 91.6	91.7 91.7	6.6 6.6	6.6 6.6	6.6	2.7 2.4	2.5 2.5	2.5	8.8 8.7	8.8	
M2	Cloudy	Calm	14:51	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	95.2 94.8	95.0 95.0	6.8 6.8	6.8 6.8	6.8	1.0 0.9	0.9 0.9	0.9	8.4 8.5	8.5	8.0
				Middle 6.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.3	35.2 35.2	94.4 94.5	94.5 94.5	6.8 6.8	6.8 6.8	6.8	0.9 1.1	1.0 1.0	1.0	7.6 7.8	7.7	
				Bottom 11.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.3	35.3 35.3	94.4 94.4	94.4 94.4	6.8 6.8	6.8 6.8	6.8	1.1 1.2	1.1 1.1	1.1	7.7 7.7	7.7	
M3	Cloudy	Calm	15:14	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	93.6 91.2	92.4 92.4	6.7 6.6	6.7 6.7	6.6	1.1 1.1	1.1 1.1	1.1	17.2 17.6	17.4	11.3
				Middle 4.1	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	92.5 92.2	92.4 92.4	6.7 6.6	6.6 6.6	6.6	1.1 1.0	1.0 1.0	1.0	8.5 8.8	8.7	
				Bottom 7.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.1	35.2 35.2	92.3 92.3	92.3 92.3	6.6 6.6	6.6 6.6	6.6	1.4 1.2	1.3 1.3	1.3	7.9 7.9	7.9	
M4	Cloudy	Calm	14:42	Surface 1.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	94.1 93.7	93.9 93.9	6.8 6.7	6.7 6.7	6.7	1.3 1.4	1.4 1.4	1.4	11.6 11.3	11.5	8.7
				Middle 5.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.2	35.3 35.3	94.1 93.7	93.9 93.9	6.8 6.7	6.8 6.7	6.8	1.4 1.4	1.4 1.4	1.4	6.4 6.5	6.5	
				Bottom 9.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.3	35.3 35.3	94.2 94.0	94.1 94.1	6.8 6.8	6.8 6.8	6.8	1.2 1.5	1.4 1.4	1.4	8.2 8.1	8.2	
M5	Cloudy	Calm	15:29	Surface 1.0	21.5 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	95.4 94.4	94.9 94.9	6.9 6.8	6.8 6.8	6.8	1.5 1.6	1.5 1.5	1.5	11.6 11.2	11.4	7.6
				Middle 6.0	21.6 21.6	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	94.8 94.5	94.7 94.7	6.8 6.8	6.8 6.8	6.8	1.2 1.2	1.2 1.2	1.2	4.5 4.6	4.6	
				Bottom 11.0	21.7 21.7	21.7 21.7	8.3 8.3	8.3 8.3	35.4 35.4	35.4 35.4	96.2 95.9	96.1 96.1	6.9 6.9	6.9 6.9	6.9	1.3 1.5	1.4 1.4	1.4	6.7 7.1	6.9	
M6	Cloudy	Calm	15:23	Surface -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4
				Middle 2.0	21.5 21.5	21.5 21.5	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	95.1 94.4	94.8 94.8	6.8 6.8	6.8 6.8	6.8	0.3 0.3	0.3 0.3	0.3	3.3 3.4	3.4	
				Bottom -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 25 March 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: 1.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.6 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: 12.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.3 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: 12.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.3 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: 20.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 22.1 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.

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Water Quality Monitoring Results on 25 March 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	Rainy	Calm	10:05	Surface	1.0	21.6 21.6	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	94.9 94.9	94.9 94.9	6.8 6.8	6.8 6.8	6.8	1.0 1.0	1.0 1.0	1.1	10.0 10.4	10.2	13.6
				Middle	9.0	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.2	35.2 35.2	95.0 95.0	95.0 95.0	6.8 6.8	6.8 6.8		1.0 1.0	1.0 1.0		13.4 13.6	13.5	
				Bottom	17.1	21.7 21.7	8.4 8.4	8.4 8.4	35.5 35.5	35.5 35.5	96.3 96.3	96.3 96.3	6.9 6.9	6.9 6.9		1.2 1.3	1.2 1.2		16.8 17.2	17.0	
C2	Rainy	Calm	10:17	Surface	1.1	21.6 21.7	8.3 8.3	8.3 8.3	35.1 35.2	35.1 35.1	96.5 96.5	96.1 96.1	6.9 6.9	6.9 6.9	6.9	0.8 0.7	0.7 0.7	0.9	9.3 9.2	9.3	6.6
				Middle	16.0	21.6 21.6	8.3 8.3	8.3 8.3	35.3 35.2	35.3 35.3	95.5 95.2	95.4 95.4	6.9 6.8	6.9 6.9		1.0 1.0	1.0 1.0		6.3 6.4	6.4	
				Bottom	31.0	21.7 21.5	8.4 8.3	8.3 8.3	35.5 35.3	35.4 35.4	96.0 95.0	95.5 95.5	6.9 6.8	6.8 6.8		1.0 1.0	1.0 1.0		4.2 4.2	4.2	
G1	Rainy	Calm	09:05	Surface	1.0	21.4 21.4	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	92.5 92.1	92.3 92.3	6.7 6.7	6.7 6.7	6.6	0.3 0.3	0.3 0.3	0.5	8.0 8.1	8.1	7.1
				Middle	4.1	21.3 21.4	8.3 8.3	8.3 8.3	35.0 35.1	35.0 35.0	91.0 92.0	91.5 91.5	6.6 6.6	6.6 6.6		0.4 0.4	0.4 0.4		6.7 6.8	6.8	
				Bottom	7.1	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.2	35.1 35.1	92.4 92.4	92.4 92.4	6.7 6.7	6.7 6.7		0.8 0.9	0.9 0.9		6.6 6.3	6.5	
G2	Rainy	Calm	08:31	Surface	1.0	21.3 21.3	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	93.0 92.6	92.8 92.8	6.7 6.7	6.7 6.7	6.7	0.5 0.6	0.5 0.5	0.7	9.1 9.3	9.2	6.4
				Middle	5.0	21.4 21.4	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	92.7 92.6	92.7 92.7	6.7 6.7	6.7 6.7		0.8 0.8	0.8 0.8		4.2 4.2	4.2	
				Bottom	9.0	21.4 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	93.0 93.3	93.2 93.2	6.7 6.7	6.7 6.7		0.7 0.7	0.7 0.7		5.8 5.8	5.8	
G3	Rainy	Calm	09:20	Surface	1.0	21.4 21.4	8.3 8.3	8.3 8.3	35.0 34.8	34.9 34.9	92.5 92.3	92.4 92.4	6.7 6.7	6.7 6.7	6.7	0.7 0.7	0.7 0.7	0.9	6.0 6.1	6.1	6.0
				Middle	4.0	21.4 21.4	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	92.4 92.5	92.5 92.5	6.7 6.7	6.7 6.7		0.8 0.9	0.8 0.8		5.6 5.8	5.7	
				Bottom	7.1	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	93.5 93.2	93.4 93.4	6.7 6.7	6.7 6.7		1.2 1.2	1.2 1.2		6.4 6.3	6.4	
G4	Rainy	Calm	09:44	Surface	1.0	21.5 21.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	91.0 90.2	90.6 90.6	6.6 6.5	6.5 6.5	6.6	0.9 0.9	0.9 0.9	0.9	4.5 4.6	4.6	5.3
				Middle	4.1	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	92.0 91.2	91.6 91.6	6.6 6.6	6.6 6.6		0.8 0.8	0.8 0.8		3.4 3.4	3.4	
				Bottom	7.1	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	93.5 92.9	93.1 93.1	6.7 6.7	6.7 6.7		1.0 0.9	0.9 0.9		7.8 8.0	7.9	
M1	Rainy	Calm	08:52	Surface	1.1	21.3 21.4	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	90.5 89.6	90.1 90.1	6.5 6.5	6.5 6.5	6.5	1.6 1.5	1.6 1.6	1.7	5.6 5.4	5.5	7.4
				Middle	3.1	21.3 21.3	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	89.9 89.5	89.7 89.7	6.5 6.5	6.5 6.5		1.7 1.7	1.7 1.7		6.4 6.4	6.4	
				Bottom	5.0	21.3 21.3	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	89.5 89.3	89.4 89.4	6.5 6.5	6.5 6.5		1.7 1.9	1.8 1.8		10.0 10.5	10.3	
M2	Rainy	Calm	08:17	Surface	1.0	21.4 21.4	8.3 8.3	8.3 8.3	35.0 34.9	35.0 35.0	93.4 92.8	93.1 93.1	6.7 6.7	6.7 6.7	6.7	0.8 0.9	0.9 0.9	1.1	8.4 8.5	8.5	11.9
				Middle	6.1	21.4 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	93.1 93.1	93.1 93.1	6.7 6.7	6.7 6.7		0.9 1.1	1.0 1.0		6.8 6.9	6.9	
				Bottom	11.0	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	93.4 93.3	93.4 93.4	6.7 6.7	6.7 6.7		1.6 1.4	1.5 1.5		19.9 20.7	20.3	
M3	Rainy	Calm	09:34	Surface	1.0	21.5 21.5	8.3 8.3	8.3 8.3	34.9 34.9	34.9 34.9	90.9 91.2	91.1 91.1	6.6 6.6	6.6 6.6	6.6	1.0 0.9	1.0 1.0	1.5	8.1 8.1	8.1	5.9
				Middle	4.1	21.5 21.5	8.3 8.3	8.3 8.3	35.0 35.1	35.1 35.1	91.0 91.1	91.1 91.1	6.6 6.6	6.6 6.6		1.2 1.2	1.2 1.2		5.8 5.9	5.9	
				Bottom	7.1	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	90.8 90.9	90.9 90.9	6.5 6.5	6.5 6.5		2.1 2.3	2.2 2.2		3.6 3.7	3.7	
M4	Rainy	Calm	08:02	Surface	1.0	21.3 21.4	8.3 8.3	8.3 8.3	34.9 35.0	35.0 35.0	92.6 92.5	92.6 92.6	6.7 6.7	6.7 6.7	6.7	0.9 0.8	0.9 0.9	1.1	12.7 12.6	12.7	8.2
				Middle	5.1	21.4 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	92.6 92.8	92.7 92.7	6.7 6.7	6.7 6.7		1.2 1.0	1.1 1.1		5.0 5.1	5.1	
				Bottom	9.0	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	92.7 92.8	92.8 92.8	6.7 6.7	6.7 6.7		1.3 1.2	1.3 1.3		6.9 6.9	6.9	
M5	Rainy	Calm	09:55	Surface	1.1	21.6 21.6	8.3 8.3	8.3 8.3	35.0 35.0	35.0 35.0	94.1 93.4	93.8 93.8	6.8 6.7	6.7 6.7	6.7	0.9 0.9	0.9 0.9	1.0	7.7 7.7	7.7	5.0
				Middle	6.0	21.4 21.4	8.3 8.3	8.3 8.3	35.1 35.0	35.1 35.1	92.8 92.6	92.7 92.7	6.7 6.7	6.7 6.7		1.1 1.1	1.1 1.1		2.7 2.7	2.7	
				Bottom	11.0	21.5 21.5	8.3 8.3	8.3 8.3	35.2 35.2	35.2 35.2	94.0 94.0	94.0 94.0	6.8 6.8	6.8 6.8		1.0 1.1	1.0 1.0		4.4 4.5	4.5	
M6	Rainy	Calm	09:49	Surface	-	- -	- -	- -	- -	- -	- -	- -	- -	- -	6.7	- -	- -	0.8	- -	-	6.2
				Middle	2.0	21.5 21.5	8.3 8.3	8.3 8.3	35.1 35.1	35.1 35.1	92.7 92.8	92.8 92.8	6.7 6.7	6.7 6.7		0.8 0.8	0.8 0.8		6.3 6.1	6.2	
				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 27 March 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: 0.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.0 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: 7.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 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>C2: 7.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 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>C2: 12.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 13.1 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 27 March 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	16:43	Surface	1.1	21.9	21.9	8.3	8.3	35.1	35.1	94.0	93.8	6.7	6.7	6.7	1.2	1.2	1.4	15.6	15.6	11.6
				Middle	9.0	21.8	21.8	8.3	8.3	35.2	35.2	93.4	93.4	6.7	6.7		1.1	1.0		10.6	10.8	
				Bottom	16.9	21.8	21.9	8.3	8.3	35.4	35.4	94.7	94.6	6.8	6.8		2.0	2.0		8.8	8.4	
C2	Fine	Calm	15:59	Surface	1.1	21.8	21.8	8.3	8.3	35.1	35.1	91.6	91.6	6.6	6.6	6.6	0.6	0.6	0.8	5.6	5.9	8.1
				Middle	16.0	21.8	21.8	8.3	8.3	35.3	35.3	92.6	92.6	6.6	6.6		0.7	0.7		8.5	8.5	
				Bottom	31.0	21.9	21.9	8.3	8.3	35.4	35.4	93.3	93.3	6.7	6.7		1.1	1.1		9.9	10.1	
G1	Fine	Calm	16:20	Surface	1.1	21.9	21.9	8.3	8.3	35.0	35.0	95.0	94.7	6.8	6.8	6.7	0.8	0.9	1.5	7.6	7.9	9.0
				Middle	4.1	21.8	21.8	8.3	8.3	35.2	35.2	93.6	93.4	6.7	6.7		1.6	1.6		10.5	10.7	
				Bottom	7.0	21.8	21.8	8.3	8.3	35.3	35.3	92.2	92.2	6.6	6.6		2.1	2.1		8.3	8.3	
G2	Fine	Calm	16:12	Surface	1.0	21.8	21.8	8.3	8.3	35.1	35.1	95.8	95.3	6.9	6.8	6.8	0.9	0.9	0.9	11.2	11.2	11.6
				Middle	5.0	21.7	21.7	8.3	8.3	35.2	35.1	94.8	94.8	6.8	6.8		0.8	0.8		6.7	7.1	
				Bottom	9.1	21.8	21.8	8.3	8.3	35.2	35.2	94.2	94.2	6.7	6.7		1.0	0.9		16.2	16.4	
G3	Fine	Calm	16:23	Surface	1.0	21.9	21.9	8.3	8.3	35.0	35.0	93.9	94.0	6.7	6.7	6.7	0.9	0.9	1.2	4.5	4.4	3.6
				Middle	4.1	21.7	21.7	8.3	8.3	35.2	35.2	93.0	93.1	6.7	6.7		1.3	1.3		5.3	5.0	
				Bottom	7.1	21.7	21.7	8.3	8.3	35.2	35.2	91.8	91.8	6.6	6.6		1.5	1.5		4.7	1.5	
G4	Fine	Calm	16:29	Surface	1.0	21.8	21.8	8.3	8.3	35.1	35.1	95.1	94.7	6.8	6.8	6.8	1.0	0.9	1.0	12.2	12.6	15.1
				Middle	4.0	21.7	21.7	8.3	8.3	35.1	35.1	93.9	94.2	6.7	6.7		0.9	0.9		17.1	17.1	
				Bottom	7.0	21.7	21.7	8.3	8.3	35.2	35.2	93.1	92.5	6.7	6.6		1.2	1.2		15.9	15.5	
M1	Fine	Calm	16:16	Surface	1.0	21.8	21.8	8.3	8.3	35.1	35.1	92.9	92.5	6.7	6.6	6.6	1.9	1.8	2.4	3.0	2.9	5.5
				Middle	3.0	21.7	21.7	8.3	8.3	35.1	35.1	91.9	91.9	6.6	6.6		2.3	2.1		4.4	4.4	
				Bottom	5.1	21.7	21.7	8.3	8.3	35.2	35.2	91.2	90.9	6.5	6.5		3.3	3.2		8.9	9.3	
M2	Fine	Calm	16:08	Surface	1.0	21.9	21.9	8.3	8.3	35.1	35.2	92.8	93.0	6.6	6.6	6.6	1.0	1.0	1.1	10.9	10.9	5.8
				Middle	6.1	21.8	21.8	8.3	8.3	35.3	35.3	93.0	93.0	6.7	6.7		1.1	1.1		3.0	2.9	
				Bottom	11.1	21.8	21.8	8.3	8.3	35.3	35.3	93.3	93.2	6.7	6.7		1.1	1.1		2.8	3.7	
M3	Fine	Calm	16:27	Surface	1.1	21.8	21.8	8.3	8.3	35.0	35.0	94.8	94.3	6.8	6.8	6.7	0.9	0.9	1.0	15.4	15.4	10.8
				Middle	3.9	21.7	21.7	8.3	8.3	35.1	35.1	94.0	94.2	6.7	6.7		1.0	1.0		12.1	12.1	
				Bottom	7.1	21.7	21.7	8.3	8.3	35.2	35.2	92.1	93.3	6.6	6.6		1.1	1.1		5.1	5.0	
M4	Fine	Calm	16:04	Surface	1.0	21.8	21.8	8.3	8.3	35.2	35.2	92.3	92.3	6.6	6.6	6.6	1.3	1.3	1.4	6.8	7.1	7.4
				Middle	5.0	21.8	21.8	8.3	8.3	35.2	35.2	92.0	92.0	6.6	6.6		1.4	1.4		5.3	5.3	
				Bottom	9.1	21.8	21.8	8.3	8.3	35.2	35.2	92.2	92.2	6.6	6.6		1.4	1.4		9.9	9.8	
M5	Fine	Calm	16:39	Surface	1.1	21.8	21.8	8.3	8.3	35.1	35.1	96.3	95.7	6.9	6.8	6.8	0.5	0.5	0.5	7.6	7.8	7.1
				Middle	6.0	21.8	21.8	8.3	8.3	35.3	35.3	95.8	95.0	6.8	6.8		0.5	0.5		5.2	5.1	
				Bottom	11.1	21.9	21.9	8.3	8.3	35.4	35.4	96.3	96.5	6.9	6.9		0.4	0.4		8.6	8.4	
M6	Fine	Calm	16:34	Surface	-	-	-	-	-	-	-	-	-	-	6.8	-	-	0.5	-	-	10.6	
				Middle	2.0	21.8	21.8	8.3	8.3	35.1	35.1	95.6	95.7	6.8		6.8	0.5		0.5	10.4		10.6
				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 27 March 2019 (Mid-Flood 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>CI: 0.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.0 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>CI: 1.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 1.9 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>CI: 1.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 1.9 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>CI: 6.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 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 27 March 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	11:18	Surface	1.0	21.7 21.7	8.3 8.3	8.3	35.2 35.2	35.2	94.8 94.5	94.7	6.8 6.8	6.8	6.8	6.8	0.9 0.9	0.9	1.1	1.1 1.8	1.5	3.8
				Middle	9.0	21.8 21.8	8.3 8.3	8.3	35.4 35.4	35.4	94.3 94.2	94.3	6.7 6.7	6.7	6.7		1.0 1.0	1.0		5.1 4.8	5.0	
				Bottom	17.0	21.9 21.9	8.3 8.3	8.3	35.5 35.5	35.5	93.9 93.9	93.9	6.7 6.7	6.7	6.7		1.4 1.4	1.4		5.0 5.1	5.1	
C2	Fine	Calm	11:22	Surface	1.1	21.7 21.7	8.3 8.3	8.3	35.0 35.0	35.0	93.9 93.6	93.8	6.7 6.7	6.7	6.7	1.1 1.0	1.0	0.8	1.1 3.8	4.0	4.8	
				Middle	16.1	21.7 21.7	8.3 8.3	8.3	35.1 35.1	35.1	92.3 92.3	92.3	6.6 6.6	6.6		6.6	0.6 0.6		0.6	5.3 4.7		5.0
				Bottom	31.1	21.7 21.7	8.3 8.3	8.3	35.2 35.2	35.2	93.3 93.4	93.4	6.7 6.7	6.7		6.7	0.8 0.9		0.9	5.0 5.7		5.4
G1	Fine	Calm	10:45	Surface	1.0	21.6 21.6	8.3 8.3	8.3	35.0 35.0	35.0	93.6 93.5	93.6	6.7 6.7	6.7	6.7	1.0 1.0	1.0	0.7	4.0 4.2	4.1	6.8	
				Middle	4.1	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	93.2 93.1	93.2	6.7 6.7	6.7		6.7	0.8 0.7		0.8	5.6 5.4		5.5
				Bottom	7.1	21.7 21.7	8.3 8.3	8.3	35.1 35.2	35.2	92.8 92.6	92.7	6.7 6.6	6.6		6.6	0.5 0.5		0.5	10.7 10.7		10.7
G2	Fine	Calm	10:33	Surface	1.0	21.6 21.6	8.3 8.3	8.3	35.0 35.1	35.0	93.5 93.0	93.3	6.7 6.7	6.7	6.7	1.0 0.8	0.9	0.6	4.0 4.1	4.1	6.8	
				Middle	5.0	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	92.9 92.9	92.9	6.7 6.7	6.7		6.7	0.5 0.5		0.5	6.5 5.9		6.2
				Bottom	9.0	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	92.9 92.9	92.9	6.7 6.7	6.7		6.7	0.4 0.4		0.4	9.8 10.4		10.1
G3	Fine	Calm	10:51	Surface	1.0	21.6 21.6	8.3 8.3	8.3	35.0 35.1	35.0	93.6 93.2	93.4	6.7 6.7	6.7	6.7	1.1 1.0	1.0	1.3	18.8 19.3	19.1	11.2	
				Middle	4.0	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	92.5 92.4	92.5	6.6 6.6	6.6		6.6	1.0 1.0		1.0	8.3 8.1		8.2
				Bottom	7.1	21.7 21.7	8.3 8.3	8.3	35.3 35.3	35.3	90.9 90.6	90.7	6.5 6.5	6.5		6.5	1.7 1.7		1.7	6.3 6.2		6.3
G4	Fine	Calm	11:00	Surface	1.1	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	92.6 91.6	92.1	6.7 6.6	6.6	6.6	1.2 1.3	1.3	1.3	9.4 9.5	9.5	12.8	
				Middle	4.0	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	91.1 91.3	91.2	6.5 6.6	6.5		6.5	1.3 1.4		1.3	18.5 18.4		18.5
				Bottom	7.1	21.7 21.7	8.3 8.3	8.3	35.2 35.2	35.2	91.1 90.9	91.0	6.5 6.5	6.5		6.5	1.2 1.1		1.2	10.3 10.6		10.6
M1	Fine	Calm	10:36	Surface	1.1	21.6 21.6	8.3 8.3	8.3	35.0 35.0	35.0	93.5 92.9	93.2	6.7 6.7	6.7	6.7	1.1 1.1	1.1	1.0	22.4 22.8	22.6	25.5	
				Middle	3.0	21.6 21.6	8.3 8.3	8.3	35.0 35.0	35.0	92.1 92.0	92.1	6.6 6.6	6.6		6.6	1.0 1.0		1.1	16.4 15.8		16.1
				Bottom	5.1	21.6 21.6	8.3 8.3	8.3	35.1 35.1	35.1	91.9 91.8	91.9	6.6 6.6	6.6		6.6	0.9 0.9		0.9	38.3 37.5		37.9
M2	Fine	Calm	10:29	Surface	1.1	21.5 21.7	8.3 8.3	8.3	35.2 35.1	35.1	95.8 95.2	95.5	6.9 6.8	6.9	6.8	0.5 0.5	0.5	0.7	28.1 27.7	27.9	15.9	
				Middle	6.0	21.7 21.7	8.3 8.3	8.3	35.2 35.2	35.2	93.1 93.1	93.1	6.7 6.7	6.7		6.7	0.7 0.7		0.7	12.4 12.2		12.3
				Bottom	11.0	21.8 21.8	8.3 8.3	8.3	35.3 35.3	35.3	92.9 92.8	92.9	6.6 6.6	6.6		6.6	0.8 0.8		0.8	7.0 7.8		7.4
M3	Fine	Calm	10:56	Surface	1.0	21.6 21.6	8.3 8.3	8.3	34.9 34.9	34.9	91.7 91.7	91.7	6.6 6.6	6.6	6.6	1.0 1.0	1.0	1.3	7.5 6.8	7.2	13.1	
				Middle	4.1	21.6 21.6	8.3 8.3	8.3	35.0 35.1	35.0	91.5 90.9	91.2	6.6 6.5	6.6		6.6	1.1 1.2		1.2	5.6 5.9		5.8
				Bottom	7.1	21.6 21.7	8.3 8.3	8.3	35.2 35.2	35.2	90.5 89.7	90.1	6.5 6.4	6.5		6.5	1.7 2.0		1.9	26.2 26.8		26.5
M4	Fine	Calm	10:26	Surface	1.1	21.7 21.7	8.2 8.2	8.2	35.1 35.1	35.1	92.9 92.9	92.9	6.7 6.7	6.7	6.7	0.8 0.8	0.8	1.2	14.5 15.4	15.0	9.4	
				Middle	5.0	21.7 21.7	8.2 8.2	8.2	35.2 35.2	35.2	92.7 92.8	92.8	6.6 6.7	6.6		6.6	0.8 0.8		0.8	7.4 7.5		7.5
				Bottom	9.1	21.8 21.8	8.3 8.3	8.3	35.3 35.3	35.3	93.0 93.1	93.1	6.7 6.7	6.7		6.7	1.9 2.0		2.0	5.5 6.1		5.8
M5	Fine	Calm	11:11	Surface	1.1	21.7 21.7	8.3 8.3	8.3	35.0 35.0	35.0	94.5 94.1	94.3	6.8 6.8	6.8	6.7	0.8 0.8	0.8	0.9	7.8 7.2	7.5	7.1	
				Middle	6.0	21.7 21.7	8.3 8.3	8.3	35.1 35.1	35.1	93.0 92.9	93.0	6.7 6.7	6.7		6.7	0.9 0.8		0.8	4.6 4.0		4.3
				Bottom	11.1	21.7 21.7	8.3 8.3	8.3	35.2 35.2	35.2	92.8 92.7	92.8	6.7 6.6	6.6		6.6	1.2 1.1		1.2	9.7 9.3		9.5
M6	Fine	Calm	11:08	Surface	-	-	-	-	-	-	-	-	-	-	6.7	-	-	1.2	-	-	3.2	
				Middle	2.0	21.7 21.7	8.3 8.3	8.3	35.2 35.2	35.2	93.4 93.4	93.4	6.7 6.7	6.7		6.7	1.2 1.2		1.2	3.4 2.9		3.2
				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 29 March 2019 (Mid-Flood 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>CI: 0.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.7 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: 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>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: 4.7 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>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: 3.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.9 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.

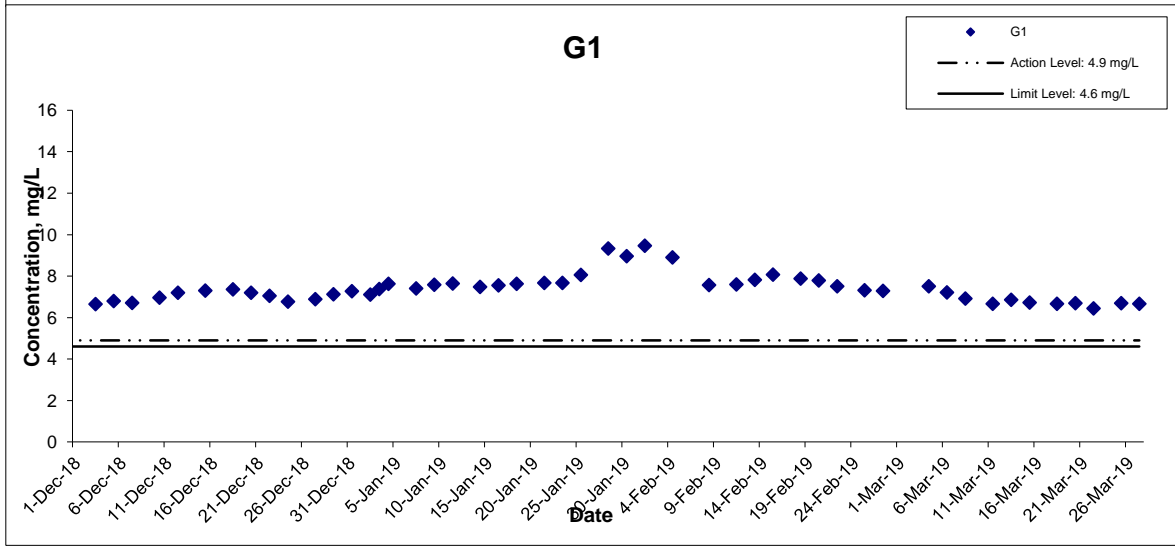
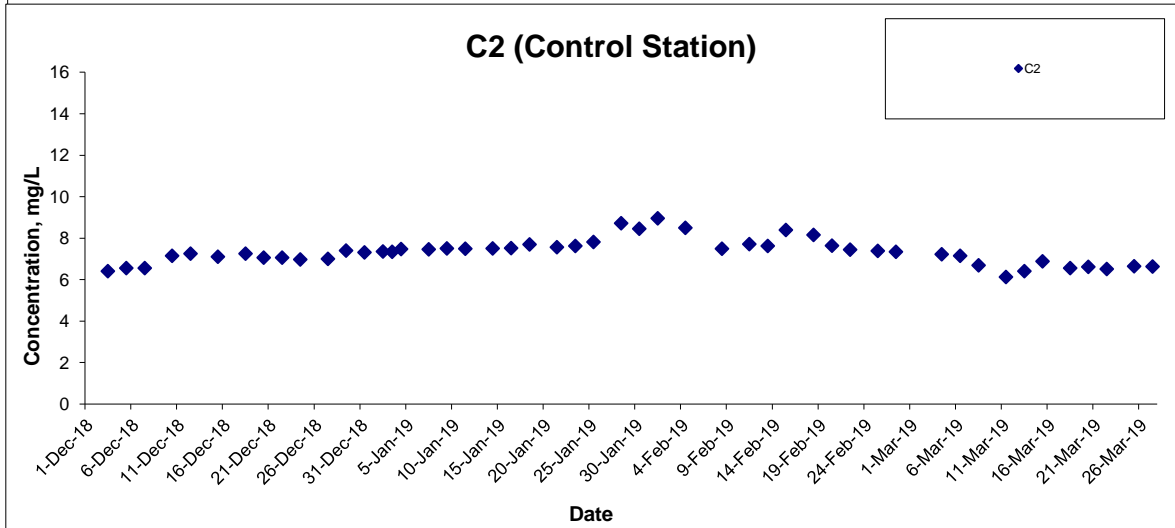
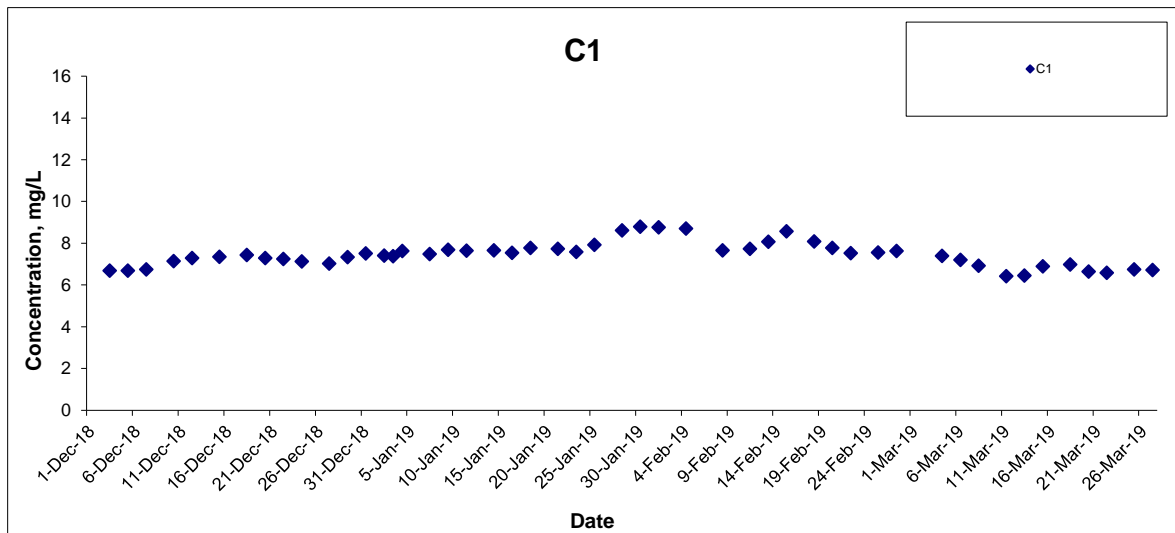
**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 29 March 2019**

(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	09:19	Surface	1.1	22.1 22.1	22.1	8.3 8.3	8.3	34.7 34.7	34.7	90.8 89.5	90.2	6.5 6.4	6.4	6.5	0.6 0.6	0.6	0.6	3.5 4.4	4.0	3.6
				Middle	9.0	22.1 22.1	22.1	8.3 8.3	8.3	35.1 34.9	35.0	92.0 90.0	91.0	6.6 6.4	6.5		0.5 0.5	0.5		4.4 4.1	3.9	
				Bottom	17.0	22.0 22.0	22.0	8.3 8.3	8.3	35.3 35.3	35.3	92.8 92.4	92.6	6.6 6.6	6.6		0.6 0.6	0.6		2.6 3.4	3.0	
C2	Sunny	Calm	08:32	Surface	1.1	22.1 22.1	22.1	8.1 8.3	8.2	34.9 34.9	34.9	90.2 90.8	90.5	6.4 6.5	6.5	6.5	0.5 0.5	0.5	1.0	4.2 4.8	4.5	3.6
				Middle	16.5	22.0 22.0	22.0	8.2 8.3	8.3	35.2 35.3	35.3	91.7 92.2	92.0	6.5 6.6	6.5		0.8 1.0	0.9		4.4 5.3	4.9	
				Bottom	32.0	22.0 22.0	22.0	8.3 8.3	8.3	35.4 35.4	35.4	92.5 92.6	92.6	6.6 6.6	6.6		1.3 1.6	1.5		1.4 1.6	1.5	
G1	Sunny	Calm	08:54	Surface	1.0	22.5 22.4	22.5	8.3 8.3	8.3	34.7 34.9	34.8	95.6 93.8	94.7	6.8 6.7	6.7	6.7	0.6 0.7	0.7	0.9	1.0 1.1	1.1	3.8
				Middle	4.1	22.2 22.4	22.3	8.3 8.3	8.3	35.0 34.9	34.9	93.5 94.4	94.0	6.7 6.7	6.7		0.7 0.8	0.7		6.1 6.4	6.3	
				Bottom	7.0	22.1 22.2	22.1	8.3 8.3	8.3	35.1 35.0	35.0	91.6 93.0	92.3	6.5 6.6	6.6		1.3 1.1	1.2		3.8 4.1	4.0	
G2	Sunny	Calm	08:45	Surface	1.1	22.3 22.3	22.3	8.3 8.3	8.3	34.9 34.9	34.9	94.0 93.1	93.6	6.7 6.6	6.6	6.6	0.5 0.5	0.5	0.6	4.9 5.6	5.3	4.0
				Middle	5.5	22.1 22.0	22.1	8.3 8.3	8.3	35.0 35.0	35.0	92.1 91.8	92.0	6.6 6.6	6.6		0.7 0.7	0.7		1.2 1.6	1.4	
				Bottom	10.0	22.0 22.0	22.0	8.3 8.3	8.3	35.2 35.2	35.2	92.2 92.1	92.2	6.6 6.6	6.6		0.7 0.7	0.7		4.9 5.9	5.4	
G3	Sunny	Calm	08:58	Surface	1.1	22.5 22.5	22.5	8.3 8.3	8.3	34.8 34.7	34.7	94.2 92.4	93.3	6.7 6.6	6.6	6.6	0.5 0.5	0.5	1.1	3.5 4.2	3.9	3.2
				Middle	4.0	22.3 22.4	22.3	8.3 8.3	8.3	35.0 34.9	34.9	94.2 93.7	94.0	6.7 6.6	6.7		0.8 0.8	0.8		1.6 1.7	1.7	
				Bottom	7.1	22.0 22.1	22.0	8.3 8.3	8.3	35.2 35.1	35.2	90.8 90.6	90.7	6.5 6.5	6.5		2.1 1.9	2.0		3.5 4.4	4.0	
G4	Sunny	Calm	09:04	Surface	1.0	22.3 22.5	22.4	8.3 8.3	8.3	34.9 34.8	34.8	92.8 93.5	93.2	6.6 6.6	6.6	6.6	0.7 0.6	0.7	0.9	6.4 6.8	6.6	5.2
				Middle	4.0	22.3 22.3	22.3	8.3 8.3	8.3	34.9 34.9	34.9	92.5 92.2	92.4	6.6 6.6	6.6		0.8 0.6	0.8		3.6 4.5	4.1	
				Bottom	7.0	22.1 22.1	22.1	8.3 8.3	8.3	35.1 35.2	35.1	91.7 91.7	91.7	6.5 6.5	6.5		1.2 1.3	1.2		4.4 5.2	4.8	
M1	Sunny	Calm	08:50	Surface	1.1	22.5 22.3	22.4	8.3 8.3	8.3	34.8 34.8	34.9	94.0 92.0	93.0	6.7 6.5	6.6	6.5	0.8 1.0	0.9	0.6	4.5 4.9	4.7	7.1
				Middle	3.1	22.4 22.4	22.4	8.3 8.3	8.3	35.0 34.9	34.9	91.3 92.1	91.7	6.5 6.5	6.5		0.4 0.4	0.4		8.7 9.5	9.1	
				Bottom	5.0	22.2 22.4	22.3	8.3 8.3	8.3	35.0 34.9	35.0	89.2 91.4	90.3	6.3 6.5	6.4		0.6 0.5	0.6		6.9 7.8	7.4	
M2	Sunny	Calm	08:42	Surface	1.0	22.3 22.3	22.3	8.3 8.3	8.3	34.8 34.8	34.8	94.3 93.6	94.0	6.7 6.7	6.7	6.6	0.6 0.5	0.6	0.7	1.6 1.9	1.8	3.1
				Middle	5.1	22.2 22.1	22.2	8.3 8.3	8.3	34.9 34.9	34.9	93.5 92.3	92.9	6.7 6.6	6.6		0.7 0.7	0.7		3.7 4.5	4.1	
				Bottom	9.1	22.0 22.0	22.0	8.3 8.3	8.3	35.2 35.2	35.2	91.7 91.5	91.6	6.5 6.5	6.5		0.9 1.0	1.0		3.3 3.3	3.3	
M3	Sunny	Calm	09:00	Surface	1.0	22.4 22.4	22.4	8.3 8.3	8.3	34.8 34.8	34.8	92.5 89.9	91.2	6.6 6.4	6.5	6.5	0.9 0.8	0.9	1.1	3.0 3.0	3.0	4.4
				Middle	4.1	22.4 22.4	22.4	8.3 8.3	8.3	35.0 34.9	34.9	93.1 91.8	92.5	6.6 6.5	6.6		0.8 0.7	0.8		5.9 6.5	6.2	
				Bottom	7.0	22.2 22.0	22.1	8.3 8.3	8.3	35.0 35.1	35.1	88.1 87.7	87.9	6.3 6.3	6.3		1.5 1.8	1.6		3.6 4.2	3.9	
M4	Sunny	Calm	08:37	Surface	1.0	22.1 22.1	22.1	8.3 8.3	8.3	34.8 34.8	34.8	90.3 90.5	90.4	6.4 6.5	6.4	6.4	0.5 0.5	0.5	0.7	3.6 4.3	4.0	2.9
				Middle	5.5	22.1 22.0	22.1	8.3 8.3	8.3	34.9 35.0	34.9	90.0 90.0	90.0	6.4 6.4	6.4		0.5 0.7	0.6		0.8 1.0	0.9	
				Bottom	10.0	22.0 22.0	22.0	8.3 8.3	8.3	35.3 35.2	35.3	92.1 91.0	91.6	6.6 6.5	6.5		1.1 1.0	1.1		3.5 3.9	3.7	
M5	Sunny	Calm	09:13	Surface	1.1	22.3 22.1	22.2	8.3 8.3	8.3	34.5 34.7	34.6	90.8 88.8	89.8	6.5 6.3	6.4	6.4	0.7 0.7	0.7	0.9	3.9 4.1	4.0	3.3
				Middle	6.1	22.1 22.1	22.1	8.3 8.3	8.3	35.0 34.9	34.9	91.4 89.2	90.3	6.5 6.4	6.4		0.6 0.8	0.7		3.7 4.5	4.1	
				Bottom	11.0	22.1 22.1	22.1	8.3 8.3	8.3	35.3 35.2	35.3	93.3 91.9	92.6	6.6 6.5	6.6		1.6 1.3	1.4		1.2 2.1	1.7	
M6	Sunny	Calm	09:08	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	0.3	-	-	1.4
				Middle	2.2	22.2 22.1	22.1	8.3 8.3	8.3	34.7 34.8	34.8	91.3 88.9	90.1	6.5 6.3	6.4		0.4 0.3	0.3		1.3 1.4	1.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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



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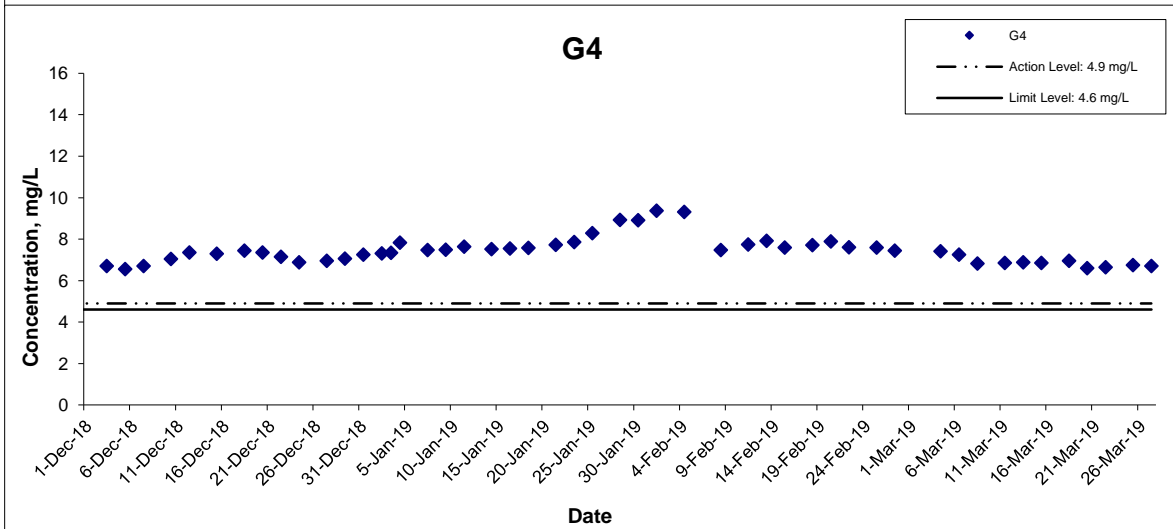
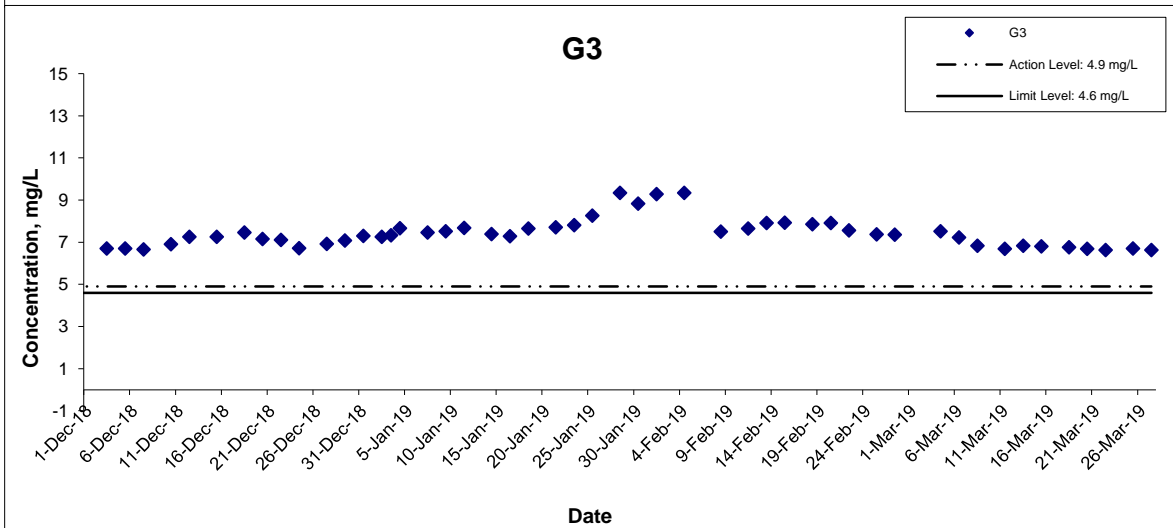
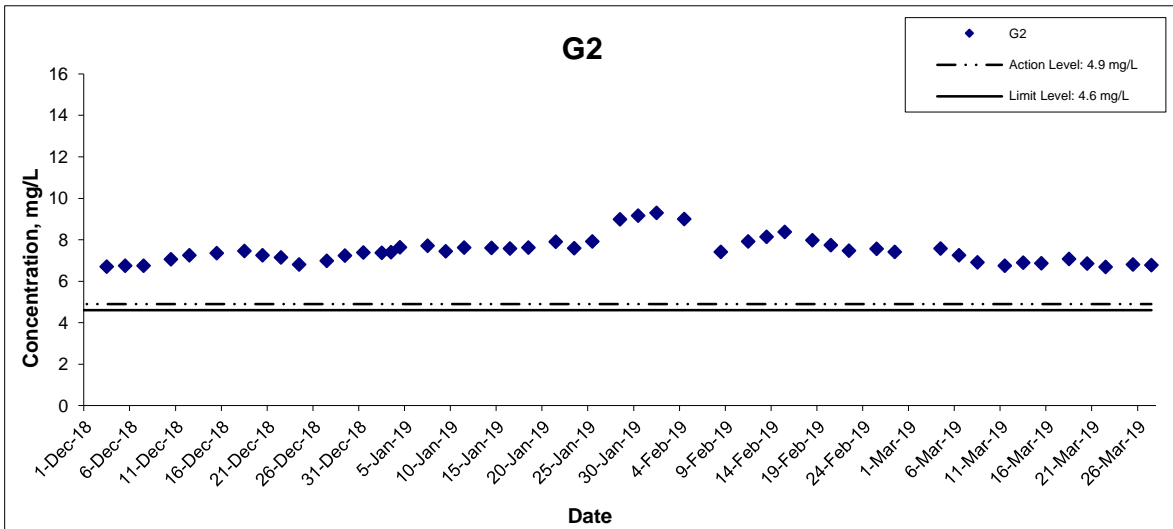
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Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



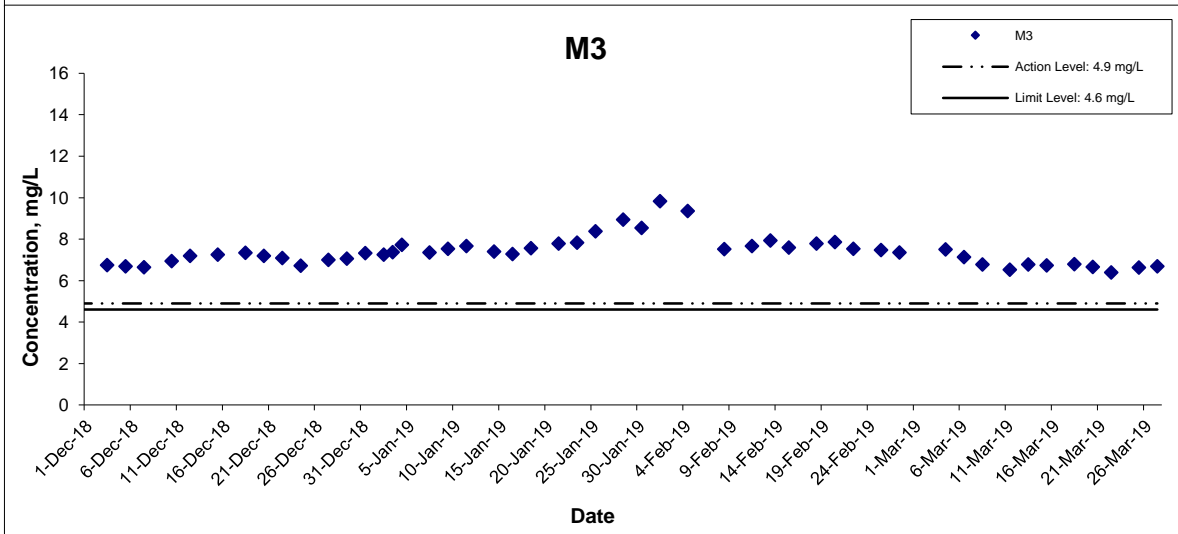
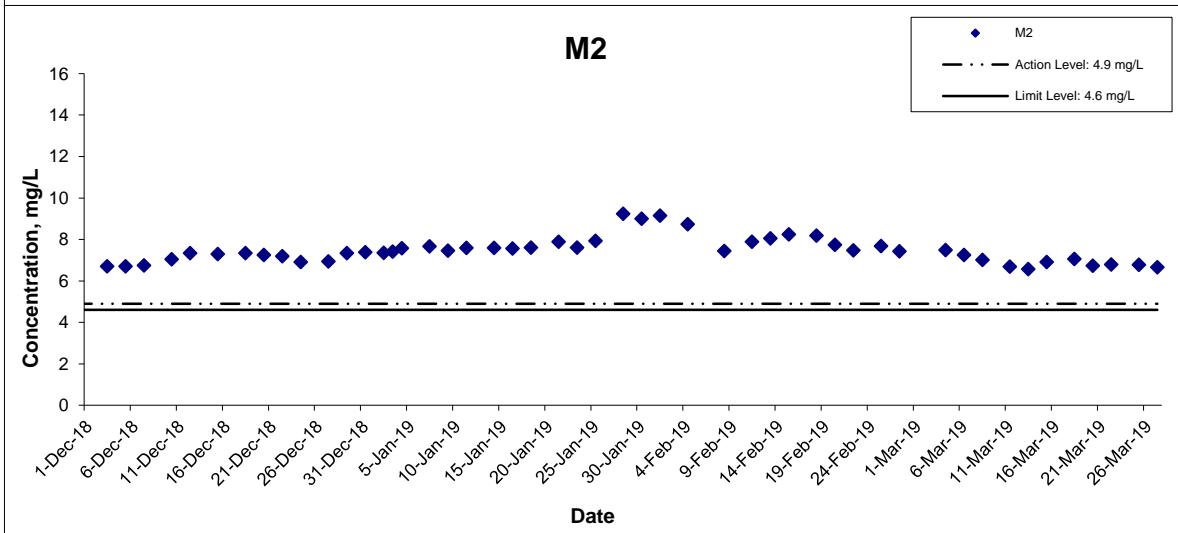
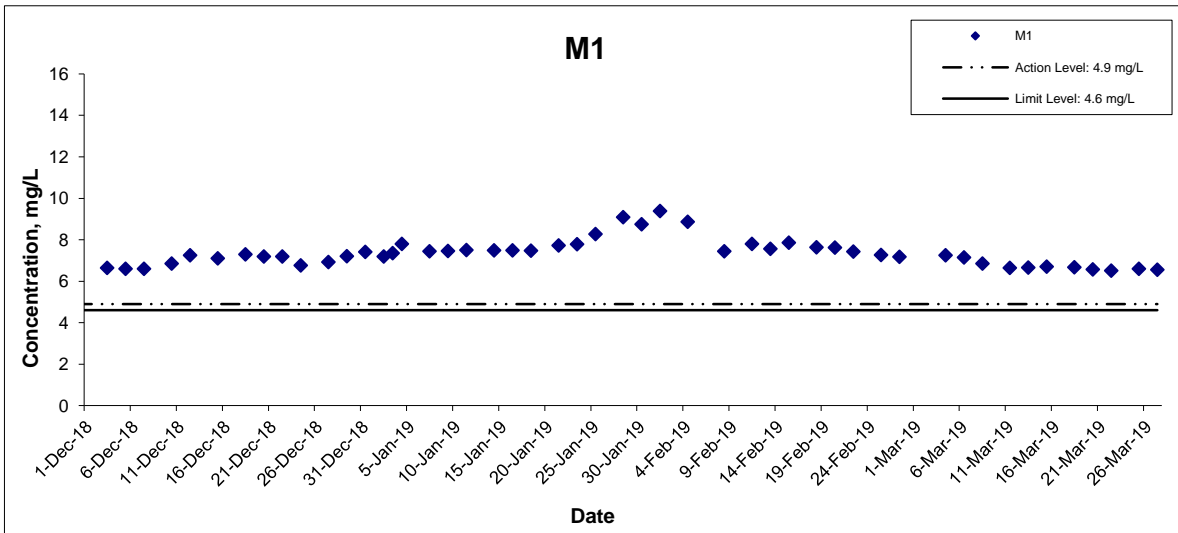
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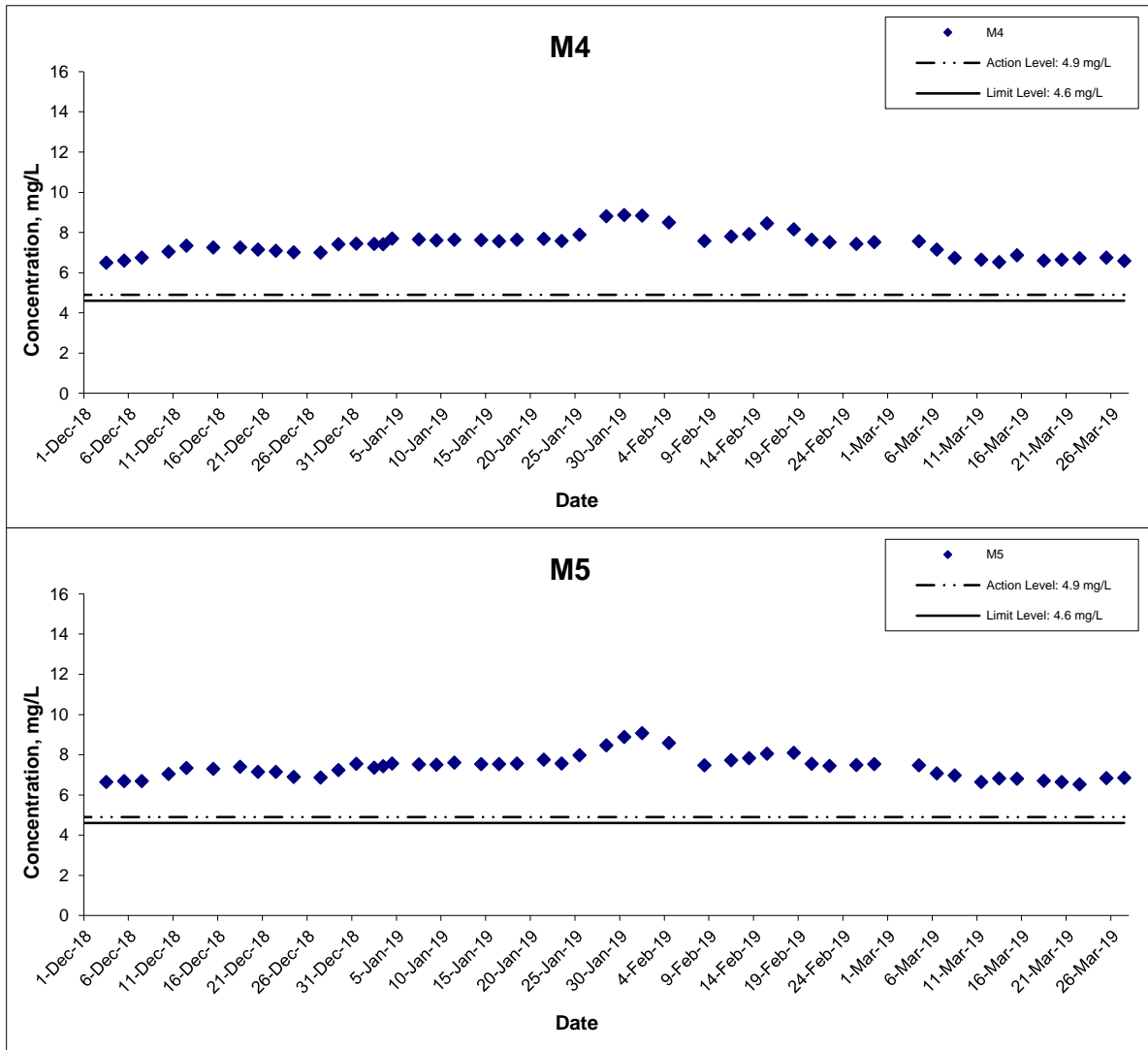


Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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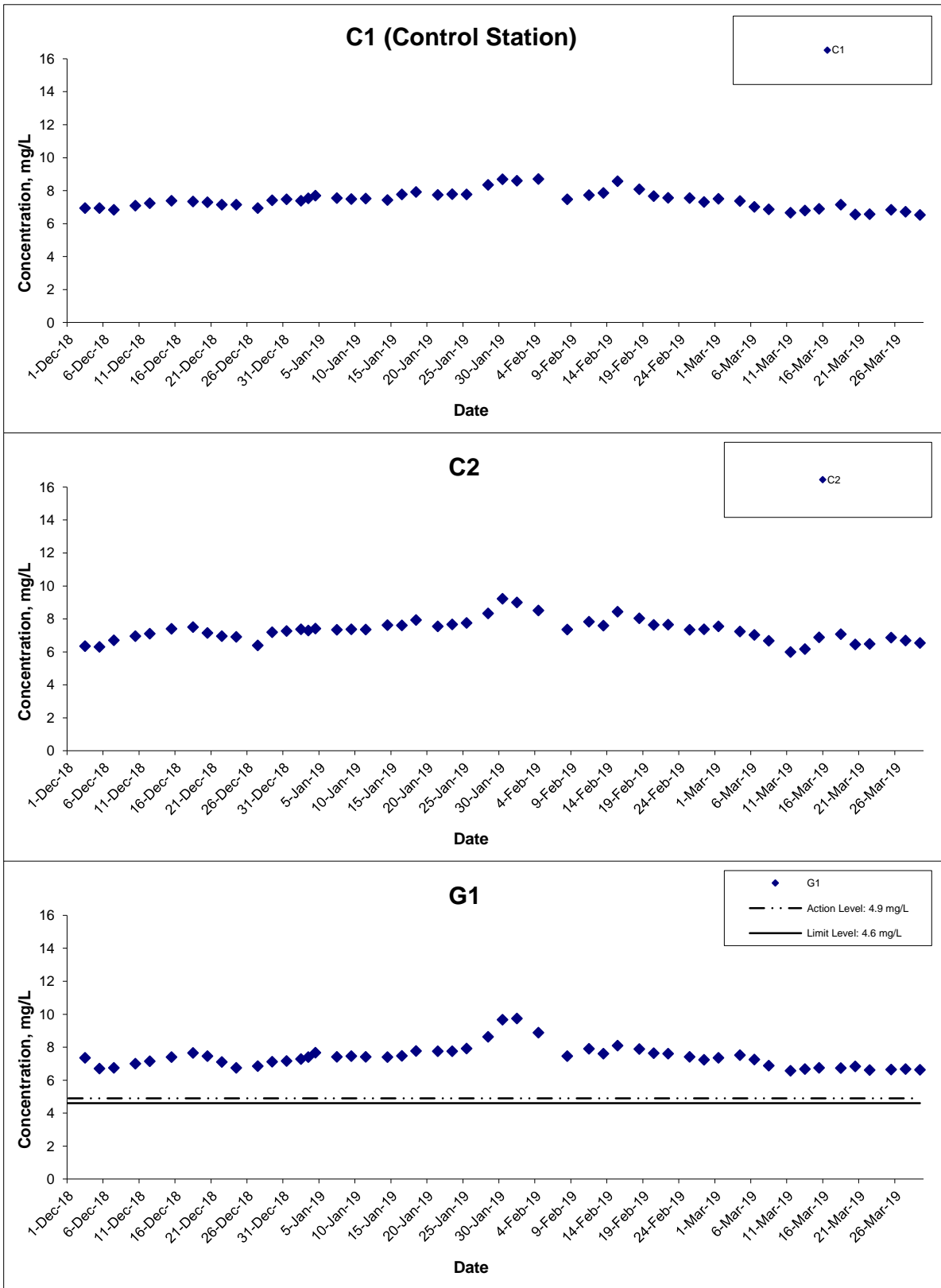
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Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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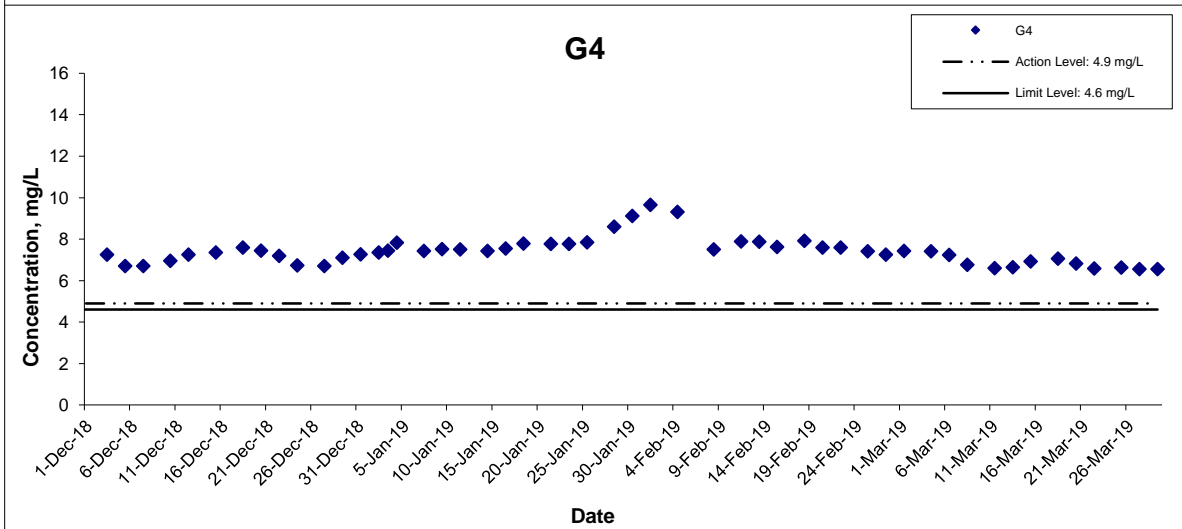
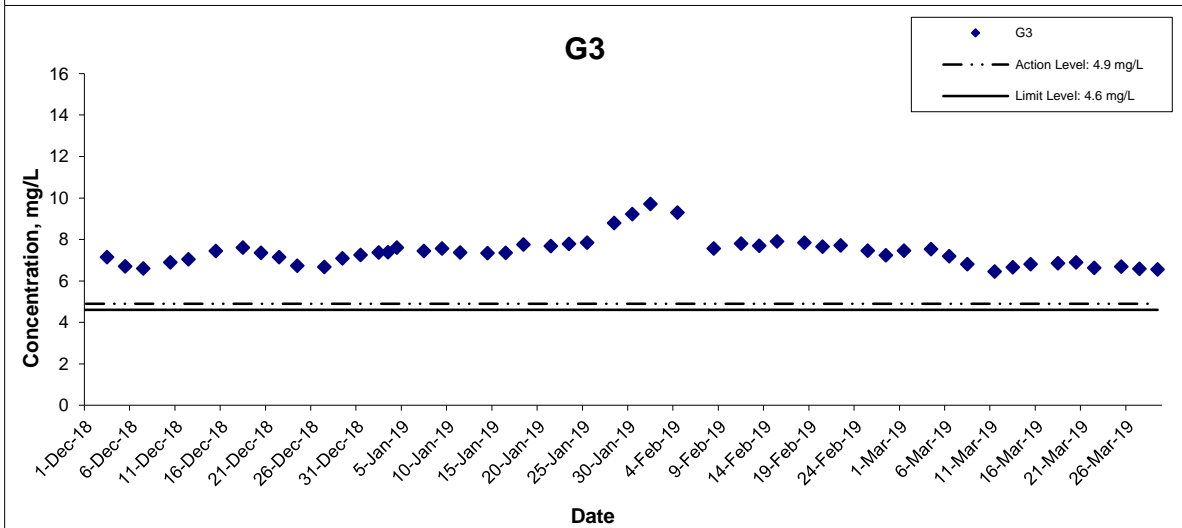
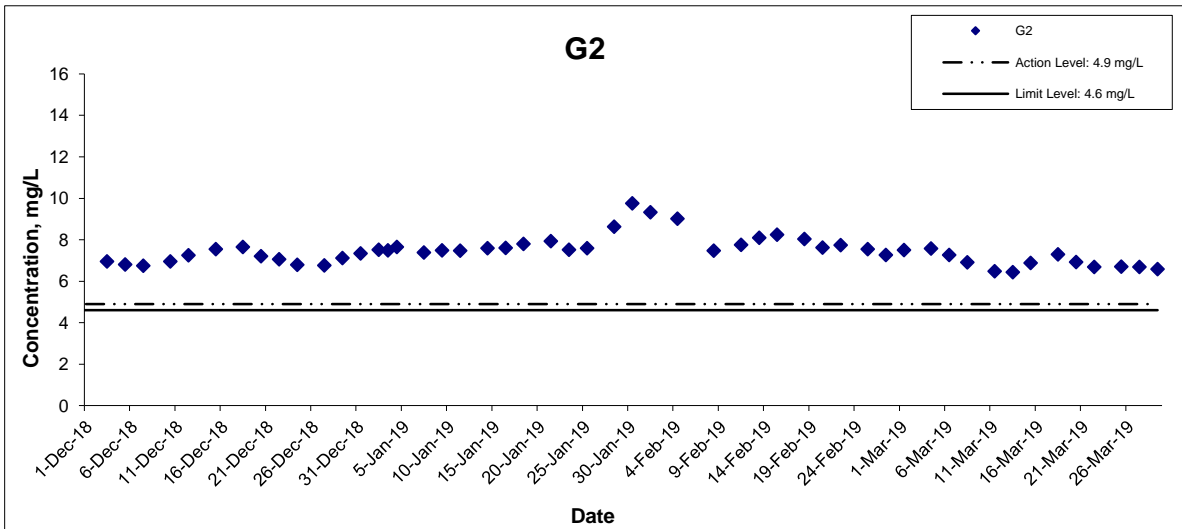
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Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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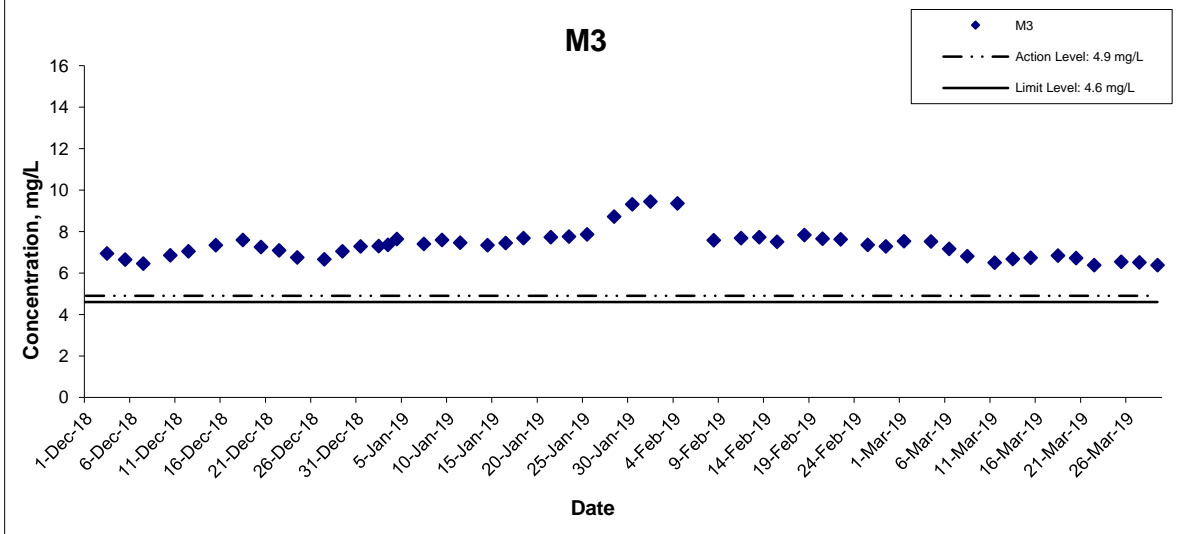
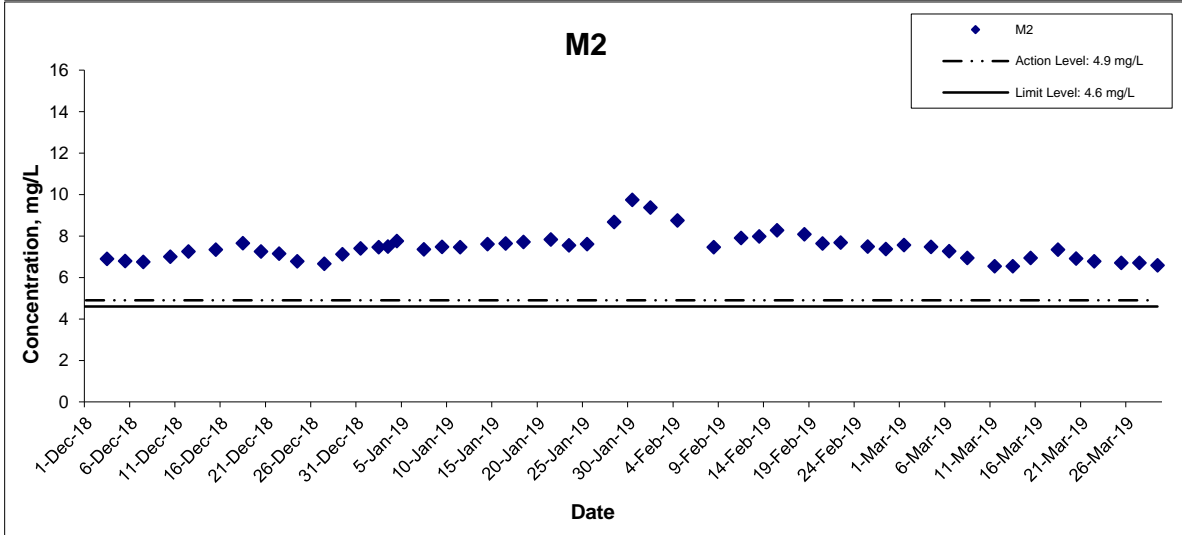
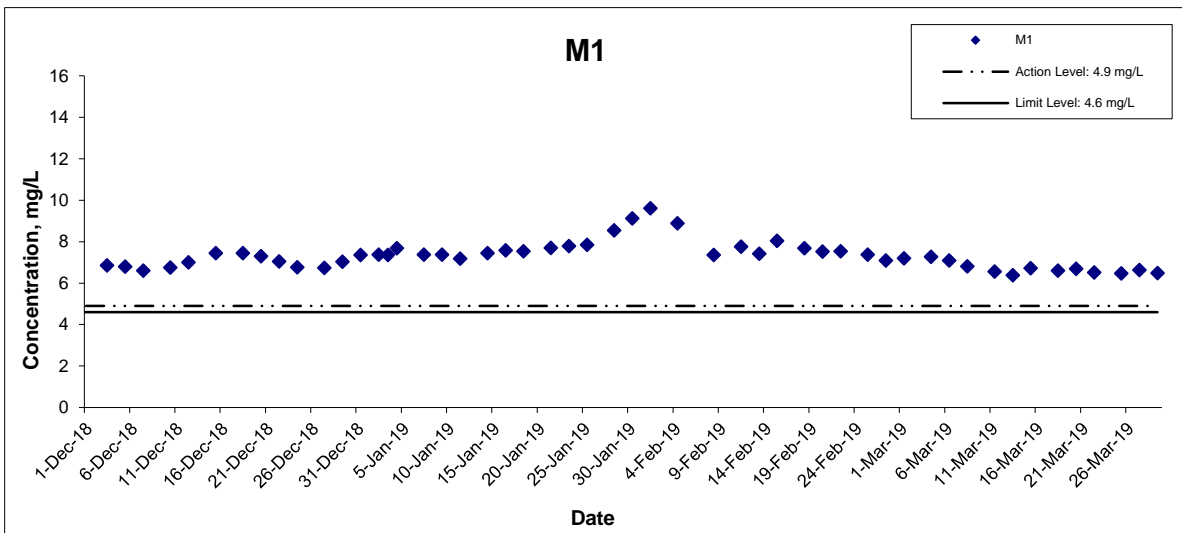
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Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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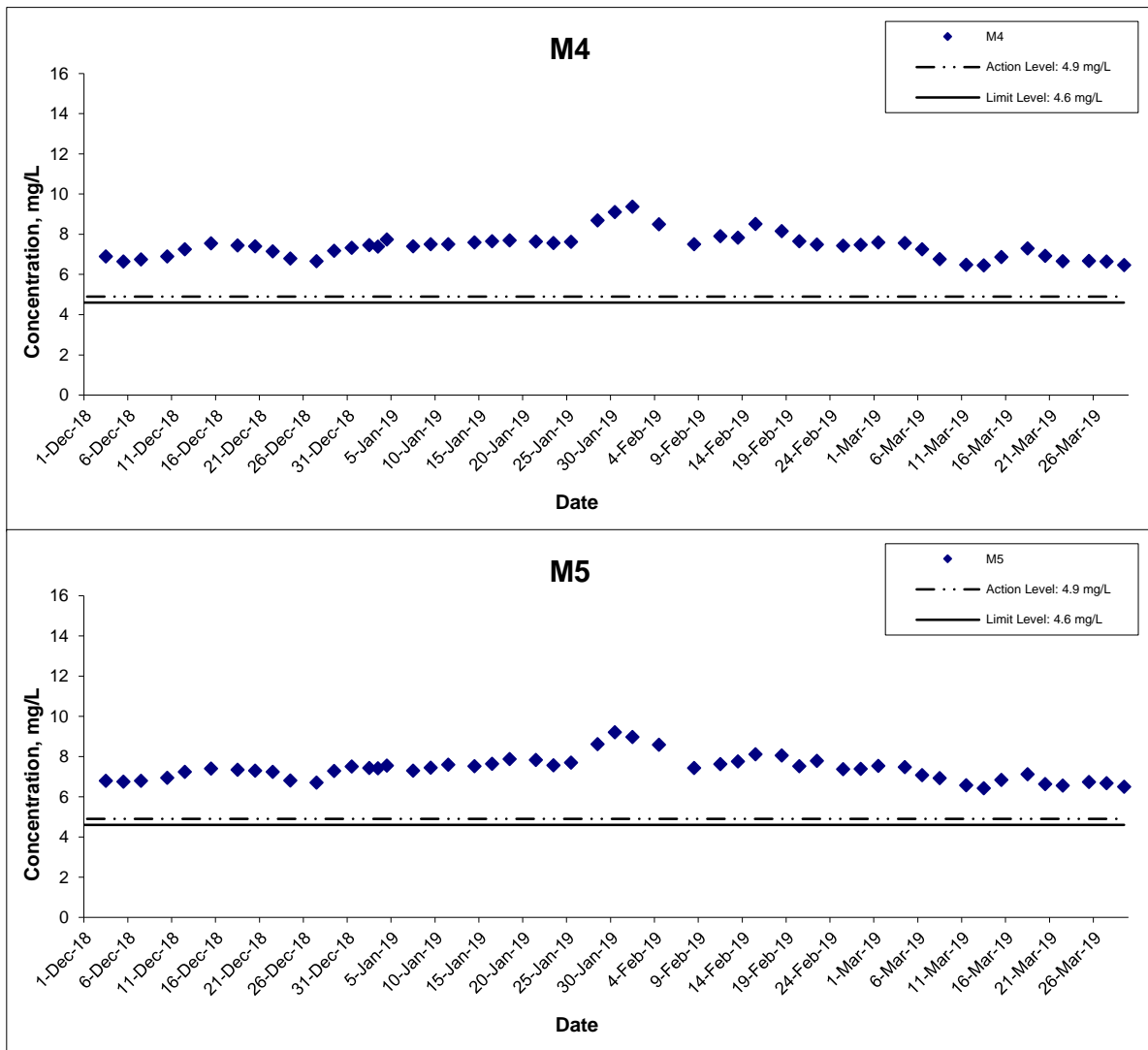
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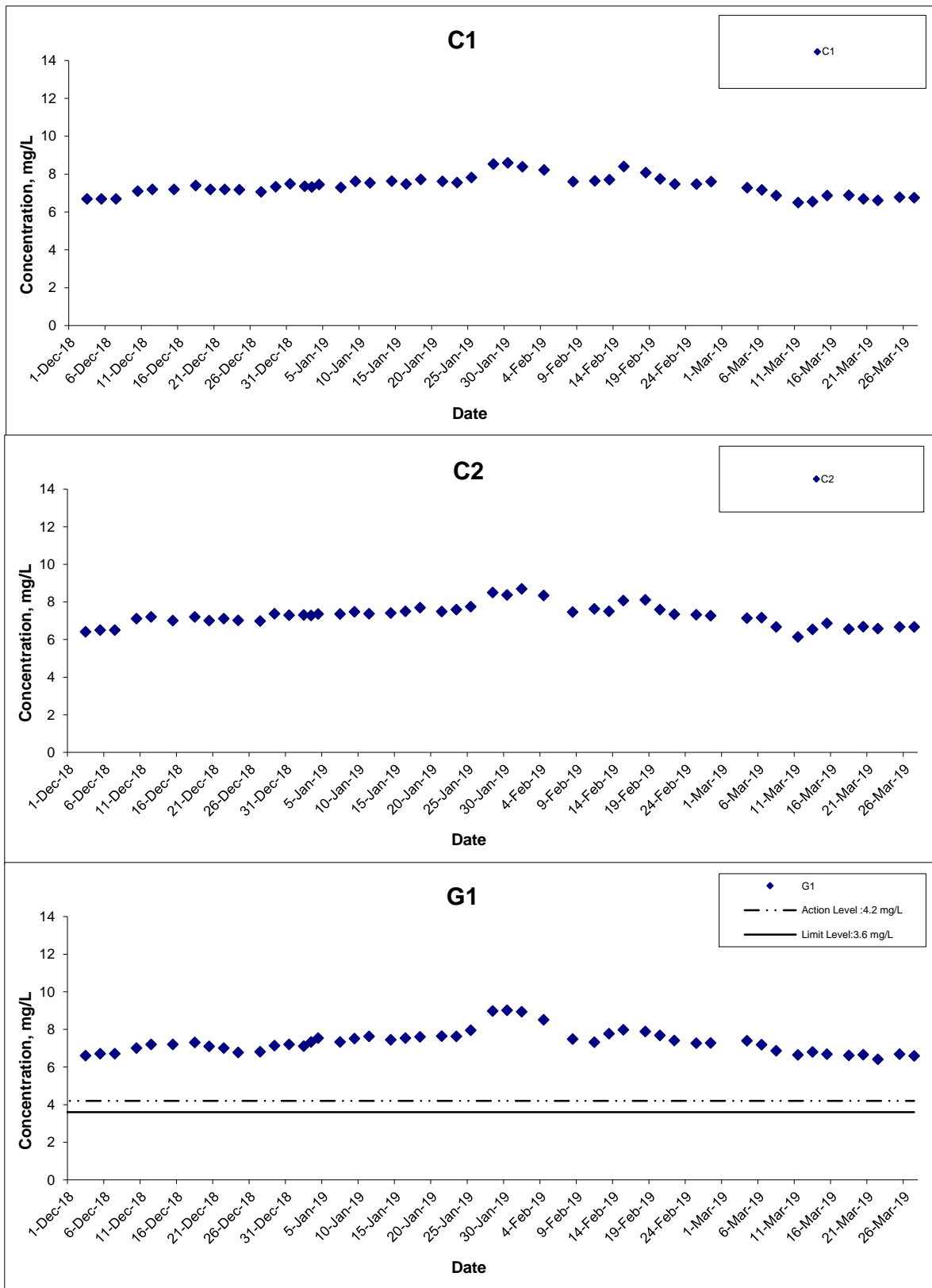


Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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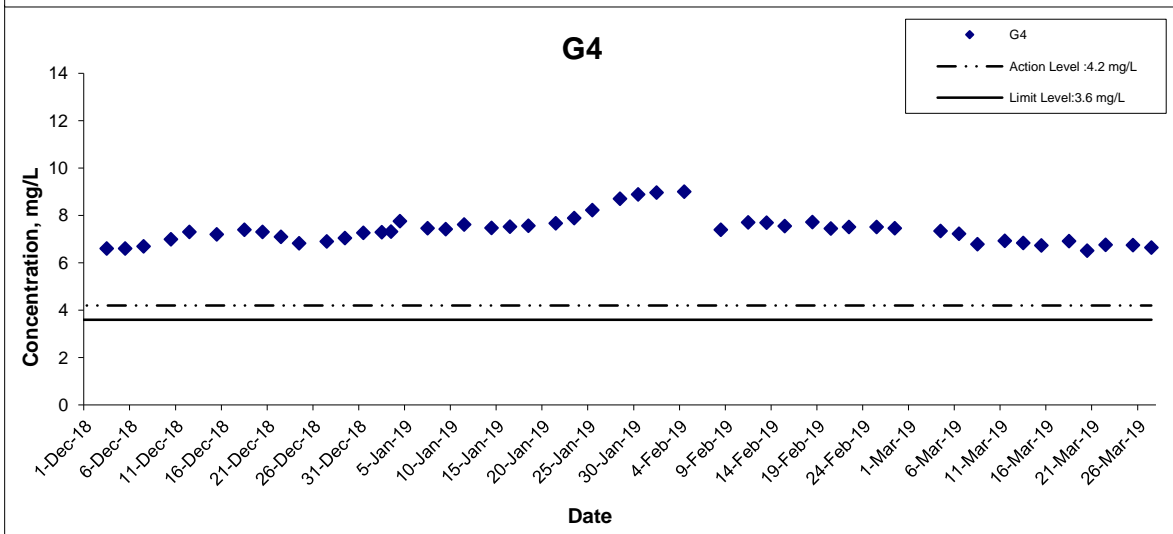
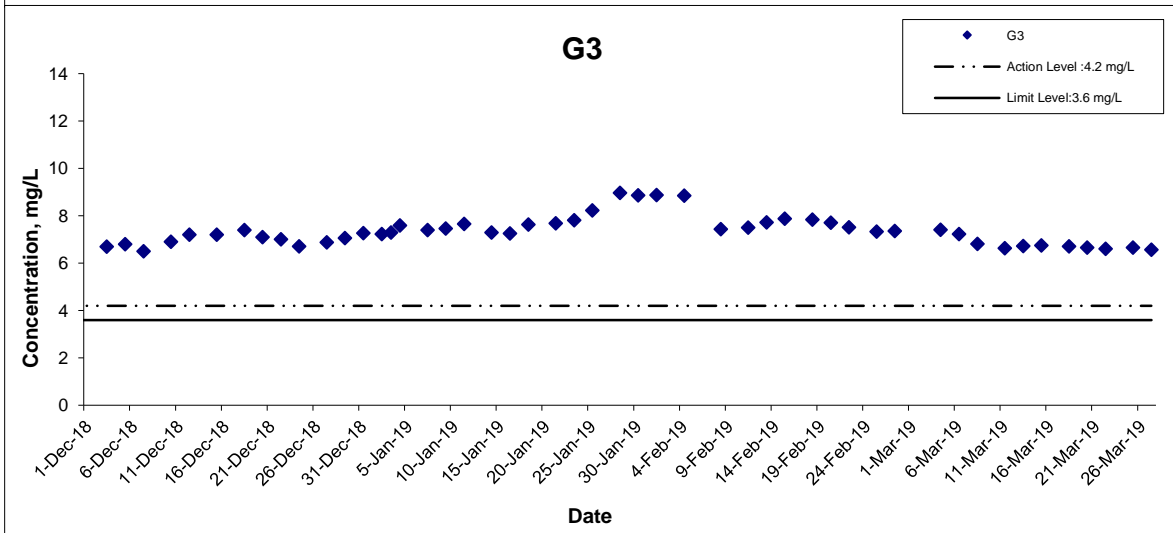
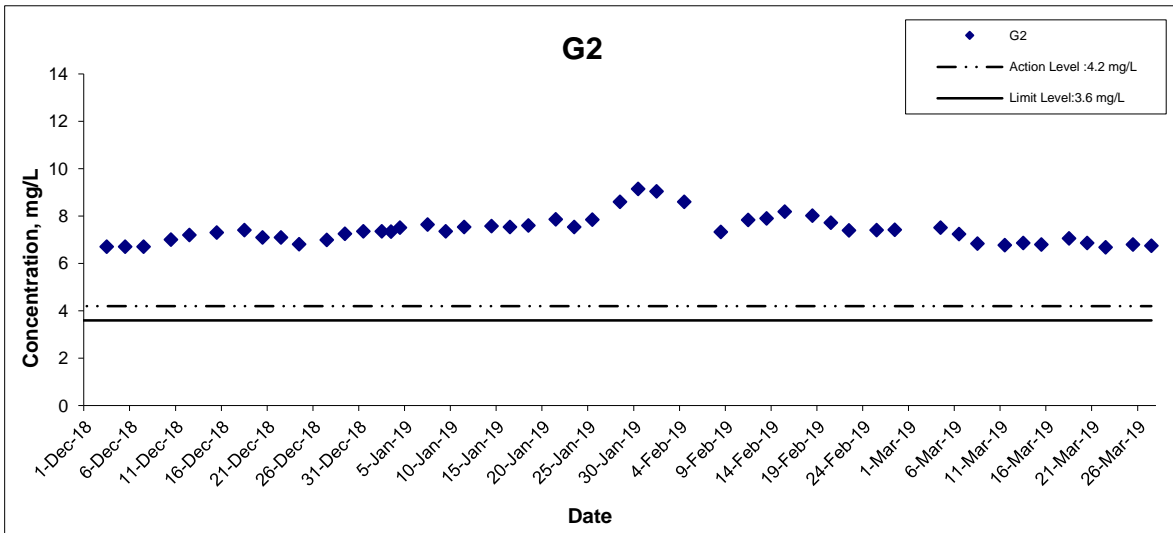
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



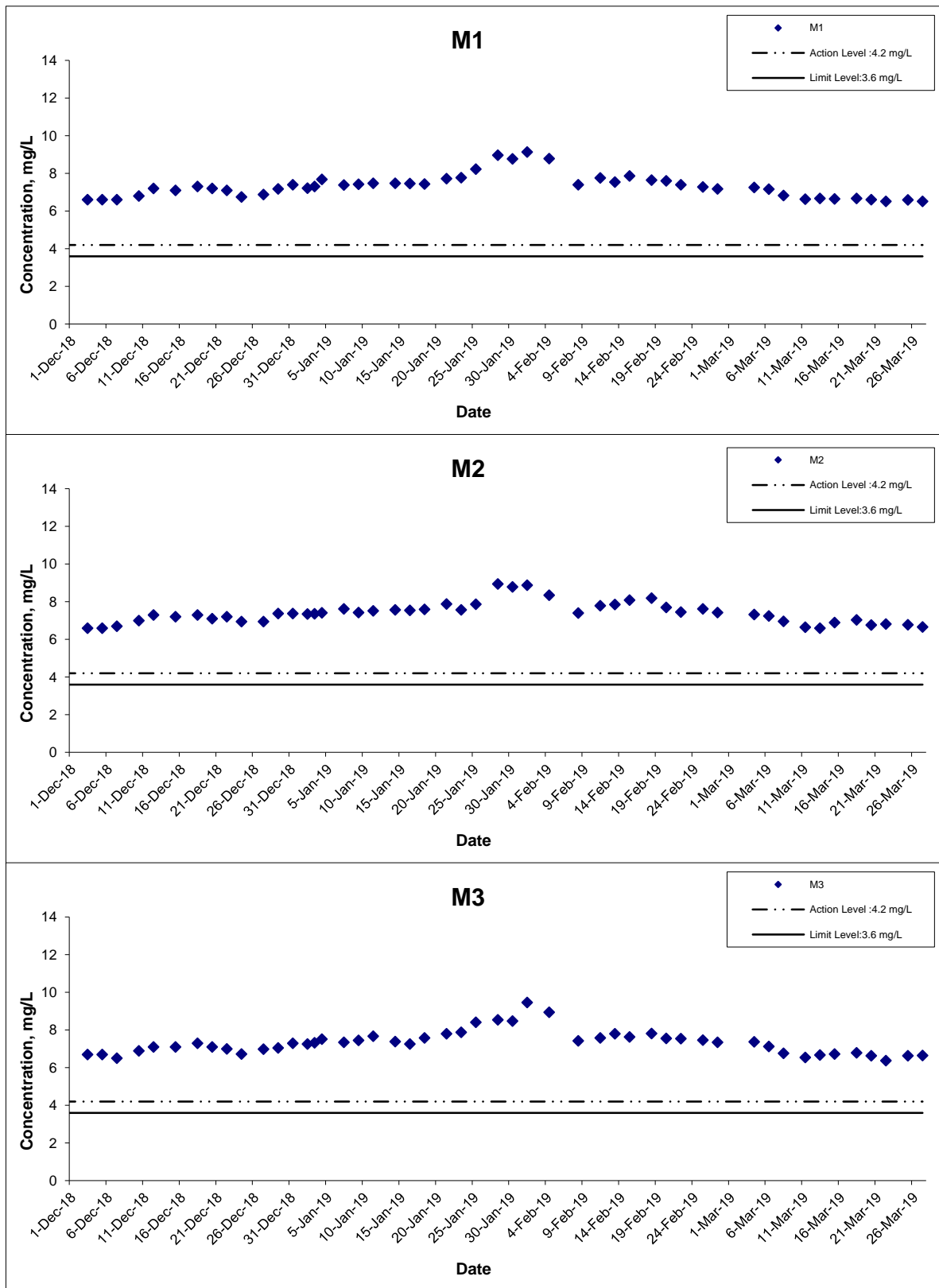
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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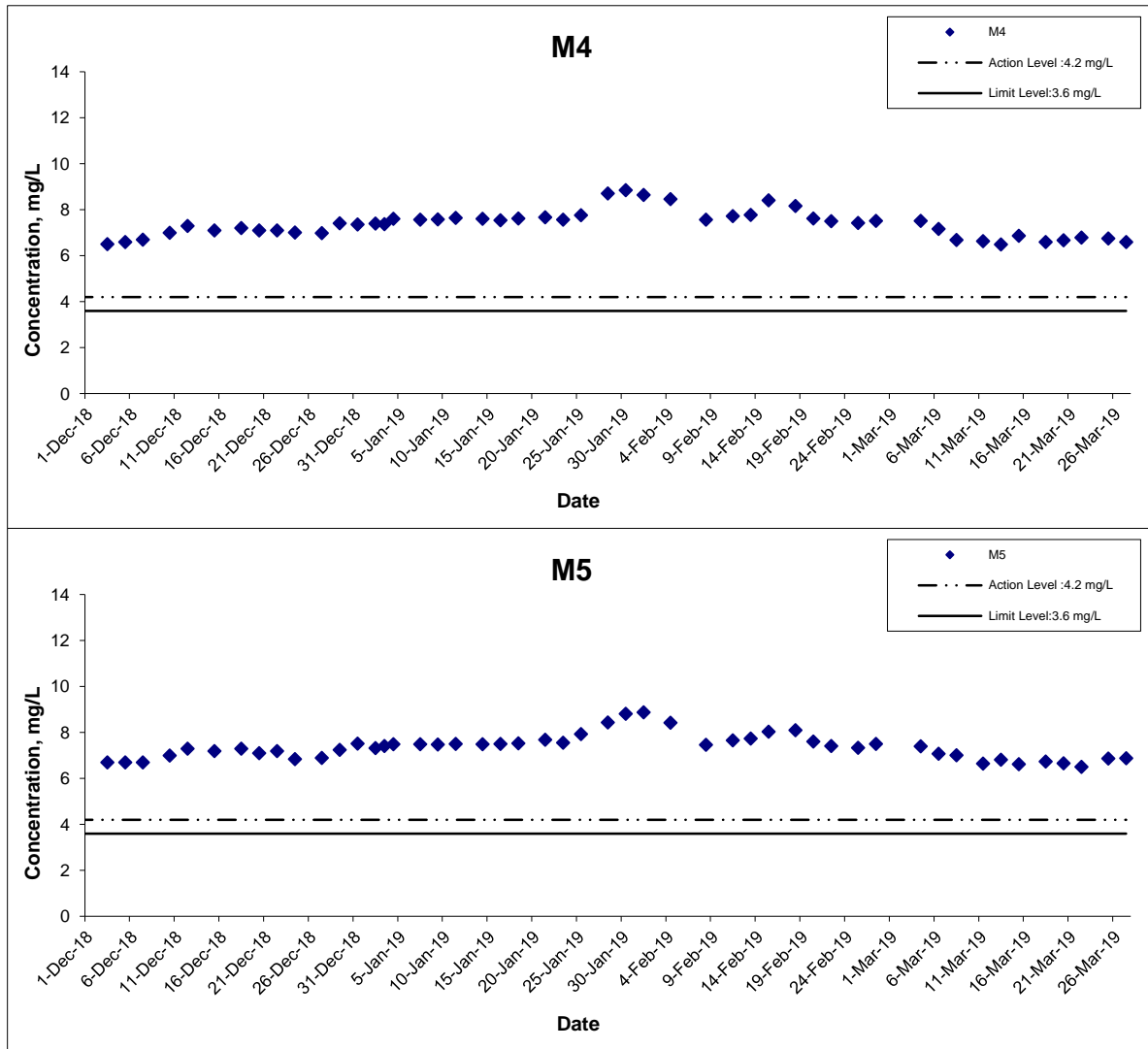
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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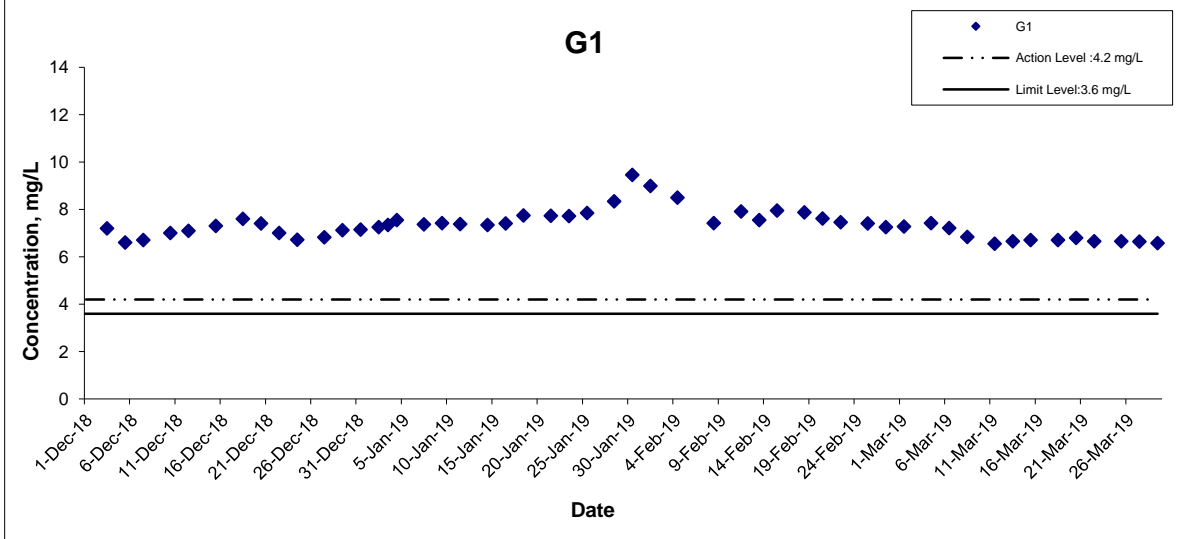
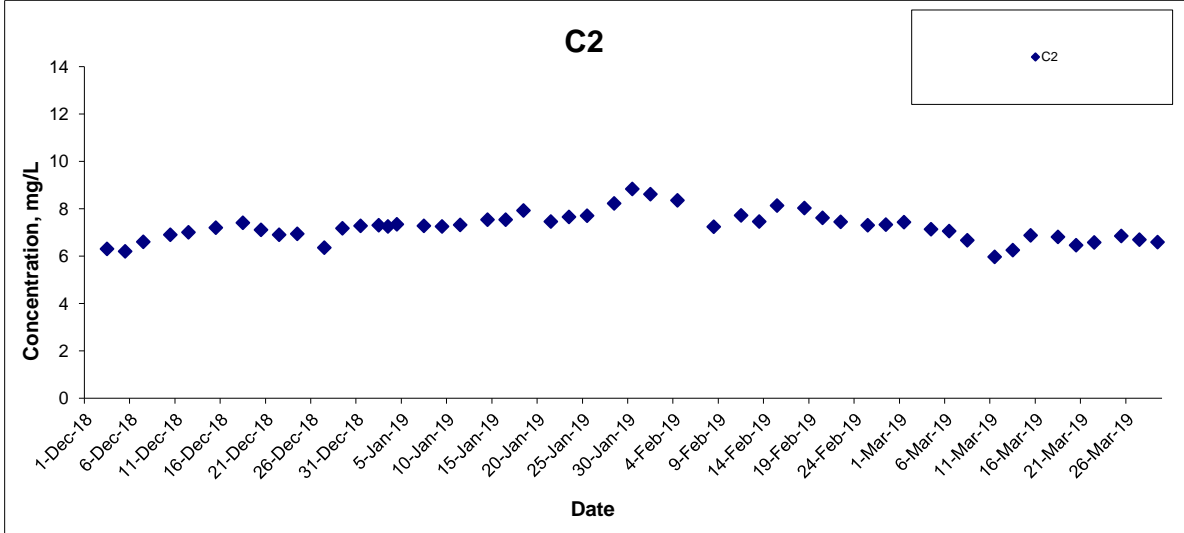
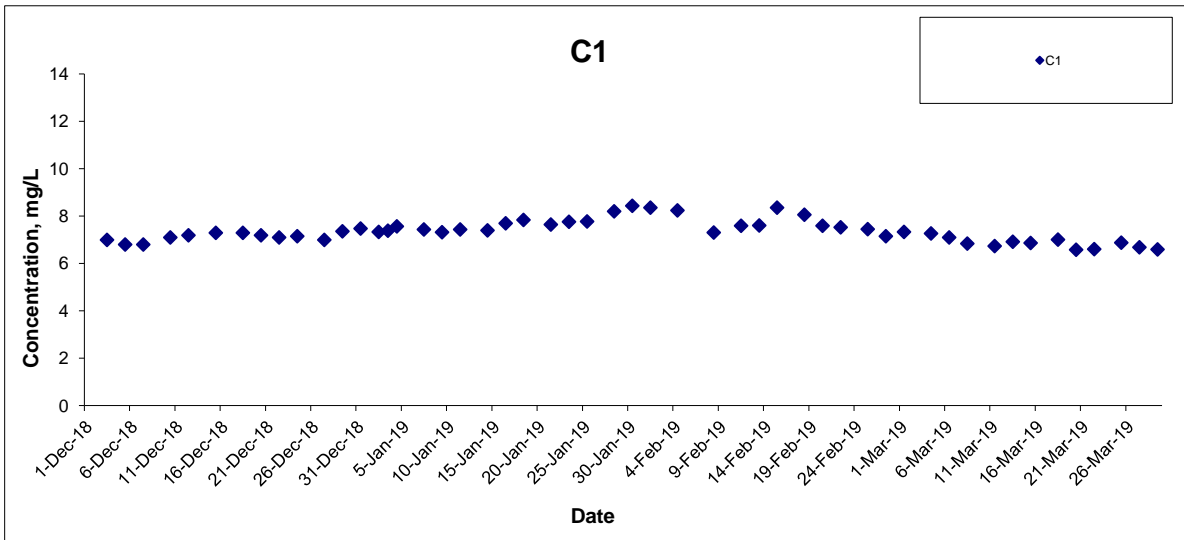
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



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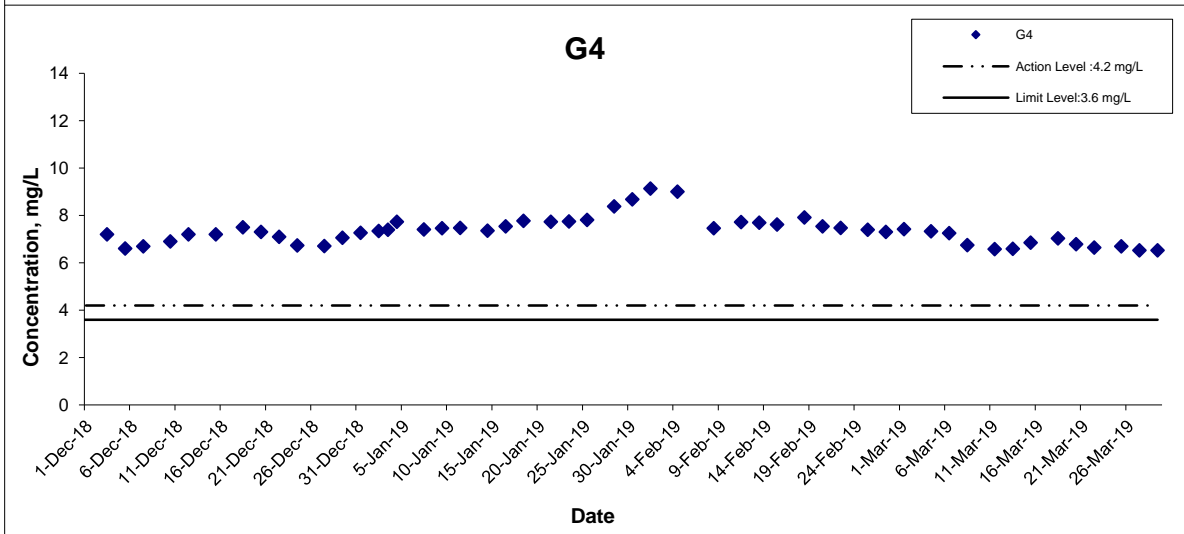
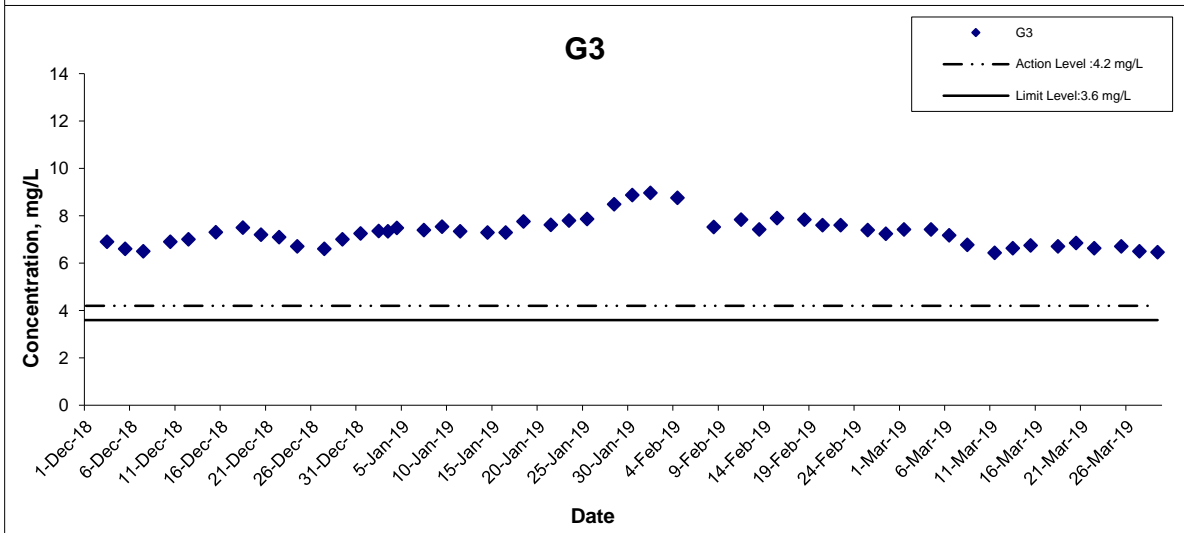
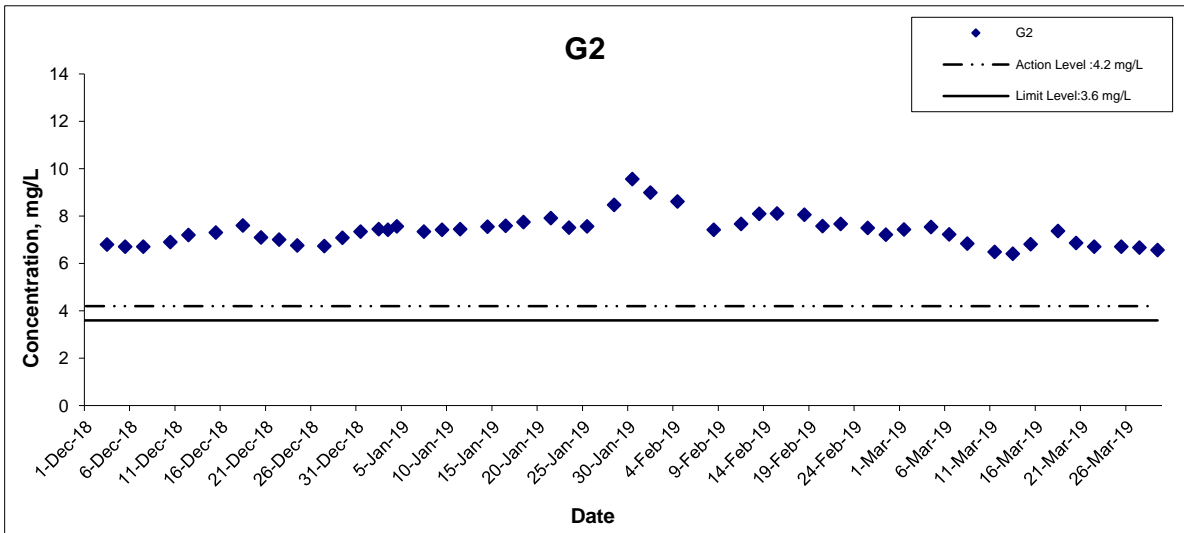
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



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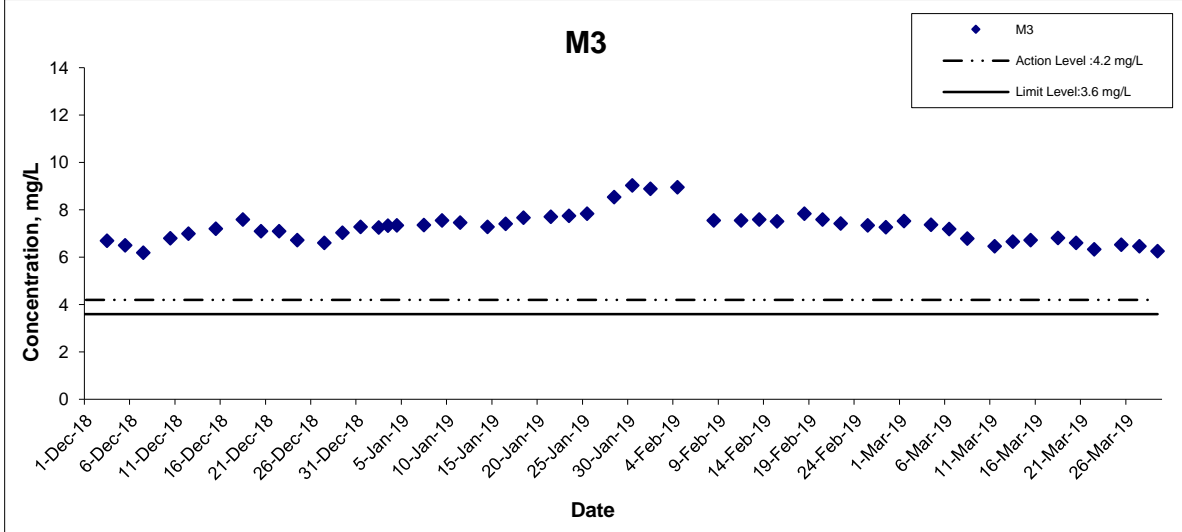
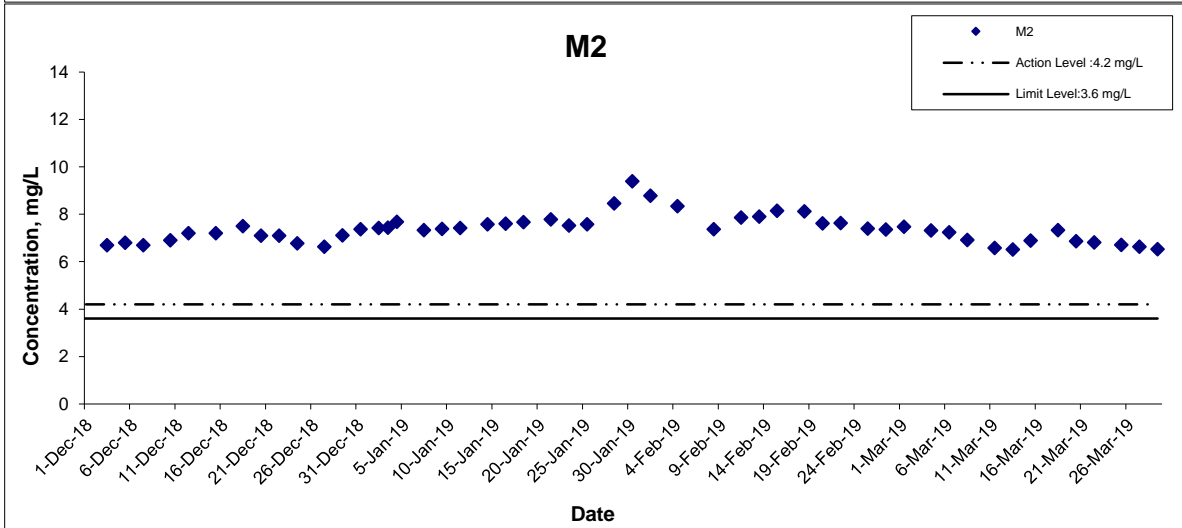
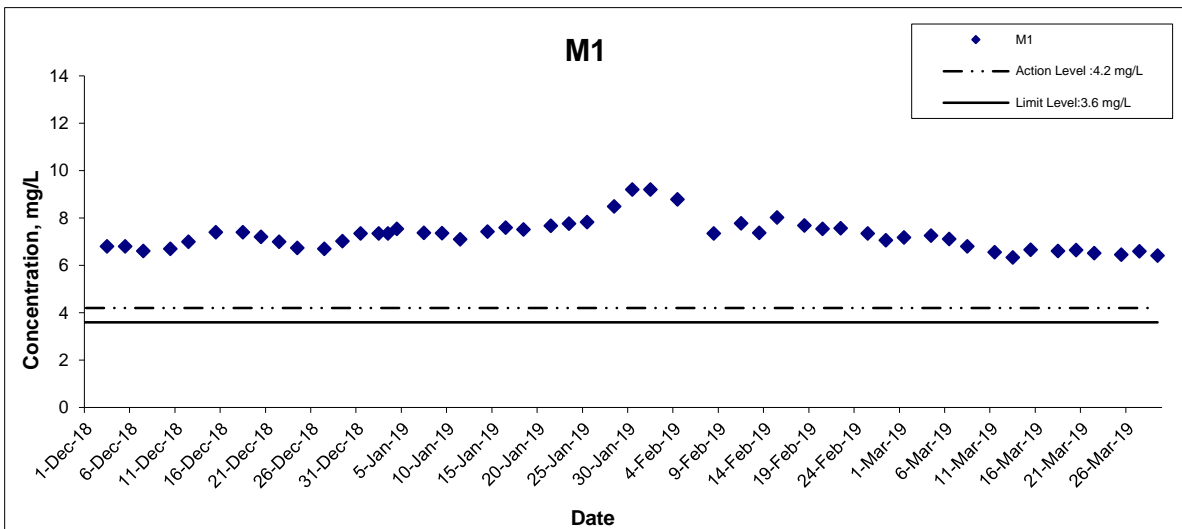
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



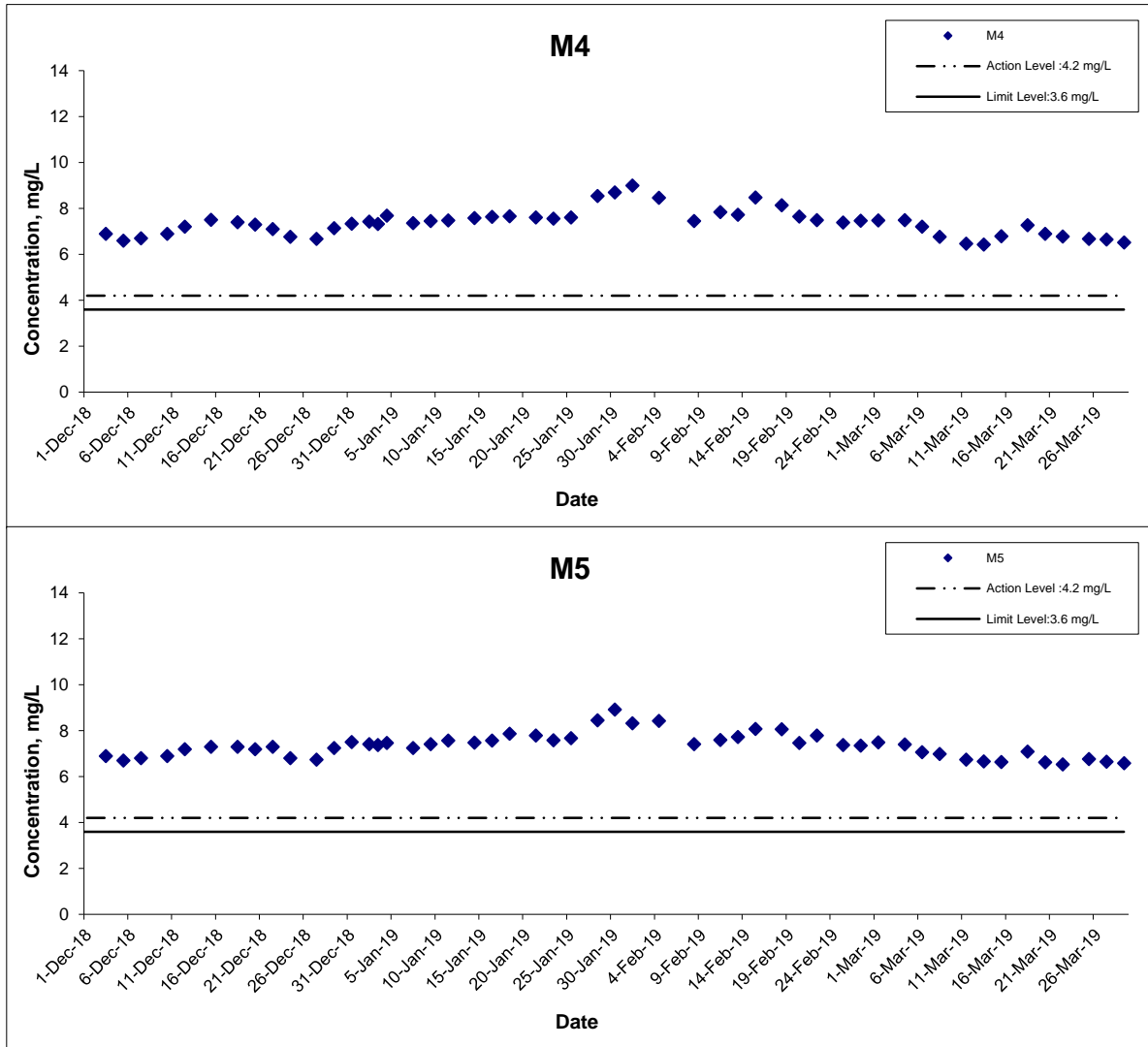
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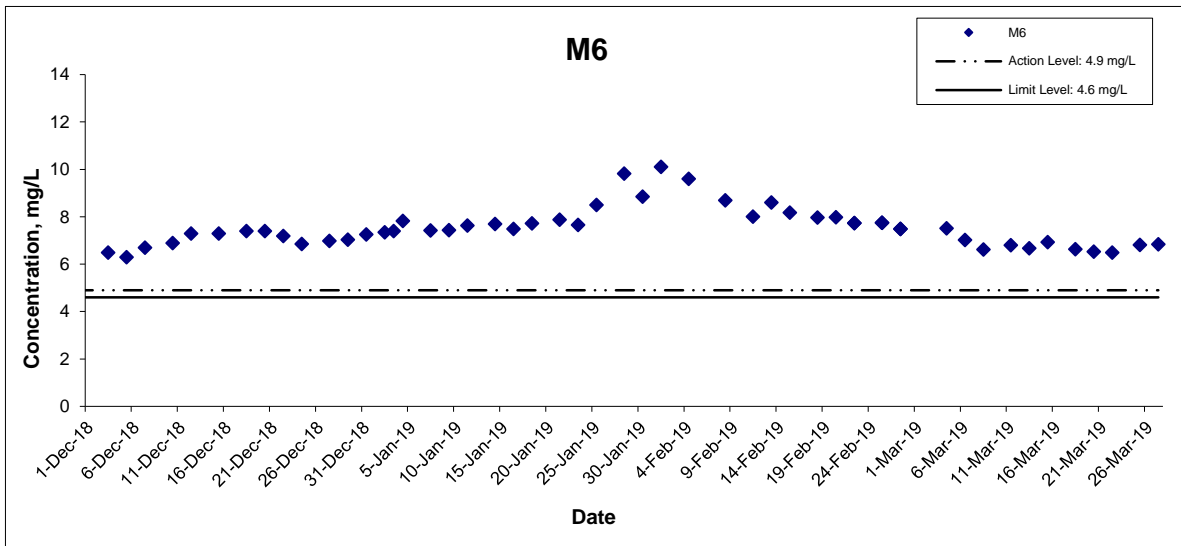


Dissolved Oxygen (Bottom) at Mid-Flood Tide



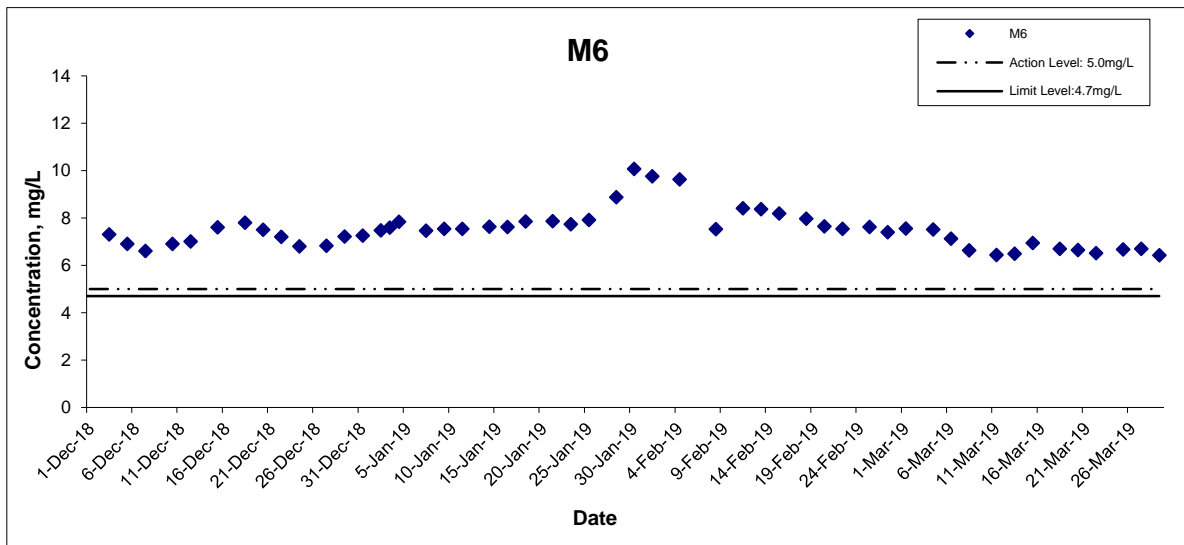
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Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



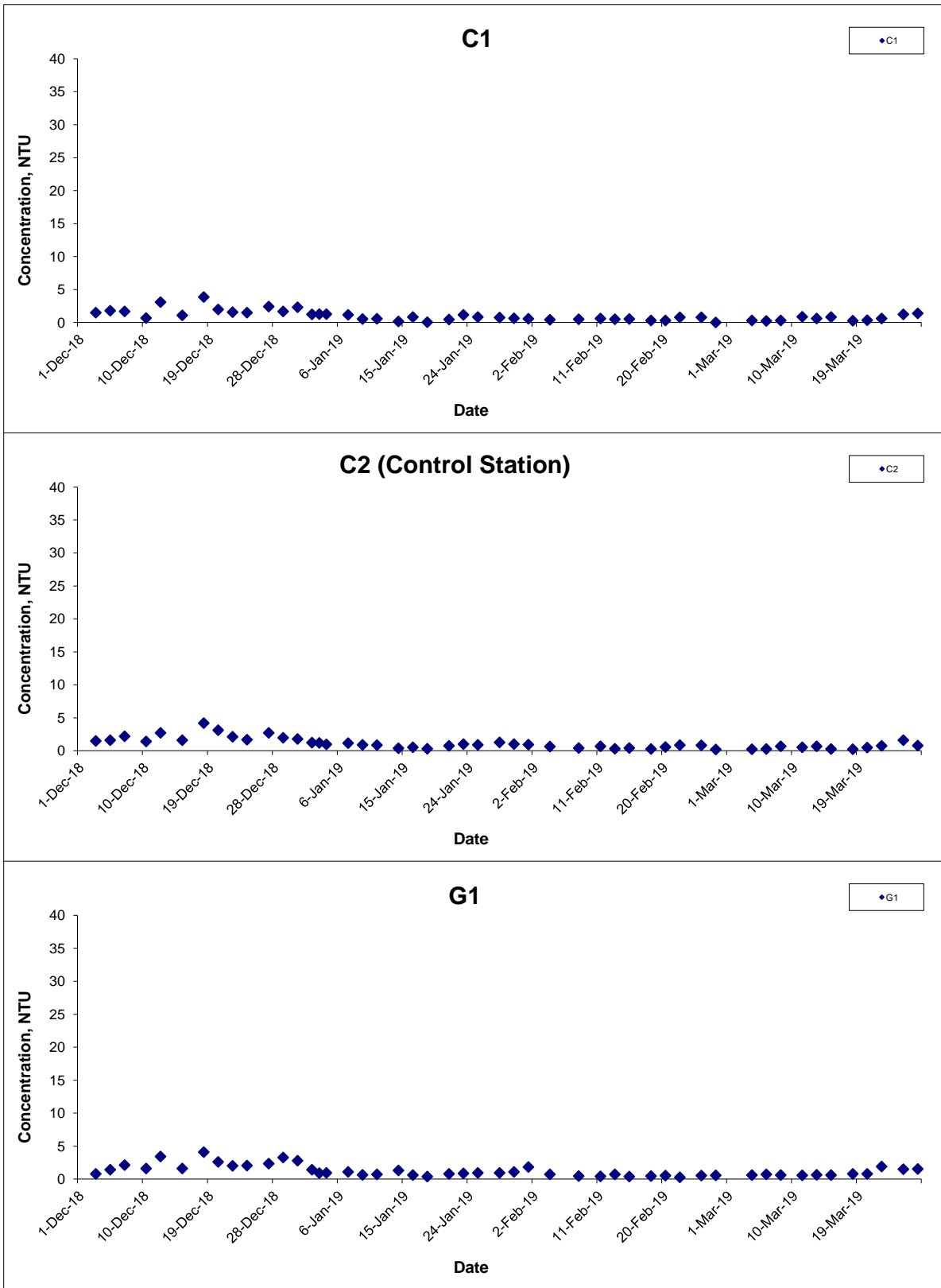
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Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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Turbidity (Depth-averaged) at Mid-Ebb Tide



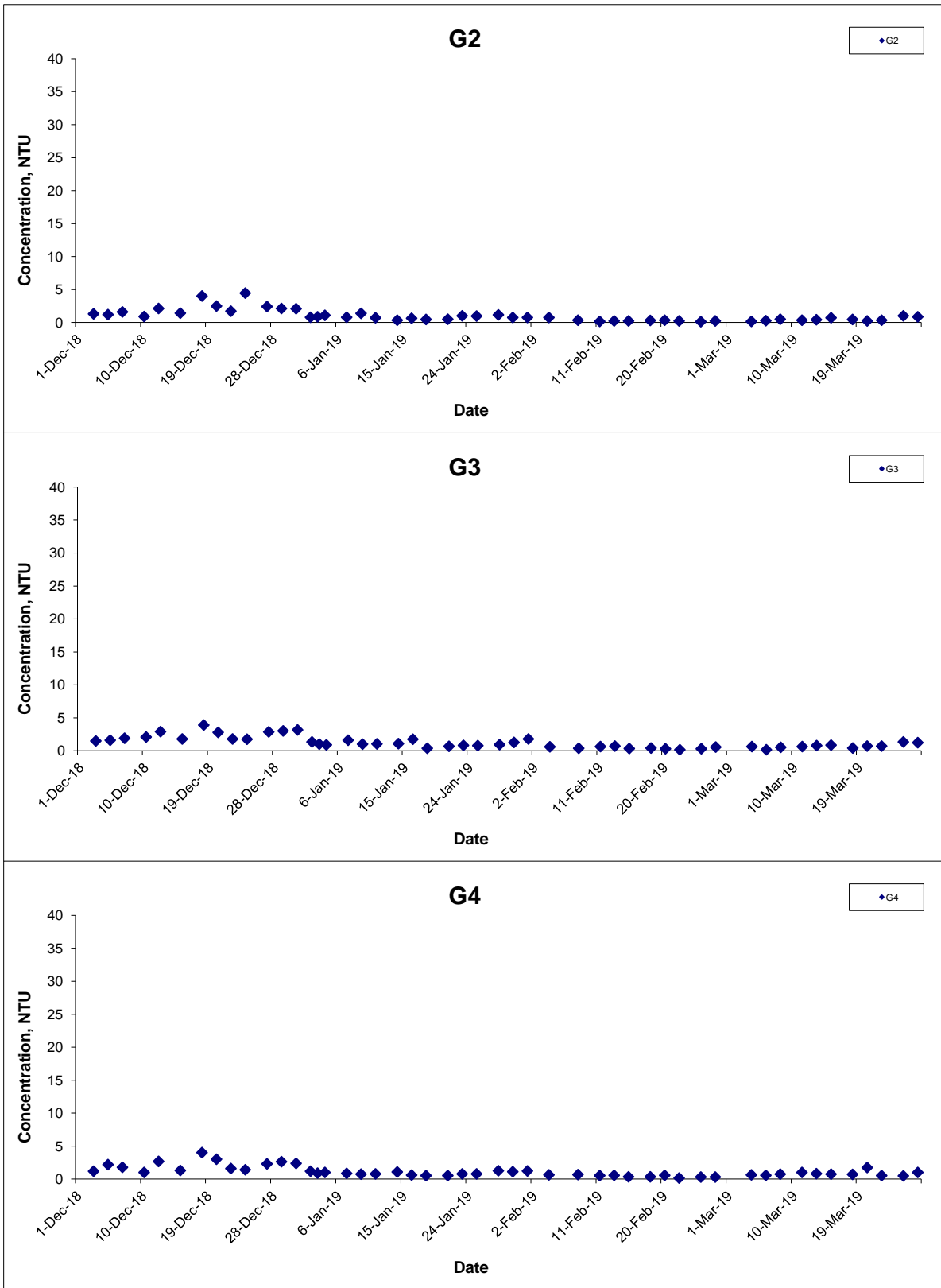
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
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Turbidity (Depth-averaged) at Mid-Ebb Tide



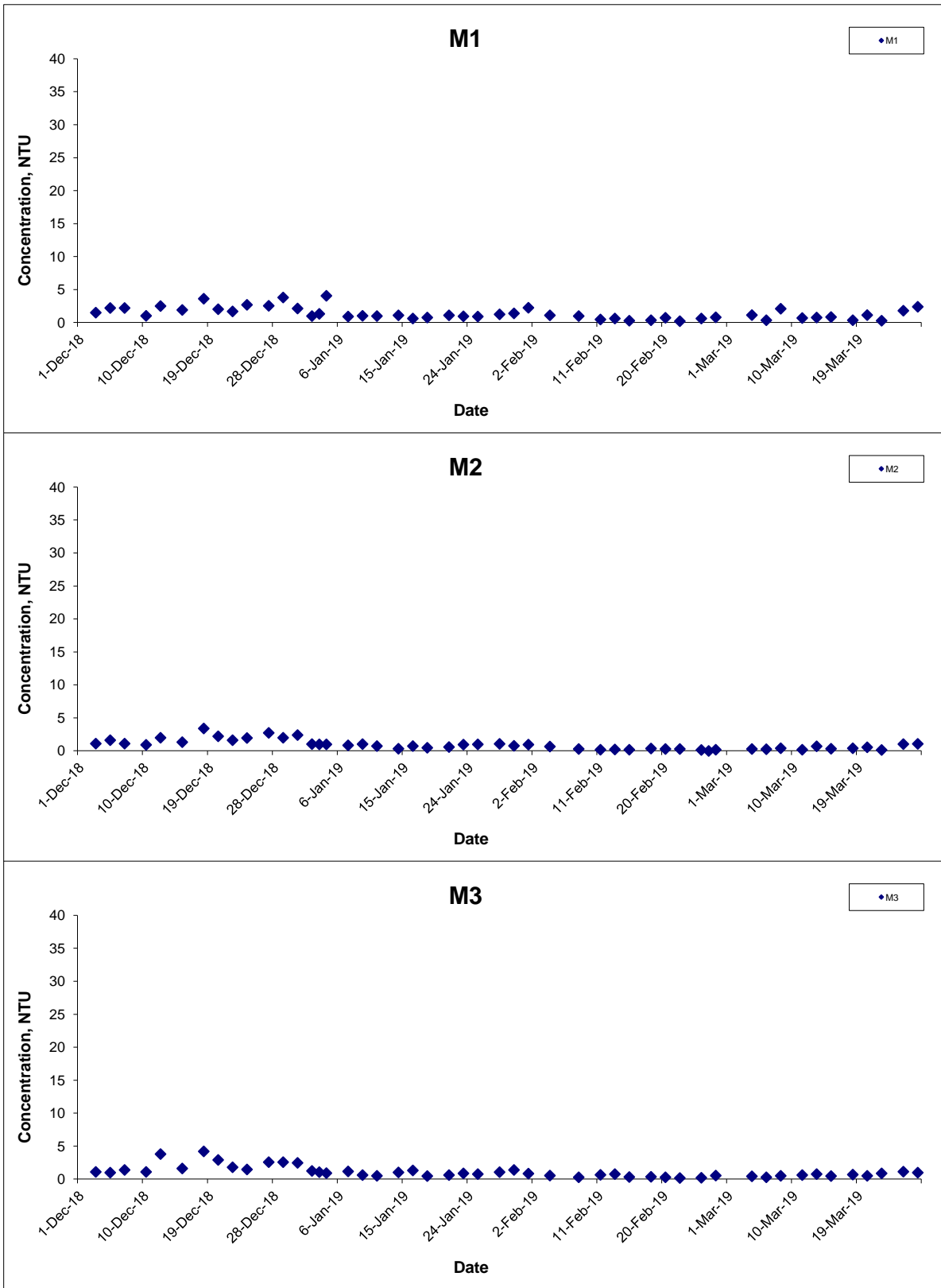
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Turbidity (Depth-averaged) at Mid-Ebb Tide



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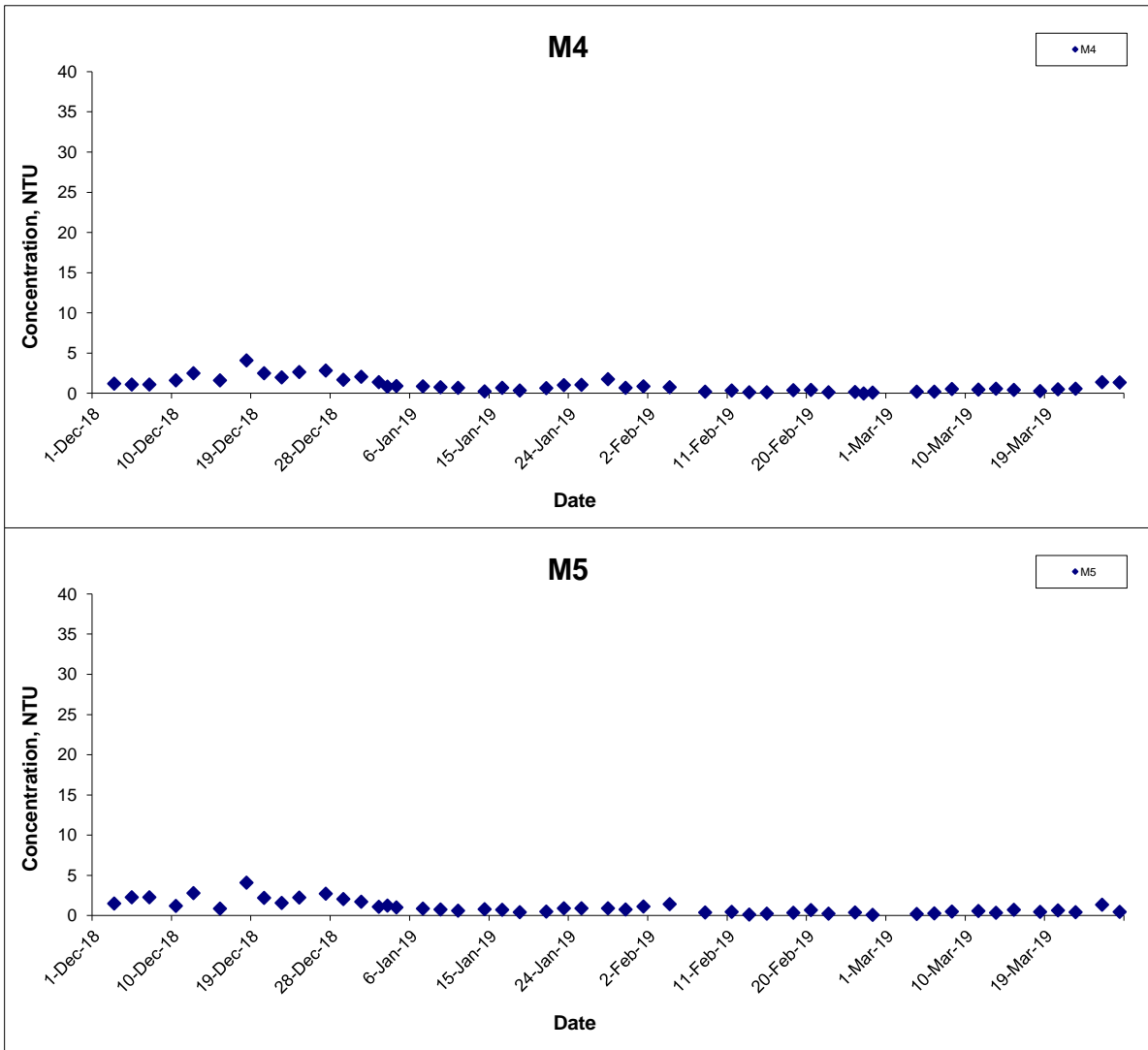
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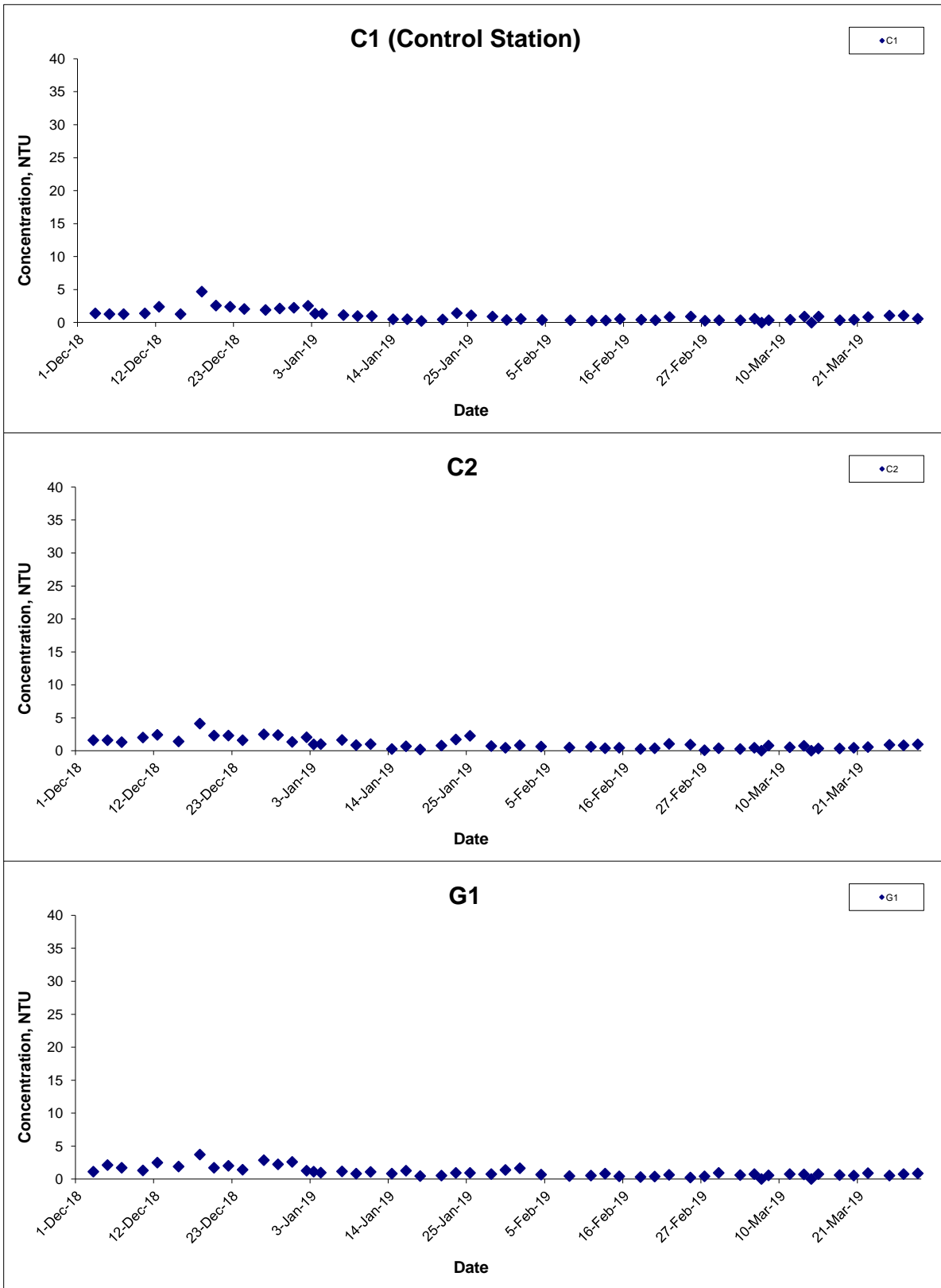


Turbidity (Depth-averaged) at Mid-Ebb Tide



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Turbidity (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

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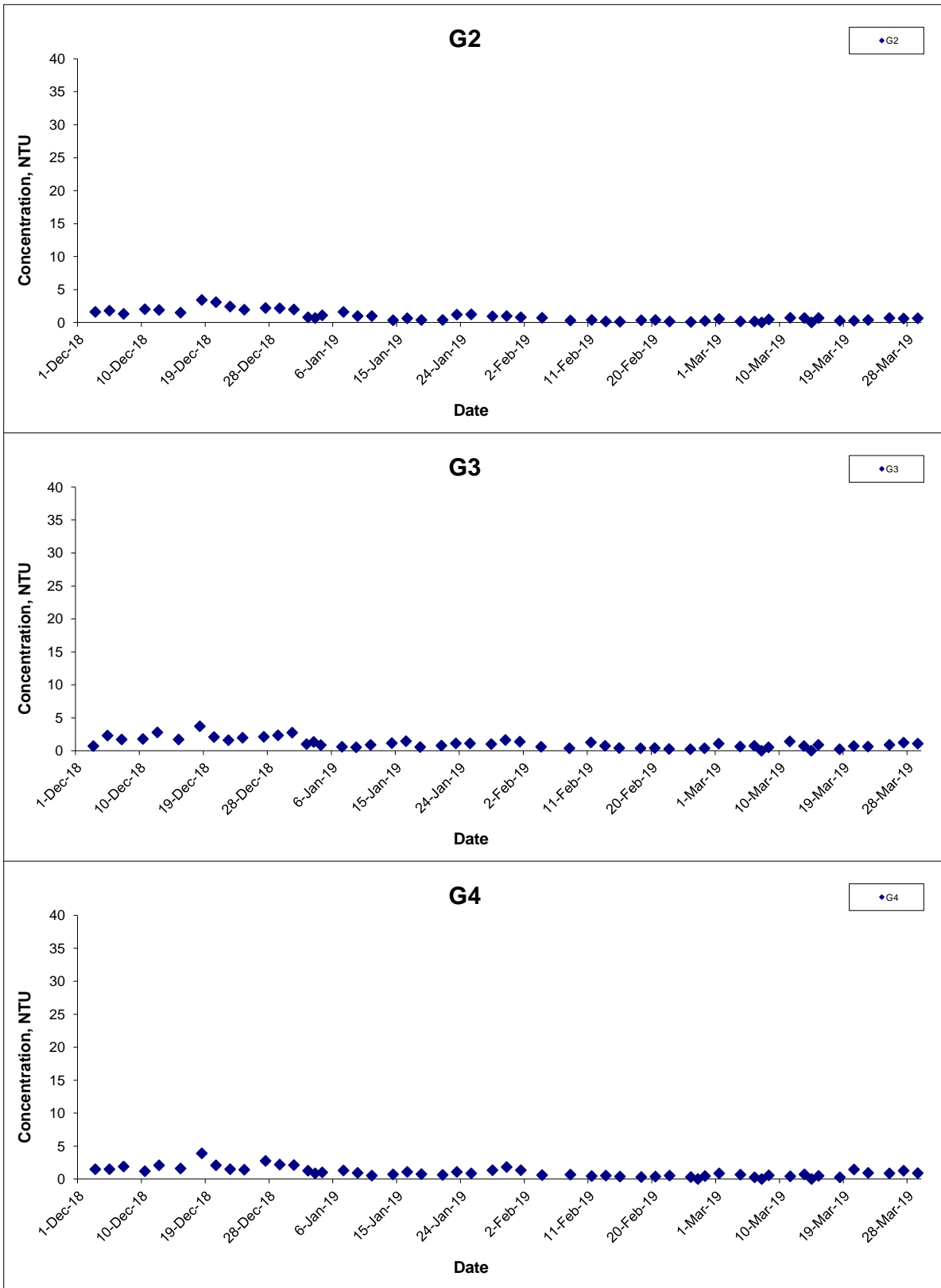
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Turbidity (Depth-averaged) at Mid-Flood Tide



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

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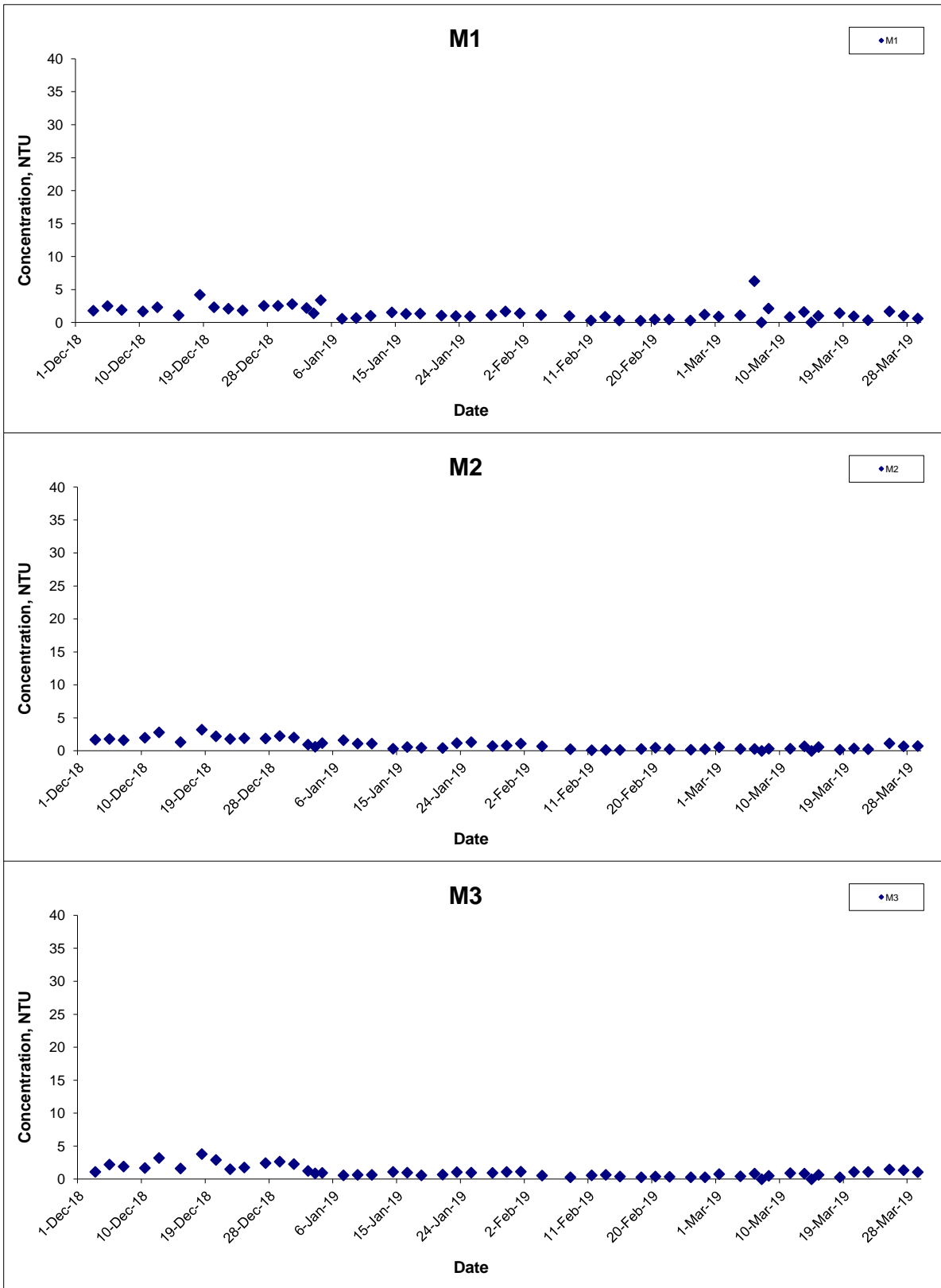
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Turbidity (Depth-averaged) at Mid-Flood Tide



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

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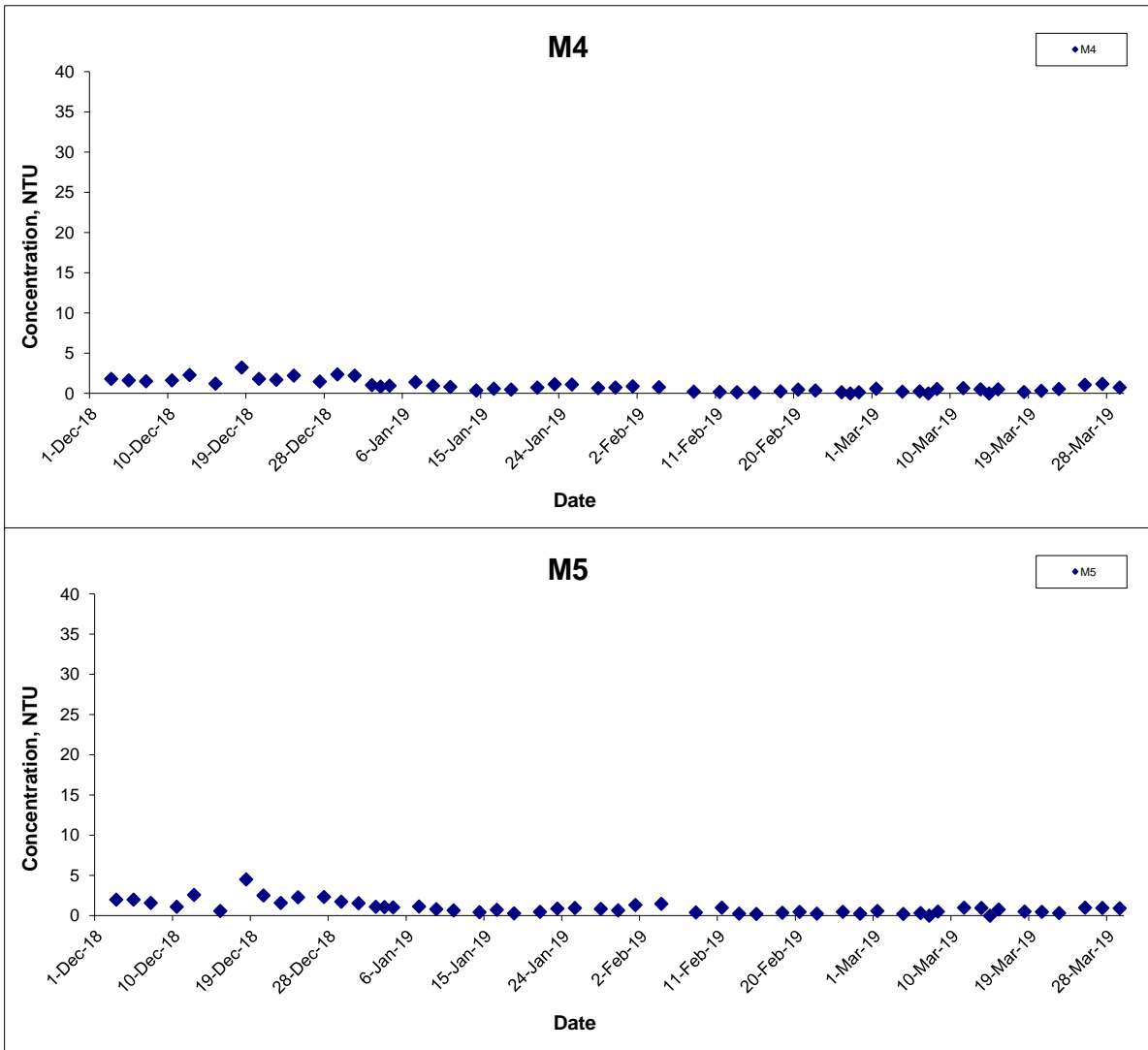
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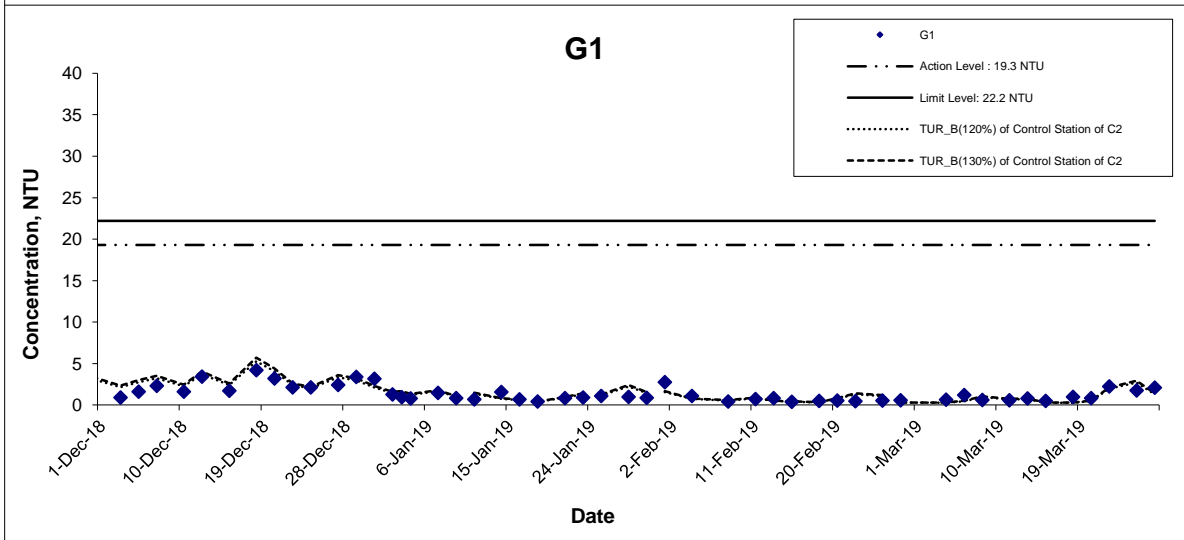
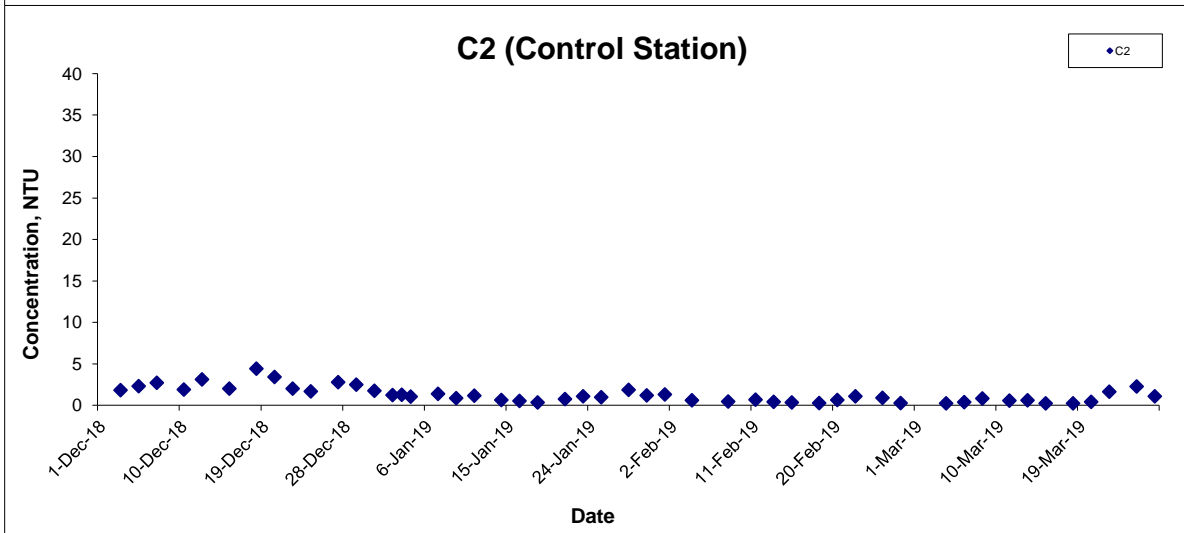
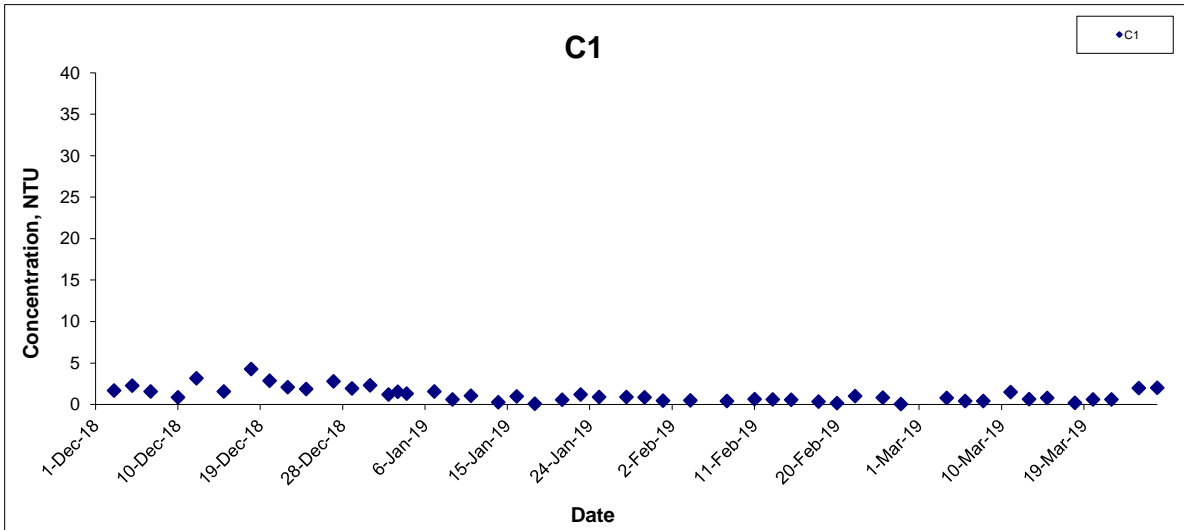


