


# 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 2019**

**(version 1.0)**

Approved By   
(Dr. HF Chan,  
Environmental Team Leader)

REMARKS:

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

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

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## EXECUTIVE SUMMARY

### Introduction

1. This is the 27<sup>th</sup> 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 2019.
2. During the reporting month, the following works contracts were undertaken:
  - Contract No. NE/2015/01 – Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works;
  - Contract No. NE/2015/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works;
  - Contract No. NE/2015/03 – Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge;
  - Contract No. NE/2017/01 – Tseung Kwan O – Lam Tin Tunnel –Tseung Kwan O Interchange and Associated Works
  - Contract No. NE/2017/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works.
  - Contract No. NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works
  - Contract No. NE/2017/07 – Cross Bay Link, Tseun Kwan O – Main Bridge and Associated Works.

### Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.
4. Summary of the non-compliance (exceedance) in the reporting month for the Project is tabulated in **Table I**.

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

Environmental Monitoring	No. of Non-compliance (Exceedance)		No. of Non-compliance (Exceedance) due to Construction Activities of this Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
Air Quality	0	0	0	0	N/A
Noise	37	12	Under investigation	0	Refer to Appendix K & O
Groundwater Quality	0	9	0	0	Refer to Appendix K
Marine Water Quality	87	322	87	322	Refer to Appendix K
Groundwater Level Monitoring (Piezometer Monitoring)	0	N/A <sup>1</sup>	0	N/A <sup>1</sup>	N/A
Ecological	N/A	N/A	N/A	N/A	N/A
Cultural Heritage	0	0	0	0	N/A
Landfill Gas	0	0	0	0	N/A

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

#### *Air Quality Monitoring*

- All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

#### *Construction Noise Monitoring*

- All noise monitoring was conducted as scheduled in the reporting month except daytime monitoring of CM5 was re-scheduled from 14 to 15 January 2019. Thirty-three (37) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Twelve (12) Limit Level exceedances were recorded in the reporting month.

#### *Water Quality Monitoring*

- Groundwater quality monitoring was conducted as scheduled in the reporting month. Nine (9) Limit Level exceedances were recorded in the reporting month.
- All marine water monitoring was conducted as scheduled in the reporting month except water monitoring of embayment at W1 was re-scheduled from 28 to 30 January 2019. Additional monitoring was conducted on 3, 10, 17, 24 and 31 January 2019. Eighty-seven (87) Action Level and three hundred and twenty two (322) Limit Level exceedance in marine water quality monitoring.

10. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month.

#### *Ecological Monitoring*

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, NE/2015/03, NE/2017/01 and NE/2017/02 on 16, 2, 29, 17 and 29 January 2019 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
	Number	Nature		
Complaint received by Project Team / Complaint referred by EPD (January 2019)	39	Noise nuisance/ Construction dust/ Water Pollution	Details refer to App O	On-going
Complaint received by Project Team / Complaint referred by EPD (December 2018)	9	Noise nuisance/ Construction dust	Details refer to App O	On-going / Closed
Complaint received by Project Team / Complaint referred by EPD (November 2018)	12	Noise nuisance/ Construction dust	Details refer to App O	On-going / Closed
Notifications of any summons & prosecutions received	0	---	N/A	N/A

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

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 2019)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5
		Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works
		TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Construction of U-trough structure at SR2 CH170-CH250 3) Construction of U-trough structure at P2 CH411-CH500 4) Pre-bore and sheetpile works for 2100 pipe at	

Contract No.	Project Title	Site Activities (January 2019)
		Portion IV and Portion VII 5) Pre-bore works for decked U-trough at CH318 – CH363.5 6) Sheet pile works for decked U-trough at CH318.00 – CH363.50 7) ELS works for 2100 pipe 8) Installation of 2100 storm water pipe at Portion IV / VII 9) King post and de-watering system for proposed U-trough CH318.00 – CH363.50 at Portion V/VI 10) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 11) Installation of 1350 diversion pipe and manhole 12) Street lighting duct installation works at Portion IV near Ocean Shores EVA 13) Construction of P2A retaining wall 14) Backfilling of P2A retaining wall 15) ELS works for CH318 – CH363.50 16) Construction of manhole for 2100 pipe (upper part) 17) Dismantling of 1st layer of struct at P2 CH411 – CH500 U-trough 18) Salvage operation of sunken barge Cheung Shing 306 19) Surcharging at surcharge Area 1a 20) Land band drain at surcharge Area 1b 21) Reclamation works at Portion IX 22) Reinstatement of existing seawall at Portion VII 23) Pre-drilling at P2 CH230 – CH264 24) Pre-boring at P2 H-pile CH290 – CH305
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Construction of Staircase 2) Installation of Lift Car
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Dismantling Works for Temporary Working Platform 2) Pre-drilling 3) Bored piling 4) Construction of Temporary Working Platform 5) Installation of Precast Pile Cap Shell
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement setup 4) Piling Works 5) Construction of Temporary carriageway 6) Pre-bored Socket H-Pile 7) Modification of traffic island 8) Predrilling 9) Construction of Temporary cycle track 10) Construction of drainage and watermain



Contract No.	Project Title	Site Activities (January 2019)
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor’s site accommodation and project signboard at Po Yap Road

### 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 2019)	Key Environmental Issues *	
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works	(B)
	TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Construction of retaining wall SR 2A / 2B (Bay 3) 2) Construction of U-trough structure at P2 CH411 – CH500 3) Pre-bore and sheet piling works for decked U-trough at CH318 – CH363.5 4) Trench excavation and ELS works for 2100 pipe 5) Installation of 2100 storm water pipe at Portion IV and VII 6) Backfilling of 2100 pipe 7) De-watering system for U-trough at Portion V/VI CH318.00 – CH363.50 8) Fabrication of ELS members for proposed ELS system at CH318.00 – CH 363.50 9) Installation of 1350 diversion pipe and manhole 10) Street lighting duct installation works at Portion IV near Ocean Shores EVA 11) Construction of P2A retaining wall 12) Backfilling of P2A retaining wall 13) ELS works for CH318 – CH363.50 14) Construction of manhole for 2100 pipe (upper part) 15) Dismantling of 1st layer of struct at P2 CH411 – CH500 U-trough	(A) / (B) / (C) / (D) / (E) / (G) / (I)	

<b>Contract No. and Project Title</b>	<b>Site Activities (February 2019)</b>	<b>Key Environmental Issues *</b>
	16) Surcharging at surcharge Area 1a & 1b 17) Reclamation works at Portion IX 18) Reinstatement of seawall at Portion VII 19) Pre-drilling at P2 CH105 – CH264 20) Treatment works of S/S Treatment Facility at Area A 21) Pre-boring at P2 H-pile CH290 – CH305	
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Removal of scaffolding at +12.15 Platform and Staircase 1 2) Construction of Pour 2 of main deck (GL4 – 5)	(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Dismantling Works for Temporary Working Platform 2) Pre-drilling 3) Bored piling 4) Construction of Temporary Working Platform 5) Installation of Precast Pile Cap Shell	(A) / (B) / (E) / (F) / (G)
NE/2017/02 – Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement setup 4) Construction of Temporary carriageway 5) Pre-bored Socket H-Pile 6) Modification of traffic island 7) Predrilling 8) Construction of Temporary cycle track	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road	(A) / (B) / (C) / (D) / (E) / (F) / (G) / (H)

Note:

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

## 1. INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was commissioned by Civil Engineering and Development Department (CEDD) as the Environmental Team (ET) to undertake environmental monitoring and auditing services for the Works Contracts involved in the implementation of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) project to ensure that the environmental performance of the Works Contracts comply with the requirements specified in the Environmental Permit (EP), Environmental Monitoring & Audit (EM&A) Manual, Environmental Impact Assessment (EIA) Report of the TKO-LTT project and other relevant statutory requirements. This is the 27<sup>th</sup> Monthly EM&A report summarizing the EM&A works for the Project in January 2019.

### **Purpose of the Report**

- 1.2 This is the 27<sup>th</sup> Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in January 2019.

### **Structure of the Report**

- 1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

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

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

monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, monitoring results and Limit Levels and Action Plan

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

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

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

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

Section 14: **Conclusions and Recommendation**

## 2. PROJECT INFORMATION

### Background

- 2.1 In 2002, Civil Engineering and Development Department (CEDD) commissioned an integrated planning and engineering study under Agreement No. CE 87/2001 (CE) “Further Development of Tseung Kwan O – Feasibility Study” (the “TKO Study”) to formulate a comprehensive plan for further development of TKO New Town. It recommended to further develop TKO to house a total population of 450,000 besides the district’s continuous commercial and industrial developments.
- 2.2 At present, the Tseung Kwan O Tunnel is the main connection between Tseung Kwan O (TKO) and other areas in the territory. To cope with the anticipated transport need, the TKO Study recommended the provision of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) (hereinafter referred to as “the Project”) and Cross Bay Link (CBL) to meet the long-term traffic demand between TKO and the external areas. The site layout plan for the Project is shown in **Figure 1**.
- 2.3 The Environmental Impact Assessment (EIA) Report for the TKO-LTT project was approved under the Environmental Impact Assessment Ordinance (EIAO) in July 2013. The corresponding Environmental Permit (EP) was issued in August 2013 (EP no.: EP-458/2013). Variations to the EP was applied and the latest EP (EP no.: EP-458/2013/C) was issued by the Director of Environmental Protection (DEP) in January 2017.
- 2.4 The commencement dates of construction of this Project are:
- Contract No. NE/2015/01 and Contract No. NE/2015/02: 7 November 2016.
  - Contract No. NE/2015/03: 29 May 2017.
  - Contract No. NE/2017/02: 15 March 2018.
  - Contract No. NE/2017/01: 23 April 2018.
  - Contract No. NE/2017/06: 09 November 2018.

### Project Organizations

- 2.5 Different parties with different levels of involvement in the project organization include:
- Project Proponent – Civil Engineering and Development Department (CEDD)
  - The Engineer and the Engineer’s Representative (ER) – AECOM
  - Environmental Team (ET) – Cinotech Consultants Limited (Cinotech)
  - Independent Environmental Checker (IEC) – AnewR Consulting Limited (AnewR)

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

**Table 2.1 Key Project Contacts**

Party	Role	Contact Person	Phone No.	Fax No.
CEDD	Project Proponent	Mr. LO Sai Pak, Sunny	2301 1384	2739 0076
AECOM	Engineer's Representative	Mr. KY Chan	3922 9000	2759 1698
Cinotech	Environmental Team	Dr. HF Chan	2151 2088	3107 1388
		Mr. KS Lee	2151 2091	
AnewR	Independent Environmental Checker	Mr. Adi Lee	2618 2836	3007 8648

### Construction Activities undertaken during the Reporting Month

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

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

Contract No.	Project Title	Site Activities (January 2019)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5
		Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works
		TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling works at P2 U-trough CH411 – CH500 2) Construction of U-trough structure at SR2 CH170-CH250 3) Construction of U-trough structure at P2 CH411-CH500 4) Pre-bore and sheetpile works for 2100 pipe at Portion IV and Portion VII 5) Pre-bore works for decked U-trough at CH318 – CH363.5 6) Sheet pile works for decked U-trough at CH318.00 – CH363.50 7) ELS works for 2100 pipe 8) Installation of 2100 storm water pipe at Portion IV / VII 9) King post and de-watering system for proposed U-trough CH318.00 – CH363.50 at Portion V/VI	

Contract No.	Project Title	Site Activities (January 2019)
		10) Fabrication of ELS members for proposed ELS system at CH318.00 – CH363.50 11) Installation of 1350 diversion pipe and manhole 12) Street lighting duct installation works at Portion IV near Ocean Shores EVA 13) Construction of P2A retaining wall 14) Backfilling of P2A retaining wall 15) ELS works for CH318 – CH363.50 16) Construction of manhole for 2100 pipe (upper part) 17) Dismantling of 1st layer of struct at P2 CH411 – CH500 U-trough 18) Salvage operation of sunken barge Cheung Shing 306 19) Surcharging at surcharge Area 1a 20) Land band drain at surcharge Area 1b 21) Reclamation works at Portion IX 22) Reinstatement of existing seawall at Portion VII 23) Pre-drilling at P2 CH230 – CH264 24) Pre-boring at P2 H-pile CH290 – CH305
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Construction of Staircase 2) Installation of Lift Car
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Dismantling Works for Temporary Working Platform 2) Pre-drilling 3) Bored piling 4) Construction of Temporary Working Platform 5) Installation of Precast Pile Cap Shell
NE/2017/02	Tseung Kwan O – Lam Tin Tunnel – Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement setup 4) Piling Works 5) Construction of Temporary carriageway 6) Pre-bored Socket H-Pile 7) Modification of traffic island 8) Predrilling 9) Construction of Temporary cycle track 10) Construction of drainage and watermain
NE/2017/06	Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road

- 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 <b>Table 2.2</b>	Noise, dust impact, water quality and waste generation	<ul style="list-style-type: none"> <li>• Sufficient watering of the works site with active dust emitting activities</li> <li>• Properly cover the stockpiles</li> <li>• On-site waste sorting and implementation of trip ticket system</li> <li>• Appropriate desilting/sedimentation devices provided on site for treatment before discharge</li> <li>• Use of quiet plant and well-maintained construction plant</li> <li>• Provide movable noise barrier</li> </ul>

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



Contract No.	Permit / License No.	Valid Period		Status
		From	To	
NE/2015/01	Waste Producer No. 5218-290-L2881-02	22/08/2016	N/A	Valid
	Waste Producer No. 5213-833-L2532-03	22/08/2016	N/A	Valid
NE/2015/02	Waste Producer No. 5213-838-C4094-01	23/08/2016	N/A	Valid
NE/2015/03	Waste Producer No. 5213-265-W3435-04	19/07/2017	N/A	Valid
NE/2017/02	Waste Producer No. 5213-833-Z4004-04	01/02/2018	N/A	Valid
NE/2017/01	Waste Producer No. 5213-833-C4262-01	12/02/2018	N/A	Valid
<b>Effluent Discharge License under Water Pollution Control Ordinance</b>				
NE/2015/01	WT00025806-2016	18/07/2018	30/11/2021	Valid
	WT00026212-2016	16/05/2017	30/11/2021	Valid
	WT00027354-2017	22/03/2017	31/03/2022	Valid
	WT00027405-2017	22/03/2017	31/03/2022	Valid
	WT-00028495-2017	11/08/2017	31/08/2022	Valid
NE/2015/02	WT00026386-2016	15/12/2016	31/12/2021	Valid
	WT00027226-2017	23/02/2017	28/02/2022	Valid
NE/2015/03	WT00027295-2017	20/03/2017	18/04/2019	Valid
	WT00027266-2017	08/03/2017	18/04/2019	Valid
NE/2017/01	WT00030711-2018	11/04/2018	30/04/2023	Valid
	WT00030716-2018	23/05/2018	31/05/2023	Valid
NE/2017/02	WT00030654-2018	16/04/2018	30/04/2023	Valid
<b>Construction Noise Permit (CNP)</b>				
NE/2015/01	GW-RE0807-18	05/12/2018	04/03/2019	Valid
	GW-RE0819-18	30/11/2018	29/01/2019	Expired on 29 Jan 2019
	GW-RE0808-18	30/11/2018	28/01/2019	Expired on 28 Jan 2019
	GW-RE0881-18	24/12/2018	22/06/2019	Valid
	GW-RE0898-18	31/12/2018	30/03/2019	Valid
	GW-RE0930-18	11/01/2019	10/03/2019	Valid
	GW-RE0031-19	28/01/2019	27/03/2019	Valid
NE/2015/02	GW-RE0434-18	16/06/2018	15/01/2019	Expired on 15 Jan 2019
	GW-RE0680-18	11/10/2018	10/04/2019	Valid
	GW-RE0732-18	31/10/2018	29/01/2019	Expired on 29 Jan 2019
	GW-RE0833-18	02/12/2018	01/06/2019	Valid

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
	GW-RE0039-19	14/01/2019	23/01/2019	Expired on 23 Jan 2019
	GW-RE0008-19	15/01/2019	14/07/2019	Valid
	GW-RE0071-19	25/01/2019	22/02/2019	Valid
	GW-RE0004-19	30/01/2019	29/04/2019	Valid
NE/2017/01	GW-RE0744-18	03/11/2018	02/02/2019	Valid
	GW-RE0755-18	07/11/2018	06/05/2019	Valid
<b>Marine Dumping Permit</b>				
NE/2017/01	EP/MD/19-064	01/12/2018	31/05/2019	Valid
	EP/MD/19-080	01/01/2019	31/01/2019	Expired on 31 Jan 2019
	EP/MD/19-093	01/02/2019	28/02/2019	Valid
	EP/MD/19-086	14/01/2019	13/07/2019	Valid
<b>Specified Process (SP) License</b>				
NE/2015/01	L-11-053	09/03/2018	08/03/2021	Valid

### Summary of EM&A Requirements

- 2.10 The EM&A programme requires construction noise monitoring, air quality monitoring, water quality monitoring, environmental site audit, etc. The EM&A requirements for each parameter are described in the following sections, including:
- All monitoring parameters;
  - Action and Limit levels for all environmental parameters;
  - Event Action Plans;
  - Environmental mitigation measures, as recommended in the Project EIA Report.
- 2.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 10** of this report.
- 2.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the monitoring parameters of the required environmental monitoring works and audit works for the Project in January 2019.

### 3. AIR QUALITY

#### Monitoring Requirements

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

#### Monitoring Locations

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

**Table 3.1 Locations for Air Quality Monitoring**

Monitoring Stations	Location	Location of Measurement
AM1	Tin Hau Temple	Ground Level
AM2	Sai Tso Wan Recreation Ground	Ground Level
AM3	Yau Lai Estate Bik Lai House	Rooftop (41/F)
AM4 <sup>(1)</sup>	Sitting-out Area at Cha Kwo Ling Village	Ground Level
AM4(A) <sup>(2) (*)</sup>	Cha Kwo Ling Public Cargo Working Area Administrative Office	Rooftop (3/F)
AM5(A) <sup>(*)</sup>	Tseung Kwan O DSD Desilting Compound	Ground Level
AM6(A) <sup>(*)</sup>	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	2
	Met One Instruments Model No.: AEROCET-831	0
	Handheld Particle Counter Hal-HPC300 / Hal-HPC301	3
HVS Sampler	TISCH Model: TE-5170	1
	GMW Model: GS2310	5
Wind Anemometer	Davis Weather Monitor II, Model no. 7440	1
	Davis Weather Stations, Vantage Pro 2, Model No. 6152CUK	0

### Monitoring Parameters and Frequency

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

**Table 3.3 Frequency and Parameters of Air Quality Monitoring**

Monitoring Stations	Parameter	Frequency
AM1, AM2, AM3, AM4, AM5(A) and AM6(A)	1-hour TSP	3 times per 6 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 0.5 $\mu$ m and 5 $\mu$ m channels will show the cumulative counts of particles larger than 0.5 $\mu$ m and 5 $\mu$ m per cubic foot.
- The AEROCET-531 is now checked out and ready for use.
- To switch off the AEROCET-531 power to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, and display value and site condition were recorded during the monitoring period.

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

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

Maintenance/Calibration

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

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

***24-hour TSP Monitoring***Instrumentation

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

- 3.10 The positioning of the HVS samplers are as follows:
- a horizontal platform with appropriate support to secure the samplers against gusty wind shall be provided;
  - no two samplers shall be placed less than 2 meter apart
  - the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
  - a minimum of 2 metres of separation from walls, parapets and penthouses is required for rooftop samplers;
  - a minimum of 2 metres of separation from any supporting structure, measured horizontally is required;
  - no furnace or incinerator flue is nearby;
  - airflow around the sampler is unrestricted;
  - the sampler is more than 20 metres from the dripline;
  - any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring;
  - permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
  - a secured supply of electricity is needed to operate the samplers.

Operating/analytical procedures for the operation of HVS

- 3.11 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m<sup>3</sup>/min. and 1.4 m<sup>3</sup>/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  $\pm 5\%$ . 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)/Refuge floor (26/F)#
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	Rooftop (41/F)
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	Rooftop (40/F)
CM4	Tin Hau Temple, Cha Kwo Ling	Ground Level
CM5	CCC Kei Faat Primary School, Yau Tong	Rooftop (6/F)
CM6(A)*	Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores	Ground Level
CM7(A)*	Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores	Ground Level
CM8(A)*	Park Central, L1/F Open Space Area	1/F

Remarks: \* Noise monitoring at designated station CM6, CM7 & CM8 was rejected by the premise owners. Therefore, baseline and impact noise monitoring works were carried out at alternative noise monitoring stations CM6(A), CM7(A) and CM8(A) respectively.  
# Monitoring location has changed from 41/f to 26/f on 23<sup>rd</sup> Nov 2018.

### Monitoring Equipment

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

**Table 4.2 Noise Monitoring Equipment**

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



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

**Table 4.3 Frequency and Parameters of Noise Monitoring**

Monitoring Stations	Parameter	Period	Frequency	Measurement
CM1	L <sub>10</sub> (30 min) dB(A) L <sub>90</sub> (30 min) dB(A) L <sub>eq</sub> (30 min) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade
CM2				Façade
CM3				Façade
CM4				Façade
CM5				Façade
CM6(A)				Free Field
CM7(A)				Free Field
CM8(A)				Façade
CM1	L <sub>10</sub> (5 min) dB(A) L <sub>90</sub> (5 min) dB(A) L <sub>eq</sub> (5 min) dB(A)	1900 – 2300 hrs on normal weekdays/ 0700 to 1900 hours on any day being a Sunday or general holiday / 2300-0700 on all day		Façade
CM2				Façade
CM3				Façade
CM4				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<sub>eq</sub>, L<sub>90</sub> and L<sub>10</sub> 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 Thirty-seven (37) Action Level exceedance was recorded due to the documented complaints received in this reporting month. Ten (10) Limit Level exceedance for night-time construction noise monitoring and they were considered due to the road traffic near Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related. Two (2) Limit Level exceedance for day time were recorded in the reporting month and it was considered non-Project related as the field staff identified road traffic near Eastern Cross Harbour Tunnel Toll Plaza as the major noise source than construction noise from the project site.
- 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**

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

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

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

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

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

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

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

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

Station	Baseline Noise Level, dB (A) (Night-time (2300 – 0700 hrs))	Noise Limit Level, dB (A) (Night-time (2300 – 0700 hrs))
CM1	14-day baseline monitoring results for the time period of impact measurement at each station would be adopted	55
CM2		
CM3		
CM4		

### Current Tunnel Blasting Arrangement

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

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

## 5. WATER QUALITY

### Monitoring Requirements

#### Groundwater Quality

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

#### Marine Water Quality

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

#### Groundwater Level Monitoring (Piezometer Monitoring)

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

## Monitoring Locations

### Groundwater Quality

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

**Table 5.1 Groundwater Quality Monitoring Stations**

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

### Marine Water Quality

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

**Table 5.2 Marine Quality Monitoring Stations**

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

### Monitoring Equipment

- 5.9 For in-situ monitoring, a multi-parameter meter (Aquaread AP-2000-D) was used to measure Dissolved oxygen (DO) concentration, DO saturation (DO %), pH, temperature and turbidity. A sampler was used to collect water samples for laboratory analysis of SS, BOD<sub>5</sub>, TOC, Total Nitrogen, Ammonia-N and Total Phosphate.

### Dissolved Oxygen (DO) and Temperature Measuring Equipment

- 5.10 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:
- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and

- a temperature of 0-45 degree Celsius.
- 5.11 It has a membrane electrode with automatic temperature compensation complete with a cable.
- 5.12 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.
- 5.13 Salinity compensation was built-in in the DO equipment.

#### Turbidity

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

#### pH

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

#### Water Depth Detector

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

#### Water Sampler

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

#### Sample Container and Storage

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

#### Calibration of In-Situ Instruments

- 5.19 All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring.
- 5.20 For the on-site calibration of field equipment, the BS 1427:1993, "Guide to Field and on-site test methods for the analysis of waters" was observed.
- 5.21 Before each round of monitoring, a zero check in distilled water was performed with the turbidity probe of Aquaread AP-2000-D. The probe was then be calibrated with a solution of known NTU.
- 5.22 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also made available so that monitoring can proceed

uninterrupted even when some equipment is under maintenance, calibration, etc.

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

**Table 5.3 Water Quality Monitoring Equipment**

Equipment	Model and Make	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	1
Multi-parameter Water Quality System	YSI 6820-C-M	0
	Aquaread AP-2000-D	0
	YSI EXO1 Multiparameter Sondes	2
Monitoring Position	“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
<b>Groundwater Quality</b>			
Stream 1- Stream 3	<ul style="list-style-type: none"> <li>• DO, mg/L</li> <li>• DO Saturation, %</li> <li>• pH</li> <li>• Water Temperature (°C)</li> <li>• Turbidity, NTU</li> <li>• SS, mg/L</li> <li>• BOD<sub>5</sub>, mg O<sub>2</sub>/L</li> <li>• TOC, mg-TOC/L</li> <li>• Total Nitrogen, mg/L</li> <li>• Ammonia-N, mg NH<sub>3</sub>-N/L</li> <li>• Total Phosphate, mg-P/L</li> </ul>	Mid-depth	Biweekly  (When the tunnel construction works are found within 50m of the location, weekly.)
<b>Marine Water Quality</b>			
M1 M2 M3 M4 M5 M6 C1 C2 G1 G2 G3 G4	<p><i>In-situ:</i> Dissolved oxygen (DO) concentration, DO saturation, turbidity, pH, temperature and salinity</p> <p><u>Laboratory Testing:</u> Suspended Solids (SS)</p>	<p><u>M1-M5, C1-C2, G1-G4</u></p> <ul style="list-style-type: none"> <li>• 3 water depths: 1m below water surface, mid-depth and 1m above sea bed.</li> <li>• If the water depth is less than 3m, mid-depth sampling only.</li> <li>• If the water depth is less than 6m, omit mid-depth sampling.</li> </ul> <p><u>M6</u></p> <ul style="list-style-type: none"> <li>• at the vertical level where the water abstraction point of the intake is located(i.e. approximately mid-</li> </ul>	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)



Monitoring Stations	Parameters, unit	Depth	Frequency
		depth level)	
<b>Water Quality Monitoring in Temporary Marine Embayment</b>			
W1	<ul style="list-style-type: none"> <li>• DO, mg/L</li> <li>• DO Saturation, %</li> <li>• pH</li> <li>• Water Temperature (°C)</li> <li>• Salinity, ppt</li> </ul>	<ul style="list-style-type: none"> <li>• 3 water depths: 1m below water surface, mid-depth and 1m above sea bed.</li> <li>• If the water depth is less than 3m, mid-depth monitoring only.</li> <li>• If the water depth is less than 6m, omit mid-depth monitoring</li> </ul>	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<sub>5</sub>, 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<sub>2</sub>SO<sub>4</sub> 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 <sup>(1)</sup>	0.5 mg/L
BOD <sub>5</sub> (mg O <sub>2</sub> /L)	APHA 19ed 5210B	2 mg O <sub>2</sub> /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 <sub>3</sub> -N/L)	In-house method SOP057 (FIA)	0.05 mg NH <sub>3</sub> -N/L	--
Total Phosphorus (mg-P/L) <sup>(2)</sup>	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 quality monitoring results, graphical presentations and laboratory testing reports are shown in **Appendix H**.

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

**Table 5.6 Summary of Groundwater Quality Monitoring Results**

Date	Location	Parameters (unit)								
		pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	SS (mg/L)	BOD <sub>5</sub> (mg O <sub>2</sub> /L)	TOC (mg-TOC/L)	Total Nitrogen (mg/L)	NH <sub>3</sub> -N (mg NH <sub>3</sub> -N/L)	Total Phosphorus (mg-P/L)
15 Jan 2019	Stream 1	7.3	9.2	1.7	3	<2	4	2.0	0.15	<b><i>0.10</i></b>
	Stream 2	7.4	8.8	1.9	<b><i>24</i></b>	<2	8	<b><i>2.3</i></b>	0.09	<b><i>0.12</i></b>
	Stream 3	7.2	7.6	0.6	<2.5	<2	4	1.5	<0.05	<0.05
29 Jan 2019	Stream 1	7.4	9.2	1.8	<2.5	<2	5	0.7	<0.05	<b><i>0.06</i></b>
	Stream 2	7.9	9.3	<b><i>6.5</i></b>	<b><i>13</i></b>	<2	5	1.6	<0.05	<b><i>0.10</i></b>
	Stream 3	7.6	7.8	0.3	<2.5	<2	5	1.2	<0.05	<b><i>0.06</i></b>
No. of Exceedance	Action Level	0	0	0	0	0	0	0	0	0
	Limit Level	0	0	1	2	0	0	1	0	5

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

***Bold Italic with underline*** means Limit Level exceedance

- 5.36 All groundwater quality monitoring was conducted as scheduled in the reporting month. Nine (9) Limit Level exceedances were recorded in the reporting month. The exceedances are considered due to human activities, therefore non-Project related. Details of the investigation are presented in **Appendix K**.

#### Marine Water Quality Monitoring

- 5.37 All marine water quality monitoring was conducted as scheduled in the reporting month except water monitoring of embayment at W1 was re-scheduled from 28 to 30 January 2019. Additional monitoring was conducted on 3, 10, 17, 24 and 31 January 2019. Marine water monitoring results and graphical presentations are shown in **Appendix I**. Other relevant data was also recorded, such as monitoring location / position, time, sampling depth, weather conditions and any special phenomena or work underway nearby.

- 5.38 Calculated Action and Limit Levels for Marine Water Quality is presented in **Appendix I**. Eighty-seven (87) Action Level and three hundred and twenty two (322) Limit Level exceedance were recorded in marine water quality monitoring.
- 5.39 The exceedance in the reporting month was reported for the whole month and the key parameter was suspended solids (SS). As mentioned in the Monthly EM&A Report for December 2018, an emergency sand discharge incident within the Junk Bay occurred on 15 December 2018 due to damage of a sand hopper barge outside the double watergate of Contract No. NE/2015/02. Subsequently, the dumped sandfill was retrieved on 21 December 2018. As the elevation of SS concentration coincided with the hopper barge incident, the SS exceedance was considered due to sandfill dumping and retrieval activities. The water quality will continue to be monitored until the exceedances subside.

#### Groundwater Level Monitoring (Piezometer Monitoring)

- 5.40 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.
- 5.41 Tunnel construction activities are within +/- 50m of the piezometer gate in plan. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. No Action Level exceedance was recorded in the reporting month. Details of the result are presented in **Appendix U**.

## 6. ECOLOGY

### Post-Translocation Coral Monitoring

- 6.1 Post-translocation monitoring survey is recommended in the EM&A Manual to audit the success of coral translocation. Information gathered during each post-translocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey.
- 6.2 Under Contract No. NE/2015/01 and NE/2015/02, a total of 14 and 29 coral colonies were tagged and translocated respectively from the Donor Site to the Recipient Site in November 2016. Ten (10) corals at the Recipient Site were also tagged by each Contract as reference for post-translocation monitoring.
- 6.3 The post-translocation coral monitoring shall be conducted once every 3 months after completion for a period of 12 months. Location of post-translocation coral monitoring is shown in **Figure 7**. The fourth post-translocation coral monitoring was carried out on 07 November 2017. No further monitoring is required.

## 7. CULTURAL HERITAGE

### Monitoring Requirement

- 7.1 According to the EP Conditions and EM&A Manual, monitoring of vibration impacts was conducted when the construction works are less than 100m from the Built Heritage in close proximity of the worksite, namely the Cha Kwo Ling Tin Hau temple. Tilting and settlement monitoring should be applied on the Cha Kwo Ling Tin Hau Temple. Construction works less than 100m from the Cha Kwo Ling Tin Hau temple commenced on 8 April 2017.
- 7.2 As stated in the “*Built Heritage Mitigation Plan*” for this Project, during the period of the construction works conducted within 100m from the Cha Kwo Ling Tin Hau Temple, monitoring on settlement and tilting will be conducted once a day for the Cha Kwo Ling. Monitoring of vibration will be conducted during blasting at Cha Kwo Ling area once a day. When there is no blasting to be conducted at the area, vibration monitoring at the Cha Kwo Ling Tin Hau Temple will be conducted once per day when there are piling works or rock breaking works within the 100m from the Cha Kwo Ling Tin Hau Temple.

### Monitoring Locations

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

### Monitoring Equipment

- 7.4 Building settlement is measured via a settlement marker attached to the wall of Cha Kwo Ling Tin Hau Temple by adhesive tape.
- 7.5 Vibration monitoring was conducted by using vibrographs: Minimate Plus manufactured by Instancel. These vibrographs will be calibrated annually and its performance follows the requirements given in the “*Guidance Note on Vibration Monitoring*” (GN-VM) issued by the Civil Engineering and Development Department, which is based on the Performance Specification for Blasting Seismographs by International Society of Explosive Engineers (ISEE (2000)).
- 7.6 **Table 7.1** summarizes the equipment employed by the Contractor for cultural heritage monitoring. Copies of calibration certificates are attached in **Appendix B**.

**Table 7.1 Cultural Heritage Monitoring Equipment**

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

## Monitoring Methodology

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

## Alert, Alarm and Action Levels

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

**Table 7.2 AAA Levels for Monitoring for Cultural Heritage**

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

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

**Results and Observations**

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

## 10. ENVIRONMENTAL AUDIT

### Site Audits

- 10.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site. The summaries of site audits are attached in **Appendix L**.
- 10.2 Joint weekly site audits by the representatives of the Engineer, Contractor and the ET were conducted in the reporting month as shown in below:
- Contract No. NE/2015/01: 2, 9, 16, 22 and 30 January 2019
  - Contract No. NE/2015/02: 2, 9, 16, 23 and 29 January 2019
  - Contract No. NE/2015/03: 2, 9, 16, 23 and 29 January 2019
  - Contract No. NE/2017/01: 2, 10, 17, 23 and 29 January 2019
  - Contract No. NE/2017/02: 2, 9, 16, 23 and 29 January 2019
- Monthly joint site inspection with the representative of IEC was conducted for NE/2015/01, NE/2015/02, NE/2015/03, NE/2017/01 and NE/2017/02 on 16, 2, 29, 17 and 29 January 2019 respectively.

### Implementation Status of Environmental Mitigation Measures

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

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## 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 Thirty-seven (37) Action Level exceedances were recorded due to the documented complaints received in the reporting month. Two (2) and ten (10) Limit Level exceedances of construction noise monitoring were recorded for day-time and night-time respectively in the reporting month. The Limit Level exceedances were considered due to road traffic near the Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.
- 12.2 Nine (9) Limit Level exceedances for groundwater quality monitoring were recorded in the reporting month. The Limit Level exceedances were considered due to rainfall or human activities, therefore non-Project related.
- 12.3 Eighty-seven (87) Action Level and three hundred and twenty two (322) Limit Level exceedance were recorded in marine water quality monitoring.
- 12.4 Actions carried out in accordance with the Event and Action Plans in **Appendix M** are presented in **Appendix K** – Summary of Exceedance.

### Summary of Environmental Non-Compliance

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

### Summary of Environmental Complaint

- 12.6 Thirty-nine (39) environmental complaints were received in the reporting month. The Cumulative Complaint Log is presented in **Appendix O**. The investigation status and result is also reported in **Appendix O**.

### Summary of Environmental Summon and Successful Prosecution

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

**13. FUTURE KEY ISSUES**

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

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

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

<b>Contract No. and Project Title</b>	<b>Site Activities (February 2019)</b>		<b>Key Environmental Issues *</b>
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	3) Main Tunnel Excavation 4) Main Tunnel Lining Works	(B)
	TKO Interchange	5) Haul Road Construction and Site Formation & Slope Works 6) Cavern Excavation 7) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Construction of retaining wall SR 2A / 2B (Bay 3) 2) Construction of U-trough structure at P2 CH411 – CH500 3) Pre-bore and sheet piling works for decked U-trough at CH318 – CH363.5 4) Trench excavation and ELS works for 2100 pipe 5) Installation of 2100 storm water pipe at Portion IV and VII 6) Backfilling of 2100 pipe 7) De-watering system for U-trough at Portion V/VI CH318.00 – CH363.50 8) Fabrication of ELS members for proposed ELS system at CH318.00 – CH 363.50 9) Installation of 1350 diversion pipe and manhole 10) Street lighting duct installation works at Portion IV near Ocean Shores EVA 11) Construction of P2A retaining wall 12) Backfilling of P2A retaining wall 13) ELS works for CH318 – CH363.50 14) Construction of manhole for 2100 pipe (upper part) 15) Dismantling of 1st layer of struct at P2 CH411 – CH500 U-trough 16) Surcharging at surcharge Area 1a & 1b 17) Reclamation works at Portion IX 18) Reinstatement of seawall at Portion VII		(A) / (B) / (C) / (D) / (E) / (G) / (I)

<b>Contract No. and Project Title</b>	<b>Site Activities (February 2019)</b>	<b>Key Environmental Issues *</b>
	19) Pre-drilling at P2 CH105 – CH264 20) Treatment works of S/S Treatment Facility at Area A 21) Pre-boring at P2 H-pile CH290 – CH305	
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Removal of scaffolding at +12.15 Platform and Staircase 1 2) Construction of Pour 2 of main deck (GL4 – 5)	(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Dismantling Works for Temporary Working Platform 2) Pre-drilling 3) Bored piling 4) Construction of Temporary Working Platform 5) Installation of Precast Pile Cap Shell	(A) / (B) / (E) / (F) / (G)
NE/2017/02 – Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement setup 4) Construction of Temporary carriageway 5) Pre-bored Socket H-Pile 6) Modification of traffic island 7) Predrilling 8) Construction of Temporary cycle track	(A) / (B) / (E) / (F) / (G)
NE/2017/06 – Tseung Kwan O – Lam Tin Tunnel – Traffic Control and Surveillance System(TCSS) and Associated Works	1) Erection of Contractor's site accommodation and project signboard at Po Yap Road	(A) / (B) / (C) / (D) / (E) / (F) / (G) / (H)

**Note:**

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

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**Key Issues for the Coming Month**

13.3 Key environmental issues in the coming month include:

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



## 14. CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- 14.1 This is the 27<sup>th</sup> Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in January 2019 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 except daytime monitoring of CM5 was re-scheduled from 14 to 15 January 2019. Thirty-seven (37) Action Level exceedances were recorded due to the documented complaints received in this reporting month. Ten (10) Limit Level exceedances were recorded in the reporting month. The limit level exceedances recorded during night-time were considered due to road traffic near the Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.
- 14.5 Two (2) Limit Level exceedances were recorded for daytime construction noise in the reporting month. The exceedances recorded during day-time were considered due to road traffic near the Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.

### Water Quality Monitoring

- 14.6 Groundwater quality monitoring was conducted as scheduled in the reporting month. Nine (9) Limit Level exceedances were recorded in the reporting month. The exceedances were considered due to rainfall or human activities, therefore non-Project related.
- 14.7 Eighty-seven (87) Action Level and three hundred and twenty two (322) Limit Level exceedance in marine water quality monitoring.
- 14.8 Tunnel construction activities are within +/- 50m of the piezometer gate in plan. Construction phase daily piezometer monitoring by the Contractor commenced in June 2018. It has switched to monthly basis since 3 October 2018 as the construction activity was 120m away from the piezometer gate. The daily piezometer monitoring has resumed on 19 November 2018, as the construction activity was within 50m. No Action Level exceedance was recorded in the reporting month. Details of the result are presented in **Appendix U**.
- 14.9 All marine water monitoring was conducted as scheduled in the reporting month except water monitoring of embayment at W1 was re-scheduled from 28 to 30 January 2019.

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### Ecological Monitoring

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

### Monitoring on Cultural Heritage

- 14.11 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

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

### Landfill Gas Monitoring

- 14.13 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

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

### Complaint, Prosecution and Notification of Summons

- 14.15 Thirty-nine (39) environmental complaints, no successful prosecution and notification of summon were received during the reporting period.

### **Recommendations**

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

#### *Air Quality Impact*

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

#### *Construction Noise*

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

#### *Water Quality Impact*

- To clear the oil slick and check for any damage of the silt curtain.
- To check whether the curtain has been set to the seabed.
- To ensure that the pumping rate of bored pile is sufficient to avoid discharging waste water into the sea.
- To clear floating refuse between the cofferdam and silt curtain.
- To clear oil slick within and outside cofferdam.

- To control the amount of loading materials in the barge to avoiding spillage.
- To cover stockpile near seafront.
- To remove wastewater and oil in drip tray.
- To remove pond/still water.

