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 January 2018

(version 2.0)

Approved By

(Dr. Priscilla Choy,
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 15th 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 January 2018.

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.

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	8	5	8	4	Refer to Appendices K and O
Groundwater Quality	2	3	0	0	N/A
Marine Water Quality	0	0	0	0	N/A
Groundwater Level Monitoring (Piezometer Monitoring)	N/A	N/A	N/A	N/A	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

Air Quality Monitoring

5. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

6. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

7. All noise monitoring was conducted as scheduled in the reporting month. Eight (8) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Five (5) other Limit Level exceedances were recorded in the reporting month of which one is considered as non-Project related and invalid.

Water Quality Monitoring

8. Groundwater monitoring was conducted as scheduled in the reporting month. Two Action Level and Three Limit exceedances were recorded in the reporting month which are considered to be non-Project related.

9. All marine water monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

10. Construction phase daily piezometer monitoring was not carried out in this reporting period as there is no tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan.

Ecological Monitoring

11. 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

12. 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

13. 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

14. 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

15. 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 and NE/2015/03 on 24, 25, 10 January 2018 respectively. Details of the audit findings and implementation status are presented in Section 10.

Waste Management

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

Key Information in the Reporting Month

17. 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	Remark
	Number	Nature			
Complaint received by Project Team / Complaint referred by EPD (January 2018)	10	Construction dust / noise nuisance / land-based water quality impacts	Under investigation	On-going	Details refer to App O
Complaint received by Project Team / Complaint referred by EPD (December 2017)	10	Construction dust / noise nuisance / Landscape and Visual Impacts	Under investigation	On-going	
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

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

18. 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 (January 2018)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2 , Area 3, Area 4 & Area 5 3) Pipe Pile wall – Area 2A
		Main Tunnel	1) Main tunnel Excavation
		TKO Interchange	1) Haul Road Construction, Site Formation and Slope Works 2) Temporary Cut Slope For BMCPC 3) Steel Platform for Bridge Construction

NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Pre-bored works at Portion IV & VII 2) ELS Installation for U-Trough at Portion V & VI 3) Construction of Retaining Wall at Portion VIII 4) Enhancement of Temporary Steel Cofferdam at Portion IX 5) Dredging Works at Portion IX 6) Treatment of Marine Sediment at Area A 7) General Site Clearance and Hoarding Erection
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Rebar fixing for pile cap. PC3 at East Pier 2) Pier Construction at East Pier

Future Key Issues

19. 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 (February 2018)		Key environmental issues *
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5 3) Pipe Pile Wall – Area 2A	(A)/ (B) / (C) / (D) / (E) (G)
	Main Tunnel	1) Main Tunnel Excavation	(B)
	TKO Interchange	1) Haul Road Construction and Site Formation & Slope Works 2) 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) Pre-bored works and sheet piling works at Portion IV & VII 2) Foot path and carriageway construction at Portion IV & VII 3) Removal of existing sea wall blocks at Portion IV & VII 4) Reconstruction of existing outfall and installation of DN2100 drainage system at Portion IV & VII 5) Temporary road construction at Portion V & VI 6) Construction of Retaining Wall at Portion VIII 7) Dredging at Portion IX 8) Seawall Construction at Portion IX 9) Placing sand blanket at non-dredged area at Portion IX 10) Treatment of Marine Sediment at Area A		(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Pier Construction at East Pier 2) Pier Construction at West Pier		(A)/ (B) / (C) / (D) / (E)

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 15th Monthly EM&A report summarizing the EM&A works for the Project in January 2018.

Purpose of the Report

1.2 This is the 15th Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in January 2018.

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 is:
- Contract No. NE/2015/01 and Contract No. NE/2015/02: 7 November 2016.
- Contract No. NE/2015/03: 29 May 2017.

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. Chiang Nin Tat, Eric	2301 1384	2739 0076
AECOM	Engineer's Representative	Mr. KY Chan	3922 9000	2759 1698
Cinotech	Environmental Team	Dr. Priscilla Choy	2151 2089	3107 1388
		Ms. Ivy Tam	2151 2090	
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 (January 2018)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1. EHC2 U-Trough 2. Site Formation – Area 1G1, Area 1G2, Area 2 , Area 3, Area 4 & Area 5 3. Pipe Pile wall – Area 2A
		Main Tunnel	1. Main tunnel Excavation
		TKO Interchange	1. Haul Road Construction, Site Formation and Slope Works 2. Temporary Cut Slope For BMCPC 3. Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1. Pre-bored works at Portion IV & VII 2. ELS Installation for U-Trough at Portion V & VI 3. Construction of Retaining Wall at Portion VIII 4. Enhancement of Temporary Steel Cofferdam at Portion IX 5. Dredging Works at Portion IX 6. Treatment of Marine Sediment at Area A 7. General Site Clearance and Hoarding Erection	
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1. Rebar fixing for pile cap. PC3 at East Pier 2. Pier Construction at East Pier	

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

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

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

Status of Environmental Licences, Notification and Permits

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

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

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
Environmental Permit (EP)				
N/A	EP-458/2013/C	20/1/2017	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation				
NE/2015/01	EPD Ref no.: 405305	21/07/2016	N/A	Valid
	EPD Ref no.: 405582	28/07/2016	N/A	Valid
NE/2015/02	EPD Ref no.: 406100	12/08/2016	N/A	Valid
NE/2015/03	EPD Ref no.: 416072	26/04/2017	N/A	Valid
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
Vessel Billing Account under construction waste disposal charging scheme				
NE/2015/01	Account No. 7027764	29/01/2018	10/05/2018	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
Effluent Discharge License under Water Pollution Control Ordinance				
NE/2015/01	WT00025806-2016	22/11/2016	30/11/2021	Valid
	WT00026212-2016	09/11/2017	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
Construction Noise Permit (CNP)				
NE/2015/01	GW-RE0705-17	06/09/2017	05/03/2018	Valid
	GW-RE0940-17	11/12/2017	10/02/2018	Valid
	GW-RE0954-17	27/12/2017	26/01/2018	Expired on 26 Jan 2018
	GW-RE0933-17	01/12/2017	07/02/2018	Valid

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
	GW-RE1020-17	30/12/2017	29/03/2018	Valid
	GW-RE1024-17	23/12/2017	22/06/2018	Valid
	GW-RE0018-18	13/01/2018	11/03/2018	Valid
	GW-RE0040-18	26/01/2018	25/02/2018	Valid
NE/2015/02	GW-RE0800-17	11/10/2017	10/04/2018	Valid
	GW-RE0809-17	13/10/2017	12/04/2018	Valid
	GW-RE0826-17	30/10/2017	29/01/2018	Expired on 29 Jan 2018
	GW-RE0905-17	17/11/2017	15/05/2018	Valid
NE/2015/03	GW-RE0966-17	14/03/2018	14/04/2018	Valid
Marine Dumping Permit				
NE/2015/02	EP/MD/18-102	02/01/2018	01/02/2018	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 January 2018.

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-3 / LD-3B	1
	Met One Instruments Model No.: AEROCET-531	0
	Handheld Particle Counter Hal-HPC300 / Hal-HPC301	4
HVS Sampler	TISCH Model: TE-5170	1
	GMW Model: GS2310	5
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	1

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 day
AM1, AM2, AM3, AM4(A), AM5(A) and AM6(A)	24-hour TSP	Once per 6 days

Monitoring Methodology

1-hour TSP Monitoring

Measuring Procedures

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

(Model LD3 / LD3B)

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

(AEROCET-531)

- The 1-hour dust meter is placed at least 1.3 meters above ground.
  - Remove the red rubber cap from the AEROCET-531 inlet nozzle.
  - Turn on the power switch that is located on the right side of the AEROCET-531.
  - On power up the product intro screen is displayed for 3 seconds. The intro screen

displays the product name and firmware version.
- Then the main counter screen will be displayed.
- Press the START button. Internal vacuum pump start running. After 1 minute the pump will stop and the 0.5μm and 5μm channels will show the cumulative counts of particles larger than 0.5μm and 5μm per cubic foot.
- The AEROCET-531 is now checked out and ready for use.
- To switch off the AEROCET-531 power to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, and display value and site condition were recorded during the monitoring period.

(Equipment: Hal Technology; Model no. Hal-HPC300)
- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance/Calibration

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

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

24-hour TSP Monitoring

Instrumentation

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

3.10 The positioning of the HVS samplers are as follows:
- a horizontal platform with appropriate support to secure the samplers against gusty wind shall be provided;
- no two samplers shall be placed less than 2 meter apart
- the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
- a minimum of 2 metres of separation from walls, parapets and penthouses is required for rooftop samplers;
- a minimum of 2 metres of separation from any supporting structure, measured horizontally is required;

- no furnace or incinerator flue is nearby;
- airflow around the sampler is unrestricted;
- the sampler is more than 20 metres from the dripline;
- any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring;
- permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- a secured supply of electricity is needed to operate the samplers.

Operating/analytical procedures for the operation of HVS

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

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

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

3.14 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered 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 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

3.22 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

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

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

3.25 The summary of exceedance record in reporting month is shown in **Appendix K**. No exceedance was recorded for the air quality monitoring.

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

Table 3.4 Major Dust Source during Air Quality Monitoring

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

4. NOISE

Monitoring Requirements

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

Monitoring Locations

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

Table 4.1 Noise Monitoring Stations

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

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

Monitoring Equipments

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 955 / 957 / 977	5
	BSWA 801	2
Calibrator	SV30A	3
	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**.

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

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 All noise monitoring was conducted as scheduled in the reporting month. Eight (8) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Five (5) other Limit Level exceedances were recorded in the reporting month of which one is considered as non-Project related and invalid. The summary of exceedance record in the reporting month is shown in **Appendix K**.

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**.

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.

Updated Construction Noise Assessment

Contract No. NE/2015/01, Contract No. NE/2015/02 and Contract No. NE/2015/03

4.13 No update of Construction Noise Assessment for Contract No. NE/2015/01 and NE/2015/03 in the reporting period. Updated Construction Noise Assessment for Contract No. NE/2015/02 is shown in **Appendix S.**

5. WATER QUALITY

Monitoring Requirements

Groundwater Quality

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

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

Marine Water Quality

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

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

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

Groundwater Level Monitoring (Piezometer Monitoring)

5.6 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan. The monitoring has not commenced in this reporting period.

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 Water 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 Equipments

5.9 For in-situ monitoring, a multi-parameter meter (Aquaread AP-2000-D) was used to measure Dissolved oxygen (DO) concentration, DO saturation (DO %), pH, temperature and turbidity. A sampler was used to collect water samples for laboratory analysis of SS, BOD_5, TOC, Total Nitrogen, Ammonia-N and Total Phosphate.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

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

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and

- a temperature of 0-45 degree Celsius.

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

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

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

Turbidity

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

pH

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

Water Depth Detector

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

Water Sampler

5.17 Water samples collected for laboratory analysis were stored in high density polythene bottles sample containers, with appropriate preservatives added. All sampling bottles were labeled (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	5
Monitoring Position Equipment	"Magellan" Handheld GPS Model GPS-320	1
Water Depth Detector	Fishfinder 140	1

Monitoring Parameters and Frequency

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

Table 5.4 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
Groundwater Quality			
Stream 1-Stream 3	• DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Turbidity, NTU • SS, mg/L • BOD_5, mg O_2/L • TOC, mg-TOC/L • Total Nitrogen, mg/L • Ammonia-N, mg NH_3-N/L • Total Phosphate, mg-P/L	Mid-depth	Biweekly (When the tunnel construction works are found within 50m of the location, weekly.)
Marine Water Quality			
M1 M2 M3 M4 M5 M6 C1 C2 G1 G2 G3 G4	*In-situ*: Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity Laboratory Testing: Suspended Solids (SS)	M1-M5, C1-C2, G1-G4 • 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If the water depth is less than 6m, omit mid-depth sampling. M6 • at the vertical level where the water abstraction point of the intake is located(i.e. approximately mid-depth level)	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)

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

Monitoring Methodology

Groundwater Quality

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

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

Marine Water Quality

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

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

Laboratory Analytical Methods

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

Table 5.5 Methods for Laboratory Analysis for Water Samples

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

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

QA/QC Requirements

Decontamination Procedures

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

Sampling Management and Supervision

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

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

Results and Observations

Groundwater Quality Monitoring

5.33 All groundwater quality monitoring was conducted as scheduled in the reporting month. Summary of groundwater quality monitoring results is shown in **Table 5.6**. Groundwater 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 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)
5 Jan 2018	Stream 1	8.3	9.0	1.6	3	<2	4	<0.6	<0.05	<0.05
	Stream 2	8.0	9.0	1.1	3	<2	4	<0.6	<0.05	<0.05
	Stream 3	8.0	9.0	1.9	***9***	<2	4	<0.6	<0.05	<0.05
16 Jan 2018	Stream 1	8.2	9.8	1.9	0.9	<2	4	<0.6	<0.05	<0.05
	Stream 2	8.0	9.1	1.6	2.3	<2	5	<0.6	<0.05	<0.05
	Stream 3	8.0	7.9	1.5	1.2	<2	4	<0.6	<0.05	<0.05
31 Jan 2018	Stream 1	7.8	10.7	1.9	***25***	<2	5	<0.6	***0.26***	<0.05
	Stream 2	7.9	10.7	2.0	***8***	<2	6	<0.6	0.14	<0.05
	Stream 3	7.9	10.7	2.0	***14***	<2	5	<0.6	0.14	<0.05
No. of Exceedance	Action Level	0	0	0	2	0	0	0	0	0
	Limit Level	0	0	0	2	0	0	0	1	0

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

5.36 All groundwater monitoring was conducted as scheduled in the reporting month. Two Action Level and Three Limit exceedances were recorded in the reporting month. It is considered that the exceedances are not project-related based on the following reasons:

- For Stream 1, the exceedances were recorded on 31 January only. According to information of the Hong Kong Observatory, rain was particularly heavy during the day that total rainfall recorded on 31 January is 19.3 mm. Also, the exceeded levels are within the maximum levels during baseline monitoring (45 mg/L for SS and 0.38 mg NH_3-N/L for NH_3-N). It is considered that the exceedances were due to natural fluctuations, rather than the project works.
- For Stream 2 and 3, there is no tunnel boring or tunnel construction works in Tseung Kwan O side in this reporting month.

Marine Water Quality Monitoring

5.37 All marine water quality monitoring was conducted as scheduled in the reporting month. 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**. No Action/Limit Level exceedance was recorded in the reporting period.

Groundwater Level Monitoring (Piezometer Monitoring)

5.39 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.

5.40 Construction Phase Piezometer Monitoring has not commenced in this reporting period.

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. The fourth post-translocation coral monitoring was carried out on 07 November 2017.

6.4 Location of post-translocation coral monitoring is shown in **Figure 7**.

Event and Action Plan

6.5 The post-translocation monitoring result was evaluated against Action and Limit Levels presented in **Appendix A**. Evaluation was based on recorded changes in percentage of partial mortality of the corals.

6.6 If the defined Action Level or Limit Level for coral monitoring is exceeded, the actions as set out in **Appendix M** will be implemented.

6.7 If observations of any die-off / abnormal conditions of the translocated corals are made during the post-translocation monitoring, the ET shall inform the Contractor, IEC and AFCD, and liaise with AFCD to investigate any mitigation measures needed.

Results and Observations

6.8 No post-translocation coral monitoring was conducted in the reporting month.

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

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

Monitoring Equipment

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

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

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

Table 7.1 Cultural Heritage Monitoring Equipment

Equipment	Manufacturer and Model	Quantity
DNA03 Digital Level for building settlement and tilting	Leica Geosystems Article No.: 723289	1
Vibrographs for vibration monitoring	MiniMate Plus manufactured by Instantel Model No.: 716A0403	1

Monitoring Methodology

7.7 Vibrograph (velocity seismograph) was deployed at each monitoring station to measure and record the PPV and amplitude of ground motion in three mutually perpendicular directions. Vibration monitoring equipment fulfils the requirements

stated in the Government guidelines and is calibrated to HOKLAS standards. Each monitoring would not be more than 10 minutes. Settlement monitoring should be conducted by surveyors manually.

Alert, Alarm and Action Levels

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

Table 7.2 AAA Levels for Monitoring for Cultural Heritage

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

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

Results

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

Mitigation Measures for Cultural Heritage

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

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

8. LANDSCAPE AND VISUAL IMPACT REQUIREMENTS

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

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

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

9. LANDFILL GAS MONITORING

Monitoring Requirement

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

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

Monitoring Parameters and Frequency

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

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

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

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

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

Monitoring Locations

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

Monitoring Equipment

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. 120848)	1

Results and Observations

9.7 In the reporting month, landfill gas monitoring was carried out by the Contractor at the aforesaid locations on 52 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: 3, 10, 17, 24 and 31 January 2018
- Contract No. NE/2015/02: 4, 10, 16 and 25 January 2018
- Contract No. NE/2015/03: 5, 10, 19 and 26 January 2018

Monthly joint site inspection with the representative of IEC was conducted for NE/2015/01, NE/2015/02 and NE/2015/03 on 24, 25, 10 January 2018 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 identified. 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 Eight (8) Noise Action Level exceedances were recorded due to the documented complaints received in the reporting month. Five (5) other Limit Level exceedances were recorded in the reporting month of which one is considered as non-Project related and invalid.

12.2 Two Action Level and Three Limit exceedances for groundwater quality monitoring were recorded in the reporting month which are considered to be non-Project related.

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

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

12.5 Ten (10) environmental complaints were received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix O**. The investigation status and result is also reported in **Appendix O**.

Summary of Environmental Summon and Successful Prosecution

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

13. FUTURE KEY ISSUES

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

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

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

Contract No.	Project Title	Site Activities (February 2018)	
NE/2015/01	Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works	Lam Tin Interchange	1. EHC2 U-Trough 2. Site Formation – Area 1G1, Area 1G2, Area 2 , Area 3, Area 4 & Area 5 3. Pipe Pile wall – Area 2A
		Main Tunnel	1. Main tunnel Excavation
		TKO Interchange	1. Haul Road Construction, Site Formation and Slope Works 2. Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1. Pre-bored works and sheet piling works at Portion IV & VII 2. Foot path and carriageway construction at Portion IV & VII 3. Removal of existing sea wall blocks at Portion IV & VII 4. Reconstruction of existing outfall and installation of DN2100 drainage system at Portion IV & VII 5. Temporary road construction at Portion V & VI 6. Construction of Retaining Wall at Portion VIII 7. Dredging at Portion IX 8. Seawall Construction at Portion IX 9. Placing sand blanket at non-dredged area at Portion IX 10. Treatment of Marine Sediment at Area A	
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1. Pier Construction at East Pier 2. Pier Construction at West Pier	

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.

Monitoring Schedule for the Next Month

13.4 The tentative environmental monitoring schedules for the next month are shown in **Appendix D**.

14. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

14.1 This is the 15th Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in January 2018 in accordance with EM&A Manual and the requirement under EP.

Air Quality Monitoring

14.2 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

14.3 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise Monitoring

14.4 All noise monitoring was conducted as scheduled in the reporting month. Eight (8) Action Level exceedances were recorded due to the documented complaints received in the reporting month. Five (5) other Limit Level exceedances were recorded in the reporting month of which one is considered as non-Project related and invalid.

Water Quality Monitoring

14.5 Groundwater monitoring was conducted as scheduled in the reporting month. Two Action Level and Three Limit exceedances were recorded in the reporting month which are considered to be non-Project related.

14.6 All marine water monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Ecological Monitoring

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

Monitoring on Cultural Heritage

14.8 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

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

Landfill Gas Monitoring

14.10 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

14.11 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.

Complaint, Prosecution and Notification of Summons

14.12 Ten (10) environmental complaints, no successful prosecution and notification of summon were received during the reporting period.

Recommendations

14.13 The following recommendations were made to the Contractor for the reporting month:

Air Quality Impact

- To implement dust suppression measures such as water spray on all haul roads, stockpiles, dry surfaces and open slopes.
- To cover stockpile of dusty material by impervious material.
- To avoid dark smoke emitted from the generator.

Construction Noise

- To provide noise mitigation measures (e.g. Temporary noise barrier or Full enclosure) to PME as proposed in the approved Noise Mitigation Plan.
- To repair the gaps between the noise barriers.

Water Quality Impact

- To provide and repair the silt curtain to fully enclose the site and prevent any gap between the silt curtains.
- To review and implement temporary drainage system.
- To clear the litter, debris, silt and sediment in drainage or catchpits.
- To remove the sand or dusty material deposited near the seafront.
- To provide bund or covers to gullies and stockpile storage area on site to avoid leakage of surface runoff.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To maintain the sedimentation tank more frequently to ensure proper wastewater treatment before discharge.

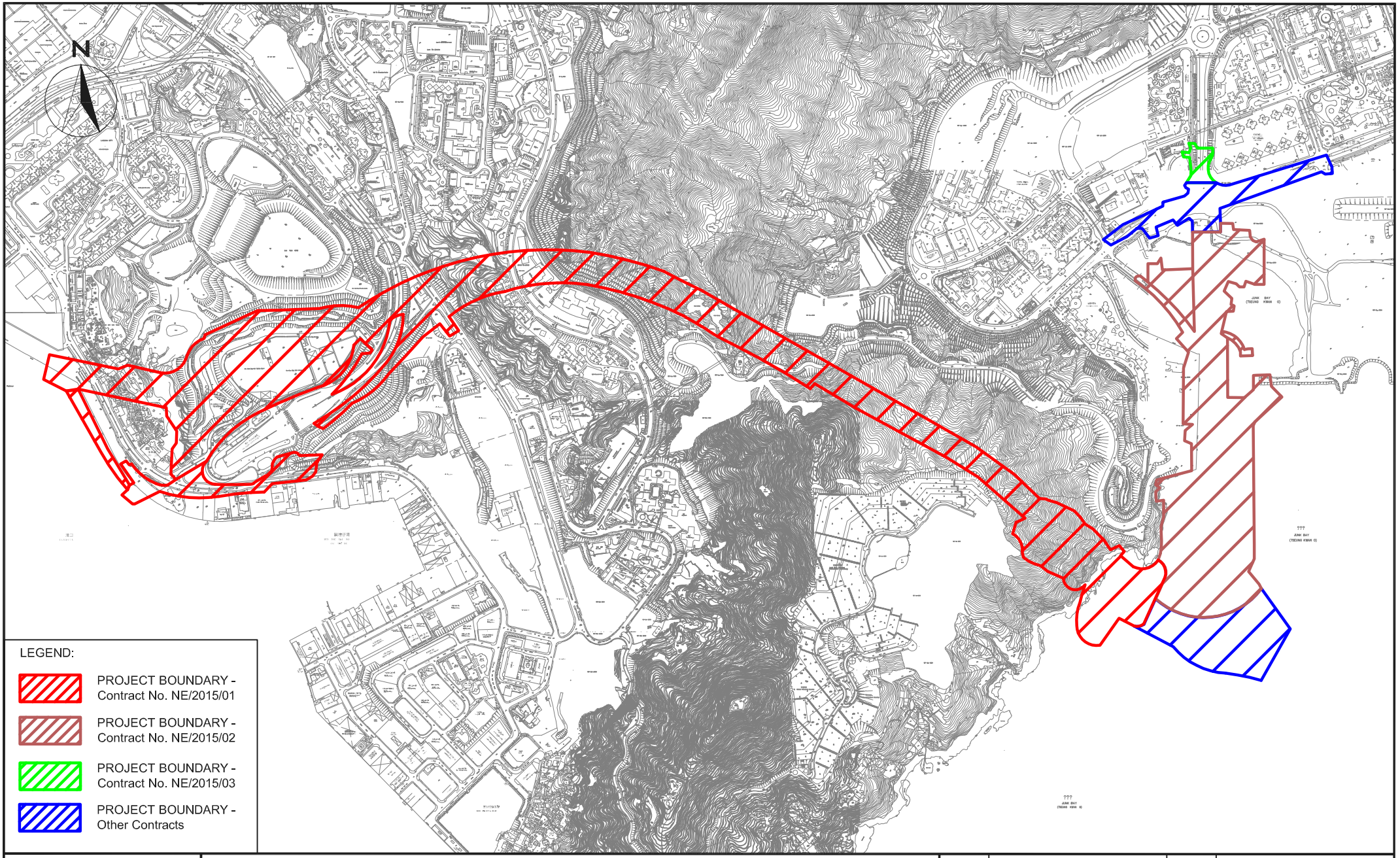
Waste/Chemical Management

- To remove construction waste regularly.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment.
- To provide drip tray to chemical containers to avoid any chemical leakage.
- To remove the oil stain and disposed of as chemical waste.
- To remove the stagnant water regularly found inside the drip tray.

Landscape and Visual

- To set up proper tree protection area.
- To avoid placing any construction materials in the tree protection zone.

FIGURES



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

Site Layout Plan

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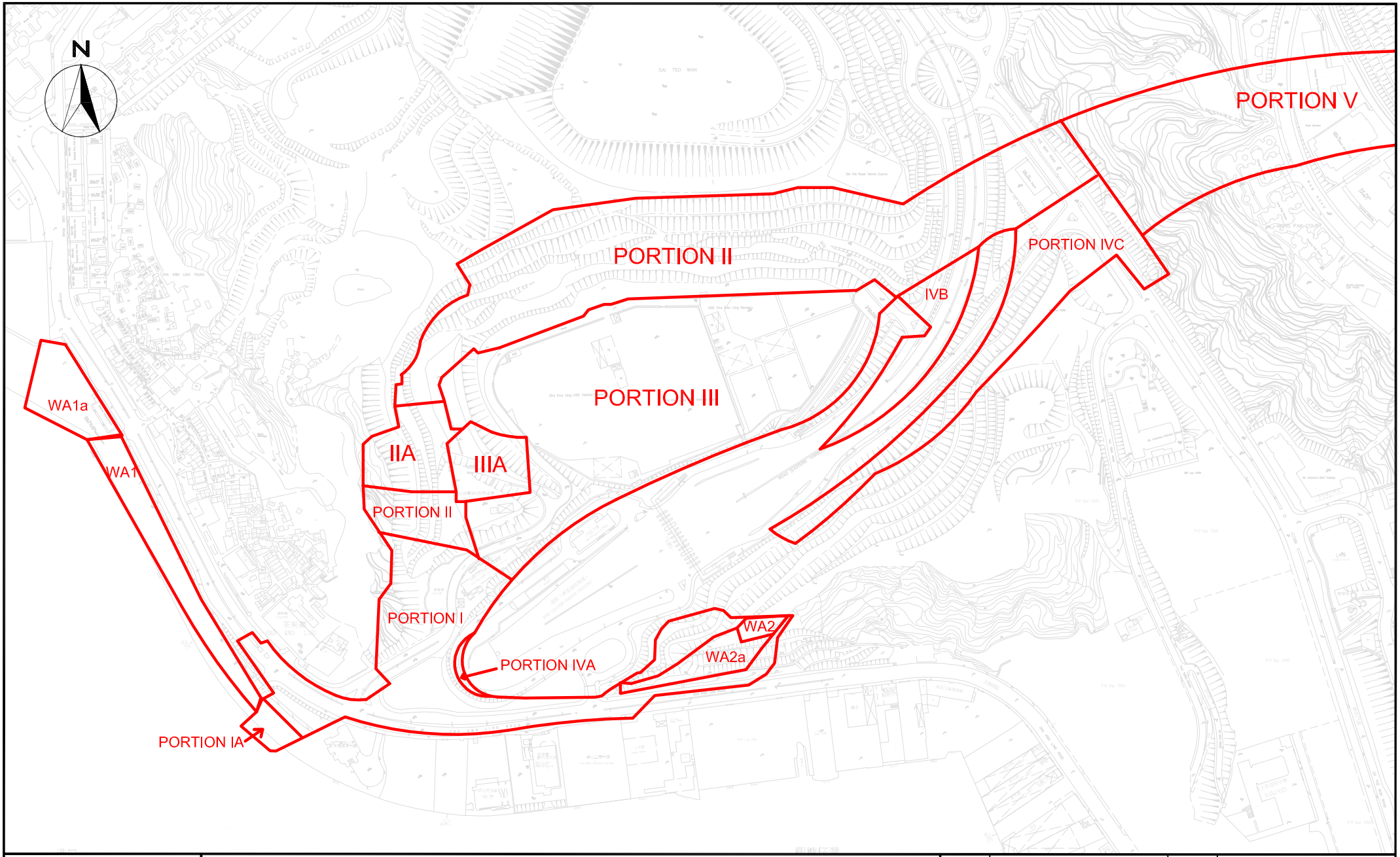
JOB No.	MA16034	FIGURE NO. 1	REV -



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

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

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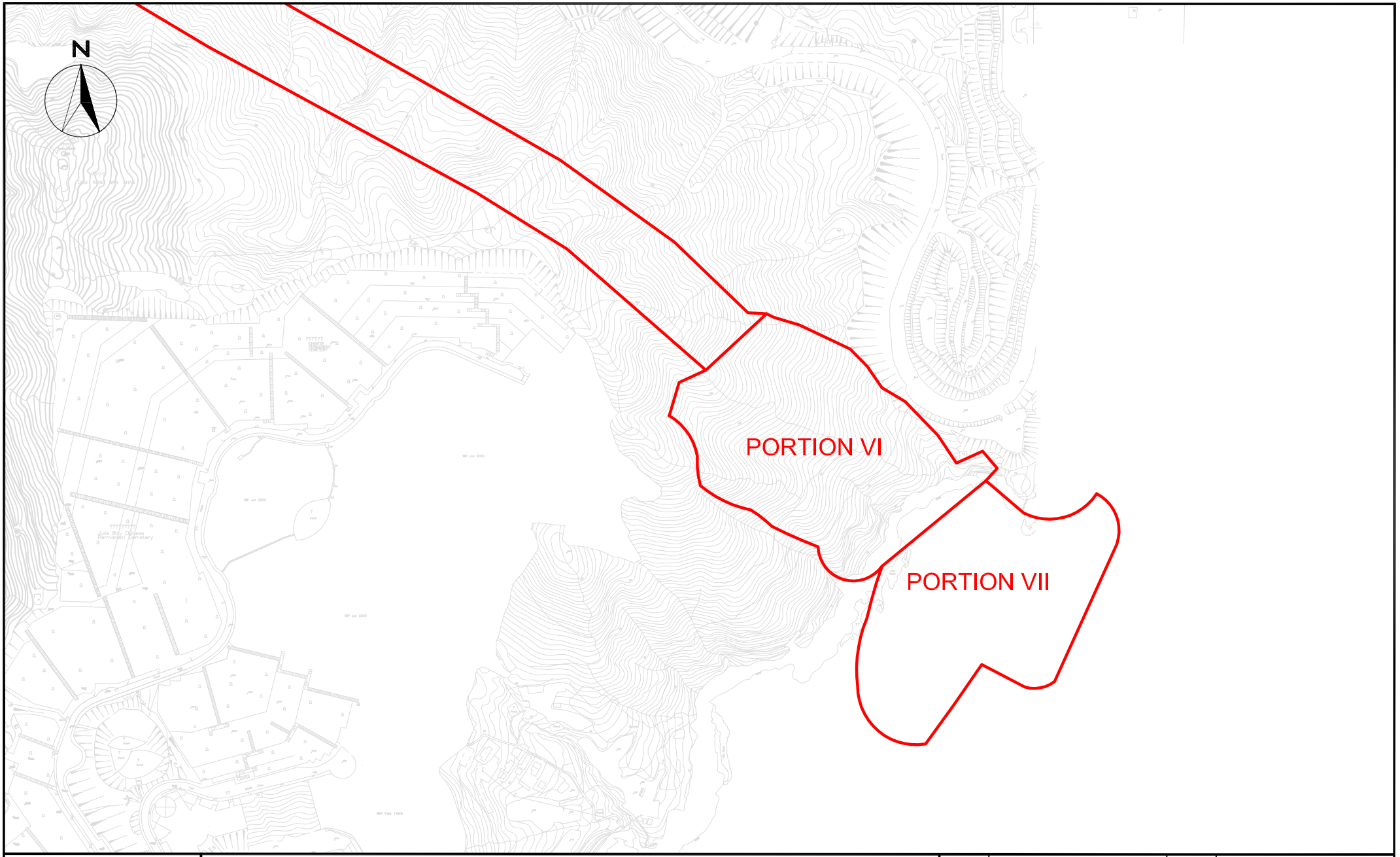

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel
- Design and Construction

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

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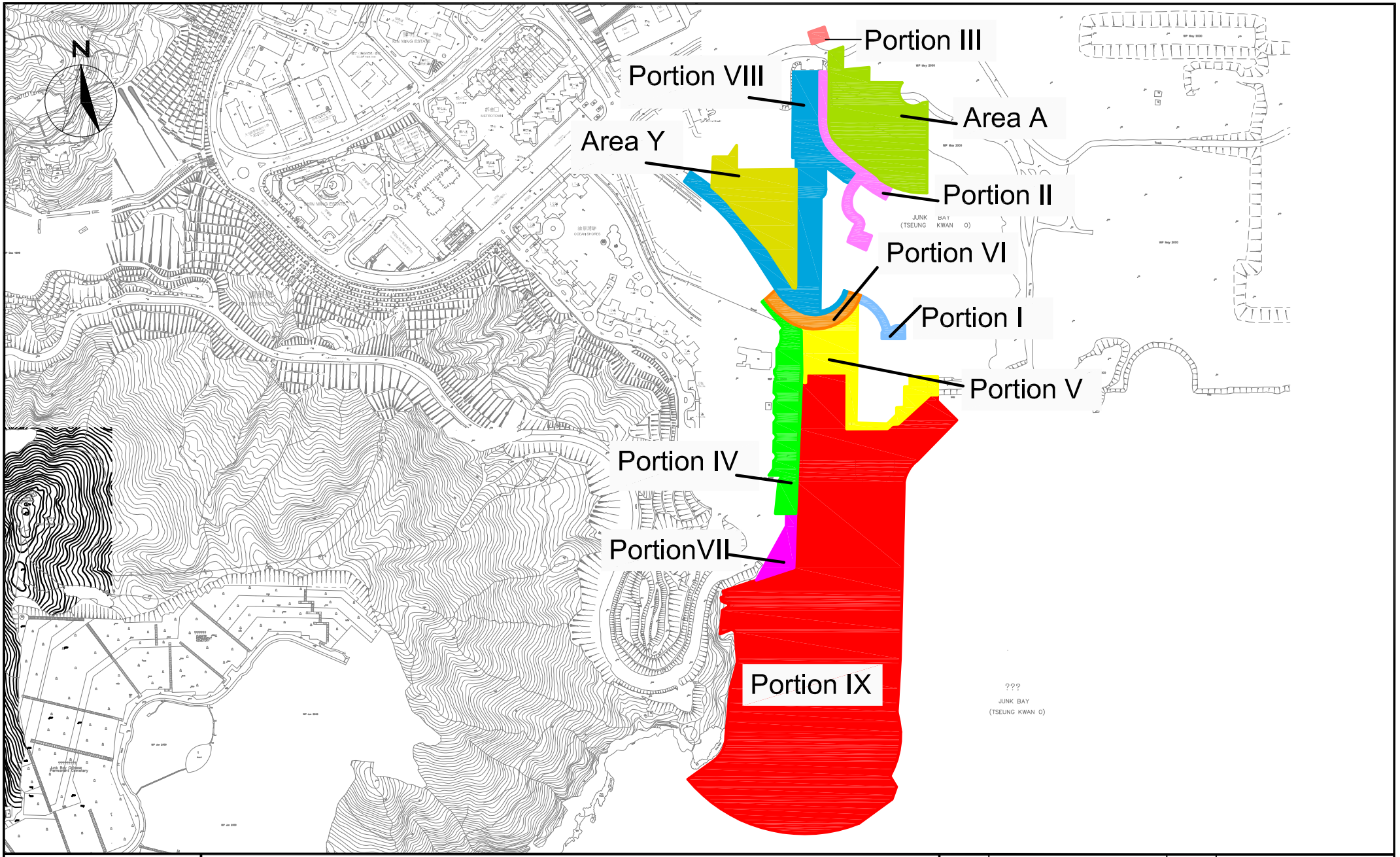
JOB No.	MA16034	FIGURE NO. 1b	REV -



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

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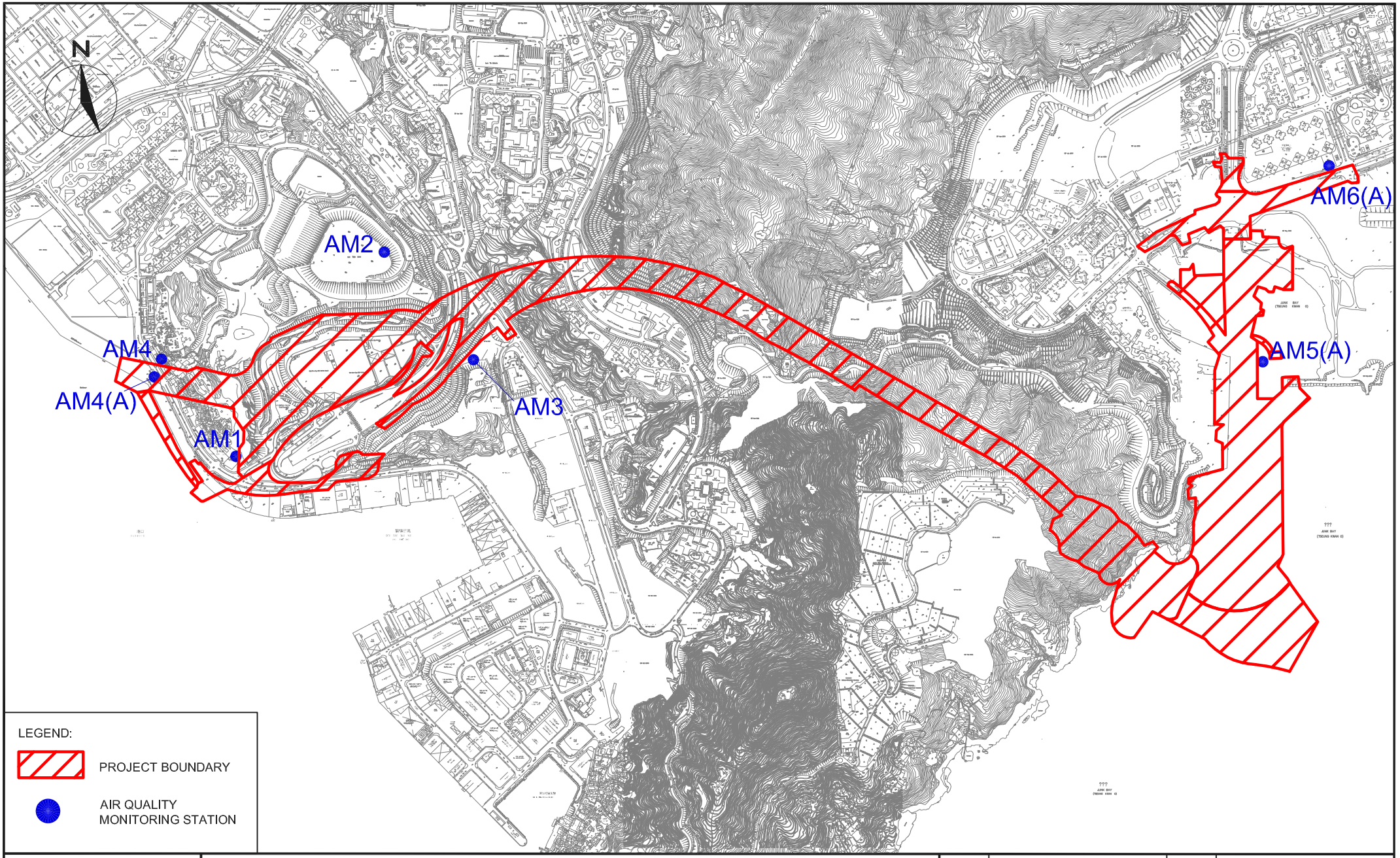

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Air Quality Monitoring Stations

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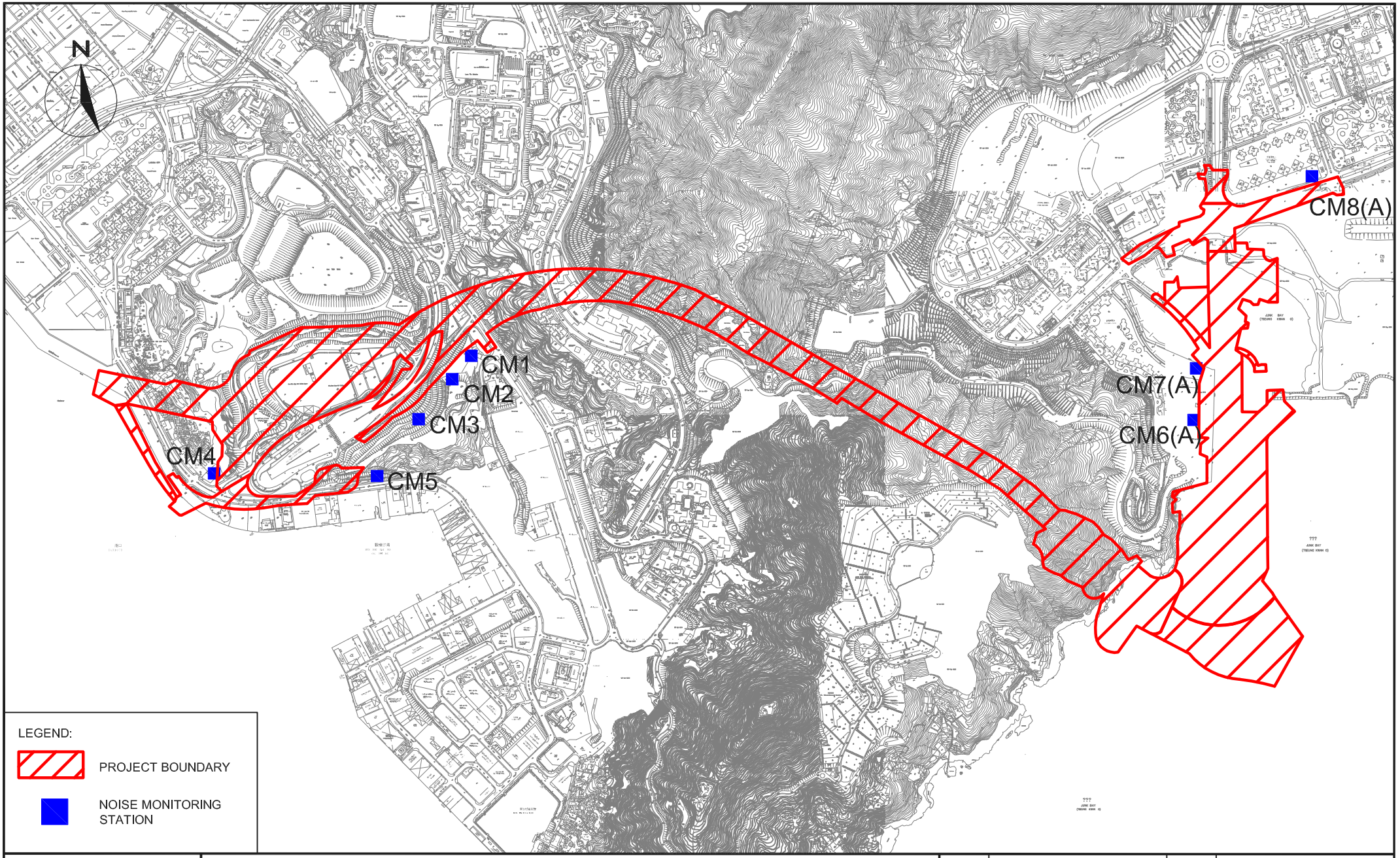
JOB No.	MA16034	FIGURE NO. 2	REV -



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

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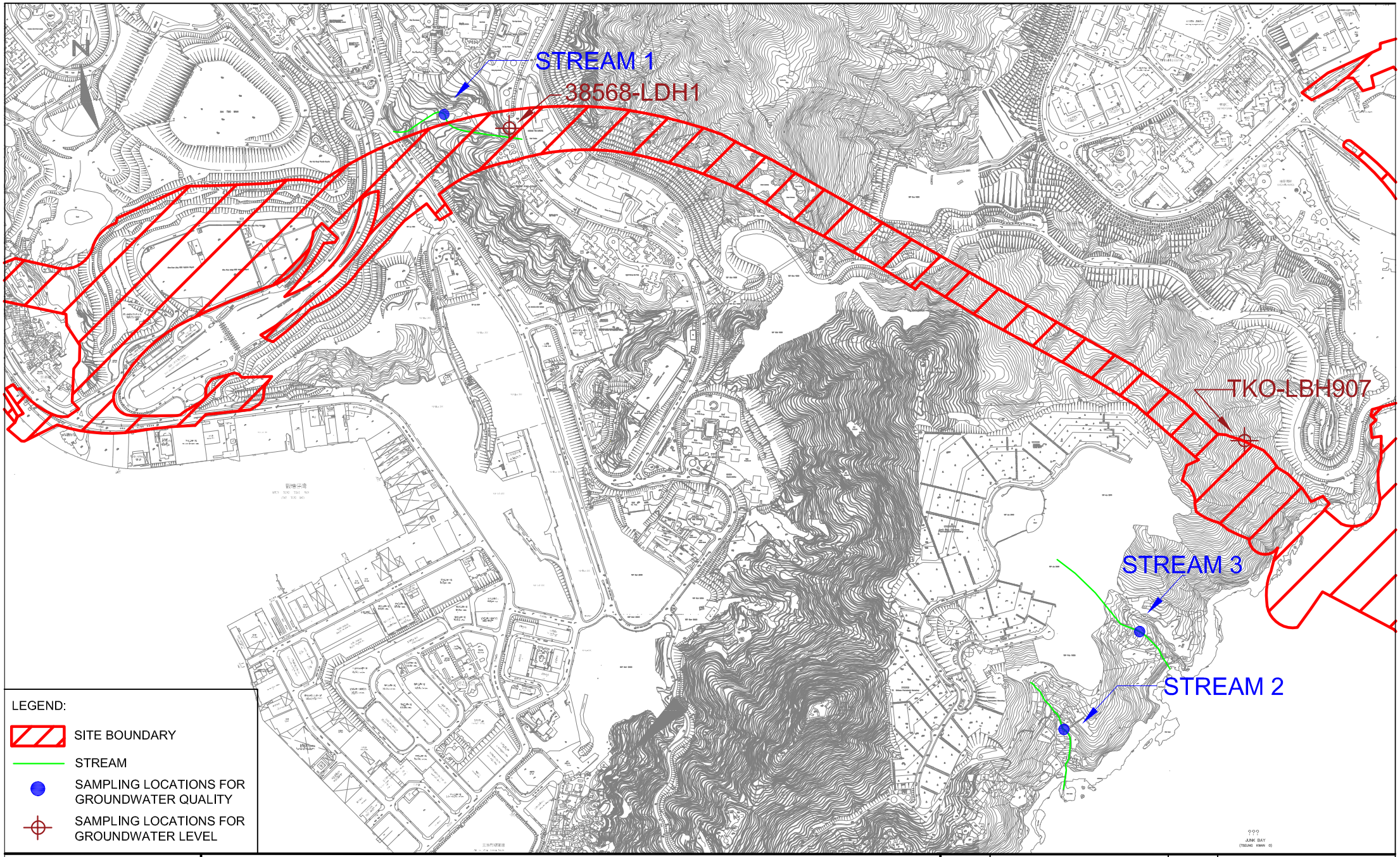
JOB No.	MA16034	FIGURE NO. 3	REV -



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

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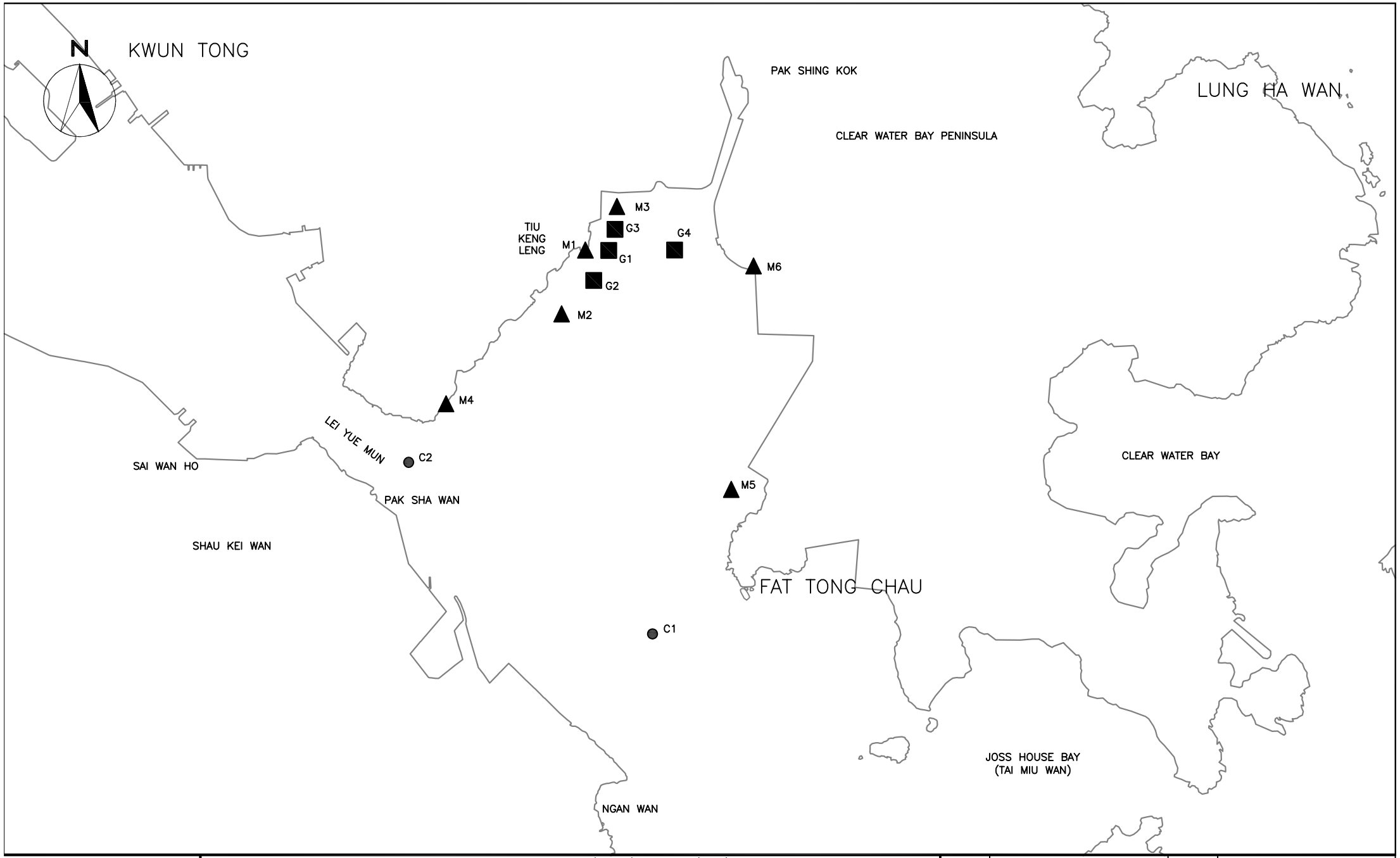
JOB No.	MA16034	FIGURE NO. 4	REV -



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

Locations of Water Quality Monitoring Stations

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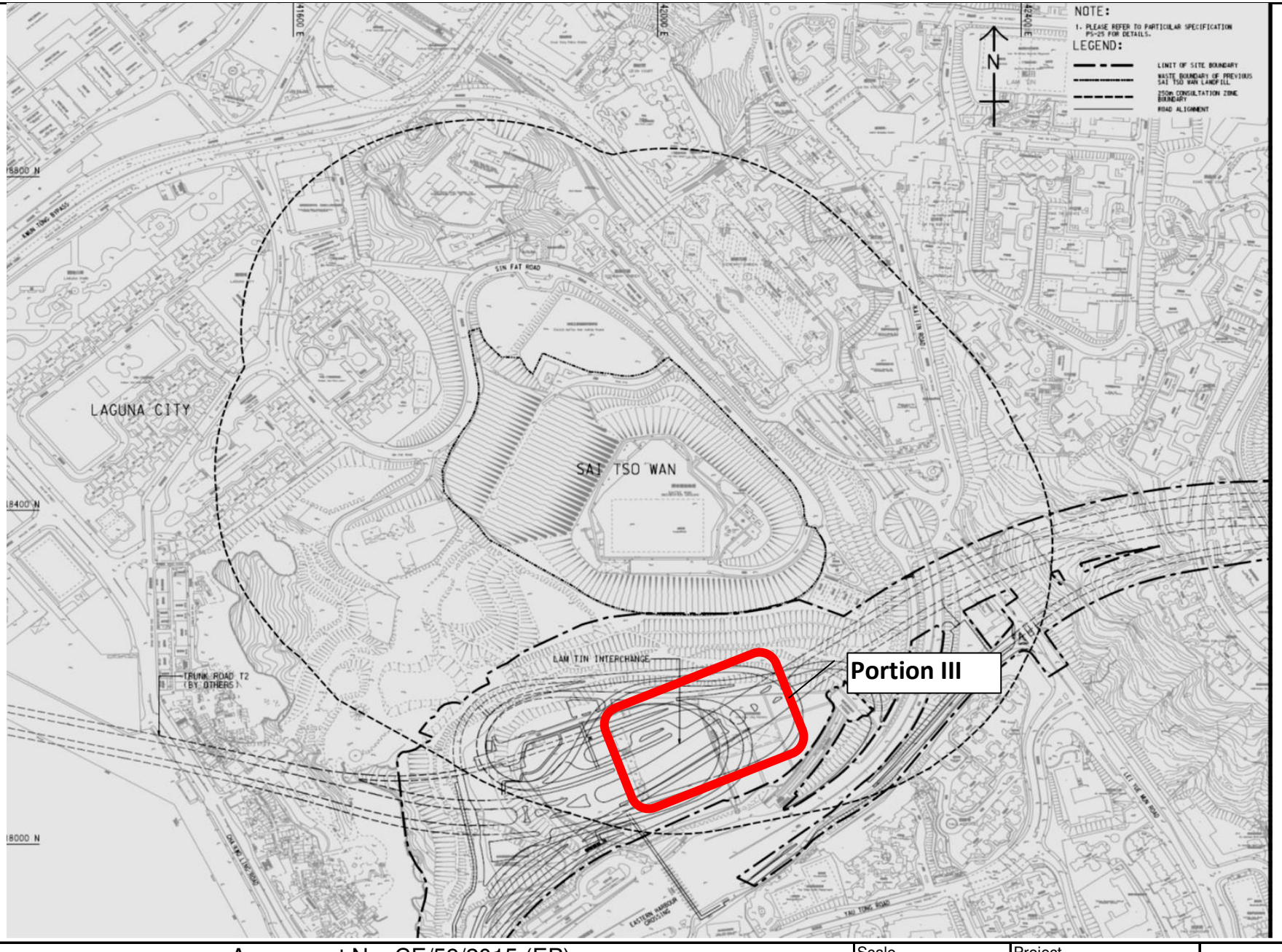

Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Locations of Landfill Gas Monitoring	Scale: N.T.S Date: Dec-16	Project No.: MA16034 Figure: 6

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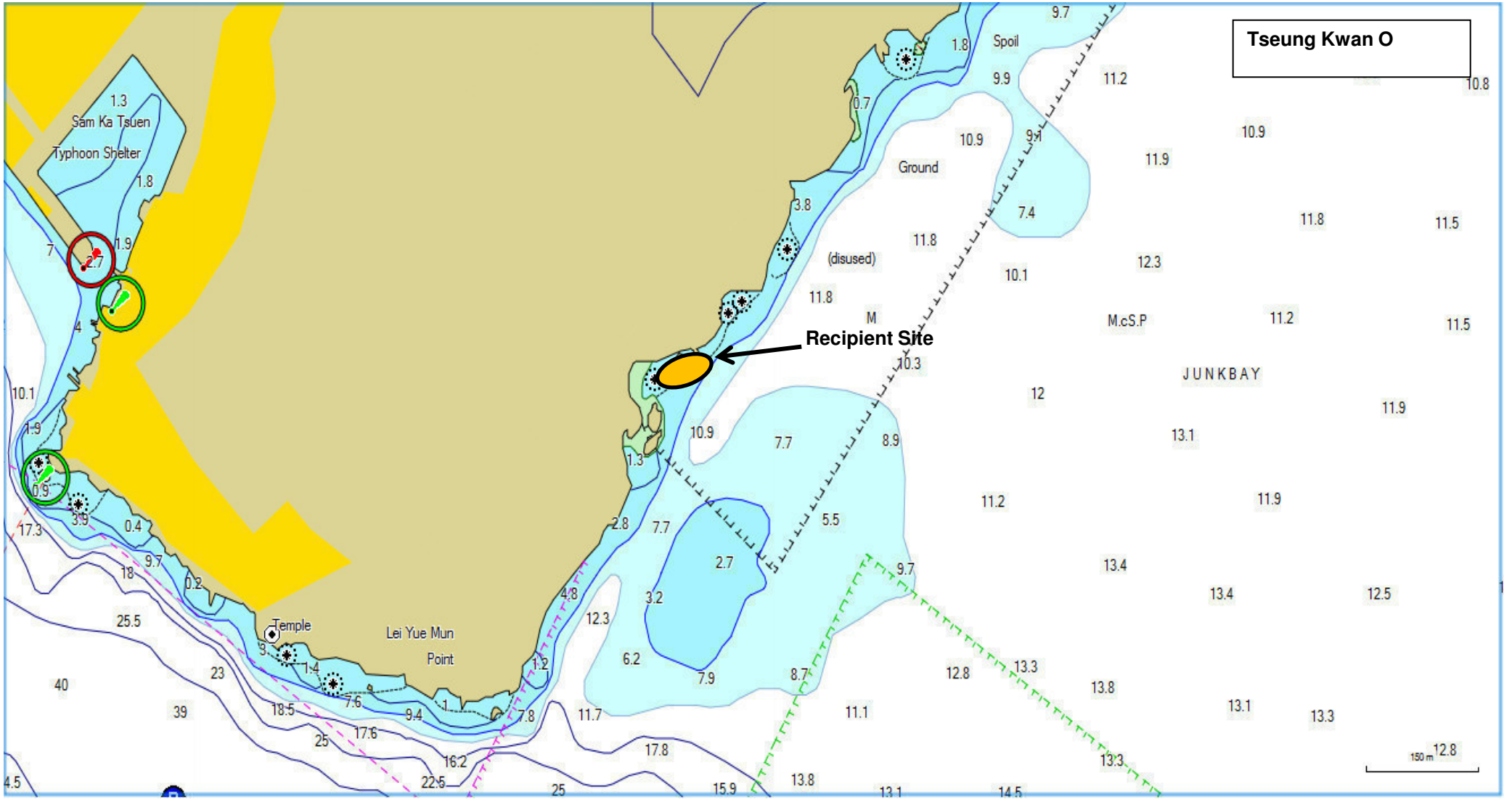

Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Location of Post-translocation Coral Monitoring	Scale: N.T.S Date: Mar-17	Project No.: MA16034 Figure: 7

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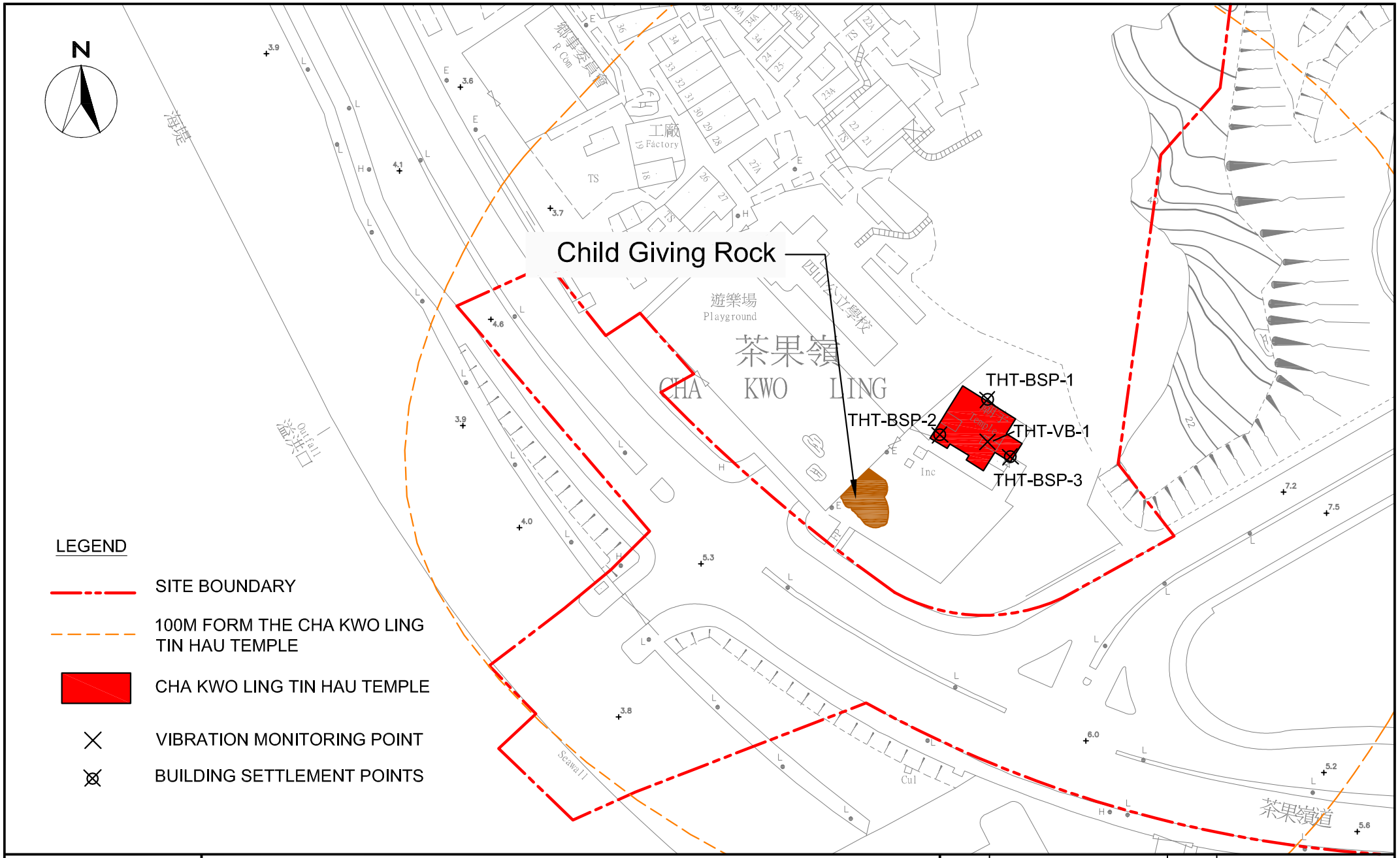

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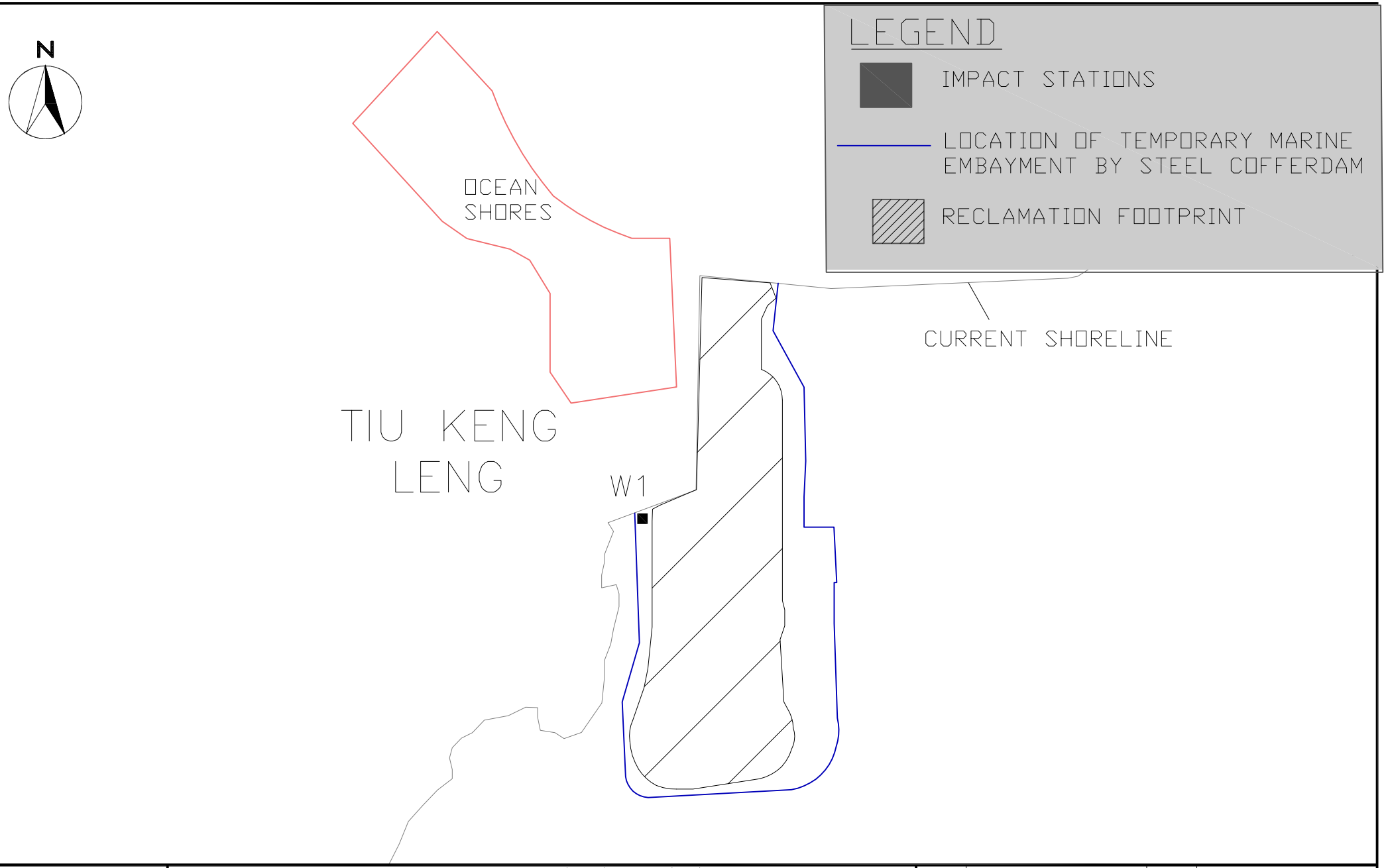
Agreement No. CE/59/2015 (EP)
Environmental Team for Tsueng Kwan O - Lam Tin Tunnel - Design and Construction

Locations of Monitirong for Cultural Heritage

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



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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction
Location of Water Quality Monitoring Stations within Temporary Marine Embayment

SCALE	N.T.S	DATE	MAY 2017
CHECK	JF	DRAWN	JW
PROJECT NO.	MA16034	FIGURE NO.	9
		REV	–

APPENDIX A
ACTION AND LIMIT LEVELS

APPENDIX A – Action and Limit Levels

Air Quality

1-hr TSP

Monitoring Stations	Location	Action Level, µg/m^3	Limit Level, µg/m^3
AM1	Tin Hau Temple	275	500
AM2	Sai Tso Wan Recreation Ground	273	
AM3	Yau Lai Estate Bik Lai House	271	
AM4	Sitting-out Area at Cha Kwo Ling Village	278	
AM5(A)	Tseung Kwan O DSD Desilting Compound	273	
AM6(A)	Park Central, L1/F Open Space Area	285	

24-hr TSP

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

Noise

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

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

Water Quality

Groundwater

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

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

Groundwater Level Monitoring

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

Marine Water Quality

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

Notes:

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

Water Quality Monitoring in Temporary Marine Embayment

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

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

Ecology

Post-translocation Coral Monitoring

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

Landfill Gas Monitoring

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

Alert, Alarm, Action Levels for Built Heritage Monitoring

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

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/05/0009

Project No. AM1 - Tin Hau Temple Operator: MH

Date: 29-Dec-17 Next Due Date: 28-Feb-18

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

Ambient Condition			
Temperature, Ta (K)	294.9	Pressure, Pa (mmHg)	766.4

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.4	3.70	64.81	7.1	2.69
2	9.7	3.14	55.27	5.4	2.35
3	8.5	2.94	51.79	4.8	2.21
4	5.4	2.35	41.45	3.3	1.83
5	3.1	1.78	31.61	1.9	1.39

By Linear Regression of Y on X

Slope , mw = 0.0389 **Intercept, bw =** 0.1909

Correlation coefficient* = 0.9988

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.40**

Remarks:

Conducted by: Lei Signature: Lei Date: 29-12-2017

Checked by: Wk. Tang Signature: Kwai Date: 29-12-2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/08/0009

Project No. AM2 - Sai Tso Wan Recreation Ground Operator: MH

Date: 29-Dec-17 Next Due Date: 28-Feb-18

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

Ambient Condition			
Temperature, Ta (K)	294.5	Pressure, Pa (mmHg)	766.2

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.7	3.74	65.56	8.1	2.87
2	10.5	3.27	57.50	6.4	2.56
3	8.8	3.00	52.71	5.1	2.28
4	5.4	2.35	41.47	3.3	1.83
5	3.2	1.81	32.12	2.0	1.43

By Linear Regression of Y on X

Slope , mw = **0.0434** **Intercept, bw :** **0.0306**

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.53**

Remarks: _____

Conducted by: hei Signature: hei Date: 29-12-2017

Checked by: wk Tang Signature: Kwai Date: 29-12-2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/03/0007

Project No. AM3 - Yau Lai Estate, Bik Lai House Operator: MH

Date: 29-Dec-17 Next Due Date: 28-Feb-18

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

Ambient Condition			
Temperature, Ta (K)	293.6	Pressure, Pa (mmHg)	768.8

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.5	3.58	62.86	7.9	2.85
2	10.8	3.33	58.49	6.7	2.62
3	7.5	2.77	48.88	4.6	2.17
4	5.6	2.40	42.35	3.4	1.87
5	3.3	1.84	32.71	2.2	1.50

By Linear Regression of Y on X

Slope , mw = 0.0449 **Intercept, bw :** 0.0013

Correlation coefficient* = 0.9986

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.63**

Remarks: _____

Conducted by: Hei Signature: Hei Date: 29-12-2017

Checked by: Ivk Tang Signature: Kwan Date: 29-12-2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/54/0008

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

Operator: MH

Date: 9-Nov-17

Next Due Date: 8-Jan-18

Equipment No.: A-01-54

Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	300.6	Pressure, Pa (mmHg)	763.4

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	17.4	4.16	72.90	10.4	3.22
2	13.5	3.67	64.31	8.1	2.84
3	10.2	3.19	56.01	6.5	2.54
4	6.9	2.62	46.22	4.5	2.12
5	4.3	2.07	36.66	3.0	1.73

By Linear Regression of Y on X

Slope , mw = **0.0409** **Intercept, bw :** **0.2307**

Correlation coefficient* = **0.9996**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.98**

Remarks:

Conducted by: LEE MAN HEI Signature: Date: 9-11-2017

Checked by: W.K. Tang Signature: Date: 9-11-2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/54/0009

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

Operator: MH

Date: 4-Jan-18

Next Due Date: 3-Mar-18

Equipment No.: A-01-54

Serial No. 1536

Ambient Condition			
Temperature, Ta (K)	292.3	Pressure, Pa (mmHg)	765

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	17.4	4.23	73.99	10.5	3.28
2	13.2	3.68	64.55	8.2	2.90
3	10.3	3.25	57.12	6.7	2.62
4	6.6	2.60	45.89	4.3	2.10
5	4.1	2.05	36.35	2.8	1.70

By Linear Regression of Y on X

Slope , mw = 0.0424 **Intercept, bw =** 0.1637

Correlation coefficient* = 0.9994

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.85**

Remarks:

Conducted by: hei Signature: hei Date: 4-1-2018

Checked by: W.K. Tang Signature: K Wai Date: 4-1-2018

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/37/0009

Project No. AM5(A) - Tseung Kwan O DSD Desilting Compou Operator: MH

Date: 29-Dec-17 Next Due Date: 28-Feb-18

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

Ambient Condition			
Temperature, Ta (K)	292.9	Pressure, Pa (mmHg)	768.7

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	17.2	4.21	73.67	8.8	3.01
2	13.2	3.69	64.64	7.2	2.72
3	10.9	3.35	58.82	5.8	2.44
4	6.4	2.57	45.27	3.5	1.90
5	4.3	2.10	37.26	2.6	1.64

By Linear Regression of Y on X

Slope , mw = 0.0387 **Intercept, bw =** 0.1749

Correlation coefficient* = 0.9986

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.29**

Remarks:

Conducted by: kwi Signature: kwi Date: 29-12-2017

Checked by: wk Teng Signature: Kwon Date: 29-12-2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/07/0008

Station: AM6 - Park Central Operator: WK

Date: 29-Nov-17 Next Due Date: 28-Jan-18

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

Ambient Condition			
Temperature, Ta (K)	298.8	Pressure, Pa (mmHg)	766.4

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.4	3.39	59.46	7.2	2.69
2	9.8	3.14	55.19	6.4	2.54
3	7.5	2.75	48.38	4.9	2.22
4	5.3	2.31	40.81	3.4	1.85
5	3.7	1.93	34.24	2.5	1.59

By Linear Regression of Y on X

Slope , mw = 0.0448 **Intercept, bw :** 0.0415

Correlation coefficient* = 0.9992

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.86

Remarks:

Conducted by: LEE MAN WEI Signature: [signature] Date: 29-11-2017

Checked by: W.K. Tang Signature: [signature] Date: 29-11-2017

High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/07/0009

Station: AM6 - Park Central | Operator: WK

Date: 26-Jan-18 | Next Due Date: 25-Mar-18

Equipment No.: A-01-07 | Serial No. 10592

Ambient Condition			
Temperature, Ta (K)	290.9	Pressure, Pa (mmHg)	765

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0578	Intercept, bc	-0.04890
Last Calibration Date:	28-Feb-17	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	27-Feb-18	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.6	3.46	60.71	7.5	2.78
2	9.5	3.13	55.02	6.3	2.55
3	7.5	2.78	48.98	4.8	2.22
4	5.0	2.27	40.15	3.5	1.90
5	3.5	1.90	33.73	2.4	1.57

By Linear Regression of Y on X

Slope , mw = 0.0444 **Intercept, bw =** 0.0866

Correlation coefficient* = 0.9985

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.86**

Remarks:

Conducted by: Kei Signature: Kei Date: 26-1-2018

Checked by: WK Tang Signature: Kwai Date: 26-1-2018

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Feb 28, 2017 Rootsmeter S/N 0438320 Ta (K) - 294
Operator Tisch Orifice I.D. - 0993 Pa (mm) - 750.57

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3860	3.2	2.00
2	NA	NA	1.00	0.9910	6.4	4.00
3	NA	NA	1.00	0.8840	7.9	5.00
4	NA	NA	1.00	0.8430	8.7	5.50
5	NA	NA	1.00	0.6970	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9967	0.7191	1.4149		0.9957	0.7184	0.8851
0.9925	1.0015	2.0010		0.9915	1.0005	1.2517
0.9904	1.1204	2.2372		0.9894	1.1192	1.3995
0.9894	1.1737	2.3464		0.9884	1.1725	1.4678
0.9842	1.4120	2.8299		0.9832	1.4106	1.7702

Qstd slope (m) =	2.04055	Qa slope (m) =	1.27776
intercept (b) =	-0.04890	intercept (b) =	-0.03059
coefficient (r) =	0.99995	coefficient (r) =	0.99995
y axis = SQRT[H2O(Pa/760)(298/Ta)]		y axis = SQRT[H2O(Ta/Pa)]	

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

WELLAB 匯力 Testing & Research

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

TEST REPORT

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

Test Report No.:	C/170818
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-02-20

ATTN: **Miss Mei Ling Tang**

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 64 %

Test Specifications:

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

Methodology:

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

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

PATRICK TSE
Laboratory Manager

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

TEST REPORT

Test Report No.:	C/170818
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-02-20
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	2.00	0.00

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
90.2	90	0.2
135	135	0
180.1	180	0.1
224.9	225	-0.1
270	270	0
315.1	315	0.1
360	360	0

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

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

TEST REPORT

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

Test Report No.:	C/171226
Date of Issue:	2017-12-29
Date Received:	2017-12-26
Date Tested:	2017-12-26
Date Completed:	2017-12-29
Next Due Date:	2018-02-28

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Laser Dust Monitor
Manufacturer	: Sibta
Model No.	: LD-3B
Serial No.	: 095029
Sensitivity (K) 1 CPM	: 0.001 mg/m^3
Sen. Adjustment Scale Setting	: 551 CPM
Equipment No.	: A-02-10

Test Conditions:

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

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	0.0037

****

PREPARED AND CHECKED BY:

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/171222
Date of Issue:	2017-12-27
Date Received:	2017-12-22
Date Tested:	2017-12-22
Date Completed:	2017-12-27
Next Due Date:	2018-02-26

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020408
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-01

Test Conditions:

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

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.054

****

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TEST REPORT

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

Test Report No.:	C/171222A
Date of Issue:	2017-12-27
Date Received:	2017-12-22
Date Tested:	2017-12-22
Date Completed:	2017-12-27
Next Due Date:	2018-02-26

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC300
Serial No.	: 3020409
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-26-02

Test Conditions:

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

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.087

****

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TEST REPORT

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

Test Report No.:	C/171215C
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-02-17

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

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701019
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-01

Test Conditions:

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

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.221

****

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TEST REPORT

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

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

Test Report No.:	C/171215
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-02-17
Page:	1 of 1

Certificate of Calibration

Item for Calibration:

Description	: Handheld Particle Counter
Manufacturer	: Hal Technology
Model No.	: Hal-HPC301
Serial No.	: 3011701017
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-04

Test Conditions:

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

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Andersen Samplers, Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.101

****

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Test Report No.:	C/N/170915A
Date of Issue:	2017-09-18
Date Received:	2017-09-15
Date Tested:	2017-09-15
Date Completed:	2017-09-18
Next Due Date:	2018-09-17
Page:	1 of 1

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

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12563
Microphone No.	: 34377
Equipment No.	: N-08-03

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 60%

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.**

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TEST REPORT

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

Test Report No.:	C/N/170825
Date of Issue:	2017-08-28
Date Received:	2017-08-25
Date Tested:	2017-08-25
Date Completed:	2017-08-28
Next Due Date:	2018-08-27

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

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperatre	: 23 degree Celsius
Relative Humidity	: 60 %

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

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PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Test Report No.:	C/N/170818
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20

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.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 61 %

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

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
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Shatin, NT, Hong Kong

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

Test Report No.:	C/N/170818A
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 61 %

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

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TEST REPORT

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

Test Report No.:	C/N/170915C
Date of Issue:	2017-09-18
Date Received:	2017-09-15
Date Tested:	2017-09-15
Date Completed:	2017-09-18
Next Due Date:	2018-09-17

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 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 60%

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

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TEST REPORT

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

Test Report No.:	C/N/171215
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-12-17

ATTN: **Mr. W.K. Tang** Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35924
Equipment No.	: N-13-01

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 64%

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:
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TEST REPORT

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

Test Report No.:	C/N/171215B
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-12-17

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

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: Sound & Vibration Analyser
Manufacturer	: BSWA
Model No.	: BSWA 801
Serial No.	: 35927
Equipment No.	: N-13-03

Test conditions:

Room Temperatre	: 20 degree Celsius
Relative Humidity	: 64%

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:

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TEST REPORT

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

Test Report No.:	C/N/170929
Date of Issue:	2017-09-30
Date Received:	2017-09-29
Date Tested:	2017-09-29
Date Completed:	2017-09-30
Next Due Date:	2018-09-29

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60 %

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

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TEST REPORT

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

Test Report No.:	C/N/170929A
Date of Issue:	2017-09-30
Date Received:	2017-09-29
Date Tested:	2017-09-29
Date Completed:	2017-09-30
Next Due Date:	2018-09-29

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

Page: 1 of 1

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60 %

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

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/N/170929B
Date of Issue:	2017-09-30
Date Received:	2017-09-29
Date Tested:	2017-09-29
Date Completed:	2017-09-30
Next Due Date:	2018-09-29
Page:	1 of 1

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

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperatre	: 21 degree Celsius
Relative Humidity	: 60 %

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
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Laboratory Manager

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TEST REPORT

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

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

Test Report No.:	C/N/170818C
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: Brüel & Kjær
Model No.	: 4231
Serial No.	: 2412367
Equipment No.	: N-02-03

Test conditions:

Room Temperatre	: 22 degree Celsius
Relative Humidity	: 61 %

Methodology:

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

Results:

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

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

Test Report No.:	C/W/171124
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24

ATTN: **Miss Mei Ling Tang**

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.: SW-08-03	
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16H102982
- EXO conductivity/Temperature Sensor, Ti	599870	16G102304
- EXO Turbuduty Sensor, Ti	599101-01	16H102460
- EXO pH Sensor Assembly, Guarded, Ti	599701	16J100413

Test conditions:

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

Test Specifications:

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

Methodology:

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

****

PREPARED AND CHECKED BY:
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TEST REPORT

Test Report No.:	C/W/171124
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.705	-0.005	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.00	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.20	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.06	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.09	9.0-11.0	Pass
50 NTU	50.03	45.0-55.0	Pass
100 NTU	100.4	90.0-110.0	Pass

Depth performance checking

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

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

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

TEST REPORT

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

Test Report No.:	C/W/171124A
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24

ATTN: **Miss Mei Ling Tang**

Certificate of Calibration

Item for calibration:

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

Test conditions:

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

Test Specifications:

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

Methodology:

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

****

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

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

TEST REPORT

Test Report No.:	C/W/171124A
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.706	-0.006	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.07	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.02	9.0-11.0	Pass
50 NTU	50.06	45.0-55.0	Pass
100 NTU	100.3	90.0-110.0	Pass

Depth performance checking

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

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

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

TEST REPORT

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

Test Report No.:	C/W/171124F
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24

ATTN: **Miss Mei Ling Tang**

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-09
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16H102988
- EXO conductivity/Temperature Sensor, Ti	599870	16G102310
- EXO Turbuduty Sensor, Ti	599101-01	16H102467
- EXO pH Sensor Assembly, Guarded, Ti	599701	16J100419

Test conditions:

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

Test Specifications:

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

Methodology:

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

****

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	C/W/171124F
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24
Page:	2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.706	-0.006	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.09	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.85	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.20	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.02	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.16	9.0-11.0	Pass
50 NTU	50.17	45.0-55.0	Pass
100 NTU	100.3	90.0-110.0	Pass

Depth performance checking

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

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

WELLAB LIMITED
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TEST REPORT

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

Test Report No.:	C/W/171124C
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24

ATTN: **Miss Mei Ling Tang**

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.: SW-08-20	
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16J100944
- EXO conductivity/Temperature Sensor, Ti	599870	16H100178
- EXO Turbuduty Sensor, Ti	599101-01	16J101097
- EXO pH Sensor Assembly, Guarded, Ti	599701	16J100706

Test conditions:

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

Test Specifications:

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

Methodology:

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

****

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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TEST REPORT

Test Report No.:	C/W/171124C
Date of Issue:	2017-11-25
Date Received:	2017-11-24
Date Tested:	2017-11-24 to 2017-11-25
Date Completed:	2017-11-25
Next Due Date:	2018-02-24
Page:	2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.702	-0.002	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.03	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.88	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.23	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.09	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.07	9.0-11.0	Pass
50 NTU	50.27	45.0-55.0	Pass
100 NTU	100.6	90.0-110.0	Pass

Depth performance checking

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

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

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TEST REPORT

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

Test Report No.:	C/W/180109
Date of Issue:	2018-01-10
Date Received:	2018-01-09
Date Tested:	2018-01-09 to 2018-01-10
Date Completed:	2018-01-10
Next Due Date:	2018-04-09

ATTN: **Miss Mei Ling Tang**

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-68
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17B101535
- EXO conductivity/Temperature Sensor, Ti	599870	16H100227
- EXO Turbuduty Sensor, Ti	599101-01	17K100336
- EXO pH Sensor Assembly, Guarded, Ti	599701	17K103107

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

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TEST REPORT

Test Report No.:	C/W/180109
Date of Issue:	2018-01-10
Date Received:	2018-01-09
Date Tested:	2018-01-09 to 2018-01-10
Date Completed:	2018-01-10
Next Due Date:	2018-04-09

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.002	-0.004	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.00	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.88	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)	Accetance Criteria	Comment
Zero DO soultion	0.06	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.03	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.03	9.0-11.0	Pass
50 NTU	50.02	45.0-55.0	Pass
100 NTU	101.1	90.0-110.0	Pass

Depth performance checking

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

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

CALIBRATION CERTIFICATE

Calibration Item:	Minimate Plus Unit (Calibration with Geophone BG16959)
Model No.:	716A0403
Serial No.:	BE17506
Calibration Date:	11 April 2017
Next Calibration Date:	11 April 2018
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

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

*References are traceable to NIST or equivalent.

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

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 11 April 2017

CALIBRATION CERTIFICATE

Calibration Item:	TRIAXIAL GEOPHONE (Calibration with main unit BE17506)
Part Number:	714A9701
Serial No.:	BG16959
Calibration Date:	11 April 2017
Next Calibration Date:	11 April 2018
Method Used:	In-house Method B3-001
In-house Testing Procedure No.:	B3-001

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

*References are traceable to NIST or equivalent.

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

Authorized by: _____

(Au Yeung Hang Chuen, Isaac)

Date: 11 April 2017

- when it has to be **right**

Leica Geosystems

Leica Geosystems
Calibration Certificate Blue

Calibration Certificate Blue without measurement values issued by Authorised Service Centre

Product	DNA03 digital level	**Certificate No.**	347062-18012017
Article No.	723289	**Inspection Date**	18.01.2017
Serial No.	347062	**Order No.**	501047397
Equipment No.	5937807	**PO No.**	PO
Issued by	Authorised Service Centre Leica Geosystems Ltd. Kowloon, Hong Kong Hongkong	**Ordered by**	LEIGHTON - CHINA STATE J.V. HONG KONG Hongkong
		Customer	LEIGHTON - CHINA STATE J.V. HONG KONG Hongkong

Compliance

The Calibration Certificate Blue without measurement values issued by Authorised Service Centre corresponds to the Producer Inspection Certificate O in accordance with DIN 55 350 Part 18-4.2.1.

Certificate

We hereby certify that the product described has been tested and complies with the specifications of the product. The test equipment used is traceable to national standards or to recognized procedures. This is established by our Quality Management System, audited and certified to ISO 9001 by an independent national accredited certification body.

Leica Geosystems Ltd.

18.01.2017

Stella Kam
Operations Manager

Jacky Ng
Service Manager

Leica Geosystems AG
Heinrich-Wild-Strasse
9435 Heerbrugg
Switzerland
Telephone +41 71 / 727 31 31
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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: 120848
Part Number: A-ALT5X-A-N-K-D-1-0-0-T-0-0-0
Sales Order Number:

Factory Calibration Date: 08/18/17

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 1.45 %VOL	O2 15.00 %VOL	CO 60.4 PPM	H2S 21.0 PPM	NH3 25 PPM	
Cylinder Lot #	1027601826B	1027601826B	1027601826B	1027601826B	201397	

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.

Process Certified By:

Jim Hoffman

JIM HOFFMAN
QUALITY ENGINEER

Calibrated By: E. Weber

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: 120847
Part Number: A-ALT5X-A-N-K-D-1-0-0-T-0-0-0
Sales Order Number:

Factory Calibration Date: 08/18/17

Set Points

(Low)						
(High)						
STEL						
TWA						
Calibrated Value	Methane 1.45 %VOL	O2 15.00 %VOL	CO 60.4 PPM	H2S 21.0 PPM	NH3 25 PPM	
Cylinder Lot #	1027601826B	1027601826B	1027601826B	1027601826B	201397	

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.

Process Certified By:

Jim Hoffman

JIM HOFFMAN
QUALITY ENGINEER

Calibrated By: E. Weber

APPENDIX C
WEATHER INFORMATION

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 January 2018	16.3 - 19	78	0
2 January 2018	16 - 19.2	78	0
3 January 2018	18.2 - 22	76	0
4 January 2018	18.1 - 20.5	82	0.2
5 January 2018	17.2 - 22.8	87	0.2
6 January 2018	15.9 - 17.3	92	3.7
7 January 2018	15.7 - 17.6	93	16.2
8 January 2018	9.5 - 18.7	95	11.6
9 January 2018	7.9 - 10.7	82	9.9
10 January 2018	10.5 - 15.2	46	Trace
11 January 2018	12.1 - 16.1	42	Trace
12 January 2018	10.5 - 15.3	46	0
13 January 2018	11.3 - 14.6	67	0
14 January 2018	12 - 17.2	70	0
15 January 2018	13 - 18.2	79	0
16 January 2018	14.8 - 22.6	75	0
17 January 2018	15.9 - 25.5	60	0
18 January 2018	15.9 - 24	76	0
19 January 2018	17.9 - 19.3	89	0.8

APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
20 January 2018	17.4 - 22.7	79	Trace
21 January 2018	16.8 - 21.5	81	0
22 January 2018	17.1 - 24.8	80	0
23 January 2018	17.2 - 22.8	78	0
24 January 2018	16.6 - 18.6	78	0
25 January 2018	16.1 - 18.8	79	0
26 January 2018	15.6 - 18.3	85	Trace
27 January 2018	14 - 17.1	81	Trace
28 January 2018	12.6 - 18.4	81	0
29 January 2018	8.9 - 12.9	76	0.1
30 January 2018	8.9 - 11	82	0.2
31 January 2018	7.8 - 10.6	87	19.3

* 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

II. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m/s	Direction
1-Jan-2018	00:00	1.6	SW
1-Jan-2018	01:00	1.6	SSW
1-Jan-2018	02:00	1.4	SW
1-Jan-2018	03:00	1.7	SSW
1-Jan-2018	04:00	1.2	SW
1-Jan-2018	05:00	1.4	SW
1-Jan-2018	06:00	1.4	SSW
1-Jan-2018	07:00	1.6	SW
1-Jan-2018	08:00	1.6	SW
1-Jan-2018	09:00	1.7	SW
1-Jan-2018	10:00	2.2	W
1-Jan-2018	11:00	2.8	SW
1-Jan-2018	12:00	3.1	WSW
1-Jan-2018	13:00	2.8	SW
1-Jan-2018	14:00	2.7	SW
1-Jan-2018	15:00	2.6	SW
1-Jan-2018	16:00	2.4	SW
1-Jan-2018	17:00	2.1	SW
1-Jan-2018	18:00	1.7	W
1-Jan-2018	19:00	1.4	SW
1-Jan-2018	20:00	1.4	WNW
1-Jan-2018	21:00	1.8	WNW
1-Jan-2018	22:00	2	WSW
1-Jan-2018	23:00	1.8	SW
2-Jan-2018	00:00	1.6	SW
2-Jan-2018	01:00	1.6	SW
2-Jan-2018	02:00	1.7	S
2-Jan-2018	03:00	1.5	WNW
2-Jan-2018	04:00	1.4	WSW
2-Jan-2018	05:00	1.4	WSW
2-Jan-2018	06:00	1.5	ENE
2-Jan-2018	07:00	1.4	NW
2-Jan-2018	08:00	1.3	W
2-Jan-2018	09:00	1.7	SW
2-Jan-2018	10:00	2	SW
2-Jan-2018	11:00	2.1	SSW
2-Jan-2018	12:00	2.5	SW

II. Mean Wind Speed and Wind Direction

2-Jan-2018	13:00	2.4	SSW
2-Jan-2018	14:00	2.5	SW
2-Jan-2018	15:00	2.2	W
2-Jan-2018	16:00	1.6	W
2-Jan-2018	17:00	1.8	WSW
2-Jan-2018	18:00	1.5	SSW
2-Jan-2018	19:00	1.5	WNW
2-Jan-2018	20:00	1.5	W
2-Jan-2018	21:00	1.8	N
2-Jan-2018	22:00	1.8	WSW
2-Jan-2018	23:00	2	SW
3-Jan-2018	00:00	1.9	SW
3-Jan-2018	01:00	1.7	SW
3-Jan-2018	02:00	2.2	SSW
3-Jan-2018	03:00	2.1	SW
3-Jan-2018	04:00	1.9	SW
3-Jan-2018	05:00	1.7	NE
3-Jan-2018	06:00	1.9	WNW
3-Jan-2018	07:00	1.4	SW
3-Jan-2018	08:00	1	W
3-Jan-2018	09:00	1.6	SW
3-Jan-2018	10:00	1.7	SW
3-Jan-2018	11:00	1.8	ENE
3-Jan-2018	12:00	2	SE
3-Jan-2018	13:00	2.5	SSE
3-Jan-2018	14:00	2.1	SW
3-Jan-2018	15:00	2.1	WSW
3-Jan-2018	16:00	2.2	E
3-Jan-2018	17:00	2.4	E
3-Jan-2018	18:00	2.5	W
3-Jan-2018	19:00	1.9	ESE
3-Jan-2018	20:00	1.6	ESE
3-Jan-2018	21:00	1.6	SW
3-Jan-2018	22:00	1.5	NE
3-Jan-2018	23:00	2.1	W
4-Jan-2018	00:00	1.8	W
4-Jan-2018	01:00	1.6	SW
4-Jan-2018	02:00	1.7	SSW

II. Mean Wind Speed and Wind Direction

4-Jan-2018	03:00	1.9	SSW
4-Jan-2018	04:00	1.6	S
4-Jan-2018	05:00	1.5	ENE
4-Jan-2018	06:00	1.6	WSW
4-Jan-2018	07:00	1.7	SSW
4-Jan-2018	08:00	2.1	W
4-Jan-2018	09:00	2.5	SSW
4-Jan-2018	10:00	3	SW
4-Jan-2018	11:00	3	SW
4-Jan-2018	12:00	3	WSW
4-Jan-2018	13:00	2.9	E
4-Jan-2018	14:00	2.9	E
4-Jan-2018	15:00	2.7	N
4-Jan-2018	16:00	2.2	SW
4-Jan-2018	17:00	2.2	SW
4-Jan-2018	18:00	1.8	NNE
4-Jan-2018	19:00	1.4	S
4-Jan-2018	20:00	1	NNW
4-Jan-2018	21:00	1.4	SW
4-Jan-2018	22:00	1.3	SW
4-Jan-2018	23:00	1.5	WNW
5-Jan-2018	00:00	1.6	SW
5-Jan-2018	01:00	1.6	SSE
5-Jan-2018	02:00	1.5	SSW
5-Jan-2018	03:00	1.6	E
5-Jan-2018	04:00	1.8	ENE
5-Jan-2018	05:00	1.9	NNE
5-Jan-2018	06:00	1.9	NNE
5-Jan-2018	07:00	1.6	ESE
5-Jan-2018	08:00	1.8	ENE
5-Jan-2018	09:00	1.9	E
5-Jan-2018	10:00	1.8	SSW
5-Jan-2018	11:00	1.6	W
5-Jan-2018	12:00	2.1	SW
5-Jan-2018	13:00	2.4	SW
5-Jan-2018	14:00	2.4	ENE
5-Jan-2018	15:00	2.3	N
5-Jan-2018	16:00	2	N

II. Mean Wind Speed and Wind Direction

5-Jan-2018	17:00	1.7	N
5-Jan-2018	18:00	1.4	NNE
5-Jan-2018	19:00	1.3	SSE
5-Jan-2018	20:00	1.5	SSW
5-Jan-2018	21:00	1.3	ENE
5-Jan-2018	22:00	1.4	S
5-Jan-2018	23:00	1.2	S
6-Jan-2018	00:00	1.5	S
6-Jan-2018	01:00	1.5	ESE
6-Jan-2018	02:00	1.3	E
6-Jan-2018	03:00	1.4	SSW
6-Jan-2018	04:00	1.5	SSW
6-Jan-2018	05:00	1.3	SSW
6-Jan-2018	06:00	1.2	ESE
6-Jan-2018	07:00	1.2	ESE
6-Jan-2018	08:00	1.4	ENE
6-Jan-2018	09:00	1.2	ENE
6-Jan-2018	10:00	1.7	NE
6-Jan-2018	11:00	1.9	NE
6-Jan-2018	12:00	2.3	N
6-Jan-2018	13:00	2.3	SW
6-Jan-2018	14:00	2	N
6-Jan-2018	15:00	2.6	E
6-Jan-2018	16:00	1.9	SE
6-Jan-2018	17:00	2.2	ENE
6-Jan-2018	18:00	2.1	N
6-Jan-2018	19:00	1.8	NE
6-Jan-2018	20:00	1.3	N
6-Jan-2018	21:00	1.5	NNE
6-Jan-2018	22:00	1.4	NE
6-Jan-2018	23:00	1.4	NE
7-Jan-2018	00:00	1.7	ENE
7-Jan-2018	01:00	1.9	ESE
7-Jan-2018	02:00	1.6	WNW
7-Jan-2018	03:00	1.5	NE
7-Jan-2018	04:00	1.2	NNE
7-Jan-2018	05:00	1.2	S
7-Jan-2018	06:00	1.6	SSW

II. Mean Wind Speed and Wind Direction

7-Jan-2018	07:00	1.8	SSW
7-Jan-2018	08:00	2.1	NNE
7-Jan-2018	09:00	2.5	NNE
7-Jan-2018	10:00	2.4	W
7-Jan-2018	11:00	2.3	W
7-Jan-2018	12:00	2.4	W
7-Jan-2018	13:00	2.4	W
7-Jan-2018	14:00	2.2	W
7-Jan-2018	15:00	2.3	WNW
7-Jan-2018	16:00	2.5	WNW
7-Jan-2018	17:00	2	W
7-Jan-2018	18:00	2.1	WNW
7-Jan-2018	19:00	1.4	WNW
7-Jan-2018	20:00	1	WNW
7-Jan-2018	21:00	1	WSW
7-Jan-2018	22:00	1.4	SSE
7-Jan-2018	23:00	1.1	SW
8-Jan-2018	00:00	1.2	W
8-Jan-2018	01:00	1.7	W
8-Jan-2018	02:00	1.9	NE
8-Jan-2018	03:00	1.7	SSW
8-Jan-2018	04:00	1.9	SSW
8-Jan-2018	05:00	1.8	SSW
8-Jan-2018	06:00	1.9	WNW
8-Jan-2018	07:00	2.3	WNW
8-Jan-2018	08:00	2.4	W
8-Jan-2018	09:00	2.4	E
8-Jan-2018	10:00	3.1	NNE
8-Jan-2018	11:00	3.3	N
8-Jan-2018	12:00	3.5	NNE
8-Jan-2018	13:00	3.1	NNE
8-Jan-2018	14:00	3.4	NW
8-Jan-2018	15:00	3.4	NNE
8-Jan-2018	16:00	3.3	N
8-Jan-2018	17:00	2.7	N
8-Jan-2018	18:00	2.4	NE
8-Jan-2018	19:00	2.5	NNE
8-Jan-2018	20:00	2.3	W

II. Mean Wind Speed and Wind Direction

8-Jan-2018	21:00	2.2	W
8-Jan-2018	22:00	1.8	WNW
8-Jan-2018	23:00	1.7	WNW
9-Jan-2018	00:00	1.9	W
9-Jan-2018	01:00	1.5	NE
9-Jan-2018	02:00	1.4	NE
9-Jan-2018	03:00	1.7	WSW
9-Jan-2018	04:00	1.6	WSW
9-Jan-2018	05:00	1.3	NE
9-Jan-2018	06:00	1.5	NE
9-Jan-2018	07:00	1.2	NE
9-Jan-2018	08:00	1.5	NE
9-Jan-2018	09:00	1.9	NNE
9-Jan-2018	10:00	2.7	NNE
9-Jan-2018	11:00	2.5	WSW
9-Jan-2018	12:00	2.6	W
9-Jan-2018	13:00	2.6	W
9-Jan-2018	14:00	2.5	W
9-Jan-2018	15:00	2.6	W
9-Jan-2018	16:00	2.6	ENE
9-Jan-2018	17:00	2.2	SSW
9-Jan-2018	18:00	2	ENE
9-Jan-2018	19:00	1.7	ENE
9-Jan-2018	20:00	1.6	SW
9-Jan-2018	21:00	1.6	W
9-Jan-2018	22:00	1.5	N
9-Jan-2018	23:00	1.5	N
10-Jan-2018	00:00	1.5	E
10-Jan-2018	01:00	1.4	E
10-Jan-2018	02:00	1.4	SSW
10-Jan-2018	03:00	1.2	S
10-Jan-2018	04:00	1.1	S
10-Jan-2018	05:00	1.3	WSW
10-Jan-2018	06:00	1.2	SW
10-Jan-2018	07:00	1.3	WSW
10-Jan-2018	08:00	1.7	W
10-Jan-2018	09:00	2	SW
10-Jan-2018	10:00	2.4	SW

II. Mean Wind Speed and Wind Direction

10-Jan-2018	11:00	2.7	SW
10-Jan-2018	12:00	2.8	SSW
10-Jan-2018	13:00	2.6	WSW
10-Jan-2018	14:00	2.7	SW
10-Jan-2018	15:00	2.2	ENE
10-Jan-2018	16:00	2.6	SW
10-Jan-2018	17:00	1.8	W
10-Jan-2018	18:00	1.5	SW
10-Jan-2018	19:00	1.5	SW
10-Jan-2018	20:00	1.2	SW
10-Jan-2018	21:00	2.1	SW
10-Jan-2018	22:00	1.2	SW
10-Jan-2018	23:00	2.5	WSW
11-Jan-2018	00:00	1.6	SW
11-Jan-2018	01:00	1.9	W
11-Jan-2018	02:00	2	W
11-Jan-2018	03:00	1.8	W
11-Jan-2018	04:00	1.6	WNW
11-Jan-2018	05:00	1.5	SW
11-Jan-2018	06:00	1.4	SW
11-Jan-2018	07:00	1.3	WNW
11-Jan-2018	08:00	1.9	WNW
11-Jan-2018	09:00	2.3	WSW
11-Jan-2018	10:00	2.3	W
11-Jan-2018	11:00	2.8	WSW
11-Jan-2018	12:00	2.9	WSW
11-Jan-2018	13:00	3	WSW
11-Jan-2018	14:00	2.9	W
11-Jan-2018	15:00	3	NE
11-Jan-2018	16:00	2.9	SW
11-Jan-2018	17:00	2.1	ENE
11-Jan-2018	18:00	1.4	NNE
11-Jan-2018	19:00	1.3	NNE
11-Jan-2018	20:00	1.6	S
11-Jan-2018	21:00	1.7	NNE
11-Jan-2018	22:00	1.5	N
11-Jan-2018	23:00	1.4	NNE
12-Jan-2018	00:00	1.5	NE

II. Mean Wind Speed and Wind Direction

12-Jan-2018	01:00	1.4	N
12-Jan-2018	02:00	1.6	N
12-Jan-2018	03:00	1.5	N
12-Jan-2018	04:00	1.6	N
12-Jan-2018	05:00	1.5	N
12-Jan-2018	06:00	1.5	N
12-Jan-2018	07:00	1.7	WSW
12-Jan-2018	08:00	1.9	SW
12-Jan-2018	09:00	2	WNW
12-Jan-2018	10:00	2.1	W
12-Jan-2018	11:00	2.4	SSW
12-Jan-2018	12:00	2.4	W
12-Jan-2018	13:00	2.7	WNW
12-Jan-2018	14:00	2.8	W
12-Jan-2018	15:00	2.4	S
12-Jan-2018	16:00	2.2	SSW
12-Jan-2018	17:00	2.4	SSE
12-Jan-2018	18:00	1.8	W
12-Jan-2018	19:00	1.6	W
12-Jan-2018	20:00	1.3	W
12-Jan-2018	21:00	1.3	ENE
12-Jan-2018	22:00	1.5	E
12-Jan-2018	23:00	1.5	S
13-Jan-2018	00:00	1.4	SW
13-Jan-2018	01:00	1.4	NE
13-Jan-2018	02:00	1	WSW
13-Jan-2018	03:00	1.3	SSW
13-Jan-2018	04:00	1.2	SSW
13-Jan-2018	05:00	1.4	W
13-Jan-2018	06:00	1.1	S
13-Jan-2018	07:00	1.2	SSW
13-Jan-2018	08:00	1.2	SSE
13-Jan-2018	09:00	2	W
13-Jan-2018	10:00	2.3	W
13-Jan-2018	11:00	2.6	W
13-Jan-2018	12:00	3	W
13-Jan-2018	13:00	2.7	ENE
13-Jan-2018	14:00	2.5	E

II. Mean Wind Speed and Wind Direction

13-Jan-2018	15:00	2.3	S
13-Jan-2018	16:00	1.9	SSW
13-Jan-2018	17:00	1.7	W
13-Jan-2018	18:00	1.5	W
13-Jan-2018	19:00	1.3	NNE
13-Jan-2018	20:00	1.1	NE
13-Jan-2018	21:00	1.1	WSW
13-Jan-2018	22:00	1.4	SSW
13-Jan-2018	23:00	1.9	SW
14-Jan-2018	00:00	1.5	SW
14-Jan-2018	01:00	1.3	W
14-Jan-2018	02:00	1.3	SW
14-Jan-2018	03:00	1.6	S
14-Jan-2018	04:00	1.5	WNW
14-Jan-2018	05:00	1.1	NE
14-Jan-2018	06:00	1.3	SW
14-Jan-2018	07:00	1.3	SW
14-Jan-2018	08:00	1.4	SW
14-Jan-2018	09:00	1.8	SW
14-Jan-2018	10:00	2.1	WSW
14-Jan-2018	11:00	3	ENE
14-Jan-2018	12:00	3.1	SSW
14-Jan-2018	13:00	2.8	SW
14-Jan-2018	14:00	2.8	W
14-Jan-2018	15:00	2.8	NNE
14-Jan-2018	16:00	2.9	W
14-Jan-2018	17:00	2.9	SSE
14-Jan-2018	18:00	2.5	ENE
14-Jan-2018	19:00	1.6	NNE
14-Jan-2018	20:00	1.7	NE
14-Jan-2018	21:00	1.7	NE
14-Jan-2018	22:00	2.1	NE
14-Jan-2018	23:00	1.4	NE
15-Jan-2018	00:00	1.6	ENE
15-Jan-2018	01:00	1.3	ENE
15-Jan-2018	02:00	1.6	NE
15-Jan-2018	03:00	1.3	E
15-Jan-2018	04:00	1.6	WNW

II. Mean Wind Speed and Wind Direction

15-Jan-2018	05:00	1.4	N
15-Jan-2018	06:00	1.6	WSW
15-Jan-2018	07:00	1.7	SW
15-Jan-2018	08:00	1.9	E
15-Jan-2018	09:00	2.5	NE
15-Jan-2018	10:00	2.7	NNE
15-Jan-2018	11:00	2.5	ENE
15-Jan-2018	12:00	3	NNE
15-Jan-2018	13:00	3.2	NNE
15-Jan-2018	14:00	2.7	ENE
15-Jan-2018	15:00	2.4	E
15-Jan-2018	16:00	2.8	NE
15-Jan-2018	17:00	2.3	ESE
15-Jan-2018	18:00	2.4	NW
15-Jan-2018	19:00	2.2	WSW
15-Jan-2018	20:00	2.2	WNW
15-Jan-2018	21:00	2.2	W
15-Jan-2018	22:00	2.1	SW
15-Jan-2018	23:00	1.9	SSW
16-Jan-2018	00:00	2.1	NE
16-Jan-2018	01:00	2.2	N
16-Jan-2018	02:00	2	ESE
16-Jan-2018	03:00	1.6	ENE
16-Jan-2018	04:00	1.7	W
16-Jan-2018	05:00	2.1	WNW
16-Jan-2018	06:00	1.9	WNW
16-Jan-2018	07:00	1.7	NNE
16-Jan-2018	08:00	1.3	N
16-Jan-2018	09:00	1.8	N
16-Jan-2018	10:00	2	N
16-Jan-2018	11:00	2.1	WSW
16-Jan-2018	12:00	2.4	N
16-Jan-2018	13:00	2.2	N
16-Jan-2018	14:00	2.2	N
16-Jan-2018	15:00	2.4	W
16-Jan-2018	16:00	2.2	NNE
16-Jan-2018	17:00	2.2	N
16-Jan-2018	18:00	1.6	N

II. Mean Wind Speed and Wind Direction

16-Jan-2018	19:00	1.3	NE
16-Jan-2018	20:00	1.5	ENE
16-Jan-2018	21:00	1.6	NE
16-Jan-2018	22:00	1.2	SSW
16-Jan-2018	23:00	1.2	NNE
17-Jan-2018	00:00	1.5	W
17-Jan-2018	01:00	1.5	WSW
17-Jan-2018	02:00	1.3	WSW
17-Jan-2018	03:00	1.6	WSW
17-Jan-2018	04:00	1.1	WSW
17-Jan-2018	05:00	1.2	WSW
17-Jan-2018	06:00	1.2	WNW
17-Jan-2018	07:00	1.1	W
17-Jan-2018	08:00	1.1	N
17-Jan-2018	09:00	1.5	WSW
17-Jan-2018	10:00	1.5	WNW
17-Jan-2018	11:00	2.2	WSW
17-Jan-2018	12:00	2.1	SSE
17-Jan-2018	13:00	1.9	WNW
17-Jan-2018	14:00	1.9	SW
17-Jan-2018	15:00	2.1	W
17-Jan-2018	16:00	2.2	W
17-Jan-2018	17:00	1.5	NNE
17-Jan-2018	18:00	1.5	NE
17-Jan-2018	19:00	1.3	N
17-Jan-2018	20:00	1	SSE
17-Jan-2018	21:00	0.9	ENE
17-Jan-2018	22:00	1.6	W
17-Jan-2018	23:00	1.4	W
18-Jan-2018	00:00	1.6	WNW
18-Jan-2018	01:00	1.8	W
18-Jan-2018	02:00	1.2	NE
18-Jan-2018	03:00	1.4	SE
18-Jan-2018	04:00	1.5	N
18-Jan-2018	05:00	1.5	W
18-Jan-2018	06:00	1.2	WNW
18-Jan-2018	07:00	1.2	W
18-Jan-2018	08:00	1.6	WNW

II. Mean Wind Speed and Wind Direction

18-Jan-2018	09:00	2.4	WNW
18-Jan-2018	10:00	3.1	WNW
18-Jan-2018	11:00	3.3	ESE
18-Jan-2018	12:00	3.3	E
18-Jan-2018	13:00	3.5	WSW
18-Jan-2018	14:00	3.3	W
18-Jan-2018	15:00	3.5	E
18-Jan-2018	16:00	3.2	WSW
18-Jan-2018	17:00	2.6	W
18-Jan-2018	18:00	2.2	SSW
18-Jan-2018	19:00	2.1	SW
18-Jan-2018	20:00	1.8	SW
18-Jan-2018	21:00	1.6	SE
18-Jan-2018	22:00	1.9	ESE
18-Jan-2018	23:00	2.2	SSE
19-Jan-2018	00:00	2.3	NE
19-Jan-2018	01:00	2	WSW
19-Jan-2018	02:00	2.2	W
19-Jan-2018	03:00	2	ENE
19-Jan-2018	04:00	1.8	SSE
19-Jan-2018	05:00	1.8	E
19-Jan-2018	06:00	1.8	ESE
19-Jan-2018	07:00	1.7	ESE
19-Jan-2018	08:00	2	ESE
19-Jan-2018	09:00	2.7	ESE
19-Jan-2018	10:00	2.9	SW
19-Jan-2018	11:00	2.5	WNW
19-Jan-2018	12:00	2.7	NNE
19-Jan-2018	13:00	2.6	NE
19-Jan-2018	14:00	2.4	ENE
19-Jan-2018	15:00	2.6	W
19-Jan-2018	16:00	2.3	W
19-Jan-2018	17:00	2.8	SSW
19-Jan-2018	18:00	2.6	W
19-Jan-2018	19:00	2.2	WSW
19-Jan-2018	20:00	1.9	W
19-Jan-2018	21:00	1.4	WSW
19-Jan-2018	22:00	2	SSE

II. Mean Wind Speed and Wind Direction

19-Jan-2018	23:00	2.1	SE
20-Jan-2018	00:00	1.9	SE
20-Jan-2018	01:00	2.1	SSE
20-Jan-2018	02:00	2.2	S
20-Jan-2018	03:00	2.3	ESE
20-Jan-2018	04:00	2.4	SE
20-Jan-2018	05:00	2.6	ESE
20-Jan-2018	06:00	2.5	SE
20-Jan-2018	07:00	2.1	SSE
20-Jan-2018	08:00	2	S
20-Jan-2018	09:00	2.8	NE
20-Jan-2018	10:00	2.7	SSE
20-Jan-2018	11:00	2.8	SSE
20-Jan-2018	12:00	2.8	SE
20-Jan-2018	13:00	3.4	SSE
20-Jan-2018	14:00	3.5	NE
20-Jan-2018	15:00	3	SSE
20-Jan-2018	16:00	3.9	ESE
20-Jan-2018	17:00	3.4	NE
20-Jan-2018	18:00	3	SE
20-Jan-2018	19:00	2.9	SE
20-Jan-2018	20:00	2.5	SSE
20-Jan-2018	21:00	2.7	SSE
20-Jan-2018	22:00	2.8	SSE
20-Jan-2018	23:00	3.6	SSE
21-Jan-2018	00:00	2.4	ENE
21-Jan-2018	01:00	2.3	ENE
21-Jan-2018	02:00	2.3	ENE
21-Jan-2018	03:00	2.8	NE
21-Jan-2018	04:00	2.4	SE
21-Jan-2018	05:00	2.7	SSE
21-Jan-2018	06:00	3	NE
21-Jan-2018	07:00	3.1	SW
21-Jan-2018	08:00	3.1	SSW
21-Jan-2018	09:00	3.5	S
21-Jan-2018	10:00	4	W
21-Jan-2018	11:00	3.9	SSW
21-Jan-2018	12:00	4.1	W

II. Mean Wind Speed and Wind Direction

21-Jan-2018	13:00	4	W
21-Jan-2018	14:00	3.8	NW
21-Jan-2018	15:00	3.7	NE
21-Jan-2018	16:00	3.8	ESE
21-Jan-2018	17:00	3.5	SW
21-Jan-2018	18:00	4.2	SSW
21-Jan-2018	19:00	3.9	W
21-Jan-2018	20:00	3.3	WNW
21-Jan-2018	21:00	3.5	SSW
21-Jan-2018	22:00	3.2	NW
21-Jan-2018	23:00	3.1	W
22-Jan-2018	00:00	3.1	SW
22-Jan-2018	01:00	3.4	WNW
22-Jan-2018	02:00	3.3	W
22-Jan-2018	03:00	3.3	ESE
22-Jan-2018	04:00	3.1	ESE
22-Jan-2018	05:00	2.6	N
22-Jan-2018	06:00	2.4	NNE
22-Jan-2018	07:00	2.6	E
22-Jan-2018	08:00	3	SE
22-Jan-2018	09:00	2.9	ESE
22-Jan-2018	10:00	3.3	SE
22-Jan-2018	11:00	3.2	SSE
22-Jan-2018	12:00	3.6	ESE
22-Jan-2018	13:00	3.7	NE
22-Jan-2018	14:00	3.2	NNE
22-Jan-2018	15:00	3.6	ENE
22-Jan-2018	16:00	3.6	SE
22-Jan-2018	17:00	3.6	ENE
22-Jan-2018	18:00	3.4	W
22-Jan-2018	19:00	2.9	SSE
22-Jan-2018	20:00	2.5	ENE
22-Jan-2018	21:00	2.5	NE
22-Jan-2018	22:00	2.5	ENE
22-Jan-2018	23:00	2.5	NE
23-Jan-2018	00:00	2.5	SE
23-Jan-2018	01:00	2.3	SSW
23-Jan-2018	02:00	3	SSW

II. Mean Wind Speed and Wind Direction

23-Jan-2018	03:00	3	ENE
23-Jan-2018	04:00	2.8	E
23-Jan-2018	05:00	2.6	ESE
23-Jan-2018	06:00	2.8	ESE
23-Jan-2018	07:00	2.2	ESE
23-Jan-2018	08:00	2.4	SSE
23-Jan-2018	09:00	2.8	ESE
23-Jan-2018	10:00	3.3	ESE
23-Jan-2018	11:00	3	SSE
23-Jan-2018	12:00	2.7	SSE
23-Jan-2018	13:00	2.8	SSE
23-Jan-2018	14:00	3	ENE
23-Jan-2018	15:00	3	WNW
23-Jan-2018	16:00	3	WNW
23-Jan-2018	17:00	2.4	WSW
23-Jan-2018	18:00	3	NE
23-Jan-2018	19:00	3.1	E
23-Jan-2018	20:00	2.7	NE
23-Jan-2018	21:00	2.7	ENE
23-Jan-2018	22:00	2.7	S
23-Jan-2018	23:00	3.1	S
24-Jan-2018	00:00	3	S
24-Jan-2018	01:00	3.6	NNW
24-Jan-2018	02:00	3	SW
24-Jan-2018	03:00	2.8	WNW
24-Jan-2018	04:00	3.2	WNW
24-Jan-2018	05:00	2.8	ENE
24-Jan-2018	06:00	2.5	SSE
24-Jan-2018	07:00	2.6	E
24-Jan-2018	08:00	2.9	N
24-Jan-2018	09:00	3	SW
24-Jan-2018	10:00	3.6	S
24-Jan-2018	11:00	3.9	N
24-Jan-2018	12:00	3.4	NNE
24-Jan-2018	13:00	3.5	ENE
24-Jan-2018	14:00	3.5	SSE
24-Jan-2018	15:00	3.7	ENE
24-Jan-2018	16:00	3.8	NE

II. Mean Wind Speed and Wind Direction

24-Jan-2018	17:00	3.6	ENE
24-Jan-2018	18:00	3	NE
24-Jan-2018	19:00	2.9	ENE
24-Jan-2018	20:00	2.5	SSE
24-Jan-2018	21:00	2.5	E
24-Jan-2018	22:00	2.6	NE
24-Jan-2018	23:00	2.6	ENE
25-Jan-2018	00:00	2.4	NE
25-Jan-2018	01:00	2.4	ENE
25-Jan-2018	02:00	2.3	ENE
25-Jan-2018	03:00	2	NNE
25-Jan-2018	04:00	1.6	ENE
25-Jan-2018	05:00	1.8	ENE
25-Jan-2018	06:00	2	NE
25-Jan-2018	07:00	1.9	ENE
25-Jan-2018	08:00	2.2	NE
25-Jan-2018	09:00	2.5	NE
25-Jan-2018	10:00	2.7	NE
25-Jan-2018	11:00	3.2	NNE
25-Jan-2018	12:00	3.4	N
25-Jan-2018	13:00	2.7	NNE
25-Jan-2018	14:00	2.8	NNE
25-Jan-2018	15:00	2.9	NE
25-Jan-2018	16:00	2.7	ENE
25-Jan-2018	17:00	2.3	ENE
25-Jan-2018	18:00	3.1	ENE
25-Jan-2018	19:00	2.9	E
25-Jan-2018	20:00	2.2	E
25-Jan-2018	21:00	1.6	E
25-Jan-2018	22:00	1.8	E
25-Jan-2018	23:00	1.7	E
26-Jan-2018	00:00	1.6	NNE
26-Jan-2018	01:00	1.3	NE
26-Jan-2018	02:00	1.6	ENE
26-Jan-2018	03:00	1.6	ESE
26-Jan-2018	04:00	0.9	SE
26-Jan-2018	05:00	1.1	S
26-Jan-2018	06:00	0.6	ESE

II. Mean Wind Speed and Wind Direction

26-Jan-2018	07:00	1	ESE
26-Jan-2018	08:00	1.2	NE
26-Jan-2018	09:00	1.4	ENE
26-Jan-2018	10:00	1.6	NNE
26-Jan-2018	11:00	2.3	NE
26-Jan-2018	12:00	3	NNE
26-Jan-2018	13:00	2.9	NNE
26-Jan-2018	14:00	3	N
26-Jan-2018	15:00	2.2	NNE
26-Jan-2018	16:00	2.5	NNE
26-Jan-2018	17:00	2.6	ENE
26-Jan-2018	18:00	2	NE
26-Jan-2018	19:00	1.8	NE
26-Jan-2018	20:00	1.7	NE
26-Jan-2018	21:00	2.3	NE
26-Jan-2018	22:00	2.1	NE
26-Jan-2018	23:00	2.1	NNE
27-Jan-2018	00:00	2.1	ENE
27-Jan-2018	01:00	1.8	ENE
27-Jan-2018	02:00	1.9	ENE
27-Jan-2018	03:00	1.7	ENE
27-Jan-2018	04:00	1.7	NE
27-Jan-2018	05:00	1.8	ENE
27-Jan-2018	06:00	1.5	E
27-Jan-2018	07:00	1.7	NE
27-Jan-2018	08:00	1.9	ENE
27-Jan-2018	09:00	2.4	ESE
27-Jan-2018	10:00	2.5	NE
27-Jan-2018	11:00	2.4	NE
27-Jan-2018	12:00	2.7	NE
27-Jan-2018	13:00	2.6	NE
27-Jan-2018	14:00	2.5	NE
27-Jan-2018	15:00	2.3	NE
27-Jan-2018	16:00	1.9	NE
27-Jan-2018	17:00	2.1	E
27-Jan-2018	18:00	1.4	N
27-Jan-2018	19:00	1.1	N
27-Jan-2018	20:00	1.1	NE

II. Mean Wind Speed and Wind Direction

27-Jan-2018	21:00	1.2	NE
27-Jan-2018	22:00	1	NE
27-Jan-2018	23:00	1.6	NNE
28-Jan-2018	00:00	1.5	NE
28-Jan-2018	01:00	1.3	E
28-Jan-2018	02:00	1.5	E
28-Jan-2018	03:00	1.3	E
28-Jan-2018	04:00	1.6	SE
28-Jan-2018	05:00	1.5	N
28-Jan-2018	06:00	1.3	SE
28-Jan-2018	07:00	1.3	ESE
28-Jan-2018	08:00	1.2	ESE
28-Jan-2018	09:00	1.6	ESE
28-Jan-2018	10:00	2.3	SSE
28-Jan-2018	11:00	2.3	SSE
28-Jan-2018	12:00	2.4	N
28-Jan-2018	13:00	2.7	N
28-Jan-2018	14:00	2	N
28-Jan-2018	15:00	1.7	NNE
28-Jan-2018	16:00	1.6	NNE
28-Jan-2018	17:00	2	NNE
28-Jan-2018	18:00	1.4	NE
28-Jan-2018	19:00	0.8	E
28-Jan-2018	20:00	0.9	NNE
28-Jan-2018	21:00	1.3	E
28-Jan-2018	22:00	1.2	E
28-Jan-2018	23:00	1.3	E
29-Jan-2018	00:00	1.5	E
29-Jan-2018	01:00	1.6	E
29-Jan-2018	02:00	1.8	ENE
29-Jan-2018	03:00	1.7	ESE
29-Jan-2018	04:00	1.2	E
29-Jan-2018	05:00	1.2	N
29-Jan-2018	06:00	1.3	N
29-Jan-2018	07:00	1	ENE
29-Jan-2018	08:00	1.1	N
29-Jan-2018	09:00	1.5	NE
29-Jan-2018	10:00	2	NE

II. Mean Wind Speed and Wind Direction

29-Jan-2018	11:00	2.3	NE
29-Jan-2018	12:00	1.7	ENE
29-Jan-2018	13:00	1.7	NNE
29-Jan-2018	14:00	1.9	N
29-Jan-2018	15:00	2.3	ENE
29-Jan-2018	16:00	1.9	NE
29-Jan-2018	17:00	1.8	NE
29-Jan-2018	18:00	1.4	NE
29-Jan-2018	19:00	1.6	N
29-Jan-2018	20:00	1.3	NE
29-Jan-2018	21:00	1.5	E
29-Jan-2018	22:00	2	E
29-Jan-2018	23:00	1.5	N
30-Jan-2018	00:00	1.5	ENE
30-Jan-2018	01:00	1.7	ENE
30-Jan-2018	02:00	1.3	NE
30-Jan-2018	03:00	1.6	ENE
30-Jan-2018	04:00	1.6	ENE
30-Jan-2018	05:00	1.3	ENE
30-Jan-2018	06:00	1.1	ENE
30-Jan-2018	07:00	1.2	NNE
30-Jan-2018	08:00	1.4	NNE
30-Jan-2018	09:00	1.7	NNE
30-Jan-2018	10:00	1.9	NE
30-Jan-2018	11:00	1.8	N
30-Jan-2018	12:00	2.3	N
30-Jan-2018	13:00	2.3	NNE
30-Jan-2018	14:00	2.1	NE
30-Jan-2018	15:00	2.2	N
30-Jan-2018	16:00	1.9	N
30-Jan-2018	17:00	2	N
30-Jan-2018	18:00	1.8	NNE
30-Jan-2018	19:00	1.8	NNE
30-Jan-2018	20:00	1.5	ENE
30-Jan-2018	21:00	1.2	ENE
30-Jan-2018	22:00	1.3	NNE
30-Jan-2018	23:00	1.5	NNE
31-Jan-2018	00:00	1.7	NNE

II. Mean Wind Speed and Wind Direction

31-Jan-2018	01:00	1.6	NNE
31-Jan-2018	02:00	1.6	E
31-Jan-2018	03:00	1.3	ENE
31-Jan-2018	04:00	1.4	NE
31-Jan-2018	05:00	1.8	NNE
31-Jan-2018	06:00	1.6	NE
31-Jan-2018	07:00	1.6	NE
31-Jan-2018	08:00	1.5	NE
31-Jan-2018	09:00	1.6	N
31-Jan-2018	10:00	1.8	NNE
31-Jan-2018	11:00	1.9	NE
31-Jan-2018	12:00	1.6	ESE
31-Jan-2018	13:00	1.9	E
31-Jan-2018	14:00	1.7	ENE
31-Jan-2018	15:00	1.7	NE
31-Jan-2018	16:00	1.4	NE
31-Jan-2018	17:00	1.1	NE
31-Jan-2018	18:00	1.3	ENE
31-Jan-2018	19:00	1.9	E
31-Jan-2018	20:00	1.8	ENE
31-Jan-2018	21:00	1.9	E
31-Jan-2018	22:00	1.6	E
31-Jan-2018	23:00	1.5	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 (January 2018)

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

Air Quality Monitoring Station

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

Noise Monitoring Station

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

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

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Impact Groundwater Quality Monitoring Schedule (January 2018)

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

Monitoring Location:
Stream 1, Stream 2, Stream 3

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Impact Water Quality Monitoring Schedule (January 2018)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Jan	2-Jan	3-Jan	4-Jan	5-Jan	6-Jan
		Mid-Ebb 12:28 Mid-Flood 17:56		Mid-Flood 8:41 Mid-Ebb 14:08		Mid-Flood 10:16 Mid-Ebb 15:47
7-Jan	8-Jan	9-Jan	10-Jan	11-Jan	12-Jan	13-Jan
	Mid-Flood 11:54 Mid-Ebb 17:40		Mid-Ebb 7:00 Mid-Flood 13:33		Mid-Ebb 9:11 Mid-Flood 15:00	
14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan	20-Jan
	Mid-Ebb 11:40 Mid-Flood 16:45		Mid-Ebb 12:53 Mid-Flood 17:56		Mid-Flood 8:35 Mid-Ebb 14:01	
21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan	27-Jan
	Mid-Flood 10:18 Mid-Ebb 16:05		Mid-Flood 11:41 Mid-Ebb 17:57		Mid-Ebb 6:47 Mid-Flood 13:12	
28-Jan	29-Jan	30-Jan	31-Jan			
	Mid-Ebb 10:32 Mid-Flood 15:58		Mid-Ebb 12:22 Mid-Flood 17:47			

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 (January 2018)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Jan	2-Jan	3-Jan	4-Jan	5-Jan	6-Jan
					Mid-Flood 9:29 Mid-Ebb 14:57	
7-Jan	8-Jan	9-Jan	10-Jan	11-Jan	12-Jan	13-Jan
				Mid-Ebb 8:07 Mid-Flood 14:18		
14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan	20-Jan
		Mid-Ebb 12:17 Mid-Flood 17:20				
21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan	27-Jan
			Mid-Flood 11:41 Mid-Ebb 17:57			
28-Jan	29-Jan	30-Jan	31-Jan			

Monitoring Station:
W1

Agreement No. CE/59/2015 (EP)

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

Tentative Impact Air Quality and Noise Monitoring Schedule (February 2018)

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

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

Air Quality Monitoring Station

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

Noise Monitoring Station

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

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

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Tentative Impact Groundwater Quality Monitoring Schedule (February 2018)

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

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

Monitoring Location:
Stream 1, Stream 2, Stream 3

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Tentative Impact Water Quality Monitoring Schedule (February 2018)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Feb	2-Feb	3-Feb
					Mid-Flood 8:17 Mid-Ebb 13:52	
4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb	10-Feb
	Mid-Flood 10:13 Mid-Ebb 16:05		Mid-Flood 11:36 Mid-Ebb 17:58		Mid-Ebb 7:21 Mid-Flood 13:09	
11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	**16-Feb**	**17-Feb**
	Mid-Ebb 10:42 Mid-Flood 15:37		Mid-Ebb 12:00 Mid-Flood 17:05			
18-Feb	**19-Feb**	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb
		Mid-Flood 9:24 Mid-Ebb 15:27		Mid-Flood 10:41 Mid-Ebb 17:11		Mid-Flood 12:21 Mid-Ebb 19:47
25-Feb	26-Feb	27-Feb	28-Feb			
	Mid-Ebb 9:23 Mid-Flood 14:37		Mid-Ebb 11:25 Mid-Flood 16:50			

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

Note: No marine construction works under this Project from 16 February 2018 to 19 February 2018.