Turbidity (Depth-averaged) at Mid-Flood Tide



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Turbidity (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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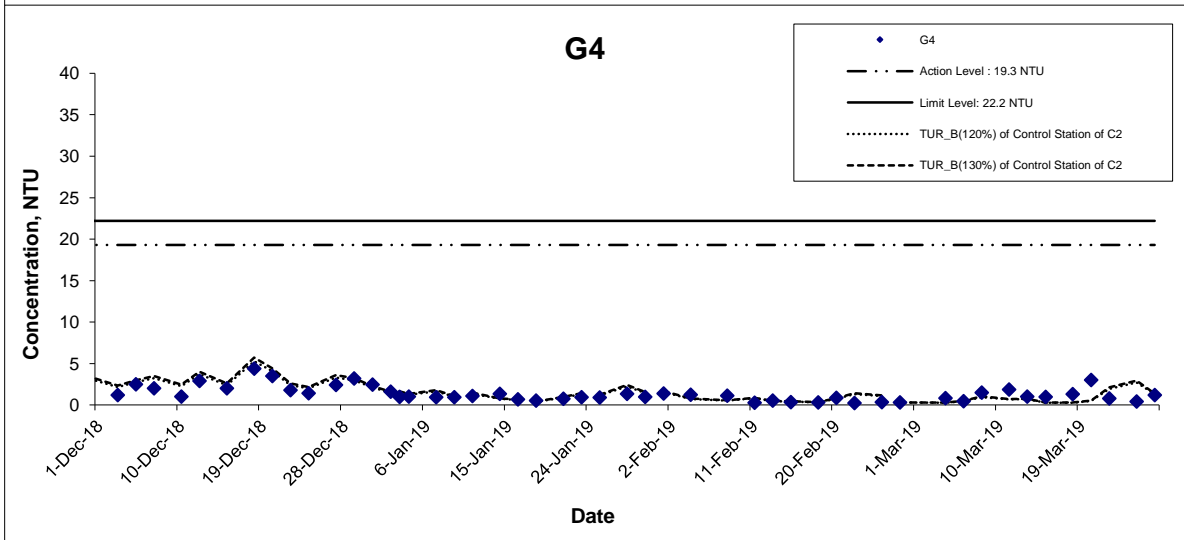
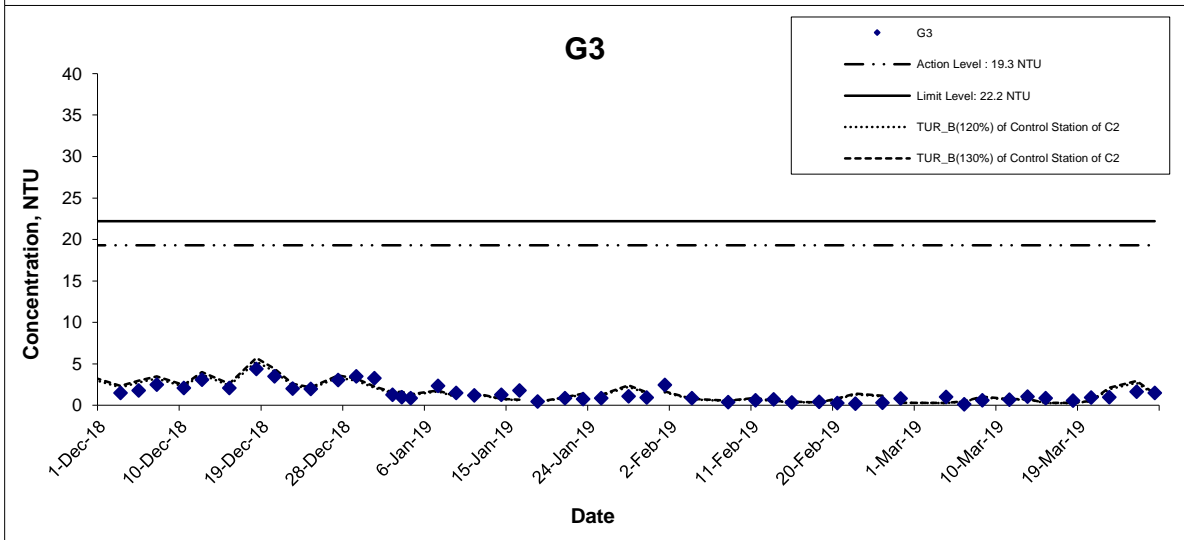
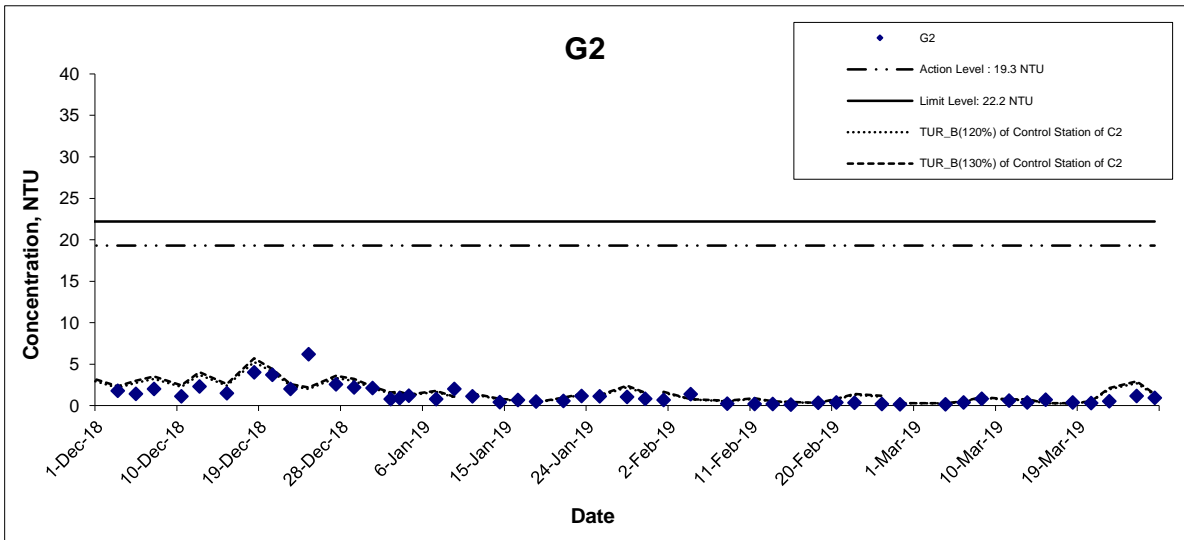
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Turbidity (Bottom) at Mid-Ebb Tide



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

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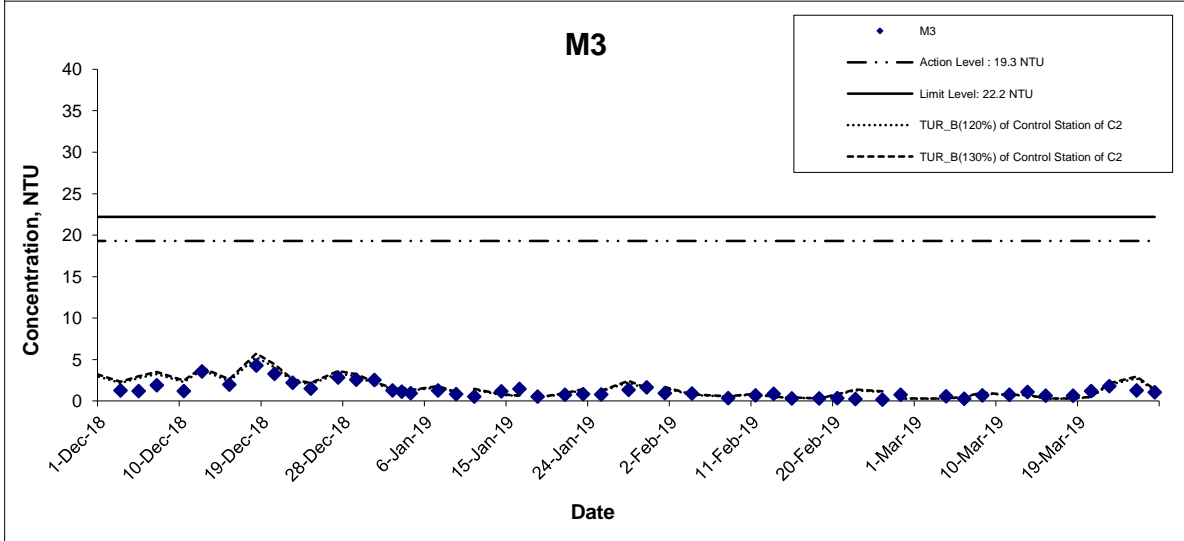
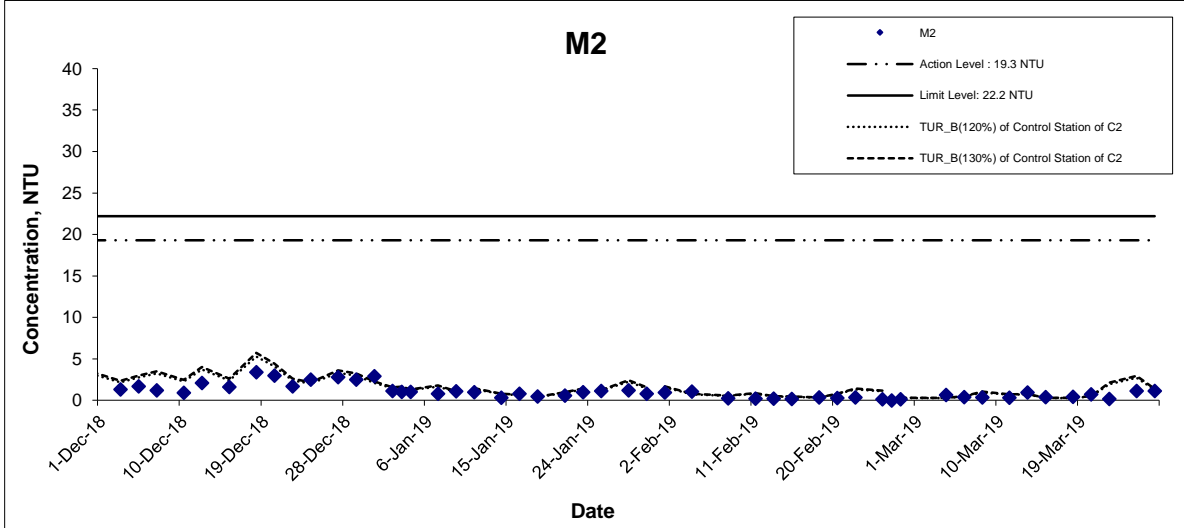
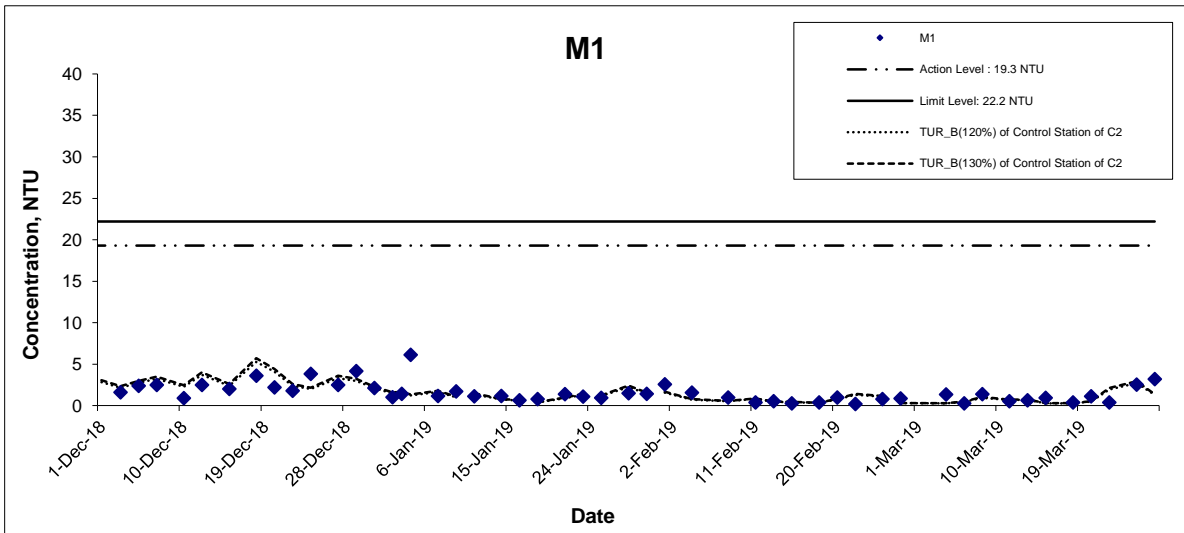
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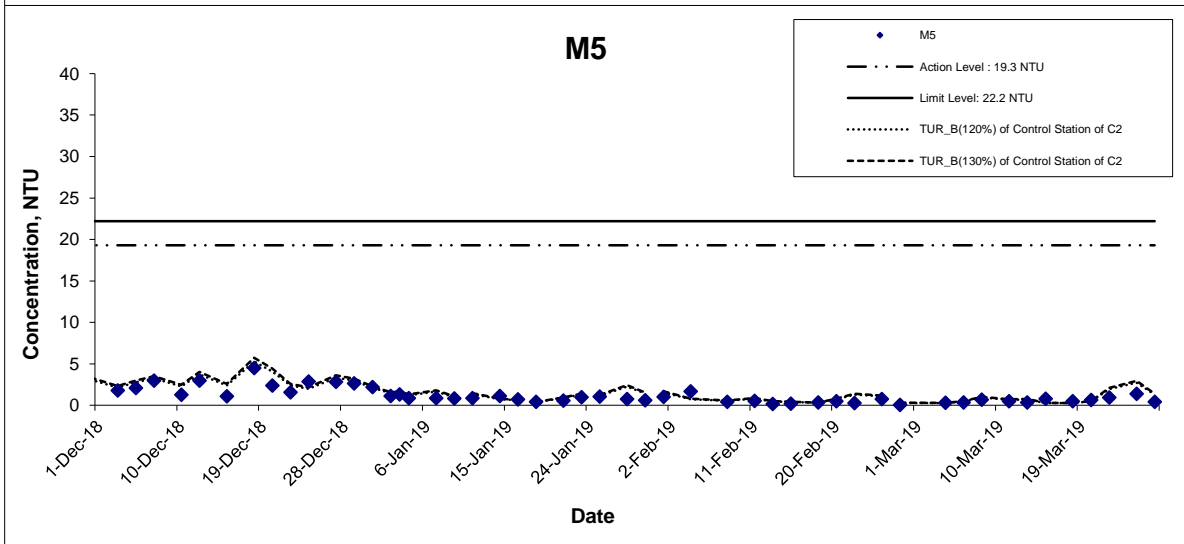
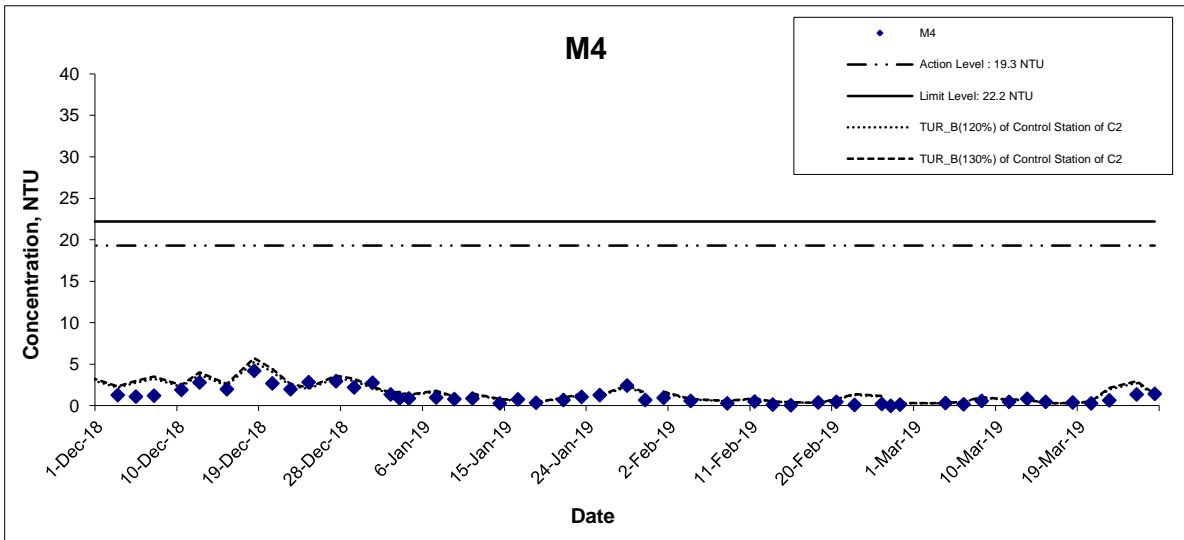


Turbidity (Bottom) at Mid-Ebb Tide



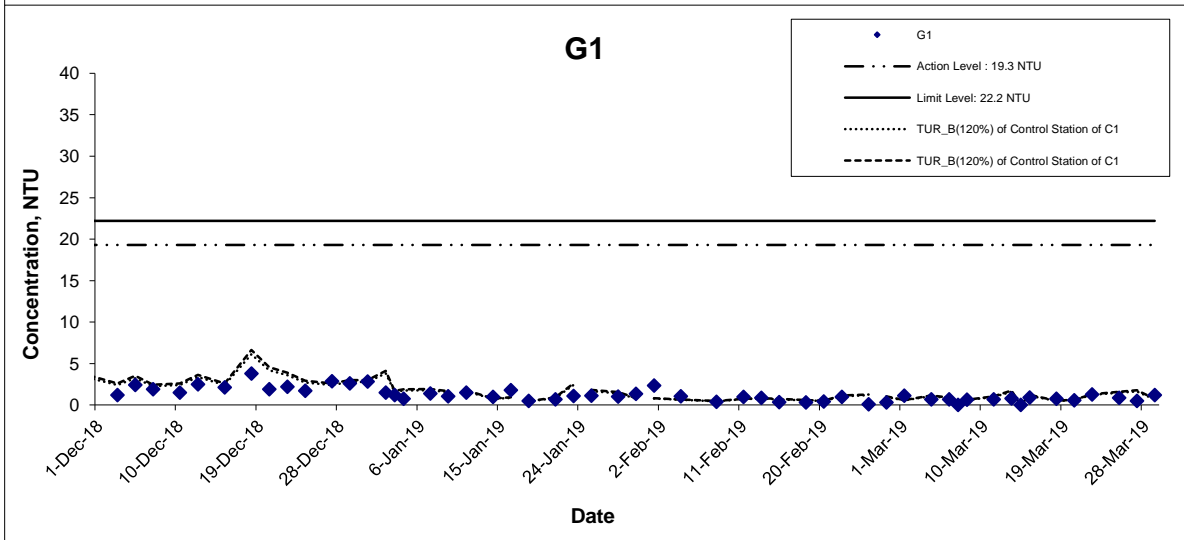
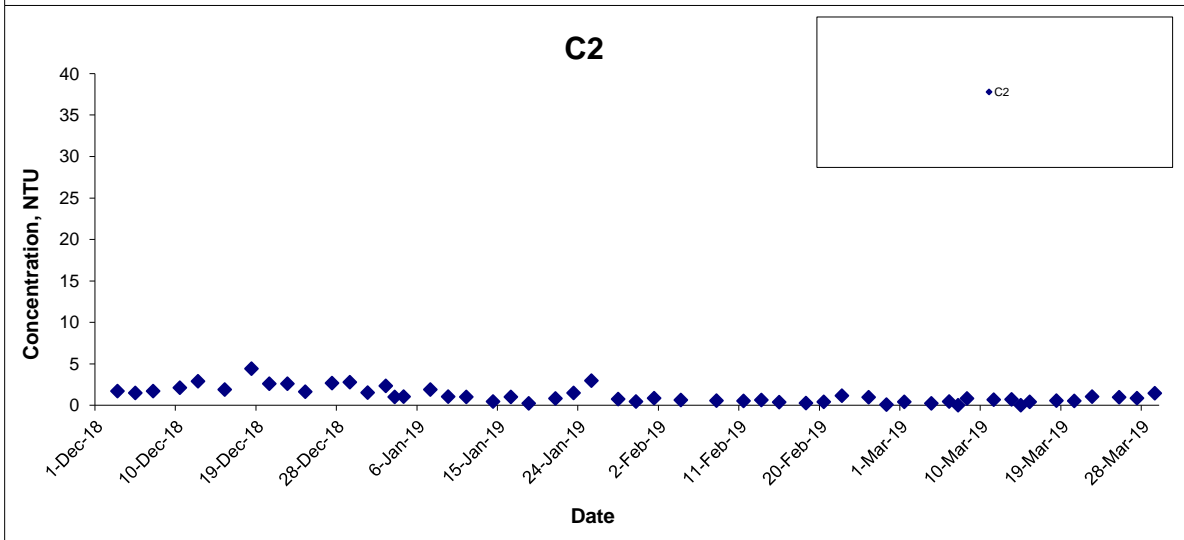
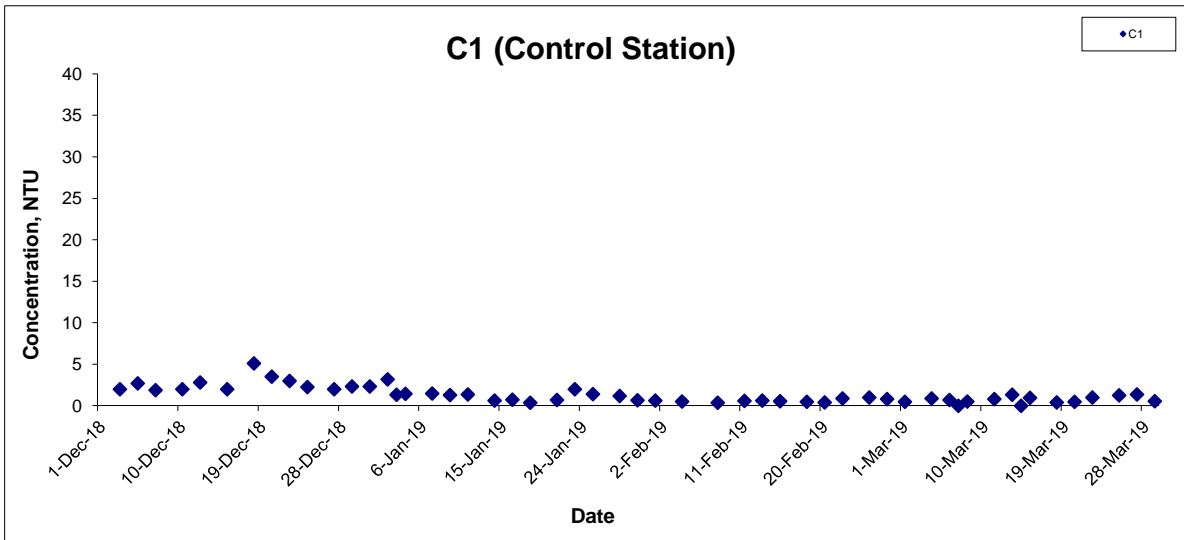
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
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Turbidity (Bottom) at Mid-Ebb Tide



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Turbidity (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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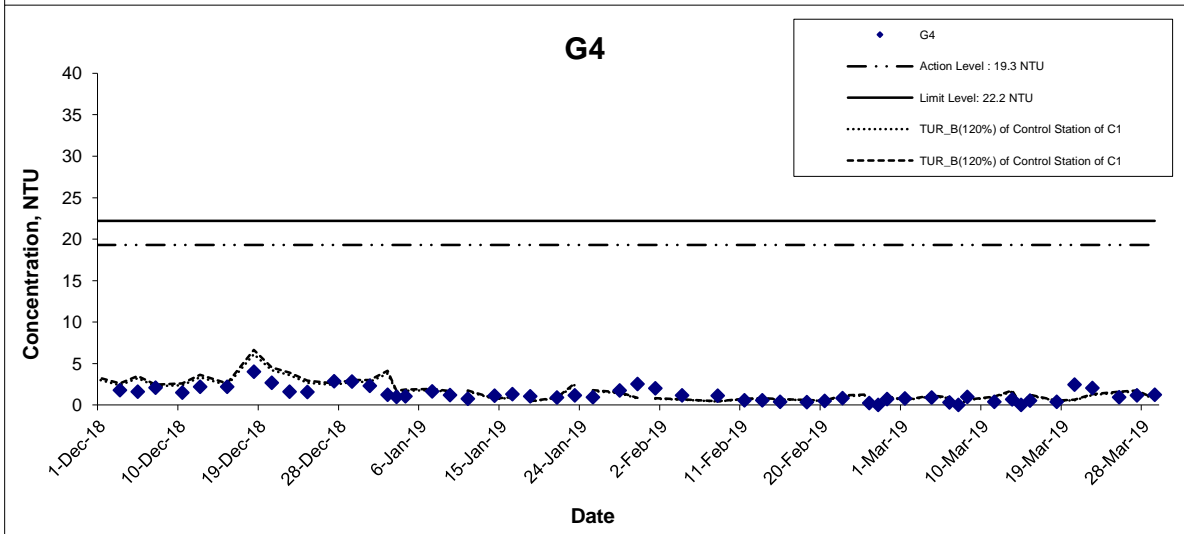
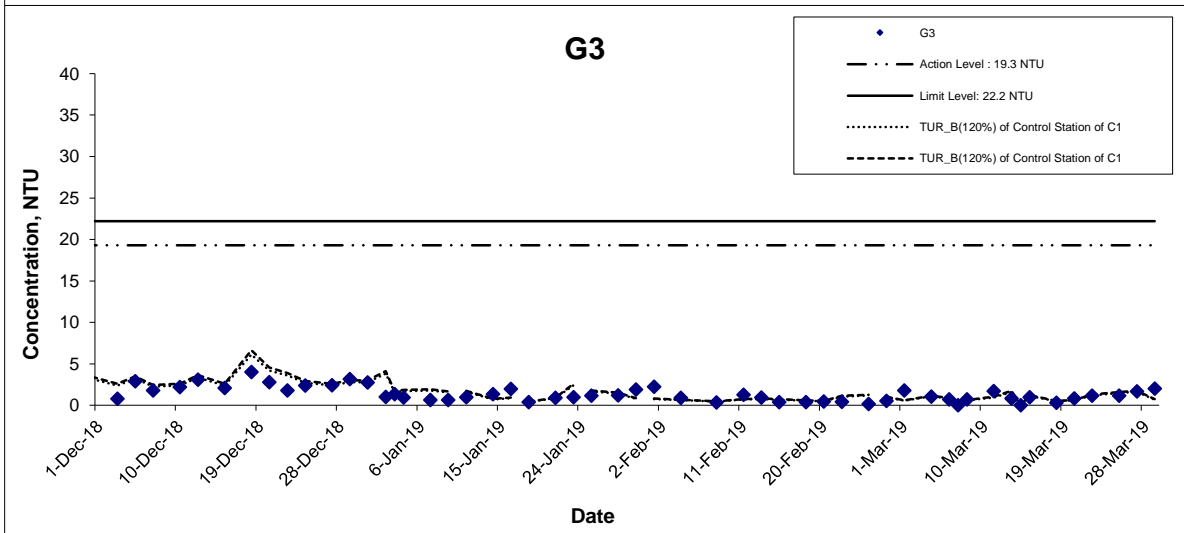
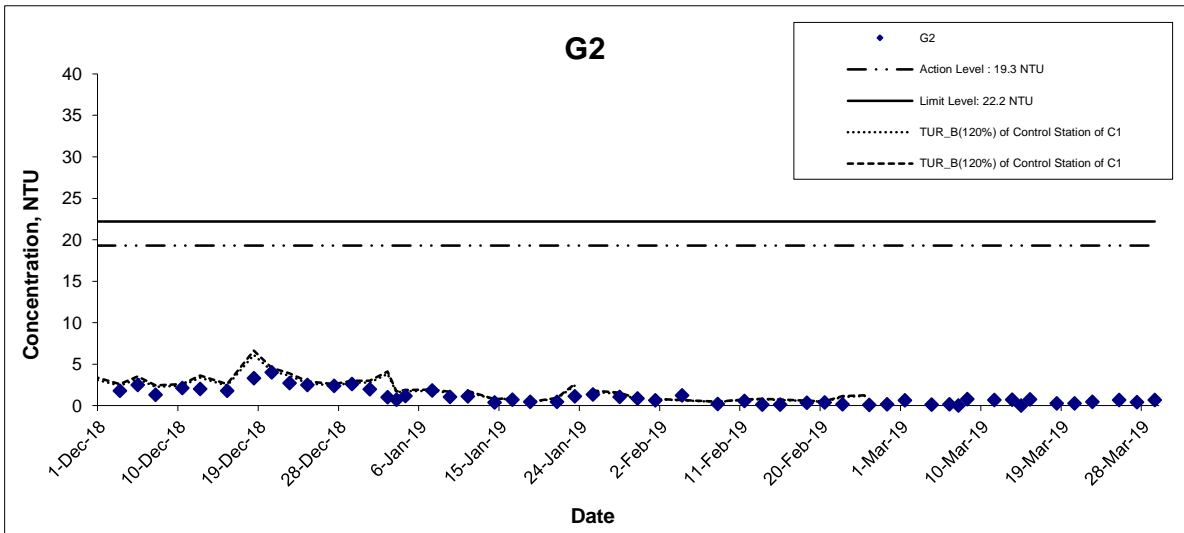
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Turbidity (Bottom) at Mid-Flood Tide



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

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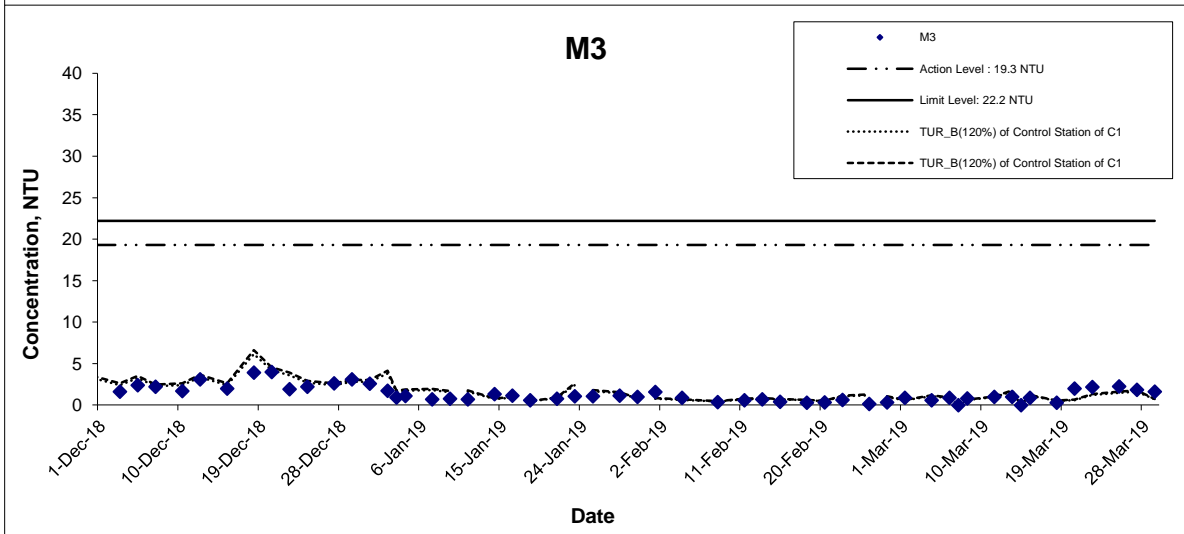
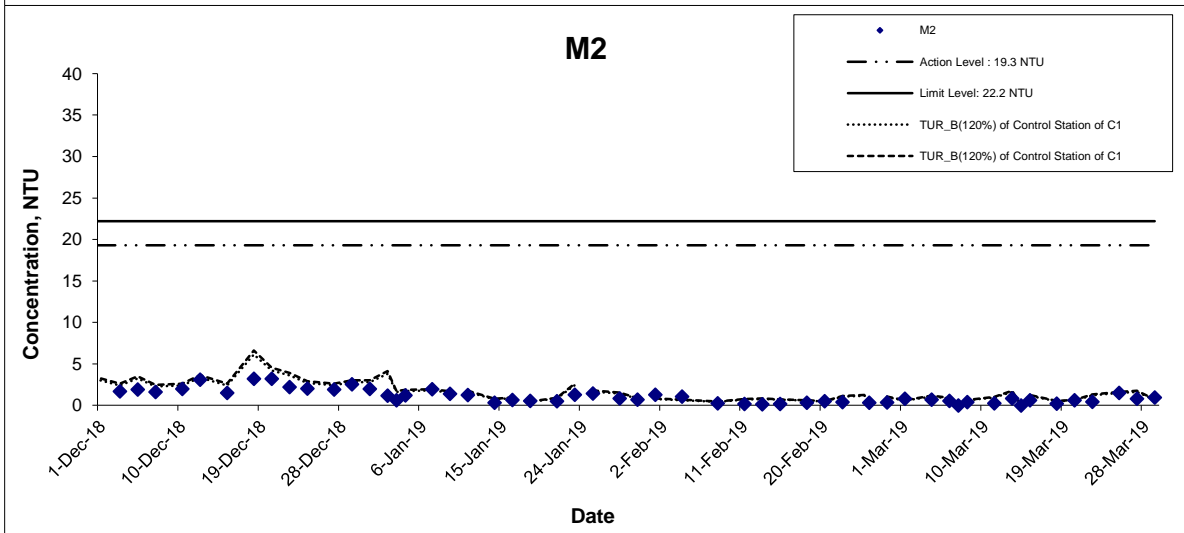
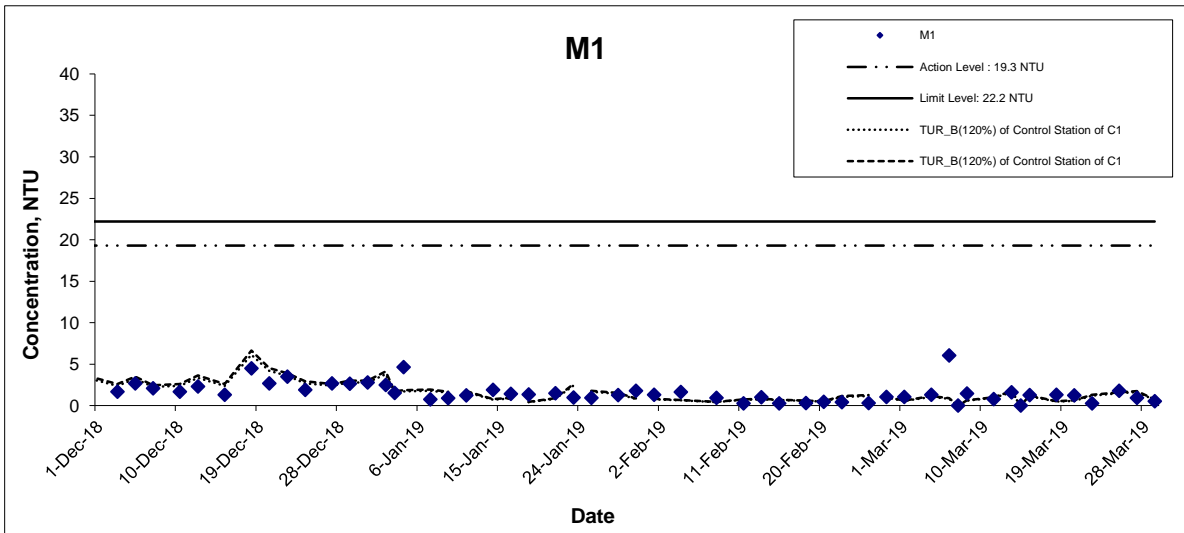
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Turbidity (Bottom) at Mid-Flood Tide



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

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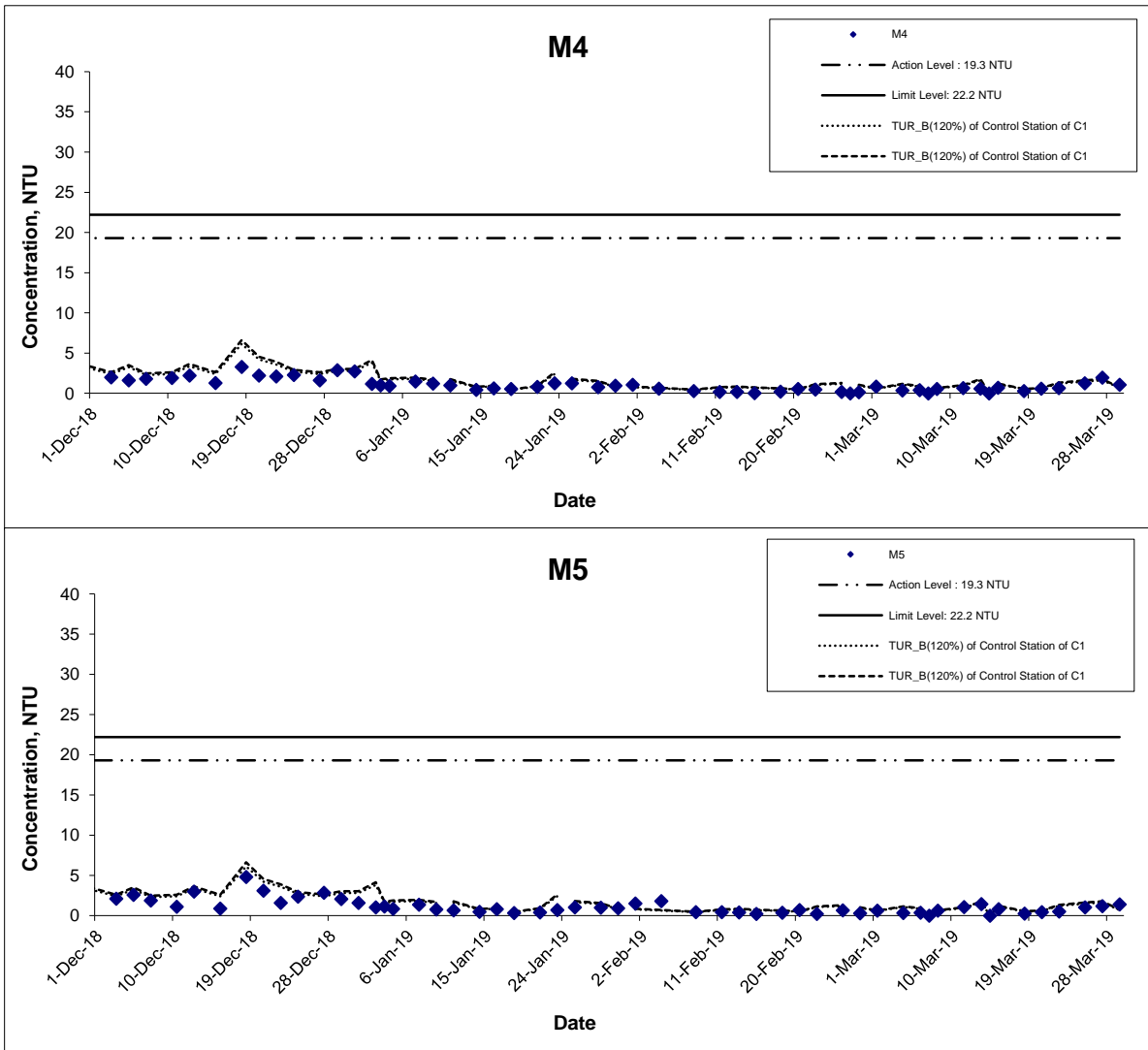
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Turbidity (Bottom) at Mid-Flood Tide



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

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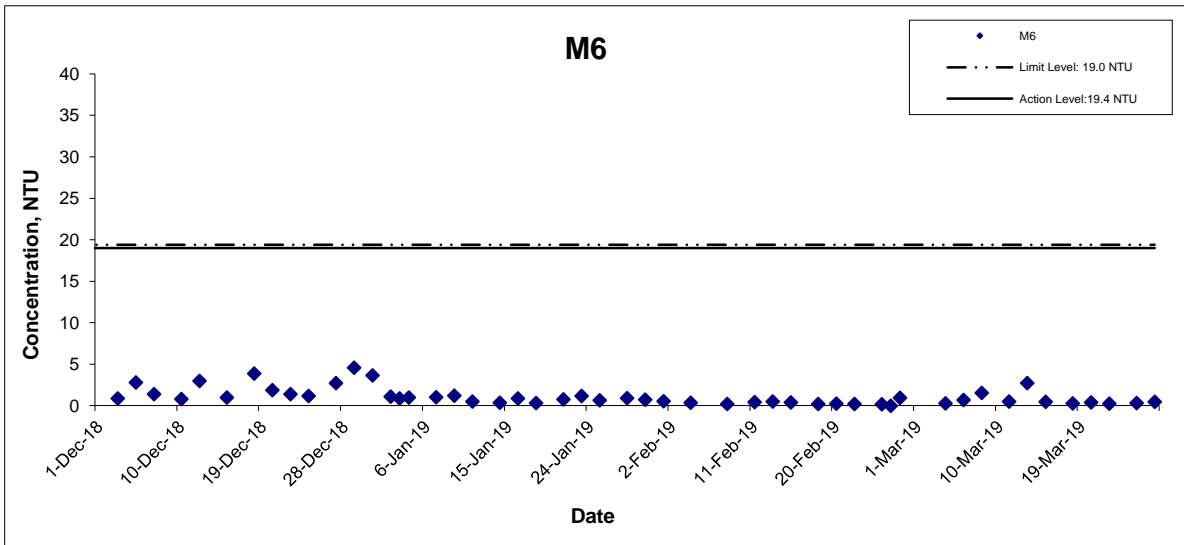
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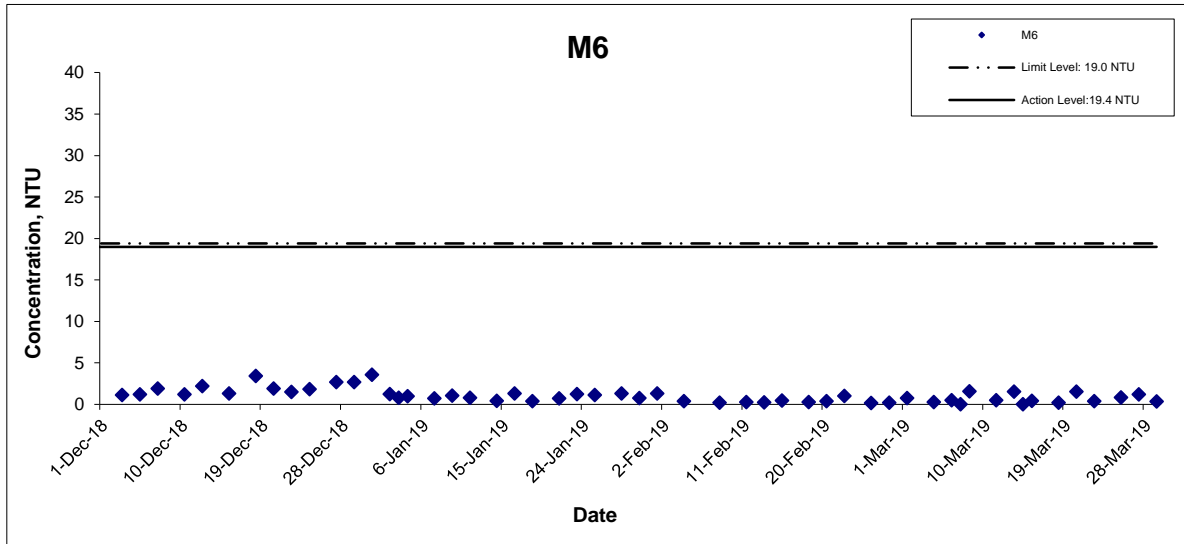


Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



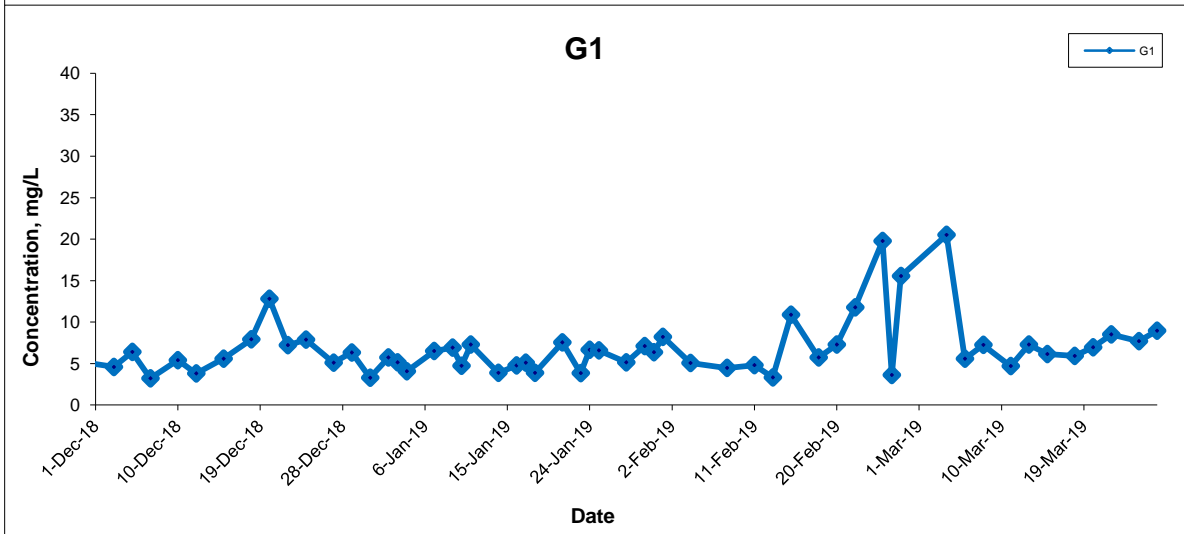
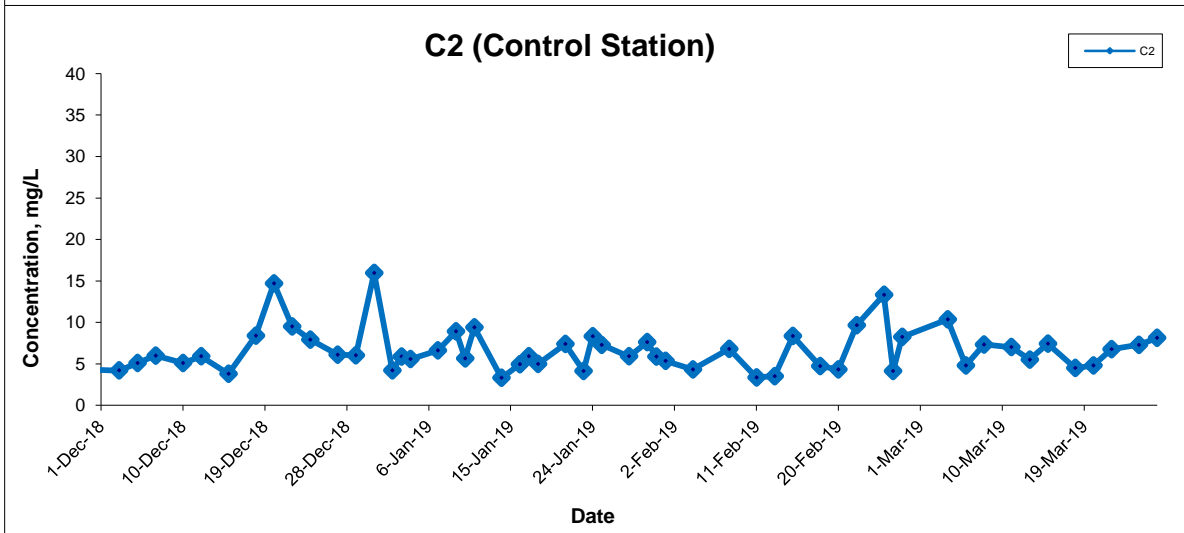
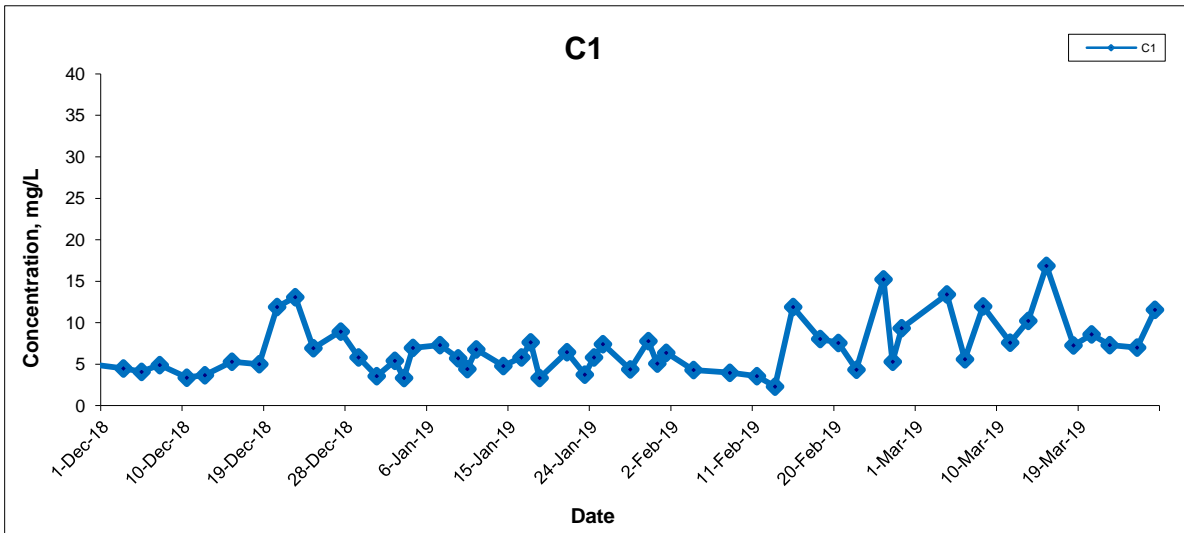
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Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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



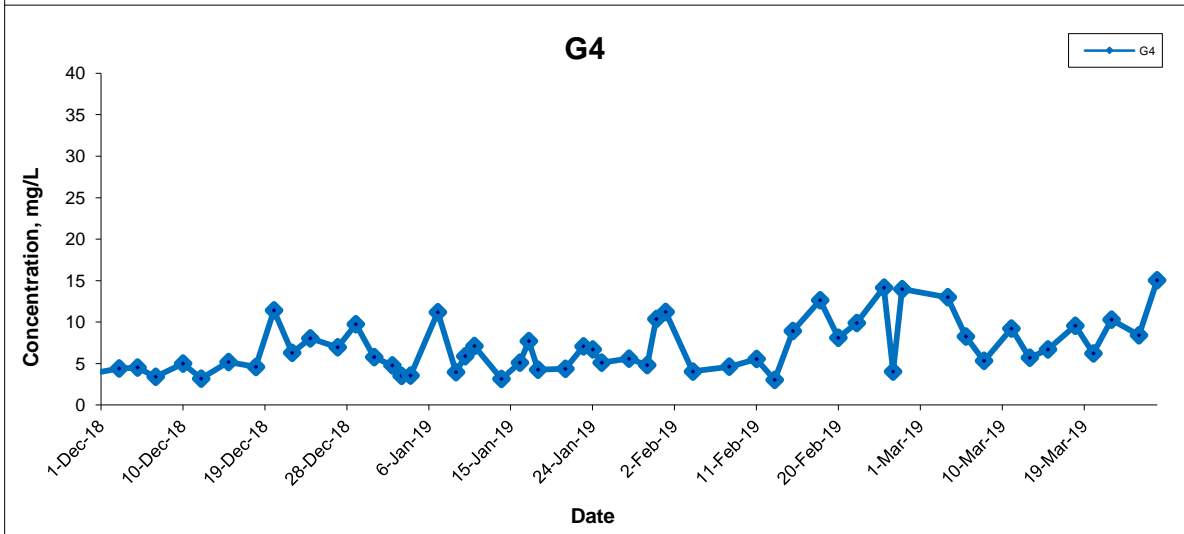
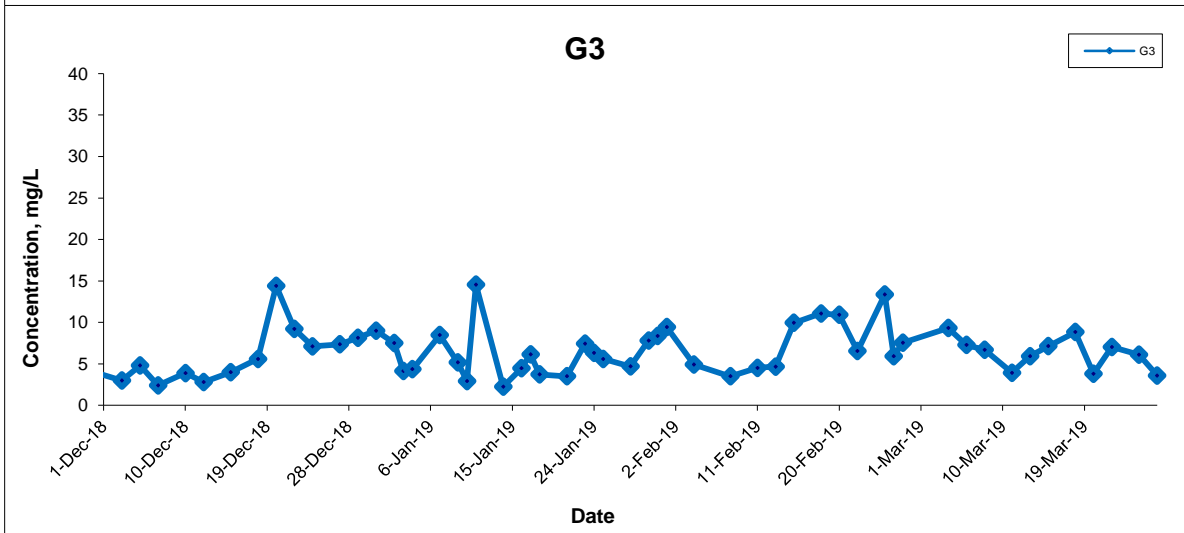
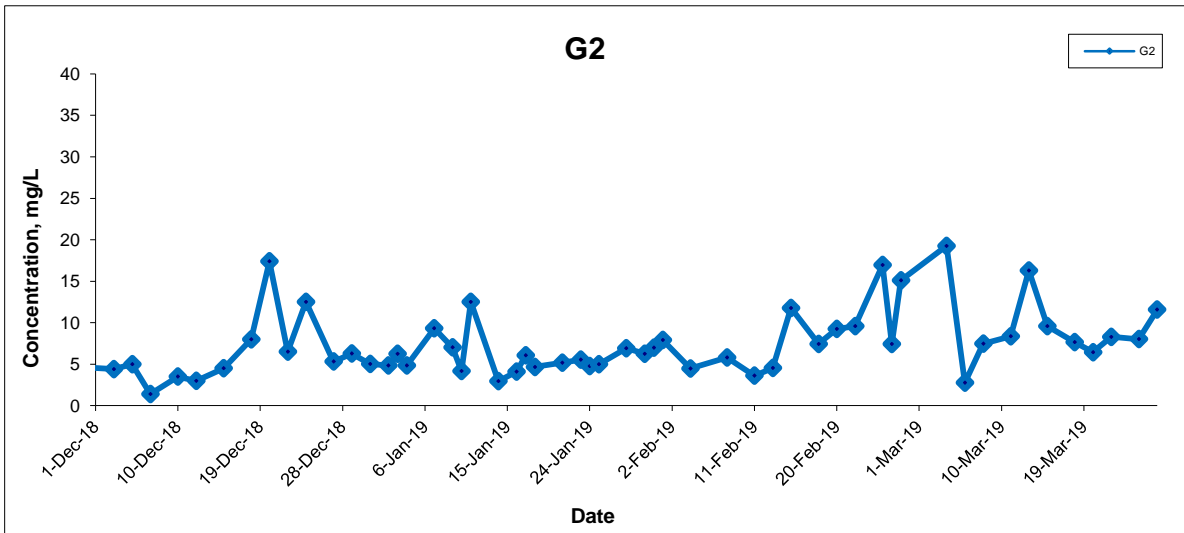
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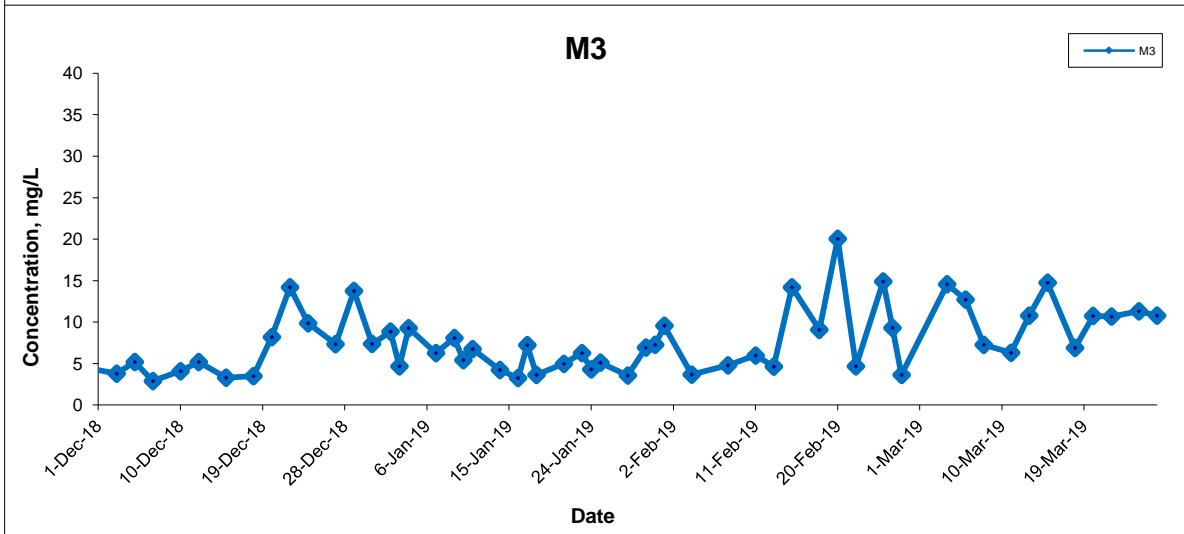
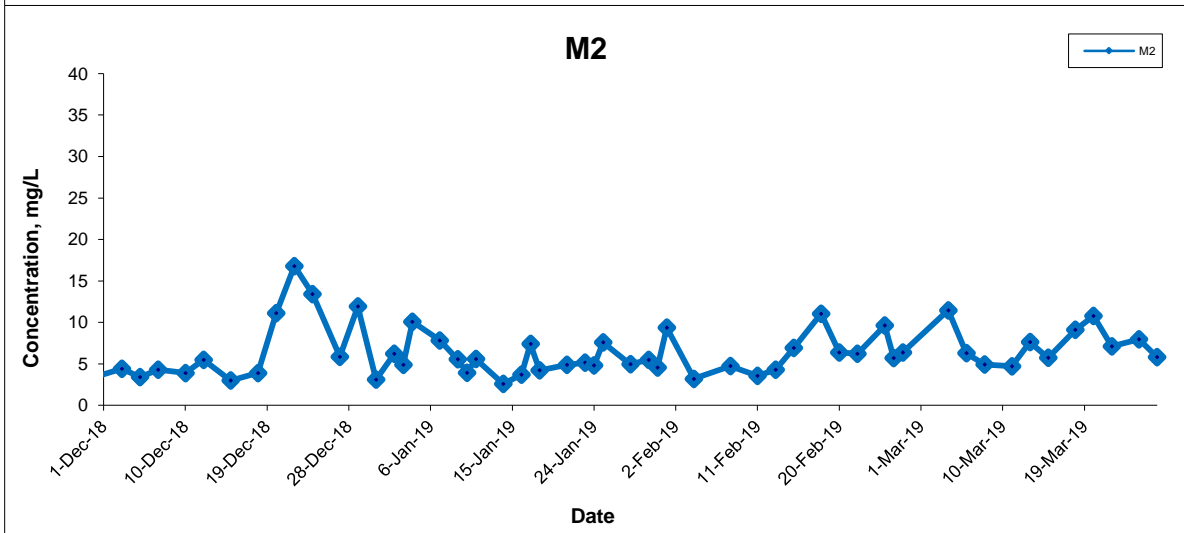
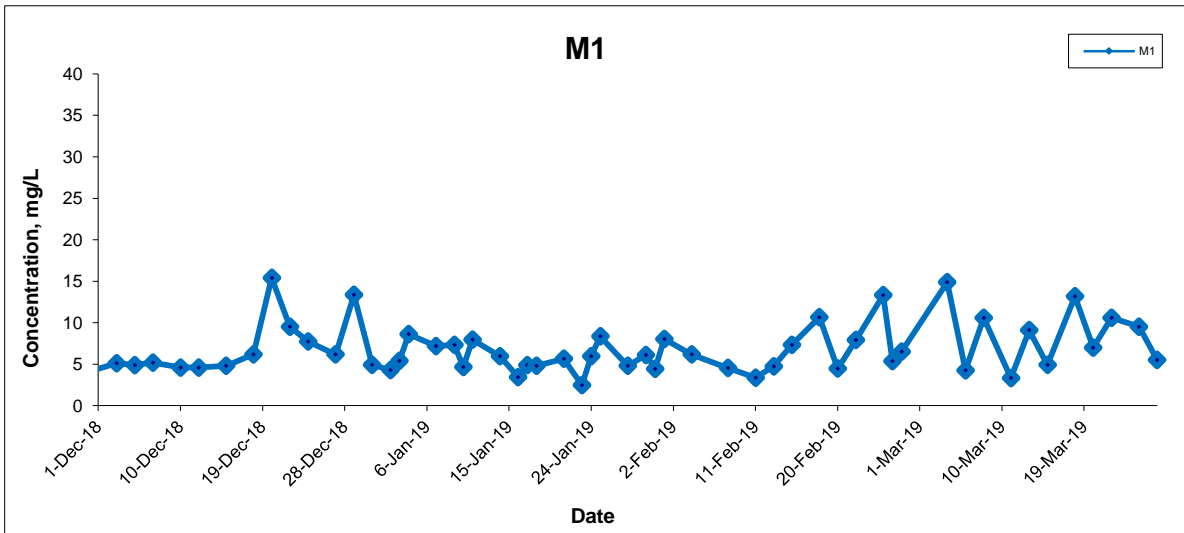


Suspended Solids (Depth-averaged) at Mid-Ebb Tide



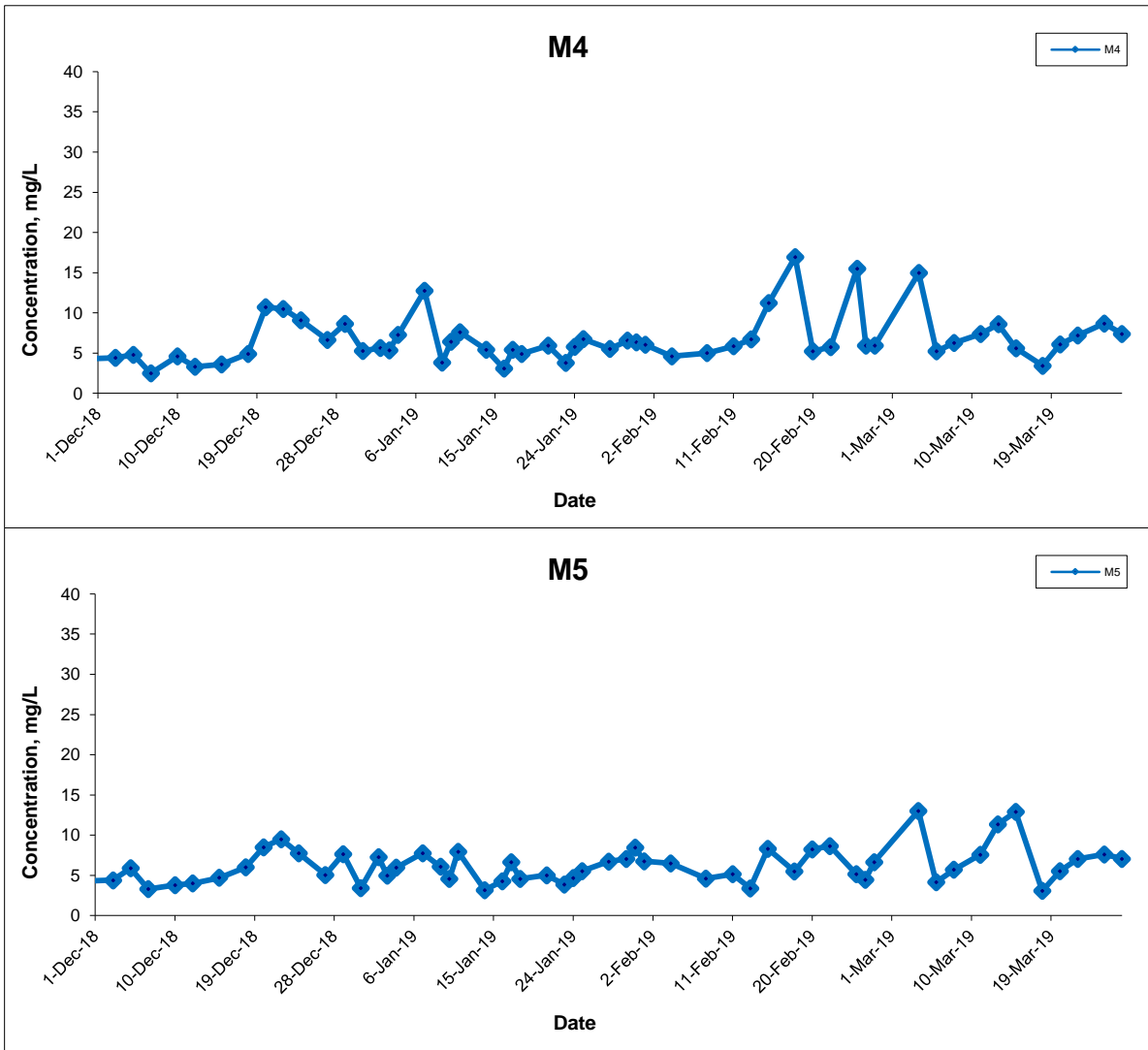
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



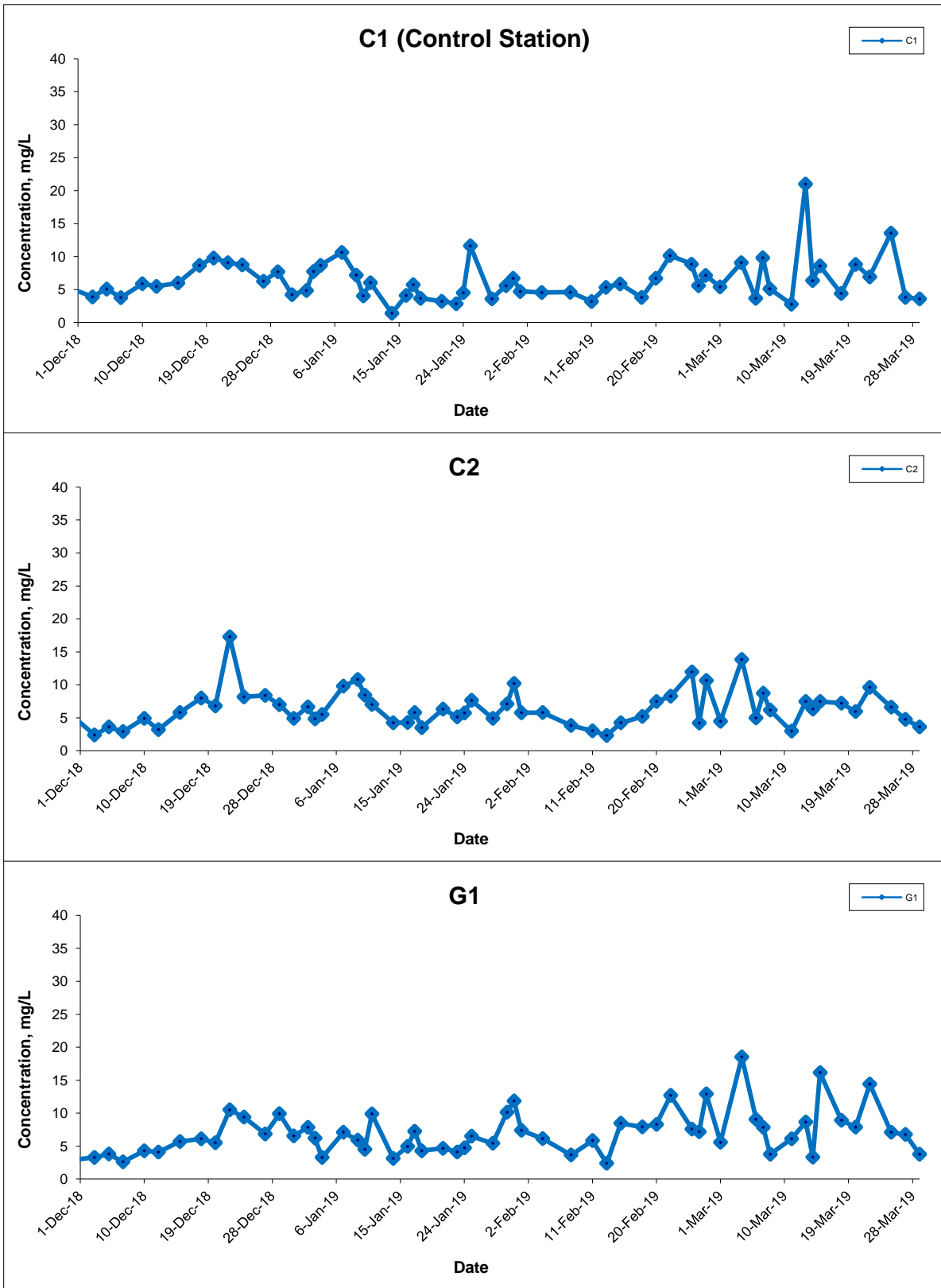
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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



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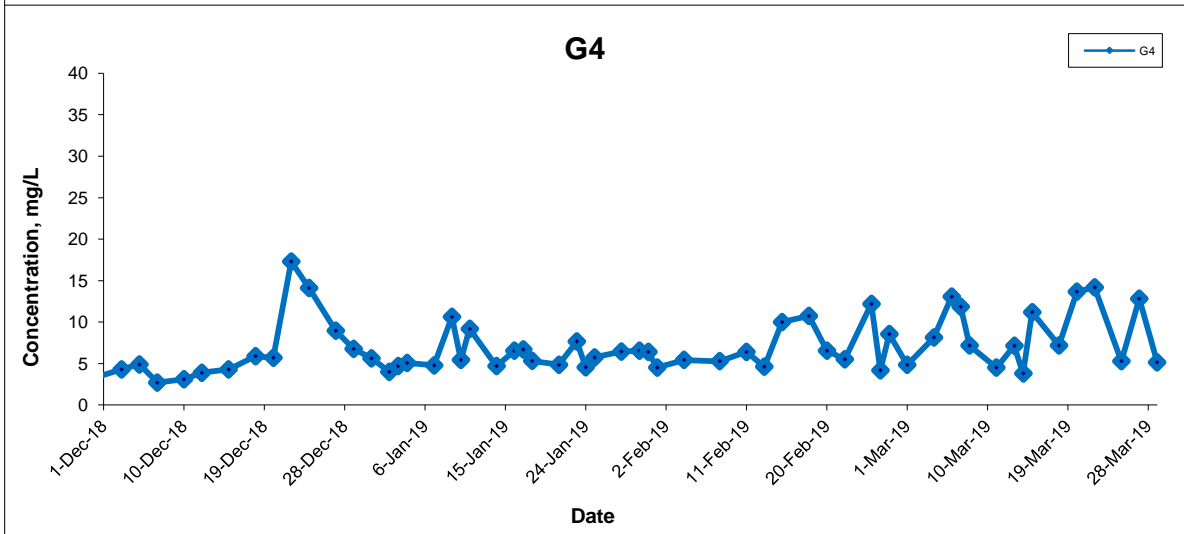
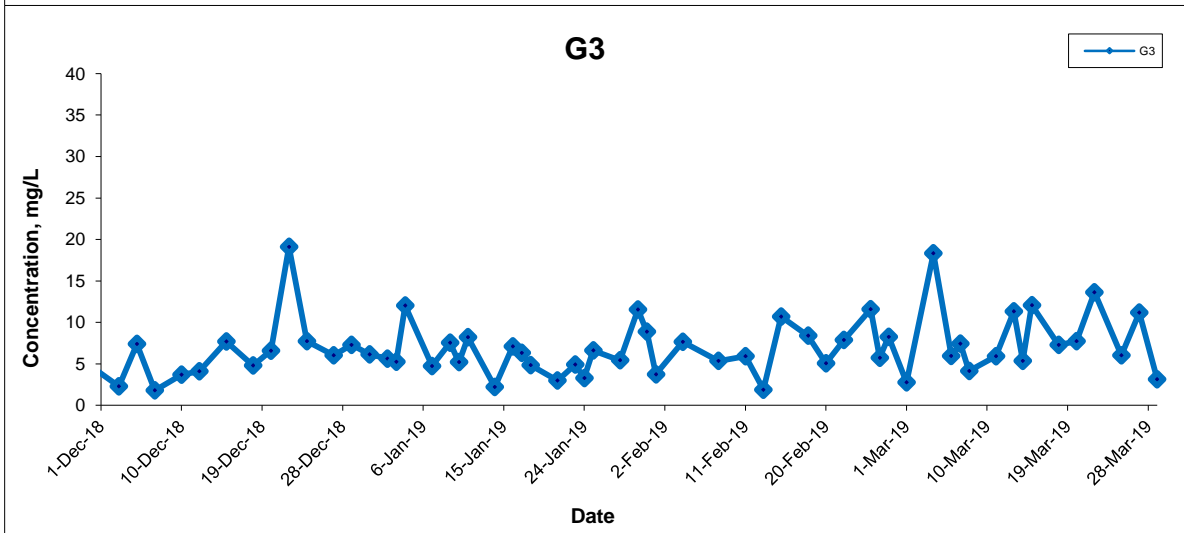
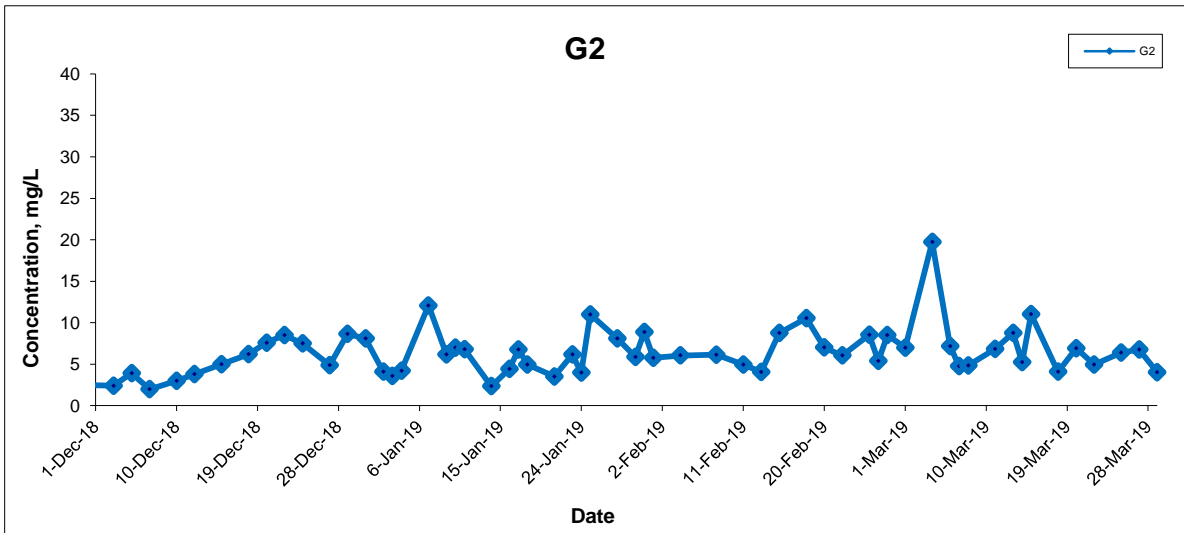
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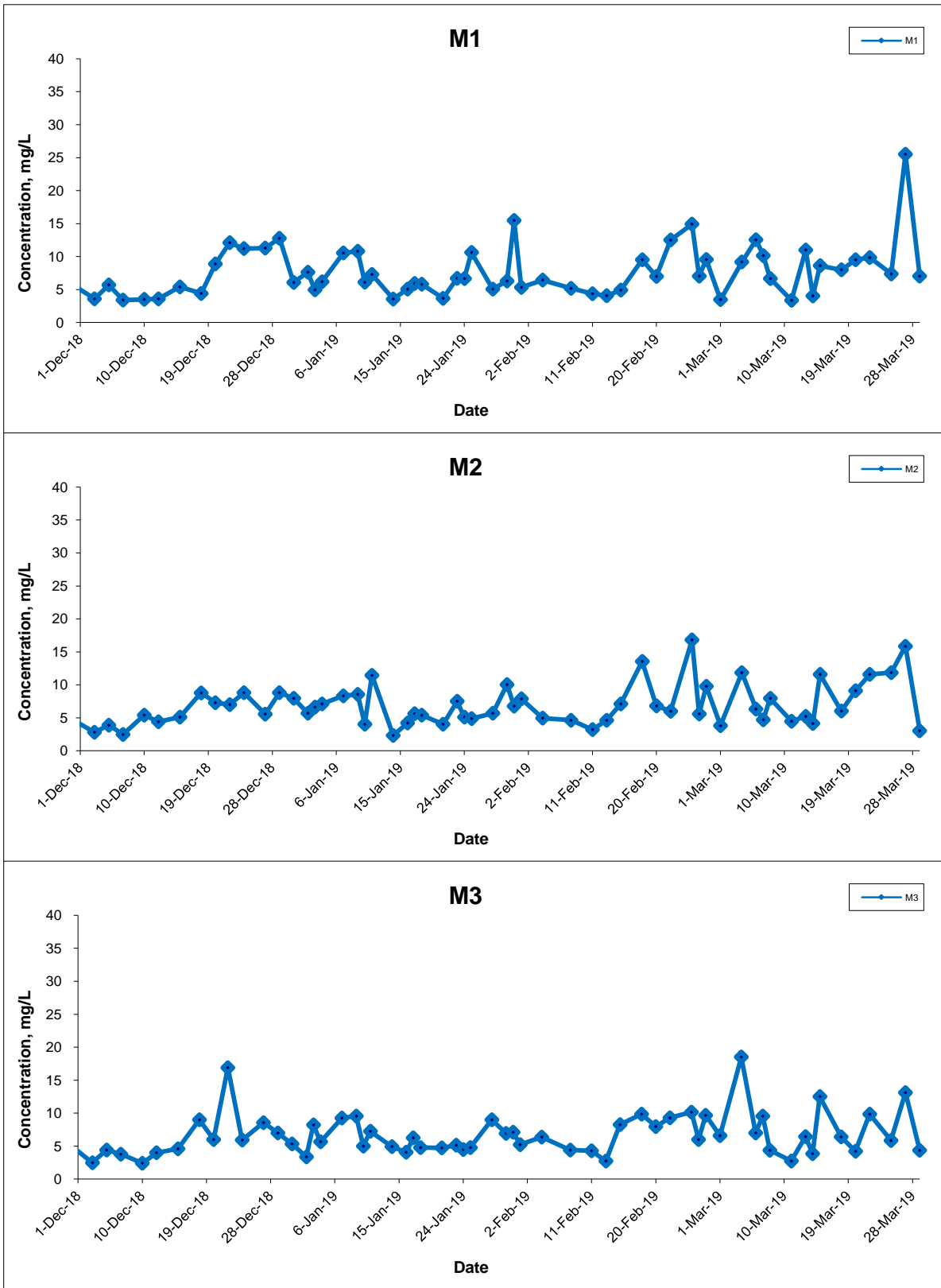