*Waste/Chemical Management*

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

*Landscape and Visual*

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

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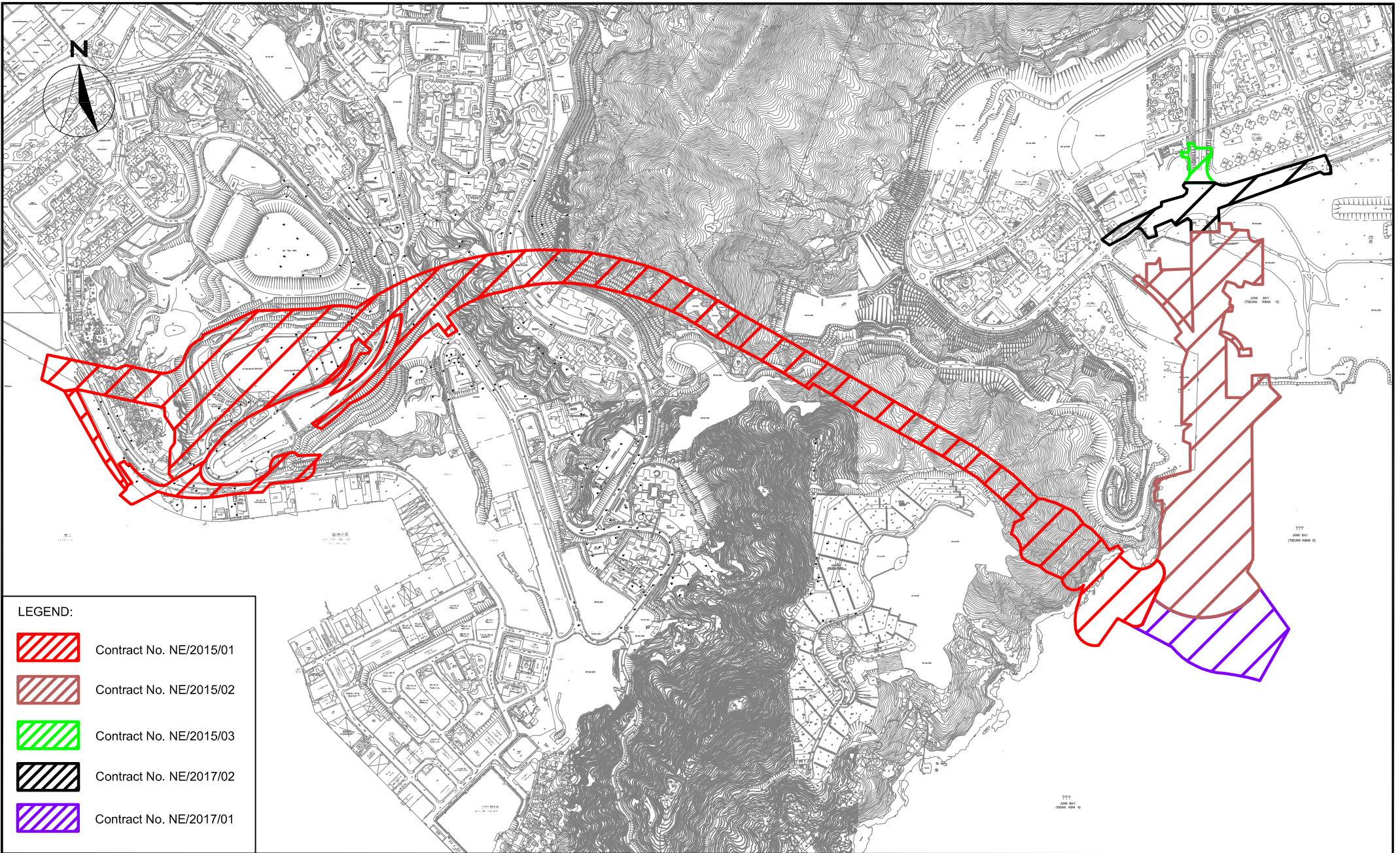
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## FIGURES






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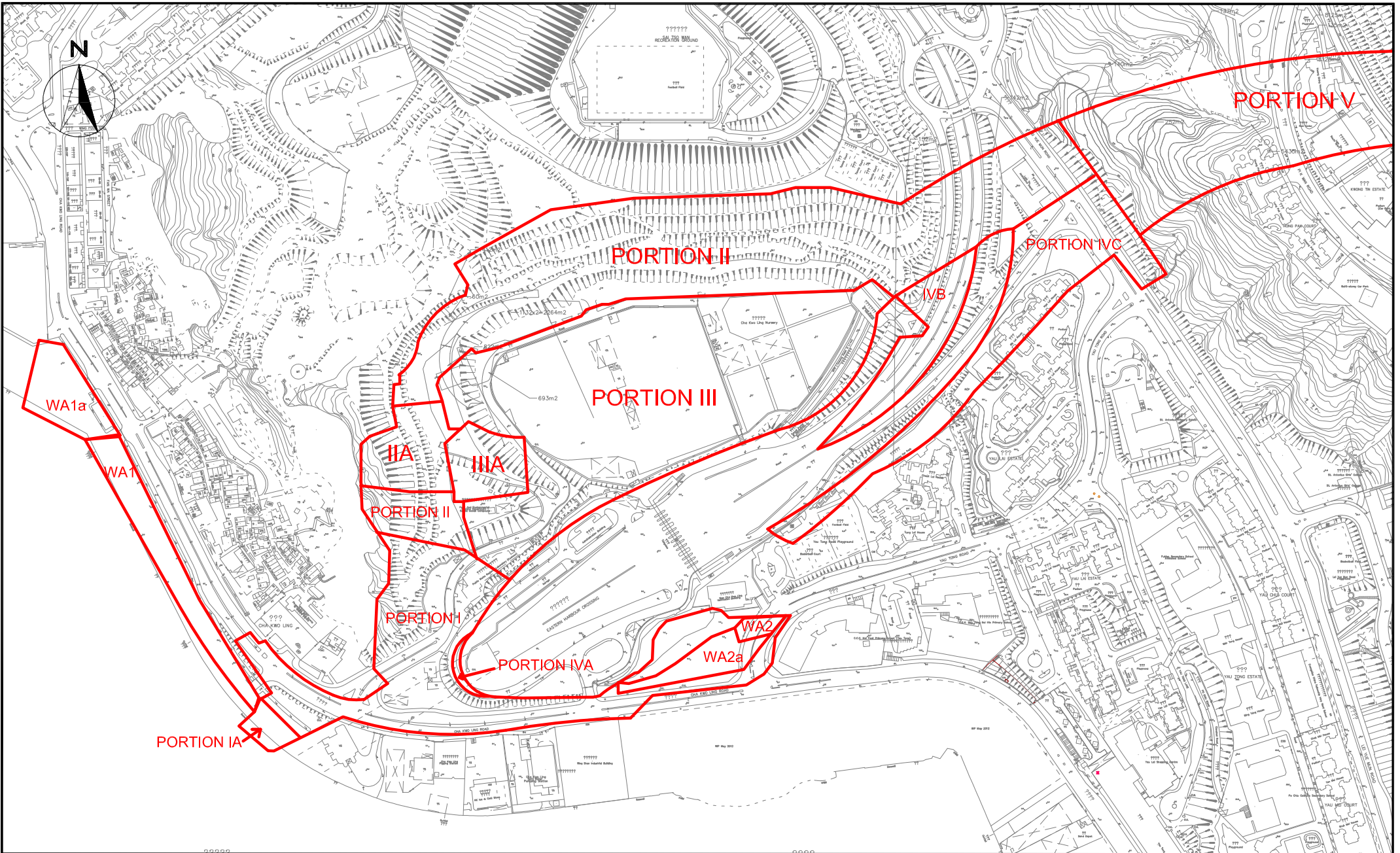


LEGEND:

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

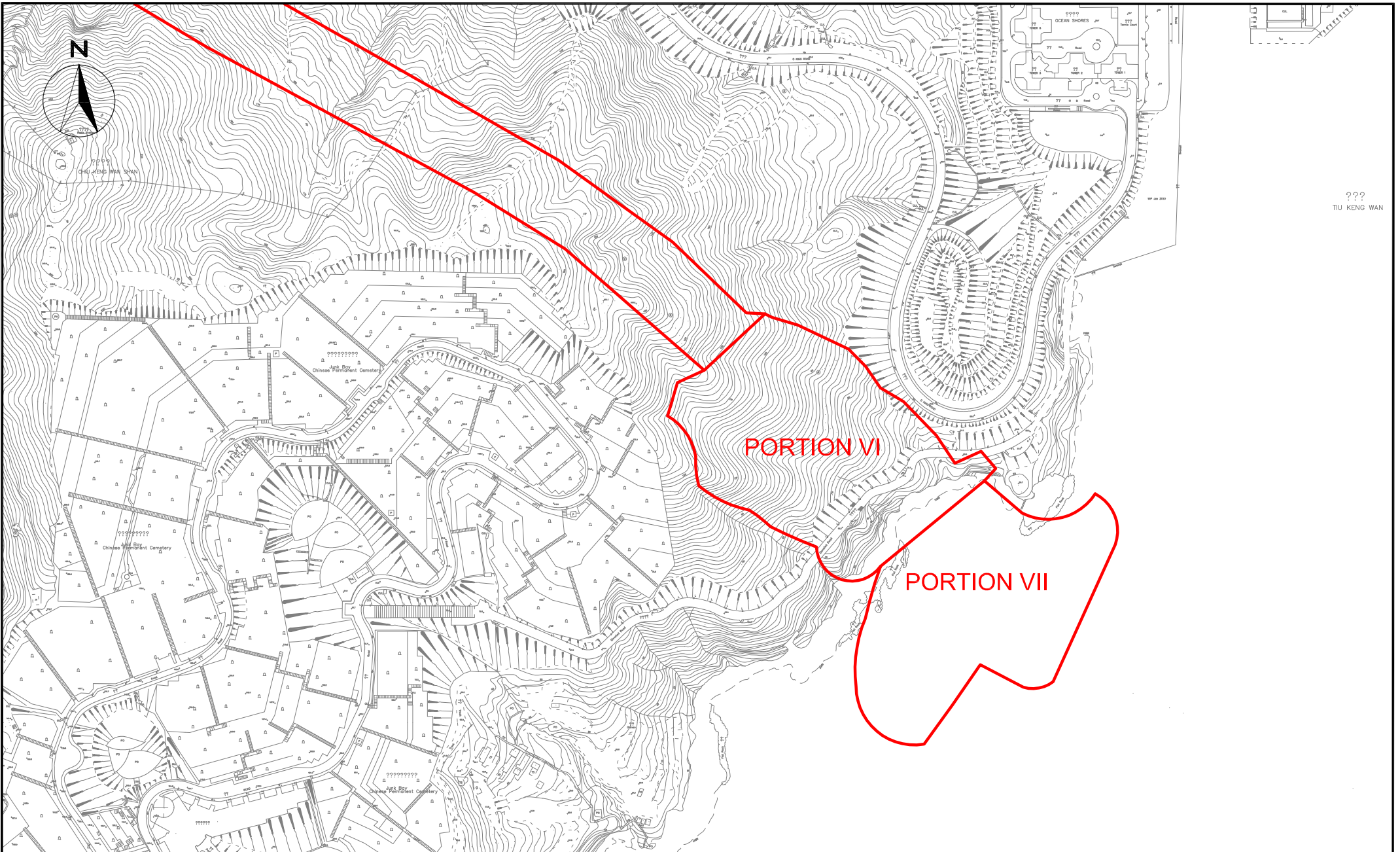
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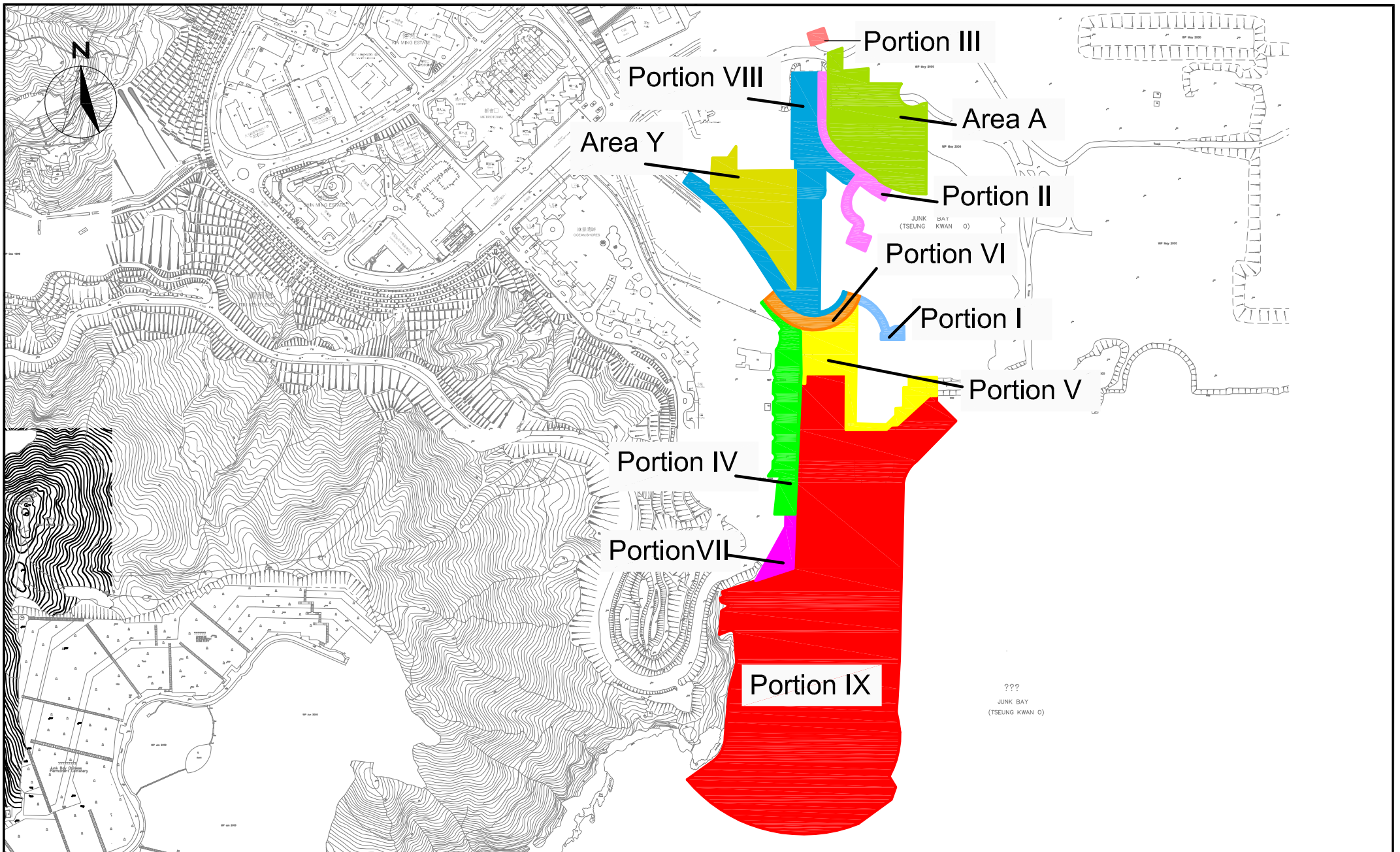


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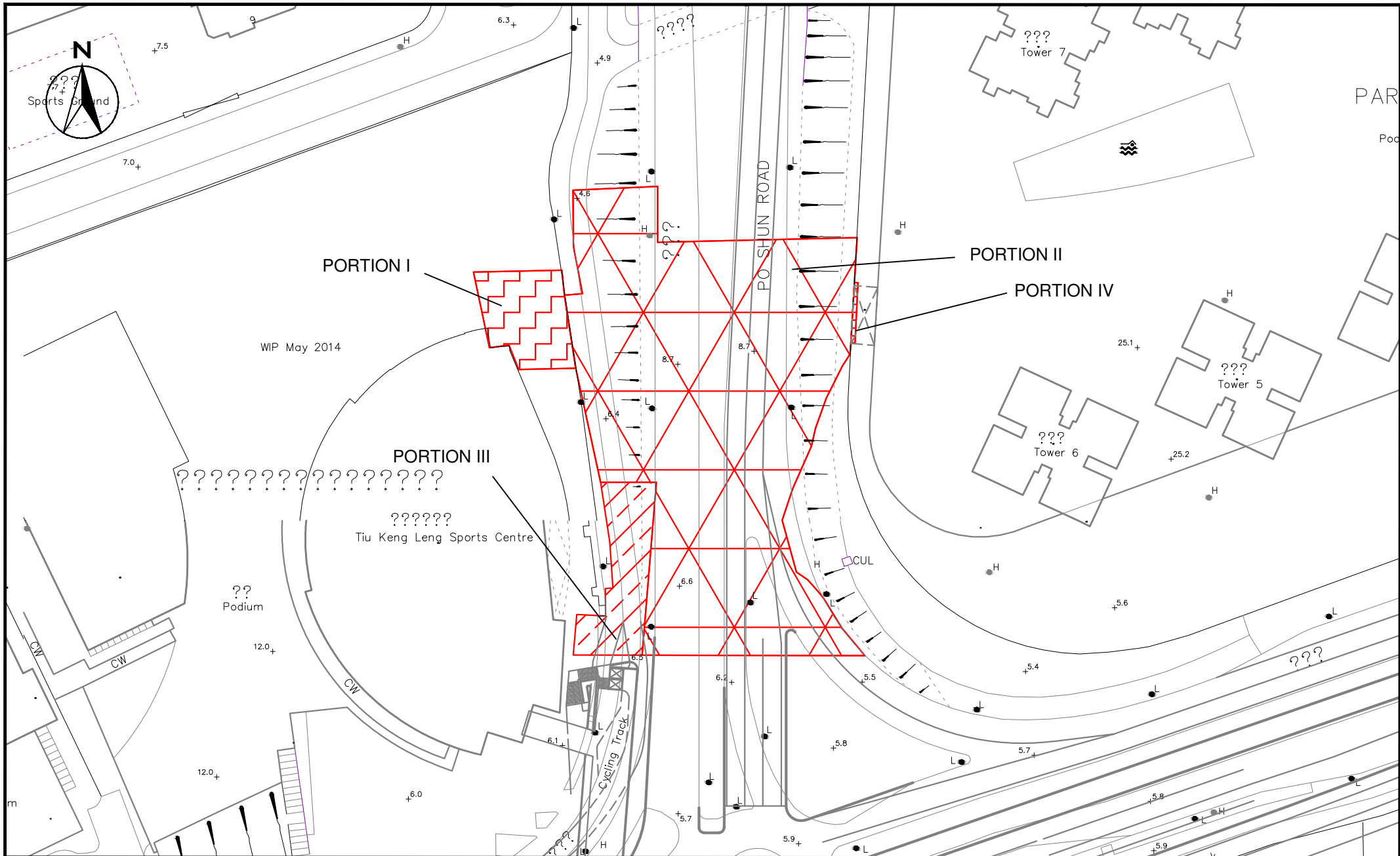


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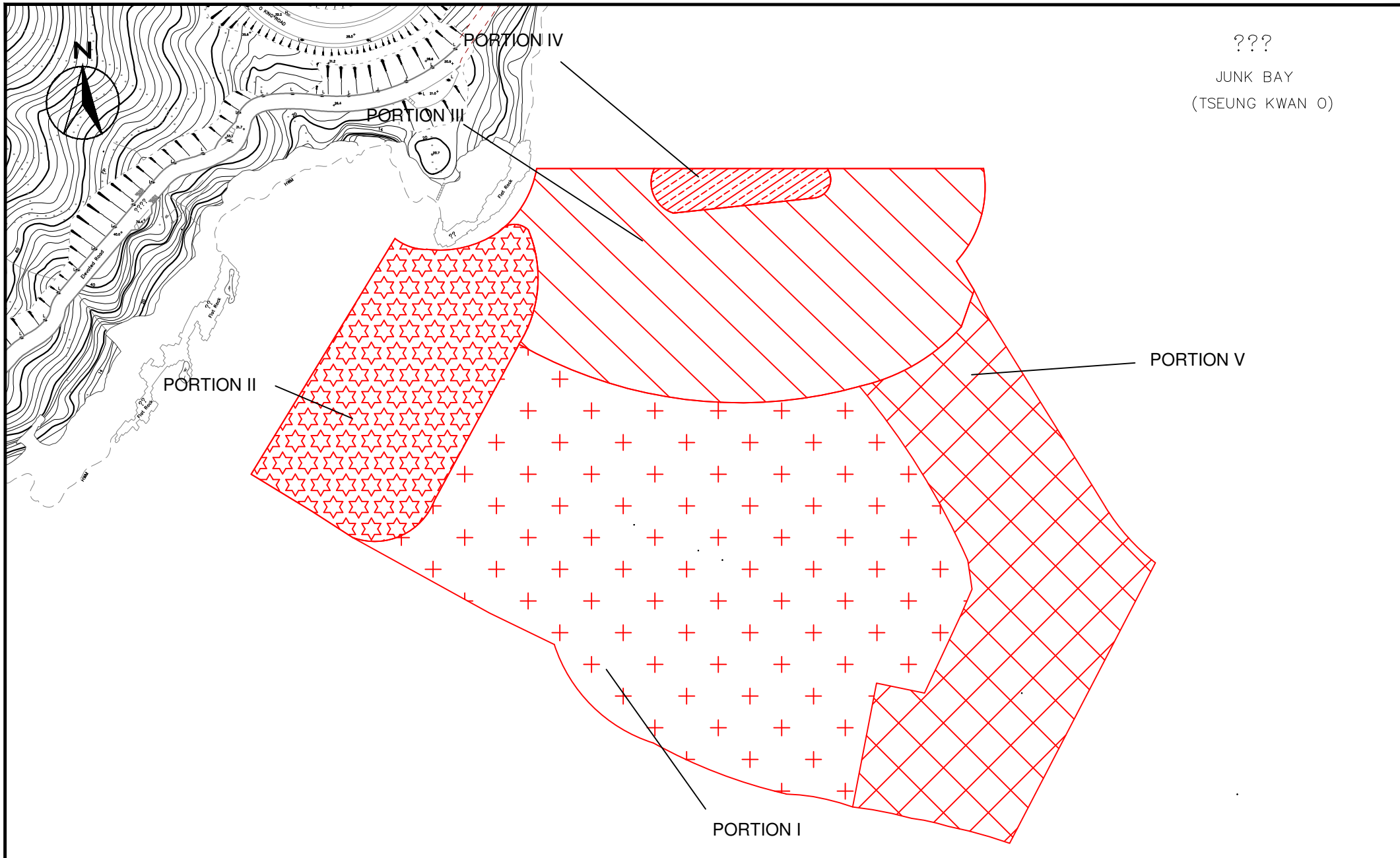


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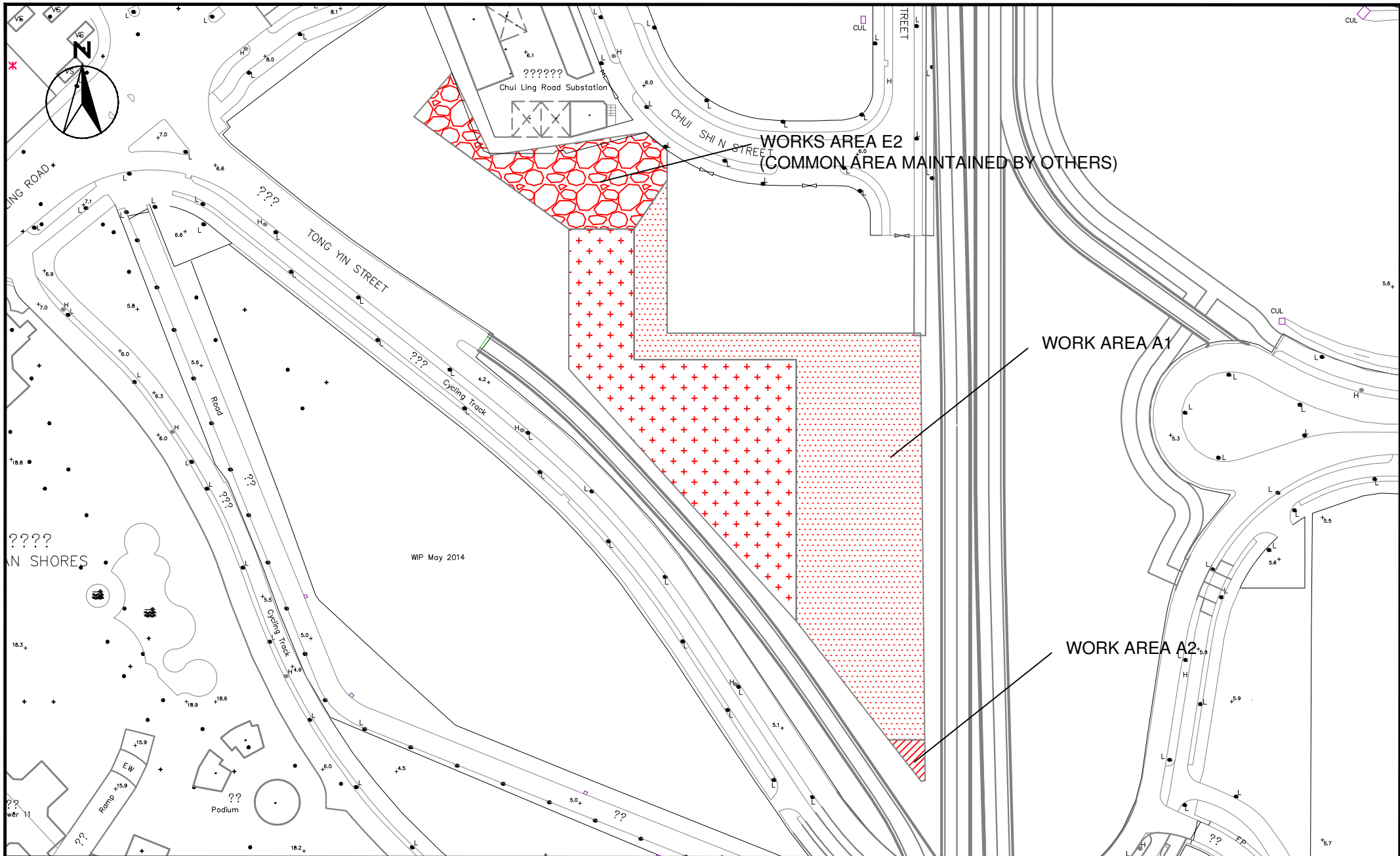
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JUNK BAY  
(TSEUNG KWAN O)



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

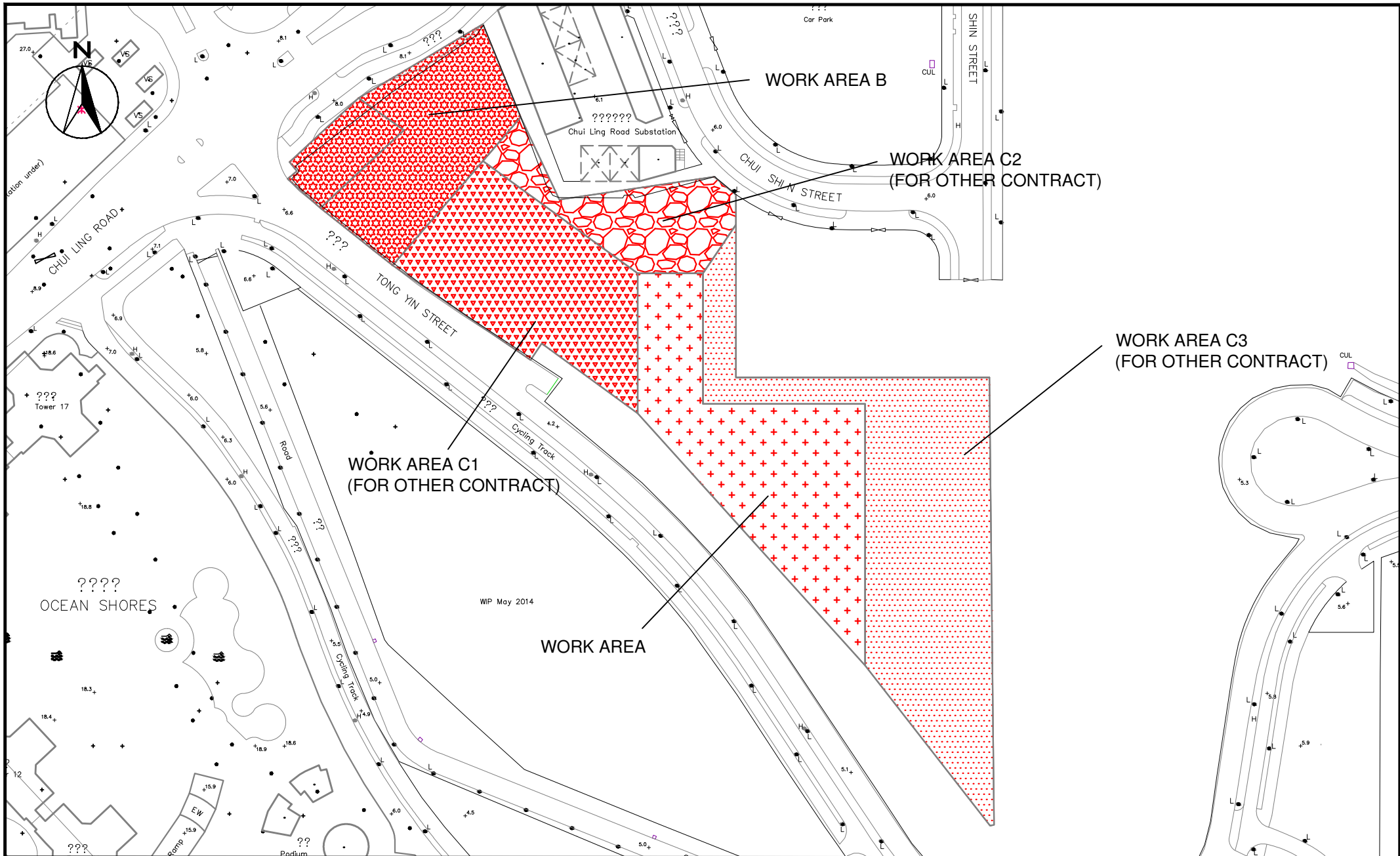
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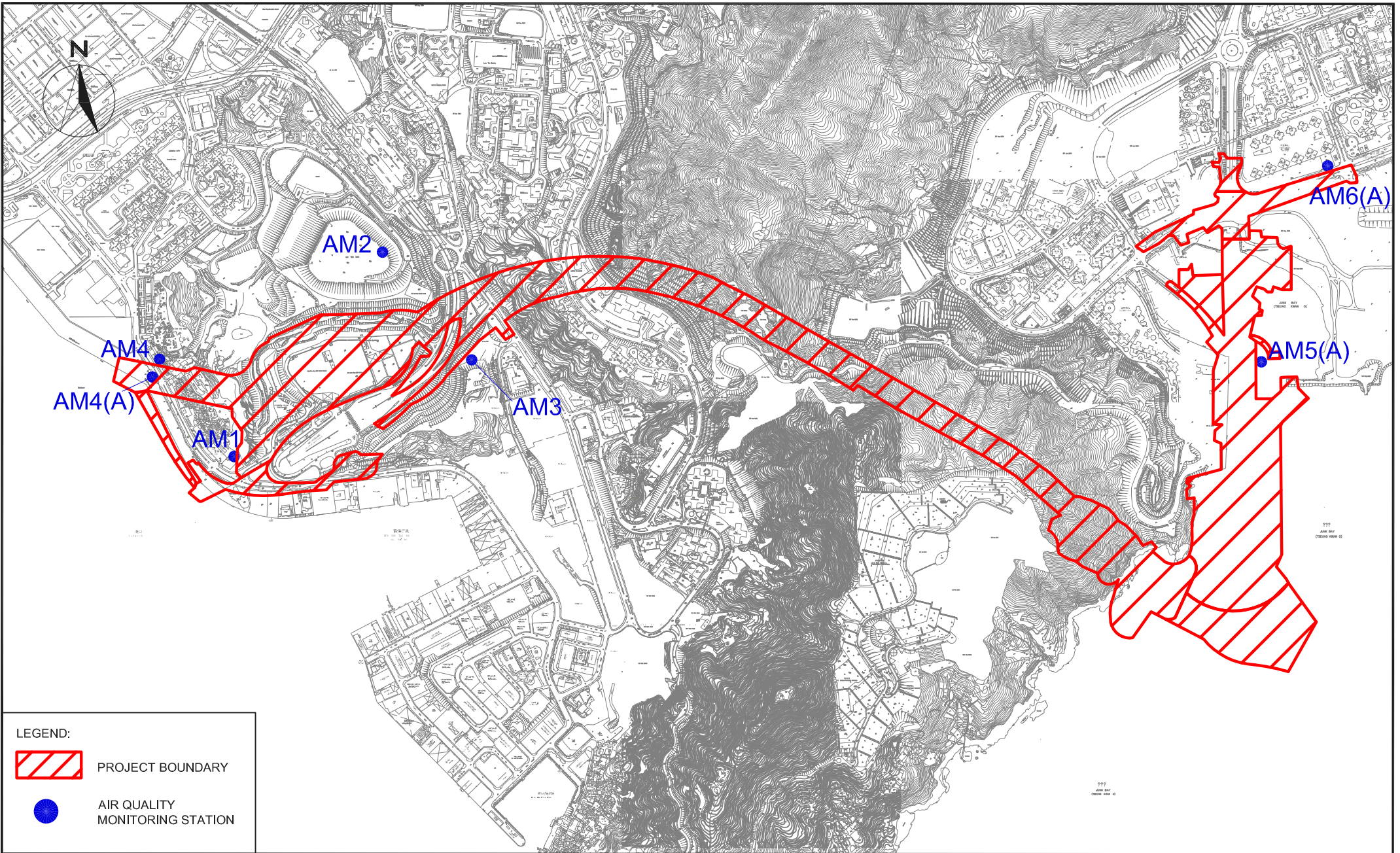







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LEGEND:

 PROJECT BOUNDARY

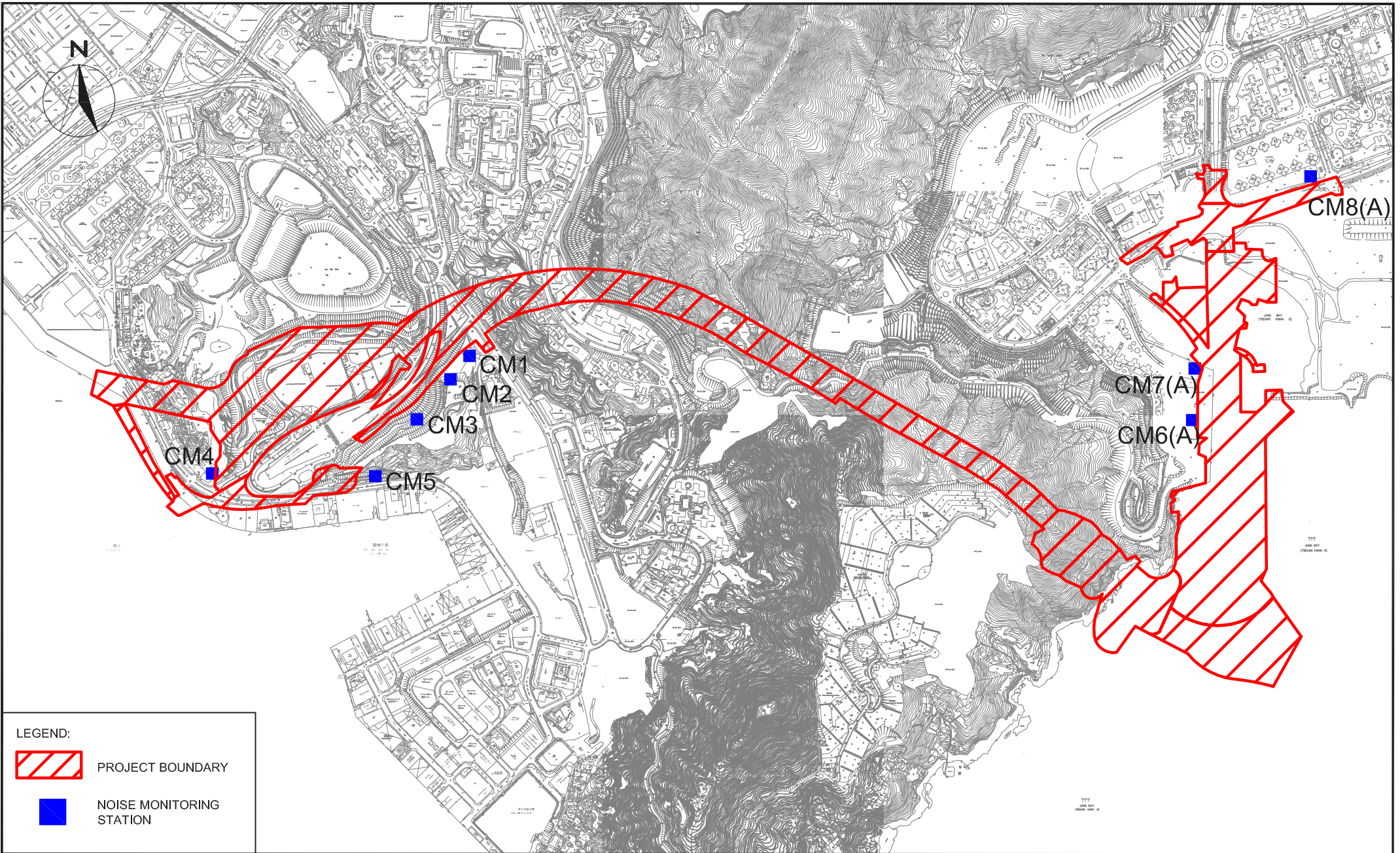
 AIR QUALITY MONITORING STATION

**CINOTECH**  
Cinotech Consultants Limited



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

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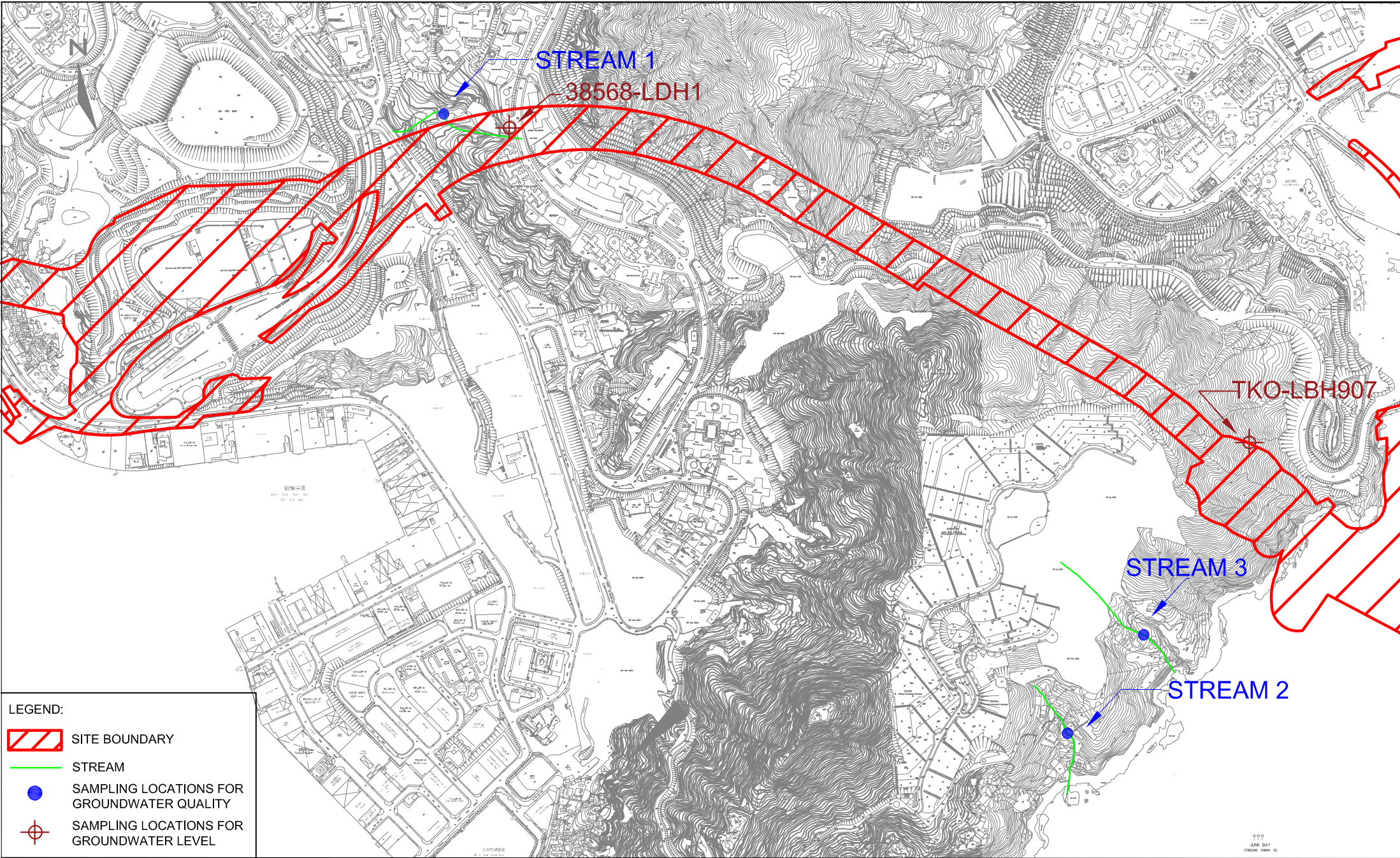






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-  PROJECT BOUNDARY
-  NOISE MONITORING STATION

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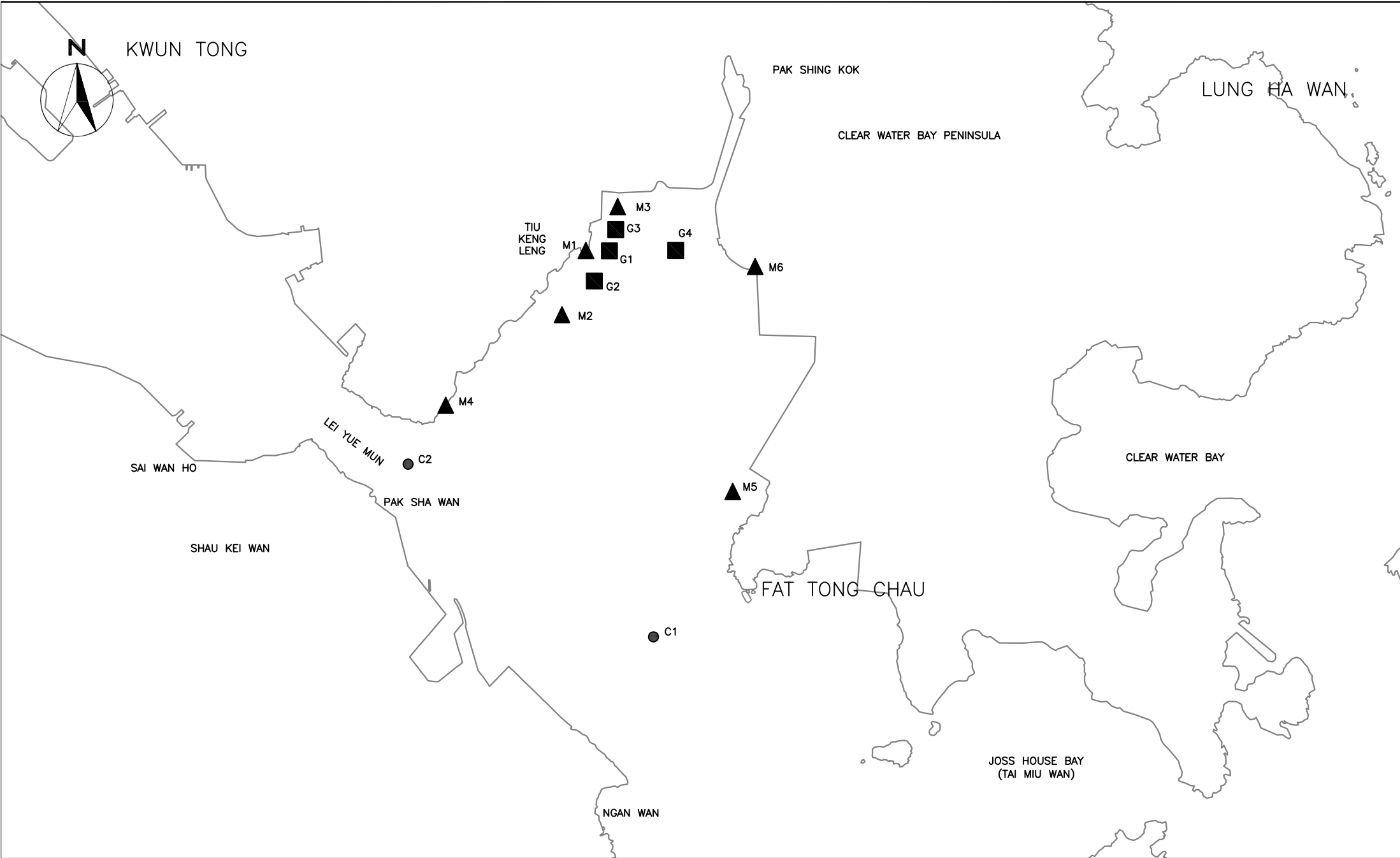
- LEGEND:**
-  SITE BOUNDARY
  -  STREAM
  -  SAMPLING LOCATIONS FOR GROUNDWATER QUALITY
  -  SAMPLING LOCATIONS FOR GROUNDWATER LEVEL