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

Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Tentative Impact Water Quality Monitoring Schedule in Temporary Marine Embayment (February 2018)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Feb	2-Feb	3-Feb
				Mid-Ebb 13:08 Mid-Flood 18:37		
4-Feb	5-Feb	6-Feb	7-Feb	8-Feb	9-Feb	10-Feb
	Mid-Flood 10:13 Mid-Ebb 16:05					
11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	**16-Feb**	**17-Feb**
		Mid-Ebb 11:23 Mid-Flood 16:22				
18-Feb	**19-Feb**	20-Feb	21-Feb	22-Feb	23-Feb	24-Feb
				Mid-Flood 10:41 Mid-Ebb 17:11		
25-Feb	26-Feb	27-Feb	28-Feb			
		Mid-Ebb 10:33 Mid-Flood 15:50				

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

Monitoring Station:
W1

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
4-Jan-18	14:00	Cloudy	232.9
4-Jan-18	15:00	Cloudy	236.7
4-Jan-18	16:00	Cloudy	254.3
10-Jan-18	13:45	Cloudy	167.6
10-Jan-18	14:45	Cloudy	183.9
10-Jan-18	15:45	Cloudy	194.8
16-Jan-18	9:00	Sunny	17.9
16-Jan-18	10:00	Sunny	17.9
16-Jan-18	11:00	Sunny	14.8
22-Jan-18	9:00	Cloudy	90.2
22-Jan-18	10:00	Cloudy	89.1
22-Jan-18	11:00	Cloudy	82.6
26-Jan-18	13:00	Cloudy	217.6
26-Jan-18	14:00	Cloudy	235.1
26-Jan-18	15:00	Cloudy	230.2
		Average	151.0
		Maximum	254.3
		Minimum	14.8

Location AM2 - Sai Tso Wan Recreation Ground			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
4-Jan-18	9:00	Cloudy	133.3
4-Jan-18	10:00	Cloudy	118.0
4-Jan-18	11:00	Cloudy	107.5
10-Jan-18	9:00	Cloudy	156.3
10-Jan-18	10:00	Cloudy	141.3
10-Jan-18	11:00	Cloudy	135.0
16-Jan-18	9:00	Fine	18.4
16-Jan-18	10:00	Fine	19.6
16-Jan-18	11:00	Fine	18.4
22-Jan-18	9:00	Cloudy	83.3
22-Jan-18	10:00	Cloudy	87.5
22-Jan-18	11:00	Cloudy	75.9
26-Jan-18	13:00	Cloudy	225.5
26-Jan-18	14:00	Cloudy	219.2
26-Jan-18	15:00	Cloudy	241.1
		Average	118.7
		Maximum	241.1
		Minimum	18.4

Appendix E - 1-hour TSP Monitoring Results

Location AM3 - Yau Lai Estate Bik Lai House			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
4-Jan-18	9:00	Cloudy	164.8
4-Jan-18	10:00	Cloudy	166.2
4-Jan-18	11:00	Cloudy	178.3
10-Jan-18	13:00	Cloudy	127.4
10-Jan-18	14:00	Cloudy	109.4
10-Jan-18	15:00	Cloudy	120.6
16-Jan-18	13:00	Sunny	17.9
16-Jan-18	14:00	Sunny	17.9
16-Jan-18	15:00	Sunny	15.8
22-Jan-18	13:30	Cloudy	102.2
22-Jan-18	14:30	Cloudy	103.3
22-Jan-18	15:30	Cloudy	111.7
26-Jan-18	9:00	Cloudy	254.8
26-Jan-18	10:00	Cloudy	260.7
26-Jan-18	11:00	Cloudy	257.3
		Average	125.1
		Maximum	260.7
		Minimum	15.8

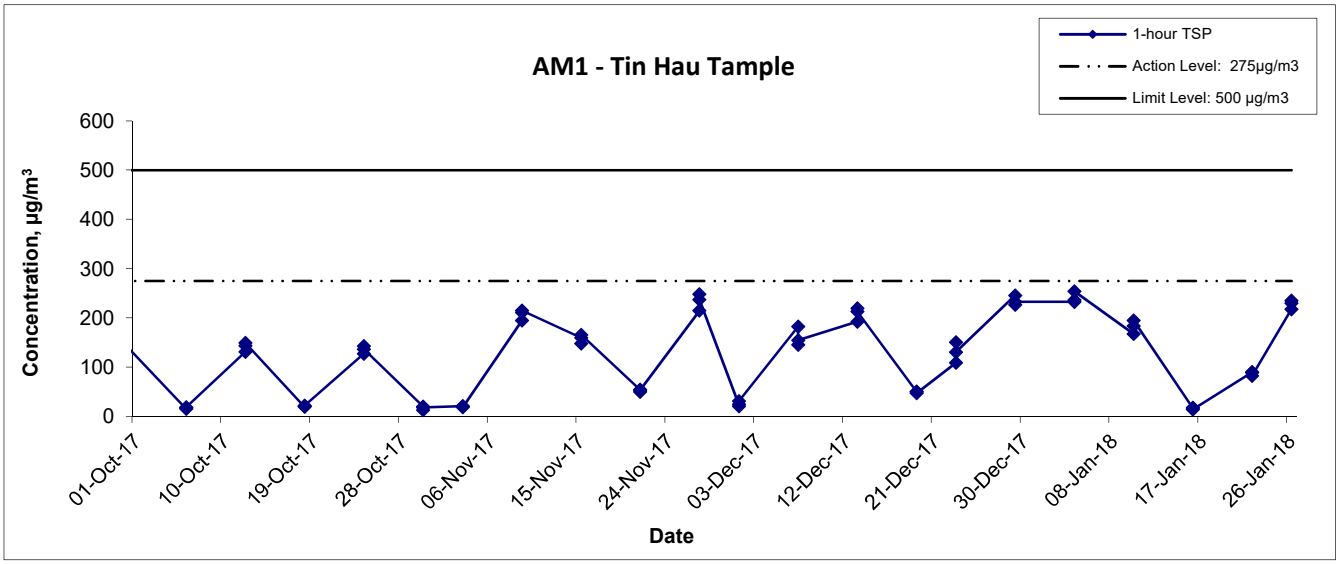
Location AM4 - Sitting-out Area at Cha Kwo Ling Village			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
4-Jan-18	13:00	Cloudy	152.5
4-Jan-18	14:00	Cloudy	138.0
4-Jan-18	15:00	Cloudy	154.4
10-Jan-18	9:00	Cloudy	168.5
10-Jan-18	10:00	Cloudy	178.3
10-Jan-18	11:00	Cloudy	150.9
16-Jan-18	13:00	Sunny	19.6
16-Jan-18	14:00	Sunny	19.6
16-Jan-18	15:00	Sunny	17.4
22-Jan-18	13:20	Cloudy	80.4
22-Jan-18	14:20	Cloudy	78.3
22-Jan-18	15:20	Cloudy	82.6
26-Jan-18	9:00	Cloudy	222.5
26-Jan-18	10:00	Cloudy	228.4
26-Jan-18	11:00	Cloudy	226.3
		Average	127.8
		Maximum	228.4
		Minimum	17.4

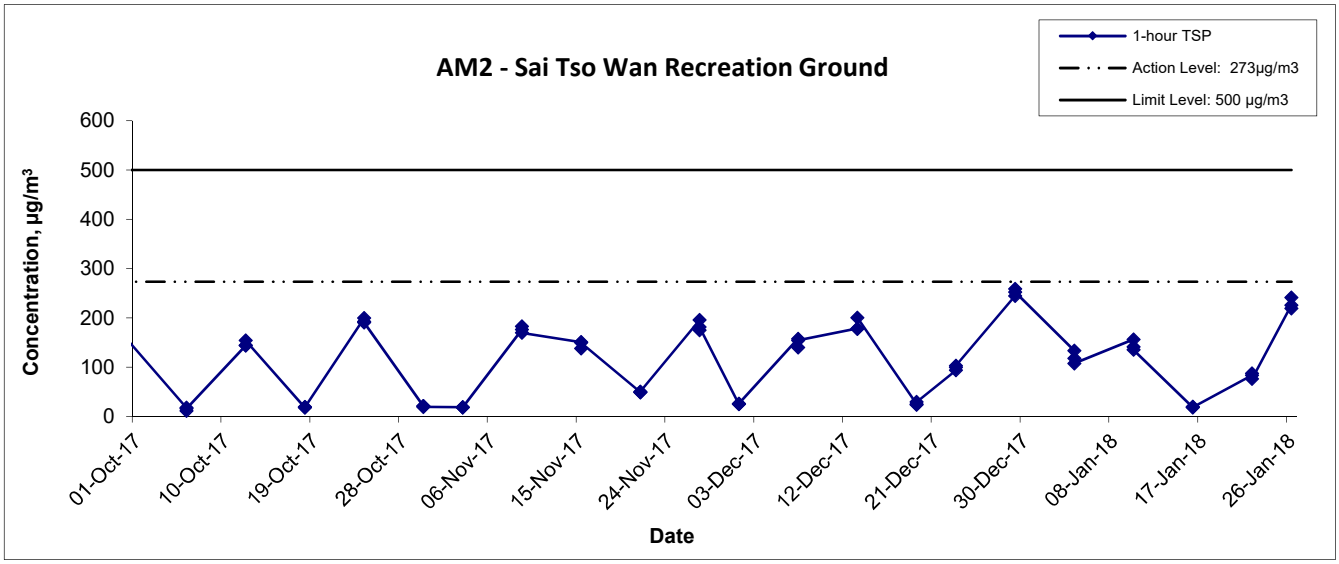
Appendix E - 1-hour TSP Monitoring Results

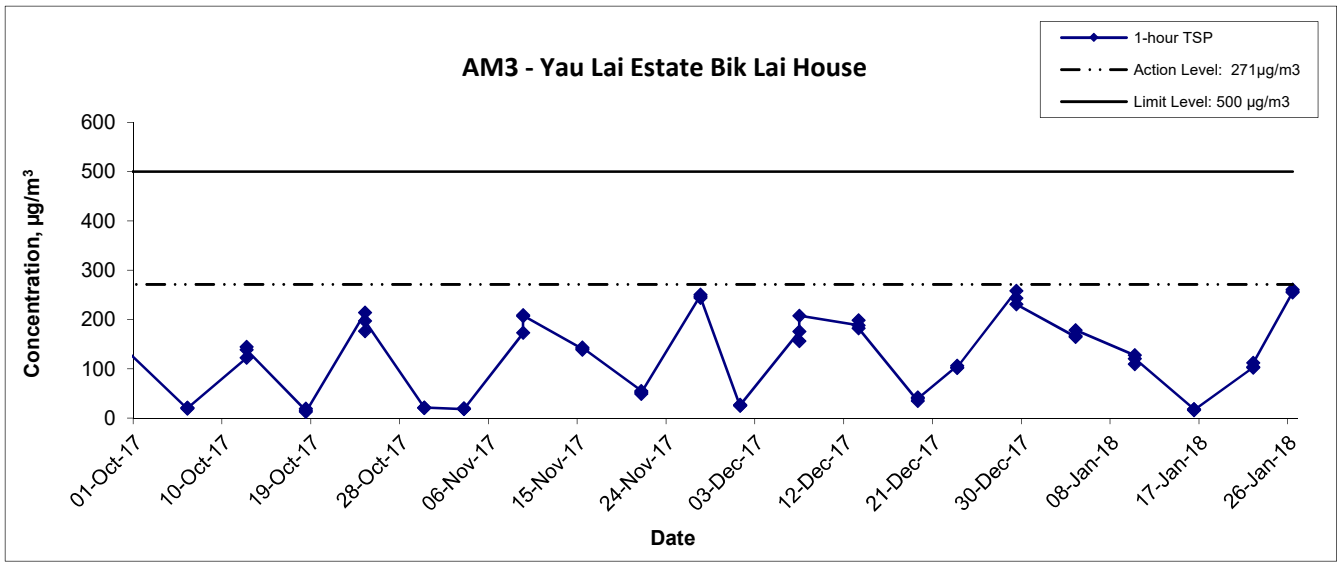
Location AM5(A) - Tseung Kwan O DSD Desilting Compound			
Date	Time	Weather	Particulate Concentration (μg/m^3)
4-Jan-18	13:35	Cloudy	11.6
4-Jan-18	14:35	Cloudy	11.6
4-Jan-18	15:35	Cloudy	20.0
10-Jan-18	13:35	Cloudy	15.2
10-Jan-18	14:35	Cloudy	15.2
10-Jan-18	15:35	Cloudy	14.1
16-Jan-18	13:00	Sunny	92.9
16-Jan-18	14:00	Sunny	103.4
16-Jan-18	15:00	Sunny	112.6
22-Jan-18	9:00	Fine	111.8
22-Jan-18	10:00	Fine	147.0
22-Jan-18	11:00	Fine	126.5
26-Jan-18	9:00	Cloudy	10.5
26-Jan-18	10:00	Cloudy	10.5
26-Jan-18	11:00	Cloudy	19.0
		Average	54.8
		Maximum	147.0
		Minimum	10.5

Location AM6(A) - Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration (μg/m^3)
4-Jan-18	14:00	Cloudy	15.2
4-Jan-18	15:00	Cloudy	15.2
4-Jan-18	16:00	Cloudy	14.1
10-Jan-18	14:00	Cloudy	11.6
10-Jan-18	15:00	Cloudy	11.6
10-Jan-18	16:00	Cloudy	20.0
16-Jan-18	9:00	Sunny	79.9
16-Jan-18	10:00	Sunny	89.8
16-Jan-18	11:00	Sunny	91.5
22-Jan-18	13:00	Fine	190.3
22-Jan-18	14:00	Fine	184.9
22-Jan-18	15:00	Fine	161.8
26-Jan-18	13:00	Cloudy	12.0
26-Jan-18	14:00	Cloudy	12.0
26-Jan-18	15:00	Cloudy	20.7
		Average	62.0
		Maximum	190.3
		Minimum	11.6

1-hr TSP Concentration Levels







Title		Scale	Project No.
Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results		N.T.S	MA16034
		Date Jan 18	Appendix E

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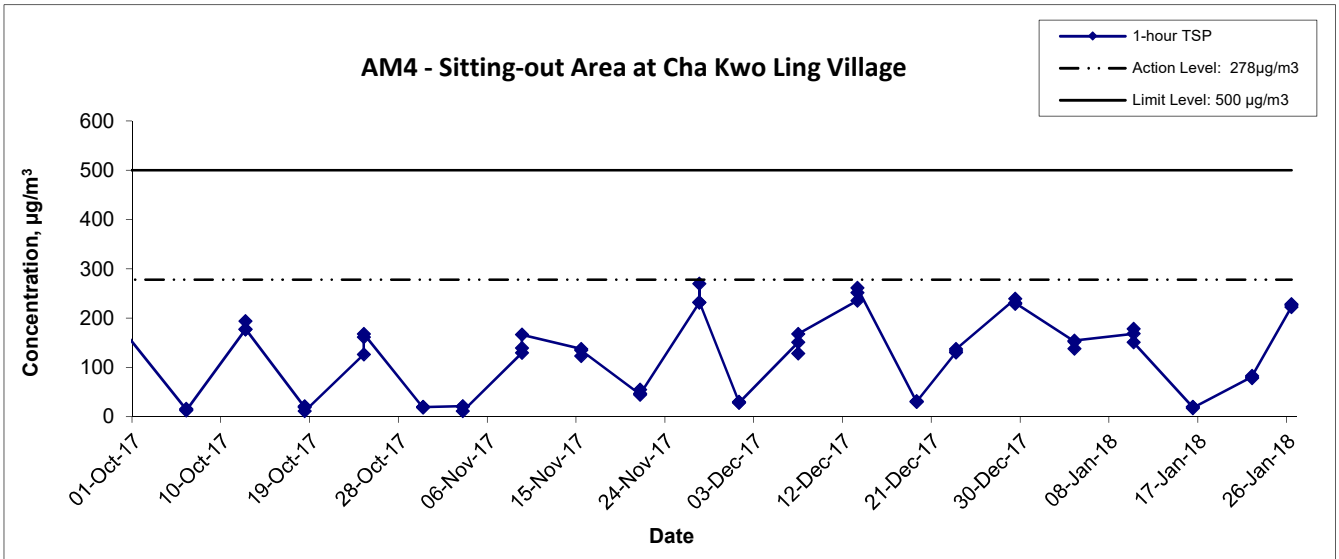
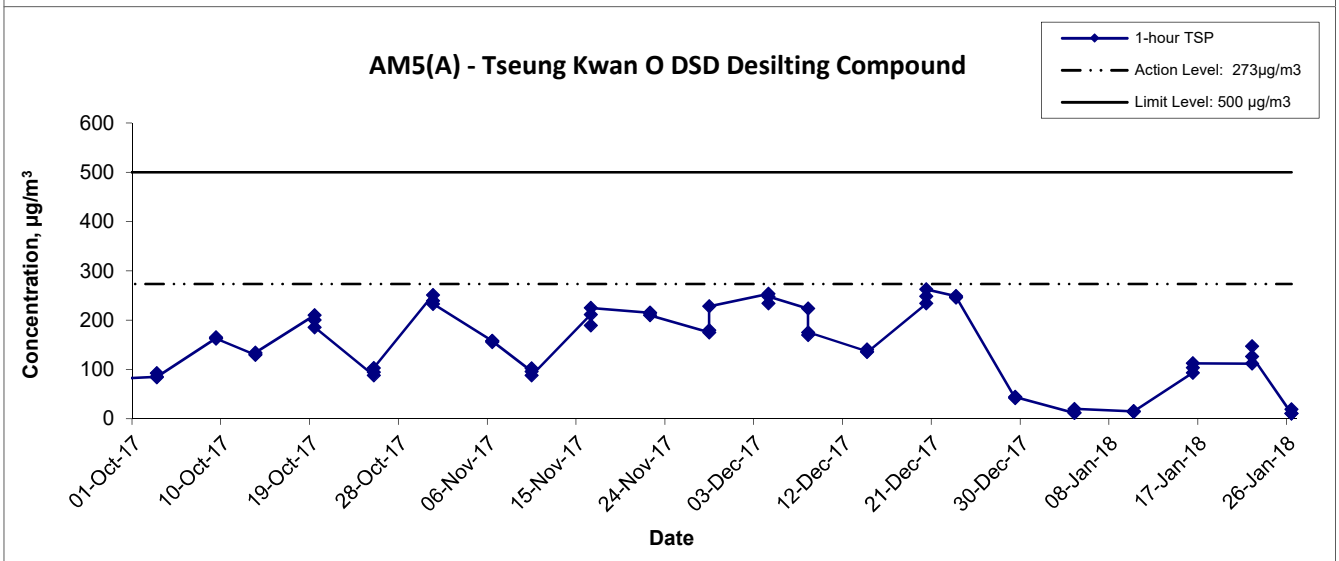
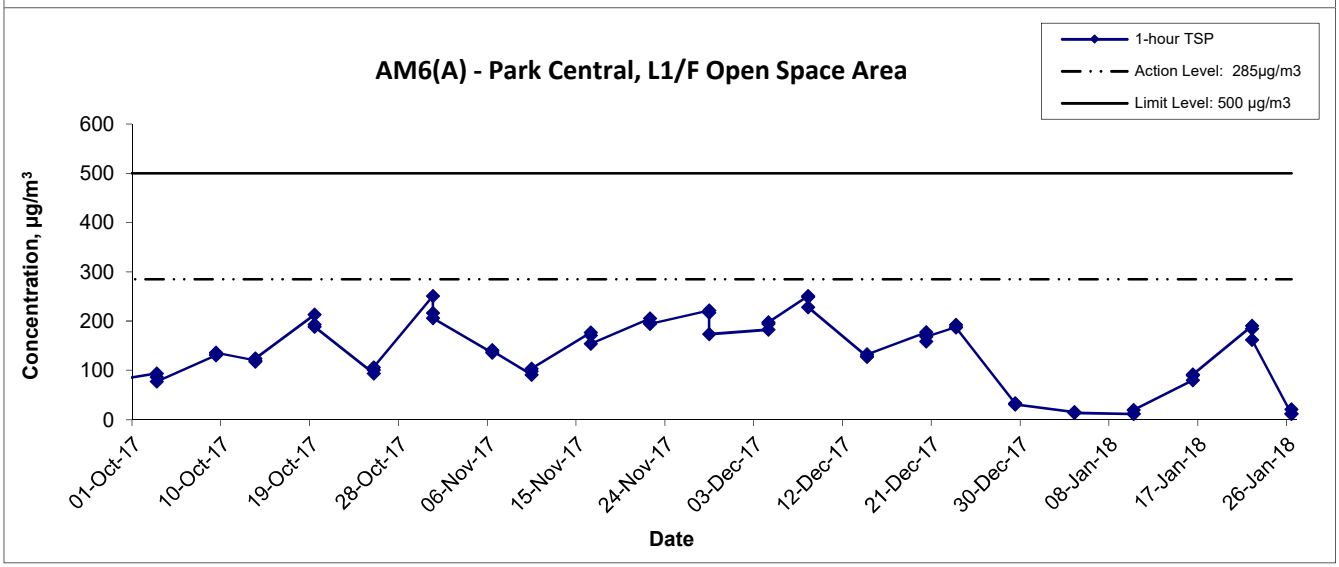
1-hr TSP Concentration Levels







Title		Scale	Project No.
Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results		N.T.S	MA16034
		Date Jan 18	Appendix E

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APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - 24-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple

Start Date	Weather 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. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-18	Sunny	290.9	767.1	2.9048	3.1963	0.2915	2915.0	2939.0	24.0	1.23	1.22	1.23	1764.3	165.2
8-Jan-18	Sunny	289.6	765.7	2.8544	2.9029	0.0485	2939.0	2963.0	24.0	1.23	1.23	1.23	1766.9	27.4
12-Jan-18	Sunny	286.5	772.7	2.7873	2.9656	0.1783	2963.0	2987.0	24.0	1.24	1.24	1.24	1786.4	99.8
18-Jan-18	Sunny	292.7	765.2	2.8551	3.1082	0.2531	2987.0	3011.0	24.0	1.22	1.22	1.22	1755.8	144.2
24-Jan-18	Sunny	291.4	764.1	2.8041	3.0068	0.2027	3011.0	3035.0	24.0	1.22	1.22	1.22	1758.7	115.3
30-Jan-18	Cloudy	282.5	768.6	2.8616	2.9899	0.1283	3035.0	3059.0	24.0	1.25	1.25	1.25	1795.2	71.5
													Min	27.4
													Max	165.2
													Average	103.9

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. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-18	Sunny	291.3	767.7	2.8707	2.9133	0.0426	23879.3	23903.3	24.0	1.22	1.22	1.22	1757.0	24.2
8-Jan-18	Sunny	290.2	763.6	2.8205	3.0239	0.2034	23903.3	23927.3	24.0	1.22	1.22	1.22	1755.6	115.9
12-Jan-18	Sunny	286.0	772.6	2.7887	2.8480	0.0593	23927.3	23951.3	24.0	1.24	1.24	1.24	1779.2	33.3
18-Jan-18	Sunny	293.9	764.8	2.8030	2.8790	0.0760	23951.3	23975.3	24.0	1.21	1.21	1.21	1745.7	43.5
24-Jan-18	Sunny	291.7	764.4	2.7930	2.8715	0.0785	23975.3	23999.3	24.0	1.22	1.22	1.22	1752.0	44.8
30-Jan-18	Cloudy	282.8	768.2	2.8340	2.8598	0.0258	23999.3	24023.3	24.0	1.24	1.24	1.24	1784.2	14.5
													Min	14.5
													Max	115.9
													Average	46.0

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. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-18	Sunny	292.4	767.9	2.9316	3.0421	0.1105	12446.7	12470.7	24.0	1.21	1.21	1.21	1746.3	63.3
8-Jan-18	Sunny	290.3	764.4	2.8456	2.9131	0.0675	12470.7	12494.7	24.0	1.21	1.21	1.21	1748.6	38.6
12-Jan-18	Sunny	286.5	771.7	2.8282	2.9328	0.1046	12494.7	12518.7	24.0	1.23	1.23	1.23	1768.6	59.1
18-Jan-18	Sunny	292.8	764.2	2.7820	2.8654	0.0834	12518.7	12542.7	24.0	1.21	1.21	1.21	1740.9	47.9
24-Jan-18	Sunny	292.1	764.6	2.8271	2.9751	0.1480	12542.7	12566.7	24.0	1.21	1.21	1.21	1743.5	84.9
30-Jan-18	Cloudy	283.5	768.1	2.8672	2.9314	0.0642	12566.7	12590.7	24.0	1.23	1.23	1.23	1773.8	36.2
													Min	36.2
													Max	84.9
													Average	55.0

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. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-18	Sunny	291.7	767.3	2.8258	3.1215	0.2957	9433.2	9457.2	24.0	1.25	1.25	1.25	1794.0	164.8
8-Jan-18	Sunny	290.4	764.1	2.8902	2.9878	0.0976	9457.2	9481.2	24.0	1.23	1.23	1.23	1770.6	55.1
12-Jan-18	Sunny	286.9	772.2	2.8263	3.0940	0.2677	9481.2	9505.2	24.0	1.25	1.24	1.24	1792.6	149.3
18-Jan-18	Sunny	293.3	764.1	2.8703	3.1494	0.2791	9505.2	9529.2	24.0	1.22	1.22	1.22	1761.0	158.5
24-Jan-18	Sunny	292.4	764.7	2.8314	3.1549	0.3235	9529.2	9553.2	24.0	1.23	1.23	1.23	1764.8	183.3
30-Jan-18	Cloudy	283.1	768.5	3.3214	3.5389	0.2175	9553.2	9577.2	24.0	1.25	1.25	1.25	1800.9	120.8
													Min	55.1
													Max	183.3
													Average	138.6

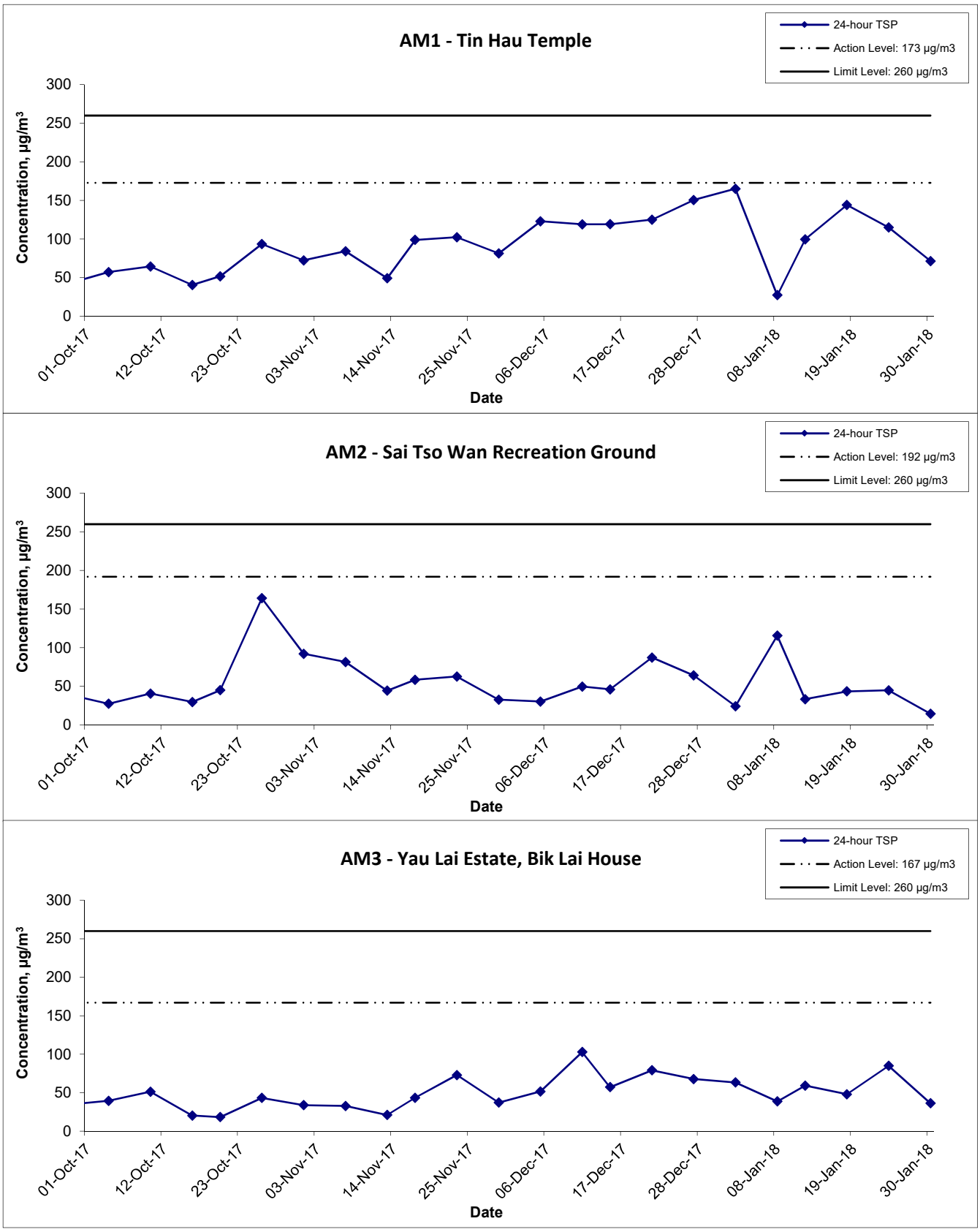
Location AM5(A) - Tseung Kwan O DSD Desilting Compound

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. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-18	Sunny	292.1	766.9	2.8137	2.9553	0.1416	25693.6	25717.6	24.0	1.22	1.22	1.22	1756.7	80.6
8-Jan-18	Sunny	289.8	763.3	2.8157	2.9299	0.1142	25717.6	25741.6	24.0	1.22	1.22	1.22	1759.8	64.9
12-Jan-18	Sunny	285.9	771.5	2.8104	2.9564	0.1460	25741.6	25765.6	24.0	1.24	1.24	1.24	1783.5	81.9
18-Jan-18	Sunny	293.7	763.4	2.8686	2.9613	0.0927	25765.6	25789.6	24.0	1.21	1.21	1.21	1747.0	53.1
24-Jan-18	Sunny	293.4	764.1	3.3397	3.5090	0.1693	25789.6	25813.6	24.0	1.21	1.21	1.21	1748.9	96.8
30-Jan-18	Cloudy	283.5	768.3	2.7904	2.8939	0.1035	25813.6	25837.6	24.0	1.24	1.24	1.24	1787.7	57.9
													Min	53.1
													Max	96.8
													Average	72.5

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. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
2-Jan-18	Sunny	291.9	766.3	2.7900	2.9013	0.1113	16235.8	16259.8	24.0	1.24	1.24	1.24	1784.8	62.4
8-Jan-18	Sunny	289.7	763.9	2.8325	2.9437	0.1112	16259.8	16283.8	24.0	1.24	1.24	1.24	1788.9	62.2
12-Jan-18	Sunny	284.8	771.2	2.8650	2.9373	0.0723	16283.8	16307.8	24.0	1.26	1.26	1.26	1813.3	39.9
18-Jan-18	Sunny	294.5	763.1	2.8134	2.9523	0.1389	16307.8	16331.8	24.0	1.23	1.23	1.23	1773.0	78.3
24-Jan-18	Sunny	292.9	764.6	3.3309	3.4894	0.1585	16331.8	16355.8	24.0	1.24	1.24	1.24	1779.7	89.1
30-Jan-18	Cloudy	282.5	768.7	2.8310	2.9382	0.1072	16355.8	16379.8	24.0	1.25	1.24	1.24	1792.8	59.8
													Min	39.9
													Max	89.1
													Average	65.3

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	
	Date: Jan 18	Appendix: F	

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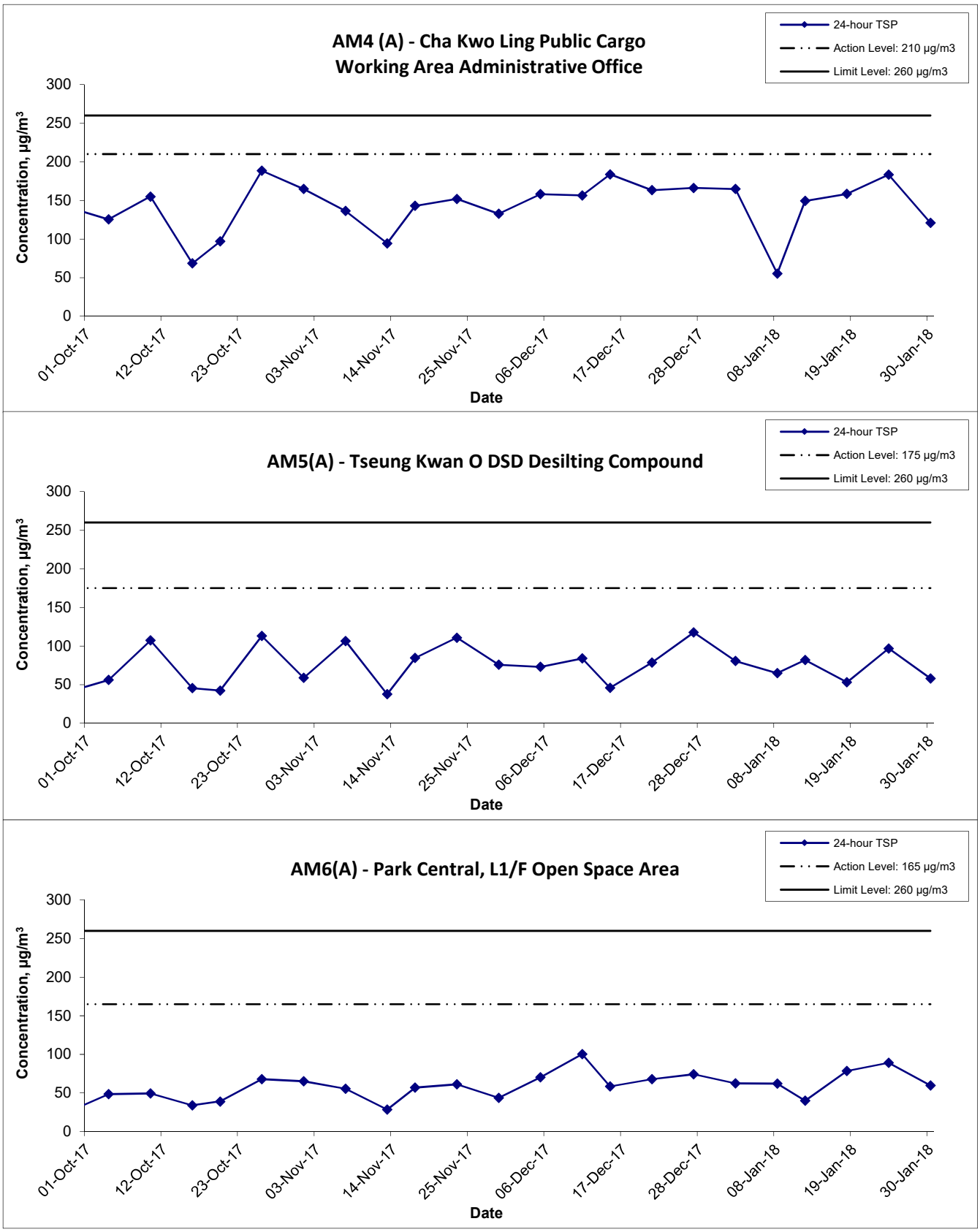
24-hr TSP Concentration Levels



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	
	Date: Jan 18	Appendix: F	

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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}
4-Jan-18	11:00	Cloudy	79.9	82.7	74.9	65.5	79.7
4-Jan-18	11:30	Cloudy	78.4	81.5	73.4		78.2
5-Jan-18	15:30	Cloudy	75.0	76.8	72.3		74.5
10-Jan-18	10:10	Cloudy	74.3	76.9	67.1		73.7
11-Jan-18	9:58	Sunny	73.6	76.3	69.7		72.9
16-Jan-18	11:25	Sunny	74.0	76.6	70.1		73.3
18-Jan-18	10:25	Sunny	74.2	76.8	69.3		73.6
22-Jan-18	15:05	Cloudy	77.0	80.3	71.4		76.7
22-Jan-18	15:35	Cloudy	78.4	81.4	72.4		78.2
23-Jan-18	14:00	Cloudy	76.9	79.6	73.1		76.6
23-Jan-18	15:00	Cloudy	78.1	79.5	74.2		77.9
29-Jan-18	9:30	Cloudy	70.2	72.4	67.6		68.4

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}
4-Jan-18	9:25	Cloudy	76.3	78.7	72.8	63.6	76.1
4-Jan-18	9:55	Cloudy	76.4	78.7	73.1		76.2
5-Jan-18	11:30	Cloudy	74.3	76.9	70.0		73.9
10-Jan-18	9:15	Cloudy	72.5	74.6	68.2		71.9
11-Jan-18	9:15	Sunny	73.1	75.4	70.1		72.6
16-Jan-18	13:30	Sunny	73.6	76.3	69.5		73.1
18-Jan-18	9:45	Sunny	74.3	77.0	65.1		73.9
22-Jan-18	14:15	Cloudy	74.4	77.1	70.8		74.0

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}
5-Jan-18	11:00	Cloudy	75.3	77.3	72.6	65.6	74.8
11-Jan-18	10:45	Sunny	73.2	75.5	70.0		72.4
18-Jan-18	10:45	Sunny	74.1	77.5	71.6		73.4
23-Jan-18	9:25	Cloudy	74.8	78.2	70.1		74.2
29-Jan-18	10:15	Cloudy	72.9	75.8	69.4		72.0

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}
4-Jan-18	14:20	Cloudy	58.9	61.7	53.8	62.0	58.9 Measured $\leqq$ Baseline
10-Jan-18	14:00	Cloudy	68.1	69.9	66.7		66.9
16-Jan-18	9:00	Sunny	58.7	61.0	53.4		58.7 Measured $\leqq$ Baseline
22-Jan-18	14:00	Cloudy	66.5	67.4	64.3		64.6

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}
5-Jan-18	13:35	Cloudy	71.3	73.6	68.1	68.2	68.4
11-Jan-18	11:30	Sunny	70.0	72.2	66.6		65.3 (*)
18-Jan-18	11:30	Sunny	71.5	73.9	67.5		68.8
23-Jan-18	8:30	Cloudy	62.0	70.1	60.8		62.0 Measured $\leqq$ Baseline
29-Jan-18	11:30	Cloudy	68.9	70.8	64.6		60.6

Note(*): Limit Level (65 dB(A) during school examination period) Exceedance which is non-Project related and invalid

Appendix G - Noise Monitoring Results

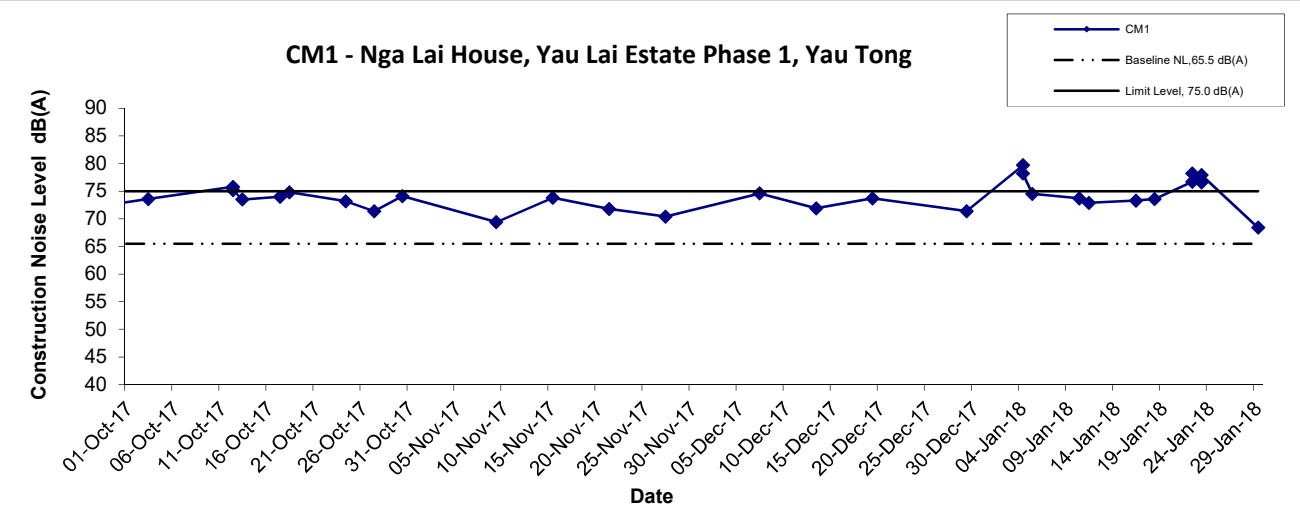
(0700-1900 hrs on Normal Weekdays)

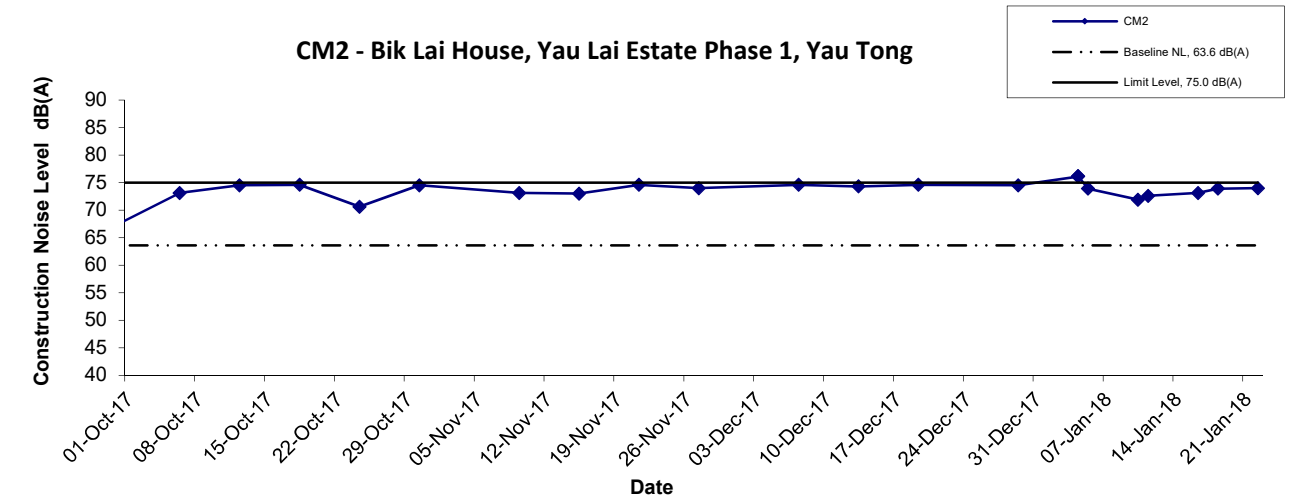
Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
4-Jan-18	14:15	Cloudy	67.5	68.8	65.5	61.9	66.1
10-Jan-18	13:30	Sunny	68.0	69.2	65.8		66.8
16-Jan-18	13:45	Sunny	72.1	73.9	70.1		71.7
26-Jan-18	13:15	Cloudy	65.9	67.0	63.4		63.7

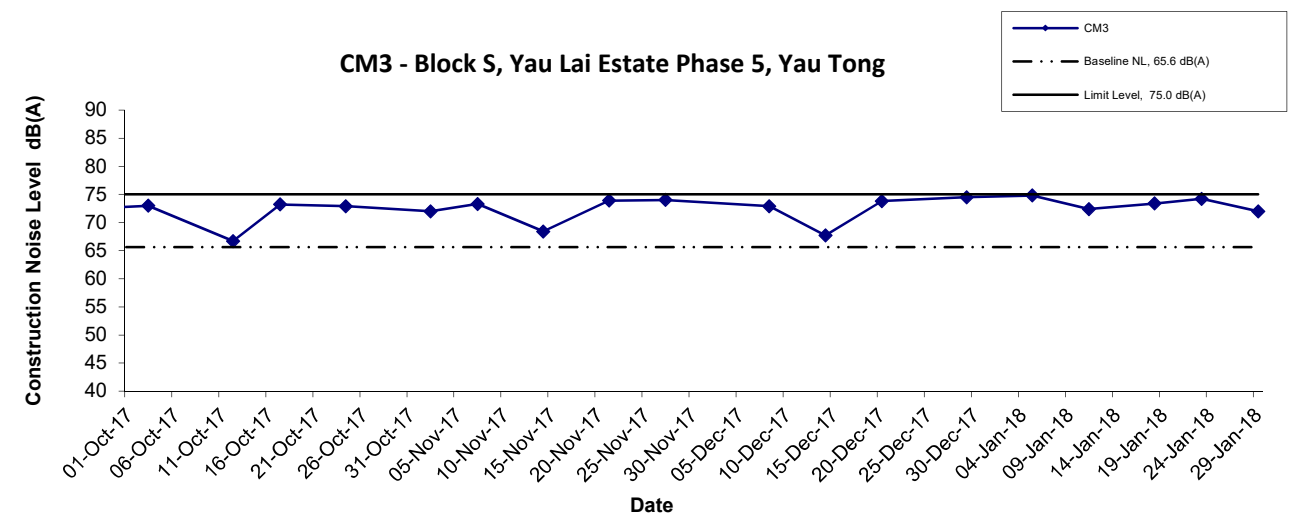
Location CM7(A) - Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
4-Jan-18	15:05	Cloudy	67.7	70.0	57.0	58.3	67.2
10-Jan-18	14:15	Sunny	67.5	70.1	56.8		66.9
16-Jan-18	13:05	Sunny	60.8	63.9	56.0		57.2
26-Jan-18	14:00	Cloudy	66.4	67.5	62.8		65.7

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}
4-Jan-18	15:45	Cloudy	65.4	67.6	64.3	69.1	65.4 Measured $\leqq$ Baseline
10-Jan-18	15:00	Sunny	60.1	59.0	54.7		60.1 Measured $\leqq$ Baseline
16-Jan-18	9:30	Sunny	64.7	67.5	59.0		64.7 Measured $\leqq$ Baseline
26-Jan-18	14:45	Cloudy	67.3	68.2	63.5		67.3 Measured $\leqq$ Baseline

Noise Levels

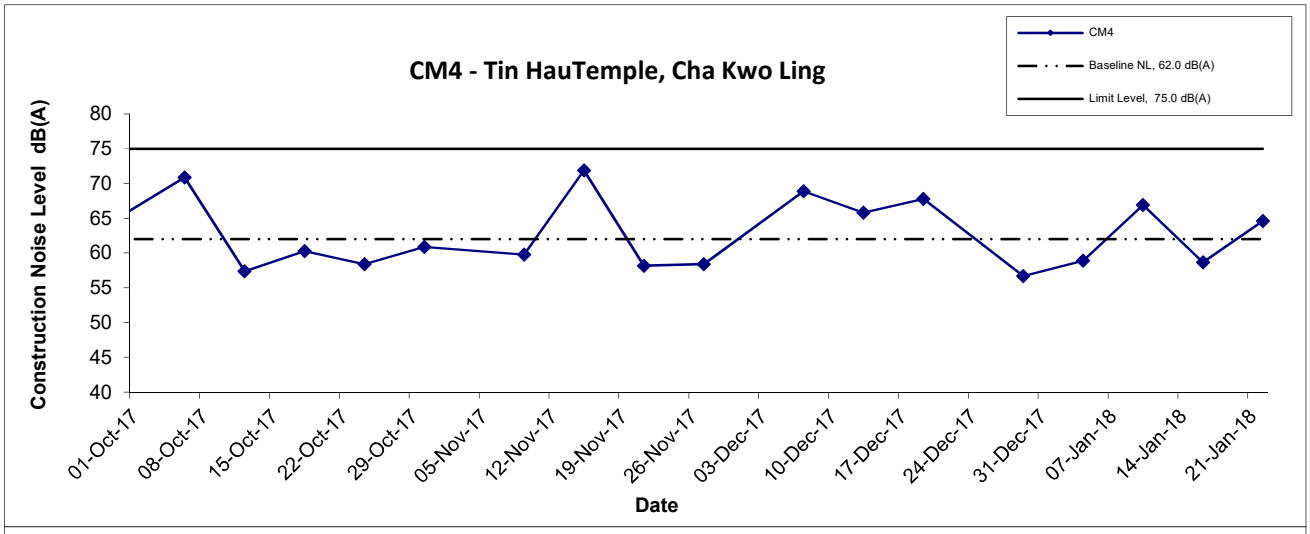


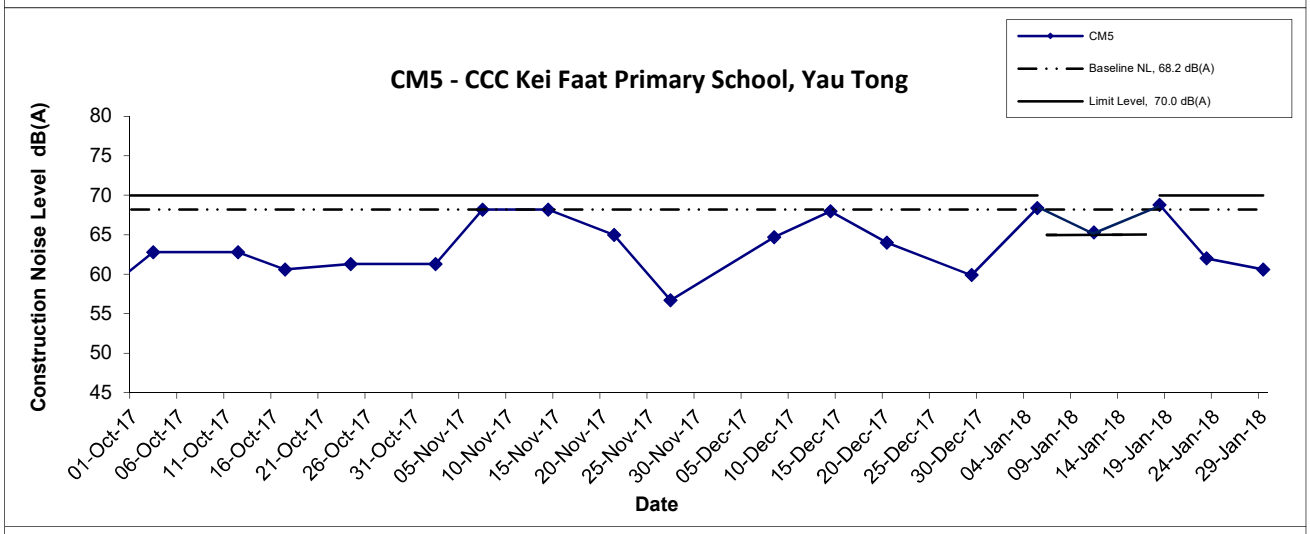


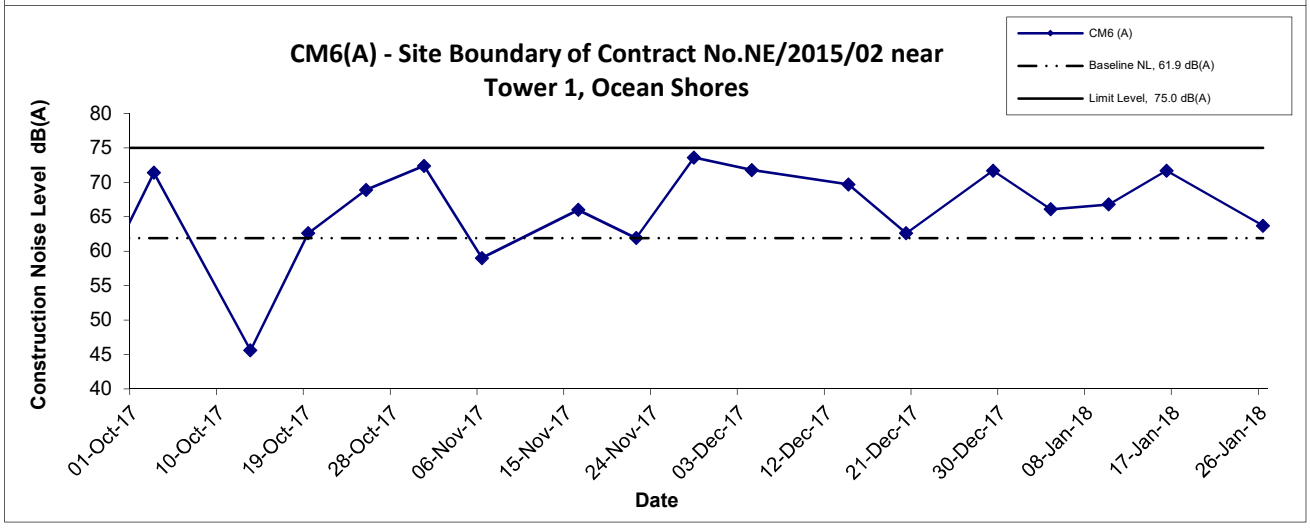


Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Jan 18	Project No.: MA16034 Appendix: G	CINOTECH

Noise Levels

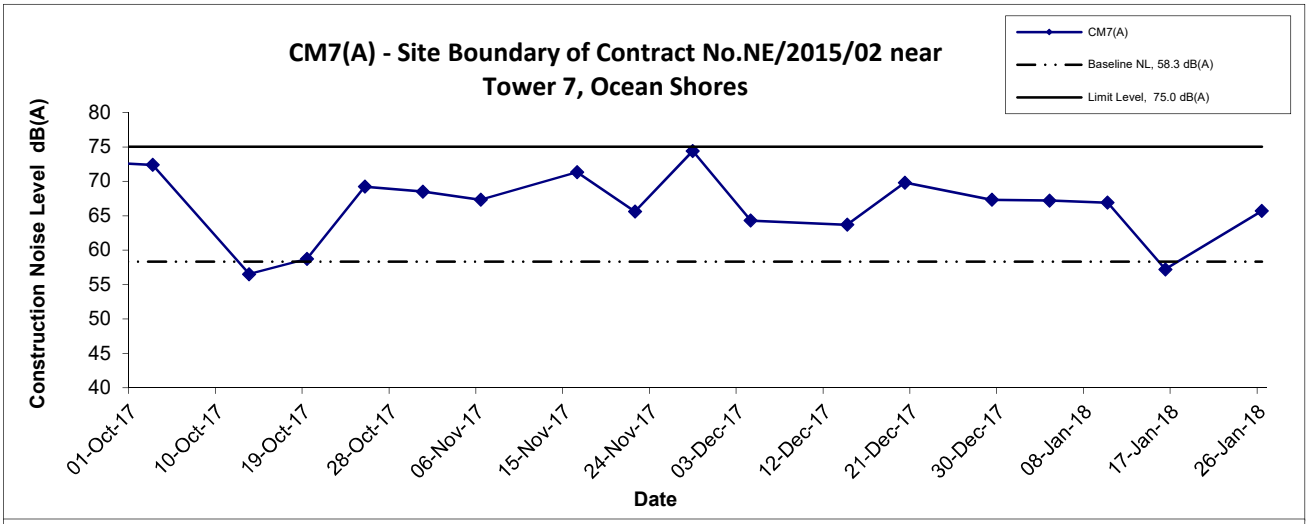


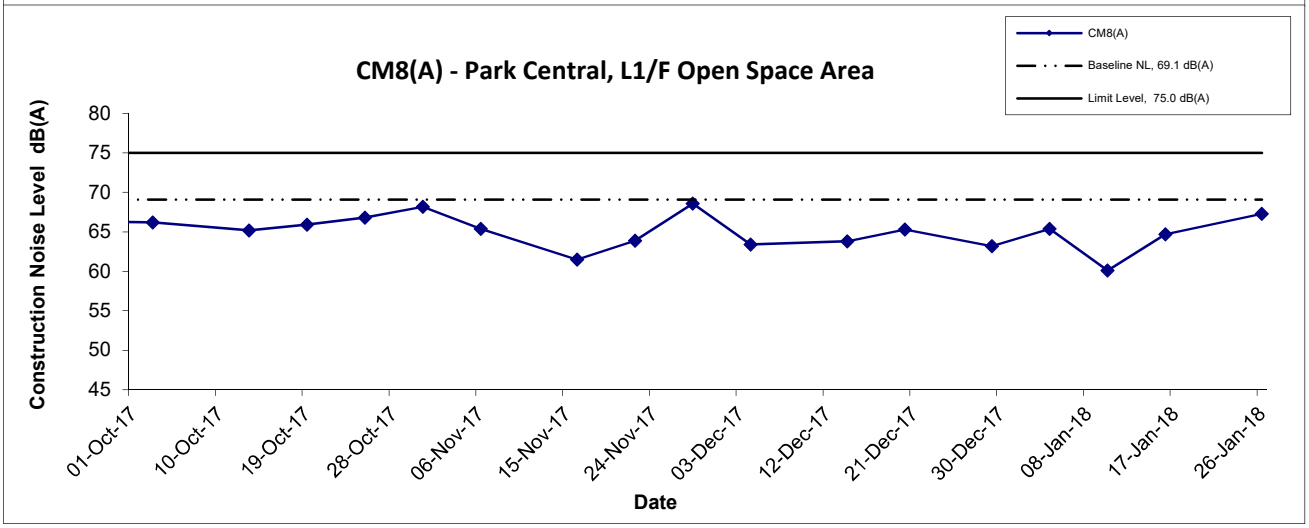




Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Jan 18	Project No.: MA16034 Appendix: G	CINOTECH

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: N.T.S Date: Jan 18	Project No. MA16034 Appendix G	CINOTECH

APPENDIX H
GROUNDWATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

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

Groundwater Quality Monitoring Results at Stream 1

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
5-Jan-18	Sunny	14:14	Middle	21.1 21.1	21.1	8.3 8.2	8.3	1.3 1.3	1.3	101.9 102.3	102.1	9.0 9.0	9.0	1.5 1.6	1.6
16-Jan-18	Sunny	11:19	Middle	17.8 17.8	17.8	8.2 8.1	8.2	1.5 1.5	1.5	103.6 103.8	103.7	9.8 9.8	9.8	1.9 1.9	1.9
31-Jan-18	Cloudy	13:50	Middle	12.2 12.2	12.2	7.8 7.8	7.8	0.1 0.1	0.1	99.5 99.5	99.5	10.7 10.7	10.7	1.9 1.9	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
5-Jan-18	Sunny	14:43	Middle	21.4 21.4	21.4	8.0 8.0	8.0	1.2 1.2	1.2	102.3 102.4	102.4	9.0 9.0	9.0	1.1 1.1	1.1
16-Jan-18	Sunny	11:39	Middle	21.3 21.4	21.4	8.0 8.0	8.0	0.4 0.4	0.4	103.2 103.3	103.3	9.1 9.1	9.1	1.6 1.6	1.6
31-Jan-18	Cloudy	13:32	Middle	11.7 11.7	11.7	7.9 7.9	7.9	0.1 0.1	0.1	98.8 98.8	98.8	10.7 10.7	10.7	2.0 2.0	2.0

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
5-Jan-18	Sunny	15:52	Middle	20.9 21.0	21.0	8.0 8.0	8.0	1.3 1.3	1.3	101.7 101.8	101.8	9.0 9.0	9.0	1.9 1.8	1.9
16-Jan-18	Sunny	11:50	Middle	20.5 20.5	20.5	8.0 8.0	8.0	0.2 0.2	0.2	87.1 87.3	87.2	7.8 7.9	7.9	1.5 1.5	1.5
31-Jan-18	Cloudy	13:17	Middle	12.0 12.0	12.0	7.9 7.9	7.9	0.1 0.1	0.1	99.0 99.0	99.0	10.7 10.7	10.7	2.0 2.0	2.0

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

Summary of Groundwater Quality Monitoring Results

Location	Date	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)
Stream 1	5-Jan-18	8.3	9	1.6	3	<2	4	<0.6	<0.05	<0.05
	16-Jan-18	8.2	9.8	1.9	0.9	<2	4	<0.6	<0.05	<0.05
	31-Jan-18	7.8	10.7	1.9	25.0	<2	5	<0.6	0.26	<0.05
Stream 2	5-Jan-18	8	9	1.1	3	<2	4	<0.6	<0.05	<0.05
	16-Jan-18	8	9.1	1.6	2.3	<2	5	<0.6	<0.05	<0.05
	31-Jan-18	7.9	10.7	2	8	<2	6	<0.6	0.14	<0.05
Stream 3	5-Jan-18	8.0	9	1.9	9.0	<2	4	<0.6	<0.05	<0.05
	16-Jan-18	8.0	7.9	1.5	1.2	<2	4	<0.6	<0.05	<0.05
	31-Jan-18	7.9	10.7	2	14	<2	5	<0.6	0.14	<0.05

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Website: www.wellab.com.hk

TEST REPORT

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

ATTN: **Ms. Mei Ling Tang**

Report No.:	28141
Date of Issue:	2018-01-16
Date Received:	2018-01-05
Date Tested:	2018-01-05
Date Completed:	2018-01-16
Page:	1 of 1

Sample Description : 3 liquid samples as received from client said to be groundwater
Laboratory No. : 28141
Project No. : MA16034 (Groundwater)
Project Name : Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction
Custody No. : MA16034(Groundwater)/20180105
Sampling Date : 2018-01-05

Tests Requested & Methodology:

Item	Parameters	Ref. Method	Limit of reporting
1	Total Suspended Solids	APHA 17ed 2540 D	*0.5 mg/L
2	Biochemical Oxygen Demand	APHA 19ed 5210B	2 mg O_2/L
3	Total Organic Carbon	In-house method SOP020 (Wet Oxidation)	1 mg-TOC/L
4	Nitrogen (Total Kjeldahl + nitrate + nitrite)	In-house method SOP063 (FIA)	0.6 mg N/L
5	Ammonia	In-house method SOP057 (FIA)	0.05 mg NH_3-N/L
6	Total Phosphorus	In-house method SOP055 (FIA)	0.05 mg-P/L

Results:

Sample ID	Stream 1	Stream 2	Stream 3
Sampling Depth	S	S	S
Sample No.	28141-1	28141-2	28141-3
Total Suspended Solids (mg/L)	3	3	9
Biochemical Oxygen Demand (mg O_2/L)	<2	<2	<2
Total Organic Carbon (mg-TOC/L)	4	4	4
Nitrogen (Total Kjeldahl + nitrate + nitrite) (mg N/L)	<0.6	<0.6	<0.6
Ammonia (mg NH_3-N/L)	<0.05	<0.05	<0.05
Total Phosphorus (mg-P/L)	<0.05	<0.05	<0.05

Remarks: 1) < = less than
2) S = Surface, M = Middle, B = Bottom
3) * Limit of Reporting is reported as Detection Limit

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

PREPARED AND CHECKED BY:

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

PATRICK TSE
Laboratory Manager

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

TEST REPORT

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

Report No.:	28188
Date of Issue:	2018-01-25
Date Received:	2018-01-16
Date Tested:	2018-01-16
Date Completed:	2018-01-25

ATTN: **Ms. Mei Ling Tang**

Page: 1 of 1

Sample Description : 3 liquid samples as received from client said to be groundwater
Laboratory No. : 28188
Project No. : MA16034 (Groundwater)
Project Name : Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction
Custody No. : MA16034(Groundwater)/20180116
Sampling Date : 2018-01-16

Tests Requested & Methodology:

Item	Parameters	Ref. Method	Limit of reporting
1	Total Suspended Solids	APHA 17ed 2540 D	*0.5 mg/L
2	Biochemical Oxygen Demand	APHA 19ed 5210B	2 mg O_2/L
3	Total Organic Carbon	In-house method SOP020 (Wet Oxidation)	1 mg-TOC/L
4	Nitrogen (Total Kjeldahl + nitrate + nitrite)	In-house method SOP063 (FIA)	0.6 mg N/L
5	Ammonia	In-house method SOP057 (FIA)	0.05 mg NH_3-N/L
6	Total Phosphorus	In-house method SOP055 (FIA)	0.05 mg-P/L

Results:

Sample ID	Stream 1	Stream 2	Stream 3
Sampling Depth	S	S	S
Sample No.	28188-1	28188-2	28188-3
Total Suspended Solids (mg/L)	0.9	2.3	1.2
Biochemical Oxygen Demand (mg O_2/L)	<2	<2	<2
Total Organic Carbon (mg-TOC/L)	4	5	4
Nitrogen (Total Kjeldahl + nitrate + nitrite) (mg N/L)	<0.6	<0.6	<0.6
Ammonia (mg NH_3-N/L)	<0.05	<0.05	<0.05
Total Phosphorus (mg-P/L)	<0.05	<0.05	<0.05

Remarks: 1) < = less than
2) S = Surface, M = Middle, B = Bottom
3) * Limit of Reporting is reported as Detection Limit

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

PREPARED AND CHECKED BY:

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

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

ATTN: **Ms. Mei Ling Tang**

Report No.:	28280
Date of Issue:	2018-02-09
Date Received:	2018-01-31
Date Tested:	2018-01-31
Date Completed:	2018-02-09
Page:	1 of 1

Sample Description : 3 liquid samples as received from client said to be groundwater
Laboratory No. : 28280
Project No. : MA16034 (Groundwater)
Project Name : Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction
Custody No. : MA16034(Groundwater)/20180131
Sampling Date : 2018-01-31

Tests Requested & Methodology:

Item	Parameters	Ref. Method	Limit of reporting
1	Total Suspended Solids	APHA 17ed 2540 D	*0.5 mg/L
2	Biochemical Oxygen Demand	APHA 19ed 5210B	2 mg O_2/L
3	Total Organic Carbon	In-house method SOP020 (Wet Oxidation)	1 mg-TOC/L
4	Nitrogen (Total Kjeldahl + nitrate + nitrite)	In-house method SOP063 (FIA)	0.6 mg N/L
5	Ammonia	In-house method SOP057 (FIA)	0.05 mg NH_3-N/L
6	Total Phosphorus	In-house method SOP055 (FIA)	0.05 mg-P/L

Results:

Sample ID	Stream 1	Stream 2	Stream 3
Sampling Depth	S	S	S
Sample No.	28280-1	28280-2	28280-3
Total Suspended Solids (mg/L)	25	8	14
Biochemical Oxygen Demand (mg O_2/L)	<2	<2	<2
Total Organic Carbon (mg-TOC/L)	5	6	5
Nitrogen (Total Kjeldahl + nitrate + nitrite) (mg N/L)	<0.6	<0.6	<0.6
Ammonia (mg NH_3-N/L)	0.26	0.14	0.14
Total Phosphorus (mg-P/L)	<0.05	<0.05	<0.05

Remarks: 1) < = less than
2) S = Surface, M = Middle, B = Bottom
3) * Limit of Reporting is reported as Detection Limit

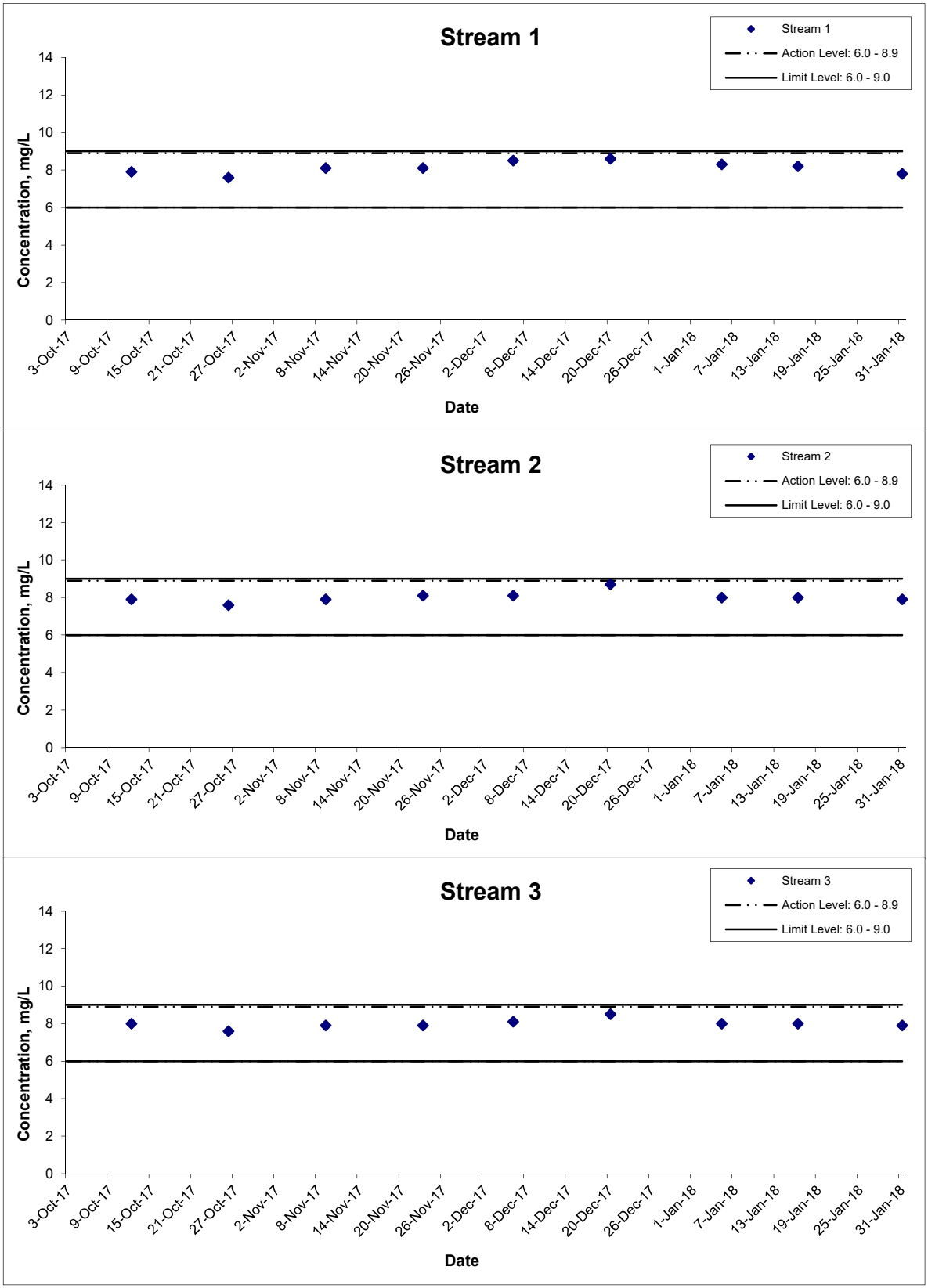
**********END OF REPORT**********

PREPARED AND CHECKED BY:

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

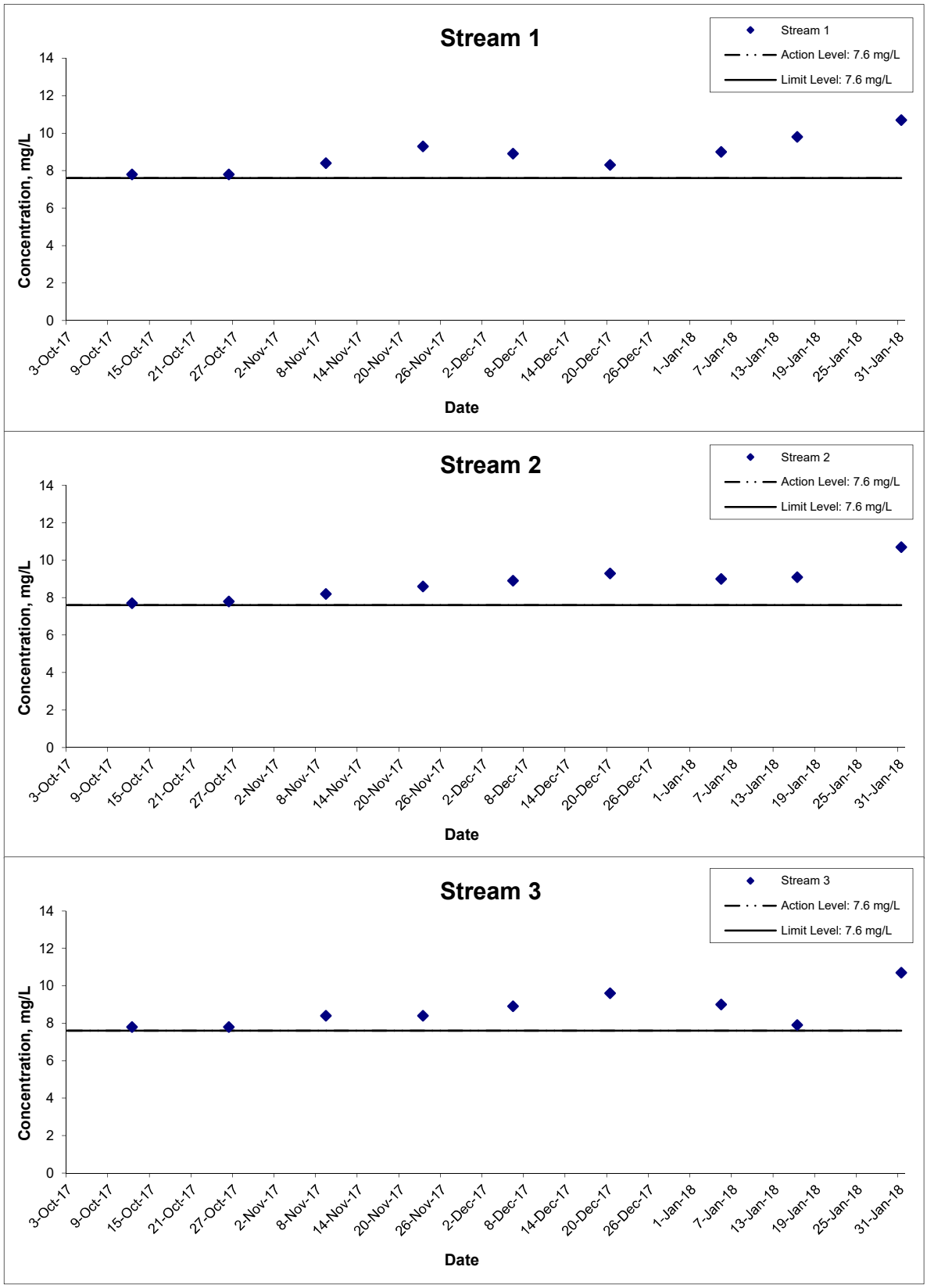
PATRICK TSE
Laboratory Manager

pH



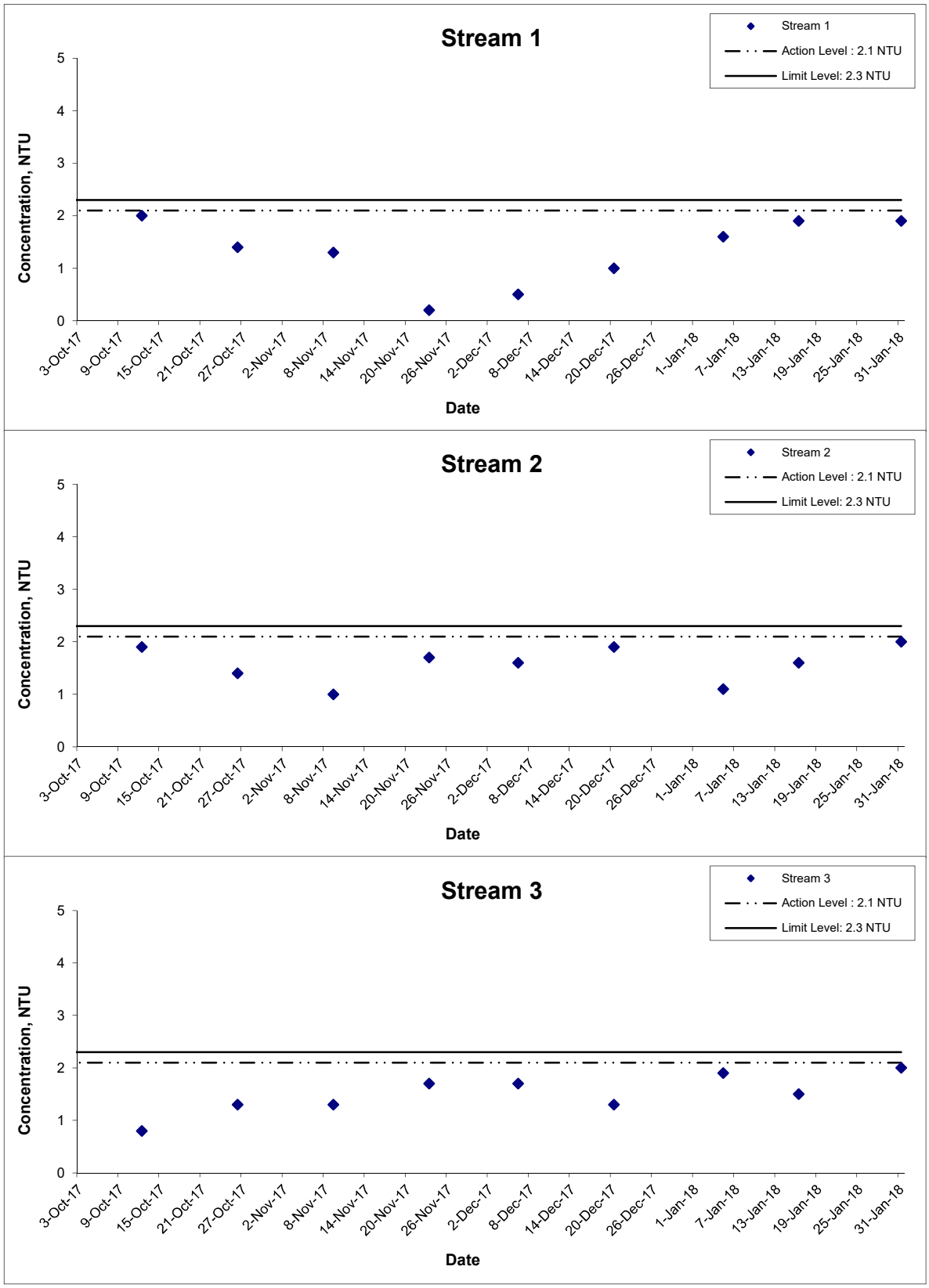
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

Dissolved Oxygen



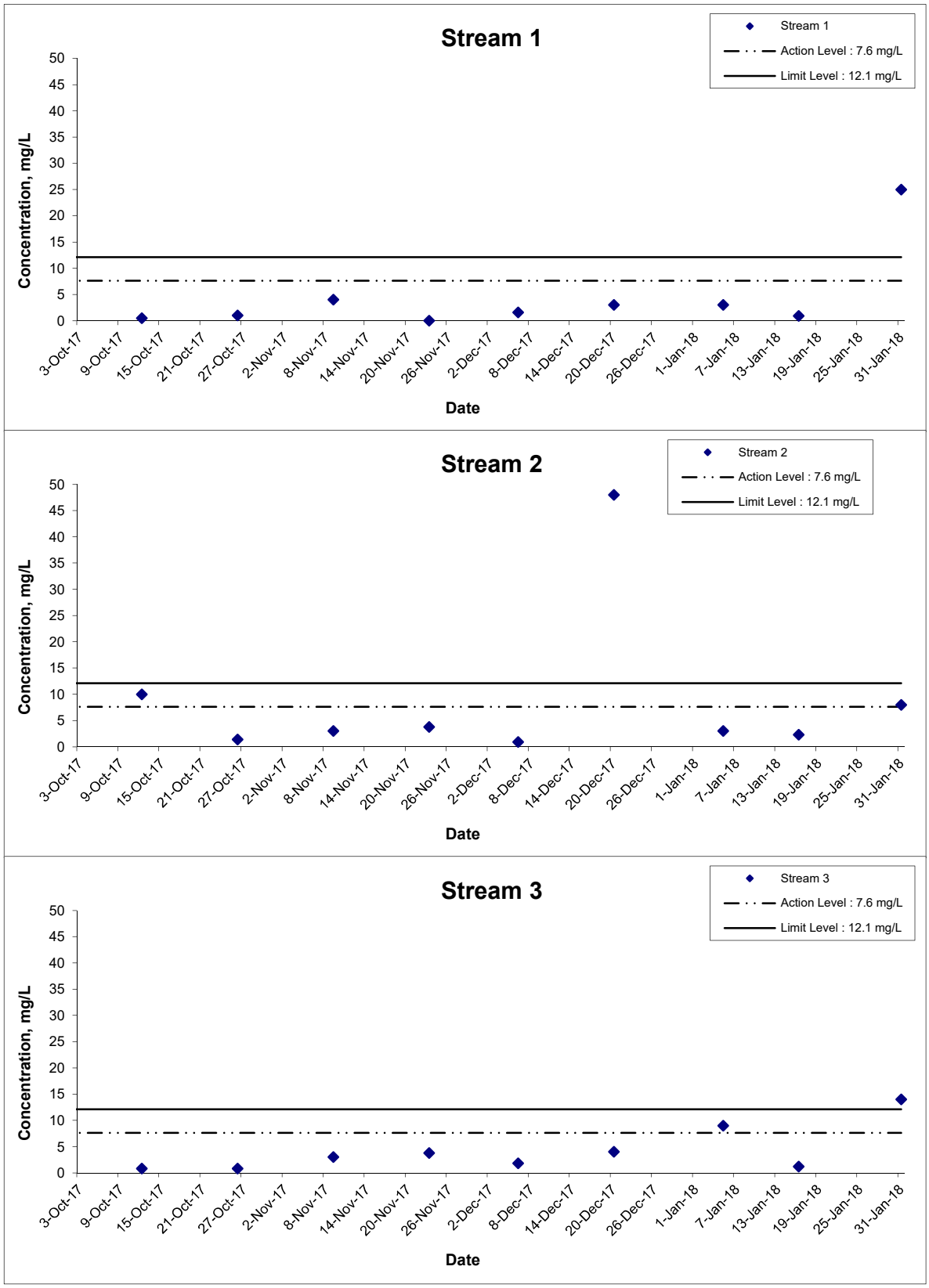
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

Turbidity



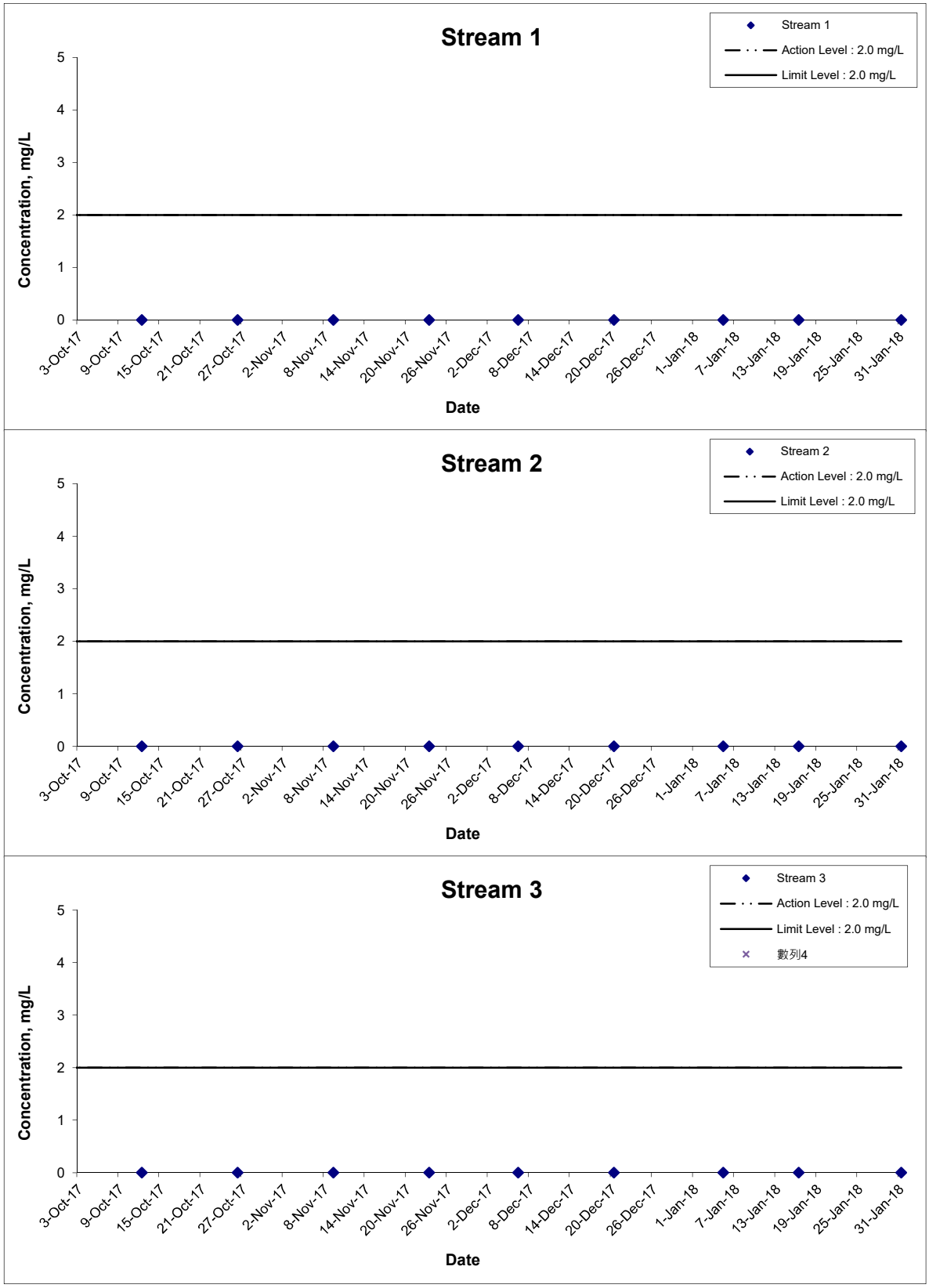
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

Suspended Solids



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

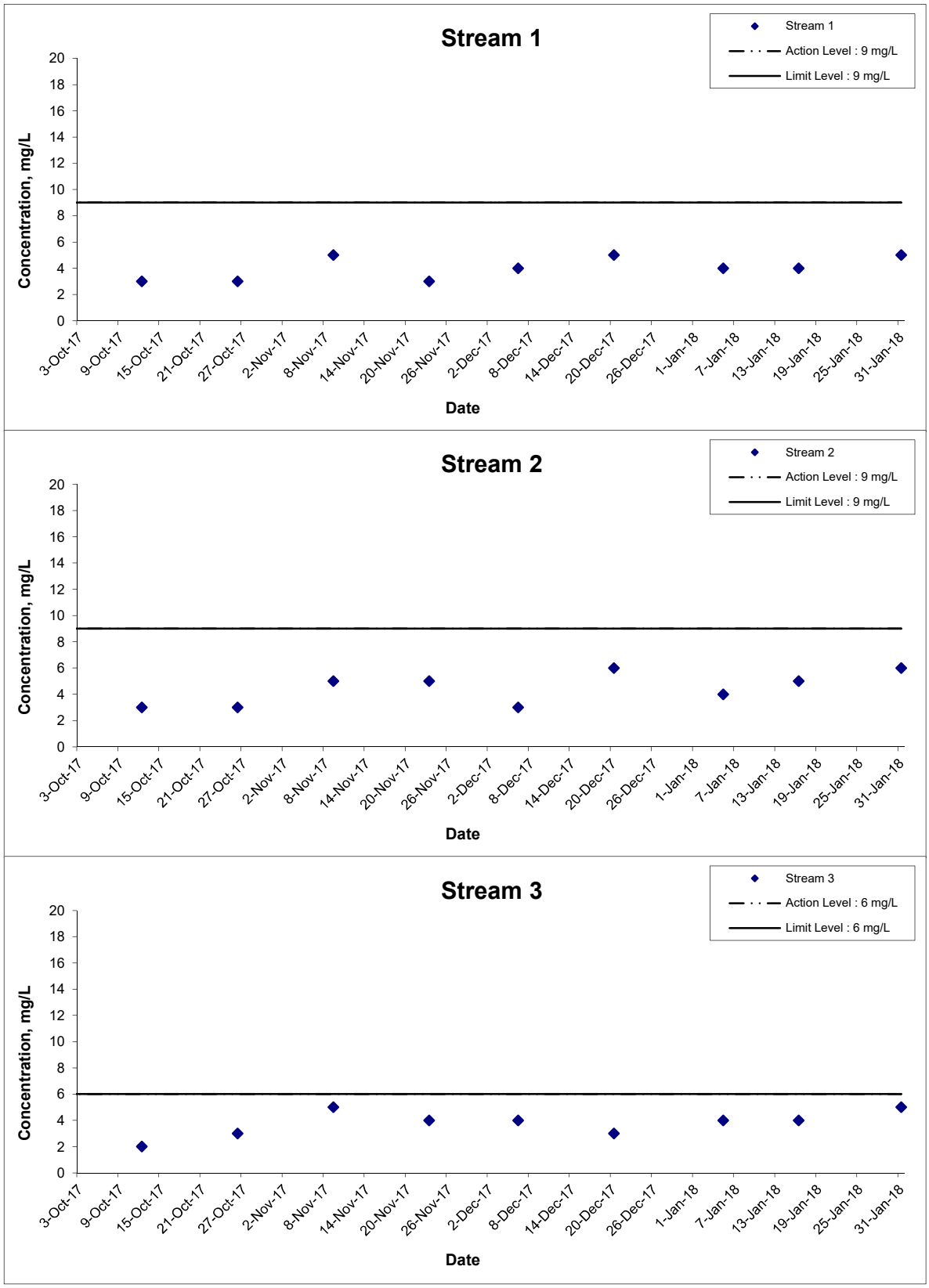
5-day Biochemical Oxygen Demand (BOD_5)



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

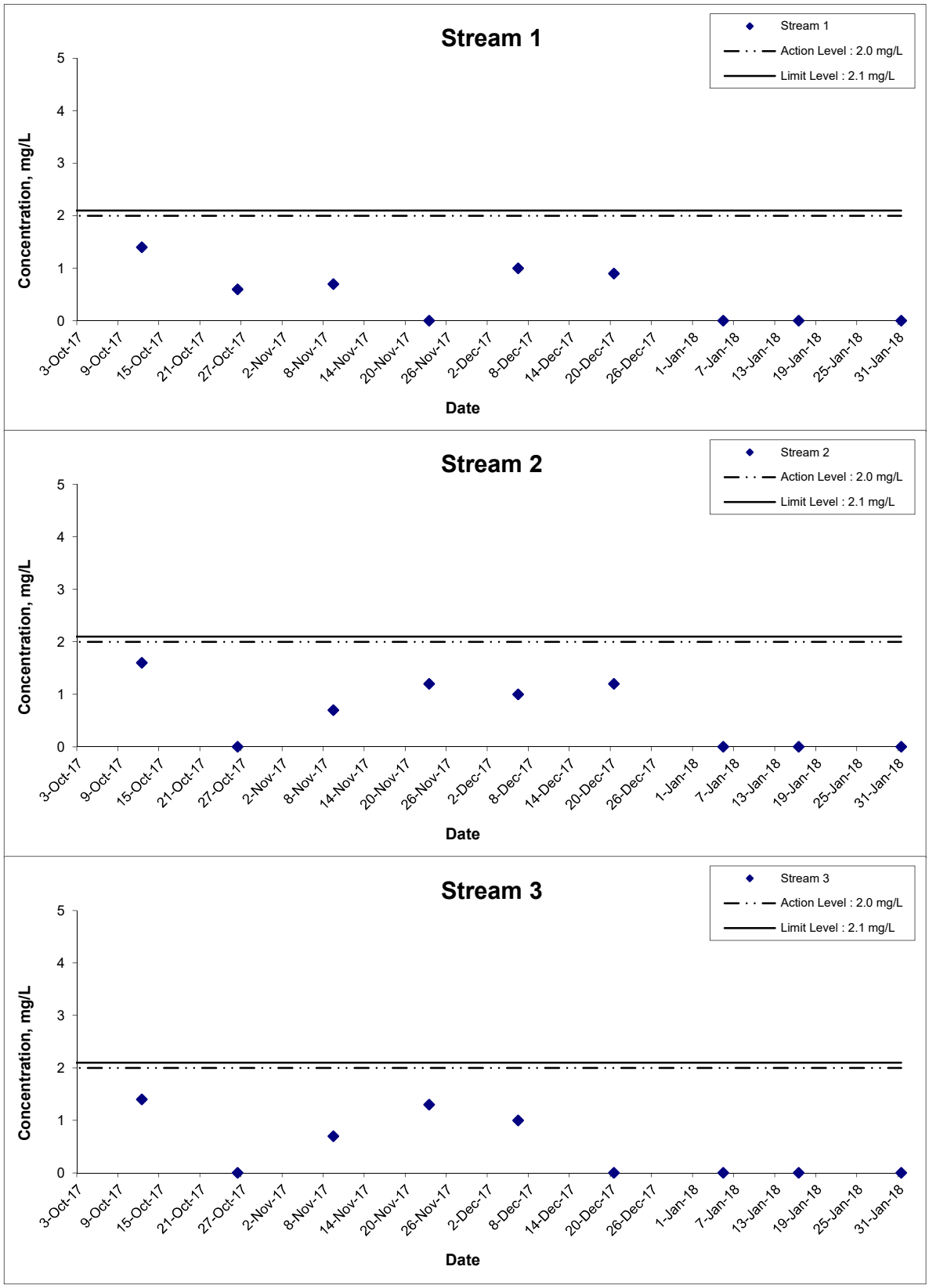
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

Total Organic Carbon (TOC)



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

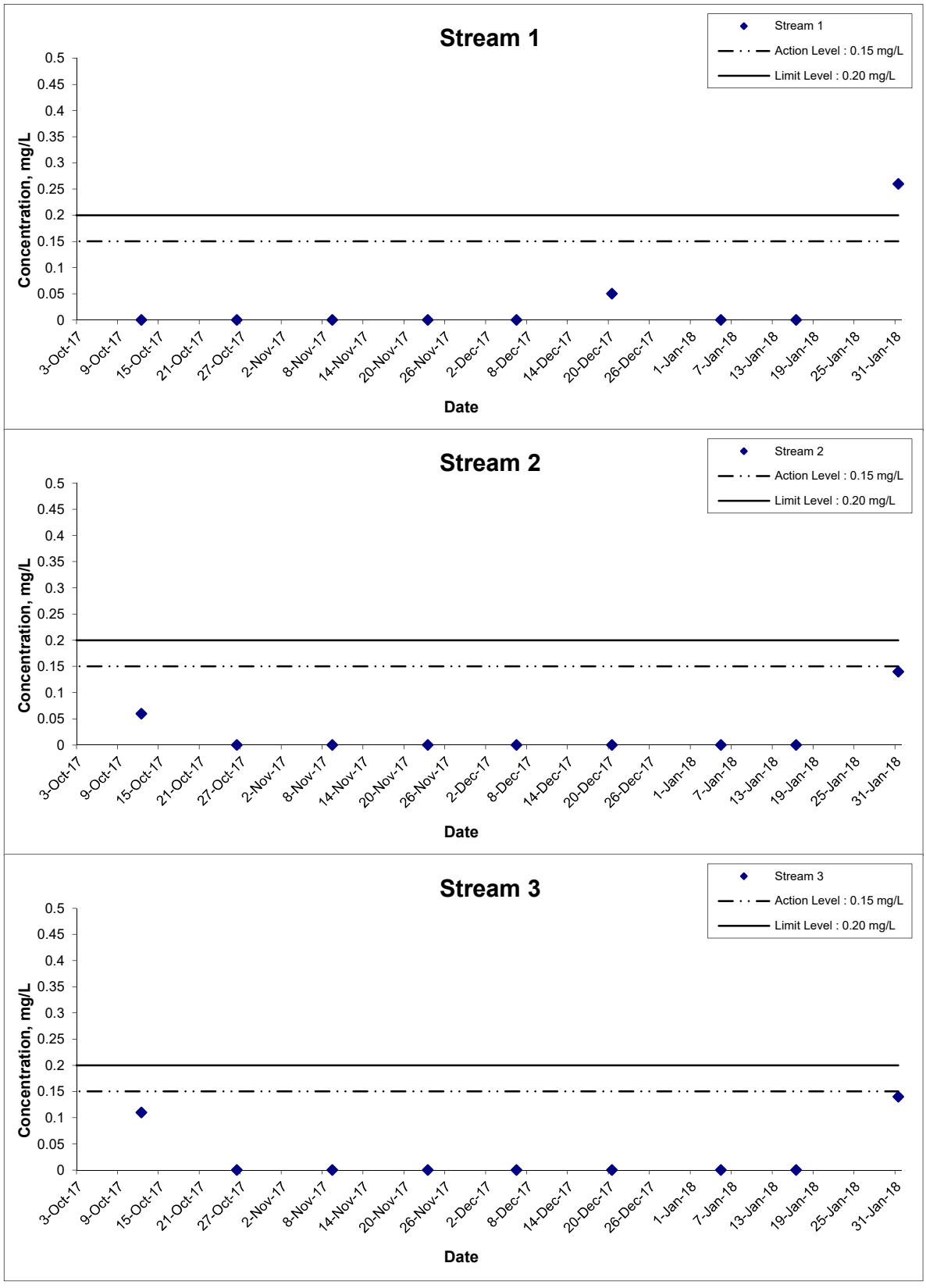
Total Nitrogen



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
		Date: Jan 18	Appendix: H	

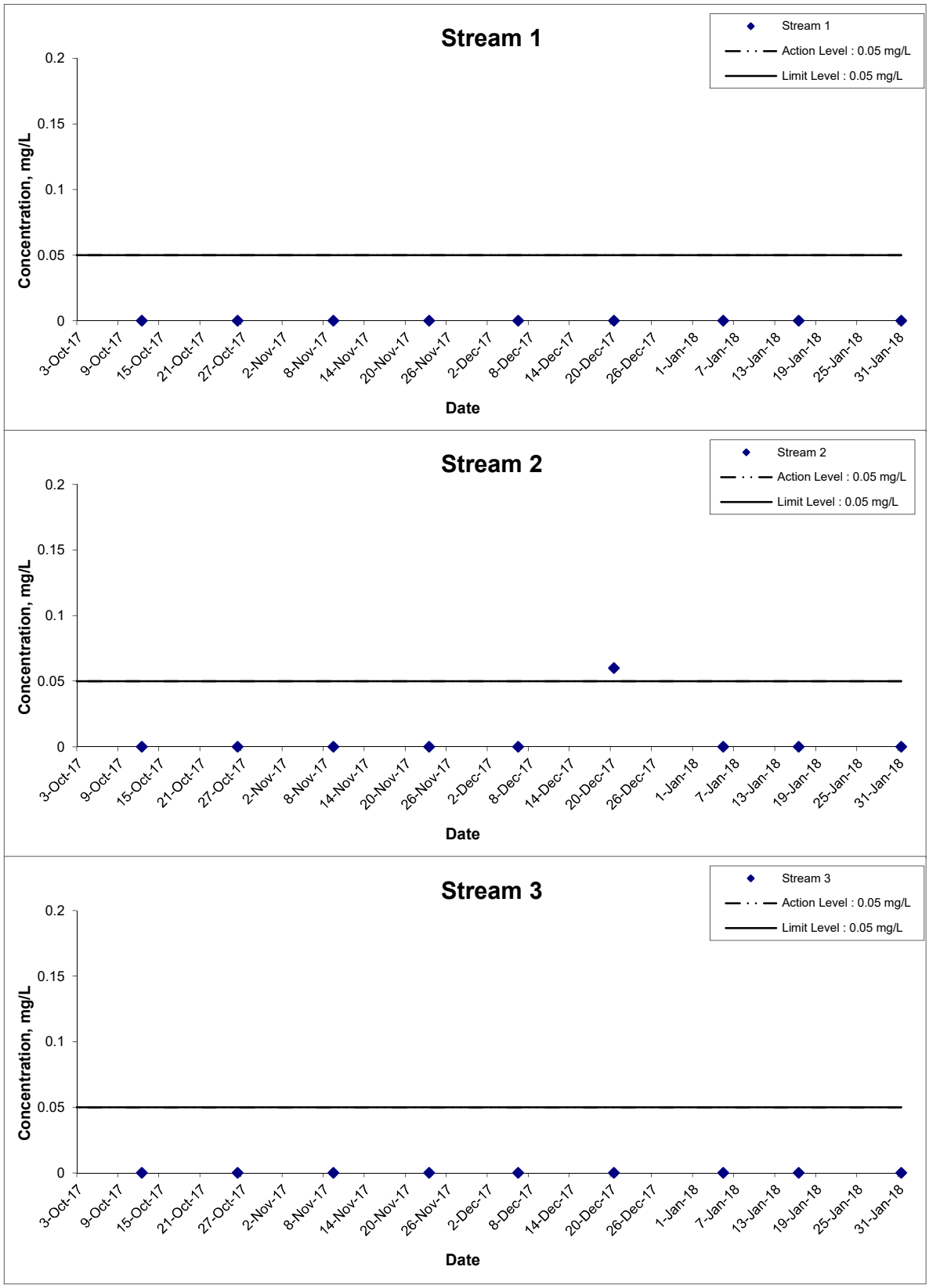
Ammonia-Nitrogen



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

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

Total Phosphate



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

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jan 18	Appendix: H	

APPENDIX I
MARINE WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix I - Action and Limit Levels for Marine Water Quality on 2 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 5.6 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 6.1 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 8.2 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 8.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 02 January 2018

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	13:06	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	34.7 34.8	34.8	102.3 102.2	102.3	7.8 7.8	7.8	7.8	1.2 1.1	1.2	1.7	5.3 5.4	5.4	4.3
				Middle	9.5	18.2 18.2	18.2	8.4 8.4	8.4	34.7 34.8	34.8	101.2 101.2	101.2	7.8 7.8	7.8		1.2 1.2	1.2		4.0 4.1	4.1	
				Bottom	18	18.1 18.1	18.1	8.4 8.4	8.4	34.8 34.8	34.8	99.8 99.8	99.8	7.7 7.7	7.7	7.7	2.8 2.3	2.6		3.3 3.3	3.3	
C2	Cloudy	Moderate	11:59	Surface	1	18.2 18.3	18.3	8.2 8.4	8.3	34.7 34.7	34.7	100.2 99.3	99.8	7.7 7.6	7.7	7.7	1.3 1.3	1.3	2.2	5.0 4.8	4.9	5.7
				Middle	16.5	18.2 18.2	18.2	8.3 8.4	8.4	34.7 34.7	34.7	99.1 98.8	99.0	7.6 7.6	7.6		1.3 1.3	1.3		5.5 5.5	5.5	
				Bottom	32	18.2 18.2	18.2	8.3 8.4	8.4	34.7 34.7	34.7	97.9 98.5	98.2	7.5 7.6	7.6	7.6	3.7 4.0	3.9		6.7 6.8	6.8	
G1	Cloudy	Moderate	12:31	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	102.6 102.6	102.6	7.8 7.8	7.8	7.8	1.3 1.3	1.3	1.3	2.6 2.5	2.6	3.5
				Middle	4	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.6 102.1	101.9	7.8 7.8	7.8		1.2 1.3	1.3		3.0 3.1	3.1	
				Bottom	7	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.7	34.8	100.8 101.1	101.0	7.7 7.7	7.7	7.7	1.2 1.2	1.2		4.7 4.6	4.7	
G2	Cloudy	Moderate	12:17	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	102.1 102.0	102.1	7.8 7.8	7.8	7.8	1.1 1.2	1.2	1.3	4.9 4.9	4.9	5.5
				Middle	5	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.5 101.6	101.6	7.8 7.8	7.8		1.3 1.2	1.3		6.3 6.3	6.3	
				Bottom	9	18.2 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	99.6 99.6	99.6	7.6 7.6	7.6	7.6	1.4 1.4	1.4		5.1 5.5	5.3	
G3	Cloudy	Moderate	12:37	Surface	1	18.4 18.5	18.5	8.4 8.4	8.4	34.6 34.5	34.6	103.3 102.9	103.1	7.9 7.9	7.9	7.8	1.4 1.4	1.4	2.0	4.6 4.5	4.6	6.0
				Middle	4	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	101.0 101.3	101.2	7.7 7.7	7.7		2.2 2.5	2.4		7.7 8.0	7.9	
				Bottom	7	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.8	34.8	99.4 98.9	99.2	7.6 7.6	7.6	7.6	2.0 2.2	2.1		5.3 5.5	5.4	
G4	Cloudy	Moderate	12:46	Surface	1	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	102.1 101.9	102.0	7.8 7.8	7.8	7.8	1.1 1.1	1.1	1.6	5.3 5.4	5.4	5.5
				Middle	4.5	18.2 18.3	18.3	8.4 8.4	8.4	34.8 34.7	34.8	99.7 100.2	100.0	7.6 7.7	7.7		2.0 1.7	1.9		6.2 6.2	6.2	
				Bottom	8	18.3 18.2	18.3	8.4 8.4	8.4	34.8 34.8	34.8	99.1 99.1	99.1	7.6 7.6	7.6	7.6	1.8 2.0	1.9		4.9 4.8	4.9	
M1	Cloudy	Moderate	12:23	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	102.0 101.7	101.9	7.8 7.8	7.8	7.8	1.4 1.4	1.4	1.3	5.0 5.0	5.0	7.0
				Middle	3	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.5 101.6	101.6	7.8 7.8	7.8		1.3 1.3	1.3		9.3 9.5	9.4	
				Bottom	5	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.7	34.8	101.4 101.4	101.4	7.8 7.8	7.8	7.8	1.3 1.3	1.3		6.4 6.7	6.6	
M2	Cloudy	Moderate	12:12	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.3 101.0	101.2	7.8 7.7	7.8	7.8	1.2 1.2	1.2	1.5	5.3 5.0	5.2	5.2
				Middle	6	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	100.6 100.0	100.3	7.7 7.7	7.7		1.3 1.4	1.4		5.5 5.6	5.6	
				Bottom	11	18.2 18.2	18.2	8.4 8.4	8.4	34.8 34.8	34.8	98.8 98.8	98.8	7.6 7.6	7.6	7.6	1.7 1.9	1.8		4.7 4.6	4.7	
M3	Cloudy	Moderate	12:41	Surface	1	18.5 18.5	18.5	8.4 8.4	8.4	34.5 34.5	34.5	103.4 102.0	102.7	7.9 7.8	7.9	7.9	1.4 1.5	1.5	1.5	5.3 5.4	5.4	6.7
				Middle	4	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	102.0 100.9	101.5	7.8 7.7	7.8		1.7 1.4	1.6		8.3 8.4	8.4	
				Bottom	7	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.8	34.8	100.1 100.0	100.1	7.7 7.6	7.7	7.7	1.5 1.5	1.5		6.2 6.2	6.2	
M4	Cloudy	Moderate	12:06	Surface	1	18.2 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	100.3 99.8	100.1	7.7 7.6	7.7	7.7	1.3 1.3	1.3	1.4	2.7 2.6	2.7	4.2
				Middle	5	18.2 18.2	18.2	8.4 8.4	8.4	34.7 34.7	34.7	99.6 99.6	99.6	7.6 7.6	7.6		1.4 1.4	1.4		6.0 5.9	6.0	
				Bottom	9	18.2 18.2	18.2	8.4 8.4	8.4	34.7 34.7	34.7	99.5 99.4	99.5	7.6 7.6	7.6	7.6	1.5 1.5	1.5		4.0 3.9	4.0	
M5	Cloudy	Moderate	12:56	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.7 100.8	101.3	7.8 7.7	7.8	7.7	1.6 1.5	1.6	1.8	5.7 5.7	5.7	5.8
				Middle	6	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	99.9 99.7	99.8	7.6 7.6	7.6		2.0 1.9	2.0		6.8 6.7	6.8	
				Bottom	11	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	99.8 99.1	99.5	7.6 7.6	7.6	7.6	1.8 1.6	1.7		4.8 4.9	4.9	
M6	Cloudy	Moderate	12:51	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.8	- -	-	1.1	- -	-	4.2
				Middle	1.3	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	102.3 102.4	102.4	7.8 7.8	7.8		1.1 1.1	1.1		4.1 4.3	4.2	
				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 2 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.5 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.8 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.9 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.9 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.5 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 02 January 2018