Suspended Solids (Depth-averaged) at Mid-Flood Tide



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



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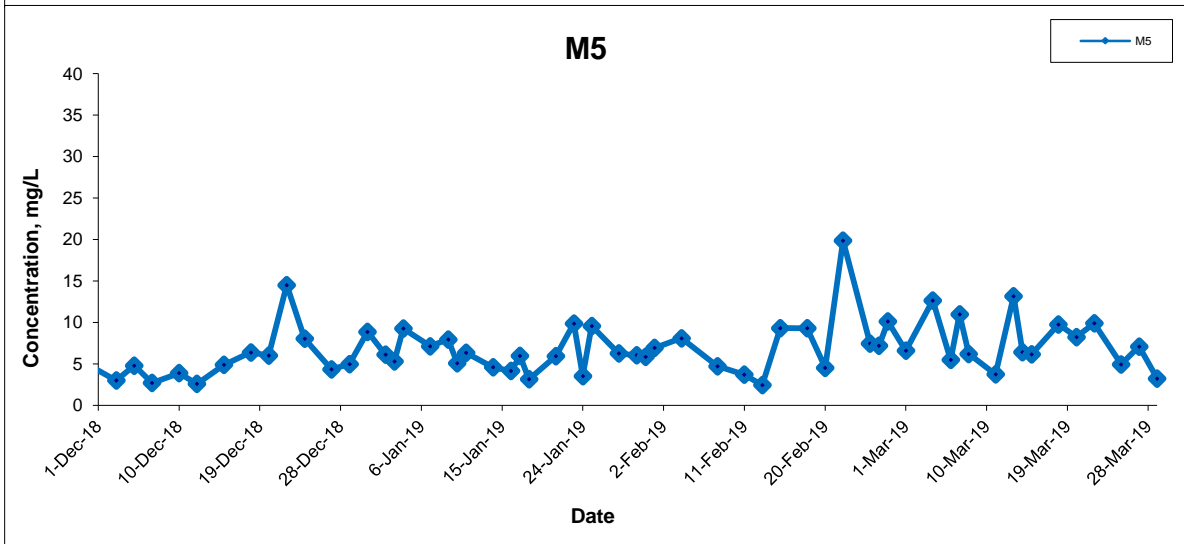
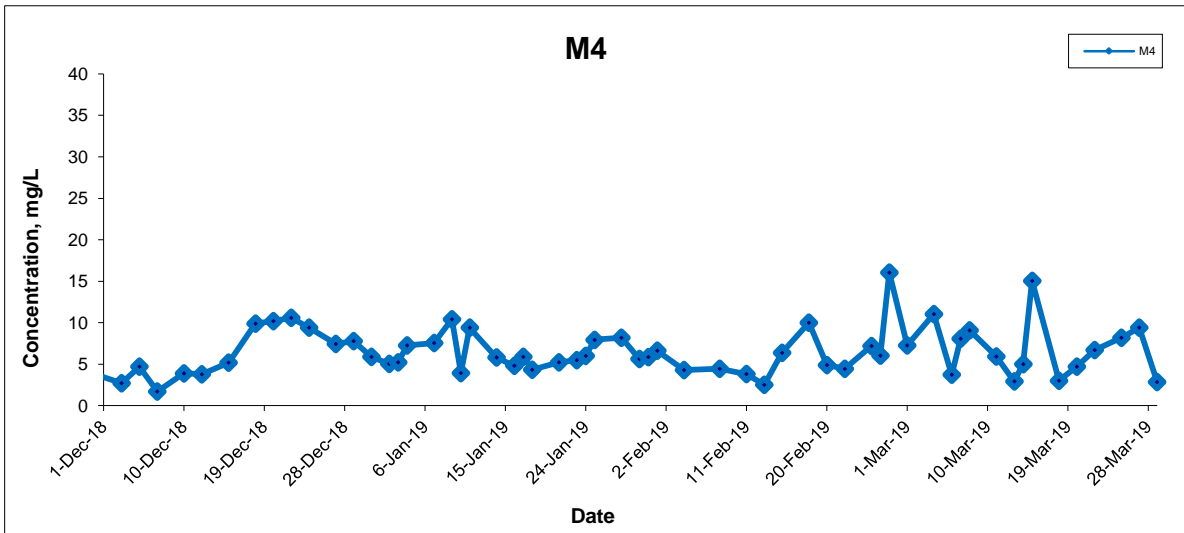
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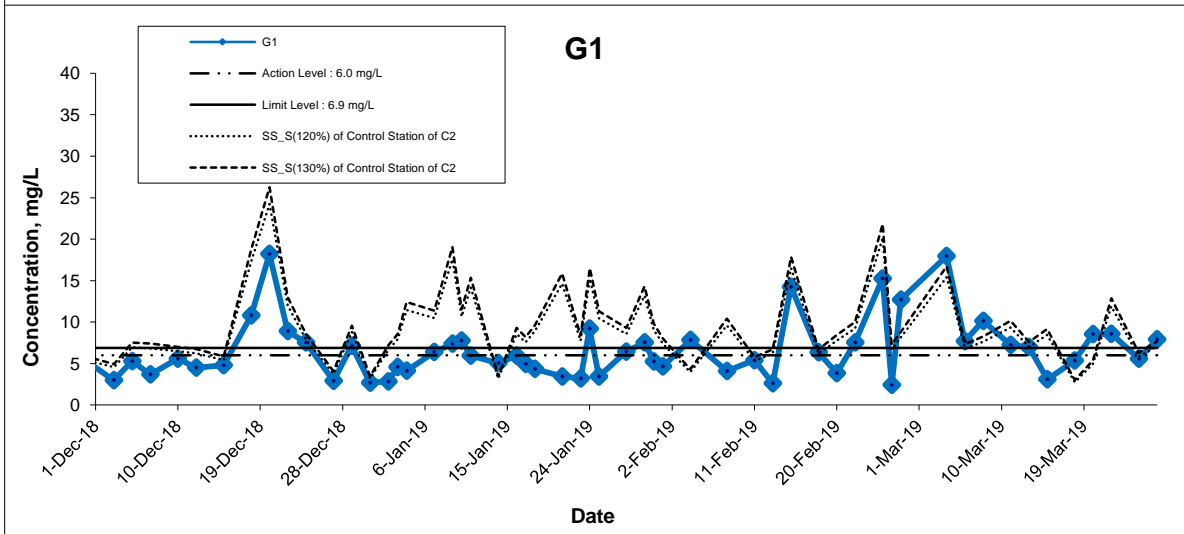
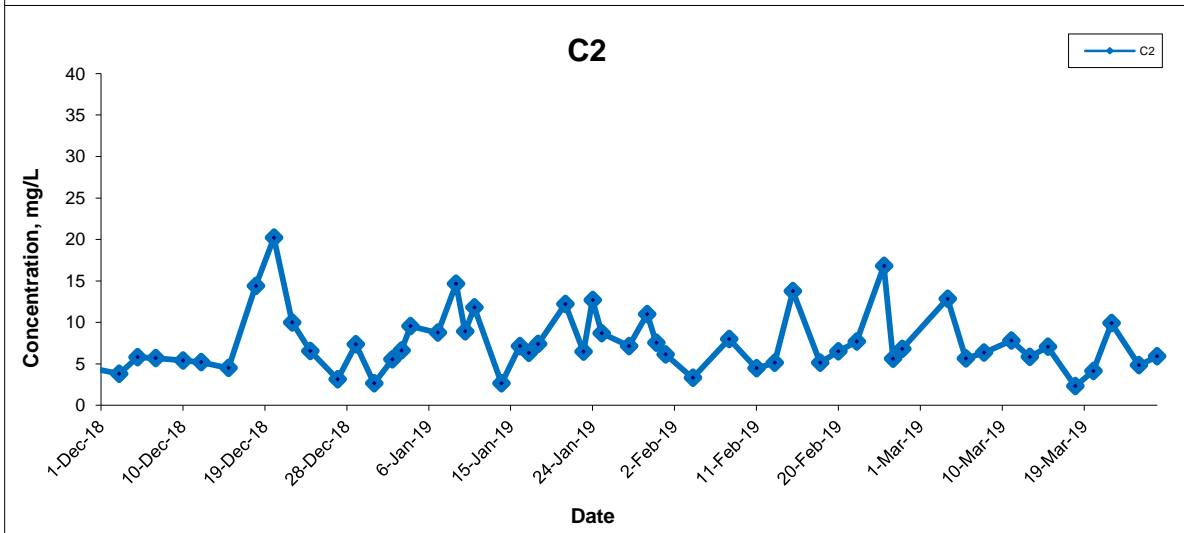
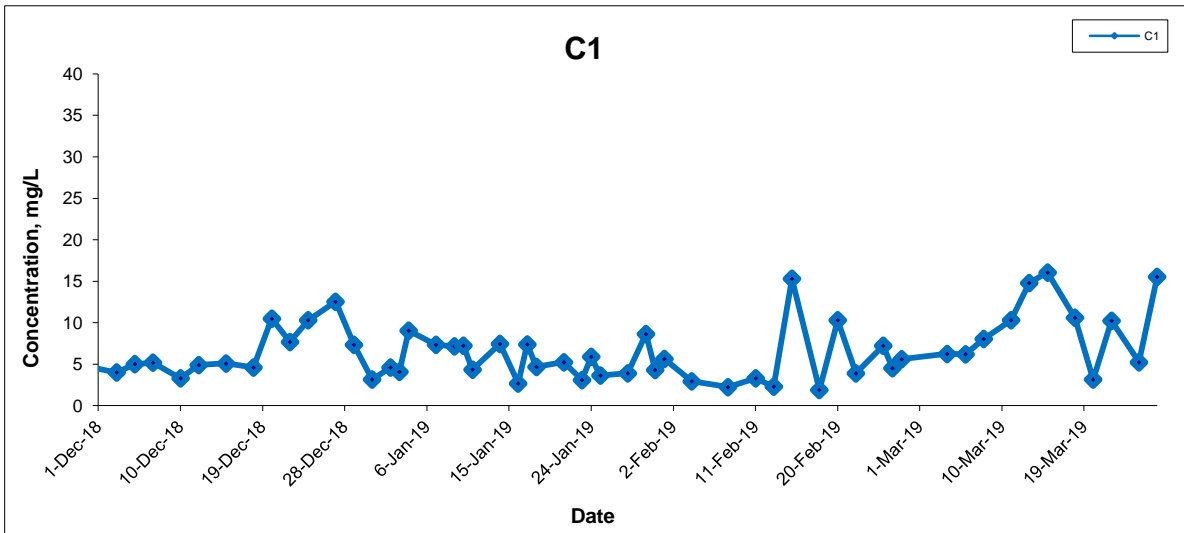


Suspended Solids (Depth-averaged) at Mid-Flood Tide



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Suspended Solids (Surface) at Mid-Ebb Tide



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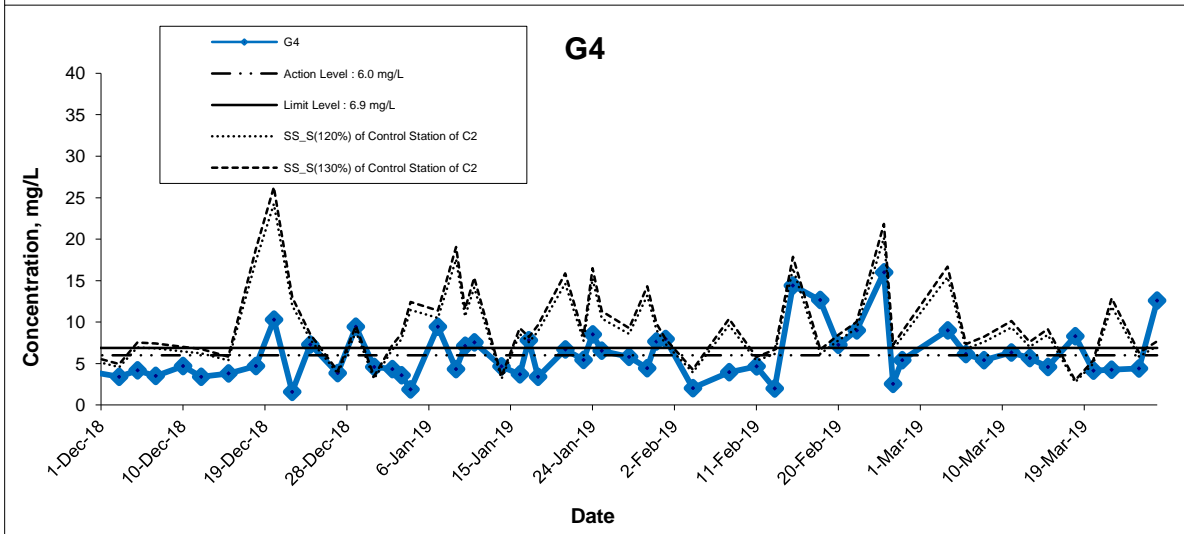
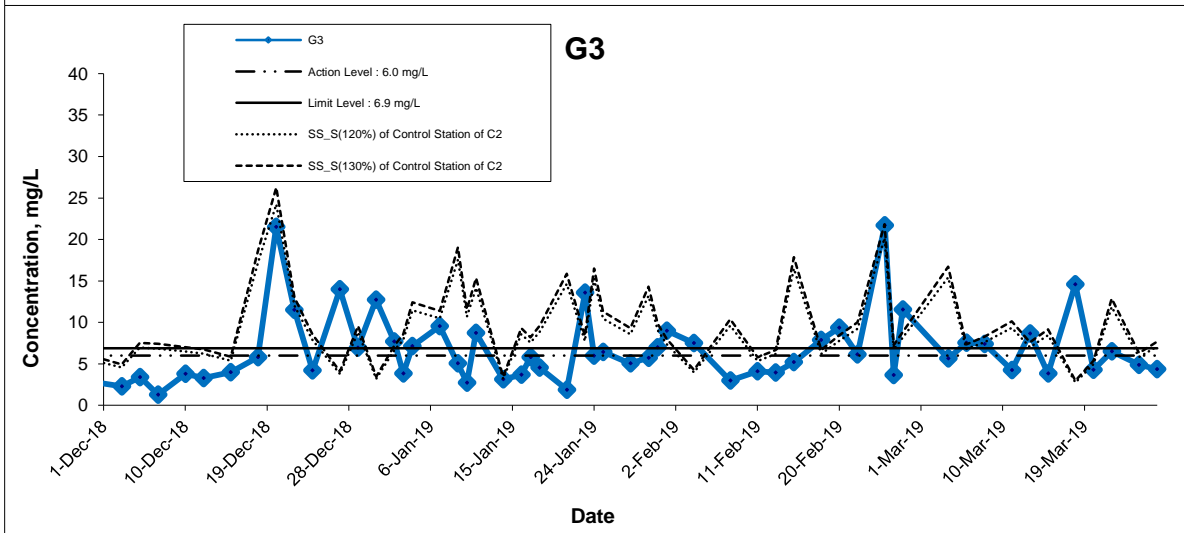
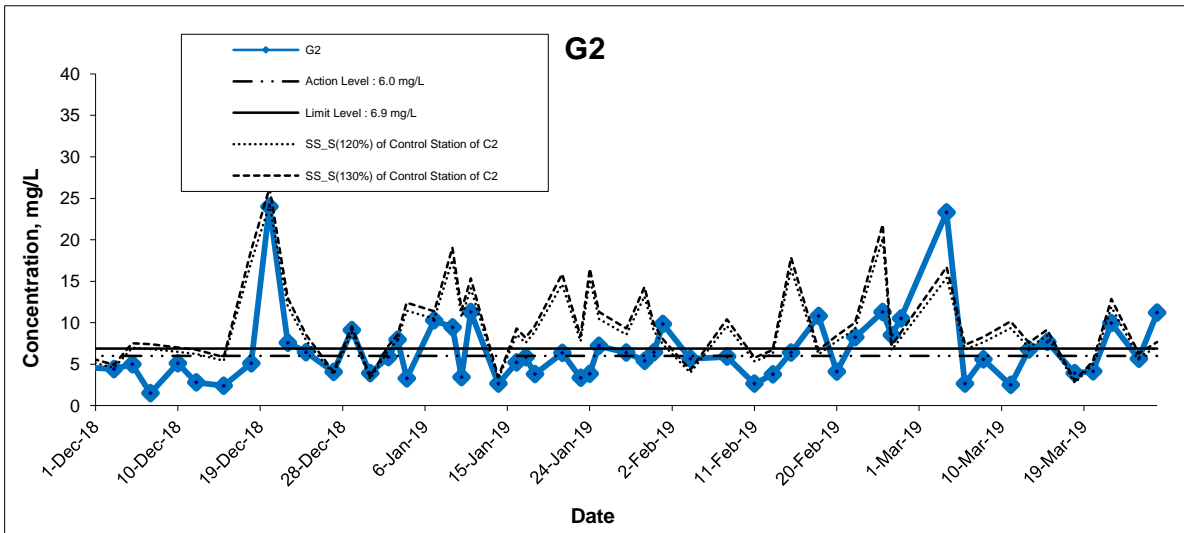
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Suspended Solids (Surface) at Mid-Ebb Tide



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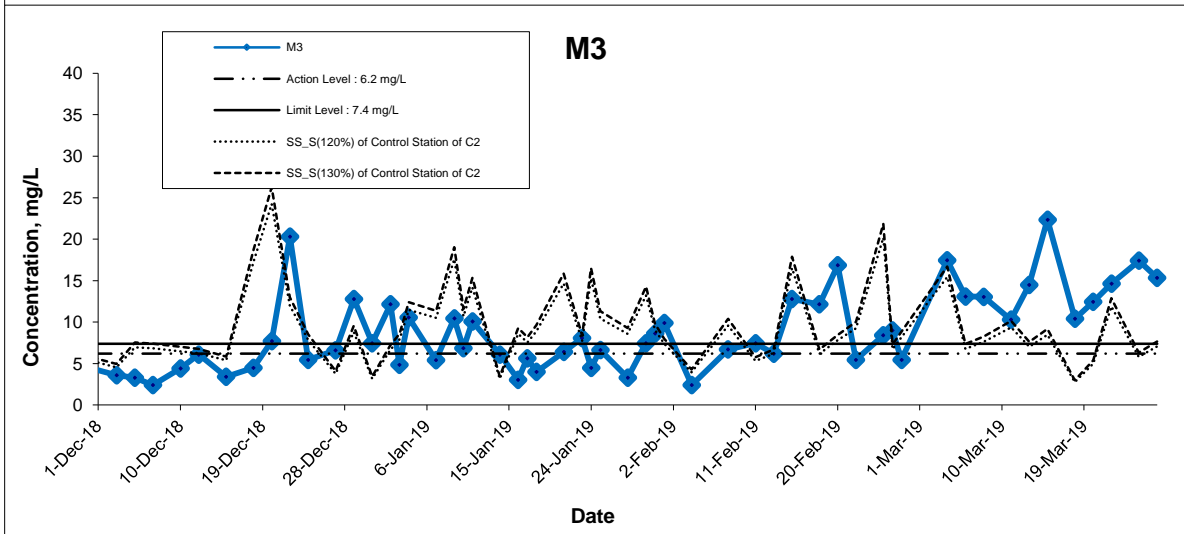
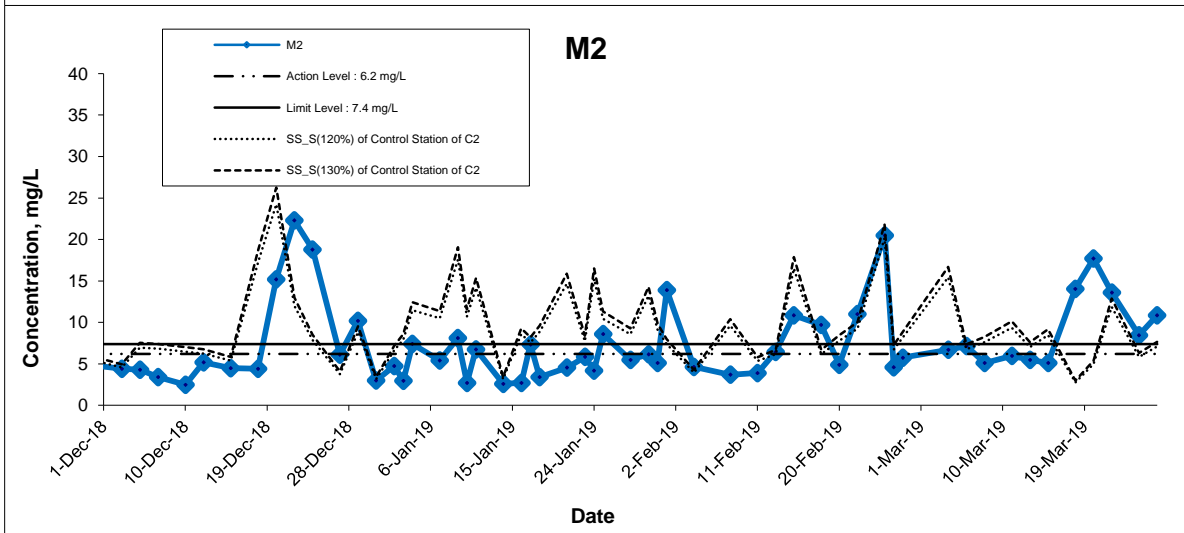
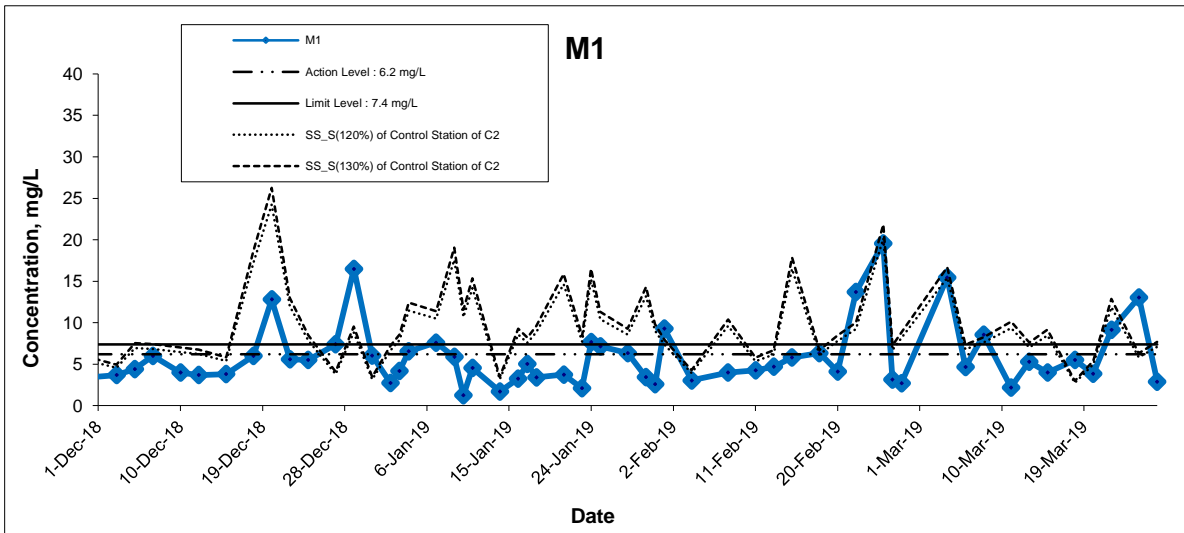
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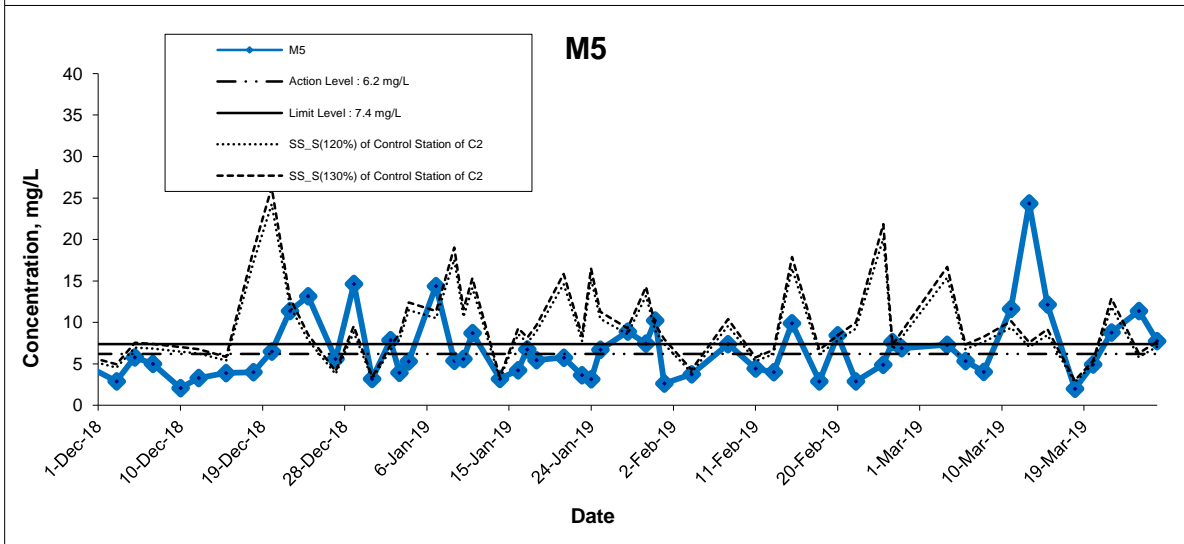
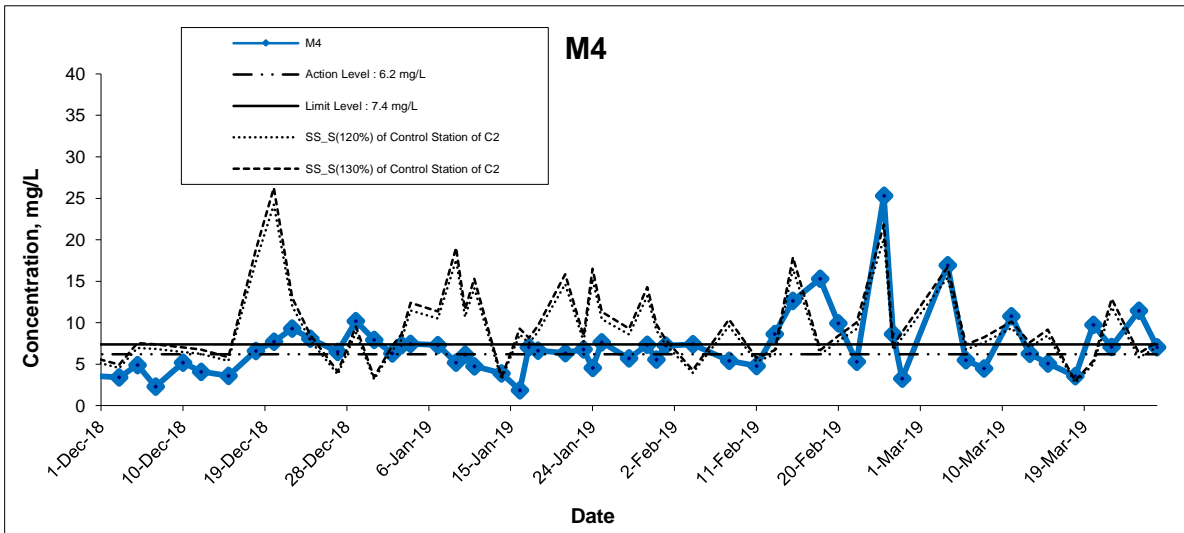


Suspended Solids (Surface) at Mid-Ebb Tide



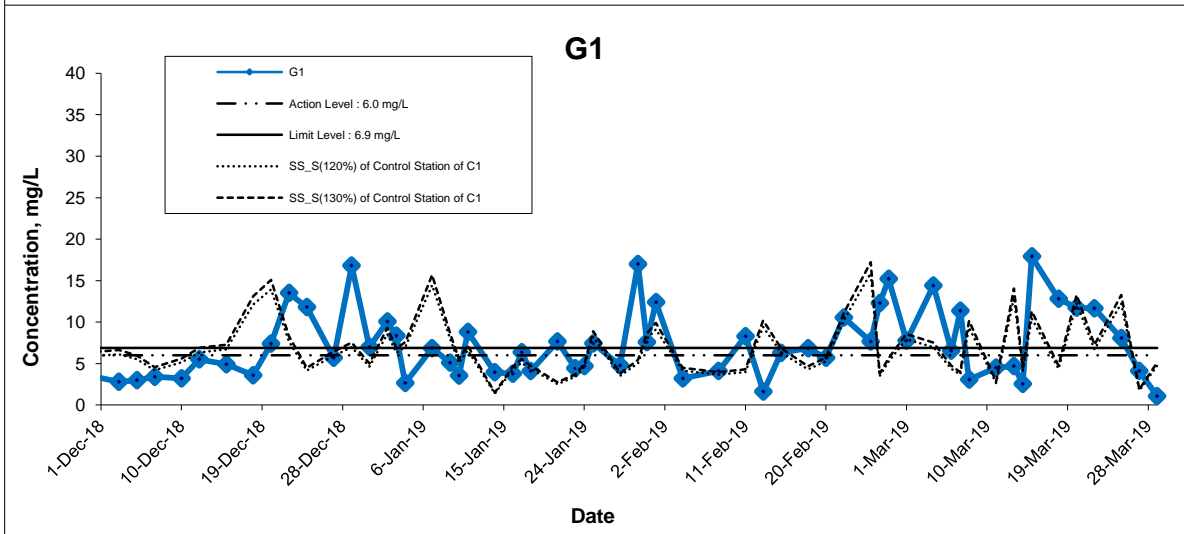
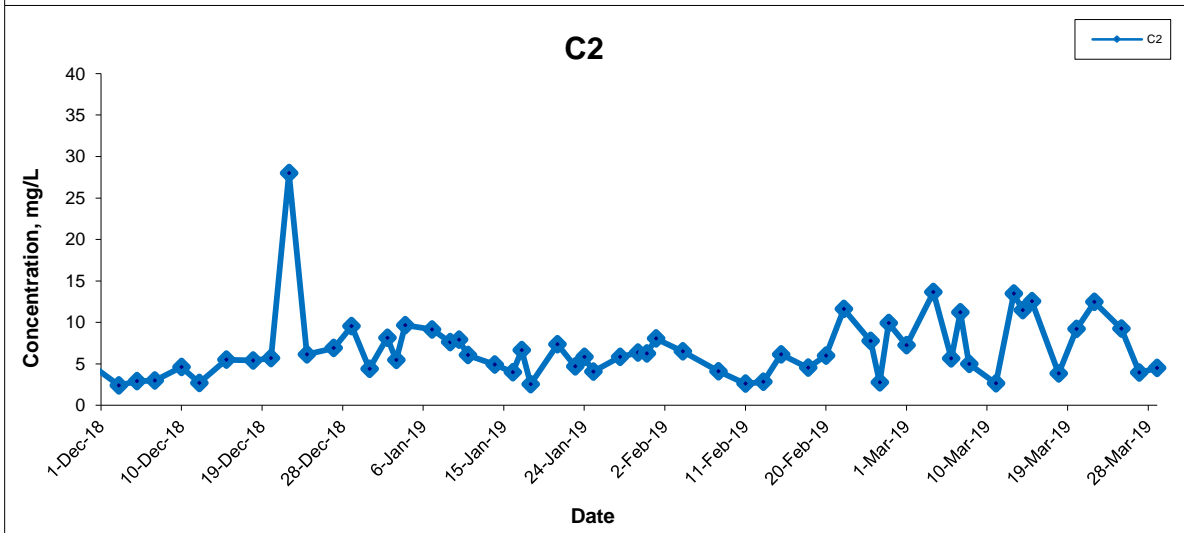
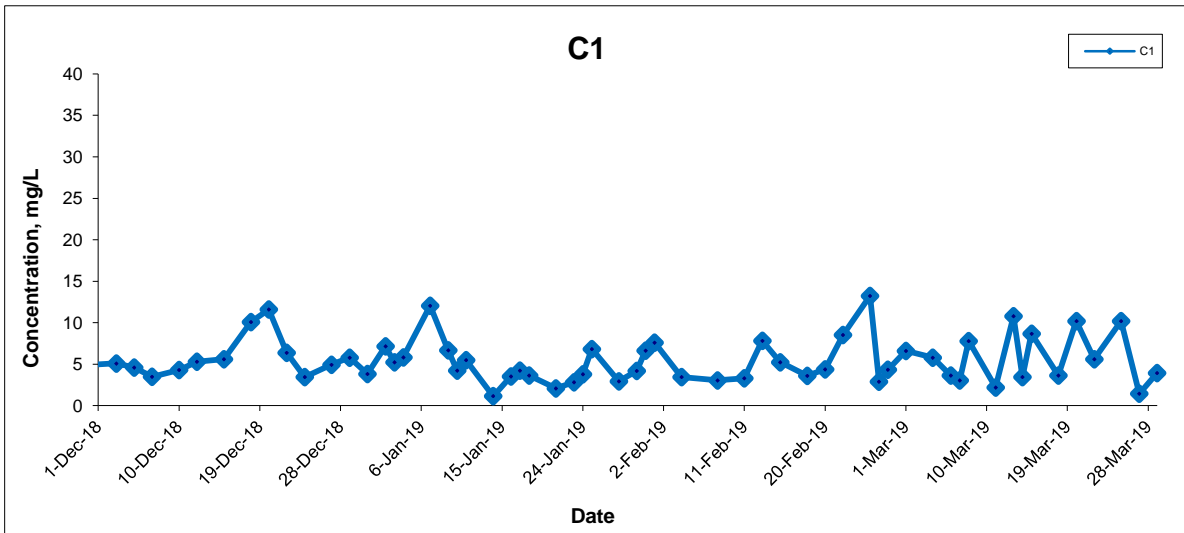
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Suspended Solids (Surface) at Mid-Ebb Tide



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Suspended Solids (Surface) at Mid-Flood Tide



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Scale N.T.S

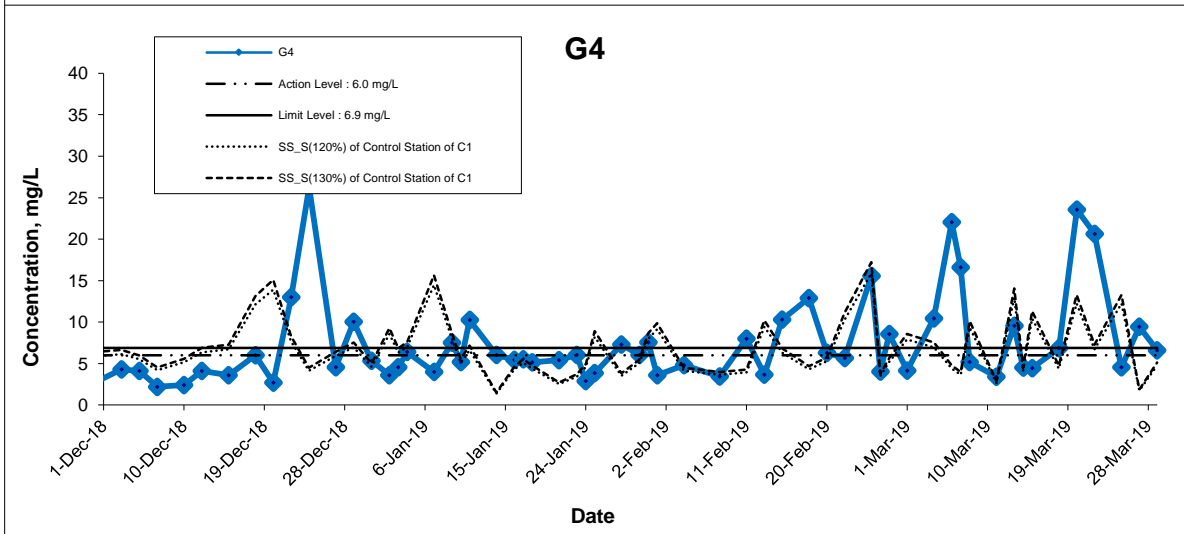
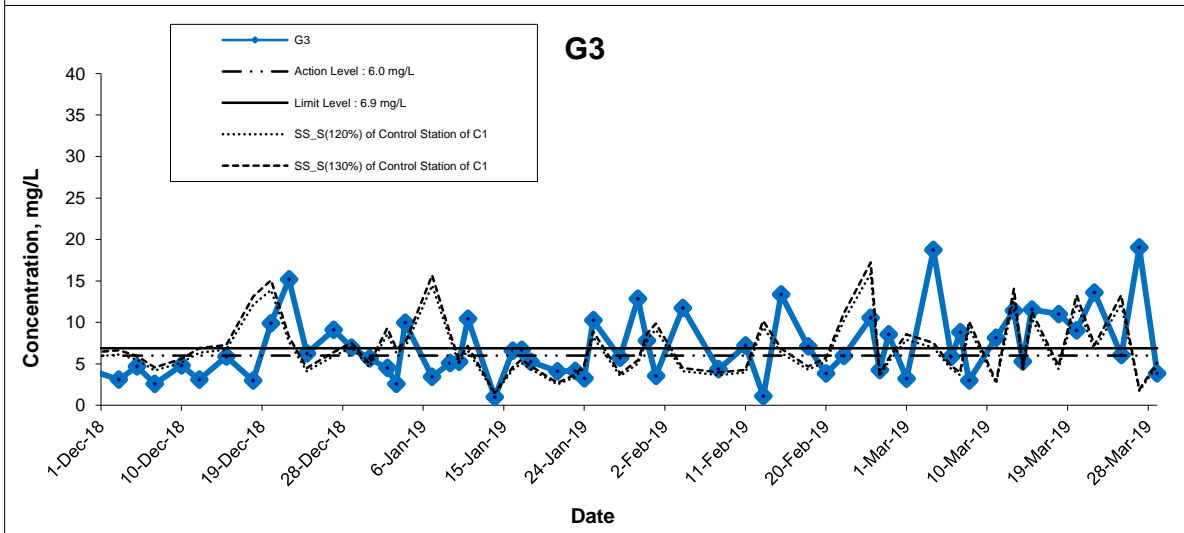
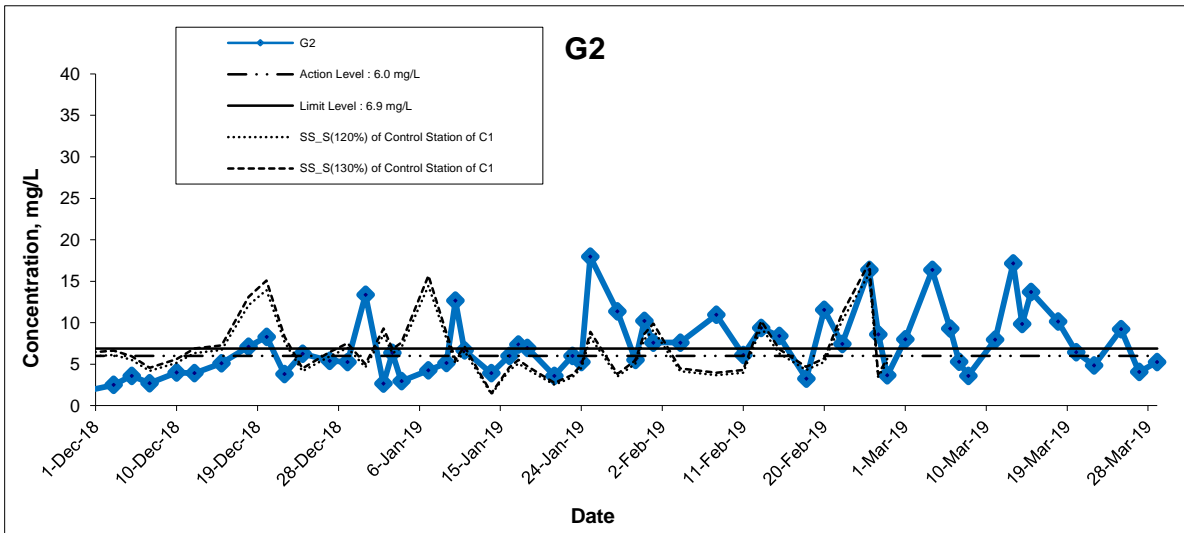
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Surface) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

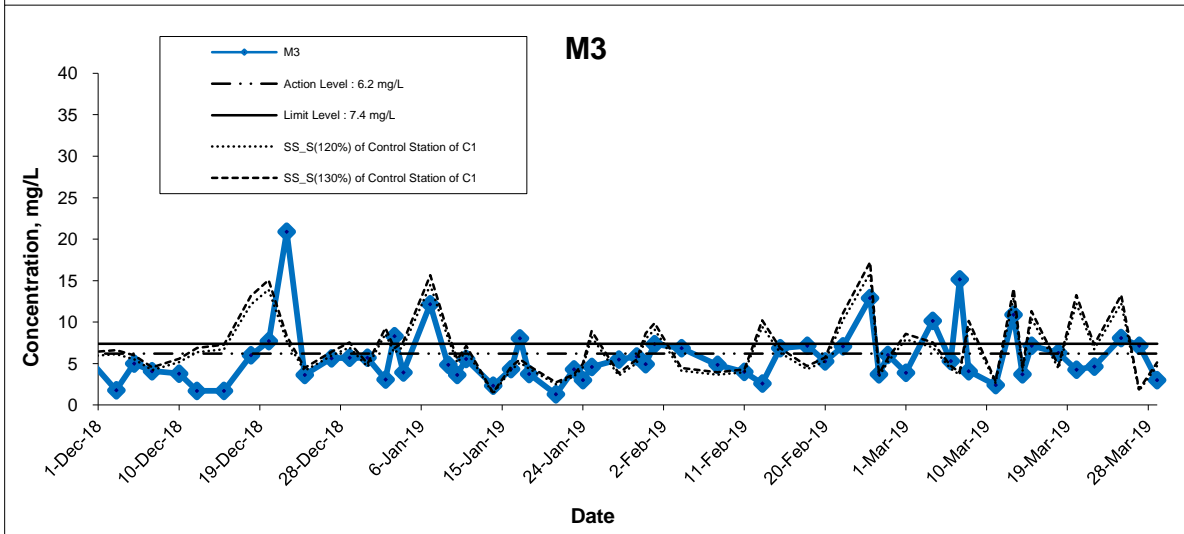
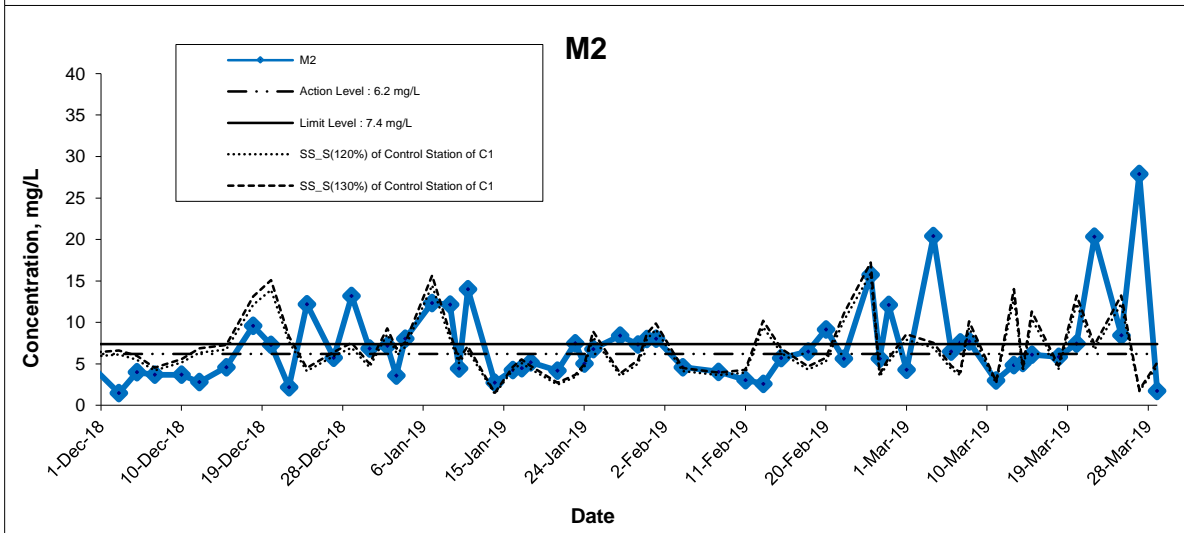
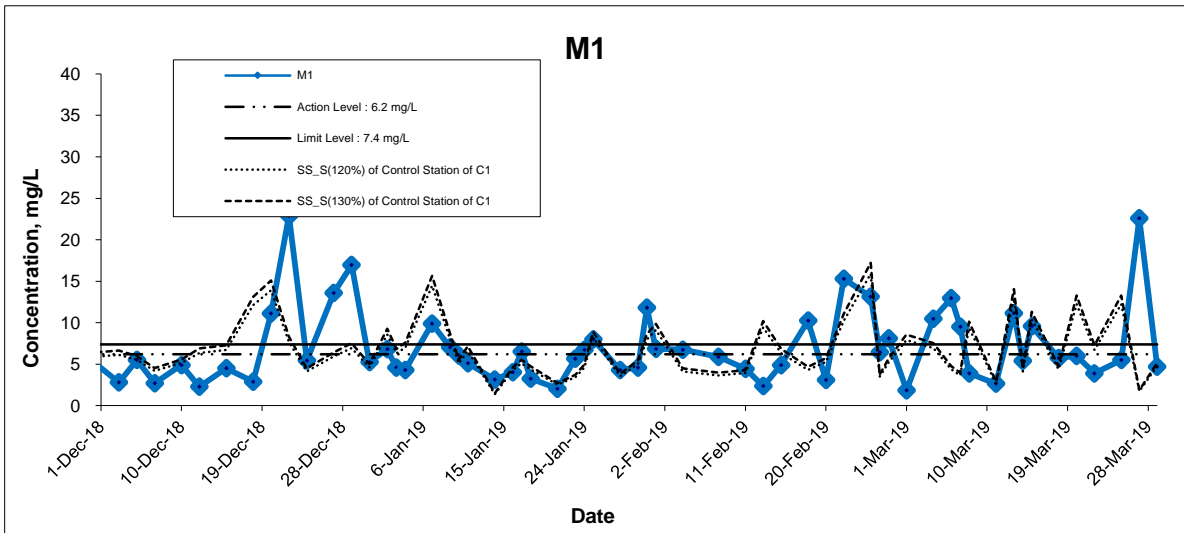
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Surface) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

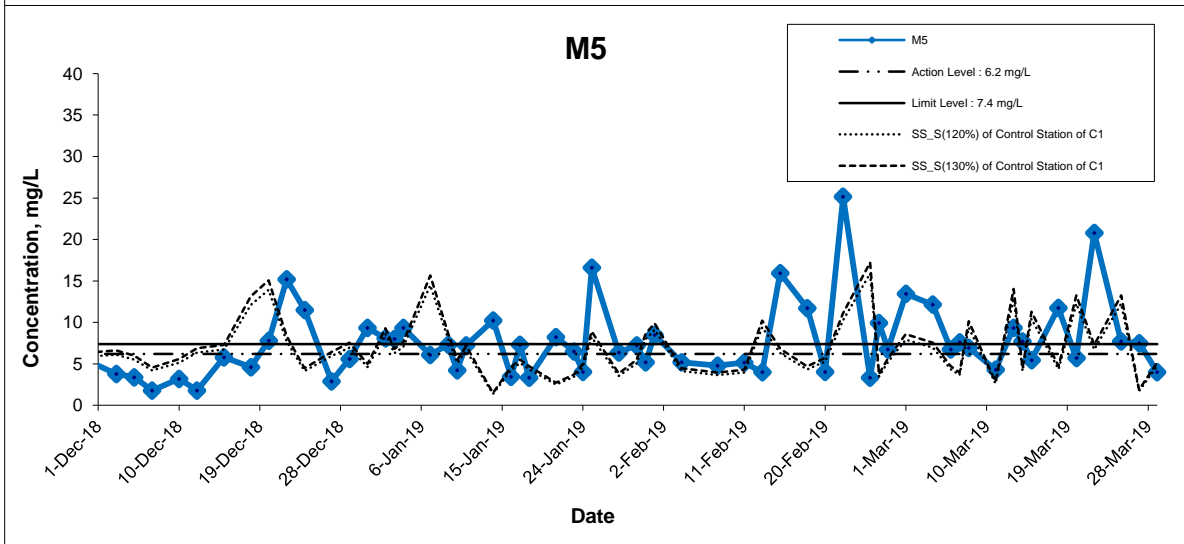
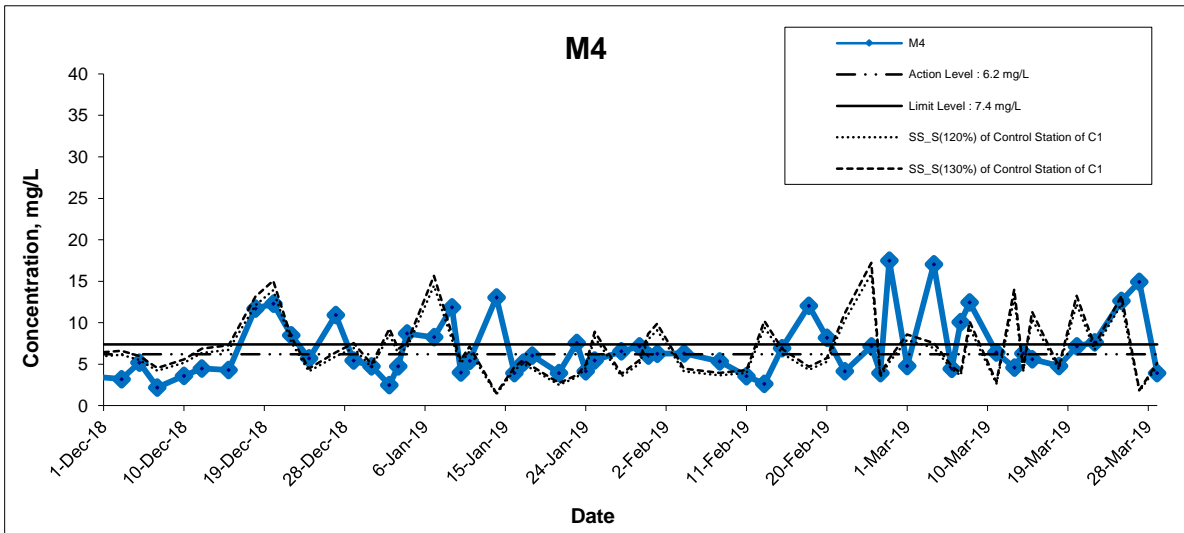
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Surface) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

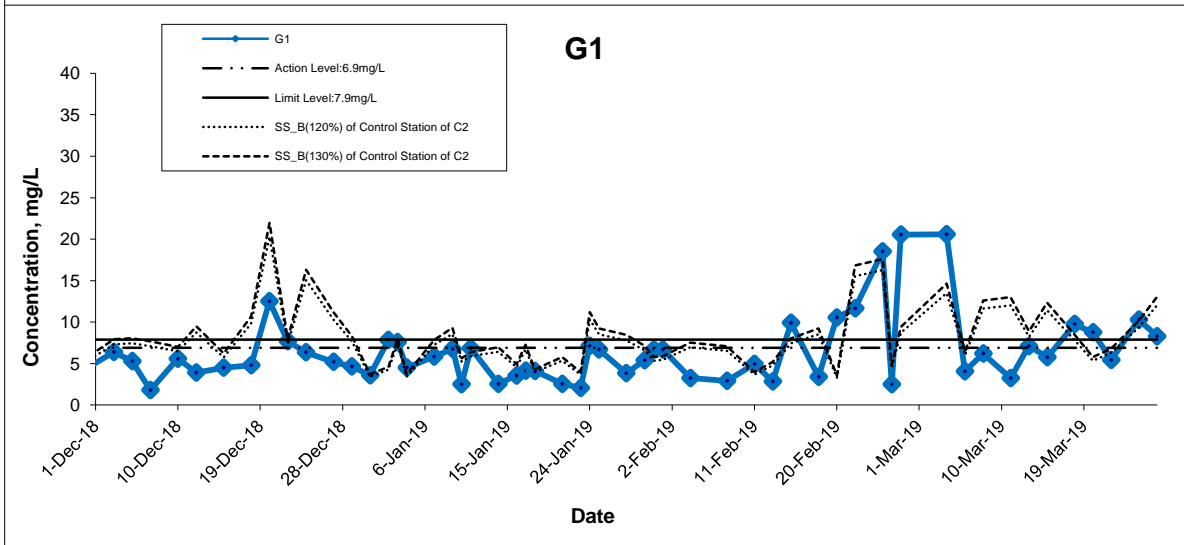
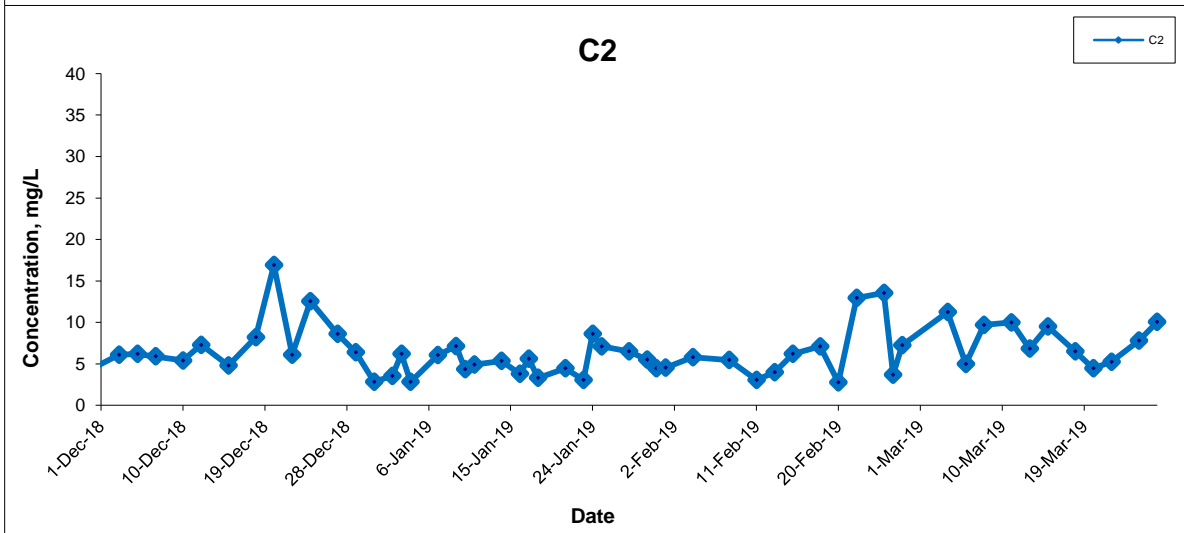
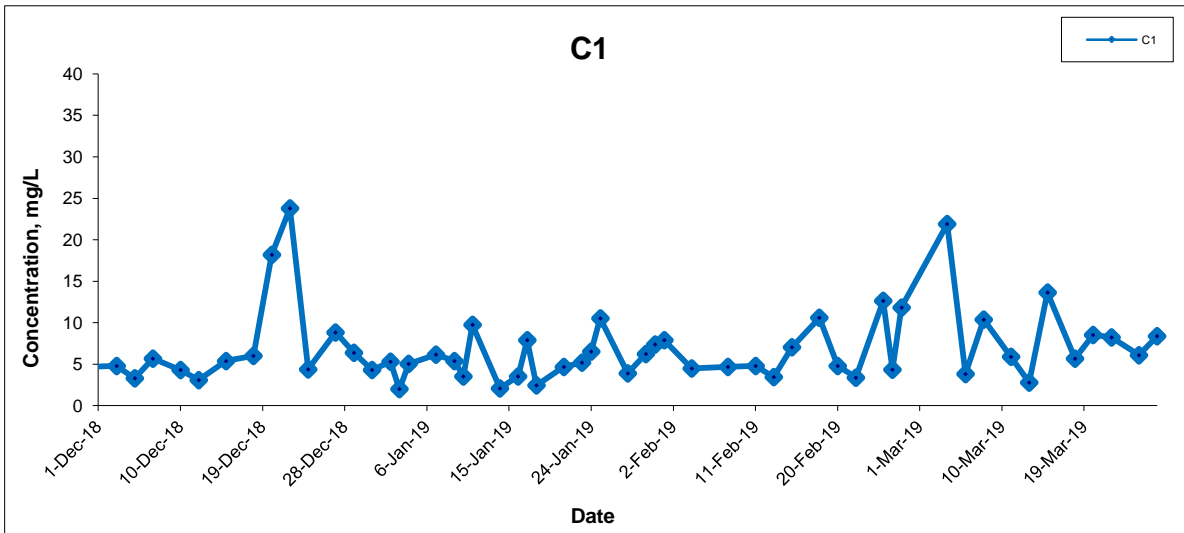
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

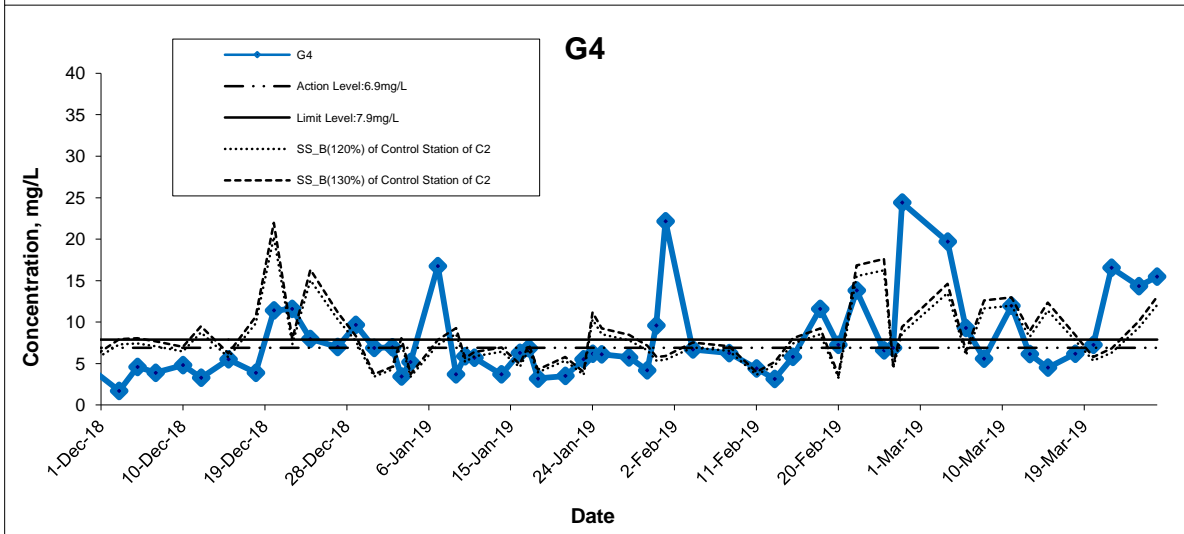
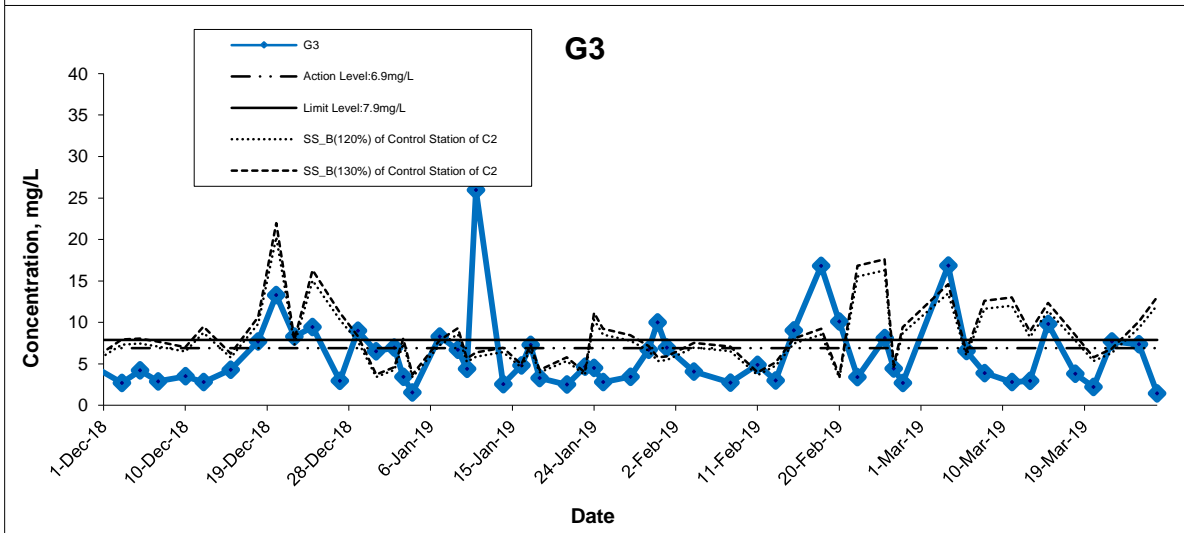
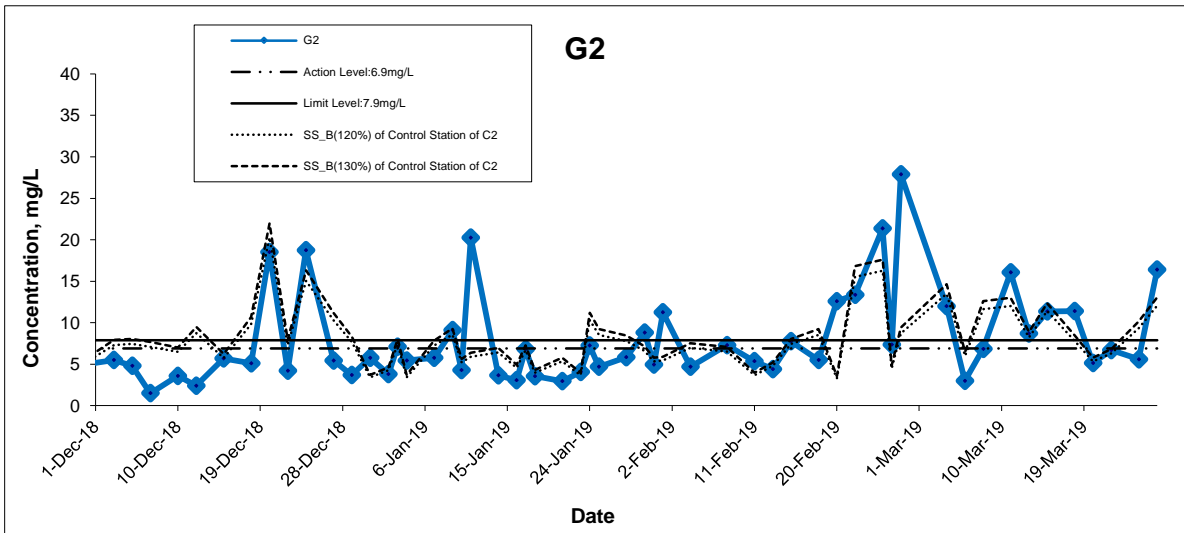
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

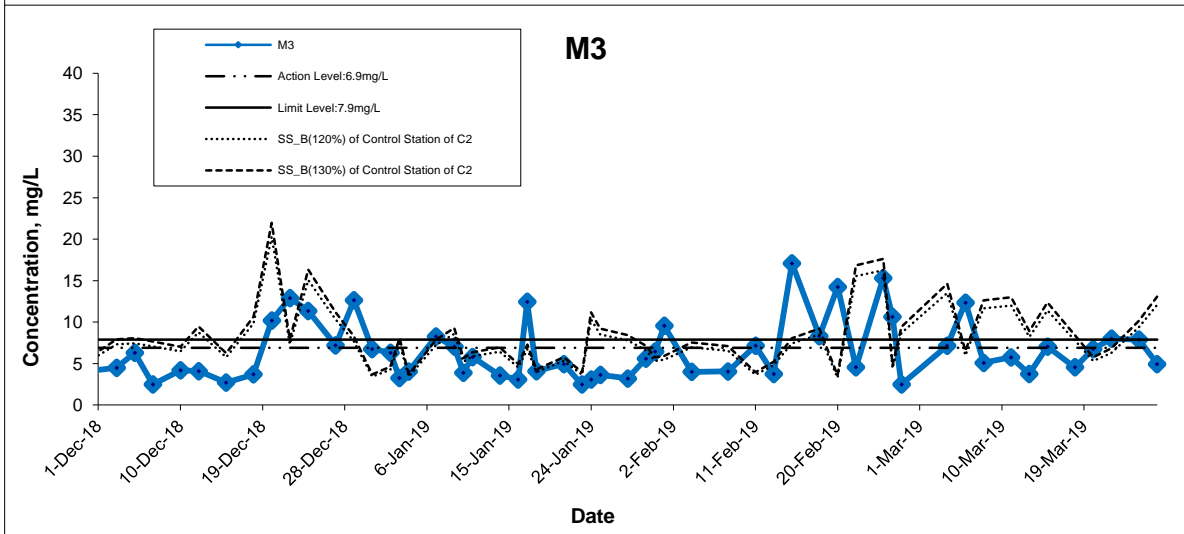
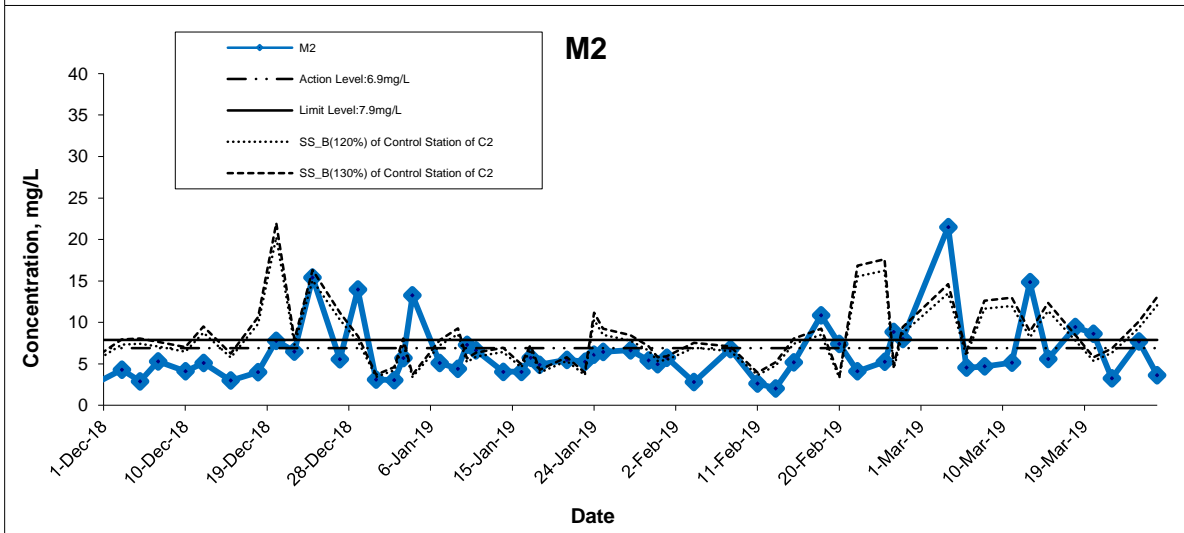
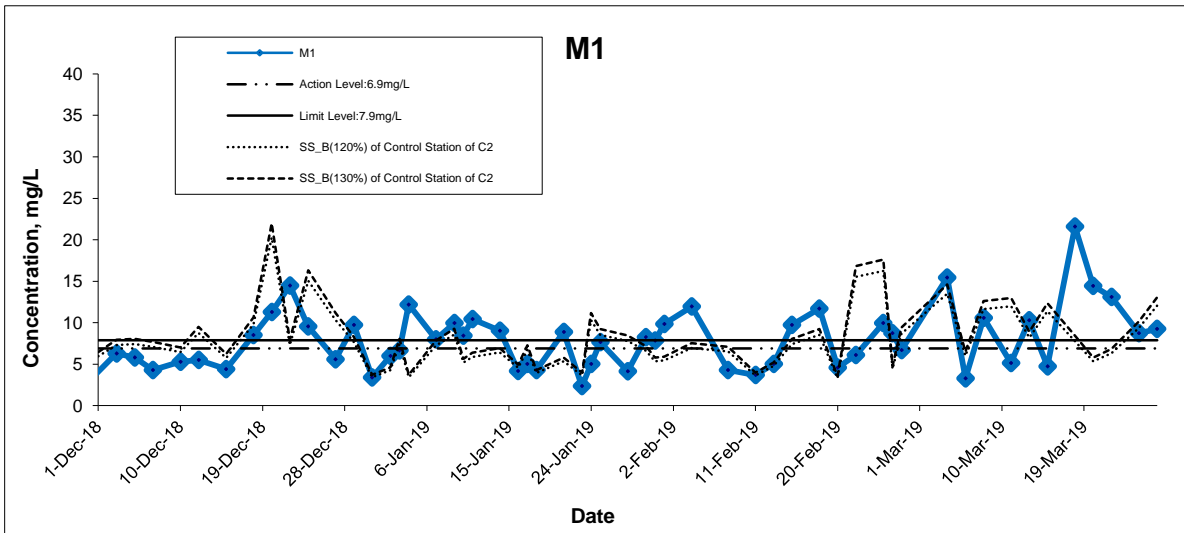
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

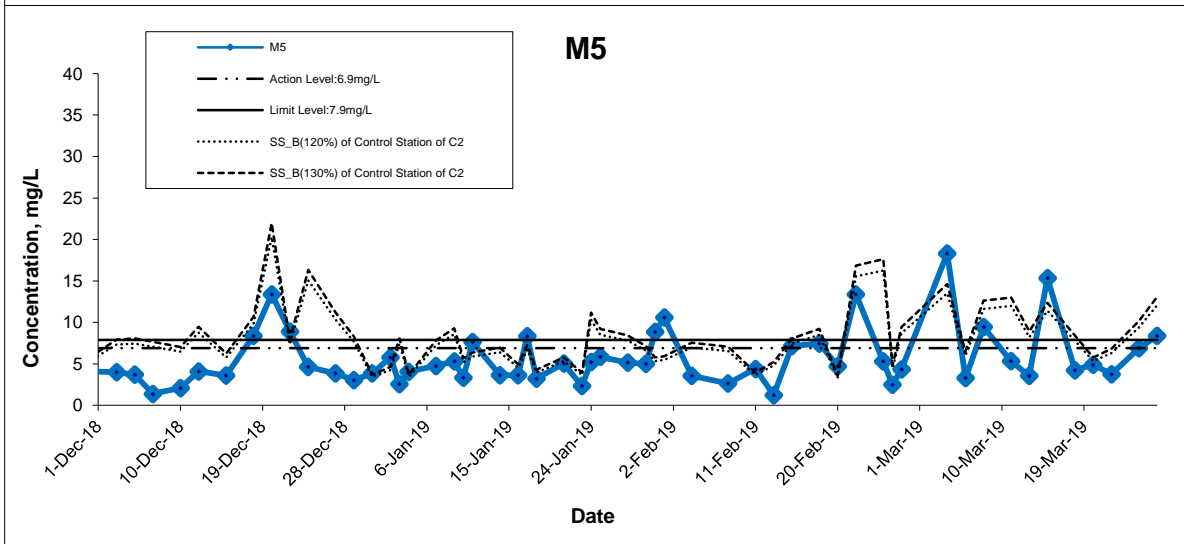
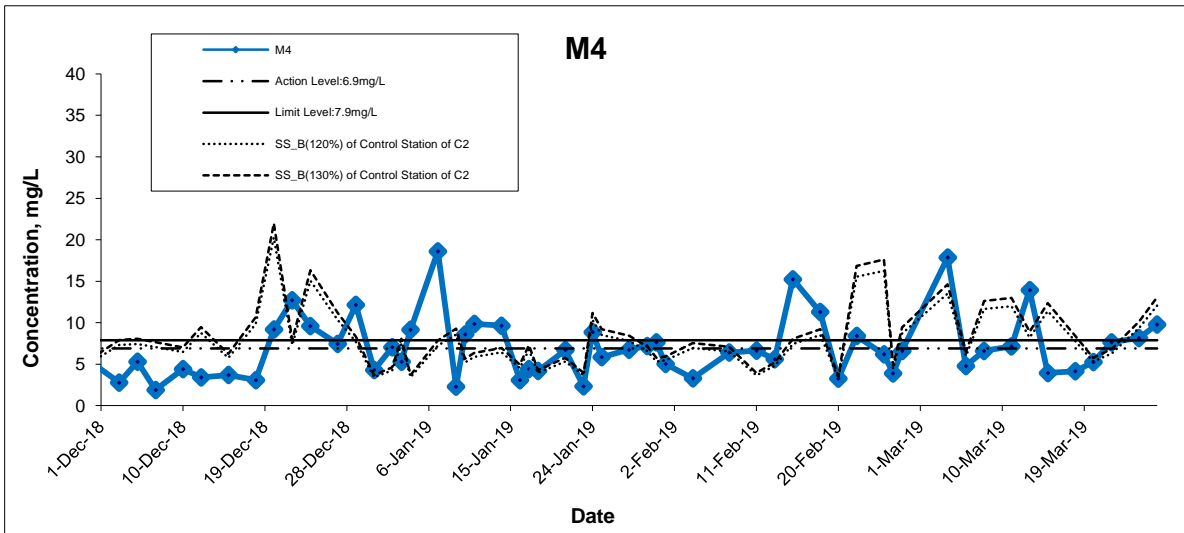
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