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

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**CINOTECH**

Cinotech Consultants Limited

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

**Locations of Water Quality Monitoring Stations**

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PROJECT NO.	MA16034	FIGURE NO.	5	REV —



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

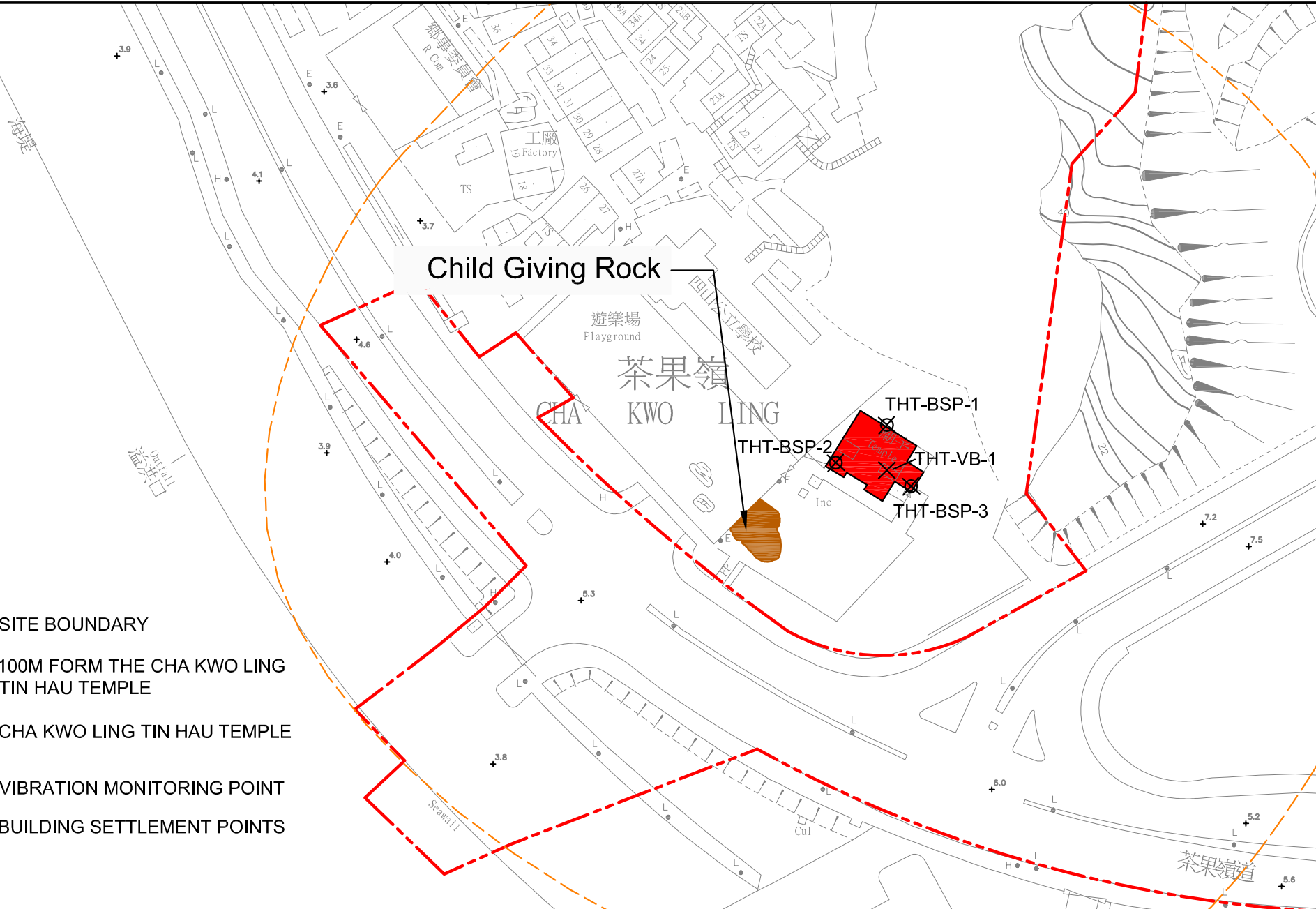
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Project No. MA16034  
 Figure 6





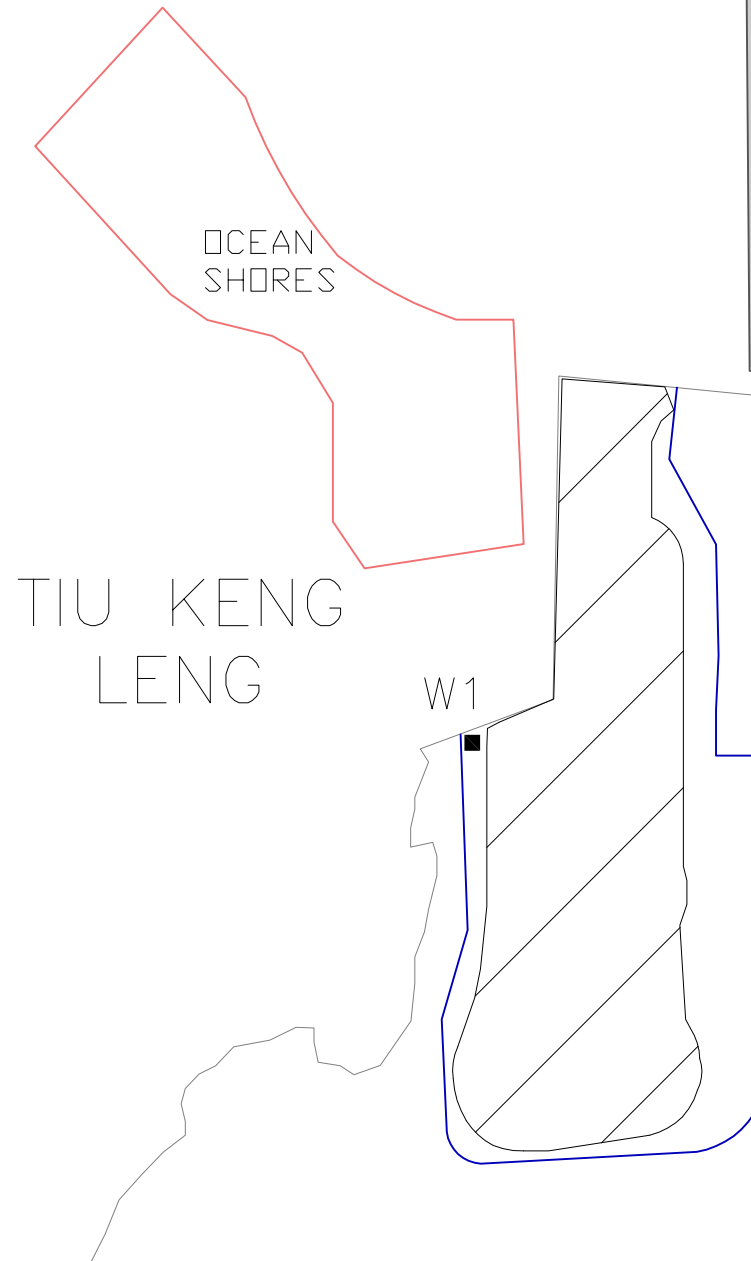
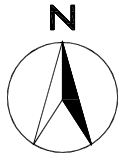




**LEGEND**

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

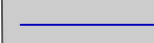
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## LEGEND



IMPACT STATIONS



LOCATION OF TEMPORARY MARINE EMBAYMENT BY STEEL COFFERDAM



RECLAMATION FOOTPRINT

CURRENT SHORELINE

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**APPENDIX A  
ACTION AND LIMIT LEVELS**

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## APPENDIX A – Action and Limit Levels

### Air Quality

#### *1-hr TSP*

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

#### *24-hr TSP*

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

### Noise

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

<sup>1</sup> 70 dB(A) for schools and 65 dB(A) for schools during examination period.

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

<sup>3</sup> 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*

<b>Parameters</b>	<b>Action</b>	<b>Limit</b>
DO in mg L <sup>-1</sup>	7.6	7.6
pH	6.0 – 8.9	6.0 – 9.0
BOD <sub>5</sub> in mg L <sup>-1</sup>	2.0	2.0
TOC in mg L <sup>-1</sup>	Stream 1 and Stream 2: 9	Stream 1 and Stream 2: 9
	Stream 3: 6	Stream 3: 6
Total Nitrogen in mg L <sup>-1</sup>	2.0	2.1
Ammonia-N in mg L <sup>-1</sup>	0.15	0.20
Total Phosphate in mg L <sup>-1</sup>	0.05	0.05
SS in mg L <sup>-1</sup>	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<sub>5</sub>), 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*

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



*Marine Water Quality*

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

Notes:

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

### *Water Quality Monitoring in Temporary Marine Embayment*

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

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
<b>Mortality</b>	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

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**APPENDIX B  
COPIES OF CALIBRATION  
CERTIFICATES**

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**TEST REPORT**

**APPLICANT: CINOTECH SOLUTIONS LTD.**  
**Room 1710, Technology Park,**  
**18 On Lai Street, Shatin,**  
**N.T. , Hong Kong**

Test Report No.:	SC/181228/02
Date of Issue:	2018-12-28
Date Received:	2018-12-27
Date Tested:	2018-12-27
Date Completed:	2018-12-28
Next Due Date:	2019-02-27

**ATTN: Mr. Henry Leung**

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description : Laser Dust Monitor  
Manufacturer : SIBATA  
Model No. : LD-3B  
Serial No. : 2Y6194  
Sensitivity (K) 1 CPM : 0.001 mg/m<sup>3</sup>  
Sen. Adjustment Scale Setting : 578 CPM  
Equipment No. : SA-01-02

**Test Conditions:**

Room Temperature : 21 degree Celsius  
Relative Humidity : 58%

**Test Specifications & Methodology:**

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

**Results:**

Correlation Factor (CF)	<b>0.0029</b>
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*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
*Laboratory Manager*

**TEST REPORT**

**APPLICANT: CINOTECH SOLUTIONS LTD.**  
**Room 1710, Technology Park,**  
**18 On Lai Street, Shatin,**  
**N.T. , Hong Kong**

Test Report No.:	30525
Date of Issue:	2018-12-27
Date Received:	2018-12-24
Date Tested:	2018-12-27
Date Completed:	2018-12-27
Next Due Date:	2019-02-26

**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. : 30117011019  
Flow rate : 0.1 cfm  
Zero Count Test : 0 count per 5 minutes  
Equipment No. : SA-01-03

**Test Conditions:**

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

**Test Specifications & Methodology:**

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

**Results:**

Correlation Factor (CF)	<b>2.50</b>
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*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
*Laboratory Manager*

**TEST REPORT**

**APPLICANT: CINOTECH SOLUTIONS LTD.**  
**Room 1710, Technology Park,**  
**18 On Lai Street, Shatin,**  
**N.T. , Hong Kong**

Test Report No.:	30523A
Date of Issue:	2018-12-16
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-16
Next Due Date:	2019-02-15

**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. : 30117011019  
Flow rate : 0.1 cfm  
Zero Count Test : 0 count per 5 minutes  
Equipment No. : A-27-01

**Test Conditions:**

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

**Test Specifications & Methodology:**

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

**Results:**

Correlation Factor (CF)	<b>1.170</b>
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*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
*Laboratory Manager*

**TEST REPORT**

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

Test Report No.:	30523
Date of Issue:	2018-12-16
Date Received:	2018-12-14
Date Tested:	2018-12-14
Date Completed:	2018-12-16
Next Due Date:	2019-02-15

**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.	: 3011701012
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-07

**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)	1.066
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*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**

Laboratory Manager

**TEST REPORT**

**APPLICANT: CINOTECH SOLUTIONS LTD.**  
**Room 1710, Technology Park,**  
**18 On Lai Street, Shatin,**  
**N.T. , Hong Kong**

Test Report No.:	SC/181228/01
Date of Issue:	2018-12-28
Date Received:	2018-12-27
Date Tested:	2018-12-27
Date Completed:	2018-12-28
Next Due Date:	2019-02-27

**Mr. Henry Leung**

Page: 1 of 1

**Certificate of Calibration**

**Item for Calibration:**

Description	: Laser Dust Monitor
Manufacturer	: SIBATA
Model No.	: LD-3B
Serial No.	: 2Y6193
Sensitivity (K) 1 CPM	: 0.001 mg/m <sup>3</sup>
Sen. Adjustment Scale Setting	: 554 CPM
Equipment No.	: SA-01-01

**Test Conditions:**

Room Temperature	: 21 degree Celsius
Relative Humidity	: 58 %

**Test Specifications & Methodology:**

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

**Results:**

Correlation Factor (CF)	<b>0.0029</b>
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*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
*Laboratory Manager*



# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA16034/05/0015

Project No. AMI - Tin Hau Temple

Date: 21-Dec-18

Next Due Date: 20-Feb-19

Operator: MH

Equipment No.: A-01-05

Model No.: GS2310

Serial No.: 10599

Ambient Condition			
Temperature, Ta (K)	295	Pressure, Pa (mmHg)	766.0

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)] <sup>1/2</sup> Y-axis
1	13.5	3.71	63.35	8.1	2.87
2	9.8	3.16	53.98	5.7	2.41
3	8.1	2.87	49.07	4.9	2.23
4	5.5	2.37	40.44	3.2	1.81
5	3.3	1.83	31.33	2.0	1.43

**By Linear Regression of Y on X**

Slope, mw = 0.0451

Intercept, bw = 0.0009

Correlation coefficient\* = 0.9993

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

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

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

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

Therefore, Set Point; W =  $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  3.70

Remarks: \_\_\_\_\_

Conducted by: Lee Man Ho

Signature: \_\_\_\_\_

Date: 21/12/2018

Checked by: Wk Tang

Signature: \_\_\_\_\_

Date: 21/12/2018

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA16034/08/0015

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 21-Dec-18

Next Due Date: 20-Feb-19

Operator: MH

Equipment No.: A-01-08

Model No.: GS2310

Serial No.: 1287

Ambient Condition			
Temperature, Ta (K)	295.5	Pressure, Pa (mmHg)	766.2

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)] <sup>1/2</sup> Y-axis
1	13.5	3.70	63.31	8.1	2.87
2	10.7	3.30	56.36	6.7	2.61
3	8.6	2.96	50.53	5.3	2.32
4	5.4	2.34	40.04	3.2	1.80
5	3.3	1.83	31.30	2.1	1.46

**By Linear Regression of Y on X**

Slope, mw = 0.0452

Intercept, bw = 0.0316

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 x Qstd + bw)<sup>2</sup> x (760 / Pa) x (Ta / 298) = 3.83

Remarks: \_\_\_\_\_

Conducted by: Bob Man Hoi Signature: hm

Checked by: Wk Tang Signature: Kwan

Date: 21/12/2018

Date: 21/12/2018

# High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA16034/03/0013

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

Date: 21-Dec-18

Next Due Date: 20-Feb-19

Operator: MH

Equipment No.: A-01-03

Model No.: GS2310

Serial No.: 10379

Ambient Condition			
Temperature, Ta (K)	296.1	Pressure, Pa (mmHg)	765.9

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.5	3.56	60.84	7.9	2.83
2	10.7	3.29	56.29	6.8	2.63
3	7.9	2.83	48.37	4.9	2.23
4	5.4	2.34	39.99	3.3	1.83
5	3.2	1.80	30.79	2.1	1.46

**By Linear Regression of Y on X**

Slope, mw = 0.0462

Intercept, bw = 0.0106

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;  $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  3.94

Remarks: \_\_\_\_\_

Conducted by: LEB MAN KEE Signature: \_\_\_\_\_

Date: 21/12/2018

Checked by: Wk Tang Signature: \_\_\_\_\_

Date: 21/12/2018



# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA16034/37/0015

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

Date: 21-Dec-18

Next Due Date: 20-Feb-19

Operator: MH

Equipment No.: A-01-37

Model No.: GS2310

Serial No.: 1704

Ambient Condition			
Temperature, Ta (K)	297.8	Pressure, Pa (mmHg)	764

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] <sup>1/2</sup>	Qstd (CFM) X - axis	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)] <sup>1/2</sup> Y-axis
1	16.3	4.05	69.19	9.2	3.04
2	13.7	3.71	63.43	7.6	2.76
3	9.4	3.08	52.55	5.8	2.42
4	6.7	2.60	44.36	4.1	2.03
5	4.5	2.13	36.36	2.9	1.71

**By Linear Regression of Y on X**

Slope, mw = 0.0400

Intercept, bw = 0.2647

Correlation coefficient\* = 0.9983

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

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

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

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

Therefore, Set Point; W = (mw x Qstd + bw)<sup>2</sup> x (760 / Pa) x (Ta / 298) = 3.92

Remarks: \_\_\_\_\_

Conducted by: LEE MAN YET Signature: \_\_\_\_\_

Date: 21/12/2018

Checked by: W.K. Tang Signature: \_\_\_\_\_

Date: 21/12/2018

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA16034/07/0014

Station AM6 - Park Central

Date: 23-Nov-18

Next Due Date: 22-Jan-19

Operator: MH

Equipment No.: A-01-07

Model No.: GS2310

Serial No.: 10592

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	769.1

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

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.7	3.46	59.20	7.6	2.79
2	9.7	3.15	53.90	6.2	2.52
3	7.5	2.77	47.40	4.7	2.20
4	5.2	2.31	39.47	3.4	1.87
5	3.3	1.84	31.44	2.2	1.50

**By Linear Regression of Y on X**

Slope,  $mw =$  0.0461

Intercept,  $bw =$  0.0424

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

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

Therefore, Set Point;  $W = (mw \times Q_{std} + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.00

Remarks: \_\_\_\_\_

Conducted by: Lee Man Hei Signature: \_\_\_\_\_

Date: 23/11/2018

Checked by: W.K. Tang Signature: \_\_\_\_\_

Date: 23/11/2018

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

# CINOTECH

File No. MA16034/07/0015

Project No. AM6 - Psrk Central

Date: 21-Jan-19 Next Due Date: 20-Mar-19 Operator: SK

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

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

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

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

**By Linear Regression of Y on X**

Slope, mw = 0.0446 Intercept, bw = 0.0705

Correlation coefficient\* = 0.9991

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

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

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

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

Therefore, Set Point; W = (mw x Qstd + bw)<sup>2</sup> x (760 / Pa) x (Ta / 298) = 3.77

Remarks: \_\_\_\_\_

Conducted by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Checked by: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 13, 2018	Rootsmeter S/N: 438320	Ta: 293	°K
Operator: Jim Tisch		Pa: 763.3	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 2896		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4670	3.2	2.00
2	3	4	1	1.0380	6.4	4.00
3	5	6	1	0.9220	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7250	12.8	8.00

Data Tabulation						
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \left( \frac{Ta}{Pa} \right)}$ (y-axis)	
1.0172	0.6934	1.4293	0.9958	0.6788	0.8762	
1.0129	0.9758	2.0213	0.9916	0.9553	1.2392	
1.0107	1.0962	2.2599	0.9895	1.0732	1.3854	
1.0097	1.1422	2.3702	0.9885	1.1182	1.4530	
1.0043	1.3853	2.8586	0.9832	1.3562	1.7524	
<b>QSTD</b>	m=	<b>2.06726</b>	<b>QA</b>	m=	<b>1.29448</b>	
	b=	<b>-0.00045</b>		b=	<b>-0.00028</b>	
	r=	<b>0.99992</b>		r=	<b>0.99992</b>	

Calculations			
Vstd=	$\Delta Vol \left( \frac{Pa - \Delta P}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)$	Va=	$\Delta Vol \left( \frac{Pa - \Delta P}{Pa} \right)$
Qstd=	Vstd/ΔTime	Qa=	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) - b \right)$	Qa=	$1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

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



## TEST REPORT

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

Test Report No.:	29681
Date of Issue:	2018-08-25
Date Received:	2018-08-24
Date Tested:	2018-08-24
Date Completed:	2018-08-25
Next Due Date:	2019-02-24

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

Page: 1 of 2

### Certificate of Calibration

**Item for calibration:**

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

**Test conditions:**

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

**Test Specifications:**

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

**Methodology:**

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

*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

Test Report No.:	29681
Date of Issue:	2018-08-25
Date Received:	2018-08-24
Date Tested:	2018-08-24
Date Completed:	2018-08-25
Next Due Date:	2019-02-24

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
90.3	90	0.3
135	135	0
180.1	180	0.1
225.2	225	0.2
270.2	270	0.2
315	315	0
360	360	0

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

## TEST REPORT

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

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

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

Page: 1 of 1

### Item for calibration:

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

### Test conditions:

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

### Methodology:

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

### Results:

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

PREPARED AND CHECKED BY:

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

  
\_\_\_\_\_  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

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

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

**ATTN:** Mr. Henry Leung

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

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

**Test conditions:**

Room Temperature : 22 degree Celsius  
Relative Humidity : 55%

**Methodology:**

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

**Results:**

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

*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

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

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

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

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

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

**Test conditions:**

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

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

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

*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**

Laboratory Manager

## TEST REPORT

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

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

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

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

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

**Test conditions:**

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

**Test Specifications:**

Performance checking at 94 and 114 dB

**Methodology:**

In-house method, according to manufacturer instruction manual

**Results:**

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

*PREPARED AND CHECKED BY:*

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

  
\_\_\_\_\_  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

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

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

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

Page: 1 of 1

### Item for calibration:

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

### Test conditions:

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

### Methodology:

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

### Results:

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

PREPARED AND CHECKED BY:

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

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

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

Test Report No.:	C/N/181213/1
Date of Issue:	2018-12-13
Date Received:	2018-12-12
Date Tested:	2018-12-12
Date Completed:	2018-12-13
Next Due Date:	2019-12-12

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 979
Serial No.	: 27189
Microphone No.	: 165399
Equipment No.	: SN-01-01

**Test conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 58 %

**Methodology:**

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

**Results:**

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

*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
Laboratory Manager



## TEST REPORT

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

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

Page: 1 of 1

### Certificate of Calibration

**Item for calibration:**

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

**Test conditions:**

Room Temperature	: 22 degree Celsius
Relative Humidity	: 58 %

**Methodology:**

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

**Results:**

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

*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
Laboratory Manager

**TEST REPORT**

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

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

**ATTN:** Miss Mei Ling Tang

Page: 1 of 2

**Certificate of Calibration**

**Item for calibration:**

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

**Test conditions:**

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

**Test Specifications:**

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

**Methodology:**

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

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**

Laboratory Manager

## TEST REPORT

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

Page: 2 of 2

### Certificate of Calibration

**Results:**

**Conductivity performance checking**

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

**Temperature performance checking**

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

**pH performance checking**

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

**D.O. performance checking**

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

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

**Turbidity performance checking**

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

**Depth performance checking**

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

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

**TEST REPORT**

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

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

**ATTN:** Miss Mei Ling Tang

Page: 1 of 2

**Certificate of Calibration**

**Item for calibration:**

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-46
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO1 Sonde, 100 meter Depth, 4 Sensor ports	599501-02	16J102318
- EXO Optical DO Sensor, Ti	599100-01	16J100971
- EXO conductivity/Temperature Sensor, Ti	599870	16H100205
- EXO Turbidity Sensor, Ti	599101-01	16J101124
- EXO pH Sensor Assembly, Guarded, Ti	599701	16J101292

**Test conditions:**

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

**Test Specifications:**

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

**Methodology:**

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

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

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



**PATRICK TSE**

Laboratory Manager

## TEST REPORT

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

Page: 2 of 2

### Certificate of Calibration

**Results:**

**Conductivity performance checking**

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

**Temperature performance checking**

	Instrument Readings ( $^{\circ}\text{C}$ )	Correction ( $^{\circ}\text{C}$ )	Comment
Reference thermometer- E431 Readings ( $^{\circ}\text{C}$ )			
20.0	20.000	0.000	N/A

**pH performance checking**

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.02	$4.00 \pm 0.10$	Pass
pH QC buffer 6.86	6.86	$6.86 \pm 0.10$	Pass
pH QC buffer 9.18	9.14	$9.18 \pm 0.10$	Pass

**D.O. performance checking**

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.07	$<0.1\text{mg}/\text{L}$	Pass

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Winkler Titration value (mg/L)			
8.00	8.09	Difference between Titration value and instrument reading $<0.2\text{mg}/\text{L}$	Pass

**Turbidity performance checking**

	Instrument Readings (NTU)	Acceptance Criteria	Comment
Turbidity stock solution			
10 NTU	9.98	9.0-11.0	Pass
50 NTU	50.01	45.0-55.0	Pass
100 NTU	99.9	90.0-110.0	Pass

**Depth performance checking**

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

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

# Leica Geosystems Calibration Certificate Blue

Calibration Certificate Blue without measurement values issued by Authorised Service Centre

Product	LS15 0.3mm Digital Level with Auto Focus	Certificate No.	701141-14092018
Article No.	804549	Inspection Date	14.09.2018
Serial No.	701141	Order No.	501195285
Equipment No.	7434370	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.



Leica Geosystems Ltd.

14.09.2018



  
Stella Kam  
Operations Manager

  
Jacky Ng  
Service Manager

Certificate No. 701141-14092018  
Article No. 5003367

This Certificate may not be reproduced other than in full except with prior written approval of the issuing authority.

Leica Geosystems AG  
Heinrich-Wild-Strasse  
9435 Heerbrugg  
Switzerland  
Telephone +41 71 / 727 31 31  
[www.leica-geosystems.com](http://www.leica-geosystems.com)







## Calibration Certificate

Certificate No. : CSA85446

Page : 2 of 2

### Calibration Results (Unit in: mm)

1. Maximum Flatness (Fixed jaw face and Sliding jaw face)  
Error : 0.02
2. Squareness of the Face of Fixed Jaw Check (external)  
Error : 0.02
3. Parallelism of the Face (external)  
Error : 0.01
4. Zero Check : 0.00
5. Scale Accuracy

	Applied Value	UUT Reading	Correction	Expanded Uncertainty	Coverage Factor
External Measurement Jaw	5.12	5.12	0.00	0.02	2.0
	10.24	10.23	0.01		
	15.36	15.34	0.02		
	21.50	21.49	0.01		
	25.00	25.00	0.00		
	50.00	50.00	0.00		
	75.00	75.00	0.00		
	100.00	100.00	0.00		
	125.00	125.00	0.00		
Internal Measurement Jaw	150.00	149.99	0.01		
	25.00	25.00	0.00		
	150.00	150.00	0.00		

- Note :
- Correction = Applied Value - UUT Reading
  - Uncertainty quoted are based on 95 % confidence level.
  - UUT reading are mean of three measurements.
  - Result of scale accuracy measured on UUT tip.

\*\*\* End of certificate \*\*\*





## CERTIFICATE OF CALIBRATION

Calibration Date: 13 September, 2018

Model: iCivil-1011 Tiltmeter  
Serial No. : HK110118  
Method Used: By direct measurement

**Laboratory Conditions:**

Ambient Temperature: (27±2)°C  
Relative Humidity: (50 ±20)%

Test Reference	Model	Equipment ID
Dual-Axis Digital Angle Protractor	TLL-90S	EPC001

**Calibration Result**

X-Axis Measurement

Applied Angle (degree)	UUT Reading (degree)	Error (degree)
10.028	10.018	-0.01
5.006	4.992	-0.014
1.027	1.018	-0.009
0.001	0.004	0.003
-1.020	-1.011	0.009
-5.069	-5.066	0.003
-9.995	-10.001	-0.006

Remarks:

1. The above calibration data applies only to the instrument described above.

Checked By: Leung Man Hin

Date: 13 September, 2018

\*\*\* End of Report\*\*\*



## CERTIFICATE OF CALIBRATION

Calibration Date: 10 September, 2018

Model: iCivil-1011 Tiltmeter  
Serial No. : HK110120  
Method Used: By direct measurement

### Laboratory Conditions:

Ambient Temperature: (27±2)°C  
Relative Humidity: (50 ±20)%

Test Reference	Model	Equipment ID
Dual-Axis Digital Angle Protractor	TLL-90S	EPC001

### Calibration Result

#### X-Axis Measurement

Applied Angle (degree)	UUT Reading (degree)	Error (degree)
10.024	10.013	-0.011
5.009	5.003	-0.006
1.014	1.016	0.002
0.003	0.007	0.004
-1.018	-1.011	0.007
-5.004	-4.974	0.03
-10.008	-9.958	0.05

#### Remarks:

1. The above calibration data applies only to the instrument described above.

Checked By: Leung Man Hin

Date: 10 September, 2018

\*\*\* End of Report\*\*\*



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE15892)  
Part Number: 714A9701  
Serial No.: BG14849  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG14849)  
Model No.: 716A0403  
Serial No.: BE15892  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17906)  
Part Number: 714A9701  
Serial No.: BG14853  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG14853)  
Model No.: 716A0403  
Serial No.: BE17906  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG14852)  
Model No.: 716A0403  
Serial No.: BE15890  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE15890)  
Part Number: 714A9701  
Serial No.: BG14852  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE16223)  
Part Number: 714A9701  
Serial No.: BG16955  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE


Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG16955)  
Model No.: 716A0403  
Serial No.: BE16223  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17504)  
Part Number: 714A9701  
Serial No.: BG20672  
Calibration Date: 10 April 2018  
Next Calibration Date: 10 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 10 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG20672)  
Model No.: 716A0403  
Serial No.: BE17504  
Calibration Date: 10 April 2018  
Next Calibration Date: 10 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Wong, Keefe Solomon )

Date: 10 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG15353)  
Model No.: 716A0403  
Serial No.: BE15891  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE15891)  
Part Number: 714A9701  
Serial No.: BG15353  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

(Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG16513)  
Model No.: 716A0403  
Serial No.: BE16355  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE16355)  
Part Number: 714A9701  
Serial No.: BG16513  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone BG15180)  
Model No.: 716A0403  
Serial No.: BE15894  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE15894)  
Part Number: 714A9701  
Serial No.: BG15180  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17902)  
Part Number: 714A9701  
Serial No.: BG20674  
Calibration Date: 10 April 2018  
Next Calibration Date: 10 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 10 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG20674)  
Model No.: 716A0403  
Serial No.: BE17902  
Calibration Date: 10 April 2018  
Next Calibration Date: 10 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 10 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17905)  
Part Number: 714A9701  
Serial No.: BG16514  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG16514)  
Model No.: 716A0403  
Serial No.: BE17905  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG20673)  
Model No.: 716A0403  
Serial No.: BE13849  
Calibration Date: 10 April 2018  
Next Calibration Date: 10 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 10 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE13849)  
Part Number: 714A9701  
Serial No.: BG20673  
Calibration Date: 10 April 2018  
Next Calibration Date: 10 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 10 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE13853)  
Part Number: 714A9701  
Serial No.: BG16512  
Calibration Date: 11 April 2018  
Next Calibration Date: 11 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 11 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG16512)  
Model No.: 716A0403  
Serial No.: BE13853  
Calibration Date: 11 April 2018  
Next Calibration Date: 11 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_



( Wong, Keefe Solomon )

Date: 11 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17506)  
Part Number: 714A9701  
Serial No.: BG16959  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG16959)  
Model No.: 716A0403  
Serial No.: BE17506  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17904)  
Part Number: 714A9701  
Serial No.: BG14847  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG14847)  
Model No.: 716A0403  
Serial No.: BE17904  
Calibration Date: 9 April 2018  
Next Calibration Date: 9 April 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Wong, Keefe Solomon )

Date: 9 April 2018



## CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone BG16957)  
Model No.: 716A0403  
Serial No.: BE17505  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE17505)  
Part Number: 714A9701  
Serial No.: BG16957  
Calibration Date: 22 March 2018  
Next Calibration Date: 22 March 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Leung Man Hin, Eric )

Date: 22 March 2018



## CALIBRATION CERTIFICATE


Calibration Item: Minimate Plus Unit (Calibration with Geophone  
BG17240)  
Model No.: 716A0403  
Serial No.: BE20015  
Calibration Date: 10 May 2018  
Next Calibration Date: 10 May 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
( Leung Man Hin, Eric )

Date: 10 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE20015)  
Part Number: 714A9701  
Serial No.: BG17240  
Calibration Date: 10 May 2018  
Next Calibration Date: 10 May 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 10 May 2018



# CALIBRATION CERTIFICATE

Calibration Item: Minimate Plus Unit (Calibration with Geophone

BG19189)  
Model No.: 716A0403  
Serial No.: BE21658  
Calibration Date: 10 May 2018  
Next Calibration Date: 10 May 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 10 May 2018



# CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit BE21658)

Part Number: 714A9701  
Serial No.: BG19189  
Calibration Date: 10 May 2018  
Next Calibration Date: 10 May 2019  
Method Used: In-house Method B3-001  
In-house Testing Procedure No.: B3-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

( Leung Man Hin, Eric )

Date: 10 May 2018



## CALIBRATION CERTIFICATE


Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12902)  
Part Number: 721A2901  
Serial No.: UM12902  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12902)  
Model No.: 721A2501  
Serial No.: UM12902  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12904)  
Model No.: 721A2501  
Serial No.: UM12904  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12904)  
Part Number: 721A2901  
Serial No.: UM12904  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12905)  
Part Number: 721A2901  
Serial No.: UM12905  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12905)  
Model No.: 721A2501  
Serial No.: UM12905  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12906)  
Part Number: 721A2901  
Serial No.: UM12906  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12906)  
Model No.: 721A2501  
Serial No.: UM12906  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_



(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12907)  
Model No.: 721A2501  
Serial No.: UM12907  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_

  
(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12907)  
Part Number: 721A2901  
Serial No.: UM12907  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_

(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12928)  
Part Number: 721A2901  
Serial No.: UM12928  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_

  
\_\_\_\_\_  
(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12928)  
Model No.: 721A2501  
Serial No.: UM12928  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_



(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM12929)  
Model No.: 721A2501  
Serial No.: UM12929  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM12929)  
Part Number: 721A2901  
Serial No.: UM12929  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM13698)  
Model No.: 721A2501  
Serial No.: UM13698  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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

Authorized by: \_\_\_\_\_

  
(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM13698)  
Part Number: 721A2901  
Serial No.: UM13698  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

(Leung Man Hin, Eric)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: TRIAXIAL GEOPHONE (Calibration with main unit UM13701)  
Part Number: 721A2901  
Serial No.: UM13701  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
(Wong, Keefe Solomon)

Date: 14 May 2018



## CALIBRATION CERTIFICATE

Calibration Item: Micromate Unit (Calibration with Geophone  
UM13701)  
Model No.: 721A2501  
Serial No.: UM13701  
Calibration Date: 14 May 2018  
Next Calibration Date: 14 May 2019  
Method Used: In-house Method MM-001  
In-house Testing Procedure No.: MM-001

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

\*References are traceable to NIST or equivalent.

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Authorized by: \_\_\_\_\_

  
(Wong, Keefe Solomon)

Date: 14 May 2018



## Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13695  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403

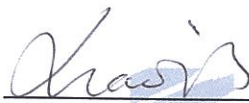
*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By:



Xiaoming Yang

 **Instantel**<sup>®</sup>

**Instantel**



## Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13696  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403

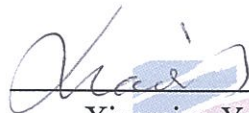
*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By:

  
Xiaoming Yang

 **Instantel**<sup>®</sup>



# Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13699  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403

*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By:



Xiaoming Yang



Instantel



## Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13702  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403


*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By:

  
Xiaoming Yang

 **Instantel**<sup>®</sup>



## Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13703  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403

*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By: \_\_\_\_\_

Xiaoming Yang

 **Instantel**<sup>®</sup>



## Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13704  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403

*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By:



Xiaoming Yang



Instantel



## Calibration Certificate

Part Number: 721A2501  
Description: Micromate ISEE Base Unit

Serial Number: UM13708  
Calibration Date: MAY 04 2018  
Calibration Equipment: 714J7403


*Instantel certifies that the above product was calibrated in accordance with the applicable Instantel procedures. These procedures are part of a quality system that is designed to assure that the product listed above meets or exceeds Instantel specifications.*

*Instantel further certifies that the measurement instruments used during the calibration of this product are traceable to the National Institute of Standards and Technology; or National Research Council of Canada. Evidence of traceability is on file at Instantel and is available upon request.*

*The environment in which this product was calibrated is maintained within the operating specifications of the instrument.*

*Please note that the sensor check function is intended to check that the sensors are connected to the unit, installed in the proper orientation and sufficiently level to operate properly. This function should not be confused with a formal calibration, which requires the sensors be checked against a reference that is traceable to a known standard. Instantel recommends that products be returned to Instantel or an authorized service and calibration facility for annual calibration.*

Calibrated By:

  
Xiaoming Yang

 **Instantel**

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**APPENDIX C**  
**WEATHER INFORMATION**

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

**I. Mean Wind Speed and Wind Direction**

<b>Date</b>	<b>Mean Air Temperature (°C)</b>	<b>Mean Relative Humidity (%)</b>	<b>Precipitation (mm)</b>
1 January 2019	13.8	68	Trace
2 January 2019	14.8	68	Trace
3 January 2019	16.2	84	0.1
4 January 2019	18.8	83	0.1
5 January 2019	19.8	87	-
6 January 2019	18.6	83	Trace
7 January 2019	18.5	83	-
8 January 2019	19.2	84	0.2
9 January 2019	17.8	84	-
10 January 2019	19.2	82	-
11 January 2019	20.6	84	-
12 January 2019	20.9	83	Trace
13 January 2019	18.5	89	Trace
14 January 2019	18.5	86	Trace
15 January 2019	19	88	4
16 January 2019	17.3	72	-
17 January 2019	16.7	70	-
18 January 2019	17.1	75	-
19 January 2019	18.8	75	0.2
20 January 2019	20.4	73	0.1

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

**I. Mean Wind Speed and Wind Direction**

<b>Date</b>	<b>Mean Air Temperature (°C)</b>	<b>Mean Relative Humidity (%)</b>	<b>Precipitation (mm)</b>
21 January 2019	17.8	64	-
22 January 2019	16	53	-
23 January 2019	16.2	62	-
24 January 2019	16.9	71	-
25 January 2019	18.7	67	-
26 January 2019	18.2	73	-
27 January 2019	16.9	71	-
28 January 2019	17.5	68	-
29 January 2019	18.5	74	-
30 January 2019	19.3	73	-
31 January 2019	21.7	76	-

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

\*\* Trace means rainfall less than 0.05 mm



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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
1 Jan 2019	0:00	0.4	WNW
1 Jan 2019	1:00	0.8	NE
1 Jan 2019	2:00	0.4	NE
1 Jan 2019	3:00	1.2	E
1 Jan 2019	4:00	0.6	NE
1 Jan 2019	5:00	1.2	NE
1 Jan 2019	6:00	1.5	NNE
1 Jan 2019	7:00	0.9	NNE
1 Jan 2019	8:00	1.6	NNE
1 Jan 2019	9:00	1.9	NNE
1 Jan 2019	10:00	1.4	E
1 Jan 2019	11:00	2.1	NE
1 Jan 2019	12:00	2.4	NE
1 Jan 2019	13:00	2.2	NE
1 Jan 2019	14:00	2.4	E
1 Jan 2019	15:00	2.2	NE
1 Jan 2019	16:00	1.9	NNE
1 Jan 2019	17:00	0.9	NNE
1 Jan 2019	18:00	1.1	NNE
1 Jan 2019	19:00	1.1	NE
1 Jan 2019	20:00	1.4	ENE
1 Jan 2019	21:00	0.9	ENE
1 Jan 2019	22:00	1.9	NE
1 Jan 2019	23:00	1.6	NE
2 Jan 2019	0:00	1.2	ENE
2 Jan 2019	1:00	1.1	N
2 Jan 2019	2:00	0.9	N
2 Jan 2019	3:00	1.3	NE
2 Jan 2019	4:00	1.1	NE
2 Jan 2019	5:00	1.2	N
2 Jan 2019	6:00	1.2	ENE
2 Jan 2019	7:00	1.0	NNE
2 Jan 2019	8:00	1.4	N
2 Jan 2019	9:00	1.5	NE
2 Jan 2019	10:00	1.3	ENE
2 Jan 2019	11:00	1.6	NE

Date	Time	Wind Speed m/s	Direction
2 Jan 2019	12:00	1.7	N
2 Jan 2019	13:00	1.8	N
2 Jan 2019	14:00	1.7	E
2 Jan 2019	15:00	1.8	NE
2 Jan 2019	16:00	1.6	E
2 Jan 2019	17:00	1.8	NE
2 Jan 2019	18:00	1.5	N
2 Jan 2019	19:00	1.7	NE
2 Jan 2019	20:00	1.3	NE
2 Jan 2019	21:00	1.0	SW
2 Jan 2019	22:00	0.2	NW
2 Jan 2019	23:00	0.1	NE
3 Jan 2019	0:00	0.1	NW
3 Jan 2019	1:00	0.1	NE
3 Jan 2019	2:00	0.1	SW
3 Jan 2019	3:00	0.1	N
3 Jan 2019	4:00	0.0	SW
3 Jan 2019	5:00	0.1	S
3 Jan 2019	6:00	0.2	NW
3 Jan 2019	7:00	0.1	SSW
3 Jan 2019	8:00	0.1	SSW
3 Jan 2019	9:00	0.1	SSE
3 Jan 2019	10:00	0.1	SE
3 Jan 2019	11:00	0.1	NNE
3 Jan 2019	12:00	0.0	NNE
3 Jan 2019	13:00	0.1	NE
3 Jan 2019	14:00	1.2	ENE
3 Jan 2019	15:00	0.1	SSE
3 Jan 2019	16:00	0.2	SE
3 Jan 2019	17:00	0.8	ESE
3 Jan 2019	18:00	0.4	WNW
3 Jan 2019	19:00	0.4	WNW
3 Jan 2019	20:00	0.7	NW
3 Jan 2019	21:00	0.1	NNW
3 Jan 2019	22:00	0.1	ESE
3 Jan 2019	23:00	0.1	WSW