(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	17:27	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	34.8 34.8	34.8	101.3 101.2	101.3	7.8 7.8	7.8	7.8	1.1 1.1	1.1	1.7	5.3 5.3	5.3	5.1
				Middle	9.5	18.1 18.2	18.2	8.4 8.4	8.4	34.8 34.8	34.8	100.3 100.4	100.4	7.7 7.7	7.7		1.1 1.1	1.1		4.6 4.8	4.7	
				Bottom	18	18.1 18.1	18.1	8.4 8.4	8.4	34.8 34.8	34.8	98.8 98.6	98.7	7.6 7.6	7.6	7.6	2.8 3.0	2.9		5.2 5.6	5.4	
C2	Cloudy	Moderate	16:27	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	34.7 34.7	34.7	100.6 100.4	100.5	7.7 7.7	7.7	7.7	1.2 1.2	1.2	1.4	4.5 4.5	4.5	5.5
				Middle	16.5	18.3 18.3	18.3	8.3 8.3	8.3	34.7 34.7	34.7	98.9 99.4	99.2	7.6 7.6	7.6		1.4 1.3	1.4		6.1 6.2	6.2	
				Bottom	32	18.3 18.3	18.3	8.3 8.3	8.3	34.7 34.7	34.7	98.0 98.4	98.2	7.5 7.5	7.5	7.5	1.5 1.5	1.5		5.8 5.7	5.8	
G1	Cloudy	Moderate	16:56	Surface	1	18.5 18.4	18.5	8.4 8.4	8.4	34.7 34.7	34.7	104.6 104.4	104.5	8.0 8.0	8.0	8.0	1.2 1.1	1.2	1.2	5.0 5.1	5.1	6.0
				Middle	4	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	103.8 103.6	103.7	7.9 7.9	7.9		1.0 1.1	1.1		6.7 6.6	6.7	
				Bottom	7	18.3 18.4	18.4	8.4 8.4	8.4	34.8 34.7	34.8	101.8 102.6	102.2	7.8 7.8	7.8	7.8	1.3 1.1	1.2		6.3 6.3	6.3	
G2	Cloudy	Moderate	16:45	Surface	1	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	104.5 104.5	104.5	8.0 8.0	8.0	7.9	1.0 1.0	1.0	1.1	2.9 2.9	2.9	4.7
				Middle	5	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.7 102.0	101.9	7.8 7.8	7.8		1.1 1.1	1.1		5.7 5.7	5.7	
				Bottom	9	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.8	34.8	101.0 101.3	101.2	7.7 7.8	7.8	7.8	1.1 1.0	1.1		5.6 5.6	5.6	
G3	Cloudy	Moderate	17:02	Surface	1	18.4 18.4	18.4	8.4 8.4	8.4	34.1 34.5	34.3	102.1 100.6	101.4	7.8 7.7	7.8	7.8	1.7 1.7	1.7	2.3	5.0 5.1	5.1	5.5
				Middle	4	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	102.8 100.7	101.8	7.9 7.7	7.8		2.0 2.3	2.2		5.9 6.0	6.0	
				Bottom	7	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.8	34.8	100.0 99.3	99.7	7.6 7.6	7.6	7.6	2.8 2.9	2.9		5.5 5.5	5.5	
G4	Cloudy	Moderate	17:11	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.8	34.8	103.3 103.3	103.3	7.9 7.9	7.9	7.9	1.2 1.1	1.2	1.6	4.0 4.0	4.0	4.9
				Middle	4.5	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.8	34.8	103.1 103.1	103.1	7.9 7.9	7.9		1.2 1.1	1.2		5.0 5.1	5.1	
				Bottom	8	18.3 18.3	18.3	8.4 8.4	8.4	34.8 34.8	34.8	100.0 100.7	100.4	7.6 7.7	7.7	7.7	2.4 2.2	2.3		5.3 5.6	5.5	
M1	Cloudy	Moderate	16:52	Surface	1	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	103.9 103.8	103.9	7.9 7.9	7.9	7.9	1.2 1.3	1.3	1.3	3.6 3.7	3.7	4.9
				Middle	3	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	102.6 103.2	102.9	7.8 7.9	7.9		1.4 1.4	1.4		4.9 5.0	5.0	
				Bottom	5	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	102.4 102.6	102.5	7.8 7.8	7.8	7.8	1.2 1.2	1.2		6.0 6.1	6.1	
M2	Cloudy	Moderate	16:40	Surface	1	18.3 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	104.0 103.8	103.9	7.9 7.9	7.9	7.9	1.1 1.1	1.1	1.4	6.0 5.8	5.9	5.3
				Middle	6	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	103.1 102.9	103.0	7.9 7.9	7.9		1.0 1.1	1.1		3.9 3.8	3.9	
				Bottom	11	18.2 18.2	18.2	8.4 8.4	8.4	34.8 34.8	34.8	100.4 98.7	99.6	7.7 7.6	7.7	7.7	1.9 2.2	2.1		6.2 6.2	6.2	
M3	Cloudy	Moderate	17:06	Surface	1	18.4 18.4	18.4	8.4 8.4	8.4	34.6 34.6	34.6	101.4 102.5	102.0	7.8 7.8	7.8	7.9	1.4 1.5	1.5	2.1	5.4 5.5	5.5	5.8
				Middle	4	18.4 18.4	18.4	8.4 8.4	8.4	34.7 34.7	34.7	103.3 101.8	102.6	7.9 7.8	7.9		1.7 1.8	1.8		6.9 7.1	7.0	
				Bottom	7	18.4 18.4	18.4	8.4 8.4	8.4	34.8 34.8	34.8	100.2 100.4	100.3	7.7 7.7	7.7	7.7	2.7 3.1	2.9		4.8 4.8	4.8	
M4	Cloudy	Moderate	16:35	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	103.1 103.7	103.4	7.9 7.9	7.9	7.9	1.1 1.0	1.1	1.2	6.0 6.0	6.0	5.4
				Middle	5	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	101.7 102.2	102.0	7.8 7.8	7.8		1.2 1.2	1.2		5.0 4.9	5.0	
				Bottom	9	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	100.6 101.1	100.9	7.7 7.7	7.7	7.7	1.2 1.3	1.3		5.3 5.2	5.3	
M5	Cloudy	Moderate	17:21	Surface	1	18.1 18.1	18.1	8.4 8.4	8.4	34.7 34.8	34.8	100.9 100.6	100.8	7.7 7.7	7.7	7.7	1.3 1.2	1.3	1.3	5.8 5.9	5.9	6.3
				Middle	6	18.1 18.1	18.1	8.4 8.4	8.4	34.8 34.8	34.8	100.2 100.1	100.2	7.7 7.7	7.7		1.3 1.4	1.4		7.8 7.8	7.8	
				Bottom	11	18.1 18.1	18.1	8.4 8.4	8.4	34.8 34.8	34.8	99.6 99.5	99.6	7.6 7.6	7.6	7.6	1.3 1.3	1.3		5.1 5.2	5.2	
M6	Cloudy	Moderate	17:16	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.8	- -	-	1.9	- -	-	4.1
				Middle	1.2	18.3 18.3	18.3	8.4 8.4	8.4	34.7 34.7	34.7	102.0 102.2	102.1	7.8 7.8	7.8		1.8 2.0	1.9		4.1 4.1	4.1	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 4 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 8.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 8.7 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.2 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.2 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 8.6 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 04 January 2018

(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	15:15	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	101.1 101.1	101.1	7.8 7.9	7.9	7.9	2.9 2.6	2.8	3.2	3.1 3.1	3.1	4.5
				Middle	9	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	100.1 100.2	100.2	7.8 7.8	7.8		2.7 2.8	2.8		6.0 5.8	5.9	
				Bottom	17	18.1 18.1	18.1	8.4 8.4	8.4	32.3 32.3	32.3	99.2 99.2	99.2	7.7 7.7	7.7	7.7	3.8 4.0	3.9		4.6 4.6	4.6	
C2	Cloudy	Moderate	14:20	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	99.1 99.1	99.1	7.7 7.7	7.7	7.7	4.6 4.7	4.7	5.3	5.5 5.5	5.5	6.7
				Middle	16.5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.2 98.2	98.2	7.6 7.6	7.6		4.6 4.6	4.6		7.9 7.9	7.9	
				Bottom	32	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.1 98.1	98.1	7.6 7.6	7.6	7.6	6.7 6.7	6.7		6.5 6.6	6.6	
G1	Cloudy	Moderate	14:46	Surface	1	18.4 18.3	18.4	8.3 8.3	8.3	32.3 32.3	32.3	102.2 101.7	102.0	7.9 7.9	7.9	7.9	2.9 2.9	2.9	3.7	4.0 4.0	4.0	4.4
				Middle	3.5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	101.1 101.4	101.3	7.8 7.9	7.9		3.4 4.2	3.8		4.9 4.8	4.9	
				Bottom	6	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.8 100.5	100.7	7.8 7.8	7.8	7.8	4.4 4.6	4.5		4.2 4.3	4.3	
G2	Cloudy	Moderate	14:38	Surface	1	18.1 18.3	18.2	8.3 8.3	8.3	32.4 32.3	32.4	101.3 100.4	100.9	7.9 7.8	7.9	7.8	3.3 3.3	3.3	4.0	4.8 4.9	4.9	5.5
				Middle	4.5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.7 99.4	99.1	7.7 7.7	7.7		4.3 3.7	4.0		6.3 6.5	6.4	
				Bottom	8	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.1 98.4	98.3	7.6 7.6	7.6	7.6	4.8 4.7	4.8		5.0 5.2	5.1	
G3	Cloudy	Moderate	14:50	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.2 32.2	32.2	97.8 97.6	97.7	7.6 7.6	7.6	7.6	7.5 7.5	7.5	7.6	5.4 5.2	5.3	7.4
				Middle	3.5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.8 97.9	97.9	7.6 7.6	7.6		7.5 7.6	7.6		12.1 12.2	12.2	
				Bottom	6	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.7 97.5	97.6	7.6 7.6	7.6	7.6	6.9 8.6	7.8		4.7 4.6	4.7	
G4	Cloudy	Moderate	14:58	Surface	1	18.4 18.4	18.4	8.3 8.3	8.3	32.3 32.3	32.3	100.8 100.1	100.5	7.8 7.8	7.8	7.8	4.8 4.8	4.8	5.5	4.9 5.0	5.0	6.5
				Middle	4	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.2 100.1	100.2	7.8 7.8	7.8		4.9 5.1	5.0		8.7 8.7	8.7	
				Bottom	7	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	97.7 97.6	97.7	7.6 7.6	7.6	7.6	6.8 6.8	6.8		5.9 5.7	5.8	
M1	Cloudy	Moderate	14:42	Surface	1	18.3 18.4	18.4	8.3 8.3	8.3	32.3 32.3	32.3	100.8 100.0	100.4	7.8 7.8	7.8	7.8	3.9 3.9	3.9	3.8	4.8 5.0	4.9	6.4
				Middle	3	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.0 99.9	100.0	7.8 7.7	7.8		3.7 3.5	3.6		8.7 8.7	8.7	
				Bottom	5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	99.0 99.5	99.3	7.7 7.7	7.7	7.7	4.1 3.8	4.0		5.7 5.5	5.6	
M2	Cloudy	Moderate	14:33	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.5 100.3	100.4	7.8 7.8	7.8	7.8	3.8 3.8	3.8	4.0	3.9 4.0	4.0	4.6
				Middle	5.5	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	99.8 100.0	99.9	7.8 7.8	7.8		3.9 3.9	3.9		6.2 6.1	6.2	
				Bottom	10	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	99.7 99.6	99.7	7.8 7.8	7.8	7.8	4.4 4.3	4.4		3.5 3.6	3.6	
M3	Cloudy	Moderate	14:54	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.2 32.2	32.2	99.5 98.8	99.2	7.7 7.7	7.7	7.7	6.4 6.1	6.3	6.3	6.1 6.0	6.1	6.8
				Middle	3.5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.1 98.1	98.1	7.6 7.6	7.6		6.0 6.1	6.1		8.6 9.0	8.8	
				Bottom	6	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.8 97.8	97.8	7.6 7.6	7.6	7.6	6.7 6.3	6.5		5.8 5.2	5.5	
M4	Cloudy	Moderate	14:28	Surface	1	18.2 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.5 98.9	99.7	7.8 7.7	7.8	7.8	2.9 2.9	2.9	3.0	4.4 4.1	4.3	4.0
				Middle	4.5	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.6 98.5	98.6	7.7 7.7	7.7		2.9 3.0	3.0		4.1 4.0	4.1	
				Bottom	8	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.4 98.4	98.4	7.7 7.7	7.7	7.7	3.2 3.0	3.1		3.4 3.5	3.5	
M5	Cloudy	Moderate	15:08	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.4 100.2	100.3	7.8 7.8	7.8	7.8	3.9 3.8	3.9	5.9	4.8 4.8	4.8	5.3
				Middle	5.5	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.7 98.2	98.5	7.7 7.6	7.7		7.0 6.8	6.9		6.9 6.6	6.8	
				Bottom	10	18.2 18.1	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.4 98.5	98.5	7.7 7.7	7.7	7.7	7.2 6.5	6.9		4.2 4.2	4.2	
M6	Cloudy	Moderate	15:03	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.8	- -	-	4.7	- -	-	7.0
				Middle	1.2	18.4 18.4	18.4	8.3 8.3	8.3	32.3 32.3	32.3	101.1 101.2	101.2	7.8 7.8	7.8		4.7 4.6	4.7		7.0 6.9	7.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 4 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 7.8 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 8.5 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 7.1 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 7.1 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 8.2 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 8.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 04 January 2018

(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	09:48	Surface	1	18.1 18.1	18.1	8.4 8.4	8.4	32.3 32.3	32.3	100.9 100.8	100.9	7.9 7.9	7.9	7.9	4.6 4.7	4.7	5.3	5.8 6.0	5.9	6.9
				Middle	9	18.1 18.1	18.1	8.4 8.4	8.4	32.3 32.3	32.3	100.0 100.2	100.1	7.8 7.8	7.8		4.8 4.5	4.7		7.9 8.0	8.0	
				Bottom	17	18.0 18.0	18.0	8.4 8.4	8.4	32.3 32.3	32.3	99.3 99.3	99.3	7.7 7.7	7.7	7.7	6.4 6.5	6.5		6.8 6.8	6.8	
C2	Cloudy	Moderate	08:47	Surface	1	18.2 18.2	18.2	8.2 8.3	8.3	32.3 32.3	32.3	100.8 99.6	100.2	7.8 7.7	7.8	7.8	3.6 3.1	3.4	4.1	3.8 3.7	3.8	3.6
				Middle	17	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.6 98.7	98.7	7.7 7.7	7.7		3.8 3.9	3.9		3.7 3.6	3.7	
				Bottom	33	18.1 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.6 98.8	98.7	7.7 7.7	7.7	7.7	4.8 5.2	5.0		3.4 3.4	3.4	
G1	Cloudy	Moderate	09:13	Surface	1	18.2 18.3	18.3	8.3 8.3	8.3	32.4 32.3	32.4	100.6 98.8	99.7	7.8 7.7	7.8	7.8	4.5 4.3	4.4	4.9	5.2 5.2	5.2	4.5
				Middle	4	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.6 98.3	98.5	7.7 7.6	7.7		5.1 5.1	5.1		4.7 4.6	4.7	
				Bottom	7	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.9 98.1	98.0	7.6 7.6	7.6	7.6	5.3 5.1	5.2		3.6 3.7	3.7	
G2	Cloudy	Moderate	09:04	Surface	1	18.1 18.3	18.2	8.3 8.3	8.3	32.4 32.3	32.4	100.8 98.9	99.9	7.8 7.7	7.8	7.8	2.5 2.5	2.5	3.2	4.0 4.1	4.1	6.4
				Middle	5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.6 98.6	98.6	7.7 7.7	7.7		3.1 3.0	3.1		8.3 8.4	8.4	
				Bottom	9	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.0 97.8	97.9	7.6 7.6	7.6	7.6	3.8 4.0	3.9		6.6 6.6	6.6	
G3	Cloudy	Moderate	09:18	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.2 32.2	32.2	99.1 97.7	98.4	7.7 7.6	7.7	7.7	5.8 6.0	5.9	6.1	3.7 3.7	3.7	4.3
				Middle	4	18.3 18.3	18.3	8.3 8.3	8.3	32.2 32.3	32.3	97.3 97.5	97.4	7.6 7.6	7.6		6.3 5.8	6.1		5.3 5.4	5.4	
				Bottom	7	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	96.8 97.6	97.2	7.5 7.6	7.6	7.6	6.9 5.6	6.3		4.0 3.8	3.9	
G4	Cloudy	Moderate	09:33	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.5 98.7	99.6	7.8 7.7	7.8	7.8	3.5 3.7	3.6	3.6	5.5 5.4	5.5	5.9
				Middle	4.5	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.2 98.4	98.3	7.6 7.7	7.7		4.1 3.7	3.9		7.3 7.3	7.3	
				Bottom	8	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	97.4 96.7	97.1	7.6 7.5	7.6	7.6	3.4 3.3	3.4		4.8 4.8	4.8	
M1	Cloudy	Moderate	09:09	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	100.1 98.1	99.1	7.8 7.6	7.7	7.7	6.2 6.2	6.2	5.9	6.0 5.9	6.0	4.8
				Middle	3	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.3 97.9	98.1	7.6 7.6	7.6		5.7 5.4	5.6		4.1 4.2	4.2	
				Bottom	5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.0 97.9	98.0	7.6 7.6	7.6	7.6	5.8 6.0	5.9		4.4 4.1	4.3	
M2	Cloudy	Moderate	08:59	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.9 98.6	98.8	7.7 7.7	7.7	7.7	3.9 3.9	3.9	4.6	6.0 6.0	6.0	5.6
				Middle	6	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.0 98.1	98.1	7.6 7.6	7.6		4.4 4.2	4.3		5.4 5.2	5.3	
				Bottom	11	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.6 97.6	97.6	7.6 7.6	7.6	7.6	5.6 5.7	5.7		5.7 5.5	5.6	
M3	Cloudy	Moderate	09:23	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.2 32.2	32.2	98.6 98.0	98.3	7.7 7.6	7.7	7.7	4.4 5.1	4.8	6.4	4.2 4.3	4.3	5.5
				Middle	4	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.5 97.2	97.4	7.6 7.6	7.6		7.1 7.2	7.2		6.0 5.8	5.9	
				Bottom	7	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.0 97.0	97.0	7.5 7.5	7.5	7.5	7.2 7.3	7.3		6.3 6.5	6.4	
M4	Cloudy	Moderate	08:54	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	99.8 98.8	99.3	7.8 7.7	7.8	7.8	5.2 4.9	5.1	5.3	4.7 4.6	4.7	4.9
				Middle	5	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.5 98.5	98.5	7.6 7.7	7.7		5.4 5.3	5.4		4.8 4.8	4.8	
				Bottom	9	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.1 98.1	98.1	7.6 7.6	7.6	7.6	5.5 5.5	5.5		5.1 5.2	5.2	
M5	Cloudy	Moderate	09:41	Surface	1	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	98.5 99.0	98.8	7.6 7.7	7.7	7.7	3.7 3.3	3.5	4.0	3.7 3.6	3.7	5.1
				Middle	6	18.3 18.3	18.3	8.3 8.3	8.3	32.3 32.3	32.3	97.5 97.9	97.7	7.6 7.6	7.6		3.6 3.7	3.7		6.7 6.8	6.8	
				Bottom	11	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	98.0 97.8	97.9	7.6 7.6	7.6	7.6	4.4 5.0	4.7		4.7 4.7	4.7	
M6	Cloudy	Moderate	09:37	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.7	- -	-	3.6	- -	-	5.5
				Middle	1.3	18.2 18.2	18.2	8.3 8.3	8.3	32.3 32.3	32.3	99.5 98.8	99.2	7.7 7.7	7.7		3.6 3.5	3.6		5.5 5.4	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 6 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 3.6 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 3.9 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.5 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 06 January 2018

(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	15:38	Surface	1	18.1 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	99.1 98.2	98.7	7.7 7.6	7.7	7.7	1.4 1.4	1.4	2.1	4.5 4.4	4.5	4.1
				Middle	9.5	18.1 18.0	18.1	8.4 8.4	8.4	33.6 33.6	33.6	97.9 97.6	97.8	7.6 7.6	7.6		1.5 1.5	1.5		3.7 3.7	3.7	
				Bottom	18	17.8 17.8	17.8	8.4 8.4	8.4	33.6 33.6	33.6	98.2 98.2	98.2	7.6 7.6	7.6	7.6	3.5 3.5	3.5		4.2 4.2	4.2	
C2	Rainy	Moderate	14:21	Surface	1	18.1 18.1	18.1	8.3 8.4	8.4	33.6 33.6	33.6	98.6 98.5	98.6	7.6 7.6	7.6	7.6	1.5 1.4	1.5	2.2	5.8 5.7	5.8	5.5
				Middle	17	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	97.5 97.6	97.6	7.5 7.6	7.6		2.0 2.0	2.0		5.1 5.1	5.1	
				Bottom	33	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	97.4 97.0	97.2	7.5 7.5	7.5	7.5	3.0 3.0	3.0		5.6 5.7	5.7	
G1	Rainy	Moderate	15:02	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.5	33.5	97.7 96.9	97.3	7.5 7.5	7.5	7.5	1.6 1.6	1.6	1.7	5.0 4.9	5.0	5.7
				Middle	4	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.9 96.8	96.9	7.5 7.5	7.5		1.6 1.7	1.7		7.7 7.6	7.7	
				Bottom	7	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.6 96.5	96.6	7.5 7.4	7.5	7.5	1.6 1.8	1.7		4.4 4.5	4.5	
G2	Rainy	Moderate	14:51	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	98.0 96.8	97.4	7.6 7.5	7.6	7.6	1.8 1.8	1.8	1.7	5.5 5.4	5.5	6.3
				Middle	5	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.1 96.9	97.0	7.5 7.5	7.5		1.8 1.7	1.8		8.0 7.9	8.0	
				Bottom	9	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.7 96.7	96.7	7.5 7.5	7.5	7.5	1.7 1.5	1.6		5.4 5.2	5.3	
G3	Rainy	Moderate	15:10	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.5	33.5	96.7 96.1	96.4	7.5 7.4	7.5	7.5	2.8 2.4	2.6	2.5	4.5 4.5	4.5	5.4
				Middle	4	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.5	33.5	96.1 96.1	96.1	7.4 7.4	7.4		2.8 2.3	2.6		6.2 6.2	6.2	
				Bottom	7	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.5	33.5	96.0 95.9	96.0	7.4 7.4	7.4	7.4	2.3 2.4	2.4		5.4 5.6	5.5	
G4	Rainy	Moderate	15:20	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.5	33.5	97.1 95.8	96.5	7.5 7.4	7.5	7.5	1.4 1.4	1.4	2.0	5.0 5.1	5.1	5.3
				Middle	4.5	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.5 96.1	96.3	7.4 7.4	7.4		1.4 1.6	1.5		6.5 6.2	6.4	
				Bottom	8	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	94.1 95.1	94.6	7.3 7.3	7.3	7.3	2.9 3.1	3.0		4.5 4.3	4.4	
M1	Rainy	Moderate	14:58	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.5 97.0	97.3	7.5 7.5	7.5	7.5	2.3 2.3	2.3	2.3	4.9 4.9	4.9	6.0
				Middle	3	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.1 96.8	97.0	7.5 7.5	7.5		2.3 2.3	2.3		7.5 7.2	7.4	
				Bottom	5	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.7 96.7	96.7	7.5 7.5	7.5	7.5	2.3 2.2	2.3		5.8 5.7	5.8	
M2	Rainy	Moderate	14:43	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	98.2 97.6	97.9	7.6 7.5	7.6	7.6	1.6 1.5	1.6	1.6	6.1 6.1	6.1	5.8
				Middle	6	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.3 97.2	97.3	7.5 7.5	7.5		1.5 1.5	1.5		5.7 5.7	5.7	
				Bottom	11	18.1 18.0	18.1	8.4 8.4	8.4	33.6 33.6	33.6	97.3 97.3	97.3	7.5 7.5	7.5	7.5	1.6 1.7	1.7		5.6 5.7	5.7	
M3	Rainy	Moderate	15:15	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.4 33.4	33.4	96.7 96.4	96.6	7.5 7.4	7.5	7.5	1.6 1.6	1.6	1.6	4.7 4.8	4.8	6.6
				Middle	4	18.2 18.2	18.2	8.4 8.4	8.4	33.4 33.5	33.5	96.5 96.3	96.4	7.5 7.4	7.5		1.6 1.6	1.6		8.7 8.9	8.8	
				Bottom	7	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.6	33.6	96.3 96.1	96.2	7.4 7.4	7.4	7.4	1.5 1.6	1.6		6.3 6.0	6.2	
M4	Rainy	Moderate	14:33	Surface	1	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	99.9 98.9	99.4	7.7 7.7	7.7	7.7	1.5 1.4	1.5	1.5	5.1 5.4	5.3	3.9
				Middle	4.5	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	99.3 98.5	98.9	7.7 7.6	7.7		1.5 1.6	1.6		3.3 3.2	3.3	
				Bottom	8	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	98.4 98.4	98.4	7.6 7.6	7.6	7.6	1.5 1.5	1.5		3.1 3.2	3.2	
M5	Rainy	Moderate	15:31	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	98.2 97.5	97.9	7.6 7.5	7.6	7.6	1.5 1.5	1.5	1.5	4.8 4.9	4.9	4.7
				Middle	6	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.2 97.2	97.2	7.5 7.5	7.5		1.5 1.5	1.5		4.6 4.5	4.6	
				Bottom	11	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.7 96.9	96.8	7.5 7.5	7.5	7.5	1.6 1.5	1.6		4.6 4.5	4.6	
M6	Rainy	Moderate	15:27	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.5	- -	-	1.6	- -	-	6.6
				Middle	2	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.4 97.1	97.3	7.5 7.5	7.5		1.6 1.5	1.6		6.6 6.5	6.6	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 6 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.7 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.0 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 7.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 8.6 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 06 January 2018

(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	11:37	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	98.6 98.1	98.4	7.6 7.6	7.6	7.6	1.7 1.7	1.7	2.2	4.8 4.9	4.9	5.5
				Middle	9.5	18.1 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.8 97.7	97.8	7.6 7.5	7.6		1.8 1.7	1.8		5.1 4.9	5.0	
				Bottom	18	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	97.7 97.7	97.7	7.6 7.6	7.6		3.1 3.0	3.1		6.5 6.7	6.6	
C2	Rainy	Moderate	10:19	Surface	1	18.3 18.3	18.3	8.2 8.3	8.3	33.5 33.6	33.6	96.8 96.7	96.8	7.5 7.5	7.5	7.5	1.6 1.6	1.6	2.1	4.2 4.2	4.2	4.7
				Middle	17	18.2 18.2	18.2	8.3 8.3	8.3	33.6 33.6	33.6	96.2 96.1	96.2	7.4 7.4	7.4		2.2 2.1	2.2		5.3 5.4	5.4	
				Bottom	33	18.3 18.2	18.3	8.3 8.3	8.3	33.6 33.6	33.6	95.8 95.6	95.7	7.4 7.4	7.4	7.4	2.3 2.4	2.4		4.7 4.5	4.6	
G1	Rainy	Moderate	10:55	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.5	33.5	96.8 96.7	96.8	7.5 7.5	7.5	7.5	1.5 1.5	1.5	1.6	3.4 3.3	3.4	4.3
				Middle	4	18.3 18.2	18.3	8.4 8.4	8.4	33.6 33.5	33.6	96.5 96.6	96.6	7.4 7.5	7.5		1.8 1.6	1.7		3.9 4.0	4.0	
				Bottom	7	18.3 18.2	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.3 96.3	96.3	7.4 7.4	7.4	7.4	1.7 1.7	1.7		5.4 5.3	5.4	
G2	Rainy	Moderate	10:43	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	97.3 96.7	97.0	7.5 7.5	7.5	7.5	1.8 1.7	1.8	1.8	4.5 4.7	4.6	4.6
				Middle	5	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.6 96.4	96.5	7.4 7.4	7.4		1.8 1.7	1.8		4.2 4.1	4.2	
				Bottom	9	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.3 96.3	96.3	7.4 7.4	7.4	7.4	1.6 1.7	1.7		4.9 4.8	4.9	
G3	Rainy	Moderate	11:03	Surface	1	18.2 18.3	18.3	8.4 8.4	8.4	32.8 33.1	33.0	96.5 95.5	96.0	7.5 7.4	7.5	7.5	1.7 1.9	1.8	1.9	3.7 3.5	3.6	5.6
				Middle	4	18.3 18.3	18.3	8.4 8.4	8.4	33.4 33.5	33.5	95.8 95.6	95.7	7.4 7.4	7.4		1.8 2.1	2.0		7.4 7.4	7.4	
				Bottom	7	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	95.5 95.4	95.5	7.4 7.4	7.4	7.4	1.9 2.0	2.0		5.8 5.8	5.8	
G4	Rainy	Moderate	11:15	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.5 33.6	33.6	97.6 96.1	96.9	7.5 7.4	7.5	7.5	1.5 1.6	1.6	1.8	3.5 3.6	3.6	3.5
				Middle	4.5	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.4 95.9	96.2	7.4 7.4	7.4		1.5 1.7	1.6		2.8 2.7	2.8	
				Bottom	8	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	95.6 95.7	95.7	7.4 7.4	7.4	7.4	2.2 1.9	2.1		4.1 4.1	4.1	
M1	Rainy	Moderate	10:50	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.5 96.5	97.0	7.5 7.4	7.5	7.5	1.8 1.6	1.7	1.7	3.8 3.8	3.8	5.0
				Middle	3	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.5 96.4	96.5	7.4 7.4	7.4		1.6 1.6	1.6		5.9 6.1	6.0	
				Bottom	5	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.4 96.3	96.4	7.4 7.4	7.4	7.4	1.6 1.7	1.7		5.4 5.2	5.3	
M2	Rainy	Moderate	10:37	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	97.4 96.8	97.1	7.5 7.5	7.5	7.5	1.7 1.6	1.7	1.8	3.8 3.8	3.8	4.6
				Middle	6	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.7 96.4	96.6	7.5 7.4	7.5		1.8 1.7	1.8		5.3 5.2	5.3	
				Bottom	11	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.3 96.0	96.2	7.4 7.4	7.4	7.4	1.8 1.7	1.8		4.6 4.7	4.7	
M3	Rainy	Moderate	11:09	Surface	1	18.3 18.3	18.3	8.4 8.4	8.4	33.4 33.3	33.4	95.7 95.9	95.8	7.4 7.4	7.4	7.4	1.6 1.6	1.6	1.5	4.4 4.4	4.4	3.9
				Middle	4	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.6 96.4	96.5	7.4 7.4	7.4		1.2 1.2	1.2		3.8 3.7	3.8	
				Bottom	7	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.4 95.7	96.1	7.4 7.4	7.4	7.4	1.5 1.6	1.6		3.4 3.4	3.4	
M4	Rainy	Moderate	10:28	Surface	1	18.2 18.2	18.2	8.3 8.4	8.4	33.6 33.6	33.6	97.5 97.3	97.4	7.5 7.5	7.5	7.5	1.7 1.7	1.7	1.7	4.5 4.5	4.5	3.7
				Middle	5	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	97.2 97.2	97.2	7.5 7.5	7.5		1.7 1.7	1.7		3.7 3.6	3.7	
				Bottom	9	18.2 18.2	18.2	8.4 8.4	8.4	33.6 33.6	33.6	96.8 96.8	96.8	7.5 7.5	7.5	7.5	1.7 1.8	1.8		2.9 2.8	2.9	
M5	Rainy	Moderate	11:29	Surface	1	18.2 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	97.4 97.1	97.3	7.5 7.5	7.5	7.5	1.7 1.8	1.8	1.9	5.7 5.6	5.7	6.8
				Middle	6	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	96.7 96.6	96.7	7.5 7.4	7.5		1.5 1.7	1.6		7.8 7.8	7.8	
				Bottom	11	18.0 18.0	18.0	8.4 8.4	8.4	33.6 33.6	33.6	97.1 97.7	97.4	7.5 7.6	7.6	7.6	2.3 2.3	2.3		6.8 6.7	6.8	
M6	Rainy	Moderate	11:23	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.5	- -	-	2.0	- -	-	5.8
				Middle	2	18.3 18.3	18.3	8.4 8.4	8.4	33.6 33.6	33.6	97.2 96.6	96.9	7.5 7.4	7.5		2.0 1.9	2.0		5.7 5.8	5.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 8 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.5 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.7 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.4 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2:5.4 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 08 January 2018

(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	17:10	Surface	1	17.8 17.8	17.8	8.5 8.5	8.5	34.5 34.5	34.5	99.7 98.2	99.0	7.7 7.6	7.7	7.7	1.6 1.5	1.6	1.9	1.8 1.8	1.8	4.3
				Middle	10	17.8 17.8	17.8	8.5 8.5	8.5	34.5 34.5	34.5	97.9 97.8	97.9	7.6 7.6	7.6		1.7 1.7	1.7		7.8 7.8	7.8	
				Bottom	19	17.7 17.7	17.7	8.5 8.5	8.5	34.5 34.5	34.5	97.6 97.6	97.6	7.6 7.6	7.6	7.6	2.2 2.3	2.3		3.3 3.3	3.3	
C2	Rainy	Moderate	16:13	Surface	1	17.8 17.9	17.9	8.3 8.3	8.3	34.5 34.5	34.5	98.2 97.8	98.0	7.6 7.6	7.6	7.6	1.2 1.3	1.3	1.6	4.4 4.5	4.5	4.6
				Middle	17.5	17.9 17.9	17.9	8.3 8.4	8.4	34.5 34.5	34.5	97.3 97.3	97.3	7.5 7.5	7.5		1.3 1.2	1.3		3.8 3.8	3.8	
				Bottom	34	17.8 17.9	17.9	8.3 8.4	8.4	34.5 34.5	34.5	97.0 97.1	97.1	7.5 7.5	7.5	7.5	2.1 2.1	2.1		5.5 5.3	5.4	
G1	Rainy	Moderate	16:41	Surface	1	17.9 17.9	17.9	8.5 8.5	8.5	34.3 34.3	34.3	98.1 97.2	97.7	7.6 7.5	7.6	7.6	1.3 1.2	1.3	1.2	4.5 4.6	4.6	4.8
				Middle	4	17.9 17.9	17.9	8.5 8.4	8.5	34.5 34.5	34.5	97.2 97.0	97.1	7.5 7.5	7.5		1.1 1.2	1.2		5.4 5.5	5.5	
				Bottom	7	17.9 17.9	17.9	8.5 8.4	8.5	34.5 34.5	34.5	97.0 96.9	97.0	7.5 7.5	7.5	7.5	1.2 1.2	1.2		4.3 4.3	4.3	
G2	Rainy	Moderate	16:30	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	34.4 34.4	34.4	98.0 97.6	97.8	7.6 7.5	7.6	7.6	1.1 1.1	1.1	1.3	3.6 3.5	3.6	3.5
				Middle	4.5	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.2 97.1	97.2	7.5 7.5	7.5		1.4 1.3	1.4		3.8 3.9	3.9	
				Bottom	8	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	96.9 96.7	96.8	7.5 7.5	7.5	7.5	1.3 1.3	1.3		2.9 2.9	2.9	
G3	Rainy	Moderate	16:46	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	33.0 34.1	33.6	97.9 95.6	96.8	7.6 7.4	7.5	7.5	1.7 1.8	1.8	1.8	5.2 5.2	5.2	5.1
				Middle	4	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.3	34.4	96.6 95.7	96.2	7.5 7.4	7.5		1.5 1.6	1.6		5.0 5.0	5.0	
				Bottom	7	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	96.0 95.6	95.8	7.4 7.4	7.4	7.4	1.7 2.0	1.9		5.2 5.2	5.2	
G4	Rainy	Moderate	16:55	Surface	1	17.9 17.9	17.9	8.5 8.5	8.5	34.4 34.4	34.4	99.6 96.9	98.3	7.7 7.5	7.6	7.6	1.2 1.2	1.2	1.4	3.8 3.8	3.8	3.8
				Middle	4.5	17.9 17.9	17.9	8.5 8.5	8.5	34.4 34.4	34.4	97.4 97.0	97.2	7.5 7.5	7.5		1.2 1.2	1.2		3.5 3.5	3.5	
				Bottom	8	17.9 17.9	17.9	8.5 8.5	8.5	34.5 34.5	34.5	95.6 95.9	95.8	7.4 7.4	7.4	7.4	1.8 1.8	1.8		4.2 4.2	4.2	
M1	Rainy	Moderate	16:36	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	34.4 34.4	34.4	97.7 97.2	97.5	7.5 7.5	7.5	7.5	1.3 1.4	1.4	1.5	3.0 3.1	3.1	3.7
				Middle	3	17.9 17.9	17.9	8.4 8.4	8.4	34.4 34.5	34.5	97.2 96.9	97.1	7.5 7.5	7.5		1.6 1.5	1.6		4.3 4.4	4.4	
				Bottom	5	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	96.9 96.8	96.9	7.5 7.5	7.5	7.5	1.5 1.5	1.5		3.7 3.6	3.7	
M2	Rainy	Moderate	16:25	Surface	1	17.9 17.9	17.9	8.5 8.4	8.5	34.4 34.4	34.4	98.5 97.5	98.0	7.6 7.5	7.6	7.6	1.1 1.2	1.2	1.3	2.6 2.6	2.6	4.1
				Middle	6	17.9 17.9	17.9	8.5 8.4	8.5	34.5 34.5	34.5	97.2 97.2	97.2	7.5 7.5	7.5		1.3 1.3	1.3		4.7 4.8	4.8	
				Bottom	11	17.9 17.9	17.9	8.5 8.4	8.5	34.5 34.5	34.5	96.9 96.8	96.9	7.5 7.5	7.5	7.5	1.3 1.3	1.3		4.8 4.7	4.8	
M3	Rainy	Moderate	16:50	Surface	1	17.9 18.0	18.0	8.4 8.4	8.4	34.4 34.3	34.4	97.0 95.6	96.3	7.5 7.4	7.5	7.5	2.2 2.2	2.2	2.4	5.0 4.8	4.9	5.2
				Middle	4	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	95.8 95.4	95.6	7.4 7.4	7.4		2.7 2.7	2.7		5.6 5.6	5.6	
				Bottom	7	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	95.4 95.1	95.3	7.4 7.3	7.4	7.4	2.2 2.1	2.2		5.0 5.0	5.0	
M4	Rainy	Moderate	16:19	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	34.4 34.4	34.4	98.2 97.8	98.0	7.6 7.6	7.6	7.6	1.1 1.1	1.1	1.5	3.5 3.5	3.5	4.1
				Middle	5.5	17.8 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.8 97.5	97.7	7.6 7.5	7.6		1.6 1.6	1.6		5.1 5.0	5.1	
				Bottom	10	17.8 17.8	17.8	8.4 8.4	8.4	34.5 34.5	34.5	97.5 97.3	97.4	7.5 7.5	7.5	7.5	1.9 1.6	1.8		3.5 3.6	3.6	
M5	Rainy	Moderate	17:04	Surface	1	17.9 17.9	17.9	8.5 8.5	8.5	34.4 34.4	34.4	99.1 97.1	98.1	7.7 7.5	7.6	7.6	1.5 1.7	1.6	1.8	2.9 2.9	2.9	3.2
				Middle	6	17.9 17.9	17.9	8.5 8.5	8.5	34.4 34.4	34.4	97.3 96.8	97.1	7.5 7.5	7.5		1.3 1.4	1.4		4.0 3.9	4.0	
				Bottom	11	17.8 17.9	17.9	8.5 8.5	8.5	34.5 34.5	34.5	96.7 96.4	96.6	7.5 7.4	7.5	7.5	2.3 2.4	2.4		2.6 2.5	2.6	
M6	Rainy	Moderate	16:59	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.6	- -	-	1.2	- -	-	4.2
				Middle	1.5	17.9 17.9	17.9	8.5 8.5	8.5	34.4 34.4	34.4	98.6 98.0	98.3	7.6 7.6	7.6		1.2 1.2	1.2		4.2 4.1	4.2	
				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 8 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.3 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.0 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1:6.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.0 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.5 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 7.3 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.9 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 08 January 2018

(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	12:23	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	34.4 34.4	34.4	97.7 97.6	97.7	7.5 7.5	7.5	7.6	1.1 1.2	1.2	1.9	5.0 5.0	5.0	6.0
				Middle	9.5	17.8 17.7	17.8	8.4 8.4	8.4	34.5 34.5	34.5	97.9 98.1	98.0	7.6 7.6	7.6		2.1 2.1	2.1		6.7 6.8	6.8	
				Bottom	18	17.7 17.7	17.7	8.4 8.4	8.4	34.6 34.5	34.6	97.9 97.9	97.9	7.6 7.6	7.6	7.6	2.7 2.2	2.5		6.2 6.0	6.1	
C2	Rainy	Moderate	11:24	Surface	1	17.9 17.9	17.9	8.2 8.4	8.3	34.4 34.4	34.4	97.1 97.0	97.1	7.5 7.5	7.5	7.5	1.3 1.3	1.3	1.5	4.8 4.9	4.9	3.8
				Middle	16.5	17.9 17.9	17.9	8.3 8.4	8.4	34.4 34.4	34.4	96.7 96.7	96.7	7.5 7.5	7.5		1.5 1.3	1.4		3.2 3.3	3.3	
				Bottom	32	17.9 17.9	17.9	8.3 8.4	8.4	34.5 34.4	34.5	96.9 96.3	96.6	7.5 7.4	7.5	7.5	1.7 1.7	1.7		3.2 3.2	3.2	
G1	Rainy	Moderate	11:55	Surface	1	18.0 17.9	18.0	8.4 8.4	8.4	34.4 34.5	34.5	97.3 97.3	97.3	7.5 7.5	7.5	7.5	1.5 1.4	1.5	1.4	3.1 3.1	3.1	6.6
				Middle	3.5	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.2 97.0	97.1	7.5 7.5	7.5		1.3 1.4	1.4		11.1 11.2	11.2	
				Bottom	6	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.1 97.2	97.2	7.5 7.5	7.5	7.5	1.3 1.3	1.3		5.7 5.4	5.6	
G2	Rainy	Moderate	11:46	Surface	1	18.0 18.0	18.0	8.4 8.4	8.4	34.3 34.4	34.4	97.9 97.4	97.7	7.6 7.5	7.6	7.6	1.2 1.2	1.2	1.2	2.8 2.8	2.8	3.7
				Middle	4	17.9 18.0	18.0	8.4 8.4	8.4	34.4 34.4	34.4	97.2 97.0	97.1	7.5 7.5	7.5		1.2 1.2	1.2		3.3 3.4	3.4	
				Bottom	7	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.1 96.8	97.0	7.5 7.5	7.5	7.5	1.3 1.2	1.3		5.0 4.9	5.0	
G3	Rainy	Moderate	12:00	Surface	1	18.0 18.0	18.0	8.4 8.4	8.4	34.5 34.4	34.5	97.2 95.6	96.4	7.5 7.4	7.5	7.5	1.8 1.9	1.9	1.9	4.8 4.7	4.8	5.1
				Middle	3.5	18.0 17.9	18.0	8.4 8.4	8.4	34.5 34.5	34.5	95.8 95.6	95.7	7.4 7.4	7.4		1.8 1.9	1.9		5.8 5.7	5.8	
				Bottom	6	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	95.5 95.5	95.5	7.4 7.4	7.4	7.4	1.9 2.0	2.0		4.7 4.8	4.8	
G4	Rainy	Moderate	12:07	Surface	1	18.0 18.1	18.1	8.4 8.4	8.4	34.4 34.1	34.3	97.6 96.3	97.0	7.5 7.4	7.5	7.5	1.2 1.2	1.2	1.4	3.8 3.8	3.8	4.3
				Middle	4	18.0 17.9	18.0	8.4 8.4	8.4	34.4 34.4	34.4	97.0 96.5	96.8	7.5 7.4	7.5		1.2 1.2	1.2		5.9 5.9	5.9	
				Bottom	7	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.1 96.8	97.0	7.5 7.5	7.5	7.5	2.0 1.6	1.8		3.2 3.2	3.2	
M1	Rainy	Moderate	11:51	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.6 97.1	97.4	7.5 7.5	7.5	7.5	1.7 2.0	1.9	1.9	4.3 4.4	4.4	4.4
				Middle	3	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.1 97.0	97.1	7.5 7.5	7.5		1.8 2.0	1.9		4.2 4.2	4.2	
				Bottom	5	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.6	34.6	96.9 96.9	96.9	7.5 7.5	7.5	7.5	1.8 1.9	1.9		4.5 4.4	4.5	
M2	Rainy	Moderate	11:40	Surface	1	18.0 17.9	18.0	8.4 8.4	8.4	34.4 34.4	34.4	98.4 97.7	98.1	7.6 7.5	7.6	7.6	1.2 1.2	1.2	1.3	4.9 5.0	5.0	4.7
				Middle	5	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.3 97.3	97.3	7.5 7.5	7.5		1.2 1.3	1.3		5.7 5.6	5.7	
				Bottom	9	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.3 97.3	97.3	7.5 7.5	7.5	7.5	1.4 1.4	1.4		3.5 3.5	3.5	
M3	Rainy	Moderate	12:03	Surface	1	18.1 18.0	18.1	8.4 8.4	8.4	34.4 34.4	34.4	95.2 95.4	95.3	7.3 7.4	7.4	7.4	2.1 1.9	2.0	1.7	5.5 5.4	5.5	5.4
				Middle	3.5	18.0 18.0	18.0	8.4 8.4	8.4	34.6 34.6	34.6	95.6 95.5	95.6	7.4 7.4	7.4		1.6 1.7	1.7		5.5 5.5	5.5	
				Bottom	6	17.9 17.9	17.9	8.4 8.4	8.4	34.6 34.6	34.6	95.8 95.7	95.8	7.4 7.4	7.4	7.4	1.4 1.4	1.4		5.1 5.0	5.1	
M4	Rainy	Moderate	11:33	Surface	1	18.0 17.9	18.0	8.4 8.4	8.4	34.4 34.4	34.4	97.9 97.7	97.8	7.6 7.5	7.6	7.6	3.1 3.1	3.1	2.2	4.3 4.4	4.4	4.0
				Middle	4.5	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.7 97.4	97.6	7.5 7.5	7.5		1.3 1.3	1.3		3.1 3.1	3.1	
				Bottom	8	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	97.5 97.5	97.5	7.5 7.5	7.5	7.5	2.0 2.1	2.1		4.4 4.4	4.4	
M5	Rainy	Moderate	12:15	Surface	1	18.0 18.0	18.0	8.4 8.4	8.4	34.4 34.4	34.4	97.4 96.9	97.2	7.5 7.5	7.5	7.5	1.0 1.1	1.1	1.3	4.3 4.4	4.4	5.3
				Middle	5.5	17.9 17.9	17.9	8.4 8.4	8.4	34.4 34.4	34.4	96.7 96.5	96.6	7.5 7.4	7.5		1.4 1.2	1.3		5.5 5.4	5.5	
				Bottom	10	17.9 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	96.3 96.3	96.3	7.4 7.4	7.4	7.4	1.5 1.6	1.6		5.9 5.8	5.9	
M6	Rainy	Moderate	12:11	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.5	- -	-	1.2	- -	-	4.6
				Middle	2.2	18.0 18.0	18.0	8.4 8.4	8.4	34.4 34.4	34.4	97.4 97.1	97.3	7.5 7.5	7.5		1.2 1.2	1.2		4.6 4.6	4.6	
				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 10 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.2 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.0 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.0 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.1 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.6 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 10 January 2018

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	08:18	Surface	1	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	98.1 97.7	97.9	7.7 7.6	7.7	7.7	1.3 1.2	1.3	1.5	5.9 5.7	5.8	4.1
				Middle	10	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.0 96.9	97.0	7.6 7.6	7.6		1.4 1.2	1.3		4.0 3.9	4.0	
				Bottom	19	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	96.4 96.5	96.5	7.6 7.6	7.6	7.6	1.7 1.9	1.8		2.5 2.4	2.5	
C2	Sunny	Moderate	07:18	Surface	1	17.2 17.2	17.2	8.4 8.4	8.4	34.3 34.2	34.3	96.7 95.9	96.3	7.6 7.5	7.6	7.6	1.3 1.3	1.3	1.5	5.0 4.9	5.0	5.0
				Middle	17.5	17.4 17.4	17.4	8.4 8.4	8.4	34.4 34.4	34.4	96.0 95.8	95.9	7.5 7.5	7.5		1.4 1.4	1.4		4.7 4.8	4.8	
				Bottom	34	17.3 17.3	17.3	8.4 8.4	8.4	34.4 34.4	34.4	95.7 95.4	95.6	7.5 7.4	7.5	7.5	1.7 1.7	1.7		5.0 5.1	5.1	
G1	Sunny	Moderate	07:45	Surface	1	17.2 17.2	17.2	8.5 8.5	8.5	34.4 34.4	34.4	97.6 97.2	97.4	7.6 7.6	7.6	7.6	1.7 1.7	1.7	1.7	5.0 4.9	5.0	5.7
				Middle	4	17.0 17.0	17.0	8.5 8.5	8.5	34.4 34.4	34.4	96.8 96.7	96.8	7.6 7.6	7.6		1.7 1.8	1.8		7.3 7.6	7.5	
				Bottom	7	17.0 17.0	17.0	8.5 8.5	8.5	34.4 34.4	34.4	96.3 96.5	96.4	7.6 7.6	7.6	7.6	1.7 1.7	1.7		4.8 4.6	4.7	
G2	Sunny	Moderate	07:37	Surface	1	17.1 17.1	17.1	8.5 8.5	8.5	34.5 34.5	34.5	98.1 97.4	97.8	7.7 7.6	7.7	7.7	1.2 1.2	1.2	1.2	3.4 3.4	3.4	4.3
				Middle	4.5	17.1 17.1	17.1	8.5 8.5	8.5	34.5 34.5	34.5	97.3 97.1	97.2	7.6 7.6	7.6		1.2 1.2	1.2		4.7 4.6	4.7	
				Bottom	8	17.0 17.0	17.0	8.5 8.5	8.5	34.5 34.5	34.5	96.6 96.6	96.6	7.6 7.6	7.6	7.6	1.3 1.2	1.3		4.9 4.9	4.9	
G3	Sunny	Moderate	07:51	Surface	1	17.2 17.2	17.2	8.5 8.5	8.5	34.4 34.4	34.4	97.6 97.2	97.4	7.6 7.6	7.6	7.6	2.0 1.9	2.0	1.8	3.5 3.5	3.5	4.6
				Middle	4	17.2 17.2	17.2	8.5 8.5	8.5	34.5 34.5	34.5	97.3 97.1	97.2	7.6 7.6	7.6		1.6 1.7	1.7		6.2 6.2	6.2	
				Bottom	7	17.2 17.2	17.2	8.5 8.4	8.5	34.5 34.5	34.5	96.8 96.4	96.6	7.6 7.6	7.6	7.6	1.8 1.8	1.8		4.1 4.2	4.2	
G4	Sunny	Moderate	08:01	Surface	1	17.0 17.0	17.0	8.4 8.4	8.4	34.3 34.3	34.3	96.3 96.3	96.3	7.6 7.6	7.6	7.6	1.4 1.5	1.5	1.5	5.4 5.5	5.5	5.5
				Middle	4.5	17.0 17.0	17.0	8.4 8.4	8.4	34.4 34.4	34.4	97.1 97.1	97.1	7.6 7.6	7.6		1.4 1.4	1.4		5.0 5.0	5.0	
				Bottom	8	17.1 17.1	17.1	8.4 8.4	8.4	34.5 34.5	34.5	97.0 96.9	97.0	7.6 7.6	7.6	7.6	1.5 1.6	1.6		5.8 5.9	5.9	
M1	Sunny	Moderate	07:41	Surface	1	17.0 16.9	17.0	8.5 8.5	8.5	34.4 34.4	34.4	96.4 95.8	96.1	7.6 7.5	7.6	7.6	1.8 1.7	1.8	1.7	3.5 3.4	3.5	3.6
				Middle	3	16.9 16.9	16.9	8.5 8.5	8.5	34.4 34.4	34.4	95.9 96.2	96.1	7.5 7.6	7.6		1.7 1.6	1.7		3.3 3.2	3.3	
				Bottom	5	16.9 16.9	16.9	8.5 8.5	8.5	34.4 34.4	34.4	95.9 96.4	96.2	7.5 7.6	7.6	7.6	1.5 1.6	1.6		4.1 4.1	4.1	
M2	Sunny	Moderate	07:31	Surface	1	17.1 17.1	17.1	8.5 8.5	8.5	34.5 34.5	34.5	97.9 97.4	97.7	7.7 7.6	7.7	7.7	1.3 1.2	1.3	1.3	4.7 4.6	4.7	4.3
				Middle	6	17.1 17.1	17.1	8.5 8.5	8.5	34.5 34.5	34.5	97.2 97.1	97.2	7.6 7.6	7.6		1.4 1.3	1.4		3.7 3.7	3.7	
				Bottom	11	17.1 17.1	17.1	8.5 8.5	8.5	34.5 34.5	34.5	96.2 96.2	96.2	7.5 7.5	7.5	7.5	1.3 1.3	1.3		4.5 4.7	4.6	
M3	Sunny	Moderate	07:55	Surface	1	17.3 17.3	17.3	8.4 8.4	8.4	34.4 34.4	34.4	97.3 97.4	97.4	7.6 7.6	7.6	7.6	1.8 1.8	1.8	1.8	5.7 5.6	5.7	4.6
				Middle	4	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	97.2 97.1	97.2	7.6 7.6	7.6		1.7 1.7	1.7		3.7 3.7	3.7	
				Bottom	7	17.2 17.1	17.2	8.4 8.4	8.4	34.5 34.5	34.5	96.9 96.8	96.9	7.6 7.6	7.6	7.6	1.9 2.0	2.0		4.4 4.5	4.5	
M4	Sunny	Moderate	07:25	Surface	1	17.2 17.2	17.2	8.5 8.5	8.5	34.4 34.4	34.4	97.9 97.1	97.5	7.7 7.6	7.7	7.7	1.4 1.3	1.4	1.4	4.3 4.6	4.5	4.3
				Middle	5.5	17.2 17.2	17.2	8.5 8.5	8.5	34.4 34.4	34.4	97.1 96.8	97.0	7.6 7.6	7.6		1.4 1.4	1.4		5.3 5.3	5.3	
				Bottom	10	17.2 17.2	17.2	8.5 8.5	8.5	34.4 34.4	34.4	96.8 96.7	96.8	7.6 7.6	7.6	7.6	1.4 1.4	1.4		3.2 3.1	3.2	
M5	Sunny	Moderate	08:11	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	97.8 97.2	97.5	7.7 7.7	7.7	7.7	1.7 1.7	1.7	1.8	4.5 4.5	4.5	4.2
				Middle	6	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	96.9 96.8	96.9	7.6 7.6	7.6		1.7 1.8	1.8		4.2 4.1	4.2	
				Bottom	11	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	96.4 96.4	96.4	7.6 7.6	7.6	7.6	1.8 1.8	1.8		4.0 3.9	4.0	
M6	Sunny	Moderate	08:06	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.7	- -	-	1.5	- -	-	3.0
				Middle	1.4	17.0 17.0	17.0	8.4 8.4	8.4	34.4 34.4	34.4	97.6 97.2	97.4	7.7 7.6	7.7		1.4 1.5	1.5		3.0 3.0	3.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 10 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.2 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.3 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.0 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.6 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.2 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 10 January 2018

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	14:39	Surface	1	17.0 17.0	17.0	8.4 8.4	8.4	34.5 34.5	34.5	98.9 98.8	98.9	7.8 7.8	7.8	7.8	1.1 1.2	1.2	1.5	5.4 5.3	5.4	5.2
				Middle	9.5	17.0 17.0	17.0	8.4 8.4	8.4	34.5 34.5	34.5	98.1 98.2	98.2	7.7 7.7	7.7		1.5 1.4	1.5		4.8 4.7	4.8	
				Bottom	18	16.9 16.9	16.9	8.4 8.4	8.4	34.5 34.5	34.5	97.5 97.6	97.6	7.7 7.7	7.7	7.7	1.8 1.8	1.8		5.6 5.4	5.5	
C2	Sunny	Moderate	13:35	Surface	1	17.3 17.3	17.3	8.3 8.4	8.4	34.3 34.3	34.3	97.4 96.9	97.2	7.6 7.6	7.6	7.6	1.2 1.2	1.2	1.3	3.5 3.5	3.5	4.3
				Middle	16.5	17.3 17.3	17.3	8.4 8.4	8.4	34.3 34.3	34.3	96.5 96.3	96.4	7.5 7.5	7.5		1.2 1.2	1.2		4.4 4.4	4.4	
				Bottom	32	17.3 17.3	17.3	8.4 8.4	8.4	34.3 34.3	34.3	95.6 95.4	95.5	7.5 7.5	7.5	7.5	1.4 1.5	1.5		5.2 5.0	5.1	
G1	Sunny	Moderate	14:06	Surface	1	17.2 17.2	17.2	8.4 8.4	8.4	34.2 34.3	34.3	98.3 98.1	98.2	7.7 7.7	7.7	7.7	1.4 1.4	1.4	1.6	4.7 4.6	4.7	4.8
				Middle	3.5	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.6 97.5	97.6	7.7 7.6	7.7		1.8 1.8	1.8		4.7 4.8	4.8	
				Bottom	6	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.2 97.2	97.2	7.6 7.6	7.6	7.6	1.7 1.6	1.7		4.7 4.8	4.8	
G2	Sunny	Moderate	13:55	Surface	1	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	98.6 98.4	98.5	7.7 7.7	7.7	7.7	1.5 1.4	1.5	1.3	3.5 3.4	3.5	4.6
				Middle	4	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	98.0 98.1	98.1	7.7 7.7	7.7		1.2 1.1	1.2		6.2 6.3	6.3	
				Bottom	7	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.7 97.5	97.6	7.7 7.6	7.7	7.7	1.2 1.1	1.2		4.1 4.1	4.1	
G3	Sunny	Moderate	14:12	Surface	1	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	98.4 98.0	98.2	7.7 7.7	7.7	7.7	1.4 1.4	1.4	1.5	5.2 5.2	5.2	6.3
				Middle	3.5	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	98.1 98.0	98.1	7.7 7.7	7.7		1.3 1.3	1.3		7.8 7.6	7.7	
				Bottom	6	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	97.5 97.5	97.5	7.6 7.6	7.6	7.6	1.8 1.7	1.8		5.9 6.0	6.0	
G4	Sunny	Moderate	14:21	Surface	1	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.8 97.7	97.8	7.7 7.7	7.7	7.7	1.4 1.5	1.5	1.6	5.7 5.6	5.7	5.6
				Middle	4	17.0 17.0	17.0	8.4 8.4	8.4	34.4 34.4	34.4	97.5 97.9	97.7	7.7 7.7	7.7		1.4 1.3	1.4		5.6 5.7	5.7	
				Bottom	7	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	97.3 97.4	97.4	7.7 7.7	7.7	7.7	2.0 1.9	2.0		5.2 5.3	5.3	
M1	Sunny	Moderate	14:01	Surface	1	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	98.3 98.1	98.2	7.7 7.7	7.7	7.7	1.9 1.8	1.9	1.8	5.3 5.3	5.3	4.8
				Middle	3	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	98.0 98.0	98.0	7.7 7.7	7.7		1.7 1.7	1.7		4.3 4.4	4.4	
				Bottom	5	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.9 97.8	97.9	7.7 7.7	7.7	7.7	1.8 1.7	1.8		4.6 4.9	4.8	
M2	Sunny	Moderate	13:48	Surface	1	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	98.9 98.5	98.7	7.8 7.7	7.8	7.8	1.1 1.2	1.2	1.2	3.4 3.2	3.3	3.9
				Middle	5	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	98.1 98.3	98.2	7.7 7.7	7.7		1.1 1.1	1.1		3.7 3.6	3.7	
				Bottom	9	17.1 17.1	17.1	8.4 8.4	8.4	34.4 34.4	34.4	97.4 97.2	97.3	7.6 7.6	7.6	7.6	1.2 1.2	1.2		4.7 4.7	4.7	
M3	Sunny	Moderate	14:15	Surface	1	17.3 17.3	17.3	8.4 8.4	8.4	34.4 34.4	34.4	98.3 97.9	98.1	7.7 7.7	7.7	7.7	1.6 1.7	1.7	1.8	6.1 6.1	6.1	6.4
				Middle	3.5	17.2 17.2	17.2	8.4 8.4	8.4	34.5 34.5	34.5	97.8 97.7	97.8	7.7 7.6	7.7		2.0 1.9	2.0		7.8 7.9	7.9	
				Bottom	6	17.1 17.1	17.1	8.4 8.4	8.4	34.5 34.5	34.5	96.9 97.1	97.0	7.6 7.6	7.6	7.6	1.7 1.5	1.6		5.1 5.1	5.1	
M4	Sunny	Moderate	13:42	Surface	1	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	98.6 98.3	98.5	7.7 7.7	7.7	7.7	1.2 1.1	1.2	1.2	3.2 3.2	3.2	3.8
				Middle	4.5	17.2 17.2	17.2	8.4 8.4	8.4	34.4 34.4	34.4	98.0 97.8	97.9	7.7 7.7	7.7		1.2 1.2	1.2		3.4 3.5	3.5	
				Bottom	8	17.2 17.1	17.2	8.4 8.4	8.4	34.4 34.4	34.4	97.5 97.3	97.4	7.6 7.6	7.6	7.6	1.2 1.3	1.3		4.7 4.7	4.7	
M5	Sunny	Moderate	14:33	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	97.5 98.2	97.9	7.7 7.7	7.7	7.7	1.3 1.5	1.4	1.7	5.3 5.4	5.4	5.5
				Middle	5.5	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	97.8 97.9	97.9	7.7 7.7	7.7		1.5 1.4	1.5		6.2 6.2	6.2	
				Bottom	10	16.9 16.9	16.9	8.4 8.4	8.4	34.4 34.4	34.4	97.4 97.4	97.4	7.7 7.7	7.7	7.7	2.0 2.1	2.1		5.0 4.9	5.0	
M6	Sunny	Moderate	14:26	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.7	- -	-	1.6	- -	-	4.2
				Middle	2.2	17.0 17.0	17.0	8.4 8.4	8.4	34.4 34.4	34.4	98.3 98.1	98.2	7.7 7.7	7.7		1.5 1.7	1.6		4.2 4.1	4.2	
				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 12 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.1 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.4 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.6 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.2 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

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Water Quality Monitoring Results on 12 January 2018

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	10:17	Surface	1	16.5 16.6	16.6	8.4 8.4	8.4	32.1 32.2	32.2	103.3 99.1	101.2	8.3 8.0	8.2	8.1	2.5 2.4	2.5	2.2	5.4 5.5	5.5	4.6
				Middle	9	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	98.8 98.4	98.6	7.9 7.9	7.9		2.0 2.0	2.0		4.0 4.0	4.0	
				Bottom	17	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	98.1 97.9	98.0	7.9 7.9	7.9	7.9	2.0 1.9	2.0		4.4 4.4	4.4	
C2	Sunny	Moderate	09:20	Surface	1	16.7 16.7	16.7	8.3 8.3	8.3	32.1 32.1	32.1	98.2 97.9	98.1	7.9 7.8	7.9	7.9	3.2 3.1	3.2	3.3	4.9 4.8	4.9	4.9
				Middle	16.5	16.6 16.7	16.7	8.3 8.4	8.4	32.2 32.2	32.2	97.4 97.4	97.4	7.8 7.8	7.8		3.3 3.2	3.3		4.3 4.4	4.4	
				Bottom	32	16.6 16.6	16.6	8.3 8.4	8.4	32.2 32.2	32.2	97.3 97.3	97.3	7.8 7.8	7.8	7.8	3.4 3.4	3.4		5.5 5.4	5.5	
G1	Sunny	Moderate	09:47	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.0 32.0	32.0	100.9 98.0	99.5	8.1 7.9	8.0	8.0	3.9 3.8	3.9	3.6	4.0 4.0	4.0	4.2
				Middle	4	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	98.6 97.8	98.2	7.9 7.9	7.9		3.5 3.5	3.5		4.4 4.2	4.3	
				Bottom	7	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	98.2 98.0	98.1	7.9 7.9	7.9	7.9	3.4 3.3	3.4		4.1 4.2	4.2	
G2	Sunny	Moderate	09:38	Surface	1	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	100.3 98.6	99.5	8.1 7.9	8.0	8.0	2.5 2.4	2.5	2.5	3.8 3.8	3.8	3.8
				Middle	5	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	98.4 98.2	98.3	7.9 7.9	7.9		2.4 2.4	2.4		4.2 4.3	4.3	
				Bottom	9	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	97.7 97.6	97.7	7.9 7.9	7.9	7.9	2.5 2.5	2.5		3.4 3.4	3.4	
G3	Sunny	Moderate	09:52	Surface	1	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	99.7 97.5	98.6	8.0 7.8	7.9	7.9	3.3 3.0	3.2	2.6	3.3 3.3	3.3	4.1
				Middle	4	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	98.3 98.1	98.2	7.9 7.9	7.9		2.1 2.0	2.1		4.7 4.8	4.8	
				Bottom	7	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	97.4 97.6	97.5	7.8 7.8	7.8	7.8	2.7 2.4	2.6		4.1 4.1	4.1	
G4	Sunny	Moderate	10:01	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	100.1 98.5	99.3	8.0 7.9	8.0	8.0	3.0 2.9	3.0	3.1	4.7 4.7	4.7	4.0
				Middle	4.5	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	98.5 97.9	98.2	7.9 7.9	7.9		3.0 2.9	3.0		3.7 3.7	3.7	
				Bottom	8	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	97.9 97.7	97.8	7.9 7.9	7.9	7.9	3.3 3.3	3.3		3.4 3.5	3.5	
M1	Sunny	Moderate	09:43	Surface	1	16.4 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	103.7 97.9	100.8	8.4 7.9	8.2	8.1	2.2 2.5	2.4	2.2	4.4 4.5	4.5	3.8
				Middle	3	16.4 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	99.7 98.3	99.0	8.0 7.9	8.0		2.1 2.0	2.1		2.9 3.0	3.0	
				Bottom	5	16.4 16.4	16.4	8.4 8.4	8.4	32.1 32.1	32.1	98.5 98.1	98.3	7.9 7.9	7.9	7.9	2.1 2.0	2.1		3.9 3.8	3.9	
M2	Sunny	Moderate	09:33	Surface	1	16.4 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	102.2 98.6	100.4	8.2 7.9	8.1	8.0	2.2 2.3	2.3	2.2	3.8 3.7	3.8	3.9
				Middle	6	16.4 16.4	16.4	8.4 8.4	8.4	32.1 32.1	32.1	98.6 97.9	98.3	7.9 7.9	7.9		2.2 2.1	2.2		5.3 5.5	5.4	
				Bottom	11	16.4 16.4	16.4	8.4 8.4	8.4	32.1 32.1	32.1	97.9 97.6	97.8	7.9 7.9	7.9	7.9	2.2 2.1	2.2		2.5 2.6	2.6	
M3	Sunny	Moderate	09:56	Surface	1	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	99.8 98.2	99.0	8.0 7.9	8.0	8.0	3.4 3.2	3.3	3.4	5.3 5.1	5.2	5.0
				Middle	4	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	98.0 97.7	97.9	7.9 7.8	7.9		3.4 3.4	3.4		5.5 5.6	5.6	
				Bottom	7	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	97.5 97.4	97.5	7.8 7.8	7.8	7.8	3.4 3.4	3.4		4.3 4.3	4.3	
M4	Sunny	Moderate	09:27	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.2	32.2	101.2 98.4	99.8	8.1 7.9	8.0	8.0	1.9 1.9	1.9	1.9	4.5 4.7	4.6	4.2
				Middle	5	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	98.4 98.0	98.2	7.9 7.9	7.9		1.9 1.9	1.9		3.0 2.9	3.0	
				Bottom	9	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	97.8 97.6	97.7	7.9 7.8	7.9	7.9	1.9 1.9	1.9		5.1 5.0	5.1	
M5	Sunny	Moderate	10:11	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	101.5 99.1	100.3	8.2 8.0	8.1	8.1	3.1 2.8	3.0	3.1	3.9 3.8	3.9	3.8
				Middle	5.5	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	99.4 98.6	99.0	8.0 7.9	8.0		3.0 3.0	3.0		4.1 4.0	4.1	
				Bottom	10	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	98.5 98.4	98.5	7.9 7.9	7.9	7.9	3.3 3.2	3.3		3.2 3.3	3.3	
M6	Sunny	Moderate	10:05	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.0	- -	-	2.3	- -	-	3.0
				Middle	1.3	16.6 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	100.7 98.3	99.5	8.1 7.9	8.0		2.3 2.3	2.3		2.9 3.0	3.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 12 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 3.3 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.0 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 12 January 2018

(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	15:22	Surface	1	16.7 16.8	16.8	8.4 8.4	8.4	32.3 32.3	32.3	101.5 100.8	101.2	8.1 8.1	8.1	8.1	2.1 2.0	2.1	2.2	5.5 5.3	5.4	4.5
				Middle	9	16.7 16.7	16.7	8.4 8.4	8.4	32.3 32.3	32.3	100.2 99.7	100.0	8.0 8.0	8.0		2.1 2.1	2.1		3.1 3.2	3.2	
				Bottom	17	16.7 16.7	16.7	8.4 8.4	8.4	32.3 32.3	32.3	99.2 98.9	99.1	7.9 7.9	7.9	7.9	2.5 2.4	2.5		4.8 4.9	4.9	
C2	Sunny	Moderate	14:17	Surface	1	16.9 16.9	16.9	8.3 8.3	8.3	32.1 32.1	32.1	99.7 100.0	99.9	8.0 8.0	8.0	8.0	1.5 1.5	1.5	1.7	3.6 3.6	3.6	3.4
				Middle	16.5	16.7 16.8	16.8	8.3 8.3	8.3	32.2 32.2	32.2	99.1 99.4	99.3	7.9 8.0	8.0		1.7 1.7	1.7		2.6 2.7	2.7	
				Bottom	32	16.6 16.7	16.7	8.3 8.3	8.3	32.2 32.2	32.2	98.6 99.0	98.8	7.9 7.9	7.9	7.9	1.9 1.8	1.9		4.0 3.8	3.9	
G1	Sunny	Moderate	14:48	Surface	1	16.7 16.6	16.7	8.3 8.3	8.3	32.1 32.1	32.1	102.9 100.5	101.7	8.2 8.1	8.2	8.2	2.5 2.2	2.4	2.3	3.5 3.4	3.5	3.4
				Middle	4	16.5 16.5	16.5	8.3 8.3	8.3	32.1 32.1	32.1	100.5 99.4	100.0	8.1 8.0	8.1		2.2 2.2	2.2		3.4 3.5	3.5	
				Bottom	7	16.5 16.5	16.5	8.3 8.3	8.3	32.1 32.1	32.1	99.5 99.0	99.3	8.0 8.0	8.0	8.0	2.2 2.6	2.4		3.0 3.1	3.1	
G2	Sunny	Moderate	14:37	Surface	1	16.7 16.9	16.8	8.3 8.3	8.3	32.0 32.0	32.0	104.3 100.4	102.4	8.4 8.0	8.2	8.1	1.9 1.7	1.8	1.8	5.8 5.9	5.9	4.4
				Middle	5	16.5 16.5	16.5	8.3 8.3	8.3	32.1 32.1	32.1	99.7 99.1	99.4	8.0 8.0	8.0		1.8 1.6	1.7		4.3 4.2	4.3	
				Bottom	9	16.6 16.6	16.6	8.3 8.3	8.3	32.2 32.2	32.2	98.7 99.1	98.9	7.9 8.0	8.0	8.0	2.0 1.8	1.9		3.0 3.0	3.0	
G3	Sunny	Moderate	14:53	Surface	1	16.9 16.8	16.9	8.3 8.3	8.3	31.8 31.9	31.9	100.9 98.7	99.8	8.1 7.9	8.0	8.0	2.7 2.9	2.8	2.6	4.0 4.2	4.1	3.7
				Middle	4	16.7 16.7	16.7	8.3 8.3	8.3	32.1 32.1	32.1	98.8 98.6	98.7	7.9 7.9	7.9		2.5 2.4	2.5		3.2 3.1	3.2	
				Bottom	7	16.6 16.6	16.6	8.3 8.3	8.3	32.1 32.1	32.1	98.2 98.0	98.1	7.9 7.9	7.9	7.9	2.5 2.3	2.4		3.8 3.8	3.8	
G4	Sunny	Moderate	15:03	Surface	1	16.8 16.8	16.8	8.3 8.3	8.3	32.0 32.0	32.0	102.8 100.0	101.4	8.2 8.0	8.1	8.1	1.8 1.8	1.8	2.3	2.5 2.5	2.5	3.3
				Middle	4.5	16.5 16.5	16.5	8.3 8.4	8.4	32.1 32.1	32.1	99.4 98.9	99.2	8.0 8.0	8.0		2.4 2.0	2.2		3.5 3.5	3.5	
				Bottom	8	16.5 16.5	16.5	8.3 8.4	8.4	32.1 32.1	32.1	98.6 98.7	98.7	7.9 7.9	7.9	7.9	3.0 2.8	2.9		3.7 3.8	3.8	
M1	Sunny	Moderate	14:44	Surface	1	16.7 16.7	16.7	8.3 8.3	8.3	32.1 32.1	32.1	102.7 100.7	101.7	8.2 8.1	8.2	8.2	1.9 1.9	1.9	2.1	4.1 4.1	4.1	3.7
				Middle	3	16.6 16.6	16.6	8.3 8.3	8.3	32.1 32.1	32.1	101.1 100.5	100.8	8.1 8.1	8.1		1.7 1.6	1.7		3.0 3.0	3.0	
				Bottom	5	16.5 16.6	16.6	8.3 8.4	8.4	32.1 32.1	32.1	100.7 100.7	100.7	8.1 8.1	8.1	8.1	2.8 2.8	2.8		3.8 3.9	3.9	
M2	Sunny	Moderate	14:31	Surface	1	16.6 16.7	16.7	8.3 8.3	8.3	32.1 32.1	32.1	106.5 100.6	103.6	8.5 8.1	8.3	8.2	2.2 2.6	2.4	2.6	3.3 3.2	3.3	3.1
				Middle	5.5	16.6 16.6	16.6	8.3 8.3	8.3	32.1 32.1	32.1	100.7 99.7	100.2	8.1 8.0	8.1		2.2 2.7	2.5		3.4 3.5	3.5	
				Bottom	10	16.6 16.6	16.6	8.3 8.3	8.3	32.2 32.2	32.2	99.2 99.4	99.3	8.0 8.0	8.0	8.0	2.9 2.9	2.9		2.6 2.5	2.6	
M3	Sunny	Moderate	14:57	Surface	1	16.8 16.8	16.8	8.3 8.3	8.3	32.0 32.0	32.0	100.2 99.5	99.9	8.0 8.0	8.0	8.0	2.0 2.4	2.2	2.3	3.9 3.9	3.9	3.9
				Middle	4	16.6 16.6	16.6	8.3 8.4	8.4	32.1 32.1	32.1	99.5 99.5	99.5	8.0 8.0	8.0		1.9 2.3	2.1		4.3 4.2	4.3	
				Bottom	7	16.6 16.6	16.6	8.3 8.3	8.3	32.1 32.1	32.1	98.4 98.3	98.4	7.9 7.9	7.9	7.9	2.7 2.7	2.7		3.5 3.6	3.6	
M4	Sunny	Moderate	14:24	Surface	1	16.7 16.7	16.7	8.3 8.3	8.3	32.1 32.1	32.1	101.9 100.7	101.3	8.2 8.1	8.2	8.2	1.7 1.7	1.7	1.8	4.4 4.5	4.5	3.9
				Middle	5	16.6 16.6	16.6	8.3 8.3	8.3	32.2 32.2	32.2	100.6 100.2	100.4	8.1 8.0	8.1		1.8 1.8	1.8		3.7 3.7	3.7	
				Bottom	9	16.6 16.6	16.6	8.3 8.3	8.3	32.2 32.2	32.2	99.4 99.2	99.3	8.0 8.0	8.0	8.0	1.9 2.0	2.0		3.4 3.5	3.5	
M5	Sunny	Moderate	15:15	Surface	1	16.5 16.6	16.6	8.3 8.4	8.4	32.1 32.2	32.2	105.7 100.0	102.9	8.5 8.0	8.3	8.2	2.2 2.1	2.2	2.2	4.1 4.2	4.2	3.7
				Middle	5.5	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	100.4 99.8	100.1	8.1 8.0	8.1		2.1 2.0	2.1		3.0 3.0	3.0	
				Bottom	10	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	99.3 99.1	99.2	8.0 8.0	8.0	8.0	2.3 2.4	2.4		4.0 3.9	4.0	
M6	Sunny	Moderate	15:09	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.0	- -	-	3.1	- -	-	4.7
				Middle	1.2	16.5 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	99.9 99.4	99.7	8.0 8.0	8.0		3.1 3.1	3.1		4.8 4.6	4.7	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 15 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.0 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.0 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.2 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 15 January 2018

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	11:39	Surface	1	16.6 16.7	16.7	8.4 8.4	8.4	32.2 32.2	32.2	102.8 102.8	102.8	8.2 8.2	8.2	8.2	1.4 1.3	1.4	1.9	3.9 3.9	3.9	4.9
				Middle	9	16.5 16.5	16.5	8.4 8.4	8.4	32.3 32.3	32.3	100.9 101.2	101.1	8.1 8.1	8.1		2.0 2.0	2.0		5.7 5.7	5.7	
				Bottom	17	16.5 16.5	16.5	8.4 8.4	8.4	32.3 32.3	32.3	100.3 100.3	100.3	8.1 8.1	8.1	8.1	2.2 2.2	2.2		5.0 5.0	5.0	
C2	Sunny	Moderate	10:41	Surface	1	16.5 16.5	16.5	8.3 8.4	8.4	32.2 32.2	32.2	101.5 101.7	101.6	8.2 8.2	8.2	8.2	1.6 1.7	1.7	1.8	4.9 5.0	5.0	4.7
				Middle	17	16.5 16.5	16.5	8.3 8.4	8.4	32.2 32.2	32.2	100.5 100.6	100.6	8.1 8.1	8.1		1.7 1.6	1.7		4.4 4.4	4.4	
				Bottom	33	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	100.5 100.3	100.4	8.1 8.1	8.1	8.1	2.0 2.0	2.0		4.8 4.7	4.8	
G1	Sunny	Moderate	11:07	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	102.5 102.5	102.5	8.2 8.2	8.2	8.2	1.9 1.7	1.8	1.7	4.1 4.2	4.2	3.9
				Middle	4	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	102.2 102.1	102.2	8.2 8.2	8.2		1.6 1.7	1.7		3.1 3.1	3.1	
				Bottom	7	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	100.9 100.9	100.9	8.1 8.1	8.1	8.1	1.7 1.6	1.7		4.4 4.3	4.4	
G2	Sunny	Moderate	10:58	Surface	1	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.2	32.2	102.9 102.0	102.5	8.3 8.2	8.3	8.3	2.2 2.3	2.3	2.0	4.1 4.2	4.2	4.4
				Middle	5	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	102.4 101.7	102.1	8.2 8.2	8.2		1.6 1.7	1.7		5.3 5.2	5.3	
				Bottom	9	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	101.2 101.4	101.3	8.1 8.2	8.2	8.2	2.0 2.1	2.1		3.6 3.6	3.6	
G3	Sunny	Moderate	11:12	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	31.9 32.0	32.0	101.2 100.9	101.1	8.1 8.1	8.1	8.2	1.7 1.8	1.8	2.0	3.9 3.9	3.9	4.3
				Middle	4	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	101.4 100.2	100.8	8.2 8.1	8.2		1.7 2.1	1.9		4.0 4.1	4.1	
				Bottom	7	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	100.2 99.7	100.0	8.1 8.0	8.1	8.1	2.2 2.3	2.3		4.8 4.8	4.8	
G4	Sunny	Moderate	11:22	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	103.1 103.1	103.1	8.3 8.3	8.3	8.3	1.6 1.6	1.6	1.7	5.2 5.4	5.3	3.8
				Middle	4.5	16.4 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	102.0 101.8	101.9	8.2 8.2	8.2		1.6 1.7	1.7		3.1 3.2	3.2	
				Bottom	8	16.4 16.4	16.4	8.4 8.4	8.4	32.3 32.2	32.3	101.5 100.2	100.9	8.2 8.1	8.2	8.2	1.8 1.8	1.8		2.8 2.8	2.8	
M1	Sunny	Moderate	11:03	Surface	1	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	102.1 102.0	102.1	8.2 8.2	8.2	8.2	1.8 1.7	1.8	1.8	4.7 4.5	4.6	4.3
				Middle	3	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	101.9 101.9	101.9	8.2 8.2	8.2		1.8 1.7	1.8		3.6 3.6	3.6	
				Bottom	5	16.5 16.5	16.5	8.4 8.4	8.4	32.1 32.1	32.1	101.7 101.8	101.8	8.2 8.2	8.2	8.2	1.8 1.7	1.8		4.5 4.6	4.6	
M2	Sunny	Moderate	10:53	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.1	32.2	102.9 102.5	102.7	8.3 8.2	8.3	8.3	1.5 1.6	1.6	1.6	3.3 3.3	3.3	3.1
				Middle	5.5	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	102.3 102.2	102.3	8.2 8.2	8.2		1.5 1.5	1.5		3.3 3.3	3.3	
				Bottom	10	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	101.1 101.2	101.2	8.1 8.1	8.1	8.1	1.7 1.6	1.7		2.7 2.7	2.7	
M3	Sunny	Moderate	11:17	Surface	1	16.6 16.7	16.7	8.4 8.4	8.4	31.9 31.7	31.8	101.5 100.3	100.9	8.2 8.1	8.2	8.2	1.9 1.8	1.9	2.0	3.3 3.4	3.4	4.4
				Middle	4	16.5 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	100.7 100.6	100.7	8.1 8.1	8.1		2.0 2.1	2.1		5.3 5.3	5.3	
				Bottom	7	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	100.5 100.3	100.4	8.1 8.1	8.1	8.1	2.1 2.1	2.1		4.5 4.4	4.5	
M4	Sunny	Moderate	10:48	Surface	1	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	102.0 101.7	101.9	8.2 8.2	8.2	8.2	1.5 1.5	1.5	1.9	5.1 5.2	5.2	4.2
				Middle	5	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.3	32.3	101.3 100.9	101.1	8.1 8.1	8.1		1.8 2.1	2.0		3.7 3.5	3.6	
				Bottom	9	16.5 16.5	16.5	8.4 8.4	8.4	32.3 32.3	32.3	100.5 100.3	100.4	8.1 8.1	8.1	8.1	2.2 2.4	2.3		3.9 3.9	3.9	
M5	Sunny	Moderate	11:32	Surface	1	16.6 16.6	16.6	8.4 8.4	8.4	32.1 32.1	32.1	103.5 102.9	103.2	8.3 8.3	8.3	8.3	1.7 1.8	1.8	2.0	2.8 2.7	2.8	3.5
				Middle	5.5	16.4 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	100.3 101.6	101.0	8.1 8.2	8.2		2.1 1.9	2.0		4.4 4.5	4.5	
				Bottom	10	16.4 16.4	16.4	8.4 8.4	8.4	32.3 32.3	32.3	100.8 100.6	100.7	8.1 8.1	8.1	8.1	2.1 2.0	2.1		3.0 3.1	3.1	
M6	Sunny	Moderate	11:28	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.3	- -	-	2.5	- -	-	4.0
				Middle	1.3	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	103.3 103.5	103.4	8.3 8.3	8.3		2.5 2.5	2.5		4.0 4.0	4.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 15 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.6 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.1 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.6 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.1 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.2 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.8 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 15 January 2018

(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	16:43	Surface	1	16.7 16.7	16.7	8.4 8.4	8.4	32.3 32.3	32.3	105.1 104.7	104.9	8.4 8.4	8.4	8.4	1.4 1.4	1.4	1.6	4.7 4.6	4.7	4.6
				Middle	9	16.7 16.6	16.7	8.4 8.4	8.4	32.3 32.3	32.3	104.5 104.5	104.5	8.4 8.4	8.4		1.4 1.4	1.4		4.0 3.9	4.0	
				Bottom	17	16.5 16.5	16.5	8.4 8.4	8.4	32.3 32.3	32.3	101.5 101.5	101.5	8.2 8.2	8.2	8.2	1.9 2.0	2.0		5.2 5.1	5.2	
C2	Sunny	Moderate	15:47	Surface	1	16.8 16.8	16.8	8.3 8.3	8.3	32.1 32.1	32.1	102.9 103.8	103.4	8.2 8.3	8.3	8.3	1.1 0.9	1.0	1.5	4.2 4.1	4.2	3.9
				Middle	16.5	16.6 16.6	16.6	8.3 8.3	8.3	32.2 32.2	32.2	102.3 102.6	102.5	8.2 8.2	8.2		1.8 1.6	1.7		3.8 3.9	3.9	
				Bottom	32	16.6 16.5	16.6	8.3 8.3	8.3	32.2 32.2	32.2	101.0 100.6	100.8	8.1 8.1	8.1	8.1	1.6 1.9	1.8		3.7 3.6	3.7	
G1	Sunny	Moderate	16:13	Surface	1	17.0 17.0	17.0	8.4 8.4	8.4	32.1 32.2	32.2	105.9 106.2	106.1	8.4 8.5	8.5	8.5	0.8 0.7	0.8	1.3	4.4 4.5	4.5	3.7
				Middle	4	16.9 16.8	16.9	8.4 8.4	8.4	32.2 32.2	32.2	106.2 105.7	106.0	8.5 8.5	8.5		0.8 0.9	0.9		2.8 2.7	2.8	
				Bottom	7	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	101.7 102.8	102.3	8.2 8.3	8.3	8.3	2.0 2.1	2.1		3.8 3.8	3.8	
G2	Sunny	Moderate	16:05	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	32.2 32.2	32.2	105.7 106.5	106.1	8.4 8.5	8.5	8.5	0.9 1.0	1.0	1.2	3.0 3.0	3.0	4.4
				Middle	5	16.9 16.8	16.9	8.4 8.4	8.4	32.2 32.2	32.2	105.8 105.6	105.7	8.4 8.4	8.4		1.1 1.3	1.2		4.1 4.1	4.1	
				Bottom	9	16.5 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	102.3 103.0	102.7	8.2 8.3	8.3	8.3	1.5 1.3	1.4		6.1 5.9	6.0	
G3	Sunny	Moderate	16:19	Surface	1	17.3 17.1	17.2	8.4 8.4	8.4	31.9 32.0	32.0	103.4 103.9	103.7	8.2 8.3	8.3	8.3	1.8 1.8	1.8	2.0	4.2 4.2	4.2	4.9
				Middle	4	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	103.0 103.0	103.0	8.2 8.2	8.2		2.0 2.1	2.1		5.8 5.7	5.8	
				Bottom	7	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	102.5 102.5	102.5	8.2 8.2	8.2	8.2	2.1 2.2	2.2		4.8 4.7	4.8	
G4	Sunny	Moderate	16:28	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	32.2 32.2	32.2	106.2 107.2	106.7	8.5 8.6	8.6	8.6	1.0 0.9	1.0	1.5	3.7 3.8	3.8	4.0
				Middle	4.5	16.8 16.8	16.8	8.4 8.4	8.4	32.2 32.2	32.2	106.1 106.4	106.3	8.5 8.5	8.5		1.3 1.1	1.2		3.9 4.0	4.0	
				Bottom	8	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	107.8 107.5	107.7	8.7 8.6	8.7	8.7	2.3 2.1	2.2		4.3 4.3	4.3	
M1	Sunny	Moderate	16:10	Surface	1	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.0 105.6	105.3	8.4 8.4	8.4	8.4	1.1 1.3	1.2	1.5	4.4 4.5	4.5	4.2
				Middle	3	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.1 105.5	105.3	8.4 8.4	8.4		1.4 1.3	1.4		3.0 3.0	3.0	
				Bottom	5	16.7 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.6 104.6	104.6	8.4 8.4	8.4	8.4	1.9 1.9	1.9		5.2 5.2	5.2	
M2	Sunny	Moderate	16:00	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	32.2 32.2	32.2	104.7 105.7	105.2	8.4 8.4	8.4	8.4	1.0 0.8	0.9	1.2	5.2 5.2	5.2	4.0
				Middle	6	16.8 16.8	16.8	8.4 8.4	8.4	32.2 32.2	32.2	105.3 105.3	105.3	8.4 8.4	8.4		0.9 0.9	0.9		3.3 3.1	3.2	
				Bottom	11	16.5 16.5	16.5	8.4 8.4	8.4	32.2 32.2	32.2	101.6 101.7	101.7	8.2 8.2	8.2	8.2	1.6 1.7	1.7		3.5 3.4	3.5	
M3	Sunny	Moderate	16:23	Surface	1	17.1 17.1	17.1	8.4 8.4	8.4	32.0 32.1	32.1	104.6 105.4	105.0	8.3 8.4	8.4	8.4	2.0 2.1	2.1	2.2	3.5 3.5	3.5	3.7
				Middle	4	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	104.6 104.7	104.7	8.3 8.4	8.4		2.2 2.3	2.3		4.4 4.4	4.4	
				Bottom	7	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	103.4 103.5	103.5	8.3 8.3	8.3	8.3	2.2 2.2	2.2		3.2 3.2	3.2	
M4	Sunny	Moderate	15:54	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.2 32.2	32.2	104.9 106.0	105.5	8.4 8.5	8.5	8.5	0.9 1.0	1.0	0.9	5.4 5.3	5.4	5.0
				Middle	5	16.8 16.9	16.9	8.4 8.4	8.4	32.2 32.2	32.2	105.1 105.6	105.4	8.4 8.4	8.4		0.9 0.8	0.9		6.8 6.9	6.9	
				Bottom	9	16.8 16.8	16.8	8.4 8.4	8.4	32.2 32.2	32.2	105.3 105.5	105.4	8.4 8.4	8.4	8.4	0.9 0.9	0.9		2.7 2.7	2.7	
M5	Sunny	Moderate	16:37	Surface	1	16.6 16.7	16.7	8.4 8.4	8.4	32.2 32.3	32.3	104.4 104.8	104.6	8.4 8.4	8.4	8.4	1.5 1.5	1.5	1.3	3.0 3.0	3.0	3.4
				Middle	5.5	16.6 16.6	16.6	8.4 8.4	8.4	32.3 32.3	32.3	103.6 103.7	103.7	8.3 8.3	8.3		1.3 1.3	1.3		4.4 4.4	4.4	
				Bottom	10	16.5 16.5	16.5	8.4 8.4	8.4	32.3 32.3	32.3	103.0 103.1	103.1	8.3 8.3	8.3	8.3	1.2 1.1	1.2		2.8 2.8	2.8	
M6	Sunny	Moderate	16:33	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.6	- -	-	0.8	- -	-	4.1
				Middle	1.3	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	107.2 107.6	107.4	8.6 8.6	8.6		0.8 0.8	0.8		4.0 4.1	4.1	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 17 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 3.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 3.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 4.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.2mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 17 January 2018

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	13:09	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.1	105.2	8.4 8.4	8.4	8.4	1.3 1.2	1.3	1.3	3.3 3.2	3.3	3.0
				Middle	9.5	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.6 104.8	104.7	8.4 8.4	8.4		1.2 1.2	1.2		2.6 2.6	2.6	
				Bottom	18	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	103.4 103.3	103.4	8.3 8.3	8.3	8.3	1.3 1.3	1.3		3.1 3.2	3.2	
C2	Sunny	Moderate	11:43	Surface	1	16.9 16.8	16.9	8.3 8.4	8.4	32.1 32.1	32.1	103.8 104.6	104.2	8.3 8.4	8.4	8.4	1.2 1.3	1.3	2.2	5.3 5.5	5.4	4.5
				Middle	16.5	16.7 16.7	16.7	8.4 8.4	8.4	32.2 32.2	32.2	103.3 103.0	103.2	8.3 8.3	8.3		2.5 2.7	2.6		4.1 4.2	4.2	
				Bottom	32	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.2	32.2	102.5 102.9	102.7	8.2 8.3	8.3	8.3	2.8 2.7	2.8		4.0 3.9	4.0	
G1	Sunny	Moderate	12:31	Surface	1	17.0 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.5 105.3	105.4	8.4 8.4	8.4	8.4	1.2 1.4	1.3	1.3	2.6 2.5	2.6	3.2
				Middle	4	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.8 105.0	104.9	8.4 8.4	8.4		1.4 1.3	1.4		3.6 3.6	3.6	
				Bottom	7	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.7 104.7	104.7	8.4 8.4	8.4	8.4	1.2 1.3	1.3		3.4 3.3	3.4	
G2	Sunny	Moderate	12:14	Surface	1	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.1	105.2	8.4 8.4	8.4	8.4	1.2 1.2	1.2	1.3	3.1 3.2	3.2	3.6
				Middle	5	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.0 104.9	105.0	8.4 8.4	8.4		1.3 1.3	1.3		3.7 3.7	3.7	
				Bottom	9	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.4 104.4	104.4	8.4 8.4	8.4	8.4	1.2 1.4	1.3		3.8 3.9	3.9	
G3	Sunny	Moderate	12:37	Surface	1	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.1 105.0	105.1	8.4 8.4	8.4	8.4	1.3 1.4	1.4	1.3	2.7 2.8	2.8	3.6
				Middle	4	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.0	105.1	8.4 8.4	8.4		1.3 1.3	1.3		4.2 4.3	4.3	
				Bottom	7	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.7 104.9	104.8	8.4 8.4	8.4	8.4	1.2 1.3	1.3		3.6 3.7	3.7	
G4	Sunny	Moderate	12:49	Surface	1	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.3 105.1	105.2	8.4 8.4	8.4	8.4	1.3 1.3	1.3	1.3	3.4 3.4	3.4	3.7
				Middle	4.5	16.7 16.9	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.9 105.3	105.1	8.4 8.4	8.4		1.3 1.2	1.3		3.3 3.4	3.4	
				Bottom	8	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.7 104.7	104.7	8.4 8.4	8.4	8.4	1.3 1.3	1.3		4.3 4.3	4.3	
M1	Sunny	Moderate	12:21	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.4	105.3	8.4 8.4	8.4	8.4	1.3 1.2	1.3	1.3	4.5 4.5	4.5	4.2
				Middle	3	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.0 105.2	105.1	8.4 8.4	8.4		1.2 1.4	1.3		4.0 4.0	4.0	
				Bottom	5	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.8 104.8	104.8	8.4 8.4	8.4	8.4	1.2 1.3	1.3		4.1 4.0	4.1	
M2	Sunny	Moderate	12:07	Surface	1	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.0 104.9	105.0	8.4 8.4	8.4	8.4	1.3 1.2	1.3	1.3	4.4 4.6	4.5	3.9
				Middle	6	16.8 16.7	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.7 104.6	104.7	8.4 8.4	8.4		1.3 1.3	1.3		4.5 4.4	4.5	
				Bottom	11	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.3 104.5	104.4	8.4 8.4	8.4	8.4	1.3 1.4	1.4		2.5 2.6	2.6	
M3	Sunny	Moderate	12:41	Surface	1	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.4 105.0	105.2	8.4 8.4	8.4	8.4	1.2 1.2	1.2	1.3	4.3 4.2	4.3	4.2
				Middle	4	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.8 105.2	105.0	8.4 8.4	8.4		1.3 1.3	1.3		4.3 4.2	4.3	
				Bottom	7	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.8 104.8	104.8	8.4 8.4	8.4	8.4	1.2 1.3	1.3		4.0 4.0	4.0	
M4	Sunny	Moderate	11:57	Surface	1	17.0 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.2 104.9	105.1	8.4 8.4	8.4	8.4	1.3 1.3	1.3	1.3	4.6 4.5	4.6	4.3
				Middle	5	16.7 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.3 104.5	104.4	8.4 8.4	8.4		1.3 1.3	1.3		4.1 4.1	4.1	
				Bottom	9	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.2 104.2	104.2	8.3 8.3	8.3	8.3	1.3 1.5	1.4		4.1 4.1	4.1	
M5	Sunny	Moderate	13:01	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.6 105.5	105.6	8.4 8.4	8.4	8.4	1.2 1.2	1.2	1.3	4.0 4.0	4.0	4.2
				Middle	6	16.7 16.9	16.8	8.4 8.4	8.4	32.1 32.1	32.1	104.7 105.2	105.0	8.4 8.4	8.4		1.3 1.3	1.3		4.5 4.6	4.6	
				Bottom	11	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.7 104.6	104.7	8.4 8.4	8.4	8.4	1.3 1.3	1.3		4.1 4.0	4.1	
M6	Sunny	Moderate	12:56	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.4	- -	-	1.2	- -	-	2.9
				Middle	2	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.4 105.4	105.4	8.4 8.4	8.4		1.2 1.2	1.2		2.9 2.9	2.9	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 17 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 1.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 1.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.8 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.8 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 7.6 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 8.2 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 17 January 2018

(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	18:04	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.9 105.7	105.8	8.5 8.4	8.5	8.5	1.3 1.2	1.3	1.2	5.6 5.7	5.7	5.3
				Middle	9.5	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.2	105.2	8.4 8.4	8.4		1.1 1.2	1.2		4.0 4.0	4.0	
				Bottom	18	16.7 16.7	16.7	8.4 8.4	8.4	32.2 32.2	32.2	103.5 104.3	103.9	8.3 8.4	8.4	8.4	1.2 1.2	1.2		6.2 6.3	6.3	
C2	Sunny	Moderate	16:32	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.0 105.2	105.1	8.4 8.4	8.4	8.4	1.3 1.4	1.4	1.4	4.1 4.1	4.1	3.6
				Middle	16.5	16.6 16.7	16.7	8.4 8.4	8.4	32.2 32.2	32.2	103.4 103.9	103.7	8.3 8.3	8.3		1.2 1.3	1.3		3.6 3.5	3.6	
				Bottom	32	16.6 16.6	16.6	8.4 8.4	8.4	32.2 32.2	32.2	102.7 103.2	103.0	8.2 8.3	8.3	8.3	1.4 1.3	1.4		3.0 3.0	3.0	
G1	Sunny	Moderate	17:21	Surface	1	17.1 16.9	17.0	8.4 8.4	8.4	32.1 32.1	32.1	106.1 105.8	106.0	8.4 8.4	8.4	8.4	1.2 1.3	1.3	1.3	5.3 5.4	5.4	3.7
				Middle	4	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.8	105.5	8.4 8.4	8.4		1.3 1.3	1.3		2.5 2.5	2.5	
				Bottom	7	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.1	105.2	8.4 8.4	8.4	8.4	1.3 1.2	1.3		3.2 3.2	3.2	
G2	Sunny	Moderate	17:07	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.5 105.7	105.6	8.4 8.4	8.4	8.4	1.4 1.2	1.3	1.3	4.1 4.0	4.1	4.3
				Middle	5	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.1	105.2	8.4 8.4	8.4		1.3 1.2	1.3		4.4 4.3	4.4	
				Bottom	9	16.7 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.0 105.1	105.1	8.4 8.4	8.4	8.4	1.2 1.2	1.2		4.4 4.5	4.5	
G3	Sunny	Moderate	17:27	Surface	1	17.0 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.9 105.6	105.8	8.4 8.4	8.4	8.5	1.3 1.2	1.3	1.2	4.8 4.8	4.8	4.2
				Middle	4	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.6 105.8	105.7	8.4 8.5	8.5		1.2 1.2	1.2		4.8 4.8	4.8	
				Bottom	7	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.5	105.4	8.4 8.4	8.4	8.4	1.2 1.2	1.2		3.0 3.0	3.0	
G4	Sunny	Moderate	17:44	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.8 105.9	105.9	8.5 8.5	8.5	8.5	1.3 1.4	1.4	1.3	4.3 4.3	4.3	3.5
				Middle	4.5	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.7 105.6	105.7	8.4 8.4	8.4		1.3 1.2	1.3		2.8 2.8	2.8	
				Bottom	8	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.2	105.2	8.4 8.4	8.4	8.4	1.2 1.4	1.3		3.2 3.3	3.3	
M1	Sunny	Moderate	17:14	Surface	1	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.8 105.7	105.8	8.4 8.4	8.4	8.4	1.2 1.3	1.3	1.3	4.3 4.3	4.3	4.0
				Middle	3	17.0 16.9	17.0	8.4 8.4	8.4	32.1 32.1	32.1	105.9 105.6	105.8	8.4 8.4	8.4		1.3 1.4	1.4		3.5 3.5	3.5	
				Bottom	5	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.3 105.3	105.3	8.4 8.4	8.4	8.4	1.2 1.2	1.2		4.2 4.3	4.3	
M2	Sunny	Moderate	16:53	Surface	1	16.8 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.4 105.7	105.6	8.4 8.4	8.4	8.4	1.3 1.2	1.3	1.3	4.3 4.2	4.3	4.4
				Middle	6	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.0 105.0	105.0	8.4 8.4	8.4		1.3 1.2	1.3		3.9 3.9	3.9	
				Bottom	11	16.7 16.7	16.7	8.4 8.4	8.4	32.2 32.1	32.2	104.6 104.9	104.8	8.4 8.4	8.4	8.4	1.2 1.2	1.2		4.9 5.0	5.0	
M3	Sunny	Moderate	17:35	Surface	1	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.8 105.5	105.7	8.5 8.4	8.5	8.5	1.3 1.2	1.3	1.2	3.9 4.0	4.0	3.7
				Middle	4	16.9 16.9	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.8 105.8	105.8	8.4 8.5	8.5		1.2 1.2	1.2		4.4 4.4	4.4	
				Bottom	7	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.2 105.3	105.3	8.4 8.4	8.4	8.4	1.2 1.2	1.2		2.7 2.8	2.8	
M4	Sunny	Moderate	16:44	Surface	1	16.8 17.0	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.1 105.8	105.5	8.4 8.4	8.4	8.4	1.2 1.3	1.3	1.2	5.1 5.1	5.1	4.6
				Middle	5	16.9 16.8	16.9	8.4 8.4	8.4	32.1 32.1	32.1	105.4 105.0	105.2	8.4 8.4	8.4		1.2 1.2	1.2		4.2 4.4	4.3	
				Bottom	9	16.7 16.7	16.7	8.4 8.4	8.4	32.1 32.1	32.1	104.8 104.9	104.9	8.4 8.4	8.4	8.4	1.2 1.2	1.2		4.3 4.4	4.4	
M5	Sunny	Moderate	17:56	Surface	1	17.1 16.8	17.0	8.4 8.4	8.4	32.1 32.1	32.1	106.3 105.7	106.0	8.5 8.5	8.5	8.5	1.2 1.2	1.2	1.2	4.8 4.6	4.7	3.9
				Middle	6	16.8 16.8	16.8	8.4 8.4	8.4	32.1 32.1	32.1	105.4 105.5	105.5	8.4 8.4	8.4		1.3 1.2	1.3		4.3 4.4	4.4	
				Bottom	11	16.7 16.7	16.7	8.4 8.4	8.4	32.2 32.2	32.2	104.9 105.0	105.0	8.4 8.4	8.4	8.4	1.2 1.2	1.2		2.7 2.7	2.7	
M6	Sunny	Moderate	17:50	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.5	- -	-	1.2	- -	-	8.2
				Middle	2.1	17.2 16.9	17.1	8.4 8.4	8.4	32.1 32.1	32.1	106.3 105.7	106.0	8.4 8.5	8.5		1.2 1.2	1.2		8.2 8.2	8.2	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 19 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.5 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.1 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.1 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.7 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 19 January 2018

(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	15:25	Surface	1	17.1 17.1	17.1	8.2 8.3	8.3	34.5 34.5	34.5	108.2 110.6	109.4	8.5 8.7	8.6	8.6	1.1 1.2	1.2	1.3	4.8 4.6	4.7	5.9
				Middle	9	17.1 17.1	17.1	8.3 8.3	8.3	34.5 34.5	34.5	109.4 109.8	109.6	8.6 8.6	8.6		1.0 1.0	1.0		7.9 7.9	7.9	
				Bottom	17	16.8 16.8	16.8	8.3 8.3	8.3	34.6 34.6	34.6	105.3 105.3	105.3	8.3 8.3	8.3	8.3	1.7 1.7	1.7		5.1 4.8	5.0	
C2	Cloudy	Moderate	14:08	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	107.8 107.5	107.7	8.5 8.4	8.5	8.4	1.3 1.3	1.3	1.5	5.9 5.8	5.9	5.6
				Middle	17	17.0 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	104.9 105.5	105.2	8.2 8.3	8.3		1.2 1.4	1.3		5.5 5.2	5.4	
				Bottom	33	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	103.5 104.1	103.8	8.1 8.2	8.2	8.2	1.8 1.9	1.9		5.6 5.6	5.6	
G1	Cloudy	Moderate	14:47	Surface	1	17.0 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	108.1 109.1	108.6	8.5 8.6	8.6	8.6	1.2 1.3	1.3	1.4	4.5 4.6	4.6	5.4
				Middle	4	16.9 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	107.2 107.6	107.4	8.4 8.5	8.5		1.4 1.3	1.4		6.6 6.8	6.7	
				Bottom	7	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.5	34.5	106.6 106.5	106.6	8.4 8.4	8.4	8.4	1.4 1.5	1.5		4.9 5.1	5.0	
G2	Cloudy	Moderate	14:35	Surface	1	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	106.9 107.7	107.3	8.4 8.5	8.5	8.5	1.2 1.3	1.3	1.3	5.1 4.8	5.0	6.5
				Middle	5	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	106.4 106.4	106.4	8.4 8.4	8.4		1.2 1.3	1.3		8.6 8.9	8.8	
				Bottom	9	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	106.0 106.2	106.1	8.3 8.4	8.4	8.4	1.3 1.4	1.4		5.6 5.7	5.7	
G3	Cloudy	Moderate	14:53	Surface	1	17.1 17.1	17.1	8.3 8.2	8.3	33.9 34.1	34.0	110.4 108.3	109.4	8.7 8.5	8.6	8.6	1.5 1.4	1.5	1.7	4.2 4.0	4.1	6.7
				Middle	4	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.3	34.4	108.1 107.7	107.9	8.5 8.5	8.5		1.8 2.0	1.9		9.3 9.6	9.5	
				Bottom	7	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	108.3 107.4	107.9	8.5 8.4	8.5	8.5	1.5 1.7	1.6		6.4 6.6	6.5	
G4	Cloudy	Moderate	15:04	Surface	1	17.2 17.2	17.2	8.3 8.3	8.3	34.4 34.4	34.4	113.6 112.4	113.0	8.9 8.8	8.9	8.8	1.1 1.1	1.1	1.4	4.7 5.0	4.9	6.6
				Middle	4.5	17.0 17.0	17.0	8.2 8.3	8.3	34.5 34.4	34.5	108.3 110.4	109.4	8.5 8.7	8.6		1.2 1.3	1.3		10.0 10.2	10.1	
				Bottom	8	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.5	34.5	106.7 107.6	107.2	8.4 8.5	8.5	8.5	1.6 1.7	1.7		4.7 4.7	4.7	
M1	Cloudy	Moderate	14:42	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	107.4 107.4	107.4	8.4 8.4	8.4	8.4	1.9 1.9	1.9	2.0	4.5 4.5	4.5	4.4
				Middle	3	17.1 17.0	17.1	8.2 8.2	8.2	34.4 34.4	34.4	107.3 107.3	107.3	8.4 8.4	8.4		1.9 1.8	1.9		5.0 5.0	5.0	
				Bottom	5	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	106.5 106.7	106.6	8.4 8.4	8.4	8.4	2.1 2.2	2.2		3.6 3.6	3.6	
M2	Cloudy	Moderate	14:25	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	109.0 109.5	109.3	8.6 8.6	8.6	8.5	1.0 1.0	1.0	1.2	4.2 4.1	4.2	4.3
				Middle	5.5	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.5	34.5	106.6 106.8	106.7	8.4 8.4	8.4		1.2 1.1	1.2		4.0 3.9	4.0	
				Bottom	10	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	106.0 105.9	106.0	8.3 8.3	8.3	8.3	1.3 1.2	1.3		4.6 4.8	4.7	
M3	Cloudy	Moderate	14:58	Surface	1	17.0 17.0	17.0	8.3 8.3	8.3	34.3 34.2	34.3	109.8 110.1	110.0	8.6 8.7	8.7	8.7	1.5 1.4	1.5	1.5	3.1 3.0	3.1	4.9
				Middle	4	17.0 17.0	17.0	8.3 8.3	8.3	34.4 34.4	34.4	108.9 109.4	109.2	8.6 8.6	8.6		1.4 1.4	1.4		7.2 7.1	7.2	
				Bottom	7	16.9 16.9	16.9	8.2 8.2	8.2	34.4 34.4	34.4	107.1 107.7	107.4	8.4 8.5	8.5	8.5	1.6 1.5	1.6		4.4 4.4	4.4	
M4	Cloudy	Moderate	14:18	Surface	1	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	106.9 107.7	107.3	8.4 8.5	8.5	8.5	1.3 1.2	1.3	1.3	3.6 3.6	3.6	3.8
				Middle	5	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	106.0 106.3	106.2	8.3 8.4	8.4		1.3 1.3	1.3		4.2 4.3	4.3	
				Bottom	9	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	105.3 105.4	105.4	8.3 8.3	8.3	8.3	1.4 1.4	1.4		3.6 3.6	3.6	
M5	Cloudy	Moderate	15:18	Surface	1	17.1 17.0	17.1	8.2 8.2	8.2	34.4 34.5	34.5	108.4 107.6	108.0	8.5 8.4	8.5	8.5	1.3 1.4	1.4	1.3	3.9 3.8	3.9	3.6
				Middle	5.5	16.9 16.9	16.9	8.3 8.3	8.3	34.6 34.6	34.6	107.5 107.4	107.5	8.5 8.4	8.5		1.2 1.2	1.2		4.3 4.3	4.3	
				Bottom	10	16.9 16.9	16.9	8.3 8.3	8.3	34.6 34.6	34.6	107.8 107.8	107.8	8.5 8.5	8.5	8.5	1.3 1.3	1.3		2.7 2.6	2.7	
M6	Cloudy	Moderate	15:08	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.8	- -	-	1.1	- -	-	3.9
				Middle	1.3	17.1 17.1	17.1	8.3 8.3	8.3	34.4 34.4	34.4	111.6 111.7	111.7	8.8 8.8	8.8		1.1 1.1	1.1		3.9 3.9	3.9	
				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 19 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.5 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.8 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.8 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 7.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 19 January 2018

(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	10:00	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	106.3 107.3	106.8	8.3 8.4	8.4	8.4	1.1 1.2	1.2	1.4	5.7 5.7	5.7	5.2
				Middle	9	16.9 16.9	16.9	8.2 8.3	8.3	34.6 34.5	34.6	106.6 106.8	106.7	8.4 8.4	8.4		1.2 1.2	1.2		5.2 5.0	5.1	
				Bottom	17	16.8 16.8	16.8	8.3 8.3	8.3	34.7 34.6	34.7	105.3 105.6	105.5	8.3 8.3	8.3	8.3	1.9 1.9	1.9		4.9 4.9	4.9	
C2	Cloudy	Moderate	09:00	Surface	1	17.0 17.0	17.0	8.1 8.2	8.2	34.4 34.4	34.4	105.2 106.5	105.9	8.3 8.4	8.4	8.3	1.2 1.1	1.2	1.4	4.5 4.5	4.5	5.8
				Middle	17	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	104.6 104.6	104.6	8.2 8.2	8.2		1.2 1.4	1.3		8.5 8.8	8.7	
				Bottom	33	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.5	34.5	103.7 103.5	103.6	8.2 8.1	8.2	8.2	1.5 1.8	1.7		4.4 4.2	4.3	
G1	Cloudy	Moderate	09:28	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	107.0 107.0	107.0	8.4 8.4	8.4	8.4	1.3 1.1	1.2	1.2	3.2 3.2	3.2	4.1
				Middle	4	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	106.2 106.4	106.3	8.3 8.4	8.4		1.1 1.1	1.1		4.3 4.4	4.4	
				Bottom	7	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	105.8 105.8	105.8	8.3 8.3	8.3	8.3	1.2 1.5	1.4		4.6 4.7	4.7	
G2	Cloudy	Moderate	09:18	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	105.3 107.2	106.3	8.3 8.4	8.4	8.4	1.4 1.2	1.3	1.6	5.4 5.4	5.4	4.0
				Middle	5	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	106.5 106.6	106.6	8.4 8.4	8.4		1.8 1.7	1.8		4.1 4.3	4.2	
				Bottom	9	16.9 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	106.3 106.2	106.3	8.4 8.4	8.4	8.4	1.6 1.8	1.7		2.4 2.4	2.4	
G3	Cloudy	Moderate	09:33	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.4 34.3	34.4	106.4 106.7	106.6	8.4 8.4	8.4	8.4	1.4 1.6	1.5	1.6	5.2 5.2	5.2	4.8
				Middle	4	16.9 16.9	16.9	8.2 8.2	8.2	34.4 34.4	34.4	106.4 106.0	106.2	8.4 8.3	8.4		1.6 1.6	1.6		4.5 4.5	4.5	
				Bottom	7	16.9 16.8	16.9	8.2 8.2	8.2	34.5 34.5	34.5	105.6 105.4	105.5	8.3 8.3	8.3	8.3	1.7 1.5	1.6		4.6 4.5	4.6	
G4	Cloudy	Moderate	09:44	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.3 34.3	34.3	108.7 109.2	109.0	8.5 8.6	8.6	8.5	1.2 1.1	1.2	1.4	4.6 4.6	4.6	5.9
				Middle	4.5	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	106.8 106.7	106.8	8.4 8.4	8.4		1.1 1.1	1.1		7.3 7.5	7.4	
				Bottom	8	16.8 16.8	16.8	8.2 8.2	8.2	34.5 34.5	34.5	106.3 105.9	106.1	8.4 8.3	8.4	8.4	2.0 1.9	2.0		5.8 5.5	5.7	
M1	Cloudy	Moderate	09:23	Surface	1	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	105.8 108.0	106.9	8.3 8.5	8.4	8.5	1.6 1.4	1.5	1.5	4.4 4.3	4.4	4.9
				Middle	3	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	107.7 107.7	107.7	8.5 8.5	8.5		1.6 1.4	1.5		4.7 4.6	4.7	
				Bottom	5	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	107.4 107.2	107.3	8.4 8.4	8.4	8.4	1.7 1.4	1.6		5.6 5.5	5.6	
M2	Cloudy	Moderate	09:14	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	106.1 106.7	106.4	8.3 8.4	8.4	8.4	1.5 1.5	1.5	1.3	4.0 3.8	3.9	4.9
				Middle	6	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	105.4 105.6	105.5	8.3 8.3	8.3		1.2 1.2	1.2		6.1 6.0	6.1	
				Bottom	11	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	105.1 105.4	105.3	8.3 8.3	8.3	8.3	1.1 1.2	1.2		4.5 4.8	4.7	
M3	Cloudy	Moderate	09:37	Surface	1	17.0 17.0	17.0	8.2 8.2	8.2	34.3 34.3	34.3	107.4 108.3	107.9	8.4 8.5	8.5	8.5	1.5 1.4	1.5	1.7	3.7 3.6	3.7	3.9
				Middle	4	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.4	34.5	107.1 107.9	107.5	8.4 8.5	8.5		1.9 1.7	1.8		4.4 4.2	4.3	
				Bottom	7	16.9 16.8	16.9	8.2 8.2	8.2	34.5 34.5	34.5	106.0 105.4	105.7	8.3 8.3	8.3	8.3	1.9 1.9	1.9		3.5 3.6	3.6	
M4	Cloudy	Moderate	09:08	Surface	1	17.1 17.0	17.1	8.2 8.2	8.2	34.4 34.4	34.4	106.7 107.2	107.0	8.4 8.4	8.4	8.4	1.1 1.1	1.1	1.2	3.4 3.6	3.5	3.5
				Middle	5	17.0 17.0	17.0	8.2 8.2	8.2	34.4 34.4	34.4	106.7 107.0	106.9	8.4 8.4	8.4		1.2 1.2	1.2		4.5 4.5	4.5	
				Bottom	9	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	105.7 106.3	106.0	8.3 8.4	8.4	8.4	1.1 1.2	1.2		2.4 2.3	2.4	
M5	Cloudy	Moderate	09:54	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	105.3 105.6	105.5	8.3 8.3	8.3	8.3	1.1 1.1	1.1	1.4	4.4 4.5	4.5	4.2
				Middle	5.5	17.0 17.0	17.0	8.2 8.2	8.2	34.5 34.5	34.5	104.9 105.2	105.1	8.2 8.3	8.3		1.4 1.4	1.4		4.9 4.7	4.8	
				Bottom	10	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	106.2 106.5	106.4	8.4 8.4	8.4	8.4	1.7 1.7	1.7		3.2 3.4	3.3	
M6	Cloudy	Moderate	09:49	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.5	- -	-	1.2	- -	-	5.3
				Middle	1.2	17.1 17.1	17.1	8.2 8.2	8.2	34.4 34.4	34.4	107.1 107.9	107.5	8.4 8.5	8.5		1.2 1.2	1.2		5.3 5.3	5.3	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 22 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.5 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.5 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.7 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 22 January 2018