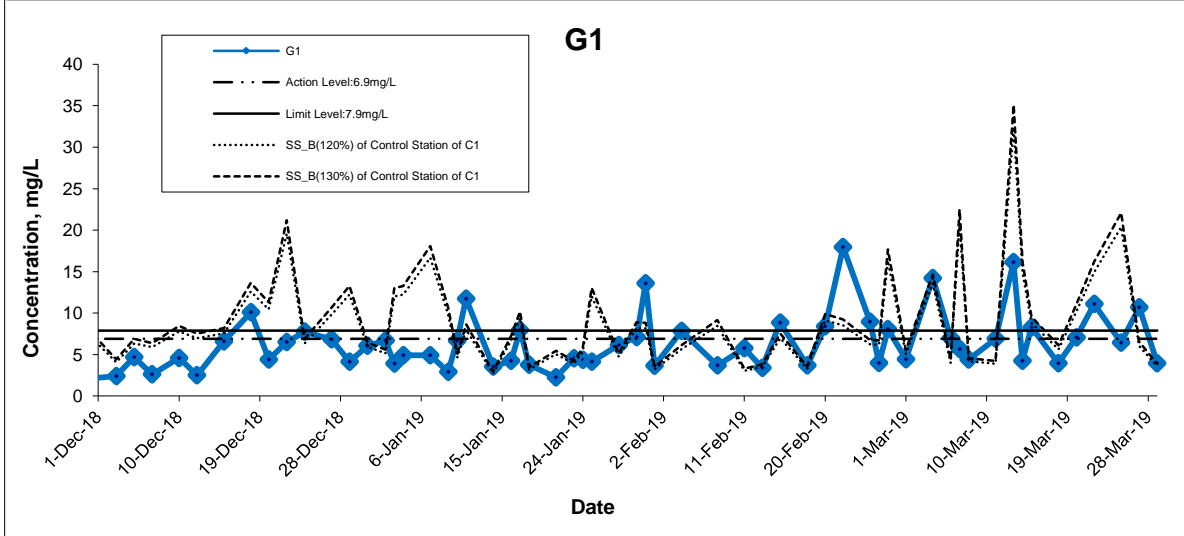
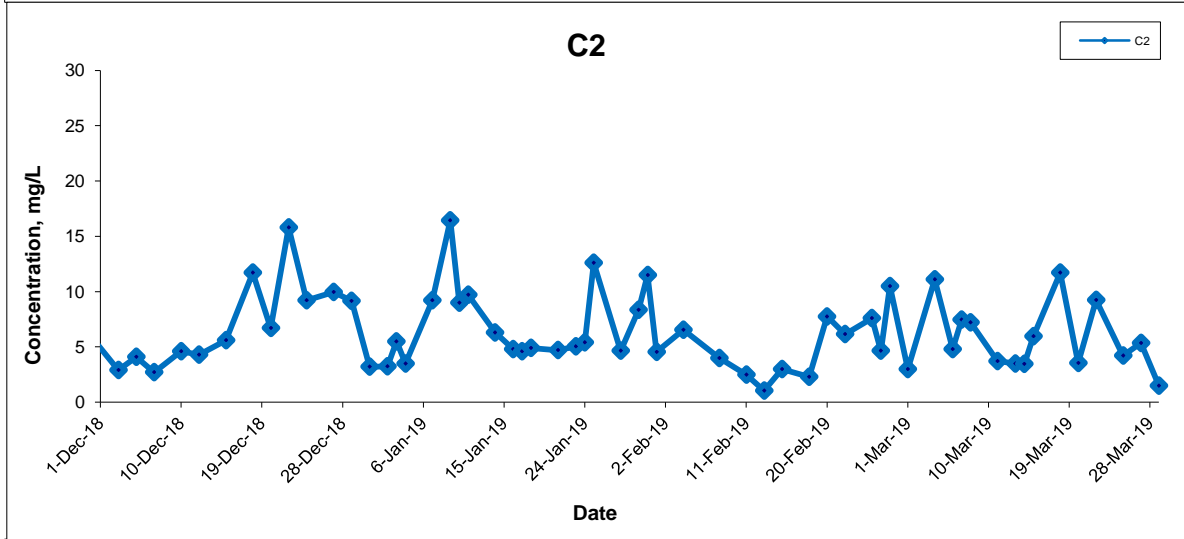
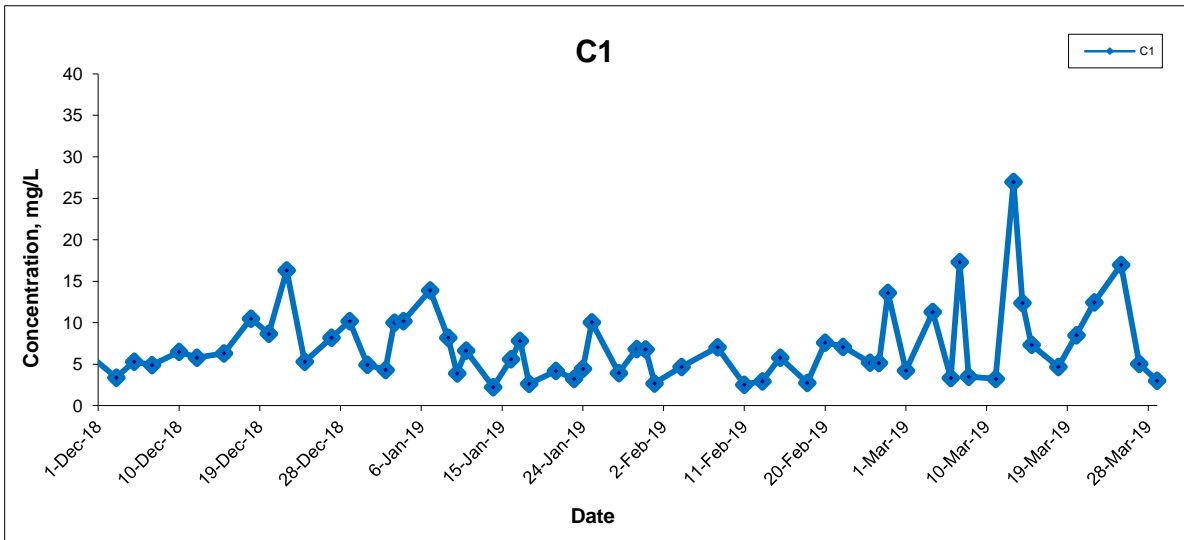
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Bottom) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

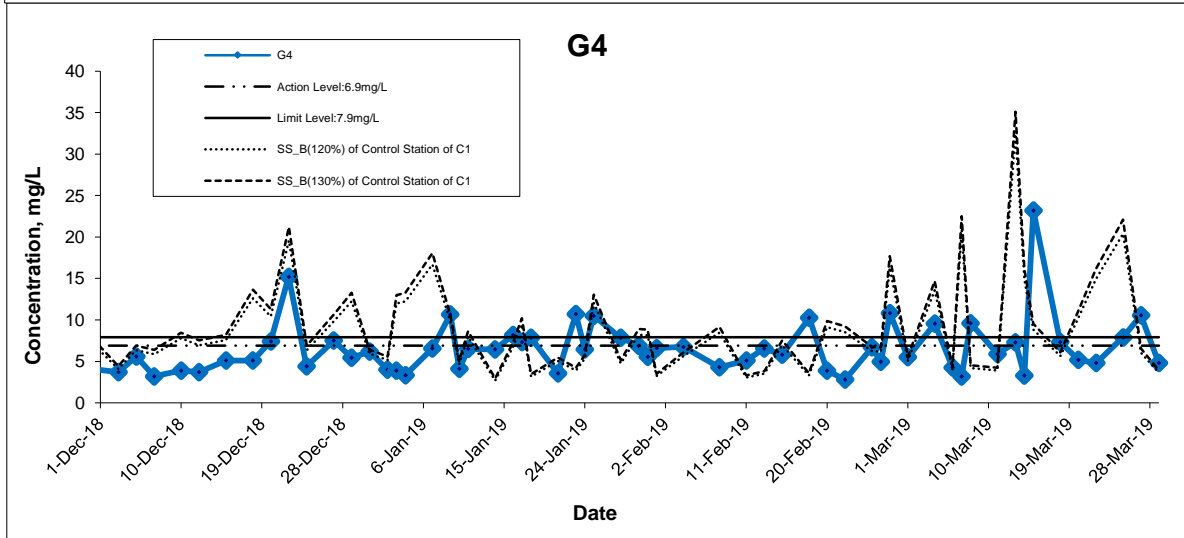
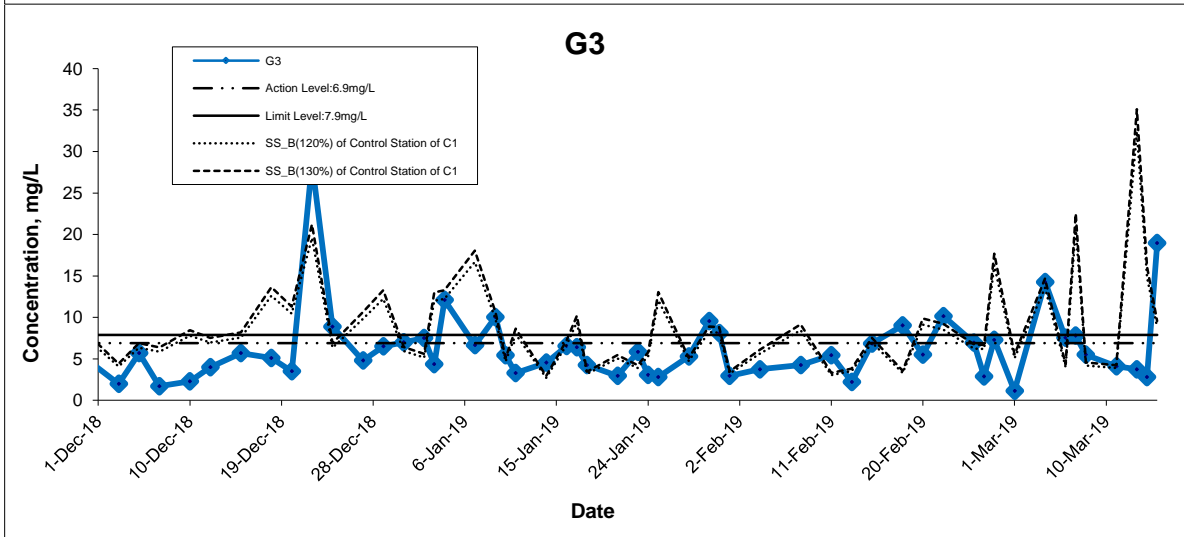
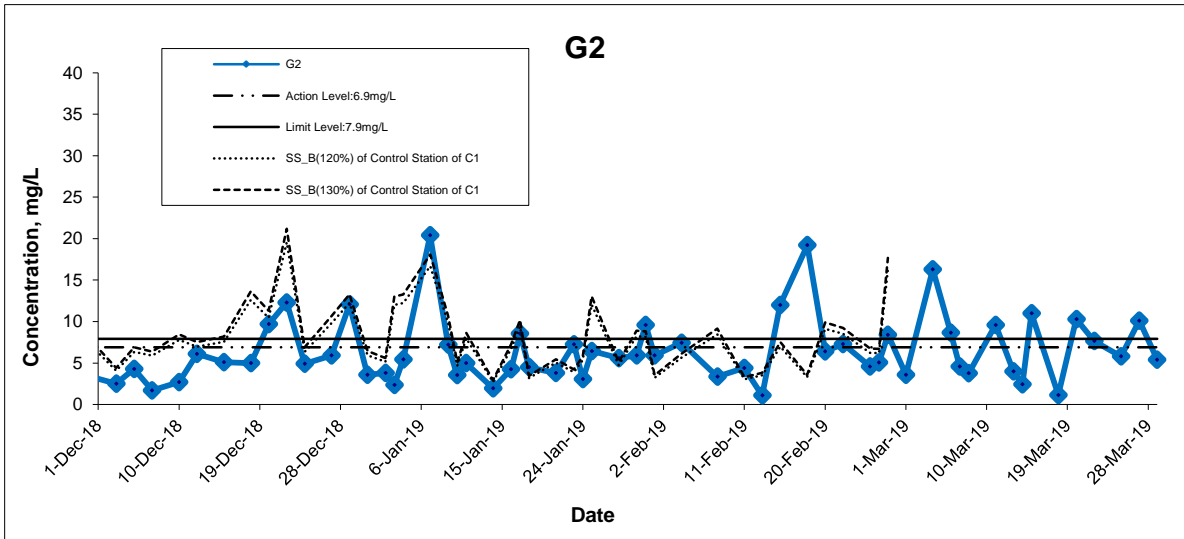
Date Mar 19

Project No. MA16034

Appendix I



Suspended Solids (Bottom) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

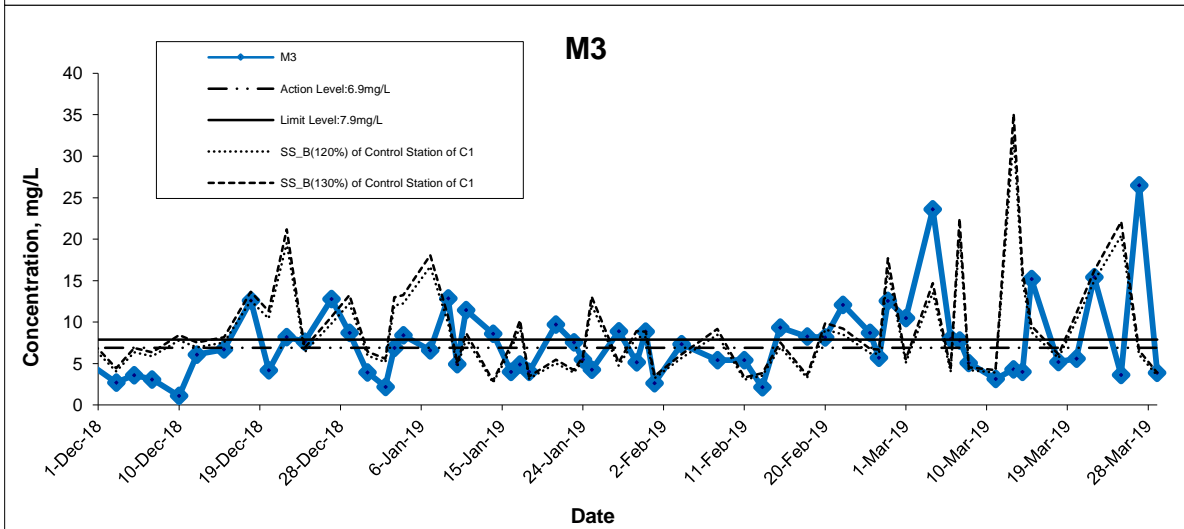
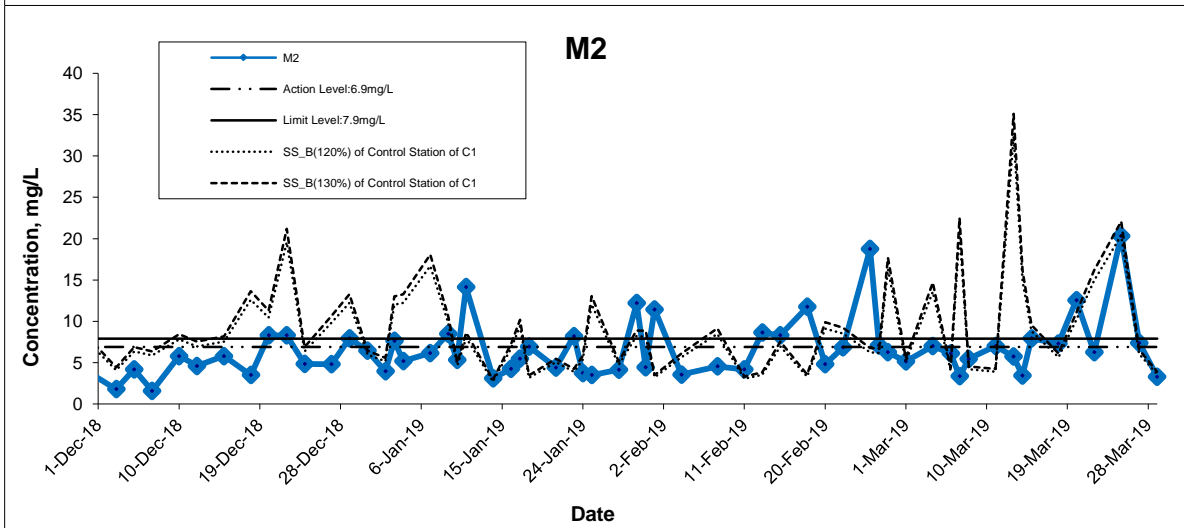
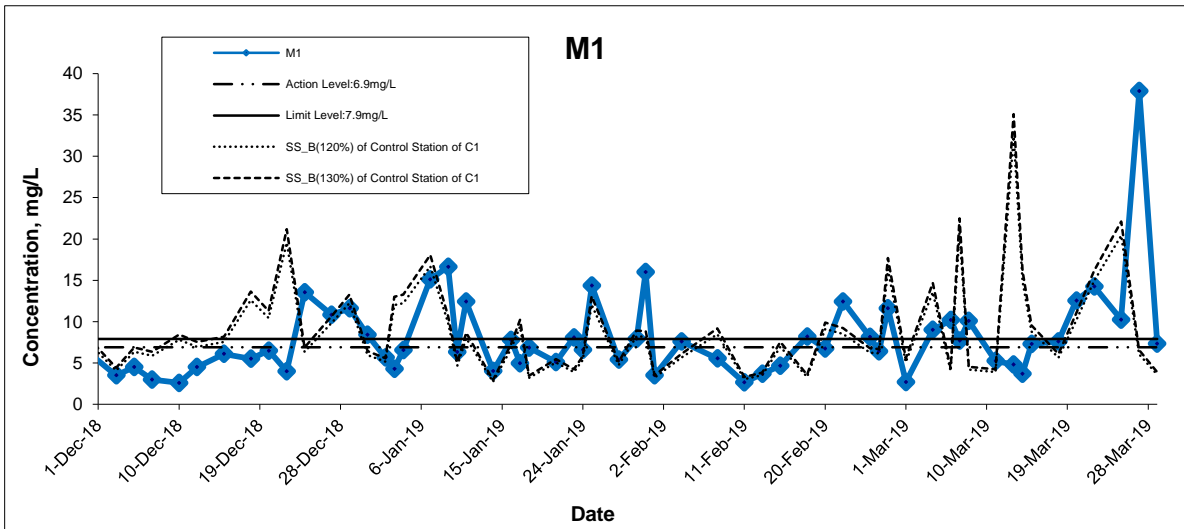
Date Mar 19

Project No. MA16034

Appendix I

CINOTECH

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

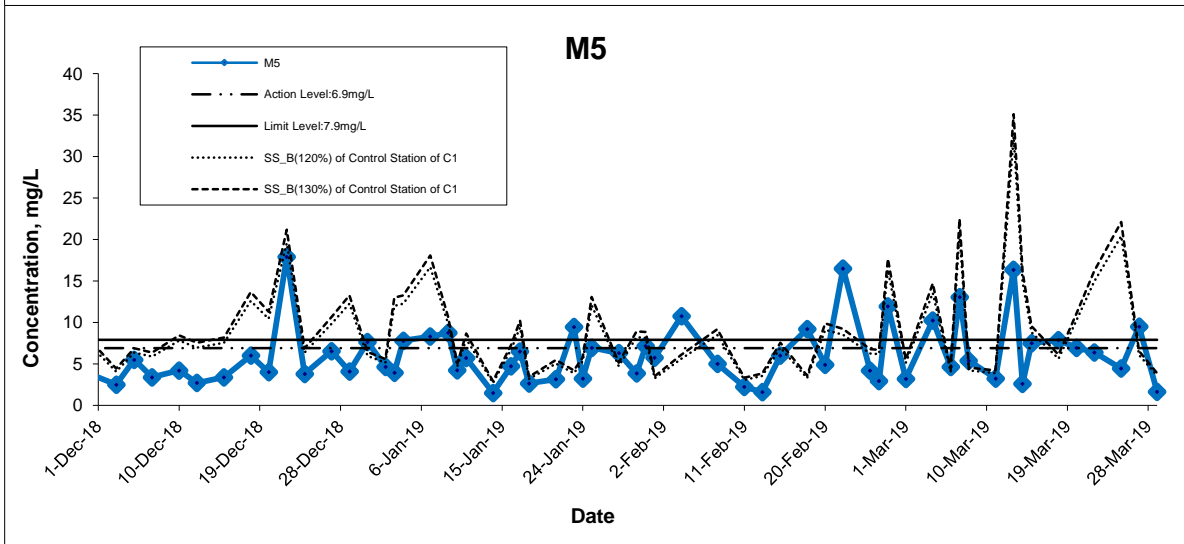
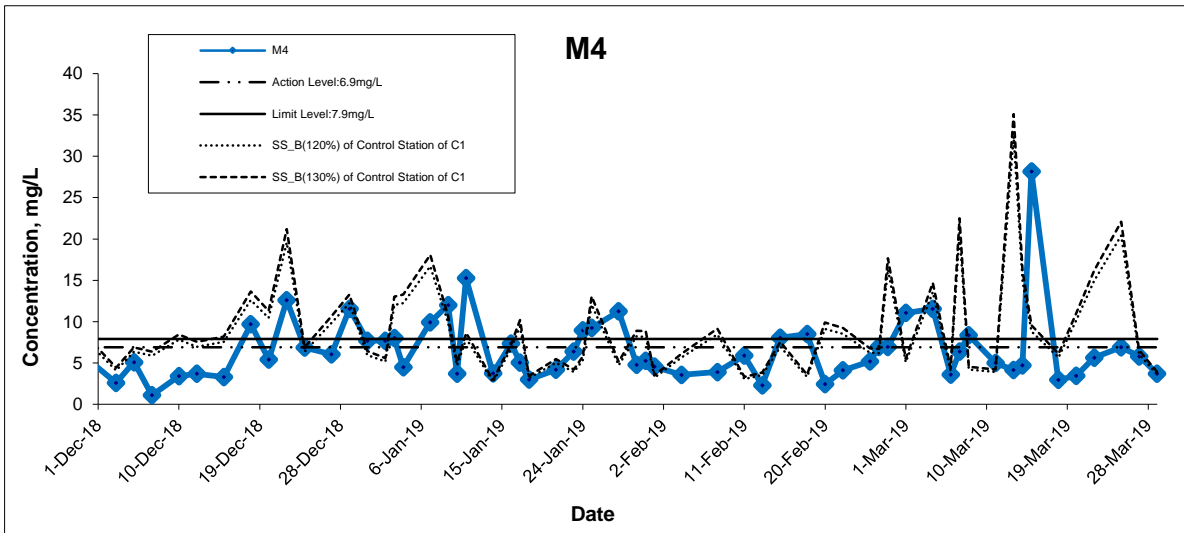
Date Mar 19

Project No. MA16034

Appendix I

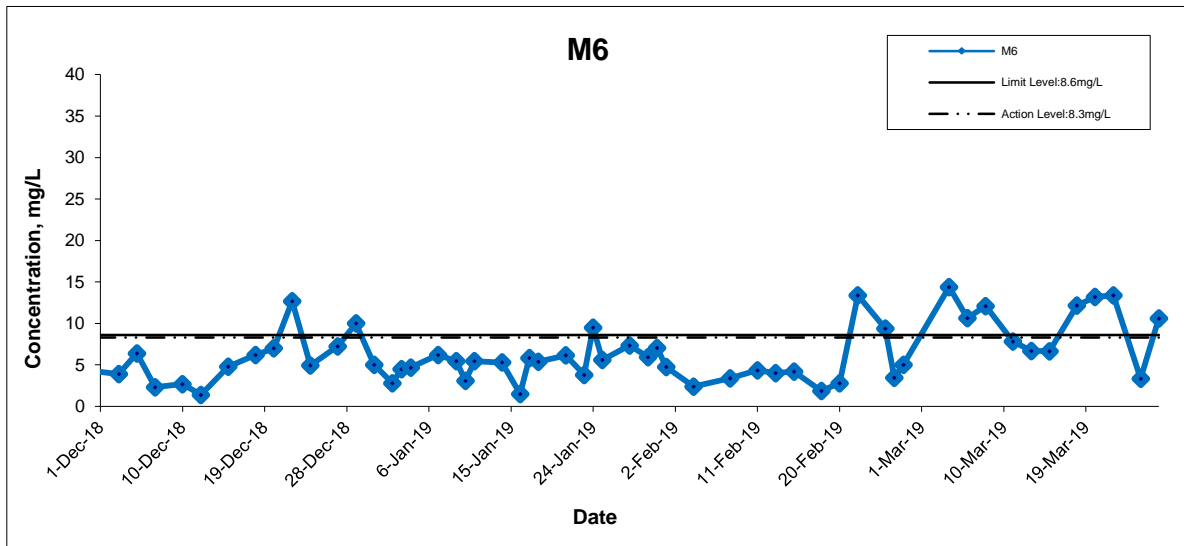


Suspended Solids (Bottom) at Mid-Flood Tide



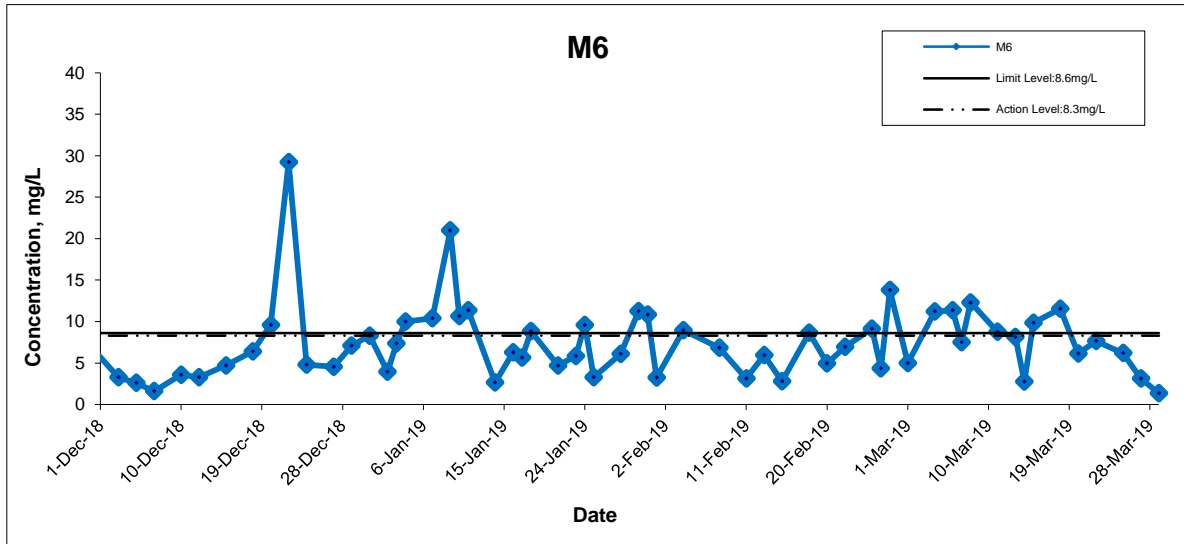
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Mar 19	Appendix I	

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



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

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



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

Water Quality Monitoring Results at W1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*
6-Mar-19	Rainy	Moderate	12:35	Surface	1.1	19.9 20.0	20.0	8.3 8.3	8.3	34.0 33.9	34.0	92.1 89.2	90.7	6.9 6.6	6.8	6.8
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	20.0 20.0	20.0	8.3 8.3	8.3	34.0 34.0	33.8	88.4 89.0	88.7	6.9 6.6	6.8	
13-Mar-19	Cloudy	Moderate	15:42	Surface	1.1	20.6 20.6	20.6	8.2 8.2	8.2	34.4 34.4	34.4	84.3 84.0	84.2	6.2 6.2	6.2	6.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	20.6 20.6	20.6	8.2 8.2	8.2	34.4 34.4	33.8	84.3 83.9	84.1	6.2 6.2	6.2	
18-Mar-19	Fine	Moderate	10:57	Surface	1.0	20.5 20.6	20.6	8.3 8.3	8.3	34.9 34.8	34.9	90.3 86.7	88.5	6.6 6.4	6.5	6.5
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	20.6 20.6	20.6	8.3 8.3	8.3	34.8 34.9	33.8	88.5 86.3	87.4	6.6 6.4	6.5	
25-Mar-19	Cloudy	Calm	15:13	Surface	1.1	21.4 21.4	21.4	8.3 8.3	8.3	34.9 34.9	34.9	87.1 86.8	87.0	6.3 6.3	6.3	6.3
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	21.3 21.3	21.3	8.3 8.3	8.3	34.9 34.9	33.8	86.0 85.7	85.9	6.3 6.3	6.3	

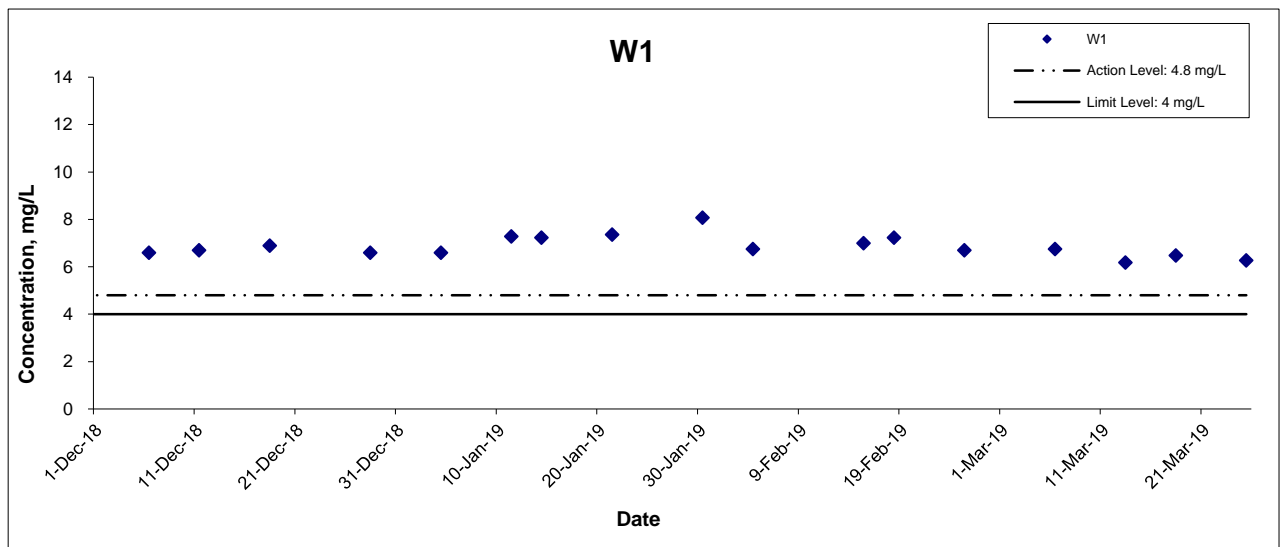
Water Quality Monitoring Results at W1 - Mid-Flood Tide

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*
6-Mar-19	Rainy	Moderate	16:33	Surface	1.0	20.0 20.0	20.0	8.3 8.3	8.3	33.6 33.7	33.6	91.1 90.0	90.6	6.8 6.7	6.8	6.8
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	20.0 20.0	20.0	8.3 8.3	8.3	33.9 33.8	33.8	89.7 90.0	89.9	6.8 6.7	6.8	
13-Mar-19	Cloudy	Moderate	10:52	Surface	1.0	20.6 20.6	20.6	8.2 8.2	8.2	34.4 34.4	34.4	85.3 84.5	84.9	6.3 6.2	6.2	6.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	20.6 20.6	20.6	8.2 8.2	8.2	34.4 34.4	33.8	84.5 84.3	84.4	6.3 6.2	6.2	
18-Mar-19	Fine	Moderate	15:55	Surface	1.1	20.7 20.6	20.6	8.3 8.3	8.3	34.8 34.9	34.8	86.2 85.8	86.0	6.3 6.3	6.3	6.3
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	20.6 20.6	20.6	8.3 8.3	8.3	34.9 34.9	33.8	85.7 86.1	85.9	6.3 6.3	6.3	
25-Mar-19	Rainy	Calm	09:30	Surface	1.7	21.4 21.4	21.4	8.3 8.3	8.3	34.9 34.9	34.9	89.9 88.7	89.3	6.5 6.4	6.4	6.4
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.5	21.3 21.3	21.3	8.3 8.3	8.3	34.9 34.9	33.8	86.7 86.5	86.6	6.5 6.4	6.4	

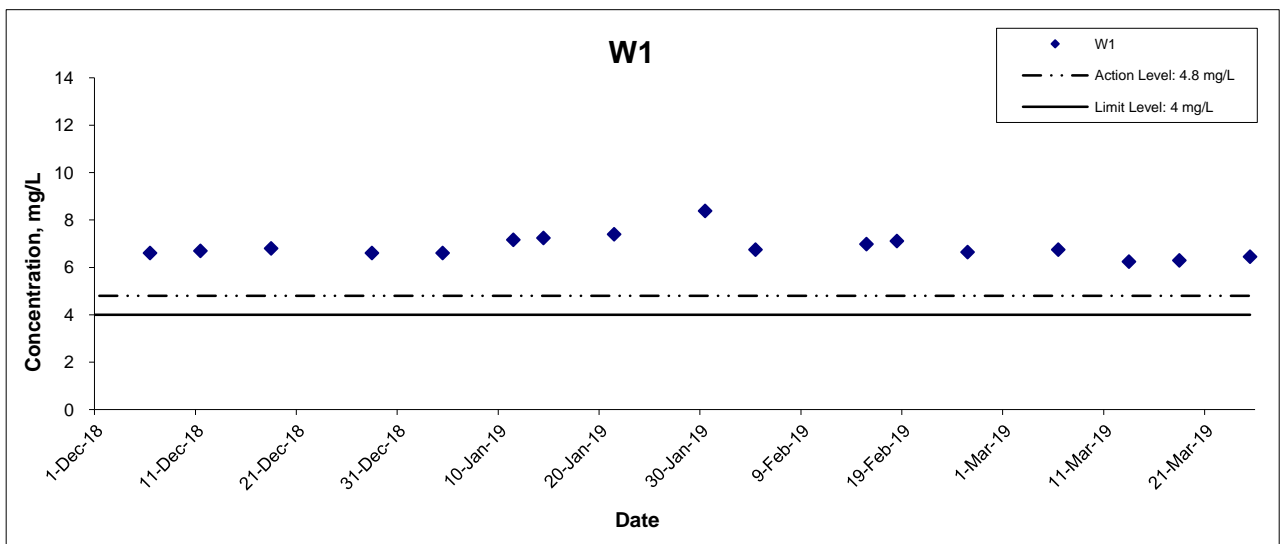
Remarks: *DA: Depth-Averaged

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

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

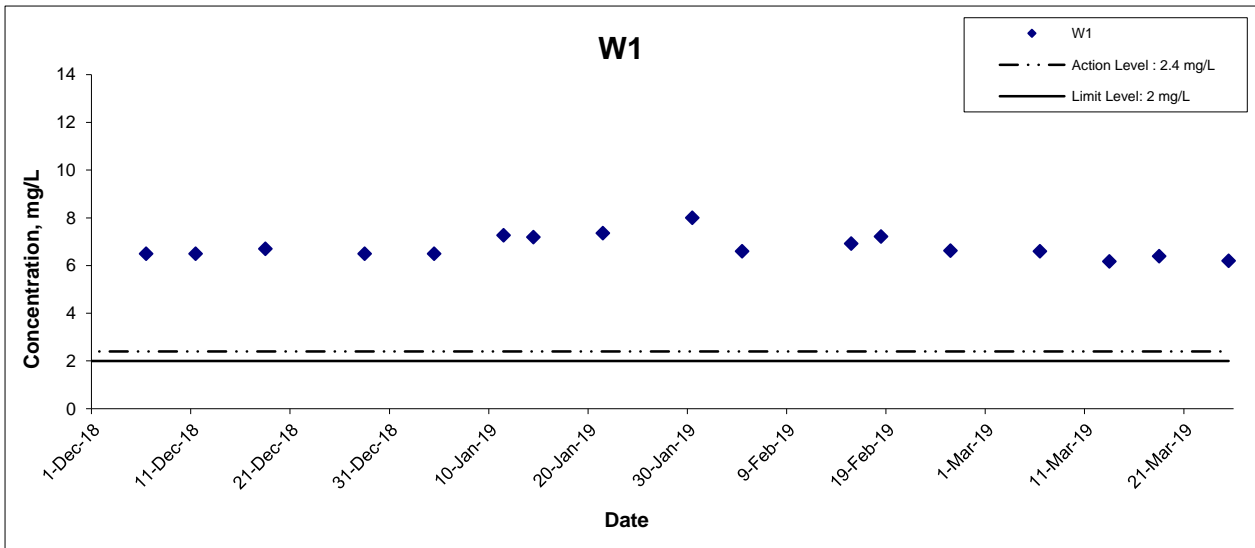


Dissolved Oxygen (Depth-Averaged) at Mid-Flood Tide

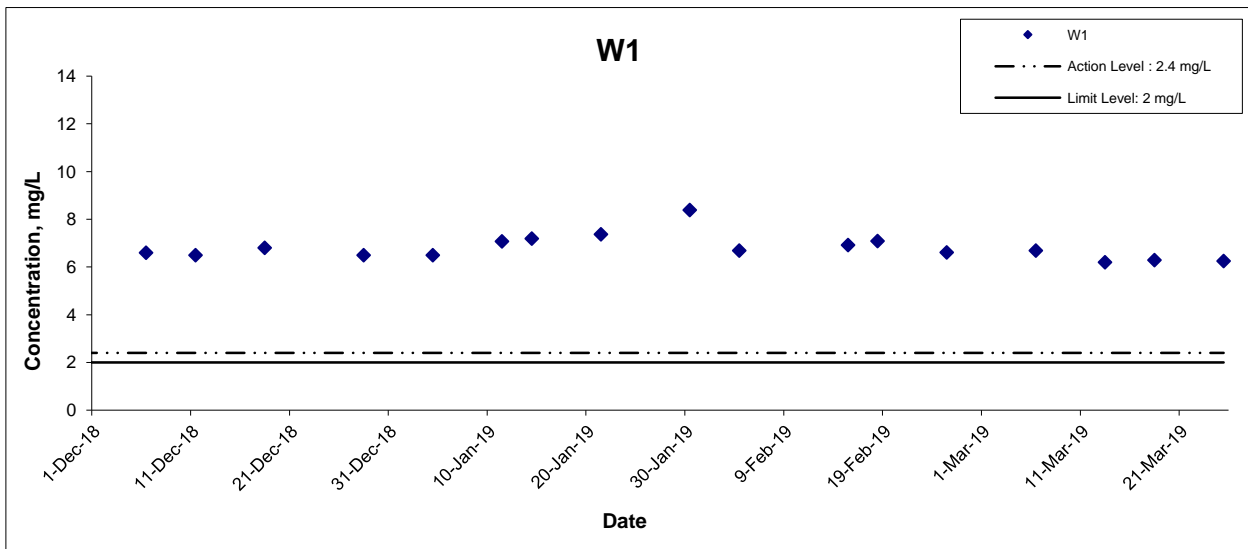


Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Additional Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Mar-19	Appendix I	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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 Additional Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	
	Date Mar-19	Appendix I	

**APPENDIX J
QUALITY CONTROL REPORTS FOR
LABORATORY ANALYSIS**

TEST REPORT

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

Report No.:	QC30999
Date of Issue:	2019-03-19
Date Received:	2019-03-08
Date Tested:	2019-03-08
Date Completed:	2019-03-19

ATTN: Mr. Henry Leung
QC report:

Page: 1 of 2

Method Blank

Parameter	MB 1	Acceptance
Suspended Solids (SS) (mg/L)	<0.5	<0.5
Biochemical Oxygen Demand	N/A	N/A
Total Organic Carbon (mg-TOC/L)	<0.2	<0.2
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (mg NH ₃ -N/L)	<0.01	<0.01
Total Phosphorus (mg-P/L)	<0.01	<0.01

Method QC

Parameter	MQC1	Acceptance
Suspended Solids (SS) (%)	100	80-120
Biochemical Oxygen Demand (mg O ₂ /L)	93	170-220
Total Organic Carbon (%)	92	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	89	80-120
Total Phosphorus (%)	91	80-120

Remarks: 1) < = less than
 2) N/A = Not applicable
 3) This report is the summary of quality control data for report number 30999.

PREPARED AND CHECKED BY:

For and On Behalf of **WELLAB Ltd.**



MOSES TSE

Laboratory Manager

TEST REPORT

Report No.:	QC30999
Date of Issue:	2019-03-19
Date Received:	2019-03-08
Date Tested:	2019-03-08
Date Completed:	2019-03-19

Page: 2 of 2

QC report:

Sample Duplicate

Parameter	30999-1 chk	Acceptance
Suspended Solids (SS) (%)	5	RPD \leq 20%
Biochemical Oxygen Demand (%)	18	RPD \leq 20%
Total Organic Carbon (%)	16	RPD \leq 20%
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	2	RPD \leq 20%
Total Phosphorus (%)	19	RPD \leq 20%

Sample Spike

Parameter	30999-1 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	101	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	98	80-120
Total Phosphorus (%)	100	80-120

Remarks: 1) \leq less than

2) N/A = Not applicable

3) This report is the summary of quality control data for report number 30999.

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

TEST REPORT

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

Report No.:	QC30957
Date of Issue:	2019-03-29
Date Received:	2019-03-20
Date Tested:	2019-03-20
Date Completed:	2019-03-29

ATTN: Mr. Henry Leung
QC report:

Page: 1 of 2

Method Blank

Parameter	MB 1	Acceptance
Suspended Solids (SS) (mg/L)	<0.5	<0.5
Biochemical Oxygen Demand	N/A	N/A
Total Organic Carbon (mg-TOC/L)	<0.2	<0.2
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (mg NH ₃ -N/L)	<0.01	<0.01
Total Phosphorus (mg-P/L)	<0.01	<0.01

Method QC

Parameter	MQC1	Acceptance
Suspended Solids (SS) (%)	99	80-120
Biochemical Oxygen Demand (mg O ₂ /L)	189	170-220
Total Organic Carbon (%)	102	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	96	80-120
Total Phosphorus (%)	103	80-120

Remarks: 1) <= less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30957.

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


PATRICK TSE
General Manager

TEST REPORT

Report No.:	QC30957
Date of Issue:	2019-03-29
Date Received:	2019-03-20
Date Tested:	2019-03-20
Date Completed:	2019-03-29

Page: 2 of 2

QC report:

Sample Duplicate

Parameter	30957-1 chk	Acceptance
Suspended Solids (SS) (%)	1	RPD≤20%
Biochemical Oxygen Demand (%)	N/A	RPD≤20%
Total Organic Carbon (%)	4	RPD≤20%
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	N/A	RPD≤20%
Total Phosphorus (%)	8	RPD≤20%

Sample Spike

Parameter	30957-1 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	102	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	103	80-120
Total Phosphorus (%)	96	80-120

Remarks: 1) < = less than

2) N/A = Not applicable

3) This report is the summary of quality control data for report number 30957.

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

**APPENDIX K
SUMMARY OF EXCEEDANCE**

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

Appendix K – Summary of Exceedance

Reporting Period: March 2019

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

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise

Twenty-four (24) Action Level exceedances were recorded due to the documented complaints received in this reporting month.

Limit Level for Construction Noise

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

Nine (9) Limit Level exceedances for nighttime construction noise monitoring were recorded in the reporting month. The night time limit level exceedances were considered non-Project related as detailed in relevant notification of exceedance.

Exceedance recorded during daytime
 (NIL in the reporting month)

Exceedance recorded during night-time

Date	Monitoring Location	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Limit Level
09 March 2019	CM1	63.5	61.9	<u>58</u>	55
22 March 2019		68.9	63.7	<u>67</u>	
29 March 2019		65.1	63.7	<u>60</u>	
08 March 2019	CM2	63.7	60.3	<u>61</u>	
15 March 2019		62.1	60.8	<u>56</u>	
22 March 2019		64.8	60.8	<u>63</u>	
08 March 2019	CM3	64.0	62.9	<u>57</u>	
16 March 2019		63.3	61.8	<u>58</u>	
23 March 2019		65.1	61.8	<u>62</u>	

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

Appendix K – Summary of Exceedance

(C) Exceedance Report for Water Quality

Eighty-eight (88) Action Level and three hundred and fifty-nine (359) Limit Level exceedances in marine water quality monitoring. Refer to the attached notifications for details. The reasons are under investigation.

One (1) Action Level and Four (4) Limit Level exceedances in groundwater quality monitoring as follows. The exceedances are considered not project-related as detailed in relevant notification of exceedance below.

Date	Monitoring Location	Monitoring Parameter	Monitoring Results	Action Level	Limit Level
2019/03/08	Stream 1	Total Phosphorus (mg-P/L)	<u>0.06</u>	0.05	0.05
	Stream 2		<u>0.07</u>	0.05	0.05
		Turbidity (NTU)	2.3	2.1	2.3
2019/03/20	Stream 2	Total Phosphorus (mg-P/L)	<u>0.11</u>	0.05	0.05
	Stream 3		<u>0.06</u>	0.05	0.05

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

(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)
ET for Tseung Kwan O – Lam Tin Tunnel
Design and Construction

- Notification and Investigation Report for Environmental Quality Action & Limit Exceedances

Monitoring Parameter: Groundwater Quality

Date of Monitoring: 20 March 2019

Part A – Summary of Exceedance Records

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
20 Mar 2019	Total Phosphorus (mg-P/L)	Stream 2	<u>0.11</u>	0.05	0.05	(2)	No
20 Mar 2019	Total Phosphorus (mg-P/L)	Stream 3	<u>0.06</u>	0.05	0.05	(2)	No

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

*Remarks

(2) – The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.

Part B – Conclusions:

1. Based on the justification in the above table, there is no direct evidence showing that the exceedance was due to Project. The exceedance is considered properly due to non-project related factor, such as, the degradation of naturally occurring organic matter, manmade sources or domestic sewage (as observed and reported in the EIA report).
2. No increase in monitoring frequency for groundwater quality monitoring and no further action are required.

Part C – Recommendations

The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

Therefore, ET recommends to suspend the water quality monitoring for the streams in accordance with the EM&A Manual, Section 4. For the details, please refer to the separate proposal for suspension of stream water monitoring.

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

Date: 21 March, 2019

Signature: 

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

- Notification and Investigation Report for Environmental Quality Action & Limit Exceedances

Monitoring Parameter: Groundwater Quality

Date of Monitoring: 20 March 2019

Part A – Summary of Exceedance Records

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
20 Mar 2019	Total Phosphorus (mg-P/L)	Stream 2	<u>0.11</u>	0.05	0.05	(2)	No
20 Mar 2019	Total Phosphorus (mg-P/L)	Stream 3	<u>0.06</u>	0.05	0.05	(2)	No

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

*Remarks

(2) – The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.

Part B – Conclusions:

1. Based on the justification in the above table, there is no direct evidence showing that the exceedance was due to Project. The exceedance is considered properly due to non-project related factor, such as, the degradation of naturally occurring organic matter, manmade sources or domestic sewage (as observed and reported in the EIA report).
2. No increase in monitoring frequency for groundwater quality monitoring and no further action are required.

Part C – Recommendations

The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

Therefore, ET recommends to suspend the water quality monitoring for the streams in accordance with the EM&A Manual, Section 4. For the details, please refer to the separate proposal for suspension of stream water monitoring.

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

Date: 21 March, 2019

Signature: 

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

NOE No. 190329_noise (CMI) Exceedance Level: Limit

Time of Measurement: 23:15-23:30

Date of Noise Monitoring: 29 March 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 (L _{eq} dB(A))	Limit Level (L _{eq} dB(A))	Level exceeded
CMI	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:15-23:30	65.1	63.7	<u>60</u>	When one documented complaint is received.	55	Limit

Field Observation(s) and Conclusion

(a) Statement of exceedance(s)

Construction noise measured at CMI exceeded the construction noise (night time) limit level.

(b) Cause of exceedance(s)

- The exceedance was not considered related to the Project works:
- According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from blasting / associated works was identified.
 - No major construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedances of night time noise limit level were not due to the Project. Only blasting associated works inside the tunnel were being conducted with blast door closed, thus, noise generated within the tunnel should not be associated with the exceedance.

Part C – Recommendation: No further action is required.

ETL Signature:



Date: 1 April, 2019

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

NOE No. 190322_noise (CM1-CM3) Exceedance Level: Limit

Time of Measurement: 23:30-00:15

Date of Noise Monitoring: 22 March 2019 – 23 March 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	Ngga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:10-23:25	68.9	63.7	<u>67</u>	When one documented complaint is received.	55	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:30-23:45	64.8	60.8	<u>63</u>			
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	00:00-00:15	65.1	61.8	<u>62</u>			

Field Observation(s) and Conclusion

(a) Statement of exceedance(s)

Construction noise measured at CM1, CM2 & CM3 exceeded the construction noise (night time) limit level.

(b) Cause of exceedance(s)

The exceedance was not considered related to the Project works:

- According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from blasting / associated works was identified.
- No major construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedances of night time noise limit level were not due to the Project. Only blasting associated works inside the tunnel were being conducted with blast door closed thus, noise generated within the tunnel should not be associated with the exceedance.

Part C – Recommendation: No further action is required.

ETL Signature:



MA16034NNOENOE_Noise190322(CM1-3)

Date: 25 March, 2019

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

NOE No. 190315_noise (CM2-CM3) Exceedance Level: Limit

Time of Measurement: 23:30-00:15

Date of Noise Monitoring: 15 March 2019 – 16 March 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	23:30-23:45	62.1	60.8	<u>56</u>	When one documented complaint is received.	55	Limit
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	00:00-00:15	63.3	61.8	<u>58</u>			

Field Observation(s) and Conclusion

- (a) Statement of exceedance(s)
 Construction noise measured at CM2 & CM3 exceeded the construction noise (night time) limit level.
- (b) Cause of exceedance(s)
 The exceedance was not considered related to the Project works:
- According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from blasting / associated works was identified.
 - No major construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedances of night time noise limit level were not due to the Project. Only blasting associated works inside the tunnel were being conducted with blast door closed, thus, noise generated within the tunnel should not be associated with the exceedance.

Part C – Recommendation: No further action is required.



ETL Signature: _____ Date: 18 March, 2019

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

NOE No. 190308_noise (CM1-CM3) Exceedance Level: Limit

Time of Measurement: 23:40-00:30

Date of Noise Monitoring: 08 March 2019 – 09 March 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	00:15-00:30	63.5	61.9	<u>58</u>	When one documented complaint is received.	55	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:55-00:10	63.7	60.3	<u>61</u>			
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	23:40-23:55	64.0	62.9	<u>57</u>			

Field Observation(s) and Conclusion

(a) Statement of exceedance(s)

Construction noise measured at CM1, CM2 & CM3 exceeded the construction noise (night time) limit level.


(b) Cause of exceedance(s)

The exceedance was not considered related to the Project works:

- According to our field observation, road traffic noise was identified as the dominant noise source. No noticeable noise from blasting / associated works was identified.
- No major construction activity was observed in Lam Tin Interchange during monitoring.

Part B – Conclusion: The exceedances of night time noise limit level were not due to the Project. Only blasting associated works inside the tunnel were being conducted with blast door closed, thus, noise generated within the tunnel should not be associated with the exceedance.

Part C – Recommendation: No further action is required.



ETL Signature:

Date: 11 March, 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: 01 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	0.5	G1	14:31	0.6	0.6	<u>1.1</u>
						G3	14:41			<u>1.8</u>
						G4	14:46			<u>0.8</u>
						M1	14:26			<u>1.0</u>
						M2	14:13			<u>0.8</u>
						M3	14:36			<u>0.9</u>
						M4	14:06			<u>0.8</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	6.6	G1	14:31	6.0	6.9	7.9	8.6	<u>7.8</u>
				G2	14:19					<u>8.0</u>
				M5	14:58					<u>13.5</u>
	Bottom	C1	4.3	G4	14:46	6.9	7.9	5.1	5.5	<u>5.5</u>
				M2	14:13					<u>5.2</u>
				M3	14:36					<u>10.5</u>
				M4	14:06					<u>11.1</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: 4 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.2	G1	11:48	0.2	0.3	<u>0.7</u>
						G3	11:54			<u>1.0</u>
						G4	12:06			<u>0.8</u>
						M1	11:40			<u>1.4</u>
						M2	11:20			<u>0.7</u>
						M3	12:01			<u>0.6</u>
						M4	11:11			<u>0.3</u>
						M5	12:18			<u>0.3</u>
			Mid-flood	C1	0.9	M1	16:13	1.0	1.2	<u>1.3</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	12.9	G1	11:48	6.0	6.9	15.4	16.7	<u>18.0</u>
				G2	11:30					<u>23.3</u>
				G4	12:06					<u>9.0</u>
				M1	11:40	6.2	7.4			<u>15.5</u>
				M2	11:20					<u>6.7</u>
				M3	12:01					<u>17.5</u>
				M4	11:11					<u>17.0</u>
				M5	12:18					<u>7.3</u>
		Intake	12:12	8.3	8.6	n.a.	n.a.	<u>14.4</u>		
		Bottom	11.3	G1	11:48	6.9	7.9	13.5	14.6	<u>20.6</u>
				G2	11:30					<u>12.0</u>
				G3	11:54					<u>16.9</u>
				G4	12:06					<u>19.7</u>
				M1	11:40					<u>15.5</u>
				M2	11:20					<u>21.5</u>
				M3	12:01					<u>7.2</u>
M4	11:11			<u>17.9</u>						
M5	12:18	<u>18.3</u>								

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	5.8	G1	16:21	6.0	6.9	7.0	7.5	<u>14.4</u>
				G2	16:03					<u>16.4</u>
				G3	16:26					<u>18.8</u>
				G4	16:39					<u>10.5</u>
				M1	16:13	6.2	7.4			<u>10.5</u>
				M2	15:53					<u>20.4</u>
				M3	16:34					<u>10.2</u>
				M4	15:43					<u>17.1</u>
				M5	16:50					<u>12.2</u>
		Intake	n.a.	M6	16:44	8.3	8.6	n.a.	n.a.	<u>11.2</u>
		Bottom	11.3	G1	16:21	6.9	7.9	13.6	14.7	<u>14.2</u>
				G2	16:03					<u>16.3</u>
				G3	16:26					<u>14.3</u>
				G4	16:39					<u>9.6</u>
				M1	16:13					<u>9.0</u>
				M2	15:53					<u>7.0</u>
				M3	16:34					<u>23.6</u>
				M4	15:43					<u>11.6</u>
M5	16:50			<u>10.3</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: 6 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.4	G1	12:24	0.5	0.5	<u>1.2</u>
			Mid-flood	C1	0.7	M1	17:16	0.8	0.9	<u>6.0</u>
						M3	17:37			<u>0.9</u>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)		
Mid-Ebb	C2	Surface	5.7	G1	12:24	6.0	6.9	6.8	7.3	<u>7.7</u>		
				G3	12:30					<u>7.6</u>		
				G4	12:45					<u>6.2</u>		
				M2	12:09	6.2	7.4			<u>7.2</u>		
				M3	12:40					<u>13.1</u>		
		Intake	n.a.	M6	12:51	8.3	8.6	n.a.	n.a.	<u>10.7</u>		
		Bottom	5.0	G3	12:30	6.9	12:45	6.9	7.9	6.0	6.5	<u>6.6</u>
				G4	<u>9.3</u>							
				M3	12:40							<u>12.4</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	3.7	G1	17:23	6.0	6.9	4.4	4.7	<u>6.6</u>
				G2	17:10					<u>9.3</u>
				G3	17:29					<u>5.9</u>
				G4	17:43					<u>22.1</u>
				M1	17:16	6.2	7.4			<u>13.0</u>
				M2	17:06					<u>6.5</u>
				M3	17:37					<u>5.3</u>
				M4	17:00					<u>4.5</u>
		M5	17:52	<u>6.8</u>						
		Intake	n.a.	M6	17:47	8.3	8.6	n.a.	n.a.	<u>11.4</u>
		Bottom	3.4	G1	17:23	6.9	7.9	4.0	4.4	<u>7.0</u>
				G2	17:10					<u>8.7</u>
				G3	17:29					<u>7.6</u>
				G4	17:43					<u>4.3</u>
				M1	17:16					<u>10.2</u>
				M2	17:06					<u>6.1</u>
M3	17:37			<u>8.0</u>						
M5	17:52			<u>4.7</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: 7 March 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	5.1	G2	13:24	6.0	6.9	6.1	6.6	<u>6.3</u>
				G3	13:35					<u>7.1</u>
				G4	13:41					<u>7.7</u>
				M1	13:28	6.2	7.4			<u>7.6</u>
				M3	13:38					<u>19.0</u>
				M5	13:51					<u>6.6</u>
		intake	n.a.	M6	13:45	8.3	8.6	n.a.	n.a.	<u>9.4</u>
		bottom	5.6	G4	13:41	6.9	7.9	6.7	7.2	<u>10.5</u>
				M1	13:28					<u>8.4</u>
				M4	13:17					<u>14.5</u>
M5	13:51			<u>8.0</u>						

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	surface	3.1	G1	17:40	6.0	6.9	3.7	4.0	<u>11.4</u>
				G2	17:32					<u>5.3</u>
				G3	17:42					<u>8.8</u>
				G4	17:48					<u>16.6</u>
				M1	17:36	6.2	7.4			<u>9.5</u>
				M2	17:29					<u>7.6</u>
				M3	17:45					<u>15.2</u>
				M4	17:20					<u>10.1</u>
		M5	17:56	<u>7.6</u>						
		botto m	17.3	G3	17:42	6.9	7.9	20.8	22.5	<u>7.8</u>
				M1	17:36					<u>7.7</u>
				M3	17:45					<u>7.8</u>
M5	17:56			<u>13.1</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: 8 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)				
Bottom	19.3	22.2	Mid-ebb	C2	0.8	G4	08:30	1.0	1.0	<u>1.5</u>				
						M1	08:17			<u>1.4</u>				
			Mid-flood	C1	0.5	G2	11:37	0.6	11:47	0.6	0.7	<u>0.8</u>		
												G3	11:47	<u>0.7</u>
												G4	11:53	<u>1.0</u>
												M1	11:41	<u>1.5</u>
												M3	11:50	<u>0.8</u>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)		
Mid-Ebb	C2	Surface	6.4	G1	08:21	6.0	6.9	7.6	8.3	<u>10.2</u>		
				G3	08:24					<u>7.4</u>		
				M1	08:17	6.2	7.4			<u>8.6</u>		
				M3	08:27					<u>13.1</u>		
		Intake	n.a.	M6	08:34	8.3	8.6	n.a.	n.a.	<u>12.1</u>		
		Bottom	9.7	M1	08:17	6.9	08:40	6.9	7.9	11.6	12.6	<u>10.6</u>
				M5	08:40							<u>9.5</u>

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	7.8	M2	11:34	6.2	7.4	9.4	10.1	<i>7.7</i>
				M4	11:25					<i><u>12.5</u></i>
				M5	12:01					<i>7.0</i>
		Intake	n.a.	M6	11:56	8.3	8.6	n.a.	n.a.	<i><u>12.3</u></i>
		Bottom	3.5	G1	11:45	6.9	7.9	4.2	4.6	<i>4.4</i>
				G3	11:47					<i><u>5.5</u></i>
				G4	11:53					<i><u>9.6</u></i>
				M1	11:41					<i><u>10.1</u></i>
				M2	11:34					<i><u>5.5</u></i>
				M3	11:50					<i>5.1</i>
				M4	11:25					<i><u>8.4</u></i>
		M5	12:01	<i><u>5.4</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: 11 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.6	G4	16:07	0.7	0.7	<u>1.9</u>
						M3	16:01			<u>0.8</u>
			Mid-flood	C1	0.8	G3	10:47	1.0	1.0	<u>1.7</u>
						M5	11:11			<u>1.1</u>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	7.8	G1	15:51	6.0	6.9	9.4	10.1	<u>7.3</u>
				G4	16:07					<u>6.4</u>
				M3	16:01	6.2	7.4			<u>10.3</u>
				M4	15:23					<u>10.8</u>
		Bottom	10.0	G2	15:37	6.9	7.9	12.0	13.0	<u>16.1</u>
				G4	16:07					<u>12.0</u>
				M4	15:23	<u>7.2</u>				

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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	2.2	G1	10:40	6.0	6.9	2.6	2.9	<u>4.5</u>
				G2	10:27					<u>8.0</u>
				G3	10:47					<u>8.2</u>
				G4	10:57					<u>3.4</u>
				M1	10:34	6.2	7.4			<u>2.7</u>
				M2	10:20					<u>3.0</u>
				M4	10:11					<u>6.4</u>
		M5	11:11	<u>4.3</u>						
		Intake	n.a.	M6	11:06	8.3	8.6	n.a.	n.a.	<u>8.8</u>
		Bottom	3.3	G1	10:40	6.9	7.9	3.9	4.2	<u>6.9</u>
				G2	10:27					<u>9.6</u>
				G3	10:47					<u>4.1</u>
				G4	10:57					<u>5.9</u>
				M1	10:34					<u>5.3</u>
M2	10:20			<u>7.0</u>						
M4	10:11			<u>5.0</u>						

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

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 13 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.6	G1	16:20	0.7	0.8	<i>0.8</i>
						G3	16:23			<i>1.0</i>
						G4	16:29			<i>1.0</i>
						M2	16:02			<i>1.0</i>
						M3	16:26			<i>1.1</i>
						M4	15:59			<i>0.8</i>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	5.9	G1	16:20	6.0	6.9	7.0	7.6	<u>7.0</u>
				G2	16:09					<u>6.8</u>
				G3	16:23					<u>8.7</u>
				M3	16:26	<u>14.5</u>				
				M4	15:59	<u>6.3</u>				
		M5	16:40	<u>24.4</u>						
		Bottom	6.9	G1	16:20	6.9	7.9	8.2	8.9	<u>7.1</u>
				G2	16:09					<u>8.7</u>
				M1	16:14					<u>10.3</u>
				M2	16:02					<u>14.9</u>
M4	15:59			<u>14.0</u>						

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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	10.8	G2	10:31	6.0	6.9	13.0	14.0	<u>17.2</u>
				G3	10:48					<u>11.4</u>
				G4	10:59					<u>9.6</u>
				M1	10:37	6.2	7.4			<u>11.2</u>
				M3	10:56					<u>10.9</u>
				M5	11:11					<u>9.4</u>
		Bottom	27.0	G1	10:44	6.9	7.9	32.4	35.1	<u>16.2</u>
				G4	10:59					<u>7.3</u>
				M5	11:11					<u>16.4</u>

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

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 14 March 2019

Part A – Exceedance Summary Tables

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	7.0	M5	19:37	6.0	6.9	8.4	9.1	<u>11.8</u>
		Bottom	4.8	G2	18:40	6.9	7.9	5.8	6.2	<u>10.6</u>
				M1	18:50					<u>10.1</u>
Mid-Flood	C1	Surface	3.5	G2	11:40	6.0	6.9	4.1	4.5	<u>9.9</u>
				G3	12:17					<u>5.3</u>
				G4	12:32					<u>4.5</u>
				M1	11:50	6.2	7.4			<u>5.4</u>
				M2	11:29					<u>5.1</u>
				M4	11:15					<u>6.3</u>
				M5	12:45					<u>7.7</u>

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

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 15 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.2	G1	18:50	0.3	0.3	<u>0.5</u>
						G2	18:35			<u>0.7</u>
						G3	18:55			<u>0.9</u>
						G4	19:13			<u>1.0</u>
						M1	18:41			<u>0.9</u>
						M2	18:30			<u>0.4</u>
						M3	19:05			<u>0.7</u>
						M4	18:26			<u>0.5</u>
						M5	19:23			<u>0.8</u>
			Mid-flood	C1	0.9	M1	10:41	1.1	1.2	<u>1.3</u>

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Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	7.1	G2	18:35	6.0	6.9	8.5	9.2	<u>7.7</u>
				M3	19:05	6.2	7.4			<u>22.4</u>
				M5	19:23					<u>12.2</u>
		Bottom	9.5	G2	18:35	6.9	7.9	11.4	12.4	<u>11.4</u>
				G3	18:55					<u>9.8</u>
				M3	19:05					<u>7.1</u>
				M5	19:23					<u>15.4</u>

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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	8.7	G1	10:50	6.0	6.9	10.4	11.3	<u>17.9</u>
				G2	10:37					<u>13.7</u>
				G3	10:55					<u>11.6</u>
				M1	10:41					<u>9.6</u>
				M3	11:00					<u>7.2</u>
		Intake	n.a.	M6	11:15	8.3	8.6	n.a.	n.a.	<u>9.9</u>
		Bottom	7.4	G1	10:50	6.9	7.9	8.8	9.6	<u>8.3</u>
				G2	10:37					<u>11.0</u>
				G3	10:55					<u>19.0</u>
				G4	11:07					<u>23.2</u>
				M1	10:41					<u>7.3</u>
				M2	10:29					<u>8.0</u>
				M3	11:00					<u>15.2</u>
				M4	10:24					<u>28.2</u>
		M5	11:23	<u>7.5</u>						

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

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 18 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.2	G1	10:49	0.3	0.3	<u>1.0</u>
						G2	10:42			<u>0.4</u>
						G3	10:53			<u>0.6</u>
						G4	11:03			<u>1.3</u>
						M1	10:46			<u>0.4</u>
						M2	10:37			<u>0.4</u>
						M3	10:59			<u>0.7</u>
						M4	10:33			<u>0.4</u>
						M5	11:13			<u>0.5</u>
			Mid-flood	C1	0.4	G1	15:46	0.5	0.5	<u>0.7</u>
						M1	15:39			<u>1.3</u>

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	2.3	G1	10:49	6.0	6.9	2.8	3.0	<u>5.4</u>
				G2	10:42					<u>3.9</u>
				G3	10:53					<u>14.6</u>
				G4	11:03					<u>8.3</u>
				M1	10:46	6.2	7.4			<u>5.5</u>
				M2	10:37					<u>14.1</u>
				M3	10:59					<u>10.4</u>
				M4	10:33					<u>3.6</u>
		Intake	n.a.	M6	11:08	8.3	8.6	n.a.	b.a.	<u>12.2</u>
		Bottom	6.5	G1	10:49	6.9	7.9	7.8	8.5	<u>9.8</u>
				G2	10:42					<u>11.4</u>
				M1	10:46					<u>21.6</u>
M2	10:37			<u>9.5</u>						

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

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- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	3.7	G1	15:46	6.0	6.9	4.4	4.7	<u>12.8</u>
				G2	15:33					<u>10.2</u>
				G3	15:53					<u>11.0</u>
				G4	16:00					<u>6.9</u>
				M1	15:39	6.2	7.4			<u>5.8</u>
				M2	15:28					<u>5.9</u>
				M3	15:56					<u>6.3</u>
				M4	15:22					<u>4.8</u>
				M5	16:14					<u>11.8</u>
		Intake	16:09	n.a.	8.3	8.6	n.a.	n.a.	<u>11.6</u>	
		Bottom	7.4	G4	16:00	6.9	7.9	8.8	9.6	<u>7.4</u>
				M1	15:39					<u>7.6</u>
				M2	15:28					<u>7.3</u>
M5	16:14			<u>7.9</u>						

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

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Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Date of Water Quality Monitoring: 20 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.4	G1	12:23	0.5	0.5	<u>0.8</u>
						G3	12:27			<u>0.9</u>
						G4	12:34			<u>3.0</u>
						M1	12:19			<u>1.1</u>
						M2	12:09			<u>0.7</u>
						M3	12:31			<u>1.2</u>
						M5	12:42			<u>0.7</u>
			Mid-flood	C1	0.5	G3	16:53	0.6	0.7	<u>0.8</u>
						G4	17:01			<u>2.5</u>
						M1	16:41			<u>1.2</u>
						M2	16:32			<u>0.6</u>
						M3	16:57			<u>2.0</u>

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- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	4.2	G1	12:23	6.0	6.9	5.0	5.4	<u>8.6</u>
				M2	12:09	6.2	7.4			<u>17.7</u>
				M3	12:31					<u>12.5</u>
				M4	12:06					<u>9.8</u>
		Intake	n.a.	M6	12:37	8.3	8.6	n.a.	b.a.	<u>13.2</u>
		Bottom	4.5	G1	12:23	6.9	7.9	5.3	5.8	<u>8.8</u>
				G4	12:34					<u>7.3</u>
				M1	12:19					<u>14.5</u>
				M2	12:09					<u>8.7</u>
				M3	12:31					<u>6.8</u>

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- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	10.2	G1	16:47	6.0	6.9	12.2	13.3	<u>11.8</u>
				G2	16:36					6.5
				G3	16:53					<u>9.1</u>
				G4	17:01					<u>23.6</u>
				M2	16:32					<u>7.5</u>
				M4	16:28					7.2
		Bottom	7.4	G1	16:47	6.9	7.9	8.8	9.6	7.1
				G2	16:36					<u>10.3</u>
				G3	16:53					<u>9.4</u>
				M1	16:41					<u>12.6</u>
				M2	16:32					<u>12.6</u>
				M5	17:11					<u>7.0</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: 22 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.6	G1	13:47	1.9	2.1	<u>2.2</u>
			Mid-flood	C1	1.0	G1	08:33	1.2	1.3	<u>1.3</u>
						G4	08:48			<u>2.0</u>
						M3	08:40			<u>2.2</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	9.9	G1	13:47	6.0	6.9	11.9	12.9	<u>8.6</u>
				G2	13:35					<u>10.0</u>
				G3	13:51					6.5
				M1	13:40	6.2	7.4			<u>9.2</u>
				M2	13:31					<u>13.6</u>
				M3	13:54					<u>14.7</u>
				M4	13:25					7.1
				M5	14:11					<u>8.8</u>
		Intake	n.a.	M6	14:06	8.3	8.6	n.a.	n.a.	<u>13.4</u>
		Bottom	5.3	G2	13:35	6.9	7.9	6.3	6.8	6.7
				G3	13:51					<u>7.7</u>
				G4	14:02					<u>16.6</u>
				M1	13:40					<u>13.1</u>
				M3	13:54					<u>8.0</u>
				M4	13:25					<u>7.7</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	5.6	G1	08:33	6.0	6.9	6.7	7.3	<u>11.7</u>
				G3	08:37					<u>13.6</u>
				G4	08:48					<u>20.7</u>
				M2	08:17	<u>20.4</u>				
				M4	08:11	<u>7.7</u>				
		M5	08:57	<u>20.8</u>						
		Bottom	12.5	G1	08:33	6.9	7.9	14.9	16.2	<u>11.1</u>
				G2	08:21					<u>7.7</u>
				G3	08:37					<u>11.3</u>
				M1	08:27					<u>14.3</u>
M3	08:40			<u>15.4</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: 25 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	1.2	M1	08:52	1.4	1.6	<u>1.8</u>
						M2	08:17			<u>1.5</u>
						M3	09:34			<u>2.2</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)		
Mid-Ebb	C2	Surface	4.9	M1	15:02	6.2	7.4	5.8	6.3	<u>13.1</u>		
				M2	14:51					<u>8.5</u>		
				M3	15:14					<u>17.4</u>		
				M4	14:42					<u>11.5</u>		
				M5	15:29					<u>11.4</u>		
		Bottom	7.8	G1	15:07	6.9	7.9	9.4	10.1	<u>10.3</u>		
				G3	15:10					7.4		
				G4	15:18					<u>14.4</u>		
						M1	15:02					<u>8.8</u>
						M2	14:51					7.7
	M3					15:14	7.9					
	M4					14:42	<u>8.2</u>					

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	10.2	G1	09:05	6.0	6.9	12.2	13.3	<u>8.1</u>
				G2	08:31					<u>9.2</u>
				G3	09:20					<u>6.1</u>
				M2	08:17	6.2	7.4			<u>8.5</u>
				M3	09:34					<u>8.1</u>
				M4	08:02					<u>12.7</u>
		Bottom	17.0	G4	09:44	6.9	7.9	20.4	22.1	<u>7.9</u>
				M1	08:52					<u>10.3</u>
				M2	08:17	<u>20.3</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: 27 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.1	G1	16:20	1.3	1.4	<u>2.1</u>
						G3	16:23			<u>1.5</u>
						M1	16:16			<u>3.2</u>
						M4	16:04			<u>1.4</u>
			Mid-flood	C1	1.4	M3	10:56	1.7	1.8	<u>1.9</u>
						M4	10:26			<u>2.0</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	5.9	G1	16:20	6.0	6.9	7.1	7.7	<u>7.9</u>
				G2	16:12					<u>11.2</u>
				G4	16:29					<u>12.6</u>
				M2	16:08	6.2	7.4			<u>10.9</u>
				M3	16:27					<u>15.4</u>
				M4	16:04					<u>7.1</u>
		M5	16:39	<u>7.8</u>						
		Intake	n.a.	M6	16:34	8.3	8.6	n.a.	n.a.	<u>10.6</u>
		Bottom	10.1	G1	16:20	6.9	7.9	12.1	13.1	<u>8.3</u>
				G2	16:12					<u>16.4</u>
				G4	16:29					<u>15.5</u>
				M1	16:16					<u>9.3</u>
				M4	16:04					<u>9.8</u>
				M5	16:39					<u>8.4</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	1.5	G1	10:45	6.0	6.9	1.7	1.9	<u>4.1</u>
				G2	10:33					<u>4.1</u>
				G3	10:51					<u>19.1</u>
				G4	11:00					<u>9.5</u>
				M1	10:396	6.2	7.4			<u>22.6</u>
				M2	10:29					<u>27.9</u>
				M3	10:56					<u>7.2</u>
				M4	10:26					<u>15.0</u>
		M5	11:11	<u>7.5</u>						
		Bottom	5.1	G1	10:45	6.9	7.9	6.1	6.6	<u>10.7</u>
				G2	10:33					<u>10.1</u>
				G3	10:51					<u>6.3</u>
				G4	11:00					<u>10.6</u>
				M1	10:36					<u>37.9</u>
M2	10:29			<u>7.4</u>						
M3	10:56	<u>26.5</u>								
M5	11:11	<u>9.5</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: 29 March 2019

Part A – Exceedance Summary Tables

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-flood	C1	0.6	G1	08:54	0.7	0.8	<u>1.2</u>
						G3	08:58			<u>2.0</u>
						G4	09:04			<u>1.2</u>
						M2	08:42			<u>1.0</u>
						M3	09:00			<u>1.6</u>
						M4	08:37			<u>1.1</u>
						M5	09:13			<u>1.4</u>

Contract No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction

- Notification of Environmental Quality Limit Exceedances

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	4.0	G2	08:54	6.0	6.9	4.7	5.1	<u>5.3</u>
				G4	09:04					<u>6.6</u>
		Bottom	3.0	G1	08:54	6.9	7.9	3.6	3.9	<u>4.0</u>
				G2	08:45					<u>5.4</u>
				G3	08:58					<u>4.0</u>
				G4	09:04					<u>4.8</u>
				M1	08:50					<u>7.4</u>
				M3	09:00					<u>3.9</u>
				M4	08:37					<u>3.7</u>

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

**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 (March 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			
At Tseung Kwan O side, part of the silt curtain is floating and part of the buoy is missing. The Contractor is reminded to check whether the curtain has been set to the sea bottom and the integrity.	30 January 2019	✓	Item was rectified on 20 March 2019.
At the Tseung Kwan O side, part of the silt curtain was floating. The Contractor is reminded to check if it has been set to the seabed. Also, part of the buoys of the silt curtain on Platform 1D was missing. The Contractor is reminded to enclose the whole platform with silt curtain.	12 February 2019	✓	Item was rectified on 20 March 2019.
Still water is observed in Portion II and needed to pump out.	20 February 2019	✓	Item was rectified on 20 March 2019.
At the Tseung Kwan O side, part of the silt curtain was floating and broken. It needs to be replaced to prevent leakage of pollutants	27 February 2019	✓	Item was rectified on 20 March 2019.
A hose in Portion II for surface water discharge was not connected to the designated desilting tank. The contractor is reminded to prevent pollution of nearby watercourses by runoff from the construction site.	06 March 2019	✓	Item was rectified on 20 March 2019.
Tree branches and rubbish were found in the perimeter drain near Cross-harbor Tunnel. This may cause overflow of water into the construction site.	06 March 2019	✓	Item was rectified on 27 March 2019.
Ecology			
--	--	--	--
Noise			
Noise barriers for a driller in Portion II should be placed to block direct view from NSRs. One noise barrier is advised to move closely to drillers to further block noise to NSRs.	20 February 2019	✓	Item was rectified on 6 March 2019.
In Portion III, noise barrier(s) should be placed in the direction of Yau Lai Estate when two breakers were breaking.	13 March 2019	✓	Item was rectified on 20 March 2019.
Landscape and Visual			
Materials underneath tree crown (tree protection zone) should be removed.	12 February 2019	✓	Item was rectified on 20 March 2019.
At the Lam Tin side, construction waste was found under a tree's crown of a retained tree near the construction entrance from East Cross-harbor Tunnel and required to be removed	20 February 2019	✓	Item was rectified on 13 March 2019.
Air Quality			
The outlet of a crusher in Portion III had insufficient water sprays. It is to ensure that both inlet and outlet of crushing machines have sufficient water spray to keep the aggregates wet.	20 February 2019	✓	Item was rectified on 6 March 2019.
Cement bags in Portion IVC need to be covered to prevent dust emission.	27 February 2019	#	Follow up action will be reported in the next reporting month.
At the Tsueng Kwan O site, dust was emitted during shotcrete works. Surrounding water sprays are required	06 March 2019	✓	Item was rectified on 20 March 2019.