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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
4 Jan 2019	0:00	1.0	WSW
4 Jan 2019	1:00	0.7	NW
4 Jan 2019	2:00	0.9	NW
4 Jan 2019	3:00	0.2	WNW
4 Jan 2019	4:00	1.0	ESE
4 Jan 2019	5:00	1.1	SE
4 Jan 2019	6:00	0.1	ESE
4 Jan 2019	7:00	1.7	NE
4 Jan 2019	8:00	1.2	ENE
4 Jan 2019	9:00	1.8	ENE
4 Jan 2019	10:00	1.5	NE
4 Jan 2019	11:00	2.0	ENE
4 Jan 2019	12:00	2.4	NE
4 Jan 2019	13:00	2.5	NE
4 Jan 2019	14:00	2.1	ENE
4 Jan 2019	15:00	1.8	NE
4 Jan 2019	16:00	1.2	ENE
4 Jan 2019	17:00	1.0	NE
4 Jan 2019	18:00	1.0	ENE
4 Jan 2019	19:00	1.6	NNE
4 Jan 2019	20:00	0.7	NNE
4 Jan 2019	21:00	0.6	ENE
4 Jan 2019	22:00	0.3	NE
4 Jan 2019	23:00	0.2	ESE
5 Jan 2019	0:00	1.5	SE
5 Jan 2019	1:00	1.2	SSE
5 Jan 2019	2:00	1.0	NNE
5 Jan 2019	3:00	1.4	NE
5 Jan 2019	4:00	1.2	NNE
5 Jan 2019	5:00	1.9	NE
5 Jan 2019	6:00	1.8	ENE
5 Jan 2019	7:00	0.9	ENE
5 Jan 2019	8:00	1.3	ENE
5 Jan 2019	9:00	2.0	NE
5 Jan 2019	10:00	2.0	NE
5 Jan 2019	11:00	1.9	ENE

Date	Time	Wind Speed m/s	Direction
5 Jan 2019	12:00	1.9	ENE
5 Jan 2019	13:00	1.3	NE
5 Jan 2019	14:00	1.5	NE
5 Jan 2019	15:00	1.3	NE
5 Jan 2019	16:00	1.4	NE
5 Jan 2019	17:00	1.0	E
5 Jan 2019	18:00	1.2	SE
5 Jan 2019	19:00	1.3	ESE
5 Jan 2019	20:00	0.4	ENE
5 Jan 2019	21:00	0.8	NE
5 Jan 2019	22:00	0.1	ENE
5 Jan 2019	23:00	0.2	NE
6 Jan 2019	0:00	0.2	NNE
6 Jan 2019	1:00	0.1	NNE
6 Jan 2019	2:00	0.1	NE
6 Jan 2019	3:00	1.5	NE
6 Jan 2019	4:00	0.8	ENE
6 Jan 2019	5:00	0.2	WSW
6 Jan 2019	6:00	0.2	NE
6 Jan 2019	7:00	0.5	NNE
6 Jan 2019	8:00	0.4	NE
6 Jan 2019	9:00	0.3	E
6 Jan 2019	10:00	1.4	NE
6 Jan 2019	11:00	1.0	ENE
6 Jan 2019	12:00	1.6	ENE
6 Jan 2019	13:00	1.7	NE
6 Jan 2019	14:00	1.5	NE
6 Jan 2019	15:00	1.8	ESE
6 Jan 2019	16:00	1.7	NE
6 Jan 2019	17:00	0.9	NNE
6 Jan 2019	18:00	0.8	ENE
6 Jan 2019	19:00	0.5	NE
6 Jan 2019	20:00	0.9	NE
6 Jan 2019	21:00	1.0	NE
6 Jan 2019	22:00	1.6	E
6 Jan 2019	23:00	1.9	NNE



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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
7 Jan 2019	0:00	1.0	E
7 Jan 2019	1:00	0.2	NNE
7 Jan 2019	2:00	0.7	NE
7 Jan 2019	3:00	1.0	NNE
7 Jan 2019	4:00	1.4	NNE
7 Jan 2019	5:00	1.7	N
7 Jan 2019	6:00	1.1	NNE
7 Jan 2019	7:00	1.4	ENE
7 Jan 2019	8:00	1.4	ENE
7 Jan 2019	9:00	1.1	NNE
7 Jan 2019	10:00	1.0	NE
7 Jan 2019	11:00	1.5	NE
7 Jan 2019	12:00	2.2	NNE
7 Jan 2019	13:00	1.8	NNE
7 Jan 2019	14:00	1.9	ENE
7 Jan 2019	15:00	2.1	ENE
7 Jan 2019	16:00	1.9	NE
7 Jan 2019	17:00	1.7	NE
7 Jan 2019	18:00	1.8	NNE
7 Jan 2019	19:00	1.7	ENE
7 Jan 2019	20:00	1.2	ENE
7 Jan 2019	21:00	1.9	NNE
7 Jan 2019	22:00	2.0	NNE
7 Jan 2019	23:00	1.9	NNE
8 Jan 2019	0:00	2.5	NE
8 Jan 2019	1:00	2.2	N
8 Jan 2019	2:00	2.4	NE
8 Jan 2019	3:00	1.5	N
8 Jan 2019	4:00	1.0	N
8 Jan 2019	5:00	1.4	ENE
8 Jan 2019	6:00	1.2	ENE
8 Jan 2019	7:00	0.8	NE
8 Jan 2019	8:00	1.3	NE
8 Jan 2019	9:00	1.5	NNE
8 Jan 2019	10:00	2.0	ENE
8 Jan 2019	11:00	1.3	ENE

Date	Time	Wind Speed m/s	Direction
8 Jan 2019	12:00	2.2	NE
8 Jan 2019	13:00	2.3	NE
8 Jan 2019	14:00	1.3	ENE
8 Jan 2019	15:00	1.2	ENE
8 Jan 2019	16:00	1.5	NE
8 Jan 2019	17:00	0.7	NNE
8 Jan 2019	18:00	1.4	NNE
8 Jan 2019	19:00	1.1	NE
8 Jan 2019	20:00	0.5	N
8 Jan 2019	21:00	0.0	NE
8 Jan 2019	22:00	0.1	NE
8 Jan 2019	23:00	1.0	NNE
9 Jan 2019	0:00	0.8	ESE
9 Jan 2019	1:00	0.2	NE
9 Jan 2019	2:00	0.4	NNE
9 Jan 2019	3:00	0.1	NE
9 Jan 2019	4:00	0.7	NE
9 Jan 2019	5:00	0.9	N
9 Jan 2019	6:00	1.1	NE
9 Jan 2019	7:00	1.4	NE
9 Jan 2019	8:00	1.2	N
9 Jan 2019	9:00	0.9	N
9 Jan 2019	10:00	1.0	NE
9 Jan 2019	11:00	1.1	NNE
9 Jan 2019	12:00	1.6	NE
9 Jan 2019	13:00	1.7	E
9 Jan 2019	14:00	1.6	NE
9 Jan 2019	15:00	1.7	SE
9 Jan 2019	16:00	1.8	SSE
9 Jan 2019	17:00	1.0	NE
9 Jan 2019	18:00	1.7	NNE
9 Jan 2019	19:00	0.2	ENE
9 Jan 2019	20:00	0.1	NE
9 Jan 2019	21:00	0.1	WNW
9 Jan 2019	22:00	0.0	NW
9 Jan 2019	23:00	0.1	WNW

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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
10 Jan 2019	0:00	0.1	N
10 Jan 2019	1:00	0.1	NE
10 Jan 2019	2:00	0.1	NNE
10 Jan 2019	3:00	0.1	NE
10 Jan 2019	4:00	0.0	N
10 Jan 2019	5:00	0.0	NW
10 Jan 2019	6:00	0.1	W
10 Jan 2019	7:00	0.1	NW
10 Jan 2019	8:00	0.1	SW
10 Jan 2019	9:00	0.0	SE
10 Jan 2019	10:00	0.1	SSE
10 Jan 2019	11:00	0.7	SE
10 Jan 2019	12:00	1.0	SE
10 Jan 2019	13:00	1.5	SSE
10 Jan 2019	14:00	1.4	S
10 Jan 2019	15:00	0.7	SE
10 Jan 2019	16:00	0.8	S
10 Jan 2019	17:00	0.7	SW
10 Jan 2019	18:00	0.3	SW
10 Jan 2019	19:00	0.7	W
10 Jan 2019	20:00	0.1	WNW
10 Jan 2019	21:00	0.0	NW
10 Jan 2019	22:00	0.1	NNW
10 Jan 2019	23:00	1.4	NE
11 Jan 2019	0:00	2.5	ENE
11 Jan 2019	1:00	1.5	NNE
11 Jan 2019	2:00	1.7	NE
11 Jan 2019	3:00	1.4	NE
11 Jan 2019	4:00	1.5	ENE
11 Jan 2019	5:00	1.9	NNE
11 Jan 2019	6:00	1.3	NE
11 Jan 2019	7:00	1.1	NNE
11 Jan 2019	8:00	1.5	NE
11 Jan 2019	9:00	1.9	E
11 Jan 2019	10:00	2.0	NE
11 Jan 2019	11:00	1.8	ENE

Date	Time	Wind Speed m/s	Direction
11 Jan 2019	12:00	1.5	NE
11 Jan 2019	13:00	1.8	NE
11 Jan 2019	14:00	1.7	E
11 Jan 2019	15:00	1.0	NNE
11 Jan 2019	16:00	1.5	E
11 Jan 2019	17:00	1.1	E
11 Jan 2019	18:00	0.1	ENE
11 Jan 2019	19:00	1.0	NE
11 Jan 2019	20:00	1.3	NNE
11 Jan 2019	21:00	1.3	ENE
11 Jan 2019	22:00	1.4	NE
11 Jan 2019	23:00	1.4	E
12 Jan 2019	0:00	1.1	NE
12 Jan 2019	1:00	1.3	N
12 Jan 2019	2:00	1.5	NE
12 Jan 2019	3:00	1.2	ENE
12 Jan 2019	4:00	0.6	NE
12 Jan 2019	5:00	0.5	NNE
12 Jan 2019	6:00	0.9	ENE
12 Jan 2019	7:00	0.8	ESE
12 Jan 2019	8:00	0.8	SE
12 Jan 2019	9:00	0.9	SE
12 Jan 2019	10:00	0.7	ESE
12 Jan 2019	11:00	1.3	ESE
12 Jan 2019	12:00	1.5	SE
12 Jan 2019	13:00	1.4	E
12 Jan 2019	14:00	1.5	NE
12 Jan 2019	15:00	1.6	SE
12 Jan 2019	16:00	1.4	SE
12 Jan 2019	17:00	1.2	NE
12 Jan 2019	18:00	1.4	E
12 Jan 2019	19:00	1.5	NE
12 Jan 2019	20:00	1.2	NNE
12 Jan 2019	21:00	1.2	NE
12 Jan 2019	22:00	1.7	NNE
12 Jan 2019	23:00	0.9	NNE



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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
13 Jan 2019	0:00	1.3	N
13 Jan 2019	1:00	1.0	N
13 Jan 2019	2:00	1.0	NE
13 Jan 2019	3:00	1.2	SE
13 Jan 2019	4:00	0.9	N
13 Jan 2019	5:00	1.0	NE
13 Jan 2019	6:00	1.2	N
13 Jan 2019	7:00	0.5	N
13 Jan 2019	8:00	0.4	NE
13 Jan 2019	9:00	0.5	ENE
13 Jan 2019	10:00	1.3	NNE
13 Jan 2019	11:00	1.4	ENE
13 Jan 2019	12:00	1.2	NE
13 Jan 2019	13:00	1.7	NE
13 Jan 2019	14:00	1.8	ENE
13 Jan 2019	15:00	1.5	NE
13 Jan 2019	16:00	1.2	NE
13 Jan 2019	17:00	1.3	ENE
13 Jan 2019	18:00	1.1	NE
13 Jan 2019	19:00	1.3	N
13 Jan 2019	20:00	1.6	NW
13 Jan 2019	21:00	1.7	N
13 Jan 2019	22:00	1.8	NE
13 Jan 2019	23:00	1.6	NNE
14 Jan 2019	0:00	1.9	NE
14 Jan 2019	1:00	2.1	NE
14 Jan 2019	2:00	2.3	NNE
14 Jan 2019	3:00	1.2	NW
14 Jan 2019	4:00	1.1	N
14 Jan 2019	5:00	2.0	NE
14 Jan 2019	6:00	1.9	E
14 Jan 2019	7:00	0.9	NE
14 Jan 2019	8:00	2.0	ENE
14 Jan 2019	9:00	1.9	E
14 Jan 2019	10:00	2.3	ENE
14 Jan 2019	11:00	2.9	NE

Date	Time	Wind Speed m/s	Direction
14 Jan 2019	12:00	2.8	NNE
14 Jan 2019	13:00	1.9	NE
14 Jan 2019	14:00	2.4	N
14 Jan 2019	15:00	1.8	NW
14 Jan 2019	16:00	2.0	NW
14 Jan 2019	17:00	1.2	N
14 Jan 2019	18:00	3.0	NE
14 Jan 2019	19:00	3.0	NE
14 Jan 2019	20:00	1.8	NNE
14 Jan 2019	21:00	1.7	NE
14 Jan 2019	22:00	1.9	NNE
14 Jan 2019	23:00	1.7	N
15 Jan 2019	0:00	1.3	NE
15 Jan 2019	1:00	1.9	N
15 Jan 2019	2:00	1.7	NE
15 Jan 2019	3:00	1.4	NNE
15 Jan 2019	4:00	2.0	N
15 Jan 2019	5:00	1.9	NE
15 Jan 2019	6:00	1.7	NNE
15 Jan 2019	7:00	0.9	N
15 Jan 2019	8:00	2.3	NE
15 Jan 2019	9:00	1.8	N
15 Jan 2019	10:00	2.2	NE
15 Jan 2019	11:00	3.0	NNE
15 Jan 2019	12:00	3.1	NE
15 Jan 2019	13:00	2.9	NNE
15 Jan 2019	14:00	2.4	NNE
15 Jan 2019	15:00	2.2	ENE
15 Jan 2019	16:00	1.9	NW
15 Jan 2019	17:00	1.3	NW
15 Jan 2019	18:00	2.7	N
15 Jan 2019	19:00	2.8	NE
15 Jan 2019	20:00	3.0	N
15 Jan 2019	21:00	1.9	NNE
15 Jan 2019	22:00	1.5	N
15 Jan 2019	23:00	2.0	NE

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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
16 Jan 2019	0:00	1.0	E
16 Jan 2019	1:00	1.2	NNE
16 Jan 2019	2:00	0.2	NNW
16 Jan 2019	3:00	1.9	ENE
16 Jan 2019	4:00	2.0	ENE
16 Jan 2019	5:00	1.5	N
16 Jan 2019	6:00	1.4	NW
16 Jan 2019	7:00	1.5	NNE
16 Jan 2019	8:00	1.8	ENE
16 Jan 2019	9:00	2.1	NE
16 Jan 2019	10:00	1.8	NNE
16 Jan 2019	11:00	1.2	NNE
16 Jan 2019	12:00	2.7	NE
16 Jan 2019	13:00	3.0	NE
16 Jan 2019	14:00	2.4	N
16 Jan 2019	15:00	2.6	ENE
16 Jan 2019	16:00	1.7	NE
16 Jan 2019	17:00	1.1	ENE
16 Jan 2019	18:00	0.5	SW
16 Jan 2019	19:00	0.2	WSW
16 Jan 2019	20:00	1.0	WSW
16 Jan 2019	21:00	1.4	NE
16 Jan 2019	22:00	0.7	N
16 Jan 2019	23:00	0.4	SSW
17 Jan 2019	0:00	0.7	SE
17 Jan 2019	1:00	1.5	ENE
17 Jan 2019	2:00	1.4	ENE
17 Jan 2019	3:00	1.2	NE
17 Jan 2019	4:00	1.3	ENE
17 Jan 2019	5:00	2.3	ENE
17 Jan 2019	6:00	2.3	NE
17 Jan 2019	7:00	2.1	N
17 Jan 2019	8:00	2.2	NE
17 Jan 2019	9:00	3.0	N
17 Jan 2019	10:00	2.9	NE
17 Jan 2019	11:00	3.0	ENE

Date	Time	Wind Speed m/s	Direction
17 Jan 2019	12:00	2.1	ENE
17 Jan 2019	13:00	1.9	NE
17 Jan 2019	14:00	1.6	ENE
17 Jan 2019	15:00	1.2	NE
17 Jan 2019	16:00	1.5	N
17 Jan 2019	17:00	1.4	NNE
17 Jan 2019	18:00	1.5	ENE
17 Jan 2019	19:00	1.8	NE
17 Jan 2019	20:00	1.4	ENE
17 Jan 2019	21:00	0.9	ENE
17 Jan 2019	22:00	1.4	E
17 Jan 2019	23:00	1.0	NE
18 Jan 2019	0:00	1.0	NNE
18 Jan 2019	1:00	1.9	N
18 Jan 2019	2:00	1.1	NE
18 Jan 2019	3:00	2.0	E
18 Jan 2019	4:00	1.3	NNE
18 Jan 2019	5:00	1.5	NNE
18 Jan 2019	6:00	1.2	NW
18 Jan 2019	7:00	1.0	NNW
18 Jan 2019	8:00	1.4	NW
18 Jan 2019	9:00	0.9	NNE
18 Jan 2019	10:00	1.3	N
18 Jan 2019	11:00	1.7	NE
18 Jan 2019	12:00	0.8	ENE
18 Jan 2019	13:00	1.4	ENE
18 Jan 2019	14:00	2.4	NE
18 Jan 2019	15:00	1.9	ENE
18 Jan 2019	16:00	1.4	NNE
18 Jan 2019	17:00	1.5	NNE
18 Jan 2019	18:00	1.6	NE
18 Jan 2019	19:00	1.2	N
18 Jan 2019	20:00	1.0	NNE
18 Jan 2019	21:00	0.7	ENE
18 Jan 2019	22:00	0.8	ENE
18 Jan 2019	23:00	0.4	NNW



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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
19 Jan 2019	0:00	1.4	ENE
19 Jan 2019	1:00	0.9	NE
19 Jan 2019	2:00	0.8	SW
19 Jan 2019	3:00	0.9	WNW
19 Jan 2019	4:00	0.5	WSW
19 Jan 2019	5:00	0.1	NW
19 Jan 2019	6:00	0.1	ENE
19 Jan 2019	7:00	0.1	ESE
19 Jan 2019	8:00	0.0	ENE
19 Jan 2019	9:00	0.1	ENE
19 Jan 2019	10:00	0.5	ESE
19 Jan 2019	11:00	1.3	ESE
19 Jan 2019	12:00	1.0	ENE
19 Jan 2019	13:00	1.5	E
19 Jan 2019	14:00	1.9	ENE
19 Jan 2019	15:00	2.0	N
19 Jan 2019	16:00	2.2	NNE
19 Jan 2019	17:00	1.9	NNE
19 Jan 2019	18:00	1.2	N
19 Jan 2019	19:00	0.5	NE
19 Jan 2019	20:00	0.7	ENE
19 Jan 2019	21:00	1.8	NE
19 Jan 2019	22:00	2.2	NNE
19 Jan 2019	23:00	1.7	NE
20 Jan 2019	0:00	1.9	NNE
20 Jan 2019	1:00	0.9	NE
20 Jan 2019	2:00	1.8	NNE
20 Jan 2019	3:00	1.0	NE
20 Jan 2019	4:00	2.3	ENE
20 Jan 2019	5:00	1.7	NW
20 Jan 2019	6:00	1.7	ENE
20 Jan 2019	7:00	1.3	NE
20 Jan 2019	8:00	1.0	ENE
20 Jan 2019	9:00	2.2	ENE
20 Jan 2019	10:00	2.7	NE
20 Jan 2019	11:00	1.9	NE

Date	Time	Wind Speed m/s	Direction
20 Jan 2019	12:00	2.5	ENE
20 Jan 2019	13:00	2.6	NE
20 Jan 2019	14:00	2.6	ENE
20 Jan 2019	15:00	3.0	NE
20 Jan 2019	16:00	2.6	NE
20 Jan 2019	17:00	2.7	NNE
20 Jan 2019	18:00	2.0	NE
20 Jan 2019	19:00	1.1	NNE
20 Jan 2019	20:00	0.9	NNW
20 Jan 2019	21:00	1.0	NNW
20 Jan 2019	22:00	1.5	N
20 Jan 2019	23:00	2.0	NNE
20 Jan 2019	0:00	2.2	NE
21 Jan 2019	1:00	3.3	NE
21 Jan 2019	2:00	3.2	NNE
21 Jan 2019	3:00	2.7	NNE
21 Jan 2019	4:00	1.3	ENE
21 Jan 2019	5:00	1.2	SW
21 Jan 2019	6:00	0.9	WSW
21 Jan 2019	7:00	1.5	E
21 Jan 2019	8:00	1.4	ENE
21 Jan 2019	9:00	1.8	NE
21 Jan 2019	10:00	3.2	ENE
21 Jan 2019	11:00	3.1	NNE
21 Jan 2019	12:00	3.5	NE
21 Jan 2019	13:00	3.5	NNE
21 Jan 2019	14:00	3.3	NE
21 Jan 2019	15:00	3.2	NE
21 Jan 2019	16:00	3.0	NNE
21 Jan 2019	17:00	2.9	NE
21 Jan 2019	18:00	0.9	NE
21 Jan 2019	19:00	0.5	NE
21 Jan 2019	20:00	0.4	NNE
21 Jan 2019	21:00	0.4	N
21 Jan 2019	22:00	1.3	NE
21 Jan 2019	23:00	0.8	NNE

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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
22 Jan 2019	0:00	0.6	NE
22 Jan 2019	1:00	1.2	E
22 Jan 2019	2:00	1.3	NNE
22 Jan 2019	3:00	0.3	NE
22 Jan 2019	4:00	0.3	SE
22 Jan 2019	5:00	0.1	SW
22 Jan 2019	6:00	0.0	SSW
22 Jan 2019	7:00	0.1	SE
22 Jan 2019	8:00	0.1	ESE
22 Jan 2019	9:00	1.2	ESE
22 Jan 2019	10:00	1.8	NE
22 Jan 2019	11:00	1.4	ENE
22 Jan 2019	12:00	1.7	NE
22 Jan 2019	13:00	1.9	NNE
22 Jan 2019	14:00	2.3	N
22 Jan 2019	15:00	3.3	NNE
22 Jan 2019	16:00	3.1	NE
22 Jan 2019	17:00	1.9	ENE
22 Jan 2019	18:00	0.6	NE
22 Jan 2019	19:00	0.9	NW
22 Jan 2019	20:00	0.3	NNW
22 Jan 2019	21:00	0.1	NW
22 Jan 2019	22:00	0.0	WNW
22 Jan 2019	23:00	0.1	NNW
23 Jan 2019	0:00	0.1	NNW
23 Jan 2019	1:00	0.0	NW
23 Jan 2019	2:00	0.1	SSE
23 Jan 2019	3:00	0.1	WSW
23 Jan 2019	4:00	0.3	NE
23 Jan 2019	5:00	0.7	NNW
23 Jan 2019	6:00	0.9	ENE
23 Jan 2019	7:00	1.7	NNW
23 Jan 2019	8:00	0.9	W
23 Jan 2019	9:00	1.9	NNE
23 Jan 2019	10:00	2.1	NE
23 Jan 2019	11:00	3.3	ENE

Date	Time	Wind Speed m/s	Direction
23 Jan 2019	12:00	2.9	NE
23 Jan 2019	13:00	3.0	ENE
23 Jan 2019	14:00	2.9	ENE
23 Jan 2019	15:00	2.7	E
23 Jan 2019	16:00	2.4	NE
23 Jan 2019	17:00	1.9	ENE
23 Jan 2019	18:00	1.6	NE
23 Jan 2019	19:00	1.3	ENE
23 Jan 2019	20:00	0.5	E
23 Jan 2019	21:00	0.1	N
23 Jan 2019	22:00	0.4	NW
23 Jan 2019	23:00	0.5	NNW
24 Jan 2019	0:00	1.3	NNW
24 Jan 2019	1:00	0.8	N
24 Jan 2019	2:00	1.4	NE
24 Jan 2019	3:00	1.3	N
24 Jan 2019	4:00	0.7	NW
24 Jan 2019	5:00	0.8	NNW
24 Jan 2019	6:00	0.3	SE
24 Jan 2019	7:00	0.0	WNW
24 Jan 2019	8:00	0.1	E
24 Jan 2019	9:00	0.1	ESE
24 Jan 2019	10:00	0.5	SE
24 Jan 2019	11:00	1.9	ENE
24 Jan 2019	12:00	2.0	ENE
24 Jan 2019	13:00	2.9	NE
24 Jan 2019	14:00	3.2	NNE
24 Jan 2019	15:00	2.8	NE
24 Jan 2019	16:00	2.2	ENE
24 Jan 2019	17:00	2.3	S
24 Jan 2019	18:00	1.4	SSE
24 Jan 2019	19:00	0.2	SE
24 Jan 2019	20:00	0.1	SSW
24 Jan 2019	21:00	0.0	WSW
24 Jan 2019	22:00	0.0	WNW
24 Jan 2019	23:00	0.1	NW



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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
25 Jan 2019	0:00	0.1	N
25 Jan 2019	1:00	0.2	NNW
25 Jan 2019	2:00	0.2	WNW
25 Jan 2019	3:00	0.0	NNE
25 Jan 2019	4:00	0.1	NNE
25 Jan 2019	5:00	0.0	SSW
25 Jan 2019	6:00	0.1	ENE
25 Jan 2019	7:00	0.3	ENE
25 Jan 2019	8:00	0.7	NE
25 Jan 2019	9:00	1.3	ENE
25 Jan 2019	10:00	2.7	NE
25 Jan 2019	11:00	2.9	N
25 Jan 2019	12:00	2.8	NE
25 Jan 2019	13:00	2.5	ENE
25 Jan 2019	14:00	2.7	NE
25 Jan 2019	15:00	2.9	ENE
25 Jan 2019	16:00	2.4	NNE
25 Jan 2019	17:00	2.1	NNE
25 Jan 2019	18:00	1.8	N
25 Jan 2019	19:00	1.7	NNE
25 Jan 2019	20:00	2.2	N
25 Jan 2019	21:00	2.3	NNE
25 Jan 2019	22:00	2.2	ENE
25 Jan 2019	23:00	1.6	NE
26 Jan 2019	0:00	2.3	NE
26 Jan 2019	1:00	2.2	ENE
26 Jan 2019	2:00	2.4	ENE
26 Jan 2019	3:00	2.2	NE
26 Jan 2019	4:00	2.3	N
26 Jan 2019	5:00	2.1	NE
26 Jan 2019	6:00	2.5	ENE
26 Jan 2019	7:00	2.1	E
26 Jan 2019	8:00	2.4	ENE
26 Jan 2019	9:00	2.6	NE
26 Jan 2019	10:00	2.6	E
26 Jan 2019	11:00	3.2	ENE

Date	Time	Wind Speed m/s	Direction
26 Jan 2019	12:00	3.0	ENE
26 Jan 2019	13:00	2.8	ESE
26 Jan 2019	14:00	2.4	E
26 Jan 2019	15:00	2.1	ENE
26 Jan 2019	16:00	1.9	ENE
26 Jan 2019	17:00	1.7	ESE
26 Jan 2019	18:00	1.7	SE
26 Jan 2019	19:00	1.6	N
26 Jan 2019	20:00	1.4	N
26 Jan 2019	21:00	1.5	ENE
26 Jan 2019	22:00	1.7	NE
26 Jan 2019	23:00	2.2	NNE
27 Jan 2019	0:00	1.7	NE
27 Jan 2019	1:00	1.9	ENE
27 Jan 2019	2:00	2.4	NE
27 Jan 2019	3:00	2.0	ENE
27 Jan 2019	4:00	1.9	NE
27 Jan 2019	5:00	1.7	NNE
27 Jan 2019	6:00	1.6	N
27 Jan 2019	7:00	3.3	N
27 Jan 2019	8:00	3.7	NE
27 Jan 2019	9:00	2.9	NNE
27 Jan 2019	10:00	3.3	ENE
27 Jan 2019	11:00	3.0	NE
27 Jan 2019	12:00	2.4	ENE
27 Jan 2019	13:00	1.9	N
27 Jan 2019	14:00	2.0	ENE
27 Jan 2019	15:00	2.8	ENE
27 Jan 2019	16:00	2.5	NE
27 Jan 2019	17:00	2.3	ESE
27 Jan 2019	18:00	2.4	ENE
27 Jan 2019	19:00	0.9	NNW
27 Jan 2019	20:00	0.4	NW
27 Jan 2019	21:00	0.1	WNW
27 Jan 2019	22:00	0.0	WNW
27 Jan 2019	23:00	0.0	SW

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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
28 Jan 2019	0:00	0.2	N
28 Jan 2019	1:00	0.2	NNW
28 Jan 2019	2:00	0.1	N
28 Jan 2019	3:00	0.1	WNW
28 Jan 2019	4:00	0.1	WNW
28 Jan 2019	5:00	0.1	NW
28 Jan 2019	6:00	0.1	SSW
28 Jan 2019	7:00	0.1	NNE
28 Jan 2019	8:00	2.0	NE
28 Jan 2019	9:00	1.6	ENE
28 Jan 2019	10:00	2.9	ENE
28 Jan 2019	11:00	3.0	NE
28 Jan 2019	12:00	3.5	NE
28 Jan 2019	13:00	3.9	E
28 Jan 2019	14:00	3.6	ENE
28 Jan 2019	15:00	3.8	NE
28 Jan 2019	16:00	3.0	NE
28 Jan 2019	17:00	2.7	N
28 Jan 2019	18:00	2.0	NNE
28 Jan 2019	19:00	2.6	N
28 Jan 2019	20:00	2.2	N
28 Jan 2019	21:00	2.3	NE
28 Jan 2019	22:00	1.8	NNE
28 Jan 2019	23:00	1.7	NNE
29 Jan 2019	0:00	2.6	NNE
29 Jan 2019	1:00	2.7	NE
29 Jan 2019	2:00	3.2	N
29 Jan 2019	3:00	2.4	N
29 Jan 2019	4:00	1.5	NNW
29 Jan 2019	5:00	2.2	NE
29 Jan 2019	6:00	2.3	NNE
29 Jan 2019	7:00	1.7	NE
29 Jan 2019	8:00	1.8	N
29 Jan 2019	9:00	1.3	SE
29 Jan 2019	10:00	2.5	E
29 Jan 2019	11:00	2.7	ENE

Date	Time	Wind Speed m/s	Direction
29 Jan 2019	12:00	1.8	E
29 Jan 2019	13:00	2.6	NE
29 Jan 2019	14:00	2.4	E
29 Jan 2019	15:00	2.3	NE
29 Jan 2019	16:00	2.0	ENE
29 Jan 2019	17:00	2.9	NNE
29 Jan 2019	18:00	2.3	NE
29 Jan 2019	19:00	2.2	ENE
29 Jan 2019	20:00	2.0	NE
29 Jan 2019	21:00	1.9	N
29 Jan 2019	22:00	1.0	NE
29 Jan 2019	23:00	0.6	NE
30 Jan 2019	0:00	1.1	N
30 Jan 2019	1:00	1.1	NNE
30 Jan 2019	2:00	0.5	NNW
30 Jan 2019	3:00	0.8	SSE
30 Jan 2019	4:00	0.1	ENE
30 Jan 2019	5:00	0.1	NE
30 Jan 2019	6:00	0.0	NNW
30 Jan 2019	7:00	0.1	NW
30 Jan 2019	8:00	0.1	N
30 Jan 2019	9:00	0.9	ENE
30 Jan 2019	10:00	1.5	E
30 Jan 2019	11:00	2.0	ESE
30 Jan 2019	12:00	2.8	E
30 Jan 2019	13:00	2.4	S
30 Jan 2019	14:00	1.2	SE
30 Jan 2019	15:00	1.5	S
30 Jan 2019	16:00	1.5	SSW
30 Jan 2019	17:00	1.4	SW
30 Jan 2019	18:00	0.0	SSE
30 Jan 2019	19:00	0.1	W
30 Jan 2019	20:00	0.1	NW
30 Jan 2019	21:00	0.1	NNW
30 Jan 2019	22:00	0.1	WNW
30 Jan 2019	23:00	0.0	N



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

**I. Mean Wind Speed and Wind Direction**

Date	Time	Wind Speed m/s	Direction
31 Jan 2019	0:00	1.4	ENE
31 Jan 2019	1:00	3.1	NE
31 Jan 2019	2:00	1.4	NW
31 Jan 2019	3:00	1.4	NNW
31 Jan 2019	4:00	1.9	ENE
31 Jan 2019	5:00	1.2	N
31 Jan 2019	6:00	2.9	NNE
31 Jan 2019	7:00	2.3	NE
31 Jan 2019	8:00	1.4	ENE
31 Jan 2019	9:00	2.0	NE
31 Jan 2019	10:00	3.5	NE
31 Jan 2019	11:00	3.2	E

Date	Time	Wind Speed m/s	Direction
31 Jan 2019	12:00	2.5	ENE
31 Jan 2019	13:00	2.2	NNW
31 Jan 2019	14:00	3.1	NE
31 Jan 2019	15:00	3.2	ENE
31 Jan 2019	16:00	2.8	NE
31 Jan 2019	17:00	2.4	N
31 Jan 2019	18:00	2.6	ENE
31 Jan 2019	19:00	2.7	NNE
31 Jan 2019	20:00	3.0	NNE
31 Jan 2019	21:00	2.4	NE
31 Jan 2019	22:00	2.3	E
31 Jan 2019	23:00	2.6	NE

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**APPENDIX D  
ENVIRONMENTAL MONITORING  
SCHEDULES**

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**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 2019)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		<b>1-Jan</b>	<b>2-Jan</b>	<b>3-Jan</b>	<b>4-Jan</b>	<b>5-Jan</b>
		<b>24 hrs TSP</b>	<b>1 hr TSP X3</b> [AM1, AM2, AM3, AM4]  <b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4, CM5]	<b>1 hr TSP X3</b> [AM5(A), AM6(A), AM7(A)]  <b>Noise [Daytime (07:00-19:00)]</b> [CM3*, CM6(A), CM7(A), CM8(A)]	<b>Noise [Evening time (19:00-23:00)]</b> [CM1, CM2, CM3, CM4] <b>Noise [Night-time (23:00-07:00)]</b> [CM1, CM2, CM3, CM4]	<b>24 hrs TSP</b>
<b>6-Jan</b>	<b>7-Jan</b>	<b>8-Jan</b>	<b>9-Jan</b>	<b>10-Jan</b>	<b>11-Jan</b>	<b>12-Jan</b>
<b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4]	<b>1 hr TSP X3</b> [AM1, AM2, AM3, AM4]	<b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4, CM5]	<b>1 hr TSP X3</b> [AM5(A), AM6(A), AM7(A)]	<b>Noise [Daytime (07:00-19:00)]</b> [CM6(A), CM7(A), CM8(A)]	<b>Noise [Evening time (19:00-23:00)]</b> [CM1, CM2, CM3, CM4] <b>Noise [Night-time (23:00-07:00)]</b> [CM1, CM2, CM3, CM4]	<b>24 hrs TSP</b>
<b>13-Jan</b>	<b>14-Jan</b>	<b>15-Jan</b>	<b>16-Jan</b>	<b>17-Jan</b>	<b>18-Jan</b>	<b>19-Jan</b>
<b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4]	<b>1 hr TSP X3</b> [AM1, AM2, AM3, AM4]  <b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4]	<b>1 hr TSP X3</b> [AM5(A), AM6(A), AM7(A)]  <b>Noise [Daytime (07:00-19:00)]</b> [CM5, CM6(A), CM7(A), CM8(A)]		<b>Noise [Evening time (19:00-23:00)]</b> [CM1, CM2, CM3, CM4] <b>Noise [Night-time (23:00-07:00)]</b> [CM1, CM2, CM3, CM4]	<b>1 hr TSP X3</b> [AM1, AM2, AM3, AM4]	
<b>20-Jan</b>	<b>21-Jan</b>	<b>22-Jan</b>	<b>23-Jan</b>	<b>24-Jan</b>	<b>25-Jan</b>	<b>26-Jan</b>
<b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4]	<b>1 hr TSP X3</b> [AM5(A), AM6(A), AM7(A)]  <b>Noise [Daytime (07:00-19:00)]</b> [CM6(A), CM7(A), CM8(A)]		<b>24 hrs TSP</b>	<b>1 hr TSP X3</b> [AM1, AM2, AM3, AM4]  <b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4, CM5]	<b>1 hr TSP X3</b> [AM5(A), AM6(A), AM7(A)]  <b>Noise [Evening time (19:00-23:00)]</b> [CM1, CM2, CM3, CM4] <b>Noise [Night-time (23:00-07:00)]</b> [CM1, CM2, CM3, CM4]	
<b>27-Jan</b>	<b>28-Jan</b>	<b>29-Jan</b>	<b>30-Jan</b>	<b>31-Jan</b>		
<b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4]		<b>Noise [Daytime (07:00-19:00)]</b> [CM1, CM2, CM3, CM4, CM5]	<b>1 hr TSP X3</b> [AM1, AM2, AM3, AM4]  <b>Noise [Daytime (07:00-19:00)]</b> [CM6(A), CM7(A), CM8(A)]	<b>1 hr TSP X3</b> [AM5(A), AM6(A), AM7(A)]		

**Air Quality Monitoring Station**

AM1 - Tin Hau Temple  
 AM2 - Sai Tso Wan Recreation Ground  
 AM3 - Yau Lai Estate Bik Lai House  
 AM4<sup>(1)</sup> - Sitting-out Area at Cha Kwo Ling Village  
 AM4(A)<sup>(2)</sup> - 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  
 AM7(A) - Tower 10, Capri, 33 Tong Yin Street

**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 Faa 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

\* Means additional monitoring

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		<b>1-Jan</b>	2-Jan	3-Jan	4-Jan	5-Jan
			Mid-Ebb 09:50 Mid-Flood 15:38	<i>Mid-Ebb 10:47</i> <i>Mid-Flood 16:14</i>	Mid-Ebb 11:35 Mid-Flood 16:48	
<b>6-Jan</b>	7-Jan	8-Jan	9-Jan	10-Jan	11-Jan	12-Jan
	Mid-Flood 08:12 Mid-Ebb 13:25		Mid-Flood 09:19 Mid-Ebb 14:36	<i>Mid-Flood 09:54</i> <i>Mid-Ebb 15:16</i>	Mid-Flood 10:31 Mid-Ebb 16:00	
<b>13-Jan</b>	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
	Mid-Flood 12:31 Mid-Ebb 18:58		Mid-Ebb 07:22 Mid-Flood 13:51	<i>Mid-Ebb 08:36</i> <i>Mid-Flood 14:34</i>	Mid-Ebb 09:44 Mid-Flood 15:19	
<b>20-Jan</b>	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
	Mid-Ebb 12:29 Mid-Flood 17:52		Mid-Flood 08:37 Mid-Ebb 14:06	<i>Mid-Flood 09:21</i> <i>Mid-Ebb 14:55</i>	Mid-Flood 10:05 Mid-Ebb 15:45	
<b>27-Jan</b>	28-Jan	29-Jan	30-Jan	31-Jan		
	Mid-Flood 12:24 Mid-Ebb 19:03		Mid-Ebb 08:14 Mid-Flood 14:03	<i>Mid-Ebb 09:36</i> <i>Mid-Flood 14:53</i>		

Monitoring Station:

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

*Italics stands for additional monitoring*



**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 2019)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		<b>1-Jan</b>	2-Jan	3-Jan	4-Jan	5-Jan
					Mid-Ebb 11:35 Mid-Flood 16:48	
<b>6-Jan</b>	7-Jan	8-Jan	9-Jan	10-Jan	11-Jan	12-Jan
					Mid-Flood 10:31 Mid-Ebb 16:00	
<b>13-Jan</b>	14-Jan	15-Jan	16-Jan	17-Jan	18-Jan	19-Jan
	Mid-Flood 12:31 Mid-Ebb 18:58					
<b>20-Jan</b>	21-Jan	22-Jan	23-Jan	24-Jan	25-Jan	26-Jan
	Mid-Ebb 12:29 Mid-Flood 17:52					
<b>27-Jan</b>	28-Jan	29-Jan	30-Jan	31-Jan		
			Mid-Ebb 08:14 Mid-Flood 14:03			

Monitoring Station:  
W1

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

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

Monitoring Location:  
Stream 1, Stream 2, Stream 3



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

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## Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Jan-19	9:00	Sunny	105.1
2-Jan-19	10:00	Sunny	99.5
2-Jan-19	11:00	Sunny	108.2
7-Jan-19	13:00	Cloudy	77.5
7-Jan-19	14:00	Cloudy	82.5
7-Jan-19	15:00	Cloudy	70.0
14-Jan-19	13:00	Cloudy	75.0
14-Jan-19	14:00	Cloudy	67.5
14-Jan-19	15:00	Cloudy	87.5
18-Jan-19	9:00	Sunny	87.5
18-Jan-19	10:00	Sunny	85.0
18-Jan-19	11:00	Sunny	87.5
24-Jan-19	13:00	Sunny	169.7
24-Jan-19	14:00	Sunny	174.1
24-Jan-19	15:00	Sunny	202.1
30-Jan-19	9:00	Fine	274.3
30-Jan-19	10:00	Fine	267.7
30-Jan-19	11:00	Fine	266.5
		Average	132.6
		Maximum	274.3
		Minimum	67.5

Location AM2 - Sai Tso Wan Recreation Ground			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Jan-19	15:00	Sunny	107.7
2-Jan-19	16:00	Sunny	111.5
2-Jan-19	17:00	Sunny	110.4
7-Jan-19	13:20	Cloudy	65.7
7-Jan-19	14:20	Cloudy	72.2
7-Jan-19	15:20	Cloudy	69.8
14-Jan-19	9:00	Cloudy	83.2
14-Jan-19	10:00	Cloudy	79.2
14-Jan-19	11:00	Cloudy	77.4
18-Jan-19	13:00	Cloudy	267.9
18-Jan-19	14:00	Cloudy	272.4
18-Jan-19	15:00	Cloudy	267.3
24-Jan-19	13:00	Sunny	100.0
24-Jan-19	14:00	Sunny	95.0
24-Jan-19	15:00	Sunny	102.5
30-Jan-19	13:55	Cloudy	170.6
30-Jan-19	14:55	Cloudy	178.6
30-Jan-19	15:55	Cloudy	173.6
		Average	133.6
		Maximum	272.4
		Minimum	65.7



## Appendix E - 1-hour TSP Monitoring Results

Location AM3 - Yau Lai Estate Bik Lai House			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Jan-19	9:00	Sunny	165.6
2-Jan-19	10:00	Sunny	155.3
2-Jan-19	11:00	Sunny	196.9
7-Jan-19	9:00	Cloudy	65.4
7-Jan-19	10:00	Cloudy	70.4
7-Jan-19	11:00	Cloudy	61.2
14-Jan-19	13:25	Cloudy	269.3
14-Jan-19	14:25	Cloudy	258.9
14-Jan-19	15:25	Cloudy	254.5
18-Jan-19	9:00	Cloudy	258.9
18-Jan-19	10:00	Cloudy	265.8
18-Jan-19	11:00	Cloudy	264.5
24-Jan-19	9:00	Sunny	194.5
24-Jan-19	10:00	Sunny	206.9
24-Jan-19	11:00	Sunny	200.4
30-Jan-19	8:30	Fine	172.2
30-Jan-19	9:30	Fine	182.5
30-Jan-19	10:30	Fine	177.4
		Average	190.0
		Maximum	269.3
		Minimum	61.2