(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	16:06	Surface	1	17.7 17.7	17.7	8.4 8.4	8.4	34.5 34.5	34.5	125.2 127.8	126.5	9.7 9.9	9.8	9.7	1.1 1.1	1.1	1.5	4.1 4.1	4.1	5.7
				Middle	9	17.2 17.2	17.2	8.4 8.4	8.4	34.6 34.6	34.6	123.1 122.1	122.6	9.6 9.5	9.6		1.2 1.2	1.2		7.3 7.5	7.4	
				Bottom	17	17.1 17.1	17.1	8.4 8.4	8.4	34.6 34.6	34.6	118.2 118.1	118.2	9.3 9.2	9.3	9.3	2.0 2.1	2.1		5.7 5.5	5.6	
C2	Cloudy	Moderate	15:09	Surface	1	17.5 17.5	17.5	8.2 8.3	8.3	34.4 34.4	34.4	117.7 119.2	118.5	9.2 9.3	9.3	9.1	1.3 1.4	1.4	1.6	5.7 5.8	5.8	5.7
				Middle	16.5	17.3 17.3	17.3	8.3 8.3	8.3	34.5 34.5	34.5	113.6 113.4	113.5	8.9 8.9	8.9		1.4 1.3	1.4		5.5 5.6	5.6	
				Bottom	32	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	112.7 113.1	112.9	8.8 8.8	8.8	8.8	1.8 1.9	1.9		5.6 5.5	5.6	
G1	Cloudy	Moderate	15:36	Surface	1	18.2 18.2	18.2	8.4 8.4	8.4	34.4 34.4	34.4	126.5 129.8	128.2	9.7 10.0	9.9	9.9	1.1 1.2	1.2	1.2	2.1 2.1	2.1	3.5
				Middle	4	17.4 17.4	17.4	8.4 8.4	8.4	34.5 34.5	34.5	126.5 127.1	126.8	9.9 9.9	9.9		1.1 1.1	1.1		2.3 2.3	2.3	
				Bottom	7	17.3 17.3	17.3	8.3 8.3	8.3	34.5 34.5	34.5	121.3 121.6	121.5	9.5 9.5	9.5	9.5	1.2 1.2	1.2		6.0 6.1	6.1	
G2	Cloudy	Moderate	15:28	Surface	1	18.1 17.9	18.0	8.4 8.4	8.4	34.5 34.5	34.5	128.2 128.0	128.1	9.9 9.9	9.9	9.8	1.1 1.1	1.1	1.3	4.2 4.2	4.2	4.5
				Middle	5	17.3 17.3	17.3	8.3 8.3	8.3	34.5 34.5	34.5	121.7 123.2	122.5	9.5 9.6	9.6		1.2 1.1	1.2		5.1 5.2	5.2	
				Bottom	9	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	116.0 117.2	116.6	9.1 9.2	9.2	9.2	1.6 1.4	1.5		4.2 4.1	4.2	
G3	Cloudy	Moderate	15:41	Surface	1	17.7 17.7	17.7	8.4 8.4	8.4	34.4 34.3	34.4	134.8 138.5	136.7	10.5 10.7	10.6	10.6	1.4 1.6	1.5	1.7	4.0 4.1	4.1	6.7
				Middle	4	17.6 17.6	17.6	8.4 8.4	8.4	34.4 34.4	34.4	135.3 136.6	136.0	10.5 10.6	10.6		1.7 1.6	1.7		10.2 10.3	10.3	
				Bottom	7	17.5 17.5	17.5	8.4 8.4	8.4	34.4 34.5	34.5	131.9 133.1	132.5	10.3 10.4	10.4	10.4	2.0 1.8	1.9		5.5 5.6	5.6	
G4	Cloudy	Moderate	15:50	Surface	1	18.1 18.1	18.1	8.4 8.4	8.4	34.4 34.4	34.4	127.0 131.7	129.4	9.8 10.1	10.0	10.0	1.2 1.1	1.2	1.3	3.0 3.0	3.0	3.3
				Middle	4	17.8 17.8	17.8	8.4 8.4	8.4	34.4 34.4	34.4	127.7 128.1	127.9	9.9 9.9	9.9		1.3 1.2	1.3		3.1 3.1	3.1	
				Bottom	7	17.8 17.6	17.7	8.4 8.4	8.4	34.4 34.5	34.5	127.9 128.8	128.4	9.9 10.0	10.0	10.0	1.4 1.4	1.4		3.6 3.7	3.7	
M1	Cloudy	Moderate	15:33	Surface	1	17.5 17.6	17.6	8.4 8.3	8.4	34.4 34.4	34.4	125.9 126.0	126.0	9.8 9.8	9.8	9.8	1.5 1.6	1.6	1.7	4.5 4.6	4.6	4.9
				Middle	3	17.4 17.4	17.4	8.3 8.3	8.3	34.5 34.5	34.5	125.0 125.2	125.1	9.7 9.8	9.8		1.3 1.3	1.3		4.0 4.0	4.0	
				Bottom	5	17.4 17.4	17.4	8.3 8.3	8.3	34.5 34.5	34.5	124.2 124.6	124.4	9.7 9.7	9.7	9.7	2.1 2.0	2.1		6.0 6.1	6.1	
M2	Cloudy	Moderate	15:24	Surface	1	17.8 17.9	17.9	8.4 8.4	8.4	34.5 34.5	34.5	126.7 127.1	126.9	9.8 9.8	9.8	9.8	1.2 1.2	1.2	1.4	5.5 5.5	5.5	4.7
				Middle	6	17.5 17.6	17.6	8.4 8.4	8.4	34.5 34.5	34.5	126.5 126.7	126.6	9.8 9.8	9.8		1.2 1.2	1.2		4.3 4.3	4.3	
				Bottom	11	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	115.5 116.3	115.9	9.0 9.1	9.1	9.1	1.6 1.8	1.7		4.4 4.3	4.4	
M3	Cloudy	Moderate	15:45	Surface	1	17.9 17.9	17.9	8.4 8.4	8.4	34.3 34.3	34.3	136.3 137.9	137.1	10.5 10.6	10.6	10.6	1.3 1.3	1.3	1.3	5.5 5.7	5.6	6.5
				Middle	4	17.7 17.7	17.7	8.4 8.4	8.4	34.4 34.4	34.4	134.5 135.1	134.8	10.4 10.5	10.5		1.3 1.2	1.3		7.7 7.5	7.6	
				Bottom	7	17.6 17.6	17.6	8.4 8.4	8.4	34.4 34.4	34.4	130.5 129.8	130.2	10.1 10.1	10.1	10.1	1.2 1.2	1.2		6.2 6.2	6.2	
M4	Cloudy	Moderate	15:18	Surface	1	17.5 17.5	17.5	8.3 8.3	8.3	34.5 34.5	34.5	117.2 121.0	119.1	9.1 9.4	9.3	9.2	1.3 1.3	1.3	1.6	5.6 5.6	5.6	6.3
				Middle	5	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	115.6 116.0	115.8	9.1 9.1	9.1		1.5 1.5	1.5		10.0 10.3	10.2	
				Bottom	9	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	115.1 115.5	115.3	9.0 9.0	9.0	9.0	1.8 1.9	1.9		3.1 3.2	3.2	
M5	Cloudy	Moderate	16:00	Surface	1	17.4 17.6	17.5	8.4 8.4	8.4	34.5 34.4	34.5	125.3 125.4	125.4	9.8 9.7	9.8	9.5	1.1 1.2	1.2	1.8	4.0 4.0	4.0	6.3
				Middle	5.5	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	116.1 118.2	117.2	9.1 9.2	9.2		2.0 1.9	2.0		8.7 8.8	8.8	
				Bottom	10	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	114.1 114.1	114.1	8.9 8.9	8.9	8.9	2.1 2.1	2.1		6.2 6.2	6.2	
M6	Cloudy	Moderate	15:54	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	9.8	- -	-	1.2	- -	-	6.1
				Middle	1.3	17.9 18.4	18.2	8.4 8.4	8.4	34.4 34.4	34.4	127.2 126.7	127.0	9.8 9.7	9.8		1.1 1.3	1.2		6.1 6.0	6.1	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 22 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 4.7 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 6.1 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.6 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 22 January 2018

(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	10:23	Surface	1	17.4 17.4	17.4	8.3 8.3	8.3	34.5 34.5	34.5	114.6 116.9	115.8	8.9 9.1	9.0	9.2	1.3 1.4	1.4	2.2	4.9 4.8	4.9	4.9
				Middle	9	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	118.0 118.5	118.3	9.2 9.3	9.3		1.4 1.5	1.5		4.7 4.8	4.8	
				Bottom	17	17.1 17.1	17.1	8.4 8.4	8.4	34.7 34.7	34.7	119.3 119.3	119.3	9.3 9.3	9.3	9.3	3.6 3.5	3.6		5.1 5.0	5.1	
C2	Cloudy	Moderate	09:19	Surface	1	17.4 17.4	17.4	8.2 8.3	8.3	34.4 34.4	34.4	106.4 111.0	108.7	8.3 8.7	8.5	8.5	1.6 1.5	1.6	2.1	5.7 5.8	5.8	5.7
				Middle	16.5	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	108.0 108.5	108.3	8.4 8.5	8.5		1.5 1.6	1.6		5.1 5.1	5.1	
				Bottom	32	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	109.7 109.2	109.5	8.6 8.5	8.6	8.6	3.1 3.0	3.1		6.1 6.0	6.1	
G1	Cloudy	Moderate	09:49	Surface	1	17.3 17.2	17.3	8.3 8.3	8.3	34.5 34.5	34.5	120.7 119.8	120.3	9.4 9.4	9.4	9.4	1.2 1.1	1.2	1.2	5.7 5.9	5.8	4.8
				Middle	4	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	118.6 118.6	118.6	9.3 9.3	9.3		1.2 1.1	1.2		5.3 5.1	5.2	
				Bottom	7	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	116.2 116.7	116.5	9.1 9.1	9.1	9.1	1.3 1.2	1.3		3.3 3.2	3.3	
G2	Cloudy	Moderate	09:40	Surface	1	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	117.5 118.5	118.0	9.2 9.3	9.3	9.2	1.1 1.2	1.2	1.2	4.4 4.3	4.4	3.6
				Middle	5	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	116.7 115.4	116.1	9.1 9.0	9.1		1.1 1.3	1.2		2.5 2.5	2.5	
				Bottom	9	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	114.4 114.0	114.2	9.0 8.9	9.0	9.0	1.1 1.2	1.2		4.0 3.9	4.0	
G3	Cloudy	Moderate	09:55	Surface	1	17.2 17.3	17.3	8.3 8.3	8.3	34.4 34.4	34.4	114.2 114.9	114.6	8.9 9.0	9.0	9.0	1.9 1.9	1.9	1.9	4.5 4.4	4.5	4.5
				Middle	4	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	112.3 114.7	113.5	8.8 9.0	8.9		1.9 1.6	1.8		4.8 4.8	4.8	
				Bottom	7	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	109.8 109.7	109.8	8.6 8.6	8.6	8.6	1.7 2.0	1.9		4.2 4.3	4.3	
G4	Cloudy	Moderate	10:05	Surface	1	17.5 17.3	17.4	8.3 8.3	8.3	34.3 34.5	34.4	119.5 121.5	120.5	9.3 9.5	9.4	9.3	1.2 1.1	1.2	1.8	5.5 5.4	5.5	4.8
				Middle	4.5	17.2 17.1	17.2	8.3 8.3	8.3	34.5 34.5	34.5	117.5 117.4	117.5	9.2 9.2	9.2		1.2 1.1	1.2		2.7 2.7	2.7	
				Bottom	8	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	110.2 112.0	111.1	8.6 8.8	8.7	8.7	2.8 3.2	3.0		6.1 6.0	6.1	
M1	Cloudy	Moderate	09:45	Surface	1	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	112.0 112.9	112.5	8.8 8.8	8.8	8.9	1.4 1.4	1.4	1.4	4.0 3.9	4.0	3.7
				Middle	3	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	112.9 113.2	113.1	8.8 8.9	8.9		1.4 1.3	1.4		3.7 3.7	3.7	
				Bottom	5	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.6	34.6	112.6 112.7	112.7	8.8 8.8	8.8	8.8	1.4 1.4	1.4		3.4 3.4	3.4	
M2	Cloudy	Moderate	09:34	Surface	1	17.2 17.2	17.2	8.3 8.3	8.3	34.4 34.4	34.4	116.6 117.2	116.9	9.1 9.2	9.2	9.1	1.2 1.1	1.2	1.3	3.3 3.3	3.3	5.2
				Middle	5.5	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	113.1 114.2	113.7	8.8 8.9	8.9		1.3 1.4	1.4		6.6 6.6	6.6	
				Bottom	10	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	113.9 114.1	114.0	8.9 8.9	8.9	8.9	1.2 1.3	1.3		5.5 5.6	5.6	
M3	Cloudy	Moderate	09:59	Surface	1	17.2 17.3	17.3	8.3 8.3	8.3	34.4 34.4	34.4	119.0 119.3	119.2	9.3 9.3	9.3	9.2	1.7 1.5	1.6	1.8	5.6 5.8	5.7	5.0
				Middle	4	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	114.1 114.4	114.3	8.9 9.0	9.0		1.9 1.7	1.8		4.7 4.5	4.6	
				Bottom	7	17.1 17.1	17.1	8.3 8.3	8.3	34.6 34.6	34.6	106.1 107.0	106.6	8.3 8.4	8.4	8.4	2.0 2.2	2.1		4.5 4.6	4.6	
M4	Cloudy	Moderate	09:28	Surface	1	17.2 17.3	17.3	8.3 8.3	8.3	34.5 34.5	34.5	117.9 120.0	119.0	9.2 9.4	9.3	9.2	1.2 1.2	1.2	1.2	4.6 4.6	4.6	5.4
				Middle	5	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	115.2 118.1	116.7	9.0 9.2	9.1		1.2 1.2	1.2		6.9 7.0	7.0	
				Bottom	9	17.2 17.2	17.2	8.3 8.3	8.3	34.6 34.5	34.6	114.6 115.5	115.1	9.0 9.0	9.0	9.0	1.3 1.2	1.3		4.5 4.6	4.6	
M5	Cloudy	Moderate	10:16	Surface	1	17.3 17.3	17.3	8.3 8.3	8.3	34.5 34.5	34.5	111.0 112.0	111.5	8.7 8.7	8.7	8.7	1.5 1.4	1.5	1.5	4.0 4.1	4.1	4.3
				Middle	5.5	17.3 17.3	17.3	8.3 8.3	8.3	34.5 34.5	34.5	110.8 111.1	111.0	8.7 8.7	8.7		1.6 1.4	1.5		4.0 4.1	4.1	
				Bottom	10	17.2 17.2	17.2	8.3 8.3	8.3	34.5 34.5	34.5	110.3 110.5	110.4	8.6 8.6	8.6	8.6	1.6 1.5	1.6		4.7 4.7	4.7	
M6	Cloudy	Moderate	10:10	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	9.0	- -	-	1.2	- -	-	3.9
				Middle	1.2	17.4 17.4	17.4	8.3 8.3	8.3	34.4 34.4	34.4	115.1 115.4	115.3	9.0 9.0	9.0		1.2 1.2	1.2		4.0 3.7	3.9	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 24 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.6 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.9 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.7 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.7 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.5 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.0 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 24 January 2018

(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	18:18	Surface	1	19.6 19.5	19.6	8.3 8.3	8.3	33.5 33.7	33.6	98.8 97.8	98.3	6.3 6.3	6.3	6.3	1.6 1.6	1.6	2.7	3.6 3.5	3.6	3.1
				Middle	9.5	18.3 18.6	18.5	8.2 8.3	8.3	34.5 34.4	34.5	100.5 97.4	99.0	6.4 6.2	6.3		2.7 2.4	2.6		3.0 3.1	3.1	
				Bottom	18	17.3 16.7	17.0	8.2 8.2	8.2	34.3 34.8	34.6	96.5 94.7	95.6	6.1 6.0	6.1	6.1	3.8 3.9	3.9		2.6 2.6	2.6	
C2	Cloudy	Moderate	16:49	Surface	1	19.6 19.6	19.6	8.4 8.3	8.4	33.8 33.9	33.9	105.8 105.4	105.6	6.7 6.7	6.7	6.5	1.4 1.4	1.4	2.8	5.5 5.6	5.6	5.4
				Middle	17.5	18.2 17.9	18.1	8.3 8.2	8.3	34.7 34.3	34.5	91.4 102.8	97.1	5.9 6.5	6.2		3.1 3.2	3.2		5.2 5.1	5.2	
				Bottom	34	17.6 17.5	17.6	8.2 8.2	8.2	34.8 34.1	34.5	84.1 84.5	84.3	5.4 5.4	5.4	5.4	3.8 3.8	3.8		5.3 5.4	5.4	
G1	Cloudy	Moderate	17:31	Surface	1	20.8 20.7	20.8	8.5 8.5	8.5	33.7 33.7	33.7	106.9 108.1	107.5	6.8 6.8	6.8	6.7	1.7 1.7	1.7	1.7	3.1 3.1	3.1	3.8
				Middle	3.5	20.0 20.3	20.2	8.4 8.4	8.4	33.9 33.8	33.9	102.8 100.7	101.8	6.5 6.4	6.5		1.4 1.3	1.4		3.5 3.4	3.5	
				Bottom	6	19.3 19.3	19.3	8.4 8.3	8.4	34.3 34.2	34.3	97.8 98.8	98.3	6.2 6.3	6.3	6.3	1.9 2.0	2.0		4.8 4.7	4.8	
G2	Cloudy	Moderate	17:20	Surface	1	20.2 20.7	20.5	8.4 8.4	8.4	33.8 33.7	33.8	108.0 107.6	107.8	6.8 6.8	6.8	6.7	1.3 1.3	1.3	1.5	5.9 5.8	5.9	4.2
				Middle	4.5	19.5 19.5	19.5	8.4 8.4	8.4	34.0 34.0	34.0	102.1 101.6	101.9	6.5 6.5	6.5		1.3 1.4	1.4		2.9 2.9	2.9	
				Bottom	8	18.9 19.2	19.1	8.3 8.3	8.3	34.9 34.4	34.7	100.5 100.0	100.3	6.4 6.4	6.4	6.4	1.9 1.9	1.9		3.7 3.8	3.8	
G3	Cloudy	Moderate	17:39	Surface	1	21.0 21.2	21.1	8.4 8.4	8.4	33.3 33.3	33.3	95.2 93.9	94.6	6.1 6.0	6.1	5.9	1.4 1.3	1.4	1.5	5.0 4.8	4.9	4.1
				Middle	3.5	19.9 19.9	19.9	8.4 8.4	8.4	33.8 33.8	33.8	87.4 87.9	87.7	5.6 5.6	5.6		1.3 1.4	1.4		4.1 4.1	4.1	
				Bottom	6	19.4 19.3	19.4	8.4 8.3	8.4	34.1 34.2	34.2	90.1 89.6	89.9	5.8 5.7	5.8	5.8	1.7 1.7	1.7		3.2 3.3	3.3	
G4	Cloudy	Moderate	17:50	Surface	1	20.3 20.5	20.4	8.5 8.5	8.5	33.8 33.8	33.8	105.6 103.9	104.8	6.7 6.6	6.7	6.5	1.3 1.3	1.3	2.4	5.3 5.1	5.2	4.8
				Middle	4	19.8 19.8	19.8	8.4 8.4	8.4	33.9 33.9	33.9	97.9 97.1	97.5	6.3 6.2	6.3		1.4 1.4	1.4		3.2 3.2	3.2	
				Bottom	7	18.6 18.6	18.6	8.2 8.2	8.2	34.5 34.5	34.5	99.3 99.4	99.4	6.3 6.3	6.3	6.3	4.6 4.4	4.5		6.1 5.9	6.0	
M1	Cloudy	Moderate	17:27	Surface	1	20.6 20.7	20.7	8.4 8.4	8.4	33.7 33.7	33.7	101.1 105.3	103.2	6.4 6.7	6.6	6.5	1.3 1.3	1.3	1.4	3.0 3.1	3.1	2.8
				Middle	3	19.9 20.2	20.1	8.4 8.4	8.4	33.8 33.8	33.8	100.7 99.2	100.0	6.4 6.3	6.4		1.3 1.3	1.3		2.6 2.6	2.6	
				Bottom	5	19.4 19.5	19.5	8.4 8.4	8.4	34.1 34.1	34.1	91.2 92.7	92.0	5.8 5.9	5.9	5.9	1.4 1.5	1.5		2.8 2.8	2.8	
M2	Cloudy	Moderate	17:10	Surface	1	20.2 21.1	20.7	8.4 8.4	8.4	33.8 33.5	33.7	103.5 106.0	104.8	6.6 6.7	6.7	6.6	1.4 1.3	1.4	1.6	3.2 3.1	3.2	3.0
				Middle	4.5	19.3 19.3	19.3	8.4 8.4	8.4	34.3 34.3	34.3	99.8 100.9	100.4	6.4 6.4	6.4		1.6 1.5	1.6		4.0 4.0	4.0	
				Bottom	8	19.2 19.2	19.2	8.3 8.3	8.3	34.4 34.4	34.4	85.1 86.4	85.8	5.4 5.5	5.5	5.5	1.7 1.7	1.7		1.8 1.8	1.8	
M3	Cloudy	Moderate	17:43	Surface	1	21.1 19.4	20.3	8.4 8.5	8.5	33.3 32.3	32.8	96.6 94.7	95.7	6.2 6.0	6.1	5.7	1.4 1.4	1.4	1.6	5.3 5.3	5.3	4.0
				Middle	3.5	19.9 18.6	19.3	8.4 8.4	8.4	33.7 32.4	33.1	82.5 81.3	81.9	5.3 5.2	5.3		1.5 1.5	1.5		2.9 3.0	3.0	
				Bottom	6	19.3 17.9	18.6	8.3 8.4	8.4	34.2 32.9	33.6	90.9 90.7	90.8	5.8 5.8	5.8	5.8	1.9 1.9	1.9		3.6 3.6	3.6	
M4	Cloudy	Moderate	16:58	Surface	1	21.2 19.4	20.3	8.4 8.4	8.4	33.6 33.3	33.5	104.2 103.5	103.9	6.6 6.6	6.6	6.5	1.3 1.3	1.3	2.1	4.3 4.2	4.3	3.1
				Middle	5	19.4 19.4	19.4	8.4 8.4	8.4	34.2 34.2	34.2	98.7 98.9	98.8	6.3 6.3	6.3		1.4 1.4	1.4		2.5 2.4	2.5	
				Bottom	9	19.0 19.3	19.2	8.3 8.3	8.3	34.7 34.4	34.6	93.9 96.7	95.3	6.0 6.2	6.1	6.1	3.5 3.5	3.5		2.4 2.4	2.4	
M5	Cloudy	Moderate	18:07	Surface	1	20.0 20.0	20.0	8.4 8.4	8.4	34.1 34.1	34.1	100.7 99.4	100.1	6.4 6.3	6.4	6.2	1.2 1.2	1.2	2.1	2.1 2.1	2.1	3.1
				Middle	5.5	19.6 19.6	19.6	8.4 8.4	8.4	34.6 34.6	34.6	94.5 93.8	94.2	6.0 6.0	6.0		1.3 1.4	1.4		3.1 3.1	3.1	
				Bottom	10	17.9 17.9	17.9	8.2 8.2	8.2	34.5 34.5	34.5	84.2 84.6	84.4	5.4 5.4	5.4	5.4	3.5 3.8	3.7		4.1 4.2	4.2	
M6	Cloudy	Moderate	17:57	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.4	- -	-	2.1	- -	-	4.8
				Middle	2.1	19.4 19.4	19.4	8.3 8.3	8.3	34.3 34.2	34.3	100.6 101.1	100.9	6.4 6.4	6.4		2.2 2.0	2.1		4.8 4.8	4.8	
				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 24 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 6.6 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 7.2 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 7.4 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 8.1 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 24 January 2018

(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	12:08	Surface	1	20.3 20.5	20.4	8.4 8.4	8.4	33.7 33.7	33.7	107.8 106.1	107.0	6.9 6.8	6.9	6.4	1.2 1.2	1.2	2.6	4.3 5.5	4.9	5.1
				Middle	10	19.2 19.1	19.2	8.3 8.3	8.3	34.8 34.0	34.4	92.0 92.1	92.1	5.9 5.9	5.9		1.1 1.2	1.2		4.4 4.2	4.3	
				Bottom	19	16.2 16.3	16.3	8.1 8.1	8.1	37.7 34.7	36.2	82.4 83.2	82.8	5.3 5.3	5.3	5.3	5.3 5.6	5.5		6.2 6.2	6.2	
C2	Cloudy	Moderate	10:42	Surface	1	19.8 19.8	19.8	8.3 8.4	8.4	33.6 33.7	33.7	98.4 97.2	97.8	6.3 6.2	6.3	5.9	1.2 1.2	1.2	3.0	3.2 3.3	3.3	3.5
				Middle	17	18.8 18.8	18.8	8.3 8.3	8.3	34.2 34.2	34.2	84.8 87.3	86.1	5.4 5.6	5.5		2.3 2.3	2.3		3.2 3.0	3.1	
				Bottom	33	17.5 17.3	17.4	8.2 8.2	8.2	34.1 34.4	34.3	77.5 78.2	77.9	5.0 5.0	5.0	5.0	5.5 5.4	5.5		4.2 4.2	4.2	
G1	Cloudy	Moderate	11:26	Surface	1	19.7 19.7	19.7	8.4 8.4	8.4	33.8 33.8	33.8	108.4 104.7	106.6	6.9 6.7	6.8	6.8	1.2 1.3	1.3	2.1	4.3 4.2	4.3	3.2
				Middle	4.5	19.3 19.2	19.3	8.3 8.3	8.3	34.3 34.3	34.3	106.5 105.2	105.9	6.8 6.7	6.8		1.4 1.7	1.6		1.5 1.4	1.5	
				Bottom	8	18.5 18.5	18.5	8.3 8.3	8.3	34.7 34.5	34.6	94.9 93.9	94.4	6.1 6.0	6.1	6.1	3.4 3.5	3.5		3.8 3.9	3.9	
G2	Cloudy	Moderate	11:12	Surface	1	19.6 19.6	19.6	8.4 8.4	8.4	33.9 33.9	33.9	110.2 109.5	109.9	7.1 7.0	7.1	6.7	1.2 1.2	1.2	1.7	3.7 3.7	3.7	3.8
				Middle	5	19.1 19.1	19.1	8.3 8.3	8.3	34.5 34.5	34.5	97.9 97.3	97.6	6.3 6.2	6.3		1.7 1.7	1.7		3.4 3.4	3.4	
				Bottom	9	18.4 18.4	18.4	8.3 8.3	8.3	34.7 34.8	34.8	86.6 89.3	88.0	5.5 5.7	5.6	5.6	2.2 2.4	2.3		4.3 4.2	4.3	
G3	Cloudy	Moderate	11:35	Surface	1	19.9 20.0	20.0	8.4 8.4	8.4	33.3 33.2	33.3	100.0 86.4	93.2	6.4 5.5	6.0	6.1	1.3 1.3	1.3	1.7	3.5 3.5	3.5	3.7
				Middle	4	19.3 19.3	19.3	8.3 8.4	8.4	34.1 34.1	34.1	95.6 95.8	95.7	6.1 6.1	6.1		1.8 1.7	1.8		3.8 3.7	3.8	
				Bottom	7	19.0 19.0	19.0	8.3 8.3	8.3	34.6 34.6	34.6	87.4 89.1	88.3	5.6 5.7	5.7	5.7	2.2 2.0	2.1		3.7 3.6	3.7	
G4	Cloudy	Moderate	11:47	Surface	1	20.3 19.7	20.0	8.4 8.4	8.4	33.4 33.9	33.7	107.4 106.0	106.7	6.9 6.8	6.9	6.8	1.3 1.2	1.3	2.5	4.6 4.7	4.7	4.3
				Middle	4.5	19.3 19.3	19.3	8.3 8.3	8.3	34.3 34.3	34.3	104.6 104.5	104.6	6.7 6.7	6.7		1.4 1.4	1.4		3.1 3.1	3.1	
				Bottom	8	18.6 18.6	18.6	8.3 8.3	8.3	34.5 34.5	34.5	86.9 87.6	87.3	5.6 5.6	5.6	5.6	4.6 4.7	4.7		5.1 4.9	5.0	
M1	Cloudy	Moderate	11:20	Surface	1	19.7 19.6	19.7	8.4 8.4	8.4	33.8 33.8	33.8	108.5 103.4	106.0	6.9 6.6	6.8	6.8	1.3 1.3	1.3	1.5	4.1 3.9	4.0	5.1
				Middle	3	19.3 19.4	19.4	8.3 8.3	8.3	34.1 34.1	34.1	104.1 104.4	104.3	6.7 6.7	6.7		1.6 1.5	1.6		4.8 4.9	4.9	
				Bottom	5	19.1 19.1	19.1	8.3 8.3	8.3	34.5 34.4	34.5	94.4 93.9	94.2	6.0 6.0	6.0	6.0	1.5 1.7	1.6		6.2 6.4	6.3	
M2	Cloudy	Moderate	11:04	Surface	1	19.6 19.6	19.6	8.4 8.4	8.4	33.8 33.8	33.8	109.9 108.0	109.0	7.1 6.9	7.0	6.7	1.4 1.3	1.4	2.6	4.0 4.1	4.1	5.1
				Middle	5.5	18.7 18.7	18.7	8.3 8.3	8.3	35.2 34.3	34.8	97.1 99.5	98.3	6.2 6.4	6.3		3.1 3.0	3.1		5.5 5.4	5.5	
				Bottom	10	18.3 18.2	18.3	8.2 8.2	8.2	34.7 34.9	34.8	80.2 84.1	82.2	5.1 5.4	5.3	5.3	3.2 3.5	3.4		5.6 5.7	5.7	
M3	Cloudy	Moderate	11:40	Surface	1	20.0 19.9	20.0	8.4 8.5	8.5	33.4 33.5	33.5	94.2 91.8	93.0	6.0 5.9	6.0	6.0	1.3 1.3	1.3	2.0	5.2 5.2	5.2	4.4
				Middle	4	19.1 19.3	19.2	8.3 8.4	8.4	34.3 34.3	34.3	91.1 96.8	94.0	5.8 6.2	6.0		1.9 1.8	1.9		3.7 3.7	3.7	
				Bottom	7	18.9 19.0	19.0	8.3 8.5	8.4	34.8 34.7	34.8	89.2 88.4	88.8	5.7 5.7	5.7	5.7	2.6 2.7	2.7		4.2 4.3	4.3	
M4	Cloudy	Moderate	10:51	Surface	1	19.7 19.8	19.8	8.4 8.4	8.4	33.7 33.7	33.7	105.4 104.0	104.7	6.8 6.7	6.8	6.3	1.3 1.2	1.3	1.4	2.6 2.5	2.6	3.8
				Middle	5	19.6 19.4	19.5	8.4 8.3	8.4	33.9 34.1	34.0	85.5 89.9	87.7	5.5 5.8	5.7		1.3 1.4	1.4		2.6 2.5	2.6	
				Bottom	9	19.5 19.3	19.4	8.3 8.3	8.3	34.1 34.3	34.2	79.9 82.1	81.0	5.1 5.3	5.2	5.2	1.4 1.6	1.5		6.1 6.1	6.1	
M5	Cloudy	Moderate	11:59	Surface	1	19.7 19.8	19.8	8.4 8.4	8.4	33.8 33.8	33.8	106.1 105.2	105.7	6.8 6.7	6.8	6.7	1.6 1.3	1.5	2.8	4.0 4.1	4.1	4.0
				Middle	6	19.4 19.5	19.5	8.3 8.3	8.3	34.1 34.0	34.1	103.2 101.4	102.3	6.6 6.5	6.6		1.3 1.2	1.3		3.6 3.7	3.7	
				Bottom	11	18.7 18.7	18.7	8.3 8.3	8.3	34.2 34.2	34.2	103.5 102.4	103.0	6.6 6.5	6.6	6.6	5.4 5.5	5.5		4.2 4.3	4.3	
M6	Cloudy	Moderate	11:53	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	5.7	- -	-	1.3	- -	-	4.4
				Middle	2.1	19.6 19.6	19.6	8.3 8.4	8.4	33.9 33.9	33.9	89.2 88.8	89.0	5.7 5.7	5.7		1.3 1.3	1.3		4.3 4.4	4.4	
				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 26 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.3 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.7 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.3 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 5.7 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 5.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 26 January 2018

(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	08:05	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	106.8 107.4	107.1	8.4 8.4	8.4	8.4	0.7 0.7	0.7	0.8	1.1 1.1	1.1	1.1
				Middle	9	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	106.3 106.3	106.3	8.3 8.3	8.3		0.7 0.7	0.7		0.9 0.9	0.9	
				Bottom	17	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	105.3 105.4	105.4	8.2 8.3	8.3	8.3	0.8 0.9	0.9		1.3 1.3	1.3	
C2	Cloudy	Moderate	07:00	Surface	1	17.1 17.1	17.1	8.1 8.2	8.2	34.7 34.7	34.7	109.9 110.1	110.0	8.6 8.6	8.6	8.6	0.9 0.9	0.9	1.3	4.3 4.4	4.4	4.4
				Middle	16.5	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	108.0 108.2	108.1	8.5 8.5	8.5		1.0 0.9	1.0		3.8 3.8	3.8	
				Bottom	32	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	107.4 107.5	107.5	8.4 8.4	8.4	8.4	1.9 2.0	2.0		4.8 4.9	4.9	
G1	Cloudy	Moderate	07:32	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.6	34.7	113.5 113.7	113.6	8.9 8.9	8.9	8.9	1.1 1.2	1.2	1.1	4.0 4.2	4.1	2.8
				Middle	4	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	112.4 112.9	112.7	8.8 8.8	8.8		1.0 0.9	1.0		2.6 2.5	2.6	
				Bottom	7	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	110.5 110.6	110.6	8.6 8.7	8.7	8.7	1.0 1.0	1.0		1.6 1.6	1.6	
G2	Cloudy	Moderate	07:21	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.6 34.6	34.6	112.7 112.9	112.8	8.8 8.8	8.8	8.8	1.2 1.3	1.3	1.2	2.3 2.3	2.3	2.9
				Middle	5	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	111.7 111.1	111.4	8.7 8.7	8.7		1.0 1.1	1.1		2.3 2.3	2.3	
				Bottom	9	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	106.8 109.5	108.2	8.4 8.6	8.5	8.5	1.3 1.2	1.3		4.1 4.0	4.1	
G3	Cloudy	Moderate	07:37	Surface	1	17.3 17.3	17.3	8.2 8.2	8.2	34.1 34.3	34.2	106.3 107.7	107.0	8.3 8.4	8.4	8.5	2.7 2.9	2.8	1.9	4.7 4.6	4.7	4.5
				Middle	4	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	108.8 108.8	108.8	8.5 8.5	8.5		1.6 1.6	1.6		4.5 4.5	4.5	
				Bottom	7	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	108.3 107.8	108.1	8.5 8.4	8.5	8.5	1.5 1.3	1.4		4.3 4.3	4.3	
G4	Cloudy	Moderate	07:47	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	110.7 111.3	111.0	8.7 8.7	8.7	8.7	1.1 1.1	1.1	1.3	2.6 2.5	2.6	2.9
				Middle	4.5	17.1 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	110.3 110.4	110.4	8.6 8.6	8.6		1.2 1.2	1.2		2.6 2.6	2.6	
				Bottom	8	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	105.5 107.1	106.3	8.3 8.4	8.4	8.4	1.6 1.6	1.6		3.4 3.3	3.4	
M1	Cloudy	Moderate	07:27	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.6 34.6	34.6	110.6 111.7	111.2	8.7 8.7	8.7	8.8	2.2 1.8	2.0	2.0	4.3 4.3	4.3	4.8
				Middle	3	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	111.7 112.0	111.9	8.7 8.8	8.8		1.9 1.9	1.9		5.1 5.1	5.1	
				Bottom	5	17.2 17.1	17.2	8.2 8.2	8.2	34.7 34.7	34.7	111.2 111.4	111.3	8.7 8.7	8.7	8.7	2.0 2.0	2.0		5.0 5.1	5.1	
M2	Cloudy	Moderate	07:16	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.6 34.6	34.6	112.1 112.3	112.2	8.8 8.8	8.8	8.8	1.2 1.2	1.2	1.2	4.9 4.9	4.9	3.5
				Middle	6	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	110.5 111.0	110.8	8.6 8.7	8.7		0.9 1.0	1.0		3.0 3.0	3.0	
				Bottom	11	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	107.2 106.9	107.1	8.4 8.4	8.4	8.4	1.3 1.5	1.4		2.7 2.7	2.7	
M3	Cloudy	Moderate	07:41	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.5 34.4	34.5	109.6 110.0	109.8	8.6 8.6	8.6	8.7	1.6 1.7	1.7	1.6	3.5 3.5	3.5	3.5
				Middle	4	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.6	34.7	109.3 110.7	110.0	8.6 8.7	8.7		1.8 1.5	1.7		3.8 3.7	3.8	
				Bottom	7	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	108.4 107.8	108.1	8.5 8.4	8.5	8.5	1.4 1.6	1.5		3.3 3.3	3.3	
M4	Cloudy	Moderate	07:09	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	112.0 113.1	112.6	8.8 8.9	8.9	8.8	0.8 0.9	0.9	0.9	1.9 1.8	1.9	2.1
				Middle	5	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	111.3 111.1	111.2	8.7 8.7	8.7		0.8 0.8	0.8		2.4 2.4	2.4	
				Bottom	9	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	108.7 109.3	109.0	8.5 8.6	8.6	8.6	1.0 1.2	1.1		1.8 1.9	1.9	
M5	Cloudy	Moderate	07:59	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	106.1 107.0	106.6	8.3 8.4	8.4	8.4	0.8 0.8	0.8	0.8	1.5 1.5	1.5	1.6
				Middle	5.5	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	106.3 106.5	106.4	8.3 8.3	8.3		0.7 0.8	0.8		1.4 1.4	1.4	
				Bottom	10	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	105.5 105.8	105.7	8.3 8.3	8.3	8.3	0.7 0.8	0.8		1.9 1.9	1.9	
M6	Cloudy	Moderate	07:53	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.7	- -	-	0.9	- -	-	1.7
				Middle	1.2	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	110.4 111.4	110.9	8.6 8.7	8.7		0.9 0.9	0.9		1.7 1.7	1.7	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 26 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.6 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 4.7 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.1 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 4.7 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.1 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 8.0 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 8.7 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 26 January 2018

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	14:38	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	106.3 107.2	106.8	8.3 8.4	8.4	8.4	0.8 0.8	0.8	1.2	3.9 3.8	3.9	4.5
				Middle	9	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	106.1 106.3	106.2	8.3 8.3	8.3		0.8 0.8	0.8		2.9 3.0	3.0	
				Bottom	17	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	105.1 105.1	105.1	8.2 8.2	8.2	8.2	2.0 2.0	2.0		6.6 6.8	6.7	
C2	Cloudy	Moderate	13:41	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	110.3 110.2	110.3	8.6 8.6	8.6	8.5	1.1 1.2	1.2	1.0	2.6 2.6	2.6	2.9
				Middle	16.5	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	105.6 106.1	105.9	8.3 8.3	8.3		0.8 0.9	0.9		2.2 2.2	2.2	
				Bottom	32	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	105.3 105.2	105.3	8.2 8.2	8.2	8.2	0.8 0.8	0.8		3.8 3.9	3.9	
G1	Cloudy	Moderate	14:08	Surface	1	17.2 17.3	17.3	8.2 8.2	8.2	34.7 34.5	34.6	118.4 119.3	118.9	9.2 9.3	9.3	9.1	1.3 1.3	1.3	1.3	2.7 2.8	2.8	3.4
				Middle	4	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	115.3 111.1	113.2	9.0 8.7	8.9		1.2 1.2	1.2		4.1 4.2	4.2	
				Bottom	7	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	113.5 111.5	112.5	8.9 8.7	8.8	8.8	1.2 1.3	1.3		3.3 3.3	3.3	
G2	Cloudy	Moderate	13:58	Surface	1	17.2 17.2	17.2	8.2 8.3	8.3	34.7 34.6	34.7	119.2 120.9	120.1	9.3 9.4	9.4	9.2	1.0 1.0	1.0	1.0	4.9 4.1	4.5	3.5
				Middle	5	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	115.2 115.6	115.4	9.0 9.0	9.0		0.9 0.9	0.9		3.8 3.8	3.8	
				Bottom	9	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	108.0 109.0	108.5	8.4 8.5	8.5	8.5	1.2 1.1	1.2		2.0 2.1	2.1	
G3	Cloudy	Moderate	14:15	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.3 34.5	34.4	112.5 109.5	111.0	8.8 8.6	8.7	8.7	1.6 1.7	1.7	1.7	3.4 3.5	3.5	4.4
				Middle	4	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	110.4 109.0	109.7	8.6 8.5	8.6		1.7 1.4	1.6		5.0 5.1	5.1	
				Bottom	7	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	105.5 106.3	105.9	8.3 8.3	8.3	8.3	1.9 1.8	1.9		4.6 4.8	4.7	
G4	Cloudy	Moderate	14:23	Surface	1	17.2 17.3	17.3	8.2 8.2	8.2	34.6 34.6	34.6	116.4 119.3	117.9	9.1 9.3	9.2	9.1	1.1 1.1	1.1	1.3	2.5 2.4	2.5	3.1
				Middle	4.5	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	115.4 115.3	115.4	9.0 9.0	9.0		1.2 1.3	1.3		3.6 3.8	3.7	
				Bottom	8	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	108.1 107.5	107.8	8.5 8.4	8.5	8.5	1.6 1.4	1.5		3.2 3.1	3.2	
M1	Cloudy	Moderate	14:03	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.6	34.7	113.3 114.5	113.9	8.9 8.9	8.9	9.0	1.5 1.5	1.5	1.6	3.1 3.1	3.1	3.4
				Middle	3	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	114.2 114.9	114.6	8.9 9.0	9.0		1.6 1.6	1.6		3.3 3.4	3.4	
				Bottom	5	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	110.3 111.8	111.1	8.6 8.7	8.7	8.7	1.6 1.8	1.7		3.5 3.7	3.6	
M2	Cloudy	Moderate	13:53	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.6 34.7	34.7	114.3 118.3	116.3	8.9 9.2	9.1	9.1	0.9 1.0	1.0	1.0	2.3 2.3	2.3	2.3
				Middle	6	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	116.2 115.6	115.9	9.1 9.0	9.1		0.9 0.9	0.9		2.1 2.1	2.1	
				Bottom	11	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	109.4 108.5	109.0	8.6 8.5	8.6	8.6	0.9 1.0	1.0		2.6 2.5	2.6	
M3	Cloudy	Moderate	14:19	Surface	1	17.2 17.2	17.2	8.2 8.2	8.2	34.6 34.6	34.6	113.3 113.3	113.3	8.9 8.9	8.9	8.8	1.8 1.5	1.7	1.6	3.6 3.6	3.6	5.7
				Middle	4	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	109.9 111.6	110.8	8.6 8.7	8.7		1.4 1.4	1.4		9.6 9.7	9.7	
				Bottom	7	17.2 17.2	17.2	8.2 8.2	8.2	34.7 34.7	34.7	107.1 107.6	107.4	8.4 8.4	8.4	8.4	1.6 1.5	1.6		3.8 3.8	3.8	
M4	Cloudy	Moderate	13:48	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	110.7 112.3	111.5	8.7 8.8	8.8	8.8	0.9 0.8	0.9	0.9	3.3 3.4	3.4	3.7
				Middle	5	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	111.3 111.9	111.6	8.7 8.8	8.8		0.8 0.8	0.8		4.5 4.6	4.6	
				Bottom	9	17.1 17.1	17.1	8.2 8.2	8.2	34.7 34.7	34.7	111.4 111.6	111.5	8.7 8.7	8.7	8.7	0.9 0.8	0.9		3.1 3.1	3.1	
M5	Cloudy	Moderate	14:32	Surface	1	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	107.6 108.4	108.0	8.4 8.5	8.5	8.5	0.7 0.7	0.7	0.8	4.6 4.4	4.5	3.8
				Middle	5.5	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	107.0 107.2	107.1	8.4 8.4	8.4		0.8 0.7	0.8		3.2 3.2	3.2	
				Bottom	10	17.1 17.1	17.1	8.2 8.2	8.2	34.8 34.8	34.8	106.3 106.4	106.4	8.3 8.3	8.3	8.3	0.8 0.8	0.8		3.7 3.8	3.8	
M6	Cloudy	Moderate	14:28	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	9.2	- -	-	1.1	- -	-	3.0
				Middle	1.2	17.3 17.3	17.3	8.2 8.2	8.2	34.7 34.7	34.7	117.2 118.7	118.0	9.1 9.3	9.2		1.1 1.1	1.1		3.0 3.0	3.0	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 29 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.3 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 2.5 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.2 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.8 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.2 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.8 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.4 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 6.9 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 29 January 2018

(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	11:54	Surface	1	16.8 16.9	16.9	8.2 8.2	8.2	34.5 34.5	34.5	104.5 101.7	103.1	8.2 8.0	8.1	8.1	1.5 1.7	1.6	1.8	3.1 3.1	3.1	4.0
				Middle	9.5	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.9 100.9	101.4	8.0 7.9	8.0		1.7 1.9	1.8		4.6 4.5	4.6	
				Bottom	18	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	99.0 100.4	99.7	7.8 7.9	7.9	7.9	1.9 1.8	1.9		4.3 4.3	4.3	
C2	Fine	Moderate	10:27	Surface	1	16.8 16.9	16.9	8.0 8.2	8.1	34.5 34.5	34.5	103.7 102.2	103.0	8.2 8.0	8.1	8.0	1.1 1.0	1.1	1.5	5.2 5.1	5.2	4.5
				Middle	16.5	16.8 16.8	16.8	8.1 8.2	8.2	34.7 34.7	34.7	99.1 99.5	99.3	7.8 7.8	7.8		1.4 1.3	1.4		2.9 2.8	2.9	
				Bottom	32	16.8 16.8	16.8	8.1 8.1	8.1	34.7 34.7	34.7	98.6 98.8	98.7	7.8 7.8	7.8	7.8	1.9 1.8	1.9		5.3 5.3	5.3	
G1	Fine	Moderate	11:06	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.2 101.6	101.9	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.6	5.5 5.3	5.4	4.6
				Middle	4	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.5 101.9	101.7	8.0 8.0	8.0		1.7 1.5	1.6		4.8 4.8	4.8	
				Bottom	7	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.8 101.2	101.0	7.9 8.0	8.0	8.0	1.6 1.6	1.6		3.5 3.4	3.5	
G2	Fine	Moderate	10:54	Surface	1	16.9 16.8	16.9	8.2 8.2	8.2	34.5 34.7	34.6	101.9 100.6	101.3	8.0 7.9	8.0	8.0	1.5 1.7	1.6	1.6	4.1 4.0	4.1	5.2
				Middle	5	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.9 101.9	101.9	8.0 8.0	8.0		1.5 1.5	1.5		6.8 6.6	6.7	
				Bottom	9	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.8 100.4	100.6	7.9 7.9	7.9	7.9	1.6 1.7	1.7		4.8 4.8	4.8	
G3	Fine	Moderate	11:14	Surface	1	16.9 16.8	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.2 101.6	101.9	8.0 8.0	8.0	8.0	1.5 1.5	1.5	1.6	3.4 3.4	3.4	5.2
				Middle	4	16.8 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.0 101.9	102.0	8.0 8.0	8.0		1.5 1.6	1.6		6.2 6.2	6.2	
				Bottom	7	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.2 101.3	101.3	8.0 8.0	8.0	8.0	1.7 1.6	1.7		5.9 5.8	5.9	
G4	Fine	Moderate	11:32	Surface	1	16.8 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.7 101.8	101.8	8.0 8.0	8.0	8.0	1.5 1.5	1.5	1.7	4.6 4.4	4.5	3.3
				Middle	4.5	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.6 101.8	101.7	8.0 8.0	8.0		1.6 1.6	1.6		1.3 1.4	1.4	
				Bottom	8	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.2 100.1	100.2	7.9 7.9	7.9	7.9	1.8 1.9	1.9		4.0 4.1	4.1	
M1	Fine	Moderate	11:00	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.8 101.9	101.9	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.6	5.8 5.8	5.8	3.9
				Middle	3	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.1 102.1	102.1	8.0 8.0	8.0		1.5 1.5	1.5		3.0 3.0	3.0	
				Bottom	5	16.9 16.8	16.9	8.2 8.2	8.2	34.6 34.7	34.7	101.9 101.1	101.5	8.0 8.0	8.0	8.0	1.5 1.7	1.6		2.9 2.8	2.9	
M2	Fine	Moderate	10:46	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.5	34.5	102.0 102.1	102.1	8.0 8.0	8.0	8.0	1.5 1.5	1.5	1.6	3.2 3.3	3.3	3.1
				Middle	6	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.1 101.5	101.8	8.0 8.0	8.0		1.6 1.6	1.6		3.1 3.2	3.2	
				Bottom	11	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.2 100.1	100.2	7.9 7.9	7.9	7.9	1.7 1.7	1.7		2.6 2.8	2.7	
M3	Fine	Moderate	11:23	Surface	1	16.8 16.8	16.8	8.2 8.2	8.2	34.6 34.6	34.6	101.9 101.7	101.8	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.6	2.6 2.5	2.6	3.5
				Middle	4	16.9 16.8	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.9 101.8	101.9	8.0 8.0	8.0		1.5 1.6	1.6		4.3 4.2	4.3	
				Bottom	7	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.3 101.1	101.2	8.0 8.0	8.0	8.0	1.6 1.6	1.6		3.7 3.6	3.7	
M4	Fine	Moderate	10:38	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.6	34.6	101.9 101.9	101.9	8.0 8.0	8.0	8.0	1.6 1.5	1.6	1.6	4.0 4.2	4.1	3.7
				Middle	5	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.9 102.0	102.0	8.0 8.0	8.0		1.6 1.5	1.6		3.5 3.4	3.5	
				Bottom	9	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.3 101.3	101.3	8.0 8.0	8.0	8.0	1.6 1.6	1.6		3.6 3.5	3.6	
M5	Fine	Moderate	11:47	Surface	1	16.8 16.8	16.8	8.2 8.2	8.2	34.6 34.6	34.6	102.1 101.2	101.7	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.8	2.3 2.3	2.3	4.5
				Middle	6	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.0 101.5	101.3	8.0 8.0	8.0		1.8 1.7	1.8		7.4 7.4	7.4	
				Bottom	11	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	99.4 100.4	99.9	7.8 7.9	7.9	7.9	1.9 1.8	1.9		3.8 3.7	3.8	
M6	Fine	Moderate	11:41	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.0	- -	-	1.5	- -	-	6.2
				Middle	2.1	16.8 16.8	16.8	8.2 8.2	8.2	34.6 34.6	34.6	102.1 102.1	102.1	8.0 8.0	8.0		1.5 1.4	1.5		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 29 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 2.2 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.0 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.5 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.0 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 5.5 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.2 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

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Water Quality Monitoring Results on 29 January 2018

(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	16:02	Surface	1	16.9 16.8	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.0 101.4	101.7	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.7	4.1 4.1	4.1	4.5
				Middle	9.5	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.8 100.8	100.8	7.9 7.9	7.9		1.8 1.7	1.8		4.6 4.5	4.6	
				Bottom	18	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.6 100.2	100.4	7.9 7.9	7.9	7.9	1.7 1.7	1.7		4.8 4.7	4.8	
C2	Cloudy	Moderate	14:37	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.5 34.6	34.6	101.9 101.4	101.7	8.0 8.0	8.0	8.0	0.6 0.5	0.6	0.9	4.4 4.5	4.5	4.1
				Middle	16.5	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	99.4 100.7	100.1	7.8 7.9	7.9		0.9 1.0	1.0		4.0 3.9	4.0	
				Bottom	32	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	99.5 100.3	99.9	7.8 7.9	7.9	7.9	1.1 1.2	1.2		3.8 3.8	3.8	
G1	Cloudy	Moderate	15:16	Surface	1	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.6	34.7	101.1 101.2	101.2	8.0 8.0	8.0	8.0	1.6 1.6	1.6	1.6	2.8 2.8	2.8	3.4
				Middle	4	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.6 101.7	101.7	8.0 8.0	8.0		1.5 1.5	1.5		3.9 3.9	3.9	
				Bottom	7	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.1 100.7	100.9	8.0 7.9	8.0	8.0	1.6 1.7	1.7		3.5 3.3	3.4	
G2	Cloudy	Moderate	15:01	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.9 101.1	101.5	8.0 8.0	8.0	8.0	1.4 1.6	1.5	1.6	4.4 4.4	4.4	3.4
				Middle	5	16.9 16.8	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.5 101.3	101.4	8.0 8.0	8.0		1.6 1.6	1.6		2.9 2.8	2.9	
				Bottom	9	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.3 100.3	100.3	7.9 7.9	7.9	7.9	1.9 1.7	1.8		3.0 3.0	3.0	
G3	Cloudy	Moderate	15:22	Surface	1	16.8 16.8	16.8	8.2 8.2	8.2	34.6 34.7	34.7	101.4 101.1	101.3	8.0 8.0	8.0	8.0	1.6 1.6	1.6	1.6	2.6 2.6	2.6	2.6
				Middle	4	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.7 101.6	101.7	8.0 8.0	8.0		1.5 1.6	1.6		2.6 2.6	2.6	
				Bottom	7	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.1 101.3	101.2	8.0 8.0	8.0	8.0	1.7 1.6	1.7		2.7 2.7	2.7	
G4	Cloudy	Moderate	15:37	Surface	1	16.8 16.9	16.9	8.2 8.2	8.2	34.7 34.6	34.7	101.2 101.7	101.5	8.0 8.0	8.0	8.0	1.6 1.5	1.6	1.6	4.5 4.4	4.5	4.4
				Middle	4.5	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.6	34.7	101.2 101.8	101.5	8.0 8.0	8.0		1.6 1.6	1.6		5.6 5.6	5.6	
				Bottom	8	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.9 101.2	101.1	7.9 8.0	8.0	8.0	1.7 1.7	1.7		3.1 3.1	3.1	
M1	Cloudy	Moderate	15:08	Surface	1	16.9 16.8	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.0 101.3	101.7	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.6	3.4 3.5	3.5	3.8
				Middle	3	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.0 101.7	101.9	8.0 8.0	8.0		1.6 1.6	1.6		2.8 2.8	2.8	
				Bottom	5	16.8 16.9	16.9	8.2 8.2	8.2	34.7 34.6	34.7	101.4 101.6	101.5	8.0 8.0	8.0	8.0	1.7 1.7	1.7		5.1 4.9	5.0	
M2	Cloudy	Moderate	14:54	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.2 101.8	101.5	8.0 8.0	8.0	8.0	1.6 1.5	1.6	1.7	3.2 3.3	3.3	3.8
				Middle	6	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.7 101.4	101.6	8.0 8.0	8.0		1.6 1.7	1.7		2.7 2.7	2.7	
				Bottom	11	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	99.9 99.8	99.9	7.9 7.9	7.9	7.9	1.8 1.8	1.8		5.4 5.4	5.4	
M3	Cloudy	Moderate	15:29	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.7 101.8	101.8	8.0 8.0	8.0	8.0	1.5 1.5	1.5	1.6	4.8 4.9	4.9	3.5
				Middle	4	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.8 101.9	101.9	8.0 8.0	8.0		1.6 1.5	1.6		2.9 2.9	2.9	
				Bottom	7	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.0 101.3	101.2	8.0 8.0	8.0	8.0	1.7 1.6	1.7		2.7 2.7	2.7	
M4	Cloudy	Moderate	14:46	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.4 101.7	101.6	8.0 8.0	8.0	8.0	1.5 1.6	1.6	1.6	3.3 3.3	3.3	3.1
				Middle	5	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.8 101.7	101.8	8.0 8.0	8.0		1.6 1.6	1.6		2.7 2.7	2.7	
				Bottom	9	16.9 16.8	16.9	8.2 8.2	8.2	34.7 34.7	34.7	101.1 100.3	100.7	8.0 7.9	8.0	8.0	1.7 1.7	1.7		3.3 3.2	3.3	
M5	Cloudy	Moderate	15:55	Surface	1	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	102.1 101.5	101.8	8.0 8.0	8.0	8.0	0.5 0.6	0.6	0.9	1.4 1.4	1.4	2.4
				Middle	6	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	101.0 101.6	101.3	8.0 8.0	8.0		0.8 0.7	0.8		3.4 3.5	3.5	
				Bottom	11	16.8 16.8	16.8	8.2 8.2	8.2	34.7 34.7	34.7	100.0 100.9	100.5	7.9 7.9	7.9	7.9	1.1 1.2	1.2		2.2 2.2	2.2	
M6	Cloudy	Moderate	15:48	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	8.0	- -	-	1.6	- -	-	3.1
				Middle	2	16.9 16.9	16.9	8.2 8.2	8.2	34.6 34.6	34.6	101.7 101.8	101.8	8.0 8.0	8.0		1.6 1.6	1.6		3.1 3.0	3.1	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 31 January 2018 (Mid-Ebb Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.4 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C2: 4.8 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.7 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.7 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.3 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C2: 6.8 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C2: 7.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 31 January 2018

(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	11:58	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.9 32.9	32.9	97.0 94.3	95.7	7.8 7.6	7.7	7.7	2.4 2.1	2.3	2.3	4.3 4.2	4.3	4.7
				Middle	9	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	94.2 93.5	93.9	7.6 7.5	7.6		2.2 2.2	2.2		3.5 3.4	3.5	
				Bottom	17	16.4 16.4	16.4	8.2 8.2	8.2	32.9 33.0	33.0	93.3 93.0	93.2	7.5 7.5	7.5	7.5	2.3 2.5	2.4		6.2 6.1	6.2	
C2	Rainy	Moderate	10:53	Surface	1	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.9	32.9	95.3 94.3	94.8	7.7 7.6	7.7	7.6	2.8 2.3	2.6	3.3	5.5 5.7	5.6	4.9
				Middle	16	16.5 16.5	16.5	8.2 8.2	8.2	33.0 33.0	33.0	93.2 93.2	93.2	7.5 7.5	7.5		3.7 3.3	3.5		3.5 3.4	3.5	
				Bottom	31	16.4 16.5	16.5	8.2 8.2	8.2	32.9 33.0	33.0	94.4 93.1	93.8	7.6 7.4	7.5	7.5	3.6 3.7	3.7		5.7 5.7	5.7	
G1	Rainy	Moderate	11:26	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.8 32.8	32.8	95.7 93.6	94.7	7.7 7.5	7.6	7.6	1.6 2.0	1.8	2.0	4.3 4.3	4.3	3.6
				Middle	4	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	94.2 93.7	94.0	7.6 7.5	7.6		1.9 2.0	2.0		3.3 3.2	3.3	
				Bottom	7	16.4 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	93.9 93.3	93.6	7.5 7.5	7.5	7.5	2.2 2.4	2.3		3.1 3.0	3.1	
G2	Rainy	Moderate	11:17	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.8 32.8	32.8	94.8 93.9	94.4	7.6 7.6	7.6	7.6	1.7 1.8	1.8	2.2	3.5 3.5	3.5	3.8
				Middle	5	16.4 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	93.6 93.3	93.5	7.5 7.5	7.5		2.4 2.2	2.3		3.7 3.7	3.7	
				Bottom	9	16.5 16.5	16.5	8.2 8.2	8.2	32.9 33.0	33.0	93.2 92.9	93.1	7.5 7.4	7.5	7.5	2.4 2.5	2.5		4.1 4.3	4.2	
G3	Rainy	Moderate	11:32	Surface	1	16.4 16.3	16.4	8.2 8.2	8.2	32.8 32.5	32.7	93.4 92.9	93.2	7.5 7.5	7.5	7.5	2.7 2.6	2.7	2.6	3.5 3.8	3.7	4.2
				Middle	4	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	93.1 93.1	93.1	7.5 7.5	7.5		2.6 2.3	2.5		4.3 4.4	4.4	
				Bottom	7	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	92.7 92.8	92.8	7.4 7.4	7.4	7.4	2.3 2.6	2.5		4.3 4.4	4.4	
G4	Rainy	Moderate	11:41	Surface	1	16.2 16.2	16.2	8.2 8.2	8.2	32.7 32.7	32.7	96.1 93.1	94.6	7.8 7.5	7.7	7.6	1.8 1.6	1.7	2.1	3.5 3.5	3.5	4.4
				Middle	4.5	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	93.6 93.5	93.6	7.5 7.5	7.5		2.1 1.9	2.0		5.7 5.7	5.7	
				Bottom	8	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	91.8 93.0	92.4	7.4 7.5	7.5	7.5	2.5 2.6	2.6		3.9 4.0	4.0	
M1	Rainy	Moderate	11:23	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.7 32.7	32.7	93.9 93.0	93.5	7.6 7.5	7.6	7.6	4.3 4.2	4.3	3.2	5.0 5.2	5.1	5.0
				Middle	3	16.3 16.3	16.3	8.2 8.2	8.2	32.8 32.7	32.8	93.5 92.8	93.2	7.5 7.5	7.5		3.5 3.4	3.5		4.8 4.9	4.9	
				Bottom	5	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.9	32.9	93.8 93.5	93.7	7.5 7.5	7.5	7.5	1.8 1.9	1.9		4.8 4.9	4.9	
M2	Rainy	Moderate	11:11	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.7 32.7	32.7	96.5 94.1	95.3	7.8 7.6	7.7	7.6	1.7 1.6	1.7	2.5	3.9 3.8	3.9	5.0
				Middle	6	16.5 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	93.7 93.7	93.7	7.5 7.5	7.5		2.6 2.3	2.5		5.3 5.2	5.3	
				Bottom	11	16.6 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.2 92.8	93.0	7.4 7.4	7.4	7.4	3.1 3.5	3.3		5.7 5.8	5.8	
M3	Rainy	Moderate	11:36	Surface	1	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.7	32.8	94.7 93.3	94.0	7.6 7.5	7.6	7.6	2.5 2.4	2.5	2.3	4.5 4.7	4.6	4.4
				Middle	4	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	93.5 93.2	93.4	7.5 7.5	7.5		2.4 2.6	2.5		4.6 4.5	4.6	
				Bottom	7	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	93.2 93.0	93.1	7.5 7.5	7.5	7.5	1.8 1.8	1.8		4.0 4.0	4.0	
M4	Rainy	Moderate	11:05	Surface	1	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	94.9 93.8	94.4	7.6 7.5	7.6	7.6	2.2 2.1	2.2	2.9	3.3 3.2	3.3	4.4
				Middle	5	16.6 16.5	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.7 93.7	93.7	7.5 7.5	7.5		2.7 2.9	2.8		4.4 4.5	4.5	
				Bottom	9	16.6 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	92.9 93.3	93.1	7.4 7.5	7.5	7.5	3.9 3.4	3.7		5.2 5.3	5.3	
M5	Rainy	Moderate	11:52	Surface	1	16.2 16.2	16.2	8.2 8.2	8.2	32.7 32.7	32.7	93.2 93.1	93.2	7.5 7.5	7.5	7.5	2.2 2.1	2.2	2.4	4.1 4.0	4.1	4.4
				Middle	5.5	16.3 16.3	16.3	8.2 8.2	8.2	32.8 32.8	32.8	93.1 93.0	93.1	7.5 7.5	7.5		2.4 2.4	2.4		5.3 5.3	5.3	
				Bottom	10	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	92.9 92.5	92.7	7.5 7.4	7.5	7.5	2.5 2.9	2.7		3.8 3.9	3.9	
M6	Rainy	Moderate	11:46	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.6	- -	-	2.5	- -	-	4.2
				Middle	2	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	94.9 93.2	94.1	7.6 7.5	7.6		2.6 2.4	2.5		4.1 4.3	4.2	
				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 31 January 2018 (Mid-Flood Tide)

Parameter (unit)	**Depth**	**Action Level**	**Limit Level**
DO in mg/L (See Note 1 and 4)	**Stations G1-G4, M1-M5**		
	Depth Average	***4.9 mg/L***	***4.6 mg/L***
	Bottom	***4.2 mg/L***	***3.6 mg/L***
	Station M6		
	Intake Level	***5.0 mg/L***	***4.7 mg/L***
Turbidity in NTU (See Note 2 and 4)	**Stations G1-G4, M1-M5**		
	Bottom	***19.3 NTU*** or 120% of upstream control station's Turbidity at the same tide of the same day ***C1: 5.0 NTU***	***22.2 NTU*** or 130% of upstream control station's Turbidity at the same tide of the same day ***C1: 5.5 NTU***
	Station M6		
	Intake Level	***19.0 NTU***	***19.4 NTU***
SS in mg/L (See Note 2 and 4)	**Stations G1-G4**		
	Surface	***6.0 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***6.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations M1-M5		
	Surface	***6.2 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.4 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Stations G1-G4, M1-M5		
	Bottom	***6.9 mg/L*** or 120% of upstream control station's SS at the same tide of the same day ***C1: 5.9 mg/L***	***7.9 mg/L*** or 130% of upstream control station's SS at the same tide of the same day ***C1: 6.4 mg/L***
	Station M6		
	Intake Level	***8.3 mg/L***	***8.6 mg/L***

Notes:

1. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.

4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

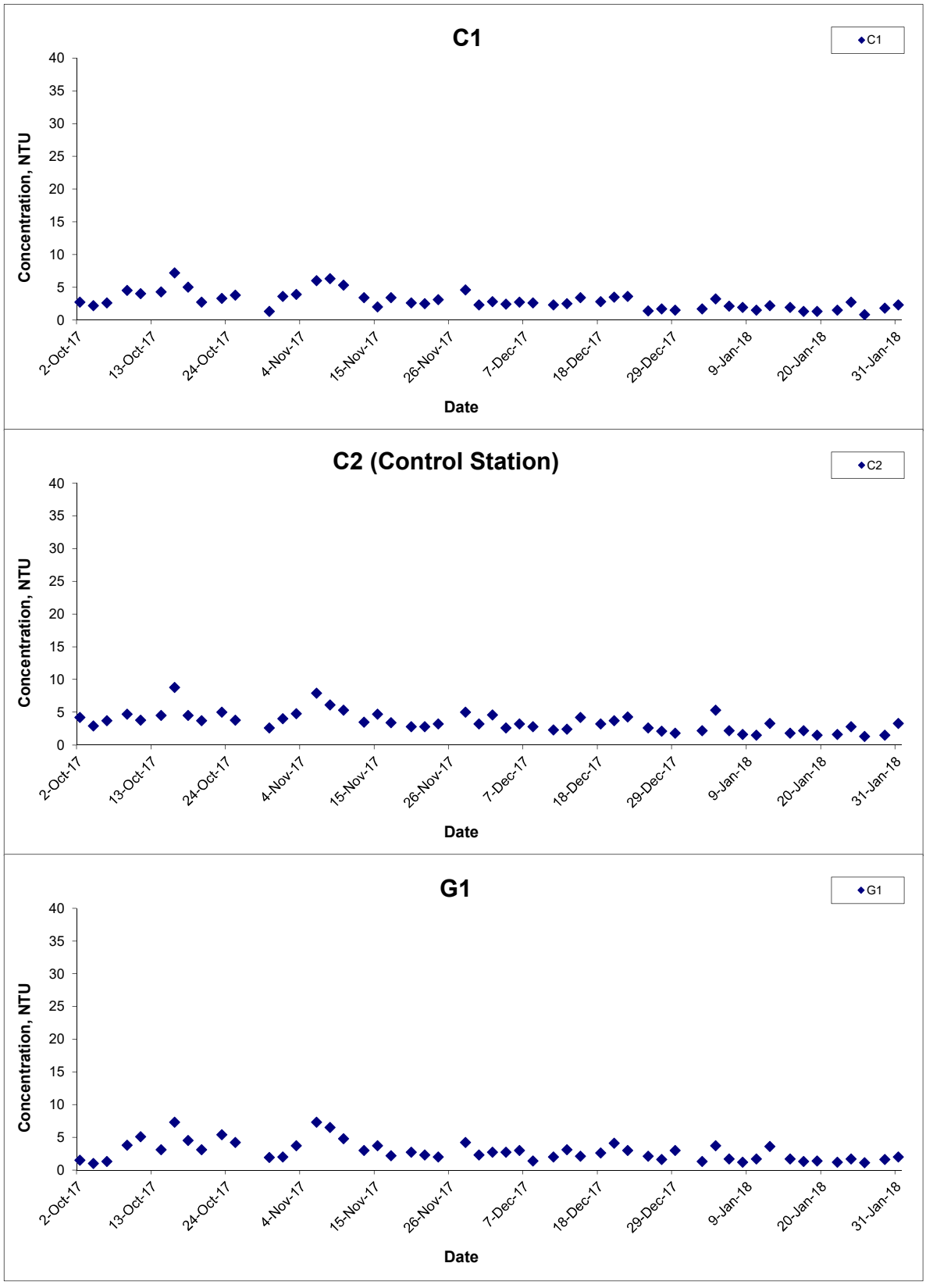
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 31 January 2018

(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	17:17	Surface	1	16.3 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	95.2 94.9	95.1	7.7 7.6	7.7	7.7	1.9 1.7	1.8	2.6	4.8 5.0	4.9	4.2
				Middle	9	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	94.5 94.3	94.4	7.6 7.6	7.6		1.9 1.9	1.9		2.7 2.8	2.8	
				Bottom	17	16.6 16.6	16.6	8.2 8.2	8.2	33.1 33.1	33.1	92.9 93.3	93.1	7.4 7.5	7.5	7.5	4.2 4.1	4.2		4.9 4.8	4.9	
C2	Cloudy	Moderate	16:18	Surface	1	16.3 16.4	16.4	8.2 8.2	8.2	32.7 32.7	32.7	94.4 93.8	94.1	7.6 7.5	7.6	7.5	2.4 2.1	2.3	2.8	3.2 3.3	3.3	3.1
				Middle	16	16.5 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	92.7 92.5	92.6	7.4 7.4	7.4		3.0 3.0	3.0		3.0 3.1	3.1	
				Bottom	31	16.5 16.5	16.5	8.2 8.2	8.2	32.9 33.0	33.0	92.3 92.0	92.2	7.4 7.4	7.4	7.4	3.0 3.2	3.1		3.0 2.9	3.0	
G1	Cloudy	Moderate	16:47	Surface	1	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	95.3 95.1	95.2	7.6 7.6	7.6	7.6	1.7 1.5	1.6	2.2	3.9 3.8	3.9	4.3
				Middle	4	16.5 16.5	16.5	8.2 8.2	8.2	32.9 33.0	33.0	94.5 94.1	94.3	7.6 7.5	7.6		2.3 2.5	2.4		4.9 4.9	4.9	
				Bottom	7	16.6 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.1 93.4	93.3	7.4 7.5	7.5	7.5	2.7 2.7	2.7		4.0 4.0	4.0	
G2	Cloudy	Moderate	16:37	Surface	1	16.3 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	96.0 95.0	95.5	7.7 7.6	7.7	7.7	2.0 1.8	1.9	2.2	4.9 5.0	5.0	3.9
				Middle	5	16.5 16.5	16.5	8.2 8.2	8.2	33.0 33.0	33.0	94.5 94.3	94.4	7.6 7.5	7.6		2.0 2.1	2.1		2.7 2.6	2.7	
				Bottom	9	16.5 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.8 93.2	93.5	7.5 7.4	7.5	7.5	2.5 2.8	2.7		3.9 3.8	3.9	
G3	Cloudy	Moderate	16:52	Surface	1	16.4 16.5	16.5	8.2 8.2	8.2	32.8 32.8	32.8	95.4 93.6	94.5	7.6 7.5	7.6	7.6	2.2 2.3	2.3	2.3	3.2 3.2	3.2	4.3
				Middle	4	16.5 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	93.7 93.7	93.7	7.5 7.5	7.5		2.2 1.9	2.1		4.6 4.6	4.6	
				Bottom	7	16.5 16.5	16.5	8.2 8.2	8.2	33.0 33.0	33.0	92.9 93.3	93.1	7.4 7.5	7.5	7.5	2.4 2.4	2.4		5.1 5.0	5.1	
G4	Cloudy	Moderate	17:02	Surface	1	16.3 16.4	16.4	8.2 8.2	8.2	32.5 32.7	32.6	95.1 94.3	94.7	7.7 7.6	7.7	7.7	1.8 2.0	1.9	2.4	5.5 5.6	5.6	4.6
				Middle	4.5	16.5 16.5	16.5	8.2 8.2	8.2	32.9 33.0	33.0	95.7 94.6	95.2	7.7 7.6	7.7		2.3 2.4	2.4		5.2 5.1	5.2	
				Bottom	8	16.6 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	95.0 93.3	94.2	7.6 7.4	7.5	7.5	2.9 3.1	3.0		3.0 2.9	3.0	
M1	Cloudy	Moderate	16:43	Surface	1	16.5 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	94.7 93.4	94.1	7.6 7.5	7.6	7.6	2.9 3.3	3.1	3.1	3.5 3.5	3.5	4.3
				Middle	3	16.5 16.5	16.5	8.2 8.2	8.2	33.0 32.9	33.0	93.9 93.3	93.6	7.5 7.5	7.5		3.0 3.0	3.0		5.3 5.3	5.3	
				Bottom	5	16.6 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.0 93.0	93.0	7.4 7.4	7.4	7.4	3.4 3.1	3.3		4.0 4.0	4.0	
M2	Cloudy	Moderate	16:32	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.8 32.8	32.8	96.6 94.7	95.7	7.8 7.6	7.7	7.6	1.7 1.6	1.7	2.4	3.1 3.1	3.1	4.1
				Middle	6	16.5 16.5	16.5	8.2 8.2	8.2	33.0 33.0	33.0	94.4 94.0	94.2	7.5 7.5	7.5		2.5 2.6	2.6		4.6 4.5	4.6	
				Bottom	11	16.5 16.5	16.5	8.2 8.2	8.2	33.0 33.0	33.0	93.1 92.8	93.0	7.4 7.4	7.4	7.4	2.9 2.8	2.9		4.7 4.7	4.7	
M3	Cloudy	Moderate	16:57	Surface	1	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.8	32.8	94.0 93.8	93.9	7.5 7.5	7.5	7.5	1.8 1.7	1.8	1.9	3.9 4.0	4.0	4.1
				Middle	4	16.4 16.4	16.4	8.2 8.2	8.2	32.8 32.9	32.9	94.1 93.9	94.0	7.5 7.5	7.5		1.7 1.8	1.8		3.7 3.6	3.7	
				Bottom	7	16.5 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	93.4 93.6	93.5	7.5 7.5	7.5	7.5	2.2 2.0	2.1		4.7 4.7	4.7	
M4	Cloudy	Moderate	16:26	Surface	1	16.3 16.3	16.3	8.2 8.2	8.2	32.8 32.9	32.9	95.4 94.8	95.1	7.7 7.6	7.7	7.7	2.0 1.7	1.9	2.6	2.7 2.8	2.8	3.4
				Middle	5	16.6 16.5	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.5 94.5	94.0	7.5 7.6	7.6		2.9 2.6	2.8		3.1 3.1	3.1	
				Bottom	9	16.6 16.6	16.6	8.2 8.2	8.2	33.0 33.0	33.0	93.0 93.3	93.2	7.4 7.5	7.5	7.5	3.0 2.9	3.0		4.2 4.2	4.2	
M5	Cloudy	Moderate	17:10	Surface	1	16.2 16.2	16.2	8.2 8.2	8.2	32.8 32.8	32.8	96.6 94.7	95.7	7.8 7.6	7.7	7.7	1.9 1.6	1.8	2.3	2.5 2.5	2.5	4.8
				Middle	5.5	16.4 16.4	16.4	8.2 8.2	8.2	32.9 32.9	32.9	94.6 94.2	94.4	7.6 7.6	7.6		2.2 2.0	2.1		6.4 6.5	6.5	
				Bottom	10	16.6 16.6	16.6	8.2 8.2	8.2	33.1 33.1	33.1	93.8 93.5	93.7	7.5 7.5	7.5	7.5	3.0 3.1	3.1		5.5 5.3	5.4	
M6	Cloudy	Moderate	17:06	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	7.6	- -	-	2.4	- -	-	4.8
				Middle	2	16.5 16.5	16.5	8.2 8.2	8.2	32.9 32.9	32.9	94.7 94.4	94.6	7.6 7.6	7.6		2.3 2.4	2.4		4.8 4.7	4.8	
				Bottom	-	- -	-	- -	-	- -	-	- -	-	- -	-	-	- -	-		- -	-	

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

Turbidity (Depth-averaged) at Mid-Ebb Tide



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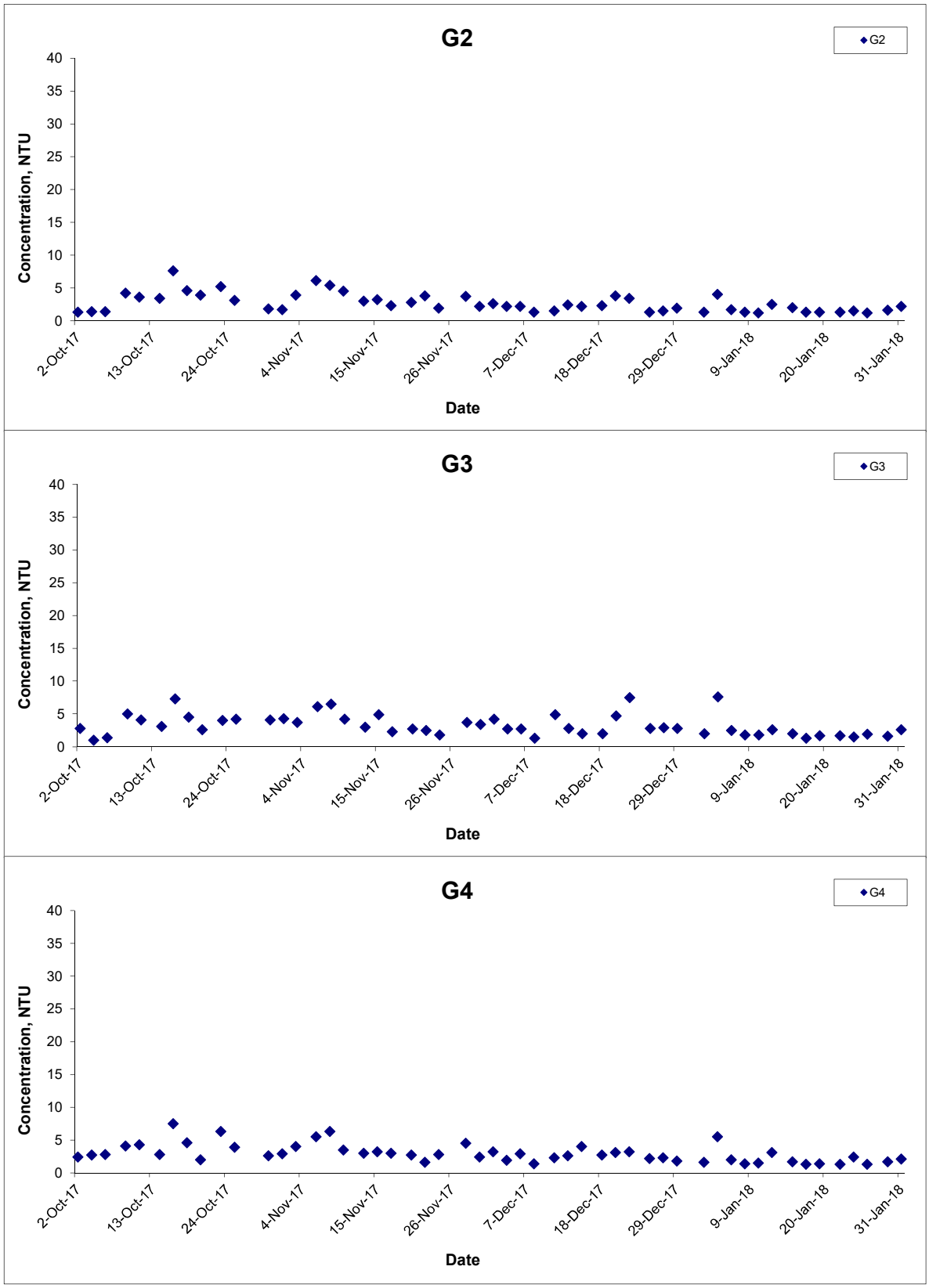
Turbidity (Depth-averaged) at Mid-Ebb Tide



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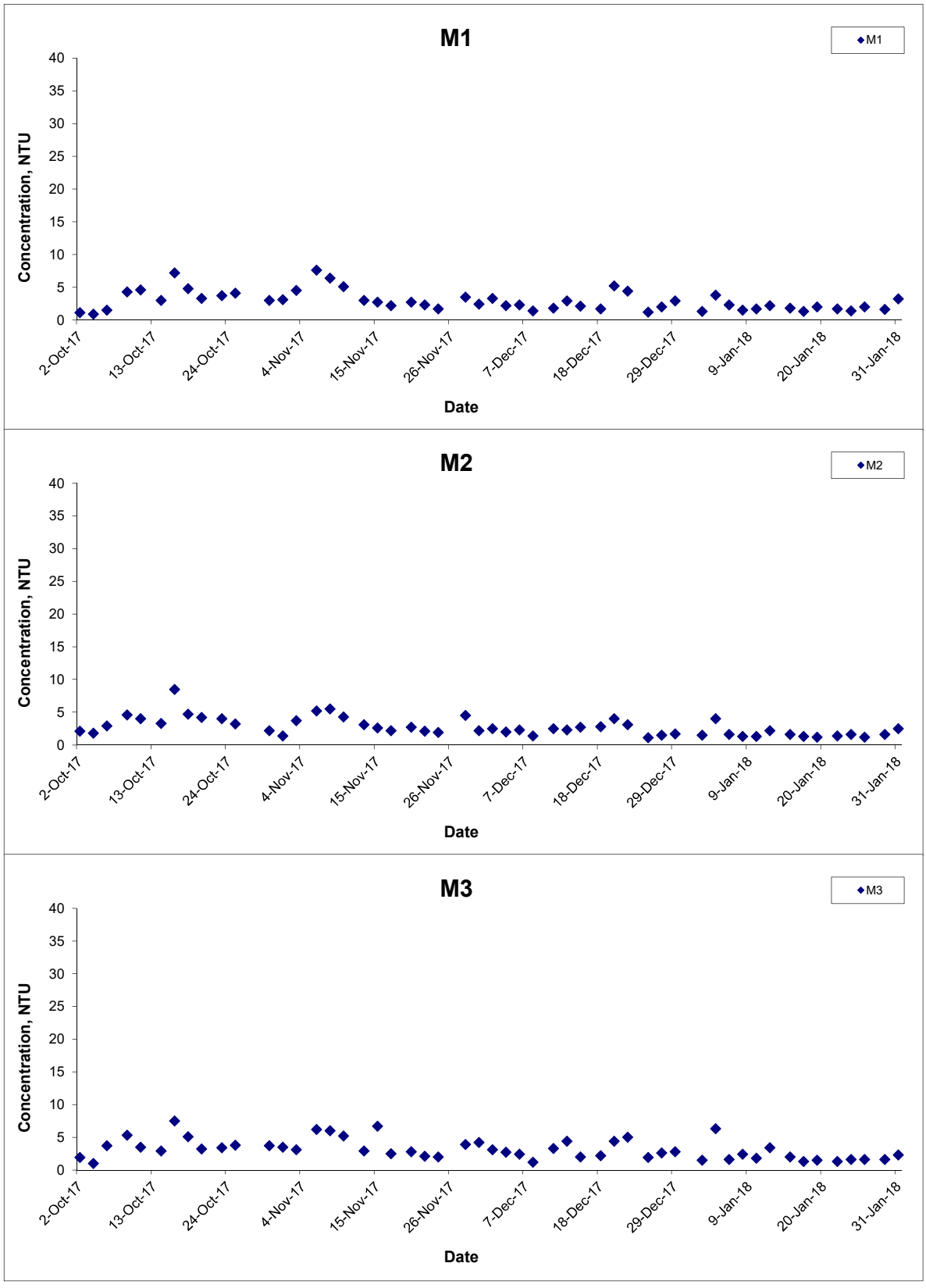
Turbidity (Depth-averaged) at Mid-Ebb Tide



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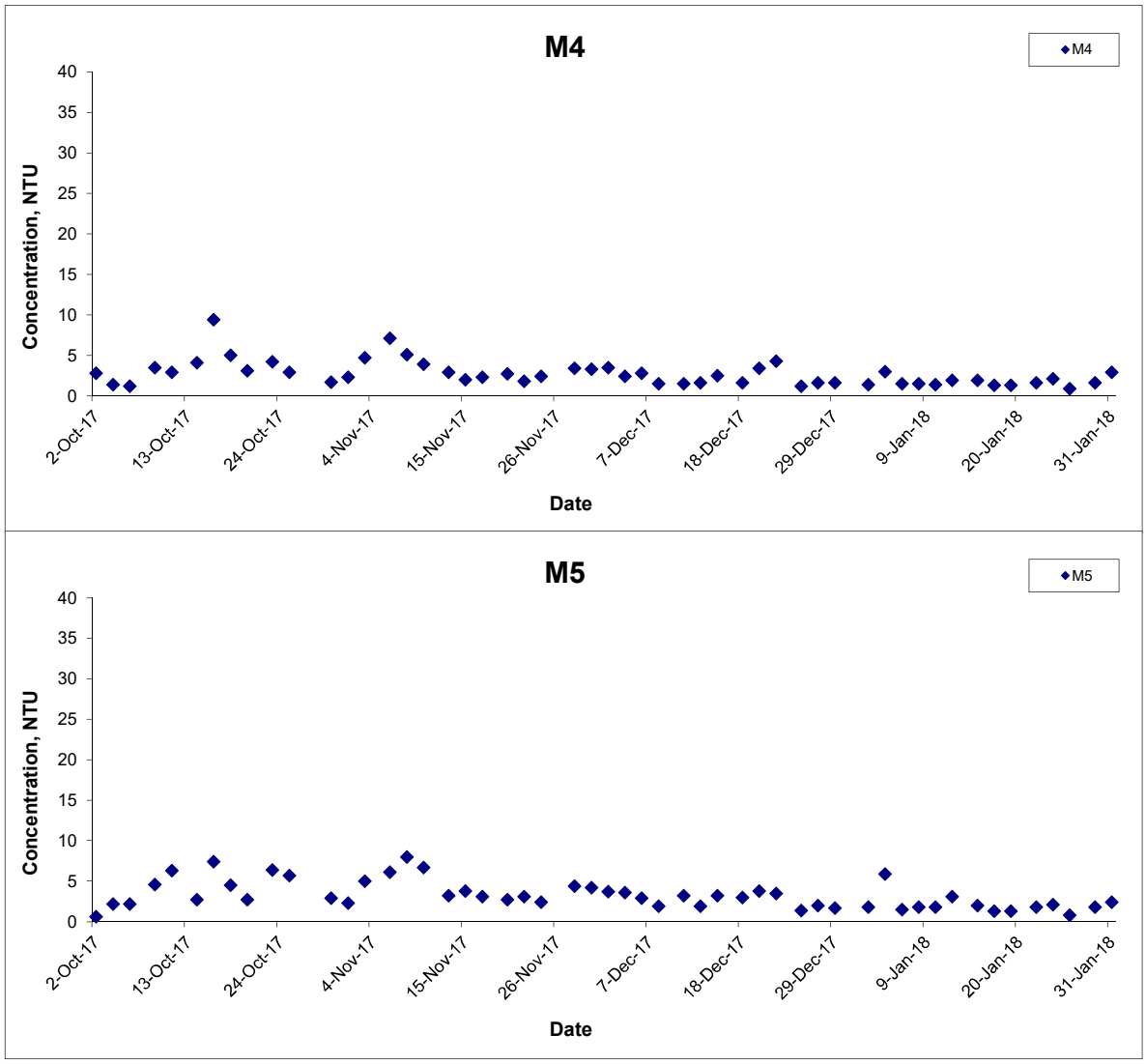
Turbidity (Depth-averaged) at Mid-Ebb Tide



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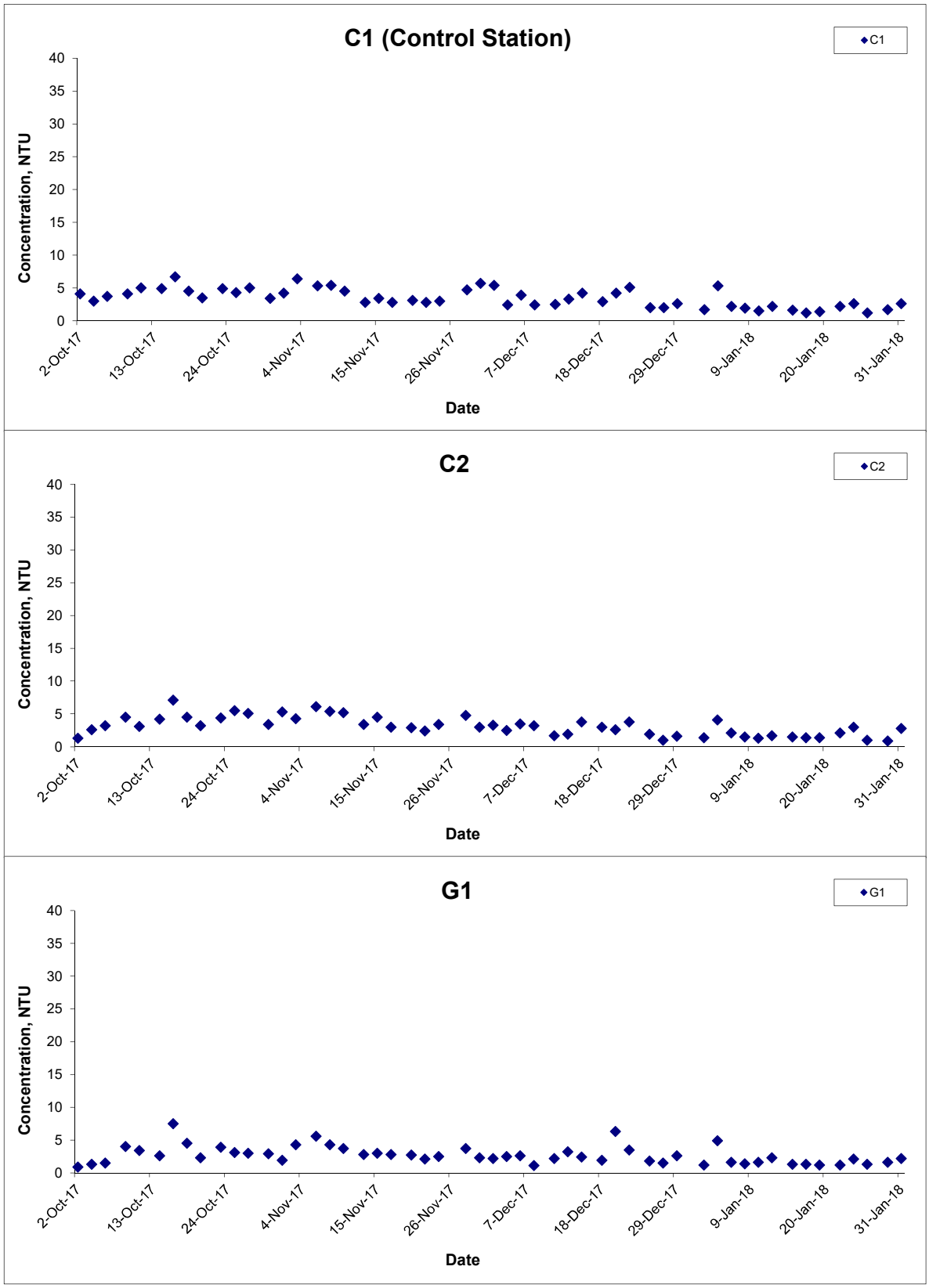
Turbidity (Depth-averaged) at Mid-Flood Tide



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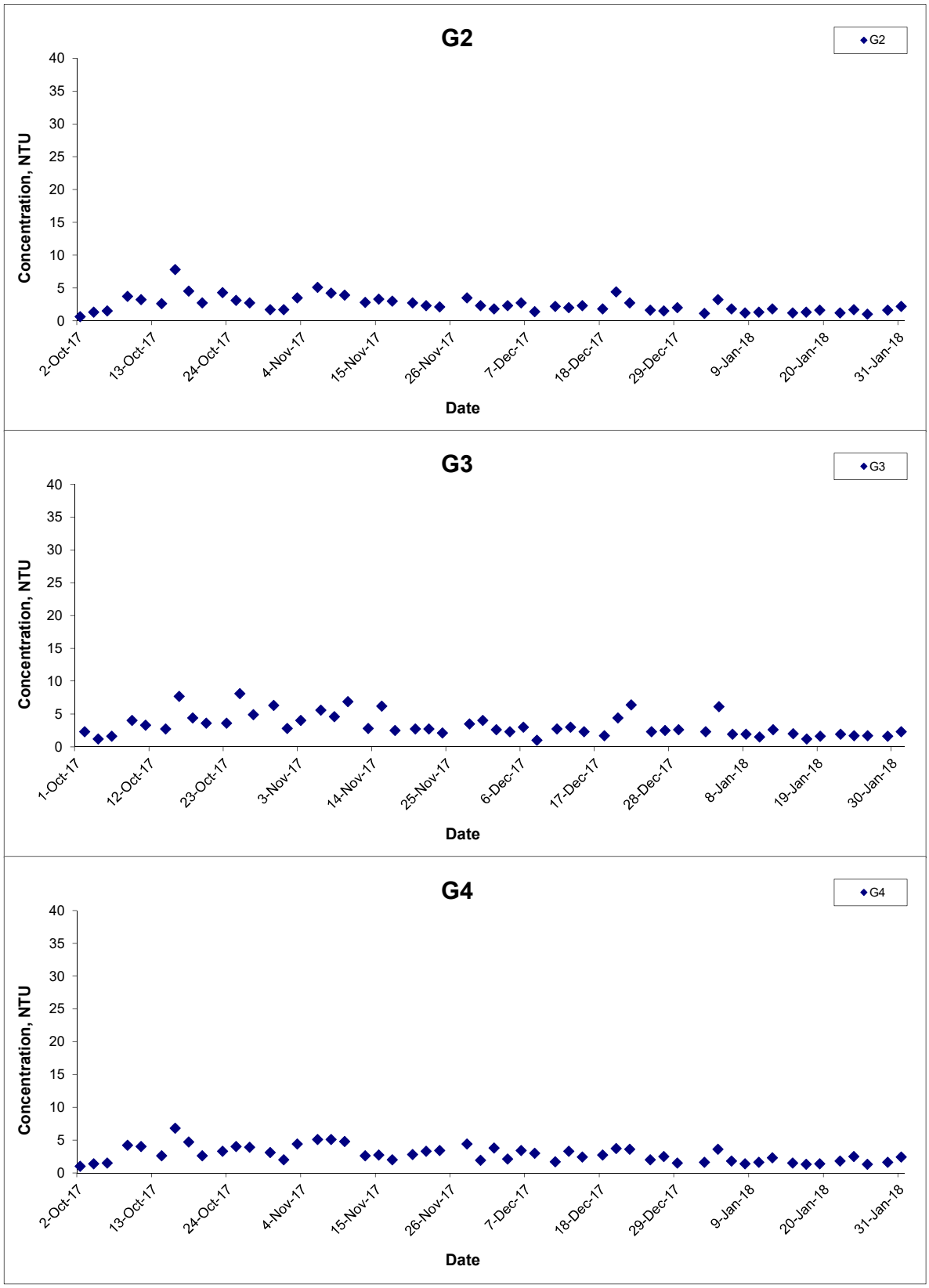
Turbidity (Depth-averaged) at Mid-Flood Tide



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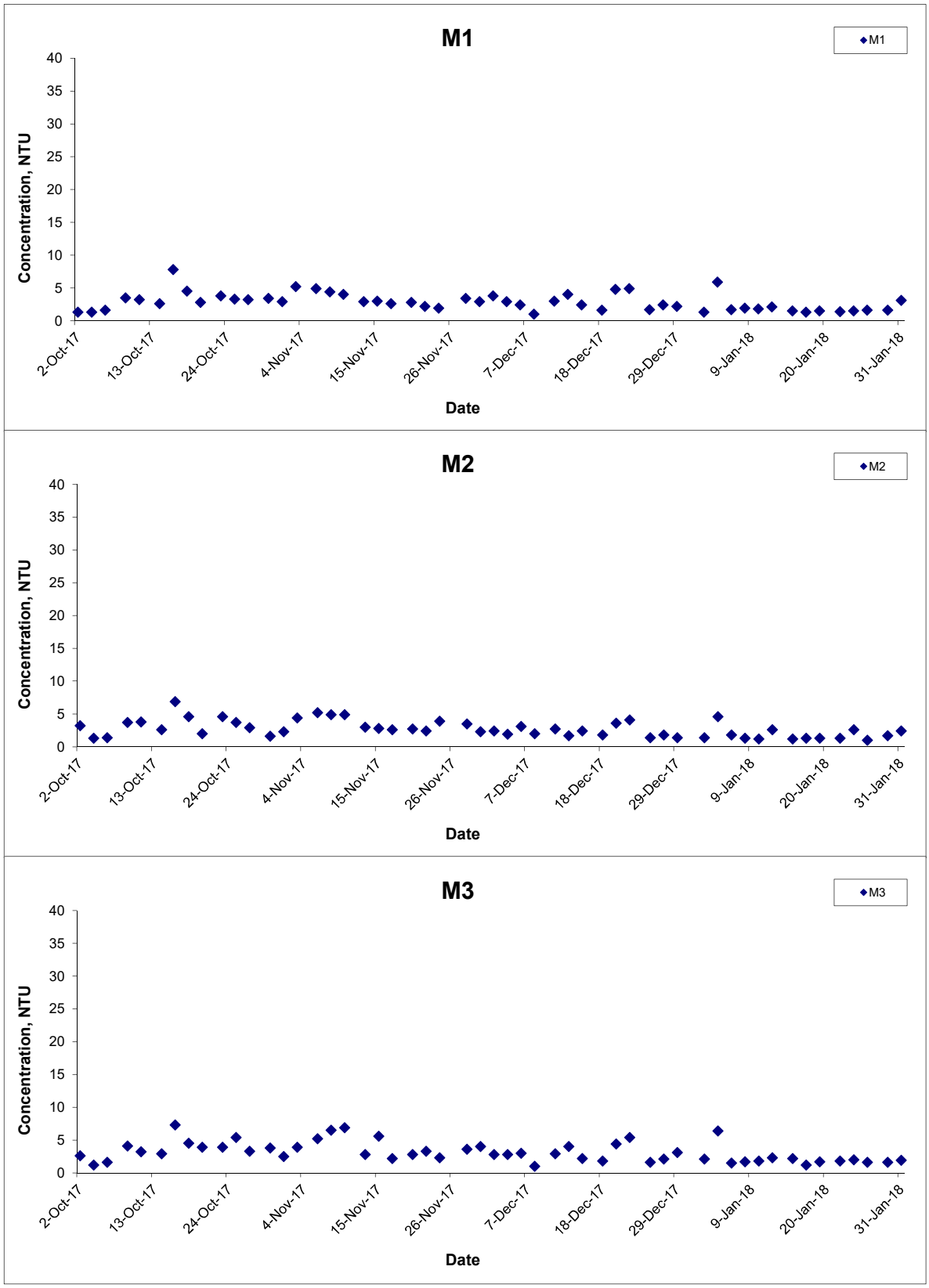
Turbidity (Depth-averaged) at Mid-Flood Tide



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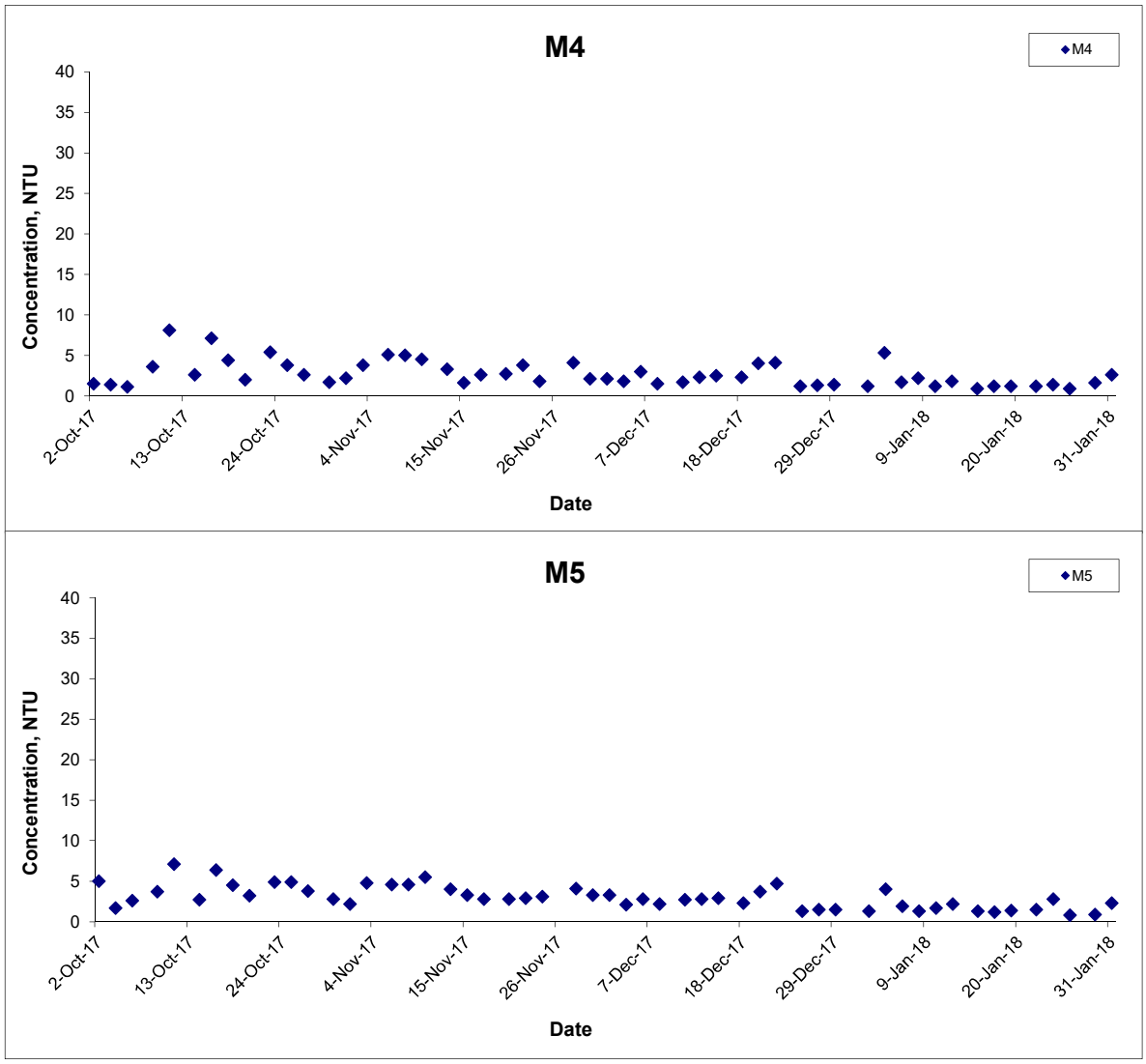
Turbidity (Depth-averaged) at Mid-Flood Tide



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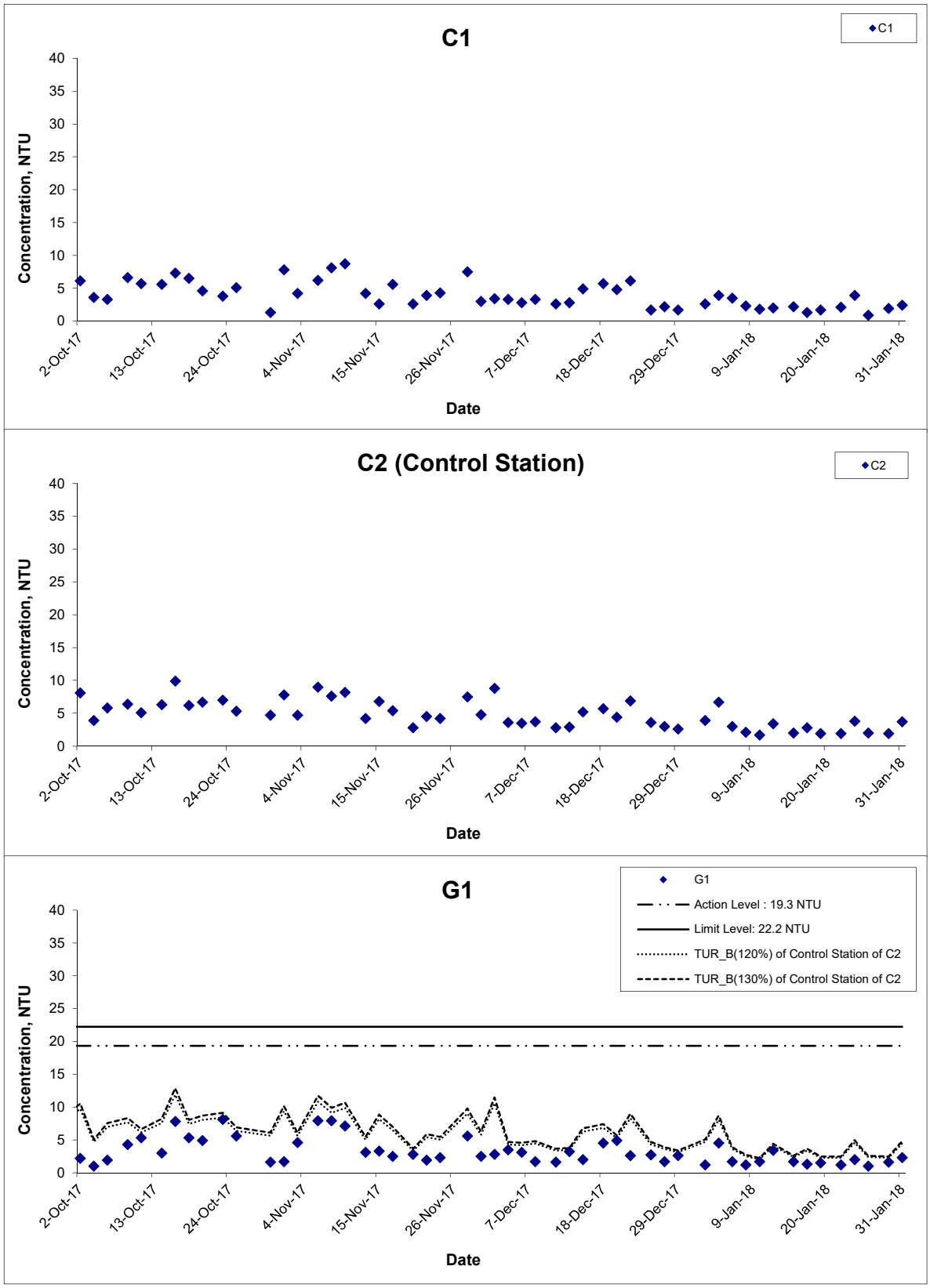
Turbidity (Bottom) at Mid-Ebb Tide



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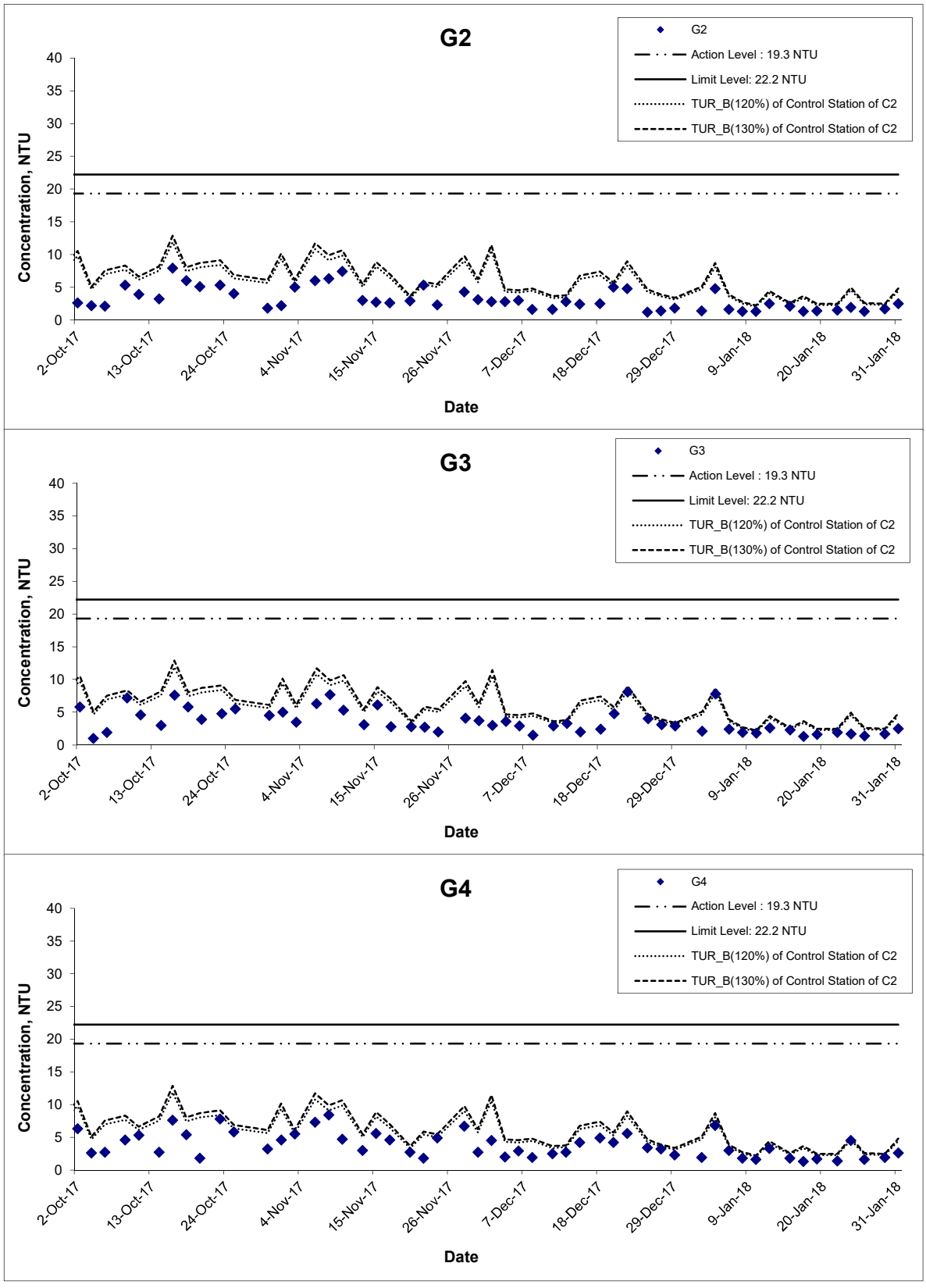
Turbidity (Bottom) at Mid-Ebb Tide



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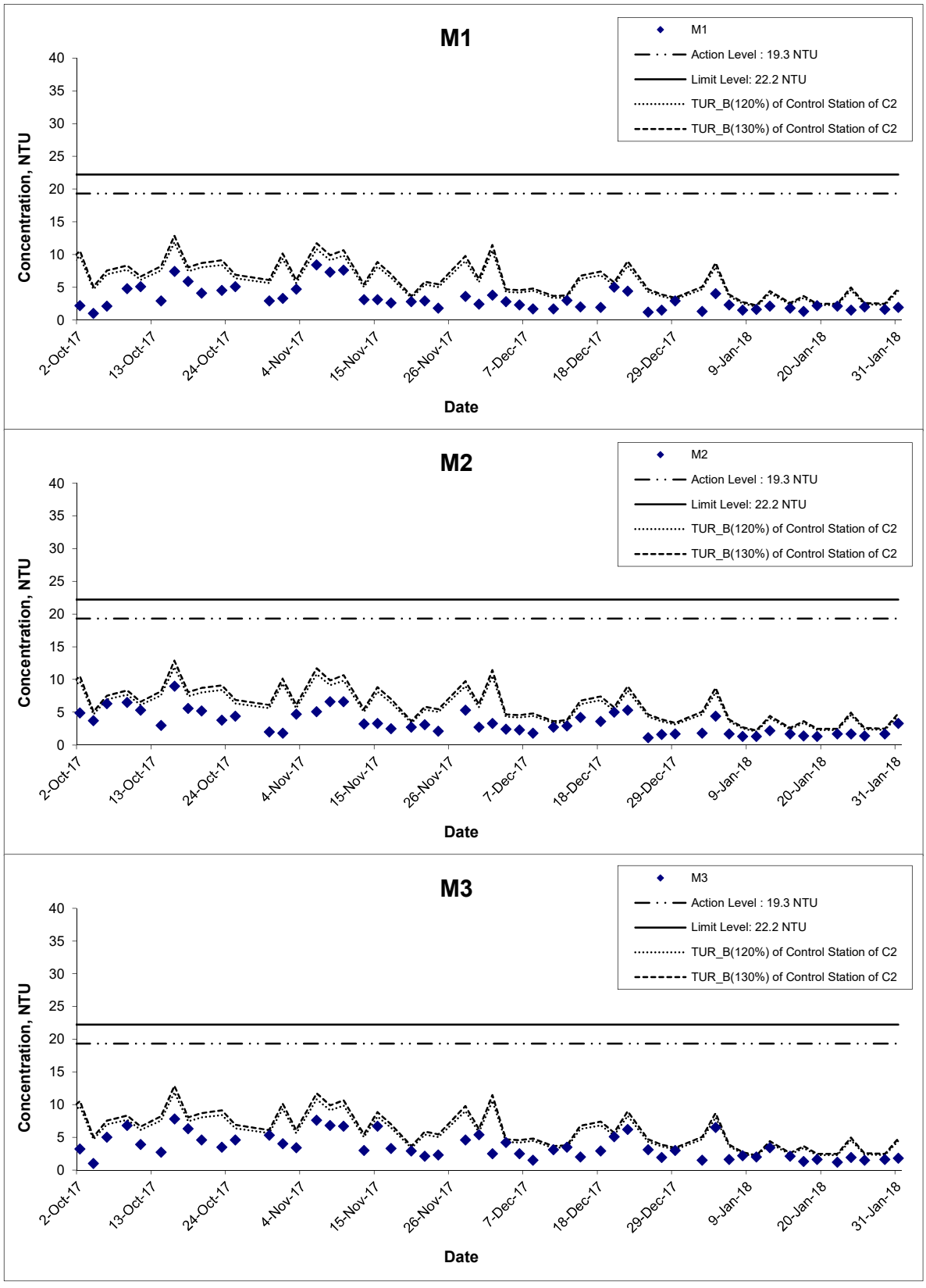
Turbidity (Bottom) at Mid-Ebb Tide



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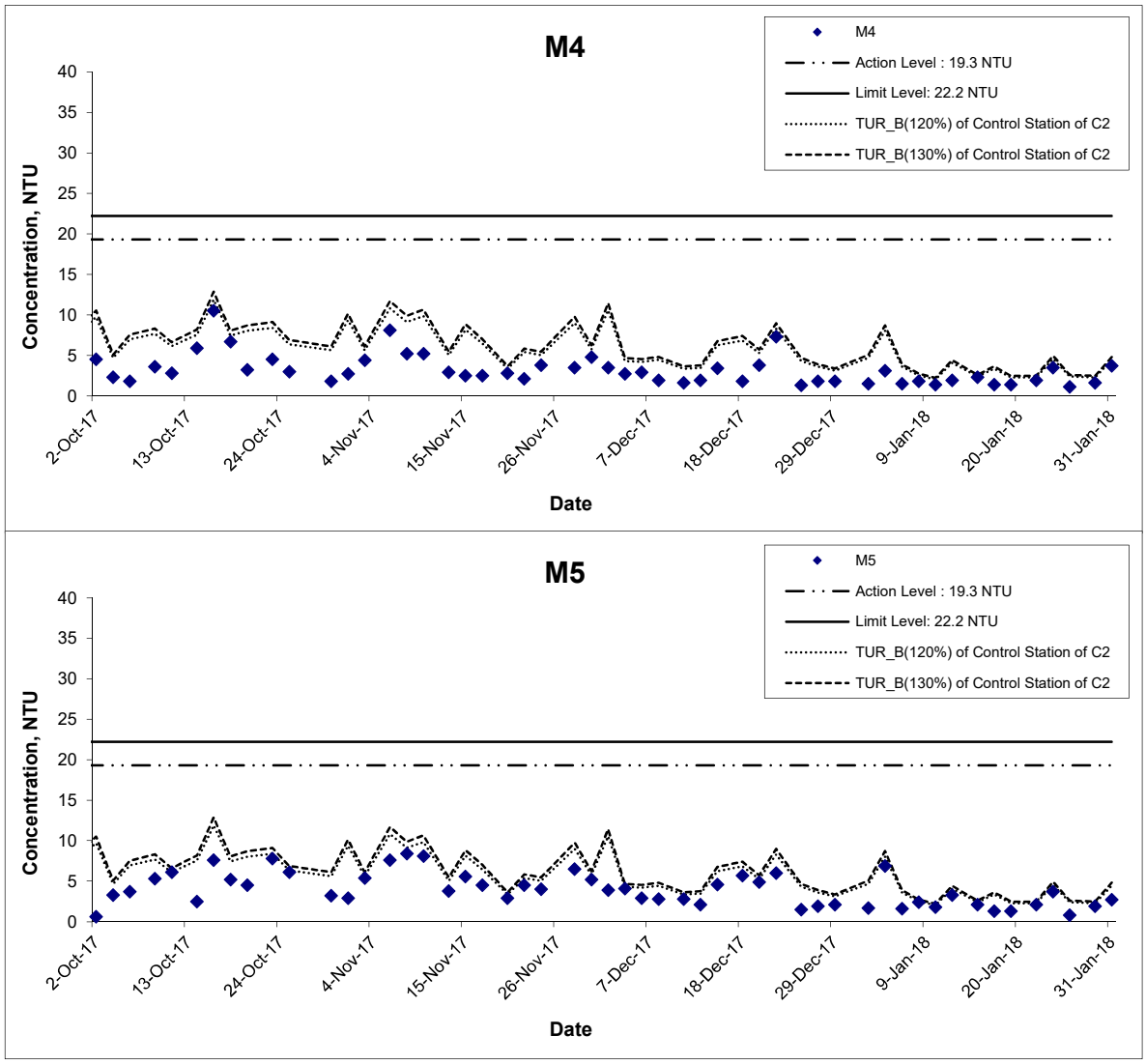
Turbidity (Bottom) at Mid-Ebb Tide



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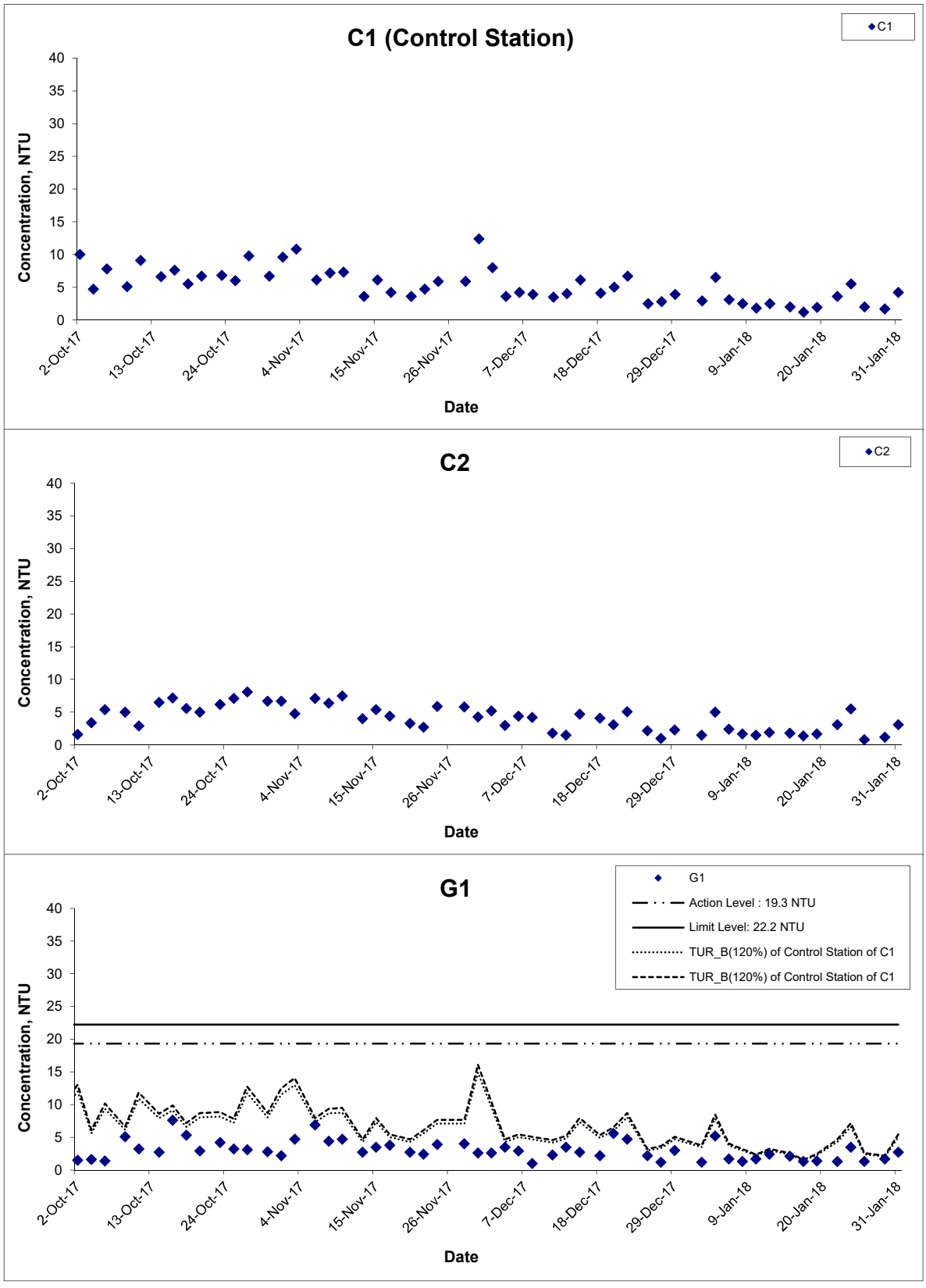
Turbidity (Bottom) at Mid-Flood Tide