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 (March 2019)

Items	Date	Status*	Follow up Action
to be turned on to reduce dust emission.			
Water sprays were required for breaking works in Portion III. Dust was emitted.	13 March 2019	✓	Item was rectified on 20 March 2019.
Waste / Chemical Management			
At the Tseung Kwan O side near the rest room and Portion IVC, a stripe of oil was observed along the road. The Contractor is reminded to clear the oil as chemical waste.	27 February 2019	✓	Item was rectified on 20 March 2019.
At the Tsueng Kwan O site, a drip tray was filled with water. Regular clean-ups of drip trays could reduce potential hazards if chemicals leak.	06 March 2019	✓	Item was rectified on 20 March 2019.
General refuse accumulation was observed nearby the entrance of Portion II. Accumulation of construction wastes, general refuses and tree branches were found in Portion II.	20 March 2019	#	Follow up action will be reported in the next reporting month.
A chemical waste tank was found without a drip tray. It is required to prevent chemical leakage.	27 March 2019	#	Follow up action will be reported in the next reporting month.
General refuse and construction waste was found. Regular clean-up is needed.	27 March 2019	#	Follow up action will be reported in the next reporting month.
Impact on Cultural Heritage			
--	--	--	--
Permits / Licenses			
--	--	--	--

- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month
- * Non-compliance of mitigation measure
- Non-compliance but improved by the contractor

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 (March 2019)

Contract No. NE/2015/02

Tseung Kwan O - Lam Tin Tunnel - Road P2 and Associated Works

Items	Date	Status*	Follow up Action
<i>Water Quality</i>			
Stagnant water are found at Portion V.	14 March 2019	✓	Improved/rectified on 28 March 2019.
Stagnant water are found in the drip tray of air compressor at Portion V.	21 March 2019	✓	Improved/rectified on 28 March 2019.
<i>Noise</i>			
--			
<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
--	--	--	--
<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 (March 2019)

Contract No. NE/2015/03

Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
Water Quality			
The generator drip tray had accumulated some water after raining.	21 February 2019	✓	Improved/rectified on 14 March 2019.
The footbridge had accumulated some water after raining.	28 February 2019	✓	Improved/rectified on 28 March 2019.
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste / Chemical Management			
The footbridge had accumulated some water after raining.	28 February 2019	✓	Improved/rectified on 28 March 2019.
Impact on Cultural Heritage			
--	--	--	--
Permits / Licenses			
--	--	--	--

- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month

- * Non-compliance of mitigation measure
- Non-compliance but rectified by the contractor

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 (March2019)

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>			
Floating refuse are found on the surface of the water.	5 March 2019	✓	Improved/rectified on 14 March 2019.
<i>Noise</i>			
--	--	--	--
<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
--	--	--	--
<i>Waste / Chemical Management</i>			
Drip trays should be provided for the oil container.	28 February 2019	✓	Improved/rectified on 19 March 2019.
<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 (March2019)

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>			
--	--	--	--
<i>Noise</i>			
--	--	--	--
<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
--	--	--	--
<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

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	<ol style="list-style-type: none"> 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. 	<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 ER 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. 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	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 	<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; 	<ol style="list-style-type: none"> 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; 	<ol style="list-style-type: none"> 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 Contractors 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
	<p>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</p> <p>8. If exceedance stops, cease additional monitoring.</p>			

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 works may require to be suspended subject to the Engineer's review of monitoring data. ● The Contractor shall immediately implement the measures as defined in the detailed plan of action to prevent further ground movement and groundwater drawdown etc. ● The Contractor shall prepare a detailed investigation report to study the cause of the exceedance ● The Contractor shall propose a contingency plan for the Engineer's approval in the event that alarm value is reached or exceeded ● The Contractor shall develop an emergency plan for the Engineer's approval in the event the applied contingency measures cannot control the situation. ● The Contractor shall meet the Engineer to discuss the instrument response and review the effectiveness of the implemented measures. ● The Contractor shall carry out design review of the works

Action Level	<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 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
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	^
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs.. - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage,	To minimize the dust impact	Contractor#	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	* (1) (2) (3) ^

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
	<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>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p># (1)</p> <p>^</p>

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.						
/	<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	• APCO	^ ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Noise Impact (Construction Phase)							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^

**App N - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES
2019**

March 2019

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
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	*(4) (5)
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	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A

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
		arising from the Project at the affected NSRs					
Water Quality Impact (Construction Phase)							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m ³ , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling barge trips per day shall be made with a maximum daily rate of 3,000m ³ (i.e. 1,000 m ³ per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
Silt Curtain	<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/2015/01	Construction stage	EIAO	* (6)

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
Deploym ent Plan	- Sufficient stock of silt curtain should be provided on site.	marine works					
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 	Control potential impacts from filling activities and marine-based construction	CEDD's 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>^</p> <p>^</p>

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
	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.						^ N/A
S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented: - Before carrying out any dredging and underwater filling works, a temporary barrier shall first be constructed to a height above the high water mark to completely enclose the works site (without any opening at the barrier wall) - The temporary barrier fully enclosing the dredging and underwater filling works site shall not be removed before completion of all dredging and underwater filling works.	Control potential impacts from dredging and filling works for Reclamation for Road P2	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A N/A N/A

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"> - 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. 						N/A
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	* (7)

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	* (8)
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^ N/A ^
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	Appendix A1 of ProPECC PN 1/94.						
S5.8.10	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m ³ capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^

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S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m ³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	runoff and land-based construction					
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.19	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		based construction					
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^
S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A

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	<p>groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected.</p> <p>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>						
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>	<p>Control potential impacts from construction site runoff and land-based construction</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Design Stage and Construction Phas</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>N/A</p>
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.</p> <p>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.</p>	<p>Control potential impacts from construction site runoff and land-based construction</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>^</p>

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S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
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	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	runoff and land-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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.44	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage	Control potential impacts from accidental	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^

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	and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	spillage of chemicals					
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. 	Control potential impacts from accidental spillage of chemicals	CEDD’s Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^ ^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD’s Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
Ecological Impact							

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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.						
S6.8.6	<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 	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^ ^ ^ ^

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	<p>translocation exercises should be conducted by experienced marine ecologist(s) 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>^</p> <p>^</p>
<p>S6.8.9</p> <p>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</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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		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	^
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 	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)	^

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<p>appropriate facility, of all wastes generated at the site;</p> <ul style="list-style-type: none"> - 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. 					<p>Land (Miscellaneous Provisions) Ordinance (Cap. 28)</p>	<p>^ # (3) (4) * (12) ^ ^</p>
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>
S8.6.5	<p>Good Site Practices and Waste Reduction Measures (con't)</p>	To achieve	Contractor	All work	Construction	ETWB TCW No.	

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
	<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>	waste reduction		sites	Phase	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 	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^

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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"> - Different locations should be designated to stockpile each material to enhance reuse. 						^
S8.6.8/ Waste Manage ment 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 Manage ment 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 (including disposal sites) should be proposed. 	To minimize potential adverse environmental impacts arising from waste collection and	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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
		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 	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ ^

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
	<p>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 						<p>^</p> <p>^</p> <p>N/A</p> <p>N/A</p>

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
	they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal.						
S8.6.26/ Waste Manage ment Plan	<p>Chemical Wastes.</p> <p>- If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</p>	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	* (13) # (2)
S8.6.27/ Waste Manage ment Plan	<p>General Refuse</p> <p>- 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.</p>	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^

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
Impact on Cultural Heritage (Construction Phase)							
S9.6.4	Dust and visual impacts <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	Indirect vibration impact <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 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.	^ ^ ^

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
Landscape and Visual Impact (Construction Phase)							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works. The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification	^
Table	CM4 - Existing trees at boundary of site and retained trees within site boundary to be	To minimize tree	CEDD (via	As per	Site clearance	ETWB TC 3/2006	*(14) *(15)

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
10.8.1/ Landsca pe Mitigation Plan	carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	loss	Contractor)	approved Tree Removal Application(s)	and throughout construction period	and as per tree protection measures in Particular Specification	
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	^
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	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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pe Mitigation 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	^

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
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 bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A	^
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with existing coastlin	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2	Construction planning and reclamation stages	N/A	N/A

Landfill Gas Hazard (Design and Construction Phase)

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
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 0100% 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	EPD's Landfill Gas Hazard Assessment Guidance Note	^
S11.5.10 S11.5.25	<p>Safety Measures</p> <ul style="list-style-type: none"> - For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards. - An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out. - No worker should be allowed to work alone at any time in or near to any excavation. At least one other worker should be available to assist with a rescue if needed. - Smoking, naked flames and all other sources of ignition should be prohibited within 15m of any excavation or ground-level confined space. "No smoking" 	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	<p>EPD's Landfill Gas Hazard Assessment Guidance Note</p> <p>Labour Department's Code of Practice for Safety and Health at Work in Confined Space</p>	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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
	<p>and “No naked flame” notices should be posted prominently on the construction site and, if necessary, special areas should be designed for smoking.</p> <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 when controlled by a “permit to work” procedure, properly authorized by the Safety Officer (or, in the case of small developments, other appropriately qualified person). - The permit to work procedure should set down clearly the requirements for continuous monitoring for methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person, in attendance outside the 'confined area', who should be responsible for reviewing the gas measurements as they are made, and who should have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise should be permitted to carry out hot works in confined areas. - Where there are any temporary site offices, or any other buildings located within the Sai Tso Wan Landfill Consultation Zone which have enclosed spaces with the capacity to accumulate landfill gas, then they should either be located in an 					<p>^</p> <p>^</p> <p>^</p> <p>^</p>	

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
	<p>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.</p> <ul style="list-style-type: none"> - Any electrical equipment, such as motors and extension cords, should be intrinsically safe. During piping assembly or conduiting construction, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed to prevent the migration of gases through the pipeline/conduit. All piping /conduiting should be capped at the end of each working day. - During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site. - Fire drills should be organized at not less than six monthly intervals. - The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow. - All personnel who work on the site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices (in Chinese and English) should be posted at prominent position around the site warning danger of the potential hazards. - Service runs within the Consultation Zone should be designated as "special routes"; utilities companies should be informed of this and precautionary 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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
	<p>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).</p> <p>- 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>						^
S11.5.26 - S11.5.31	<p>Monitoring</p> <ul style="list-style-type: none"> Routine monitoring should be carried out in all excavations, manholes, chambers, relocation of monitoring wells and any other confined spaces that may have been created. All measurements in excavations should be made with the extended monitoring tube located not more than 10 mm from the exposed ground surface. Monitoring should be performed properly to make sure that the area is free of landfill gas before any man enters into the area. For excavations deeper than 1m, measurements should be carried out: 	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	^

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"> - at the ground surface before excavation commences;- - immediately before any worker enters the excavation; - at the beginning of each working day for the entire period the excavation remains open; and - periodically throughout the working day whilst workers are in the excavation. ● For excavations between 300mm and 1m deep, measurements should be carried out: <ul style="list-style-type: none"> - directly after the excavation has been completed; and - periodically whilst the excavation remains open. ● For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person. ● Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person. ● The exact frequency of monitoring should be determined prior to the commencement of works, but should be at least once per day, and be carried out by a suitably qualified or qualified person before starting the work of the day. Measurements shall be recorded and kept as a record of safe working conditions with copies of the site diary and submitted to the Engineer for approval. The Contractor may elect to carry out monitoring via an automated monitoring system. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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
S11.5.32	The hazards from landfill gas during the construction stage within the Sai Tso Wan Landfill Consultation Zone should be minimized by suitable precautionary measures recommended in Chapter 8 of the Landfill Gas Hazard Assessment Guidance Note.	construction stage within the Sai Tso Wan Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	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 (Construction Phase)</i>					
* (1)	S3.8.7	Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> • The outlet of a crusher in Portion III had insufficient water sprays. It is to ensure that both inlet and outlet of crushing machines have sufficient water spray to keep the aggregates wet.
# (1)		<ul style="list-style-type: none"> - Use of frequent watering for particularly dusty construction areas and areas close to ASRs.. 	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> • Cement bags in Portion IVC need to be covered to prevent dust emission.
* (2)		<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. 	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> • At the Tsueng Kwan O site, dust was emitted during shotcrete works. Surrounding water sprays are required to be turned on to reduce dust emission.
* (3)		<ul style="list-style-type: none"> - Open stockpiles shall be avoided or covered. Where possible, prevent 	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> • Water sprays were required for breaking works in Portion III. Dust was emitted.

		placing dusty material storage piles near ASRs.			
Noise Impact (Construction Phase)					
* (4) * (5)	Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, Silent Up, 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"> Noise barriers for a driller in Portion II should be placed to block direct view from NSRs. One noise barrier is advised to move closely to drillers to further block noise to NSRs.
			NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> In Portion III, noise barrier(s) should be placed in the direction of Yau Lai Estate when two breakers were breaking.
Water Quality Impact (Construction Phase)					
* (6)	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"> At Tseung Kwan O side, part of the silt curtain is floating and part of the buoy is missing. The Contractor is reminded to check whether the curtain has been set to the sea bottom and the integrity. At the Tseung Kwan O side, part of the silt curtain was floating. The Contractor is reminded to check if it has been set to the seabed. Also, part of the buoys of the silt curtain on Platform 1D was missing. The Contractor is reminded to enclose the whole platform with silt curtain. At the Tseung Kwan O side, part of the silt curtain was floating and broken. It needs to be replaced to prevent leakage of pollutants
* (7) (8)	S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> Still water is observed in Portion II and needed to pump out.

		environmental requirements in order to ensure adequate hydraulic capacity of all drains.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> Tree branches and rubbish were found in the perimeter drain near Cross-harbor Tunnel. This may cause overflow of water into the construction site.
* (9)	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.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> Washing water was seen overflowing from the bored pile case in platform 1D. The Contractor should ensure that the pumping rate is sufficient to avoid discharging waste water into the sea.
			NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> Tree branches and rubbish were found in the perimeter drain near Cross-harbor Tunnel. This may cause overflow of water into the construction site.
Waste/ Chemical Management					
# (3) (4) (12)	S8.6.3	- Provision of sufficient waste disposal points and regular collection of waste	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> General refuse accumulation was observed nearby the entrance of Portion II. Accumulation of construction wastes, general refuses and tree branches were found in Portion II.

		-	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> General refuse and construction waste was found. Regular clean-up is needed.
			NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> At the Tseung Kwan O side near the rest room and Portion IVC, a stripe of oil was observed along the road. The Contractor is reminded to clear the oil as chemical waste.
* (13) # (2)	S8.6.26/ Waste Management Plan	<p>Chemical Wastes.</p> <p>- 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,</p>	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> At the Tsueng Kwan O site, a drip tray was filled with water. Regular clean-ups of drip trays could reduce potential hazards if chemicals leak.
			NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> A chemical waste tank was found without a drip tray. It is required to prevent chemical leakage.

		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.			
Landscape and Visual Impact (Construction Phase)					
* (14)	Table 10.8.1/ Landscape Mitigation Plan	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> Materials underneath tree crown (tree protection zone) should be removed.
* (15)	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	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> At the Lam Tin side, construction waste was found under a tree's crown of a retained tree near the construction entrance from East Cross-harbor Tunnel and required to be removed.

		construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).			
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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

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Air Quality Impact							
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	^
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <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. 	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^

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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 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	3 sides. - Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.						^
/	Emission from Vehicles and Plants - All vehicles shall be shut down in intermittent use. - Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. - All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^ ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Sediment Management Plan	- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite. - Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation - Subject to the odour intensity and instruction by the <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>

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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	N/A
Water Quality Impact (Construction Phase)							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m ³ , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall	Control potential	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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	opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling barge trips per day shall be made with a maximum daily rate of 3,000m ³ (i.e. 1,000 m ³ per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.	impacts from filling activities					
Silt Curtain Deployment Plan	<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 woroks	Contractor	NE/2015/02	Construction stage	EIAO	^ ^ ^
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 	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	^ ^ ^ ^ ^

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	<p>bodies and tailgates will be sealed to prevent any discharge during transport or wet conditions.</p> <ul style="list-style-type: none"> - 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>^</p> <p>^</p> <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 	Control potential impacts from	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal	^

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	<p>separate the construction works from the sea;</p> <ul style="list-style-type: none"> - floating single silt curtain shall be employed for all marine works; - all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved; - adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; - loading of barges and hoppers should be controlled to prevent splashing of filling material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation; - any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; - construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds; and - before commencement of the reclamation works, the holder of Environmental Permit has to submit plans showing the phased construction of the reclamation, design and operation of the silt curtain. 	<p>filling activities and marine-based construction</p>				<p>Ordinance (WDO)</p>	<p>^ ^ ^ ^ ^ ^ ^ ^ * (4) N/A</p>

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S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	<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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^ ^ N/A ^

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S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	*(1) *(2)
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the corresponding WCZ	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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	under the TM-DSS.						
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A ^
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.10	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m ³ capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^

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		construction					
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m ³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface runoff into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.19	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		construction					
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^
S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A

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	<p>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>	<p>construction</p>					
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>	<p>Control potential impacts from construction site runoff and land-based construction</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Design Stage and Construction Phas</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>N/A</p>
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 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.</p>	<p>Control potential impacts from construction site runoff and land-based construction</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>^</p>

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S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.44	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	<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 	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^

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	allocated to the storage area.						^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
Ecological Impact							
S6.8.4	<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 	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^

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	<p>demarcated. The works areas should be reinstated after completion of the works.</p> <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). 	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	<p>^</p> <p>^</p>

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	<ul style="list-style-type: none"> - 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. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
<p>S6.8.9</p> <p>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</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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		contamination of wastewater 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	Design Team / Contractor	Marine work area	Construction phase	WQO	^

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		solid level					
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 - Plan and stock construction materials carefully to minimize amount of waste generated 	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance	^ ^ ^

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	and avoid unnecessary generation of waste.					(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> <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 	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^

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	materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.						^
S8.6.8/ Waste Management Plan	<i>Storage, Collection and Transportation of Waste (con't)</i> - 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	<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	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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		collection and disposal					
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	^ ^ ^
S8.6.15 – S8.6.16/ Waste Management 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 sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening 	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02	All works areas with sediments concern	Construction Phase	RBRG	N/A

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	<p>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 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP 						N/A
S8.6.17 – S8.6.20	<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 	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ ^

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	<p>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.</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. 						N/A
S8.6.21/ Waste Management 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	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 confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the 	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A

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	<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 style="text-align: center;">^</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">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, 	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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	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 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 and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works. The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification	^

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Table 10.8.1/ Landscape Mitigation Plan	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	^
Table 10.8.1/ Landscape Mitigation Plan	CM5 - Trees unavoidably affected by the works shall be transplanted where practicable. Where possible, trees should be transplanted direct to permanent locations rather than temporary holding nurseries. A detailed tree transplanting specification shall be provided in the Contract Specification and sufficient time for preparation shall be allowed in the construction programme.	To maximize preservation of existing trees	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	^
Table 10.8.1/ Landscape Mitigation Plan	CM6 - Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	To maximize screening of the works	CEDD (via Contractor)	At Lam Tin Interchange and edge of Road P2 landscape deck, TKO	Beginning of construction period	N/A	^
Table 10.8.1/	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce	CEDD (via	General	Throughout	As per	N/A

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Landscape Mitigation Plan		visual intrusion	Contractor)		construction period	Particular Specification	
Table 10.8.1/ Landscape Mitigation Plan	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion and integration with environment	CEDD (via Contractor)	Built structures	Design and construction stage	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling	Throughout construction period	N/A	^

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				roadworks			
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with existing coastlin	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and permanent reclamation for TKO Interchange slip roads and Road P2.	Construction planning and reclamation stages	N/A	N/A

Table II - Observations/reminders/non-compliance made during Site Audit

- Key:**
- * Observation/reminder was made during site audit but improved/rectified by the contractor.
 - # Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
 - X Non-compliance of mitigation measure
 - Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
Water Quality Impact (Construction Phase)					
* (1) (2)	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.	NE/2015/02	Construction of Road P2	<ul style="list-style-type: none"> • Stagnant water are found at Portion V. • Stagnant water are found in the drip tray of air compressor at Portion V.

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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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>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	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	• APCO	^
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 - 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>

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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	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^ N/A ^
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m ³ capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	*(1)

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.19	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected. Prescriptive measures in the form of an Action Plan with pre-emptive and re-active to preserve the groundwater levels at all times during the tunnel construction are set out in Table 5.18.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A

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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	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.29 - S5.8.31	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an online standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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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	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: - suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^

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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	CEDD's 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><i>Measure to Minimize Groundwater Inflow</i></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><i>Measure to Minimize Impact on Corals</i></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><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</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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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"> - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 						^
S8.6.5	<p><i>Good Site Practices and Waste Reduction Measures (con't)</i></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><i>Good Site Practices and Waste Reduction Measures (con't)</i></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><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; 	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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	confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.	sediment					
S8.6.24 - S8.6.28/ Waste Manage ment 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 contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring and transportation of the sediment, the excavated sediments should be kept wet 	To ensure handling of sediments are in accordance to statutory requirements	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^ ^ ^

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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 contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction	N/A	^

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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 works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	^
Table	CM5 - Trees unavoidably affected by the works shall be transplanted where	To maximize	CEDD (via	As per	Site clearance	ETWB TC 3/2006	^

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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
N/A					

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

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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>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	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	• APCO	^
Noise Impact (Construction Phase)							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^

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Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
S4.9	<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)							
	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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	discharged into the corresponding WCZ under the TM-DSS.						
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^ N/A ^
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (1) * (2)
S5.8.10	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m ³ capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m ³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		based construction					
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.19	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^
S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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		based construction					
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected. Prescriptive measures in the form of an Action Plan with pre-emptive and re-active to preserve the groundwater levels at all times during the tunnel construction are set out in Table 5.18.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A
S5.8.28	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.29 - S5.8.31	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an online standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.44	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste)	Control potential impacts from accidental	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^

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	(General) Regulation should be observed and complied with for control of chemical wastes.	spillage of chemicals					
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: - suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and - storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^ ^ ^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^

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Ecological Impact							
S6.8.4	<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. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter 	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^ ^ ^ ^

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	the nearby watercourses.						
S6.8.8	-						
S6.8.9 S6.8.10	<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><i>Good Site Practices and Waste Reduction Measures (con't)</i></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><i>Good Site Practices and Waste Reduction Measures (con't)</i></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>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 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		^ ^ ^ ^ ^ ^

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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 Management	<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	^ ^ ^

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	works are less than 100m from the temple.						
<i>Landscape and Visual Impact (Construction Phase)</i>							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1/ Landscape Mitigation Plan	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works. The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification	^
Table 10.8.1/	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be	To minimize tree loss	CEDD (via Contractor)	As per approved	Site clearance and	ETWB TC 3/2006 and as per tree	^

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

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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
Water Quality (Construction Phase)					
* (1) *(2)	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.	NE/2015/03	Construction of Northern Footbridge	The footbridge had accumulated some water after raining. The generator drip tray had accumulated some water after raining.

Table I – Recommended Mitigation Measures stipulated in EM&A Manual of the Project

(Further information on observations/reminders/non-compliance made during site audit should refer to Table II)

Contract: NE/2017/01

- Key:**
- ^ Mitigation measure was fully implemented.
 - * Observation/reminder was made during site audit but improved/rectified by the contractor.
 - # Observation/reminder was made during site audit but not yet improved/rectified by the contractor.
 - X Non-compliance of mitigation measure
 - Non-compliance but rectified by the contractor
 - N/A Not Applicable

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
<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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	<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	• APCO	^ ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Sediment 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					<p>^</p> <p>^</p> <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	N/A
Water Quality Impact (Construction Phase)							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m ³ , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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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	CEDD's 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	CEDD's 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>* (1)</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>CEDD's 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>CEDD's 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	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	N/A
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	N/A

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	discharged into the corresponding WCZ under the TM-DSS.						
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A N/A N/A
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.10	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m ³ capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	N/A
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	N/A
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	N/A
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m ³ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.19	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	N/A
S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected. Prescriptive measures in the form of an Action Plan with pre-emptive and re-active to preserve the groundwater levels at all times during the tunnel construction are set out in Table 5.18.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A
S5.8.28	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.29 - S5.8.31	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an online standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.44	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste)	Control potential impacts from accidental	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^

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	(General) Regulation should be observed and complied with for control of chemical wastes.	spillage of chemicals					
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: - suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport; - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and - storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	*(2) ^ ^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^

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Ecological Impact							
S6.8.4	<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
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

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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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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
		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><i>Good Site Practices and Waste Reduction Measures (con't)</i></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><i>Good Site Practices and Waste Reduction Measures (con't)</i></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 Manage ment 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 Manage ment 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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	contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP						
S8.6.17 – S8.6.20	<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 	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase	^ ^ ^	N/A

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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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	- 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
<i>Landscape and Visual Impact (Construction Phase)</i>							
Table 10.8.1/ Landsca pe Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	N/A
Table 10.8.1/ 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	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 works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	N/A
Table 10.8.1/ 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

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				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>Water Quality (Construction Phase)</i>					
* (1)	S5.8.3	Other good site practices should be undertaken during filling operations include: <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 	NE/2017/01	Construction of TKO Interchange	<ul style="list-style-type: none"> • Floating refuse are found on the surface of the water.

		<p>and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;</p> <ul style="list-style-type: none"> - 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 			
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		<p>not be operated with leaking pipes;</p> <ul style="list-style-type: none"> - 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. 			
Waste Management (Construction Phase)					
* (2)	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 	NE/2017/01	Construction of TKO Interchange	<ul style="list-style-type: none"> • Drip trays should be provided for the oil container.

		<p>wastes to avoid leakage or spillage during storage, handling and transport;</p> <ul style="list-style-type: none"> - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and <p>storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</p>			
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**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
346	31-Mar-19	31st March 2019 / Construction of Road P2	District Council	Others	Validity of Construction works on Sunday	N	Investigation has been completed but yet to be finalised.	On-going
345	29-Mar-19	29th March 2019 / Construction of Road D4	Resident of Park Central?	Noise	Breaking noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
344	28-Mar-19	28th March 2019 / Construction of Road P2	District Council	Noise	Noise and black smoke from barges	Y	Investigation has been completed but yet to be finalised.	On-going
343	25-Mar-19	25th March 2019 / Construction of Road D4	Resident of Park Central	Noise	Piling like noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
342	25-Mar-19	25th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Construction noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
341	24-Mar-19	24th March 2019 / Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Breaking noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going

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	Tunneling work noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
339	21-Mar-19	21st March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Breaking noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
338	21-Mar-19	21st March 2019 / Construction of Lam Tin Interchange	Resident of Ocean Shore	Noise	Metal collision like noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
337	20-Mar-19	20th March 2019 / Construction of Road D4 and Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Construction of work noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
336	20-Mar-19	20th March 2019 / Construction of Road D4	Resident of Park Central	Noise & Pest	Construction vehicle noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
335	19-Mar-19	19th March 2019 / Construction of Road P2/	Resident of Ocean Shore	Noise	Marine works noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
334	19-Mar-19	19th March 2019 / Construction of Road P2/	District Council	Noise	Marine works noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
333	19-Mar-19	19th March 2019 / Construction of Road P2/	Resident of Ocean Shore	Noise	Marine works noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
332	18-Mar-19	18th March 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Construction noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
331	18-Mar-19	18th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Construction noise (Day time and Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
330	17-Mar-19	17th March 2019 / Construction of Lam Tin Interchange	General Public	Noise	Construction noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
329	15-Mar-19	15th March 2019 / Construction of Road D4	Resident of Park Central	Noise & Air	Construction of work noise (Daytime) and odour	Y	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
328	14-Mar-19	14th March 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Drilling noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
327	13-Mar-19	13th March 2019 / Construction of Lam Tin Interchange	Resident of Bik Lai House	Noise	Construction noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
326	13-Mar-19	13th March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Construction noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
325	9-Mar-19	9th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Machine and breaking noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
324	7-Mar-19	7th March 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Breaking noise during day and night	Y	Investigation has been completed but yet to be finalised.	On-going
323	4-Mar-19		Resident of Ocean Shore	Noise	Construction noise (Evening time)	Y	Investigation has been completed but yet to be finalised.	On-going
322	1-Mar-19	4th March 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Construction noise (Day time)	Y	Investigation has been completed but yet to be finalised.	On-going

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	Investigation has been completed but yet to be finalised.	On-going
320	22-Feb-19	22nd February 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Breaking noise (Day time)	Y	Investigation has been completed but yet to be finalised.	On-going
319	21-Feb-19	21st February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Breaking noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
318	21-Feb-19	21st February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Breaking noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
317	25-Feb-19	25th February 2019 / Construction of Road P2	Resident in O King Road	Air	Complained about the petroleum smell	N	Investigation has been completed but yet to be finalised.	On-going
316	18-Feb-19	18th February 2019 / Construction of Road P2	Resident in O King Road	Air	Complained about the black smoke and petroleum smell	N	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
315	17-Feb-19	17th February 2019 / Construction of Lam Tin Interchange, Road P2 and Tseung Kwan O Interchange	General Public	Noise	Complained about construction noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
314	17-Feb-19	17th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air	Complained about dust	N	Investigation has been completed but yet to be finalised.	On-going
313	17-Feb-19	17th February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the explosion noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
312	16-Feb-19	16th February 2019 / Construction of Lam Tin Interchange	District Council	Noise	Complained about the explosion noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
311	15-Feb-19	15th February 2019 / Construction of Lam Tin Interchange	Public	Noise	Complained about the explosion noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
310	14-Feb-19	14th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the dumping noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
309	13-Feb-19	13th February 2019 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complaint about construction noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
308	13-Feb-19	13th February 2019 / Construction of Lam Tin Interchange	Management Section of Kwong Tin Estate	Noise	Complaint about construction noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
307	13-Feb-19	13th February 2019 / Construction of Road P2	District Council	Noise	Complained about construction noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
306	13-Feb-19	13th February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about construction noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
305	12-Feb-19	12th February 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complaint about construction noise (Night time)	Y	Investigation has been completed but yet to be finalised.	On-going
304	8-Feb-19	8th February 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about construction noise (Daytime)	Y	Investigation has been completed but yet to be finalised.	On-going
303	2-Feb-19	2nd February 2019 / Construction of Lam Tin Interchange	Resident of Ping Tin Estate	Noise	Complained about construction noise from the subway (Day & night time)	Y	Investigation has been completed but yet to be finalised.	On-going

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	2nd February 2019 / Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complained about breaking (Day Time)	Y	Investigation has been completed but yet to be finalised.	On-going
301	31th January 2019	31th January 2019 / Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about construction noise.	Y	Investigation has been completed but yet to be finalised.	On-going
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	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Investigation has been completed but yet to be finalised.	On-going
299	30th January 2019	30th January 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complained about the noise from safety alarm at the site near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	As confirmed by the engineer, the beeping noise should come from the crane lorry during reversing. This is applied to give an audible warning to nearby pedestrians when the vehicle reverses and it is only a temporary noise source. In order to minimize the disturbance, signalman is used instead.	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	30th January 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise & Air Quality	Complained about construction noise & dust.	Y	Investigation has been completed but yet to be finalised.	On-going
297	30th January 2019	30th January 2019 / Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from loading and unloading.	Y	Investigation has been completed but yet to be finalised.	On-going
296	29th January 2019	29th January 2019 / Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	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	Refer to Investigation / Mitigation Action for complaint no. 299	Closed
295	29th January 2019	29th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the noise from the Steel cable wire for anchoring between barge and pier.	Y	Investigation has been completed but yet to be finalised.	On-going
294	29th January 2019	29th January 2019 / Construction of Road P2	Resident in O King Road	Air Quality	Complained about black smoke emission and odour.	Y	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
293 (EPD-K15/RE/0000 3291-19)	29th January 2019	29th January 2019 / Construction of Lam Tin Interchange	Cha Kwo Ling Tsuen	Noise & Air Quality	Complained about construction noise & dust (Day & Nighttime)	Y	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
290	29th January 2019	29th January 2019 / Construction of Lam Tin Interchange	District Council	Noise	Complained about the construction noise from Tunnel Works	Y	Investigation has been completed but yet to be finalised.	On-going
289 (EPD-)	24th January 2019	24th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from Tunnel Works	Y	Investigation has been completed but yet to be finalised.	On-going
288	18th January 2019	18th January 2019 / Construction of Road P2	Public	Noise	Complained about the construction noise from Tunnel Works	Y	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
286	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 near Tiu Keng Leng Sport Centre and Park Central.	N	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
284	16th January 2019	16th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	N	Investigation has been completed but yet to be finalised.	On-going
283	15th January 2019	15th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	N	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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 blower/fan near Tiu Keng Leng Sport Centre and Park Central.	N	Investigation has been completed but yet to be finalised.	On-going
281	15th January 2019	15th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre	N	Investigation has been completed but yet to be finalised.	On-going
280	14th January 2019	14th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	N	Investigation has been completed but yet to be finalised.	On-going
279	14th January 2019	14th January 2019 / Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	N	Investigation has been completed but yet to be finalised.	On-going
278	12th January 2019	12th 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	Investigation has been completed but yet to be finalised.	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
277	12th January 2019	12th January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the noise from breaking activities.	N	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
274 (EPD-N08/RE/0000 1234-19)	11th January 2019	11th January 2019 / Construction of Road D4	Public	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
272	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	Investigation has been completed but yet to be finalised.	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
271	8th January 2019	8th January 2019 / Construction of 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	Investigation has been completed but yet to be finalised.	On-going
270 (EPD-K15/RE/0000 0691-19)	7th January 2019	7th January 2019 / Construction of Lam Tin Interchange	Cha Kwo Ling Tsuen	Noise & Air Quality	Complained about construction noise & dust (Day & Night-time)	Y	Further information is required for investigation	On-going
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	Investigation has been completed but yet to be finalised.	On-going
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	Investigation has been completed but yet to be finalised.	On-going
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 the investigation for complaint no. 266	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; Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum. 	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	<ul style="list-style-type: none"> Under Investigation 	On-going
264	2nd January 2019	2nd January 2019 / Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	No further comments from IEC on 08/04/2019, signed report submitted on 08/04/2019	Closed
263 (EPD-)	1st January 2019	1st January 2019 / Coastal near TKO cemetery	General Public	Water	Complained concerning oil leakage/stain on the sea surface near the sunken barge at C2 site.	N	Under Investigation	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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 of Proposed Mitigation Measures” of EM&A Manual 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. 	On-going
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	On-going
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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	The complaint lodged on 25 th November 2018 is considered as non-project related, as no works was conducted on that day. The complaint on 27 th November 2018 is considered project related. The contractor is reminded to 1) frequently check and repair operating PME if any loosen or worn parts of the equipment to reduce excessive noise disturbance; 2) Ensure no further use of PA system for marine works.	Closed
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
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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
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
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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 style="text-align: center;"><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
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
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	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <p style="text-align: center;"><u>Noise:</u></p> <p>Walkie-talkie was used instead of broadcasting to reduce the noise nuisance.</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
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	<p>Mitigation Measures adopted by the Contractor</p> <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
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 of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <p style="text-align: center;"><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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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 of Proposed Mitigation Measures” of EM&A Manual 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
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	<ul style="list-style-type: none"> ➤ See Investigation / Mitigation Measures for Complaint No. 217 	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
213	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
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 style="text-align: center;">Measure Taken by the Contractor</p> <p>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</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <p>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;</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
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 the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <p style="text-align: center;">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. 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
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</p> <p>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 the “Implementation Schedule of Proposed Mitigation Measures” of EM&A 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 the “Implementation Schedule of Proposed Mitigation Measures” of EM&A 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
200 199	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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File 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
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 style="text-align: center;"><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 Schedule of Proposed Mitigation Measures” of EM&A 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
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 of Proposed Mitigation Measures” of EM&A Manual 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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
195	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 of Proposed Mitigation Measures” of EM&A Manual 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 the “Implementation Schedule of Proposed Mitigation 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
192 191	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	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation 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 <p>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.</p> <p>The Contractors had implemented environmental mitigation measures to reduce odour nuisance from construction activities to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Air blowers were provided at the location where welding works to be carried out to dilute the smell ➤ Additional water filter tank was adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell 	Closed
	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		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		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		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 Schedule of Proposed Mitigation Measures” of EM&A Manual 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
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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
184	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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
181	29 th May 2018	Not specified/ Construction of Road P2	Public	Air Quality	The complainant complained about the black smoke emission from the construction vessel.	N	<p>According to the information provided and confirmed by the Engineer, dredging and placing rock fill material were conducted during the time of complaint.</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Air Quality:</u></p> <p>As confirmed by the Engineer, the concerned large was removed off site for further maintenance; Additional water filter tank was adopted to reduce emission of dark smoke and exhaust. The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</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
180	25 th May 2018	24 th May 2018/ Construction of Road P2	SKDC member Mr. Cheung Chin Pang	Odour	The complainant complained about smell of exhaust gas affecting high level residents (60/F and above) of Metrotown Tower 10.	N	<p>According to the information provided and confirmed by the Engineer, modification of temporary marine platform and welding works were conducted during the time of complaint.</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Air Quality:</u></p> <p>Additional water filter tank was adopted to reduce emission of dark smoke and exhaust. The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</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
179	24 th May 2018	24 th May 2018/ Construction of Northern footbridge, Road P2/D4 and Road P2	Public	Air Quality	The complainant complained construction dust generated from the CEDD construction works site between Tong Yin Street and Tiu Keng Leng Sport Centre (Po Yap Road) as a result of insufficient dust suppression measures	N	<p>According to the information provided and confirmed by the Engineer, construction works including steel bar fixing, scaffolding, trimming formation level, compaction, removal of road marking and handling of treated sediment were conducted during the time of complaint.</p> <p>As shown in the Air Quality Monitoring Results, no Action/ Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) in May 2018. It is considered that no adverse construction dust impact was brought to the nearby sensitive receivers during the construction period of this Project</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> Water spraying was provided at least 8 times a day; Surface near public access was hard paved; Grass in Work Area A was covered except the operating area <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</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
178	23 rd May 2018	22 nd May 2018/ Construction of TKO Portal	Public	N/A	The complainant complained construction works was carried out on 22 May (which was a public holiday) around 1500 hour at the sea area near Ocean shore Block 2.	N	<p>According to the information provided and confirmed by the Engineer, modification of temporary marine platform and welding works were conducted during the time of complaint.</p> <p>One valid Construction Noise Permit (CNP) (No. GE-RE0309-18) was granted to the Contractor (Leighton – China State Joint Venture) (Contract No. NE/2015/01) for the marine construction site near Ocean Shores. According to the CNP, Group O to T of the PME listed in condition 3.a. are allowed to operate during general holiday (including Sunday) from 0900 – 2300 hours.</p> <p>As confirmed by the Engineer, only a group of PME (listed in Group Q) was operated during the time of complaint. No welding machine was operated in Zone A. No derrick barge and flat top barge were operated beyond Zone C.</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 style="text-align: center;"><u>Noise:</u></p> <p>Preinstalled speaker was used on derrick barge to minimize the noise disturbance from on-site communication.</p> <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</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
177	22 nd May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air Quality & Noise	The complainant complained about the dust nuisance and construction noise at Lam Tin Interchange	Y	<p>According to the Engineer's Site Diaries, the major construction activities performed in May 2018 included rock breaking, drilling and excavation at Lam Tin Interchange. Construction works for night-time included blasting and excavation.</p> <p>According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at Station AM2 – Sai Tso Wan Recreation Ground and AM3 – Yau Lai Estate, Bik Lai House. Based on the Air Quality Monitoring Results which conducted by ET, no Action or Limit Level Exceedance was recorded at Station AM2 and AM3. It is considered that no adverse air quality impact was brought to the nearby sensitive receivers during the time of complaint.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows:</p> <p style="text-align: center;"><u>Air Quality:</u></p> <p>at water spraying on unpaved area and haul roads at Lam Tin Interchange</p> <p style="text-align: center;">Noise:</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 ➤ Erected movable cantilever noise barriers and the breaker head was wrapped with Silent Mat and TMD; ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat 	Closed
MA16034	\Report\	App O - Cumulative complaint log			L-49		<ul style="list-style-type: none"> ➤ Drill rig was covered with Silent Mat and 	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
176	21 st May 2018	21 st May 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about dust/dirt being brought onto Tong Yin Street by the vehicles travelling to and from TKO-LTT construction site, causing dust problem and air nuisance.	N	<p>According to the information confirmed by the Engineer, all dump trucks were covered and wheel washed before leaving the works site on 21 May 2018.</p> <p>As shown in the Air Quality Monitoring Results, no Action/ Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) in May 2018. It is considered that no adverse construction dust impact was brought to the nearby sensitive receivers during the construction period of this Project</p> <p>The Contractors had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows: Water spraying was provided at least 8 times a day. Washing truck would be provided once a week to clean the dust on the public street. A sign board notice would be set up to remind the truck driver to perform wheel-washing properly before leaving site. Environmental staff at the access to check the dump trucks to ensure all dump trucks are properly covered and wheel-washed before leaving site.</p> <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</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
175	19 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during nighttime.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
174	19 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during nighttime.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
173	16 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court,	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
172	15 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
171	15 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Bik Lai Estate	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
170	15 th May 2018	Not specified/ Construction site near Cha Kwo Ling Tsuen	Anonymous	Noise	The complainant complained the noise nuisance due to the construction work near Cha Kwo Ling Tsuen during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
169	14 th May 2018	Not specified/ Construction of Lam Tin Interchange	Kowloon East District Council Member Mr. Tam Man Ho	Noise	The complainant complained the noise nuisance due to the construction work and night time blasting works at the Lam Tin Interchange.	Y	<p>According to the latest CNMP of this Contract, the subgroups of work activities undertaken near noise sensitive receivers in the reporting period:</p> <p>The construction activities of Lam Tin Interchange (Work site No.101) on 14th of May 2018 possessed of 6 no. of breakers, excavator mounted which were consistent with the quantities of breaker in the Construction Noise Mitigation Plan (Construction Activity Group1.1)</p> <p style="text-align: center;"><u>Noise:</u></p> <p>Installed steel-type blasting door mounted and absorptive lining to absorb construction noise in the tunnel;</p> <p>Erected movable cantilever noise barriers and breaker head was wrapped with Silent Mat and TMD;</p> <p>Powered mechanical equipment (PME) for breaking were equipped with TMD and SilentMat;</p> <p>As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4.</p> <p>The environmental conditions of the site and the control of works will be continuously reviewed and monitored by the Engineer and the Environmental Team.</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
168	14 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Yung Lai House	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
167	13 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court, Chung Pak House	Noise	The complainant complained the noise nuisance due to the construction work on Sunday morning and night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
166	13 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance due to the construction work at around 5:00 am and night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
165	13 th May 2018	13 th May 2018/ Construction of Lam Tin Interchange	Property Management Office of Hong Nga Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange on 13 th May 2018 (Sunday morning).	Y	<p>A valid Construction Noise Permit (CNP) (No. GW-RE0278-18) was granted to the Contractor for the construction site at Lam Tin Interchange (location of construction site is shown in Figure 1). According to the conditions in the CNP, only one group among Group A to R of the powered mechanical equipment is allowed to be operated during 0800-2300 hours on general holidays (including Sundays); and 1900-2300 hours on any day not being a general holiday. The number of excavators, dump trucks, craned lorry and breakers that were used on 13th, 14th, 15th & 22nd of May were covered by the CNP.</p> <p>Other good site practices recommended in the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual and the Noise Mitigation Plan of this Contract had been implemented by the Contractor, including the following:</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; • Mobile plant, if any, should be sited as far away from NSRs as possible; • Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs <p>As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4.</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
164	12 th May 2018	12 th May 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
163	12 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
162	11 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Lung Pak House	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
161	9 th May 2018	9 th May 2018 / Construction of Road P2	Resident of Ocean Shore	Air Quality	The complainant complained about dark smoke emission from a barge working at the sea area under TKO-LTT project near Block 2 of Ocean Shore.	N	<p>According to the information provided and confirmed by the Engineer, loading and unloading of marine sediment was conducted during the time of complaint</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Additional water filter tank was adopted to reduce emission of dark smoke and exhaust smell. <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</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
160	4 th May 2018	Not specified/ Construction of Lam Tin Interchange	Public	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	<p>According to the Engineer's Site Diaries, the major construction activities performed in May 2018 included rock breaking, drilling and excavation at Lam Tin Interchange. Construction works for night-time included blasting and excavation.</p> <p>A valid Construction Noise Permit (CNP) (No. GW-RE0278-18) was granted to the Contractor for the construction site at Lam Tin Interchange. According to the conditions in the CNP, only one group among Group A to R of the powered mechanical equipment is allowed to be operated during 0800-2300 hours on general holidays (including Sundays); and 1900-2300 hours on any day not being a general holiday. The number of excavators, dump trucks, craned lorry and breaker that were used during the day of complaint was covered by the CNP.</p> <p>In addition, Group T to X of the powered mechanical equipment is allowed to be operated during 2300-0700 hours on any day. The operation of charging unit during the time of complaint was covered by the CNP. Therefore, no violation of CNP (No. GW-RE0278-18) conditions was observed during the time of complaint.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows:</p> <p style="text-align: center;"><u>Air Quality:</u></p> <p style="text-align: center;">Frequent water spraying on unpaved area and haul roads at Lam Tin;</p> <p style="text-align: center;"><u>Noise:</u></p> <p style="text-align: center;">Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel;</p>	Closed
MA16034	Report	App O - Cumulative complaint log			L-58		<p>Installed steel-type blasting door mounted and absorptive lining to absorb construction noise in the tunnel;</p>	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
159	3 rd May 2018	2 nd and 3 rd May 2018 / Construction of Road P2	Public	Odour	The complainant complained the odour nuisance from the construction vessel.	N	<p>According to the information provided and confirmed by the Engineer, major construction activity including dredging, loading and unloading of marine sediment was conducted during the time of complaint</p> <p>The use of dredger and derrick barge conformed to the proposed quantity and type of PME stated in the updated Construction Noise Assessment of CNMP.</p> <p>Based on the noise monitoring results in April and May 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 style="text-align: center;"><u>Noise:</u></p> <p>Noise source on the barge was covered with acoustic materials. Additional sound absorptive blankets were to reduce the nuisance from the engine of the barge. Nylon rope was used instead of wire rope to reduce friction secure the barge in place. Maintenance of barge including lubrication of g parts was performed to minimized noise from worn or loose parts.</p> <p style="text-align: center;"><u>Air Quality:</u></p> <p>Additional water filter tank was adopted to reduce emission of dark smoke and exhaust smell.</p>	Closed
MA16034	Report	App O - Cumulative complaint log			L-59		The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize	CINOTECH

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
159 158	30 th April 2018	Not specified / Construction of Road P2	Public	Noise & Odour	The complainant complained the construction noise and odour nuisance from the construction vessel.	Y	According to the information provided and confirmed by the Engineer, major construction activity including dredging, loading and unloading of marine sediment was conducted during the time of complaint	Closed 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
	30 th April 2018	Not specified/ Construction of Lam Tin Interchange	Property Management Office of Kwong Tin Estate	Noise	The complainant complained the noise nuisance due to the breaking work at Lam Tin Interchange.	Y	<p>The use of dredger and derrick barge conformed to the proposed quantity and type of PME stated in the updated Construction Noise Assessment of CNMP.</p> <p>Based on the noise monitoring results in April and May 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 style="text-align: center;"><u>Noise:</u></p> <p>Noise source on the barge was covered with acoustic materials. Additional sound absorptive blankets were to reduce the nuisance from the engine of the barge. Nylon rope was used instead of wire rope to reduce friction secure the barge in place. Maintenance of barge including lubrication of parts was performed to minimized noise from worn or loose parts.</p> <p style="text-align: center;"><u>Air Quality:</u></p> <p>Additional water filter tank was adopted to reduce emission of dark smoke and exhaust smell.</p> <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	
MA16034	Report	App O - Cumulative complaint log			L-61		See Investigation / Mitigation Measures for Complaint No. 145.	CINOTECH

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
157	26 th April 2018	26 th April 2018 / Construction of TKO portal	Resident of Laguna City	Light	The complainant complained that two spotlights were used during daytime and nighttime causing light nuisance to the residents. She requested to direct the strong lighting toward the sea.	N	<p>According to the information provided and confirmed by the Engineer, no major construction activity was conducted at the location of complaint on 26 April 2018.</p> <p>Upon the receipt of the complaint, as confirmed by the Engineer, the Contractor had taken initiatives to maintain the environmental conditions in the works area as shown below:</p> <ul style="list-style-type: none"> ➤ The spotlights at the Cha Kwo Ling Public Cargo Working Administrative Office were switched off during daytime; and ➤ The illumination angle of spotlights was turned facing downwards to avoid light overspill <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	Closed
156	25 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the breaking work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	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
155	23 th April 2018	23th April 2018 / Construction of Road P2	Public	Noise	The complainant complained about noise from construction activities at the sea area near Ocean Shore Block 6 starting 8:30-8:45am on 23 April 2018. She suspected the noise is from drilling/breaking works.	Y	<p>According to the information provided and confirmed by the Engineer, construction works including excavation and pre-boring works in Portion IV were conducted on 23 April 2018. One unit of excavator and two units of mini backhoe were in operation for excavation works while two units of drill rigs were in operation for the pre-boring works in Portion IV.</p> <p>As confirmed by the Engineer, no breaking works were carried out during the time of complaint in Portion IV. Therefore, pre-boring works at Portion IV is regarded the source of noise nuisance.</p> <p>The Contractor had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Acoustics barriers were provided to the drill rigs for pre-boring works (see photo 1). ➤ Maintenance was provided to the rotary head of the drill rig to minimize noise nuisance from worn or loose parts. ➤ 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. ➤ Acoustic box was utilized for breaking works to minimize noise nuisance <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p> <p>The use of excavator did not conform the proposed quantity of powered mechanical equipment stated in the CNMP. Therefore, it is regarded as a non-compliance.</p>	Closed
MA16034\Report\App O - Cumulative complaint log					L-63			

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
154	23 th April 2018	Not specified/ Construction of Lam Tin Interchange	Kwun Tong District Council Member Mr. Lai Shu Ho	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
153	23 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noisy breaking work from two breakers at Lam Tin Interchange. He requested the Contractor to review the noise mitigation measures on site.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
152	20 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Nga Lai Estate, Yau Lai Estate	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
151	17 th April 2018	Not specified/ Construction of Lam Tin Interchange	Property Management Office of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	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
150	17 th April 2018	Not specified/ Construction of Lam Tin Interchange	Sham Shui Po District Council Member Mr. Ho Kai Ming	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	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
149	16 th April 2018	Not specified / Construction of Road P2	Resident of Ocean Shore	Noise	The complaint is about the noise generated from a poorly maintained excavator.	Y	<p>According to the information provided and confirmed by the Engineer, two units of excavators were in operation for excavation works in Portion VI on 16 and 18 April 2018. Excessive sound from movement of the poorly maintained excavator is considered source of noise nuisance.</p> <p>The Contractor had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ As confirmed by the Engineer, the use of concerned excavator was stopped and it was replaced with a new excavator. ➤ Regular site checking would be performed to ensure the type and quantity of PME are in order with the updated Construction Noise Assessment <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p> <p>The use of excavator did not conform the proposed quantity of powered mechanical equipment stated in the CNMP. Therefore, it is regarded as a non-compliance.</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
149 148	18 th April 2018	Not specified / Construction of Road P2	Resident of Ocean Shore	Noise	The complaint is about the noise generated from a poorly maintained excavator.	Y	According to the information provided and confirmed by the Engineer, two units of excavators were in operation for excavation works in Portion VI on 16 and 18 April 2018. Excessive sound from movement of the poorly maintained excavator is considered source of	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
							<p>noise nuisance.</p> <p>The Contractor had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ As confirmed by the Engineer, the use of concerned excavator was stopped and it was replaced with a new excavator. ➤ Regular site checking would be performed to ensure the type and quantity of PME are in order with the updated Construction Noise Assessment <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p> <p>The use of excavator did not conform the proposed quantity of powered mechanical equipment stated in the CNMP. Therefore, it is regarded as a non-compliance.</p> <p>According to the Engineer's Site Diary, the major construction activities performed in the reporting period included rock breaking and excavation at Lam Tin Interchange.</p> <p>According to the latest CNMP of this Contract, the subgroups of work activities undertaken near noise sensitive receivers in the reporting period are as follows:</p> <ul style="list-style-type: none"> - Construction of Lam Tin Interchange (LTI); 	
MA16034		Report	App O - Cumulative complaint log		L-68		<p>The construction activities of Lam Tin Interchange (Work site No.101) on 17th, 23rd & 25th of April</p>	CINOTECH

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
147	15 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noisy construction work at Lam Tin Interchange on public holiday.	Y	According to the Engineer's Site Diary, the major construction activities performed in the reporting period included rock breaking and excavation at Lam Tin Interchange.	Closed
145	2 nd April 2018	Public holiday/ Construction Works near Eastern Harbour Crossing tunnel portal	Resident of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work near Eastern Harbour Crossing tunnel portal on public holiday. (started from 9:00 am)	Y	<p>According to the latest CNMP of this Contract, the subgroups of work activities undertaken near noise sensitive receivers in the reporting period are as follows:</p> <ul style="list-style-type: none"> - Construction of Lam Tin Interchange (LTI); <p>The construction activities of Lam Tin Interchange (Work site No.101) on 17th, 23rd & 25th of April possessed of 7 no. of breakers, which were consistent</p>	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<p>with the quantities of breakers in the Construction Noise Mitigation Plan (Group 1.1.8)</p> <p>A valid Construction Noise Permit (CNP) (No. GW-RE0084-18) was granted to the Contractor for the construction site at Lam Tin Interchange. According to the conditions in the CNP, only one group among Group A to N of the powered mechanical equipment is allowed to be operated during 08:00 - 23:00 hours on general holiday (including Sunday). The operations on 2nd & 15th of April involved 1 no. of excavator, 2 no. of dump trucks, which were covered by the CNP. Therefore, no violation of CNP (No. GW-RE0084-18) condition was identified during the time of complaints.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <ul style="list-style-type: none"> ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat at Slope H in Lam Tin Interchange; ➤ PMEs at Portion IVC were mounted and shielded with SilentMat; ➤ Noise barriers were placed next to the breaker at Slope H in Lam Tin Interchange to reduce the noise nuisance to nearby NSRs; ➤ Cantilevered noise barriers were erected next to breakers wrapped with TMD and SilentMat at Portion IVC; ➤ Ensured blasting doors were closed while mucking out in the tunnel was undertaken; and ➤ Installed steel-type blasting door mounted with sound absorptive lining to absorb noise due to construction works in the tunnel 	
MA16034		Report	App O - Cumulative complaint log		L-70		CINOTECH	

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	12	0	0

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
December 2018	9	0	0
January 2019	39	0	0
Total	343	1	1

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	KTS2 4138/ 2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	The Summon was issued on 22 Dec 2017 First hearing on 29 Mar 2018	0	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--

Cumulative Log for Successful Prosecutions

Contract No.	Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
NE/2015/01	--	--	--	--	--	--
NE/2015/02	KTS2 4138/ 2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	Successful prosecution to the subcontractor on 27 June 2018	1	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--

**APPENDIX P
WASTE GENERATION IN THE
REPORTING MONTH**



Monthly Summary Waste Flow Table for 2019

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
January	131.655	73.591	0.000	103.085	28.570	0.000	0.000	0.421	0.000	2.400	0.140
February	105.752	52.675	0.000	55.650	50.103	0.000	0.000	0.333	0.000	0.000	0.088
March	147.872	85.219	0.000	85.219	62.653	0.000	0.000	0.000	0.000	0.000	0.102
April											
May											
June											
Sub-total	385.279	211.485	0.000	243.954	141.325	0.000	0.000	0.754	0.000	2.400	0.329
July											
August											
September											
October											
November											
December											
Total	385.279	211.485	0.000	243.954	141.325	0.000	0.000	0.754	0.000	2.400	0.329

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

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01



- 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	5.41318	0.00000	1.09752	0.00000	2.94501	1.37065	140.97000	0.00000	0.00000	4.11000	0.07932
Feb	1.93395	0.00000	0.73212	0.00000	1.09407	0.10776	0.00000	0.00000	0.00000	0.72000	0.01610
Mar	3.84851	0.00000	0.00000	0.00000	3.29905	0.54946	18.33000	0.00000	0.00000	0.00000	0.04866
Apr											
May											
June											
SUB-TOTAL	11.19563	0.00000	1.82964	0.00000	7.33813	2.02786	159.30000	0.00000	0.00000	4.83000	0.14408
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	11.19563	0.00000	1.82964	0.00000	7.33813	2.02786	159.30000	0.00000	0.00000	4.83000	0.14408

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 (in '000m ³)	Broken Concrete (see Note 1) (in '000m ³)	Reused in the Contract (in '000m ³)	Reused in other Projects (in '000m ³)	Disposed as Public Fill (in '000m ³)	Metals (in '000 Kg)	Paper/ cardboard packaging (in '000 Kg)	Plastics (see Note 2) (in '000 Kg)	Chemical Waste (in '000 Kg)	Others, e.g. general refuse (in '000m ³)
		(in '000 Kg)								
Jan	0.3363	0.0336	0	0	0.3027	0	0	0	0	0.0065
Feb	0.0650	0.0244	0	0	0.0406	0	0	0	0	0.0065
Mar	0.2925	0.2633	0	0	0.0293	0	0	0	0	0.0065
Sub-total	0.6938	0.3212	0	0	0.3726	0	0	0	0	0.0195
Apr	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0
Sept	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0
Total	0.6938	0.3212	0	0	0.3726	0	0	0	0	0.0195

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											
May											
Jun											
Sub-total	0	0	0	0	0	0	0	0	0	0	0.018
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0	0	0	0	0	0	0	0	0	0	0.018

- Notes:
- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (2) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.
 - (3) Each dump truck carries 6m³ of general refuse.
 - (4) The commencement date of the Contract is 9 November 2018. The current reporting period is from 1 March 2019 to 31 March 2019.

Wing Lee (SK) Construction Company Limited
NE/2015/03 - Environmental Management Plan
Appendices - Appendix 13

Rev. No.	Draft
Issue Date	16 Dec 2016

Name of Department : CEDD

Contract No. : NE/2015/03

2019

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 (in '000 m ³)	Hard Rock & Large Broken Concrete (in '000 m ³)	Reused in the Contract (in '000 m ³)	Reused in other Projects (in '000 m ³)	Disposed as Public Fill (in '000 m ³)	Imported Fill (in '000 m ³)	Metals (in '000 kg)	Paper/ cardboard packaging (in '000 kg)	Plastics (see Note 3) (in '000 kg)	Chemicals Waste (in '000 kg)	Others, e.g. general refuse (in '000 m ³)
Accumulated From	1.234385	0				0.03056	0	0			0.038188
Jan											
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec	0.00141	0	0	0	0.00141	0	0	0	0	0	0
Total					0.6056	0.03056					

- Notes: (1) The performance targets 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 materials.
(4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the *works*, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the *works* is equal to or exceeding 50,000 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											
May											
Jun											
Sub-total	0.1200	0.0000	0.0000	0.1200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0038
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.1200	0.0000	0.0000	0.1200	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0038

- 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	Apr-19	May-19	Jun-19
Lam Tin Interchange			
EHC2 U-Trough			
Site Formation - Area 1G1 & 1G2 &5			
Site Formation - Area 2			
Site Formation - Area 3			
Site Formation - Area 4			
Administration Building			
Main Tunnel			
MT Excavation			
MT Lining Works			
TKO Interchange			
Haul Road Construction, Site Formation & Slope Works			
Steel Platform for Bridge Construction			
Cavern Excavation			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019	Feb	Mar	Apr	May	Jun	Jul	
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Feb-19)																		
Preliminaries, Submission, Contractor's Design Submission and Approval																		
General Submission and Acceptance																		
S10240	Prepare/Submit the Weather Protection Scheme	P2-Cal.A	30	20	21-Aug-17 A	11-Mar-19	660	33.33%		-538								
Contractor's Design Submission and Acceptance																		
Foundation Design																		
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44																		
S11260-03	3rd Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	5	01-Jun-18 A	24-Feb-19	-102	64.29%		-255								
S11260-04	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	25-Feb-19	17-Mar-19	-102	0%		0								
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH105)																		
S11270-05	5th Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	5	08-Feb-19 A	24-Feb-19	-51	64.29%		-3								
S11270-06	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	25-Feb-19	17-Mar-19	-51	0%		0								
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH105 - CH305)																		
S11279-09	7th Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	14	12	19-Feb-19 A	03-Mar-19	-62	14.29%		1								
S11279-10	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	05-Mar-19	25-Mar-19	-62	0%		0								
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44																		
S11360	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	25-Feb-19	17-Mar-19	-102	0%		0								
S11380	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	18-Mar-19	07-Apr-19	-102	0%		0								
S11400	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	14	08-Apr-19	21-Apr-19	-102	0%		0								
S11410	Review and comment by Hyd	P2-Cal.A	14	14	22-Apr-19	05-May-19	-102	0%		0								
S11420	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	06-May-19	26-May-19	-102	0%		0								
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH105)																		
S11426	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	5	08-Feb-19 A	01-Mar-19	-51	64.29%		-8								
S11428	Review and comment by Hyd	P2-Cal.A	14	14	02-Mar-19	15-Mar-19	-51	0%		0								
S11430	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	16-Mar-19	05-Apr-19	-51	0%		0								
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH105 - CH305)																		
S11438	Review and comment by Hyd	P2-Cal.A	14	10	20-Oct-18 A	14-Mar-19	-62	28.57%		-132								
S11439-03	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	14	12	19-Feb-19 A	26-Mar-19	-62	14.29%		-22								
S11439-04	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	27-Mar-19	16-Apr-19	-62	0%		0								
E&M Design																		
Statutory Approval for E&M Works																		
S11570-11	FSD Approval for Underpass GBP	P2-Cal.A	0	0	14-Apr-19	14-Apr-19	25	0%		0								
S11570-12	FSD Approval for Plant room GBP	P2-Cal.A	0	0	14-Apr-19	14-Apr-19	25	0%		0								
Detail Design for E&M Works (Tunnel and associated)																		
MVAC Detail Design																		
Plantroom																		
S11577	Formal Submission to Supervisor	P2-Cal.A	8	8	04-May-18 A	27-Feb-19	63	0%		-292								
S11578	Accept detail design by the Supervisor	P2-Cal.A	7	7	28-Feb-19	06-Mar-19	63	0%		0								
Underpass																		
S11630	Formal Submission to Supervisor	P2-Cal.A	8	8	28-Apr-18 A	27-Feb-19	63	0%		-298								
S11640	Accept detail design by the Supervisor	P2-Cal.A	7	7	28-Feb-19	06-Mar-19	63	0%		0								
FS Detail Design																		
Underpass																		

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

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Feb-19)

3 Monthly Rolling Programme
(Data Date : 20-Feb-2019)

Page : 1 of 13

Date	Revision	Checked	Approved
20-Feb-19			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019						
											Feb	Mar	Apr	May	Jun	Jul	
S11649	FSD review GBP	P2-Cal.A	28	7	19-Oct-17 A	26-Feb-19	25	75%		-468							
S11650-01	2nd review by EMSD	P2-Cal.A	15	10	19-Mar-18 A	08-Mar-19	25	33.33%		-340							
S11651	Accept detail design by the Supervisor	P2-Cal.A	7	7	09-Mar-19	15-Mar-19	25	0%		0							
Plantroom		P2-Cal.A	474	24	19-Oct-17 A	15-Mar-19	25			-39							
S11652-10	FSD review GBP	P2-Cal.A	28	7	19-Oct-17 A	26-Feb-19	25	75%		-468							
S11652-21	2nd review by FSD/EMSD	P2-Cal.A	15	10	19-Mar-18 A	08-Mar-19	25	33.33%		-340							
S11652-23	Accept detail design by the Supervisor	P2-Cal.A	7	7	09-Mar-19	15-Mar-19	25	0%		0							
Plumbing and Drainage Detail Design		P2-Cal.A	428	39	01-Apr-17 A	30-Mar-19	-31			-301							
Underpass		P2-Cal.A	428	39	03-May-17 A	30-Mar-19	-31			-269							
S11656	Design Coordination for PD Services	P2-Cal.A	60	7	03-May-17 A	26-Feb-19	-31	88.33%		-605							
S11657	1st review by HyD/EMSD	P2-Cal.A	15	3	09-Apr-18 A	01-Mar-19	-31	80%		-312							
S11657-01	2nd review by HyD/EMSD	P2-Cal.A	15	15	02-Mar-19	16-Mar-19	-31	0%		0							
S11658	Formal Submission to Supervisor	P2-Cal.A	7	7	17-Mar-19	23-Mar-19	-31	0%		0							
S11659	Accept detail design by the Supervisor	P2-Cal.A	7	7	24-Mar-19	30-Mar-19	-31	0%		0							
Plantroom		P2-Cal.A	415	34	01-Apr-17 A	25-Mar-19	-26			-309							
S11660-07	Design Coordination for PD Services	P2-Cal.A	60	7	01-Apr-17 A	26-Feb-19	-26	88.33%		-637							
S11660-09	2nd review by HyD/EMSD	P2-Cal.A	15	13	17-May-18 A	11-Mar-19	-26	13.33%		-284							
S11660-10	Formal Submission to Supervisor	P2-Cal.A	7	7	12-Mar-19	18-Mar-19	-26	0%		0							
S11660-11	Accept detail design by the Supervisor	P2-Cal.A	7	7	19-Mar-19	25-Mar-19	-26	0%		0							
Electrical Detail Design		P2-Cal.A	569	34	07-Mar-17 A	25-Mar-19	-26			-180							
Underpass Lighting		P2-Cal.A	569	34	30-May-17 A	25-Mar-19	-26			-96							
S11660-15	Design Coordination for EL Services	P2-Cal.A	60	15	30-May-17 A	06-Mar-19	-26	75%		-586							
S11660-17	2nd review by EMSD/HyD	P2-Cal.A	15	5	06-Jul-18 A	11-Mar-19	-26	66.67%		-234							
S11660-19	Formal Submission to Supervisor	P2-Cal.A	7	7	12-Mar-19	18-Mar-19	-26	0%		0							
S11660-20	Accept detail design by the Supervisor	P2-Cal.A	7	7	19-Mar-19	25-Mar-19	-26	0%		0							
External Road Lighting		P2-Cal.A	549	34	07-Mar-17 A	25-Mar-19	-26			-200							
S11660-23	Design Coordination for EL Services	P2-Cal.A	60	15	07-Mar-17 A	06-Mar-19	-26	75%		-670							
S11660-25	2nd review by EMSD/CLP/ HyD	P2-Cal.A	15	5	06-Jul-18 A	11-Mar-19	-26	66.67%		-234							
S11660-27	Formal Submission to Supervisor	P2-Cal.A	7	7	12-Mar-19	18-Mar-19	-26	0%		0							
S11660-28	Accept detail design by the Supervisor	P2-Cal.A	7	7	19-Mar-19	25-Mar-19	-26	0%		0							
Plantroom		P2-Cal.A	422	34	07-Mar-17 A	25-Mar-19	-26			-327							
S11664	Design Coordination for EL Services	P2-Cal.A	60	15	07-Mar-17 A	06-Mar-19	-26	75%		-670							
S11666	2nd review by EMSD/HyD	P2-Cal.A	15	5	06-Jul-18 A	11-Mar-19	-26	66.67%		-234							
S11667	Formal Submission to Supervisor	P2-Cal.A	7	7	12-Mar-19	18-Mar-19	-26	0%		0							
S11668	Accept detail design by the Supervisor	P2-Cal.A	7	7	19-Mar-19	25-Mar-19	-26	0%		0							
ELV And SCADA Detail Design		P2-Cal.A	456	29	12-Aug-17 A	20-Mar-19	-21			-130							
Underpass		P2-Cal.A	456	29	12-Aug-17 A	20-Mar-19	-21			-130							
S11669-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	01-Mar-19	-21	83.33%		-507							
S11669-19	2nd review by EMSD	P2-Cal.A	15	5	21-Jun-18 A	06-Mar-19	-21	66.67%		-244							
S11669-29	Formal Submission to Supervisor	P2-Cal.A	7	7	07-Mar-19	13-Mar-19	-21	0%		0							
S11669-30	Accept detail design by the Supervisor	P2-Cal.A	7	7	14-Mar-19	20-Mar-19	-21	0%		0							
Plantroom		P2-Cal.A	417	29	12-Aug-17 A	20-Mar-19	-21			-169							
S11670-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	01-Mar-19	-21	83.33%		-507							

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											Feb	Mar	Apr	May	Jun	Jul				
S11670-19	2nd review by EMSD	P2-Cal.A	15	5	21-Jun-18 A	06-Mar-19	-21	66.67%		-244										
S11670-29	Formal Submission to Supervisor	P2-Cal.A	7	7	07-Mar-19	13-Mar-19	-21	0%		0										
S11670-30	Accept detail design by the Supervisor	P2-Cal.A	7	7	14-Mar-19	20-Mar-19	-21	0%		0										
Design of Architectural Finishes for Internal Walls of U-Trough Structures		P2-Cal.A	220	67	15-Sep-18 A	27-Apr-19	118			-5										
S11675	Prepare and Submit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	11	15-Sep-18 A	02-Mar-19	118	47.62%		-148										
S11680	Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	03-Mar-19	23-Mar-19	118	0%		0										
S11700	Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	14	14	24-Mar-19	06-Apr-19	118	0%		0										
S11720	Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	07-Apr-19	27-Apr-19	118	0%		0										
Irrigation System		P2-Cal.A	251	98	15-Sep-18 A	28-May-19	81			-5										
S11787-01	2nd review by LCSD	P2-Cal.A	21	21	15-Sep-18 A	12-Mar-19	81	0%		-158										
S11788	Prepare & Submission of Form 542	P2-Cal.A	14	14	13-Mar-19	26-Mar-19	81	0%		0										
S11789	Reviewed by WSD	P2-Cal.A	28	28	27-Mar-19	23-Apr-19	81	0%		0										
S11790	Formal Submission to Supervisor	P2-Cal.A	14	14	24-Apr-19	07-May-19	81	0%		0										
S11800	Review and Accept Submission for Waterpoints and associated elements	P2-Cal.A	21	21	08-May-19	28-May-19	81	0%		0										
Contractor Cost Saving Design		P2-Cal.A	273	89	20-Oct-18 A	19-May-19	-96			61										
AIP Submission for CSD3(A) of Reclaimed Section (S200 CH821 - P2 CH305)		P2-Cal.A	225	47	20-Oct-18 A	07-Apr-19	-96			55										
S11973-03	Resubmit AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	19	19-Feb-19 A	10-Mar-19	-96	9.52%		1										
S11973-04	Review and Accept AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	12-Mar-19	01-Apr-19	-90	0%		0										
S11974	Review and Accept AIP Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)	P2-Cal.A	28	28	20-Oct-18 A	07-Apr-19	-96	0%		-142										
DDA Submission for CSD3(A) of Reclaimed Section (S200 CH821 - P2 CH305)		P2-Cal.A	42	42	08-Apr-19	19-May-19	-96	0%		0										
S11975	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	08-Apr-19	28-Apr-19	-96	0%		0										
S11976	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	29-Apr-19	19-May-19	-96	0%		0										
AIP Submission for CSD3(B) of Reclaimed Section (S200 CH821 - P2 CH305)		P2-Cal.A	69	38	08-Feb-19 A	29-Mar-19	-87			19										
S11979-03	Resubmit AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	10	08-Feb-19 A	01-Mar-19	-87	52.38%		-1										
S17988	Review and AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	02-Mar-19	22-Mar-19	-80	0%		0										
S18008	Review and Accept AIP Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)	P2-Cal.A	28	28	02-Mar-19	29-Mar-19	-87	0%		0										
DDA Submission for CSD3(B) of Reclaimed Section (S200 CH821 - P2 CH305)		P2-Cal.A	42	42	08-Apr-19	19-May-19	-96	0%		0										
S18028	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	08-Apr-19	28-Apr-19	-96	0%		0										
S18048	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	29-Apr-19	19-May-19	-96	0%		0										
Major Construction Works Method Statement		P2-Cal.A	165	103	19-Dec-18 A	02-Jun-19	-5			-1										
Removal of Temporary Steel Cofferdam		P2-Cal.A	67	67	20-Feb-19	27-Apr-19	-5			0										
S13810	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	18	18	20-Feb-19	09-Mar-19	-38	0%		0										
S13811	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	21	21	10-Mar-19	30-Mar-19	-38	0%		0										
S13812	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	7	7	31-Mar-19	06-Apr-19	-38	0%		0										
S13813	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	21	21	07-Apr-19	27-Apr-19	-38	0%		0										
S13814	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	18	18	20-Feb-19	09-Mar-19	-38	0%		0										
S13815	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	21	21	10-Mar-19	30-Mar-19	-38	0%		0										
S13816	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	7	7	31-Mar-19	06-Apr-19	-38	0%		0										
S13817	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	21	21	07-Apr-19	27-Apr-19	-38	0%		0										
S13818-1	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	18	18	20-Feb-19	09-Mar-19	-5	0%		0										
S13818-2	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	21	21	10-Mar-19	30-Mar-19	-5	0%		0										
S13818-3	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	7	7	31-Mar-19	06-Apr-19	-5	0%		0										
S13818-4	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	21	21	07-Apr-19	27-Apr-19	-5	0%		0										

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											Feb	Mar	Apr	May	Jun	
Removal of Water Gate																
S13882	Prepare and Submit Method Statement for Removal of Water Gate	P2-Cal.A	18	18	25-Apr-19	12-May-19	-13	0%		0						
S13884	Review and Discuss Method Statement for Removal of Water Gate	P2-Cal.A	21	21	13-May-19	02-Jun-19	-13	0%		0						
ELS of Underpass (P2 CH105-318)																
S14056	Prepare and Submit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	18	10	11-Feb-19 A	01-Mar-19	39	44.44%		-1						
S14057	1st Review and Discuss Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	21	21	02-Mar-19	22-Mar-19	39	0%		0						
S14058	Resubmit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	7	7	23-Mar-19	29-Mar-19	39	0%		0						
S14059	Accept Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	21	21	30-Mar-19	19-Apr-19	39	0%		0						
Construction of U-Troughs structure (P2 CH318-363)																
S14122	Prepare and Submit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	18	18	19-Dec-18 A	09-Mar-19	-254	0%		-63						
S14124	Review and Discuss Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	21	21	10-Mar-19	30-Mar-19	-254	0%		0						
S14126	Resubmit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	14	14	31-Mar-19	13-Apr-19	-254	0%		0						
S14128	Accept Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	21	21	14-Apr-19	04-May-19	-254	0%		0						
Procurement of Major Material																
Civil/Structural																
S14981	Procurement and Delivery of Steel H-Pile	P2-Cal.A	800	153	31-Jan-17 A	22-Jul-19	-279	80.88%		-103						
S14983	Procurement and Delivery of ELS Waling & Struts Members	P2-Cal.A	1015	377	20-Jan-17 A	02-Mar-20	-264	62.86%		-123						
E&M																
S15144	Procurement and Delivery of MVAC Plant	P2-Cal.A	450	450	06-Apr-19	28-Jun-20	63	0%		0						
S15146	Procurement and Delivery of FS Equipment	P2-Cal.A	450	450	15-May-19	06-Aug-20	25	0%		0						
S15148	Procurement and Delivery of P/D Equipment	P2-Cal.A	450	450	30-Apr-19	22-Jul-20	-31	0%		0						
S15150	Procurement and Delivery of EL Equipment (Incl. SCADA and ELV)	P2-Cal.A	450	450	25-Apr-19	17-Jul-20	-26	0%		0						
Subletting Package																
ELS Works (Reclaimed Section)																
S16386	Invitation, Submission and Opening of Tender for Excavation and ELS Works (Reclaimed Section)	P2-Cal.A	14	3	05-Oct-18 A	22-Feb-19	238	78.57%		-127						
S16387	Tender Interview and Recommendation to PM for Excavation and ELS Works (Reclaimed Section)	P2-Cal.A	21	21	23-Feb-19	15-Mar-19	238	0%		0						
S16388	Excavation and ELS Works (Reclaimed Section) Award	P2-Cal.A	0	0		15-Mar-19	238	0%		0						
Structural Works for Retaining Wall (Reclaimed Section)																
S16391	Tender Interview and Recommendation to PM for Structural Works for Retaining Wall	P2-Cal.A	30	20	24-Oct-18 A	11-Mar-19	346	33.33%		-109						
S16392	Structural Works for Retaining Wall Award	P2-Cal.A	0	0		11-Mar-19	346	0%		0						
Structural Works for U-Trough, Underpass and Abutment																
S16440	Tender Interview and Recommendation to PM for Structural Works for U-Trough, Underpass and Abutment	P2-Cal.A	30	20	24-Oct-18 A	11-Mar-19	349	33.33%		-109						
S16460	Structural Works for U-Trough, Underpass and Abutment Award	P2-Cal.A	0	0		11-Mar-19	349	0%		0						
Installation of Bored Pile																
S16800	Prepare Installation of Bored Pile Tender Document for PM Acceptance	P2-Cal.A	7	5	25-Jan-19 A	10-Mar-19	107	28.57%		-38						
S16820	Invitation, Submission and Opening of Tender for Installation of Bored Pile	P2-Cal.A	14	14	11-Mar-19	24-Mar-19	107	0%		0						
S16840	Tender Interview and Recommendation to PM for Installation of Bored Pile	P2-Cal.A	21	21	25-Mar-19	14-Apr-19	107	0%		0						
S16860	Installation of Bored Pile Award	P2-Cal.A	0	0		14-Apr-19	107	0%		0						
Road Works																
S17200	Prepare Road Works Tender Document for PM Acceptance	P2-Cal.A	7	7	20-Feb-19	26-Feb-19	152	0%		0						
S17220	Submission and Opening of Tender for Road Works	P2-Cal.A	14	14	27-Feb-19	12-Mar-19	152	0%		0						
S17240	Tender Interview and Recommendation to PM for Road Works	P2-Cal.A	21	21	13-Mar-19	02-Apr-19	152	0%		0						
S17260	Road Works Award	P2-Cal.A	0	0		02-Apr-19	152	0%		0						