Location AM4 - Sitting-out Area at Cha Kwo Ling Village			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
2-Jan-19	13:00	Sunny	107.3
2-Jan-19	14:00	Sunny	115.3
2-Jan-19	15:00	Sunny	120.9
7-Jan-19	9:00	Cloudy	112.5
7-Jan-19	10:00	Cloudy	122.5
7-Jan-19	11:00	Cloudy	120.0
14-Jan-19	9:00	Cloudy	80.0
14-Jan-19	10:00	Cloudy	82.5
14-Jan-19	11:00	Cloudy	87.5
18-Jan-19	13:00	Sunny	102.5
18-Jan-19	14:00	Sunny	92.5
18-Jan-19	15:00	Sunny	97.5
24-Jan-19	9:00	Sunny	119.8
24-Jan-19	10:00	Sunny	140.3
24-Jan-19	11:00	Sunny	164.5
30-Jan-19	13:00	Sunny	228.7
30-Jan-19	14:00	Sunny	242.6
30-Jan-19	15:00	Sunny	243.7
		Average	132.3
		Maximum	243.7
		Minimum	80.0

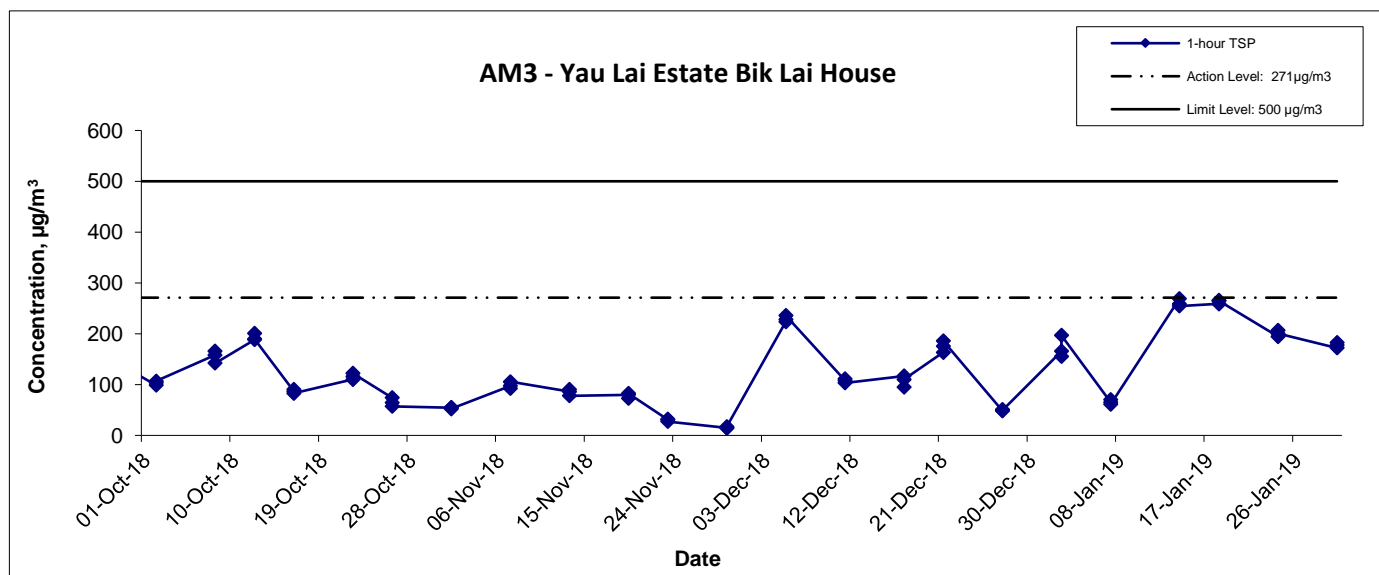
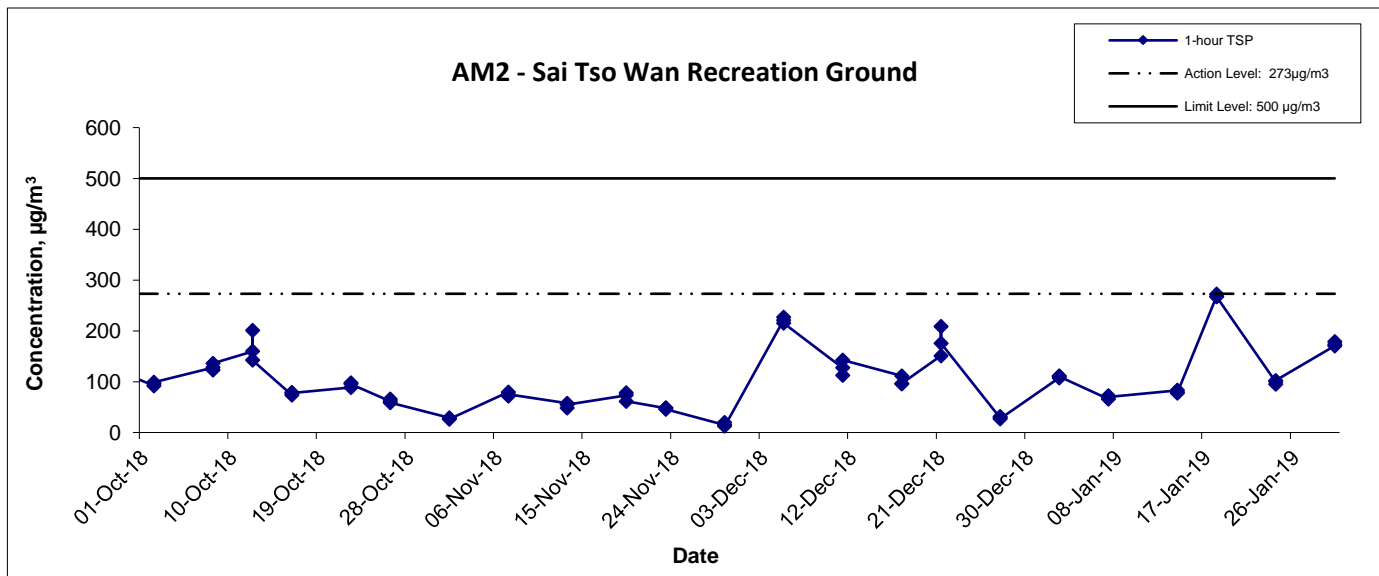
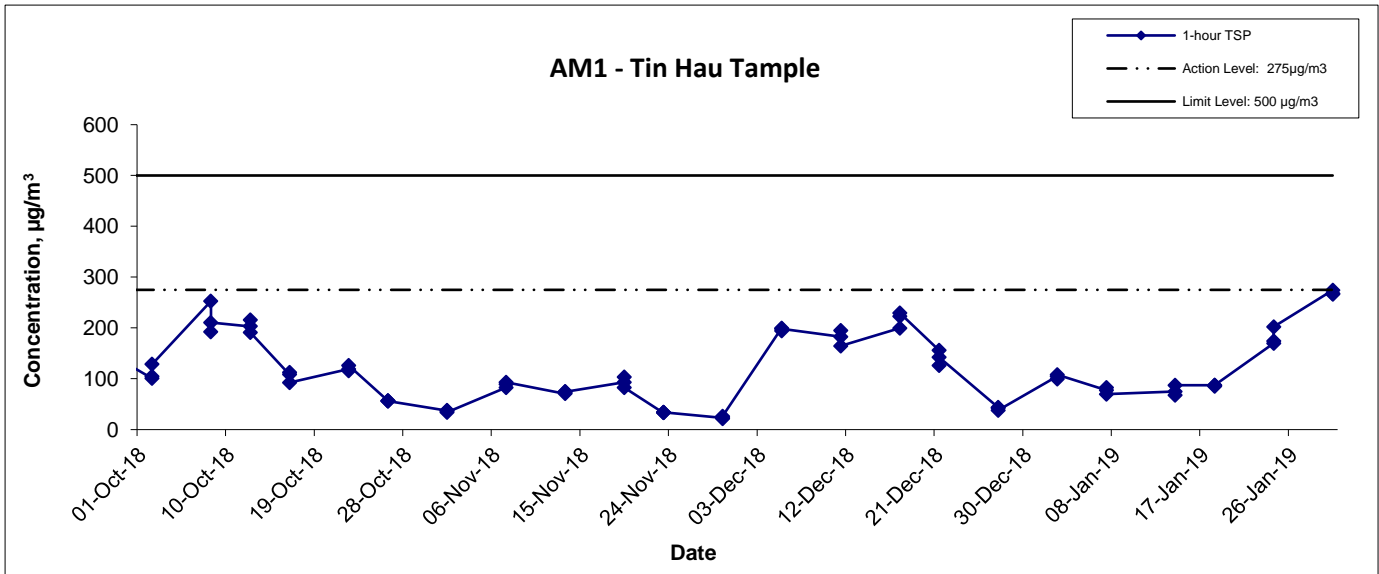
## Appendix E - 1-hour TSP Monitoring Results

Location AM5(A) - Tseung Kwan O DSD Desilting Compound			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
3-Jan-19	9:00	Cloudy	115.1
3-Jan-19	10:00	Cloudy	112.6
3-Jan-19	11:00	Cloudy	112.3
9-Jan-19	13:00	Fine	135.7
9-Jan-19	14:00	Fine	140.2
9-Jan-19	15:00	Fine	123.1
15-Jan-19	13:09	Fine	135.5
15-Jan-19	14:09	Fine	131.1
15-Jan-19	15:09	Fine	184.2
21-Jan-19	9:00	Sunny	125.3
21-Jan-19	10:00	Sunny	129.3
21-Jan-19	11:00	Sunny	127.3
25-Jan-19	9:00	Sunny	194.3
25-Jan-19	10:00	Sunny	202.2
25-Jan-19	11:00	Sunny	200.5
31-Jan-19	13:00	Sunny	102.5
31-Jan-19	14:00	Sunny	100.0
31-Jan-19	15:00	Sunny	100.0
Average			137.3
Maximum			202.2
Minimum			100.0

Location AM6(A) - Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration ( $\mu\text{g}/\text{m}^3$ )
3-Jan-19	13:00	Sunny	94.7
3-Jan-19	14:00	Sunny	96.3
3-Jan-19	15:00	Sunny	101.6
9-Jan-19	9:00	Fine	101.4
9-Jan-19	10:00	Fine	108.4
9-Jan-19	11:00	Fine	91.3
15-Jan-19	13:43	Fine	254.5
15-Jan-19	14:43	Fine	253.3
15-Jan-19	15:43	Fine	247.6
21-Jan-19	13:00	Sunny	110.5
21-Jan-19	14:00	Sunny	114.6
21-Jan-19	15:00	Sunny	119.1
25-Jan-19	13:00	Sunny	171.1
25-Jan-19	14:00	Sunny	183.2
25-Jan-19	15:00	Sunny	186.3
31-Jan-19	9:00	Sunny	107.5
31-Jan-19	10:00	Sunny	102.5
31-Jan-19	11:00	Sunny	100.0
Average			141.3
Maximum			254.5
Minimum			91.3

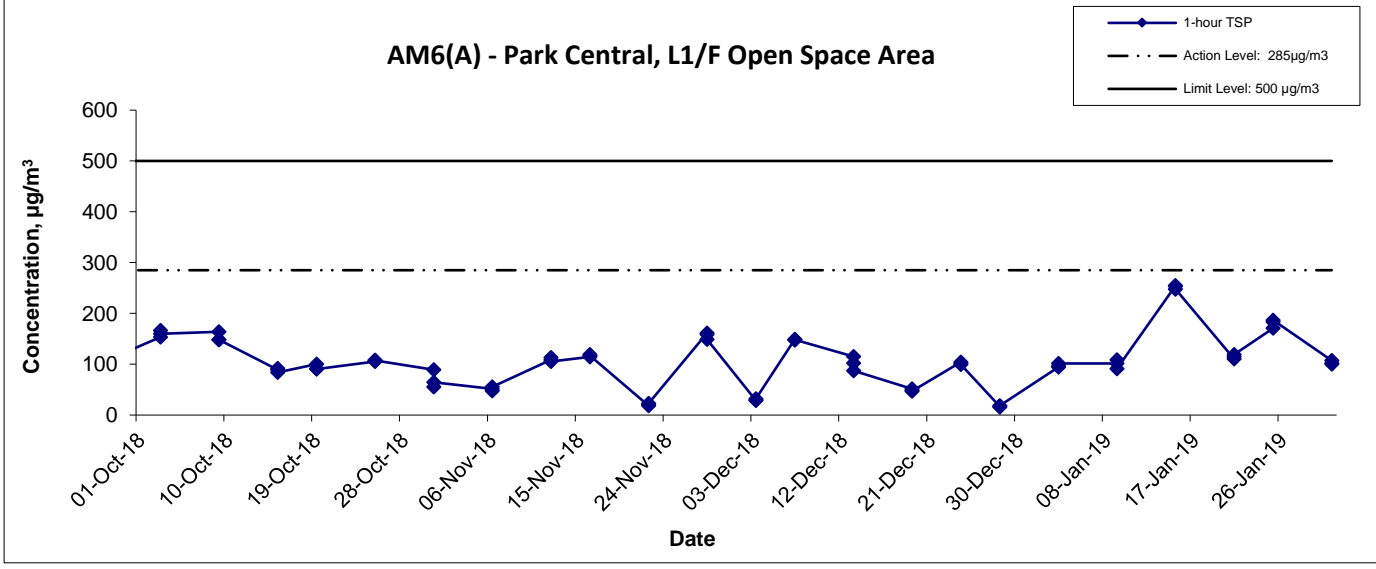
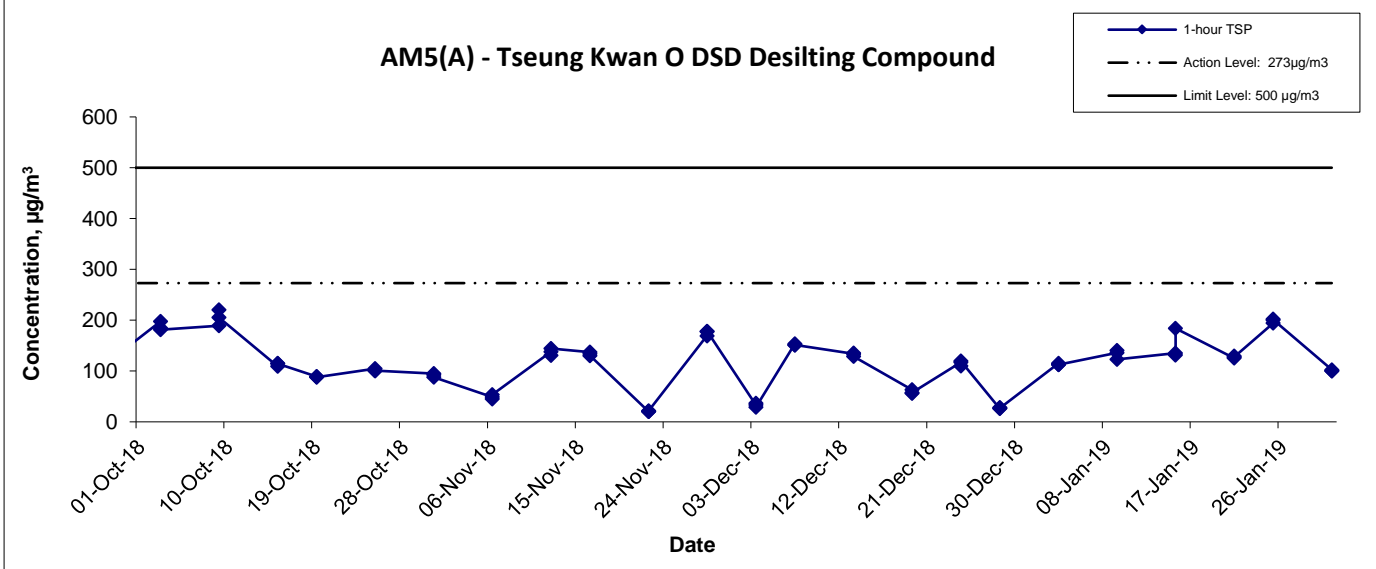
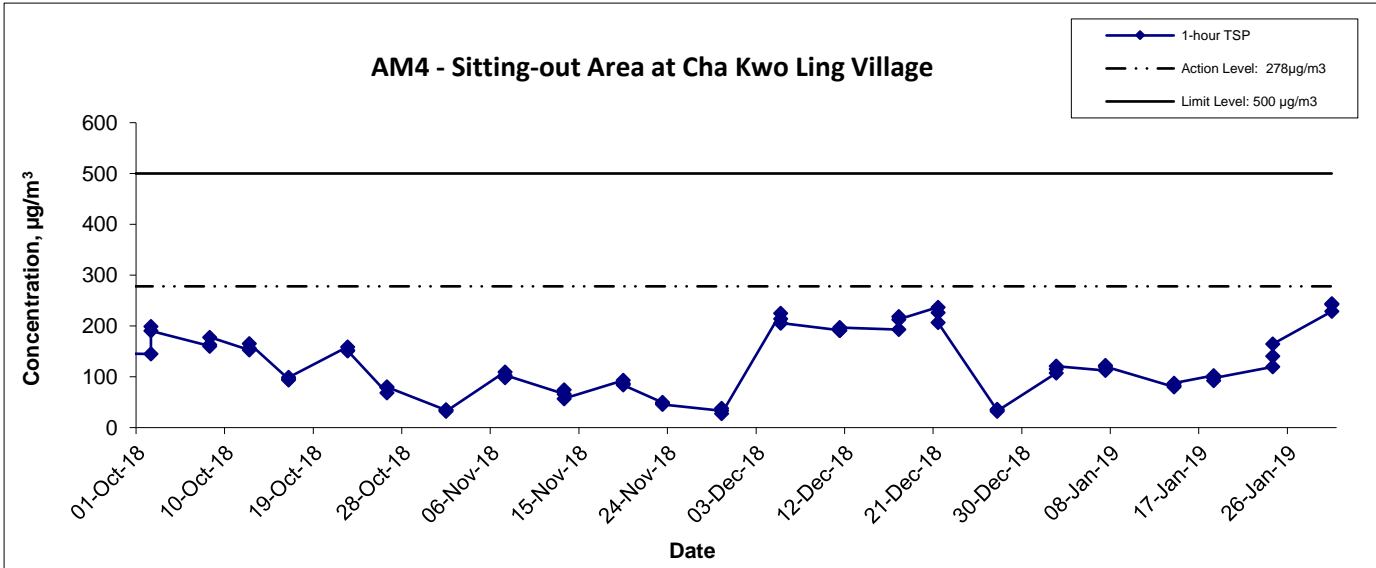


### 1-hr TSP Concentration Levels



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

### 1-hr TSP Concentration Levels



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



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**APPENDIX F  
24-HOUR TSP MONITORING RESULTS  
AND GRAPHICAL PRESENTATIONS**

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## 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 <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
				Initial	Final		Initial	Final		Initial	Final			
1-Jan-19	Sunny	286.5	772.6	3.3899	3.5437	0.1538	4727.4	4751.4	24.0	1.24	1.24	1.24	1787.2	86.1
5-Jan-19	Cloudy	292.2	768.3	2.9857	3.2405	0.2548	4751.4	4775.4	24.0	1.22	1.23	1.22	1764.0	144.4
11-Jan-19	Cloudy	290.6	764.2	2.9960	3.0866	0.0906	4775.4	4799.4	24.0	1.23	1.22	1.23	1764.2	51.4
17-Jan-19	Cloudy	289.9	769.1	2.9764	3.1180	0.1416	4799.4	4823.4	24.0	1.23	1.23	1.23	1772.0	79.9
23-Jan-19	Sunny	289.6	768.2	2.9633	3.1845	0.2212	4823.4	4847.4	24.0	1.23	1.23	1.23	1772.6	124.8
29-Jan-19	Sunny	291.9	768.4	2.9669	3.1373	0.1704	4847.4	4871.4	24.0	1.23	1.22	1.23	1765.0	96.5
													Min	51.4
													Max	144.4
													Average	97.2

### Location AM2 - Sai Tso Wan Recreation Ground

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
				Initial	Final		Initial	Final		Initial	Final			
1-Jan-19	Sunny	286.5	772.6	3.3904	3.4478	0.0574	25619.8	25643.8	24.0	1.24	1.24	1.24	1785.9	32.1
5-Jan-19	Sunny	292.2	768.3	3.0010	3.3032	0.3022	25643.8	25667.8	24.0	1.22	1.23	1.22	1763.0	171.4
11-Jan-19	Sunny	290.6	764.2	2.9524	3.0905	0.1381	25667.8	25691.8	24.0	1.23	1.22	1.22	1763.3	78.3
17-Jan-19	Cloudy	289.9	769.1	2.9725	3.0909	0.1184	25691.8	25715.8	24.0	1.23	1.23	1.23	1772.6	66.8
23-Jan-19	Sunny	289.6	768.2	2.9879	3.1660	0.1781	25715.8	25739.8	24.0	1.23	1.23	1.23	1771.1	100.6
29-Jan-19	Sunny	291.9	768.4	2.9660	3.0677	0.1017	25739.8	25763.8	24.0	1.23	1.22	1.23	1764.1	57.7
													Min	32.1
													Max	171.4
													Average	84.5

### 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 <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
				Initial	Final		Initial	Final		Initial	Final			
1-Jan-19	Sunny	286.5	772.6	3.3789	3.4769	0.0980	12438.7	12462.7	24.0	1.24	1.24	1.24	1791.1	54.7
5-Jan-19	Sunny	292.2	768.3	2.9943	3.1898	0.1955	12462.7	12486.7	24.0	1.23	1.23	1.23	1767.7	110.6
11-Jan-19	Cloudy	290.6	764.2	2.9888	3.0987	0.1099	12486.7	12510.7	24.0	1.23	1.22	1.23	1768.7	62.1
17-Jan-19	Cloudy	289.9	769.1	2.9626	3.0431	0.0805	0.1	24.1	24.0	1.23	1.23	1.23	1776.5	45.3
23-Jan-19	Sunny	289.6	768.2	2.9891	3.1853	0.1962	24.1	48.1	24.0	1.23	1.23	1.23	1776.4	110.4
29-Jan-19	Sunny	291.9	768.4	2.9899	3.1105	0.1206	48.1	72.1	24.0	1.23	1.23	1.23	1769.4	68.2
													Min	45.3
													Max	110.6
													Average	75.2



## 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 <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
				Initial	Final		Initial	Final		Initial	Final			
1-Jan-19	Sunny	286.5	772.6	3.3931	3.6134	0.2203	10867.9	10891.9	24.0	1.25	1.25	1.25	1796.4	122.6
5-Jan-19	Cloudy	292.2	768.3	2.9900	3.3129	0.3229	10891.9	10915.9	24.0	1.23	1.23	1.23	1771.9	182.2
11-Jan-19	Cloudy	290.6	764.2	2.9706	3.2904	0.3198	10915.9	10939.9	24.0	1.24	1.23	1.23	1772.2	180.5
17-Jan-19	Cloudy	289.9	769.1	3.0061	3.3169	0.3108	10939.9	10963.9	24.0	1.24	1.24	1.24	1780.7	174.5
23-Jan-19	Sunny	289.6	768.2	2.9864	3.3057	0.3193	10963.9	10987.9	24.0	1.24	1.24	1.24	1780.6	179.3
29-Jan-19	Sunny	291.9	768.4	2.9750	3.2707	0.2957	10987.9	11011.9	24.0	1.23	1.23	1.23	1773.0	166.8
													Min	122.6
													Max	182.2
													Average	167.7

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

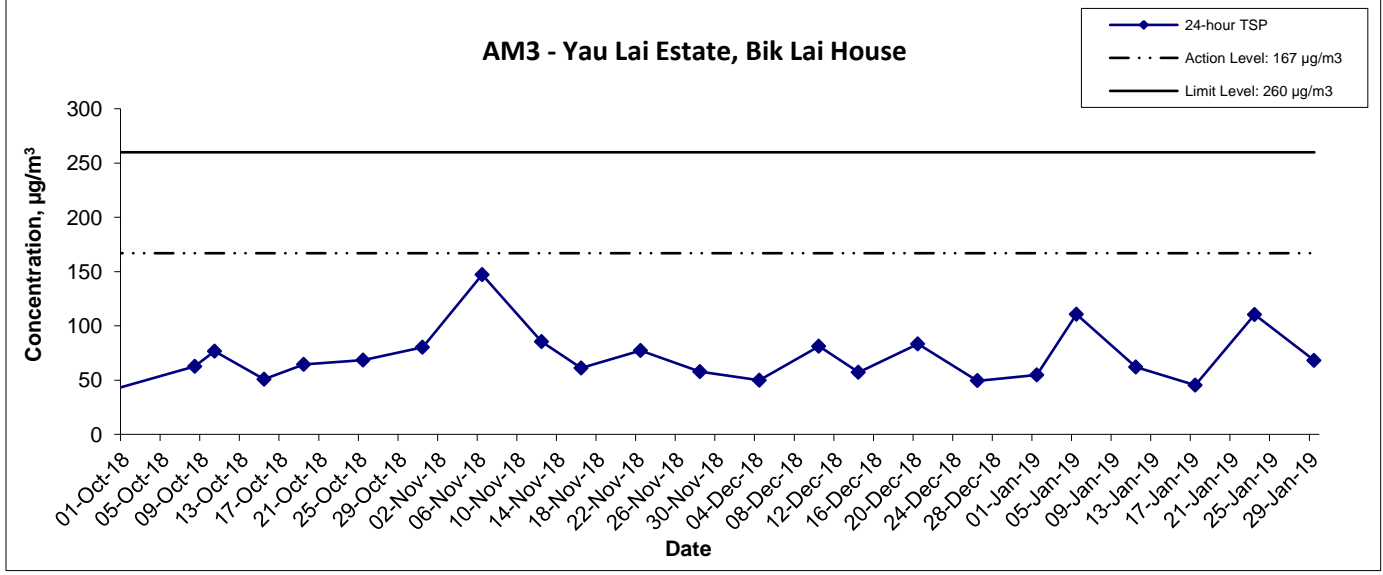
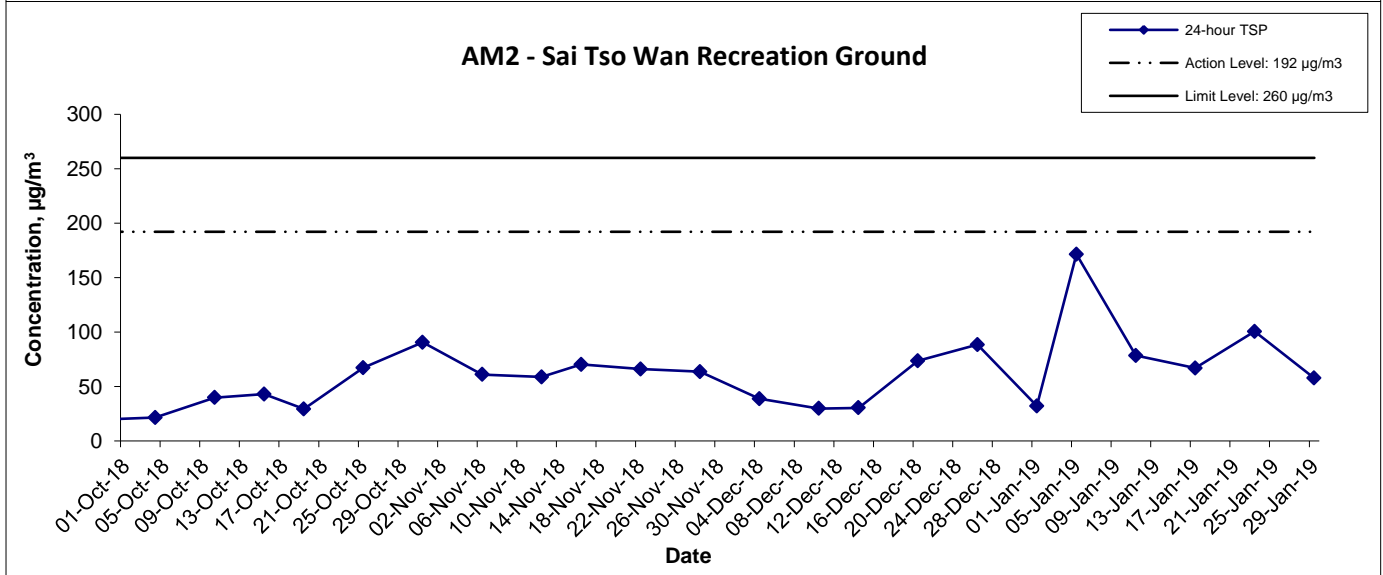
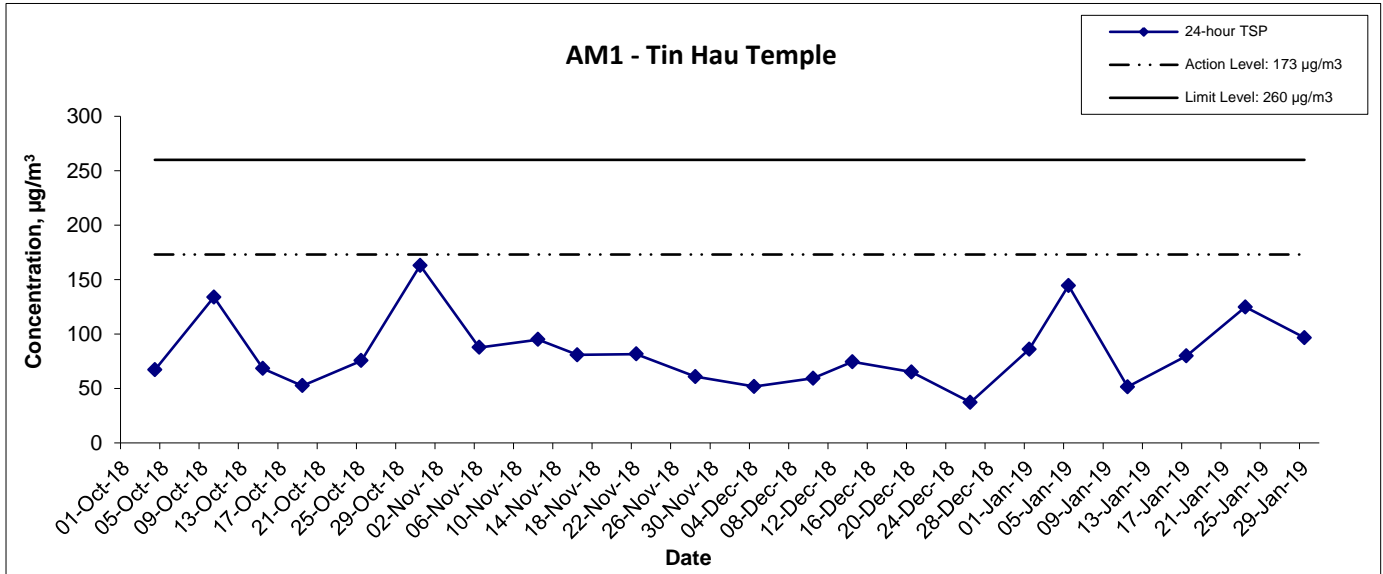
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
				Initial	Final		Initial	Final		Initial	Final			
1-Jan-19	Sunny	286.5	772.6	3.3656	3.4487	0.0831	27332.7	27356.7	24.0	1.25	1.25	1.25	1804.5	46.1
5-Jan-19	Sunny	292.2	768.3	2.9753	3.1530	0.1777	27356.7	27380.7	24.0	1.23	1.24	1.23	1778.4	99.9
11-Jan-19	Cloudy	290.6	764.2	3.0264	3.1069	0.0805	27380.7	27404.7	24.0	1.24	1.23	1.24	1778.7	45.3
17-Jan-19	Cloudy	289.9	769.1	2.9765	3.0596	0.0831	27405.7	27429.7	24.0	1.24	1.24	1.24	1787.7	46.5
23-Jan-19	Sunny	289.6	768.2	2.9878	3.1317	0.1439	27429.7	27453.7	24.0	1.24	1.24	1.24	1787.6	80.5
29-Jan-19	Sunny	291.9	768.4	2.9536	3.0695	0.1159	27453.7	27477.7	24.0	1.24	1.23	1.24	1779.6	65.1
													Min	45.3
													Max	99.9
													Average	63.9

### 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 <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
				Initial	Final		Initial	Final		Initial	Final			
1-Jan-19	Sunny	286.5	772.6	3.3806	3.5218	0.1412	17554.1	17578.1	24.0	1.24	1.24	1.24	1780.5	79.3
5-Jan-19	Sunny	292.2	768.3	3.0002	3.2535	0.2533	17578.1	17602.1	24.0	1.22	1.22	1.22	1757.6	144.1
11-Jan-19	Cloudy	290.6	764.2	2.9956	3.2628	0.2672	17602.1	17626.1	24.0	1.23	1.22	1.22	1757.9	152.0
17-Jan-19	Cloudy	289.9	769.1	2.9822	3.1939	0.2117	0.1	24.1	24.0	1.23	1.23	1.23	1765.8	119.9
23-Jan-19	Sunny	289.6	768.2	2.9676	3.2643	0.2967	24.1	48.1	24.0	1.25	1.25	1.25	1799.4	164.9
29-Jan-19	Sunny	291.9	768.4	2.9868	3.1388	0.1520	48.1	72.1	24.0	1.25	1.24	1.24	1792.1	84.8
													Min	79.3
													Max	164.9
													Average	124.2

Appendix F - 24-hour TSP Monitoring Results in January

24-hr TSP Concentration Levels

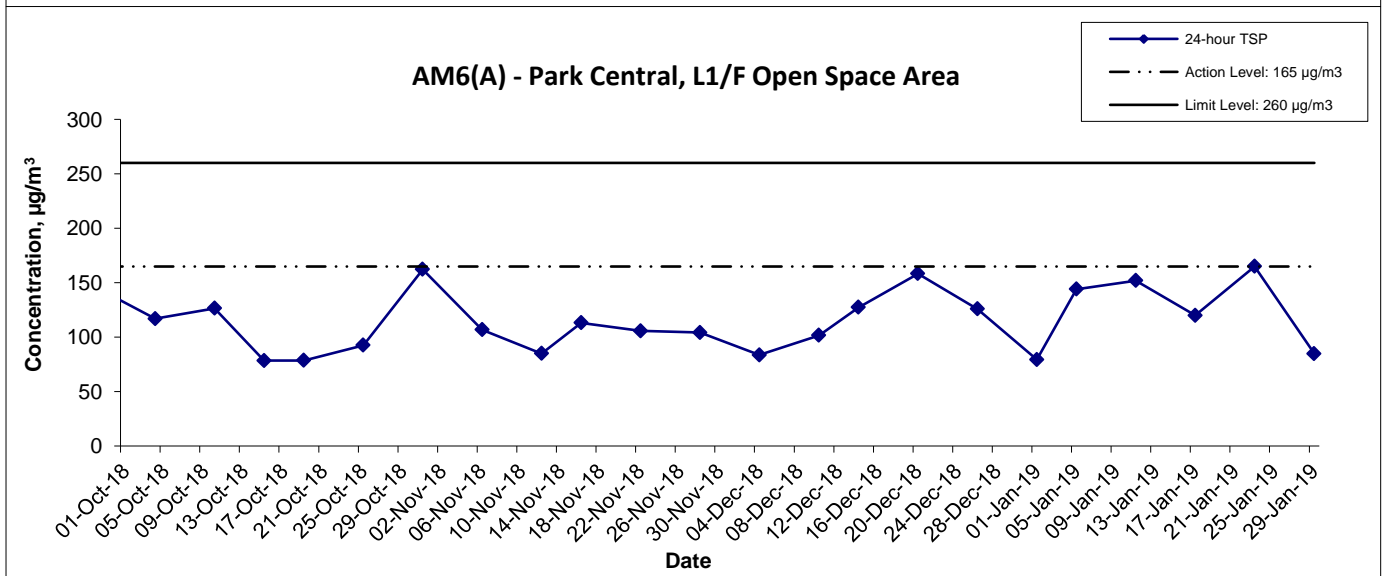
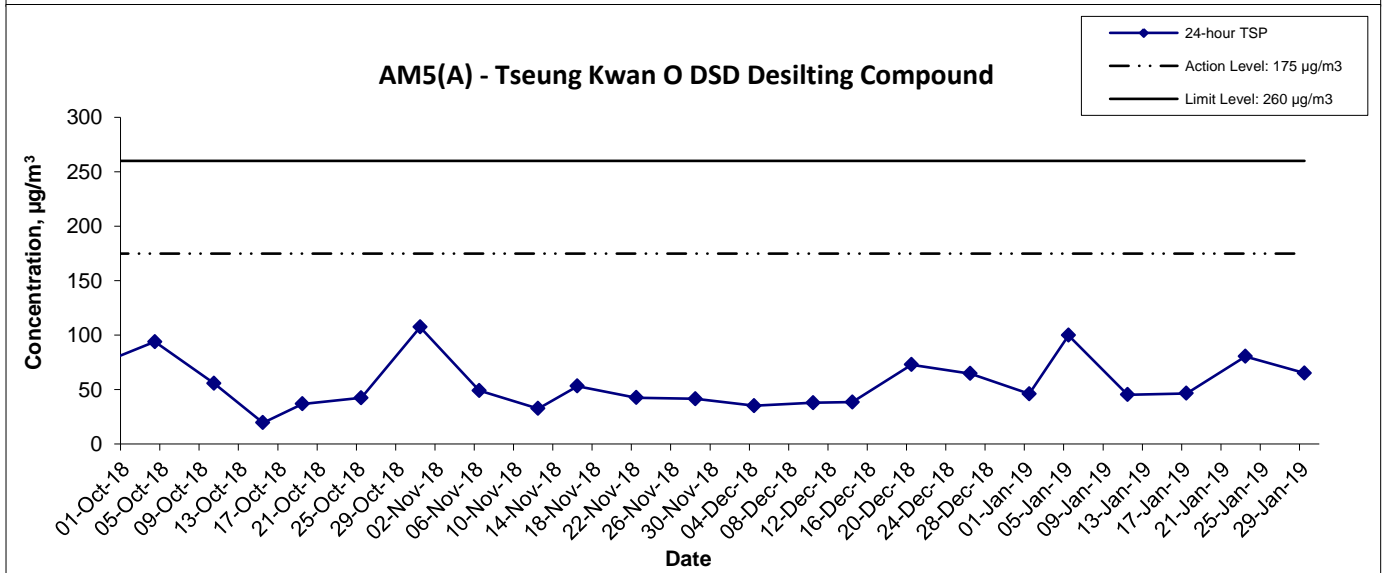
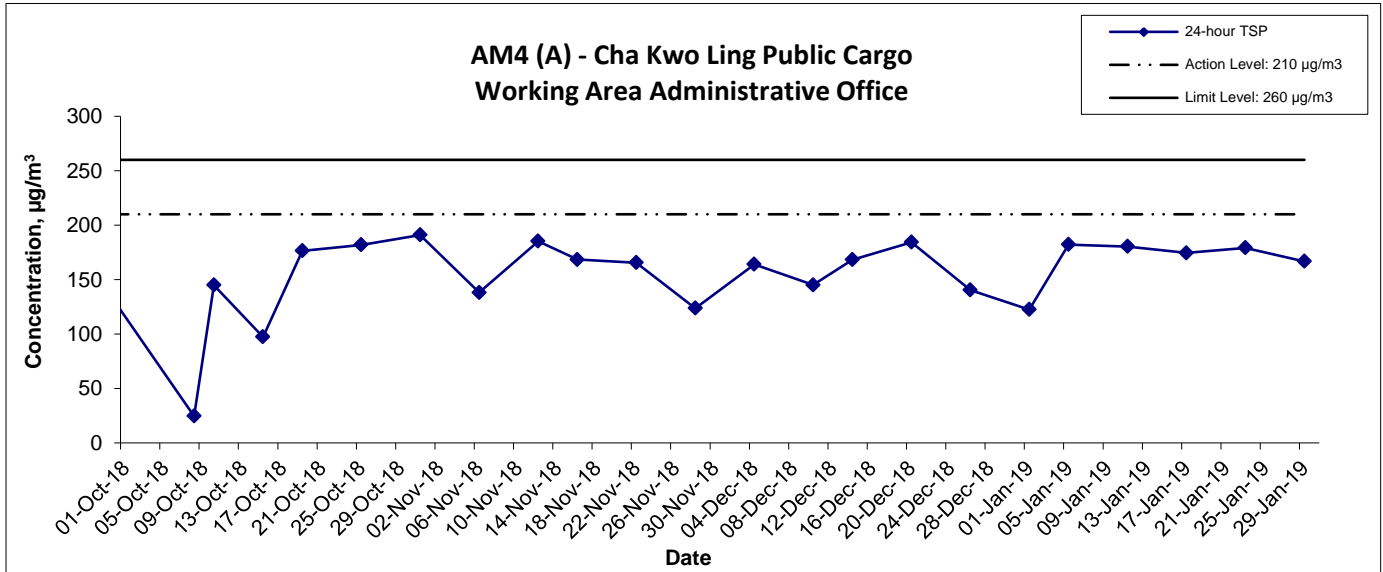


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	Date	Jan 18	Appendix	F	



Appendix F - 24-hour TSP Monitoring Results in January

24-hr TSP Concentration Levels



Title	Agreement No. CE/59/2015 (EP)	Scale	Project	CINOTECH
	Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction	N.T.S	No. MA16034	
	Graphical Presentation of 24-hour TSP Monitoring Results	Date	Appendix	
		Jan 18	F	

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**APPENDIX G  
NOISE MONITORING RESULTS AND  
GRAPHICAL PRESENTATIONS**

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## 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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Jan-2019	10:20	Sunny	74.5	75.6	73.7	65.5	74
8-Jan-2019	11:15	Cloudy	75.1	78.3	72.7		75
14-Jan-2019	14:32	Cloudy	74.2	75.8	72.2		74
24-Jan-2019	10:30	Sunny	74.7	76.7	72.0		74
29-Jan-2019	11:25	Sunny	74.1	77.8	72.1		73

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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Jan-2019	09:00	Sunny	73.9	75.4	72.8	63.6	73
8-Jan-2019	10:30	Cloudy	75.6	77.6	73.3		75
14-Jan-2019	13:29	Cloudy	70.6	72.6	67.5		70
24-Jan-2019	11:20	Sunny	72.4	73.9	70.4		72
29-Jan-2019	10:35	Sunny	74.2	75.8	72.2		74

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Jan-2019	09:40	Sunny	74.8	75.7	74.1	65.6	74
3-Jan-2019	13:00	Cloudy	75.0	76.9	72.1		74
8-Jan-2019	13:15	Cloudy	76.1	78.5	74.2		76
14-Jan-2019	16:20	Cloudy	75.5	77.9	72.3		75
24-Jan-2019	09:29	Sunny	74.9	76.8	72.6		74
29-Jan-2019	09:50	Sunny	75.1	76.7	73.0	75	