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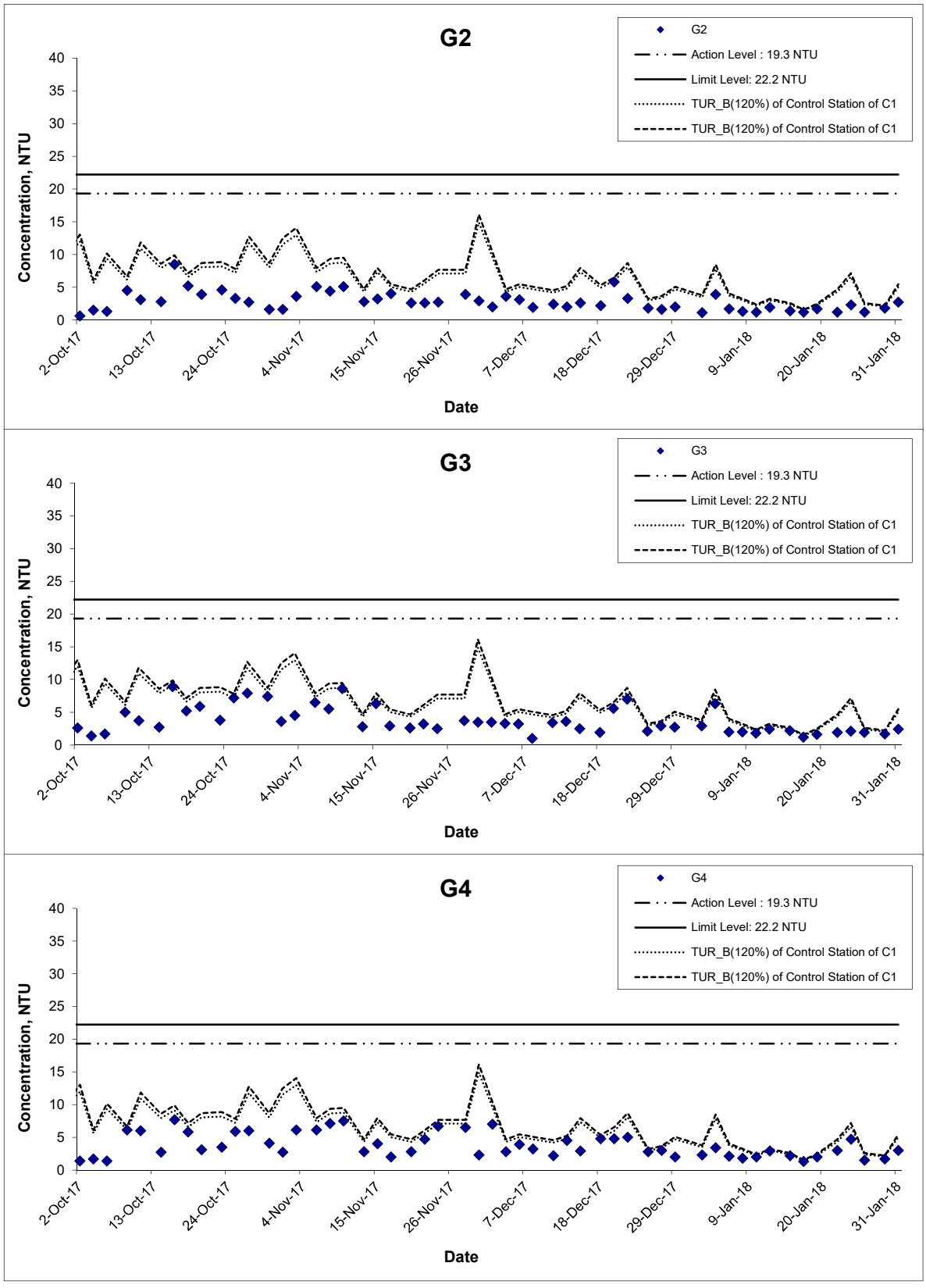
Turbidity (Bottom) at Mid-Flood Tide



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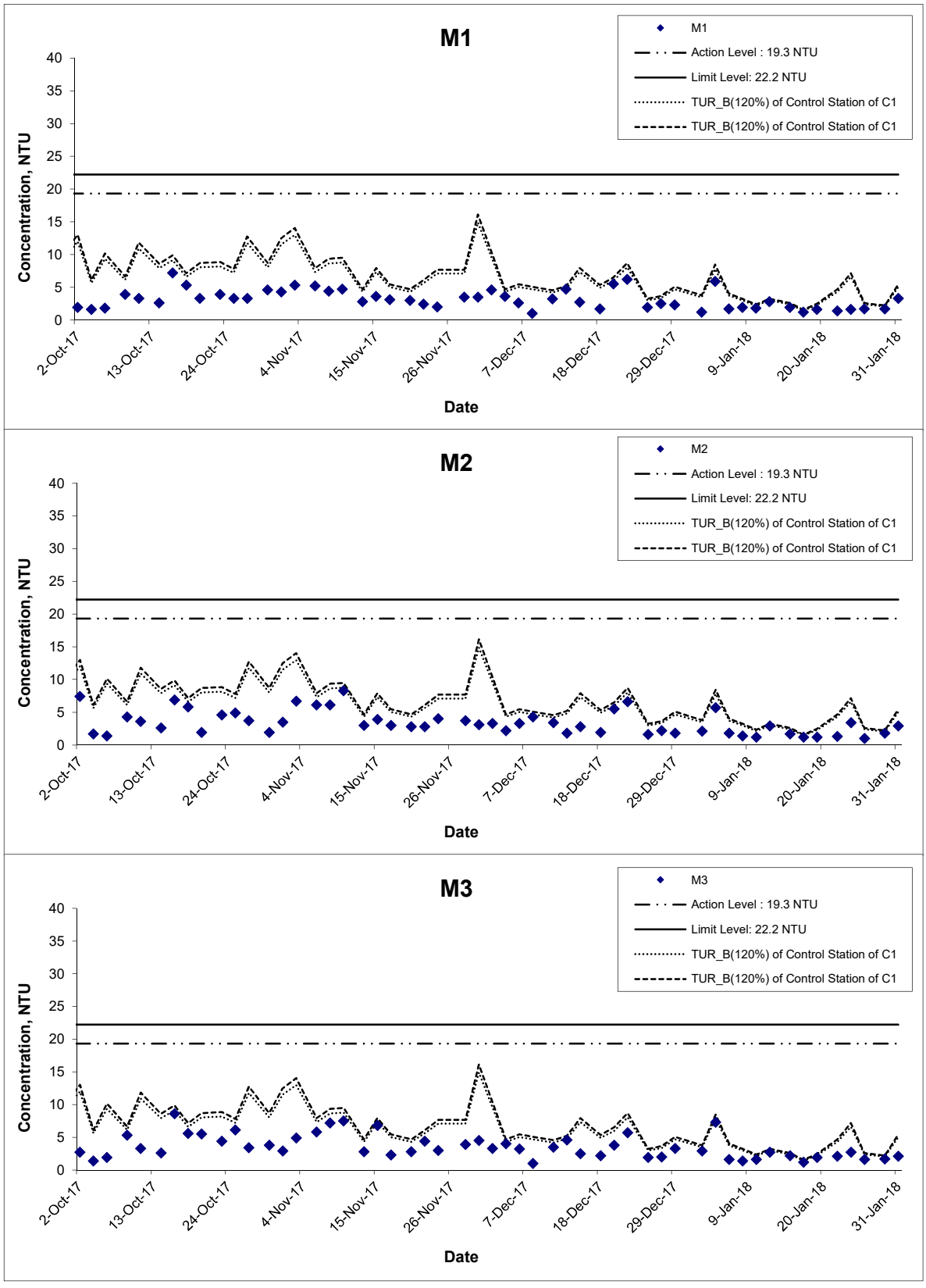
Turbidity (Bottom) at Mid-Flood Tide



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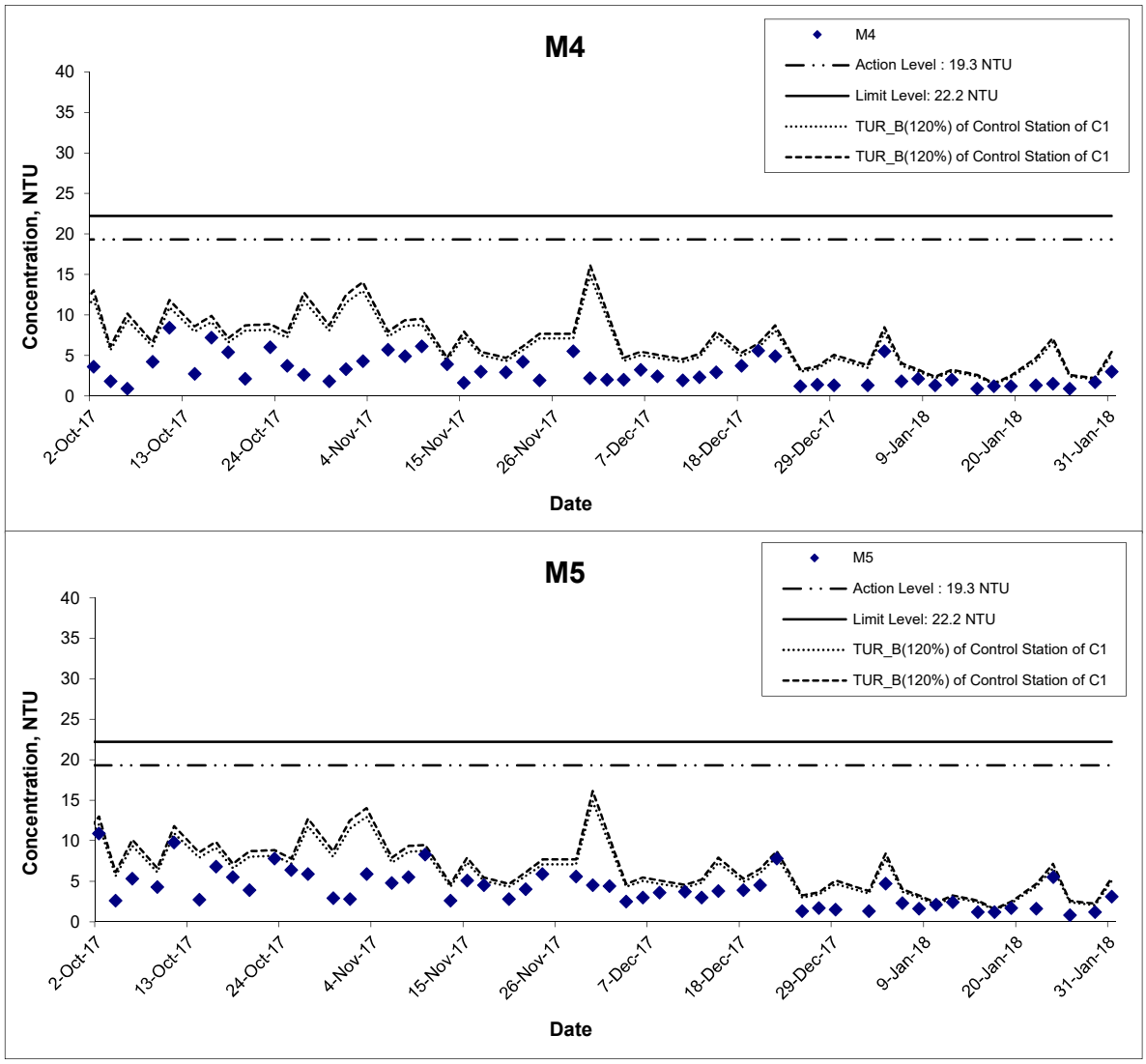
Turbidity (Bottom) at Mid-Flood Tide



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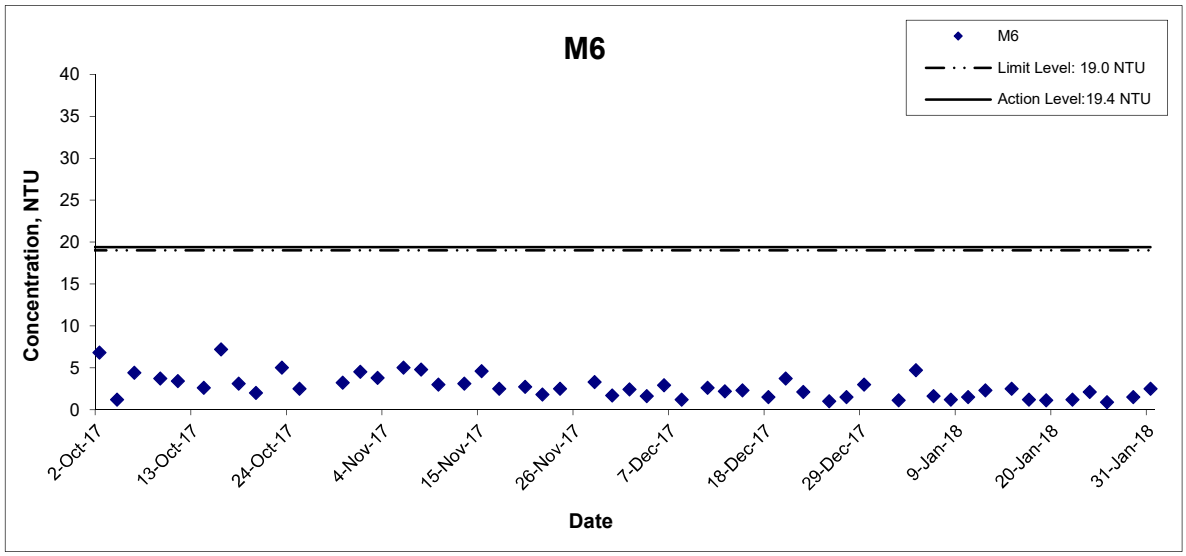
Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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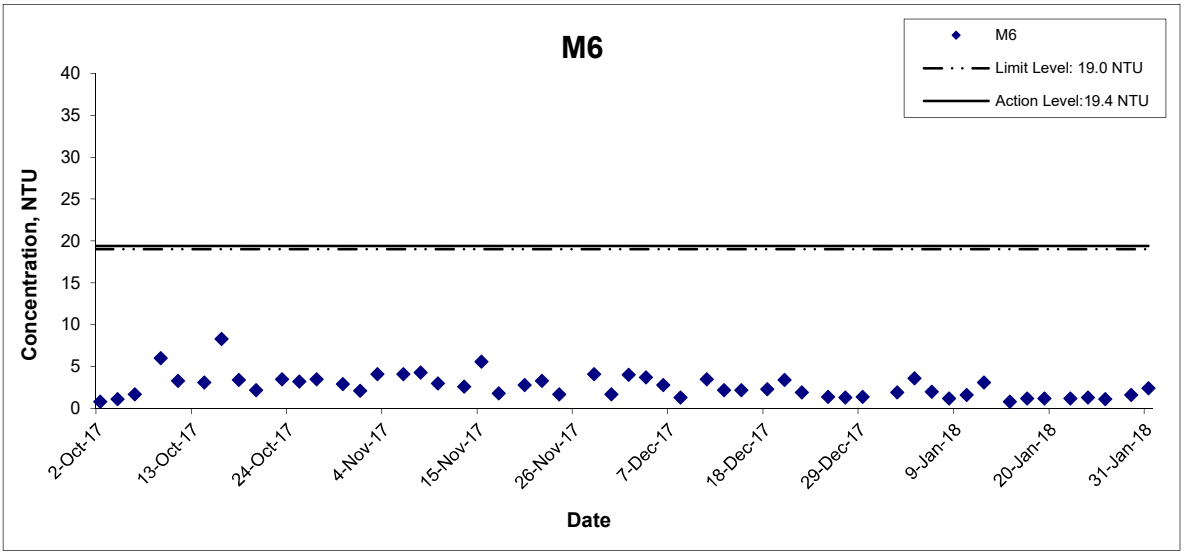
Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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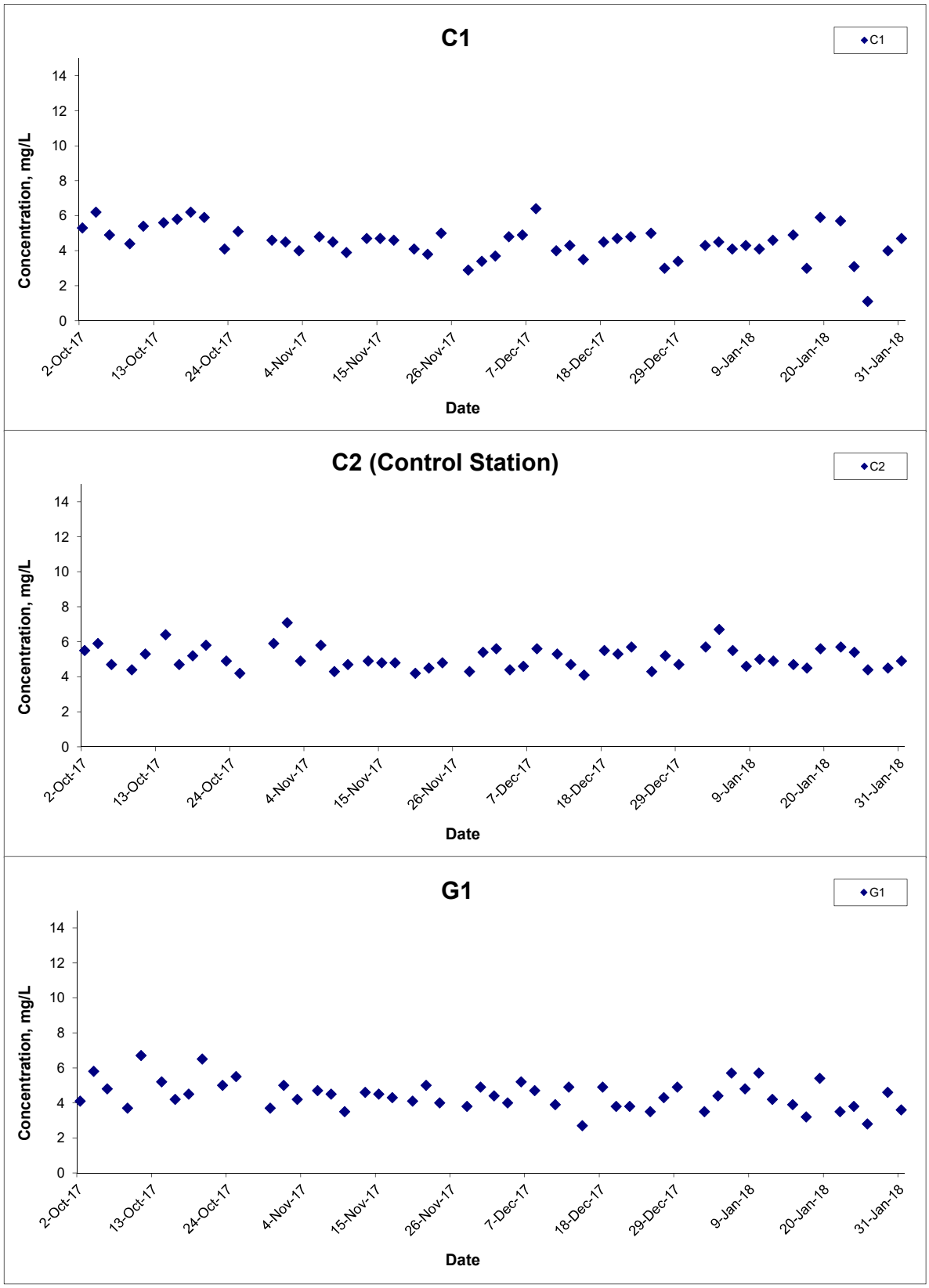
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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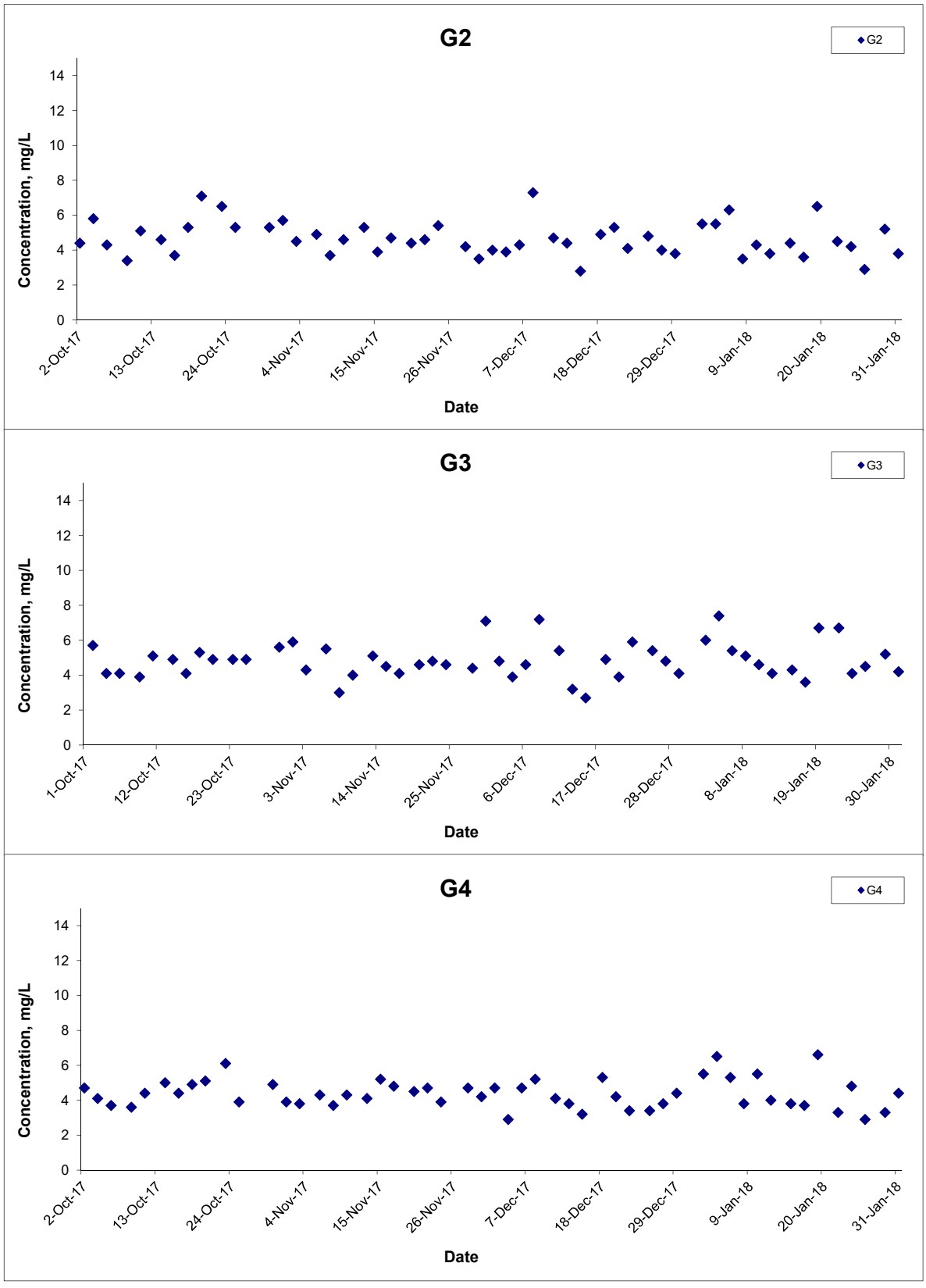
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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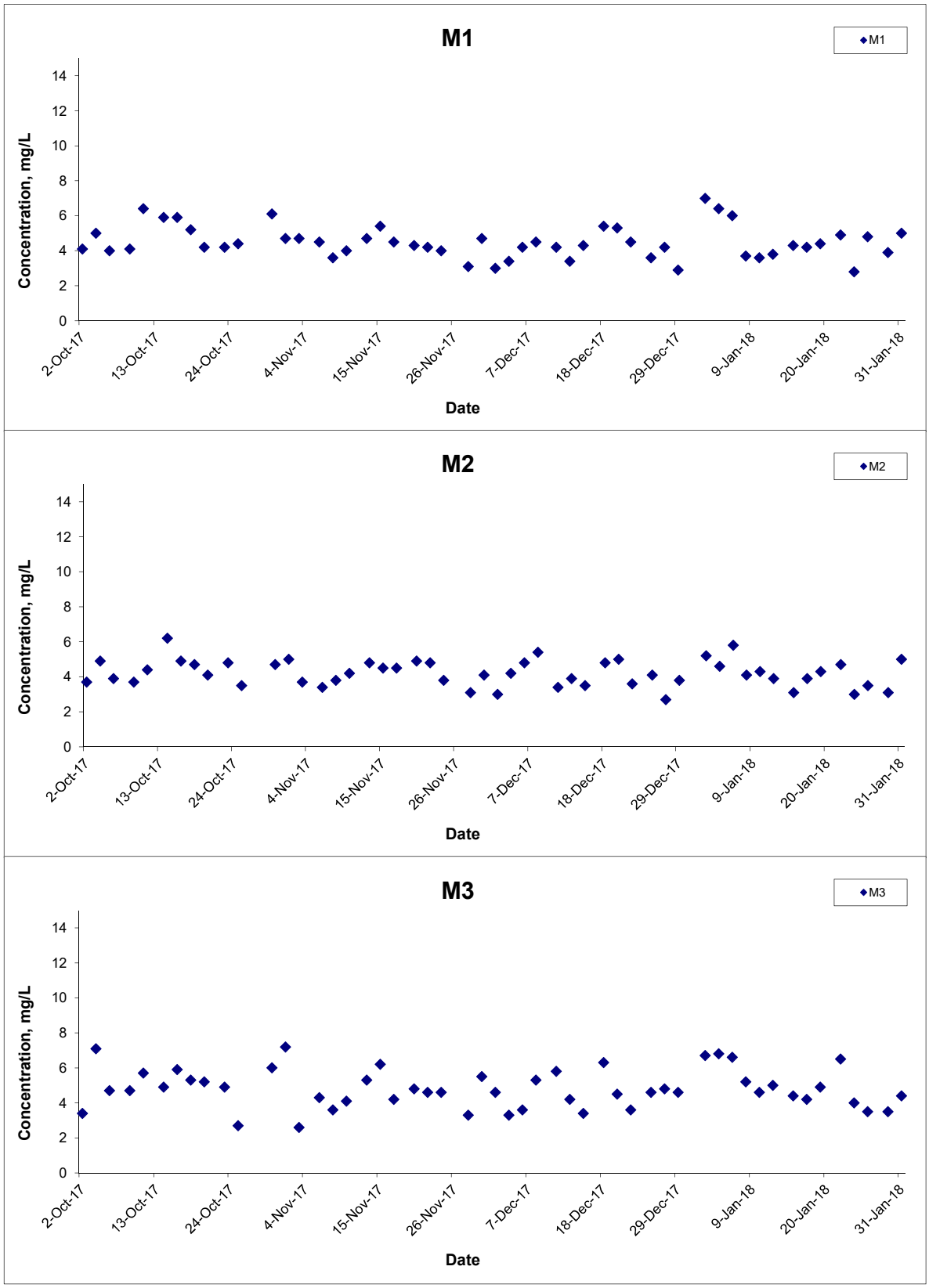
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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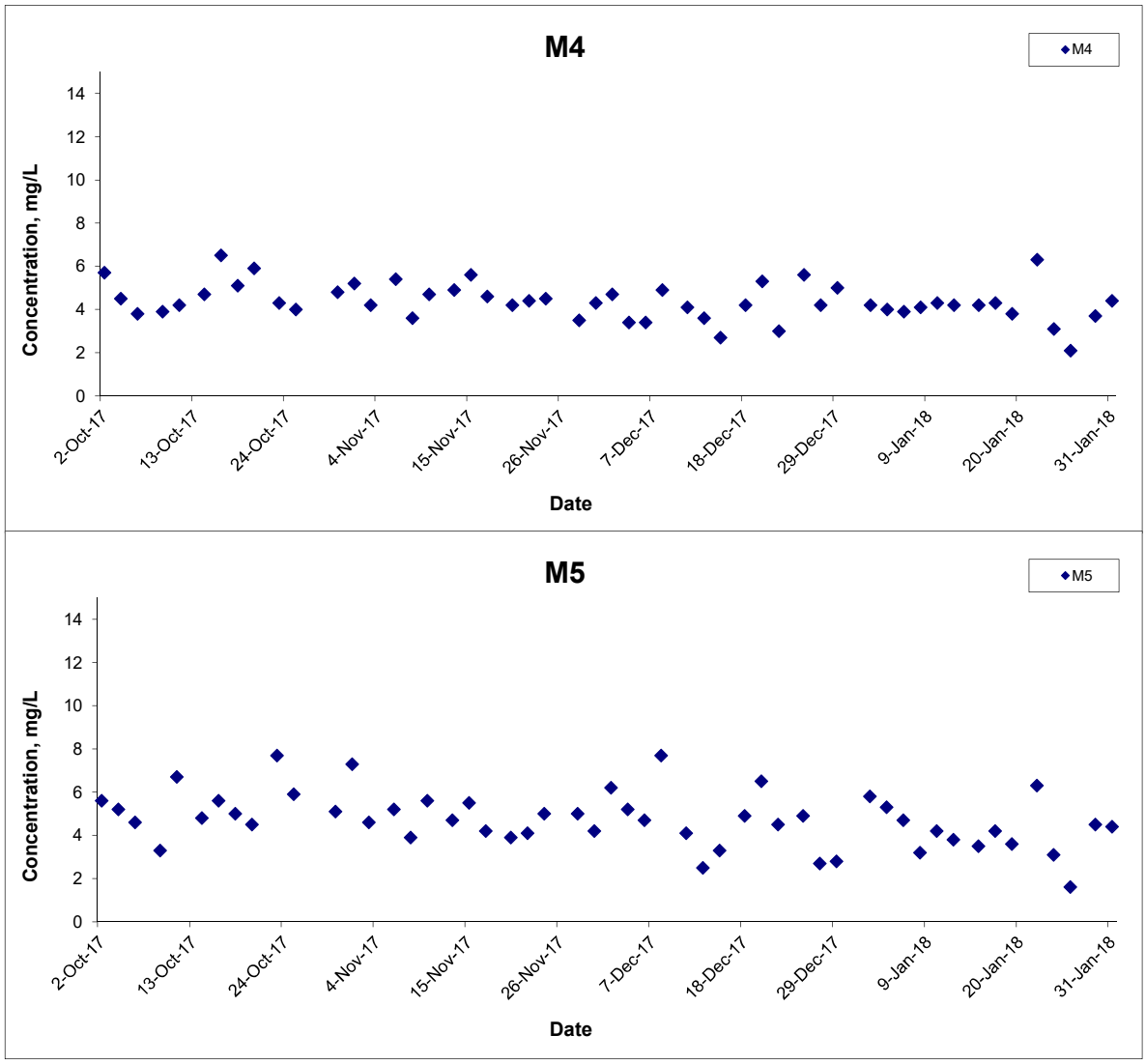

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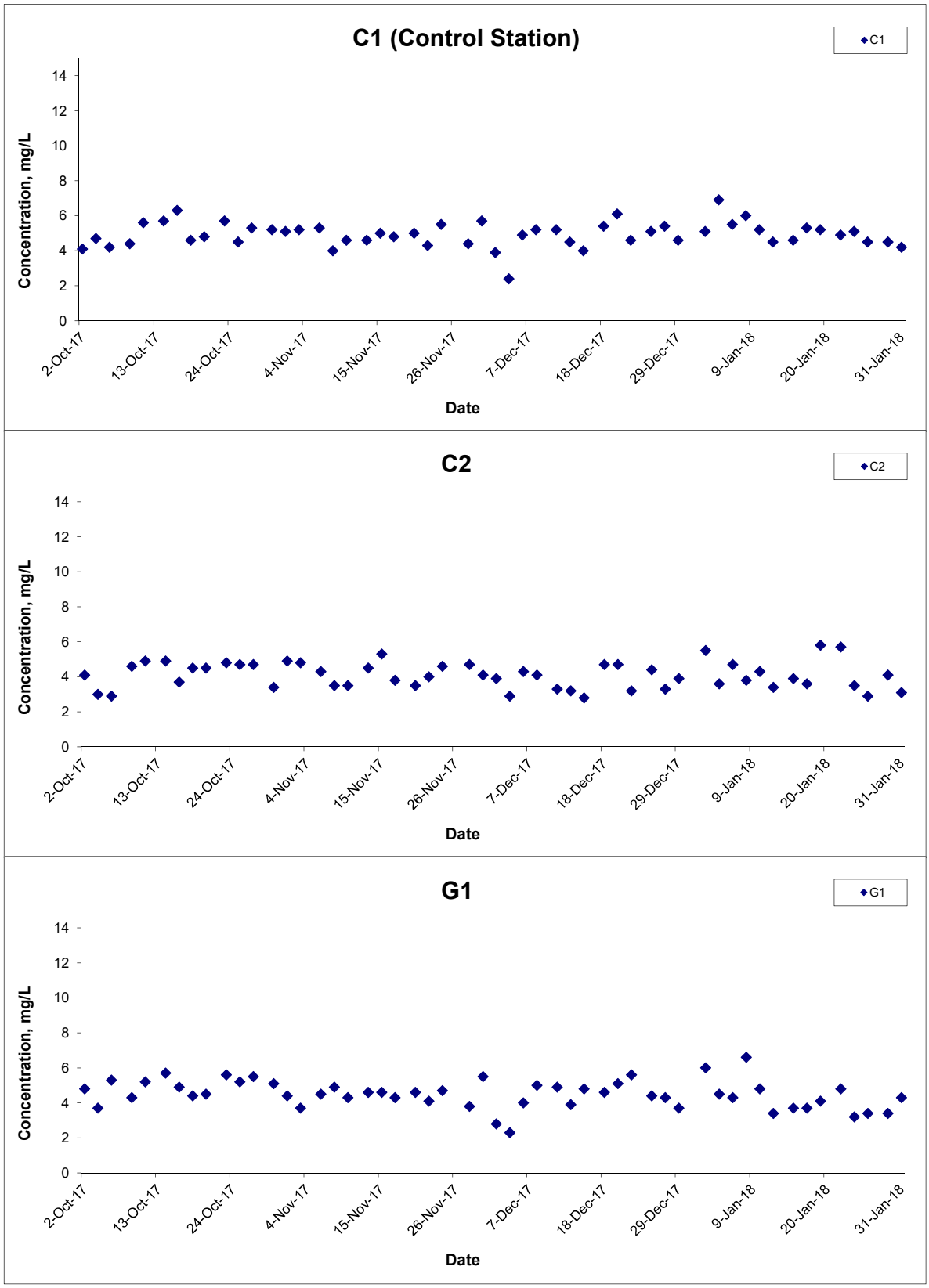

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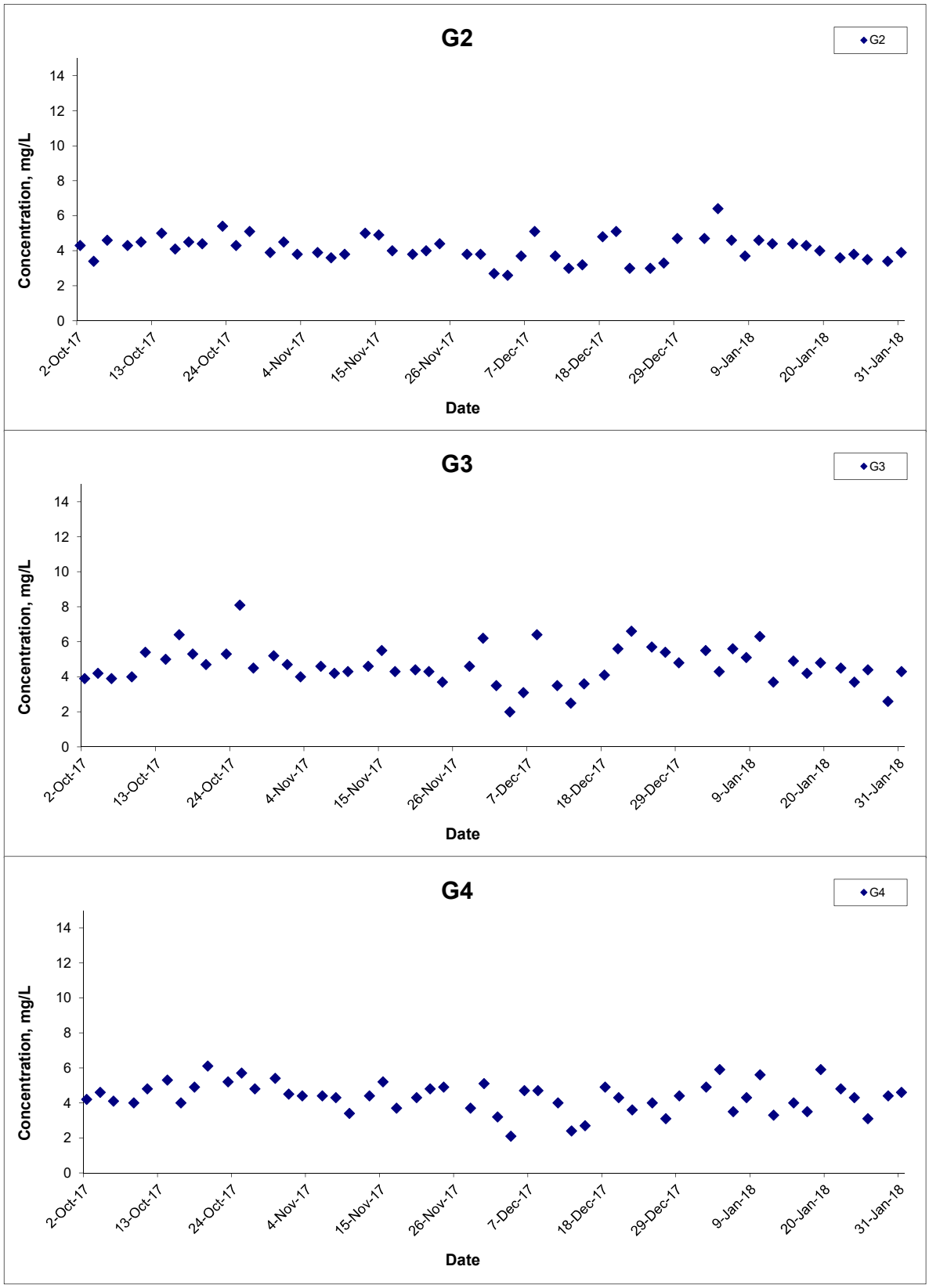
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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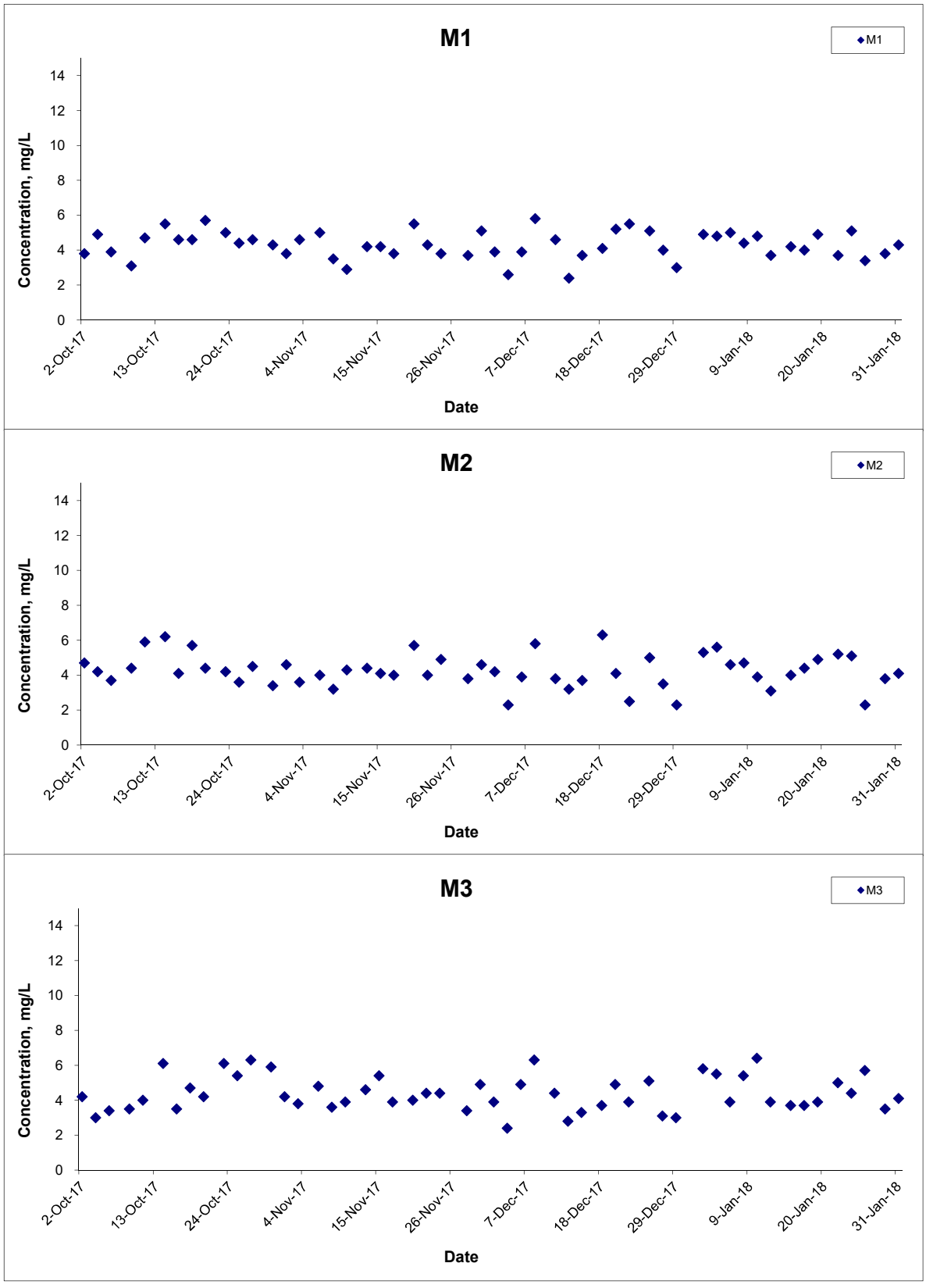

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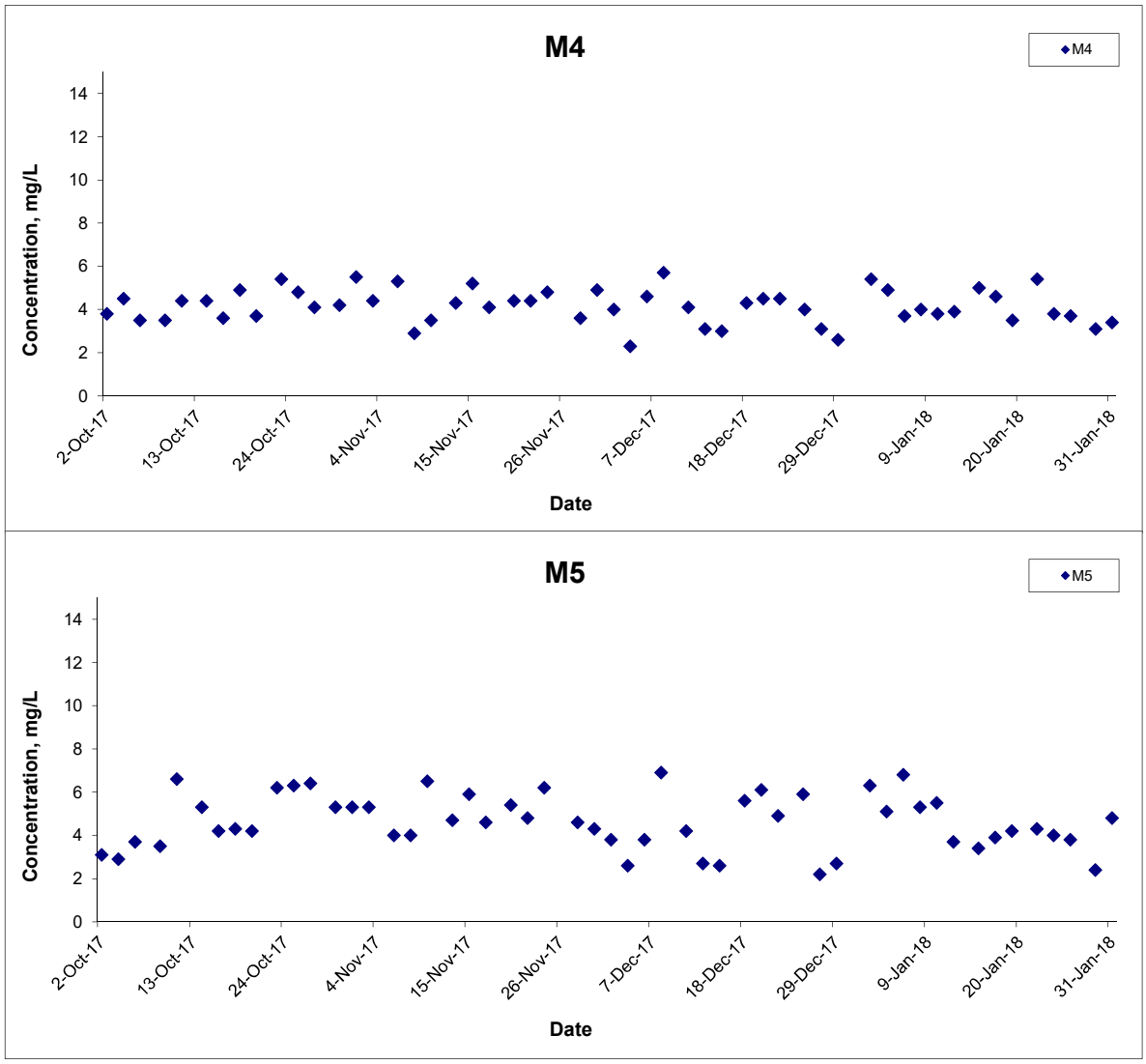
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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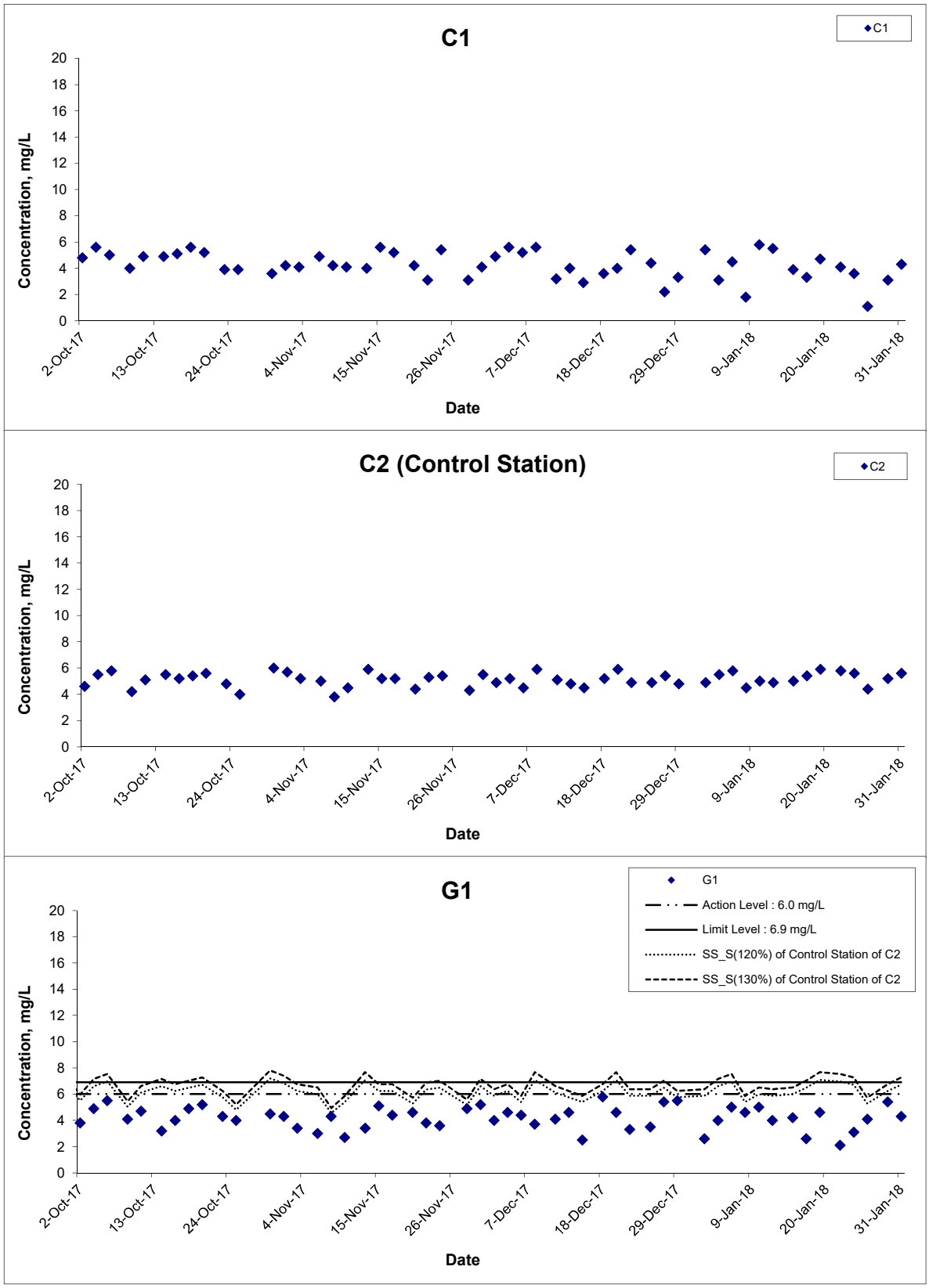
Suspended Solids (Surface) at Mid-Ebb Tide



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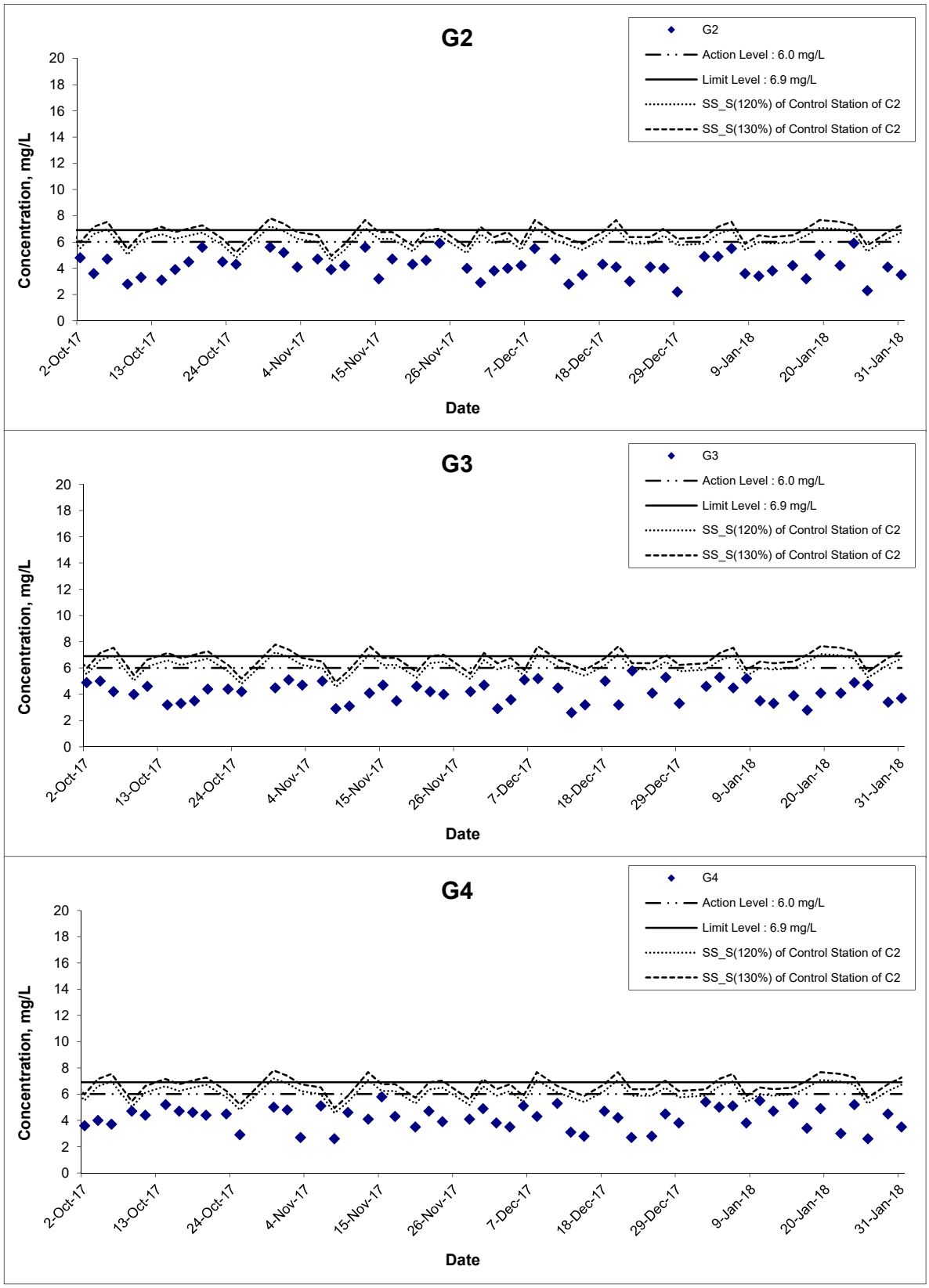
Suspended Solids (Surface) at Mid-Ebb Tide



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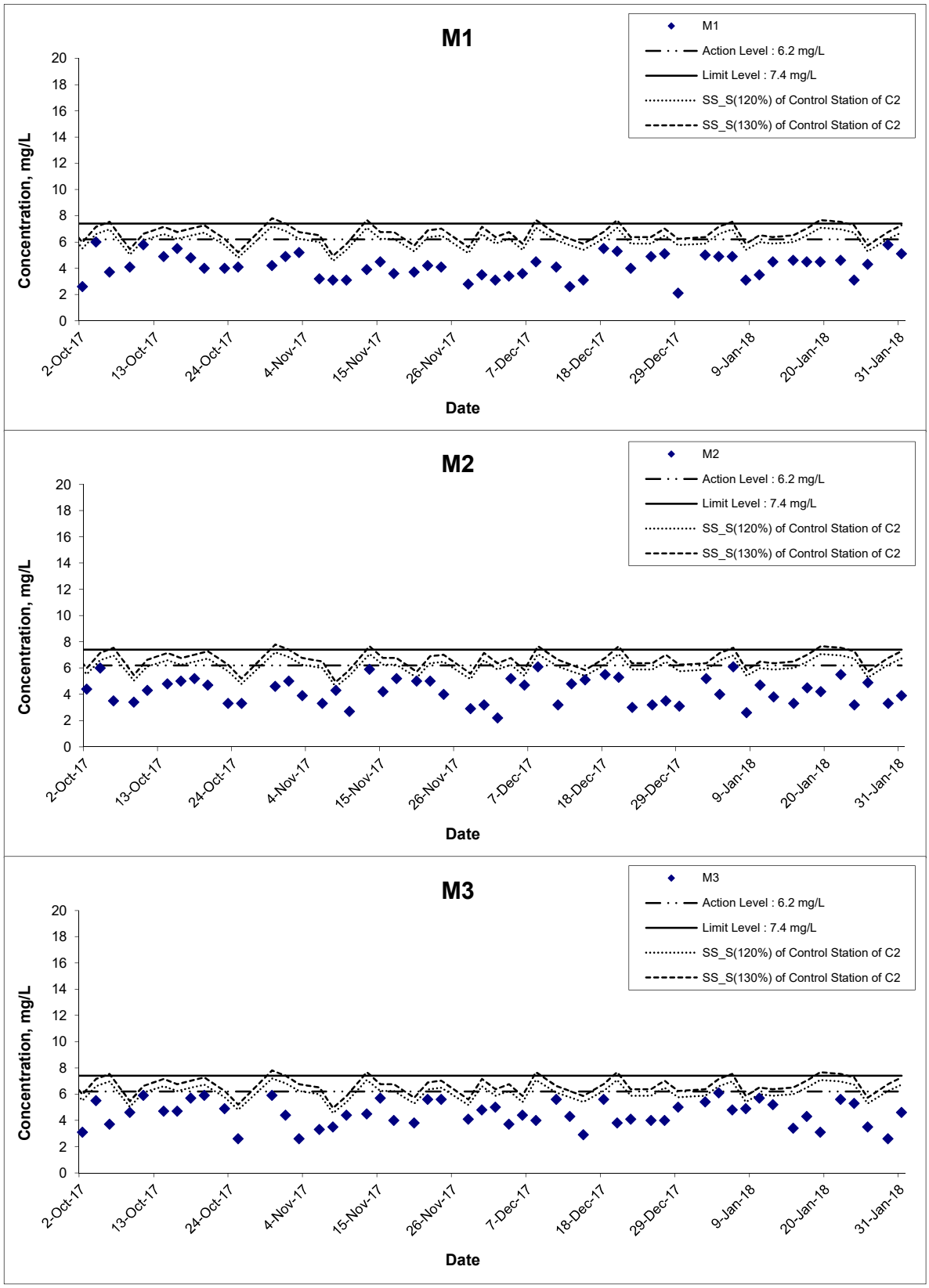
Suspended Solids (Surface) at Mid-Ebb Tide



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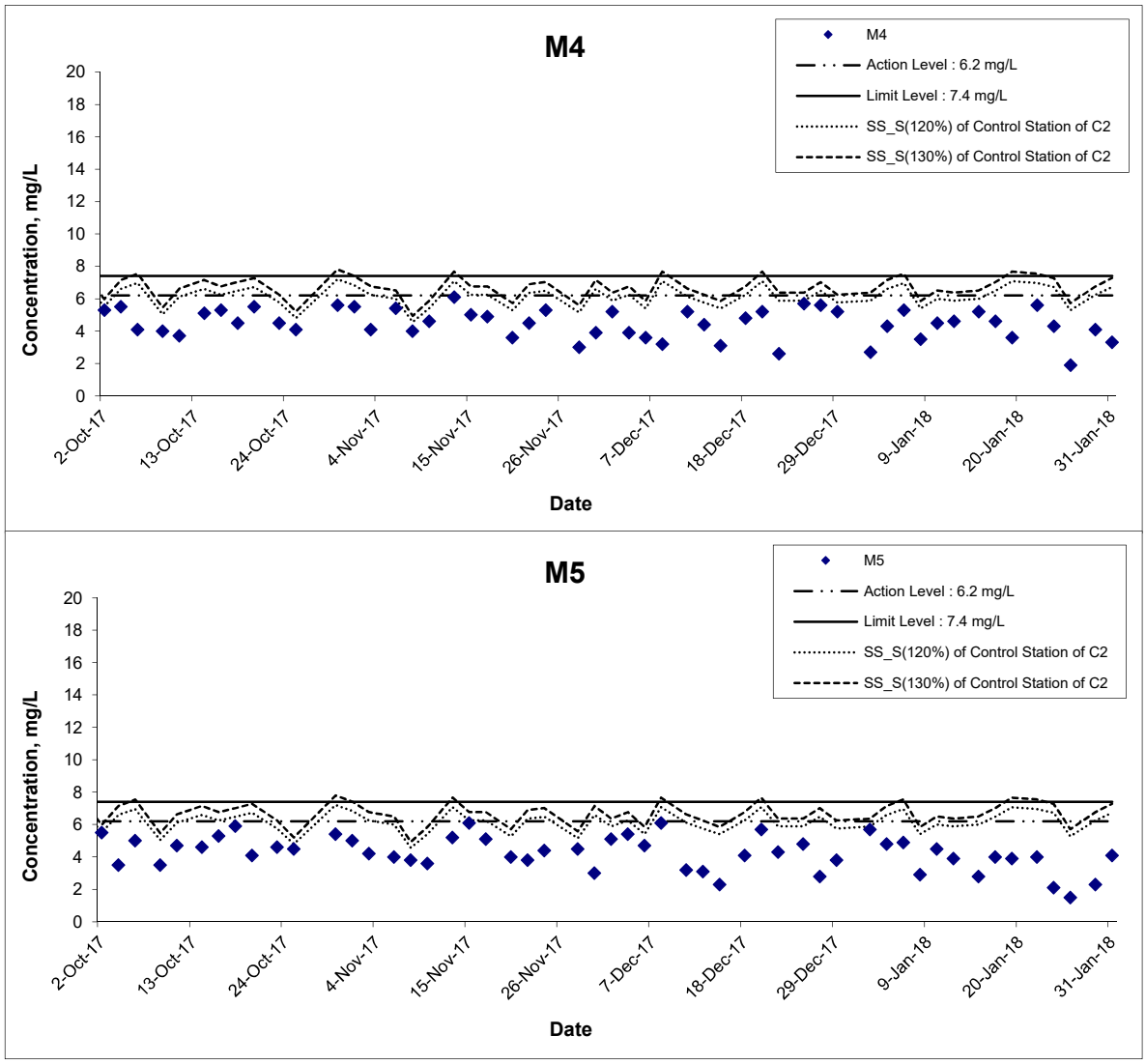
Suspended Solids (Surface) at Mid-Ebb Tide



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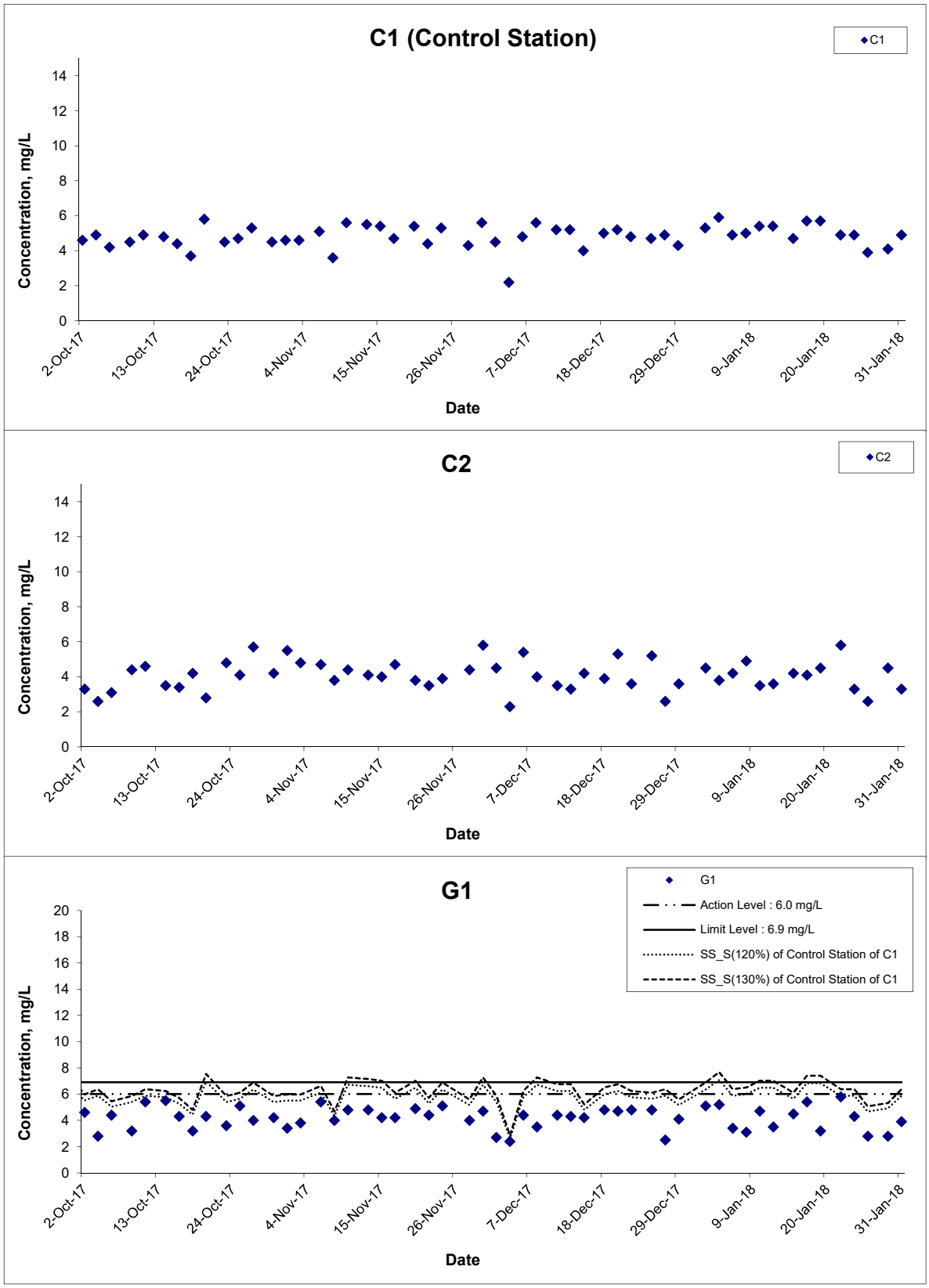
Suspended Solids (Surface) at Mid-Flood Tide



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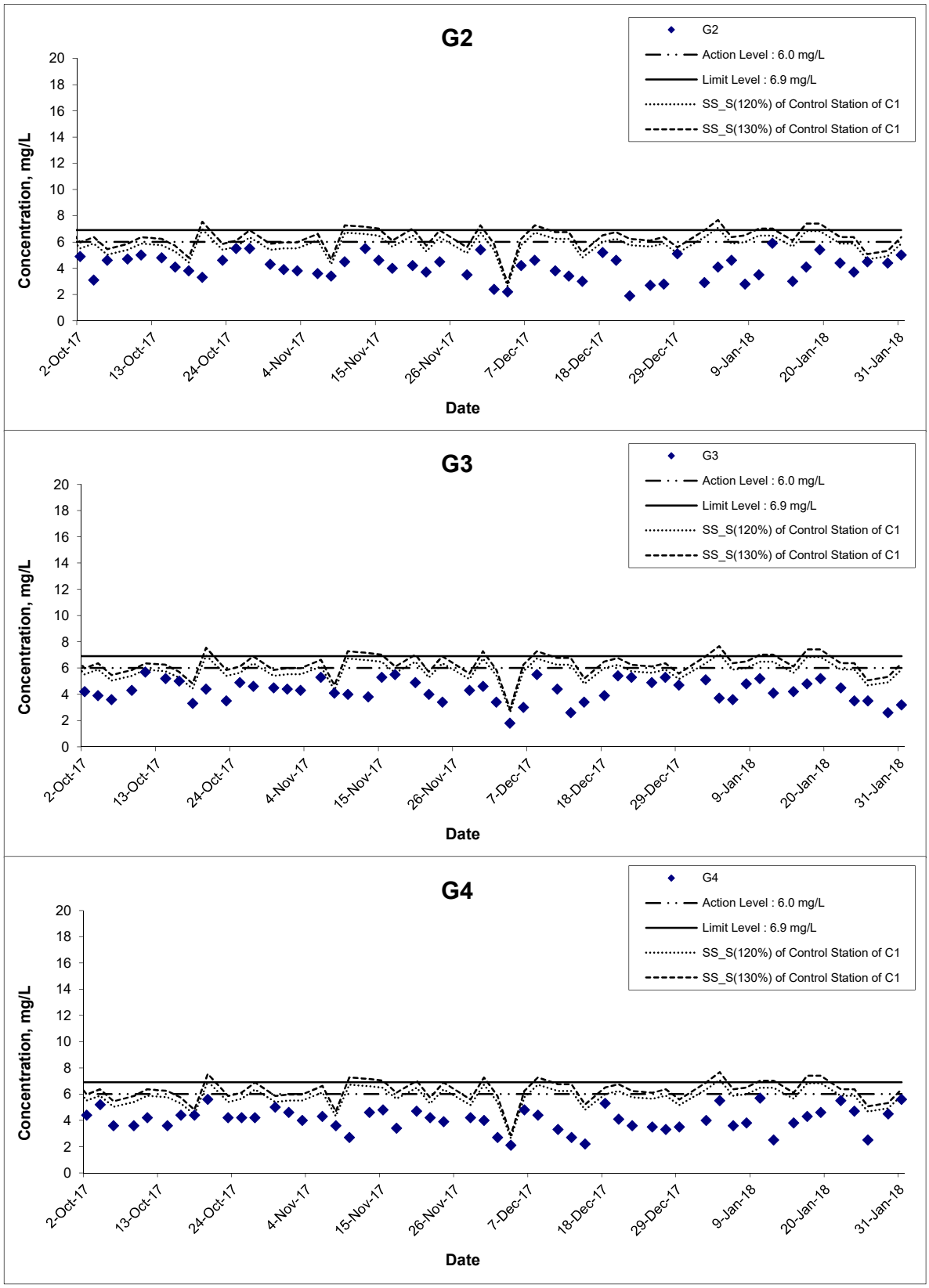
Suspended Solids (Surface) at Mid-Flood Tide



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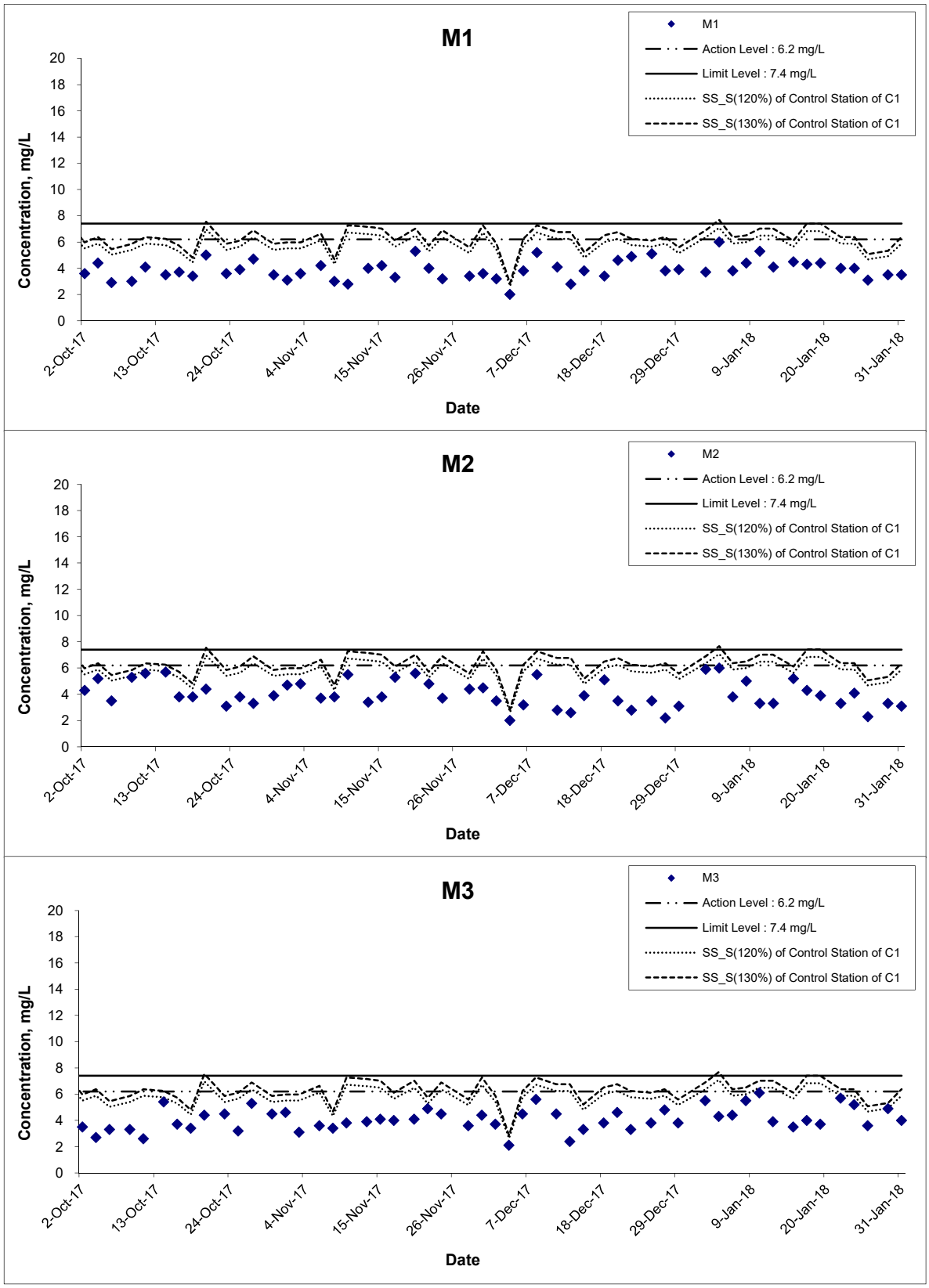
Suspended Solids (Surface) at Mid-Flood Tide



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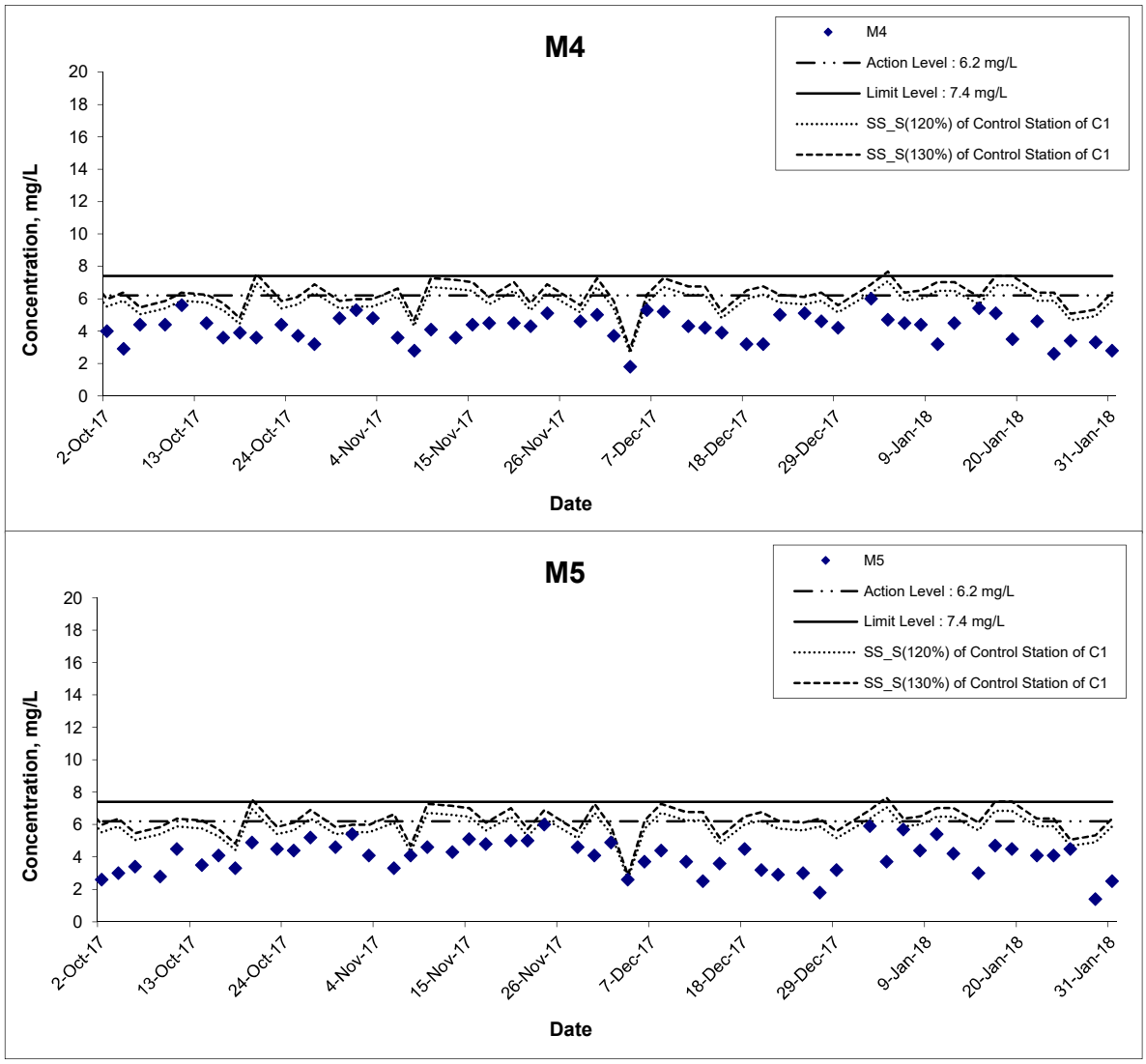
Suspended Solids (Surface) at Mid-Flood Tide



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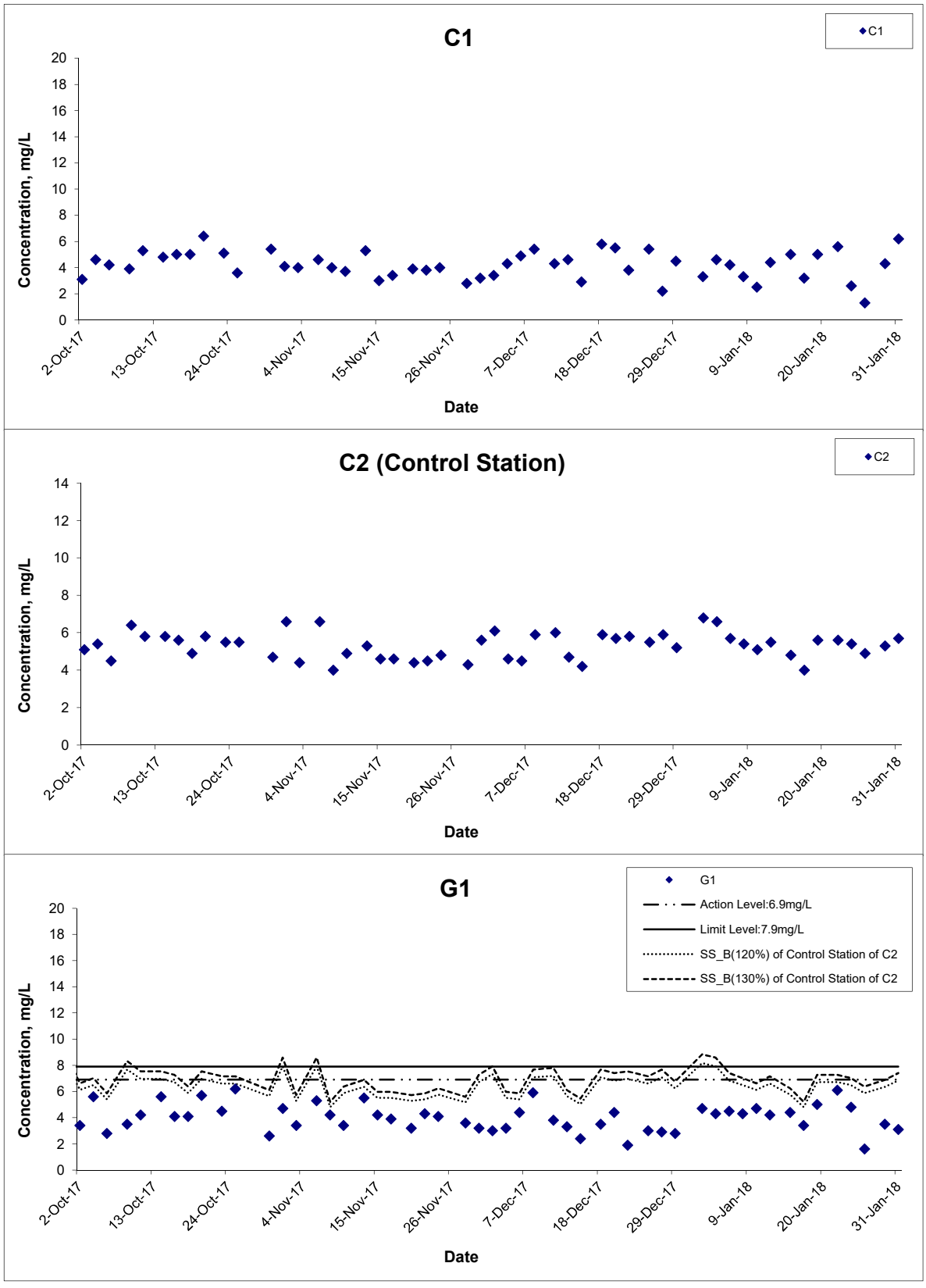
Suspended Solids (Bottom) at Mid-Ebb Tide



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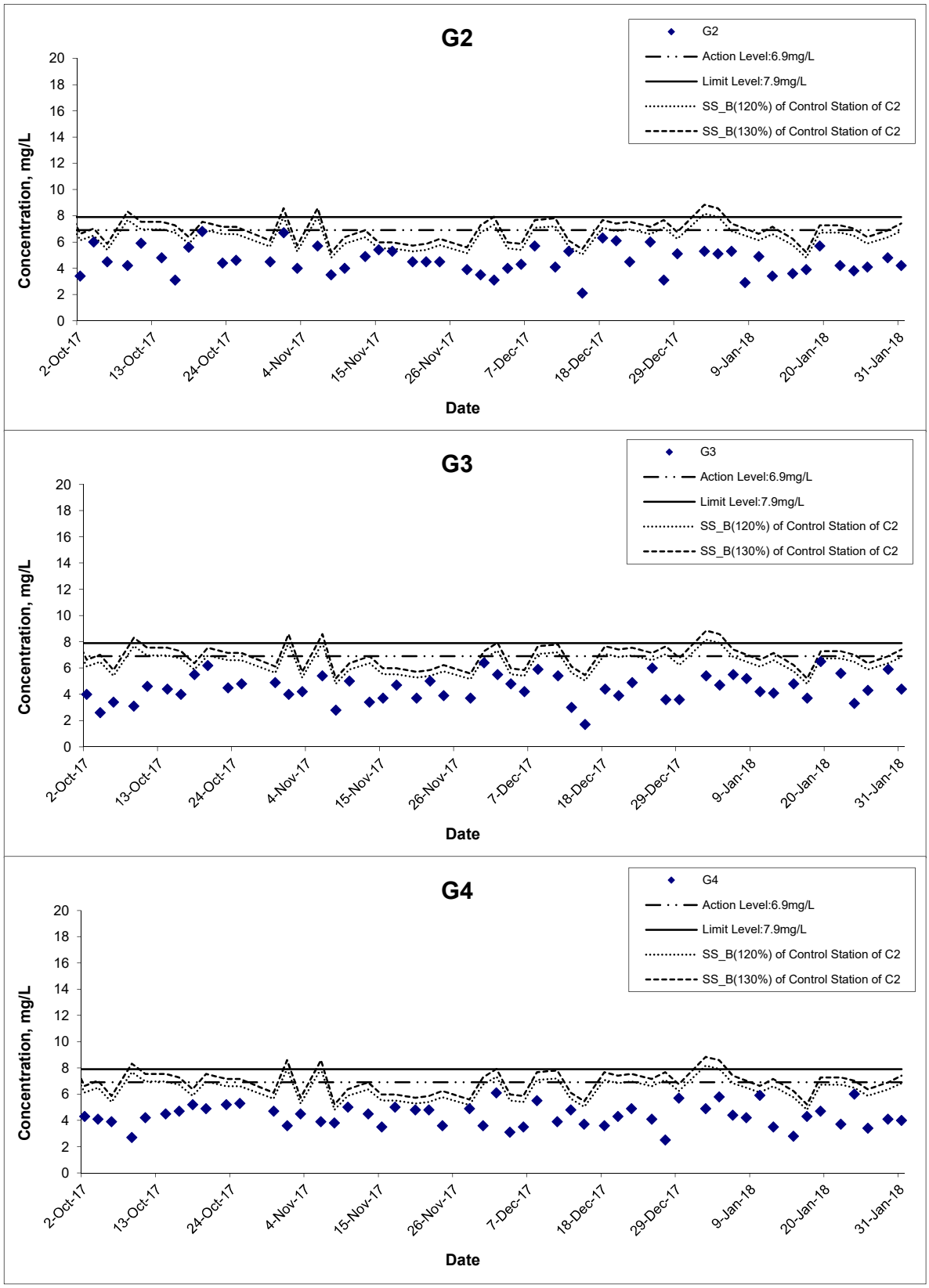
Suspended Solids (Bottom) at Mid-Ebb Tide



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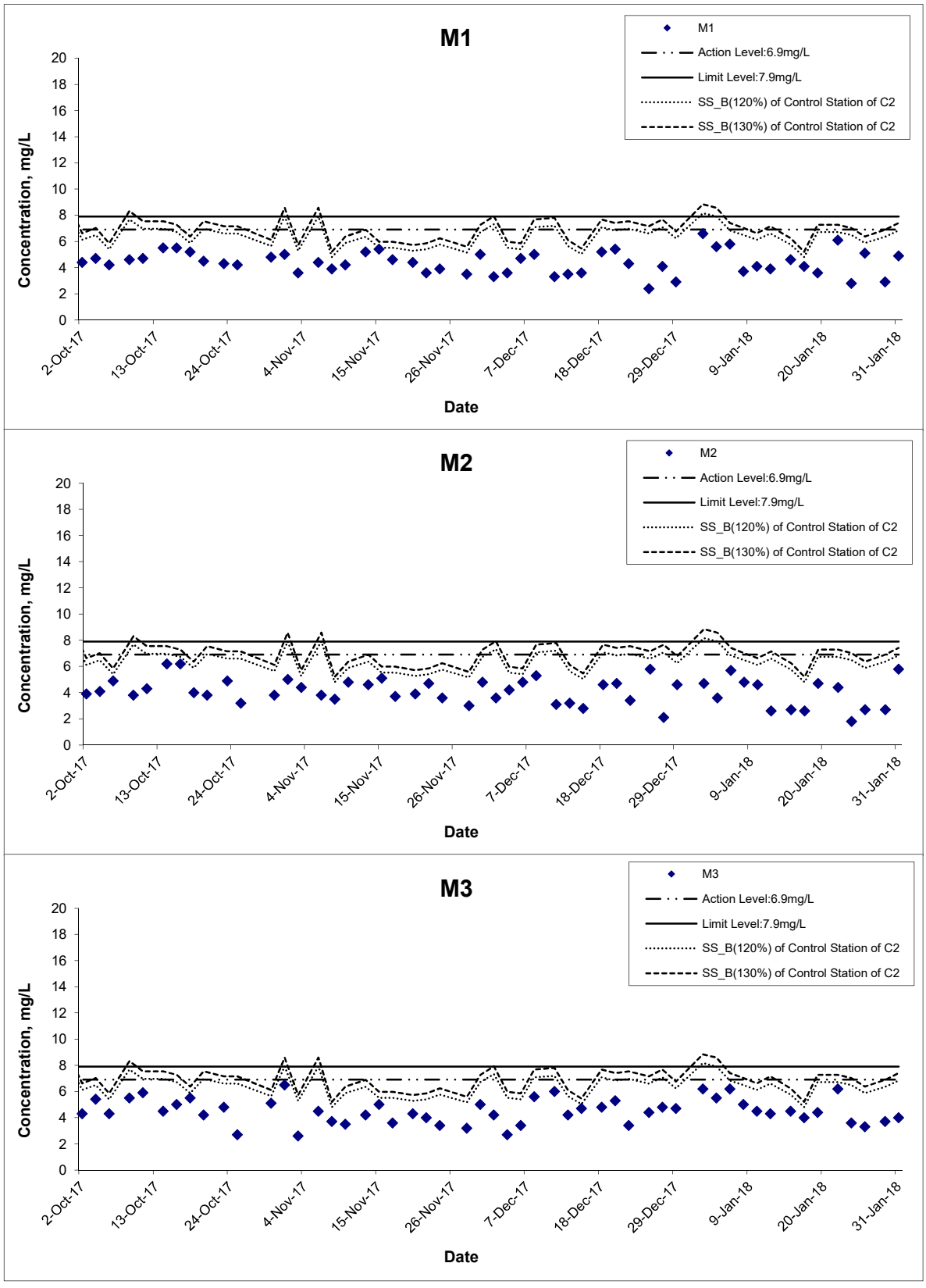
Suspended Solids (Bottom) at Mid-Ebb Tide



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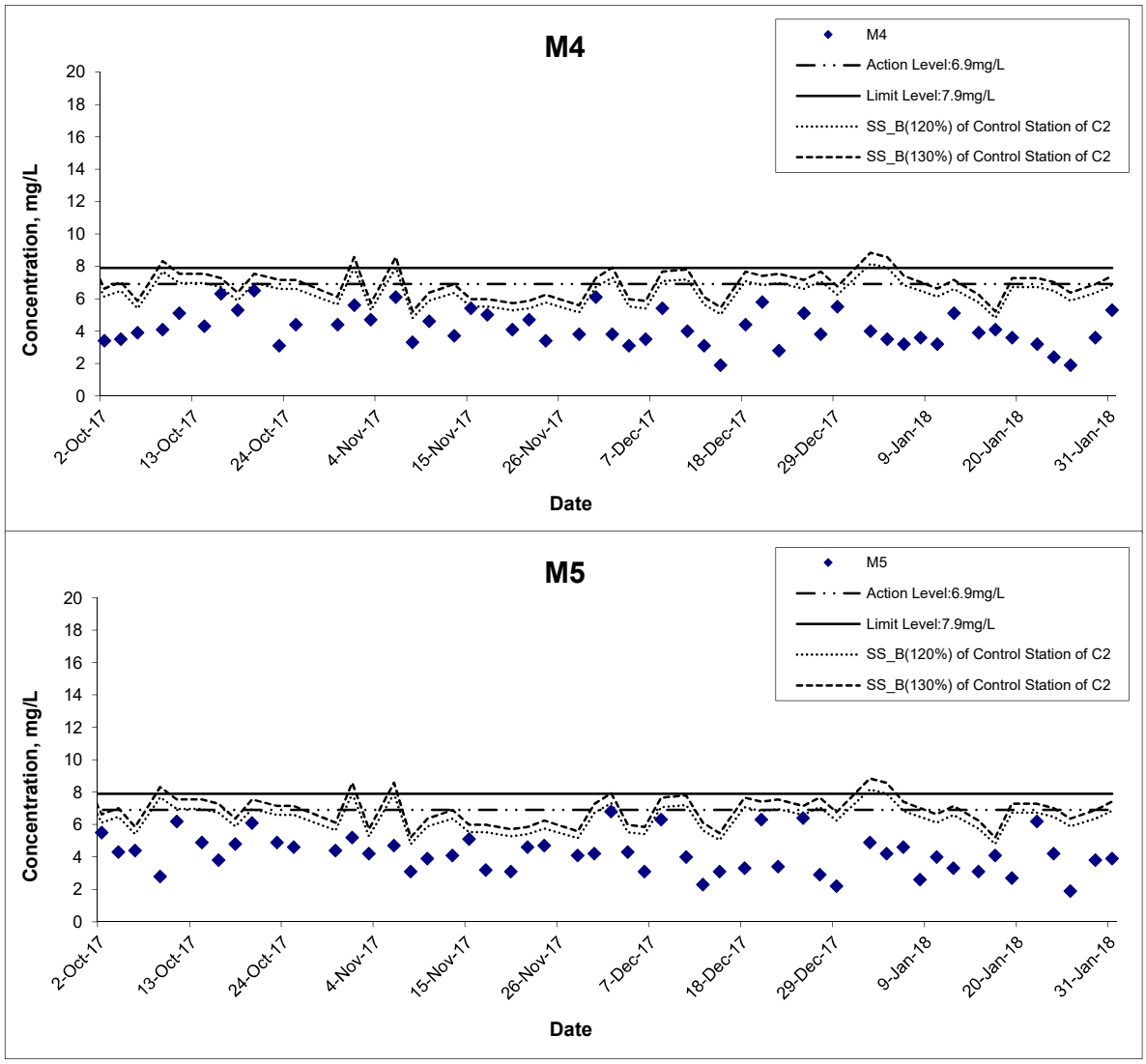
Suspended Solids (Bottom) at Mid-Ebb Tide



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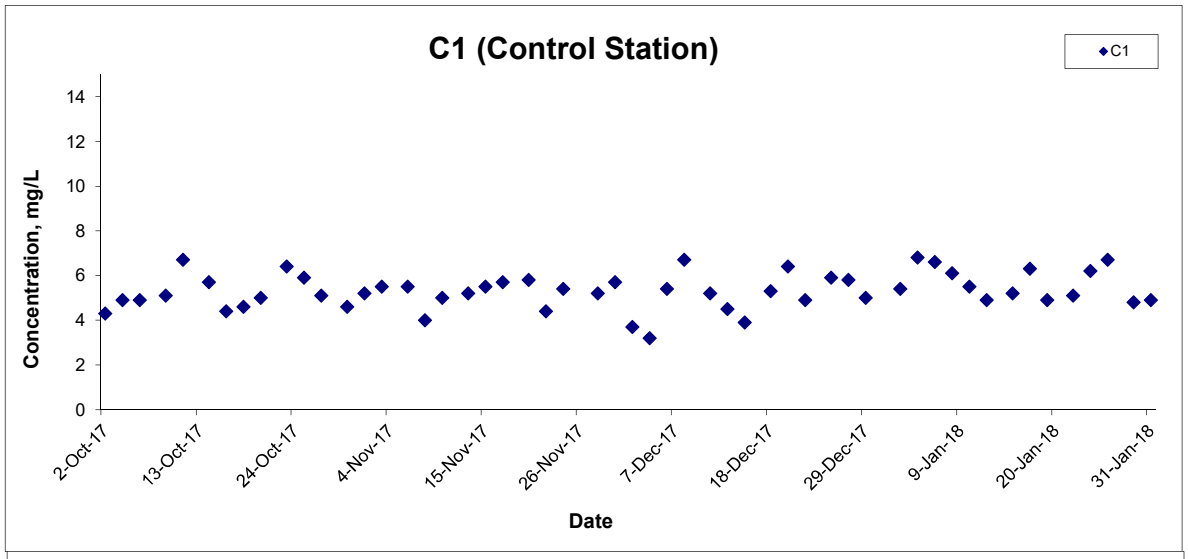
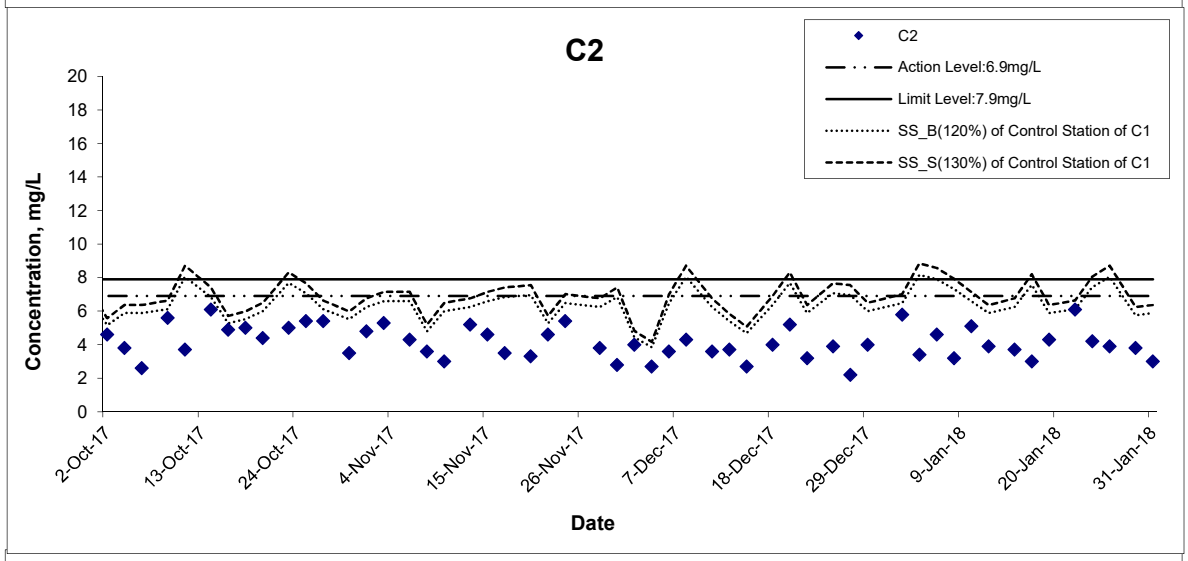
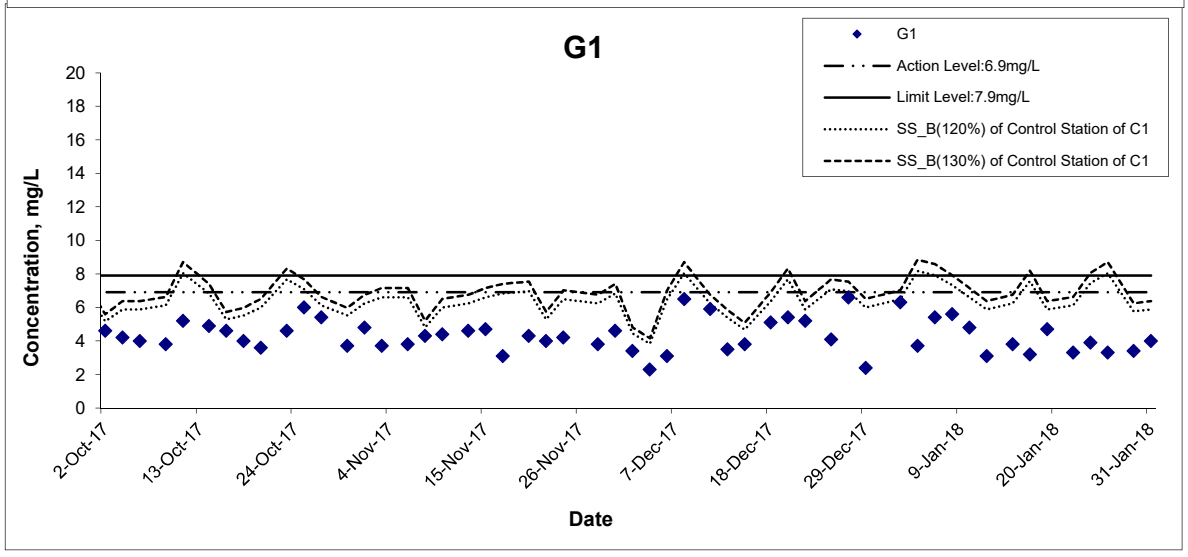
Suspended Solids (Bottom) at Mid-Flood Tide







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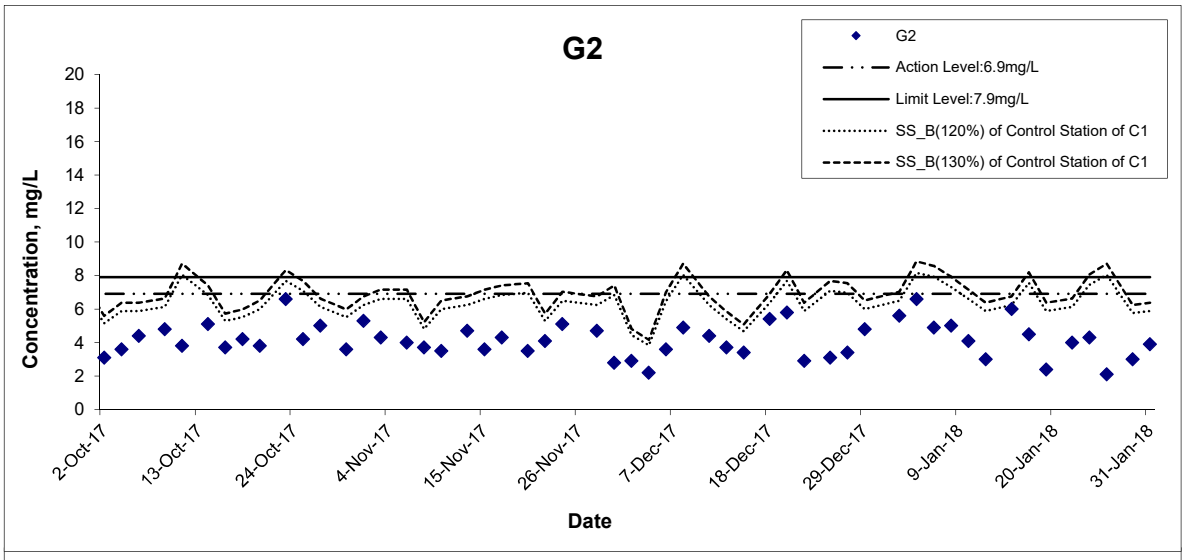
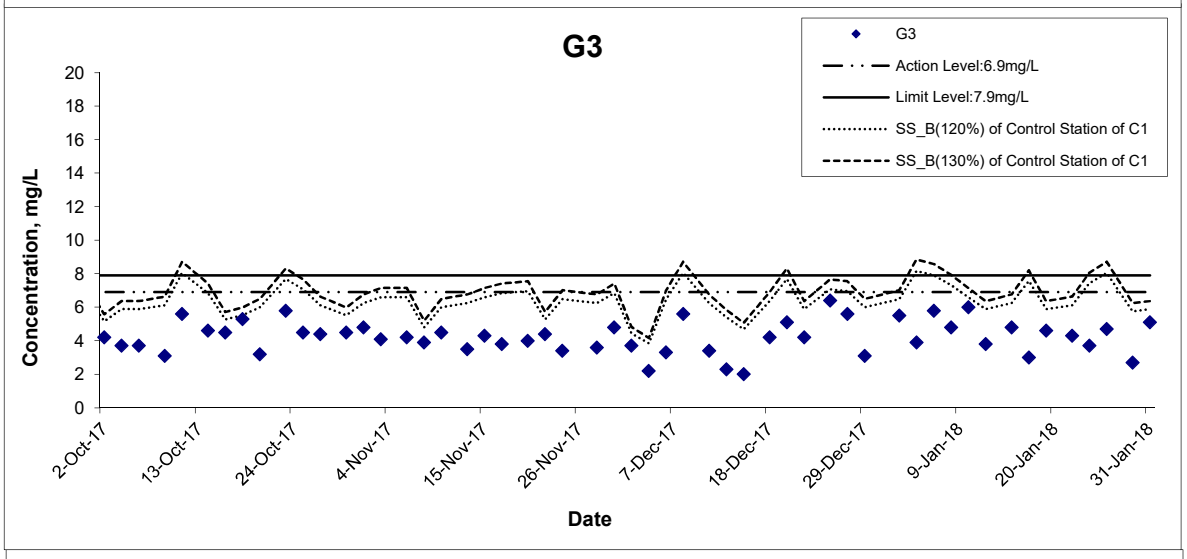
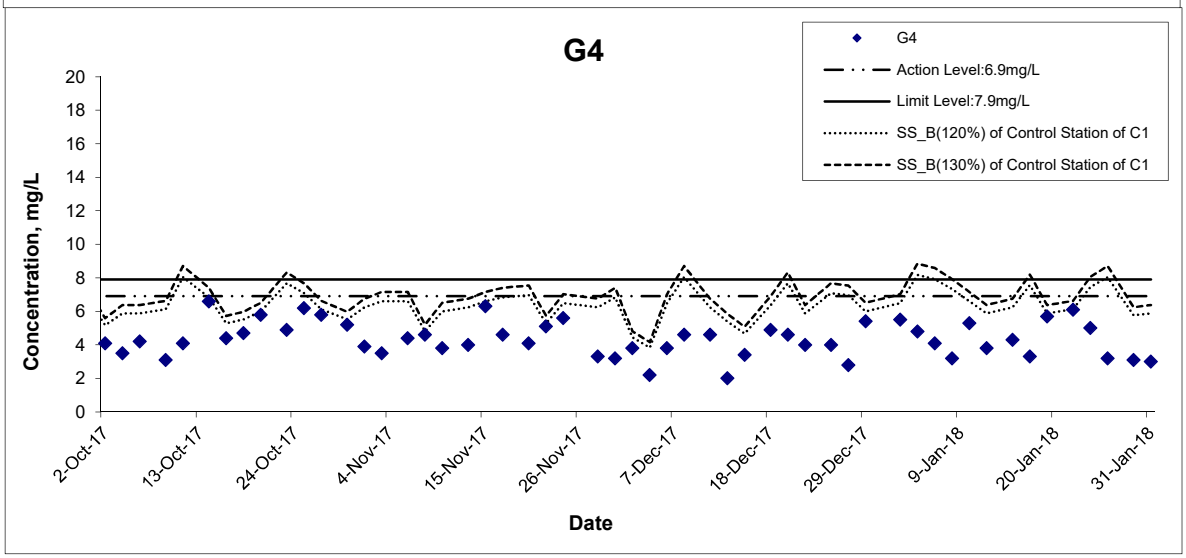
Suspended Solids (Bottom) at Mid-Flood Tide







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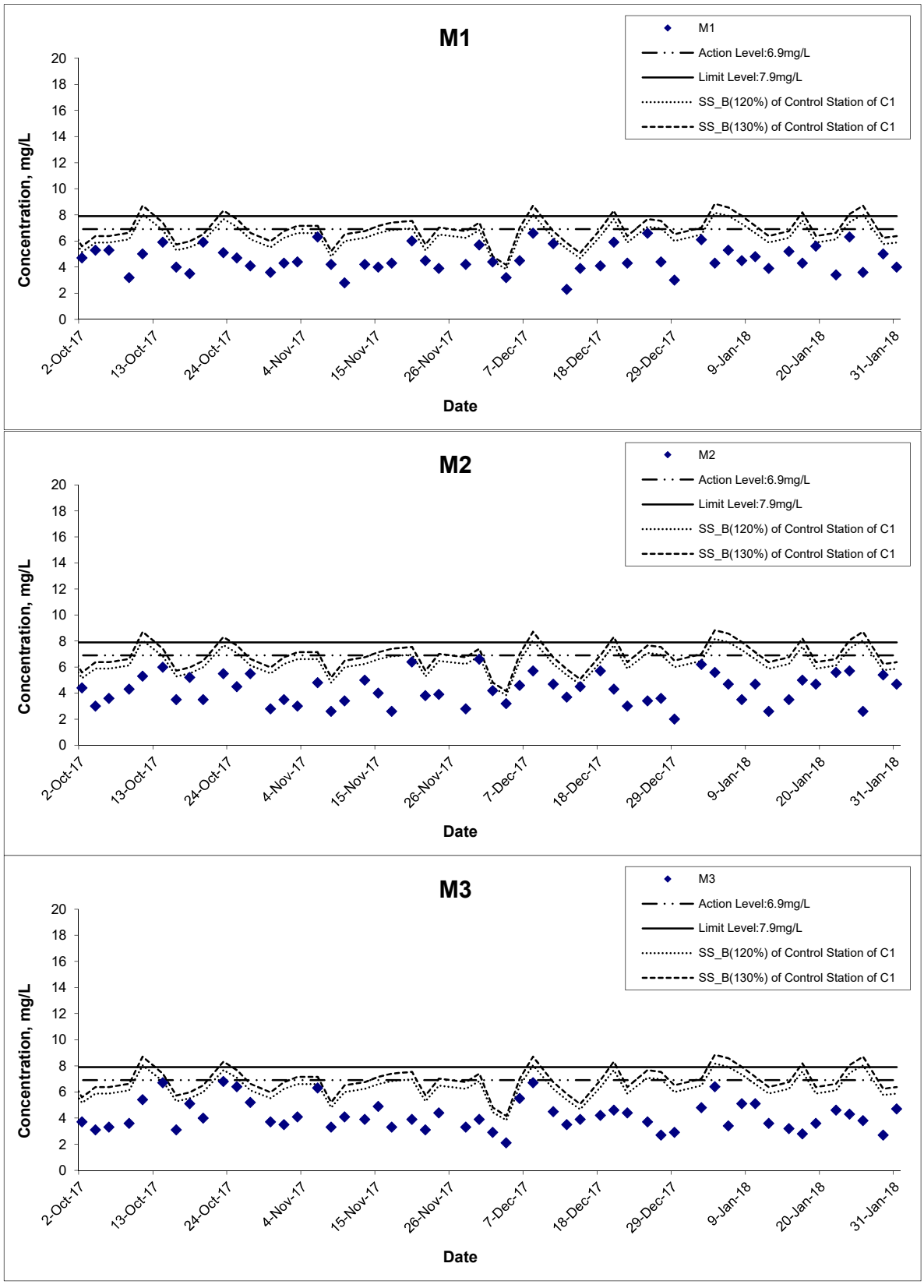
Suspended Solids (Bottom) at Mid-Flood Tide



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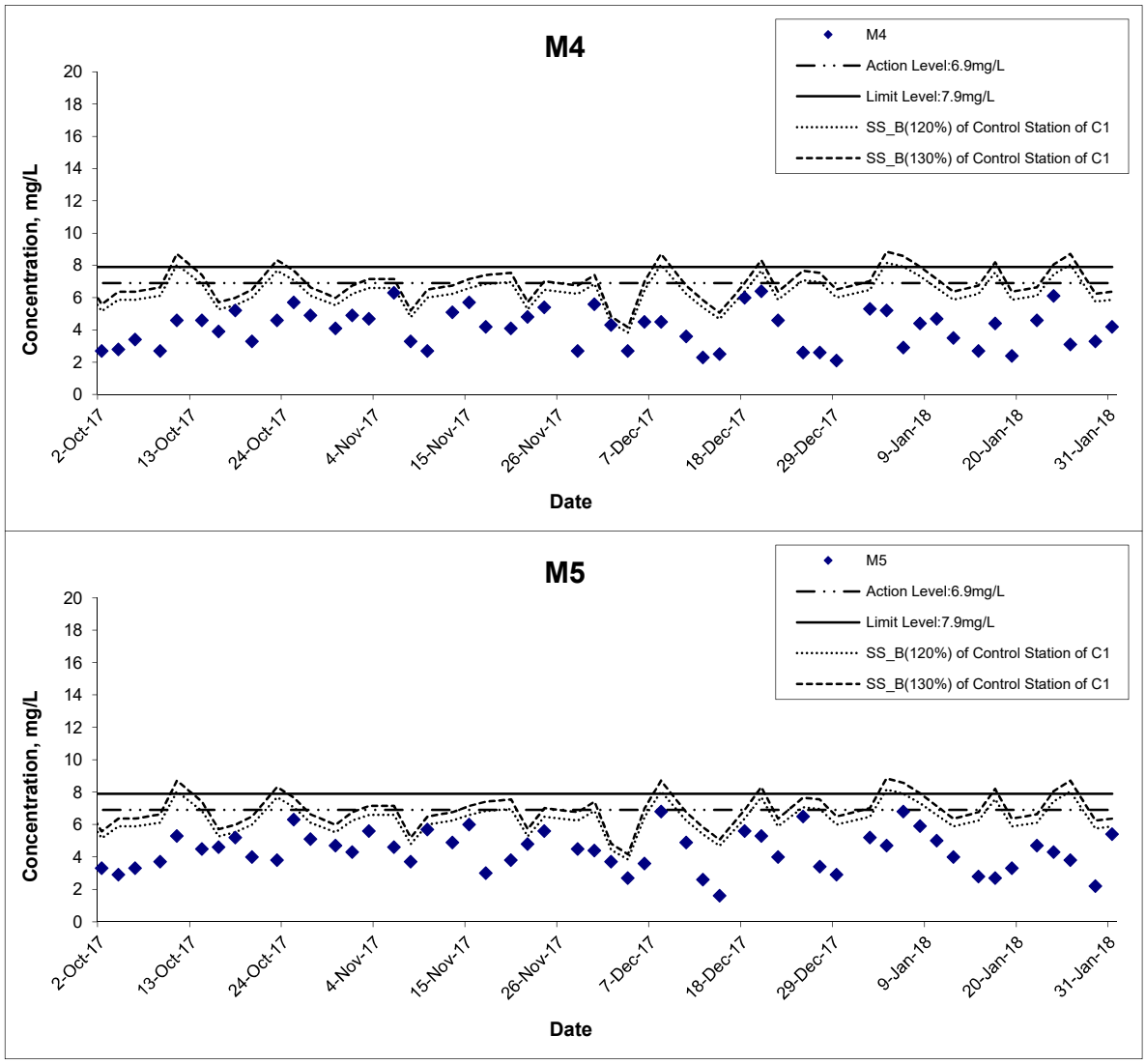
Suspended Solids (Bottom) at Mid-Flood Tide



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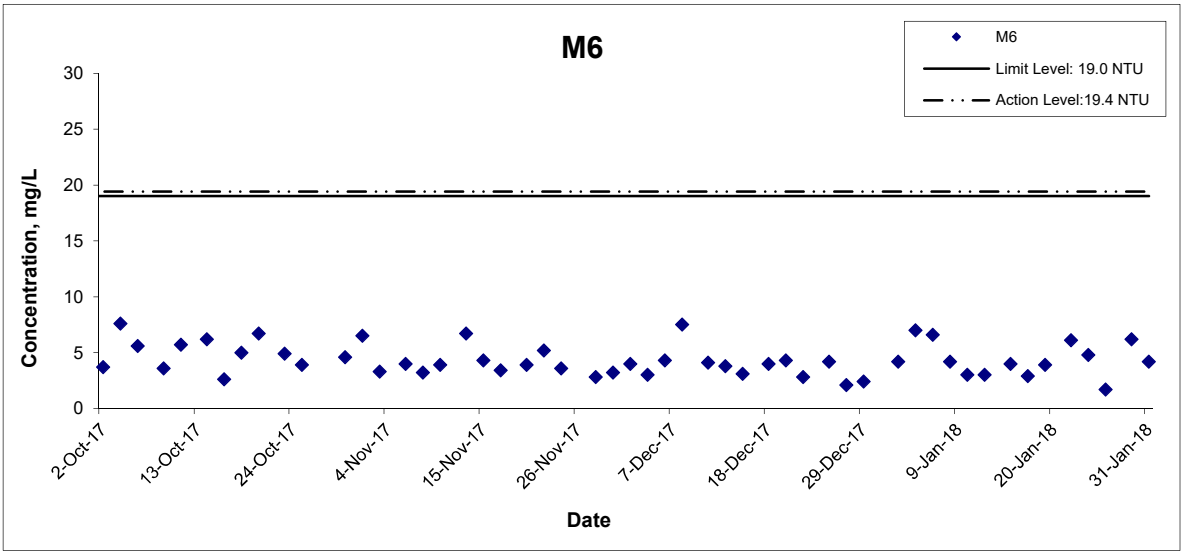
Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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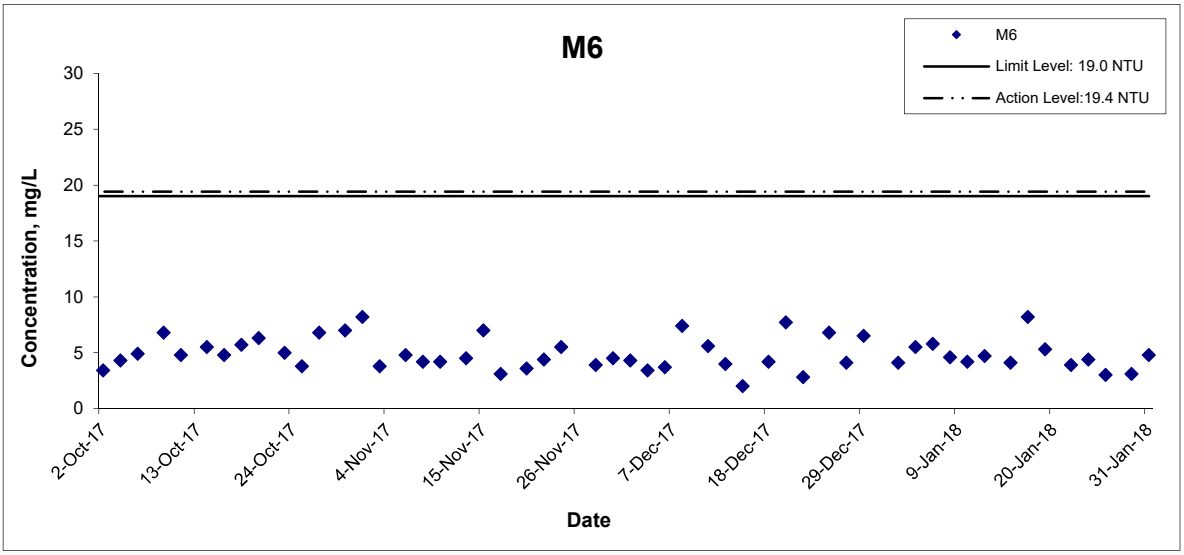
Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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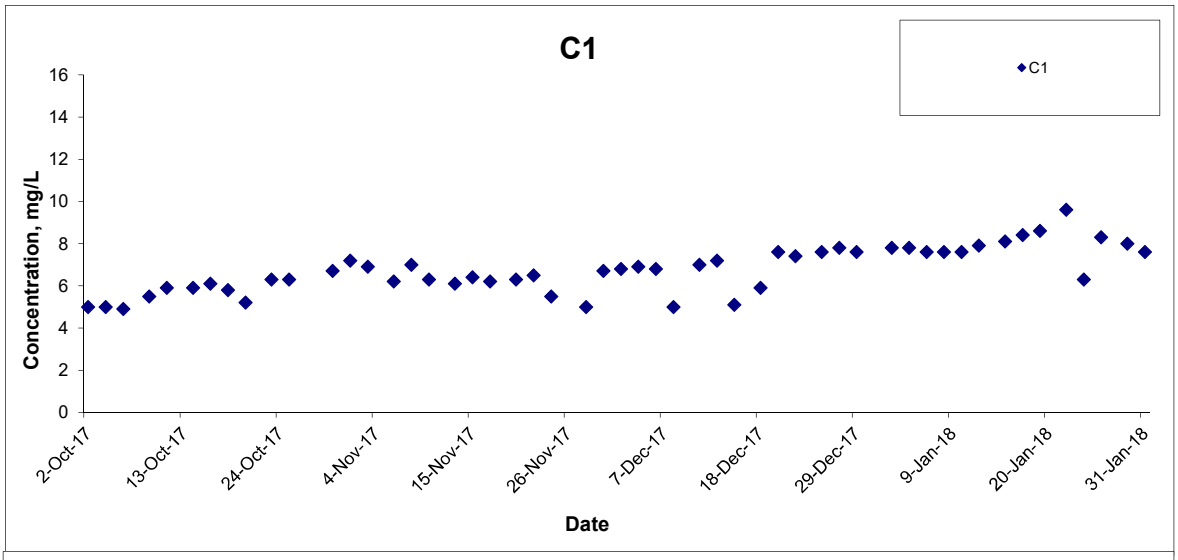
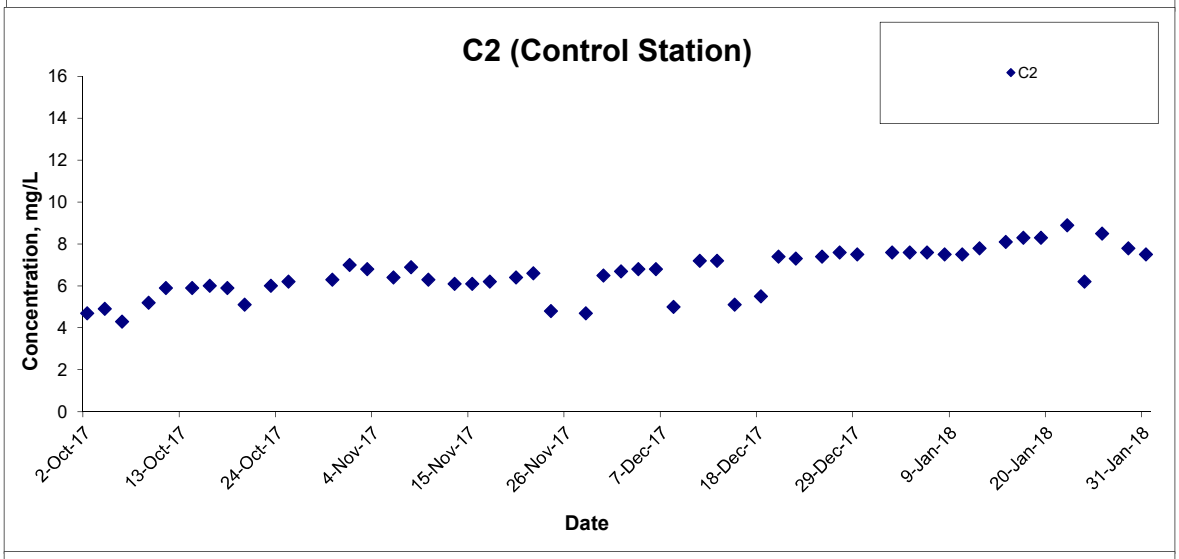
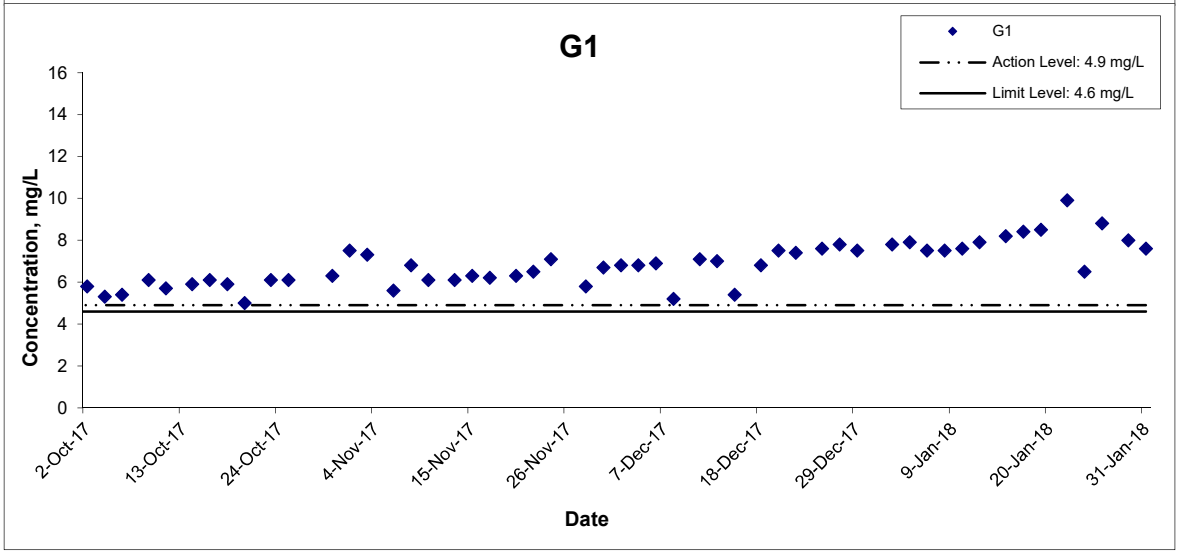
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide