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											Feb	Mar	Apr	May	Jun	Jul
Traffic and Directional Signs																
S17440	Prepare Traffic and Directional Signs Tender Document for PM Acceptance	P2-Cal.A	7	7	10-Mar-19	16-Mar-19	449	0%		0	Prepare Traffic and Directional Signs Tender Document for PM Acceptance					
S17460	Submission and Opening of Tender for Traffic and Directional Signs	P2-Cal.A	14	14	17-Mar-19	30-Mar-19	449	0%		0	Submission and Opening of Tender for Traffic and Directional Signs					
S17480	Tender Interview and Recommendation to PM for Traffic and Directional Signs	P2-Cal.A	21	21	31-Mar-19	20-Apr-19	449	0%		0	Tender Interview and Recommendation to PM for Traffic and Directional Signs					
S17500	Traffic and Directional Signs Award	P2-Cal.A	0	0		20-Apr-19	449	0%		0	Traffic and Directional Signs Award					
Section 2 of the Works (All Works Within Portion II)																
Roadworks																
LC11807	TTA application of road works after removal of treated sediment stockpile & partial removal of concrete blockwall	P2-Cal.C	35	35	28-Feb-19	10-Apr-19	102	0%		0	TTA application of road works after removal of treated sediment stockpile & partial removal of co					
LC11808	TTA Implementation (Site Entrance)	P2-Cal.C	14	14	11-Apr-19	30-Apr-19	102	0%		0	TTA Implementation (Site Entrance)					
LC11810	Drainage works, ducting and water mains	P2-Cal.C	60	60	02-May-19	13-Jul-19	102	0%		0	Drainage works, ducting and water mains					
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																
Bay 1-2																
LC11947	Backfilling Works RW P2-A Back Side (Bay 1 - 2) (Incl. soil test)	P2-Cal.C	35	16	28-Jan-19 A	09-Mar-19	323	54.29%	6	2	Backfilling Works RW P2-A Back Side (Bay 1 - 2) (Incl. soil test)					
Bay 5-15																
LC11972-1	Construction of CCTV High Mast Footing - Base Slab (PMI 090)	P2-Cal.C	10	10	01-Mar-19	12-Mar-19	191	0%		0	Construction of CCTV High Mast Footing - Base Slab (PMI 090)					
LC11972-2	Construction of CCTV High Mast Footing - Column (PMI 090)	P2-Cal.C	10	10	13-Mar-19	23-Mar-19	191	0%		0	Construction of CCTV High Mast Footing - Column (PMI 090)					
LC11988	Backfilling Works RW P2-A Back Side (Bay 5 - 15) (Incl. Soil Test)	P2-Cal.C	35	8	07-Aug-18 A	28-Feb-19	191	77.14%	12	-133	Backfilling Works RW P2-A Back Side (Bay 5 - 15) (Incl. Soil Test)					
LC11989	Excavation and Drainage Works (Bay 1 - 15)	P2-Cal.C	60	60	25-Mar-19	10-Jun-19	191	0%		0	Excavation and Drainage Works (Bay 1 - 15)					
P2 Road																
P2 CH 318 - 363																
ELS P2 CH318-363 & SR2 CH100-110																
LC12951	Overcome obstruction by Pre-bore method at CH318-363 (NCE072, 075, 131, 136 and CE067)	P2-Cal.C	60	6	16-Apr-18 A	26-Feb-19	-227	90%		-199	Overcome obstruction by Pre-bore method at CH318-363 (NCE072, 075, 131, 136 and CE067)					
LC12952	Installation of sheetpile wall at CH318-363	P2-Cal.C	60	10	19-May-18 A	05-Mar-19	-227	83.33%		-177	Installation of sheetpile wall at CH318-363					
LC12953	Installation of Dewatering System and King Posts	P2-Cal.C	20	10	22-Sep-18 A	05-Mar-19	-227	50%		-112	Installation of Dewatering System and King Posts					
LC12956	Excavation to +1.0 ~ +1.3mPD (4600m3)	P2-Cal.C	5	3	25-Jan-19 A	08-Mar-19	-227	40%		-29	Excavation to +1.0 ~ +1.3mPD (4600m3)					
LC12957	Installation of 1st layer strut/waler @ +2.0 ~ +2.3mPD	P2-Cal.C	15	12	02-Feb-19 A	22-Mar-19	-227	20%		-24	Installation of 1st layer strut/waler @ +2.0 ~ +2.3mPD					
LC12958	Excavation to -1.0 ~ -1.6mPD (3810m3)	P2-Cal.C	5	5	23-Mar-19	28-Mar-19	-227	0%		0	Excavation to -1.0 ~ -1.6mPD (3810m3)					
LC12959	Installation of 2nd layer strut/waler @ -0.6 ~ -1.0mPD	P2-Cal.C	15	15	29-Mar-19	16-Apr-19	-227	0%		0	Installation of 2nd layer strut/waler @ -0.6 ~ -1.0mPD					
LC12961	Excavation to -2.9 ~ -4.6mPD (3810m3)	P2-Cal.C	5	5	17-Apr-19	25-Apr-19	-227	0%		0	Excavation to -2.9 ~ -4.6mPD (3810m3)					
LC12962	Installation of 3rd layer strut/waler @ -1.9 ~ -3.6mPD	P2-Cal.C	15	15	26-Apr-19	15-May-19	-227	0%		0	Installation of 3rd layer strut/waler @ -1.9 ~ -3.6mPD					
LC12964	Excavation to -5.5 ~ -6.7mPD (6550m3)	P2-Cal.C	9	9	16-May-19	25-May-19	-227	0%		0	Excavation to -5.5 ~ -6.7mPD (6550m3)					
P2 CH 411- 500																
Structure P2 CH 411 - 500 (U Trough A)																
Wall Stem																
LC15185	Waterproofing of wall stem, backfill & removal of strut/walling at Bay 1 to 3	P2-Cal.C	30	10	17-Dec-18 A	02-Mar-19	256	66.67%		-30	Waterproofing of wall stem, backfill & removal of strut/walling at Bay 1 to 3					
LC15230	Construction of wall stem Final Pour at Bay 1	P2-Cal.C	13	13	04-Mar-19	18-Mar-19	256	0%		0	Construction of wall stem Final Pour at Bay 1					
LC15235	Construction of wall stem Final Pour at Bay 2 & 3	P2-Cal.C	13	8	28-Jan-19 A	28-Feb-19	258	38.46%		-12	Construction of wall stem Final Pour at Bay 2 & 3					
LC15240	Backfilling and Removal of Sheetpile at the edge	P2-Cal.C	30	30	19-Mar-19	26-Apr-19	256	0%		0	Backfilling and Removal of Sheetpile at the edge					
LC15250	Construction of Drainage and Manhole (NCE143)	P2-Cal.C	60	5	06-Apr-18 A	25-Feb-19	299	91.67%		-206	Construction of Drainage and Manhole (NCE143)					
LC15260	Backfilling of Engineered Fill Material (3430m3) inside U-trough	P2-Cal.C	15	5	15-May-18 A	02-Mar-19	299	66.67%		-224	Backfilling of Engineered Fill Material (3430m3) inside U-trough					
LC15270	Installation of Precast Concrete Profile Barrier (192m)	P2-Cal.C	30	30	27-Apr-19	03-Jun-19	256	0%		0	Installation of Precast Concrete Profile Barrier (192m)					

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											Feb	Mar	Apr	May	Jun
SR2		P2-Cal.C	285	88	28-May-18 A	10-Jun-19	251			-22					SR2
Retaining Wall SR2-A & B CH250 - 310		P2-Cal.C	169	88	03-Aug-18 A	10-Jun-19	251			-82					Retaining Wall SR2-A & B
Retaining Wall SR2-B		P2-Cal.C	169	88	03-Aug-18 A	10-Jun-19	251			-82					Retaining Wall SR2-B
LC16593	Excavation, Blinding & W/P of RW SR2-A & B Bay 1 - 3 (RFI-105; MJ & W/P details not finalised)	P2-Cal.C	21	0	03-Aug-18 A	20-Feb-19 A		100%		-142					Excavation, Blinding & W/P of RW SR2-A & B Bay 1 - 3 (RFI-105; MJ & W/P details not finalised)
LC16615	Construction of Base Slab (RW SR2-A & B Bay 3)(RFI-105)	P2-Cal.C	15	8	19-Feb-19 A	28-Feb-19	251	46.67%		6					Construction of Base Slab (RW SR2-A & B Bay 3)(RFI-105)
LC16860	Construction of Drainage and Manhole	P2-Cal.C	40	40	01-Mar-19	17-Apr-19	251	0%	10	0					Construction of Drainage and Manhole
LC16865	Backfilling Works of back side (SR2- A & B - Bay 1)	P2-Cal.C	30	30	01-Mar-19	04-Apr-19	261	0%	10	0					Backfilling Works of back side (SR2- A & B - Bay 1)
LC16880	Installation of Precast Concrete Profile Barrier	P2-Cal.C	40	40	18-Apr-19	10-Jun-19	251	0%	10	0					Installation of Precast Concrete Profile Barrier
SR2 CH170 - 250		P2-Cal.C	266	69	28-May-18 A	17-May-19	270			-22					SR2 CH170 - 250
Structure SR2 CH 170 - 250 (U Trough A)		P2-Cal.C	266	69	28-May-18 A	17-May-19	270			-22					Structure SR2 CH 170 - 250 (U Trough A)
LC17340	Waterproofing of wall stem, backfill & removal of strut/waling at CH170 - 182.5 (NCE107, 110, 116, 119, 127 & 132)	P2-Cal.C	10	5	28-May-18 A	25-Feb-19	270	50%		-214					Waterproofing of wall stem, backfill & removal of strut/waling at CH170 - 182.5 (NCE107, 110, 116, 119, 127 & 132)
LC17395	Construction of wall stem 2nd pour (top level) at CH170 - 182.5	P2-Cal.C	9	9	07-May-19	17-May-19	270	0%		0					Construction of wall stem 2nd pour (top level) at CH170 - 182.5
LC17400	Construction of Drainage and Manhole Cover (NCE143)	P2-Cal.C	40	15	28-Jun-18 A	14-Mar-19	270	62.5%		-173					Construction of Drainage and Manhole Cover (NCE143)
LC17510	Waterproofing, Backfilling and Remove sheetpile	P2-Cal.C	40	40	26-Feb-19	13-Apr-19	294	0%		0					Waterproofing, Backfilling and Remove sheetpile
LC17520	Installation of Precast Concrete Profile Barrier	P2-Cal.C	40	40	15-Mar-19	06-May-19	270	0%		0					Installation of Precast Concrete Profile Barrier
Portion IV & VII		P2-Cal.C	171	48	10-Sep-18 A	17-Apr-19	-29			-8					Portion IV & VII
Construction of DN2100 stormwater at Portion IV & VII		P2-Cal.C	171	48	10-Sep-18 A	17-Apr-19	-29			-8					Construction of DN2100 stormwater at Portion IV & VII
Drainage works		P2-Cal.C	171	48	10-Sep-18 A	17-Apr-19	-29			-8					Drainage works
SMH9103-SMH9104		P2-Cal.C	20	5	20-Dec-18 A	25-Feb-19	-221			-32					SMH9103-SMH9104
LC17690-3	Manhole construction and Pipe Laying (SMH9103 and SMH9104)	P2-Cal.C	20	5	20-Dec-18 A	25-Feb-19	-221	75%		-32					Manhole construction and Pipe Laying (SMH9103 and SMH9104)
SMH9104-SMH9105		P2-Cal.C	16	8	10-Sep-18 A	28-Feb-19	-1			-123					SMH9104-SMH9105
LC17691-3	Manhole construction and Pipe Laying (SMH9105)	P2-Cal.C	16	8	10-Sep-18 A	28-Feb-19	-1	50%		-123					Manhole construction and Pipe Laying (SMH9105)
SMH9105-SMH9106		P2-Cal.C	16	8	05-Nov-18 A	28-Feb-19	-1			-78					SMH9105-SMH9106
LC17692-3	Manhole construction and Pipe Laying (SMH9106)	P2-Cal.C	16	8	05-Nov-18 A	28-Feb-19	-1	50%		-78					Manhole construction and Pipe Laying (SMH9106)
SMH9106-SMH9107		P2-Cal.C	16	10	11-Jan-19 A	02-Mar-19	-3			-25					SMH9106-SMH9107
LC17693-3	Manhole construction and Pipe Laying (SMH9107)	P2-Cal.C	16	10	11-Jan-19 A	02-Mar-19	-3	37.5%		-25					Manhole construction and Pipe Laying (SMH9107)
SMH9107-SMH9108		P2-Cal.C	57	34	02-Jan-19 A	30-Mar-19	-29			-16					SMH9107-SMH9108
LC17694	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9107 to SMH9108)	P2-Cal.C	10	2	02-Jan-19 A	21-Feb-19	-29	80%		-31					Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9107 to SMH9108)
LC17695	Bedding And Inspection	P2-Cal.C	3	3	22-Feb-19	25-Feb-19	-29	0%		0					Bedding And Inspection
LC17695-01	Installation of Precast Manhole (SMH9108)	P2-Cal.C	1	1	26-Feb-19	26-Feb-19	-29	0%		0					Installation of Precast Manhole (SMH9108)
LC17696	Manhole construction and Pipe Laying (SMH9108)	P2-Cal.C	16	16	27-Feb-19	16-Mar-19	-29	0%		0					Manhole construction and Pipe Laying (SMH9108)
LC17698	Inspection & Backfill	P2-Cal.C	14	14	15-Mar-19	30-Mar-19	-29	0%		0					Inspection & Backfill
SMH9108-SMH9109		P2-Cal.C	57	34	04-Jan-19 A	30-Mar-19	-29			-14					SMH9108-SMH9109
LC17699	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9108 to SMH9109)	P2-Cal.C	10	5	04-Jan-19 A	25-Feb-19	-29	50%		-32					Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9108 to SMH9109)
LC17701	Bedding And Inspection	P2-Cal.C	3	1	14-Jan-19 A	26-Feb-19	-29	66.67%		-32					Bedding And Inspection
LC17702	Manhole construction and Pipe Laying (SMH9109)	P2-Cal.C	16	16	27-Feb-19	16-Mar-19	-29	0%		0					Manhole construction and Pipe Laying (SMH9109)
LC17704	Inspection & Backfill	P2-Cal.C	14	14	15-Mar-19	30-Mar-19	-29	0%		0					Inspection & Backfill
SMH9109-SMH9110		P2-Cal.C	137	30	10-Sep-18 A	26-Mar-19	-25			-24					SMH9109-SMH9110
LC17707	Bedding And Inspection	P2-Cal.C	3	2	10-Sep-18 A	21-Feb-19	-25	33.33%		-130					Bedding And Inspection
LC17708	Manhole construction and Pipe Laying (SMH9110)	P2-Cal.C	16	16	22-Feb-19	12-Mar-19	-25	0%		0					Manhole construction and Pipe Laying (SMH9110)
LC17710	Inspection & Backfill	P2-Cal.C	14	14	11-Mar-19	26-Mar-19	-25	0%		0					Inspection & Backfill
SMH9110-Outfall		P2-Cal.C	55	32	17-Jan-19 A	28-Mar-19	-27			-3					SMH9110-Outfall
LC17713	Bedding And Inspection	P2-Cal.C	3	2	17-Jan-19 A	21-Feb-19	-27	33.33%		-25					Bedding And Inspection

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LC17715	Lay Dia. 2100 Drainage for Existing Outfalls along Existing Seawall (SMH9110- Outfall) (63m)	P2-Cal.C	10	10	21-Feb-19	04-Mar-19	-20	0%		0							
LC17716	Reinstatement of Seawall and Backfilling Works	P2-Cal.C	30	30	22-Feb-19	28-Mar-19	-27	0%		0							
Inspection 2100 Drainage Pipe																	
LC17717	Inspection with DSD and Temporary Diversion from SMH9103 to Outfall	P2-Cal.C	14	14	01-Apr-19	17-Apr-19	-29	0%		0							
New Reclaimed Section																	
Marine Works																	
Initial Works																	
MC10050	Installation of Marine Survey Tower	P2-Cal.C	42	5	08-Sep-18 A	28-Feb-19	114	88.1%		-98							
MC10060	Installation of Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	7	2	28-Jun-18 A	21-Feb-19	16	71.43%		-188							
MC10070	Baseline for Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	10	10	03-Jul-18 A	05-Mar-19	16	0%		-192							
MC10080	Installation of Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	7	2	03-May-18 A	25-Feb-19	20	71.43%		-237							
MC10120	Baseline for Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	3	3	26-Feb-19	28-Feb-19	20	0%		0							
MC10156	Installation of Type 2 Settlement Marker (Type RA)	P2-Cal.C	7	7	28-Feb-19	07-Mar-19	11	0%		0							
MC10160	Baseline for Type 2 Settlement Marker (Type RA)	P2-Cal.C	3	3	08-Mar-19	11-Mar-19	11	0%		0							
MC10170	Installation of Type 2 Settlement Marker (Type RB)	P2-Cal.C	7	7	28-Feb-19	07-Mar-19	11	0%		0							
MC10175	Baseline for Type 2 Settlement Marker (Type RB)	P2-Cal.C	3	3	08-Mar-19	11-Mar-19	11	0%		0							
Steel Cofferdam and Water Gate																	
Steel Cofferdam Installation																	
Reinstatement works																	
Type 1																	
Removal of S/P at transition zone																	
MC10304-02	Removal of Underwater S/P	P2-Cal.C	60	60	20-Feb-19	06-May-19	-11	0%		0							
Dredging Work																	
MC10855	Dredge CH480-560 for treatment stage 2 (Bottom) (18000m3); 600m3/day	P2-Cal.C	30	7	29-Nov-18 A	27-Feb-19	-70	76.67%		-42							
Bathymetric and Seismic Survey																	
MC11025	Survey CH480-560 - stage 1	P2-Cal.C	2	2	20-Feb-19	21-Feb-19	-74	0%		0							
MC11035	Survey CH480-560 - stage 2	P2-Cal.C	2	2	28-Feb-19	01-Mar-19	-63	0%		0							
Filling of Recycle G400 Rock at Dredged Trench																	
MC11205	Fill Recycle G400 at CH412-442 (19909m3)	P2-Cal.C	10	3	13-Nov-18 A	22-Feb-19	-81	70%		-72							
MC11225	Fill Recycle G400 at CH442-512 (24332m3) (+O/S 20 to 80)	P2-Cal.C	12	12	23-Feb-19	08-Mar-19	-81	0%		0							
MC11228	Fill Recycle G400 after Band Drain Installation (5850m3)	P2-Cal.C	10	10	29-Mar-19	10-Apr-19	-82	0%		0							
MC11235	Fill Recycle G400 at CH442-512 (6000m3) - Stage 1 (West Side)	P2-Cal.C	6	6	23-Feb-19	01-Mar-19	-81	0%		0							
MC11245	Fill Recycle G400 at CH442-560 (91060m3) - Stage 2 (East Side)	P2-Cal.C	43	43	02-Mar-19	25-Apr-19	-63	0%		0							
Construction of Seawall Foundation (Dredged Area)																	
Laying of Type A Rockfill (Base)																	
MC11275	Type A Rockfill CH250-312 (952m3)	P2-Cal.C	2	1	26-Nov-18 A	20-Feb-19	-82	50%		-67							
MC11285	Type A Rockfill CH312-362 (860m3)	P2-Cal.C	1	1	18-Jan-19 A	21-Feb-19	-82	0%		-26							
MC11295	Type A Rockfill CH362-412 (917m3)	P2-Cal.C	1	1	22-Feb-19	22-Feb-19	-81	0%		0							
MC11305	Type A Rockfill CH412-442 (773m3)	P2-Cal.C	1	1	23-Feb-19	23-Feb-19	-79	0%		0							
MC11315	Type A Rockfill CH442-500 (2222m3)	P2-Cal.C	2	2	09-Mar-19	11-Mar-19	-81	0%		0							
MC11318	Type A Rockfill after Band Drain at West Side (2000m3)	P2-Cal.C	2	2	11-Apr-19	12-Apr-19	-82	0%		0							
Laying of Geotextile Type A (Base)																	
MC11375	Geotextile Type A CH312-362 (952m2)	P2-Cal.C	1	1	12-Feb-19 A	22-Feb-19	-82	0%		-9							

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											Feb	Mar	Apr	May	Jun	Jul
MC11385	Geotextile Type A CH362-412 (952m2)	P2-Cal.C	1	1	23-Feb-19	23-Feb-19	-81	0%	0	0						
MC11395	Geotextile Type A CH412-442 (673m2)	P2-Cal.C	1	1	25-Feb-19	25-Feb-19	-79	0%	0	0						
MC11405	Geotextile Type A CH442-500 (1567m2)	P2-Cal.C	2	2	12-Mar-19	13-Mar-19	-81	0%	0	0						
MC11408	Geotextile Type A after Band Drain at West Side (1400m2)	P2-Cal.C	2	2	13-Apr-19	15-Apr-19	-82	0%	0	0						
Laying of Granular Filter (Base)		P2-Cal.C	47	47	19-Jan-19 A	17-Apr-19	-82			-25						
MC11455	Granular Filter CH262-312 (1217m3)	P2-Cal.C	2	2	19-Jan-19 A	22-Feb-19	-82	0%	0	-25						
MC11465	Granular Filter CH312-362 (852m3)	P2-Cal.C	1	1	23-Feb-19	23-Feb-19	-82	0%	0	0						
MC11475	Granular Filter CH362-412 (893m3)	P2-Cal.C	1	1	25-Feb-19	25-Feb-19	-81	0%	0	0						
MC11485	Granular Filter CH412-442 (743m3)	P2-Cal.C	1	1	26-Feb-19	26-Feb-19	-79	0%	0	0						
MC11495	Granular Filter CH442-500 (2164m3)	P2-Cal.C	2	2	14-Mar-19	15-Mar-19	-81	0%	0	0						
MC11498	Granular Filter after Band Drain at West Side (2000m3)	P2-Cal.C	2	2	16-Apr-19	17-Apr-19	-82	0%	0	0						
Laying Geotextile Type A		P2-Cal.C	87	19	06-Aug-18 A	18-Mar-19	-81			-97						
MC12055	Geotextile Type A (No-Dredged Area) CH312-362 (2606m2)	P2-Cal.C	4	1	06-Aug-18 A	25-Feb-19	-82	75%	0	-162						
MC12065	Geotextile Type A (No-Dredged Area) CH362-412 (2566m2)	P2-Cal.C	4	1	06-Aug-18 A	26-Feb-19	-81	75%	0	-163						
MC12075	Geotextile Type A (No-Dredged Area) CH412-442 (1878m2)	P2-Cal.C	3	3	27-Feb-19	01-Mar-19	-79	0%	0	0						
MC12085	Geotextile Type A (No-Dredged Area) CH442-530 (2540m2)	P2-Cal.C	4	4	14-Mar-19	18-Mar-19	-81	0%	0	0						
Placing Sand Blanket (Non-Dredged Area)		P2-Cal.C	68	22	04-Jan-19 A	21-Mar-19	-81			5						
MC12105	Sand Blanket CH225-275 (1205m3)	P2-Cal.C	3	0	04-Jan-19 A	20-Feb-19 A		100%	0	-34						
MC12115	Sand Blanket CH275-325 (2316m3)	P2-Cal.C	5	2	25-Jan-19 A	26-Feb-19	-82	60%	0	-20						
MC12125	Sand Blanket CH325-375 (2467m3)	P2-Cal.C	5	5	27-Feb-19	04-Mar-19	-82	0%	0	0						
MC12135	Sand Blanket CH375-425 (2465m3)	P2-Cal.C	5	5	05-Mar-19	09-Mar-19	-82	0%	0	0						
MC12145	Sand Blanket CH425-442 (2923m3)	P2-Cal.C	2	2	11-Mar-19	12-Mar-19	-80	0%	0	0						
MC12155	Sand Blanket CH442-530 (2468m3)	P2-Cal.C	5	5	16-Mar-19	21-Mar-19	-81	0%	0	0						
Installation of Band Drain (Non-Dredged Area)		P2-Cal.C	73	31	30-Oct-18 A	28-Mar-19	-82			-50						
MC12163	Band Drain CH38-95 (1131nos) - Land Plant	P2-Cal.C	12	2	21-Jan-19 A	22-Feb-19	-82	83.33%	0	-14						
MC12175	Band Drain CH225-275 (340nos)	P2-Cal.C	3	2	22-Jan-19 A	25-Feb-19	-81	33.33%	0	-24						
MC12185	Band Drain CH275-325 (1133nos)	P2-Cal.C	8	8	18-Feb-19 A	07-Mar-19	-82	0%	0	-8						
MC12195	Band Drain CH325-375 (1016nos)	P2-Cal.C	7	2	30-Oct-18 A	09-Mar-19	-82	71.43%	0	-100						
MC12205	Band Drain CH375-425 (1455nos)	P2-Cal.C	10	4	06-Nov-18 A	14-Mar-19	-82	60%	0	-95						
MC12215	Band Drain CH425-442 (694nos)	P2-Cal.C	5	5	15-Mar-19	20-Mar-19	-82	0%	0	0						
MC12225	Band Drain CH442-530 (1012nos)	P2-Cal.C	7	7	21-Mar-19	28-Mar-19	-82	0%	0	0						
Filling of Reclamation Fill to Seabed Level		P2-Cal.C	53	53	19-Feb-19 A	03-May-19	-82			-6						
MC12365	Reclamation Fill CH225-275 (3760m3)	P2-Cal.C	5	5	26-Feb-19	02-Mar-19	-70	0%	0	0						
MC12375	Reclamation Fill CH275-325 (4829m3)	P2-Cal.C	5	5	08-Mar-19	13-Mar-19	-73	0%	0	0						
MC12385	Reclamation Fill CH325-375 (3454m3)	P2-Cal.C	4	4	14-Mar-19	18-Mar-19	-68	0%	0	0						
MC12395	Reclamation Fill CH375-398 (2152m3)	P2-Cal.C	3	3	19-Mar-19	21-Mar-19	-60	0%	0	0						
MC12405	Reclamation Fill CH398-500 (8036m3)	P2-Cal.C	9	9	18-Apr-19	02-May-19	-82	0%	0	0						
Laying of Geotextile Type A on Top of Reclamation Fill		P2-Cal.C	48	48	19-Feb-19 A	03-May-19	-82			-11						
MC12445	Geotextile Type A CH215-265 (905m2)	P2-Cal.C	1	1	19-Feb-19 A	04-Mar-19	-70	0%	0	-11						
MC12455	Geotextile Type A CH265-315 (1156m2)	P2-Cal.C	1	1	14-Mar-19	14-Mar-19	-73	0%	0	0						
MC12465	Geotextile Type A CH315-365 (1077m2)	P2-Cal.C	1	1	19-Mar-19	19-Mar-19	-68	0%	0	0						
MC12475	Geotextile Type A CH365-388 (518m2)	P2-Cal.C	1	1	22-Mar-19	22-Mar-19	-59	0%	0	0						
MC12485	Geotextile Type A CH388-500 (1946m2)	P2-Cal.C	1	1	03-May-19	03-May-19	-82	0%	0	0						

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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019						
											Feb	Mar	Apr	May	Jun	Jul	
Construction of Eastern Seawall Up to +2.5mPD												Construction of Eastern Seawall Up to +2.5mPD					
Filling of G400 Rock as East Seawall Core (+2.5mPD)												Filling of G400 Rock as East Seawall Core (+2.5mPD)					
MC11525	Fill G400 at CH165-215 (5826m3) for Vectrical Seawall	P2-Cal.C	3	1	18-Jan-19 A	23-Feb-19	-70	66.67%	0	-26	Fill G400 at CH165-215 (5826m3) for Vectrical Seawall						
MC11535	Fill G400 at CH215-265 (10232m3)	P2-Cal.C	6	6	05-Mar-19	11-Mar-19	-70	0%	0	0	Fill G400 at CH215-265 (10232m3)						
MC11545	Fill G400 at CH265-315 (11705m3)	P2-Cal.C	9	9	15-Mar-19	25-Mar-19	-73	0%	0	0	Fill G400 at CH265-315 (11705m3)						
MC11555	Fill G400 at CH315-365 (12252m3)	P2-Cal.C	10	10	26-Mar-19	06-Apr-19	-73	0%	0	0	Fill G400 at CH315-365 (12252m3)						
MC11565	Fill G400 at CH365-388 (6115m3)	P2-Cal.C	4	4	08-Apr-19	11-Apr-19	-71	0%	0	0	Fill G400 at CH365-388 (6115m3)						
MC11575	Fill G400 at CH388-465 (25272m3)	P2-Cal.C	13	13	04-May-19	20-May-19	-82	0%	0	0	Fill G400 at CH388-465 (25272m3)						
Laying of Type A Rockfill as East Seawall Core (+2.5mPD)												Laying of Type A Rockfill as East Seawall Core (+2.5mPD)					
MC11615	Type A Rockfill CH115-165 (2880m3) After Vectrical Seawall Completion	P2-Cal.C	4	2	05-Jan-19 A	21-Feb-19	-59	50%	0	-34	Type A Rockfill CH115-165 (2880m3) After Vectrical Seawall Completion						
MC11625	Type A Rockfill CH165-215 (3059m3) After Vectrical Seawall Completion	P2-Cal.C	4	4	07-Mar-19	11-Mar-19	-70	0%	0	0	Type A Rockfill CH165-215 (3059m3) After Vectrical Seawall Completion						
MC11635	Type A Rockfill CH215-265 (823m3)	P2-Cal.C	1	1	12-Mar-19	12-Mar-19	-62	0%	0	0	Type A Rockfill CH215-265 (823m3)						
MC11645	Type A Rockfill CH265-315 (735m3)	P2-Cal.C	1	1	26-Mar-19	26-Mar-19	-70	0%	0	0	Type A Rockfill CH265-315 (735m3)						
MC11655	Type A Rockfill CH315-365 (735m3)	P2-Cal.C	1	1	08-Apr-19	08-Apr-19	-73	0%	0	0	Type A Rockfill CH315-365 (735m3)						
MC11665	Type A Rockfill CH365-388 (352m3)	P2-Cal.C	1	1	12-Apr-19	12-Apr-19	-71	0%	0	0	Type A Rockfill CH365-388 (352m3)						
Laying of Geotextile Type A as East Seawall Core (+2.5mPD)												Laying of Geotextile Type A as East Seawall Core (+2.5mPD)					
MC11715	Geotextile Type A CH115-165 (1138m2)	P2-Cal.C	1	1	07-Jan-19 A	22-Feb-19	-56	0%	0	-37	Geotextile Type A CH115-165 (1138m2)						
MC11725	Geotextile Type A CH165-215 (1212m2)	P2-Cal.C	1	1	12-Mar-19	12-Mar-19	-70	0%	0	0	Geotextile Type A CH165-215 (1212m2)						
MC11735	Geotextile Type A CH215-265 (1243m2)	P2-Cal.C	1	1	13-Mar-19	13-Mar-19	-62	0%	0	0	Geotextile Type A CH215-265 (1243m2)						
MC11745	Geotextile Type A CH265-315 (1282m2)	P2-Cal.C	1	1	27-Mar-19	27-Mar-19	-70	0%	0	0	Geotextile Type A CH265-315 (1282m2)						
MC11755	Geotextile Type A CH315-365 (1308m2)	P2-Cal.C	1	1	09-Apr-19	09-Apr-19	-73	0%	0	0	Geotextile Type A CH315-365 (1308m2)						
MC11765	Geotextile Type A CH365-388 (633m2)	P2-Cal.C	1	1	13-Apr-19	13-Apr-19	-71	0%	0	0	Geotextile Type A CH365-388 (633m2)						
Laying of Granular Filter as East Seawall Core (+2.5mPD)												Laying of Granular Filter as East Seawall Core (+2.5mPD)					
MC11815	Granular Filter CH115-165 (1061m3)	P2-Cal.C	2	1	10-Jan-19 A	22-Feb-19	-56	50%	0	-33	Granular Filter CH115-165 (1061m3)						
MC11825	Granular Filter CH165-215 (1112m3)	P2-Cal.C	2	2	13-Mar-19	14-Mar-19	-70	0%	0	0	Granular Filter CH165-215 (1112m3)						
MC11835	Granular Filter CH215-265 (877m3)	P2-Cal.C	1	1	15-Mar-19	15-Mar-19	-63	0%	0	0	Granular Filter CH215-265 (877m3)						
MC11845	Granular Filter CH265-315 (904m3)	P2-Cal.C	1	1	28-Mar-19	28-Mar-19	-70	0%	0	0	Granular Filter CH265-315 (904m3)						
MC11855	Granular Filter CH315-365 (923m3)	P2-Cal.C	1	1	10-Apr-19	10-Apr-19	-73	0%	0	0	Granular Filter CH315-365 (923m3)						
MC11865	Granular Filter CH365-388 (420m3)	P2-Cal.C	1	1	15-Apr-19	15-Apr-19	-71	0%	0	0	Granular Filter CH365-388 (420m3)						
Construction of Vertical Seawall												Construction of Vertical Seawall					
Construction of Vertical Seawall (Type 2 & 3)												Construction of Vertical Seawall (Type 2 & 3)					
MC11950	Connection of existing Vertical Seawall - 3 Layer (RFI-151)(PMI-096)	P2-Cal.C	3	1	07-Dec-18 A	20-Feb-19	-80	66.67%	0	-56	Connection of existing Vertical Seawall - 3 Layer (RFI-151)(PMI-096)						
Construction of Vertical Seawall (Type 1 & 4)												Construction of Vertical Seawall (Type 1 & 4)					
MC11955	Installation of guidance rail for leveling stone	P2-Cal.C	2	1	16-Jan-19 A	23-Feb-19	-70	50%	0	-29	Installation of guidance rail for leveling stone						
MC11965	Seawall (Type 1 & 4) Laying of leveling stone Type 1 & 4	P2-Cal.C	5	2	18-Jan-19 A	25-Feb-19	-70	60%	0	-25	Seawall (Type 1 & 4) Laying of leveling stone Type 1 & 4						
MC11975	Seawall (Type 1 & 4) Laying of M9 (65 nos)	P2-Cal.C	7	3	21-Jan-19 A	27-Feb-19	-70	57.14%	0	-23	Seawall (Type 1 & 4) Laying of M9 (65 nos)						
MC11985	Seawall (Type 1 & 4) Laying 1st Layer (124 nos)	P2-Cal.C	12	6	25-Jan-19 A	02-Mar-19	-70	50%	0	-17	Seawall (Type 1 & 4) Laying 1st Layer (124 nos)						
MC11995	Seawall (Type 1 & 4) Laying 2nd Layer (105 nos)	P2-Cal.C	10	5	09-Feb-19 A	06-Mar-19	-70	50%	0	-12	Seawall (Type 1 & 4) Laying 2nd Layer (105 nos)						
Construction of Western Seawall Up to +1.3mPD												Construction of Western Seawall Up to +1.3mPD					
Filling of G400 Rock as West Seawall Core (+1.3mPD)												Filling of G400 Rock as West Seawall Core (+1.3mPD)					
MC12495	Fill G400 CH270-320 (4241m3)	P2-Cal.C	2	2	08-Mar-19	09-Mar-19	-57	0%	0	0	Fill G400 CH270-320 (4241m3)						
MC12505	Fill G400 CH320-370 (4679m3)	P2-Cal.C	2	2	11-Mar-19	12-Mar-19	-52	0%	0	0	Fill G400 CH320-370 (4679m3)						
MC12515	Fill G400 CH370-420 (5159m3)	P2-Cal.C	3	3	15-Mar-19	18-Mar-19	-51	0%	0	0	Fill G400 CH370-420 (5159m3)						

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											Feb	Mar	Apr	May	Jun	Jul	
MC12525	Fill G400 CH420-440 (1449m3)	P2-Cal.C	1	1	03-May-19	03-May-19	-63	0%	0	0						Fill G400 CH420-440 (1449m3)	
Laying of Type A Rockfill as West Seawall Core (+1.3mPD)																	Laying of Type A Rockfill as West Seawall Core (+1.3mPD)
MC12535	Type A Rockfill CH270-320 (511m3)	P2-Cal.C	1	1	11-Mar-19	11-Mar-19	-57	0%	0	0						Type A Rockfill CH270-320 (511m3)	
MC12545	Type A Rockfill CH320-370 (541m3)	P2-Cal.C	1	1	13-Mar-19	13-Mar-19	-52	0%	0	0						Type A Rockfill CH320-370 (541m3)	
MC12555	Type A Rockfill CH370-420 (554m3)	P2-Cal.C	1	1	19-Mar-19	19-Mar-19	-51	0%	0	0						Type A Rockfill CH370-420 (554m3)	
MC12565	Type A Rockfill CH420-440 (160m3)	P2-Cal.C	1	1	04-May-19	04-May-19	-63	0%	0	0						Type A Rockfill CH420-440 (160m3)	
Laying of Geotextile Type A as West Seawall Core (+1.3mPD)																	Laying of Geotextile Type A as West Seawall Core (+1.3mPD)
MC12575	Geotextile Type A CH270-320 (807m2)	P2-Cal.C	1	1	12-Mar-19	12-Mar-19	-57	0%	0	0						Geotextile Type A CH270-320 (807m2)	
MC12585	Geotextile Type A CH320-370 (541m2)	P2-Cal.C	1	1	14-Mar-19	14-Mar-19	-52	0%	0	0						Geotextile Type A CH320-370 (541m2)	
MC12595	Geotextile Type A CH370-420 (805m2)	P2-Cal.C	1	1	20-Mar-19	20-Mar-19	-51	0%	0	0						Geotextile Type A CH370-420 (805m2)	
MC12605	Geotextile Type A CH420-440 (237m2)	P2-Cal.C	1	1	06-May-19	06-May-19	-63	0%	0	0						Geotextile Type A CH420-440 (237m2)	
Laying of Granular Filter as West Seawall Core (+1.3mPD)																	Laying of Granular Filter as West Seawall Core (+1.3mPD)
MC12615	Granular Filter CH270-320 (533m3)	P2-Cal.C	1	1	13-Mar-19	13-Mar-19	-57	0%	0	0						Granular Filter CH270-320 (533m3)	
MC12625	Granular Filter CH320-370 (543m3)	P2-Cal.C	1	1	15-Mar-19	15-Mar-19	-52	0%	0	0						Granular Filter CH320-370 (543m3)	
MC12635	Granular Filter CH370-420 (634m3)	P2-Cal.C	1	1	21-Mar-19	21-Mar-19	-51	0%	0	0						Granular Filter CH370-420 (634m3)	
MC12645	Granular Filter CH420-440 (160m3)	P2-Cal.C	1	1	07-May-19	07-May-19	-63	0%	0	0						Granular Filter CH420-440 (160m3)	
Filling of Reclamation Fill to -2.0mPD																	Filling of Reclamation Fill to -2.0mPD
MC12655-05	Reclamation Fill to -2.0mPD CH80-155 (2603m3) - West Side	P2-Cal.C	5	1	29-Jan-19 A	23-Feb-19	-57	80%	0	-15						Reclamation Fill to -2.0mPD CH80-155 (2603m3) - West Side	
MC12665	Reclamation Fill to -2.0mPD CH80-155 (2603m3)	P2-Cal.C	2	2	25-Feb-19	26-Feb-19	-57	0%	0	0						Reclamation Fill to -2.0mPD CH80-155 (2603m3)	
MC12665-01	Reclamation Fill to -2.0mPD CH155-215 (2760m3) - West Side	P2-Cal.C	5	5	23-Feb-19	28-Feb-19	-58	0%	0	0						Reclamation Fill to -2.0mPD CH155-215 (2760m3) - West Side	
MC12665-02	Reclamation Fill to -2.0mPD CH155-215 (2760m3)	P2-Cal.C	2	2	15-Mar-19	16-Mar-19	-70	0%	0	0						Reclamation Fill to -2.0mPD CH155-215 (2760m3)	
MC12675	Reclamation Fill to -2.0mPD CH215-255 (4528m3)	P2-Cal.C	4	4	18-Mar-19	21-Mar-19	-64	0%	0	0						Reclamation Fill to -2.0mPD CH215-255 (4528m3)	
MC12675-01	Reclamation Fill to -2.0mPD CH255-315 (8839m3)	P2-Cal.C	4	4	29-Mar-19	02-Apr-19	-70	0%	0	0						Reclamation Fill to -2.0mPD CH255-315 (8839m3)	
MC12685	Reclamation Fill to -2.0mPD CH315-355 (6284m3)	P2-Cal.C	4	4	11-Apr-19	15-Apr-19	-73	0%	0	0						Reclamation Fill to -2.0mPD CH315-355 (6284m3)	
MC12685-01	Reclamation Fill to -2.0mPD CH355-405 (7927m3)	P2-Cal.C	4	4	16-Apr-19	23-Apr-19	-71	0%	0	0						Reclamation Fill to -2.0mPD CH355-405 (7927m3)	
Filling of Reclamation Fill to -2.0 to +1.3mPD																	Filling of Reclamation Fill to -2.0 to +1.3mPD
MC12705	Reclamation Fill to +1.3mPD CH260-300 (6115m3)	P2-Cal.C	4	4	03-Apr-19	08-Apr-19	-70	0%	0	0						Reclamation Fill to +1.3mPD CH260-300 (6115m3)	
MC12705-01	Reclamation Fill to +1.3mPD CH300-350 (7807m3)	P2-Cal.C	4	4	16-Apr-19	23-Apr-19	-73	0%	0	0						Reclamation Fill to +1.3mPD CH300-350 (7807m3)	
MC12715	Reclamation Fill to +1.3mPD CH350-400 (7639m3)	P2-Cal.C	4	4	24-Apr-19	27-Apr-19	-71	0%	0	0						Reclamation Fill to +1.3mPD CH350-400 (7639m3)	
Laying Geotextile Type A at West Side																	Laying Geotextile Type A at West Side
MC12735	Geotextile Type A CH260-300 (617m2)	P2-Cal.C	1	1	09-Apr-19	09-Apr-19	-70	0%	0	0						Geotextile Type A CH260-300 (617m2)	
MC12735-01	Geotextile Type A CH300-350 (617m2)	P2-Cal.C	1	1	24-Apr-19	24-Apr-19	-73	0%	0	0						Geotextile Type A CH300-350 (617m2)	
MC12745	Geotextile Type A CH350-400 (650m2)	P2-Cal.C	1	1	29-Apr-19	29-Apr-19	-71	0%	0	0						Geotextile Type A CH350-400 (650m2)	
Construction of Western Seawall Up to +2.5mPD																	Construction of Western Seawall Up to +2.5mPD
Filling of G400 Rock as West Seawall Core (+2.5mPD)																	Filling of G400 Rock as West Seawall Core (+2.5mPD)
MC12765	Fill G400 CH260-300 (402m3)	P2-Cal.C	1	1	10-Apr-19	10-Apr-19	-70	0%	0	0						Fill G400 CH260-300 (402m3)	
MC12765-01	Fill G400 CH300-350 (402m3)	P2-Cal.C	1	1	25-Apr-19	25-Apr-19	-73	0%	0	0						Fill G400 CH300-350 (402m3)	
MC12775	Fill G400 CH350-400 (420m3)	P2-Cal.C	1	1	30-Apr-19	30-Apr-19	-71	0%	0	0						Fill G400 CH350-400 (420m3)	
Laying of Type A Rockfill as West Seawall Core (+2.5mPD)																	Laying of Type A Rockfill as West Seawall Core (+2.5mPD)
MC12795	Type A Rockfill CH260-300 (152m3)	P2-Cal.C	1	1	11-Apr-19	11-Apr-19	-70	0%	0	0						Type A Rockfill CH260-300 (152m3)	
MC12795-01	Type A Rockfill CH300-350 (152m3)	P2-Cal.C	1	1	26-Apr-19	26-Apr-19	-73	0%	0	0						Type A Rockfill CH300-350 (152m3)	
MC12805	Type A Rockfill CH350-400 (80m3)	P2-Cal.C	1	1	02-May-19	02-May-19	-71	0%	0	0						Type A Rockfill CH350-400 (80m3)	
Laying of Geotextile Type A as West Seawall Core (+2.5mPD)																	Laying of Geotextile Type A as West Seawall Core (+2.5mPD)

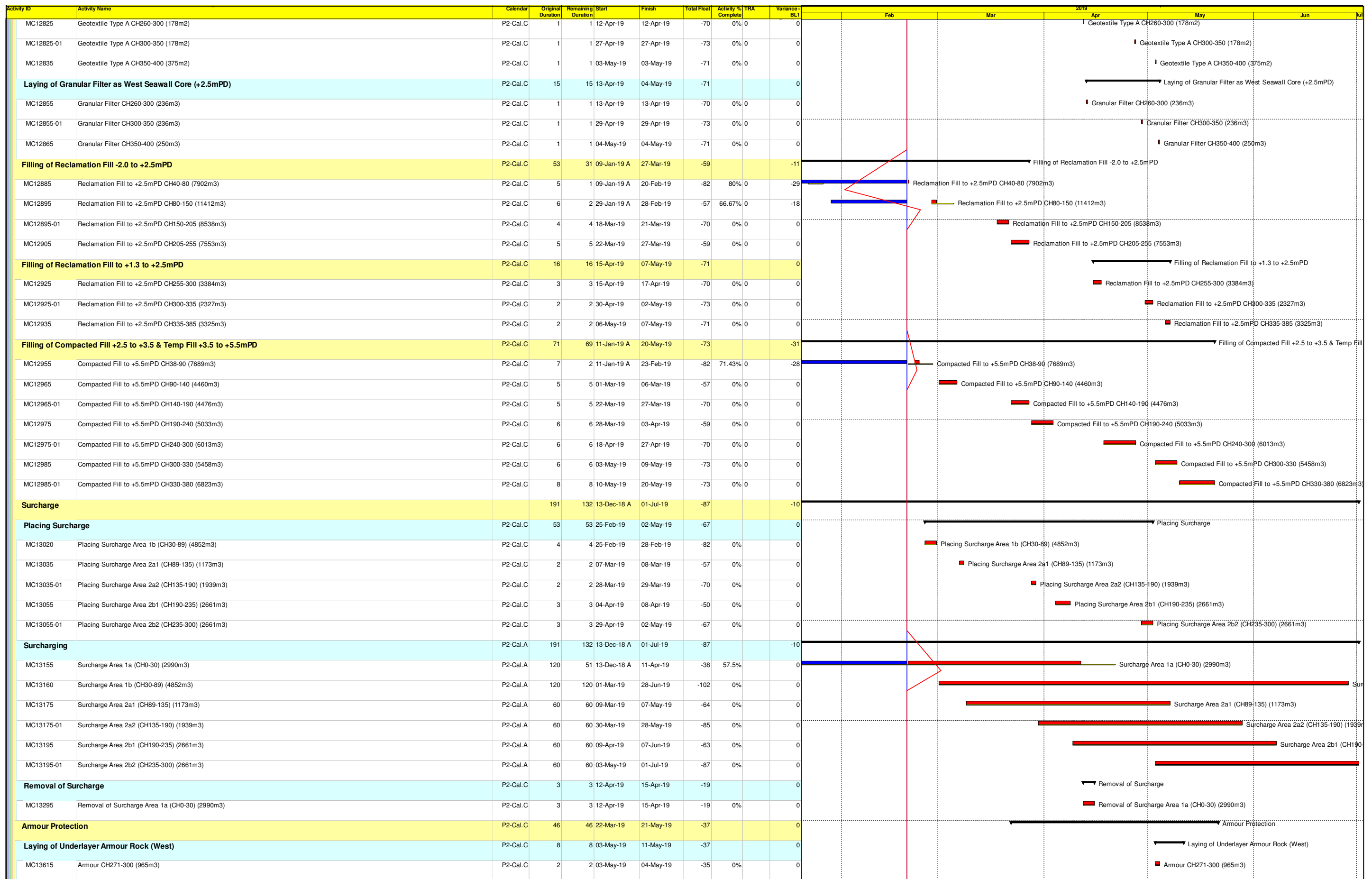
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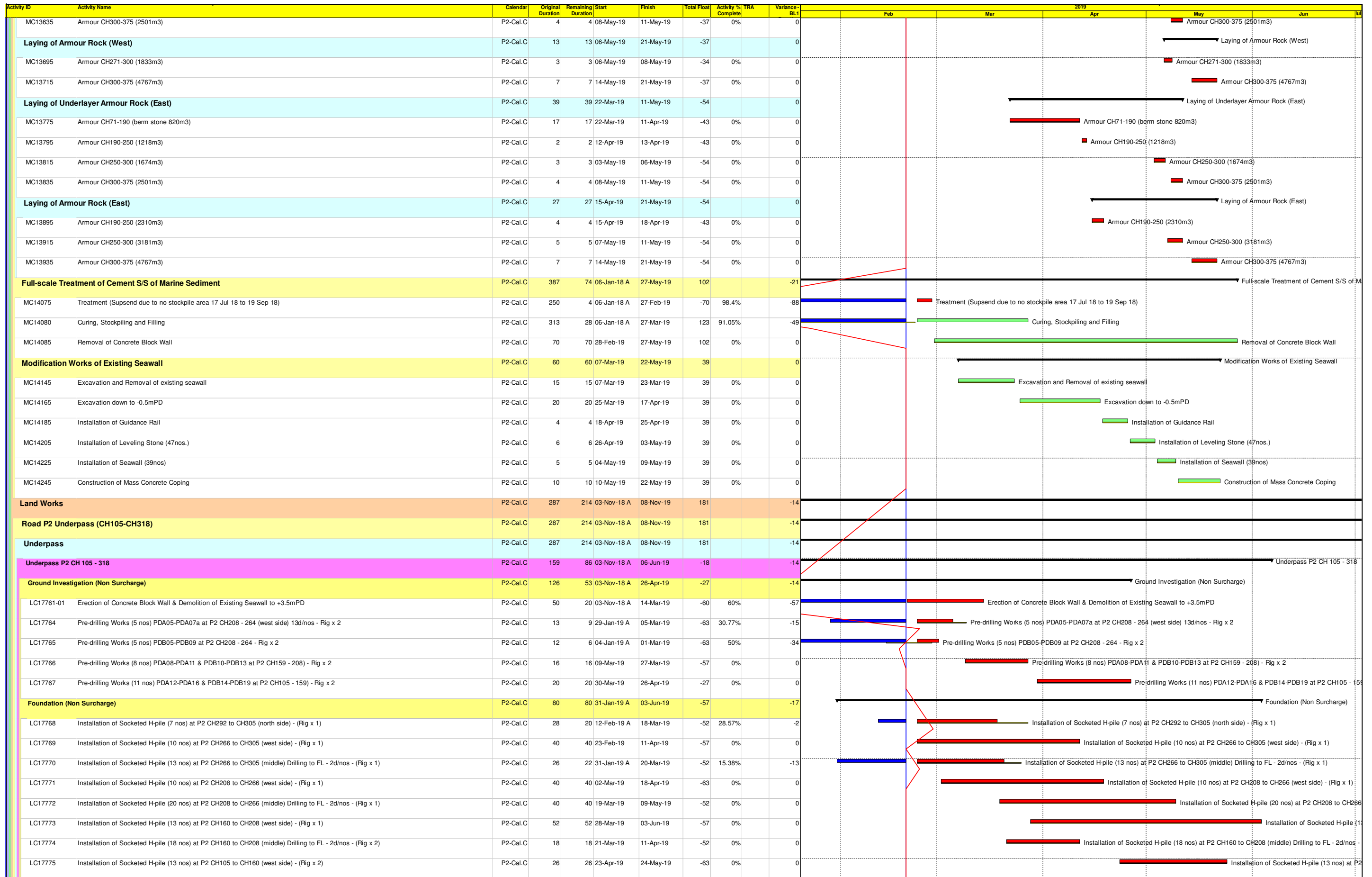
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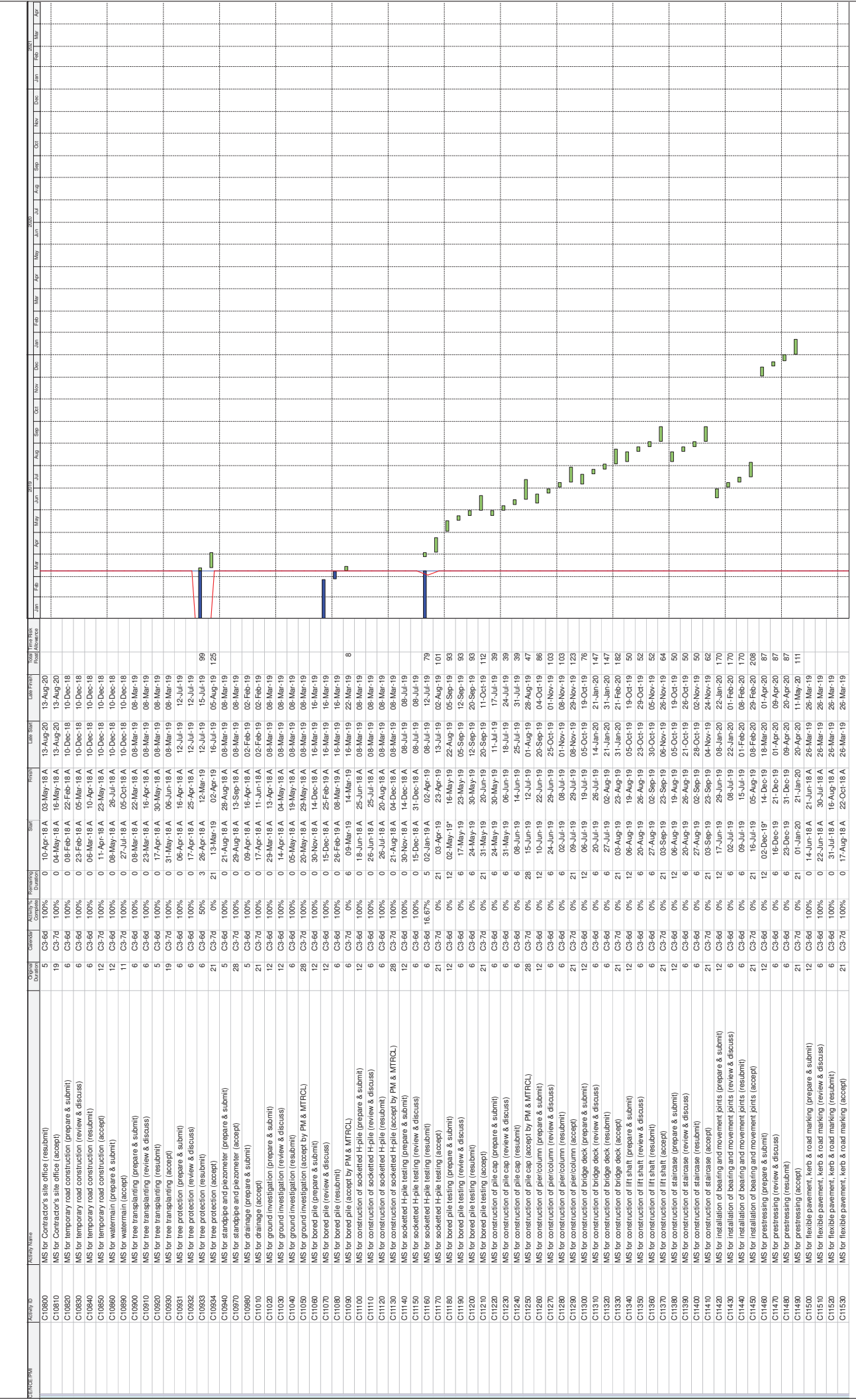
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Activity Name	Activity ID	Start	Finish	Duration	Completion %	Activity Type	Start	Finish	Duration	Completion %	Activity Type	Start	Finish	Duration	Completion %	Activity Type	
Noise Mitigation Plan (review & comment)	C10120	18	C3-6d	100%	0	16-Feb-19 A	26-Mar-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Noise Mitigation Plan (resubmit)	C10121	18	C3-6d	100%	0	27-Mar-19 A	11-Jun-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Noise Mitigation Plan (review & comment)	C10122	12	C3-6d	100%	0	12-Jun-19 A	26-Jun-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Noise Mitigation Plan (resubmit)	C10123	12	C3-6d	100%	0	27-Jun-19 A	11-Sep-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Noise Mitigation Plan (accept)	C10124	21	C3-7d	100%	0	12-Sep-19 A	10-Oct-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Weather Protection Scheme (prepare & submit)	C10130	30	C3-7d	100%	0	30-Nov-17 A	30-Jan-18 A	02-Feb-19	02-Feb-19	02-Feb-19	02-Feb-19						
Weather Protection Scheme (accept)	C10140	21	C3-7d	100%	0	31-Jan-18 A	05-Feb-18 A	02-Feb-19	02-Feb-19	02-Feb-19	02-Feb-19						
Waste Management Plan (prepare & submit)	C10150	18	C3-6d	100%	0	30-Nov-17 A	20-Dec-17 A	10-Dec-18	10-Dec-18	10-Dec-18	10-Dec-18						
Waste Management Plan (review & discuss)	C10160	18	C3-6d	100%	0	21-Dec-17 A	11-Jan-18 A	10-Dec-18	10-Dec-18	10-Dec-18	10-Dec-18						
Waste Management Plan (resubmit)	C10170	21	C3-7d	100%	0	19-Jan-18 A	25-Apr-18 A	10-Dec-18	10-Dec-18	10-Dec-18	10-Dec-18						
Waste Management Plan (accept)	C10180	21	C3-7d	100%	0	30-Nov-17 A	05-Feb-18 A	10-Dec-18	10-Dec-18	10-Dec-18	10-Dec-18						
Site Traffic Safety Management Plan	C10190	42	C3-7d	100%	0	12-Dec-17 A	11-Jan-18 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Construction Impact Assessment (review & discuss)	C10200	12	C3-6d	100%	0	25-Jan-19 A	13-Apr-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Construction Impact Assessment (resubmit - Issue 2 and 3)	C10220	12	C3-6d	100%	0	14-Apr-19 A	29-Jun-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Construction Impact Assessment (resubmit - Issue 4)	C10230	12	C3-6d	100%	0	30-Jun-19 A	29-Aug-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Construction Impact Assessment (resubmit - Issue 5)	C10232	12	C3-6d	100%	0	30-Aug-19 A	16-Oct-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Construction Impact Assessment (resubmit - Issue 6)	C10233	21	C3-7d	100%	0	17-Oct-19 A	07-Nov-19 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Construction Impact Assessment (accept)	C10240	6	C3-6d	100%	0	15-Feb-18 A	02-Mar-18 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Monitoring proposal for Geotechnical Monitoring	C10250	30	C3-6d	100%	0	08-Feb-18 A	14-Feb-18 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Geotechnical instrumentation programme (prepare & submit)	C10260	21	C3-7d	100%	0	15-Feb-18 A	02-Mar-18 A	08-Mar-19	08-Mar-19	08-Mar-19	08-Mar-19						
Geotechnical instrumentation programme (accept)	C10290	18	C3-6d	0%	18	02-Jul-19*	22-Jul-19	13-Jan-20	06-Feb-20	161							
Fall Arrest System (prepare & submit)	C10290	12	C3-6d	0%	12	23-Jul-19	05-Aug-19	06-Feb-20	20-Feb-20	161							
Fall Arrest System (review & discuss)	C10300	12	C3-6d	0%	12	08-Aug-19	19-Aug-19	20-Feb-20	05-Mar-20	161							
Fall Arrest System (resubmit)	C10310	21	C3-7d	0%	21	20-Aug-19	09-Sep-19	05-Mar-20	26-Mar-20	198							
Fall Arrest System (accept)	C10320	12	C3-6d	0%	12	25-Jan-20*	25-Jan-20	19-Jun-20	11-Jul-20	136							
Bridge waterproofing system (review & discuss)	C10330	12	C3-6d	0%	12	25-Jan-20	08-Feb-20	13-Jul-20	25-Jul-20	136							
Bridge waterproofing system (resubmit)	C10340	12	C3-6d	0%	12	10-Feb-20	25-Feb-20	27-Jul-20	08-Aug-20	136							
Bridge waterproofing system (accept)	C10350	21	C3-7d	0%	21	23-Feb-20	14-Mar-20	10-Aug-20	30-Aug-20	169							
Particulars of bridge bearings (prepare & submit)	C10360	18	C3-6d	0%	18	01-Apr-19*	25-Apr-19	30-Oct-19	20-Nov-19	172							
Particulars of bridge bearings (review & discuss)	C10370	12	C3-6d	0%	12	26-Apr-19	10-May-19	20-Nov-19	04-Dec-19	172							
Particulars of bridge bearings (resubmit)	C10380	21	C3-6d	0%	21	11-May-19	25-May-19	18-Dec-19	18-Dec-19	172							
Particulars of bridge bearings (accept)	C10390	21	C3-7d	0%	21	28-May-19	15-Jun-19	18-Dec-19	08-Jan-20	207							
Pillar box arrangement (prepare & submit)	C10400	18	C3-6d	0%	18	06-Jan-20*	29-Jan-20	04-Feb-20	24-Feb-20	22							
Pillar box arrangement (review & discuss)	C10410	12	C3-6d	0%	12	30-Jan-20	12-Feb-20	25-Feb-20	09-Mar-20	22							
Pillar box arrangement (resubmit)	C10420	12	C3-6d	0%	12	13-Feb-20	26-Feb-20	10-Mar-20	23-Mar-20	26							
Pillar box arrangement (accept)	C10430	21	C3-7d	0%	21	27-Feb-20	18-Mar-20	24-Mar-20	13-Apr-20	60							
Temporary Works (TW) Design																	
TW for trench excavation (prepare & submit)	C10440	516	C3-6d	100%	0	08-Mar-19 A	09-Apr-19 A	10-Dec-18	10-Dec-18								
TW for trench excavation (accept)	C10470	19	C3-7d	100%	0	10-Apr-19 A	19-Apr-19 A	10-Dec-18	10-Dec-18								
TW for socketed H-pile test (prepare & submit)	C10480	18	C3-6d	100%	0	30-Nov-19 A	14-Dec-19 A	19-Jun-19	19-Jun-19								
TW for socketed H-pile test (review & discuss)	C10490	12	C3-6d	100%	0	15-Dec-19 A	31-Dec-19 A	19-Jun-19	19-Jun-19								
TW for socketed H-pile test (resubmit)	C10500	6	C3-6d	100%	0	02-Jan-20 A	06-Mar-20 A	19-Jun-19	19-Jun-19								
TW for socketed H-pile test (accept)	C10510	21	C3-7d	9.52%	19	07-Mar-19 A	27-Mar-19 A	19-Jun-19	07-Jul-19	102							
TW for construction of pile cap (prepare & submit)	C10520	12	C3-6d	0%	12	30-Mar-19*	13-Apr-19	22-May-19	04-Jun-19	39							
TW for construction of pile cap (review & discuss)	C10530	6	C3-6d	0%	6	15-Apr-19	24-Apr-19	05-Jun-19	12-Jun-19	39							
TW for construction of pile cap (resubmit)	C10540	21	C3-6d	0%	21	25-Apr-19	02-May-19	13-Jun-19	19-Jun-19	39							
TW for construction of pile cap (accept)	C10550	18	C3-6d	0%	18	03-May-19	23-May-19	20-Jun-19	10-Jul-19	48							
TW for construction of pier/column (prepare & submit)	C10560	18	C3-6d	0%	18	01-Apr-19*	25-Apr-19	19-Jul-19	08-Aug-19	86							
TW for construction of pier/column (review & discuss)	C10570	12	C3-6d	0%	12	26-Apr-19	10-May-19	22-Aug-19	22-Aug-19	86							
TW for construction of pier/column (resubmit)	C10590	6	C3-6d	0%	6	11-May-19	18-May-19	23-Aug-19	23-Aug-19	86							
TW for construction of pier/column (accept)	C10590	21	C3-7d	0%	21	19-May-19	08-Jun-19	30-Aug-19	19-Sep-19	103							
TW for construction of bridge deck (prepare & submit)	C10600	18	C3-6d	0%	18	02-May-19*	23-May-19	03-Aug-19	23-Aug-19	77							
TW for construction of bridge deck (review & discuss)	C10610	12	C3-6d	0%	12	24-May-19	06-Jun-19	24-Aug-19	06-Sep-19	77							
TW for construction of bridge deck (resubmit)	C10620	6	C3-6d	0%	6	08-Jun-19	14-Jun-19	07-Sep-19	13-Sep-19	77							
TW for construction of bridge deck (accept)	C10630	21	C3-7d	0%	21	15-Jun-19	05-Jul-19	14-Sep-19	04-Oct-19	91							
TW for construction of lift shaft (prepare & submit)	C10640	18	C3-6d	0%	18	01-Jun-19*	25-Jun-19	03-Aug-19	23-Aug-19	92							
TW for construction of lift shaft (review & discuss)	C10650	12	C3-6d	0%	12	24-Jun-19	08-Jul-19	24-Aug-19	06-Sep-19	92							
TW for construction of lift shaft (resubmit)	C10660	6	C3-6d	0%	6	08-Jul-19	15-Jul-19	07-Sep-19	13-Sep-19	92							
TW for construction of lift shaft (accept)	C10670	21	C3-7d	0%	21	16-Jul-19	05-Aug-19	14-Sep-19	04-Oct-19	60							
TW for construction of staircase (prepare & submit)	C10680	18	C3-6d	0%	18	01-Jun-19*	22-Jun-19	03-Aug-19	23-Aug-19	52							
TW for construction of staircase (review & discuss)	C10690	12	C3-6d	0%	12	24-Jun-19	08-Jul-19	24-Aug-19	06-Sep-19	52							
TW for construction of staircase (resubmit)	C10700	6	C3-6d	0%	6	09-Jul-19	15-Jul-19	07-Sep-19	13-Sep-19	52							
TW for construction of staircase (accept)	C10710	21	C3-7d	0%	21	16-Jul-19	05-Aug-19	14-Sep-19	04-Oct-19	60							
Method Statements (MS)																	
MS tree felling (prepare & submit)	C10720	12	C3-6d	100%	0	22-Jan-19 A	26-Jan-19 A	04-Mar-19	04-Mar-19								
MS tree felling (accept)	C10730	21	C3-7d	100%	0	27-Jan-19 A	07-Feb-19 A	04-Mar-19	04-Mar-19								
MS for trench excavation (prepare & submit)	C10740	11	C3-6d	100%	0	13-Mar-19 A	09-Apr-19 A	10-Dec-18	10-Dec-18								
MS for trench excavation (accept)	C10750	19	C3-7d	100%	0	10-Apr-19 A	19-Apr-19 A	10-Dec-18	10-Dec-18								
MS for Contractor's site office (prepare & submit)	C10760	6	C3-6d	100%	0	08-Mar-19 A	12-Mar-19 A	13-Aug-20	13-Aug-20								
MS for Contractor's site office (review & discuss)	C10790	6	C3-6d	100%	0	13-Mar-19 A	09-Apr-19 A	13-Aug-20	13-Aug-20								

NE/2017/02 - Tseung Kwan O - Lam Tin Tunnel
Road P2/D4 and Associated Works
Updated Programme (March 2019)

Date	Revision
08-Mar-19	RWP-2019-03 (Data date 8-Mar-19)
	Checked
	Approved

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



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█ Actual Work
█ Remaining Work
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Date	Revision
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	TC
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Activity Name	Activity ID	Start	Finish	Duration	Activity Completion	Activity Start	Activity End	Activity Duration	Activity Type	Activity Category	Activity Sub-Category	Activity Status	Activity Risk	Activity Priority	Activity Level	Activity Impact	Activity Notes
Lift 2A & 2B	C12050-10	19-Mar-20	16-Jul-20	119	0%	19-Mar-20	16-Jul-20	119	0%	0%	0%	0%	0%	0%	0%	0%	Lift shaft scaffolding (2A & 2B)
Lift 2A & 2B	C12050-15	30-Mar-20	22-Feb-20	34	0%	30-Mar-20	22-Feb-20	34	0%	0%	0%	0%	0%	0%	0%	0%	Lift machine & guide rail (2A & 2B)
Lift 2A & 2B	C12050-20	15-Apr-20	22-Feb-20	39	0%	15-Apr-20	22-Feb-20	39	0%	0%	0%	0%	0%	0%	0%	0%	Lift door and landing (2A & 2B)
Lift 2A & 2B	C12050-25	29-Apr-20	05-Mar-20	35	0%	29-Apr-20	05-Mar-20	35	0%	0%	0%	0%	0%	0%	0%	0%	Lift door and landing (2A & 2B)
Lift 2A & 2B	C12050-30	13-May-20	19-Mar-20	31	0%	13-May-20	19-Mar-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Control panel and lift shaft wiring (2A & 2B)
Lift 2A & 2B	C12050-35	20-May-20	08-Apr-20	27	0%	20-May-20	08-Apr-20	27	0%	0%	0%	0%	0%	0%	0%	0%	Modify lift shaft scaffolding (2A & 2B)
Lift 2A & 2B	C12050-40	27-May-20	11-Jun-20	15	0%	27-May-20	11-Jun-20	15	0%	0%	0%	0%	0%	0%	0%	0%	Lift car assembly / permanent power supply to control panel (2A & 2B)
Lift 2A & 2B	C12050-45	12-Jun-20	07-May-20	31	0%	12-Jun-20	07-May-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Connect temporary / permanent power supply to control panel (2A & 2B)
Lift 2A & 2B	C12050-50	15-Jun-20	09-May-20	31	0%	15-Jun-20	09-May-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Remove lift shaft scaffolding (2A & 2B)
Lift 2A & 2B	C12050-55	22-Jun-20	20-Oct-20	121	0%	22-Jun-20	20-Oct-20	121	0%	0%	0%	0%	0%	0%	0%	0%	Slow speed test (2A & 2B)
Lift 2A & 2B	C12050-60	04-Jul-20	27-Oct-20	94	0%	04-Jul-20	27-Oct-20	94	0%	0%	0%	0%	0%	0%	0%	0%	CCTV and intercom system (2A & 2B)
Lift 3A & 3B	C12055-10	06-Jul-20	02-Nov-20	120	0%	06-Jul-20	02-Nov-20	120	0%	0%	0%	0%	0%	0%	0%	0%	High speed & load test (2A & 2B)
Lift 3A & 3B	C12055-15	22-Jun-20	16-May-20	26	0%	22-Jun-20	16-May-20	26	0%	0%	0%	0%	0%	0%	0%	0%	Lift shaft scaffolding (3A & 3B)
Lift 3A & 3B	C12055-20	04-Jul-20	16-May-20	43	0%	04-Jul-20	16-May-20	43	0%	0%	0%	0%	0%	0%	0%	0%	Lift machine & guide rail (3A & 3B)
Lift 3A & 3B	C12055-25	10-Jul-20	28-May-20	50	0%	10-Jul-20	28-May-20	50	0%	0%	0%	0%	0%	0%	0%	0%	Lift door and landing (3A & 3B)
Lift 3A & 3B	C12055-30	20-Jul-20	11-Jun-20	31	0%	20-Jul-20	11-Jun-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Control panel and lift shaft wiring (3A & 3B)
Lift 3A & 3B	C12055-35	31-Jul-20	23-Jun-20	31	0%	31-Jul-20	23-Jun-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Modify lift shaft scaffolding (3A & 3B)
Lift 3A & 3B	C12055-40	07-Aug-20	02-Jul-20	31	0%	07-Aug-20	02-Jul-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Lift car assembly / permanent power supply to control panel (3A & 3B)
Lift 3A & 3B	C12055-45	14-Aug-20	09-Jul-20	31	0%	14-Aug-20	09-Jul-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Remove lift shaft scaffolding (3A & 3B)
Lift 3A & 3B	C12055-50	29-Aug-20	27-Jul-20	31	0%	29-Aug-20	27-Jul-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Connect temporary / permanent power supply to control panel (3A & 3B)
Lift 3A & 3B	C12055-55	01-Sep-20	20-Oct-20	50	0%	01-Sep-20	20-Oct-20	50	0%	0%	0%	0%	0%	0%	0%	0%	Slow speed test (3A & 3B)
Lift 3A & 3B	C12055-60	08-Sep-20	27-Oct-20	50	0%	08-Sep-20	27-Oct-20	50	0%	0%	0%	0%	0%	0%	0%	0%	CCTV and intercom system (3A & 3B)
Lift 3A & 3B	C12055-65	15-Sep-20	02-Nov-20	48	0%	15-Sep-20	02-Nov-20	48	0%	0%	0%	0%	0%	0%	0%	0%	High speed & load test (3A & 3B)
Lift 1A & 1B	C12065-10	08-Sep-20	03-Aug-20	31	0%	08-Sep-20	03-Aug-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Lift shaft scaffolding (1A & 1B)
Lift 1A & 1B	C12065-15	15-Sep-20	05-Oct-20	21	0%	15-Sep-20	05-Oct-20	21	0%	0%	0%	0%	0%	0%	0%	0%	Lift machine & guide rail (1A & 1B)
Lift 1A & 1B	C12065-20	06-Oct-20	28-Aug-20	31	0%	06-Oct-20	28-Aug-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Lift door and landing (1A & 1B)
Lift 1A & 1B	C12065-25	17-Oct-20	09-Sep-20	31	0%	17-Oct-20	09-Sep-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Control panel and lift shaft wiring (1A & 1B)
Lift 1A & 1B	C12065-30	06-Nov-20	15-Sep-20	31	0%	06-Nov-20	15-Sep-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Modify lift shaft scaffolding (1A & 1B)
Lift 1A & 1B	C12065-35	24-Oct-20	22-Sep-20	31	0%	24-Oct-20	22-Sep-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Lift car assembly / permanent power supply to control panel (1A & 1B)
Lift 1A & 1B	C12065-40	02-Nov-20	23-Sep-20	31	0%	02-Nov-20	23-Sep-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Connect temporary / permanent power supply to control panel (1A & 1B)
Lift 1A & 1B	C12065-45	18-Nov-20	12-Oct-20	31	0%	18-Nov-20	12-Oct-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Remove lift shaft scaffolding (1A & 1B)
Lift 1A & 1B	C12065-50	25-Nov-20	14-Oct-20	31	0%	25-Nov-20	14-Oct-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Slow speed test (1A & 1B)
Lift 1A & 1B	C12065-55	02-Dec-20	27-Oct-20	31	0%	02-Dec-20	27-Oct-20	31	0%	0%	0%	0%	0%	0%	0%	0%	CCTV and intercom system (1A & 1B)
Lift 1A & 1B	C12065-60	08-Dec-20	10-Dec-20	31	0%	08-Dec-20	10-Dec-20	31	0%	0%	0%	0%	0%	0%	0%	0%	High speed & load test (1A & 1B)
EMSD	C12080-10	19-Dec-20	13-Nov-20	31	0%	19-Dec-20	13-Nov-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Form LES submission
EMSD	C12080-20	14-Jan-21	16-Nov-20	48	0%	14-Jan-21	16-Nov-20	48	0%	0%	0%	0%	0%	0%	0%	0%	EMSD inspection
EMSD	C12080-30	02-Feb-21	04-Dec-20	48	0%	02-Feb-21	04-Dec-20	48	0%	0%	0%	0%	0%	0%	0%	0%	Use permit issuance
Electrical System for Footbridge	C12090	15-Nov-19	14-Jan-21	677	0%	15-Nov-19	14-Jan-21	677	0%	0%	0%	0%	0%	0%	0%	0%	Design of electrical system for footbridge (prepare & submit)
Electrical System for Footbridge	C12100	15-Nov-19	09-Jan-20	226	74.44%	15-Nov-19	09-Jan-20	226	74.44%	0%	0%	0%	0%	0%	0%	0%	Design of electrical system for footbridge (review & discuss)
Electrical System for Footbridge	C12110	06-Apr-19	10-Dec-19	226	0%	06-Apr-19	10-Dec-19	226	0%	0%	0%	0%	0%	0%	0%	0%	Design of electrical system for footbridge (resubmit)
Electrical System for Footbridge	C12120	05-May-19	04-Feb-20	226	0%	05-May-19	04-Feb-20	226	0%	0%	0%	0%	0%	0%	0%	0%	Design of electrical system for footbridge (accept)
Electrical System for Footbridge	C12130	24-May-19	16-Mar-20	277	0%	24-May-19	16-Mar-20	277	0%	0%	0%	0%	0%	0%	0%	0%	MS for electrical system (prepare & submit)
Electrical System for Footbridge	C12140	05-Jul-19	28-Apr-20	259	0%	05-Jul-19	28-Apr-20	259	0%	0%	0%	0%	0%	0%	0%	0%	MS for electrical system (review & discuss)
Electrical System for Footbridge	C12150	06-Jul-19	21-May-20	259	0%	06-Jul-19	21-May-20	259	0%	0%	0%	0%	0%	0%	0%	0%	MS for electrical system (resubmit)
Electrical System for Footbridge	C12160	27-Jul-19	11-Jun-20	259	0%	27-Jul-19	11-Jun-20	259	0%	0%	0%	0%	0%	0%	0%	0%	Material order and delivery of footbridge electrical system
Electrical System for Footbridge	C12170	10-Aug-19	25-Jun-20	320	0%	10-Aug-19	25-Jun-20	320	0%	0%	0%	0%	0%	0%	0%	0%	MS for electrical system (accept)
Electrical System for Footbridge	C12180	14-Jun-19	17-Mar-20	267	0%	14-Jun-19	17-Mar-20	267	0%	0%	0%	0%	0%	0%	0%	0%	Install electrical system for footbridge (incl. footbridge lighting system)
Electrical System for Footbridge	C12190	10-Sep-20	16-Jul-20	48	0%	10-Sep-20	16-Jul-20	48	0%	0%	0%	0%	0%	0%	0%	0%	Test and commissioning of electrical system for footbridge
Electrical System for Footbridge	C12200	14-Jan-21	17-Oct-20	48	0%	14-Jan-21	17-Oct-20	48	0%	0%	0%	0%	0%	0%	0%	0%	Design of glazing system (prepare & submit)
Electrical System for Footbridge	C12210	09-Mar-19	18-Apr-19	33	0%	09-Mar-19	18-Apr-19	33	0%	0%	0%	0%	0%	0%	0%	0%	Design of glazing system (review & discuss)
Electrical System for Footbridge	C12220	02-Jul-19	30-Aug-19	33	0%	02-Jul-19	30-Aug-19	33	0%	0%	0%	0%	0%	0%	0%	0%	Design of glazing system (resubmit)
Electrical System for Footbridge	C12230	12-Jul-19	30-Aug-19	33	0%	12-Jul-19	30-Aug-19	33	0%	0%	0%	0%	0%	0%	0%	0%	Design of glazing system (accept)
Electrical System for Footbridge	C12240	02-Sep-19	21-Sep-19	39	0%	02-Sep-19	21-Sep-19	39	0%	0%	0%	0%	0%	0%	0%	0%	MS for glazing system (prepare & submit)
Electrical System for Footbridge	C12250	08-Sep-19	20-Nov-19	64	0%	08-Sep-19	20-Nov-19	64	0%	0%	0%	0%	0%	0%	0%	0%	MS for glazing system (review & discuss)
Electrical System for Footbridge	C12260	25-Sep-19	17-Oct-19	64	0%	25-Sep-19	17-Oct-19	64	0%	0%	0%	0%	0%	0%	0%	0%	MS for glazing system (resubmit)
Electrical System for Footbridge	C12270	12-Oct-19	04-Jan-20	64	0%	12-Oct-19	04-Jan-20	64	0%	0%	0%	0%	0%	0%	0%	0%	MS for glazing system (accept)
Electrical System for Footbridge	C12280	01-Nov-19	18-Jan-20	78	0%	01-Nov-19	18-Jan-20	78	0%	0%	0%	0%	0%	0%	0%	0%	Material order and delivery of glazing system
Electrical System for Footbridge	C12290	03-Sep-19	12-Oct-19	31	0%	03-Sep-19	12-Oct-19	31	0%	0%	0%	0%	0%	0%	0%	0%	Install glazing system (Lift 2A & 2B)
Electrical System for Footbridge	C12292	16-Mar-20	08-Feb-20	31	0%	16-Mar-20	08-Feb-20	31	0%	0%	0%	0%	0%	0%	0%	0%	Install glazing system (Lift 3A & 3B)
Electrical System for Footbridge	C12294	12-May-20	02-May-20	14	0%	12-May-20	02-May-20	14	0%	0%	0%	0%	0%	0%	0%	0%	Install glazing system (Lift 1A & 1B)
Electrical System for Footbridge	C12300	12-May-20	01-Aug-20	51	0%	12-May-20	01-Aug-20	51	0%	0%	0%	0%	0%	0%	0%	0%	Install glazing system (canopy)
Road Lighting System	C12310	08-Oct-20	06-Feb-21	194	0%	08-Oct-20	06-Feb-21	194	0%	0%	0%	0%	0%	0%	0%	0%	Design of road lighting system (prepare & submit)
Road Lighting System	C12320	15-Nov-19	22-Aug-20	329	82.86%	15-Nov-19	22-Aug-20	329	82.86%	0%	0%	0%	0%	0%	0%	0%	Design of road lighting system (review & discuss)
Road Lighting System	C12330	12-Mar-19	13-Apr-19	17	0%	12-Mar-19	13-Apr-19	17	0%	0%	0%	0%	0%	0%	0%	0%	Design of road lighting system (resubmit)
Road Lighting System	C12340	15-Apr-19	09-May-19	17	0%	15-Apr-19	09-May-19	17	0%	0%	0%	0%	0%	0%	0%	0%	Design of road lighting system (accept)