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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Jan-2019	09:00	Sunny	70.7	72.2	69.4	62.0	70
8-Jan-2019	15:30	Cloudy	69.6	72.4	68.1		69
14-Jan-2019	09:00	Cloudy	60.7	63.3	54.8		61 Measured ≤ Baseline
24-Jan-2019	15:20	Sunny	58.9	61.7	53.0		59 Measured ≤ Baseline
29-Jan-2019	13:00	Sunny	62.7	65.9	54.4		54

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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
2-Jan-2019	11:30	Sunny	69.7	71.2	68.1	68.2	64
8-Jan-2019	14:45	Cloudy	74.7	76.8	73.1		74
15-Jan-2019	09:34	Cloudy	69.5	71.9	65.7		64
24-Jan-2019	10:22	Sunny	68.8	70.9	65.8		60
29-Jan-2019	09:00	Sunny	69.4	71.7	66.2		63

## Appendix G - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

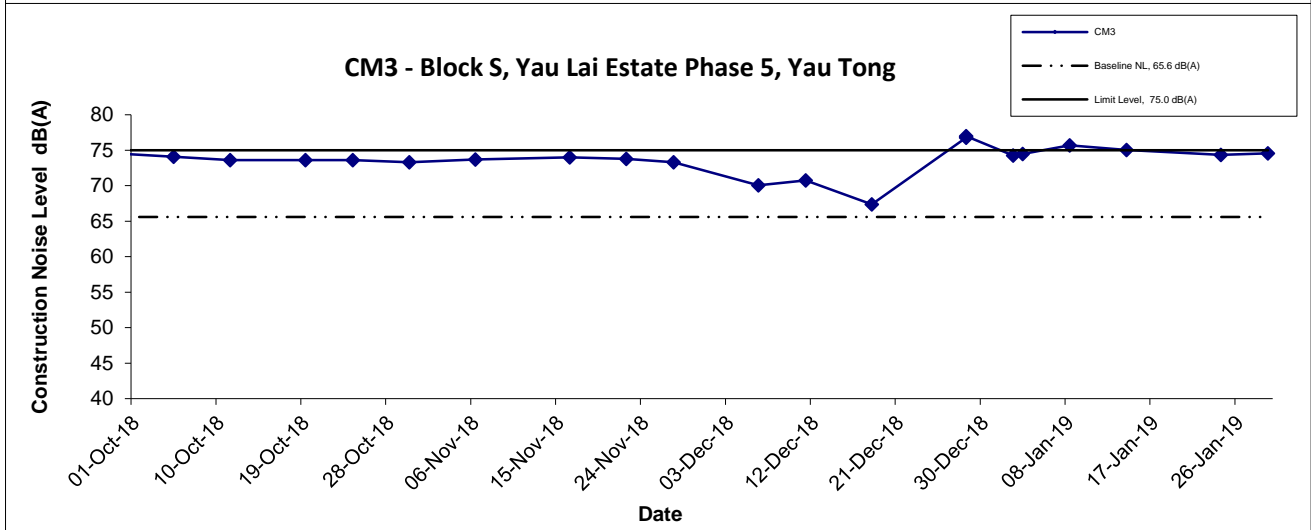
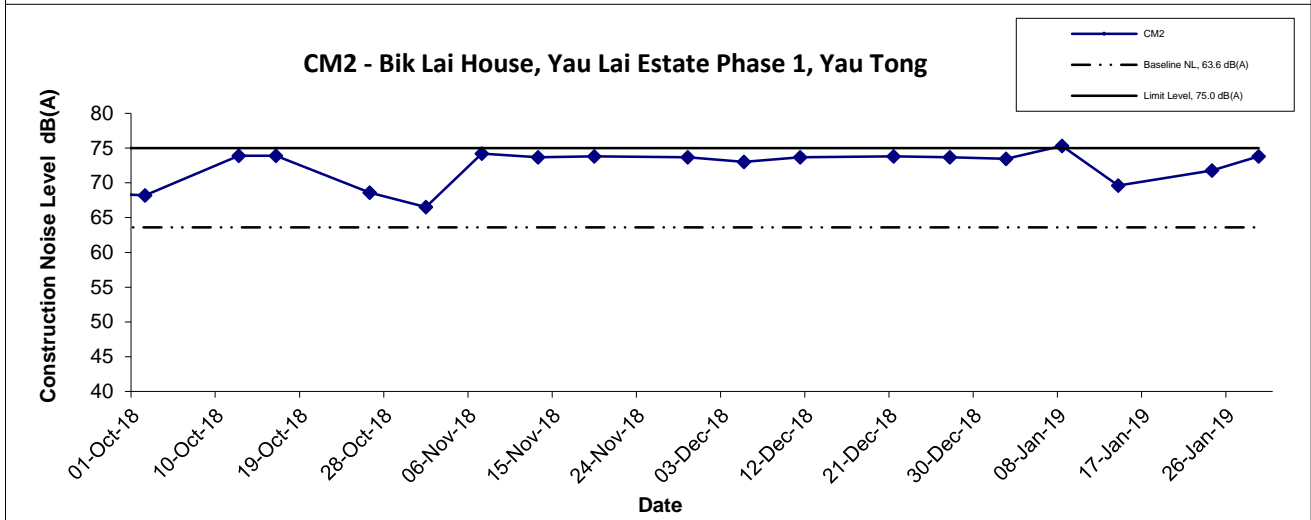
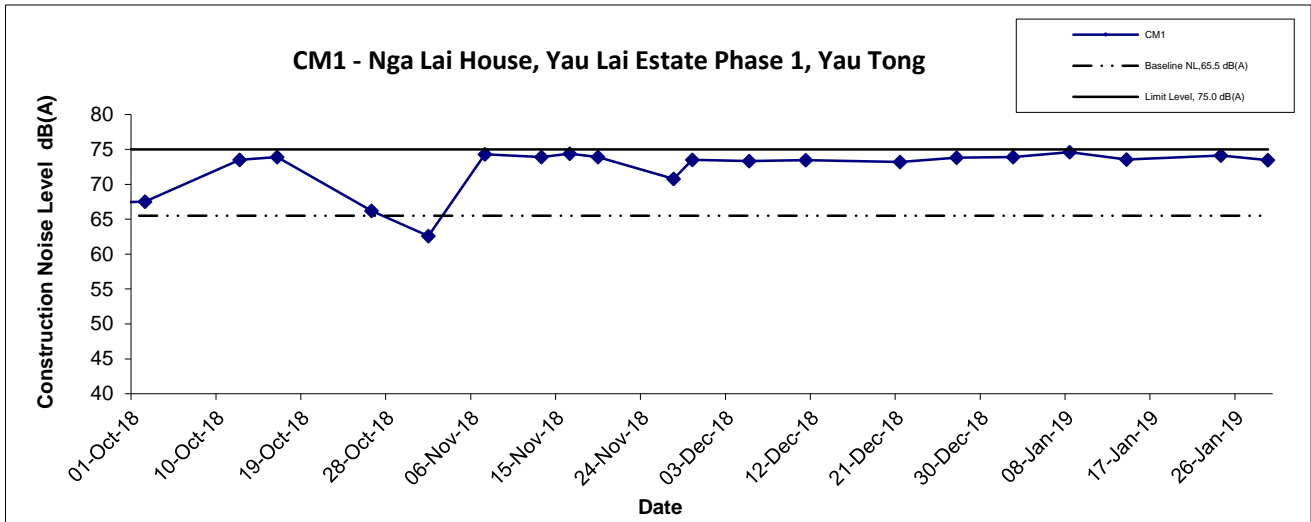
Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
3-Jan-2019	15:50	Cloudy	68.9	72.2	65.2	61.9	68
10-Jan-2019	16:45	Cloudy	69.2	70.9	63.8		68
15-Jan-2019	15:28	Cloudy	67.2	69.8	61.2		66
21-Jan-2019	10:50	Sunny	65.4	70.2	60.9		63
30-Jan-2019	14:00	Sunny	60.5	62.4	56.7		61 Measured ≤ Baseline

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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
3-Jan-2019	15:15	Cloudy	70.8	76.6	60.0	58.3	71
10-Jan-2019	17:30	Cloudy	61.3	63.0	59.0		58
15-Jan-2019	14:26	Sunny	63.0	63.7	57.6		61
21-Jan-2019	11:30	Sunny	60.4	64.1	55.9		56
30-Jan-2019	14:45	Sunny	66.4	69.1	61.1		66

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 <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	L <sub>eq</sub>	L <sub>eq</sub>
3-Jan-2019	13:00	Sunny	71.5	72.9	70.3	69.1	68
10-Jan-2019	15:30	Cloudy	63.7	64.9	56.4		64 Measured ≤ Baseline
15-Jan-2019	16:32	Cloudy	64.6	68.5	57.8		65 Measured ≤ Baseline
21-Jan-2019	13:00	Sunny	58.4	60.4	56.1		58 Measured ≤ Baseline
30-Jan-2019	15:30	Sunny	66.2	71.4	62.1		66 Measured ≤ Baseline

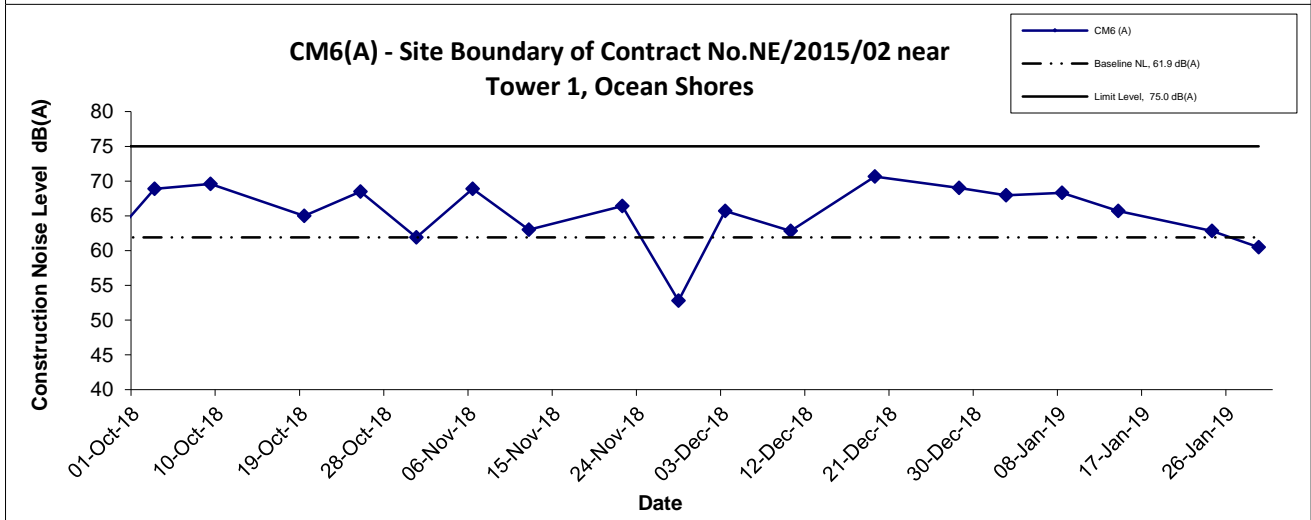
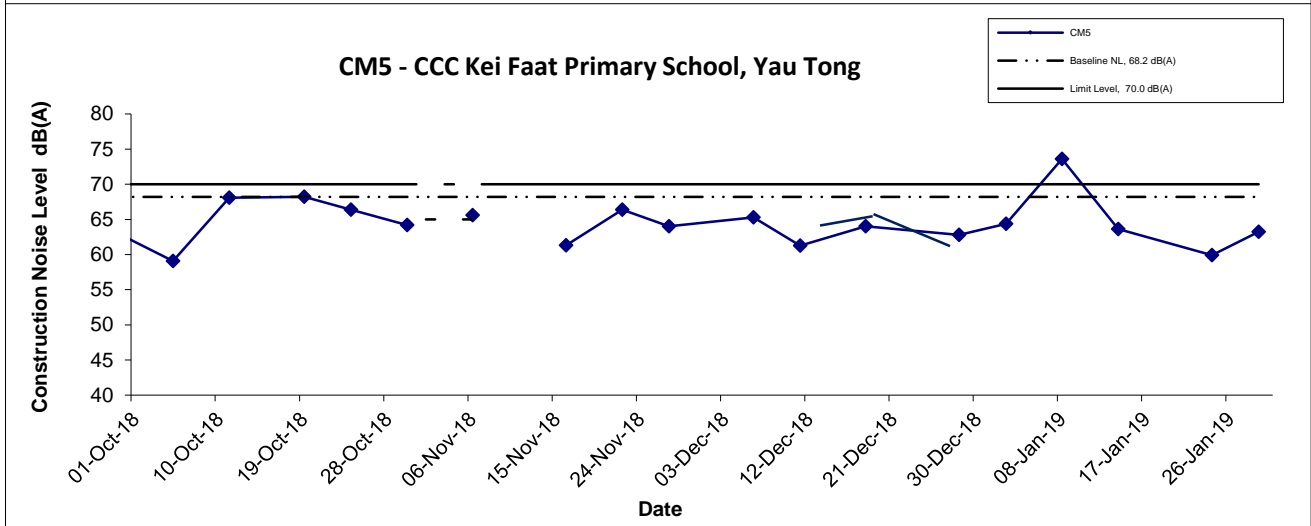
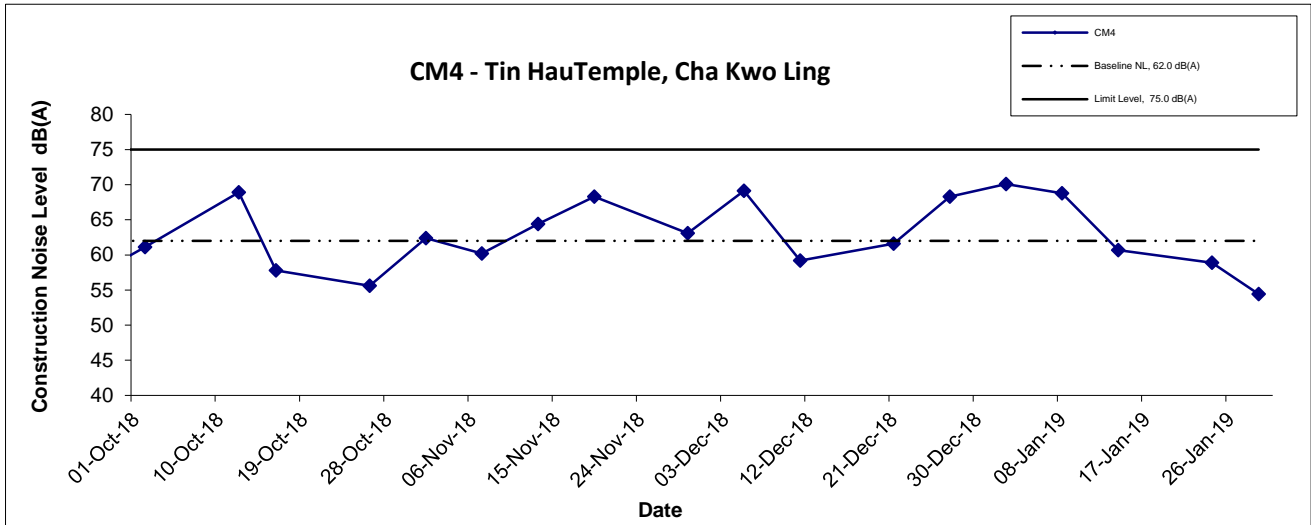


## Noise Levels



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	Project No. MA16034	
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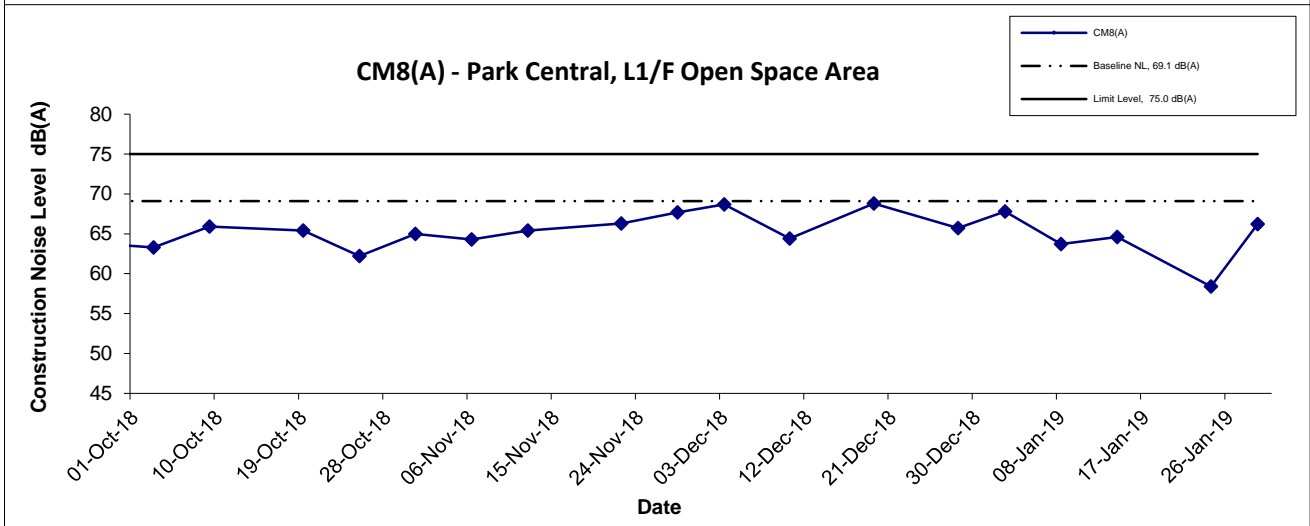
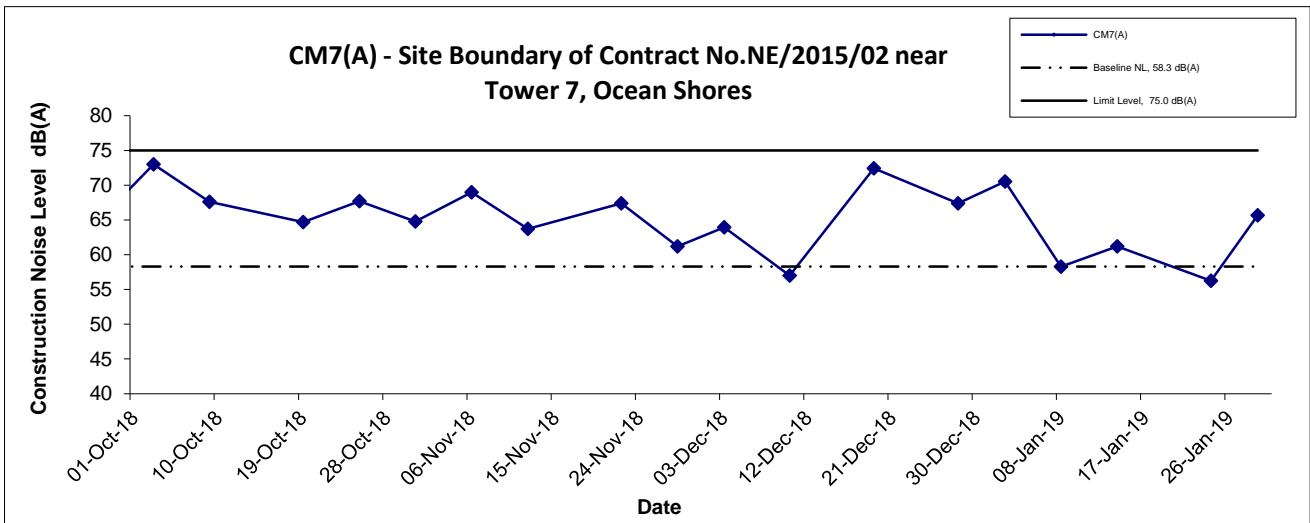
## Noise Levels



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

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

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong											
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>			
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>					
4-Jan-19	10:50	Sunny	68.6	70.3	66.1	67.6	64.4	65			
	10:55		67.1	68.4	65.5						
	11:00		67.0	68.7	65.0						
6-Jan-19	17:10	Sunny	66.4	67.8	64.7	66.0		64.4	61		
	17:15		65.3	68.1	63.8						
	17:20		66.3	67.7	64.6						
11-Jan-19	21:00	Sunny	67.0	69.4	64.1	66.4			64.4	62	
	21:05		66.3	67.4	64.5						
	21:10		65.9	67.2	64.1						
13-Jan-19	14:55	Sunny	67.1	68.1	65.6	66.6				64.4	63
	15:00		66.8	68.1	65.1						
	15:05		65.7	67.3	64.0						
17-Jan-19	22:40	Cloudy	66.2	67.7	63.7	66.2	64.4				62
	22:45		66.1	67.8	63.8						
	22:50		66.3	67.9	63.9						
20-Jan-19	15:10	Sunny	68.9	69.9	67.8	69.0		64.4			67
	15:15		69.0	70.6	67.0						
	15:20		69.2	70.6	67.5						
25-Jan-19	21:30	Sunny	67.3	68.8	64.1	67.3			64.4		64
	21:35		67.2	69.2	63.9						
	21:40		67.4	68.9	64.0						
27-Jan-19	9:30	Sunny	64.0	65.5	63.2	64.5				64.4	48
	9:35		64.6	66.4	63.5						
	9:40		64.8	66.7	63.9						

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong											
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>			
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>					
4-Jan-19	22:09	Sunny	64.8	66.0	63.1	65.1	64.2	58			
	22:14		65.2	66.6	63.7						
	22:19		65.4	66.6	64.1						
6-Jan-19	16:35	Sunny	67.4	68.7	65.9	66.5		64.2	63		
	16:40		65.4	67.6	64.3						
	16:45		66.5	67.5	65.1						
11-Jan-19	21:30	Sunny	65.0	66.8	63.0	64.6			64.2	54	
	21:35		64.6	65.7	63.1						
	21:40		64.0	65.4	62.3						
13-Jan-19	15:40	Sunny	65.9	67.3	64.0	65.7				64.2	60
	15:45		65.7	66.9	64.0						
	15:50		65.6	66.7	64.0						
17-Jan-19	22:10	Cloudy	66.7	68.2	65.1	66.7	64.2				63
	22:15		66.8	68.3	65.0						
	22:20		66.6	68.1	65.1						
20-Jan-19	14:30	Sunny	68.3	69.7	67.0	68.3		64.2			66
	14:35		68.2	69.4	66.8						
	14:40		68.4	69.7	67.1						
25-Jan-19	21:45	Sunny	67.4	68.3	63.5	67.3			64.2		64
	21:50		67.3	68.1	63.4						
	21:55		67.3	68.0	63.5						
27-Jan-19	9:55	Sunny	67.5	69.8	65.1	67.4				64.2	65
	10:00		67.7	70.1	65.8						
	10:05		66.8	68.7	64.2						

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong											
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>			
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>					
4-Jan-19	21:27	Sunny	66.0	67.3	64.0	65.3	64.7	56			
	21:32		65.4	66.8	63.7						
	21:37		64.5	65.8	63.1						
6-Jan-19	15:30	Sunny	65.6	66.7	64.2	65.9		64.7	60		
	15:35		66.3	67.3	65.1						
	15:40		65.9	66.8	64.5						
11-Jan-19	22:00	Sunny	65.4	66.5	63.6	64.7			64.7	65 Measured ≤ Baseline	
	22:05		64.5	65.7	62.8						
	22:10		64.1	65.6	62.2						
13-Jan-19	16:20	Sunny	66.6	68.2	65.0	66.2				64.7	61
	16:25		65.9	67.5	67.6						
	16:30		66.2	67.6	64.0						
17-Jan-19	21:35	Cloudy	66.6	68.0	64.4	66.6	64.7				62
	21:40		66.7	68.1	64.5						
	21:45		66.5	68.0	64.3						
20-Jan-19	14:00	Sunny	67.0	68.2	65.4	67.2		64.7			64
	14:05		67.4	68.8	65.7						
	14:10		67.2	68.5	65.5						
25-Jan-19	22:15	Sunny	66.9	68.0	64.5	67.0			64.7		63
	22:20		67.0	68.1	64.7						
	22:25		67.1	68.1	64.8						
27-Jan-19	10:39	Sunny	66.5	67.6	63.1	65.4				64.7	57
	10:44		65.1	65.9	63.5						
	10:49		64.3	65.6	63.3						



**Appendix G - Noise Monitoring Results**

Location CM4 - Tin Hau Temple, Cha Kwo Ling										
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>		
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>				
4-Jan-19	20:30	Sunny	56.0	58.6	46.4	55.7	57.0	56 Measured $\leq$ Baseline		
	20:35		55.7	60.1	45.5					
	20:40		55.4	58.8	46.4					
6-Jan-19	16:10	Sunny	51.1	53.9	40.8	51.1		57.0	51 Measured $\leq$ Baseline	
	16:15		50.9	54.7	41.5					
	16:20		51.3	55.3	41.7					
11-Jan-19	22:30	Sunny	53.7	56.5	46.9	53.2			57.0	53 Measured $\leq$ Baseline
	22:35		52.5	57.1	48.5					
	22:40		53.2	55.8	47.3					
13-Jan-19	16:50	Sunny	54.0	57.9	46.0	54.6				57.0
	16:55		54.0	57.1	44.9					
	17:00		55.6	59.1	44.8					
17-Jan-19	21:00	Cloudy	55.9	59.6	45.7	55.3	57.0			
	21:05		54.9	58.9	45.9					
	21:10		55.1	59.1	45.8					
20-Jan-19	13:00	Sunny	55.4	59.1	44.9	55.5		57.0		
	13:05		55.9	59.3	45.2					
	13:10		55.1	59.1	45.1					
25-Jan-19	22:40	Sunny	55.1	56.2	45.7	55.1			57.0	
	22:45		55.2	56.8	45.6					
	22:50		55.1	56.3	45.6					
27-Jan-19	11:20	Sunny	57.4	59.2	55.2	58.0				57.0
	11:25		58.1	59.3	55.6					
	11:30		58.4	59.9	56.1					

**Appendix G - Noise Monitoring Results**

(Restricted Hours - 2300-0700 on all days)

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>		
4-Jan-19	23:03	Sunny	67.4	68.9	65.4	67.3	63.7	<b>65</b>
	23:08		66.8	68.3	64.4			
	23:13		67.7	68.9	65.6			
11-Jan-19	23:30	Sunny	66.6	68.0	64.3	66.7	62.8	<b>64</b>
	23:35		67.3	69.3	64.4			
	23:40		66.1	67.4	64.4			
17-Jan-19	23:00	Cloudy	66.8	68.0	65.2	66.8	63.7	<b>64</b>
	23:05		66.9	68.3	64.9			
	23:10		66.6	67.8	65.0			
26-Jan-19	0:30	Sunny	66.8	68.2	63.5	66.7	61.1	<b>65</b>
	0:35		66.7	68.0	63.7			
	0:40		66.7	68.4	63.8			

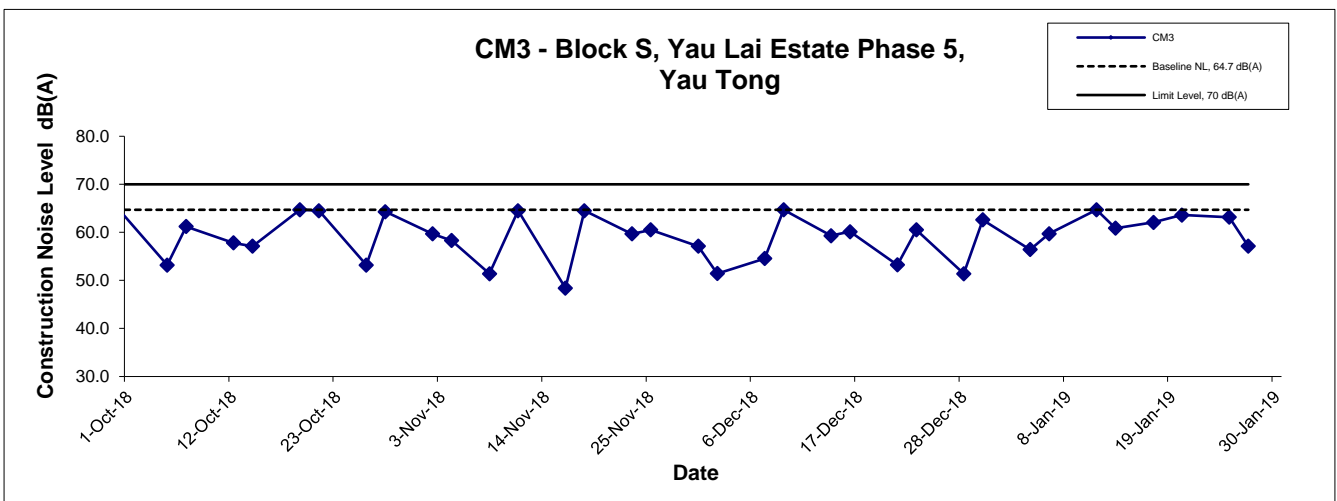
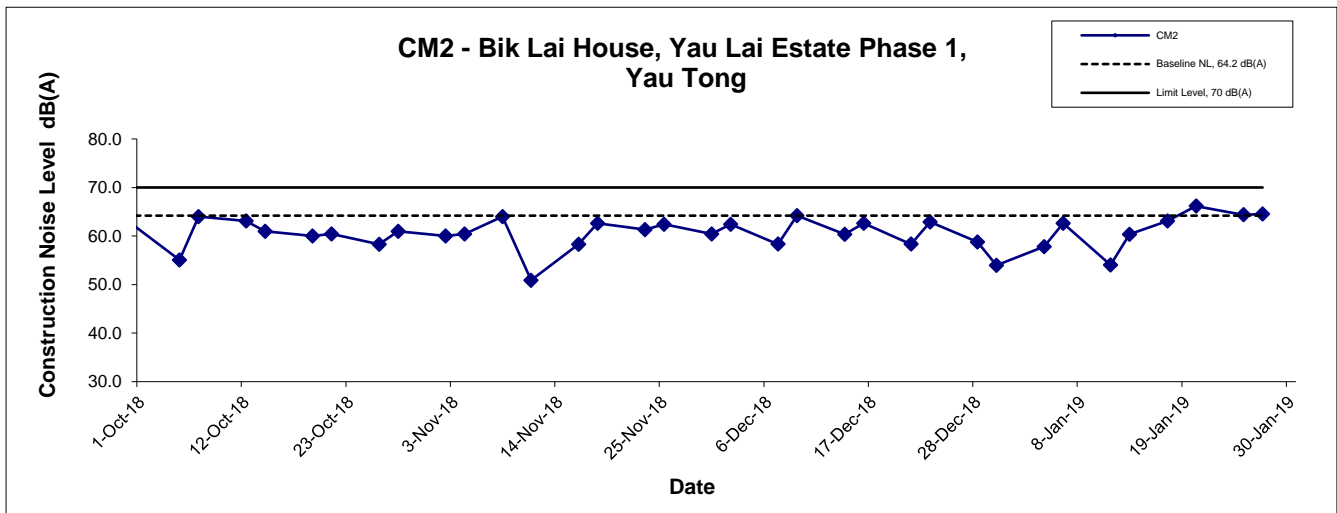
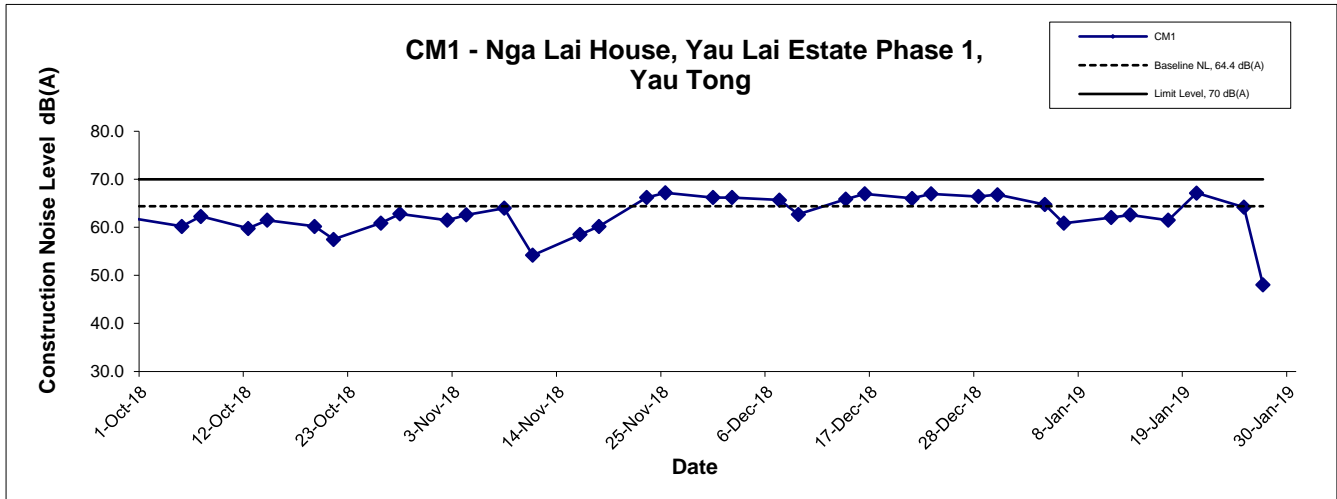
Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>		
4-Jan-19	23:35	Sunny	64.4	65.7	63.0	64.0	60.8	<b>61</b>
	23:40		63.8	64.9	61.3			
	23:45		63.9	65.6	61.5			
12-Jan-19	0:00	Sunny	65.4	66.2	63.2	64.7	59.7	<b>63</b>
	0:05		64.9	66.8	62.3			
	0:10		63.7	65.8	61.3			
17-Jan-19	23:30	Cloudy	64.7	66.9	63.1	64.8	60.8	<b>63</b>
	23:35		64.9	67.0	63.0			
	23:40		64.8	66.8	62.9			
26-Jan-19	0:10	Sunny	64.8	66.5	62.1	64.7	59.7	<b>63</b>
	0:15		64.8	66.8	62.0			
	0:20		64.6	66.3	62.2			

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>		
5-Jan-19	0:17	Sunny	62.7	64.4	61.9	62.6	61.8	55
	0:22		63.0	64.6	61.1			
	0:27		61.9	63.4	60.2			
12-Jan-19	0:30	Sunny	62.1	63.6	60.4	62.8	60.5	<b>59</b>
	0:35		62.7	64.4	60.4			
	0:40		63.6	65.0	62.1			
18-Jan-19	0:10	Cloudy	62.4	64.7	60.4	62.5	61.8	54
	0:15		62.6	64.9	60.6			
	0:20		62.5	64.5	60.3			
25-Jan-19	23:30	Sunny	64.3	65.1	60.2	64.2	62.9	<b>58</b>
	23:35		64.2	65.3	60.2			
	23:40		64.0	65.3	60.1			

Location CM4 - Tin Hau Temple, Cha Kwo Ling								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>	Average L <sub>eq</sub>		
5-Jan-19	1:25	Sunny	54.7	58.6	42.3	52.6	54.3	53 Measured ≤ Baseline
	1:30		51.8	56.1	42.2			
	1:35		49.8	54.2	42.6			
11-Jan-19	23:00	Sunny	53.6	57.1	47.5	52.5	55.6	53 Measured ≤ Baseline
	23:05		53.2	56.5	46.7			
	23:10		49.9	54.0	46.0			
18-Jan-19	0:50	Cloudy	53.8	56.4	46.4	53.7	54.5	54 Measured ≤ Baseline
	0:55		53.6	56.5	46.6			
	1:00		53.7	56.8	46.7			
25-Jan-19	23:00	Sunny	55.1	56.0	45.2	55.1	55.6	55 Measured ≤ Baseline
	23:05		55.0	56.2	45.3			
	23:10		55.2	56.4	45.3			

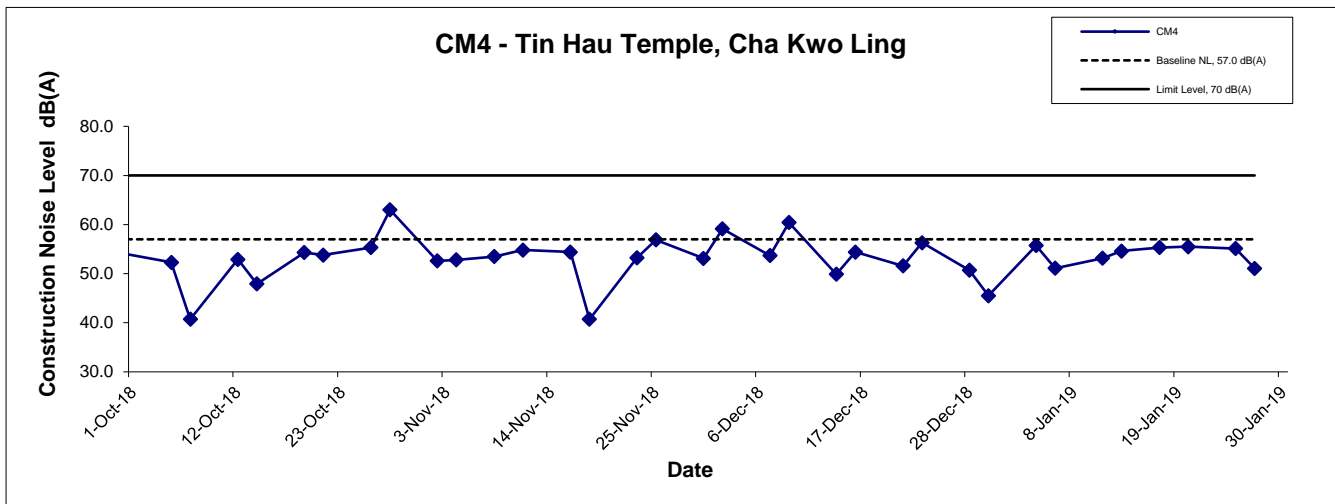


## Noise Levels (Restricted Hours - 07:00 - 23:00 holidays & 19:00 - 23:00 on all other days )



Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction  Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
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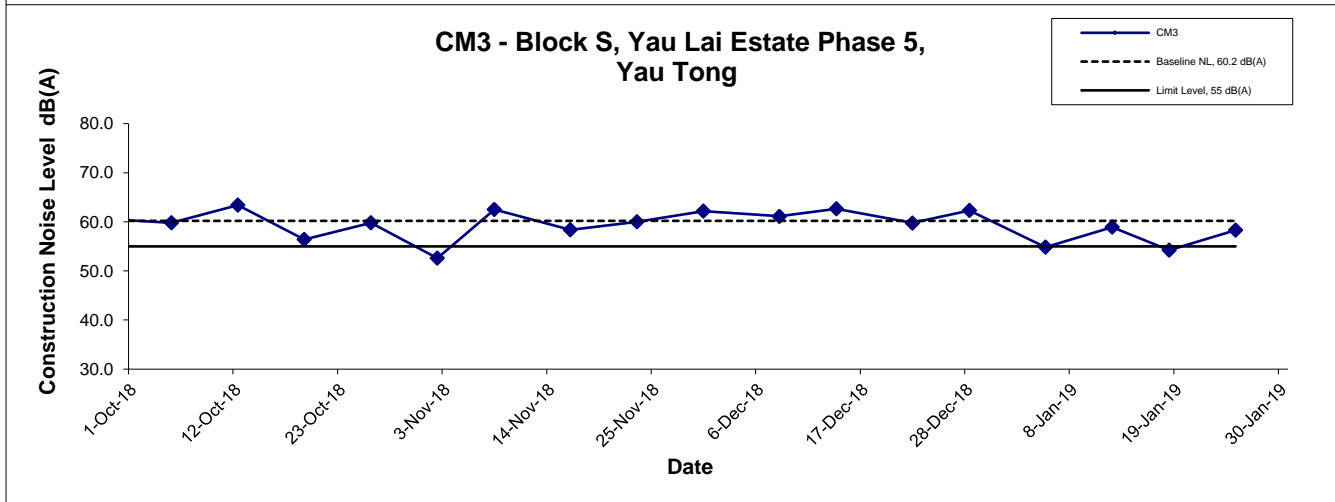
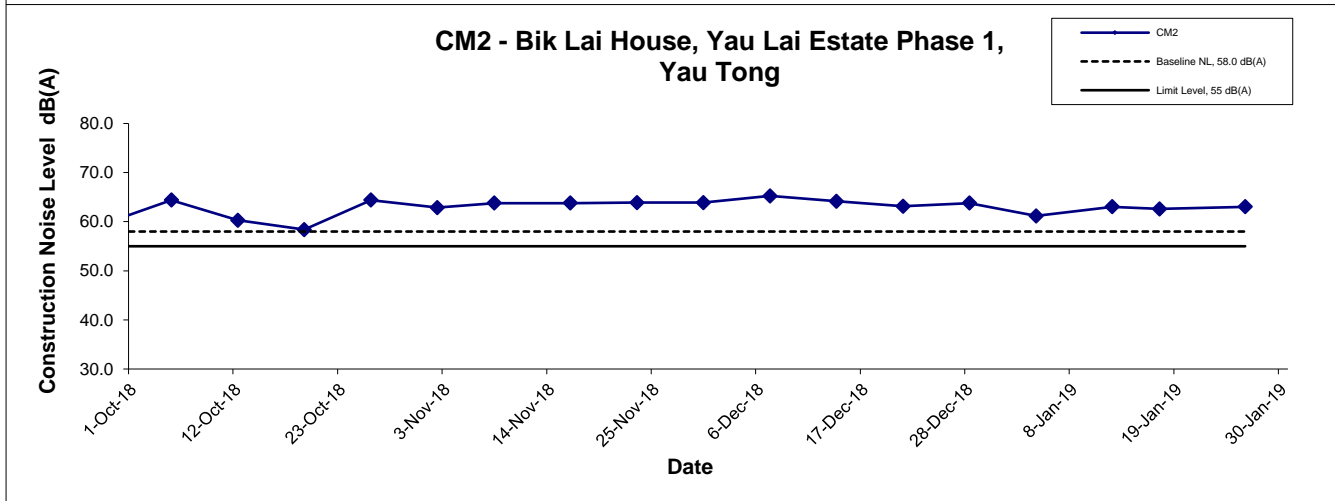
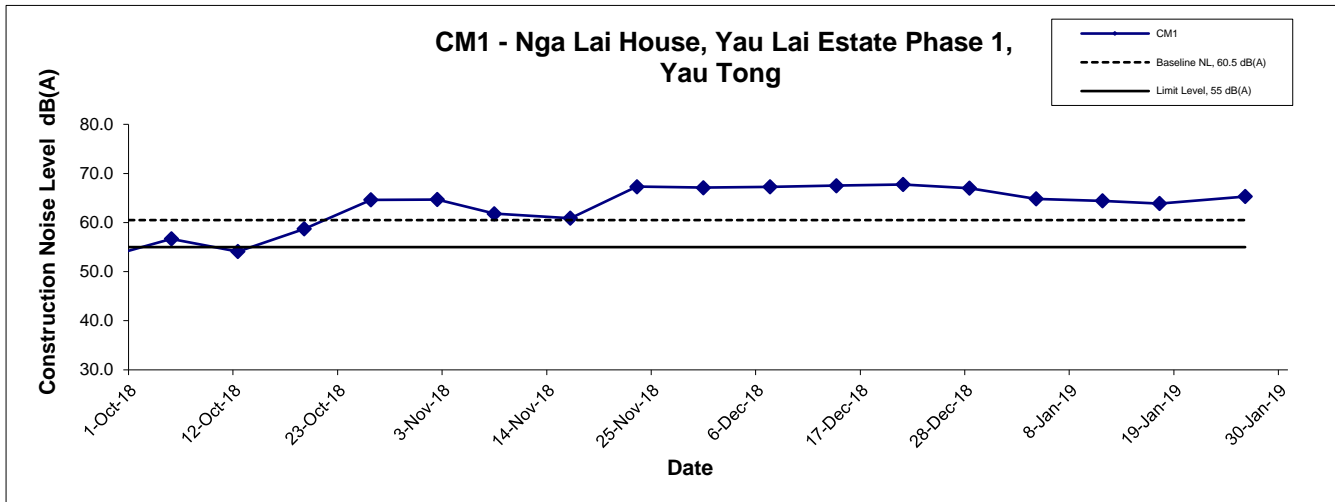
**Noise Levels**  
**(Restricted Hours - 07:00 - 23:00 holidays & 19:00 - 23:00 on all other days )**