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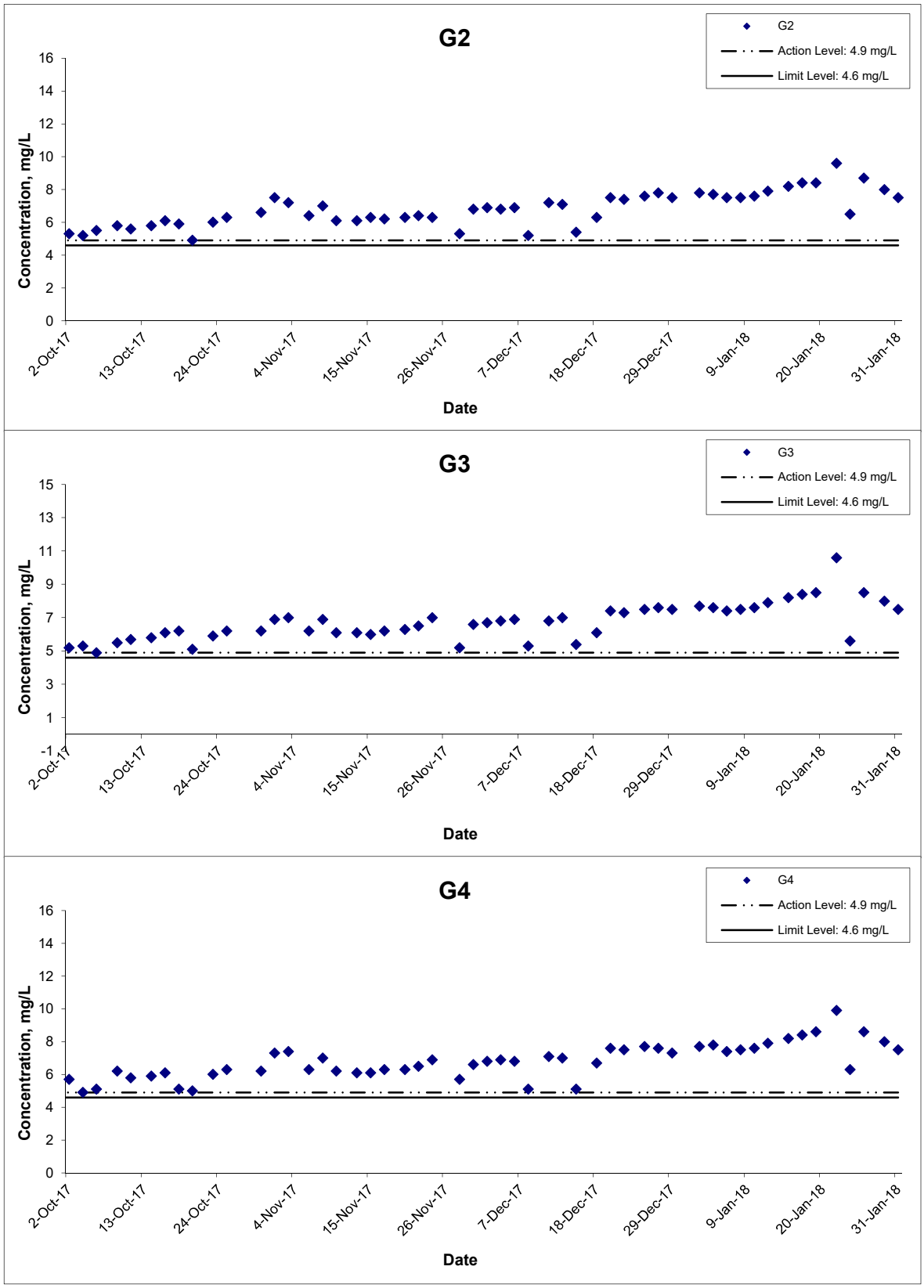
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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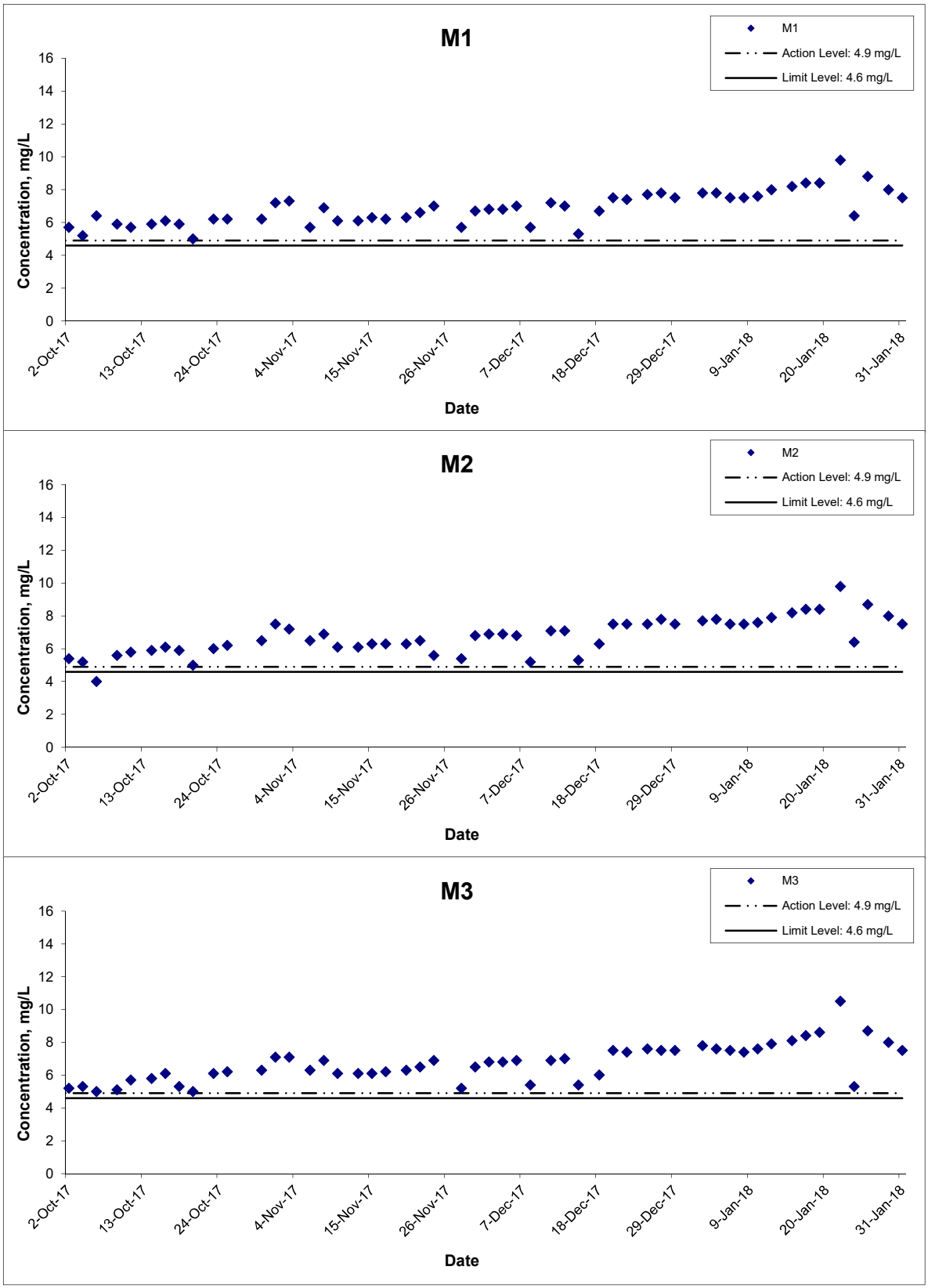
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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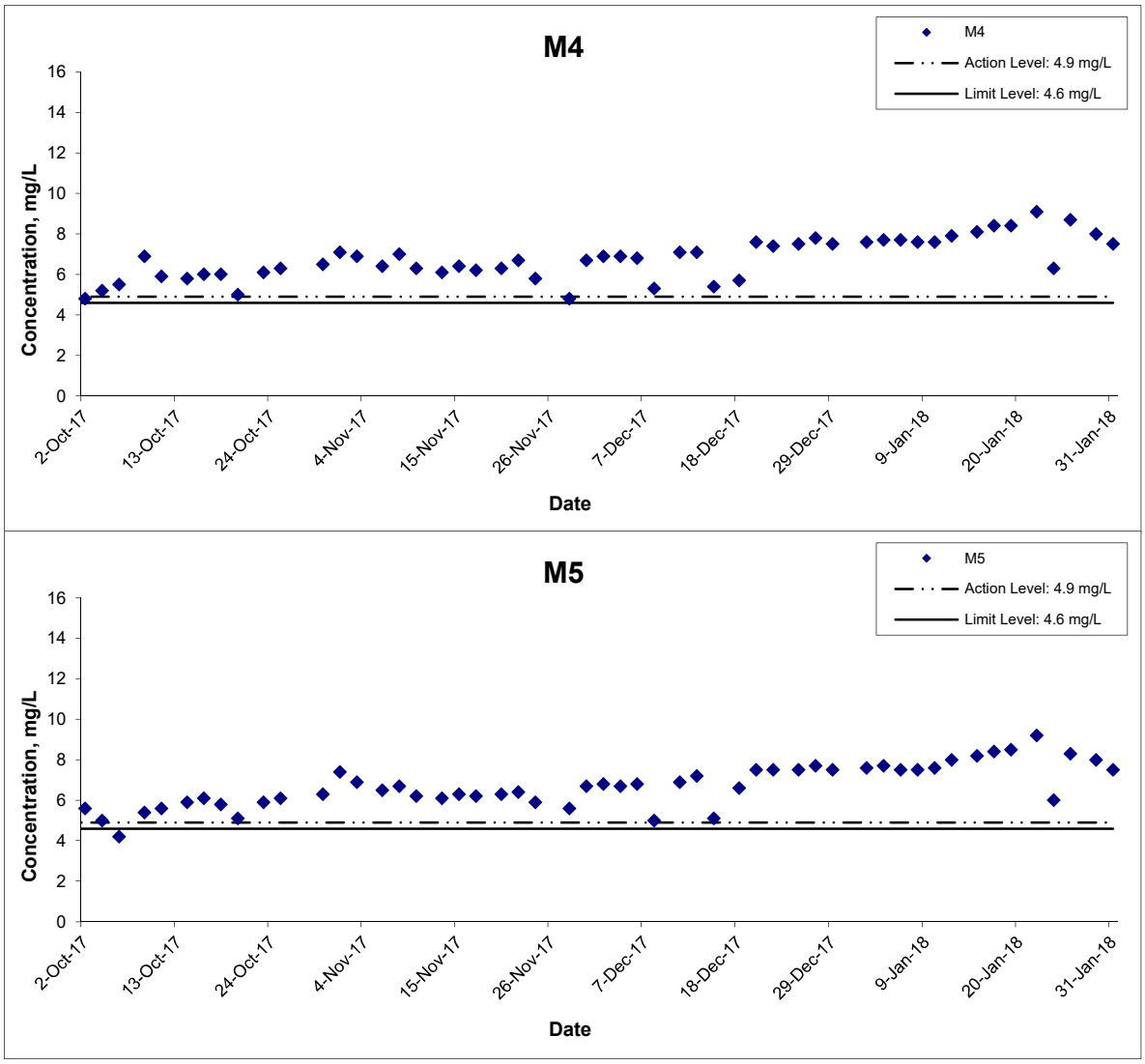
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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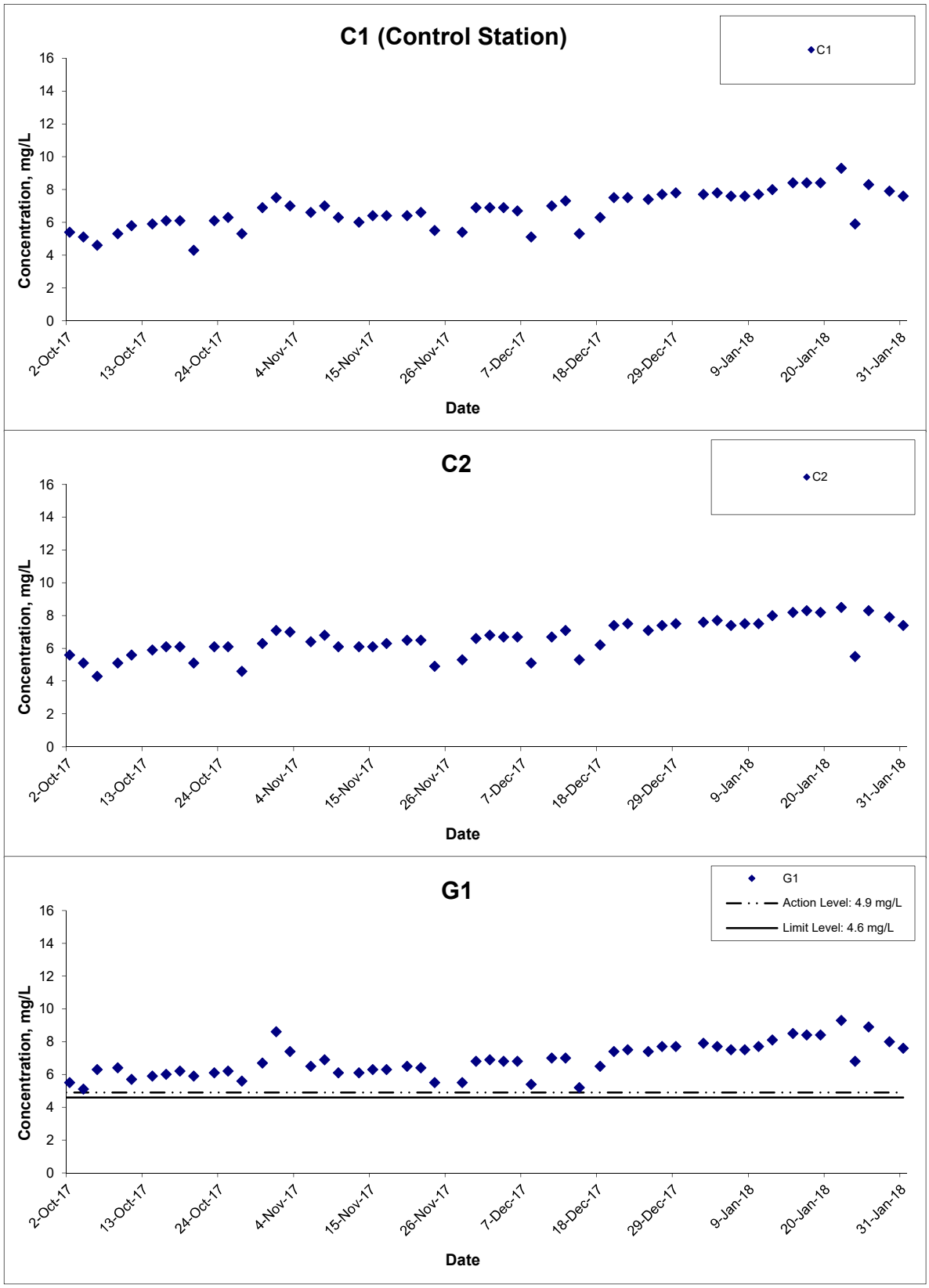
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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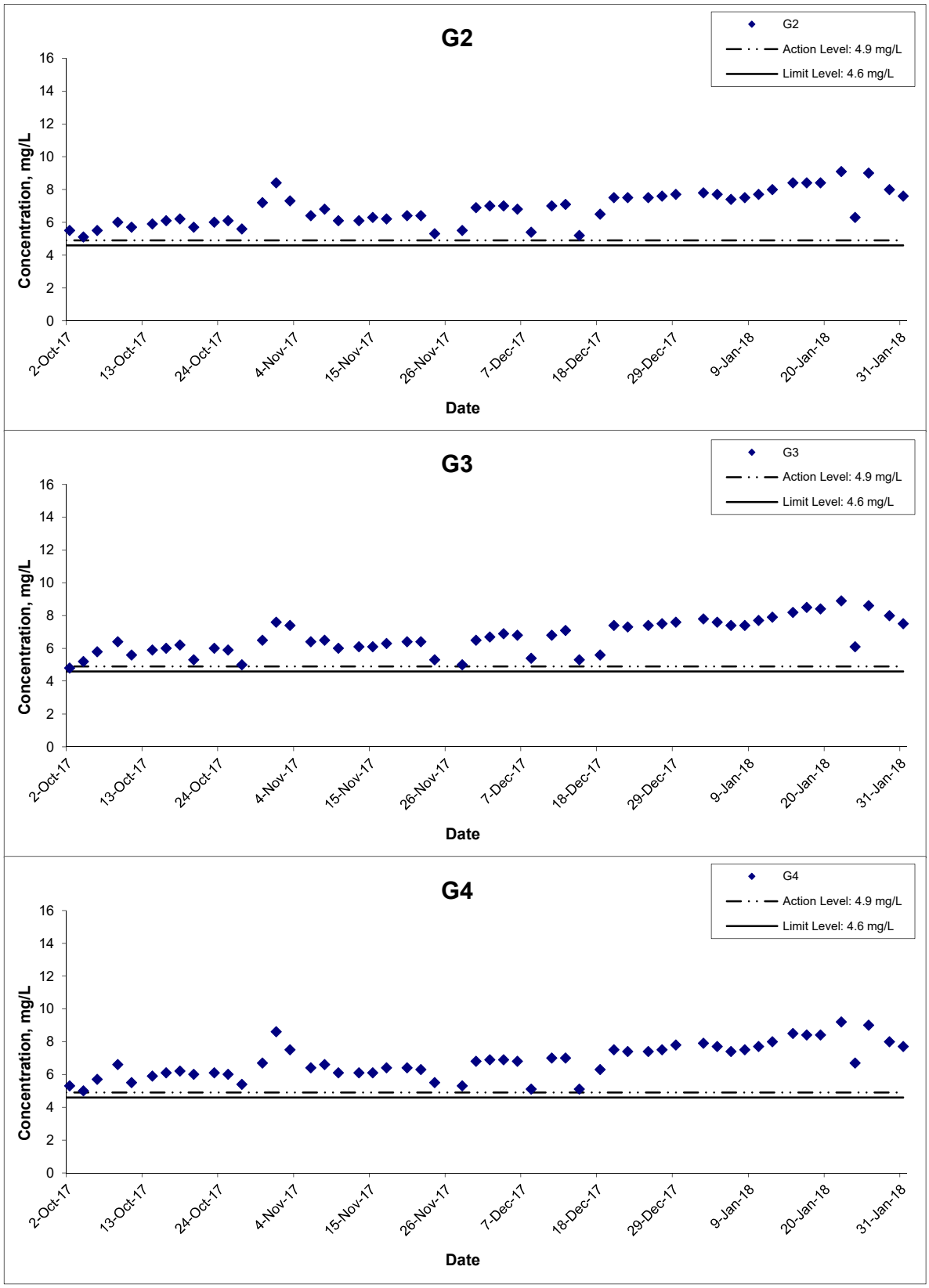
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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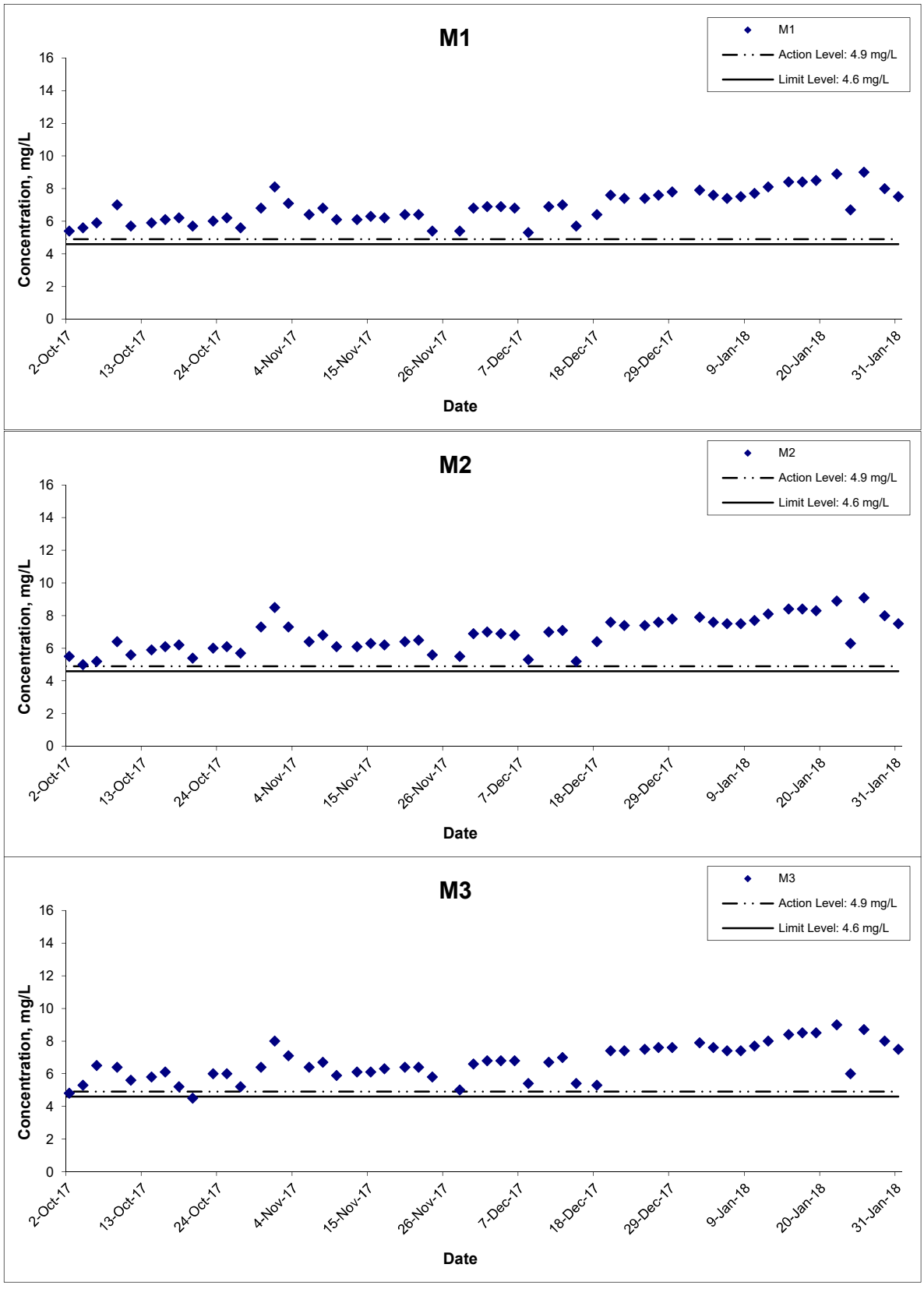
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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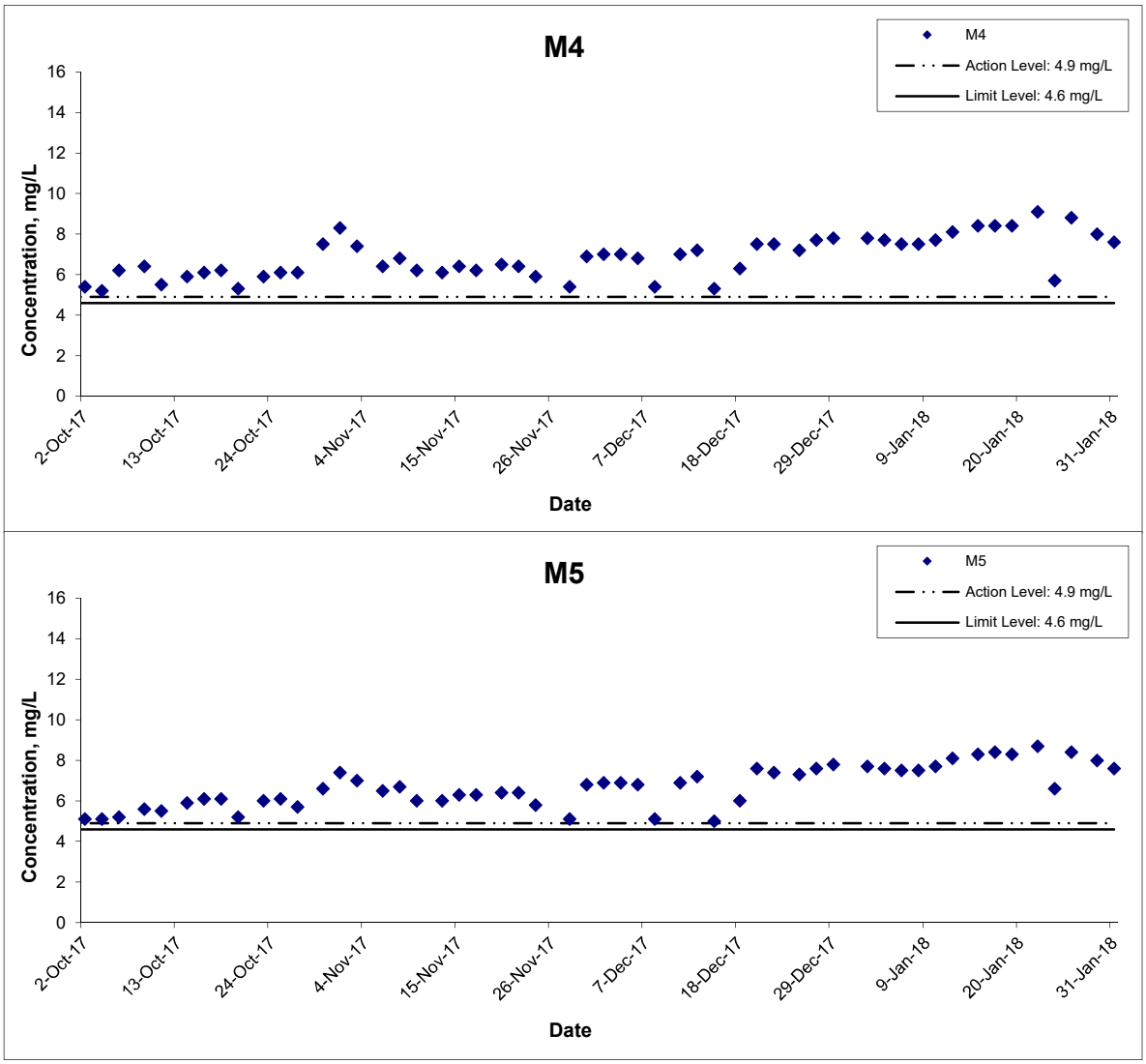
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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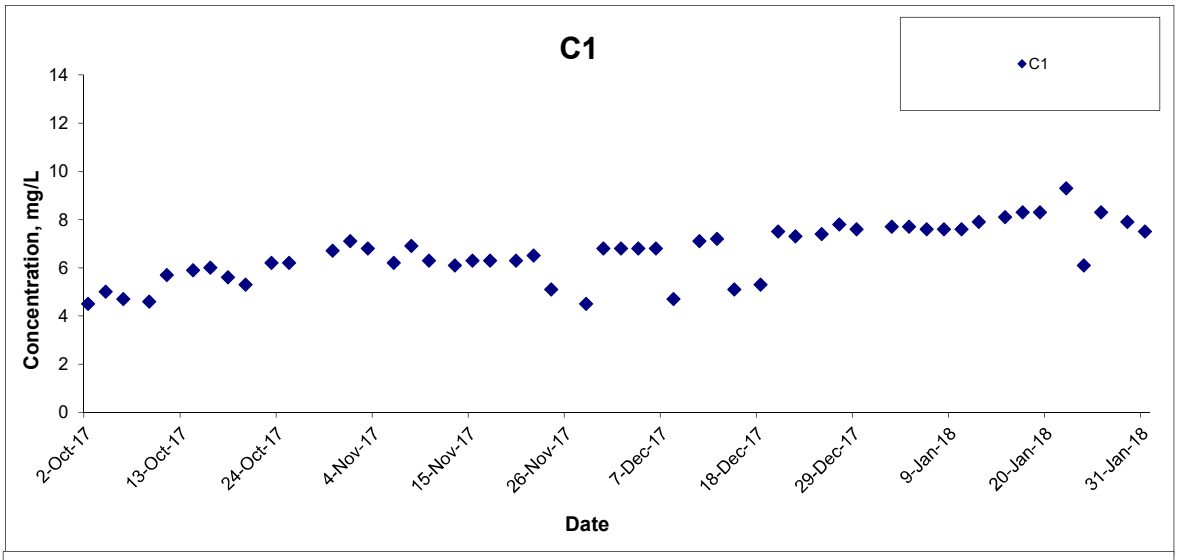
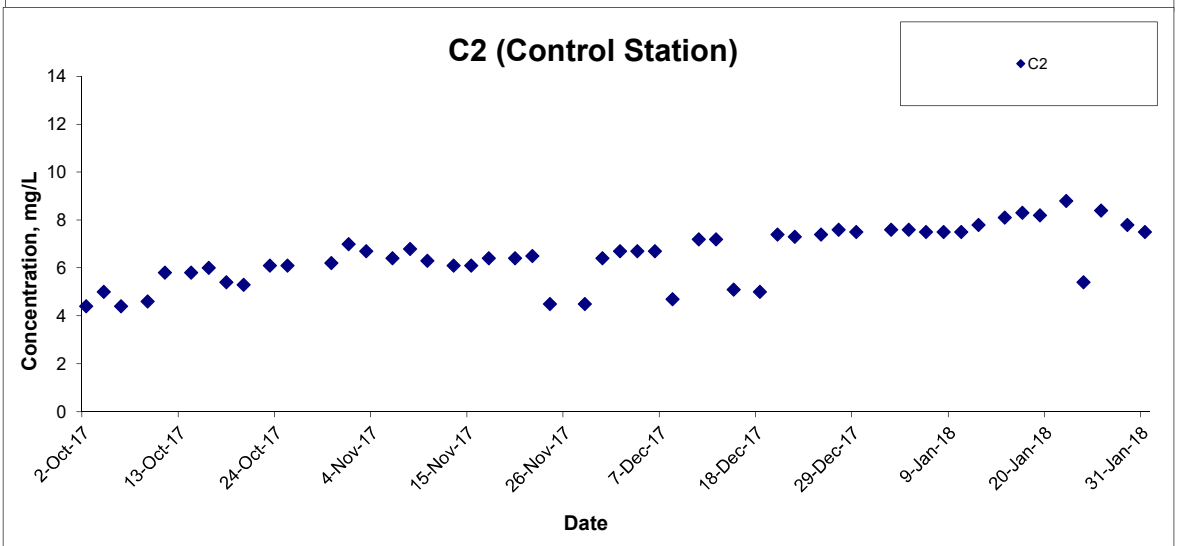
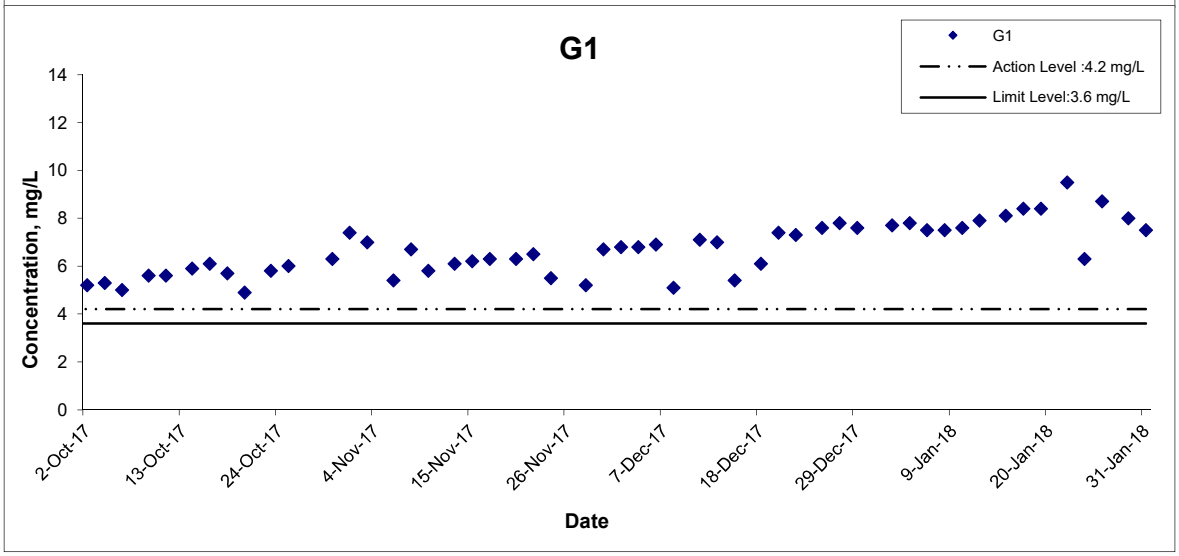
Dissolved Oxygen (Bottom) at Mid-Ebb Tide







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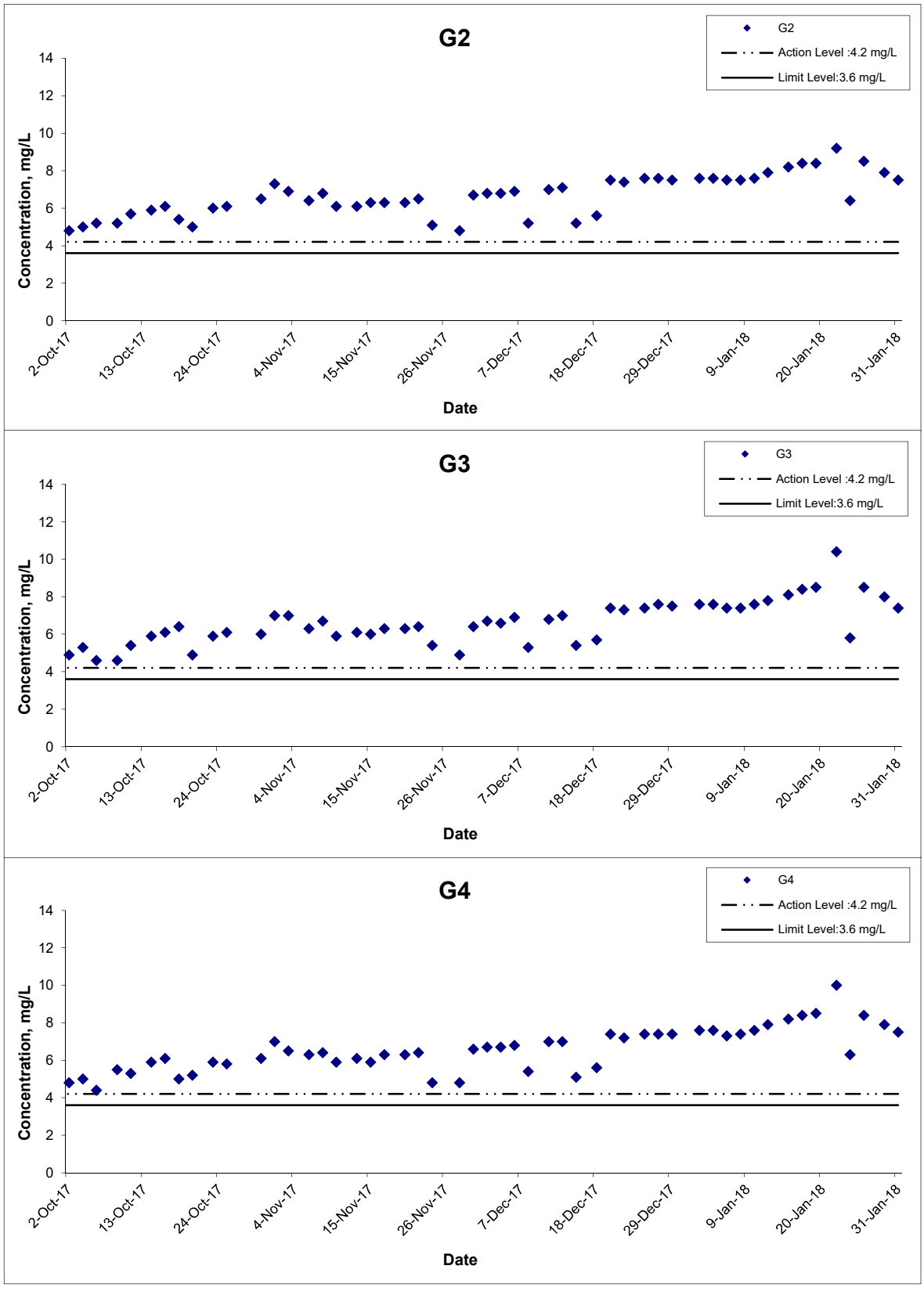
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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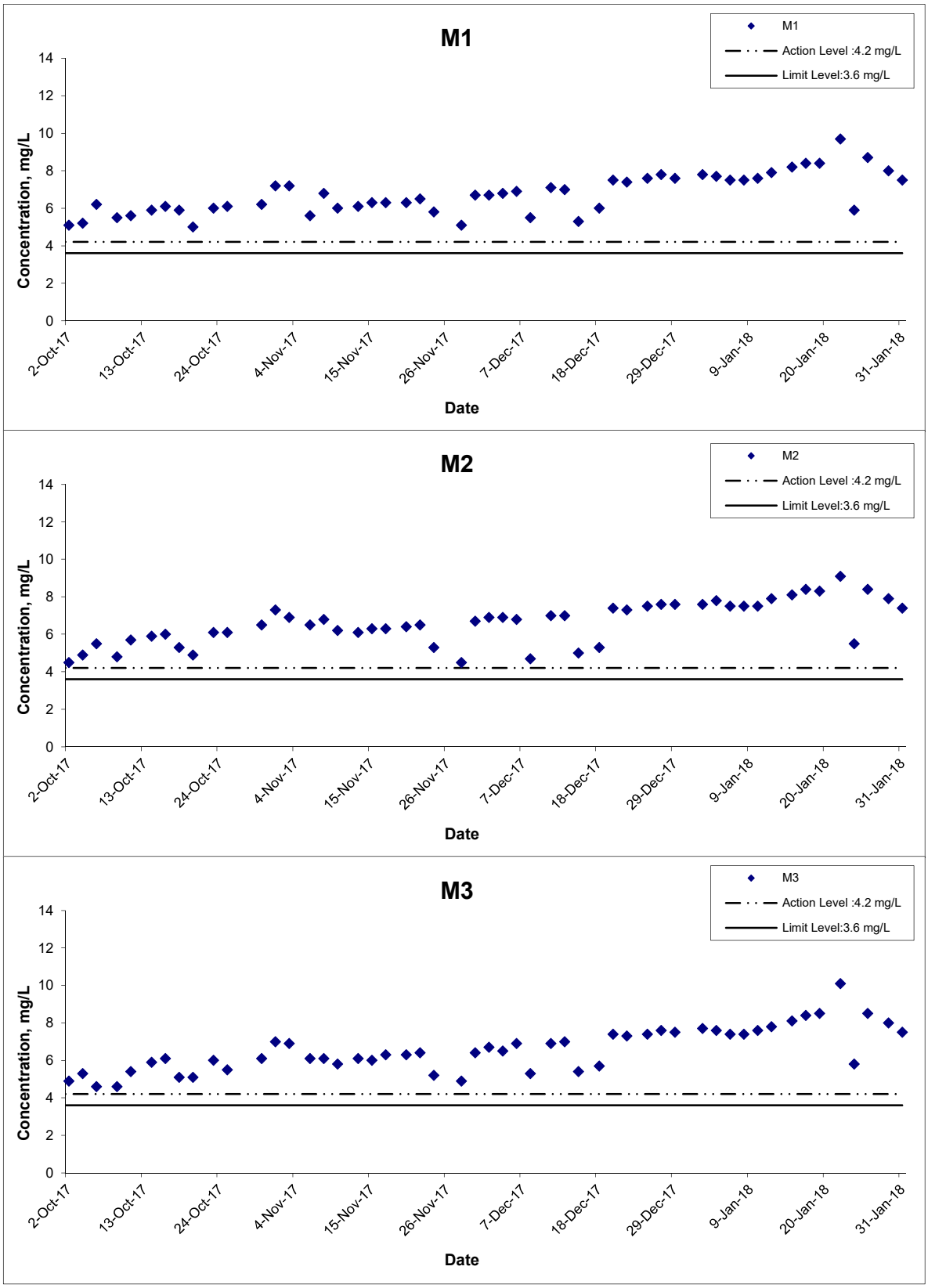
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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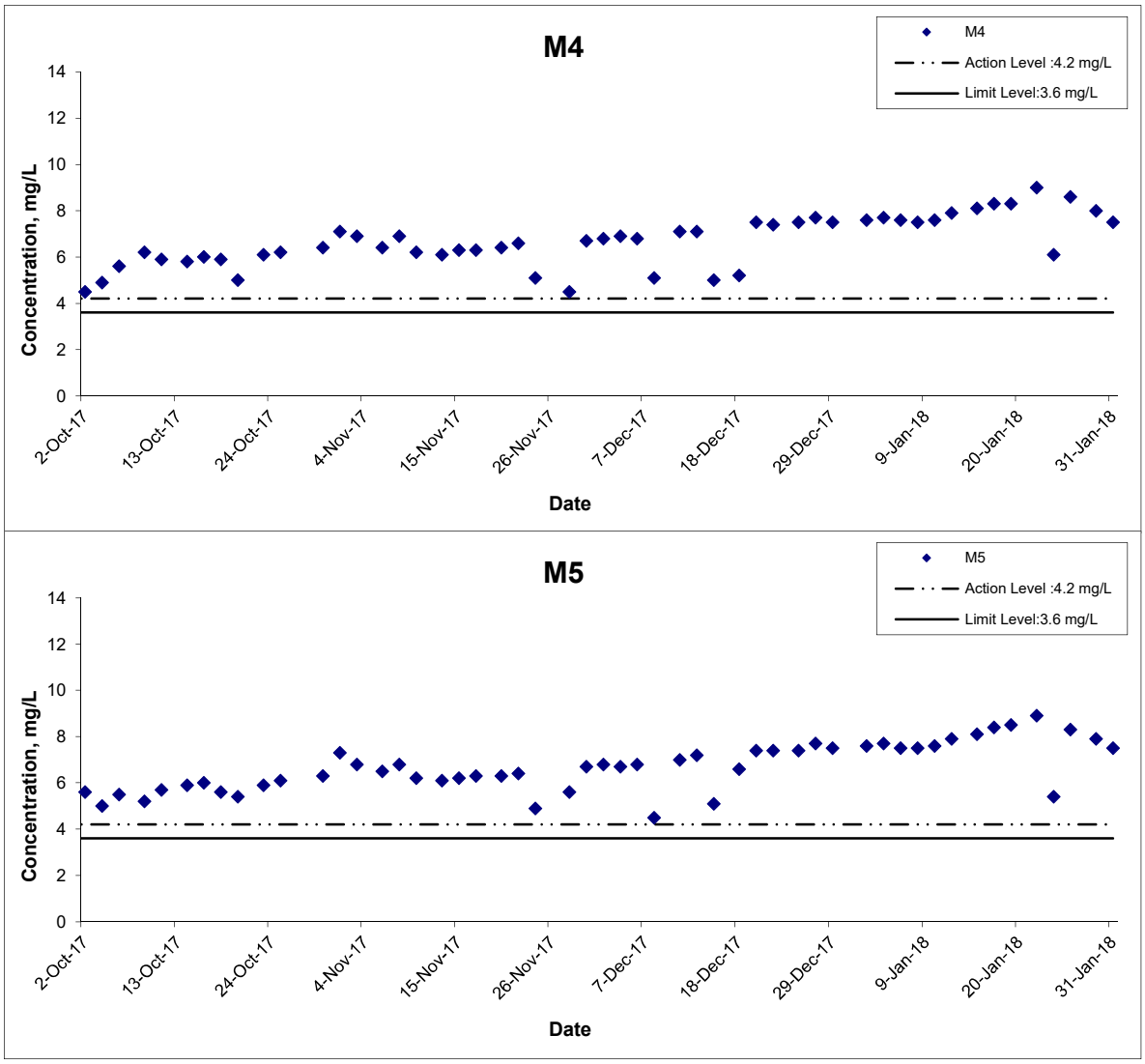
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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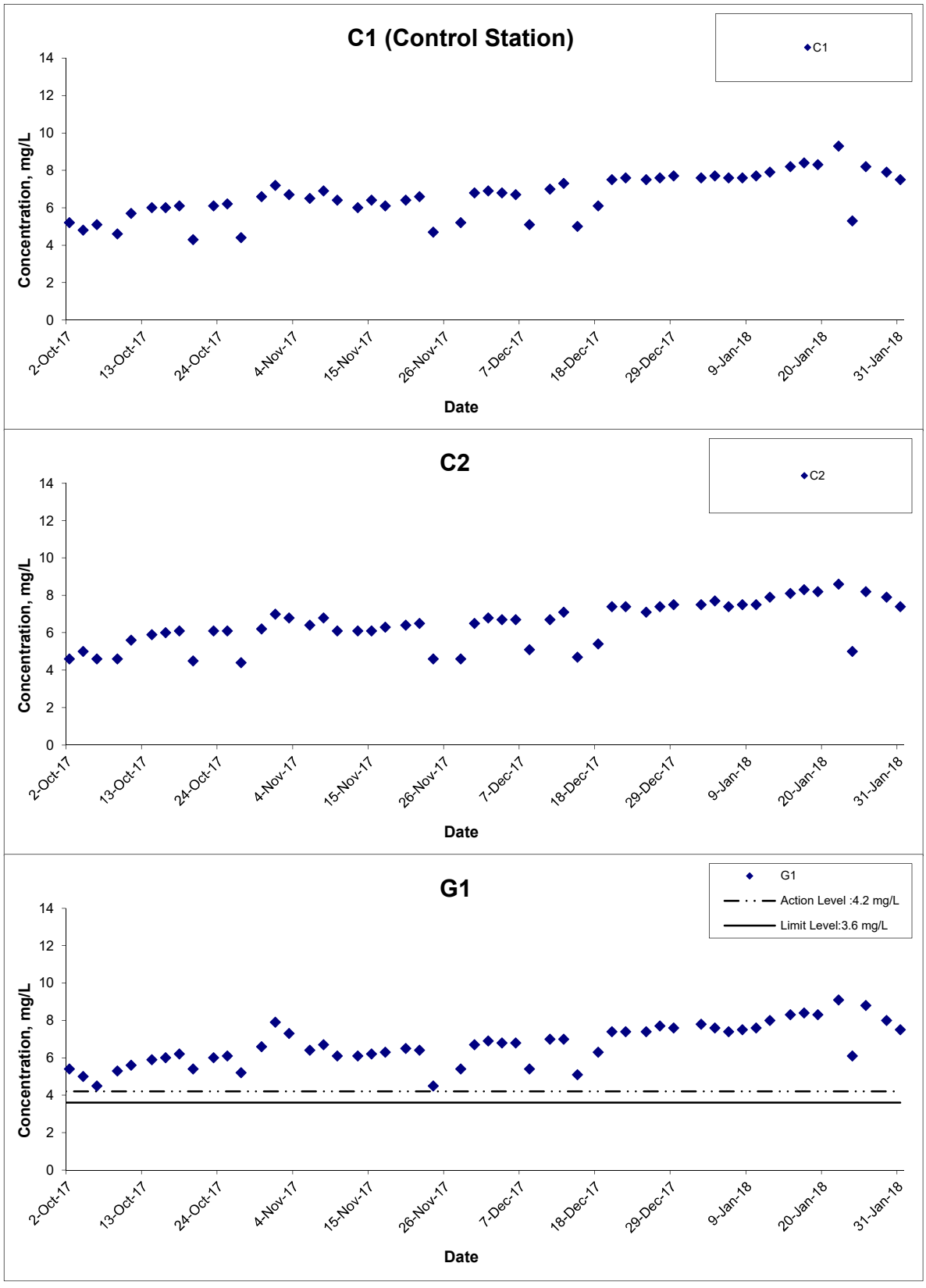
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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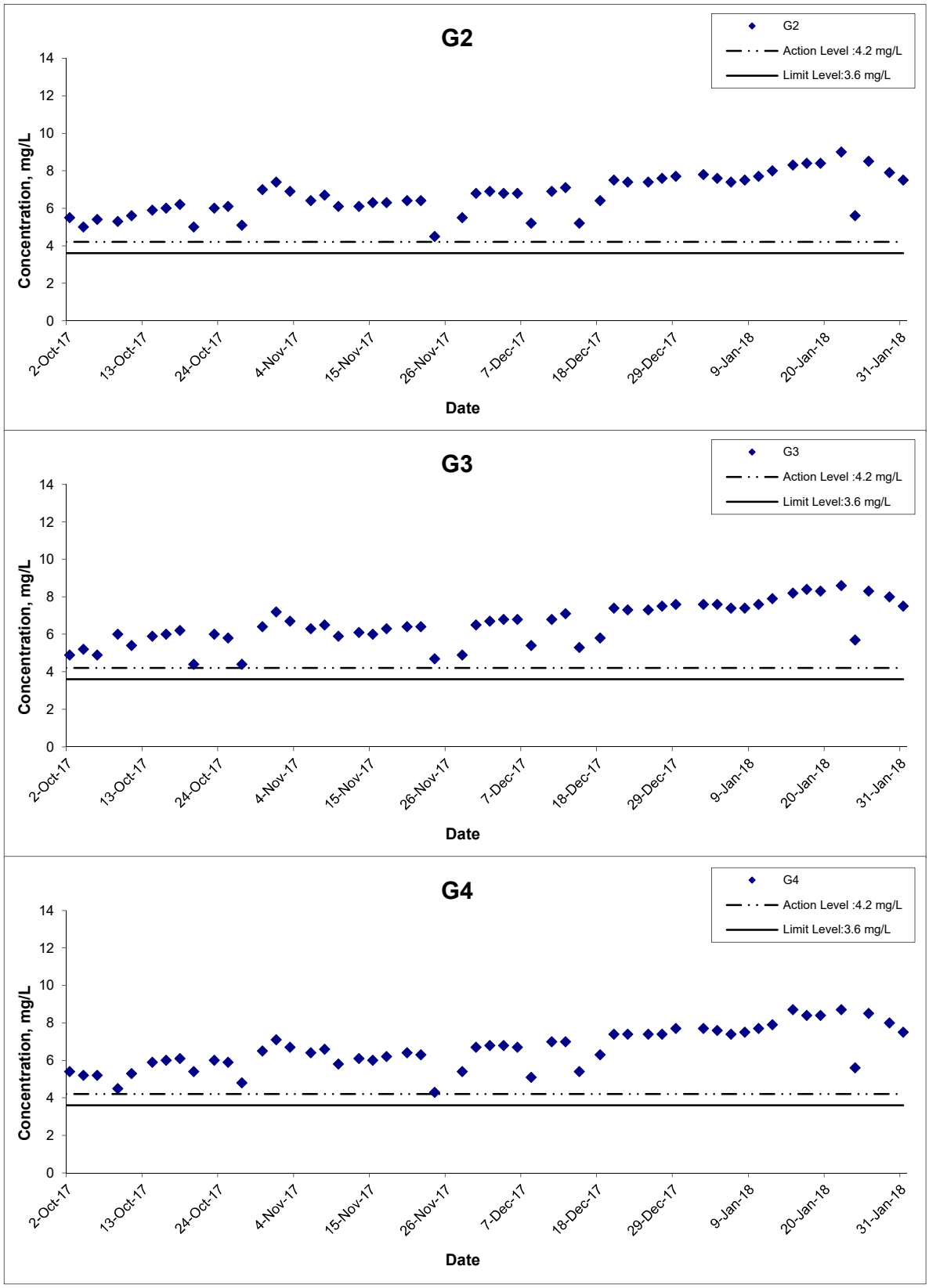
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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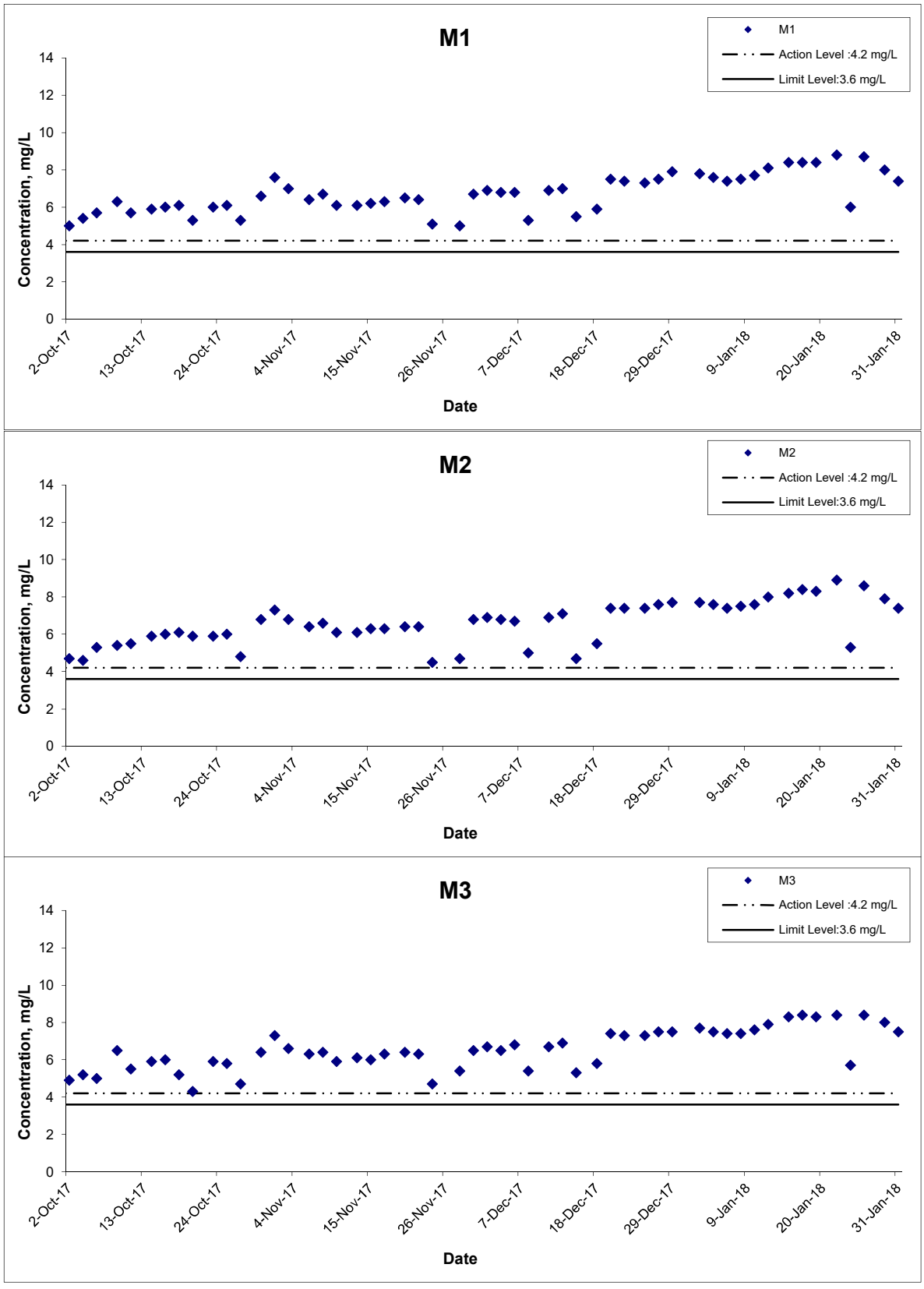
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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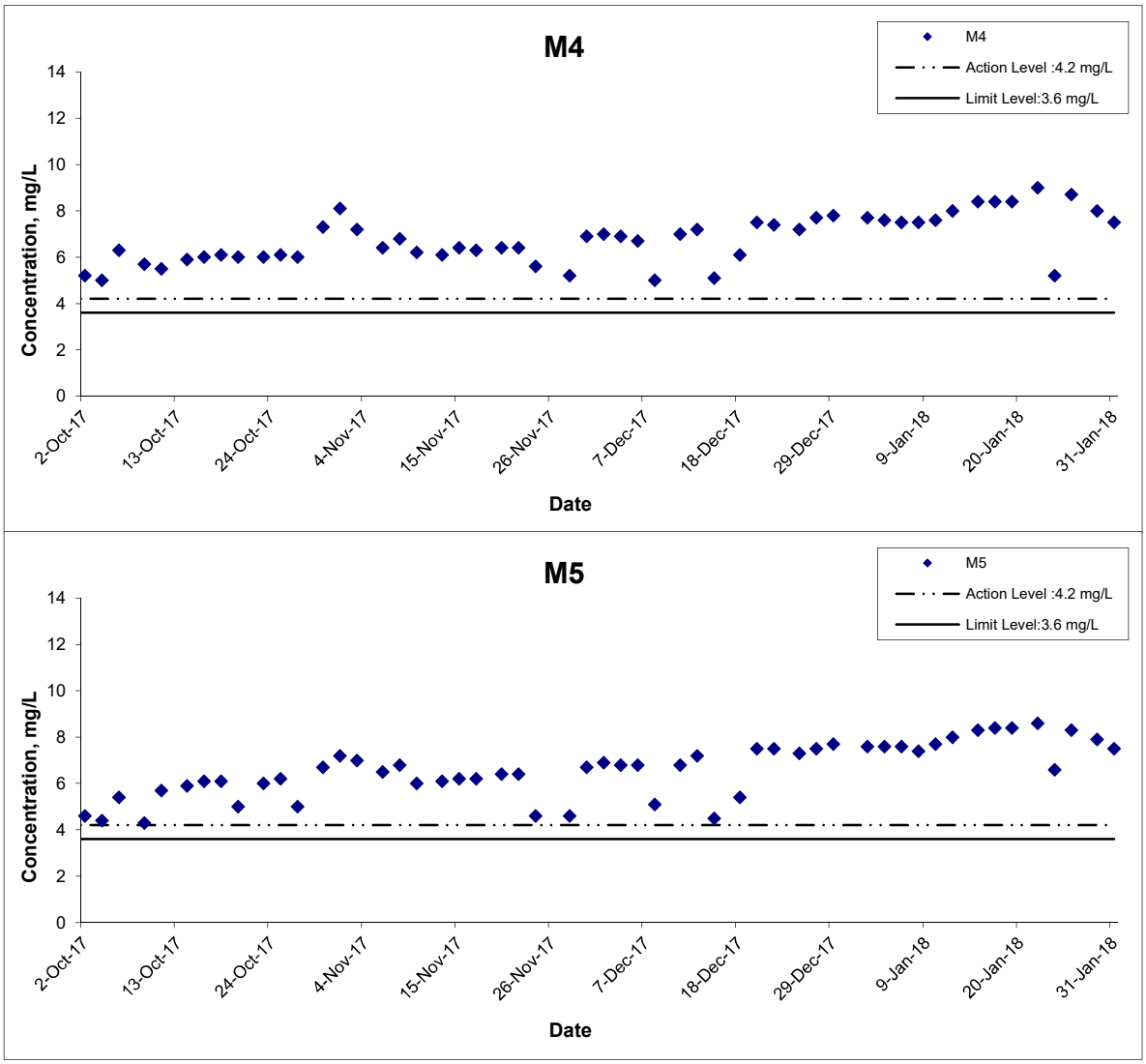
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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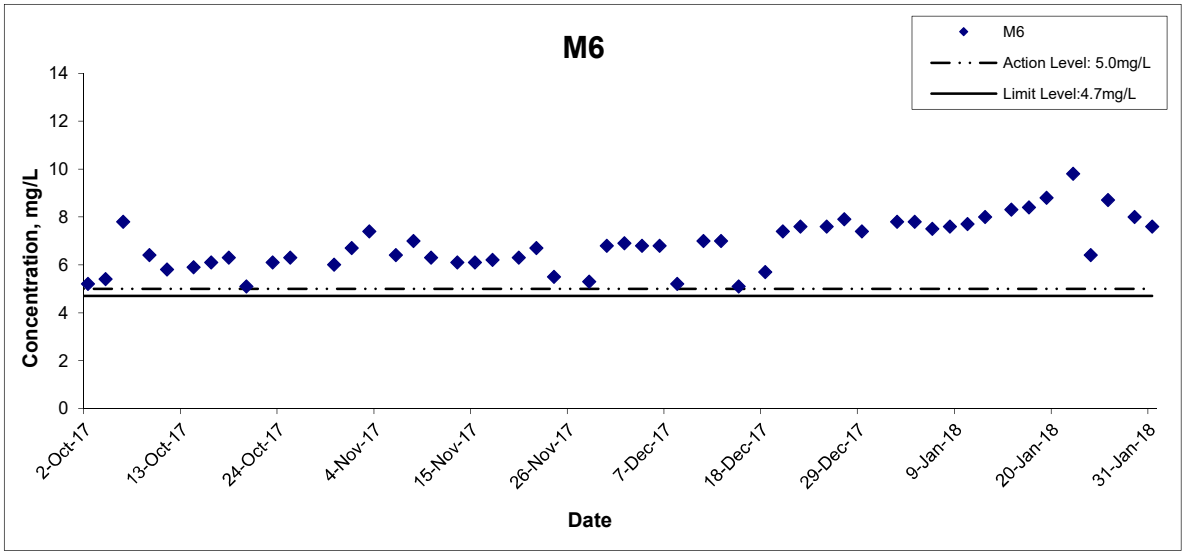
Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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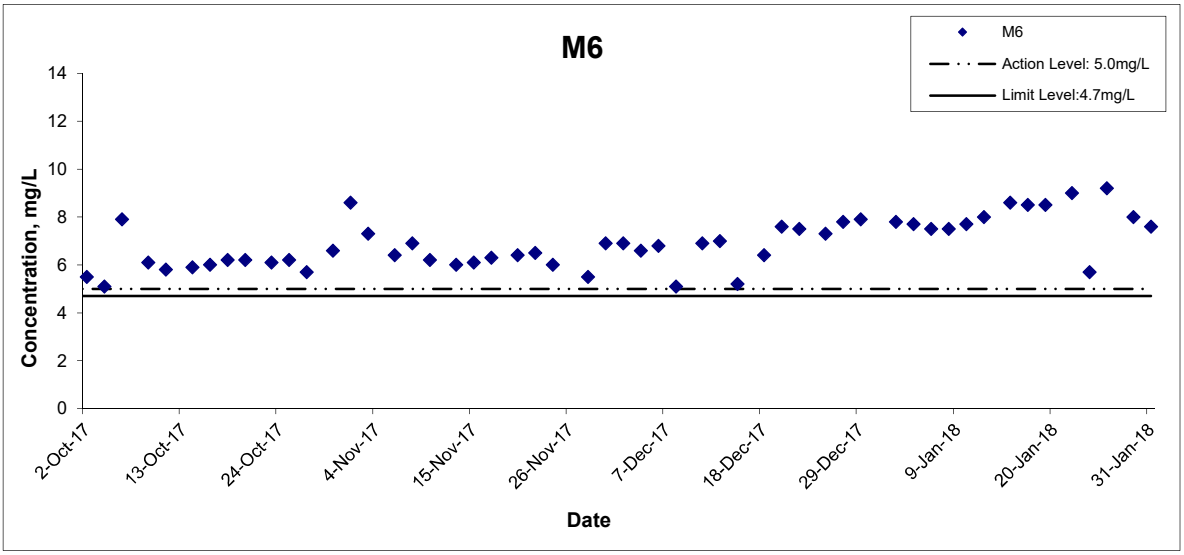
Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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Water Quality Monitoring Results at W1 - Mid-Ebb Tide

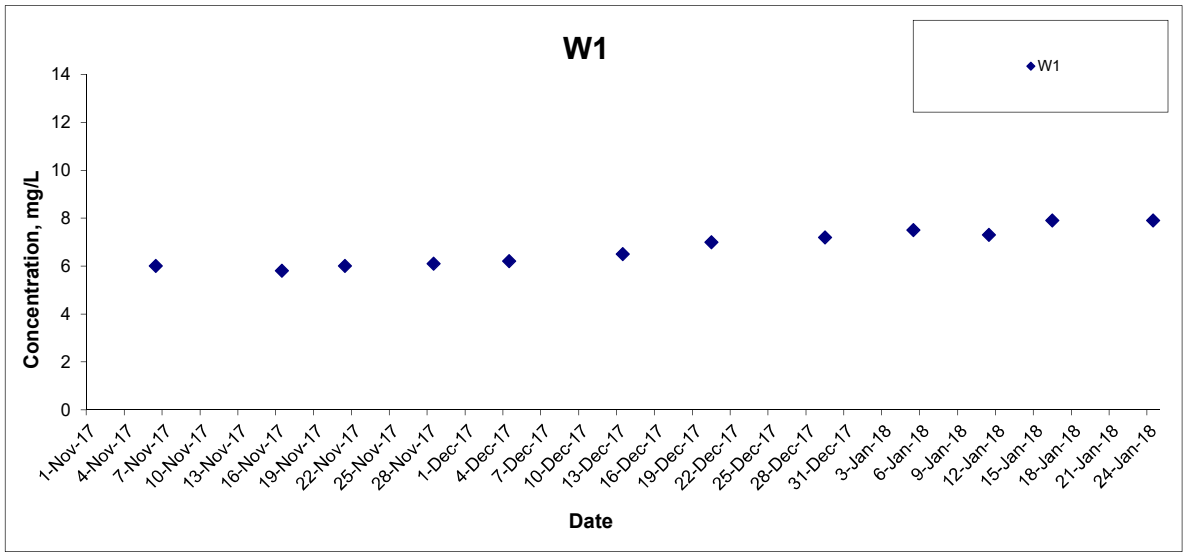
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*
5-Jan-18	Cloudy	Calm	15:54	Surface	1	18.5 18.5	18.5	8.0 8.0	8.0	32.3 32.3	32.3	96.2 96.7	96.5	7.4 7.5	7.5	7.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	2.1	18.5 18.5	18.5	8.0 8.0	8.0	32.3 32.3	32.3	96.0 96.6	96.3	7.4 7.5	7.5	7.5
11-Jan-18	Sunny	Calm	09:05	Surface	1	17.0 17.0	17.0	8.3 8.3	8.3	34.2 34.2	34.2	93.3 93.1	93.2	7.3 7.3	7.3	7.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	3.9	17.0 17.0	17.0	8.3 8.3	8.3	34.2 34.2	34.2	92.8 92.8	92.8	7.3 7.3	7.3	7.3
16-Jan-18	Sunny	Moderate	12:43	Surface	1	16.9 16.9	16.9	7.8 8.0	7.9	32.0 32.0	32.0	99.3 99.2	99.3	7.9 7.9	7.9	7.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	2.6	16.9 16.9	16.9	8.0 8.1	8.1	32.0 32.0	32.0	99.1 99.3	99.2	7.9 7.9	7.9	7.9
24-Jan-18	Sunny	Moderate	17:00	Surface	1	17.7 17.7	17.7	8.4 8.4	8.4	31.9 31.9	31.9	100.5 100.3	100.4	7.9 7.9	7.9	7.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	4.6	17.7 17.7	17.7	8.4 8.4	8.4	31.9 31.9	31.9	100.2 100.2	100.2	7.9 7.9	7.9	7.9

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*
5-Jan-18	Cloudy	Calm	10:06	Surface	1	18.5 18.4	18.5	8.0 8.1	8.1	32.3 32.3	32.3	96.3 96.4	96.4	7.5 7.5	7.5	7.5
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	3.1	18.4 18.4	18.4	8.1 8.1	8.1	32.3 32.3	32.3	96.2 96.3	96.3	7.5 7.5	7.5	7.5
11-Jan-18	Sunny	Calm	15:25	Surface	1	17.0 17.0	17.0	8.3 8.3	8.3	34.2 34.2	34.2	92.8 93.0	92.9	7.3 7.3	7.3	7.3
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	3.9	17.0 17.0	17.0	8.3 8.3	8.3	34.2 34.2	34.2	92.7 92.5	92.6	7.3 7.3	7.3	7.3
16-Jan-18	Sunny	Moderate	15:59	Surface	1	17.2 17.3	17.3	8.0 8.1	8.1	32.0 32.0	32.0	101.9 102.1	102.0	8.1 8.1	8.1	8.1
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	2.3	17.1 17.1	17.1	8.1 8.1	8.1	32.0 32.0	32.0	100.8 101.6	101.2	8.0 8.1	8.1	8.1
24-Jan-18	Sunny	Moderate	12:19	Surface	1	17.7 17.8	17.8	8.3 8.3	8.3	31.9 32.0	32.0	100.3 100.2	100.3	7.9 7.9	7.9	7.9
				Middle	-	- -	-	- -	-	- -	-	- -	-	- -	-	
				Bottom	4.5	17.7 17.8	17.8	8.3 8.3	8.3	31.9 31.9	31.9	100.7 101.3	101.0	7.9 8.0	8.0	8.0

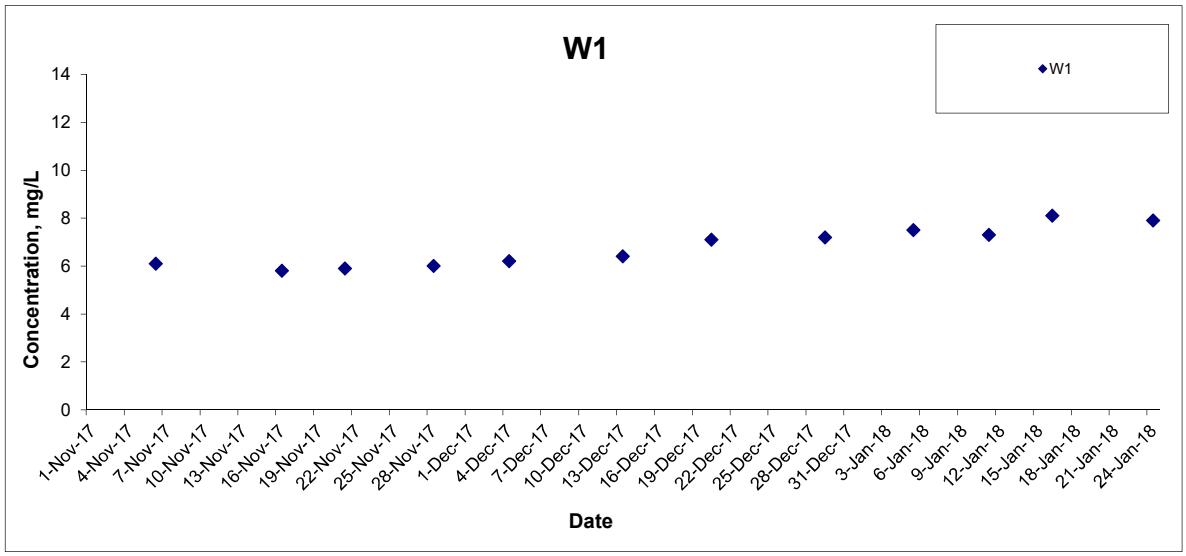
Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Dissolved Oxygen (Surface) at Mid-Ebb Tide



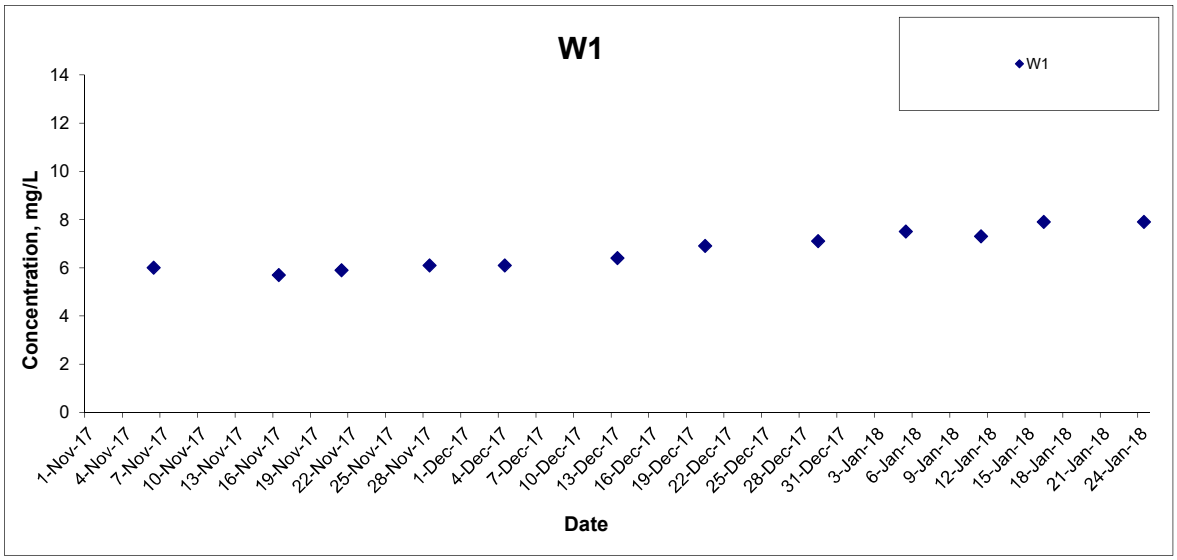
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Additional Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jan 18	Appendix: I	

Dissolved Oxygen (Surface) at Mid-Flood Tide



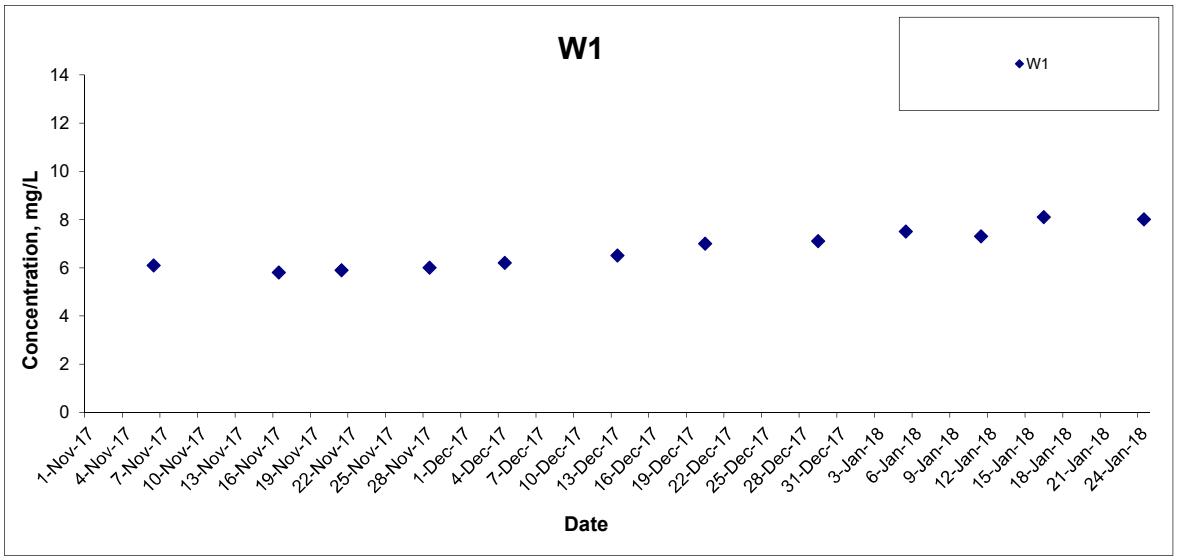
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Additional Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jan 18	Appendix: I	

Dissolved Oxygen (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 AddititionalWater Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jan 18	Appendix: I	

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 AddititionalWater Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jan 18	Appendix: I	

APPENDIX J
QUALITY CONTROL REPORTS FOR LABORATORY ANALYSIS

WELLAB LIMITED
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TEST REPORT

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

Report No.:	QC28141
Date of Issue:	2018-01-16
Date Received:	2018-01-05
Date Tested:	2018-01-05
Date Completed:	2018-01-16

ATTN: **Ms. Mei Ling Tang** Page: 1 of 2

QC report:

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) (%)	98	80-120
Biochemical Oxygen Demand (mg O_2/L)	190	170-220
Total Organic Carbon (%)	108	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	98	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 28141.

****

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

PATRICK TSE
Laboratory Manager

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Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
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Website: www.wellab.com.hk

TEST REPORT

Report No.:	QC28141
Date of Issue:	2018-01-16
Date Received:	2018-01-05
Date Tested:	2018-01-05
Date Completed:	2018-01-16

QC report:

Sample Duplicate

Parameter	28141-3 chk	Acceptance
Suspended Solids (SS) (%)	4	RPD≤20%
Biochemical Oxygen Demand (%)	N/A	RPD≤20%
Total Organic Carbon (%)	9	RPD≤20%
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	N/A	RPD≤20%
Total Phosphorus (%)	N/A	RPD≤20%

Sample Spike

Parameter	28141-3 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	103	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	92	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 28141.

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

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

TEST REPORT

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

Report No.:	QC28188
Date of Issue:	2018-01-25
Date Received:	2018-01-16
Date Tested:	2018-01-16
Date Completed:	2018-01-25

ATTN: **Ms. Mei Ling Tang**
Page: 1 of 2

QC report:

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) (%)	97	80-120
Biochemical Oxygen Demand (mg O_2/L)	194	170-220
Total Organic Carbon (%)	100	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	96	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 28188.

****

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

PATRICK TSE
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TEST REPORT

Report No.:	QC28188
Date of Issue:	2018-01-25
Date Received:	2018-01-16
Date Tested:	2018-01-16
Date Completed:	2018-01-25

QC report:

Sample Duplicate

Parameter	28188-3 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 (%)	N/A	RPD≤20%

Sample Spike

Parameter	28188-3 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	100	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	93	80-120
Total Phosphorus (%)	97	80-120

Remarks: 1) < = less than

2) N/A = Not applicable

3) This report is the summary of quality control data for report number 28188.

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

WELLAB 匯力 Testing & Research

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Website: www.wellab.com.hk

TEST REPORT

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

Report No.:	QC28280
Date of Issue:	2018-02-09
Date Received:	2018-01-31
Date Tested:	2018-01-31
Date Completed:	2018-02-09

ATTN: **Ms. Mei Ling Tang**
Page: 1 of 2

QC report:

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) (%)	114	80-120
Biochemical Oxygen Demand (mg O_2/L)	172	170-220
Total Organic Carbon (%)	98	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	106	80-120
Total Phosphorus (%)	98	80-120

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 28280.

****

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

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

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Website: www.wellab.com.hk

TEST REPORT

Report No.:	QC28280
Date of Issue:	2018-02-09
Date Received:	2018-01-31
Date Tested:	2018-01-31
Date Completed:	2018-02-09

QC report:

Sample Duplicate

Parameter	28280-3 chk	Acceptance
Suspended Solids (SS) (%)	2	RPD≤20%
Biochemical Oxygen Demand (%)	N/A	RPD≤20%
Total Organic Carbon (%)	3	RPD≤20%
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	2	RPD≤20%
Total Phosphorus (%)	N/A	RPD≤20%

Sample Spike

Parameter	28280-3 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	96	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	108	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 28280.

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

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Report No.:	28115
Date of Issue:	2018/1/3
Date Received:	2018/1/2
Date Tested:	2018/1/2
Date Completed:	2018/1/3
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/2
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180102

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	2.7	2.8	4	101

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

PREPARED AND CHECKED BY:
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PATRICK TSE
Laboratory Manager

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TEST REPORT

QC REPORT

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

Report No.:	28125
Date of Issue:	2018/1/5
Date Received:	2018/1/4
Date Tested:	2018/1/4
Date Completed:	2018/1/5
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/4
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180104

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.4	4.1	6	101

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

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

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Report No.:	28135
Date of Issue:	2018/1/8
Date Received:	2018/1/6
Date Tested:	2018/1/6
Date Completed:	2018/1/8
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/6
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180106

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	5.1	5.4	4	102

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

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

PATRICK TSE
Laboratory Manager

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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Report No.:	28139
Date of Issue:	2018/1/9
Date Received:	2018/1/8
Date Tested:	2018/1/8
Date Completed:	2018/1/9
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/8
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180108

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.5	3.5	2	97

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

PREPARED AND CHECKED BY:
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TEST REPORT

QC REPORT

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

Report No.:	28149
Date of Issue:	2018/1/11
Date Received:	2018/1/10
Date Tested:	2018/1/10
Date Completed:	2018/1/11
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/10
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180110

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.3	4.6	6	106

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

PREPARED AND CHECKED BY:
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Patrick Tse

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TEST REPORT

QC REPORT

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

Report No.:	28160
Date of Issue:	2018/1/15
Date Received:	2018/1/12
Date Tested:	2018/1/12
Date Completed:	2018/1/15
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/12
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180112

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.5	4.7	4	98

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

PREPARED AND CHECKED BY:
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TEST REPORT

QC REPORT

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

Report No.:	28172
Date of Issue:	2018/1/16
Date Received:	2018/1/15
Date Tested:	2018/1/15
Date Completed:	2018/1/16
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/15
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180115

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	5.1	5.2	0	99

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

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

PATRICK TSE
Laboratory Manager

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Technology Park, 18 On Lai Street,
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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Report No.:	28186
Date of Issue:	2018/1/18
Date Received:	2018/1/17
Date Tested:	2018/1/17
Date Completed:	2018/1/18
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/17
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180117

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.6	4.5	2	103

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

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

PATRICK TSE
Laboratory Manager

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

TEST REPORT

QC REPORT

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

Report No.:	28197
Date of Issue:	2018/1/22
Date Received:	2018/1/19
Date Tested:	2018/1/19
Date Completed:	2018/1/22
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/19
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180119

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.6	3.6	2	92

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

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

PATRICK TSE
Laboratory Manager

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Technology Park, 18 On Lai Street,
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Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Report No.:	28206
Date of Issue:	2018/1/23
Date Received:	2018/1/22
Date Tested:	2018/1/22
Date Completed:	2018/1/23
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/22
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180122

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	5.6	5.6	1	111

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

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

PATRICK TSE
Laboratory Manager

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TEST REPORT

QC REPORT

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

Report No.:	28230
Date of Issue:	2018/1/25
Date Received:	2018/1/24
Date Tested:	2018/1/24
Date Completed:	2018/1/25
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/24
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180124

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.3	4.3	0	103

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

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

PATRICK TSE
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TEST REPORT

QC REPORT

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

Report No.:	28247
Date of Issue:	2018/1/29
Date Received:	2018/1/26
Date Tested:	2018/1/26
Date Completed:	2018/1/29
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/26
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180126

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	1.9	1.8	4	94

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

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

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TEST REPORT

QC REPORT

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

Report No.:	28255
Date of Issue:	2018/1/30
Date Received:	2018/1/29
Date Tested:	2018/1/29
Date Completed:	2018/1/30
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/29
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180129

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.0	4.2	4	105

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

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

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Website: www.wellab.com.hk

TEST REPORT

QC REPORT

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

Report No.:	28275
Date of Issue:	2018/2/1
Date Received:	2018/1/31
Date Tested:	2018/1/31
Date Completed:	2018/2/1
Page:	1 of 1

ATTN: Ms. Mei Ling Tang

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/1/31
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)/180131

****

Total Suspended Solids	Duplicate Analysis			QC Recovery, %
Sampling Point	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.3	3.2	3	100

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

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

PATRICK TSE
Laboratory Manager

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: January 2018

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

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise
(Eight (8) Action Level exceedances were recorded due to the documented complaints received in this reporting month.)

Limit Level for Construction Noise
(Five (5) Limit Level exceedances were recorded in this reporting month. Refer to attached Investigation Report of Environmental Quality Limit Exceedances)

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
4 Jan 2018								
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	11:00	79.9	65.5	***79.7***	When one documented complaint is received	75.0	Limit
		11:30[(1)]	78.4	65.5	***78.2***	When one documented complaint is received	75.0	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	9:25	76.3	63.6	***76.1***	When one documented complaint is received	75.0	Limit
		9:55[(1)]	76.4	63.6	***76.2***	When one documented complaint is received	75.0	Limit
11 Jan 2018								
CM5	CCC Kei Faat Primary School	11:30	70.0	72.2	***65.3*** [(2)]	When one documented complaint is received	65.0	Limit
22 Jan 2018								
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	15:05	77.0	65.5	***76.7***	When one documented complaint is received	75.0	Limit
		15:35[(1)]	78.4	65.5	***78.2***	When one documented complaint is received	75.0	Limit
23 Jan 2018								
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	14:00	76.9	65.5	***76.6***	When one documented complaint is received	75.0	Limit
		15:00[(1)]	78.1	65.5	***77.9***	When one documented complaint is received	75.0	Limit

Note: (1) Repeated measurement according to Event and Action Plan for Construction Noise of the EM&A Manual
(2) Measured noise level has not exceeded the baseline noise level at station CM5. Therefore, the exceedance is considered as non-Project related and invalid

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
(No exceedance for marine water quality monitoring in the reporting month)

(Two Action Level exceedances and Three Limit Level exceedances in groundwater quality monitoring as followed:

Date	Monitoring Location	Monitoring Parameter	Monitoring Results	Action Level	Limit Level
5 Jan 2018	Stream 3	Suspended Solids	9 mg/L	7.6	12.1
31 Jan 2018	Stream 1	Suspended Solids	25 mg/L	7.6	12.1
31 Jan 2018	Stream 1	Ammonia-N	0.26 mg NH_3-N/L	0.15	0.20
31 Jan 2018	Stream 2	Suspended Solids	8 mg/L	7.6	12.1
31 Jan 2018	Stream 3	Suspended Solids	14 mg/L	7.6	12.1

It is considered that the exceedances were not project-related based on the following reasons:

- **For Stream 1, the exceedances were recorded on 31 January only. According to information of the Hong Kong Observatory, rain was particularly heavy during the day that total rainfall recorded on 31 January is 19.3 mm. Also, the exceeded levels are within the maximum levels during baseline monitoring. It is considered that the exceedances were due to natural fluctuations, rather than the project works.**

- **For Stream 2 and 3, there is no tunnel boring or tunnel construction works in Tseung Kwan O side in this reporting month.)**

(D) Exceedance Report for Ecology
(NIL in the reporting month)

(E) Exceedance Report for Cultural Heritage
(NIL in the reporting month)

(F) Exceedance Report for Landfill Gas
(NIL in the reporting month)

Agreement No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction
-Investigation Report of Environmental Quality Limit Exceedances

Date of Noise Monitoring: 4 January 2018

Part A – Exceedance Summary

A noise exceedance was recorded at 9:25 and 11:00 at Bik Lai House and Nga Lai House respectively on 4 January 2018

An exceedance summary is shown in Table I:

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	11:00	79.9	65.5	***79.7***	When one documented complaint is received	**75.0**	Limit
		11:30(1)	78.4	65.5	***78.2***	When one documented complaint is received	**75.0**	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	9:25	76.3	63.6	***76.1***	When one documented complaint is received	**75.0**	Limit
		9:55(1)	76.4	63.6	***76.2***	When one documented complaint is received	**75.0**	Limit

(1) Repeated measurement according to Event and Action Plan for Construction Noise of the EM&A Manual

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

Part B – Source of Exceedance

The major noise sources identified during the noise measurements are as follows:

1. Construction activities under this Project at "Slope H":
According to on-site observation by ET during the monitoring, it was identified the major noise source form construction activities of this Project was rock breaking works at "Slope H" in Lam Tin Interchange (Photo 1). It was observed that the noise barrier was not placed directly in front of the breaker during rock breaking works. In addition, according to Contractor, no noise generating activity at Portion IVC was carried out.

According to information provided by the Contractor, one excavator-mounted breaker were in operation for rock breaking at "Slope H" at site Portion IVB. The need for sideway-placed noise barrier to cater for ground excavation works on the edge of a steep slope according to the construction sequence for a short period of time.

Photo 1
Rock breaking works at "Slope H" during noise monitoring

2. Road Traffic Noise at slips roads approaching Eastern Harbour Crossing Tunnel
3. It was noted that noisy works including slope stabilization works were being carried out at sites on the slope along Lei Yue Mun Road by other Projects.

Review of Latest Construction Noise Assessment:

According to information provided by the Contractor, the quantity of operated PMEs at site Portion IVB during the period of exceedance included 1 nos. of excavator-mounted breaker. The quantities are in compliance of the latest construction noise assessment presented in Monthly EM&A Report (March 2017), of which the Contractor proposed to adopt a maximum of 1 backhoe with hydraulic breaker at "Activity ID: 1.1 Construction of Lam Tin Interchange (LTI)". The quantities are in compliance during checking by ET on the weekly site inspection on 3 January 2018.

As mentioned above, it was observed that the noise barrier was not placed directly in front of the excavator-mounted breaker during rock breaking works.

Part C – Actions Taken

Upon being noticed of the noise exceedance, the Contractor has suspended rock breaking works at Slope H. The Contractor had implemented the following:

- movable noise barrier at Slope H was placed at position suitable for breaking works once the ground condition at Slope H allows placing of movable noise barrier
- Conduct checking of movable noise barrier at Slope H. Any damaged noise barrier at Slope H is replaced.

According to the Contractor, the rock breaking works facing Yau Lai Estate has resumed and been carried out intermittently in the following week as the damaged acoustic mat is repaired (Photo 2). Based on observations by ET during weekly site inspection on 10 January 2018, excavator-mounted breaker was operating behind the movable noise barrier and/or behind the acoustic mat. The noise barriers are in condition in general (Photo 3). The Contractor is reminded by ET to continuously monitor the conditions of movable noise barriers and avoid gaps in between on the noise barriers.

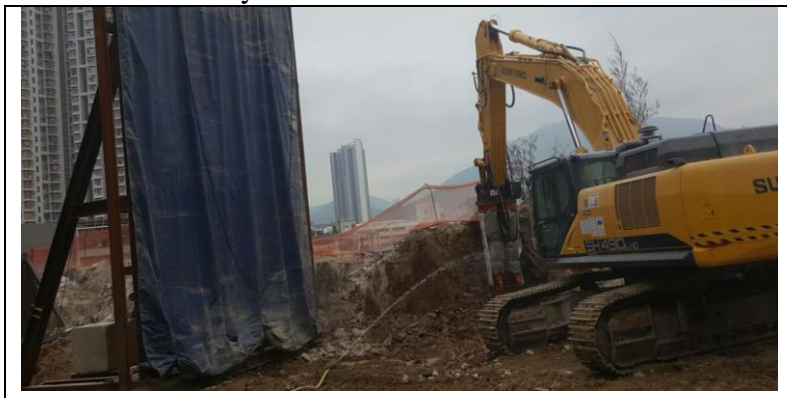


Photo 2 Noise barrier for resumed rock breaking works	Photo 3 Repaired noise barrier near Slope H

The followings will be implemented by the Contractor to minimize noise nuisance to vicinity:

1. Contractor would review the use of PMEs in order to keep the noise level within the limit level of 75 dB(A);
2. Contractor would arrange the training to the frontline staff to enhance their awareness of the integrity of the noise barrier in noise reduction during the rock breaking.

Part D – Additional Noise Monitoring

According to the Event and Action Plan for Construction Noise in the EM&A Manual, ET has increased noise monitoring frequency to check the effectiveness of Contractor's remedial action. Additional noise monitoring was carried out on 5 January 2018 at Station CM1 and CM2. No Limit Level Exceedance are recorded. Monitoring frequency would increase from weekly to twice a week to check the effectiveness of implemented noise mitigation measures by the Contractor.

Monitoring Date: 5 January 2018

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	15:30	75.0	65.5	74.5	When one documented complaint is received	**75.0**	No Exceedance
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	11.30	74.3	63.3	73.9	When one documented complaint is received	**75.0**	No Exceedance

Part E – Recommendations

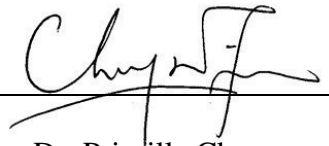
The ET has reminded the Contractor to further minimize noise nuisance by implementing mitigation measures as below:

1. Temporary Noise Barrier should be properly provided during the use of excavator-mounted breaker as proposed in the approved Noise Mitigation Plan. No rock breaking works should proceed if noise mitigation measures are not provided or well-maintained, regardless of site constraints.
2. To continue to properly implement noise mitigation measures as recommended in the Environmental Monitoring & Audit Manual and approved Noise Mitigation Plan such as:
   - Quantity of each type of PME in operation on site should be consistent with the proposed quantity in the approved NMP;
   - Should there be any update in construction programme / quantities in each type of PME, the Contractor shall prepare an update of construction noise assessment. The updated construction noise assessment shall be included in Monthly EM&A Report.
3. To well-maintain all the PME condition and check all the mitigation measurements implemented on site regularly.
4. To reschedule operation time and reduce operation duration of each PME.
5. To turn off or throttle down idle PME.

The IEC has also recommended the following to the Contractor:

1. Noise barrier should be erected as close as possible to the noise source of the PME to screen out the noise propagation effectively.
2. To consider to use damper and/or to wrap acoustic insulation materials at the breaker head to tackle the noise source from the breaker.

The recommendations by ET and IEC will be kept in view to ensure the effectiveness to minimize noise nuisance to nearby sensitive receivers.

Reviewed by: 

Dr. Priscilla Choy

Title: Environmental Team Leader

Date: 12 January 2018

Agreement No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction
-Investigation Report of Environmental Quality Limit Exceedances

Date of Noise Monitoring: 22 and 23 January 2018

Part A – Exceedance Summary

An exceedance summary is shown in Table I:

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
22 Jan 2018								
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	15:05	77.0	65.5	***76.7***	When one documented complaint is received	**75.0**	Limit
		15:35(1)	78.4	65.5	***78.2***	When one documented complaint is received	**75.0**	Limit
23 Jan 2018								
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	14:00	76.9	65.5	***76.6***	When one documented complaint is received	**75.0**	Limit
		15:00(1)	78.1	65.5	***77.9***	When one documented complaint is received	**75.0**	Limit

(1) Repeated measurement according to Event and Action Plan for Construction Noise of the EM&A Manual

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

Part B – Source of Exceedance

The major noise sources identified during the noise measurements are as follows:

1. Construction activities under this Project:

22 Jan 2018

The major noise source form construction activities of this Project was rock breaking works at Portion IVc and also "Slope H" at site Portion IVb (Photo 1). One excavator-mounted breaker for breaking and one drill rig in operation for drilling at Portion IVc; while one excavator-mounted breaker was in operation for rock breaking at “Slope H” at site Portion IVb.

23 Jan 2018

It was observed rock breaking and noisy works at Portion IVc was suspended during the noise monitoring. The major noise source form construction activities of this Project was rock breaking works at "Slope H" at site Portion IVb (Photo 1). Based on checking of site record of 23 Jan 2018 by the Contractor, TWO excavator-mounted breakers were in operation alternately for rock breaking at "Slope H" at site Portion IVb.

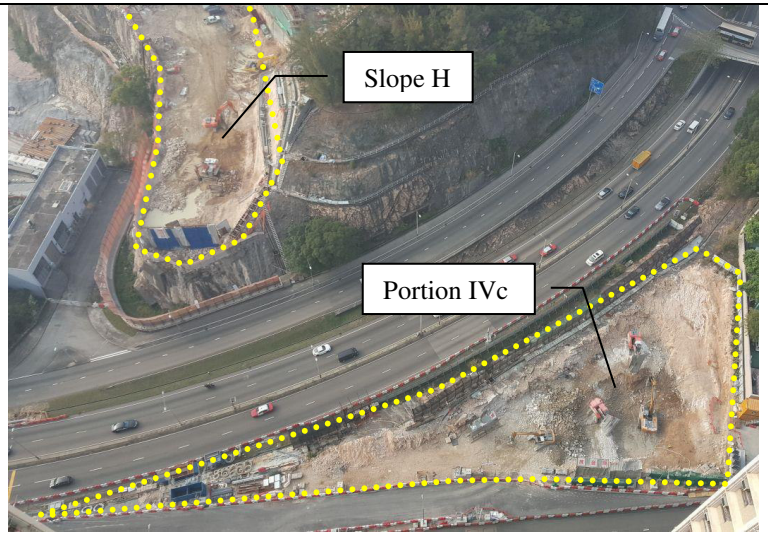


Photo 1
Overview of Portion IVc and Slope H (22 Jan 2018)

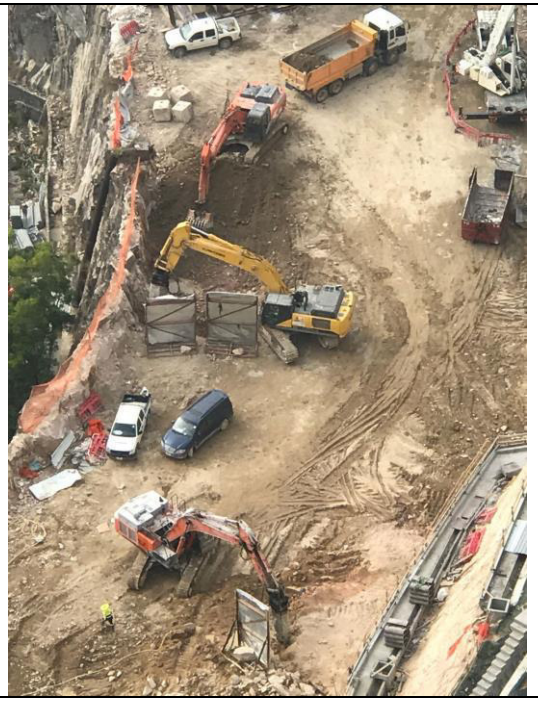


Photo 2
Rock breaking works at "Slope H" (23 Jan 2018)

2. Road Traffic Noise at slips roads approaching Eastern Harbour Crossing Tunnel

Review of Latest Construction Noise Assessment:

The checking is summarized in table below:

Date	Site Portion	Work Site ID in construction noise assessment	Operated PME	Proposed PME in construction noise assessment	Compliance with construction noise assessment?
22 Jan 2018	Portion IVc	Work Site ID: 116a	• 1 excavator-mounted breaker • 1 drill rig	• 2 backhoe with hydraulic breaker • 2 drill rigs	YES
22 Jan 2018	Portion IVb (Slope H)	Work Site ID: 101	1 excavator-mounted breaker	1 backhoe with hydraulic breaker	YES
23 Jan 2018	Portion IVb (Slope H)	Work Site ID: 101	2 excavator-mounted breaker alternately	1 backhoe with hydraulic breaker	YES

It is observed that the quantity of operated PMEs at site Portion IVB during the period of exceedance on 23 Jan 2018 included TWO nos. of excavator-mounted breakers, which is not in compliance of the latest construction noise assessment.

Part C – Actions Taken

Upon being noticed of the noise exceedance, the Contractor has suspended rock breaking works. The followings observations are recorded during ET site inspection on 24 Jan 2018:

Gaps between noise barrier

Acoustic wrap for breaker head should be replaced

Noise absorptive material should be replaced

Refer to the above observations (Photo 1-4), the Contractor had implemented the following:

- Movable noise barrier was erected at Slope H and placed as close as to the excavator-mounted breaker;
- Gaps between noise barrier panels at Slope H are sealed and placed with extra noise absorptive material in between;
- Acoustic wrap for breaker at Slope H is repaired;
- At Portion IVc, cantilever portion of noise barriers are with replaced with acoustic mat.

The photos record for the above follow up actions could be referred to the "Proposal for Remedial Action for Exceedance of Noise Limit Level on 22 and 23 January 2018" by the Contractor.

Furthermore, as reminders by ET and IEC, the Contractor will proceed the following to further minimize noise impact during operation:

i) Install cantilever portion to the existing movable noise barriers;
ii) Schedule noisy operation properly to minimize exposure and cumulative impacts;
iii) Shut down machines and plant that may be in intermittent use or throttle down to a minimum;
iv) Use of damper at breaker head.

Part D – Additional Noise Monitoring

According to the Event and Action Plan for Construction Noise in the EM&A Manual, ET has increased noise monitoring frequency to check the effectiveness of Contractor's remedial action. Monitoring frequency would increase from weekly to twice a week to check the effectiveness of implemented noise mitigation measures by the Contractor at CM1.

Part E – Recommendations

The ET has reminded the Contractor to further minimize noise nuisance by implementing mitigation measures as below:

1. Temporary Noise Barrier should be properly provided during the use of excavator-mounted breaker as proposed in the approved Noise Mitigation Plan. No rock breaking works should proceed if noise mitigation measures are not provided or well-maintained, regardless of site constraints.
2. To continue to properly implement noise mitigation measures as recommended in the Environmental Monitoring & Audit Manual and approved Noise Mitigation Plan such as:
   - Quantity of each type of PME in operation on site should be consistent with the proposed quantity in the approved NMP;
   - Should there be any update in construction programme / quantities in each type of PME, the Contractor shall prepare an update of construction noise assessment. The updated construction noise assessment shall be included in Monthly EM&A Report.

The IEC has also recommended the following to the Contractor:

1. To consider alternative quieter construction method, such as the use of chemical agent for rock breaking works to minimize the noise impact.

The recommendations by ET and IEC will be kept in view to ensure the effectiveness to minimize noise nuisance to nearby sensitive receivers.

Reviewed by: 
Dr. Priscilla Choy

Title: Environmental Team Leader
Date: 26 January 2018

APPENDIX L
SITE AUDIT SUMMARY

Appendix L - Site Audit Summary (January 2018)

Contract No. NE/2015/01

Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
Silt curtain should enclose the entire area of marine works at TKO site to prevent effluent discharge.	31 January 2018	#	Follow up action will be reported in next reporting month
Gaps between silt curtains at TKO site should be avoided.	31 January 2018	#	Follow up action will be reported in next reporting month
Noise			
Noise barriers should be placed next to PME in LTI to reduce noise nuisance to nearby NSRs.	03 January 2018	✓	Improved/rectified on 10 January 2018.
The Contractor should ensure there are no gaps between noise barriers at Slope H in LTI.	24 January 2018	✓	Improved/rectified on 31 January 2018.
Acoustic materials wrapped on breaker head of PMEs on Slope H in LTI should be kept well maintained.	24 January 2018	✗	Item remarked on 31 January 2018.
	31 January 2018	#	Follow up action will be reported in next reporting month
The Contractor was reminded to place noise barriers next to breakers to reduce noise nuisance to nearby NSRs.	24 January 2018	✗	Item remarked on 31 January 2018.
	31 January 2018	#	Follow up action will be reported in next reporting month
Noise mitigation measures at Portion IVC next to Nga Lai House should be enhanced to minimize noise nuisance to NSRs nearby.	31 January 2018	#	Follow up action will be reported in next reporting month
The Contractor should ensure the noise barrier mounted on PME faces the nearby NSRs during works.	31 January 2018	#	Follow up action will be reported in next reporting month
Landscape and Visual			
--	--	--	--
Air Quality			
Water spraying should be provided more frequently near slip road near EHC for dust suppression.	03 January 2018	✓	Improved/rectified on 10 January 2018.
Exposed slope at TKO & LTI should be sprayed with water for dust suppression.	17 January 2018	✓	Improved/rectified on 24 January 2018.
The contractor was reminded to repair the PME to avoid black smoke emission at LTI.	17 January 2018	✓	Improved/rectified on 24 January 2018.
Bagged cement on haul road at Portion 6 in TKO site should be covered or sheltered on top and three sides.	24 January 2018	✓	Improved/rectified on 31 January 2018.
Waste / Chemical Management			
Oil stains at Portion IVC should be properly cleared as chemical waste.	27 December 2017	✓	Improved/rectified on 03 January 2018.
Waste skip at Portion IVC should be maintained more frequently to avoid accumulation of waste.	03 January 2018	✓	Improved/rectified on 10 January 2018.
Drip tray should be provided to chemical containers at work site near EHC.	03 January 2018	✓	Improved/rectified on 10 January 2018.
Drip tray should be provided to chemical containers in LTI.	10 January 2018	✓	Improved/rectified on 17 January 2018.
Drip tray should be provided to chemical containers at Portion 6 in TKO site.	24 January 2018	✓	Improved/rectified on 31 January 2018.
General refuse at TKO site should be properly cleared.	31 January 2018	#	Follow up action will be reported in next reporting month
Impact on Cultural Heritage			
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Appendix L - Site Audit Summary (January 2018)

Items	Date	Status*	Follow up Action
Permits / Licenses			
--	--	--	--

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

Appendix L - Site Audit Summary (January 2018)

Contract No. NE/2015/02

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

Items	Date	Status*	Follow up Action
Water Quality			
Gap was observed between 2 units of silt curtain near Type 1 and 2C cofferdam.	10 January 2018	✗	Item remarked on 16 January 2018.
	16 January 2018	✓	Improved/rectified on 25 January 2018.
General refuse was observed accumulated at the silt curtains near Type 1 and 2C cofferdam. Housekeeping should be enhanced at Portion 9.	10 January 2018	✗	Item remarked on 16 January 2018.
	16 January 2018	✓	Improved/rectified on 25 January 2018.
Frame type silt curtains were found damaged at GD2 and ShunTat 20. The Contractor was reminded to carry out maintenance as necessary and ensure integrity of silt curtain at all time.	10 January 2018	✗	Item remarked on 16 January 2018.
	16 January 2018	✓	Improved/rectified on 25 January 2018.
The Contractor was reminded to keep the deck of hopper barge free of excess material before the vessel is moved.	25 January 2018	#	Follow up action will be reported in next reporting month
Minor gap was found between 2 units of silt curtain near Type 1 cofferdam. The Contractor was reminded to carry out maintenance regularly to ensure integrity of silt curtain at all time.	25 January 2018	#	Follow up action will be reported in next reporting month
Noise			
The Contractor was reminded to provide sufficient dust screen/ noise barrier in Portion 7 to screen dusty/ noisy works from sensitive receivers.	16 January 2018	✓	Improved/rectified on 25 January 2018.
Landscape and Visual			
--	--	--	--
Air Quality			
The Contractor was reminded to properly cover the bagged cement in Portion 7 to prevent dust emission.	04 January 2018	✓	Improved/rectified on 10 January 2018.
Dust mitigation should be enhanced in Portion 4 and Work Area A.	16 January 2018	✗	Item remarked on 25 January 2018.
	25 January 2018	#	Follow up action will be reported in next reporting month
The top of mixing area in Work Area A was found opened. The Contractor should carry out maintenance as necessary and ensure the mixing area is properly enclosed.	16 January 2018	✓	Improved/rectified on 25 January 2018.
The Contractor was reminded to provide sufficient dust screen/ noise barrier in Portion 7 to screen dusty/ noisy works from sensitive receivers.	16 January 2018	✓	Improved/rectified on 25 January 2018.
Waste / Chemical Management			
Housekeeping should be enhanced at Portion 7 and accumulation of waste should be avoided.	28 December 2017	✓	Improved/rectified on 04 January 2018.
Oil stain was found under an idling drill rig in Portion 7.	25 January 2018	#	Follow up action will be reported in next reporting month
Impact on Cultural Heritage			
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Permits / Licenses			
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Appendix L - Site Audit Summary (January 2018)

✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit

\# Follow up action will be reported in next reporting month

∗ Non-compliance of mitigation measure

- Non-compliance but rectified by the contractor

Appendix L - Site Audit Summary (January 2018)

Contract No. NE/2015/03
Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
Water Quality			
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Noise			
--	--	--	--
Landscape and Visual			
A proper label is needed for the "Tree Protection Zone" in West Pier.	10 January 2018	✓	Improved/rectified on 19 January 20187.
Air Quality			
--	--	--	--
Waste / Chemical Management			
Impact on Cultural Heritage			
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Permits / Licenses			
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✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
✕ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
\# Follow up action will be reported in next reporting month

∗ Non-compliance of mitigation measure
• Non-compliance but rectified by the contractor

APPENDIX M
EVENT AND ACTION PLANS

Event and Action Plan for Air Quality (Dust)

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	8. If exceedance stops, cease additional monitoring.			
Limit level being exceeded by one sampling	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor ,IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals;

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	3. Supervise the implementation of remedial measures.	4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.			

Event and Action Plan for Marine Water Quality

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action level being exceeded by one sampling day at water sensitive receiver(s)	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; • If exceedance is found to be caused by the reclamation activities, repeat *in-situ* measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • If exceedance occurs at WSD salt water intake, inform WSD; • Discuss mitigation measures with IEC and Contractor; • Repeat measurement on next day of exceedance.	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal.	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Amend working methods if appropriate; • Discuss with ET and IEC and propose mitigation measures to IEC and ER; • Implement the agree mitigation measures.
Action level being exceeded by two or more consecutive	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures;	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal;	• Inform the Engineer and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
sampling days at water sensitive receiver(s)	• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Ensure mitigation measures are implemented; • Prepare to increase the monitoring frequency to daily; • If exceedance occurs at WSD salt water intake, inform WSD; • Repeat measurement on next day of exceedance.	• Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Assess the effectiveness of the implemented mitigation measures.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day at water sensitive receiver(s)	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
	• If exceedance is found to be caused by the reclamation activities, repeat *in-situ* measurement to confirm findings; • Inform IEC, contractor, AFCD and EPD • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level; • If exceedance occurs at WSD salt water intake, inform WSD.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and submit proposal of mitigation measures to IEC and ER within 3 working days of notification; • Implement the agreed mitigation measures.
Limit level being exceeded by two or more consecutive sampling days at	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IC(E), ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
water sensitive receiver(s)	• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IC(E), AFCD, contractor and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IC(E), ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days; • If exceedance occurs at WSD salt water intake, inform WSD.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures; • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IC(E) and ER and submit proposal of mitigation measures to IC(E) and ER within 3 working days of notification; • Implement the agreed mitigation measures; • As directed by the Engineer, to slow down or to stop all or part of the construction activities.

Limit Levels and Action Plan for Landfill Gas

Parameter	Limit Level	Action
Oxygen	<19%	• Ventilate to restore oxygen to >19%
	<18%	• Stop works • Evacuate personnel/prohibit entry • Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. > 0.5% by volume)	• Prohibit hot works • Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. > 1% by volume)	• Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore methane to <10% LEL
Carbon Dioxide	>0.5%	• Ventilate to restore carbon dioxide to < 0.5%
	>1.5%	• Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore carbon dioxide to < 0.5%

Event and Action Plan for Coral Post-Translocation Monitoring

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level Exceedance	1. Check monitoring data; 2. Inform the IEC, ER and Contractor of the findings; 3. Increase the monitoring to at least once a month to confirm findings; 4. Propose mitigation measures for consideration	1.Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.
Limit Level Exceedance	Undertake Steps 1-4 as in the Action Level Exceedance. If further exceedance of Limit Level, suspend construction works until an effective solution is identified.	1.Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.

Mitigation Measures for Vibration Monitoring

Level	Contingency Action
Alert Level	● The Engineer shall be informed immediately. ● The Contractor shall submit an investigation report to describe works being undertaken. To review the instrument responses and to study the cause of undue response. ● The Contractor shall review and increase the instrumentation monitoring and reporting frequency, if applicable. ● The Contractor shall submit a detailed plan of action describing the measures to be taken should the concerned instrument reach the action level to the Engineer for approval.
Alarm Level	● The Engineer shall be informed immediately. ● The active construction works may require to be suspended subject to the Engineer's review of monitoring data. ● The Contractor shall immediately implement the measures as defined in the detailed plan of action to prevent further ground movement and groundwater drawdown etc. ● The Contractor shall prepare a detailed investigation report to study the cause of the exceedance ● The Contractor shall propose a contingency plan for the Engineer's approval in the event that alarm value is reached or exceeded ● The Contractor shall develop an emergency plan for the Engineer's approval in the event the applied contingency measures cannot control the situation. ● The Contractor shall meet the Engineer to discuss the instrument response and review the effectiveness of the implemented measures. ● The Contractor shall carry out design review of the works

Action Level	● Consideration shall be given to suspend all active construction works and the Engineer shall be informed immediately ● The Contractor shall immediately implement the measures defined in the contingency plan ● The Contractor shall implement the measures defined in the emergency plan in the event that the applied contingency measures are found inadequate ● The Contractor shall provide a complete report to examine the construction method and review the response of the instruments with full history of the monitoring data and construction activities and necessary design update ● To resume the suspended activities, the Contractor shall demonstrate to the Engineer's satisfaction that it is safe to do so with approval from the Engineer.

APPENDIX N
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

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

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

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.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Air Quality Impact							
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	*(1)
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall, 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.h - 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	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	*(1) *(1)

EIA Ref.	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
	applied to aggregate fines.						
	- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.						^
	- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.						^
	- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.						N/A
	- Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods.						^
	- Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit.						^
	- Imposition of speed controls for vehicles on site haul roads.						^
	- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs						^
	- Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.						*(1)
	- 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.						

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
/	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• 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	N/A
Noise Mitigation Plan	Use of Temporary Noise Barriers or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	*(2) / #(2)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S4.9	Good Site Practice - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program - Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. - Mobile plant, if any, should be sited as far away from NSRs as possible. - Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^ ^ ^ ^
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the 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	Control potential impacts from filling	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	activities					
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
S5.8.3	Other good site practices should be undertaken during filling operations include: - all marine works should adopt the environmental friendly construction methods as far as practically possible including the use of cofferdams to cover the construction area to separate the construction works from the sea; - floating single silt curtain shall be employed for all marine works; - all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved; - adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	*(3)/#(3) *(3)/#(3) ^ ^ *(3)/#(3) ^

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

EIA Ref.	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
	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. The general of arrangement of silt curtain is shown in Figure 7 of the existing Environmental Permit (No. EP-458/2013/C).						^
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the corresponding WCZ	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	*(5)

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

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	able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	runoff and land-based construction				S5	
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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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
S5.8.28	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		based construction					
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S5.8.39	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	^
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	#(6)
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.	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	Appropriate 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.	runoff and land-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	*(7)
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	Control potential impacts from	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	*(4)

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	and the neighbouring water free from rubbish.	floating refuse and debris					
Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - Hoarding or fencing should be erected around the works area boundaries during the construction phase. The hoarding would screen adjacent habitats from construction phase activities, reduce noise disturbance to these habitats and also to restrict access to habitats adjacent to works areas by site workers; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation	Design Team / Contractor	Land-based works are	Construction Phase	N/A	^ ^ ^
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter the	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^ *(8) ^ ^ ^

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	nearby watercourses.						
S6.8.6	***Measure to Minimize Groundwater Inflow*** - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - During the tunnel excavation, pre-excavation grouting could be adopted to reduce the groundwater inflow and ensure that the tunnel would meet the long term water tightness requirements.	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	***Measure to Minimize Impact on Corals*** <u>Coral translocation</u> - It is recommended to translocate the affected coral colonies, except the locally common *Oulastrea crispata*, within the reclamation area and bridge footprint to the other suitable locations as far as practicable. - The coral translocation should be conducted during the winter months (November-March) in order to avoid disturbance during their spawning period (i.e. July to October). - A detailed coral translocation plan with a description on the methodology for pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage. - The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^ ^ ^ ^

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	exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation. <u>Post translocation Monitoring</u> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - Information gathered during each posttranslocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey.						^ ^
S6.8.9 S6.8.10	***Measure to Control Water Quality Impact*** - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. - Diverting of the site runoff to silt trap facilities before discharging into storm drain; - Proper waste and dumping management; and - Standard good-site practice for land-based construction.	Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the receiving water bodies	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	N/A ^ ^ ^

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S6.8.11	***Compensation for Vegetation Loss*** - Felling of mature trees should be compensated by planting of standard or heavy standard trees within or in vicinity of the affected area as far as practicable. Such compensatory planting for trees should be provided with at least a 1:1 ratio. In addition, vegetation at the temporarily affected area should be reinstated with species similar to the existing condition.	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
Fisheries Impact							
S7.7.3	***Measure to Control Water Quality Impact*** - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
Waste Management (Construction Phase)							
S8.6.3	***Good Site Practices and Waste Reduction Measures*** - Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; - Training of site personnel in site cleanliness, proper waste management and chemical handling procedures; - Provision of sufficient waste disposal points and regular collection of waste; - Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and - Regular cleaning and maintenance programme for drainage systems, sumps and oil	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^ ^ #(9)

EIA Ref.	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
	interceptors.						
S8.6.4	***Good Site Practices and Waste Reduction Measures (con't)*** - Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; - Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; - Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^ ^
S8.6.5	***Good Site Practices and Waste Reduction Measures (con't)*** The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	***Good Site Practices and Waste Reduction Measures (con't)*** - C&D materials would be reused in the project and other local concurrent projects as far as possible.	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^ ^
S8.6.8	***Storage, Collection and Transportation of Waste (con't)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); - Waste should be disposed of at licensed waste disposal facilities; 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	***Storage, Collection and Transportation of Waste (con't)*** - Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials, to monitor disposal of	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	waste 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.	impacts arising from waste collection and disposal					
S8.6.11 - S8.6.13	***Sorting of C&D Materials*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - The C&D materials should at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled in the reclamation as far as practicable before delivery to PFRFs. While opportunities for reusing the non-inert portion should be investigated before disposal of at designated landfills	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005	^ ^ ^
S8.6.15 – S8.6.16	***Sediments*** - Sediment encountered may be reused as filling material on-site after cement stabilization. Cement-stabilization process is undertaken by mixing sediment and cement and will convert sediment to earth filling material. The treated sediment has to comply with Risk-Based Remediation Goals (RBRGs) before being reused in order not to raise any land contamination issue. The adoption of RBRGs to assess stabilized sediment has been proposed in the current C&DMMP. MFC has no adverse comment on the current C&DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening	To ensure the sediment to be disposed of in an authorized and least impacted way	contractor	All works areas with sediments concern	Construction Phase	RBRG	N/A

EIA Ref.	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
	results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination. - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP						N/A
S8.6.17 – S8.6.20	***Sediments (con't)*** - Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during boring, excavation, transportation and disposal of sediments or cement stabilization of sediment. - A treatment area should be confined for carrying out the cement stabilization mixing and temporary stockpile. The area should be designed to prevent leachate from entering the ground. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring, excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks.	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		N/A N/A N/A

EIA Ref.	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
	Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						N/A
S8.6.21	***Sediments (con't)*** - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is responsible for the provision and management of disposal capacity and facilities for the excavated sediment, while the permit of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the DEP.	To ensure the sediment to be disposed of in an authorized and least impacted way	contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	***Sediments (con't)*** - For allocation of sediment disposal sites and application of marine dumping permit, separate SSTP has to be submitted to EPD for agreement under DASO. Additional site investigation, based on the SSTP, maybe carried out in order to confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.24 -	***Sediments (con't)***	To ensure handling	Contractor	All works	Construction	ETWB TC(W) No.	