NE/2017/02 - Updated Programme (Mar 2019)

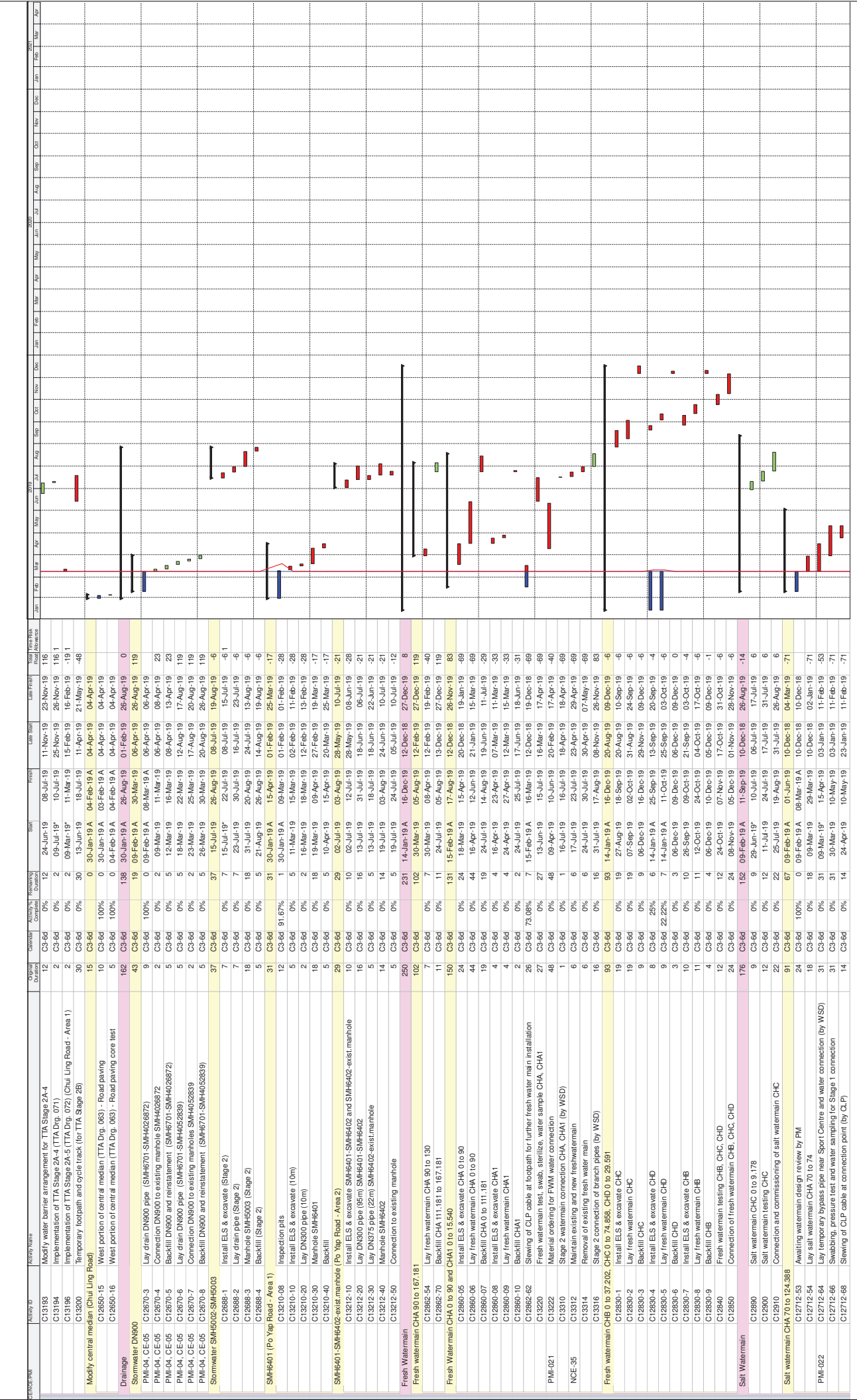
Activity Name	Activity No	Activity Status	Original Duration	Current Duration	Activity Completion	Start	Finish	Latest Finish	Free Float (Min)	Free Float (Max)	2019	2020	2021	2022
Design of road lighting system (accept by PM & HYD)	C12340	C3-7d	0%	21	0%	18-May-19	07-Jun-19	27-Jun-19	24-Jun-19	48				
MS for road lighting system (prepare & submit)	C12350	C3-6d	0%	18	0%	08-Jun-19	28-Jun-19	05-Aug-19	24-Aug-19	20				
MS for road lighting system (review & discuss)	C12360	C3-6d	0%	18	0%	29-Jun-19	29-Jul-19	26-Aug-19	16-Sep-19	48				
MS for road lighting system (resubmit)	C12370	C3-6d	0%	12	0%	22-Jul-19	03-Aug-19	17-Sep-19	30-Sep-19	48				
Material order and delivery of road lighting system	C12380	C3-7d	0%	21	0%	04-Aug-19	24-Aug-19	22-Oct-19	22-Oct-19	59				
Install road lighting system	C12390	C3-6d	0%	96	0%	08-Jun-19	30-Sep-19	28-Jun-19	22-Oct-19	17				
Testing and commissioning of road lighting system	C12400	C3-6d	0%	128	0%	17-Jan-20	24-Jun-20	23-Oct-19	26-Mar-20	-71				
Stage 0 Works														
Preliminary Works														
Application of XP	C12420	C3-6d	100%	0	0%	01-Dec-17A	07-Jul-18A	10-Dec-18	13-Aug-20					
Utilities detection (Road P2 south of interchange)	C12430	C3-6d	100%	0	0%	01-Dec-17A	05-Mar-18A	10-Dec-18	10-Dec-18					
Initial site survey	C12440	C3-6d	100%	0	0%	13-Jun-19A	19-Jan-19A	08-Mar-19	08-Mar-19					
Pre-construction condition survey and manhole survey	C12450	C3-6d	100%	0	0%	11-Dec-17A	30-Dec-17A	10-Dec-18	10-Dec-18					
Contractor's site office	C12460	C3-6d	100%	0	0%	08-Mar-19A	23-May-19A	10-Dec-18	10-Dec-18					
Stage 1 Works														
TTA Stage 1A														
Design and acceptance of TTA Drg. 001A / 007, 002A / 008, and 006A	C12470	C3-6d	100%	0	0%	20-Dec-17A	28-Apr-18A	10-Dec-18	08-Mar-19					
Implementation of TTA Stage 1A (trial pits) (TTA Drg. 006A)	C12480	C3-6d	100%	0	0%	20-Dec-17A	20-Feb-18A	10-Dec-18	10-Dec-18					
Implementation of TTA Stage 1A (roundabout) (part of TTA Drg. 001A / 007)	C12490	C3-6d	100%	0	0%	08-Mar-18A	09-Mar-18A	10-Dec-18	10-Dec-18					
Utilities detection (Po Shun Road north of interchange)	C12500	C3-6d	100%	0	0%	19-Mar-18A	19-Mar-18A	10-Dec-18	10-Dec-18					
Modification of road layout at roundabout	C12510	C3-6d	100%	0	0%	13-Jan-18A	18-Jan-18A	10-Dec-18	10-Dec-18					
Tree felling (Road P2 south of interchange, TGC01 & TGC02)	C12520	C3-6d	100%	0	0%	11-Apr-18A	18-Apr-18A	10-Dec-18	10-Dec-18					
Utilities detection (Chui Ling Road south - existing cycle track)	C12570	C3-6d	100%	0	0%	08-Feb-18A	28-Apr-18A	08-Mar-19	08-Mar-19					
TTA Stage 1B-1, 1B-2, 1B-3 & 1B-4														
Temporary footpath & cycle track at south of Chui Ling Road / Po Yap Road (for implementation of TTA Stage 1B-1 (part of TTA Drg. 002A / 009))	C12520	C3-6d	100%	11	0%	23-Apr-18A	04-Dec-18A	10-Dec-18	10-Dec-21					
Implementation of TTA Stage 1B-2 (TTA Drg. 002A / 009, 030A & 031A)	C12550	C3-6d	100%	0	0%	14-May-18A	25-Jun-18A	10-Dec-18	10-Dec-18					
Implementation of TTA Stage 1B-3 (TTA Drg. 009A, 027B, 030A & 031A)	C12561	C3-6d	100%	0	0%	04-May-18A	04-May-18A	10-Dec-18	10-Dec-18					
Preparation work & arrange RMO for TTA Stage 1C	C12562	C3-6d	100%	0	0%	31-Jul-18A	19-Oct-18A	09-Apr-19	09-Apr-19					
Modify north-east island at roundabout (affected by supply of aggregate)	C12600	C3-6d	100%	32	0%	09-Nov-18A	27-Nov-18A	04-Mar-19	04-Mar-19					
Central median (Po Shun Road) - Demolish existing divider & excavation	C12605-1	C3-6d	100%	0	0%	20-Oct-18A	30-Nov-18A	09-Apr-19	09-Apr-19					
Central median (Po Shun Road) - Formation	C12605-2	C3-6d	100%	0	0%	23-Nov-18A	23-Nov-18A	09-Apr-19	09-Apr-19					
Central median (Po Shun Road) - Sub-base	C12605-3	C3-6d	100%	0	0%	24-Nov-18A	24-Nov-18A	09-Apr-19	09-Apr-19					
Central median (Po Shun Road) - Sub-base SRT	C12605-4	C3-6d	100%	0	0%	25-Nov-18A	30-Nov-18A	09-Apr-19	09-Apr-19					
Roundabout - Demolish existing island & excavation	C12606-1	C3-6d	100%	0	0%	09-Nov-18A	15-Nov-18A	09-Apr-19	09-Apr-19					
Modify central median (Po Yap Road)	C12600-2	C3-6d	100%	0	0%	04-Jun-18A	17-Nov-18A	09-Apr-19	09-Apr-19					
Modify central median (Po Yap Road)	C12600-3	C3-6d	100%	0	0%	04-Jun-18A	27-Jul-18A	09-Apr-19	09-Apr-19					
Modify central median (Chui Ling Road)	C12600-4	C3-6d	100%	0	0%	28-Jul-18A	03-Aug-18A	09-Apr-19	09-Apr-19					
Modify east portion of central median (Chui Ling Road) (TTA Drg. 029B) - Excav	C12650-1	C3-6d	100%	137	0%	06-Jun-18A	22-Nov-18A	09-Apr-19	09-Apr-19					
Preparation work for TTA Stage 2.2	C12650-1.1	C3-6d	100%	2	0%	06-Jun-18A	16-Jul-18A	04-Mar-19	04-Mar-19					
WSD emergency works Chui Ling Road	C12650-1.2	C3-7d	100%	6	0%	17-Jul-18A	18-Jul-18A	04-Mar-19	04-Mar-19					
Arrange subcontractor for implementation of TTA Stage 2.2	C12650-1.3	C3-6d	100%	18	0%	25-Jul-18A	26-Jul-18A	04-Mar-19	04-Mar-19					
East portion & mid portion of central median (TTA Drg. 030A) - Excavation	C12650-4.1	C3-6d	100%	12	0%	07-Sep-18A	06-Sep-18A	04-Mar-19	04-Mar-19					
Design review of clash between existing CLP cables and gullies by PM	C12650-4.2	C3-7d	100%	12	0%	01-Sep-18A	20-Sep-18A	04-Mar-19	04-Mar-19					
East portion & mid portion of central median (TTA Drg. 029B, 030A, 031A) - Gul	C12650-4.3	C3-6d	100%	12	0%	21-Sep-18A	20-Oct-18A	04-Mar-19	04-Mar-19					
East portion & mid portion of central median (TTA Drg. 029B, 030A, 031A) - For	C12650-5	C3-6d	100%	5	0%	20-Oct-18A	25-Oct-18A	04-Mar-19	04-Mar-19					
East portion & mid portion of central median (TTA Drg. 029B, 030A, 031A) - Su	C12650-6	C3-6d	100%	0	0%	07-Nov-18A	08-Nov-18A	04-Mar-19	04-Mar-19					
East portion & mid portion of central median (TTA Drg. 029B, 030A, 031A) - R	C12650-7	C3-6d	100%	0	0%	09-Nov-18A	16-Nov-18A	04-Mar-19	04-Mar-19					
East portion & mid portion of central median (TTA Drg. 029B, 030A, 031A) - R	C12650-7.1	C3-6d	100%	0	0%	17-Nov-18A	22-Nov-18A	04-Mar-19	04-Mar-19					
Modify mid portion of North central median (TTA Drg. 031A)	C12650-8	C3-6d	100%	16	0%	13-Sep-18A	16-Nov-18A	04-Mar-19	04-Mar-19					
Tree felling and transplanting														
Tree felling (Po Yap Road)	C12580	C3-6d	100%	306	0%	24-Apr-18A	18-Sep-18A	04-Mar-19	10-Dec-21					
Tree transplanting (Po Yap Road) central median	C12590	C3-6d	100%	54	0%	24-Apr-18A	19-Jul-18A	10-Dec-21	10-Dec-21					
Tree transplanting (Po Yap Road) south side	C12610	C3-6d	100%	21	0%	25-Jun-18A	19-Jul-18A	10-Dec-21	10-Dec-21					
Tree transplanting (adjacent TKO Sports Centre) T304, T21005 to T21008	C12611	C3-6d	100%	48	0%	17-Sep-18A	17-Sep-18A	04-Apr-19	04-Apr-19					
Tree transplanting (Chui Ling Road)	C12630	C3-6d	100%	1	0%	01-Jun-18A	02-Jun-18A	08-Mar-19	08-Mar-19					
Tree felling (Chui Ling Road)	C12770	C3-6d	100%	48	0%	17-Sep-18A	17-Sep-18A	08-Mar-19	08-Mar-19					
Tree felling (Po Shun Road central median)	C13540	C3-6d	100%	6	0%	07-May-18A	15-Aug-18A	24-Mar-19	24-Mar-19					
Install groundwater monitoring point GWMP 04	C12640	C3-6d	100%	105	0%	24-Apr-18A	30-Apr-18A	27-Apr-20	27-Apr-20					
Install groundwater monitoring point GWMP 05	C12641	C3-6d	100%	9	0%	22-Aug-18A	04-Dec-18A	08-Mar-19	08-Mar-19					

NE/2017/02 - Tseung Kwan O - Lam Tin Tunnel
Road P2/D4 and Associated Works
Updated Programme (March 2019)

Date: 08-Mar-19
Revision: RWP-2019-03 (Data date 8-Mar-19)
Checked: TC
Approved:

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NE/2017/02 - Updated Programme (Mar 2019)



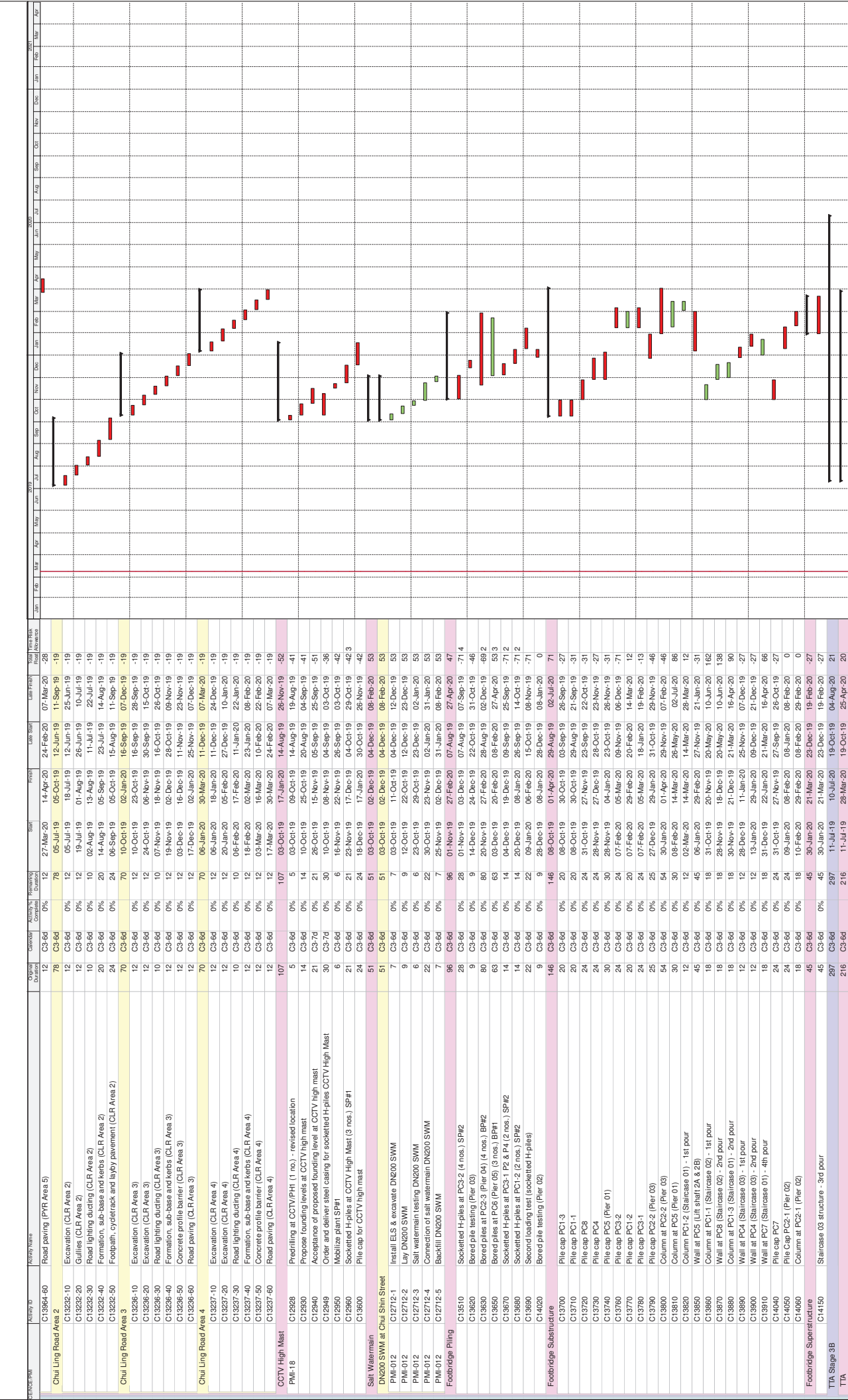
NE/2017/02 - Tseung Kwan O - Lam Tin Tunnel
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Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Checked
Approved



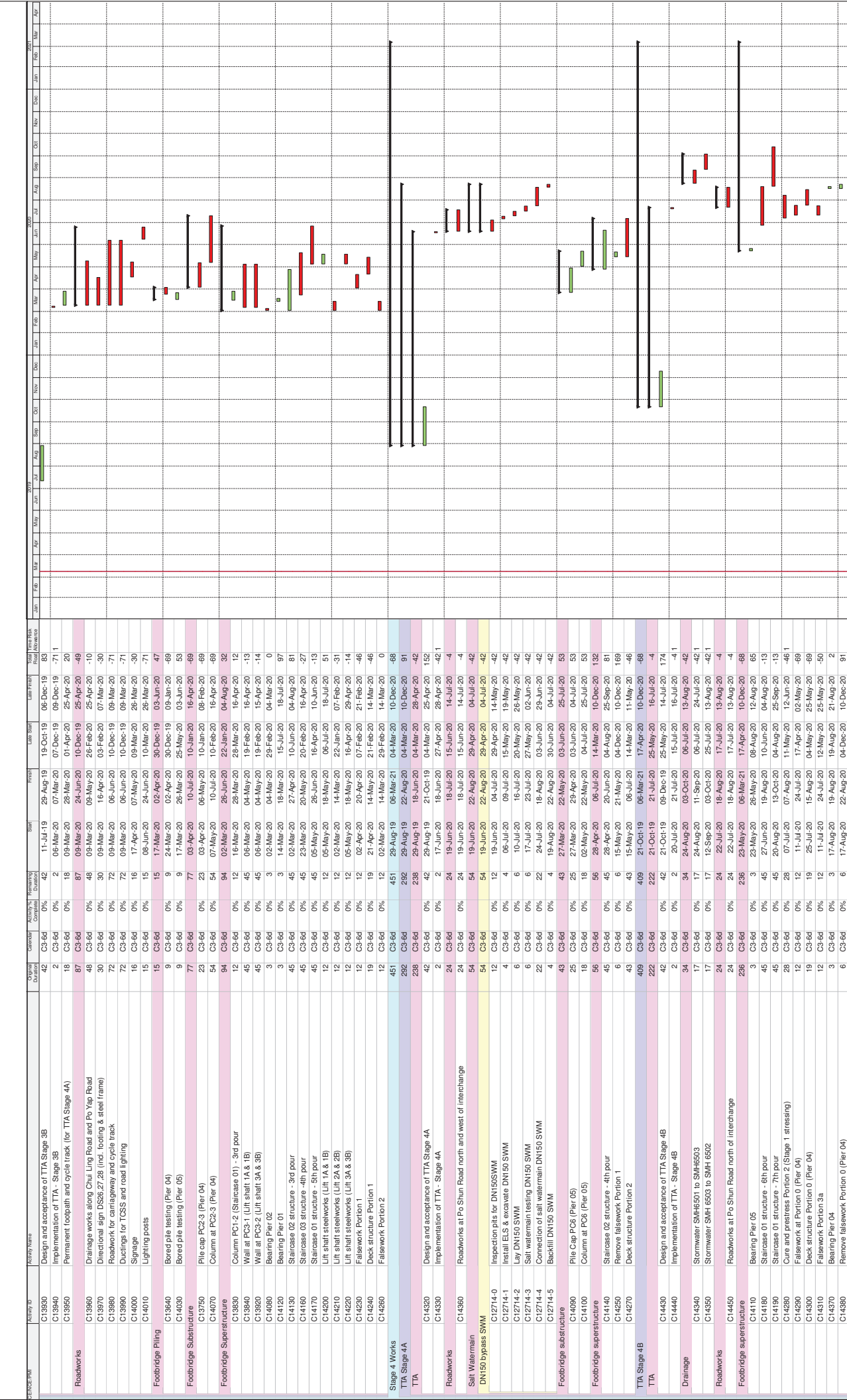
NE/2017/02 - Tseung Kwan O - Lam Tin Tunnel
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Road P2/D4 and Associated Works
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Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
1	Contract Award	0 days	Mon 29 Oct '18	Mon 29 Oct '18	NA						
2	Letter of Acceptance	0 days	Mon 29 Oct '18	Mon 29 Oct '18	NA		6,20,10,9,8				
3	Commencement of the Works	0 days	Fri 9 Nov '18	Fri 9 Nov '18	NA		18,14,11,12,13,16,17,7				
4											
5	Design Stage	301 days?	Mon 29 Oct '18	Sun 25 Aug '19	NA						
6	Prepare and Submit Initial Works Programme	5 days	Mon 29 Oct '18	Fri 2 Nov '18	Fri 2 Nov '18	2					
7	Submit Staffing Proposal	7 days	Fri 9 Nov '18	Thu 15 Nov '18	Thu 15 Nov '18	3					
8	Submit Quality Plan	17 days	Mon 29 Oct '18	Wed 14 Nov '18	Wed 14 Nov '18	2					
9	Submit Draft Safety Plan	12 days	Mon 29 Oct '18	Fri 9 Nov '18	Fri 9 Nov '18	2					
10	Submit Safety Plan	46 days	Mon 29 Oct '18	Thu 13 Dec '18	Thu 13 Dec '18	2					
11	Submit Draft Environmental Management Plan	6 days	Fri 9 Nov '18	Wed 14 Nov '18	Wed 14 Nov '18	3					
12	Submit Environmental Management Plan	53 days	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18	3					
13	Submit Site Management Plan for Trip Ticket System	36 days	Fri 9 Nov '18	Fri 14 Dec '18	Fri 14 Dec '18	3					
14	Submit Sub-contractor Management Plan	17 days	Mon 29 Oct '18	Wed 14 Nov '18	Wed 14 Nov '18	3					
15											
16	Submit Software Quality Plan	57 days	Mon 29 Oct '18	Mon 24 Dec '18	Mon 24 Dec '18	3					
17	Submit Software Configuration Management Plan	60 days	Mon 29 Oct '18	Thu 27 Dec '18	Thu 27 Dec '18	3					
18	Submit Software Verification & Validation Plan	60 days	Mon 29 Oct '18	Thu 27 Dec '18	Thu 27 Dec '18	3					
19											
20	Prepare / Submission of PSP for TKO-LTT TCSS and CBL TCSS	301 days?	Mon 29 Oct '18	Sun 25 Aug '19	NA	2					
21	Submission of PSP - Central System Software	56 days	Fri 9 Nov '18	Thu 3 Jan '19	Thu 3 Jan '19		22				
22	Review and Comment the PSP	54 days	Thu 3 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	21	23				
23	Resubmission of the PSP	31 days	Tue 26 Feb '19	Fri 29 Mar '19	Fri 29 Mar '19	22	24				

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
24	Review and Approval of the PSP	28 days	Fri 29 Mar '19	Fri 26 Apr '19	NA 23	102					
25											
26	Submission of PSP - Central System Hardware	53 days?	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18	27					
27	Review and Comment the PSP	73 days	Mon 31 Dec '18	Thu 14 Mar '19	Thu 14 Mar '19	26	28				
28	Resubmission of the PSP	10 days	Thu 14 Mar '19	Sun 24 Mar '19	NA 27	29					
29	Review and Approval of the PSP	28 days	Sun 24 Mar '19	Sun 21 Apr '19	NA 28	107					
30											
31	Submission of PSP - Traffic Control Devices	53 days?	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18	32					
32	Review and Comment the PSP	87 days	Mon 31 Dec '18	Thu 28 Mar '19	Thu 28 Mar '19	31	33				
33	Resubmission of the PSP	10 days	Thu 28 Mar '19	Sun 7 Apr '19	NA 32	34					
34	Review and Approval of the PSP	28 days	Sun 7 Apr '19	Sun 5 May '19	NA 33	112					
35											
36	Submission of PSP - Communication System	57 days?	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19	37					
37	Review and Comment the PSP	53 days	Fri 4 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	36	38				
38	Resubmission of the PSP	35 days	Tue 26 Feb '19	Tue 2 Apr '19	Tue 2 Apr '19	37	39				
39	Review and Approval of the PSP	28 days	Tue 2 Apr '19	Tue 30 Apr '19	NA 38	117					
40											
41	Submission of PSP - Closed Circuit Television System	49 days?	Fri 9 Nov '18	Thu 27 Dec '18	Thu 27 Dec '18	42					
42	Review and Comment the PSP	62 days	Thu 27 Dec '18	Wed 27 Feb '19	Wed 27 Feb '19	41	43				
43	Resubmission of the PSP	10 days	Wed 27 Feb '19	Sat 9 Mar '19	NA 42	44					
44	Review and Approval of the PSP	28 days	Sat 9 Mar '19	Sat 6 Apr '19	NA 43	122					
45											
46	Submission of PSP - Building PABX System	50 days?	Fri 9 Nov '18	Fri 28 Dec '18	Fri 28 Dec '18	47					
47	Review and Comment the PSP	77 days	Fri 28 Dec '18	Fri 15 Mar '19	Fri 15 Mar '19	46	48				

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
48	Resubmission of the PSP	10 days	Fri 15 Mar '19	Mon 25 Mar '19	NA 47	49					
49	Review and Approval of the PSP	28 days	Mon 25 Mar '19	Mon 22 Apr '19	NA 48	127					
50											
51	Submission of PSP - Emergency Telephone System	57 days?	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19	52					
52	Review and Comment the PSP	87 days	Fri 4 Jan '19	Mon 1 Apr '19	Mon 1 Apr '19	51	53				
53	Resubmission of the PSP	10 days	Mon 1 Apr '19	Thu 11 Apr '19	NA 52	54					
54	Review and Approval of the PSP	28 days	Thu 11 Apr '19	Thu 9 May '19	NA 53	132					
55											
56	Submission of PSP - Public Address System	71 days	Mon 29 Oct '18	Mon 7 Jan '19	Mon 7 Jan '19	57					
57	Review and Comment the PSP	28 days	Mon 7 Jan '19	Mon 4 Feb '19	NA 56	58					
58	Resubmission of the PSP	10 days	Mon 4 Feb '19	Thu 14 Feb '19	NA 57	59					
59	Review and Approval of the PSP	28 days	Thu 14 Feb '19	Thu 14 Mar '19	NA 58	137					
60											
61	Submission of PSP - Radio System	71 days	Mon 29 Oct '18	Mon 7 Jan '19	Mon 7 Jan '19	62					
62	Review and Comment the PSP	50 days	Mon 7 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	61	63				
63	Resubmission of the PSP	10 days	Tue 26 Feb '19	Fri 8 Mar '19	NA 62	64					
64	Review and Approval of the PSP	28 days	Fri 8 Mar '19	Fri 5 Apr '19	NA 63	142					
65											
66	Submission of PSP - Detection System	53 days	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18	67					
67	Review and Comment the PSP	28 days	Mon 31 Dec '18	Mon 28 Jan '19	NA 66	68					
68	Resubmission of the PSP	10 days	Mon 28 Jan '19	Thu 7 Feb '19	NA 67	69					
69	Review and Approval of the PSP	28 days	Thu 7 Feb '19	Thu 7 Mar '19	NA 68	147					
70											
71	Submission of PSP - Manual Fallback System	46 days	Fri 9 Nov '18	Mon 24 Dec '18	Mon 24 Dec '18	72					

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
72	Review and Comment the PSP	63 days	Mon 24 Dec '18	Mon 25 Feb '19	Mon 25 Feb '19	71	73				
73	Resubmission of the PSP	32 days	Mon 25 Feb '19	Fri 29 Mar '19	Fri 29 Mar '19	72	74	█			
74	Review and Approval of the PSP	28 days	Fri 29 Mar '19	Fri 26 Apr '19	NA	73	152		█		
75											
76	Submission of PSP - Operation Facilities	57 days	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		77				
77	Review and Comment the PSP	53 days	Fri 4 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	76	78				
78	Resubmission of the PSP	28 days	Tue 26 Feb '19	Tue 26 Mar '19	Tue 26 Mar '19	77	79	█			
79	Review and Approval of the PSP	28 days	Tue 26 Mar '19	Tue 23 Apr '19	NA	78	157		█		
80											
81	Submission of PSP - Power Distribution System	57 days	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		82				
82	Review and Comment the PSP	55 days	Fri 4 Jan '19	Thu 28 Feb '19	Thu 28 Feb '19	81	83				
83	Resubmission of the PSP	10 days	Thu 28 Feb '19	Sun 10 Mar '19	NA	82	84	█			
84	Review and Approval of the PSP	28 days	Sun 10 Mar '19	Sun 7 Apr '19	NA	83	162		█		
85											
86	Submission of PSP - Enforcement System	68 days	Mon 29 Oct '18	Fri 4 Jan '19	Fri 4 Jan '19		87				
87	Review and Comment the PSP	28 days	Fri 4 Jan '19	Fri 1 Feb '19	NA	86	88				
88	Resubmission of the PSP	10 days	Fri 1 Feb '19	Mon 11 Feb '19	NA	87	89				
89	Review and Approval of the PSP	28 days	Mon 11 Feb '19	Mon 11 Mar '19	NA	88	167	█			
90											
91	Submission of PSP - Government Optical Fibre System	60 days	Fri 9 Nov '18	Mon 7 Jan '19	Mon 7 Jan '19		92				
92	Review and Comment the PSP	50 days	Mon 7 Jan '19	Tue 26 Feb '19	Tue 26 Feb '19	91	93				
93	Resubmission of the PSP	28 days	Tue 26 Feb '19	Tue 26 Mar '19	Tue 26 Mar '19	92	94	█			
94	Review and Approval of the PSP	28 days	Tue 26 Mar '19	Tue 23 Apr '19	NA	93	172		█		
95											

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
96	Submission of PSP - Overview	60 days	Fri 9 Nov '18	Mon 7 Jan '19	Mon 7 Jan '19		97				
97	Review and Comment the PSP	28 days	Mon 7 Jan '19	Mon 4 Feb '19		NA 96	98				
98	Resubmission of the PSP	10 days	Mon 4 Feb '19	Thu 14 Feb '19		NA 97	99				
99	Review and Approval of the PSP	28 days	Thu 14 Feb '19	Thu 14 Mar '19		NA 98					
100											
101	Prepare / Submission of FSP for TKO-LTT TCSS and CBL TCSS	171 days	Thu 7 Mar '19	Sun 25 Aug '19	NA						
102	Submission of FSP - Central System Software	42 days	Fri 26 Apr '19	Fri 7 Jun '19		NA 24	103				
103	Review and Comment the FSP	28 days	Fri 7 Jun '19	Fri 5 Jul '19		NA 102	104				
104	Resubmission of the FSP	10 days	Fri 5 Jul '19	Mon 15 Jul '19		NA 103	105				
105	Review and Approval of the FSP	28 days	Mon 15 Jul '19	Mon 12 Aug '19		NA 104					
106											
107	Submission of FSP- Central System Hardware	42 days	Sun 21 Apr '19	Sun 2 Jun '19		NA 29	108				
108	Review and Comment the FSP	28 days	Sun 2 Jun '19	Sun 30 Jun '19		NA 107	109				
109	Resubmission of the FSP	10 days	Sun 30 Jun '19	Wed 10 Jul '19		NA 108	110				
110	Review and Approval of the FSP	28 days	Wed 10 Jul '19	Wed 7 Aug '19		NA 109					
111											
112	Submission of FSP - Traffic Control Devices	42 days	Sun 5 May '19	Sun 16 Jun '19		NA 34	113				
113	Review and Comment the FSP	28 days	Sun 16 Jun '19	Sun 14 Jul '19		NA 112	114				
114	Resubmission of the FSP	10 days	Sun 14 Jul '19	Wed 24 Jul '19		NA 113	115				
115	Review and Approval of the FSP	28 days	Wed 24 Jul '19	Wed 21 Aug '19		NA 114					
116											
117	Submission of FSP - Communication System	42 days	Tue 30 Apr '19	Tue 11 Jun '19		NA 39	118				
118	Review and Comment the FSP	28 days	Tue 11 Jun '19	Tue 9 Jul '19		NA 117	119				
119	Resubmission of the FSP	10 days	Tue 9 Jul '19	Fri 19 Jul '19		NA 118	120				

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
120	Review and Approval of the FSP	28 days	Fri 19 Jul '19	Fri 16 Aug '19	NA 119						
121											
122	Submission of FSP - Closed Circuit Television System	42 days	Sat 6 Apr '19	Sat 18 May '19	NA 44		123		█		
123	Review and Comment the FSP	28 days	Sat 18 May '19	Sat 15 Jun '19	NA 122					█	
124	Resubmission of the FSP	10 days	Sat 15 Jun '19	Tue 25 Jun '19	NA 123						█
125	Review and Approval of the FSP	28 days	Tue 25 Jun '19	Tue 23 Jul '19	NA 124						█
126											
127	Submission of FSP - Building PABX System	42 days	Mon 22 Apr '19	Mon 3 Jun '19	NA 49				█		
128	Review and Comment the FSP	28 days	Mon 3 Jun '19	Mon 1 Jul '19	NA 127						█
129	Resubmission of the FSP	10 days	Mon 1 Jul '19	Thu 11 Jul '19	NA 128						
130	Review and Approval of the FSP	28 days	Thu 11 Jul '19	Thu 8 Aug '19	NA 129						
131											
132	Submission of FSP - Emergency Telephone System	42 days	Thu 9 May '19	Thu 20 Jun '19	NA 54					█	
133	Review and Comment the FSP	28 days	Thu 20 Jun '19	Thu 18 Jul '19	NA 132						█
134	Resubmission of the FSP	10 days	Thu 18 Jul '19	Sun 28 Jul '19	NA 133						
135	Review and Approval of the FSP	28 days	Sun 28 Jul '19	Sun 25 Aug '19	NA 134						
136											
137	Submission of FSP - Public Address System	42 days	Thu 14 Mar '19	Thu 25 Apr '19	NA 59			█			
138	Review and Comment the FSP	28 days	Thu 25 Apr '19	Thu 23 May '19	NA 137				█		
139	Resubmission of the FSP	10 days	Thu 23 May '19	Sun 2 Jun '19	NA 138					█	
140	Review and Approval of the FSP	28 days	Sun 2 Jun '19	Sun 30 Jun '19	NA 139						█
141											
142	Submission of FSP - Radio System	42 days	Fri 5 Apr '19	Fri 17 May '19	NA 64				█		
143	Review and Comment the FSP	28 days	Fri 17 May '19	Fri 14 Jun '19	NA 142					█	

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
144	Resubmission of the FSP	10 days	Fri 14 Jun '19	Mon 24 Jun '19	NA 143	145					
145	Review and Approval of the FSP	28 days	Mon 24 Jun '19	Mon 22 Jul '19	NA 144						
146											
147	Submission of FSP - Detection System	42 days	Thu 7 Mar '19	Thu 18 Apr '19	NA 69	148					
148	Review and Comment the FSP	28 days	Thu 18 Apr '19	Thu 16 May '19	NA 147	149					
149	Resubmission of the FSP	10 days	Thu 16 May '19	Sun 26 May '19	NA 148	150					
150	Review and Approval of the FSP	28 days	Sun 26 May '19	Sun 23 Jun '19	NA 149						
151											
152	Submission of FSP - Manual Fallback System	42 days	Fri 26 Apr '19	Fri 7 Jun '19	NA 74	153					
153	Review and Comment the FSP	28 days	Fri 7 Jun '19	Fri 5 Jul '19	NA 152	154					
154	Resubmission of the FSP	10 days	Fri 5 Jul '19	Mon 15 Jul '19	NA 153	155					
155	Review and Approval of the FSP	28 days	Mon 15 Jul '19	Mon 12 Aug '19	NA 154						
156											
157	Submission of FSP - Operation Facilities	42 days	Tue 23 Apr '19	Tue 4 Jun '19	NA 79	158					
158	Review and Comment the FSP	28 days	Tue 4 Jun '19	Tue 2 Jul '19	NA 157	159					
159	Resubmission of the FSP	10 days	Tue 2 Jul '19	Fri 12 Jul '19	NA 158	160					
160	Review and Approval of the FSP	28 days	Fri 12 Jul '19	Fri 9 Aug '19	NA 159						
161											
162	Submission of FSP - Power Distribution System	42 days	Sun 7 Apr '19	Sun 19 May '19	NA 84	163					
163	Review and Comment the FSP	28 days	Sun 19 May '19	Sun 16 Jun '19	NA 162	164					
164	Resubmission of the FSP	10 days	Sun 16 Jun '19	Wed 26 Jun '19	NA 163	165					
165	Review and Approval of the FSP	28 days	Wed 26 Jun '19	Wed 24 Jul '19	NA 164						
166											
167	Submission of FSP - Enforcement System	42 days	Mon 11 Mar '19	Mon 22 Apr '19	NA 89	168					

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Mar	Apr	May	Jun
168	Review and Comment the FSP	28 days	Mon 22 Apr '19	Mon 20 May '19	NA	167	169				
169	Resubmission of the FSP	10 days	Mon 20 May '19	Thu 30 May '19	NA	168	170				
170	Review and Approval of the FSP	28 days	Thu 30 May '19	Thu 27 Jun '19	NA	169					
171											
172	Submission of FSP - Government Optical Fibre System	42 days	Tue 23 Apr '19	Tue 4 Jun '19	NA	94	173				
173	Review and Comment the FSP	28 days	Tue 4 Jun '19	Tue 2 Jul '19	NA	172	174				
174	Resubmission of the FSP	10 days	Tue 2 Jul '19	Fri 12 Jul '19	NA	173	175				
175	Review and Approval of the FSP	28 days	Fri 12 Jul '19	Fri 9 Aug '19	NA	174					

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
Milestone		External Milestone		Duration-only		Finish-only		Deadline	
Summary		Inactive Milestone		Manual Summary Rollup		External Tasks			

Subject: 3 Months Look Ahead Programme

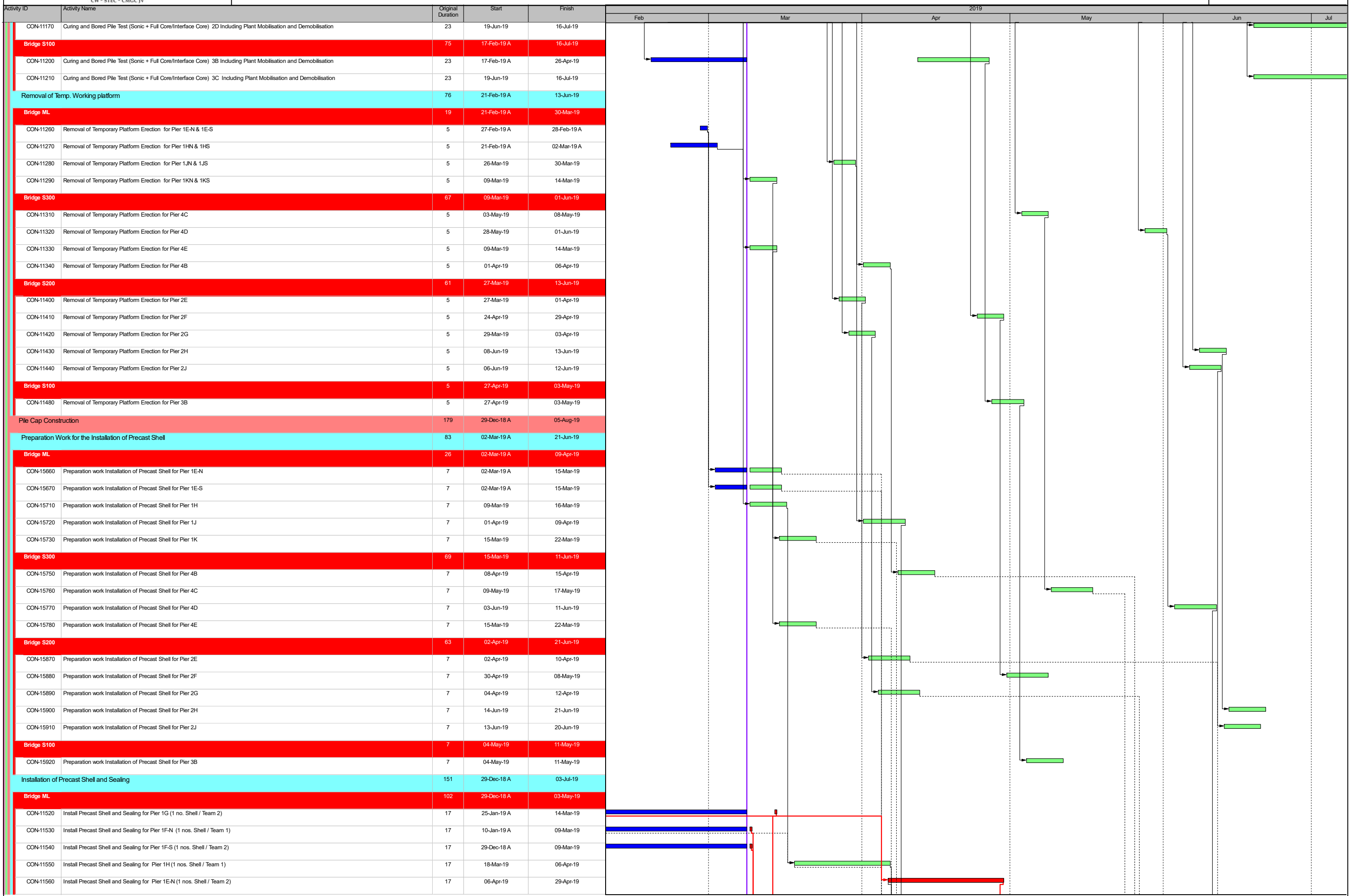
Activities	Mar, 2019	Apr, 2019	May, 2019
Concreting of Staircase 2			
Erect Steel frames and purlins for canopy at Staircase 2			

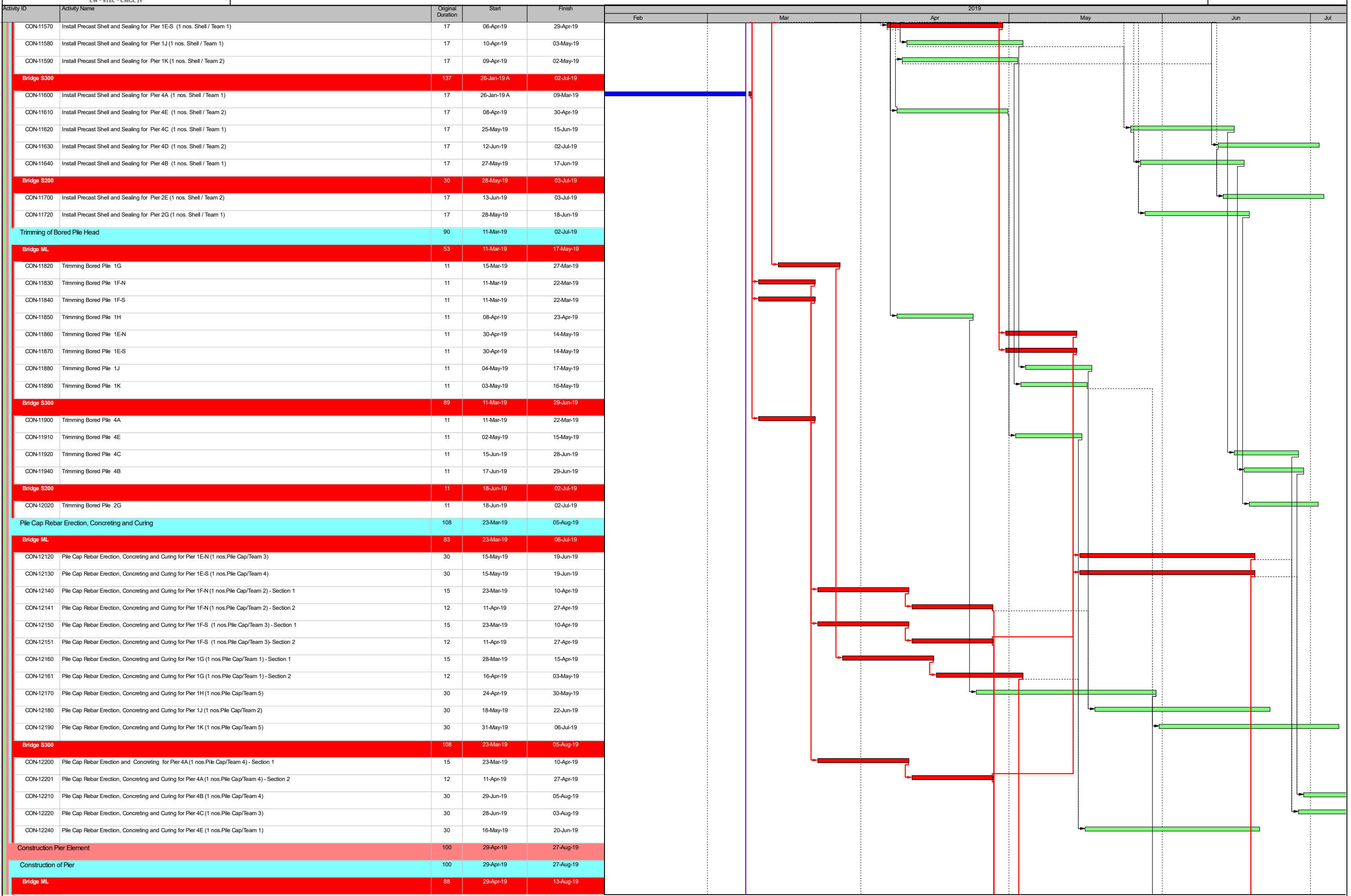
Subject: Construction Programme (Mar, 2019)

Activities	Week 1	Week 2	Week 3	Week 4
Erection of scaffolding and construction Staircase				
Concreting of Staircase 2				

Activity ID	Activity Name	Original Duration	Start	Finish	2019							
					Feb	Mar	Apr	May	Jun	Jul		
Tseung Kwan O Lam Tin Tunnel - Tseung Kwan O Interchange and Associated Works												
Construction Work												
Pre-Drilling & Piling Work												
Temporary Platform erection for Pre-drilling & Piling												
Bridge S300												
COON-10140	Temporary Platform Erection & Silt Curtain Installation for Pier 4H	8	28-Mar-19	06-Apr-19								
Bridge S200												
COON-10220	Temporary Platform Erection & Silt Curtain Installation for Pier 2D	8	19-Mar-19	27-Mar-19								
Bridge S100												
COON-10260	Temporary Platform Erection & Silt Curtain Installation for Pier 3C	8	09-Mar-19	18-Mar-19								
Pre-drilling												
Bridge S300												
COON-10450	Pre-drill 4F Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	21-Feb-19 A	06-Mar-19 A								
COON-10470	Pre-drill 4G Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	07-Mar-19 A	18-Mar-19								
COON-10490	Pre-drill 4H Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	08-Apr-19	18-Apr-19								
Bridge S200												
COON-10570	Pre-drill 2D Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	30-Mar-19	11-Apr-19								
Bridge S100												
COON-10610	Pre-drill 3C Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	19-Mar-19	29-Mar-19								
Bored Pile Include Fabrication & Delivery of Pile Cage and Casing												
Bridge ML												
COON-10700	Bored Pile 1J Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	03-Nov-18 A	06-Mar-19 A								
Bridge S300												
COON-10740	Bored Pile 4C Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	10-Dec-18 A	30-Mar-19								
COON-10750	Bored Pile 4D Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	11-Jan-19 A	27-Apr-19								
COON-10770	Bored Pile 4F Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	04-May-19	06-Jul-19								
COON-10780	Bored Pile 4G Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	14-Jun-19	14-Aug-19								
COON-10790	Bored Pile 4H Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	06-May-19	08-Jul-19								
Bridge S200												
COON-10840	Bored Pile 2D Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	12-Apr-19	18-Jun-19								
COON-10870	Bored Pile 2G Including Plant Demobilisation (2 nos. Pile / Team 2)	52	27-Nov-18 A	25-Feb-19 A								
COON-10880	Bored Pile 2H Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	04-Jan-19 A	09-May-19								
COON-10890	Bored Pile 2J Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	15-Jan-19 A	08-May-19								
Bridge S100												
COON-10900	Bored Pile 3B Including Plant Demobilisation (2 nos. Pile / Team 1)	48	21-Jan-19 A	26-Feb-19 A								
COON-10910	Bored Pile 3C Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	12-Apr-19	18-Jun-19								
Curing and Bored Pile Test (Sonic + Interface Core/Full Core)												
Bridge ML												
COON-11000	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1J Including Plant Mobilisation and Demobilisation	23	23-Jan-19 A	25-Mar-19								
COON-11010	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1K Including Plant Mobilisation and Demobilisation	23	30-Dec-18 A	28-Feb-19 A								
Bridge S300												
COON-11030	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4C Including Plant Mobilisation and Demobilisation	23	01-Apr-19	02-May-19								
COON-11040	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4D Including Plant Mobilisation and Demobilisation	23	29-Apr-19	27-May-19								
COON-11050	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4E Including Plant Mobilisation and Demobilisation	23	05-Jan-19 A	20-Feb-19 A								
COON-11060	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4B Including Plant Mobilisation and Demobilisation	23	29-Jan-19 A	30-Mar-19								
Bridge S200												
COON-11120	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2E Including Plant Mobilisation and Demobilisation	23	27-Nov-18 A	28-Feb-19 A								
COON-11130	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2F Including Plant Mobilisation and Demobilisation	23	23-Dec-18 A	20-Feb-19 A								
COON-11140	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2G Including Plant Mobilisation and Demobilisation	23	19-Feb-19 A	28-Mar-19								
COON-11150	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2H Including Plant Mobilisation and Demobilisation	23	10-May-19	06-Jun-19								
COON-11160	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 2J Including Plant Mobilisation and Demobilisation	23	09-May-19	05-Jun-19								

◆ Milestone ■ Works ■ Critical Works ■ Actual ■ Actual Progress of Regular Submission ◆ BL Milestone





Activity ID	Activity Name	Original Duration	Start	Finish	2019								
					Feb	Mar	Apr	May	Jun	Jul			
OON-12420	Construction of Pier 1G, Type 4M (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 1) - 1st Pour	12	04-May-19	18-May-19									
OON-12421	Construction of Pier 1G, Type 4M (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 1)- 1st Pour	26	20-May-19	19-Jun-19									
OON-12422	Construction of Pier 1G, Type 4M (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 1) - 2nd Pour	8	20-Jun-19	28-Jun-19									
OON-12423	Construction of Pier 1G, Type 4M (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 1)- 2nd Pour	38	29-Jun-19	13-Aug-19									
OON-12430	Construction of Pier 1F, Type 3 (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 2)-1st Pour	12	29-Apr-19	14-May-19									
OON-12431	Construction of Pier 1F, Type 3 (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 2)-1st Pour	28	15-May-19	17-Jun-19									
OON-12432	Construction of Pier 1F, Type 3 (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 2)-2nd Pour	8	18-Jun-19	26-Jun-19									
OON-12433	Construction of Pier 1F, Type 3 (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 2)-2nd Pour	40	27-Jun-19	13-Aug-19									
OON-12440	Construction of Pier 1E, Type 3 (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 4) - 1st Pour	12	20-Jun-19	04-Jul-19									
OON-12450	Construction of Pier 1H, Type 4 (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 5) - 1st Pour	12	31-May-19	14-Jun-19									
OON-12451	Construction of Pier 1H, Type 4 (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 5) - 1st Pour	23	15-Jun-19	12-Jul-19									
Bridge S300		100	29-Apr-19	27-Aug-19									
OON-12480	Construction of Pier 4A, type 1M (2 Pours) Erection of Platform, Formwork and Falsework (1 nos.Pier /Team 3) - 1st Pour	12	29-Apr-19	14-May-19									
OON-12481	Construction of Pier 4A, type 1M (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 3) - 1st Pour	30	15-May-19	19-Jun-19									
OON-12482	Construction of Pier 4A, type 1M (2 Pours) Erection of Platform, Formwork and Falsework(1 nos.Pier /Team 3) - 2nd Pour	8	20-Jun-19	28-Jun-19									
OON-12483	Construction of Pier 4A, type 1M (2 Pours) Rebar Erection and Concreting (1 nos.Pier /Team 3) - 2nd Pour	50	29-Jun-19	27-Aug-19									

**APPENDIX R
RECORD OF LANDFILL GAS
MONITORING BY CONTRACTOR**

APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
Portion III	1-Mar-19	08:10	Sunny	20	0	0	20.9
	1-Mar-19	13:10	Sunny	21	0	0	20.9
	1-Mar-19	15:40	Sunny	22	0	0	20.9
	1-Mar-19	15:50	Sunny	22	0	0	20.9
	1-Mar-19	16:00	Sunny	22	0	0	20.9
	2-Mar-19	08:15	Sunny	21	0	0	20.9
	2-Mar-19	13:30	Sunny	22	0	0	20.9
	2-Mar-19	15:50	Cloudy	23	0	0	20.9
	2-Mar-19	16:00	Cloudy	23	0	0	20.9
	2-Mar-19	16:10	Cloudy	23	0	0	20.9
	4-Mar-19	08:05	Cloudy	20	0	0	20.9
	4-Mar-19	13:05	Cloudy	21	0	0	20.9
	4-Mar-19	15:00	Cloudy	22	0	0	20.9
	4-Mar-19	15:10	Cloudy	22	0	0	20.9
	4-Mar-19	15:15	Cloudy	22	0	0	20.9
	5-Mar-19	08:10	Sunny	21	0	0	20.9
	5-Mar-19	13:10	Sunny	22	0	0	20.9
	5-Mar-19	15:00	Cloudy	23	0	0	20.9
	5-Mar-19	15:10	Cloudy	23	0	0	20.9
	5-Mar-19	15:15	Cloudy	23	0	0	20.9
	6-Mar-19	08:10	Cloudy	21	0	0	20.9
	6-Mar-19	13:20	Rainy	22	0	0	20.9
	6-Mar-19	15:30	Rainy	22	0	0	20.9
	6-Mar-19	15:40	Rainy	22	0	0	20.9
	6-Mar-19	15:50	Rainy	22	0	0	20.9
	7-Mar-19	08:15	Cloudy	19	0	0	20.9
	7-Mar-19	13:20	Rainy	20	0	0	20.9
	7-Mar-19	14:40	Rainy	20	0	0	20.9
	7-Mar-19	14:50	Rainy	20	0	0	20.9
	7-Mar-19	15:00	Rainy	20	0	0	20.9
	8-Mar-19	08:15	Cloudy	18	0	0	20.9
	8-Mar-19	13:15	Cloudy	19	0	0	20.9
	8-Mar-19	14:30	Cloudy	20	0	0	20.9
	8-Mar-19	14:35	Cloudy	20	0	0	20.9
	8-Mar-19	14:45	Cloudy	20	0	0	20.9
	9-Mar-19	08:10	Cloudy	18	0	0	20.9
	9-Mar-19	13:15	Rainy	19	0	0	20.9
	9-Mar-19	14:30	Cloudy	20	0	0	20.9
	9-Mar-19	14:40	Cloudy	20	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 (%)
	9-Mar-19	14:50	Cloudy	20	0	0	20.9
	11-Mar-19	08:15	Cloudy	19	0	0	20.9
	11-Mar-19	13:15	Sunny	20	0	0	20.9
	11-Mar-19	14:30	Sunny	21	0	0	20.9
	11-Mar-19	14:35	Sunny	21	0	0	20.9
	11-Mar-19	14:45	Sunny	21	0	0	20.9
	12-Mar-19	08:15	Sunny	20	0	0	20.9
	12-Mar-19	13:20	Sunny	21	0	0	20.9
	12-Mar-19	14:30	Sunny	22	0	0	20.9
	12-Mar-19	14:40	Sunny	22	0	0	20.9
	12-Mar-19	14:50	Sunny	22	0	0	20.9
	13-Mar-19	08:10	Sunny	20	0	0	20.9
	13-Mar-19	13:15	Sunny	21	0	0	20.9
	13-Mar-19	14:30	Sunny	22	0	0	20.9
	13-Mar-19	14:35	Sunny	22	0	0	20.9
	13-Mar-19	14:45	Sunny	22	0	0	20.9
	14-Mar-19	08:10	Sunny	20	0	0	20.9
	14-Mar-19	13:20	Sunny	21	0	0	20.9
	14-Mar-19	14:30	Sunny	22	0	0	20.9
	14-Mar-19	14:40	Sunny	22	0	0	20.9
	14-Mar-19	14:50	Sunny	22	0	0	20.9
	15-Mar-19	08:20	Cloudy	20	0	0	20.9
	15-Mar-19	13:20	Cloudy	21	0	0	20.9
	15-Mar-19	14:30	Cloudy	22	0	0	20.9
	15-Mar-19	14:40	Cloudy	22	0	0	20.9
	15-Mar-19	15:50	Cloudy	22	0	0	20.9
	16-Mar-19	08:20	Sunny	20	0	0	20.9
	16-Mar-19	13:20	Sunny	21	0	0	20.9
	16-Mar-19	14:30	Sunny	22	0	0	20.9
	16-Mar-19	14:40	Sunny	22	0	0	20.9
	16-Mar-19	14:50	Sunny	22	0	0	20.9
	18-Mar-19	08:15	Cloudy	20	0	0	20.9
	18-Mar-19	13:15	Sunny	21	0	0	20.9
	18-Mar-19	14:30	Sunny	23	0	0	20.9
	18-Mar-19	14:40	Sunny	23	0	0	20.9
	18-Mar-19	14:50	Sunny	23	0	0	20.9
	19-Mar-19	08:15	Sunny	21	0	0	20.9
	19-Mar-19	13:15	Sunny	22	0	0	20.9
	19-Mar-19	14:30	Sunny	23	0	0	20.9

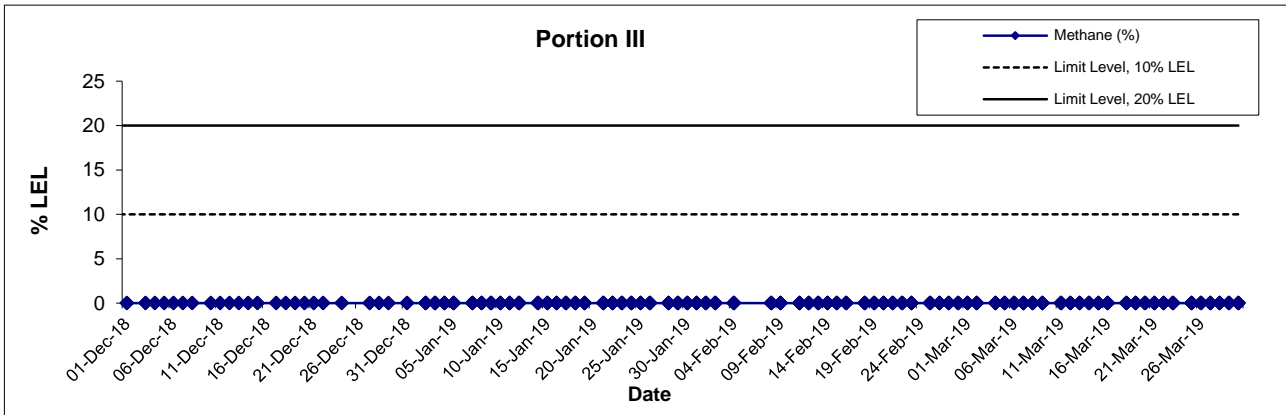
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
	19-Mar-19	14:40	Sunny	23	0	0	20.9
	19-Mar-19	14:50	Sunny	23	0	0	20.9
	20-Mar-19	08:15	Sunny	21	0	0	20.9
	20-Mar-19	13:30	Sunny	22	0	0	20.9
	20-Mar-19	14:30	Sunny	23	0	0	20.9
	20-Mar-19	14:40	Sunny	23	0	0	20.9
	20-Mar-19	14:50	Sunny	23	0	0	20.9
	21-Mar-19	08:10	Sunny	22	0	0	20.9
	21-Mar-19	13:30	Sunny	23	0	0	20.9
	21-Mar-19	14:30	Sunny	24	0	0	20.9
	21-Mar-19	14:40	Sunny	24	0	0	20.9
	21-Mar-19	14:50	Sunny	24	0	0	20.9
	22-Mar-19	08:15	Sunny	20	0	0	20.9
	22-Mar-19	13:30	Sunny	21	0	0	20.9
	22-Mar-19	14:30	Sunny	23	0	0	20.9
	22-Mar-19	14:40	Sunny	23	0	0	20.9
	22-Mar-19	14:50	Sunny	23	0	0	20.9
	23-Mar-19	08:10	Sunny	22	0	0	20.9
	23-Mar-19	13:30	Sunny	23	0	0	20.9
	23-Mar-19	14:30	Sunny	24	0	0	20.9
	23-Mar-19	14:40	Sunny	24	0	0	20.9
	23-Mar-19	14:50	Sunny	24	0	0	20.9
	25-Mar-19	08:15	Sunny	21	0	0	20.9
	25-Mar-19	13:20	Sunny	22	0	0	20.9
	25-Mar-19	14:30	Sunny	23	0	0	20.9
	25-Mar-19	14:40	Sunny	23	0	0	20.9
	25-Mar-19	14:50	Sunny	23	0	0	20.9
	26-Mar-19	08:10	Sunny	21	0	0	20.9
	26-Mar-19	13:30	Sunny	22	0	0	20.9
	26-Mar-19	14:30	Sunny	23	0	0	20.9
	26-Mar-19	14:40	Sunny	23	0	0	20.9
	26-Mar-19	14:50	Sunny	23	0	0	20.9
	27-Mar-19	08:30	Sunny	21	0	0	20.9
	27-Mar-19	13:30	Sunny	22	0	0	20.9
	27-Mar-19	14:30	Sunny	23	0	0	20.9
	27-Mar-19	14:40	Sunny	23	0	0	20.9
	27-Mar-19	14:50	Sunny	23	0	0	20.9
	28-Mar-19	08:30	Sunny	22	0	0	20.9
	28-Mar-19	13:15	Sunny	23	0	0	20.9

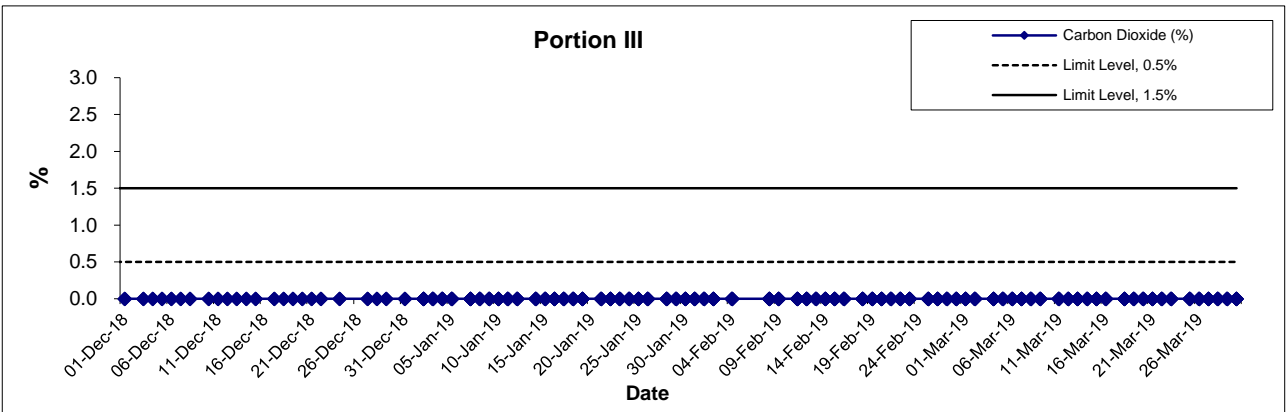
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
	28-Mar-19	14:30	Sunny	24	0	0	20.9
	28-Mar-19	14:40	Sunny	24	0	0	20.9
	28-Mar-19	14:50	Sunny	24	0	0	20.9
	29-Mar-19	08:15	Sunny	21	0	0	20.9
	29-Mar-19	13:30	Sunny	22	0	0	20.9
	29-Mar-19	14:40	Sunny	23	0	0	20.9
	29-Mar-19	14:50	Sunny	23	0	0	20.9
	29-Mar-19	15:00	Sunny	23	0	0	20.9
	30-Mar-19	08:10	Sunny	23	0	0	20.9
	30-Mar-19	13:30	Sunny	23	0	0	20.9
	30-Mar-19	14:30	Sunny	23	0	0	20.9
	30-Mar-19	14:40	Sunny	23	0	0	20.9
	30-Mar-19	14:50	Sunny	23	0	0	20.9

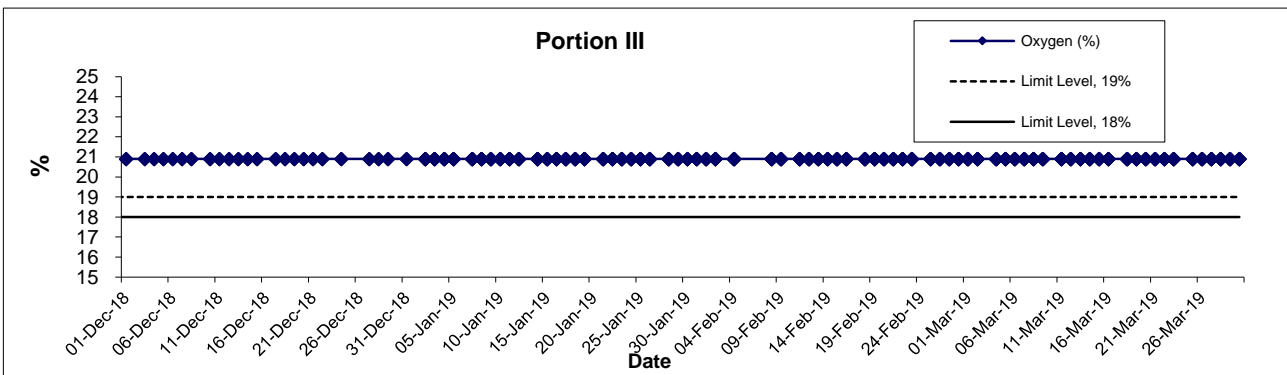
Methane



Carbon Dioxide



Oxygen



Title	Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction	Scale	Project	CINOTECH
		N.T.S	No. MA16034	
Date	Mar-19	Appendix	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
1-Mar-19	1 : 89993	1 : 17999	1 : 15517	1 : 23684	+3	Stop monitoring	Stop monitoring	0.134	0.197	0.118
2-Mar-19	-1 : 112492	1 : 23683	1 : 19565	1 : 20454	+2	Stop monitoring	Stop monitoring	0.126	0.189	0.110
4-Mar-19	-1 : 44997	1 : 44998	1 : 32142	1 : 34615	+2	Stop monitoring	Stop monitoring	0.142	0.134	0.102
5-Mar-19	1 : 224983	1 : 44998	1 : 32142	1 : 23684	+2	Stop monitoring	Stop monitoring	0.118	0.126	0.213
6-Mar-19	1 : 40906	1 : 20454	1 : 22500	1 : 18000	Bad weather	Stop monitoring	Stop monitoring	0.142	0.150	0.095
7-Mar-19	-1 : 449967	1 : 44998	1 : 15517	1 : 34615	+2	Stop monitoring	Stop monitoring	0.134	0.102	0.095
8-Mar-19	1 : 89993	1 : 64283	1 : 19565	1 : 16071	+2	Stop monitoring	Stop monitoring	0.150	0.102	0.102
9-Mar-19	-1 : 64281	1 : 20454	1 : 26470	1 : 20454	+2	Stop monitoring	Stop monitoring	0.118	0.102	0.079
11-Mar-19	-1 : 64281	1 : 16071	1 : 17307	1 : 45000	+2	Stop monitoring	Stop monitoring	0.118	0.134	0.087
12-Mar-19	1 : 224983	1 : 23683	1 : 22500	1 : 23684	+2	Stop monitoring	Stop monitoring	0.150	0.189	0.102
13-Mar-19	-1 : 44997	1 : 20454	1 : 40908	1 : 18000	+2	Stop monitoring	Stop monitoring	0.181	0.118	0.126
14-Mar-19	1 : 224983	1 : 44998	1 : 22500	1 : 34615	+2	Stop monitoring	Stop monitoring	0.126	0.173	0.087
15-Mar-19	-1 : 64281	1 : 17999	1 : 17307	1 : 20454	+2	Stop monitoring	Stop monitoring	0.118	0.126	0.087
16-Mar-19	1 : 89993	1 : 13235	1 : 19565	1 : 45000	+2	Stop monitoring	Stop monitoring	0.150	0.181	0.087
18-Mar-19	-1 : 449967	1 : 20454	1 : 19565	1 : 28125	+2	Stop monitoring	Stop monitoring	0.126	0.197	0.126
19-Mar-19	1 : 40906	1 : 64283	1 : 15517	1 : 18000	+2	Stop monitoring	Stop monitoring	0.150	0.197	0.158

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
20-Mar-19	1 : 224983	1 : 23683	1 : 26470	1 : 20454	+2	Stop monitoring	Stop monitoring	0.118	0.102	0.079
21-Mar-19	1 : 40906	1 : 17999	1 : 17307	1 : 16071	+1	Stop monitoring	Stop monitoring	0.142	0.118	0.118
22-Mar-19	1 : 89993	1 : 16071	1 : 22500	1 : 23684	+2	Stop monitoring	Stop monitoring	0.181	0.134	0.150
23-Mar-19	1 : 89993	1 : 23683	1 : 22500	1 : 18000	+2	Stop monitoring	Stop monitoring	0.126	0.134	0.095
25-Mar-19	1 : 224983	1 : 17999	1 : 40908	1 : 20454	+2	Stop monitoring	Stop monitoring	0.158	0.118	0.142
26-Mar-19	1 : 89993	1 : 34614	1 : 26470	1 : 34615	+2	Stop monitoring	Stop monitoring	0.126	0.142	0.079
27-Mar-19	-1 : 112492	1 : 20454	1 : 15517	1 : 28125	+2	Stop monitoring	Stop monitoring	0.118	0.118	0.087
28-Mar-19	1 : 89993	1 : 44998	1 : 22500	1 : 16071	+2	Stop monitoring	Stop monitoring	0.236	0.363	0.276
29-Mar-19	1 : 40906	1 : 64283	1 : 17307	1 : 23684	+2	Stop monitoring	Stop monitoring	0.158	0.323	0.095
Alert Level	1:2000				6			4.5		
Alarm Level	1:1500				8			4.8		
Action Level	1:1000				10			5		

Note:

Bold means Alert Level exceedance

Bold Italic means Alarm Level exceedance

Bold Italic with underline means Action Level exceedance

**APPENDIX U
PIEZOMETER MONITORING RESULTS**

Appendix U – Construction Phase Daily Piezometer Monitoring Results

Date	Daily Piezometer Monitoring	
	38568-LDH1 (P)	
1-Mar-19	n.a.	
2-Mar-19	n.a.	
4-Mar-19	n.a.	
5-Mar-19	n.a.	
6-Mar-19	87.65	
7-Mar-19	n.a.	
8-Mar-19	n.a.	
9-Mar-19	n.a.	
11-Mar-19	n.a.	
12-Mar-19	87.65	
13-Mar-19	n.a.	
14-Mar-19	n.a.	
15-Mar-19	n.a.	
16-Mar-19	n.a.	
18-Mar-19	n.a.	
19-Mar-19	87.65	
20-Mar-19	n.a.	
21-Mar-19	n.a.	
22-Mar-19	n.a.	
23-Mar-19	n.a.	
25-Mar-19	n.a.	
26-Mar-19	n.a.	
27-Mar-19	87.65	
28-Mar-19	n.a.	
29-Mar-19	n.a.	
30-Mar-19	87.65	
Action Level (mPD)	+74.65	TKO-LBH907 +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.