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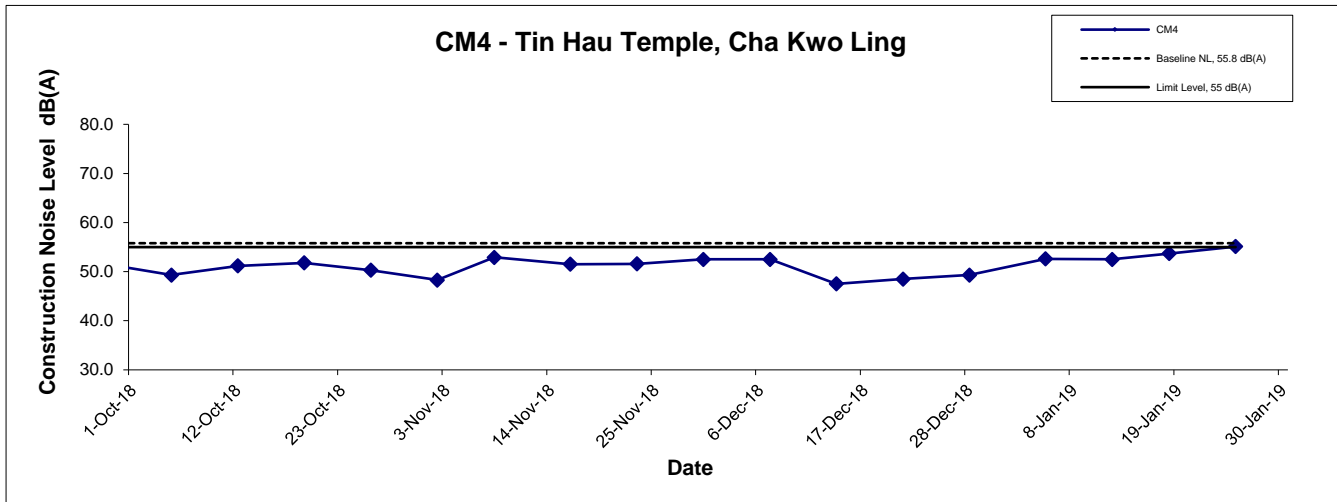


## Noise Levels (Restricted Hours - 2300-0700 on all days )



Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction  Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
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## Noise Levels (Restricted Hours - 2300-0700 on all days )



Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction  Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
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**APPENDIX H  
GROUNDWATER QUALITY  
MONITORING RESULTS AND  
GRAPHICAL PRESENTATIONS**

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**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
15-Jan-19	Fine	10:57	Surface	19.1	19.1	7.3	7.3	1.2	1.2	100.3	100.3	9.2	9.2	1.7	1.7
				19.1		7.3		1.2		100.3		9.2		1.6	
29-Jan-19	Sunny	15:59	Surface	20.1	20.2	7.4	7.4	1.2	1.2	102.1	102.1	9.2	9.2	1.8	1.8
				20.2		7.4		1.2		102.1		9.2		1.8	

**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
15-Jan-19	Fine	10:24	Surface	19.3	19.3	7.4	7.4	0.1	0.1	95.2	95.2	8.8	8.8	1.8	1.9
				19.3		7.4		0.1		95.2		8.8		1.9	
29-Jan-19	Sunny	15:42	Surface	18.5	18.5	7.9	7.9	0.2	0.2	99.1	99.1	9.3	9.3	6.5	<b>6.5</b>
				18.5		7.9		0.2		99.1		9.3		6.5	

**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
15-Jan-19	Fine	10:33	Surface	20.7	20.7	7.2	7.2	0.1	0.1	83.9	83.8	7.6	7.6	0.6	0.6
				20.7		7.2		0.1		83.6		7.6		0.6	
29-Jan-19	Sunny	15:59	Surface	20.1	20.1	7.6	7.6	0.1	0.1	86.4	86.3	7.8	7.8	0.3	0.3
				20.1		7.6		0.1		86.2		7.8		0.3	



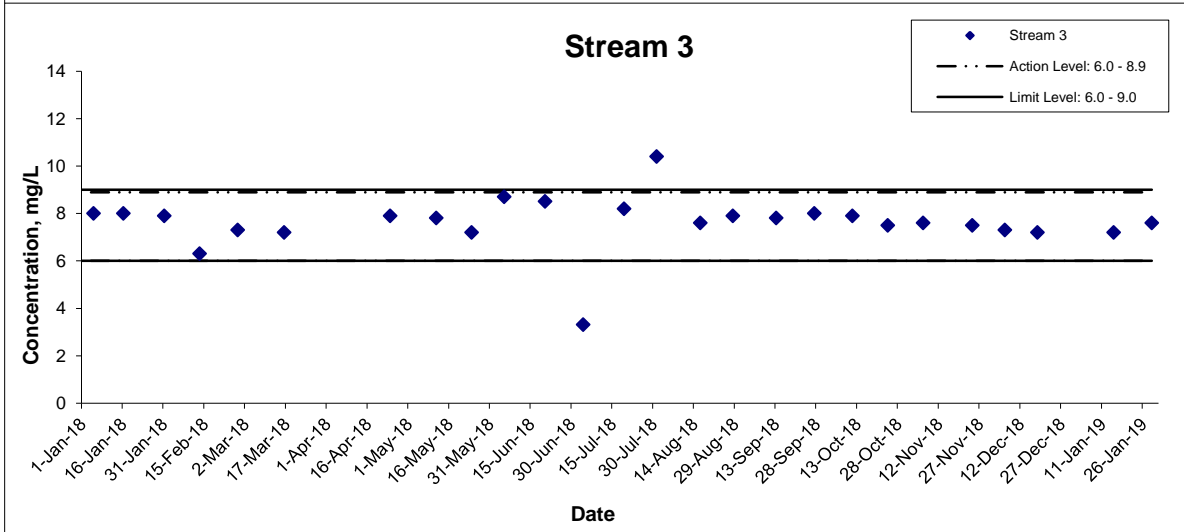
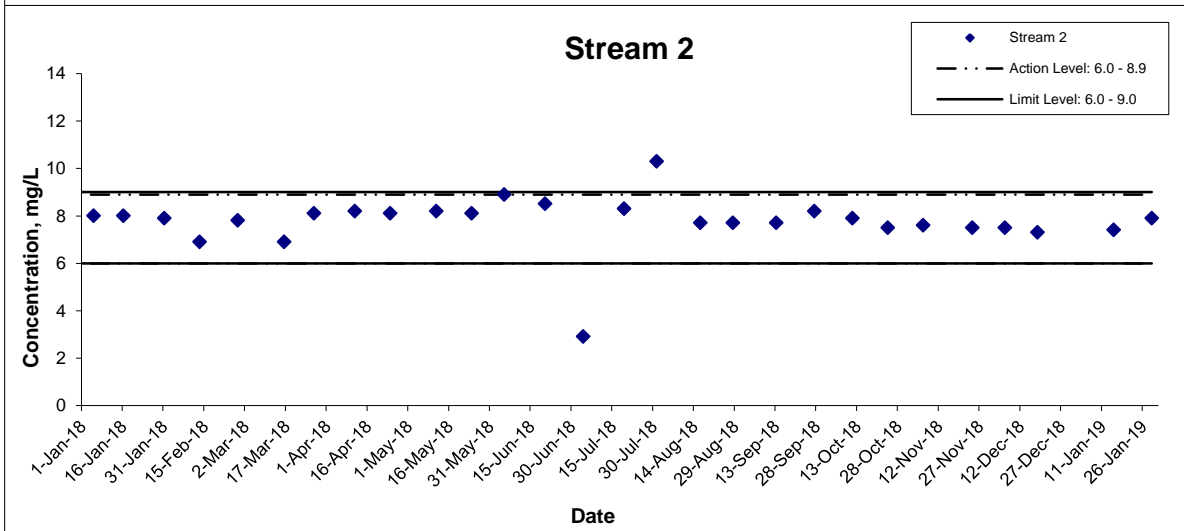
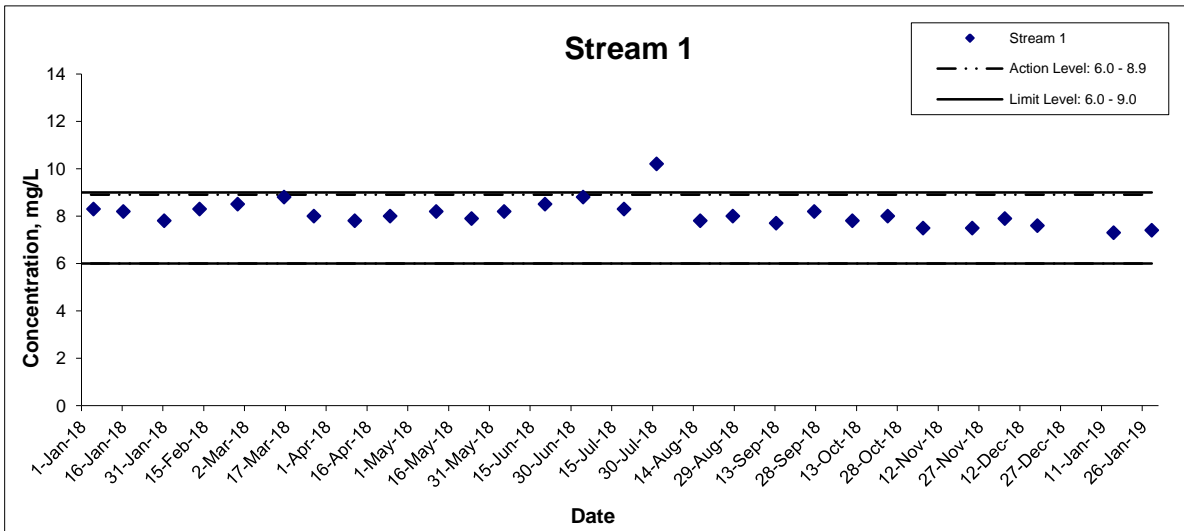
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**Summary of Groundwater Quality Monitoring Results**

Date	Location	Parameters (unit)								
		pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	SS (mg/L)	BOD <sub>5</sub> (mg O <sub>2</sub> /L)	TOC (mg-TOC/L)	Total Nitrogen (mg/L)	NH <sub>3</sub> -N (mg NH <sub>3</sub> -N/L)	Total Phosphorus (mg-P/L)
15 Jan 2019	Stream 1	7.3	9.2	1.7	3	<2	4	2.0	0.15	<b><u>0.10</u></b>
	Stream 2	7.4	8.8	1.9	<b>24</b>	<2	8	<b>2.3</b>	0.09	<b><u>0.12</u></b>
	Stream 3	7.2	7.6	0.6	<2.5	<2	4	1.5	<0.05	<0.05
29 Jan 2019	Stream 1	7.4	9.2	1.8	<2.5	<2	5	0.7	<0.05	<b><u>0.06</u></b>
	Stream 2	7.9	9.3	<b>6.5</b>	<b>13</b>	<2	5	1.6	<0.05	<b><u>0.10</u></b>
	Stream 3	7.6	7.8	0.3	<2.5	<2	5	1.2	<0.05	<b><u>0.06</u></b>

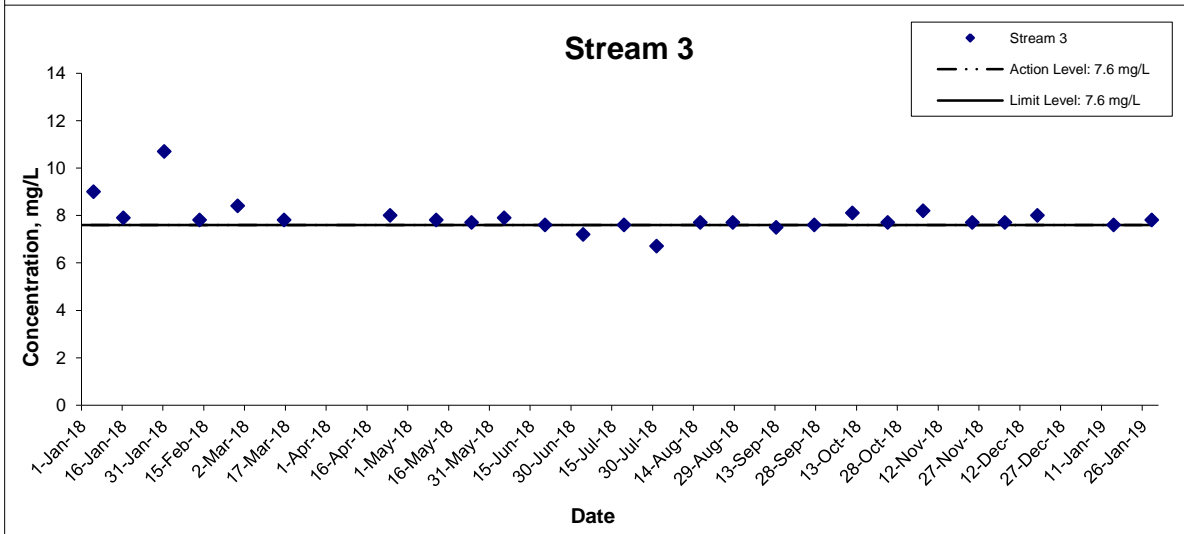
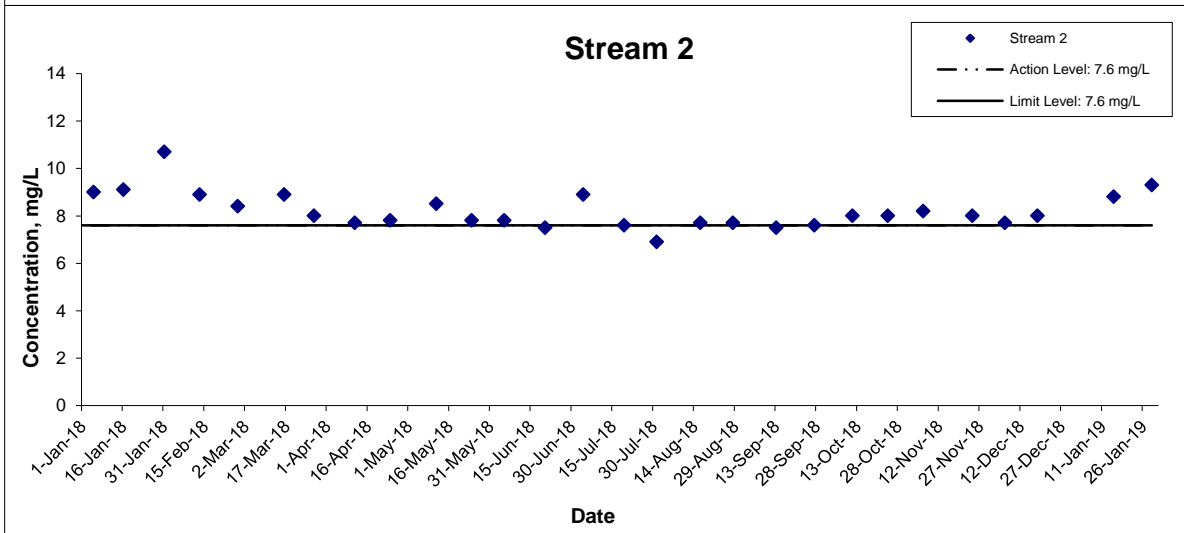
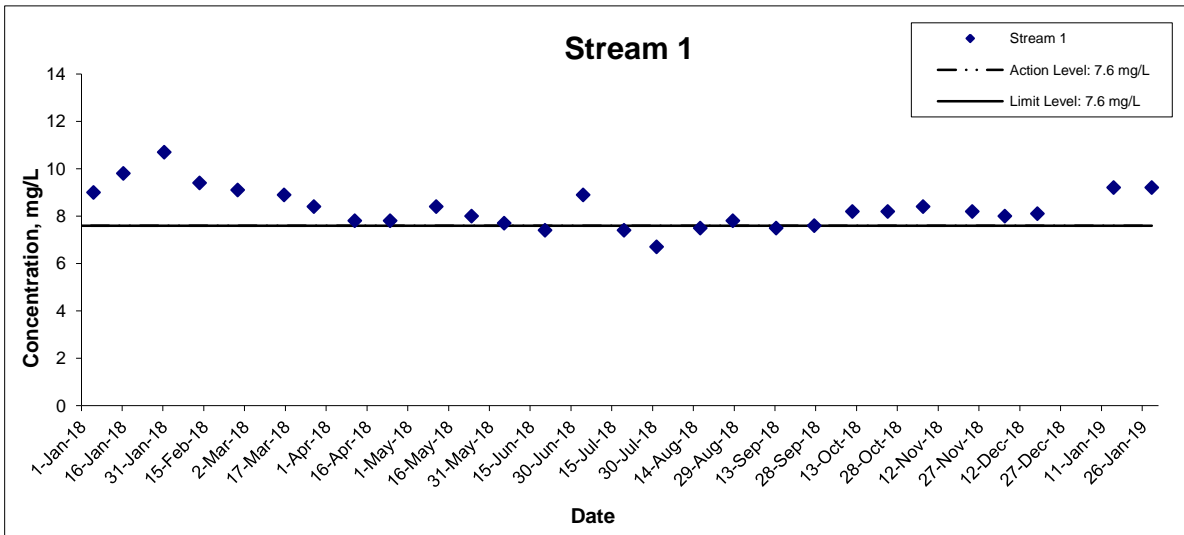
## pH



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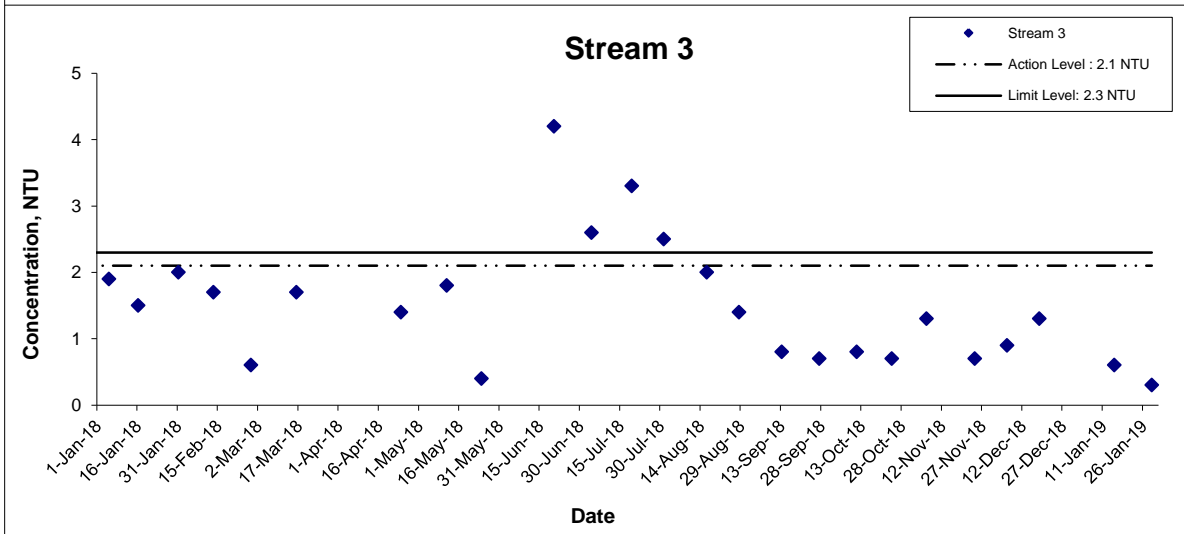
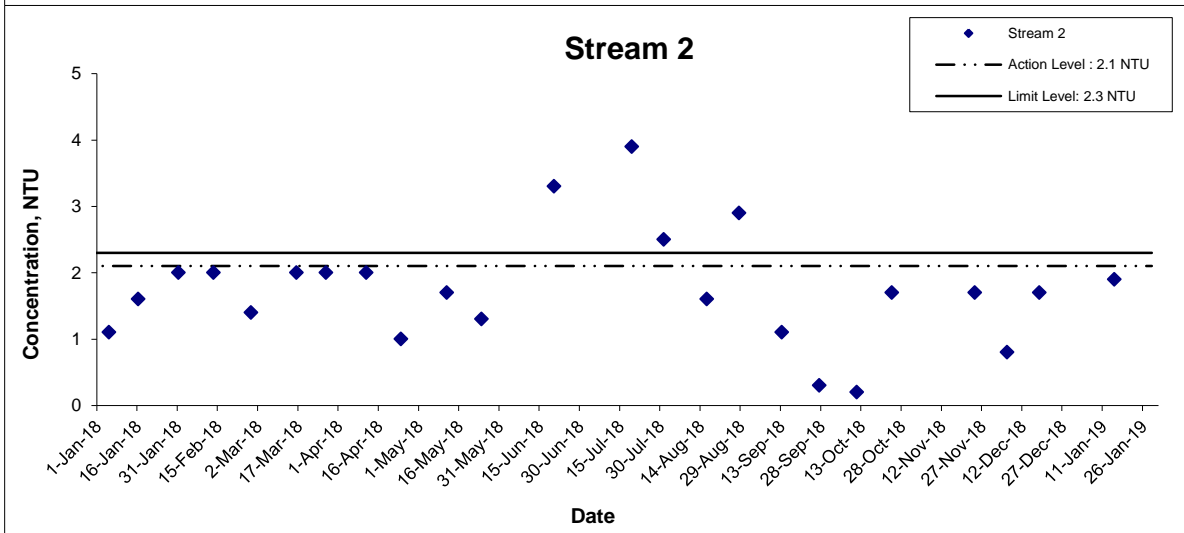
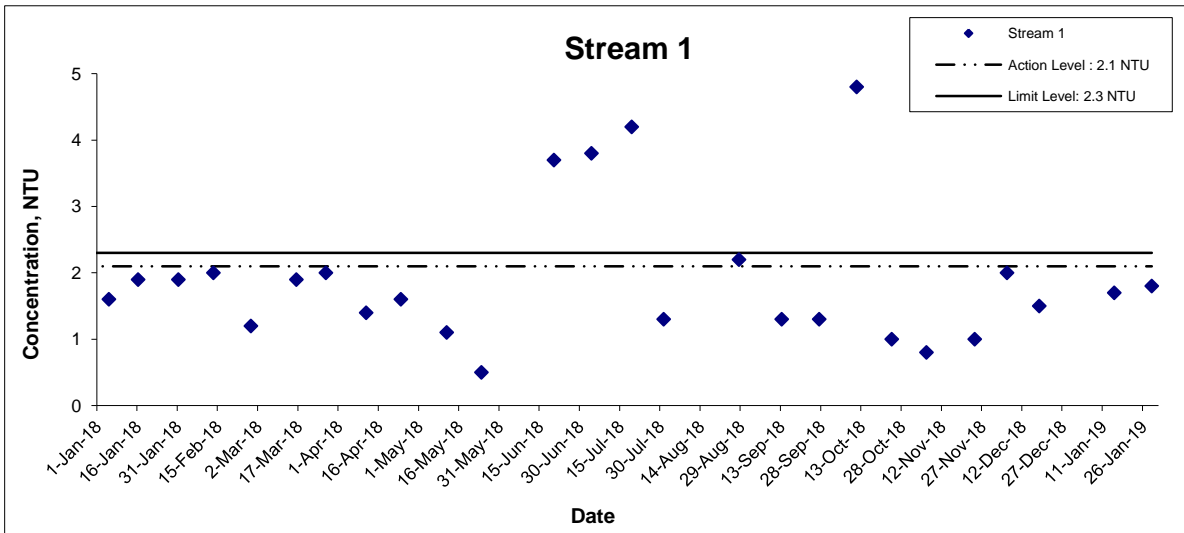


## Dissolved Oxygen



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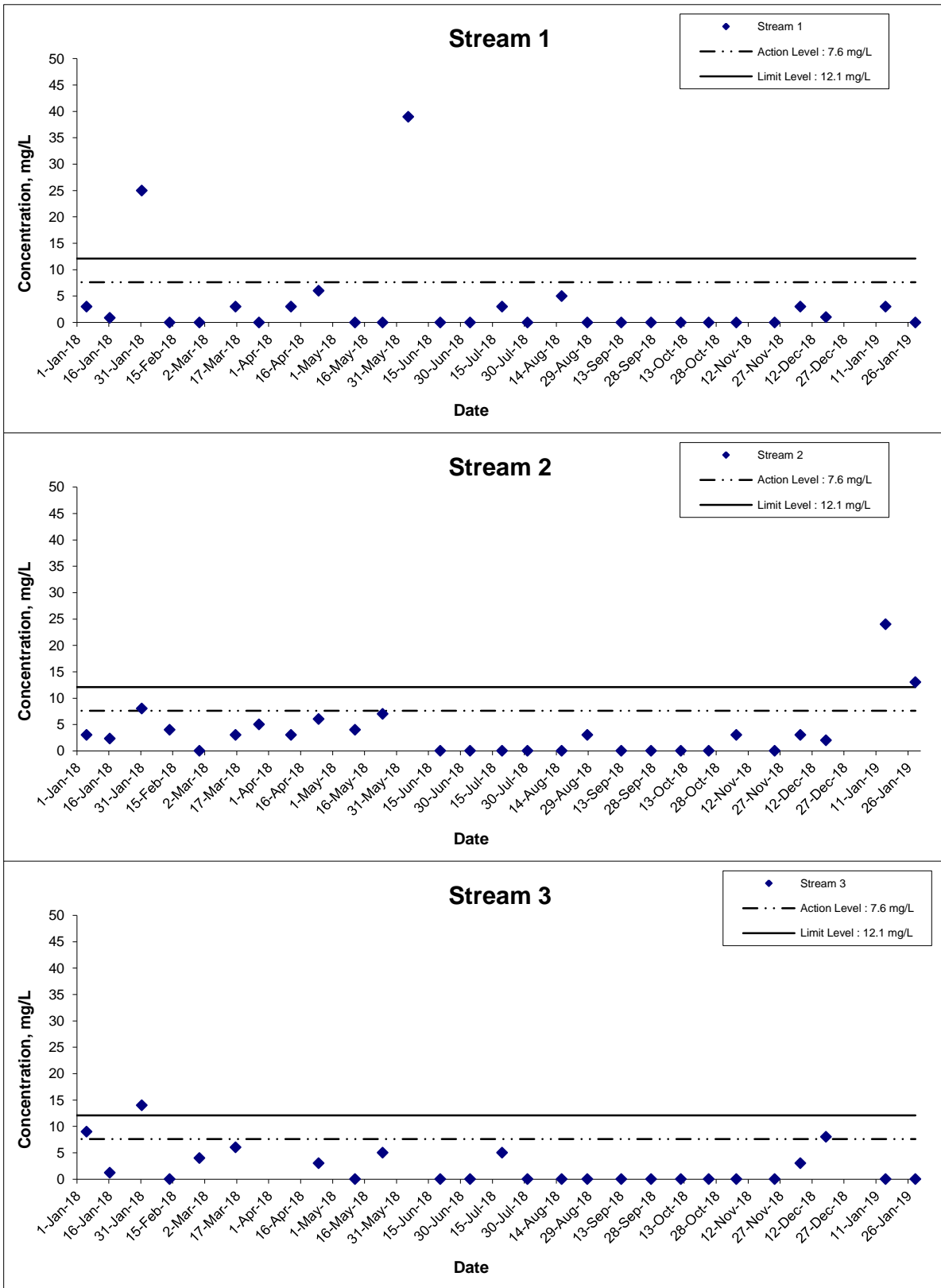
## Turbidity



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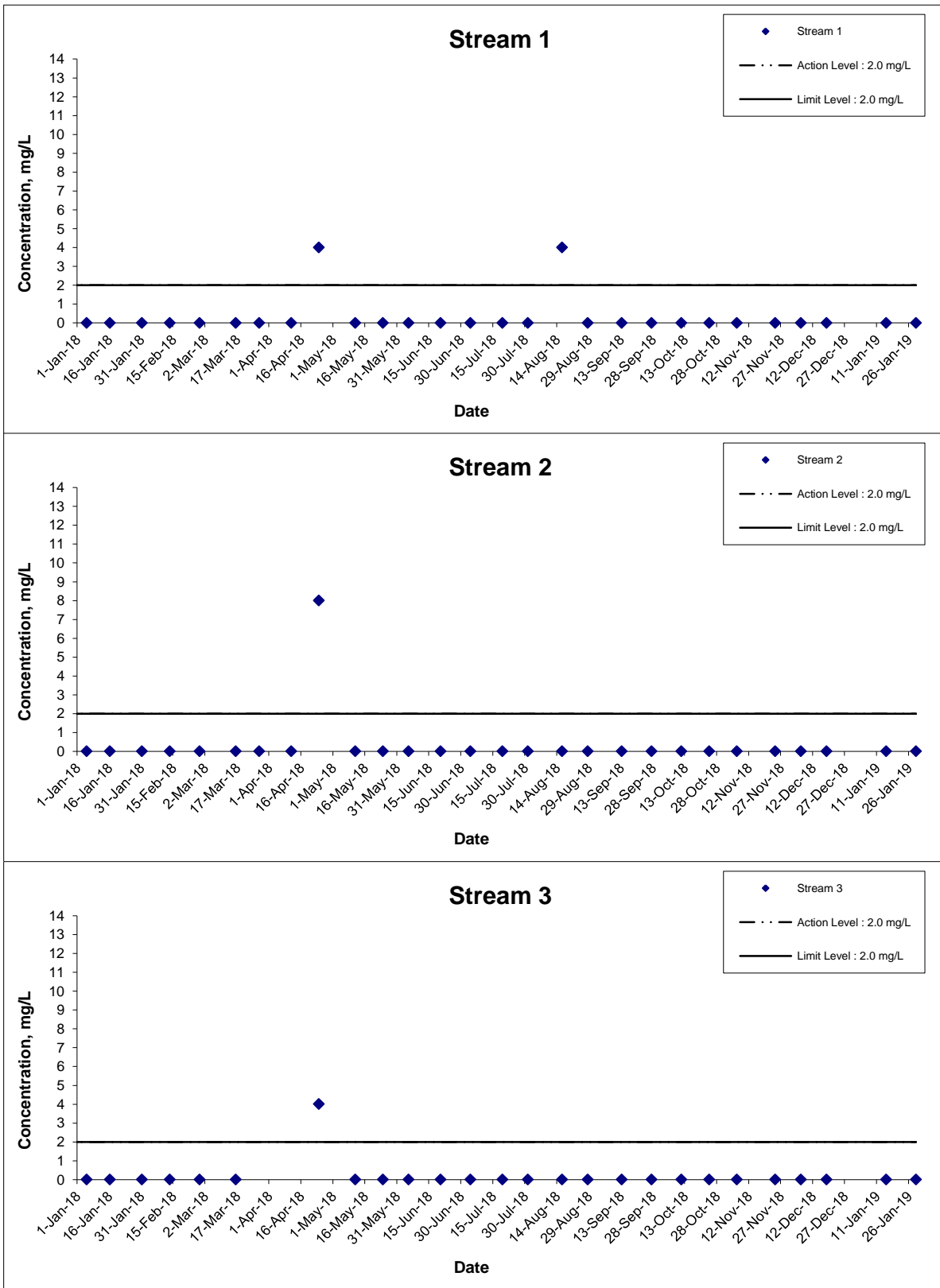
## Suspended Solids



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

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## 5-day Biochemical Oxygen Demand (BOD<sub>5</sub>)

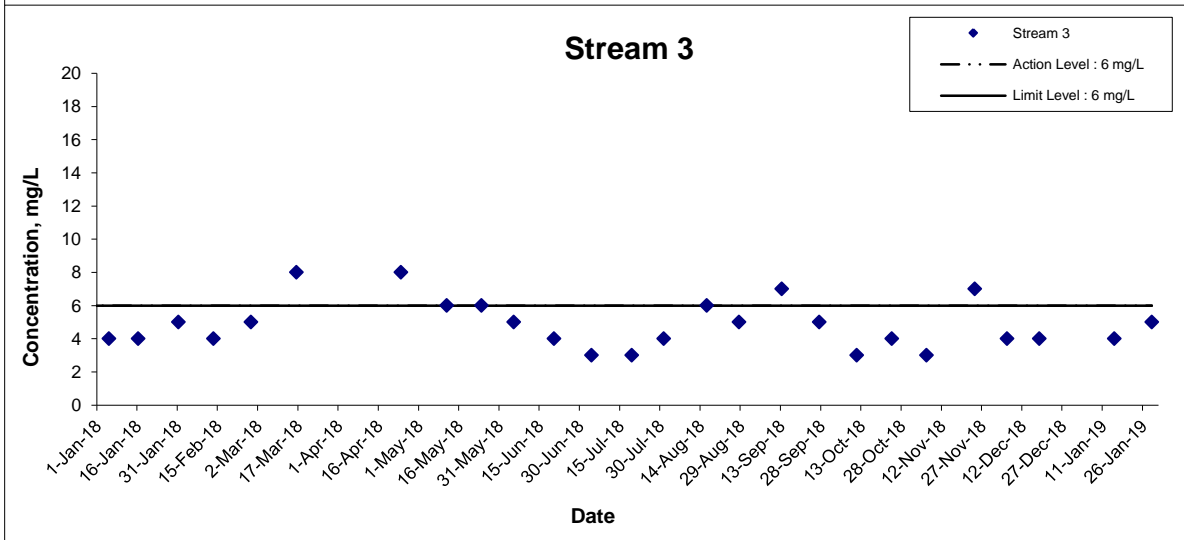
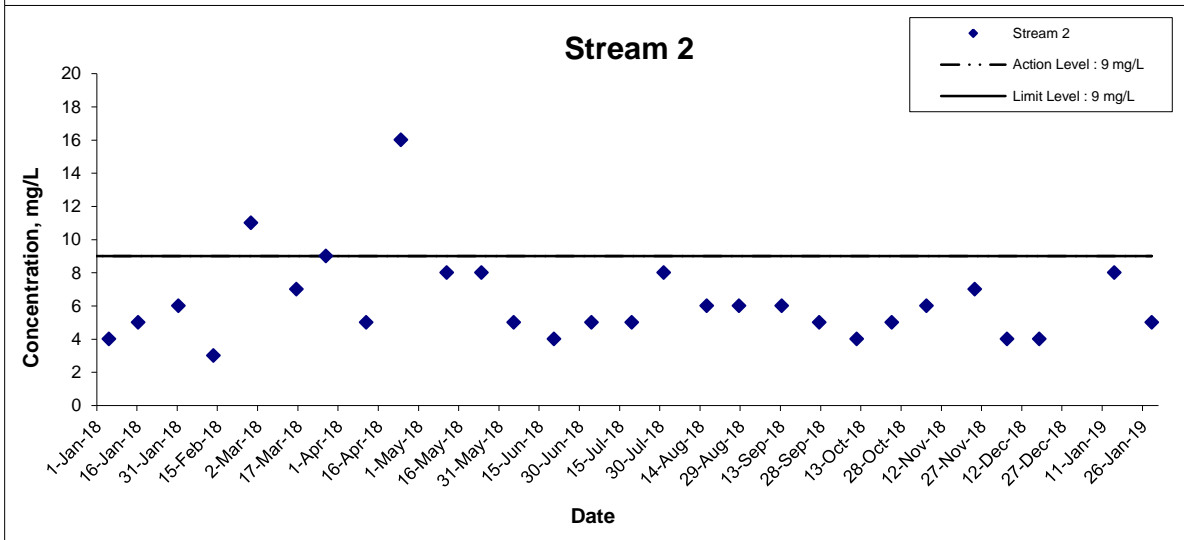
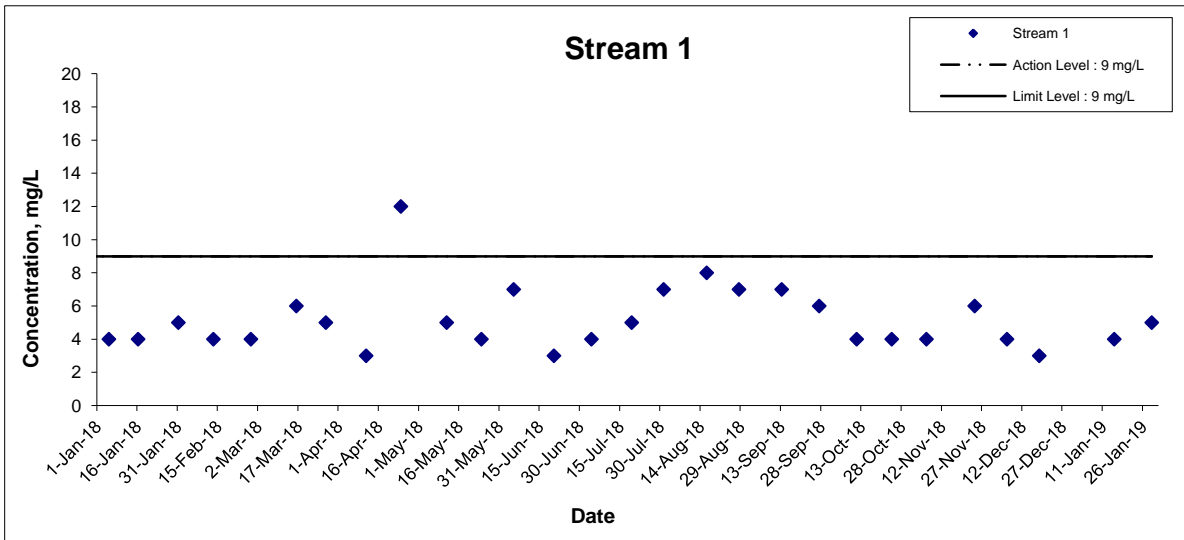


Remarks: The graphical point at zero concentration is presented as <2 mg/L

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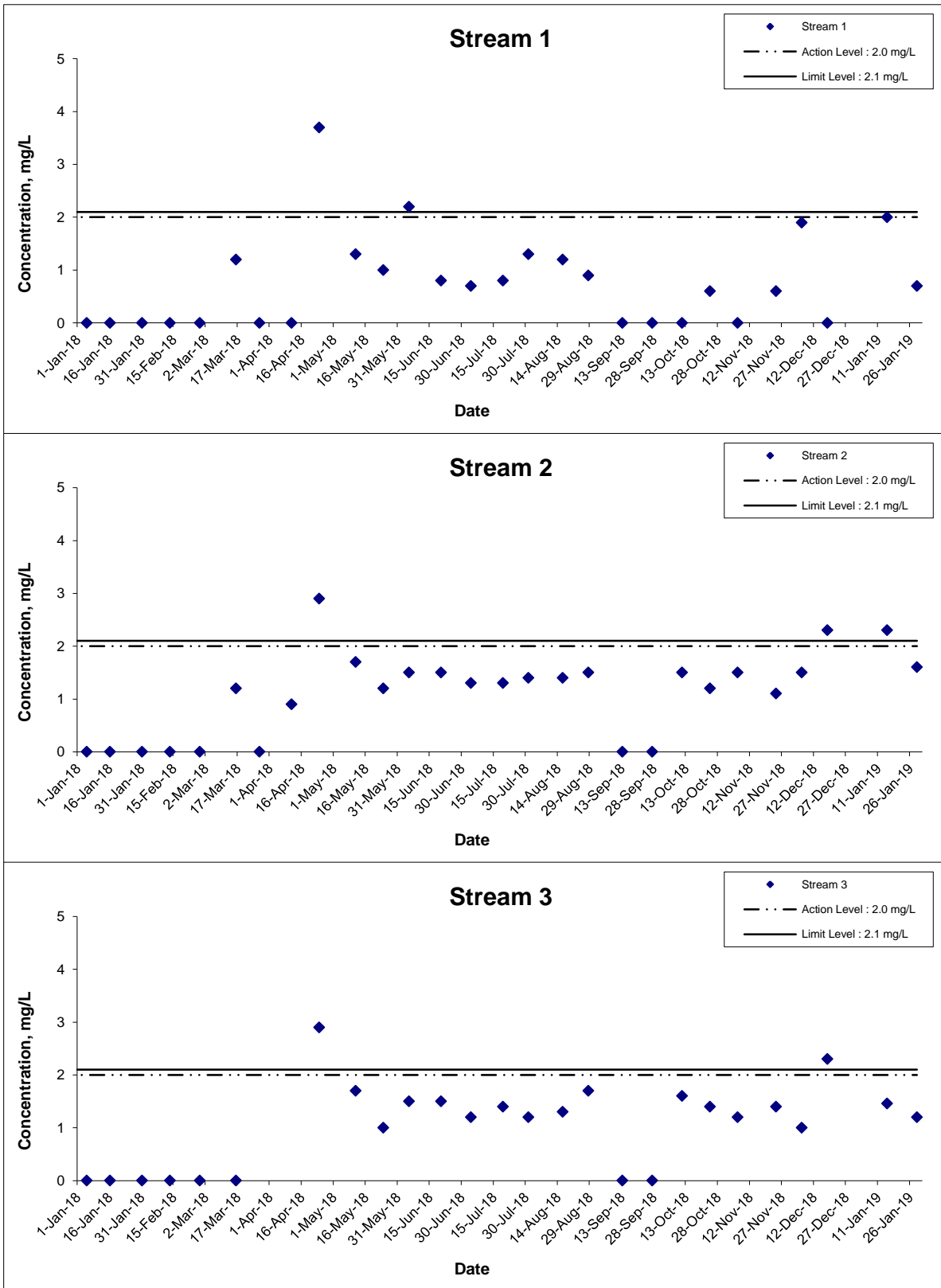