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S8.6.28	- The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excaveted sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002. - Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. - The barge transporting the sediments to the designated disposal sites should be 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.	of sediments are in accordance to statutory requirements		areas with sediments concern	Phase	34/2002 & Dumping at Sea Ordinance	N/A N/A N/A N/A

EIA Ref.	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
	- In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. - Another possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal.						N/A N/A
S8.6.26	***Chemical Wastes.*** - If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes Waste Disposal (Chemical Waste) (General) Regulation	^
S8.6.27	***General Refuse***	To ensure proper	Contractor	All works sites	Construction	Public Health and	^

EIA Ref.	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
	- 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.	management of general refuse			Phase	Municipal Services Ordinance (Cap. 132)	
Impact on Cultural Heritage (Construction Phase)							
S9.6.4	Dust and visual impacts - Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided; - The open yard in front of the temple should be kept as usual for annual Tin Hau festival; - Monitoring of vibration impacts should be conducted when the construction works are less than 100m from the temple.	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^ ^ ^
S9.6.4	Indirect vibration impact - Vibration level is suggest to be controlled within a peak particle velocity (ppv) limit of 5mm/s measured inside the historical buildings; - Monitoring of vibration should be carried out during construction phase. - Tilting and settlement monitoring should will be applied on the Cha Kwo Ling Tin Hau Temple as well. - A proposal with details for the mitigation measures and monitoring of impacts on built heritage shall be submitted to AMO for comments before commencement of work.	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	^ ^ ^ ^
Landscape and Visual Impact (Construction Phase)							
Table 10.8.1	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	N/A	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
					construction period		
Table 10.8.1	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	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 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	*(10)
Table 10.8.1	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	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	^

EIA Ref.	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 deck, TKO			
Table 10.8.1	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	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	^
Table 10.8.1	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A	^
Table 10.8.1	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	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	CEDD (via Contractor)	Temporary reclamation for barging	Construction planning and reclamation	N/A	N/A

EIA Ref.	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
		existing coastlin		points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2	stages		
Landfill Gas Hazard (Design and Construction Phase)							
S11.5.9	A Safety Officer, trained in the use of gas detection equipment and landfill gas-related hazards, should be present on site throughout the groundworks phase. The Safety Officer should be provided with an intrinsically safe portable instrument, which is appropriately calibrated and able to measure the following gases in the ranges indicated below: Methane 0-100% LEL and 0100% v/v Carbon dioxide 0-100% Oxygen 0-21%	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	^
S11.5.10 S11.5.25	***Safety Measures*** - For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards.	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour	^

EIA Ref.	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
	- An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out. - No worker should be allowed to work alone at any time in or near to any excavation. At least one other worker should be available to assist with a rescue if needed. - Smoking, naked flames and all other sources of ignition should be prohibited within 15m of any excavation or ground-level confined space. "No smoking" and "No naked flame" notices should be posted prominently on the construction site and, if necessary, special areas should be designed for smoking. - 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.			Zone		Department's Code of Practice for Safety and Health at Work in Confined Space	^ ^ ^ ^ ^ ^

EIA Ref.	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
	- Where there are any temporary site offices, or any other buildings located within the Sai Tso Wan Landfill Consultation Zone which have enclosed spaces with the capacity to accumulate landfill gas, then they should either be located in an area which has been proven to be free of landfill gas (by survey using portable gas detectors); or be raised clear of the ground by a minimum of 500mm. This aims to create a clear void under the structure which is ventilated by natural air movement such that emission of gas from the ground are mixed and diluted by air.						^
	- Any electrical equipment, such as motors and extension cords, should be intrinsically safe. During piping assembly or conduiting construction, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed to prevent the migration of gases through the pipeline/conduit. All piping /conduiting should be capped at the end of each working day.						^
	- During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site.						^
	- Fire drills should be organized at not less than six monthly intervals.						^
	- The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow.						^
	- All personnel who work on the site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices (in Chinese and English) should be posted at prominent position around the site warning danger of the potential hazards.						^
	- Service runs within the Consultation Zone should be designated as “special routes”; utilities companies should be informed of this and precautionary measures should be						^

EIA Ref.	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
	implemented. Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces such as manholes and service chambers, and that appropriate monitoring procedures are in place to prevent hazards due to asphyxiating atmospheres in confined spaces. Detailed guidance on entry into confined spaces is given in Code of Practice on Safety and Health at Work in Confined Spaces (Labour Department, Hong Kong). - Periodically during ground-works construction within the 250m Consultation Zone, the works area should be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment. The monitoring frequency and areas to be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriately qualified person.						^
S11.5.26 - S11.5.31	***Monitoring*** ● 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: - 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	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.	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
	- periodically throughout the working day whilst workers are in the excavation. ● For excavations **between 300mm and 1m deep**, measurements should be carried out: - directly after the excavation has been completed; and - periodically whilst the excavation remains open. ● For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person. ● Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person. ● The exact frequency of monitoring should be determined prior to the commencement of works, but should be at least once per day, and be carried out by a suitably qualified or qualified person before starting the work of the day. Measurements shall be recorded and kept as a record of safe working conditions with copies of the site diary and submitted to the Engineer for approval. The Contractor may elect to carry out monitoring via an automated monitoring system.						^ ^ ^ ^
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
Air Quality Impact					
* (1)	S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	NE/2015/01	Construction of Lam Tin Interchange	Water spraying should be provided more frequently near slip road near EHC for dust suppression.
	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. - Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. - 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 / TKO Portal	Exposed slope at TKO & LTI should be sprayed with water for dust suppression.
			NE/2015/01	Construction of Lam Tin Interchange	The contractor was reminded to repair the PME to avoid black smoke emission at LTI.
			NE/2015/01	Construction of TKO Portal	Bagged cement on haul road at Portion 6 in TKO site should be covered or sheltered on top and three sides.
			NE/2015/02	Construction of Road P2	The Contractor was reminded to properly cover the bagged cement in Portion 7 to prevent dust emission.
# (1)			NE/2015/02	Construction of Road P2	Dust mitigation should be enhanced in Portion 4 and Work Area A.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
			NE/2015/02	Construction of Road P2	The top of mixing area in Work Area A was found opened. The Contractor should carry out maintenance as necessary and ensure the mixing area is properly enclosed.
Noise Impact (Construction Phase)					
* (2)	Noise Mitigation Plan	Use of Temporary Noise Barriers or Full Enclosure for PME according to the approved Noise Mitigation Plan	NE/2015/01	Construction of Lam Tin Interchange	Noise barriers should be placed next to PME in LTI to reduce noise nuisance to nearby NSRs.
			NE/2015/01	Construction of Lam Tin Interchange	The Contractor should ensure there are no gaps between noise barriers at Slope H in LTI.
			NE/2015/01	Construction of Lam Tin Interchange	Acoustic materials wrapped on breaker head of PMEs on Slope H in LTI should be kept well maintained.
			NE/2015/01	Construction of Lam Tin Interchange	The Contractor should ensure the noise barrier mounted on PME faces the nearby NSRs during works.
			NE/2015/02	Construction of Road P2	The Contractor was reminded to provide sufficient dust screen/ noise barrier in Portion 7 to screen dusty/ noisy works from sensitive receivers.
# (2)			NE/2015/01	Construction of Lam Tin Interchange	Noise mitigation measures at Portion IVC next to Nga Lai House should be enhanced to minimize noise nuisance to NSRs nearby.
			NE/2015/01	Construction of Lam Tin Interchange	The Contractor was reminded to place noise barriers next to breakers to reduce noise nuisance to nearby NSRs.
Water Quality Impact (Construction Phase)					

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
* (3)	S5.8.3	Other good site practices should be undertaken during filling operations include: - all marine works should adopt the environmental friendly construction methods as far as practically possible including the use of cofferdams to cover the construction area to separate the construction works from the sea; - floating single silt curtain shall be employed for all marine works; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved;	NE/2015/02	Construction of Road P2	Gap was observed between 2 units of silt curtain near Type 1 and 2C cofferdam.
# (3)			NE/2015/01	Construction of TKO Portal	Silt curtain should enclose the entire area of marine works at TKO site to prevent effluent discharge.
			NE/2015/01	Construction of TKO Portal	Gaps between silt curtains at TKO site should be avoided.
			NE/2015/02	Construction of Road P2	The Contractor was reminded to keep the deck of hopper barge free of excess material before the vessel is moved.
			NE/2015/02	Construction of Road P2	Minor gap was found between 2 units of silt curtain near Type 1 cofferdam. The Contractor was reminded to carry out maintenance regularly to ensure integrity of silt curtain at all time.
* (4)	S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	NE/2015/02	Construction of Road P2	General refuse was observed accumulated at the silt curtains near Type 1 and 2C cofferdam. Housekeeping should be enhanced at Portion 9.
* (5)	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/2015/02	Construction of Road P2	Frame type silt curtains were found damaged at GD2 and ShunTat 20. The Contractor was reminded to carry out maintenance as necessary and ensure integrity of silt curtain at all time.
Ecological Impact					

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
# (6)	S 5.8.42	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.	NE/2015/02	Construction of Road P2	Oil stain was found under an idling drill rig in Portion 7.
* (7)	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.	NE/2015/01	Construction of Lam Tin Interchange	Drip tray should be provided to chemical containers at work site near EHC.
			NE/2015/01	Construction of Lam Tin Interchange	Drip tray should be provided to chemical containers in LTI.
			NE/2015/01	Construction of TKO Portal	Drip tray should be provided to chemical containers at Portion 6 in TKO site.
* (8)	S6.8.5	***Standard Good Site Practice*** - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.	NE/2015/01	Construction of Lam Tin Interchange	Waste skip at Portion IVC should be maintained more frequently to avoid accumulation of waste.
Waste Management (Construction Phase)					
# (9)	S8.6.3	***Good Site Practices and Waste Reduction Measures*** - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.	NE/2015/02	Construction of Road P2	General refuse at TKO site should be properly cleared.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
* (10)	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 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/2015/03	Construction of Northern Footbridge	A proper label is needed for the "Tree Protection Zone" in West Pier.

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
1	7th December 2016	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Air Quality & Noise	The complainant complained about the construction noise and dust near Yau Lai Estate. (EPD Reference No.: K15/RE/00032001-16)	Y	According to information provided by the Contractor, powered Mechanical Equipment being operated for construction of Lam Tin Interchange on 7 and 9 December 2016 include breaker, dump truck, backhoes, drilling rig and small bulldozer. They were operated on and off with some idling time. It is considered that noise nuisance during the time of complaint was mainly due to high noise level emission during the use of breaker for rock breaking. The Contractors had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual to reduce construction dust and noise nuisance to the vicinity. According to the regular air quality monitoring conducted at Air Quality Monitoring Stations AM3, no Action or Limit Level Exceedance was recorded from 6 – 14 December 2016. Similarly, no Limit Level Exceedance was recorded at Noise Monitoring Station CM1, Station CM2 and Station CM3 from 6 – 16 December 2016. With the implementation of environmental mitigation measures by Contractor on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project.	Closed
2	9th December 2016	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Block A Nga Lai House	Noise	The complainant complained about the construction noise near Yau Lai Estate. (EPD Reference No.: K15/RE/00032317-16)	Y		Closed
3	9th December 2016	Not Specified / Construction of Road P2	Sai Kung District Council Member Mr. Chan Kai Wai	Air Quality & Noise	The complainant complained about the noise nuisance during transportation of construction materials on haul road and dust generation during construction activities.	Y	No construction activities were carried out for both construction of Road P2 and TKO portal during night time or at about 7am. Therefore, no construction noise nuisance were generated during night-time or at about 7am under this Project and it is considered that these noise nuisance is not project- related. The Contractors of this Project had implemented environmental mitigation measures for air quality, noise and visual impact (night-time lighting) in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual. The Contractors had taken the initiative to provide additional noise mitigation measures to works since the complaints were received	Closed
4	20th December 2016	Not Specified / Construction of Road P2	Resident of Ocean Shore	Noise	The complainant complained about the lighting and noise nuisance on construction vessels moored near Ocean Shores during night time.	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
5	22nd December 2016	21 Dec 2016 at night / Construction of TKO portal	Resident of Block 3, Ocean Shores	Noise	The complainant concerned the noise generated by the construction works at hillside near Block 3 of Ocean Shores in daytime.	Y	including: - Temporary noise barrier had been installed to reduce noise nuisance from piling works in construction of Road P2 Provision of noise enclosure to cover generators for reducing its noise nuisance in TKO portal; and - Provision of portable noise enclosures at breakers and generators to reduce noise emission from works in TKO portal According to the regular air quality and noise monitoring for this Project, no Action or Limit Level Exceedance was recorded in December 2016. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project. According to the ET's ad-hoc site inspection during night-time, no unacceptable noise nuisance from this Project was heard. No strong light emission from all the construction vessels near Ocean Shores was observed yet minimum lighting for marine safety purpose was observed from the construction vessel and anchors.	Closed
6	22nd December 2016	Not specified / Construction of TKO portal	Public	Noise	The complainant complained about the noise generated by the construction works at hillside in daytime.	Y		Closed
7	22nd December 2016	Not specified / Construction of Road P2	Resident from Ocean Shore	Noise	The complainant complained about the noise nuisance of broadcast on construction vessel near Ocean Shores at 7am and the noise generated by the construction works outside Tseung Kwan O Chinese Permanent Cemetery.	Y		Closed
8	22nd December 2016	Not specified / Construction of Road P2 and TKO portal	Resident from Ocean Shore	Noise	The complainant complained about the noise nuisance generated by construction works of Tseung Kwan O portal in daytime and noise nuisance of "loud speaker" on construction vessel near Ocean Shores.	Y		Closed
9	16th December 2016	Not Specified / near Ocean Shores	DC member	Noise & (Light)	The complainant complained that they noticed about 2 work vessels were being used at 00:00-01:00 and also moored there overnight which caused light pollution and affecting the residents.	Y	According to the findings of investigation, minimum lighting on the construction vessel was required for guard watching the works site. Adverse night-time light and noise nuisance from the marine works area near Ocean Shores as alleged by the complainant are considered not caused by this Project. The Contractor had continuously implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed	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
10	17th January 2017	5 January 2017 / near Ocean Shores	DC member	Noise & (Light)	The complainant complained that marine vessels were used at about 22:00 and around 01:00 on 5 Jan 2017, again causing noise and light nuisance to the residents.	Y	Mitigation Measures" of EM&A Manual. To avoid strong light emission towards the sensitive receivers, night-time lighting is properly controlled by hooding all lights (except necessary lighting for safety purpose and guard watching); According to the ET's ad-hoc site inspection during night-time, no unacceptable noise nuisance from this Project was heard. No strong light emission from all the construction vessels near Ocean Shores was observed yet minimum lighting for marine safety and guard watching purpose was observed from the construction vessel and anchors. The Contractor was recommended to continuously implement the following visual impact mitigation measures: • necessary lighting on construction vessels should be oriented as much as possible such that direct strong lighting towards the sensitive receivers is avoided. • Strong lighting that may be in intermittent use should be shut down between works periods	Closed
11	23rd December 2016	Not Specified / near Cha Kwo Ling Tsuen	Cha Kwo Ling Tsuen	Water	The complainant complaint about the Soil/muddy water from construction site near Cha Kwo Ling Tsuen. (EPD Reference No.: K15/RE/00033951-16)	N	No construction works were being carried out on 23rd December 2016 at Portion WA1, which is the site portion near Cha Kwo Ling Tsuen. Despite, it was recorded that some muddy water was flowing from the Contractor's wheel washing facility to the gullies within the site boundary. For complaint of muddy water on 23rd December 2016, the Contractor has fixed the clear water hose for wheel washing on 24th December 2016 early morning. During the recent weekly site inspections to Site Portion WA1, no muddy water was observed leaked out of the Site Boundary.	Closed
12	29th December 2016	23rd December 2016 / near Cha Kwo Ling Tsuen	Cha Kwo Ling Tsuen	Water	The complainant complaint that some muddy water flowing from the wheel washing facility to the gullies within the site boundary.	N		Closed
13	6th January 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Block A Nga Lai House	Noise	The complainant complained about the noise nuisance during rock breaking at the Eastern Harbour Crossing (EHC) portal and lack of noise mitigation measures during the works.	Y	After investigation, it was found out that necessary rock breaking works by hydraulic or pneumatic breakers was conducted during excavation for tunnel adit at Lam Tin Interchange. Noise nuisance from the works area is considered due to the high noise level emission during use of hydraulic or pneumatic breakers. The Contractor had implemented environmental mitigation measures in	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
14	6th January 2017	Not Specified / Cha Kwo Ling Road	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance generated by the excavation works at Cha Kwo Ling Road on 6 January 2017 just after 7 a.m.	Y	accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: Air Quality Use of frequent watering during construction of Lam Tin Interchange, including watering of eight times a day on active work area, exposed area and paved haul roads to mitigate air quality impacts to the nearby Air Sensitive Receivers (ASRs) Noise ● Provision of portable noise enclosures to head of breakers to reduce noise emission during rock breaking works in Lam Tin Interchange; ● Provision of portable noise enclosures to reduce noise nuisance from drilling works and generator in Lam Tin Interchange; and ● Use of Quiet PME on-site including generator and hydraulic excavator. The Contractor has taken the initiative to implement additional noise mitigation measures in order to further minimize noise nuisance to the nearby sensitive receivers, including the followings: ● Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange; ● Commencement time of daily construction works for construction of Lam Tin Interchange has been postponed from 7am to 8am each day. According to the regular air quality and noise monitoring for this Project, no Action or Limit Level Exceedance was recorded from 16 December 2016 to 19 January 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project. Nevertheless, the Contractor was recommended to continue to properly implement and strictly follow the air quality and noise mitigation measures as recommended in the Environmental Monitoring & Audit Manual and approved Noise Mitigation Plan to minimize environmental impact on the construction site.	Closed
15	6th January 2017	Not Specified / Construction site near Yau Lai Estate	Resident of Yau Lai Estate Bik Lai House	Air Quality & Noise	The complainant complained about the noise nuisance during the construction works near Yau Lai Estate at 7:15am. He requested to erect noise barriers and set up water spraying system to minimize the noise and air nuisances to the nearby residents.	Y		Closed
16	6th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Cheuk Lai House	Noise	The complainant complained the construction noise generated from this Project (EPD Reference No.: K15/RE/00000564-17)	Y		Closed
17	6th January 2017	Not Specified / Construction site near Yau Lai Estate	Resident of Yau Lai Estate Bik Lai House	Noise	The Yau Lai Estate Property Services Management Office mentioned that one of the resident of Yau Lai Estate had complained to Hong Kong Housing Authority (HKHA) about the noise generated by the construction works.	Y		Closed
18	10th January 2017	Not Specified	Anonymous	Noise	The complainant complained the construction noise generated (EPD Reference No.: K15/RE/00000967-17)	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
19	12th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noise generated from rock breaking at Lam Tin Interchange. He requested concrete actions to improve the situation.	Y		Closed
20	12th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the noise generated from rock breaking at Lam Tin Interchange.	Y		Closed
21	13th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning.	Y		Closed
22	13th January 2017	Not Specified / Construction Works near Eastern Habour Crossing tunnel portal	Anonymous	Noise	The complainant complained about the noise generated by the construction works near the toll plaza of the Eastern Harbour Crossing (EHC). The complainant complained again on 24 Jan 2017 and mentioned the noise problem still affected the daily life of residents	Y		Closed
23	16th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning.	Y		Closed
24	17th January 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the construction noise generated at Lam Tin Interchange.	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
25	26th January 2017	Not Specified / Construction Works near Eastern Habour Crossing tunnel portal	黃國健議員 及 何啟明議員	Noise	LC members referred complaints about the noise generated by the construction works near the EHC tunnel portal. They mentioned that the noise generated by the construction works had greatly affected the daily life of nearby residents, especially occupants of Block 5 of Yau Lai Estate and those who lived at the upper floors.	Y	After investigation, it was found out that necessary rock breaking works by hydraulic or pneumatic breakers was conducted during excavation for tunnel adit at Lam Tin Interchange. Noise nuisance from the works area is considered due to the high noise level emission during use of hydraulic or pneumatic breakers. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual. The Contractor has taken the initiative to implement additional noise mitigation measures in order to further minimize noise nuisance to the nearby sensitive receivers, including the followings: ➢ Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange; ➢ Commencement time of daily construction works for construction of Lam Tin Interchange has been postponed from 7am to 8am each day.	Closed
26	27th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning. (EPD Ref No. K15/RE/00002945-17)	Y	According to information provided by the Contractor, powered Mechanical Equipment being operated on site during the time of complaint include breaker, dump truck, backhoes, drilling rig, mobile crane and small bulldozer. They were operated on and off with some idling time. It is considered that noise nuisance during the time of complaint was mainly due to high noise level emission during the use of breaker for rock breaking. In addition to the the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual, the Contractor has implemented the following additional noise mitigation measures since late including: ● Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange; ● Sound absorptive materials with 50mm thickness were hanged on	Closed
27	9th February 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yat Lai House, Yau Lai Estate	Noise	The complainant complained about the noise nuisance during the construction works of Lam Tin Interchange at 8:10am. (EPD Reference No.: K15/RE/00003855-17)	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
28	13th February 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yat Lai House, Yau Lai Estate	Noise	The complainant complained about the noise nuisance during the construction works of Lam tin Interchange.	Y	rock mountain wall as well as temporary noise barrier containers; and ● Adoption of alternative rock breaking method such as partial rock breaking by rock splitter. In addition, the Contractor has taken the initiative to explore measures to further reduce construction noise nuisance such as: ● Installation of cantilever barrier on top of the containers; ● Installation of tuned mass dampers on breaker head; and ● Use of acoustic mat cover and a retractable noise barrier where feasible. According to the regular noise monitoring no Limit Level Exceedance was recorded at Noise Monitoring Station CM1, Station CM2 and Station CM3 from 2 – 15 February 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project.	Closed
29	23rd February 2017	18 Feb 2017 / Slope Works at Lei Yue Mun Road	Anonymous	Air Quality	The complainant complained about the dust generated by the slope works opposite to Lam Tin Ambulance Deport on 18 February 2017 afternoon. He mentioned that the dust greatly affected the pedestrian.	N	The major source of construction dust nuisance was construction of a temporary storage area. As per investigation, the Contractor has provided environmental mitigation measures to prevent dust generation for the slope works. Water spray was prepared and provided next to the works for dust suppression during the use of handheld breaker.	Closed
30	23rd February 2017	Not Specified / BMCPC Footpath	Sai Kung District Council Member Mr. Chan Kai Wai	(Safety)	Mr. Chan complained that some of the excavated materials fell from the dump trucks on the BMCPC footpath affecting the safety of pedestrian and hikers.	N	The major source of construction dust nuisance was formation of temporary site haul road. As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Water truck was provided for dust suppression at least 8 times per day along the footpath within our site boundary;	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
31	2nd March 2017	Not Specified / Construction Works near BMCPC Footpath	A resident of Ocean Shores	Air Quality	The complainant complained about the dust generated by the construction works near the existing BMCPC footpath	N	➢ Wheel washing were provided for all dump trucks once loaded; ➢ All the dump trucks were covered properly with a mechanical cover once loaded. ➢ The dump trucks were loaded in a specific area (off the footpath) near the formation works area.	Closed
32	8th March 2017	7 Mar 2017 / Slope works near Sin Fat Road Tennis Court	Public	Air Quality & Noise	The complainant complained the dust and noise generated by the slope works near Sin Fat Road Tennis Court	Y	The major source of construction dust and noise nuisance was shotcreting of slope surface, and drilling for soil nail. As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Tarpaulin sheets were provided along the slope adjacent to the tennis court during shotcreting; ➢ After the complaint was received, the dust screen for tennis court has been enhanced immediately with additional tarpaulin along the fencing of tennis court; ➢ Additional acoustic sheets were also provided to minimize construction noise nuisance to users of the tennis courts; ➢ At the location of shotcreting / drilling of slope works, additional tarpaulin sheet was placed at source to minimize dust generation due to the works	Closed
33	10th March 2017	4 Mar 2017 / Slope works near Sin Fat Road Tennis Court	Anonymous	Air Quality	The complainant complained the dust generated by the slope works near Sin Fat Road Tennis Court.	N		Closed
34	13th March 2017	27 Feb – 12 Mar 2017 / Barging point in front of Ocean Shore	Public	Noise	The complainant complained about noise from the loading / unloading activities at the barging point in front of Ocean Shore for material delivery to the LT-TKO Tunnel work site during 3:00 am and 4:00am over the past 2 weeks.	Y	According to information provided by the Contractors, no works, including any loading / unloading works, was carried out during the restricted hours at site area near Ocean Shores in early March 2017. The complaint is concluded to be non-Project related. The Engineer and the Environmental Team have reminded the contractor(s) not to carry out any works, especially loading/unloading activities near the Ocean Shores during restricted hours to minimize noise nuisance to the nearby residents.	Closed
35	21st March 2017	Not Specified / Construction Works near Cha Kwo Ling Village	茶果嶺鄉民聯誼會書記鍾先生	Water & Waste/Chemical Management	The complainant stated that villagers concerned about the waste water produced by car washing in construction site will flow into the sea/ existing drainage system directly	N	In accordance with the information provided by the Contractor of the Project, vehicle wheel washing near Cha Kwo Ling Village was carried out site access of Portion 1 and Portion WAII. At Portion 1, a 'WetSep' wastewater treatment system was installed to treat wastewater from vehicle washing washing. For Portion WAII, surface runoff collection system is also installed near the site access. Also, concrete sand bag bunds are provided near seafront of Portion WAII to prevent wastewater	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
					and requested the contractors to improve the situation.		flowing into the sea. Despite, the Contractor was reminded to fully implement the relevant water quality mitigation measures according to the EM&A Manual on site. The Contractor was also recommended to provide training for all workers again to increase awareness of their environmental responsibilities and properly collect and treat all wastewater generated due to construction works.	
36	25th March 2017	Not Specified / Construction Works of TKO Portal	Public	Air Quality	The complainant complaint about the construction dust impact due to marine works and construction of tunnel of this Project.	N	The major source of construction dust and noise nuisance was site formation works for TKO Portal and marine works for construction of temporary barging facilities As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Provision of frequent watering including watering of eight times a day on active work area, exposed area and paved haul roads; ➢ Installation of automatic sprinklers for water spray to minimize dust generation; ➢ Shotcreting or hydroseeding to surface of TKO Portal site formation; ➢ Provision of wheel washing to vehicles out of site; ➢ Covering of dusty slope surface by impervious material such tarpaulin sheets. During the weekly site inspections by the Environmental Team (ET), no deficiencies about exhaust gas or black smoke generation was observed from the Powered Mechanical Equipment (PME) on site of construction of TKO Portal. Air quality impact due to exhaust gas or black smoke emission from PME is considered insignificant from the Project.	Closed
37	6th April 2017	1 Apr 2017 / Slope works near Sin Fat Road Tennis Court	Public	Air Quality	The complainant complained the smell and dust generated by the slope works near Sin Fat Road Tennis Court on 1 April 2017. He suspected that the shotcrete may contain toxic substances and may affect the health.	N	See Investigation / Mitigation Action for Complaint No. 32 and 33.	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
38	4th May 2017	Not Specified / Construction site near Nga Lai House, Yau Lai Estate	Kwun Tong District Council Member Mr. Lai Shu Ho	Noise	The complainant complained about construction noise nuisance near Nga Lai House, Yau Lai Estate and lack of noise mitigation measures during construction works.	Y	According to information provided by the Contractor, necessary rock breaking work was carried out in May 2017 by excavator-mounted breakers and drill rig at Portion IVC, which is in close vicinity of the complainant. Also, 2 nos. of excavator / drill rig were operated in May 2017 for excavation and drilling and rock hill. Noise nuisance concerned by the complainant is considered due to the high noise level emission during use of these Powered Mechanical Equipment (PME). The Contractors had implemented environmental mitigation measures on site according to the EM&A Manual to reduce air quality impact and noise nuisance to the vicinity. Weekly Environmental Site Inspection has been on-going in May 2017. Recommendations was made on site by the Engineer and the ET to increase the effectiveness of the noise mitigation measures.	Closed
39	8th May 2017	Not Specified / Construction site near Yau Lai Estate	Kwun Tong District Council Member Mr. Lai Shu Ho	Air Quality & Noise	The complainant complained about construction noise nuisance and air pollution generated by this Project.	Y	According to the regular air quality monitoring conducted at Air Quality Monitoring Stations AM3, no Action or Limit Level Exceedance was recorded from 4, 10 and 16 May 2017. Similarly, no Limit Level Exceedance was recorded in May 2017 at Noise Monitoring Station CM1 and CM2. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project.	Closed
40	9th May 2017	Not Specified / Construction of Road P2 near Ocean Shores	Public	Noise	The complainant complained about noise and environmental nuisance resulting from the piling works.	Y	Major construction activities near Ocean Shores in early May included sheetpiling works and pre-boring works for construction of Road P2. Powered Mechanical Equipments (PME) operated included drilling rigs and piling rigs (vibration hammer), which are considered to be the source of noise nuisance resulting from piling work. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the approved Noise Mitigation Plan. Movable temporary noise barrier is erected on ground in vicinity of the piling areas to reduce noise emission during piling works. Acoustic material are also hanged on the piling rigs to shield noise from the Powered Mechanical Equipment (PME) to nearby noise sensitive receivers. According to the regular noise monitoring conducted at Noise Monitoring Stations CM6(A) and CM7(A), no Limit Level Exceedance was recorded from 1- 14 May 2017. With the implementation 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
							environmental mitigation measures by Contractors on site, it is considered that no adverse noise impact was brought to the nearby sensitive receivers by the works of this Project.	
41	10th May 2017	Not Specified / Construction of Road P2 near Ocean Shores	Public	Noise	The complainant complained about noise nuisance from the use of the generators until midnight.	Y	During evening time, two generators were operated between 7pm - 11pm for site office use only. No generators were used until midnight according to the Contractor. Additional temporary noise barrier is installed by the Contractor to screen noise due to use of generators during evening time	Closed
42	10th May 2017	Not Specified / Slope works near Sin Fat Road Tennis Court	Public	Air Quality	The complainant complained about the generation of construction dust from this Project	N	See Investigation / Mitigation Action for Complaint No. 32 and 33.	Closed
43	15th May 2017	Not Specified / Construction site at Lei Yue Mun Road	Kwun Tong District Council Member Mr. Lai Shu Ho	Noise	The complainant complained about construction noise nuisance during construction works at work site at Lei Yue Mun Road.	Y	See Investigation / Mitigation Action for Complaint No. 38 and 39.	Closed
44	16th May 2017	Not Specified / Construction site near Nga Lai House, Yau Lai Estate	Public	Noise	The complainant complained about construction noise nuisance during construction works at work site near Nga Lai House, Yau Lai Estate from 8 am to 7 pm.	Y	See Investigation / Mitigation Action for Complaint No. 38 and 39.	Closed
45	17th May 2017	3rd May 2017 / Marine Works Area in TKO Side	Public	Noise	The complainant complained about the noisy ongoing construction works on a public holiday.	Y	No marine works was carried out under Contract No. NE/2015/01 on public holidays on 30 April, 1 May and 3 May 2017. While marine construction works was carried out on public holiday under Contract No. NE/2015/02 on 3 May 2017 between 9am to 5pm. One derrick barge was operated for the marine works during this period.no violation of CNP (No. GW-RE0317-17) conditions is observed during the time of complaint. The Engineer and the Environmental Team have reminded the contractor(s) to minimize construction works during public holidays or restricted hours to minimize noise nuisance to the nearby residents.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
46	25th May 2017	Not Specified / Construction site near Tin Hau Temple	茶果嶺鄉民聯誼會主席羅悅屏	Noise	The complainant complaint about the noisy rock breaking works near Tin Hau Temple and poor efficiency of vehicle wheel washing on site.	Y	According to information provided by the Contractor of the Project, excavation and rock breaking by 1 no. of excavator/excavator-mounted breaker was carried out intermittently during daytime of the time of complaint near Tin Hau Temple. The tip of the breaker is wrapped with acoustic blanket and followed by erection of noise barrier. A wheel washing bay had been installed at the site entrance on Cha Kwo Ling Road to construction of Lam Tin Interchange. A 'WetSep' wastewater treatment system was installed to treat wastewater from vehicle washing washing. The Contractor was reminded to fully implement on site the relevant noise and water quality mitigation measures according to the EM&A Manual and the approved Noise Mitigation Plan.	Closed
47	27th May 2017	Not Specified / Construction site at Lei Yue Mun Road	Public	Noise	The complainant complained about construction noise nuisance during construction works at work site at Lei Yue Mun Road.	Y	See Investigation / Mitigation Action for Complaint No. 38 and 39.	Closed
48	1st June 2017	Not Specified / Construction site near Yung Lai House, Yau Lai Estate	Public	Noise	The complainant complained about construction dust and noise nuisance during construction works at work site near Yung Lai House, Yau Lai Estate (EPD Reference No.: K15/RE/00016902-17)	Y	According to the information provided by the Contractor, the major construction activities performed in June and mid-July included excavation and drilling in Portion IVC near Lei Yue Mun Road, excavation and rock breaking at Lam Tin Interchange and rock breaking next to Yau Tong Site Office. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: <u>Air Quality:</u> • Water spraying was provided during breaking works at Portion IVC, slope G of Lam Tin Interchange and works area near Yau Tong Site Office to minimize dust generation due to the works. <u>Noise:</u> • Operating PMEs at Portion IVC, slope G of Lam Tin Interchange and works area near Yau Tong Site Office were on and off with idling time. • Excavator-mounted breakers were mounted with acoustic sheets. • Noise barriers were erected during the breaking works at Portion IV,	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
							slope G of Lam Tin Interchange and works area near Yau Tong Site Office to minimize construction noise nuisance. With the implementation of environmental mitigation measures by Contractors on site, it is considered that air quality and noise nuisance by the works has been brought to a minimum level.	
49	7th June 2017	7th June 2017 / Construction site near Sin Fat Road Tennis Courts	Corresponden t of Sin Fat Road Tennis Courts	Air Quality	The complainant complained about construction dust nuisance near the tennis courts.	N	In accordance with the information provided by the Contractor of the Project, the major construction activities at the location of complaints were shotcreting of slope surface and drilling for soil nail near Sin Fat Road Tennis Court. The Contractor immediately stopped the shotcreting works adjacent to the tennis courts upon the complaint, and re-schedule the works such that the shotcreting works near the tennis court are performed only when the tennis courts are not in use. The Contractor also cleared the dust brought by the construction in the tennis courts on the same day of the complaint. the Contractor was reminded to fully implement the relevant air quality mitigation measures according to the EM&A Manual on site.	Closed
50	8th June 2017	30th May 2017 / marine works area inside the cofferdam installed under the Project	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained about marine construction work being carried out on 30 May 2017 (a public holiday) within the reclamation area near Ocean Shore under this Project (EPD Reference No.: N08/RE/019540-17)	Y	According to information provided by the Contractor and confirmation by the Engineer, no marine construction activities were conducted on public holiday on 30th May 2017 within the cofferdams installed in the reclamation area under this Project. The complaint on 30th May 2017 therefore considered to be non-Project related.	Closed
51	15th June 2017	Not Specified / Construction site near Nga Lai House, Yau Lai Estate	Public	Air Quality & Noise	The complainant complained about construction dust and noise nuisance during construction works at work site near Nga Lai House, Yau Lai Estate. (EPD Reference No.: K15/RE/00018656-17)	Y	See Investigation / Mitigation Action for Complaint No. 48.	Closed
52	21st June 2017	Not Specified / Construction	Public	Noise	The complainant complained about construction noise	Y	See Investigation / Mitigation Action for Complaint No. 48.	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
		site near Yau Lai Estate			nuisance from work site near Yau Lai Estate.			
53	24th June 2017	24th June 2017 / land-based works area near Ocean Shores	Resident of Ocean Shores	Noise	The complainant complained about construction noise nuisance from land-based works area near Ocean Shores	Y	According to the information provided by the Contractor, the major construction activities during the time of complaint includes breaking of hard material. Upon received of the complaint, the Contractor has taken the initiative to minimize construction noise nuisance by erecting temporary noise barrier during rock breaking works. Nonetheless, the Contractor was recommended to implement and strictly follow the noise mitigation measures as recommended in the EM&A Manual and Noise Mitigation Plan in order to reduce construction noise impact on site.	Closed
54	26th June 2017	26th June 2017 / marine works area near Ocean Shores	Public	Waste/ Chemical Management	The complainant complained about oil spill on sea near marine works site near Ocean Shores	N	According to the information provided by the Contractor, marine works were conducted on 26 June 2017, including lifting operation for the concrete block from water gate to derrick barge. 3 derrick barges and 3 sampan were in operation for the marine works. According to records of the Contractor, no report of oil spill from the derrick barges was received from the site foremen. Oil spillage was not found in the afternoon on 26 June 2017. Therefore, the complaint is considered to be non-Project related.	Closed
55	27th June 2017	25th June 2017/ marine works area near Ocean Shores	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained about marine construction work being carried out on public holidays within the marine works area near Ocean Shore under this Project	Y	Minor marine construction activities was conducted on public holiday 25th June 2017 within the reclamation area under this Project. Removal of damaged parts of steel cofferdam, which are damaged under adverse weather conditions in June 2017. The Engineer and the Environmental Team reminded the Contractor(s) not to conduct any works near Ocean Shores during public holidays (including Sundays) to avoid noise nuisance to the nearby residents. Also, no use of PME will be allowed for general holidays (including Sundays) at marine works area under this Contract according to the latest CNP granted to the Contractor.	Closed
56	6th July 2017	Not Specified / Construction site near Yau Lai Site Office	Resident of Yat Lai House, Yau Lai Estate	Noise	The complainant complained about construction noise nuisance from work site near Yau Tong Site Office.	Y	See Investigation / Mitigation Action for Complaint No. 48.	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
57	14th July 2017	Not Specified / Construction sites near Cha Kwo Ling Road	Kwun Tong District Council Member Mr. Mok Kin Shing	Air Quality	The complainant complained about construction dust nuisance due to works and vehicles on Cha Kwo Ling Road	N	The Contractor had implemented the following to reduce dust nuisance caused by construction vehicles on Cha Kwo Ling Road: ➢ Mobilize water trucks to perform water spraying along Cha Kwo Ling Road to suppress dust generation due to movement of vehicles ➢ Dispatch workers to clear dust near vehicle exits from the construction site on Cha Kwo Ling Road. ➢ Performing frequent water spraying by water trucks on Cha Kwo Ling Road; ➢ Frequent clearance of dust near site exits on Cha Kwo Ling Road; ➢ Provision of wheel washing for site vehicles at paved site exits to reduce vehicle tracking of soil on Cha Kwo Ling Road; Despite, the Contractor was reminded to fully implement the relevant air quality mitigation measures according to the EM&A Manual on site, including: ➢ Maintenance of wheel washing machines on a regular basis to ensure sand and silt settled out in wash-water; ➢ Reminding all site vehicles to perform wheel washing before leaving the site; and ➢ To ensure materials on construction trucks are covered by impervious materials before leaving the site to prevent fugitive emission.	Closed
58	18th July 2017	Not Specified / Construction sites near Yau Lai Estate	Yau Lai Estate Property Services Management Office	Noise	The complainant complained about construction noise nuisance from work site near Yau Lai Estate.	Y	See Investigation / Mitigation Action for Complaint No. 48.	Closed
59	2nd August 2017	2nd August 2017 / construction site under this Project in Tseung Kwan O	Drainage Services Department	Water Quality	Muddy flow was noted in Tseung Kwan O DSD desilting compound. Muddy discharge should be flow down along the western one / two cell(s) of the DSD box culvert	N	According to information provided by the Contractor, no discharge of muddy water was reported and wastewater treatment system were functioned properly on the day of event. No muddy effluent discharge was recorded from the weekly site inspection reports in July. The site effluent was appeared visually acceptable in reference to the results of daily visual checking by the Contractor and the weekly site inspection	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
					underneath the desilting compound. The complainant suspected that TKO-LT Tunnel project should be the major construction site discharging into the cell(s).		conducted on 3rd August, 2017. The Contractor has taken initiatives to ensure the quality of the wastewater discharge from the construction site as followed: ➢ Temporary drainage system were developed on site and number of sub-drains were distributed within the site area to divert wastewater and allow longer settling time for surface runoff prior to further treatment before discharging ➢ Daily visual checking was conducted to check the physical appearance of treated effluent and to ensure proper performance of the wastewater treatment system. ➢ Manholes were adequately covered and temporarily sealed to prevent silt, construction materials or debris being washed into the drainage system ➢ Apart from visual checking, inspection of effluent was provided by the Contractor on rainy days to make sure the quality of treated wastewater discharge is in compliance of the discharge license requirements. It is considered that the wastewater generated from the construction activities of the Project was collected and treated properly before discharging to the designated discharge point on 2nd August, 2017. As the same discharge point is shared by other box culverts, it is considered that the source of silty discharge at location of complaint was runoff or effluent collected from other upstream sources such as that collected by drainage systems in Tseung Kwan O town centre and other construction sites in vicinity.	
60	2nd August 2017	Not Specified / construction site at Lei Yun Mun Road	Anonymous	Landscape and Visual Impact	The complainant complained the long tree branches and weeds and request proper trimming.	N	According to the information provided by the Contractor, clearance of weeds adjacent to Lam Tin Ambulance Depot and pruning of overgrown trees within the Site area have been undertaken by the Contractor. Upon received of the complaint, the Contractor has taken the initiative to remove weeds adjacent to Lam Tin Ambulance Depot. In addition, the Contractor has performed pruning of excess branches of trees on Lei Yue Mun Road and established fencing of tree protection zones for	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
							existing trees.	
61	11th August 2017	Not Specified / construction site in Green Cross-hatched Black Area near Ocean Shores	Sai Kung District Council Member Mr. Chan Kai Wai	Landscape and Visual Impact	The complainant complained the poor health and condition of trees and lack of tree protection facility.	N	Based on the information gather in the investigation, it is considered that retained trees adjacent to the construction area of Portion IV are carefully managed and properly fenced off within the tree protection zone. No heavy vehicles or equipment stationed in the vicinity of retained tree and tree protection zone are observed free from storage and dumping. Tree Survey and Tree Assessment Reports are conducted by qualified Arborist (ISA Certified Arborist) to monitor the performance of the retained trees throughout the construction period. Advance tree survey works were done and consent was granted from the Engineer for the removal of defective trees.	Closed
62	11th August 2017	9th August 2017 / construction site in Green Cross-hatched Black Area near Ocean Shores	Sai Kung District Council Member Mr. Chan Kai Wai	Landscape and Visual Impact	The complainant complained the poor health and condition of trees; and that they were felled.	N		
63	11th August 2017	Not Specified / construction site near Ocean Shores near the BMCPC footpath	Sai Kung District Council Member Mr. Chan Kai Wai	Landscape and Visual Impact	The complainant complained that trees within the Project Site were felled.	N		
64	14th August 2017	Not Specified / construction site near Ocean Shores near the BMCPC footpath	Sai Kung District Council Member Mr. Chan Kai Wai	Landscape and Visual Impact	The complainant complained that trees within the Project Site were felled.	N		
65	15th August 2017	15th August 2017 / marine works site at TKO side	Sai Kung District Council Member Mr. Chan Kai Wai	Water Quality	Muddy discharge from the marine works site (near the Type 2 cofferdam) at TKO side occurred in the morning.	N	It is considered that the muddy discharge was caused by the overflowing of coarse material within the steel tank and the sediment being disturbed by the cofferdam during the reinstatement of the position of steel tank. The Contractor did not stop the works immediately and which contributed to the large spreading area of sediment. The Contractor did not provide proper deployment of the silt curtain system to stop the muddy discharge generated from the abovementioned work to the surrounding water. The Contractor is advised to implement the following measures to	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
							avoid/ minimize the generation of muddy discharge from marine works: 1. Marine works should be stopped immediately when the silt curtain system is found malfunctioned or when sediment dispersion is observed. 2. Deterioration of cofferdam or silt curtain, as the mitigation measures to water quality, should be repaired immediately or at a reasonable time. 3. Cofferdams should be designed and installed properly in order to withstand any conceivable adverse weather conditions and precautions measure should be taken in advance particularly during typhoon season. 4. Materials with high silt content should be avoided to use as filling materials in the steel tanks for cofferdams. They should be replaced with materials with minimal silt content, such as pebbles, rocks and etc. to reduce pollution to the marine environment when spill over. 5. The steel tanks filled with finer aggregate materials should be securely covered or locked in the tank, so that no materials will be spilled over the sea. 6. Silt curtain should be deployed properly before commencement of works. 7. Regular inspection should be performed to examine the integrity of the cofferdam and performance of silt curtains.	
66	17th August 2017	Not Specified / construction site at Lei Yun Mun Road	Anonymous	Landscape and Visual Impact	The complainant complained the long tree branches and lack of tree protection facilities on site.	N	See Investigation / Mitigation Action for Complaint No. 60.	Closed
67	1st September 2017	Not Specified / near Eastern Harbour Crossing	Anonymous	Landscape and Visual Impact	The complainant complained poor tree health and lack of tree protection facilities on site.	N	According to the information provided by the Contractor and confirmed by the Engineer, the Contractor had implemented environmental mitigation measures on site as confirmed by the Engineer to minimize the deterioration of existing landscape and visual quality by construction works under this Contract. The Contractor was reminded to provide proper tree management and adequate tree protection measures toward retained trees on site, including the measures as follows:	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
							• Regular site inspection shall be conducted to verify whether all tree protection measures are in place during construction work; • Temporary protective fencing shall be well-maintained to ensure the integrity of the tree protection zone; • No materials or machinery shall be stored or placed within the area of a tree's crown to avoid soil compaction or pollution; and • Any foreseeable damage to trees and fencings shall be reported and rectified as soon as practicable.	
68	4th September 2017	Not Specified / Construction site near Sin Fat Road Tennis Courts	Public	Air Quality	The complainant complained the construction dust and odour nuisance	N	According to the information provided by the Contractor, the major construction activities during the time of complaint included excavation, rock breaking. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: ➢ Breaking works were provided with water spraying to reduce fugitive emission; ➢ Tarpaulin sheets were provided along Sin Fat Road Tennis Court; ➢ Frequent water spraying on unpaved area and haul roads at Lam Tin Interchange; ➢ Wheel washing facility at exits of Lam Tin Interchange to prevent mud trailing of vehicles and dust generation. According to the regular air quality monitoring, no Action or Limit Level Exceedance was recorded at Air Quality Monitoring Station AM2 and AM3 in September 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality impact was brought to the nearby sensitive receivers by the works of this Project. The following recommendations were given by the ET to further enhance effectiveness of the mitigation measures: ➢ To provide a hard-surfaced road between any cleaning facility and the public road ➢ To treat exposed earth by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen or other suitable surface stabilizer within six months after the last construction activity within the site; ➢ Where practicable, to provide sheltered area on the top and three sides for stockpiles of dusty materials, or perform frequent water	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
							spraying so as to maintain the entire surface wet.	
69	5th September 2017	Not Specified / near Eastern Harbour Crossing	Anonymous	Landscape and Visual Impact	The complainant complained poor tree health and lack of tree protection facilities on site.	N	See Investigation / Mitigation Action for Complaint No. 67.	Closed
	19th September 2017	Not Specified / near Eastern Harbour Crossing	Anonymous	Landscape and Visual Impact	The complainant complained poor tree health and lack of tree protection facilities on site.	N		
70	9th September 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Ping Tin Estate	Noise	The complainant complained daytime noise nuisance that commenced early in the morning	Y	According to the information provided by the Contractor, the major construction activities at the location of complaint recorded included excavation, rock breaking and drilling during September 2017. Operated PME during the time of complaints are consistent with the proposed quantities in the latest Construction Noise Assessment. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: ➢ Erected noise barriers with acoustic mats facing Ping Tin Estate and along breaking works at Portion IVc; ➢ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat. According to the regular noise monitoring, no Limit Level Exceedance was recorded at Noise Monitoring Station CM1, Station CM2 and Station CM3 in September 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse noise impact was brought to the nearby sensitive receivers by the works of this Project. The following recommendations were given by the ET to further enhance effectiveness of the mitigation measures: ➢ Frequent checking and repair the gaps or broken tarpaulin sheets and acoustic sheets; ➢ To adopt Cantilever noise barriers at Lam Tin Interchange to screen noise effectively; ➢ To continue to properly implement noise mitigation measures as	Closed
	22nd September 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Ping Tin Estate	Noise	The complainant complained daytime construction noise nuisance.	Y		

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							recommended in the Environmental Monitoring & Audit Manual and approved Noise Mitigation Plan; ➢ To continue to strictly follow the requirements in the approved Noise Mitigation Plan; and ➢ To reschedule operation time and reduce operation duration of each PME.	
71	11th September 2017	3rd September 2017 / Construction of Lam Tin Interchange	Anonymous	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange	Y	The Contractor had taken the initiative to implement environmental mitigation measures specified to blasting as below: ➢ Installed steel-type blasting door mounted with sound absorptive lining to absorb noise from blasting in the tunnel; ➢ Ensured blasting doors were fully closed when blasting works were undertaken ➢ Erected noise barriers with TMD and SilentMAT adjacent to blasting door facing Yau Lai Estate ➢ Placed acoustic materials on slopes adjacent to blasting door With the implementation of environmental mitigation measures by Contractors on site, it is considered that blasting noise impact to the nearby sensitive receivers has been brought to a minimum.	Closed
	21st September 2017	19th September 2017 / Construction of Lam Tin Interchange	Anonymous	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange	Y		
72	11th September 2017	Not Specified / Construction of Tseung Kwan O Portal	Resident of Ocean Shores	Air Quality	The complainant complained the construction dust nuisance	N	According to the information provided by the Contractor, the major construction activities at the location of complaint recorded included breaking works and shotcreting works from 0830 hrs to 1800 hrs during early September 2017. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below:	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
	12th September 2017	Not Specified / Construction of Tseung Kwan O Portal	Resident of Ocean Shores	Air Quality	The complainant complained the construction dust nuisance	N	➢ Water spraying on unpaved or exposed area for dust suppression; ➢ Breaking of rocks was provided with water spraying to reduce fugitive emission; ➢ Automatic water sprinklers were provided and in operation; ➢ Manual water spraying was provided to haul roads to reduce dust generation due to movement of construction vehicles; ➢ Tarpaulin sheets were erected along the access road to reduce dust nuisance to pedestrians.	
73	12th September 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Nga Lai House, Yau Lai Estate	Air Quality / Noise	The complainant complained the construction dust and noise nuisance from works	Y	See Investigation / Mitigation Action for Complaint No. 68 and 70.	Closed
74	15th September 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Laguna City	Noise	The complainant complained the construction noise nuisance from works	Y	See Investigation / Mitigation Action for Complaint No. 70.	Closed
75	18th September 2017	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 LamTin Interchange	Y	See Investigation / Mitigation Action for Complaint No. 71.	Closed
76	21st September 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yung Lai House, Yau Lai Estate	Noise	The complainant complained about the construction noise nuisance from the construction of Lam Tin Interchange and tunnel blasting at nights. He also stated there were construction works near Lam Tin Interchange on public holidays.	Y	See Investigation / Mitigation Action for Complaint No. 70 and 71.	Closed
77	26th September 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Cheuk Lai House, Yau Lai Estate	Noise	The complainant complained about the night time construction noise nuisance	Y	See Investigation / Mitigation Action for Complaint No. 70.	Closed
78	26th September	Not Specified / Construction	Resident of Laguna City	Noise	The complainant complained the blasting	Y	See Investigation / Mitigation Action for Complaint No. 71.	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
	2017	of Lam Tin Interchange			noise nuisance during works at the Lam Tin Interchange			
79	27th September 2017	17th, 20th, 23rd September 2017 / Construction of Lam Tin Interchange	Public	Noise	The complainant complained about the construction noise nuisance due to road works near Lam Tin Interchange.	Y	See Investigation / Mitigation Action for Complaint No. 70.	Closed
80	28th September 2017	Not Specified / Construction of Lam Tin Interchange	Property Management Office of Laguna City	Noise	The complainant complained the noise nuisance during night time blasting works at the LamTin Interchange	Y	See Investigation / Mitigation Action for Complaint No. 71.	Closed
81	3rd October 2017	30th September 2017 / Construction of Road P2	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained that construction works starts too early between 8-9 am on 30 September 2017 (Saturday).	Y	As confirmed by the Engineer, construction work including excavation work was carried out on the morning of 30 September 2017. One unit of backhoe was in operation during the time of complaint for such work in Portion VIII. The operated powered mechanical equipment (backhoe) was considered as the source of noise nuisance resulting from such work. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the approved Noise Mitigation Plan to reduce noise nuisance brought to nearby noise sensitive receivers as follows: Additional acoustic mat was hung closely to the powered mechanical equipment to minimize noise impact to the nearby sensitive receivers In addition, other good site practices recommended in the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the approved Noise Mitigation Plan of this Contract had been implemented by the Contractor, including the following: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Mobile plant, if any, should be sited as far away as possible from 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
							and • Plant 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.	
82	3rd October 2017	Not Specified / CRE Site Office	Anonymous	Landscape and Visual Impact	The complainant complained the long tree branches and weeds and lack of tree protection facilities.	N	See Investigation / Mitigation Action for Complaint No. 67.	Closed
83	6th October 2017	6th October 2017 / Construction of TKO Portal	Public	Waste Management	The complainant complained that construction waste was disposed on slope near O King Road.	N	In accordance with the information provided by the Contractor of the Project and confirmed by the AECOM (hereinafter called "the Engineer"), the major construction activities undertaken at the location of complaint included breaking works in early October 2017. Inert C&D including concrete debris, rubble and sand were the major types of waste derived from the abovementioned works activity in October 2017. The Contractor has immediately removed the concerned construction waste in the vicinity of O King Road. In addition, the Contractor has taken initiatives to maintain the environmental conditions in the works area as shown below: • Provided waste skips at Portion 6 for collection of construction waste; • Provided recycle bins for sorting and recycling of general refuse generated by workforce; • Placed more enclosed rubbish bins to reduce the occurrence of 'windblown' light general refuse; and • Removed C&D waste from the site by a reputable waste collector on a regular basis.	Closed
84	17th October 2017	17th October 2017 / Marine Works Area for Road P2	Public	Water Quality	The complainant concerns marine water pollution in Tseung Kwan O on 17 Oct 2017, which might due to construction activities of this Project.	N	Based on the information gathered in the investigation, it is considered that muddy water recorded by the complainant was not caused by the construction activities (land-based and marine-based) carried out during the time of complaint. Also, wastewater generated from the construction activities of the Project was collected and treated properly before discharging as the site effluent was appeared visually acceptable and the wastewater treatment systems were preformed properly. As the location of the muddy water was appeared adjoining the Tseung	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
							Kwan O DSD Desilting Compound, a high volume of upstream discharge collected from rain events (3-4 am of 17 October 2017) is a possible cause of muddy water. Based on the above observations and findings, this complaint is considered to be non-Project related.	
85	18th October 2017	Not Specified / Construction of Lam Tin Interchange	Public	Noise	The complainant complained about the noise nuisance due to construction of Lam Tin Interchange	Y	According to the Engineer's Site Diaries, the major construction activities performed in October 2017 and early November 2017 included rock breaking and excavation at Lam Tin Interchange and Portion IVC near Lei Yue Mun Road. In addition to other good site practices recommended in the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the Noise Mitigation Plan of this Contract had been implemented by the Contractor, including the following: ● Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; ● Mobile plant, if any, should be sited as far away from NSRs as possible; ● 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; and ● Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSR ● Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	Closed
86	25th October 2017	24th October 2017 / Construction of Lam Tin Interchange	Public	Air & Noise	The complainant complained about the noise nuisance due to blasting works at nighttime and request water spraying on breakers.	Y	The Contractor had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers: • Ensured blasting doors were fully closed when blasting works were undertaken • Installed steel-type blasting door mounted with sound absorptive lining to absorb noise from blasting in the tunnel • Erected noise barriers with TMD and SilentMAT adjacent to blasting door facing Yau Lai Estate • Placed acoustic materials on slopes adjacent to blasting door The following recommendations were made to further enhance the	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
							mitigation measures • To frequently check and maintain the acoustic materials on slopes, absorptive lining adhered on blasting doors on a regular basis; • To ensure no gaps between noise barriers adjacent to the blasting doors For air quality impact during the use of breakers, the Contractor has provided breaking works with water spraying to reduce fugitive emission	
87	26th October 2017	23th October 2017 / Construction of marine works outside Ocean Shores	Public	Noise	The complainant complaint about noise nuisance which may due to construction of marine work outside Ocean Shores at nighttime.	Y	According to the site diaries provided by the Engineer, marine construction works carried out near the Ocean Shores on 23 October 2017 and 1 November 2017 included the reinstatement of cofferdams. One unit of derrick lighter was in operation on both days. The working period of the remedial works for cofferdam were between 0800 – 2100 hours on 23 October 2017 and 0800 – 2030 hours on 1 November 2017. As confirmed by the Engineer, the marine works on 1 November 2017 were stopped at 2030 hours. Potential marine traffic noise from the movement of nearby vessels might have contributed to the noise after 2030 hours on 1 November 2017. The Contractor had covered noise source on the barge with acoustic materials to minimize the noise nuisance from marine works to the nearby noise sensitive receivers during night time. The following recommendations were made to further enhance the mitigation measures ● To frequently check and maintain the acoustic materials on a regular basis; ● To ensure no visible gaps between units of noise barriers for effective noise shielding; ● To schedule site operations in such a way to avoid working in the sensitive hour as far as practicable; ● For unavoidable night works with a CNP, carefully schedule noisy works at locations close to any sensitive receiver so as to reduce noise disturbance.	Closed
88	27th , 30th October 2017 / 6th	Not Specified / Construction of Lam Tin	Resident of Bik Lai House, Yau	Noise	The complainant complained about noise nuisance as it is observed	Y	For blasting works at night, see Investigation / Mitigation Action for Complaint No. 86. For construction noise impacts due to use of breakers, the Contractor	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
	November 2017	Interchange	Lai Estate		that no acoustic materials are provided to breaker. She also complained about the noise nuisance due to blasting works at nights. (EPD Reference No.: K15/RE/00035946-17)		has implemented the following to minimize the impacts: • Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat at Slope H in Lam Tin Interchange; • Erected movable cantilevered noise barriers next to breaking works at Portion IVC	
89	1st November 2017	Not Specified / Construction of marine works outside Ocean Shores	Resident of Ocean Shore	Noise & Light	The complainant complained about the lighting and noise nuisance on construction vessels near Ocean Shores.	Y	According to the Engineer's Site Diaries, the major construction activities performed including Reinstatement of Type 2 Cofferdam. One unit of derrick barge was in operation for such works from 0800 – 2030 hours on 1 November 2017. Therefore, no violation of CNP is found. The Contractor had implemented environmental mitigation measures to minimize the nuisance from marine works to the nearby noise sensitive receivers during night time as follows: • Noise source on the barge was covered with acoustic materials; • To avoid strong light emission towards the sensitive receivers, night-time lighting was properly controlled by hooding all lights (except necessary lighting for safety and guard watching purpose).	Closed
90	2nd November 2017	1st November 2017 night-time / Portion IX outside Tower 1, Ocean Shore	Public	Noise	The complainant complained about the construction noise nuisance due to the marine works at night. He claimed that the noise lasted until 8:50 pm.	Y	See Investigation / Mitigation Action for Complaint No. 87.	Closed
91	13th November 2017	Not Specified / Lam Tin Interchange	Resident of Ping Tin Estate	Noise	The complainant complained about the noise nuisance due to construction works at Lam Tin Interchange at about 7 am.	Y	According to the Engineer's Site Diaries, the major construction activities performed in November 2017 included drilling and excavation at Lam Tin Interchange and Portion IVC near Lei Yue Mun Road. Also, night time construction works including Mucking out of spoil after blasting works was carried out during 21 – 23 November 2017 (0400-0500 hours). According to Construction Noise Assessment of this Contract, operated PME during the time of complaints are consistent with the proposed quantities in the latest Construction Noise Assessment. Also, no violation of CNP (No. GW-RE0838-17) conditions was observed during the time	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
92	14th November 2017	Not Specified / Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained about the noise nuisance due to construction works at Lam Tin Interchange. He requested to erect noise barriers and used low noise construction equipment to minimize the noise nuisances to the nearby residents.	Y	of complaint. The following had been implemented by the Contractor to minimize noise impact : ➢ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat at Slope H in Lam Tin Interchange; ➢ Erected movable cantilevered noise barriers next to breaking works at Portion IVC. According to the regular noise monitoring conducted at Noise Monitoring Stations CM1, CM2 and CM3, no Limit Level Exceedance was recorded in 18 October – 30 November 2017. With the implementation of environmental mitigation measures by the Contractor, it is considered that no adverse noise impact was brought to the nearby sensitive receivers.	Closed
93	14th November 2017	14th November 2017 / Construction of TKO Portal	Public	Noise	The complainant complained about the continuous noise (started from 7:13 am) made by a worker by hitting / kicking a truck.	Y	As confirmed by the Engineer, construction activity including excavation works was conducted in Portion VIII at the time of complaint. Removing mud from dump truck container was carried out during the course. The excessive sound from kicking/ hitting the dump truck to remove mud from its container is considered the source of noise nuisance. The use of concerned dump truck in Portion VIII conformed to the approved Noise Mitigation Plan. The Contractor had implemented additional control measures to prevent similar noise disturbance as follows: • Training sessions had been provided to the workers from subcontractors to improve their awareness of proper handling of equipment. • Site supervision had been enhanced to promote good site practice so as to avoid any unnecessary disturbance created from on-site activities. The Engineer and the Environmental Team have reminded the Contractor to keep implementing noise mitigation measures as stated in the approved Noise Mitigation Plan to further reduce the noise impact from construction site to nearby sensitive receiver.	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
							The following recommendations were made to further enhance the mitigation measures: • To maintain equipment in good condition to ensure quietest operation possible. • To repair any loosen and worn parts of the equipment, as soon as possible, to reduce excessive noise disturbance. • To provide training to the workers regularly on proper operation or appropriate use of equipment to avoid unnecessary noise impact. • To take care when loading and unloading materials in order to attenuate undesired noise.	
94	15th November 2017	Not Specified / Construction of marine works outside Ocean Shores	Sai Kung District Council Member Mr. Chan Kai Wai	Air Quality	The complainant complained the odour nuisance from the construction vessels near Ocean Shore.	N	According to the Engineer's Site Diaries, the major marine construction activities included dredging operations. PME used included tug boat, dredging and hopper barge. The Contractor had implemented environmental mitigation measures to minimize the nuisance from marine works to the nearby noise sensitive receivers during night time as follows: • Ultra-low sulphur diesel was used to reduce emission of sulphur emission to nearby sensitive receivers. • Odour suppressant will be applied to dredged sediment when unpleasant smell is detected. • Visual assessment with Ringelmann chart was conducted in a regular interval to monitor dark smoke emission; • In addition, odour patrol was conducted twice a day by the Engineer's qualified odour panel member to identify any odour nuisance due to marine works;	Closed
95	15th November 2017	9th November 2017 / Construction of marine works outside Ocean Shores	Sai Kung District Council Member Mr. Chan Kai Wai	Air Quality	The complainant complained the black smoke generation from the construction vessels and affected to the nearby sensitive receivers.	N		Closed
96	16th November 2017	Not Specified / Ocean Shore Emergency Vehicular Access	Public	Landscape and Visual Impact	The complainant complained that trees near the Ocean Shore Emergency Vehicular Access were felled.	N	According to the information provided and confirmed by the Engineer, tree removal application for the concerned area has granted approval from District Lands Office on 1 August 2017. The felling of a total of 59 trees at the concerned area as recommended in the Tree Assessment Schedule was approved by the District Lands Office. None of them are registered Old and Valuable Tree and neither of them are rare nor endangered species. The following was implemented by Contractor:	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
							• Tree protection zones were established and surrounded by fences to protect retained trees adjacent to the construction area of Portion IV. • Tree protection zones at Portion IV 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.	
97	23rd November 2017	21st & 23rd November 2017 / Lam Tin Interchange	Resident of Yau Lai Estate Block A Nga Lai House	Noise	The complainant complained about the noise nuisance due to construction works at Lam Tin Interchange on 21st & 23rd November 2017 at about 4am. She claimed that the noise lasted for 1 hours.	Y	See Investigation / Mitigation Action for Complaint No. 91-92.	Closed
98	28th November 2017	Not Specified / Lam Tin Interchange	Resident of Yung Lai House, Yau Lai Estate	Noise	The complainant complained about the construction noise nuisance at Lam Tin Interchange.	Y	See Investigation / Mitigation Action for Complaint No. 91-92.	Closed
99	28th November 2017	Not Specified / Construction of TKO Portal	Resident of Ocean Shore	Noise	The complainant complained about the noise nuisance due to construction works near the Ocean Shore.	Y	Based on the gathered information, construction works including removal of armour rock seawall and excavation were conducted in Portion V at the time of complaint. The operated powered mechanical equipment and the noise from loading/ unloading were considered the sources of noise nuisance. As confirmed by the Engineer, the type and quantity of operated derrick lighter and backhoe were in compliance with the approved Noise Mitigation Plan. The Contractor had implemented environmental mitigation measures to minimize the noise nuisance from construction works to the nearby noise sensitive receivers as follows: • A soil layer was placed over the basin of barge to act as a cushion when loading hard materials into barge. • The grab bucket was kept at the lowest level, as far as practicable, when loading hard materials into the barge. • Noise source on the barge was covered with acoustic materials.	Closed
100	30th November 2017	28th and 30th December 2017 / Marine works site	Public	Noise	The complainant complained about the daytime construction noise from the marine works. He said about the loud noise from the dropping of materials from the dredgers into the barges which caused annoyance to nearby residents on 28 and 30 November morning till noon.	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
101	2nd, 14th, 16th, 20th and 23rd December 2017	2nd December 2017 / Construction of Road P2	Resident of Ocean Shore	Noise	The complainant complained the noise nuisance due to the operation of the excavator on the beach near Ocean Shore on 2 Dec 2017 at about 8am.	Y	• To erect additional noise barriers in Portion V According to the regular noise monitoring conducted at Noise Monitoring Station CM6(A) and CM7(A), it is considered that no adverse noise impact was brought to the nearby sensitive receivers with the implementation of noise mitigation measures.	Closed
102	6th, 11th December 2017	Not Specified / Construction site near Cha Kwo Ling Road	茶果嶺鄉民聯誼會黃添財先生	Air Quality	The complainant complained the construction dust near Cha Kwo Ling Road. He requested water spraying to the site entrance for dust suppression.	N	In accordance with the information provided by the Contractor of the Project and confirmed by the Engineer, no construction activity was carried out adjacent to Cha Kwo Ling Road during the time of complaint. A steel bridge was set up for dump trucks heading to Barging Facility to avoid dust generation due to vehicle movement of dump trucks on Cha Kwo Ling Road. The Contract has undertaken the following measures near Cha Kwo Ling Road after the complaint to reduce the dust nuisance to nearby air sensitive receivers, including: • mobilized water trucks to perform water spraying along Cha Kwo Ling Road to suppress dust generation due to movement of vehicles; • water spraying at the exit of Contractor Office on a regular basis for dust suppression due to entry and leaving of vehicles; • wheel washing for site vehicles at paved site exits for Lam Tin Interchange work site to reduce vehicle tracking of soil on Cha Kwo Ling Road	On-going
103	16th December 2017	16th December 2017 / Marine works site	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained the noise nuisance from construction site at nighttime and call 999.	Y	According to the information provided and confirmed by the Engineer, no construction activities were conducted before 0700 hour on 16 December 2017. The sound of waves lapping against the steel cofferdam and from the loose or worn part of barges are likely the sources of noise nuisance. According to information provided by Engineer, the following is implemented immediately on the following day to minimize noise nuisance due to the construction vessels: • Apply lubricants to the vessels and the joints; • Replace Steel Cable by Ropes; • Regular noise barrier for winch at barges; • Cofferdams were reinforced with armour rock to bring down the	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
							impact sound when water waves hitting the steel tanks; • Breakwater was installed to reduce the intensity of wave action and thus, reducing the noise when waves lap against the cofferdams.	
104	18th December 2017	Not Specified / Lam Tin Interchange	Resident of Ping Ting Estate	Noise	The complainant complained about the construction noise nuisance at Lam Tin Interchange at about 7 am.	Y	According to the Engineer's Site Diaries, the major construction activities on 18 December 2017 included rock breaking excavation at Lam Tin Interchange. According to Construction Noise Assessment of this Contract, operated PME during the time of complaints are consistent with the proposed quantities in the latest Construction Noise Assessment. The Contractor had implemented environmental mitigation measures to minimize noise nuisance as followed: • 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; • Erected movable noise barriers next to breaking works at Lam Tin Interchange; • Cantilevered noise barriers were erected next to breakers wrapped with TMD and SilentMat at Portion IVC. According to routine noise monitoring of this Project, no limit level exceedance was recorded at monitoring stations in Yau Lai Estate in December 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that noise nuisance by the works has been brought to a minimum level and no adverse impact was brought to the nearby sensitive receivers.	On-going
105	18th December 2017	Not Specified / Construction of Road P2	Public	Noise	The complainant complained about noise from handling of steel at the water front storage area near Ocean Shore (portion VII).	Y	According to the information provided and confirmed by the Engineer, the major construction activities conducted during the time of complaint include Sheet pilings works (Portion IV) and Welding works for sheet piles (Portion VII). No powered mechanical equipment was operated for welding works at Portion VII on 18 December 2017. Therefore, the sheet piling works at Portion IV is considered the source of noise nuisance from handling of steel instead of Portion VII.	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
							The following was implemented by Contractor: • Acoustic material was wrapped around the vibratory hammer and acoustic mat was erected as temporary noise barrier during sheet piling works at Portion IV, where practicable; • Rubber pads were placed between the sheet pile and vibratory hammer to reduce noise impact from material collision when driving sheet piles into the ground. According to the regular noise monitoring conducted near Ocean Shores at Noise Monitoring Station CM6(A) and CM7(A), it is considered that no adverse noise impact was brought to the nearby sensitive receivers with the implementation of noise mitigation measures by the Contractor.	
106	19th December 2017	16th December 2017 / Construction of Road P2	Public	Air Quality and Noise	The complainant complained the noise nuisance and odour nuisance from the construction vessel near Ocean Shore.	Y	According to information provided by Engineer, the following is implemented immediately on the following day to minimize noise nuisance due to the construction vessels: • apply lubricants to the vessels and the joints • Replace Steel Cable by Ropes • Regular noise barrier for winch at barges	On-going
107	20th December 2017	Not Specified / Not Specified	Public	Noise	The complainant complained about machine noise from excavation of rock near the rocky shore. He complained that there is no hoarding / barrier to surround the workfront and the use of inappropriate machine.	Y	According to the information provided and confirmed by the Engineer, the major construction activities conducted during the time of complaint include Removal of armour rock seawall (Portion V). The sound produced when the excavator crossing uneven, rocky surface and from the moving of hard materials are considered the sources of noise nuisance resulting from the removal of armour rock seawall on 20 December 2017. Due to rocky and uneven land surface, erection of temporary noise barrier to surround the entire works area was unlikely to be feasible. And, it is considered to be impracticable to wrap the bucket or wheel of excavator with acoustic materials. Despite the limitations, temporary noise barriers were installed at where ground condition allowed. Cantilever noise barriers were erected at part of the boundary of Portion V facing Ocean Shores to reduce noise impact According to the regular noise monitoring conducted near Ocean Shores	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
							at Noise Monitoring Station CM6(A) and CM7(A), it is considered that no adverse noise impact was brought to the nearby sensitive receivers with the implementation of noise mitigation measures by the Contractor.	
108	20th December 2017	20th December 2017 / Lam Tin Interchange	Resident of Nga Lai House, Yau Lai Estate	Noise	The complainant complained about the construction noise nuisance due to the rock breaking work at Lam Tin Interchange at nighttime.	Y	According to the Engineer's Site Diaries, the major construction activities included mucking out of spoil after blasting works; pre-excavation grouting and hole drilling at Lam Tin Interchange. According to Construction Noise Assessment of this Contract, operated PME during the time of complaints are consistent with the proposed quantities in the latest Construction Noise Assessment. Also, no violation of CNP conditions was observed during time of complaints. The Contractor had implemented environmental mitigation measures to minimize noise nuisance as followed: • Installed steel-type blasting door mounted with sound absorptive lining to absorb noise from blasting in the tunnel; • Ensured blasting doors were fully closed when blasting works were undertaken • Erected noise barriers with TMD and SilentMAT adjacent to blasting door facing Yau Lai Estate • Placed acoustic materials on slopes adjacent to blasting door With the implementation of environmental mitigation measures by Contractors on site, it is considered that noise nuisance by the works has been brought to a minimum level and no adverse impact was brought to the nearby sensitive receivers.	On-going
109	20th, 31st December 2017, 7th January 2018	Not Specified / Lam Tin Interchange	Resident of Nga Lai House, Yau Lai Estate	Noise	The complainant complained about the construction noise nuisance at Lam Tin Interchange at nighttime.	Y		On-going
110	20th December 2017	18th December 2017 / Construction of Road P2	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained about the construction noise nuisance in marine works area at about 6pm.	Y	According to the information provided and confirmed by the Engineer, removal of armour rock in Portion IX was the only construction activity carried out after 1800 hours and completed before 1900 hours on 18 December 2017. One unit of derrick barge was in operation for such works during the time of complaint. The operated powered mechanical equipment and the noise stemmed from loading/unloading of hard materials into the barge are considered the sources of noise nuisance resulting from such works. The Contractor had implemented environmental mitigation measures to	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
							minimize the noise nuisance to the nearby noise sensitive receivers as follows: • A layer of sand was placed over the basin of barge to act as a cushion when loading hard materials into barge. • The grab bucket was kept at the lowest level, as far as practicable, when loading hard materials into the barge. • Maintenance of barge including lubrication of moving parts was performed to minimize noise from worn or loose parts. • Noise source on the barge was covered with acoustic materials	
111	2nd January 2018	2nd January 2018 / Construction of Lam Tin Interchange	Public	Noise	The complainant complained about the construction noise nuisance to Sau Lau House, Yau Lai Estate.	Y	See Investigation / Mitigation Action for Complaint No. 104.	On-going
112	5th January 2018	5th January 2018 / Construction of Lam Tin Interchange	Public	Noise	The complainant complained about rock breaking noise nuisance to Bik Lau House, Yau Lai Estate.	Y		On-going
113	8th January 2018	Not specified / Construction of Lam Tin Interchange	Public	Noise	The complainant from Yung Lai House, Yau Lai Estate complained about machine noise nuisance from the works area during night time. (EPD Reference No.: K15/RE/00000714-18)	Y	According to the Engineer's Site Diaries, the major construction activities included pre-excavation grouting and hole drilling at Lam Tin Interchange. It is uncertain that the machine noise concerned by the complainant is generated from construction of this Project. Despite, the Contractor is reminded to implemented the following for blasting works during night time: ➢ Ensured blasting doors were fully closed when blasting works were undertaken ➢ Erected noise barriers with TMD and SilentMAT adjacent to blasting door facing Yau Lai Estate ➢ Placed acoustic materials on slopes adjacent to blasting door ➢ Proper and frequent maintenance of PME.	On-going
114	8th, 19th January 2018	7th January 2018 / Marine works area for construction of Road P2	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained that construction work was carried out as early as 7am on 7 January 2018	Y	According to site diaries, no marine construction works was carried out on 7th January 2018 under this Project. Marine transportation for the barge workers to rotate shift was the only non-construction activity carried out during the time of complaint on 7th January 2018. No significant noise impact was anticipated.	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
					(Sunday).		For necessary PME operating during public holidays (including Sunday) on land-based works area, the Contractor is reminded to comply with the conditions of relevant CNPs and adopt good site practices recommended in the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the approved Noise Mitigation Plan of this Contract, including the following: ➢ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; ➢ Silences 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 oriented so that the noise is directly away from the nearby NSRs; ➢ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	
115	12th January 2018	Not specified/ Construction of Lam Tin Interchange	Yau Lai Estate Property Services Management Office	Noise	The complainant complained about construction noise nuisance in early morning from the works area.	Y	Under Investigation	On-going
116	15th January 2018	Not specified / Construction of Lam Tin Interchange	Public	Noise	The complainant from Nga Lai House, Yau Lai Estate complained about construction noise nuisance from works area (EPD Reference No.: K15/RE/00001427-18)	Y	Under Investigation	On-going
117	22nd January 2018	Not specified/ Construction of Lam Tin	Public	Noise	A resident of Yau Lai Estate complained about construction noise	Y	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
		Interchange			nuisance from construction of Lam Tin Interchange.			
118	25th January 2018	Not specified/ Construction of Lam Tin Interchange	Public	Air Quality	Conduction dust nuisance from works near Cha Kwo Ling Road and the complainant requested more wheel washing and water spray at Cha Kwo Ling Road near site entrance. (EPD Reference No.: K15/RE/00002751-18)	N	No specific dust generation works was carried out near Cha Kwo Ling Road. Water browser had been deployed for washing at junction between Cha Kwo Ling Road and site entrance to minimize dust impact to Cha Kwo Ling Road.	On-going
119	26th January 2018	Not specified/ Construction of Lam Tin Interchange	Public	Water Quality	The complainant mentioned that muddy water was discharged from the site to Cha Kwo Ling Road.	N	No muddy water and sand/rubble was identified running off the Cha Kwo Ling Road. The Contractor will be reminded that stormwater drain should be kept under monitoring.	On-going
120	27th January 2018	27th January 2018 / Construction of Road P2	Public	Noise	A resident of Ocean Shore complaining about hammering noise emanated from the TKO-LTT construction site in front of Ocean Shores as early as 7am on 27 January 2018 (Saturday). She said the noise lasted till 900am and caused serious annoyance to nearby residents.	Y	Under Investigation	On-going

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	10	0	0
Total	**129**	**1**	**0**

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	First hearing on 29 Mar 2018	0	1
NE/2015/03	--	--	--	--	--	--

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	--	--	--	--	--	--
NE/2015/03	--	--	--	--	--	--

APPENDIX P
WASTE GENERATION IN THE REPORTING MONTH

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01

Monthly Summary Waste Flow Table for 2018

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 (see Note 10)	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	118.887	44.216	25.727	60.437	32.723	0.000	0.000	0.308	0.000	1.200	0.094
February											
March											
April											
May											
June											
Sub-total	118.887	44.216	25.727	60.437	32.723	0.000	0.000	0.308	0.000	1.200	0.094
July											
August											
September											
October											
November											
December											
Total	118.887	44.216	25.727	60.437	32.723	0.000	0.000	0.308	0.000	1.200	0.094

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

Contract No. NE/2015/02

Monthly Summary Waste Flow Table for 2018 Year

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Borken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (See note 3)	Chemical Waste	Other, e.g. general refuse
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
Jan	0.30510	0.00000	0.11060	0.00000	0.00850	0.18600	0.00000	0.00000	0.00000	0.00000	0.07544
Feb											
Mar											
Apr											
May											
June											
SUB-TOTAL	0.30510	0.00000	0.11060	0.00000	0.00850	0.18600	0.00000	0.00000	0.00000	0.00000	0.07544
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	0.30510	0.00000	0.11060	0.00000	0.00850	0.18600	0.00000	0.00000	0.00000	0.00000	0.07544

Note: **Conversion to 1000m^3** for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m^3 for Inert C&D is weight in 1000kg multiply by 0.0005

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Name of Department : CEDD

Contract No. : NE/2015/03

Monthly Summary Waste Flow Table for 2018 (year)

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 (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 m^3)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m^3)
Accumulated From 2017	0.84697	0	0.175365	0.290915	0.350135	0.03056	0	0	0	0	0.03079
Jan	0.17555	0	0	0	0.17555	0	0	0	0	0	0.00614
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	1.02252	0	0.175365	0.290915	0.525685	0.03056	0	0	0	0	0.03693

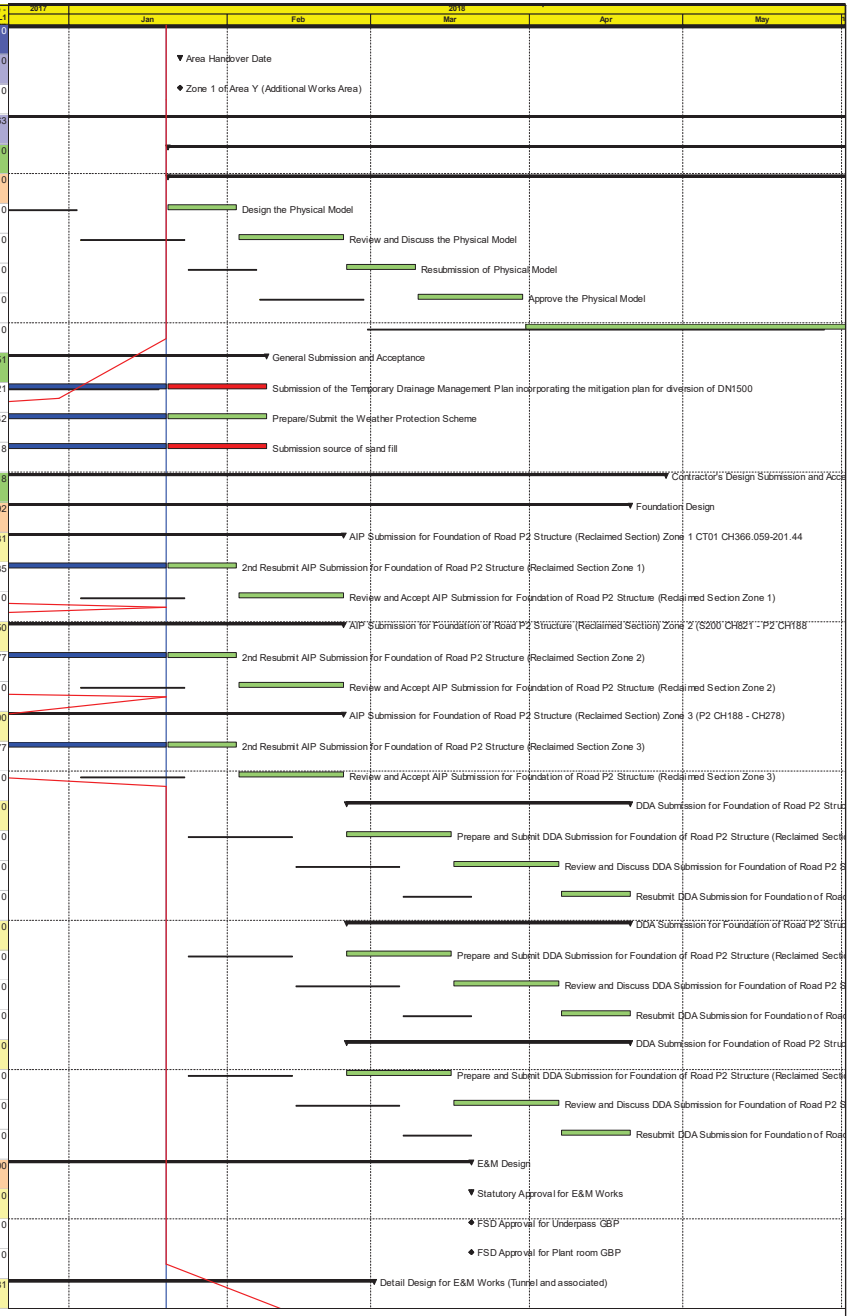
Notes: (1) The performance targets are given in PS Clause 6.14.
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.
(4) The *Contractor* 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.

APPENDIX Q
TENTATIVE CONSTRUCTION PROGRAMME

High Level 3 Months Look Ahead Programme

Activities	Feb-18	Mar-18	Apr-18
Lam Tin Interchange			
EHC2 U-Trough			
Site Formation - Area 1G1 & 1G2 &5			
Site Formation - Area 2			
Site Formation - Area 3			
Site Formation - Area 4			
Soldier Pile Wall - Area 2A			
Main Tunnel			
MT Excavation			
TKO Interchange			
Haul Road Construction, Site Formation & Slope Works			
Steel Platform for Bridge Construction			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)			1563	1200	12-Jan-17 A	04-May-21	-219			-10
Area Handover Date		P2-Cal.A	0	0	22-Jan-18	22-Jan-18	0			0
A10720	Zone 1 of Area Y (Additional Works Area)	P2-Cal.A	0	0		22-Jan-18*	0	0%		0
Preliminaries, Submission, Contractor's Design Submission and Approval		P2-Cal.A	1015	713	20-Jan-17 A	02-Jan-20	179			-63
Preliminaries		P2-Cal.A	160	160	20-Jan-18	28-Jun-18	732			0
Design Submission of Physical Model		P2-Cal.A	160	160	20-Jan-18	28-Jun-18	732			0
LC10242	Design the Physical Model	P2-Cal.A	14	14	20-Jan-18	02-Feb-18	732	0%		0
LC10244	Review and Discuss the Physical Model	P2-Cal.A	21	21	03-Feb-18	23-Feb-18	732	0%		0
LC10246	Resubmission of Physical Model	P2-Cal.A	14	14	24-Feb-18	09-Mar-18	732	0%		0
LC10248	Approve the Physical Model	P2-Cal.A	21	21	10-Mar-18	30-Mar-18	732	0%		0
LC10250	Fabrication of Physical Model	P2-Cal.A	90	90	31-Mar-18	28-Jun-18	732	0%		0
General Submission and Acceptance		P2-Cal.A	121	20	21-Aug-17 A	08-Feb-18	872			-51
S10050	Submission of the Temporary Drainage Management Plan incorporating the mitigation plan for diversion of DN1500	P2-Cal.A	60	20	20-Nov-17 A	08-Feb-18	-65	66.67%		-21
S10240	Prepare/Submit the Weather Protection Scheme	P2-Cal.A	30	20	21-Aug-17 A	08-Feb-18	872	33.33%		-142
S10780	Submission source of sand fill	P2-Cal.A	30	20	14-Sep-17 A	08-Feb-18	-184	33.33%		-118
Contractor's Design Submission and Acceptance		P2-Cal.A	456	98	07-Mar-17 A	27-Apr-18	141			8
Foundation Design		P2-Cal.A	449	91	30-May-17 A	20-Apr-18	37			92
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44		P2-Cal.A	270	35	30-May-17 A	23-Feb-18	37			-31
S11260-1	2nd Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	14	30-May-17 A	02-Feb-18	37	0%		-235
S11260-2	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	03-Feb-18	23-Feb-18	37	0%		0
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH188		P2-Cal.A	393	35	27-Jul-17 A	23-Feb-18	37			150
S11269-1	2nd Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	14	27-Jul-17 A	02-Feb-18	37	0%		-177
S11270	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	03-Feb-18	23-Feb-18	37	0%		0
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH188 - CH278)		P2-Cal.A	143	35	27-Jul-17 A	23-Feb-18	37			-100
S11278-2	2nd Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	14	14	27-Jul-17 A	02-Feb-18	37	0%		-177
S11279	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	03-Feb-18	23-Feb-18	37	0%		0
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44		P2-Cal.A	56	56	24-Feb-18	20-Apr-18	37			0
S11360	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	24-Feb-18	16-Mar-18	37	0%		0
S11380	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	17-Mar-18	06-Apr-18	37	0%		0
S11400	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	14	07-Apr-18	20-Apr-18	37	0%		0
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH188		P2-Cal.A	56	56	24-Feb-18	20-Apr-18	37			0
S11422	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	24-Feb-18	16-Mar-18	37	0%		0
S11424	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	17-Mar-18	06-Apr-18	37	0%		0
S11426	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	14	07-Apr-18	20-Apr-18	37	0%		0
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH188 - CH278)		P2-Cal.A	56	56	24-Feb-18	20-Apr-18	37			0
S11432	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	24-Feb-18	16-Mar-18	37	0%		0
S11434	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	17-Mar-18	06-Apr-18	37	0%		0
S11436	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	14	14	07-Apr-18	20-Apr-18	37	0%		0
E&M Design		P2-Cal.A	208	60	07-Mar-17 A	20-Mar-18	119			-200
Statutory Approval for E&M Works		P2-Cal.A	0	0	20-Mar-18	20-Mar-18	119			0
S11570-11	FSD Approval for Underpass GBP	P2-Cal.A	0	0		20-Mar-18	119	0%		0
S11570-12	FSD Approval for Plant room GBP	P2-Cal.A	0	0		20-Mar-18	119	0%		0
Detail Design for E&M Works (Tunnel and associated)		P2-Cal.A	208	41	07-Mar-17 A	01-Mar-18	138			-181



Primary Baseline
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Remaining Work
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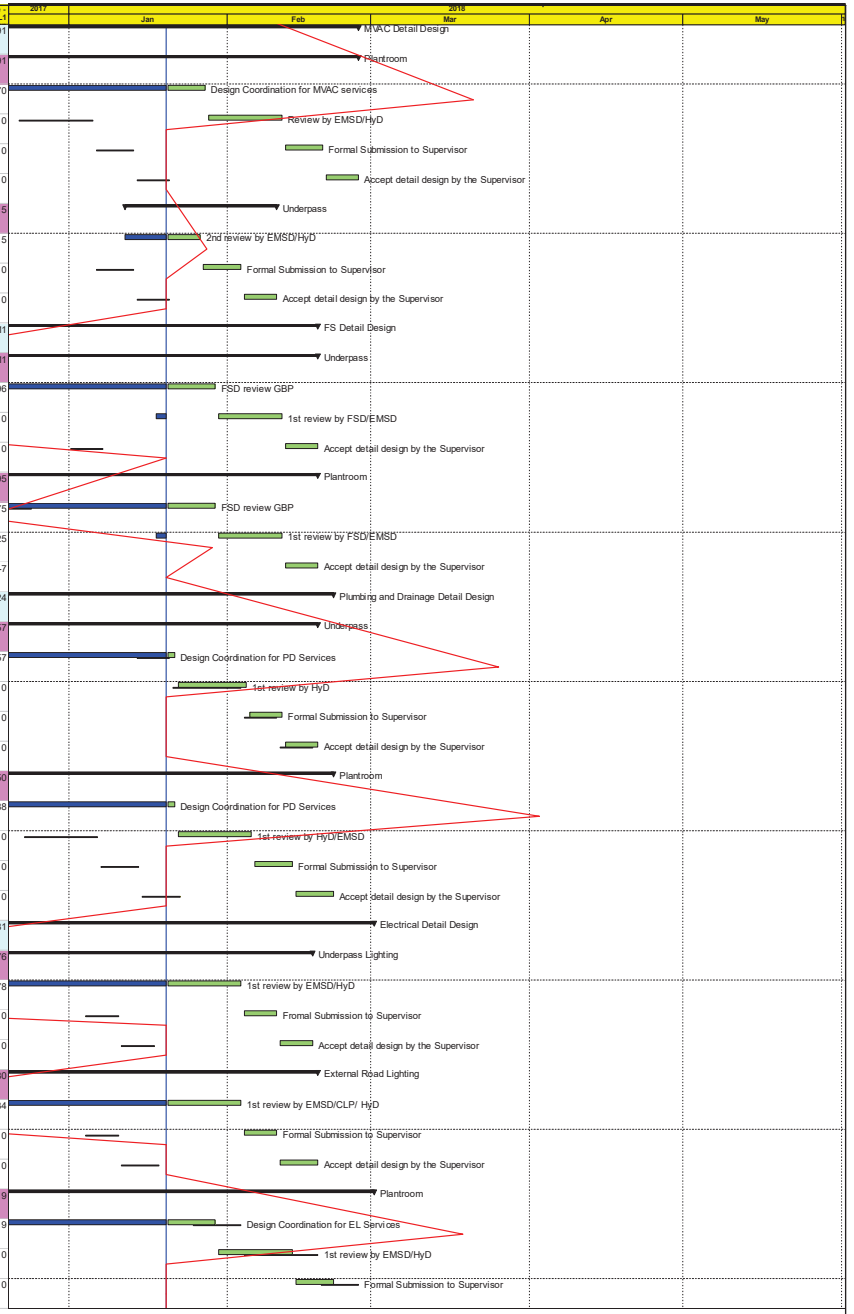
Summary

NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)

3 Monthly Rolling Programme
(Data Date : 20-Jan-2018)

Date	Revision	Checked	Approved
20-Jan-18			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1
MVAC Detail Design		P2-Cal.A	68	38	25-Apr-17 A	26-Feb-18	127			-191
Plantroom		P2-Cal.A	60	38	25-Apr-17 A	26-Feb-18	127			-191
S11575	Design Coordination for MVAC services	P2-Cal.A	60	8	25-Apr-17 A	27-Jan-18	127	86.67%		-270
S11576	Review by EMSD/HyD	P2-Cal.A	15	15	28-Jan-18	11-Feb-18	127	0%		0
S11577	Formal Submission to Supervisor	P2-Cal.A	8	8	12-Feb-18	19-Feb-18	127	0%		0
S11578	Accept detail design by the Supervisor	P2-Cal.A	7	7	20-Feb-18	26-Feb-18	127	0%		0
Underpass		P2-Cal.A	22	22	12-Jan-18 A	10-Feb-18	143			-15
S11626	2nd review by EMSD/HyD	P2-Cal.A	15	7	12-Jan-18 A	26-Jan-18	143	53.33%		-15
S11630	Formal Submission to Supervisor	P2-Cal.A	8	8	27-Jan-18	03-Feb-18	143	0%		0
S11640	Accept detail design by the Supervisor	P2-Cal.A	7	7	04-Feb-18	10-Feb-18	143	0%		0
FS Detail Design		P2-Cal.A	156	30	19-Oct-17 A	18-Feb-18	119			-11
Underpass		P2-Cal.A	154	30	19-Oct-17 A	18-Feb-18	119			-11
S11649	FSD review GBP	P2-Cal.A	28	10	19-Oct-17 A	29-Jan-18	119	64.29%		-96
S11650	1st review by FSD/EMSD	P2-Cal.A	15	13	18-Jan-18 A	11-Feb-18	119	13.33%		-10
S11651	Accept detail design by the Supervisor	P2-Cal.A	7	7	12-Feb-18	18-Feb-18	119	0%		0
Plantroom		P2-Cal.A	86	30	19-Oct-17 A	18-Feb-18	119			-95
S11652-10	FSD review GBP	P2-Cal.A	28	10	19-Oct-17 A	29-Jan-18	119	64.29%		-75
S11652-20	1st review by FSD/EMSD	P2-Cal.A	15	13	18-Jan-18 A	11-Feb-18	119	13.33%		-25
S11652-23	Accept detail design by the Supervisor	P2-Cal.A	7	7	12-Feb-18	18-Feb-18	119	0%		-7
Plumbing and Drainage Detail Design		P2-Cal.A	73	33	01-Apr-17 A	21-Feb-18	132			-224
Underpass		P2-Cal.A	65	30	03-May-17 A	18-Feb-18	135			-257
S11656	Design Coordination for PD Services	P2-Cal.A	60	2	03-May-17 A	21-Jan-18	135	96.67%		-257
S11657	1st review by HyD	P2-Cal.A	14	14	22-Jan-18	04-Feb-18	135	0%		0
S11658	Formal Submission to Supervisor	P2-Cal.A	7	7	05-Feb-18	11-Feb-18	135	0%		0
S11659	Accept detail design by the Supervisor	P2-Cal.A	7	7	12-Feb-18	18-Feb-18	135	0%		0
Plantroom		P2-Cal.A	73	33	01-Apr-17 A	21-Feb-18	132			-250
S11660-08	Design Coordination for PD Services	P2-Cal.A	60	2	01-Apr-17 A	21-Jan-18	132	96.67%		-288
S11660-09	1st review by HyD/EMSD	P2-Cal.A	15	15	22-Jan-18	05-Feb-18	132	0%		0
S11660-10	Formal Submission to Supervisor	P2-Cal.A	8	8	06-Feb-18	13-Feb-18	132	0%		0
S11660-11	Accept detail design by the Supervisor	P2-Cal.A	8	8	14-Feb-18	21-Feb-18	132	0%		0
Electrical Detail Design		P2-Cal.A	201	41	07-Mar-17 A	01-Mar-18	138			-181
Underpass Lighting		P2-Cal.A	162	29	26-Jul-17 A	17-Feb-18	136			-78
S11660-16	1st review by EMSD/HyD	P2-Cal.A	15	15	26-Jul-17 A	03-Feb-18	136	0%		-178
S11660-18	Fromal Submission to Supervisor	P2-Cal.A	7	7	04-Feb-18	10-Feb-18	136	0%		0
S11660-19	Accept detail design by the Supervisor	P2-Cal.A	7	7	11-Feb-18	17-Feb-18	136	0%		0
External Road Lighting		P2-Cal.A	115	30	08-Sep-17 A	18-Feb-18	149			-80
S11660-24	1st review by EMSD/CLP/ HyD	P2-Cal.A	15	15	08-Sep-17 A	03-Feb-18	149	0%		-134
S11660-26	Formal Submission to Supervisor	P2-Cal.A	7	7	04-Feb-18	10-Feb-18	149	0%		0
S11660-27	Accept detail design by the Supervisor	P2-Cal.A	8	8	11-Feb-18	18-Feb-18	149	0%		0
Plantroom		P2-Cal.A	60	41	07-Mar-17 A	01-Mar-18	124			-319
S11665	Design Coordination for EL Services	P2-Cal.A	60	10	07-Mar-17 A	29-Jan-18	124	83.33%		-319
S11666	1st review by EMSD/HyD	P2-Cal.A	15	15	30-Jan-18	13-Feb-18	124	0%		0
S11667	Formal Submission to Supervisor	P2-Cal.A	8	8	14-Feb-18	21-Feb-18	124	0%		0



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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)

3 Monthly Rolling Programme
(Data Date : 20-Jan-2018)

Date	Revision	Checked	Approved
20-Jan-18			

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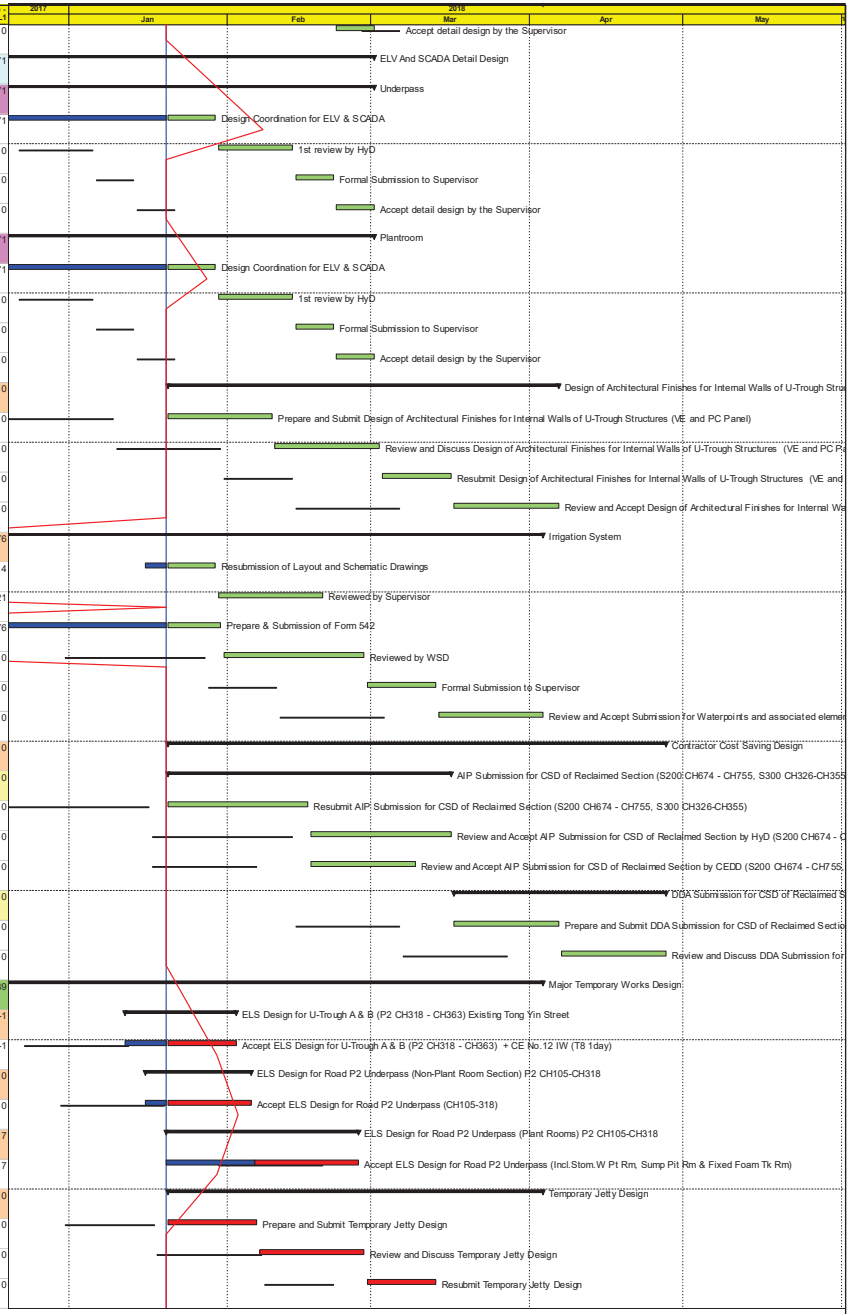
S11668	Accept detail design by the Supervisor	P2-Cal.A	8	8	22-Feb-18	01-Mar-18	124	0%		0
ELV And SCADA Detail Design		P2-Cal.A	72	41	12-Aug-17 A	01-Mar-18	124			-171
Underpass		P2-Cal.A	72	41	12-Aug-17 A	01-Mar-18	124			-171
S11669-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	29-Jan-18	124	83.33%		-171
S11669-18	1st review by HyD	P2-Cal.A	15	15	30-Jan-18	13-Feb-18	124	0%		0
S11669-19	Formal Submission to Supervisor	P2-Cal.A	8	8	14-Feb-18	21-Feb-18	124	0%		0
S11669-20	Accept detail design by the Supervisor	P2-Cal.A	8	8	22-Feb-18	01-Mar-18	124	0%		0
Plantroom		P2-Cal.A	33	41	12-Aug-17 A	01-Mar-18	124			-171
S11670-10	Design Coordination for ELV & SCADA	P2-Cal.A	10	10	12-Aug-17 A	29-Jan-18	124	0%		-171
S11670-18	1st review by HyD	P2-Cal.A	15	15	30-Jan-18	13-Feb-18	124	0%		0
S11670-19	Formal Submission to Supervisor	P2-Cal.A	8	8	14-Feb-18	21-Feb-18	124	0%		0
S11670-20	Accept detail design by the Supervisor	P2-Cal.A	8	8	22-Feb-18	01-Mar-18	124	0%		0
Design of Architectural Finishes for Internal Walls of U-Trough Structures		P2-Cal.A	77	77	20-Jan-18	06-Apr-18	83			0
S11675	Prepare and Submit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	20-Jan-18	09-Feb-18	83	0%		0
S11680	Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	10-Feb-18	02-Mar-18	83	0%		0
S11700	Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	14	14	03-Mar-18	16-Mar-18	83	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	17-Mar-18	06-Apr-18	83	0%		0
Irrigation System		P2-Cal.A	258	74	16-Nov-17 A	03-Apr-18	165			-76
S11785	Resubmission of Layout and Schematic Drawings	P2-Cal.A	14	10	16-Jan-18 A	29-Jan-18	173	28.57%		-14
S11786	Reviewed by Supervisor	P2-Cal.A	21	21	30-Jan-18	19-Feb-18	173	0%		-21
S11788	Prepare & Submission of Form 542	P2-Cal.A	14	11	16-Nov-17 A	30-Jan-18	165	21.43%		-76
S11789	Reviewed by WSD	P2-Cal.A	28	28	31-Jan-18	27-Feb-18	165	0%		0
S11790	Formal Submission to Supervisor	P2-Cal.A	14	14	28-Feb-18	13-Mar-18	165	0%		0
S11800	Review and Accept Submission for Waterpoints and associated elements	P2-Cal.A	21	21	14-Mar-18	03-Apr-18	165	0%		0
Contractor Cost Saving Design		P2-Cal.A	98	98	20-Jan-18	27-Apr-18	23			0
AIP Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)		P2-Cal.A	56	56	20-Jan-18	16-Mar-18	23			0
S11940	Resubmit AIP Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	28	28	20-Jan-18	16-Feb-18	23	0%		0
S11950	Review and Accept AIP Submission for CSD of Reclaimed Section by HyD (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	28	28	17-Feb-18	16-Mar-18	23	0%		0
S11960	Review and Accept AIP Submission for CSD of Reclaimed Section by CEDD (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	21	17-Feb-18	09-Mar-18	30	0%		0
DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)		P2-Cal.A	42	42	17-Mar-18	27-Apr-18	23			0
S11962	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	21	17-Mar-18	06-Apr-18	23	0%		0
S11964	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	21	07-Apr-18	27-Apr-18	23	0%		0
Major Temporary Works Design		P2-Cal.A	114	74	22-Nov-17 A	03-Apr-18	229			-39
ELS Design for U-Trough A & B (P2 CH318 - CH363) Existing Tong Yin Street		P2-Cal.A	21	14	12-Jan-18 A	02-Feb-18	-71			-1
S12520	Accept ELS Design for U-Trough A & B (P2 CH318 - CH363) + CE No.12 IW (T8 1day)	P2-Cal.A	21	14	12-Jan-18 A	02-Feb-18	-71	33.33%		-1
ELS Design for Road P2 Underpass (Non-Plant Room Section) P2 CH105-CH318		P2-Cal.A	21	17	16-Jan-18 A	05-Feb-18	0			0
S12760	Accept ELS Design for Road P2 Underpass (CH105-318)	P2-Cal.A	21	17	16-Jan-18 A	05-Feb-18	0	19.05%		0
ELS Design for Road P2 Underpass (Plant Rooms) P2 CH105-CH318		P2-Cal.A	21	21	20-Jan-18 A	26-Feb-18	0			-17
S17960	Accept ELS Design for Road P2 Underpass (Incl.Stom.W Pt Rm, Sump Pit Rm & Fixed Foam Tk Rm)	P2-Cal.A	21	21	20-Jan-18 A	26-Feb-18	0	0%		-17
Temporary Jetty Design		P2-Cal.A	74	74	20-Jan-18	03-Apr-18	-111			0
S13020	Prepare and Submit Temporary Jetty Design	P2-Cal.A	18	18	20-Jan-18	06-Feb-18	-111	0%		0
S13040	Review and Discuss Temporary Jetty Design	P2-Cal.A	21	21	07-Feb-18	27-Feb-18	-111	0%		0
S13060	Resubmit Temporary Jetty Design	P2-Cal.A	14	14	28-Feb-18	13-Mar-18	-111	0%		0



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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)

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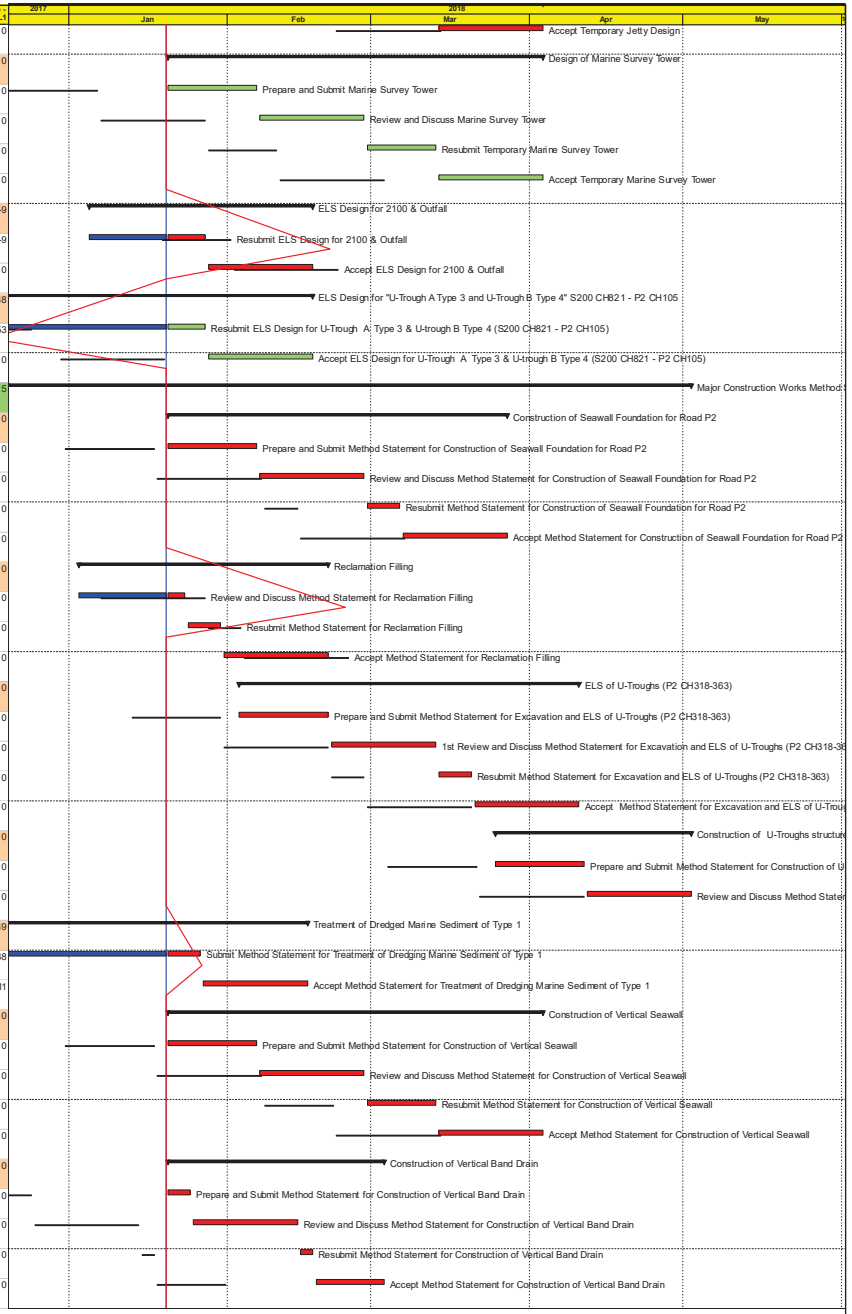
S13080	Accept Temporary Jetty Design	P2-Cal.A	21	21	14-Mar-18	03-Apr-18	-111	0%		0
Design of Marine Survey Tower		P2-Cal.A	74	74	20-Jan-18	03-Apr-18	114			0
S13100	Prepare and Submit Marine Survey Tower	P2-Cal.A	18	18	20-Jan-18	06-Feb-18	114	0%		0
S13120	Review and Discuss Marine Survey Tower	P2-Cal.A	21	21	07-Feb-18	27-Feb-18	114	0%		0
S13140	Resubmit Temporary Marine Survey Tower	P2-Cal.A	14	14	28-Feb-18	13-Mar-18	114	0%		0
S13160	Accept Temporary Marine Survey Tower	P2-Cal.A	21	21	14-Mar-18	03-Apr-18	114	0%		0
ELS Design for 2100 & Outfall		P2-Cal.A	32	29	05-Jan-18 A	17-Feb-18	-79			-9
S13166	Resubmit ELS Design for 2100 & Outfall	P2-Cal.A	14	8	05-Jan-18 A	27-Jan-18	-79	42.86%		-9
S13168	Accept ELS Design for 2100 & Outfall	P2-Cal.A	21	21	28-Jan-18	17-Feb-18	-79	0%		0
ELS Design for "U-Trough A Type 3 and U-Trough B Type 4" S200 CH821 - P2 CH105		P2-Cal.A	69	29	22-Nov-17 A	17-Feb-18	274			-48
S13178	Resubmit ELS Design for U-Trough A Type 3 & U-trough B Type 4 (S200 CH821 - P2 CH105)	P2-Cal.A	14	8	22-Nov-17 A	27-Jan-18	274	42.86%		-53
S13179	Accept ELS Design for U-Trough A Type 3 & U-trough B Type 4 (S200 CH821 - P2 CH105)	P2-Cal.A	21	21	28-Jan-18	17-Feb-18	274	0%		0
Major Construction Works Method Statement		P2-Cal.A	103	103	20-Dec-17 A	02-May-18	-28			5
Construction of Seawall Foundation for Road P2		P2-Cal.A	67	67	20-Jan-18	27-Mar-18	-186			0
S13260	Prepare and Submit Method Statement for Construction of Seawall Foundation for Road P2	P2-Cal.A	18	18	20-Jan-18	06-Feb-18	-186	0%		0
S13280	Review and Discuss Method Statement for Construction of Seawall Foundation for Road P2	P2-Cal.A	21	21	07-Feb-18	27-Feb-18	-186	0%		0
S13300	Resubmit Method Statement for Construction of Seawall Foundation for Road P2	P2-Cal.A	7	7	28-Feb-18	06-Mar-18	-186	0%		0
S13320	Accept Method Statement for Construction of Seawall Foundation for Road P2	P2-Cal.A	21	21	07-Mar-18	27-Mar-18	-186	0%		0
Reclamation Filling		P2-Cal.A	35	32	03-Jan-18 A	20-Feb-18	-196			0
S13360	Review and Discuss Method Statement for Reclamation Filling	P2-Cal.A	21	4	03-Jan-18 A	23-Jan-18	-196	80.95%		0
S13380	Resubmit Method Statement for Reclamation Filling	P2-Cal.A	7	7	24-Jan-18	30-Jan-18	-196	0%		0
S13400	Accept Method Statement for Reclamation Filling	P2-Cal.A	21	21	31-Jan-18	20-Feb-18	-196	0%		0
ELS of U-Troughs (P2 CH318-363)		P2-Cal.A	67	67	03-Feb-18	10-Apr-18	-71			0
S14060	Prepare and Submit Method Statement for Excavation and ELS of U-Troughs (P2 CH318-363)	P2-Cal.A	18	18	03-Feb-18	20-Feb-18	-71	0%		0
S14080	1st Review and Discuss Method Statement for Excavation and ELS of U-Troughs (P2 CH318-363)	P2-Cal.A	21	21	21-Feb-18	13-Mar-18	-71	0%		0
S14100	Resubmit Method Statement for Excavation and ELS of U-Troughs (P2 CH318-363)	P2-Cal.A	7	7	14-Mar-18	20-Mar-18	-71	0%		0
S14120-01	Accept Method Statement for Excavation and ELS of U-Troughs (P2 CH318-363)	P2-Cal.A	21	21	21-Mar-18	10-Apr-18	-71	0%		0
Construction of U-Troughs structure (P2 CH318-363)		P2-Cal.A	39	39	25-Mar-18	02-May-18	-28			0
S14122	Prepare and Submit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	18	18	25-Mar-18	11-Apr-18	-28	0%		0
S14124	Review and Discuss Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	21	21	12-Apr-18	02-May-18	-28	0%		0
Treatment of Dredged Marine Sediment of Type 1		P2-Cal.A	28	28	20-Dec-17 A	16-Feb-18	-58			-49
S14373-02	Submit Method Statement for Treatment of Dredging Marine Sediment of Type 1	P2-Cal.A	14	7	20-Dec-17 A	26-Jan-18	-58	50%		-38
S14374	Accept Method Statement for Treatment of Dredging Marine Sediment of Type 1	P2-Cal.A	21	21	27-Jan-18	16-Feb-18	-58	0%		-11
Construction of Vertical Seawall		P2-Cal.A	74	74	20-Jan-18	03-Apr-18	-195			0
S14931	Prepare and Submit Method Statement for Construction of Vertical Seawall	P2-Cal.A	18	18	20-Jan-18	06-Feb-18	-195	0%		0
S14933	Review and Discuss Method Statement for Construction of Vertical Seawall	P2-Cal.A	21	21	07-Feb-18	27-Feb-18	-195	0%		0
S14935	Resubmit Method Statement for Construction of Vertical Seawall	P2-Cal.A	14	14	28-Feb-18	13-Mar-18	-195	0%		0
S14937	Accept Method Statement for Construction of Vertical Seawall	P2-Cal.A	21	21	14-Mar-18	03-Apr-18	-195	0%		0
Construction of Vertical Band Drain		P2-Cal.A	43	43	20-Jan-18	03-Mar-18	-188			0
S14939	Prepare and Submit Method Statement for Construction of Vertical Band Drain	P2-Cal.A	5	5	20-Jan-18	24-Jan-18	-188	0%		0
S14941	Review and Discuss Method Statement for Construction of Vertical Band Drain	P2-Cal.A	21	21	25-Jan-18	14-Feb-18	-188	0%		0
S14945	Resubmit Method Statement for Construction of Vertical Band Drain	P2-Cal.A	3	3	15-Feb-18	17-Feb-18	-188	0%		0
S14947	Accept Method Statement for Construction of Vertical Band Drain	P2-Cal.A	14	14	18-Feb-18	03-Mar-18	-188	0%		0



Primary Baseline
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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)

3 Monthly Rolling Programme
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Date	Revision	Checked	Approved
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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1
Construction of Temporary Jetty		P2-Cal.A	22	22	14-Mar-18	04-Apr-18	-111			0
S14949	Prepare and Submit Method Statement for Construction of Temporary Jetty	P2-Cal.A	4	4	14-Mar-18	17-Mar-18	-111	0%		0
S14951	Review and Discuss Method Statement for Construction of Temporary Jetty	P2-Cal.A	7	7	18-Mar-18	24-Mar-18	-111	0%		0
S14953	Resubmit Method Statement for Construction of Temporary Jetty	P2-Cal.A	4	4	25-Mar-18	28-Mar-18	-111	0%		0
S14955	Accept Method Statement for Construction of Temporary Jetty	P2-Cal.A	7	7	29-Mar-18	04-Apr-18	-111	0%		0
Construction of DN2100		P2-Cal.A	35	35	20-Jan-18	23-Feb-18	-108			0
S14961	Resubmit Method Statement for Construction of DN2100	P2-Cal.A	14	14	20-Jan-18	02-Feb-18	-108	0%		0
S14962	Accept Method Statement for Construction of DN2100	P2-Cal.A	21	21	03-Feb-18	23-Feb-18	-108	0%		0
Procurement of Major Material		P2-Cal.A	1015	713	20-Jan-17 A	02-Jan-20	10			-63
Civil/Structural		P2-Cal.A	1015	713	20-Jan-17 A	02-Jan-20	10			-63
S14981	Procurement and Delivery of Steel H-Pile	P2-Cal.A	800	479	31-Jan-17 A	13-May-19	-211	40.13%		-33
S14983	Procurement and Delivery of ELS Wailing & Struts Members	P2-Cal.A	1015	713	20-Jan-17 A	02-Jan-20	10	29.75%		-63
S14985	Offsite Fabrication of Pre-cast Seawall blocks	P2-Cal.A	40	40	16-Feb-18	27-Mar-18	-186	0%		0
S14995	Offsite Fabrication of Marine Survey Tower	P2-Cal.A	120	120	04-Apr-18	01-Aug-18	114	0%		0
S15001	Procurement and Delivery of 1500DN materials	P2-Cal.A	90	40	01-Dec-17 A	28-Feb-18	-85	55.56%		0
Subletting Package		P2-Cal.A	370	102	27-Apr-17 A	01-May-18	359			0
V Panel and Precast Concrete Panel		P2-Cal.A	21	21	14-Dec-17 A	06-Apr-18	83			-93
S15156	Tender Interview and Recommendation to PM for V Panel and Precast Concrete Panel (Re-tender due to revise dwg)	P2-Cal.A	21	21	14-Dec-17 A	06-Apr-18	83	0%		-93
S15160	V Panel and Precast Concrete Panel Award	P2-Cal.A	0	0		06-Apr-18	83	0%		0
ELS Works (Reclaimed Section)		P2-Cal.A	42	42	21-Mar-18	01-May-18	63			0
S16385	Prepare Excavation and ELS Works (Reclaimed Section) Tender Document for PM Acceptance	P2-Cal.A	7	7	21-Mar-18	27-Mar-18	63	0%		0
S16386	Invitation, Submission and Opening of Tender for Excavation and ELS Works (Reclaimed Section)	P2-Cal.A	14	14	28-Mar-18	10-Apr-18	63	0%		0
S16387	Tender Interview and Recommendation to PM for Excavation and ELS Works (Reclaimed Section)	P2-Cal.A	21	21	11-Apr-18	01-May-18	63	0%		0
Structural Works for U-Trough, Underpass and Abutment		P2-Cal.A	220	100	01-Sep-17 A	29-Apr-18	65			-52
S16400	Prepare Structural Works for U-Trough, Underpass and Abutment Tender Document for PM Acceptance	P2-Cal.A	60	10	01-Sep-17 A	29-Jan-18	65	83.33%		-91
S16420	Invitation, Submission and Opening of Tender for Structural Works for U-Trough, Underpass and Abutment	P2-Cal.A	60	60	30-Jan-18	30-Mar-18	65	0%		0
S16440	Tender Interview and Recommendation to PM for Structural Works for U-Trough, Underpass and Abutment	P2-Cal.A	30	30	31-Mar-18	29-Apr-18	65	0%		0
Drainage and Sewerage Works (Existing Land) (At Grade Section)		P2-Cal.A	331	63	27-Apr-17 A	23-Mar-18	307			-31
S17104	Submission and Opening of Tender for Drainage and Sewerage Works	P2-Cal.A	42	42	27-Apr-17 A	02-Mar-18	307	0%		-268
S17106	Tender Interview and Recommendation to PM for Drainage and Sewerage Works	P2-Cal.A	21	21	03-Mar-18	23-Mar-18	307	0%		0
S17108	Drainage and Sewerage Works Award	P2-Cal.A	0	0		23-Mar-18	307	0%		0
Water Works (To be Incorporated in Irrigation Package)		P2-Cal.A	209	56	07-Aug-17 A	16-Mar-18	335			-39
S17120	Prepare Water Works Tender Document for PM Acceptance	P2-Cal.A	30	5	07-Aug-17 A	24-Jan-18	335	83.33%		-141
S17140	Submission and Opening of Tender for Water Works	P2-Cal.A	30	30	25-Jan-18	23-Feb-18	335	0%		0
S17160	Tender Interview and Recommendation to PM for Water Works	P2-Cal.A	21	21	24-Feb-18	16-Mar-18	335	0%		0
S17180	Water Works Award	P2-Cal.A	0	0		16-Mar-18	335	0%		0
Road Works		P2-Cal.A	42	42	21-Mar-18	01-May-18	359			0
S17200	Prepare Road Works Tender Document for PM Acceptance	P2-Cal.A	7	7	21-Mar-18	27-Mar-18	359	0%		0
S17220	Submission and Opening of Tender for Road Works	P2-Cal.A	14	14	28-Mar-18	10-Apr-18	359	0%		0
S17240	Tender Interview and Recommendation to PM for Road Works	P2-Cal.A	21	21	11-Apr-18	01-May-18	359	0%		0
Irrigation Works		P2-Cal.A	178	56	07-Aug-17 A	16-Mar-18	335			-70
S17280	Prepare Irrigation Works Tender Document for PM Acceptance	P2-Cal.A	30	5	07-Aug-17 A	24-Jan-18	335	83.33%		-141
S17300	Submission and Opening of Tender for Irrigation Works	P2-Cal.A	30	30	25-Jan-18	23-Feb-18	335	0%		0

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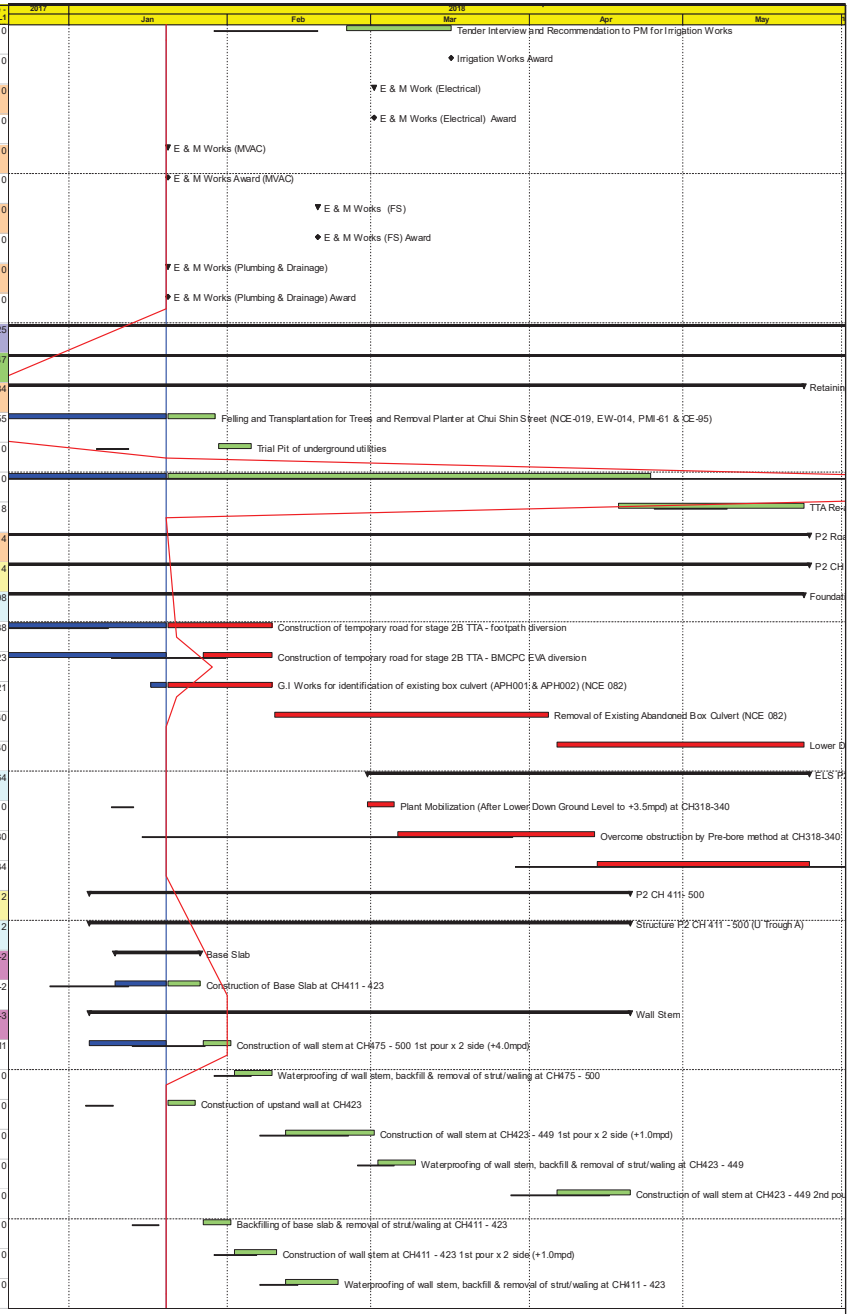
S17320	Tender Interview and Recommendation to PM for Irrigation Works	P2-Cal.A	21	21	24-Feb-18	16-Mar-18	335	0%		0
S17340	Irrigation Works Award	P2-Cal.A	0	0		16-Mar-18	335	0%		0
E & M Work (Electrical)		P2-Cal.A	0	0	01-Mar-18	01-Mar-18	138			0
S17420	E & M Works (Electrical) Award	P2-Cal.A	0	0		01-Mar-18	138	0%		0
E & M Works (MVAC)		P2-Cal.A	0	0	20-Jan-18	20-Jan-18	165			0
S17425	E & M Works Award (MVAC)	P2-Cal.A	0	0		20-Jan-18	165	0%		0
E & M Works (FS)		P2-Cal.A	0	0	18-Feb-18	18-Feb-18	149			0
S17429	E & M Works (FS) Award	P2-Cal.A	0	0		18-Feb-18	149	0%		0
E & M Works (Plumbing & Drainage)		P2-Cal.A	0	0	20-Jan-18	20-Jan-18	179			0
S17433	E & M Works (Plumbing & Drainage) Award	P2-Cal.A	0	0		20-Jan-18	179	0%		0
Section 3 of the Works All Works within Portion IV, V, VI, VII,VIII, and IX			644	368	25-Apr-17 A	22-Jan-19	154			-25
Existing Land Section			579	162	25-Apr-17 A	30-Jun-18	360			147
Retaining Wall P2-A CH 500- 650			579	125	25-Apr-17 A	24-May-18	158			184
LC11925	Felling and Transplantation for Trees and Removal Planter at Chui Shin Street (NCE-019, EW-014, PMI-61 & CE-95)	P2-Cal.A	200	10	20-May-17 A	29-Jan-18	65	95%		-55
LC11926	Trial Pit of underground utilities	P2-Cal.C	6	6	30-Jan-18	05-Feb-18	214	0%		0
LC11929	CLP cable Diversion and relocation of WSD flowmeter chamber (by others) (NCE-029) (NCE-030) (PMI-027)	P2-Cal.A	365	95	25-Apr-17 A	24-Apr-18	65	73.97%		0
LC11930	TTA Re-application and RA Period	P2-Cal.C	30	30	18-Apr-18	24-May-18	54	0%		-18
P2 Road		P2-Cal.C	99	99	08-Dec-17 A	25-May-18	175			14
P2 CH 318 - 363		P2-Cal.C	99	99	08-Dec-17 A	25-May-18	-111			14
Foundation P2 CH318-363		P2-Cal.C	98	98	08-Dec-17 A	24-May-18	-174			-98
LC12948	Construction of temporary road for stage 2B TTA - footpath diversion	P2-Cal.C	20	18	08-Dec-17 A	09-Feb-18	-174	10%		-38
LC12949	Construction of temporary road for stage 2B TTA - BMCPC EVA diversion	P2-Cal.C	20	12	19-Dec-17 A	09-Feb-18	-174	40%		-23
LC12949-02	G.I Works for identification of existing box culvert (APH001 & APH002) (NCE 082)	P2-Cal.C	20	18	17-Jan-18 A	09-Feb-18	-174	10%		-21
LC12949-03	Removal of Existing Abandoned Box Culvert (NCE 082)	P2-Cal.C	40	40	10-Feb-18	04-Apr-18	-174	0%		-40
LC12949-05	Lower Down Ground Level to +3.5mpd & UU Diversion at CH340-363	P2-Cal.C	40	40	06-Apr-18	24-May-18	-174	0%		-40
ELS P2 CH318-363 & SR2 CH100-110		P2-Cal.C	69	69	28-Feb-18	25-May-18	-111			64
LC12950	Plant Mobilization (After Lower Down Ground Level to +3.5mpd) at CH318-340	P2-Cal.C	5	5	28-Feb-18	05-Mar-18	-111	0%		0
LC12951	Overcome obstruction by Pre-bore method at CH318-340 (NCE072, NCE075 and CE067)	P2-Cal.C	30	30	06-Mar-18	13-Apr-18	-111	0%		30
LC12952	Installation of sheetpile wall at CH318-340	P2-Cal.C	34	34	14-Apr-18	25-May-18	-111	0%		34
P2 CH 411- 500		P2-Cal.C	71	71	05-Jan-18 A	20-Apr-18	203			2
Structure P2 CH 411 - 500 (U Trough A)		P2-Cal.C	71	71	05-Jan-18 A	20-Apr-18	203			2
Base Slab		P2-Cal.C	13	6	10-Jan-18 A	26-Jan-18	164			-2
LC14820	Construction of Base Slab at CH411 - 423	P2-Cal.C	13	6	10-Jan-18 A	26-Jan-18	164	53.85%		-2
Wall Stem		P2-Cal.C	71	71	05-Jan-18 A	20-Apr-18	203			-3
LC15040	Construction of wall stem at CH475 - 500 1st pour x 2 side (+4.0mpd)	P2-Cal.C	13	5	05-Jan-18 A	01-Feb-18	164	61.54%		-11
LC15050	Waterproofing of wall stem, backfill & removal of strut/waling at CH475 - 500	P2-Cal.C	7	7	02-Feb-18	09-Feb-18	217	0%		0
LC15075	Construction of upstand wall at CH423	P2-Cal.C	5	5	20-Jan-18	25-Jan-18	178	0%		0
LC15080	Construction of wall stem at CH423 - 449 1st pour x 2 side (+1.0mpd)	P2-Cal.C	13	13	12-Feb-18	01-Mar-18	164	0%		0
LC15090	Waterproofing of wall stem, backfill & removal of strut/waling at CH423 - 449	P2-Cal.C	7	7	02-Mar-18	09-Mar-18	183	0%		0
LC15100	Construction of wall stem at CH423 - 449 2nd pour x 2 side (+4.0mpd)	P2-Cal.C	13	13	06-Apr-18	20-Apr-18	164	0%		0
LC15130	Backfilling of base slab & removal of strut/waling at CH411 - 423	P2-Cal.C	5	5	27-Jan-18	01-Feb-18	185	0%		0
LC15140	Construction of wall stem at CH411 - 423 1st pour x 2 side (+1.0mpd)	P2-Cal.C	8	8	02-Feb-18	10-Feb-18	164	0%		0
LC15150	Waterproofing of wall stem, backfill & removal of strut/waling at CH411 - 423	P2-Cal.C	7	7	12-Feb-18	22-Feb-18	183	0%		0



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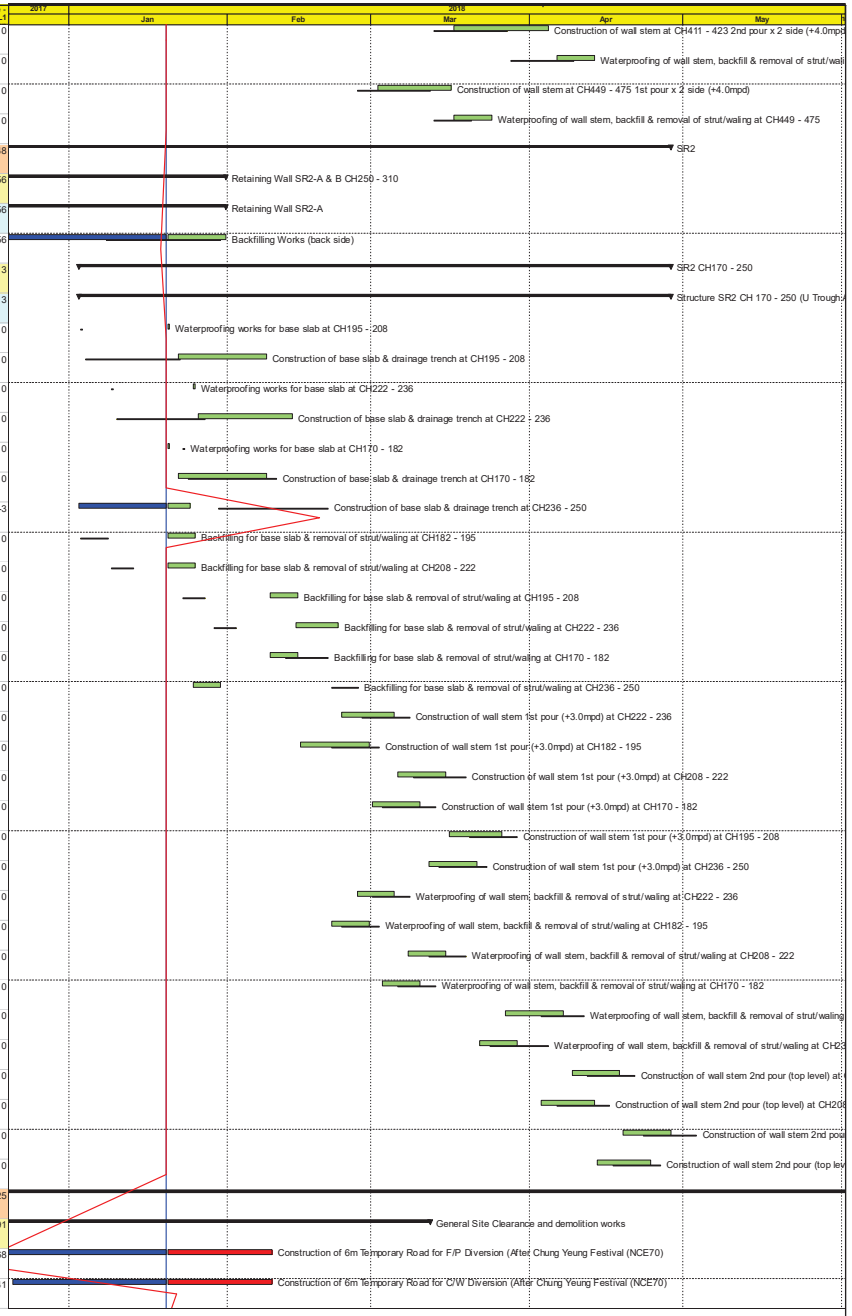
LC15160	Construction of wall stem at CH411 - 423 2nd pour x 2 side (+4.0mpd)	P2-Cal.C	13	13	17-Mar-18	04-Apr-18	164	0%		0
LC15170	Waterproofing of wall stem, backfill & removal of strut/waling at CH411 - 423	P2-Cal.C	7	7	06-Apr-18	13-Apr-18	209	0%		0
LC15200	Construction of wall stem at CH449 - 475 1st pour x 2 side (+4.0mpd)	P2-Cal.C	13	13	02-Mar-18	16-Mar-18	164	0%		0
LC15210	Waterproofing of wall stem, backfill & removal of strut/waling at CH449 - 475	P2-Cal.C	7	7	17-Mar-18	24-Mar-18	196	0%		0
SR2		P2-Cal.C	89	78	01-Nov-17 A	28-Apr-18	342			-48
Retaining Wall SR2-A & B CH250 - 310		P2-Cal.C	20	10	01-Nov-17 A	31-Jan-18	410			-56
Retaining Wall SR2-A		P2-Cal.C	20	10	01-Nov-17 A	31-Jan-18	410			-56
LC17140	Backfilling Works (back side)	P2-Cal.C	20	10	01-Nov-17 A	31-Jan-18	410	50%	5	-56
SR2 CH170 - 250		P2-Cal.C	78	78	03-Jan-18 A	28-Apr-18	253			3
Structure SR2 CH 170 - 250 (U Trough A)		P2-Cal.C	78	78	03-Jan-18 A	28-Apr-18	253			3
LC17230	Waterproofing works for base slab at CH195 - 208	P2-Cal.C	1	1	20-Jan-18	20-Jan-18	257	0%		0
LC17235	Construction of base slab & drainage trench at CH195 - 208	P2-Cal.C	16	16	22-Jan-18	08-Feb-18	257	0%		0
LC17240	Waterproofing works for base slab at CH222 - 236	P2-Cal.C	1	1	25-Jan-18	25-Jan-18	253	0%		0
LC17245	Construction of base slab & drainage trench at CH222 - 236	P2-Cal.C	16	16	26-Jan-18	13-Feb-18	253	0%		0
LC17250	Waterproofing works for base slab at CH170 - 182	P2-Cal.C	1	1	20-Jan-18	20-Jan-18	257	0%		0
LC17255	Construction of base slab & drainage trench at CH170 - 182	P2-Cal.C	16	16	22-Jan-18	08-Feb-18	257	0%		0
LC17265	Construction of base slab & drainage trench at CH236 - 250	P2-Cal.C	16	4	03-Jan-18 A	24-Jan-18	253	75%		-3
LC17280	Backfilling for base slab & removal of strut/waling at CH182 - 195	P2-Cal.C	5	5	20-Jan-18	25-Jan-18	274	0%		0
LC17285	Backfilling for base slab & removal of strut/waling at CH208 - 222	P2-Cal.C	5	5	20-Jan-18	25-Jan-18	274	0%		0
LC17290	Backfilling for base slab & removal of strut/waling at CH195 - 208	P2-Cal.C	5	5	09-Feb-18	14-Feb-18	257	0%		0
LC17295	Backfilling for base slab & removal of strut/waling at CH222 - 236	P2-Cal.C	5	5	14-Feb-18	22-Feb-18	253	0%		0
LC17300	Backfilling for base slab & removal of strut/waling at CH170 - 182	P2-Cal.C	5	5	09-Feb-18	14-Feb-18	257	0%		0
LC17305	Backfilling for base slab & removal of strut/waling at CH236 - 250	P2-Cal.C	5	5	25-Jan-18	30-Jan-18	270	0%		0
LC17310	Construction of wall stem 1st pour (+3.0mpd) at CH222 - 236	P2-Cal.C	9	9	23-Feb-18	05-Mar-18	253	0%		0
LC17315	Construction of wall stem 1st pour (+3.0mpd) at CH182 - 195	P2-Cal.C	9	9	15-Feb-18	28-Feb-18	257	0%		0
LC17320	Construction of wall stem 1st pour (+3.0mpd) at CH208 - 222	P2-Cal.C	9	9	06-Mar-18	15-Mar-18	253	0%		0
LC17325	Construction of wall stem 1st pour (+3.0mpd) at CH170 - 182	P2-Cal.C	9	9	01-Mar-18	10-Mar-18	257	0%		0
LC17330	Construction of wall stem 1st pour (+3.0mpd) at CH195 - 208	P2-Cal.C	9	9	16-Mar-18	26-Mar-18	253	0%		0
LC17335	Construction of wall stem 1st pour (+3.0mpd) at CH236 - 250	P2-Cal.C	9	9	12-Mar-18	21-Mar-18	257	0%		0
LC17340	Waterproofing of wall stem, backfill & removal of strut/waling at CH222 - 236	P2-Cal.C	7	7	26-Feb-18	05-Mar-18	287	0%		0
LC17345	Waterproofing of wall stem, backfill & removal of strut/waling at CH182 - 195	P2-Cal.C	7	7	21-Feb-18	28-Feb-18	291	0%		0
LC17350	Waterproofing of wall stem, backfill & removal of strut/waling at CH208 - 222	P2-Cal.C	7	7	08-Mar-18	15-Mar-18	269	0%		0
LC17355	Waterproofing of wall stem, backfill & removal of strut/waling at CH170 - 182	P2-Cal.C	7	7	03-Mar-18	10-Mar-18	273	0%		0
LC17360	Waterproofing of wall stem, backfill & removal of strut/waling at CH195 - 208	P2-Cal.C	7	7	27-Mar-18	07-Apr-18	253	0%		0
LC17365	Waterproofing of wall stem, backfill & removal of strut/waling at CH236 - 250	P2-Cal.C	7	7	22-Mar-18	29-Mar-18	257	0%		0
LC17370	Construction of wall stem 2nd pour (top level) at CH170 - 182	P2-Cal.C	9	9	09-Apr-18	18-Apr-18	253	0%		0
LC17375	Construction of wall stem 2nd pour (top level) at CH208 - 222	P2-Cal.C	9	9	03-Apr-18	13-Apr-18	257	0%		0
LC17380	Construction of wall stem 2nd pour (top level) at CH182 - 195	P2-Cal.C	9	9	19-Apr-18	28-Apr-18	253	0%		0
LC17385	Construction of wall stem 2nd pour (top level) at CH222 - 236	P2-Cal.C	9	9	14-Apr-18	24-Apr-18	257	0%		0
Portion IV & VII		P2-Cal.C	179	129	20-Nov-17 A	30-Jun-18	-120			-25
General Site Clearance and demolition works		P2-Cal.C	93	41	20-Nov-17 A	12-Mar-18	-164			-91
LC17658-07	Construction of 6m Temporary Road for F/P Diversion (After Chung Yeung Festival (NCE70)	P2-Cal.C	30	18	20-Nov-17 A	09-Feb-18	-178	40%		-68
LC17658-09	Construction of 6m Temporary Road for C/W Diversion (After Chung Yeung Festival (NCE70)	P2-Cal.C	20	18	21-Dec-17 A	09-Feb-18	-178	10%		-41



Primary Baseline
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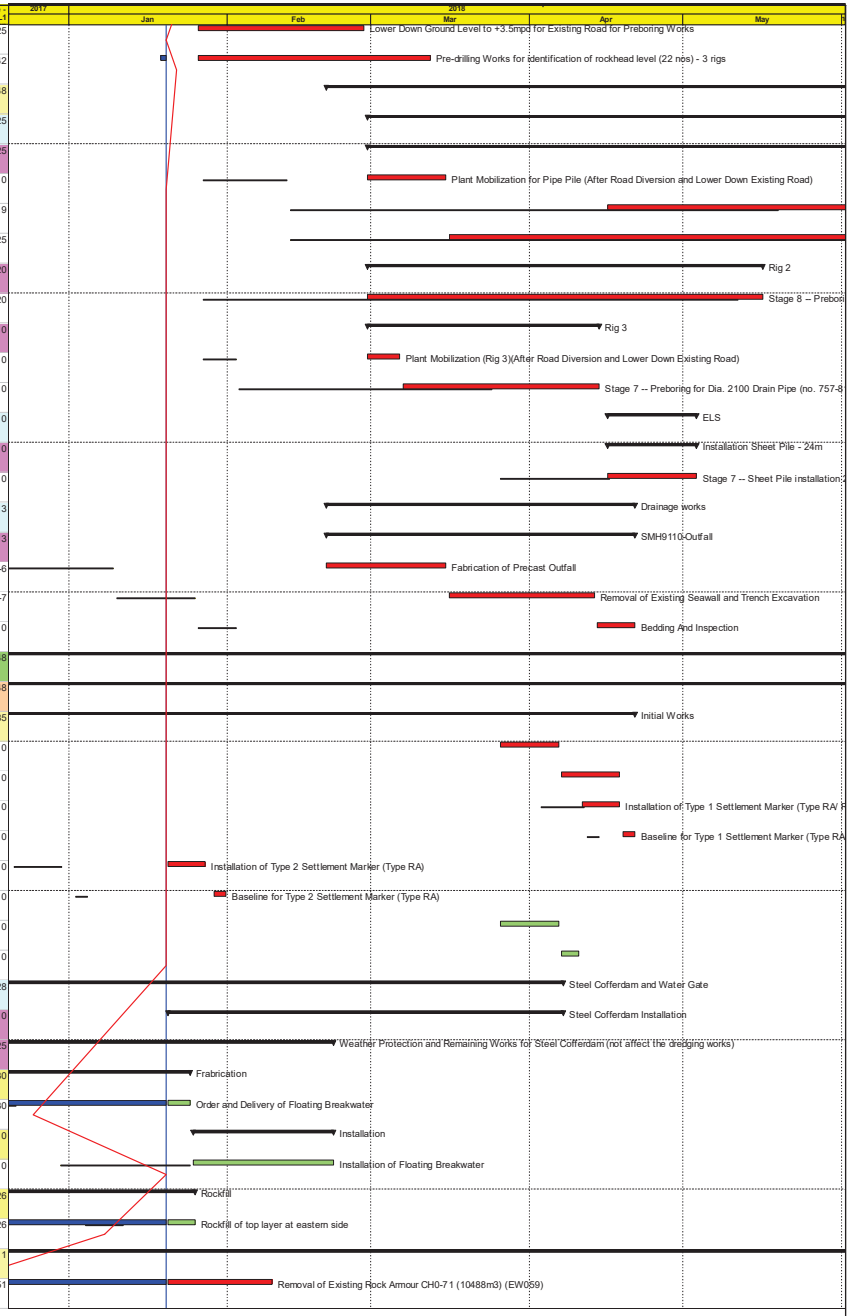
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)

3 Monthly Rolling Programme
(Data Date : 20-Jan-2018)

Date	Revision	Checked	Approved
20-Jan-18			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1
LC17658-10	Lower Down Ground Level to +3.5mpd for Existing Road for Preboring Works	P2-Cal.C	25	25	26-Jan-18	27-Feb-18	-178	0%		-25
LC17658-11	Pre-drilling Works for identification of rockhead level (22 nos) - 3 rigs	P2-Cal.C	37	36	19-Jan-18 A	12-Mar-18	-164	2.7%		-42
Construction of DN2100 stormwater at Portion IV & VII		P2-Cal.C	106	106	20-Feb-18	30-Jun-18	-120			48
Preboring		P2-Cal.C	99	99	28-Feb-18	30-Jun-18	-167			25
Rig 1		P2-Cal.C	99	99	28-Feb-18	30-Jun-18	-167			25
LC17665	Plant Mobilization for Pipe Pile (After Road Diversion and Lower Down Existing Road)	P2-Cal.C	14	14	28-Feb-18	15-Mar-18	-167	0%		0
LC17666	Stage 9 -- Preboring for Dia. 2100 Drain Pipe (no.825-936)(115 nos.@ 2nos./d)(CE 041)	P2-Cal.C	56	56	16-Apr-18	22-Jun-18	-174	0%		19
LC17667	Stage 10 -- Pipe Pile Installation (85nos. @ 1nos./d)	P2-Cal.C	85	85	16-Mar-18	30-Jun-18	-167	0%		25
Rig 2		P2-Cal.C	62	62	28-Feb-18	16-May-18	-178			20
LC17676	Stage 8 -- Preboring for Dia. 2100 Drain Pipe (no.936-1059)(124 nos.@ 2nos./d)(CE 041)	P2-Cal.C	62	62	28-Feb-18	16-May-18	-178	0%		20
Rig 3		P2-Cal.C	36	36	28-Feb-18	14-Apr-18	-174			10
LC17677	Plant Mobilization (Rig 3)(After Road Diversion and Lower Down Existing Road)	P2-Cal.C	6	6	28-Feb-18	06-Mar-18	-174	0%		0
LC17677-2	Stage 7 -- Preboring for Dia. 2100 Drain Pipe (no. 757-816)(60 nos.@ 2nos./d)(CE 041)	P2-Cal.C	30	30	07-Mar-18	14-Apr-18	-174	0%		10
ELS		P2-Cal.C	15	15	16-Apr-18	03-May-18	-123			0
Installation Sheet Pile - 24m		P2-Cal.C	15	15	16-Apr-18	03-May-18	-123			0
LC17686	Stage 7 -- Sheet Pile installation 24m length (107 nos.@7.5pcs./d)	P2-Cal.C	15	15	16-Apr-18	03-May-18	-123	0%		0
Drainage works		P2-Cal.C	49	49	20-Feb-18	21-Apr-18	-63			-13
SMH9110-Outfall		P2-Cal.C	49	49	20-Feb-18	21-Apr-18	-63			-13
LC17711	Fabrication of Precast Outfall	P2-Cal.C	21	21	20-Feb-18	15-Mar-18	-63	0%		-6
LC17712	Removal of Existing Seawall and Trench Excavation	P2-Cal.C	21	21	16-Mar-18	13-Apr-18	-63	0%		-7
LC17713	Bedding And Inspection	P2-Cal.C	7	7	14-Apr-18	21-Apr-18	-63	0%		0
New Reclaimed Section		P2-Cal.C	372	298	21-Sep-17 A	22-Jan-19	-46			-48
Marine Works		P2-Cal.C	372	298	21-Sep-17 A	22-Jan-19	-46			-48
Initial Works		P2-Cal.C	122	72	15-Nov-17 A	21-Apr-18	132			85
MC10060	Installation of Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	7	7	26-Mar-18	06-Apr-18	-83	0%		0
MC10070	Baseline for Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	10	10	07-Apr-18	18-Apr-18	-83	0%		0
MC10080	Installation of Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	7	7	11-Apr-18	18-Apr-18	-9	0%		0
MC10120	Baseline for Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	3	3	19-Apr-18	21-Apr-18	-9	0%		0
MC10156	Installation of Type 2 Settlement Marker (Type RA)	P2-Cal.C	7	7	20-Jan-18	27-Jan-18	-38	0%		0
MC10160	Baseline for Type 2 Settlement Marker (Type RA)	P2-Cal.C	3	3	29-Jan-18	31-Jan-18	-38	0%		0
MC10170	Installation of Type 2 Settlement Marker (Type RB)	P2-Cal.C	7	7	26-Mar-18	06-Apr-18	55	0%		0
MC10175	Baseline for Type 2 Settlement Marker (Type RB)	P2-Cal.C	3	3	07-Apr-18	10-Apr-18	55	0%		0
Steel Cofferdam and Water Gate		P2-Cal.C	110	60	15-Nov-17 A	07-Apr-18	144			-28
Steel Cofferdam Installation		P2-Cal.C	60	60	20-Jan-18	07-Apr-18	144			0
Weather Protection and Remaining Works for Steel Cofferdam (not affect the dredging works)		P2-Cal.C	75	25	15-Nov-17 A	21-Feb-18	179			-25
Frabrication		P2-Cal.C	28	4	15-Nov-17 A	24-Jan-18	179			-30
MC14514	Order and Delivery of Floating Breakwater	P2-Cal.C	28	4	15-Nov-17 A	24-Jan-18	179	85.71%		-30
Installation		P2-Cal.C	21	21	25-Jan-18	21-Feb-18	179			0
MC14486	Installation of Floating Breakwater	P2-Cal.C	21	21	25-Jan-18	21-Feb-18	179	0%		0
Rockfill		P2-Cal.C	7	5	15-Dec-17 A	25-Jan-18	199			-26
MC14493	Rockfill of top layer at eastern side	P2-Cal.C	7	5	15-Dec-17 A	25-Jan-18	199	28.57%		-26
Dredging Work		P2-Cal.C	198	137	08-Nov-17 A	12-Jul-18	-165			1
MC10495	Removal of Existing Rock Armour CH0-71 (10488m3) (EW059)	P2-Cal.C	20	18	16-Nov-17 A	09-Feb-18	-174	10%		-51



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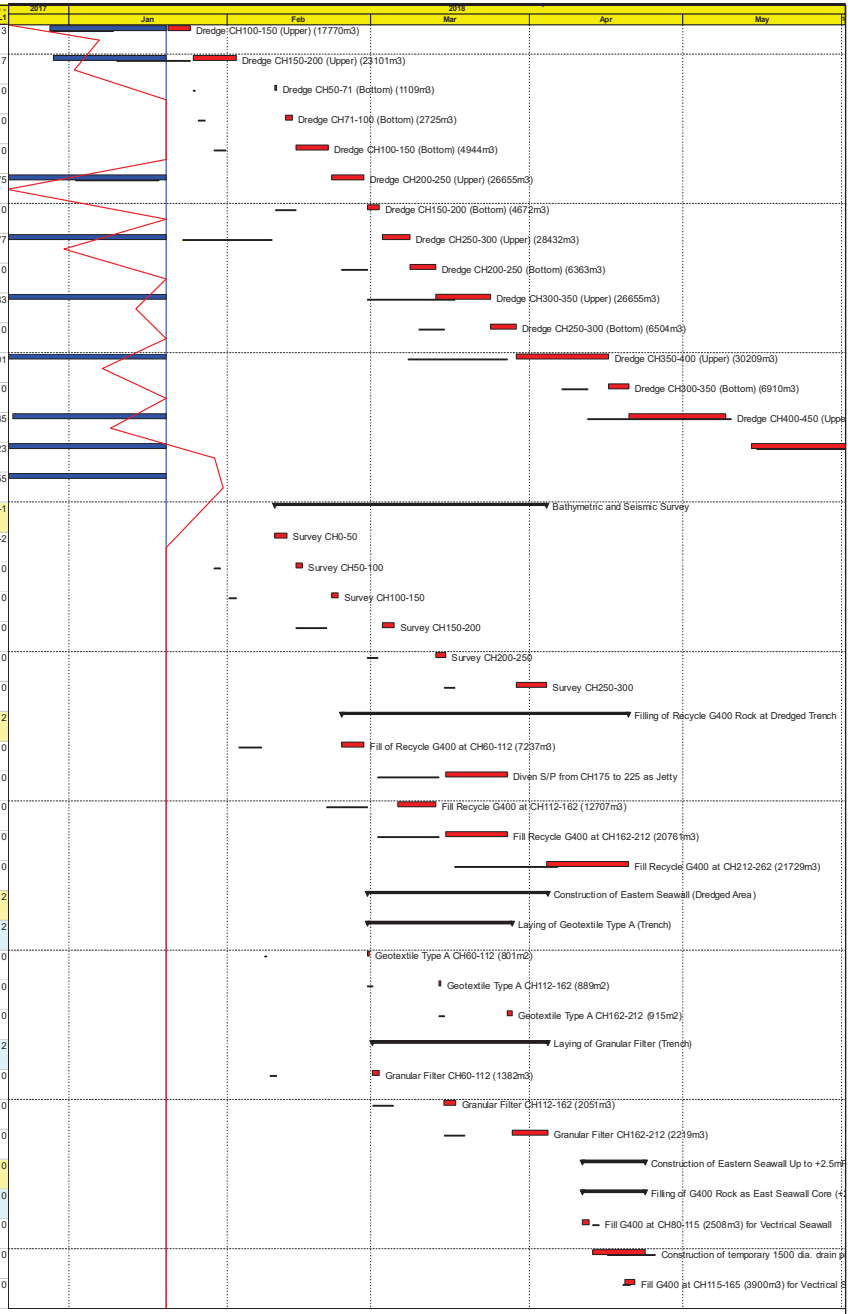
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-18)

3 Monthly Rolling Programme
(Data Date : 20-Jan-2018)

Date	Revision	Checked	Approved
20-Jan-18			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1
MC10515	Dredge CH100-150 (Upper) (17770m3)	P2-Cal.C	10	4	28-Dec-17 A	24-Jan-18	-168	60%		-13
MC10525	Dredge CH150-200 (Upper) (23101m3)	P2-Cal.C	13	8	29-Dec-17 A	02-Feb-18	-168	39.01%		-17
MC10535	Dredge CH50-71 (Bottom) (1109m3)	P2-Cal.C	1	1	10-Feb-18	10-Feb-18	-174	0%		0
MC10555	Dredge CH71-100 (Bottom) (2725m3)	P2-Cal.C	2	2	12-Feb-18	13-Feb-18	-174	0%		0
MC10575	Dredge CH100-150 (Bottom) (4944m3)	P2-Cal.C	3	3	14-Feb-18	20-Feb-18	-174	0%		0
MC10595	Dredge CH200-250 (Upper) (26655m3)	P2-Cal.C	15	6	08-Nov-17 A	27-Feb-18	-174	60%		-75
MC10615	Dredge CH150-200 (Bottom) (4672m3)	P2-Cal.C	3	3	28-Feb-18	02-Mar-18	-174	0%		0
MC10635	Dredge CH250-300 (Upper) (28432m3)	P2-Cal.C	16	5	14-Nov-17 A	08-Mar-18	-174	69%		-77
MC10655	Dredge CH200-250 (Bottom) (6363m3)	P2-Cal.C	4	4	08-Mar-18	13-Mar-18	-174	0%		0
MC10675	Dredge CH300-350 (Upper) (26655m3)	P2-Cal.C	15	9	23-Nov-17 A	24-Mar-18	-174	39%		-83
MC10695	Dredge CH250-300 (Bottom) (6504m3)	P2-Cal.C	4	4	24-Mar-18	29-Mar-18	-174	0%		0
MC10715	Dredge CH350-400 (Upper) (30209m3)	P2-Cal.C	17	11	18-Nov-17 A	16-Apr-18	-169	33%		-101
MC10735	Dredge CH300-350 (Bottom) (6910m3)	P2-Cal.C	4	4	16-Apr-18	20-Apr-18	-169	0%		0
MC10755	Dredge CH400-450 (Upper) (40871m3)	P2-Cal.C	23	15	21-Dec-17 A	09-May-18	-169	36%		-85
MC10795	Dredge CH450-500 (Upper) (71080m3)	P2-Cal.C	40	32	29-Nov-17 A	21-Jun-18	-169	21%		-123
MC10835	Dredge CH500-560 (Upper) (23101m3)	P2-Cal.C	13	10	12-Dec-17 A	12-Jul-18	-165	20%		-155
Bathymetric and Seismic Survey		P2-Cal.C	39	39	10-Feb-18	04-Apr-18	-174			-1
MC10870	Survey CH0-50	P2-Cal.C	2	2	10-Feb-18	12-Feb-18	-161	0%		-2
MC10875	Survey CH50-100	P2-Cal.C	2	2	14-Feb-18	15-Feb-18	-170	0%		0
MC10895	Survey CH100-150	P2-Cal.C	2	2	21-Feb-18	22-Feb-18	-171	0%		0
MC10915	Survey CH150-200	P2-Cal.C	2	2	03-Mar-18	05-Mar-18	-169	0%		0
MC10935	Survey CH200-250	P2-Cal.C	2	2	13-Mar-18	15-Mar-18	-171	0%		0
MC10955	Survey CH250-300	P2-Cal.C	2	2	29-Mar-18	04-Apr-18	-174	0%		0
Filling of Recycle G400 Rock at Dredged Trench		P2-Cal.C	44	44	23-Feb-18	20-Apr-18	-174			2
MC11055	Fill of Recycle G400 at CH60-112 (7237m3)	P2-Cal.C	4	4	23-Feb-18	27-Feb-18	-171	0%		0
MC11075	Diven S/P from CH175 to 225 as Jetty	P2-Cal.C	10	10	15-Mar-18	27-Mar-18	-158	0%		0
MC11085	Fill Recycle G400 at CH112-162 (12707m3)	P2-Cal.C	7	7	06-Mar-18	13-Mar-18	-169	0%		0
MC11105	Fill Recycle G400 at CH162-212 (20761m3)	P2-Cal.C	10	10	15-Mar-18	27-Mar-18	-171	0%		0
MC11125	Fill Recycle G400 at CH212-262 (21729m3)	P2-Cal.C	13	13	04-Apr-18	20-Apr-18	-174	0%		0
Construction of Eastern Seawall (Dredged Area)		P2-Cal.C	28	28	28-Feb-18	04-Apr-18	-164			2
Laying of Geotextile Type A (Trench)		P2-Cal.C	25	25	28-Feb-18	28-Mar-18	-164			2
MC11325	Geotextile Type A CH60-112 (801m2)	P2-Cal.C	1	1	28-Feb-18	28-Feb-18	-171	0%		0
MC11335	Geotextile Type A CH112-162 (889m2)	P2-Cal.C	1	1	14-Mar-18	14-Mar-18	-158	0%		0
MC11345	Geotextile Type A CH162-212 (915m2)	P2-Cal.C	1	1	27-Mar-18	28-Mar-18	-164	0%		0
Laying of Granular Filter (Trench)		P2-Cal.C	27	27	01-Mar-18	04-Apr-18	-164			2
MC11415	Granular Filter CH60-112 (1382m3)	P2-Cal.C	2	2	01-Mar-18	02-Mar-18	-171	0%		0
MC11425	Granular Filter CH112-162 (2051m3)	P2-Cal.C	3	3	15-Mar-18	17-Mar-18	-158	0%		0
MC11435	Granular Filter CH162-212 (2219m3)	P2-Cal.C	3	3	28-Mar-18	04-Apr-18	-164	0%		0
Construction of Eastern Seawall Up to +2.5mPD		P2-Cal.C	11	11	11-Apr-18	23-Apr-18	-160			0
Filling of G400 Rock as East Seawall Core (+2.5mPD)		P2-Cal.C	11	11	11-Apr-18	23-Apr-18	-160			0
MC11505	Fill G400 at CH80-115 (2508m3) for Vectrical Seawall	P2-Cal.C	2	2	11-Apr-18	12-Apr-18	-171	0%		0
MC11510	Construction of temporary 1500 dia. drain pipe (CH70 - 110)	P2-Cal.C	9	9	13-Apr-18	23-Apr-18	-171	0%		0
MC11515	Fill G400 at CH115-165 (3900m3) for Vectrical Seawall	P2-Cal.C	2	2	19-Apr-18	21-Apr-18	-159	0%		0



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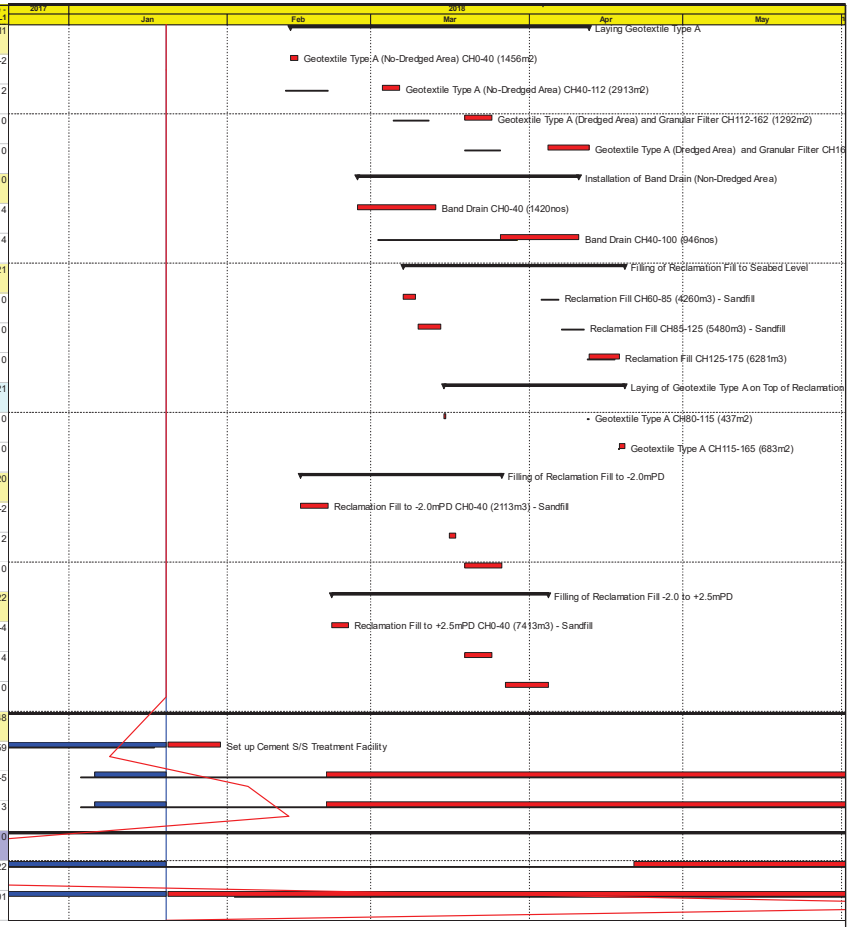
Laying Geotextile Type A		P2-Cal.C	44	44	13-Feb-18	12-Apr-18	-164			-11
MC12003	Geotextile Type A (No-Dredged Area) CH0-40 (1456m2)	P2-Cal.C	2	2	13-Feb-18	14-Feb-18	-161	0%		-2
MC12005	Geotextile Type A (No-Dredged Area) CH40-112 (2913m2)	P2-Cal.C	3	3	03-Mar-18	06-Mar-18	-171	0%		2
MC12015	Geotextile Type A (Dredged Area) and Granular Filter CH112-162 (1292m2)	P2-Cal.C	6	6	19-Mar-18	24-Mar-18	-158	0%		0
MC12025	Geotextile Type A (Dredged Area) and Granular Filter CH162-212 (1400m2)	P2-Cal.C	6	6	04-Apr-18	12-Apr-18	-164	0%		0
Installation of Band Drain (Non-Dredged Area)		P2-Cal.C	34	34	26-Feb-18	10-Apr-18	-171			-10
MC12163	Band Drain CH0-40 (1420nos)	P2-Cal.C	14	14	26-Feb-18	13-Mar-18	-161	0%		-14
MC12165	Band Drain CH40-100 (946nos)	P2-Cal.C	10	10	26-Mar-18	10-Apr-18	-171	0%		14
Filling of Reclamation Fill to Seabed Level		P2-Cal.C	34	34	07-Mar-18	19-Apr-18	-159			-21
MC12325	Reclamation Fill CH60-85 (4260m3) - Sandfill	P2-Cal.C	3	3	07-Mar-18	09-Mar-18	-171	0%		0
MC12335	Reclamation Fill CH85-125 (5480m3) - Sandfill	P2-Cal.C	4	4	10-Mar-18	14-Mar-18	-171	0%		0
MC12345	Reclamation Fill CH125-175 (6281m3)	P2-Cal.C	5	5	12-Apr-18	18-Apr-18	-163	0%		0
Laying of Geotextile Type A on Top of Reclamation Fill		P2-Cal.C	27	27	15-Mar-18	19-Apr-18	-159			-21
MC12415	Geotextile Type A CH80-115 (437m2)	P2-Cal.C	1	1	15-Mar-18	15-Mar-18	-171	0%		0
MC12425	Geotextile Type A CH115-165 (683m2)	P2-Cal.C	1	1	18-Apr-18	19-Apr-18	-159	0%		0
Filling of Reclamation Fill to -2.0mPD		P2-Cal.C	31	31	15-Feb-18	26-Mar-18	-82			-20
MC12653	Reclamation Fill to -2.0mPD CH0-40 (2113m3) - Sandfill	P2-Cal.C	2	2	15-Feb-18	20-Feb-18	-161	0%		-2
MC12655	Reclamation Fill to -2.0mPD CH40-105 (3435m3) - Sandfill	P2-Cal.C	2	2	16-Mar-18	17-Mar-18	-171	0%		2
MC12655-01	Construction of temporary 1500 dia. drain pipe (CH30 - 70)	P2-Cal.C	7	7	19-Mar-18	26-Mar-18	-82	0%		0
Filling of Reclamation Fill -2.0 to +2.5mPD		P2-Cal.C	34	34	21-Feb-18	04-Apr-18	-82			-22
MC12883	Reclamation Fill to +2.5mPD CH0-40 (7413m3) - Sandfill	P2-Cal.C	4	4	21-Feb-18	24-Feb-18	-161	0%		-4
MC12885	Reclamation Fill to +2.5mPD CH40-95 (10195m3) - Sandfill	P2-Cal.C	6	6	19-Mar-18	24-Mar-18	-171	0%		4
MC12890	Construction of temporary 1500 dia. drain pipe (CH0 - 30)	P2-Cal.C	5	5	27-Mar-18	04-Apr-18	-82	0%		0
Full-scale Treatment of Cement S/S of Marine Sediment		P2-Cal.C	372	298	21-Sep-17 A	22-Jan-19	-46			-48
MC14055	Set up Cement S/S Treatment Facility	P2-Cal.C	48	9	21-Sep-17 A	30-Jan-18	-32	81.25%		-59
MC14075	Treatment	P2-Cal.C	250	220	06-Jan-18 A	15-Nov-18	-46	12%		-5
MC14080	Curing, Stockpiling and Filling	P2-Cal.C	313	275	06-Jan-18 A	22-Jan-19	-46	12.14%		3
Section 4 of the Works - Preservation and Protection of Existing Trees		P2-Cal.A	1563	1200	12-Jan-17 A	04-May-21	-219			-10
LC25260	Preservation and Protection of Existing Trees	P2-Cal.A	1451	1109	12-Jan-17 A	04-May-21	-219	23.57%		-122
LC25280	Nursery Transplanted Trees at the Contractor's holding nursery	P2-Cal.A	1177	1011	28-Apr-17 A	26-Oct-20	-30	14.1%		-101



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3 Monthly Rolling Programme
(Data Date : 20-Jan-2018)

Date	Revision	Checked	Approved
20-Jan-18			

Contract No. NE/2015/03

Subject: 3 Months Look Ahead Programme			
Activities	Feb-18	Mar-18	Apr-18
Construction of Pile Caps PC1 & PC2			
Excavation for PC4 sump pit and FT1			

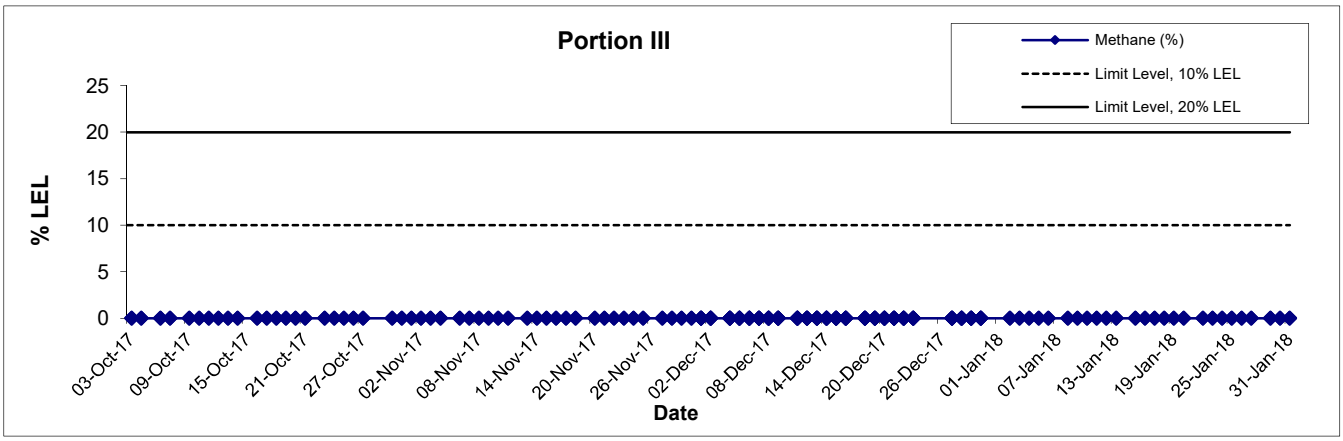
Subject: Construction Programme (Jan, 2018)				
Activities	Week 1	Week 2	Week 3	Week 4
Excavation of Pile Caps PC1 & PC2				
Rebar fixing for pile cap. PC3 at East Pier				

APPENDIX R
RECORD OF LANDFILL GAS MONITORING BY CONTRACTOR

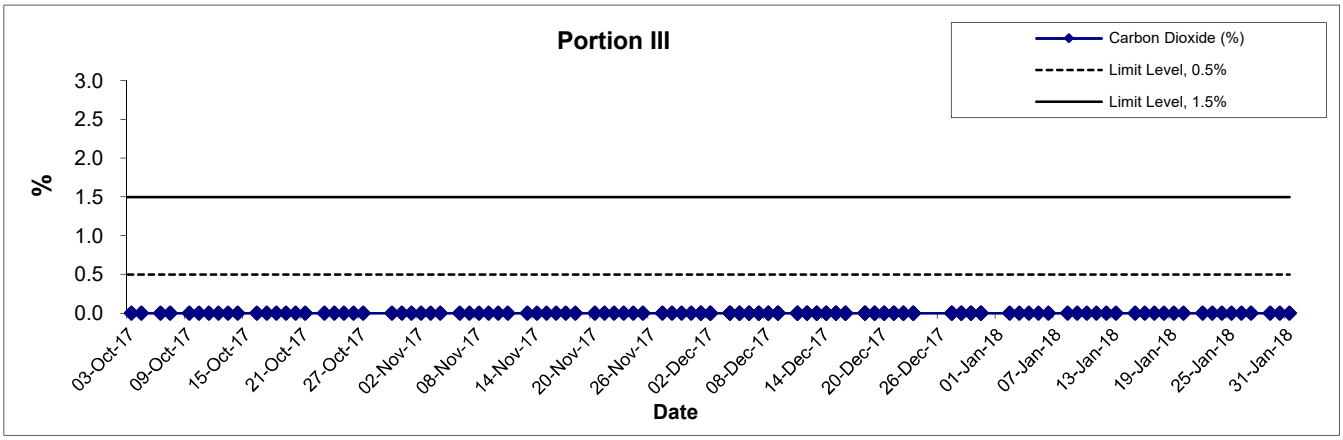
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
Portion III	2-Jan-18	8:30	Sunny	15	0	0	20.9
	2-Jan-18	13:01	Sunny	20	0	0	20.9
	3-Jan-18	8:30	Sunny	15	0	0	20.9
	3-Jan-18	13:00	Sunny	20	0	0	20.9
	4-Jan-18	8:28	Cloudy	15	0	0	20.9
	4-Jan-18	13:02	Sunny	18	0	0	20.9
	5-Jan-18	8:29	Rainy	16	0	0	20.9
	5-Jan-18	13:04	Rainy	21	0	0	20.9
	6-Jan-18	8:30	Rainy	14	0	0	20.9
	6-Jan-18	13:03	Rainy	17	0	0	20.9
	8-Jan-18	8:30	Rainy	8	0	0	20.9
	8-Jan-18	13:03	Rainy	16	0	0	20.9
	9-Jan-18	8:28	Rainy	7	0	0	20.9
	9-Jan-18	13:03	Rainy	11	0	0	20.9
	10-Jan-18	8:30	Cloudy	9	0	0	20.9
	10-Jan-18	13:00	Rainy	16	0	0	20.9
	11-Jan-18	8:30	Cloudy	11	0	0	20.9
	11-Jan-18	13:02	Cloudy	16	0	0	20.9
	12-Jan-18	8:30	Sunny	10	0	0	20.9
	12-Jan-18	13:02	Sunny	15	0	0	20.9
	13-Jan-18	8:30	Sunny	10	0	0	20.9
	13-Jan-18	13:00	Sunny	15	0	0	20.9
	15-Jan-18	8:30	Sunny	12	0	0	20.9
	15-Jan-18	13:02	Sunny	16	0	0	20.9
	16-Jan-18	8:30	Cloudy	14	0	0	20.9
	16-Jan-18	13:01	Sunny	22	0	0	20.9
	17-Jan-18	8:30	Cloudy	16	0	0	20.9
	17-Jan-18	13:03	Cloudy	25	0	0	20.9
	18-Jan-18	8:30	Cloudy	16	0	0	20.9
	18-Jan-18	13:00	Cloudy	24	0	0	20.9
	19-Jan-18	8:30	Rainy	17	0	0	20.9
	19-Jan-18	13:02	Cloudy	20	0	0	20.9
	20-Jan-18	8:30	Rainy	17	0	0	20.9
	20-Jan-18	13:05	Cloudy	23	0	0	20.9
	22-Jan-18	8:30	Cloudy	17	0	0	20.9
	22-Jan-18	13:05	Cloudy	24	0	0	20.9
	23-Jan-18	8:30	Cloudy	17	0	0	20.9
	23-Jan-18	13:02	Cloudy	23	0	0	20.9
	24-Jan-18	8:30	Cloudy	17	0	0	20.9
	24-Jan-18	13:01	Cloudy	23	0	0	20.9
	25-Jan-18	8;30	Cloudy	15	0	0	20.9
	25-Jan-18	13:03	Cloudy	19	0	0	20.9
	26-Jan-18	8:30	Rainy	15	0	0	20.9
	26-Jan-18	13:01	Cloudy	19	0	0	20.9
	27-Jan-18	8:30	Rainy	14	0	0	20.9
	27-Jan-18	13:02	Cloudy	17	0	0	20.9
	29-Jan-18	8:30	Rainy	8	0	0	20.9
	29-Jan-18	13:04	Cloudy	14	0	0	20.9
	30-Jan-18	8:30	Rainy	12	0	0	20.9
	30-Jan-18	13:02	Cloudy	16	0	0	20.9
	31-Jan-18	8:30	Cloudy	11	0	0	20.9
	31-Jan-18	13:02	Cloudy	15	0	0	20.9

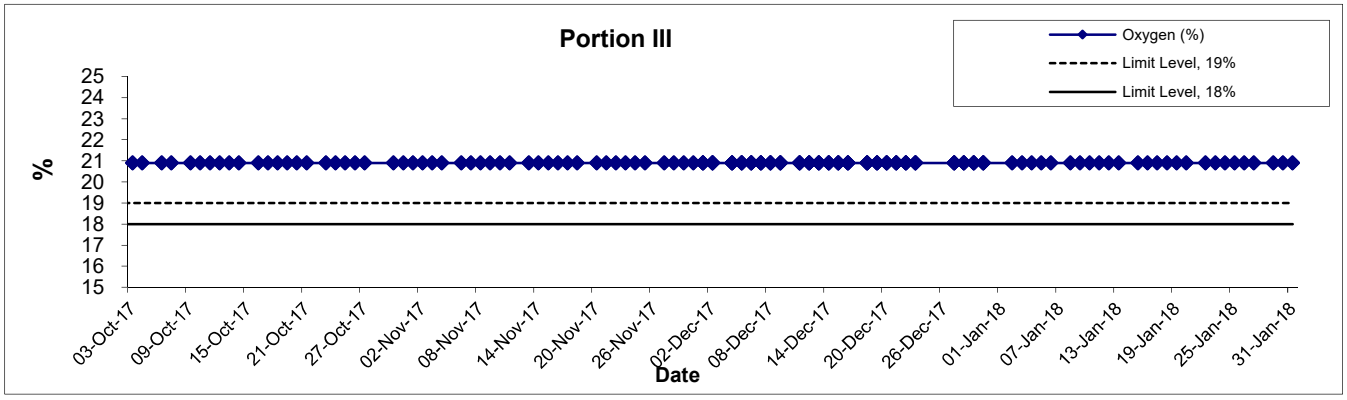
Methane



Carbon Dioxide



Oxygen



Title		Scale	Project
	Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction	N.T.S	No. MA16034
	Graphical Presentation of Landfill Gas Measurement	Date Jan 18	Appendix R

APPENDIX S
UPDATED CONSTRUCTION NOISE ASSESSMENT

Contract No. NE/2015/02 – Updated Construction Noise Assessment

PME List with Proposed Mitigation Measures

Location	PME Type	TM Ref. / Other Ref / BS5228 Ref	Type of Noise Mitigation Measures	Noise Level Reduction dB(A)
Portion III (Demolition of DSD Transformer room)	Breaker, excavator mounted (hydraulic)	CNP 028	Noise Barrier	-5
Portion IV (Road P2 Underpass (Piling))	Crane (62 kw)	BS D7/114	Noise Barrier	-5
	Drill Rig, Rotary Type (Diesel)	CNP 072	Noise Barrier (SilentUp)	-11.7
	Air Compressor	CNP 002	Noise Barrier	-5
	Excavator (73 kw)	BS D8/13	Noise Barrier	-5
	Concrete Lorry Mixer (6 m^3)	BS D6/33	Noise Barrier	-5
	Water pump, submersible (electric)	CNP 283	Noise Barrier	-5
	Breaker, excavator mounted (hydraulic)	CNP 028	Acoustic box / Noise Barrier (SilentUp)	-10 / -11.7
Portion IV (Road P2 Underpass (ELS))	Crane (62 kw)	BS D7/114	Noise Barrier	-5
	Generator, Silenced,<=75 dB(A) at 7m	CNP102	Noise Barrier	-5
	Piling, Vibration Hammer	CNP 172	Noise Barrier	-5
	Power Pack (diesel)	CNP 174	Noise Barrier	-5
	Excavator (73 kw)	BS D8/13	Noise Barrier	-5
	Water pump, submersible (electric)	CNP 283	Noise Barrier	-5
Portion IV (Road & Drainage Works)	Excavator (73 kw)	BS D8/13	Noise Barrier	-5
	Roller, Vibratory (51 kw)	BS D8/30	Noise Barrier	-5
	Concrete Lorry Mixer (6 m^3)	BS D6/33	Noise Barrier	-5
	Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	Noise Barrier	-5
	Water pump, submersible (electric)	CNP 283	Noise Barrier	-5
	Dump Truck	CNP 068	Noise Barrier	-5
	Road Roller	CNP 185	Noise Barrier	-5
Portion V (Road P2 Underpass (Piling))	Drill Rig, Rotary Type (Diesel)	CNP 072	Noise Barrier (SilentUp)	-11.7
	Breaker, excavator mounted (hydraulic)	CNP 028	Acoustic box / Noise Barrier (SilentUp)	-10 / -11.7
Portion VII (Road P2 Underpass, U Trough (Piling))	Crane (62 kw)	BS D7/114	Noise Barrier	-5
	Drill Rig, Rotary Type (Diesel)	CNP 072	Noise Barrier	-5
	Air Compressor	CNP 002	Noise Barrier	-5
	Excavator (73 kw)	BS D8/13	Noise Barrier	-5
	Concrete Lorry Mixer (6 m^3)	BS D6/33	Noise Barrier	-5
	Piling, Vibration Hammer	CNP 172	Noise Barrier	-5
	Power pack (diesel)	CNP 174	Noise Barrier	-5
	Water pump, submersible (electric)	CNP 283	Noise Barrier	-5

Portion VII (Road P2 Underpass, U Trough (ELS))	Crane (62 kw)	BS D7/114	Noise Barrier	-5
	Generator, Silenced,<=75 dB(A) at 7m	CNP102	Noise Barrier	-5
	Breaker, excavator mounted (hydraulic)	CNP 028	Acoustic box / Noise Barrier (SilentUp)	-10 / -11.7
	Piling, Vibration Hammer	CNP 172	Noise Barrier	-5
	Power pack (diesel)	CNP 174	Noise Barrier	-5
	Excavator (73 kw)	BS D8/13	Noise Barrier	-5
	Dump Truck	CNP 068	Noise Barrier	-5
	Water pump, submersible (electric)	CNP 283	Noise Barrier	-5
Portion VII (Road & Drainage Works)	Excavator (73 kw)	BS D8/13	Noise Barrier	-5
	Roller, Vibratory (51 kw)	BS D8/30	Noise Barrier	-5
	Concrete Lorry Mixer (6 m^3)	BS D6/33	Noise Barrier	-5
	Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	Noise Barrier	-5
	Water pump, submersible (electric)	CNP 283	Noise Barrier	-5
	Dump Truck	CNP 068	Noise Barrier	-5
	Road Roller	CNP 185	Noise Barrier	-5
Portion VIII (Road P2 Underpass, U Trough (Piling))	Drill Rig, Rotary Type (Diesel)	CNP 072	Noise Barrier	-5
Portion VIII (Road P2 Underpass, U Trough (ELS))	Breaker, excavator mounted (hydraulic)	CNP 028	Acoustic box / Noise Barrier (SilentUp)	-10 / -11.7
Portion IX (Road P2 Underpass, U Trough (Piling))	Drill Rig, Rotary Type (Diesel)	CNP 072	Noise Barrier	-5
	Piling, Large Diameter Bored, Reverse Circulation Drill	CNP 166	Noise Barrier	-5
Area A	Breaker, excavator mounted (hydraulic)	CNP 028	Noise Barrier	-5

CRBC - Build King Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: CM6 (0-39m)

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Portion	Activity	PME	TM Ref. / other Ref.	No. of plants	SWL	Total SWL	On-time, %	Time Factor	Distance from Notional Sources, m	Distance Attenuation*, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
I	DSD Transformer Room	Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	213	-54.57	0	3	45.42	
		Bar Bender and Cutter	CNP 021	1	90	90	50	-3	213	-54.57	0	3	35.42	
		Breaker, hand-held, mass > 10kg < 20kg	CNP 024	1	108	108	50	-3	213	-54.57	0	3	53.42	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	213	-54.57	0	3	41.42	
		Saw, Circular Wood	CNP 201	1	108	108	50	-3	213	-54.57	0	3	53.42	
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	213	-54.57	0	3	33.43	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	213	-54.57	0	3	55.42	
		Dump Truck	CNP 068	1	105	105	50	-3	213	-54.57	0	3	50.42	59.78
IV	Road P2 Underpass (Piling)	Crane (62 kw)	BS D7/114	3	101	106	50	-3	47	-41.39	-5	3	59.37	
		Drill Rig, Rotary Type (Diesel)	CNP 072	3	110	115	30	-5	47	-41.39	-11.7	3	59.46	
		Air Compressor	CNP 002	6	102	110	30	-5	47	-41.39	-5	3	61.17	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	47	-41.39	-5	3	63.60	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	47	-41.39	-5	3	49.60	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	47	-41.39	-5	3	44.62	
		Breaker, excavator mounted (hydraulic)	CNP 028	1	122	122	10	-10	47	-41.39	-10	3	63.61	68.90
IV	Road P2 Underpass (ELS)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	47	-41.39	-5	3	54.60	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	47	-41.39	-5	3	53.60	
		Piling, Vibration Hammer	CNP 172	2	115	118	30	-5	47	-41.39	-5	3	69.39	
		Power pack (diesel)	CNP 174	2	100	103	30	-5	47	-41.39	-5	3	54.39	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	47	-41.39	-5	3	63.60	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	47	-41.39	-5	3	44.62	70.72
IV	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	47	-41.39	-5	3	63.60	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	47	-41.39	-5	3	54.60	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	47	-41.39	-5	3	49.60	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	47	-41.39	-5	3	54.60	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	47	-41.39	-5	3	44.62	
		Dump Truck	CNP 068	1	105	105	50	-3	47	-41.39	-5	3	58.60	
		Road Roller	CNP 185	1	108	108	50	-3	47	-41.39	-5	3	61.60	67.13
V	Road P2 Underpass, U Trough (Piling)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	146	-51.26	0	3	49.73	
		Drill Rig, Rotary Type (Diesel)	CNP 072	2	110	113	30	-5	146	-51.26	-11.7	3	47.82	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	146	-51.26	0	3	48.73	
		Air Compressor	CNP 002	4	102	108	30	-5	146	-51.26	0	3	54.53	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	146	-51.26	0	3	58.73	
		Concrete Lorry Mixer	BS D6/33	1	96	96	50	-3	146	-51.26	0	3	44.73	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	146	-51.26	0	3	39.75	
		Breaker, excavator mounted (hydraulic)	CNP 028	1	122	122	10	-10	146	-51.26	-10	3	53.74	61.86
V	Road P2 Underpass, U Trough (ELS)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	146	-51.26	0	3	49.73	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	146	-51.26	0	3	48.73	
		Piling, Vibration Hammer	CNP 172	1	115	115	30	-5	146	-51.26	0	3	61.51	
		Power pack (diesel)	CNP 174	1	100	100	30	-5	146	-51.26	0	3	46.51	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	146	-51.26	0	3	58.73	
		Dump Truck	CNP 068	1	105	105	50	-3	146	-51.26	0	3	53.73	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	146	-51.26	0	3	39.75	64.19
V	Road P2 Underpass, U Trough (Structure)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	146	-51.26	0	3	49.73	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	146	-51.26	0	3	51.74	
		Air Compressor	CNP 002	2	102	105	50	-3	146	-51.26	0	3	53.74	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	146	-51.26	0	3	59.74	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	146	-51.26	0	3	44.73	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	146	-51.26	0	3	39.75	61.65
V	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	146	-51.26	0	3	58.73	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	146	-51.26	0	3	49.73	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	146	-51.26	0	3	44.73	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	146	-51.26	0	3	49.73	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	146	-51.26	0	3	39.75	
		Dump Truck	CNP 068	1	105	105	50	-3	146	-51.26	0	3	53.73	
		Road Roller	CNP 185	1	108	108	50	-3	146	-51.26	0	3	56.73	62.25
VII	Road P2 Underpass, U Trough (Piling)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	119	-49.50	-5	3	46.50	
		Drill Rig, Rotary Type (Diesel)	CNP 072	1	110	110	30	-5	119	-49.50	-5	3	53.29	
		Air Compressor	CNP 002	2	102	105	30	-5	119	-49.50	-5	3	48.30	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	119	-49.50	-5	3	55.50	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	119	-49.50	-5	3	41.50	
		Piling, Vibration Hammer	CNP 172	1	115	115	30	-5	119	-49.50	-5	3	58.29	
		Power pack (diesel)	CNP 174	1	100	100	30	-5	119	-49.50	-5	3	43.29	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	119	-49.50	-5	3	36.52	61.44
VII	Road P2 Underpass, U Trough (ELS)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	119	-49.50	-5	3	46.50	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	119	-49.50	-5	3	45.50	
		Breaker, Excavator mounted (hydraulic)	CNP 028	1	122	122	10	-10	119	-49.50	-10	3	55.51	
		Piling, Vibration Hammer	CNP 172	1	115	115	30	-5	119	-49.50	-5	3	58.29	
		Power pack (diesel)	CNP 174	1	100	100	30	-5	119	-49.50	-5	3	43.29	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	119	-49.50	-5	3	55.50	
		Dump Truck	CNP 068	1	105	105	50	-3	119	-49.50	-5	3	50.50	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	119	-49.50	-5	3	36.52	62.05
VII	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	119	-49.50	-5	3	55.50	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	119	-49.50	-5	3	46.50	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	119	-49.50	-5	3	41.50	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	119	-49.50	-5	3	46.50	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	119	-49.50	-5	3	36.52	
		Dump Truck	CNP 068	1	105	105	50	-3	119	-49.50	-5	3	50.50	
		Road Roller	CNP 185	1	108	108	50	-3	119	-49.50	-5	3	53.50	59.03
IX	Dredging and Reclamation	Dredger	CNP 070	2	103	106	50	-3	225	-55.10	0	3	50.94	
		Derrick Barge	CNP 061	4	104	110	50	-3	225	-55.10	0	3	54.95	
		Tug boat	CNP 221	2	110	113	50	-3	225	-55.10	0	3	57.94	
		Water pump, subersible (electric)	CNP 283	6	85	93	50	-3	225	-55.10	0	3	37.71	
		Dump Truck	CNP 068	6	105	113	50	-3	225	-55.10	0	3	57.71	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	4	100	106	50	-3	225	-55.10	0	3	50.95	
		Winch (Electric)	CNP 262	4	95	101	50	-3	225	-55.10	0	3	45.95	
		Excavator (73 kw)	BS D8/13	3	110	115	50	-3	225	-55.10	0	3	59.70	
		Vibration Hammer	CNP 172	1	115	115	50	-3	225	-55.10	0	3	59.93	
		Hopper barge	-	6	-	-	50	-3	225	-55.10	0	3	-	65.73
IX	Steel Cofferdam and Water Gate	Derrick Barge	CNP 061	3	104	109	50	-3	225	-55.10	0	3	53.70	
		Tug boat	CNP 221	2	110	113	50	-3	225	-55.10	0	3	57.94	59.33

Note: SPL = SWL + TF + DC + BC + FC, where

SPL = Predicted noise level in dB(A)

SWL = Sound Power Level in dB(A)

TF = Time factor in dB(A) = 10 log (P)

P = On-time percentage

DC = Distance attenuation correction in dB(A) = -(20 log D + 8)

D = Distance in m between the noise source and the receiver

BC = Barrier correction in dB(A)

FC = Façade correction in dB(A) = 3 dB(A)

CRBC - Build King Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: CM6 (0-39m)

Noise Criteria: 75dB(A)

Mitigation Measures Scenario

Portion	Activity	PME	TM Ref. / other Ref.	No. of plants	SWL	Total SWL	On-time, %	Time Factor	Distance from Notional Sources, m	Distance Attenuation*,dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
IX	U - Trough (Piling)	Crane (62 kw)	BS D7/114	10	101	111	50	-3	225	-55.10	0	3	55.93	
		Drill Rig, Rotary Type (Diesel)	CNP 072	10	110	120	30	-5	225	-55.10	-5	3	57.71	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	10	100	110	50	-3	225	-55.10	0	3	54.93	
		Air Compressor	CNP 002	10	102	112	30	-5	225	-55.10	0	3	54.71	
		Excavator (73 kw)	BS D8/13	10	110	120	50	-3	225	-55.10	0	3	64.93	
		Concrete Lorry Mixer	BS D6/33	10	96	106	50	-3	225	-55.10	0	3	50.93	
		Piling, Vibration Hammer	CNP 172	10	115	125	30	-5	225	-55.10	0	3	67.71	
		Power pack (diesel)	CNP 174	10	100	110	30	-5	225	-55.10	0	3	52.71	
		Water pump, subersible (electric)	CNP 283	10	85	95	50	-3	225	-55.10	0	3	39.93	
		Piling, large diameter bored, reverse circulation drill	CNP 166	3	100	105	30	-5	225	-55.10	-5	3	42.49	70.39
IX	U - Trough (ELS)	Crane (62 kw)	BS D7/114	4	101	107	50	-3	225	-55.10	0	3	51.95	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	8	100	109	50	-3	225	-55.10	0	3	53.96	
		Piling, Vibration Hammer	CNP 172	4	115	121	30	-5	225	-55.10	0	3	63.73	
		Power pack (diesel)	CNP 174	4	100	106	30	-5	225	-55.10	0	3	48.73	
		Excavator (73 kw)	BS D8/13	8	110	119	50	-3	225	-55.10	0	3	63.96	
		Dump Truck	CNP 068	8	105	114	50	-3	225	-55.10	0	3	58.96	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	225	-55.10	0	3	35.95	
		Derrick Barge	CNP 061	2	104	107	50	-3	225	-55.10	0	3	51.94	67.98
IX	U - Trough (Structure)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	225	-55.10	0	3	48.94	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	225	-55.10	0	3	47.94	
		Air Blower	CNP 006	10	95	105	50	-3	225	-55.10	0	3	49.93	
		Saw, Circular Wood	CNP 201	10	108	118	50	-3	225	-55.10	0	3	62.93	
		Concrete Lorry Mixer (6 m3)	BS D6/33	4	96	102	50	-3	225	-55.10	0	3	46.95	
		Concrete pump, stationary/lorry mounted	CNP 047	4	109	115	50	-3	225	-55.10	0	3	59.95	
		Poker, vibratory, hand-held	CNP 170	4	113	119	50	-3	225	-55.10	0	3	63.95	
		Water pump, subersible (electric)	CNP 283	12	85	96	50	-3	225	-55.10	0	3	40.72	67.59
IX	U - Trough (Road and Drainage Works)	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	225	-55.10	0	3	54.93	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	225	-55.10	0	3	45.93	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	225	-55.10	0	3	40.93	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	225	-55.10	0	3	45.93	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	225	-55.10	0	3	35.95	
		Dump Truck	CNP 068	1	105	105	50	-3	225	-55.10	0	3	49.93	
		Road Roller	CNP 185	1	108	108	50	-3	225	-55.10	0	3	52.93	58.46
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	163	-52.20	0	3	48.77	
		Piling, large diameter bored, oscillator	CNP 165	1	115	115	30	-5	163	-52.20	0	3	60.56	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	163	-52.20	0	3	57.77	
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	163	-52.20	0	3	35.78	62.59
VI	Road P2 Underpass, U Trough (Structure)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	163	-52.20	0	3	51.78	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	163	-52.20	0	3	50.78	
		Air Compressor	CNP 002	2	102	105	50	-3	163	-52.20	0	3	52.78	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	163	-52.20	0	3	58.78	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	163	-52.20	0	3	43.77	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	163	-52.20	0	3	38.79	60.96
VI	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	163	-52.20	0	3	57.77	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	163	-52.20	0	3	48.77	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	163	-52.20	0	3	43.77	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	163	-52.20	0	3	48.77	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	163	-52.20	0	3	38.79	
		Dump Truck	CNP 068	1	105	105	50	-3	163	-52.20	0	3	52.77	
		Road Roller	CNP 185	1	108	108	50	-3	163	-52.20	0	3	55.77	61.3

Note: SPL = SWL + TF + DC + BC + FC, where

SPL = Predicted noise level in dB(A)

SWL = Sound Power Level in dB(A)

TF = Time factor in dB(A) = 10 log (P)

P = On-time percentage

DC = Distance attenuation correction in dB(A) = -(20 log D + 8)

D = Distance in m between the noise source and the receiver

BC = Barrier correction in dB(A)

FC = Façade correction in dB(A) = 3 dB(A)

CRBC - Build King Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: CM7

Noise Criteria: 75dB(A)

Mitigation Measures Scenario

Portion	Activity	PME	TM Ref. / other Ref.	No. of plants	SWL	Total SWL	On-time, %	Time Factor	Distance from Notional Sources, m	Distance Attenuation*, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
VI	Road P2 Underpass, U Trough (Structure)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	157	-51.92	0	3	52.08	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	157	-51.92	0	3	51.08	
		Air Compressor	CNP 002	2	102	105	50	-3	157	-51.92	0	3	53.08	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	157	-51.92	0	3	59.08	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	157	-51.92	0	3	44.07	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	157	-51.92	0	3	39.09	61.26
VI	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	157	-51.92	0	3	58.07	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	157	-51.92	0	3	49.07	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	157	-51.92	0	3	44.07	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	157	-51.92	0	3	49.07	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	157	-51.92	0	3	39.09	
		Dump Truck	CNP 068	1	105	105	50	-3	157	-51.92	0	3	53.07	
		Road Roller	CNP 185	1	108	108	50	-3	157	-51.92	0	3	56.07	61.6
VIII	Road P2 Underpass, U Trough (Piling)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	224	-55.00	0	3	49.00	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	4	100	106	50	-3	224	-55.00	0	3	51.01	
		Air Compressor	CNP 002	4	102	108	50	-3	224	-55.00	0	3	53.01	
		Drill Rig, Rotary Type (Diesel)	CNP 072	2	110	113	50	-3	224	-55.00	-5	3	53.00	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	224	-55.00	0	3	54.98	
		Concrete Lorry Mixer (6 m3)	BS D6/33	2	96	99	50	-3	224	-55.00	0	3	44.00	
		Piling, Vibration Hammer	CNP 172	1	115	115	50	-3	224	-55.00	0	3	59.98	
		Power pack (diesel)	CNP 174	1	100	100	50	-3	224	-55.00	0	3	44.98	
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	224	-55.00	0	3	33.00	62.95
VIII	Road P2 Underpass, U Trough (ELS)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	224	-55.00	0	3	49.00	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	4	100	106	50	-3	224	-55.00	0	3	51.01	
		Air Compressor	CNP 002	4	102	108	50	-3	224	-55.00	0	3	53.01	
		Piling, Vibration Hammer	CNP 172	2	115	118	50	-3	224	-55.00	0	3	63.00	
		Power pack (diesel)	CNP 174	2	100	103	50	-3	224	-55.00	0	3	48.00	
		Excavator (73 kw)	BS D8/13	4	110	116	50	-3	224	-55.00	0	3	61.01	
		Breaker, Excavator mounted (hydraulic)	CNP 028	1	122	122	50	-3	224	-55.00	-10	3	56.98	
		Dump Truck	CNP 068	2	105	108	50	-3	224	-55.00	0	3	53.00	
		Water pump, subersible (electric)	CNP 283	16	85	97	50	-3	224	-55.00	0	3	42.03	66.47
VIII	Road P2 Underpass, U Trough (Structure)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	224	-55.00	0	3	49.00	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	224	-55.00	0	3	48.00	
		Air Compressor	CNP 002	1	102	102	50	-3	224	-55.00	0	3	46.98	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	224	-55.00	0	3	56.00	
		Concrete Lorry Mixer (6 m3)	BS D6/33	2	96	99	50	-3	224	-55.00	0	3	44.00	
		Water pump, subersible (electric)	CNP 283	16	85	97	50	-3	224	-55.00	0	3	42.03	58
VIII	Road and Drainage Works	Excavator (73 kw)	BS D8/13	2	110	113	50	-3	224	-55.00	0	3	58.00	
		Roller, Vibratory (51 kw)	BS D8/30	2	101	104	50	-3	224	-55.00	0	3	49.00	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	224	-55.00	0	3	56.00	
		Asphalt Paver	BS D8/24	1	101	101	50	-3	224	-55.00	0	3	45.98	
		Dump Truck	CNP 068	2	105	108	50	-3	224	-55.00	0	3	53.00	
		Lorry	BS D8/25	2	96	99	50	-3	224	-55.00	0	3	44.00	
		Crane (62 kw)	BS D7/114	2	101	104	50	-3	224	-55.00	0	3	49.00	
		Water pump, subersible (electric)	CNP 283	16	85	97	50	-3	224	-55.00	0	3	42.03	61.66
Area Y		Bar Bender and Cutter	CNP 021	4	90	96	50	-3	180	-53.11	0	3	42.90	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	180	-53.11	0	3	49.89	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	180	-53.11	0	3	37.90	50.91

Note: SPL = SWL + TF + DC + BC + FC, where

SPL = Predicted noise level in dB(A)

SWL = Sound Power Level in dB(A)

TF = Time factor in dB(A) = 10 log (P)

P = On-time percentage

DC = Distance attenuation correction in dB(A) = -(20 log D + 8)

D = Distance in m between the noise source and the receiver

BC = Barrier correction in dB(A)

FC = Façade correction in dB(A) = 3 dB(A)

CRBC - Build King Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: CM8

Noise Criteria: 75dB(A)

Portion	Activity	PME	TM Ref. / other Ref.	No. of plants	SWL	Total SWL	On-time, %	Time Factor	Distance from Notional Sources, m	Distance Attenuation*,dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)	Total Predicted Noise Level Portion II dB(A)
III	Demolition of DSD Transformer Room	Breaker, Excavator mounted (hydraulic)	CNP 028	1	122	122	50	-3	116	-49.29	-5	3	67.70		
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	116	-49.29	0	3	60.70		
		Lorry	BS D8/25	1	96	96	50	-3	116	-49.29	0	3	46.70		
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	116	-49.29	0	3	38.71	68.52	68.52
II	Retaining Wall	Excavator (73 kw)	BS D8/13	2	110	113	50	-3	257	-56.20	0	3	56.80		
		Dump Truck	CNP 068	2	105	108	50	-3	257	-56.20	0	3	51.80		
		Saw, Circular Wood	CNP 201	4	108	114	50	-3	257	-56.20	0	3	57.81		
		Bar Bender and Cutter	CNP 021	4	90	96	50	-3	257	-56.20	0	3	39.81		
		Lorry	BS D8/25	2	96	99	50	-3	257	-56.20	0	3	42.80		
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	257	-56.20	0	3	31.80		
		Concrete Lorry Mixer (6 m3)	BS D6/33	2	96	99	50	-3	257	-56.20	0	3	42.80		
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	257	-56.20	0	3	44.79	61.18	61.18
Area A		Breaker, Excavator mounted (hydraulic)	CNP 028	1	122	122	50	-3	217	-54.73	-5	3	62.26		
		Excavator (73 kw)	BS D8/13	3	110	115	50	-3	217	-54.73	0	3	60.03		
		Dump Truck	CNP 068	3	105	110	50	-3	217	-54.73	0	3	55.03		
		Water pump, subersible (electric)	CNP 283	3	85	90	50	-3	217	-54.73	0	3	35.03	64.79	64.79
Construction of Northern Footbridge	Pre-drilling works (Near Tiu Keng Leng Sports Centre) Feb 17 to Mar, 17	Drill Rig	CNP 072	1	110	110	20	-7	60	-43.56	-5	3	57.45		
		Breaker, excavator mounted (hydraulic)	CNP 028	1	122	122	20	-7	60	-43.56	-5	3	69.45	69.71	69.71
Construction of Northern Footbridge	Construction of soldier wall (Near Tiu Keng Leng Sports Centre) Apr 17 to Oct 17	Air Compressor	CNP 002	1	102	102	20	-7	60	-43.56	-5	3	49.45		
		Crane	BS D7/114	1	101	101	20	-7	60	-43.56	0	3	53.45		
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	40	-4	60	-43.56	0	3	55.46		
		Concrete Lorry Mixer	BS D6/33	2	96	99	20	-7	60	-43.56	0	3	51.46		
		Piling, Vibration Hammer	CNP 172	1	115	115	20	-7	60	-43.56	-5	3	62.45		
		Water Pump, Submersible (electric)	CNP 283	1	85	85	10	-10	60	-43.56	0	3	34.44		
		Excavator	BS D8/13	1	110	110	20	-7	60	-43.56	0	3	62.45	66.35	
Construction of Northern Footbridge	Pre-drilling & Piling works (Near Park Central Block 6) Aug 17 to Oct, 17	Drill Rig	CNP 072	1	110	110	30	-5	93	-47.37	-5	3	55.40		
		Breaker, excavator mounted (hydraulic)	CNP 028	1	122	122	30	-5	93	-47.37	-5	3	67.40		
		Air Compressor	CNP 002	1	102	102	20	-7	93	-47.37	-5	3	45.64		
		Crane	BS D7/114	1	101	101	20	-7	93	-47.37	0	3	49.64		
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	40	-4	93	-47.37	0	3	51.65		
		Concrete Lorry Mixer	BS D6/33	2	96	99	20	-7	93	-47.37	0	3	47.65		
		Piling, Vibration Hammer	CNP 172	1	115	115	20	-7	93	-47.37	-5	3	58.64		
		Water Pump, Submersible (electric)	CNP 283	1	85	85	10	-10	93	-47.37	0	3	30.63		
		Excavator	BS D8/13	1	110	110	20	-7	93	-47.37	0	3	58.64	68.83	70.78
Construction of Northern Footbridge	Construction of Footbridge (Near Park Central Block 6) Nov 17 to Apr 19	Crane	BS D7/114	1	101	101	40	-4	60	-43.56	0	3	56.46		
		Dump Truck	BS D8/25	1	105	105	20	-7	60	-43.56	0	3	57.45		
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	70	-2	60	-43.56	0	3	57.89		
		Concrete Lorry Mixer	BS D6/33	2	96	99	30	-5	60	-43.56	0	3	53.22		
		Saw, Circular Wood	CNP 201	4	108	114	60	-2	60	-43.56	-5	3	66.22		
		Water Pump, Submersible (electric)	CNP 283	1	85	85	20	-7	60	-43.56	0	3	37.45	67.79	
Construction of Northern Footbridge	Construction of Footbridge (Near Tiu Keng Leng Sports Centre) Nov 17 to Apr 19	Crane	BS D7/114	1	101	101	40	-4	93	-47.37	0	3	52.65		
		Dump Truck	BS D8/25	1	105	105	20	-7	93	-47.37	0	3	53.64		
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	70	-2	93	-47.37	0	3	54.08		
		Concrete Lorry Mixer	BS D6/33	2	96	99	30	-5	93	-47.37	0	3	49.41		
		Saw, Circular Wood	CNP 201	4	108	114	60	-2	93	-47.37	-5	3	62.41		
		Water Pump, Submersible (electric)	CNP 283	1	85	85	20	-7	93	-47.37	0	3	33.64	63.99	69.30

Note: SPL = SWL + TF + DC + BC + FC, where

SPL = Predicted noise level in dB(A)

SWL = Sound Power Level in dB(A)

TF = Time factor in dB(A) = 10 log (P)

P = On-time percentage

DC = Distance attenuation correction in dB(A) = -(20 log D + 8)

D = Distance in m between the noise source and the receiver

BC = Barrier correction in dB(A)

FC = Façade correction in dB(A) = 3 dB(A)

NE/2015/02
Associated Cumulative Noise Levels

NSR CM6

Portion	Activity	2016		2017												2018												2019												2020												2021			
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
I	DSD Transformer Room	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78	59.78																																									
IV	Road P2 Underpass (Piling)							68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9																																								
IV	Road P2 Underpass (ELS)										70.72	70.72	70.72	70.72	70.72	70.72	70.72	70.72	70.72	70.72	70.72																																								
IV	Road and Drainage Works																67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13	67.13
V	Road P2 Underpass, U Trough (Piling)									61.86	61.86	61.86	61.86	61.86																																												
V	Road P2 Underpass, U Trough (ELS)													64.19	64.19	64.19	64.19	64.19	64.19	64.19	64.19	64.19																																									
V	Road P2 Underpass, U Trough (Structure)																					61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65	61.65																								
V	Road and Drainage Works																															62.25	62.25	62.25	62.25	62.25	62.25	62.25	62.25	62.25	62.25																
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)																62.59	62.59																																								
VI	Road P2 Underpass, U Trough (Structure)																					60.96	60.96	60.96	60.96	60.96	60.96	60.96	60.96	60.96	60.96																												
VI	Road and Drainage Works																															61.30	61.30	61.30	61.30	61.30	61.30	61.30	61.30	61.30	61.30																
VII	Road P2 Underpass, U Trough (Piling)									61.44	61.44	61.44	61.44																																													
VII	Road P2 Underpass, U Trough (ELS)												62.05	62.05	62.05	62.05	62.05	62.05	62.05	62.05	62.05	62.05																																								
VII	Road and Drainage Works																					59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03	59.03
IX	Steel Cofferdam & Water Gate	59.33	59.33	59.33	59.33	59.33	59.33	59.33	59.33	59.33	59.33	59.33	59.33	59.33																																									
IX	Dredging & Reclamation													65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73	65.73																								
IX	Road P2 Underpass, U Trough (Piling)																								70.39	70.39	70.39	70.39	70.39	70.39	70.39	70.39	70.39	70.39	70.39																										
IX	Road P2 Underpass, U Trough (ELS)																											67.98	67.98	67.98	67.98	67.98	67.98	67.98	67.98	67.98	67.98																								
IX	Road P2 Underpass, U Trough (Structure)																																																							
IX	Road and Drainage Works																																																							
	Cumulative Noise / dB(A)	63	63	63	63	63	63	70	70	71	74	74	74	75	74	74	75	75	75	75	75	71	72	71	74	74	74	75	75	75	75	75	75	74	72	72	73	73	72	71	71	71	71	71	71	71	71	71	68	62	58	58	58	58
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
		2016		2017												2018												2019												2020												2021			

NSR CM7

Portion	Activity	2016		2017												2018												2019												2020									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)																60.46	60.46																																				
VI	Road P2 Underpass, U Trough (Structure)																					61.26	61.26	61.26	61.26	61.26	61.26	61.26	61.26	61.26	61.26																								
VI	Road and Drainage Works																													61.60	61.60	61.60	61.60	61.60	61.60	61.60	61.60	61.60	61.60												
VIII	Road P2 Underpass, U Trough (Piling)				62.95	62.95	62.95	62.95	62.95	62.95																								62.95	62.95	62.95															
VIII	Road P2 Underpass, U Trough (ELS)				66.47	66.47	66.47	66.47	66.47	66.47	66.47	66.47	66.47	66.47	66.47																								66.47	66.47	66.47	66.47									
VIII	Road P2 Underpass, U Trough (Structure)												58	58	58	58	58	58	58	58	58	58																						58	58	58	58	58	58	58	58	58				
VIII	Road and Drainage Works																				61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66	61.66					61.66	61.66	61.66	61.66	61.66				
Area Y			50.91	50.91	50.91	50.91	50.91	50.91	50.91	50.91	50.91	50.91	50.91	50.91																																								
	Cumulative Noise / dB(A)		51	51	68	68	68	68	68	68	67	67	67	67	67	58	62	62	58	58	63	63	64	64	64	64	64	64	64	66	66	66	66	65	67	67	70	69	69	68	58	58	58	58	58	63	63	63	62				
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct				
		2016		2017												2018												2019												2020															

NSR CM8

Portion	Activity	2016		2017												2018												2019									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
III	Demolition of DSD Transformer Room													68.52	68.52																						
II	Retaining Wall																					61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18	61.18
Area A		64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79	64.79															
Construction of Northern Footbridge	Pre-drilling works (Near Tiu Keng Leng Sports Centre)					69.71																															
Construction of Northern Footbridge	Construction of soldier wall (Near Tiu Keng Leng Sports Centre)						66.35	66.35	66.35	66.35	66.35	66.35	66.35																									
Construction of Northern Footbridge	Pre-drilling & Piling works (Near Park Central Block 6)						68.83	68.83	68.83	68.83	68.83	68.83	68.83																									
Construction of Northern Footbridge	Construction of Footbridge (Near Park Central Block 6)													67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79	67.79					
Construction of Northern Footbridge	Construction of Footbridge (Near Tiu Keng Leng Sports Centre)													63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99	63.99					
	Cumulative Noise / dB(A)	65	65	65	65	71	72	72	72	72	72	72	72	73	73	71	71	71	71	71	71	71	70	70	70	70	70	70	70	70	70	61	61	61	61	61	61
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
		2016		2017												2018												2019									

CRBC - Build King Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: CM6 (Above 39m)

Noise Criteria: 75dB(A)

Mitigation Measures Scenario

Portion	Activity	PME	TM Ref. / other Ref.	No. of plants	SWL	Total SWL	On-time, %	Time Factor	Distance from Notional Sources, m	Distance Attenuation*,dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
IX	U - Trough (Piling)	Crane (62 kw)	BS D7/114	10	101	111	50	-3	228	-55.20	0	3	55.82	
		Drill Rig, Rotary Type (Diesel)	CNP 072	10	110	120	30	-5	228	-55.20	-5	3	57.60	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	10	100	110	50	-3	228	-55.20	0	3	54.82	
		Air Compressor	CNP 002	10	102	112	30	-5	228	-55.20	0	3	54.60	
		Excavator (73 kw)	BS D8/13	10	110	120	50	-3	228	-55.20	0	3	64.82	
		Concrete Lorry Mixer	BS D6/33	10	96	106	50	-3	228	-55.20	0	3	50.82	
		Piling, Vibration Hammer	CNP 172	10	115	125	30	-5	228	-55.20	0	3	67.60	
		Power pack (diesel)	CNP 174	10	100	110	30	-5	228	-55.20	0	3	52.60	
		Water pump, subersible (electric)	CNP 283	10	85	95	50	-3	228	-55.20	0	3	39.82	
		Piling, large diameter bored, reverse circulation drill	CNP 166	3	100	105	30	-5	228	-55.20	-5	3	42.37	70.28
IX	U - Trough (ELS)	Crane (62 kw)	BS D7/114	4	101	107	50	-3	228	-55.20	0	3	51.84	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	8	100	109	50	-3	228	-55.20	0	3	53.85	
		Piling, Vibration Hammer	CNP 172	4	115	121	30	-5	228	-55.20	0	3	63.62	
		Power pack (diesel)	CNP 174	4	100	106	30	-5	228	-55.20	0	3	48.62	
		Excavator (73 kw)	BS D8/13	8	110	119	50	-3	228	-55.20	0	3	63.85	
		Dump Truck	CNP 068	8	105	114	50	-3	228	-55.20	0	3	58.85	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	228	-55.20	0	3	35.84	
		Derrick Barge	CNP 061	2	104	107	50	-3	228	-55.20	0	3	51.83	67.87
IX	U - Trough (Structure)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	228	-55.20	0	3	48.83	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	228	-55.20	0	3	47.83	
		Air Blower	CNP 006	10	95	105	50	-3	228	-55.20	0	3	49.82	
		Saw, Circular Wood	CNP 201	10	108	118	50	-3	228	-55.20	0	3	62.82	
		Concrete Lorry Mixer (6 m3)	BS D6/33	4	96	102	50	-3	228	-55.20	0	3	46.84	
		Concrete pump, stationary/lorry mounted	CNP 047	4	109	115	50	-3	228	-55.20	0	3	59.84	
		Poker, vibratory, hand-held	CNP 170	4	113	119	50	-3	228	-55.20	0	3	63.84	
		Water pump, subersible (electric)	CNP 283	12	85	96	50	-3	228	-55.20	0	3	40.61	67.47
IX	U - Trough (Road and Drainage Works)	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	228	-55.20	0	3	54.82	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	228	-55.20	0	3	45.82	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	228	-55.20	0	3	40.82	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	228	-55.20	0	3	45.82	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	228	-55.20	0	3	35.84	
		Dump Truck	CNP 068	1	105	105	50	-3	228	-55.20	0	3	49.82	
		Road Roller	CNP 185	1	108	108	50	-3	228	-55.20	0	3	52.82	58.34
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	167	-52.40	0	3	48.55	
		Piling, large diameter bored, oscillator	CNP 165	1	115	115	30	-5	167	-52.40	0	3	60.34	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	167	-52.40	0	3	57.55	
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	167	-52.40	0	3	35.57	62.37
VI	Road P2 Underpass, U Trough (Structure)	Crane (62 kw)	BS D7/114	2	101	104	50	-3	167	-52.40	0	3	51.57	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	167	-52.40	0	3	50.57	
		Air Compressor	CNP 002	2	102	105	50	-3	167	-52.40	0	3	52.57	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	167	-52.40	0	3	58.57	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	167	-52.40	0	3	43.55	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	167	-52.40	0	3	38.58	60.74
VI	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	167	-52.40	0	3	57.55	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	167	-52.40	0	3	48.55	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	167	-52.40	0	3	43.55	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	167	-52.40	0	3	48.55	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	167	-52.40	0	3	38.58	
		Dump Truck	CNP 068	1	105	105	50	-3	167	-52.40	0	3	52.55	
		Road Roller	CNP 185	1	108	108	50	-3	167	-52.40	0	3	55.55	61.08

Note: SPL = SWL + TF + DC + BC + FC, where

SPL = Predicted noise level in dB(A)

SWL = Sound Power Level in dB(A)

TF = Time factor in dB(A) = 10 log (P)

P = On-time percentage

DC = Distance attenuation correction in dB(A) = -(20 log D + 8)

D = Distance in m between the noise source and the receiver

BC = Barrier correction in dB(A)

FC = Façade correction in dB(A) = 3 dB(A)

CRBC - Build King Joint Venture

Construction Noise Assessment

Period: 0700 to 1900 (except general holidays)

Noise Sensitive Receiver: CM6 (Above 39m)

Mitigation Measures Scenario

Noise Criteria: 75dB(A)

Portion	Activity	PME	TM Ref. / other Ref.	No. of plants	SWL	Total SWL	On-time, %	Time Factor	Distance from Notional Sources, m	Distance Attenuation*, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Total Predicted Noise Level for each group, dB(A)
I	DSD Transformer Room	Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	217	-54.70	0	3	45.29	
		Bar Bender and Cutter	CNP 021	1	90	90	50	-3	217	-54.70	0	3	35.29	
		Breaker, hand-held, mass > 10kg < 20kg	CNP 024	1	108	108	50	-3	217	-54.70	0	3	53.29	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	217	-54.70	0	3	41.29	
		Saw, Circular Wood	CNP 201	1	108	108	50	-3	217	-54.70	0	3	53.29	
		Water pump, subersible (electric)	CNP 283	2	85	88	50	-3	217	-54.70	0	3	33.30	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	217	-54.70	0	3	55.29	
		Dump Truck	CNP 068	1	105	105	50	-3	217	-54.70	0	3	50.29	59.65
IV	Road P2 Underpass (Piling)	Crane (62 kw)	BS D7/114	3	101	106	50	-3	60	-43.50	-5	3	57.26	
		Drill Rig, Rotary Type (Diesel)	CNP 072	3	110	115	30	-5	60	-43.50	0	3	69.05	
		Air Compressor	CNP 002	6	102	110	30	-5	60	-43.50	-5	3	59.06	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	60	-43.50	-5	3	61.49	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	60	-43.50	-5	3	47.49	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	60	-43.50	-5	3	42.51	
		Breaker, excavator mounted (hydraulic)	CNP 028	1	122	122	10	-10	60	-43.50	-10	3	61.50	70.89
IV	Road P2 Underpass (ELS)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	60	-43.50	-5	3	52.49	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	60	-43.50	-5	3	51.49	
		Piling, Vibration Hammer	CNP 172	2	115	118	30	-5	60	-43.50	-5	3	67.28	
		Power pack (diesel)	CNP 174	2	100	103	30	-5	60	-43.50	-5	3	52.28	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	60	-43.50	-5	3	61.49	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	60	-43.50	-5	3	42.51	68.61
IV	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	60	-43.50	-5	3	61.49	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	60	-43.50	-5	3	52.49	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	60	-43.50	-5	3	47.49	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	60	-43.50	-5	3	52.49	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	60	-43.50	-5	3	42.51	
		Dump Truck	CNP 068	1	105	105	50	-3	60	-43.50	-5	3	56.49	
		Road Roller	CNP 185	1	108	108	50	-3	60	-43.50	-5	3	59.49	65.02
V	Road P2 Underpass, U Trough (Piling)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	150	-51.50	0	3	49.46	
		Drill Rig, Rotary Type (Diesel)	CNP 072	2	110	113	30	-5	150	-51.50	0	3	59.25	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	150	-51.50	0	3	48.46	
		Air Compressor	CNP 002	4	102	108	30	-5	150	-51.50	0	3	54.26	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	150	-51.50	0	3	58.46	
		Concrete Lorry Mixer	BS D6/33	1	96	96	50	-3	150	-51.50	0	3	44.46	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	150	-51.50	0	3	39.48	
		Breaker, excavator mounted (hydraulic)	CNP 028	1	122	122	10	-10	150	-51.50	-10	3	53.47	63.48
V	Road P2 Underpass, U Trough (ELS)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	150	-51.50	0	3	49.46	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	150	-51.50	0	3	48.46	
		Piling, Vibration Hammer	CNP 172	1	115	115	30	-5	150	-51.50	0	3	61.24	
		Power pack (diesel)	CNP 174	1	100	100	30	-5	150	-51.50	0	3	46.24	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	150	-51.50	0	3	58.46	
		Dump Truck	CNP 068	1	105	105	50	-3	150	-51.50	0	3	53.46	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	150	-51.50	0	3	39.48	63.91
V	Road P2 Underpass, U Trough (Structure)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	150	-51.50	0	3	49.46	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	2	100	103	50	-3	150	-51.50	0	3	51.47	
		Air Compressor	CNP 002	2	102	105	50	-3	150	-51.50	0	3	53.47	
		Saw, Circular Wood	CNP 201	2	108	111	50	-3	150	-51.50	0	3	59.47	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	150	-51.50	0	3	44.46	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	150	-51.50	0	3	39.48	61.38
V	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	150	-51.50	0	3	58.46	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	150	-51.50	0	3	49.46	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	150	-51.50	0	3	44.46	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	150	-51.50	0	3	49.46	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	150	-51.50	0	3	39.48	
		Dump Truck	CNP 068	1	105	105	50	-3	150	-51.50	0	3	53.46	
		Road Roller	CNP 185	1	108	108	50	-3	150	-51.50	0	3	56.46	61.98
VII	Road P2 Underpass, U Trough (Piling)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	124	-49.90	-5	3	46.10	
		Drill Rig, Rotary Type (Diesel)	CNP 072	1	110	110	30	-5	124	-49.90	-5	3	52.88	
		Air Compressor	CNP 002	2	102	105	30	-5	124	-49.90	-5	3	47.89	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	124	-49.90	-5	3	55.10	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	124	-49.90	-5	3	41.10	
		Piling, Vibration Hammer	CNP 172	1	115	115	30	-5	124	-49.90	-5	3	57.88	
		Power pack (diesel)	CNP 174	1	100	100	30	-5	124	-49.90	-5	3	42.88	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	124	-49.90	-5	3	36.12	61.04
VII	Road P2 Underpass, U Trough (ELS)	Crane (62 kw)	BS D7/114	1	101	101	50	-3	124	-49.90	-5	3	46.10	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	1	100	100	50	-3	124	-49.90	-5	3	45.10	
		Breaker, Excavator mounted (hydraulic)	CNP 028	1	122	122	10	-10	124	-49.90	-10	3	55.11	
		Piling, Vibration Hammer	CNP 172	1	115	115	30	-5	124	-49.90	-5	3	57.88	
		Power pack (diesel)	CNP 174	1	100	100	30	-5	124	-49.90	-5	3	42.88	
		Excavator (73 kw)	BS D8/13	1	110	110	50	-3	124	-49.90	-5	3	55.10	
		Dump Truck	CNP 068	1	105	105	50	-3	124	-49.90	-5	3	50.10	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	124	-49.90	-5	3	36.12	61.65
VII	Road and Drainage Works	Excavator (73 kw)	BS D8/13	1	110	110	50	-3	124	-49.90	-5	3	55.10	
		Roller, Vibratory (51 kw)	BS D8/30	1	101	101	50	-3	124	-49.90	-5	3	46.10	
		Concrete Lorry Mixer (6 m3)	BS D6/33	1	96	96	50	-3	124	-49.90	-5	3	41.10	
		Light goods vehicle, gross vehicle weight < 5.5 tonne	CNP 143	1	101	101	50	-3	124	-49.90	-5	3	46.10	
		Water pump, subersible (electric)	CNP 283	4	85	91	50	-3	124	-49.90	-5	3	36.12	
		Dump Truck	CNP 068	1	105	105	50	-3	124	-49.90	-5	3	50.10	
		Road Roller	CNP 185	1	108	108	50	-3	124	-49.90	-5	3	53.10	58.63
IX	Dredging and Reclamation	Dredger	CNP 070	2	103	106	50	-3	228	-55.20	0	3	50.83	
		Derrick Barge	CNP 061	4	104	110	50	-3	228	-55.20	0	3	54.84	
		Tug boat	CNP 221	2	110	113	50	-3	228	-55.20	0	3	57.83	
		Water pump, subersible (electric)	CNP 283	6	85	93	50	-3	228	-55.20	0	3	37.60	
		Dump Truck	CNP 068	6	105	113	50	-3	228	-55.20	0	3	57.60	
		Generator, Silenced,<=75 dB(A) at 7m	CNP 102	4	100	106	50	-3	228	-55.20	0	3	50.84	
		Winch (Electric)	CNP 262	4	95	101	50	-3	228	-55.20	0	3	45.84	
		Excavator (73 kw)	BS D8/13	3	110	115	50	-3	228	-55.20	0	3	59.59	
		Vibration Hammer	CNP 172	1	115	115	50	-3	228	-55.20	0	3	59.82	
		Hopper barge	-	6	-	-	50	-3	228	-55.20	0	3	-	65.61
IX	Steel Cofferdam and Water Gate	Derrick Barge	CNP 061	3	104	109	50	-3	228	-55.20	0	3	53.59	
		Tug boat	CNP 221	2	110	113	50	-3	228	-55.20	0	3	57.83	59.22

Note: SPL = SWL + TF + DC + BC + FC, where

SPL = Predicted noise level in dB(A)

SWL = Sound Power Level in dB(A)

TF = Time factor in dB(A) = 10 log (P)

P = On-time percentage

DC = Distance attenuation correction in dB(A) = -(20 log D + 8)

D = Distance in m between the noise source and the receiver

BC = Barrier correction in dB(A)

FC = Façade correction in dB(A) = 3 dB(A)

NE/2015/02

Associated Cumulative Noise Levels

NSR CM6 (Above 39m)

		2016		2017											
Portion	Activity	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
I	DSD Transformer Room	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	59.65	
IV	Road P2 Underpass (Piling)							70.89	70.89	70.89	70.89	70.89	70.89	70.89	70.89
IV	Road P2 Underpass (ELS)										68.61	68.61	68.61	68.61	68.61
IV	Road and Drainage Works														
V	Road P2 Underpass, U Trough (Piling)									63.48	63.48	63.48	63.48	63.48	
V	Road P2 Underpass, U Trough (ELS)													63.91	63.91
V	Road P2 Underpass, U Trough (Structure)														
V	Road and Drainage Works														
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)														
VI	Road P2 Underpass, U Trough (Structure)														
VI	Road and Drainage Works														
VII	Road P2 Underpass, U Trough (Piling)									61.04	61.04	61.04	61.04		
VII	Road P2 Underpass, U Trough (ELS)												61.65	61.65	61.65
VII	Road and Drainage Works														
IX	Steel Cofferdam & Water Gate	59.22	59.22	59.22	59.22	59.22	59.22	59.22	59.22	59.22	59.22	59.22	59.22	59.22	
IX	Dredging & Reclamation													65.61	65.61
IX	Road P2 Underpass, U Trough (Piling)														
IX	Road P2 Underpass, U Trough (ELS)														
IX	Road P2 Underpass, U Trough (Structure)														
IX	Road and Drainage Works														
	Cumulative Noise / dB(A)	62	62	62	62	62	62	71	71	72	74	74	74	75	74
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		2016		2017											

		2018											
Portion	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
I	DSD Transformer Room												
IV	Road P2 Underpass (Piling)	70.89	70.89	70.89	70.89	70.89	70.89						
IV	Road P2 Underpass (ELS)	68.61	68.61	68.61	68.61	68.61	68.61						
IV	Road and Drainage Works		65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02
V	Road P2 Underpass, U Trough (Piling)												
V	Road P2 Underpass, U Trough (ELS)	63.91	63.91	63.91	63.91	63.91	63.91	63.91	63.91				
V	Road P2 Underpass, U Trough (Structure)								61.38	61.38	61.38	61.38	61.38
V	Road and Drainage Works												
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)		62.37	62.37									
VI	Road P2 Underpass, U Trough (Structure)								60.74	60.74	60.74	60.74	60.74
VI	Road and Drainage Works												
VII	Road P2 Underpass, U Trough (Piling)												
VII	Road P2 Underpass, U Trough (ELS)	61.65	61.65	61.65	61.65	61.65	61.65	61.65					
VII	Road and Drainage Works							58.63	58.63	58.63	58.63	58.63	58.63
IX	Steel Cofferdam & Water Gate												
IX	Dredging & Reclamation	65.61	65.61	65.61	65.61	65.61	65.61	65.61	65.61	65.61	65.61	65.61	65.61
IX	Road P2 Underpass, U Trough (Piling)										70.28	70.28	70.28
IX	Road P2 Underpass, U Trough (ELS)												
IX	Road P2 Underpass, U Trough (Structure)												
IX	Road and Drainage Works												
	Cumulative Noise / dB(A)	74	75	75	75	75	75	71	71	70	73	73	73
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		2018											

		2019											
Portion	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
I	DSD Transformer Room												
IV	Road P2 Underpass (Piling)												
IV	Road P2 Underpass (ELS)												
IV	Road and Drainage Works	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02
V	Road P2 Underpass, U Trough (Piling)												
V	Road P2 Underpass, U Trough (ELS)												
V	Road P2 Underpass, U Trough (Structure)	61.38	61.38	61.38	61.38	61.38	61.38						
V	Road and Drainage Works			61.98	61.98	61.98	61.98	61.98	61.98	61.98	61.98	61.98	61.98
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)												
VI	Road P2 Underpass, U Trough (Structure)	60.74	60.74	60.74	60.74	60.74	60.74						
VI	Road and Drainage Works			61.08	61.08	61.08	61.08	61.08	61.08	61.08	61.08	61.08	61.08
VII	Road P2 Underpass, U Trough (Piling)												
VII	Road P2 Underpass, U Trough (ELS)												
VII	Road and Drainage Works	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63
IX	Steel Cofferdam & Water Gate												
IX	Dredging & Reclamation	65.61	65.61	65.61	65.61	65.61							
IX	Road P2 Underpass, U Trough (Piling)	70.28	70.28	70.28	70.28	70.28	70.28	70.28					
IX	Road P2 Underpass, U Trough (ELS)	67.87	67.87	67.87	67.87	67.87	67.87	67.87	67.87	67.87	67.87	67.87	
IX	Road P2 Underpass, U Trough (Structure)										67.47	67.47	67.47
IX	Road and Drainage Works												
	Cumulative Noise / dB(A)	74	74	75	75	75	74	74	71	71	73	73	71
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		2019											

		2020												2021			
Portion	Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
I	DSD Transformer Room																
IV	Road P2 Underpass (Piling)																
IV	Road P2 Underpass (ELS)																
IV	Road and Drainage Works	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02	65.02					
V	Road P2 Underpass, U Trough (Piling)																
V	Road P2 Underpass, U Trough (ELS)																
V	Road P2 Underpass, U Trough (Structure)																
V	Road and Drainage Works																
VI	Road P2 Underpass, U-Trough (Removal of Existing Abandoned Box Culvert)																
VI	Road P2 Underpass, U Trough (Structure)																
VI	Road and Drainage Works																
VII	Road P2 Underpass, U Trough (Piling)																
VII	Road P2 Underpass, U Trough (ELS)																
VII	Road and Drainage Works	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63	58.63				
IX	Steel Cofferdam & Water Gate																
IX	Dredging & Reclamation																
IX	Road P2 Underpass, U Trough (Piling)																
IX	Road P2 Underpass, U Trough (ELS)																
IX	Road P2 Underpass, U Trough (Structure)	67.47	67.47	67.47	67.47	67.47	67.47	67.47	67.47	67.47	67.47						
IX	Road and Drainage Works										58.34	58.34	58.34	58.34	58.34	58.34	58.34
	Cumulative Noise / dB(A)	70	70	70	70	70	70	70	70	70	70	67	61	58	58	58	58
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
		2020												2021			

APPENDIX T
CULTURAL HERITAGE MONITORING RESULTS

Appendix T – Cultural Heritage Monitoring Results

Date	Time	Tilting			Settlement (mm)			Vibration (mm/s)		
								Measurement Direction		
		Angle (deg) between THT-BSP-1 & THT-BSP-2	Angle (deg) between THT-BSP-1 & THT-BSP-3	Angle (deg) between THT-BSP-2 & THT-BSP-3	THT-BSP-1	THT-BSP-2	THT-BSP-3	Tran	Vertical	Longitudinal
2-Jan-18	09:46	1:2775	1:4099	1:10904	+4	-1	+0	0.254	0.254	0.127
3-Jan-18	10:09	1:4944	1:3122	1:9942	+2	-0	-2	0.127	0.127	0.127
4-Jan-18	10:34	1:5325	1:3330	1:10433	+3	+0	-1	0.127	0.127	0.127
5-Jan-18	10:50	1:5108	1:4123	1:24142	+2	-1	-1	0.127	0.254	0.127
6-Jan-18	11;09	1:4908	1:5006	1:1690144	+2	-1	-1	0.254	0.254	0.127
8-Jan-18	16:36	1:5699	1:5965	1:241449	+2	-0	-0	0.254	0.127	0.254
9-Jan-18	10:31	1:5244	1:6343	1:40242	+2	-1	-0	0.254	0.254	0.127
10-Jan-18	13:48	1:5945	1:6068	1:1690144	+2	-1	-1	0.127	0.254	0.127
11-Jan-18	08:41	1:6896	1:7009	0	+2	+0	+0	0.127	0.254	0.127
12-Jan-18	10:31	1:2910	1:2670	1:33140	+4	-0	-1	0.254	0.254	0.127
13-Jan-18	15:13	1:4597	1:4673	0	+2	-1	-1	0.254	0.254	0.254
15-Jan-18	09:48	1:13792	1:7009	1:16901	+1	+0	-1	0.254	0.254	0.127
16-Jan-18	11:27	1:5844	1:5940	0	+2	-0	-0	0.254	0.254	0.127
17-Jan-18	13:24	1:6896	1:7009	0	+3	+1	+1	0.127	0.254	0.127
18-Jan-18	15:00	1:13792	1:14018	0	-1	+0	+0	0.254	0.381	0.127
19-Jan-18	08:33	1:6385	1:3095	1:7131	+3	+1	-1	0.254	0.254	0.127
20-Jan-18	13:31	1:3573	1:33376	1:3949	+1	-3	+2	0.254	0.254	0.127
22-Jan-18	16:14	1:5584	1:5698	11:1690144	+1	-1	-1	0.254	0.127	0.127
23-Jan-18	08:36	1:8210	1:6872	1:46948	+1	-0	-1	0.127	0.127	0.127
24-Jan-18	10:19	1:4874	1:3905	1:22239	+2	-0	-1	0.127	0.127	0.127
25-Jan-18	13:54	1:16038	1:6401	1:12708	+1	+0	-1	0.254	0.127	0.127
26-Jan-18	17:04	1:11034	1:6121	1:16251	+1	+0	-1	0.127	0.254	0.127
27-Jan-18	09:09	1:4582	1:3718	1:22239	+2	-1	-1	0.254	0.254	0.127
29-Jan-18	09:58	1:86201	1:16112	1:23805	+0	+0	+1	0.254	0.254	0.127
30-Jan-18	10:08	1:5539	1:7875	1:23805	+2	-0	+0	0.254	0.254	0.127
31-Jan-18	15:53	1:11890	1:10461	1:93897	+2	+1	+1	0.127	0.381	0.127
Alert Level		1:2000			6			4.5		
Alarm Level		1:1500			8			4.8		
Action Level		1:1000			10			5		