## Total Organic Carbon (TOC)



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## Total Nitrogen

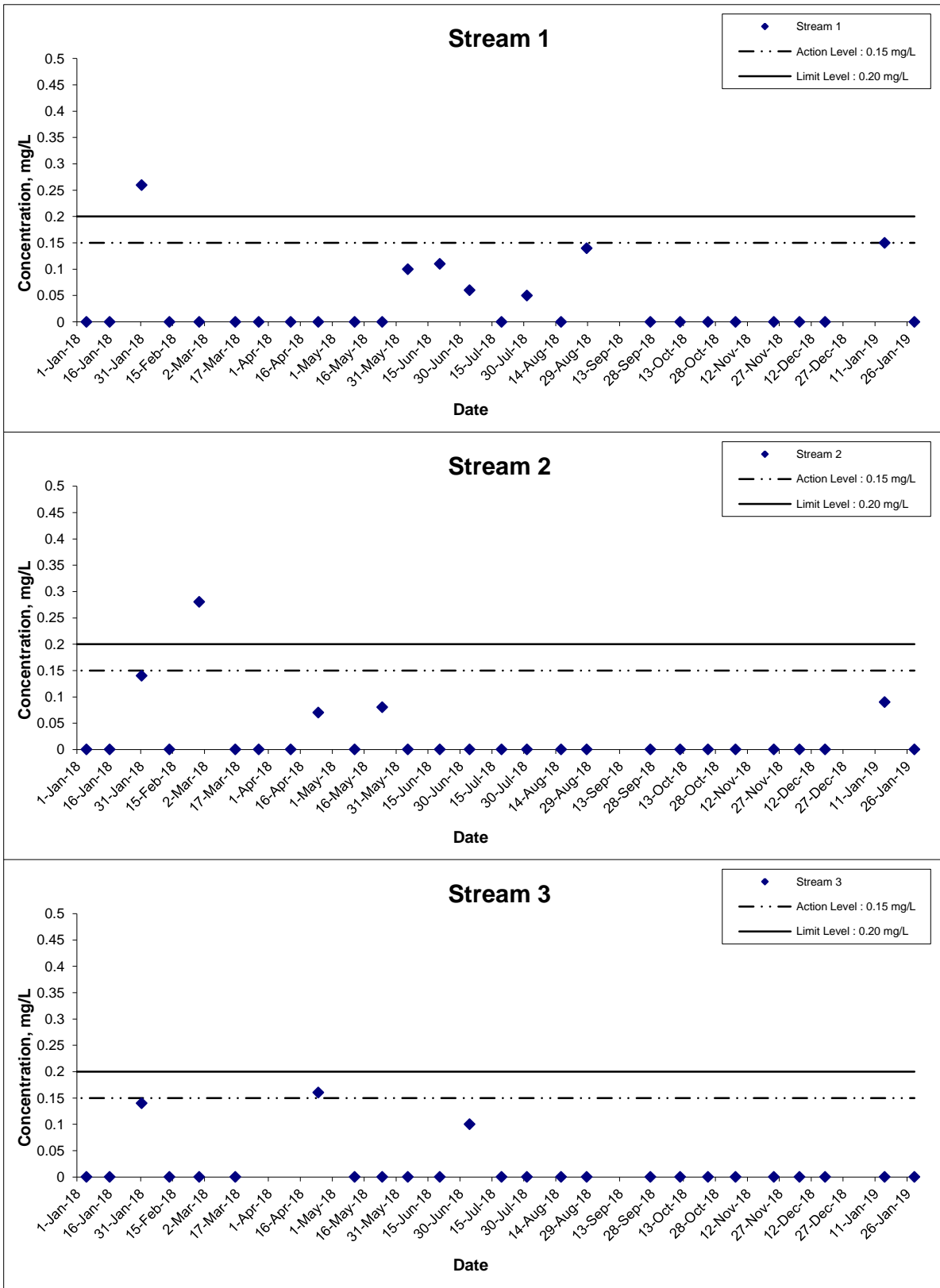


Remarks: The graphical point at zero concentration is presented as <0.6 mg/L

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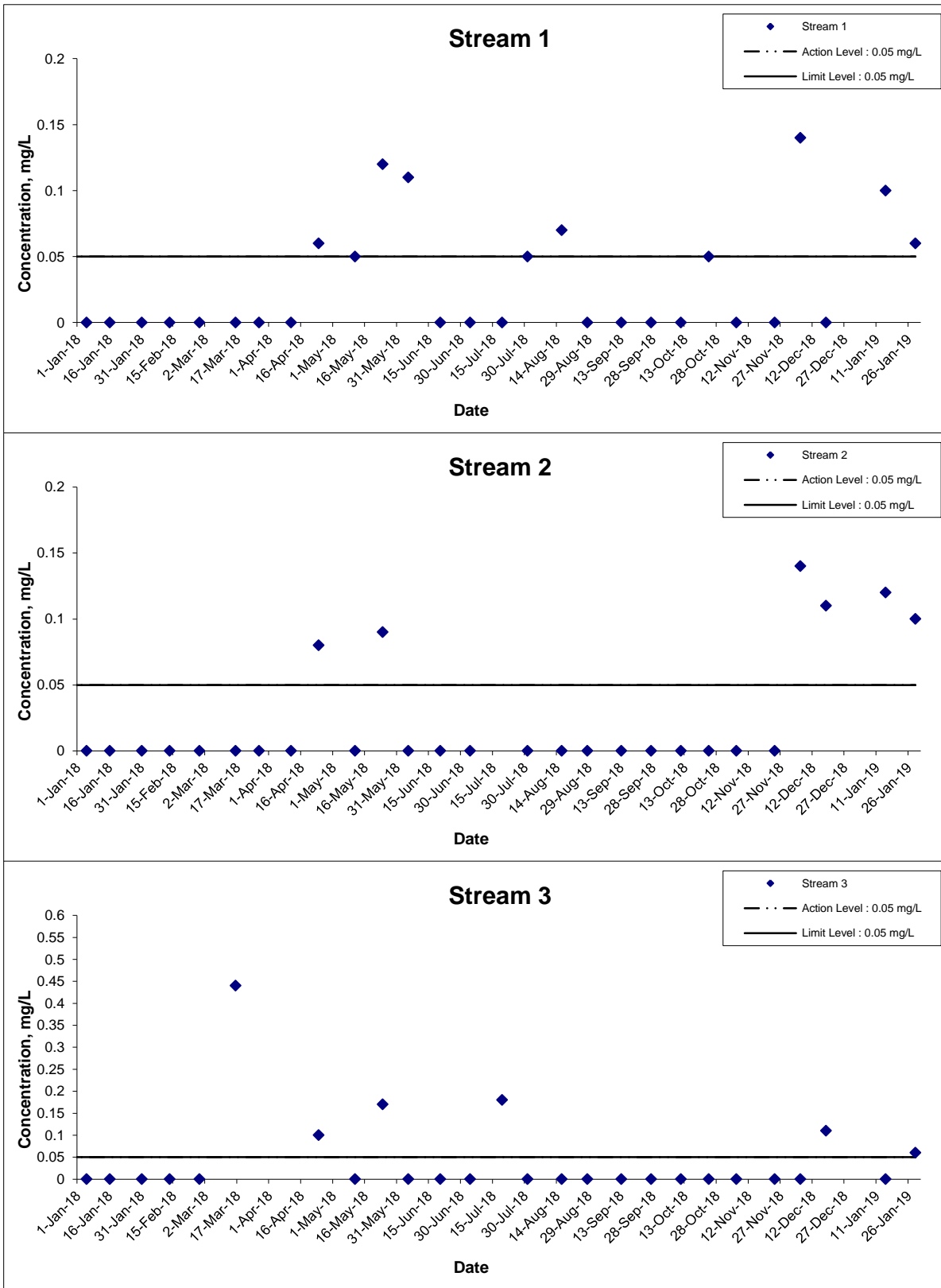
# Ammonia-Nitrogen



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

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## Total Phosphate



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

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

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

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.6 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 4.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 4.6 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 02 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	11:11	Surface	1.1	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	100.1 99.4	99.8	7.5 7.5	7.5	1.2 1.2	1.2	1.3	4.6 4.6	4.6	5.4	
				Middle	9.0	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	98.8 98.8	98.8	7.4 7.4	7.4	1.4 1.3	1.3		6.4 6.3	6.4		
				Bottom	17.0	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	98.0 98.0	98.0	7.4 7.4	7.4	1.2 1.2	1.2		5.3 5.3	5.3		
C2	Fine	Calm	9:37	Surface	1.1	19.2 19.2	19.2	8.1 8.2	8.1	35.1 35.0	35.0	99.9 99.4	99.7	7.5 7.5	7.5	1.2 1.1	1.2	1.2	5.6 5.5	5.6	4.2	
				Middle	16.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	98.1 98.0	98.1	7.4 7.4	7.4	1.3 1.3	1.3		3.5 3.5	3.5		
				Bottom	31.1	19.2 19.2	19.2	8.1 8.1	8.1	35.1 35.1	35.1	97.3 97.0	97.2	7.3 7.3	7.3	1.3 1.2	1.2		3.5 3.6	3.6		
G1	Fine	Calm	10:17	Surface	1.0	19.4 19.4	19.4	8.1 8.2	8.1	35.0 35.0	35.0	94.9 95.0	95.0	7.1 7.1	7.1	1.6 1.5	1.5	1.4	2.8 2.9	2.9	5.7	
				Middle	4.0	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	95.4 95.0	95.2	7.1 7.1	7.1	1.4 1.4	1.4		6.4 6.5	6.5		
				Bottom	7.1	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	95.0 94.9	95.0	7.1 7.1	7.1	1.3 1.2	1.3		7.9 7.8	7.9		
G2	Fine	Calm	10:01	Surface	1.0	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	98.8 98.5	98.7	7.4 7.4	7.4	0.7 0.8	0.7	0.8	5.8 5.9	5.9	4.9	
				Middle	5.3	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	98.3 98.1	98.2	7.4 7.4	7.4	0.8 0.9	0.8		4.8 5.0	4.9		
				Bottom	9.0	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	97.8 98.0	97.9	7.3 7.4	7.4	0.8 0.8	0.8		3.8 3.8	3.8		
G3	Fine	Calm	10:23	Surface	1.0	19.4 19.4	19.4	8.2 8.2	8.2	35.1 35.0	35.1	98.2 97.8	98.0	7.3 7.3	7.3	1.4 1.3	1.3	1.3	7.5 7.9	7.7	7.5	
				Middle	4.1	19.3 19.4	19.3	8.2 8.2	8.2	35.1 35.1	35.1	97.1 97.1	97.1	7.3 7.3	7.3	1.3 1.4	1.4		7.9 7.8	7.9		
				Bottom	7.1	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	96.5 96.5	96.5	7.2 7.2	7.2	1.3 1.3	1.3		7.0 6.9	7.0		
G4	Fine	Calm	10:50	Surface	1.1	19.3 19.3	19.3	8.2 8.2	8.2	35.0 35.0	35.0	98.9 97.5	98.2	7.4 7.3	7.4	1.0 1.0	1.0	1.2	4.3 4.4	4.4	4.8	
				Middle	4.1	19.2 19.3	19.3	8.2 8.2	8.2	35.1 35.0	35.0	97.7 97.2	97.5	7.3 7.3	7.3	1.0 1.0	1.0		3.0 3.0	3.0		
				Bottom	7.0	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	97.5 97.0	97.3	7.3 7.3	7.3	1.6 1.6	1.6		6.9 7.0	7.0		
M1	Fine	Calm	10:08	Surface	1.0	19.1 19.2	19.2	8.1 8.2	8.1	35.1 35.1	35.1	96.0 95.7	95.9	7.2 7.2	7.2	1.0 0.9	0.9	1.0	2.8 2.7	2.8	4.3	
				Middle	3.0	19.2 19.2	19.2	8.1 8.2	8.1	35.1 35.1	35.1	95.8 95.6	95.7	7.2 7.2	7.2	1.1 1.0	1.0		4.2 4.1	4.2		
				Bottom	5.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	96.3 95.8	96.1	7.2 7.2	7.2	1.0 1.0	1.0		5.9 6.1	6.0		
M2	Fine	Calm	9:56	Surface	1.0	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	98.6 98.6	98.6	7.4 7.4	7.4	1.0 0.9	0.9	1.0	4.7 4.8	4.8	6.2	
				Middle	5.6	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	98.3 98.1	98.2	7.4 7.4	7.4	1.0 1.0	1.0		10.8 11.0	10.9		
				Bottom	10.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	97.9 97.9	97.9	7.4 7.3	7.3	1.1 1.2	1.1		3.0 3.1	3.1		
M3	Fine	Calm	10:33	Surface	1.0	19.4 19.4	19.4	8.2 8.2	8.2	35.0 35.0	35.0	96.7 97.2	97.0	7.2 7.3	7.3	1.1 1.3	1.2	1.3	12.1 12.2	12.2	8.9	
				Middle	4.0	19.4 19.3	19.4	8.2 8.2	8.2	35.1 35.1	35.1	96.8 97.0	96.9	7.2 7.3	7.3	1.3 1.3	1.3		8.0 8.2	8.1		
				Bottom	7.1	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	97.0 96.8	96.9	7.3 7.3	7.3	1.3 1.3	1.3		6.3 6.3	6.3		
M4	Fine	Calm	9:46	Surface	1.0	19.1 19.1	19.1	8.1 8.2	8.2	35.1 35.1	35.1	99.9 99.6	99.8	7.5 7.5	7.5	1.4 1.5	1.4	1.4	6.2 6.4	6.3	5.7	
				Middle	5.1	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	99.0 99.2	99.1	7.4 7.5	7.4	1.4 1.4	1.4		3.6 3.6	3.6		
				Bottom	9.1	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	98.5 98.6	98.6	7.4 7.4	7.4	1.4 1.4	1.4		7.1 7.0	7.1		
M5	Fine	Calm	11:04	Surface	1.1	19.0 19.1	19.0	8.2 8.2	8.2	35.1 35.1	35.1	99.4 98.2	98.8	7.5 7.4	7.4	1.0 1.0	1.0	1.1	7.8 7.9	7.9	7.3	
				Middle	6.0	19.0 19.1	19.0	8.2 8.2	8.2	35.1 35.1	35.1	97.9 97.8	97.9	7.4 7.4	7.4	1.2 1.1	1.1		8.0 8.4	8.2		
				Bottom	11.0	19.0 19.0	19.0	8.2 8.2	8.2	35.1 35.1	35.1	97.2 97.3	97.3	7.3 7.3	7.3	1.2 1.1	1.1		5.7 5.9	5.8		
M6	Fine	Calm	10:59	Surface	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	2.8		
				Middle	2.1	19.2 19.2	19.2	8.1 8.1	8.1	35.1 35.1	35.1	98.2 97.9	98.1	7.4 7.4	7.4	1.1 1.1		1.1	2.8 2.8		2.8	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 2 January 2019 (Mid-Flood Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 3.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.1 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 9.3 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 9.3 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.6 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 02 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	16:06	Surface	1.1	19.2 19.1	19.1	8.2 8.2	8.2	35.0 35.0	35.0	99.5 99.2	99.4	7.5 7.5	7.5	7.4	2.2 2.2	2.2	2.6	7.2 7.1	7.2	4.9
				Middle	9.0	19.2 19.2	19.2	8.2 8.2	8.2	35.0 35.0	35.0	98.7 98.6	98.7	7.4 7.4	7.4		2.3 2.3	2.3		3.1 3.2	3.2	
				Bottom	17.0	19.1 19.0	19.1	8.2 8.2	8.2	35.0 35.0	35.0	97.5 97.5	97.5	7.3 7.3	7.3		3.1 3.2	3.2		4.4 4.2	4.3	
C2	Fine	Calm	14:49	Surface	1.1	19.2 19.2	19.2	8.1 8.1	8.1	35.0 35.1	35.1	99.7 99.6	99.7	7.5 7.5	7.5	7.4	1.6 1.6	1.6	2.1	8.2 8.1	8.2	6.7
				Middle	16.1	19.1 19.1	19.1	8.1 8.1	8.1	35.1 35.1	35.1	97.7 98.1	97.9	7.3 7.4	7.4		2.3 2.2	2.2		8.7 8.5	8.6	
				Bottom	31.1	19.1 19.1	19.1	8.1 8.1	8.1	35.1 35.1	35.1	97.3 97.2	97.3	7.3 7.3	7.3		2.3 2.4	2.3		3.2 3.3	3.3	
G1	Fine	Calm	15:26	Surface	1.1	19.4 19.4	19.4	8.2 8.2	8.2	34.9 34.9	34.9	98.4 97.7	98.1	7.4 7.3	7.3	7.3	1.1 1.1	1.1	1.3	9.9 10.2	10.1	7.8
				Middle	4.0	19.3 19.4	19.3	8.2 8.2	8.2	35.1 35.1	35.1	97.6 97.5	97.6	7.3 7.3	7.3		1.2 1.2	1.2		6.7 6.8	6.8	
				Bottom	7.0	19.3 19.2	19.3	8.2 8.2	8.2	35.1 35.1	35.1	96.8 96.7	96.8	7.3 7.3	7.3		1.3 1.6	1.5		6.7 6.7	6.7	
G2	Fine	Calm	15:11	Surface	1.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	101.2 101.1	101.2	7.6 7.6	7.6	7.6	0.7 0.7	0.7	0.8	2.7 2.6	2.7	4.1
				Middle	5.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	100.5 100.6	100.6	7.5 7.6	7.5		0.6 0.7	0.7		5.9 5.7	5.8	
				Bottom	9.1	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	99.9 98.5	99.2	7.5 7.4	7.5		0.9 1.1	1.0		3.8 3.8	3.8	
G3	Fine	Calm	15:32	Surface	1.0	19.3 19.3	19.3	8.2 8.2	8.2	34.9 34.9	34.9	98.8 98.1	98.5	7.4 7.4	7.4	7.4	1.2 1.1	1.1	1.0	4.6 4.4	4.5	5.6
				Middle	4.1	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	98.9 98.1	98.5	7.4 7.4	7.4		0.9 1.0	1.0		4.9 4.9	4.9	
				Bottom	7.0	19.2 19.3	19.2	8.2 8.2	8.2	35.1 35.1	35.1	98.1 97.9	98.0	7.4 7.3	7.4		1.1 1.0	1.0		7.4 7.6	7.5	
G4	Fine	Calm	15:45	Surface	1.0	19.4 19.4	19.4	8.2 8.2	8.2	35.0 35.0	35.0	98.6 98.6	98.6	7.4 7.4	7.4	7.4	1.0 1.0	1.0	1.3	3.6 3.6	3.6	4.0
				Middle	4.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	98.2 98.0	98.1	7.4 7.4	7.4		1.5 1.7	1.6		4.4 4.3	4.4	
				Bottom	7.1	19.2 19.2	19.2	8.2 8.2	8.2	35.1 35.1	35.1	97.9 97.9	97.9	7.4 7.4	7.4		1.4 1.2	1.3		4.0 4.0	4.0	
M1	Fine	Calm	16:17	Surface	1.0	19.2 19.2	19.2	8.2 8.2	8.2	35.0 35.0	35.0	99.5 98.3	98.9	7.5 7.4	7.4	7.4	1.7 1.9	1.8	2.2	6.8 6.8	6.8	7.6
				Middle	3.0	19.2 19.2	19.2	8.2 8.2	8.2	35.0 35.0	35.0	98.5 98.0	98.3	7.4 7.4	7.4		2.3 2.4	2.3		10.5 10.4	10.5	
				Bottom	5.0	19.2 19.2	19.2	8.2 8.2	8.2	35.0 35.1	35.0	98.1 97.7	97.9	7.4 7.3	7.3		2.5 2.5	2.5		5.7 5.6	5.7	
M2	Fine	Calm	15:03	Surface	1.1	19.2 19.2	19.2	8.1 8.2	8.1	35.1 35.1	35.1	100.7 100.3	100.5	7.6 7.5	7.5	7.5	0.8 0.8	0.8	1.0	7.3 7.1	7.2	5.7
				Middle	5.6	19.1 19.1	19.1	8.1 8.2	8.1	35.1 35.1	35.1	99.5 99.4	99.5	7.5 7.5	7.5		0.9 0.9	0.9		6.0 6.0	6.0	
				Bottom	10.0	19.1 19.1	19.1	8.1 8.1	8.1	35.1 35.1	35.1	98.7 98.7	98.7	7.4 7.4	7.4		1.2 1.2	1.2		3.9 4.0	4.0	
M3	Fine	Calm	15:38	Surface	1.0	19.4 19.4	19.4	8.2 8.2	8.2	35.0 35.0	35.0	99.1 98.5	98.8	7.4 7.4	7.4	7.4	0.9 0.9	0.9	1.2	3.1 3.1	3.1	3.4
				Middle	4.0	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	97.6 97.9	97.8	7.3 7.3	7.3		1.1 1.1	1.1		4.8 4.8	4.8	
				Bottom	7.0	19.3 19.3	19.3	8.2 8.2	8.2	35.1 35.1	35.1	96.9 96.8	96.9	7.3 7.3	7.3		1.8 1.7	1.7		2.2 2.2	2.2	
M4	Fine	Calm	14:57	Surface	1.0	19.1 19.1	19.1	8.1 8.1	8.1	35.1 35.1	35.1	100.5 100.2	100.4	7.6 7.5	7.5	7.5	0.8 0.8	0.8	1.0	2.5 2.5	2.5	5.0
				Middle	5.0	19.1 19.1	19.1	8.1 8.1	8.1	35.1 35.1	35.1	99.4 99.5	99.5	7.5 7.5	7.5		1.1 1.0	1.0		4.8 5.0	4.9	
				Bottom	9.0	19.1 19.1	19.1	8.1 8.1	8.1	35.1 35.1	35.1	98.8 98.9	98.9	7.4 7.4	7.4		1.2 1.2	1.2		7.9 7.5	7.7	
M5	Fine	Calm	15:59	Surface	1.0	19.1 19.1	19.1	8.2 8.2	8.2	35.0 35.0	35.0	99.8 99.3	99.6	7.5 7.5	7.5	7.5	1.1 1.2	1.2	1.1	8.1 8.1	8.1	6.1
				Middle	6.0	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	99.1 98.9	99.0	7.5 7.4	7.4		1.1 1.1	1.1		5.6 5.6	5.6	
				Bottom	11.1	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	98.9 98.5	98.7	7.4 7.4	7.4		1.0 1.0	1.0		4.6 4.7	4.7	
M6	Fine	Calm	15:53	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	1.2	-	-	4.0
				Middle	2.0	19.2 19.2	19.2	8.1 8.1	8.1	35.1 35.1	35.1	99.5 99.4	99.5	7.5 7.5	7.5		1.2 1.2	1.2		3.9 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 3 January 2019 (Mid-Ebb Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.5 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.7 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.6 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.6 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.1 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 03 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	11:29	Surface	1.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	100.5 98.8	99.7	7.6 7.5	7.5	1.1 1.2	1.1	1.3	4.1 4.1	4.1	3.3	
				Middle	9.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	98.5 98.2	98.4	7.4 7.4	7.4	1.2 1.2	1.2		3.9 3.9	3.9		
				Bottom	17.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	97.3 97.1	97.2	7.3 7.3	7.3	1.6 1.5	1.6		2.0 2.0	2.0		
C2	Fine	Calm	10:10	Surface	1.0	19.0 19.0	19.0	8.1 8.1	8.1	35.0 35.0	35.0	98.6 98.6	98.6	7.4 7.4	7.4	1.1 1.0	1.1	1.2	6.6 6.6	6.6	5.9	
				Middle	16.0	19.0 19.0	19.0	8.1 8.1	8.1	35.0 35.0	35.0	97.8 97.5	97.7	7.4 7.3	7.4	1.2 1.2	1.2		4.8 4.8	4.8		
				Bottom	31.1	19.0 19.0	19.0	8.1 8.1	8.1	35.0 35.0	35.0	96.7 96.6	96.7	7.3 7.3	7.3	1.3 1.3	1.3		6.3 6.1	6.2		
G1	Fine	Calm	10:49	Surface	1.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	100.1 97.7	98.9	7.5 7.4	7.5	0.8 0.9	0.9	0.9	4.5 4.7	4.6	5.2	
				Middle	4.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	98.8 97.6	98.2	7.4 7.4	7.4	0.9 0.9	0.9		3.3 3.2	3.3		
				Bottom	7.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	97.3 97.2	97.3	7.3 7.3	7.3	0.9 1.0	0.9		7.4 7.8	7.6		
G2	Fine	Calm	10:32	Surface	1.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	100.8 98.2	99.5	7.6 7.4	7.5	0.8 0.8	0.8	0.9	7.9 8.0	8.0	6.3	
				Middle	5.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	98.3 97.8	98.1	7.4 7.4	7.4	0.8 0.9	0.8		3.6 3.8	3.7		
				Bottom	9.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.1	35.0	97.8 97.2	97.5	7.4 7.3	7.3	0.9 0.9	0.9		6.9 7.3	7.1		
G3	Fine	Calm	10:55	Surface	1.1	19.1 19.1	19.1	8.2 8.2	8.2	34.9 35.0	34.9	98.7 97.7	98.2	7.4 7.3	7.4	0.9 1.0	0.9	1.0	3.8 3.9	3.9	4.1	
				Middle	4.0	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.0	35.0	97.4 97.5	97.5	7.3 7.3	7.3	1.2 1.1	1.1		5.1 5.1	5.1		
				Bottom	7.0	19.0 19.0	19.0	8.2 8.2	8.2	35.1 35.1	35.1	96.8 96.7	96.8	7.3 7.3	7.3	1.0 0.9	1.0		3.4 3.5	3.5		
G4	Fine	Calm	11:07	Surface	1.0	19.2 19.1	19.2	8.2 8.2	8.2	34.7 35.0	34.8	98.4 97.8	98.1	7.4 7.4	7.4	0.7 0.8	0.7	0.9	3.6 3.6	3.6	3.5	
				Middle	4.1	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.0	35.0	97.9 97.8	97.9	7.4 7.4	7.4	1.1 0.9	1.0		3.5 3.6	3.6		
				Bottom	7.0	19.0 19.0	19.0	8.2 8.2	8.2	35.1 35.0	35.0	97.5 97.0	97.3	7.3 7.3	7.3	1.0 1.0	1.0		3.5 3.4	3.5		
M1	Fine	Calm	10:40	Surface	1.0	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.0	35.0	100.8 97.2	99.0	7.6 7.3	7.5	1.3 1.3	1.3	1.3	4.2 4.2	4.2	5.4	
				Middle	3.1	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.0	35.0	98.2 97.0	97.6	7.4 7.3	7.3	1.2 1.2	1.2		5.4 5.4	5.4		
				Bottom	5.0	19.0 19.0	19.0	8.2 8.2	8.2	35.1 35.1	35.1	97.3 96.7	97.0	7.3 7.3	7.3	1.4 1.4	1.4		6.7 6.6	6.7		
M2	Fine	Calm	10:27	Surface	1.0	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.0	35.0	101.6 98.4	100.0	7.7 7.4	7.5	0.9 0.9	0.9	1.0	2.9 3.0	3.0	4.9	
				Middle	6.0	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.1	35.0	99.3 97.6	98.5	7.5 7.4	7.4	1.1 1.0	1.0		6.2 5.9	6.1		
				Bottom	11.0	19.0 19.0	19.0	8.1 8.2	8.1	35.1 35.1	35.1	98.0 97.1	97.6	7.4 7.3	7.4	1.0 1.0	1.0		5.7 5.7	5.7		
M3	Fine	Calm	11:01	Surface	1.0	19.2 19.2	19.2	8.2 8.2	8.2	35.0 35.0	35.0	100.0 98.3	99.2	7.5 7.4	7.4	0.9 0.9	0.9	1.0	4.9 4.8	4.9	4.7	
				Middle	4.0	19.1 19.1	19.1	8.2 8.2	8.2	35.1 35.1	35.1	98.6 97.8	98.2	7.4 7.4	7.4	1.2 1.0	1.1		5.8 6.0	5.9		
				Bottom	7.0	19.1 19.0	19.0	8.2 8.2	8.2	35.1 35.1	35.1	97.7 96.9	97.3	7.4 7.3	7.3	1.1 1.2	1.1		3.3 3.2	3.3		
M4	Fine	Calm	10:20	Surface	1.1	18.9 19.0	19.0	8.1 8.2	8.1	35.0 35.0	35.0	100.8 98.3	99.6	7.6 7.4	7.5	0.8 0.8	0.8	0.8	7.3 7.3	7.3	5.4	
				Middle	5.1	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.1	35.0	99.5 97.8	98.7	7.5 7.4	7.4	0.9 0.9	0.9		3.4 3.5	3.5		
				Bottom	9.0	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.1	35.0	97.9 97.6	97.8	7.4 7.4	7.4	0.9 0.9	0.9		5.2 5.4	5.3		
M5	Fine	Calm	11:19	Surface	1.1	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	99.9 99.1	99.5	7.5 7.5	7.5	1.2 1.3	1.3	1.3	3.9 4.0	4.0	5.0	
				Middle	6.1	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	99.1 98.5	98.8	7.5 7.4	7.5	1.3 1.2	1.2		8.3 8.5	8.4		
				Bottom	11.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	98.4 98.1	98.3	7.4 7.4	7.4	1.4 1.3	1.3		2.5 2.6	2.6		
M6	Fine	Calm	11:13	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	-	-	4.5	
				Middle	2.1	18.9 18.9	18.9	8.2 8.2	8.2	35.1 35.1	35.1	98.2 98.1	98.2	7.4 7.4	7.4	0.9 0.9	0.9		4.4 4.6	4.5		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 3 January 2019 (Mid-Flood Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.7 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.8 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.8 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 12.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.0 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 03 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	16:40	Surface	1.0	18.3 18.3	18.3	8.2 8.2	8.2	34.5 34.5	34.5	102.0 101.1	101.6	7.8 7.7	7.8	7.7	1.4 1.4	1.4	1.4	5.3 5.2	5.3	7.8
				Middle	9.0	18.8 18.9	18.9	8.2 8.2	8.2	34.8 34.9	34.9	101.4 100.5	101.0	7.7 7.6	7.6		1.4 1.3	1.3		8.0 8.1	8.1	
				Bottom	17.1	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	97.7 98.4	98.1	7.4 7.4	7.4		1.4 1.3	1.3		10.0 10.0	10.0	
C2	Fine	Calm	15:21	Surface	1.0	19.1 19.1	19.1	8.1 8.1	8.1	35.0 35.0	35.0	98.3 98.7	98.5	7.4 7.4	7.4	7.3	0.9 0.9	0.9	1.0	5.5 5.4	5.5	4.9
				Middle	16.1	19.0 19.1	19.0	8.1 8.1	8.1	35.1 35.0	35.0	96.7 96.9	96.8	7.3 7.3	7.3		1.1 1.1	1.1		3.6 3.6	3.6	
				Bottom	32.1	19.0 19.0	19.0	8.1 8.1	8.1	35.0 35.0	35.0	96.3 96.1	96.2	7.3 7.2	7.2		1.1 0.9	1.0		5.5 5.5	5.5	
G1	Fine	Calm	15:59	Surface	1.0	19.1 19.2	19.1	8.2 8.2	8.2	35.0 35.0	35.0	101.2 98.3	99.8	7.6 7.4	7.5	7.5	1.0 1.0	1.0	1.1	8.2 8.5	8.4	6.2
				Middle	4.0	19.1 19.1	19.1	8.2 8.2	8.2	35.0 35.0	35.0	99.2 97.8	98.5	7.5 7.4	7.4		1.2 1.2	1.2		6.4 6.4	6.4	
				Bottom	7.0	19.1 19.1	19.1	8.2 8.2	8.2	35.0 35.1	35.0	98.3 96.9	97.6	7.4 7.3	7.3		1.2 1.2	1.2		4.0 3.8	3.9	
G2	Fine	Calm	15:44	Surface	1.0	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.0	35.0	101.6 99.7	100.7	7.7 7.5	7.6	7.5	0.6 0.7	0.6	0.7	6.4 6.3	6.4	3.6
				Middle	5.1	19.0 19.0	19.0	8.1 8.2	8.1	35.1 35.1	35.1	100.0 99.4	99.7	7.5 7.5	7.5		0.6 0.7	0.6		2.0 2.0	2.0	
				Bottom	9.0	19.0 19.0	19.0	8.1 8.2	8.1	35.1 35.1	35.1	98.6 98.5	98.6	7.4 7.4	7.4		0.7 0.8	0.7		2.4 2.3	2.4	
G3	Fine	Calm	16:05	Surface	1.1	19.2 19.1	19.2	8.2 8.2	8.2	34.8 35.0	34.9	100.4 98.5	99.5	7.6 7.4	7.5	7.4	0.7 0.7	0.7	1.4	2.6 2.6	2.6	5.3
				Middle	4.0	19.1 19.0	19.1	8.2 8.2	8.2	35.0 35.0	35.0	99.0 97.7	98.4	7.4 7.4	7.4		2.0 2.1	2.0		8.7 9.0	8.9	
				Bottom	7.0	19.0 19.1	19.0	8.2 8.2	8.2	35.1 35.0	35.0	97.4 97.5	97.5	7.3 7.3	7.3		1.3 1.4	1.3		4.3 4.4	4.4	
G4	Fine	Calm	16:16	Surface	1.1	19.1 19.1	19.1	8.2 8.2	8.2	35.0 35.0	35.0	101.3 99.8	100.6	7.6 7.5	7.6	7.5	0.8 0.7	0.7	0.9	4.5 4.6	4.6	4.7
				Middle	4.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.1	35.0	98.9 98.6	98.8	7.5 7.4	7.4		0.9 0.9	0.9		5.6 5.7	5.7	
				Bottom	7.0	19.0 19.0	19.0	8.2 8.2	8.2	35.1 35.1	35.1	98.6 97.6	98.1	7.4 7.4	7.4		1.0 1.0	1.0		3.9 3.9	3.9	
M1	Fine	Calm	15:52	Surface	1.0	19.1 19.1	19.1	8.1 8.2	8.1	35.1 35.0	35.0	98.8 97.7	98.3	7.4 7.4	7.4	7.4	1.3 1.4	1.3	1.4	4.6 4.6	4.6	5.0
				Middle	3.0	19.0 19.1	19.1	8.1 8.2	8.1	35.1 35.1	35.1	98.1 97.5	97.8	7.4 7.3	7.4		1.3 1.3	1.3		6.0 5.9	6.0	
				Bottom	5.0	19.0 19.1	19.0	8.2 8.2	8.2	35.1 35.1	35.1	97.8 97.4	97.6	7.4 7.3	7.3		1.6 1.5	1.6		4.2 4.4	4.3	
M2	Fine	Calm	15:38	Surface	1.1	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.1	35.0	100.9 100.0	100.5	7.6 7.5	7.6	7.5	0.6 0.5	0.6	0.6	3.6 3.6	3.6	6.7
				Middle	6.0	19.0 19.0	19.0	8.1 8.2	8.1	35.0 35.1	35.0	99.8 99.8	99.8	7.5 7.5	7.5		0.7 0.6	0.6		8.7 8.7	8.7	
				Bottom	11.1	19.0 19.0	19.0	8.1 8.1	8.1	35.1 35.1	35.1	99.4 98.1	98.8	7.5 7.4	7.4		0.6 0.6	0.6		7.7 7.6	7.7	
M3	Fine	Calm	16:10	Surface	1.0	19.1 19.1	19.1	8.2 8.2	8.2	35.0 35.0	35.0	98.3 98.3	98.3	7.4 7.4	7.4	7.4	0.9 0.8	0.9	0.9	8.2 8.4	8.3	8.2
				Middle	4.0	19.1 19.1	19.1	8.2 8.2	8.2	35.0 35.0	35.0	98.1 97.8	98.0	7.4 7.4	7.4		0.9 0.8	0.8		9.4 9.5	9.5	
				Bottom	7.0	19.0 19.0	19.0	8.2 8.2	8.2	35.1 35.1	35.1	97.4 97.7	97.6	7.3 7.4	7.3		0.9 0.9	0.9		6.9 6.9	6.9	
M4	Fine	Calm	15:30	Surface	1.0	19.0 19.1	19.0	8.1 8.1	8.1	35.0 35.0	35.0	100.4 98.7	99.6	7.6 7.4	7.5	7.5	0.7 0.7	0.7	0.9	4.7 4.8	4.8	5.2
				Middle	5.1	19.0 19.0	19.0	8.1 8.1	8.1	35.1 35.1	35.1	98.6 98.4	98.5	7.4 7.4	7.4		0.9 0.9	0.9		2.9 3.0	3.0	
				Bottom	9.0	19.0 19.0	19.0	8.1 8.1	8.1	35.1 35.1	35.1	96.9 97.4	97.2	7.3 7.3	7.3		1.0 0.9	1.0		8.1 7.9	8.0	
M5	Fine	Calm	16:31	Surface	1.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	100.7 99.0	99.9	7.6 7.5	7.5	7.5	1.0 0.9	1.0	1.1	8.2 7.8	8.0	5.3
				Middle	6.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	98.7 98.4	98.6	7.4 7.4	7.4		1.0 1.2	1.1		4.0 3.9	4.0	
				Bottom	11.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	98.0 97.8	97.9	7.4 7.4	7.4		1.1 1.2	1.1		4.0 3.9	4.0	
M6	Fine	Calm	16:25	Surface	-	-	-	-	-	-	-	-	-	-	7.6	-	-	0.8	-	-	7.4	
				Middle	2.0	19.0 19.0	19.0	8.2 8.2	8.2	35.0 35.0	35.0	100.8 100.7	100.8	7.6 7.6		7.6	0.8 0.8		0.8	7.3 7.4		7.4
				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 4 January 2019 (Mid-Ebb Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.2 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.3 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 11.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.4 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 11.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 12.4 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 3.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 3.7 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 04 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	12:00	Surface	1.0	18.6	18.6	8.2	8.2	34.2	34.2	102.8	102.8	7.9	7.9	7.8	1.3	1.3	1.3	9.0	9.1	7.0
				Middle	9.1	18.5	18.5	8.1	8.1	34.3	34.3	100.6	100.6	7.7	7.7		1.2	1.2		7.2	6.8	
				Bottom	17.0	19.0	19.0	8.1	8.1	34.8	34.8	98.5	98.5	7.5	7.5		1.3	1.3		5.1	5.1	
C2	Fine	Calm	10:45	Surface	1.0	18.9	18.9	8.1	8.1	34.5	34.5	102.2	102.3	7.8	7.8	7.6	1.0	1.0	1.0	9.5	9.6	5.6
				Middle	16.1	19.0	19.0	8.1	8.1	34.8	34.8	97.6	97.7	7.4	7.4		0.9	0.9		4.3	4.3	
				Bottom	31.0	19.0	19.0	8.1	8.1	34.8	34.8	97.0	97.0	7.4	7.4		1.0	1.0		2.8	2.9	
G1	Fine	Calm	11:23	Surface	1.0	18.6	18.6	8.2	8.2	34.3	34.3	102.7	102.8	7.9	7.9	7.7	1.2	1.2	0.9	4.1	4.2	4.1
				Middle	4.1	19.0	19.0	8.1	8.1	34.8	34.8	100.4	100.5	7.6	7.6		0.8	0.8		3.7	3.6	
				Bottom	7.1	19.1	19.1	8.1	8.1	34.9	34.9	99.7	99.7	7.5	7.5		0.8	0.8		4.5	4.5	
G2	Fine	Calm	11:09	Surface	1.1	18.6	18.6	8.2	8.2	34.4	34.4	103.2	103.2	7.9	7.9	7.7	0.9	0.9	1.1	3.3	3.3	4.9
				Middle	5.0	18.8	18.8	8.1	8.1	34.6	34.6	99.9	99.9	7.6	7.6		1.1	1.1		5.5	5.8	
				Bottom	9.0	19.0	19.0	8.1	8.1	34.8	34.8	99.3	99.3	7.5	7.5		1.2	1.2		5.8	5.5	
G3	Fine	Calm	11:30	Surface	1.1	18.9	18.9	8.2	8.2	34.2	34.2	102.4	102.4	7.8	7.8	7.7	0.9	0.9	0.9	7.3	7.2	4.4
				Middle	4.1	19.0	19.0	8.2	8.2	34.7	34.7	101.0	101.1	7.7	7.7		0.9	0.9		4.3	4.4	
				Bottom	7.0	19.1	19.1	8.2	8.2	34.7	34.7	100.3	100.3	7.6	7.6		0.9	0.9		1.6	1.6	
G4	Fine	Calm	11:45	Surface	1.0	18.7	18.7	8.2	8.2	34.3	34.3	103.8	103.8	7.9	7.9	7.9	1.0	1.0	1.0	2.0	1.9	3.6
				Middle	4.0	18.7	18.7	8.2	8.2	34.4	34.4	103.6	103.6	7.9	7.9		1.0	1.0		4.0	3.6	
				Bottom	7.1	18.9	18.9	8.2	8.2	34.6	34.6	102.1	102.1	7.8	7.8		1.0	1.0		5.1	5.2	
M1	Fine	Calm	11:16	Surface	1.1	18.7	18.7	8.2	8.2	34.3	34.3	104.7	104.8	8.0	8.0	7.9	1.1	1.1	4.1	6.7	6.6	8.6
				Middle	3.0	18.7	18.7	8.2	8.2	34.4	34.4	102.5	102.5	7.8	7.8		5.0	5.0		7.1	7.1	
				Bottom	5.0	18.8	18.8	8.1	8.1	34.6	34.6	101.0	101.0	7.7	7.7		6.2	6.1		12.5	12.2	
M2	Fine	Calm	11:03	Surface	1.1	18.7	18.7	8.2	8.2	34.4	34.4	102.8	102.9	7.9	7.9	7.8	1.0	1.0	1.0	7.2	7.4	10.1
				Middle	6.0	18.8	18.8	8.1	8.1	34.7	34.7	100.6	100.7	7.7	7.7		1.0	1.0		9.4	9.6	
				Bottom	11.1	19.0	19.0	8.1	8.1	34.9	34.9	98.0	98.0	7.4	7.4		1.0	1.0		13.6	13.3	
M3	Fine	Calm	11:37	Surface	1.0	18.9	18.9	8.2	8.2	34.3	34.3	105.1	105.1	8.0	8.0	7.9	0.9	0.9	0.9	10.9	10.6	9.3
				Middle	4.0	18.9	18.9	8.2	8.2	34.5	34.5	103.3	103.4	7.9	7.9		1.0	0.9		13.1	13.2	
				Bottom	7.0	19.2	19.2	8.2	8.2	34.9	34.9	99.7	99.7	7.5	7.5		0.9	0.9		3.8	4.1	
M4	Fine	Calm	10:54	Surface	1.0	18.8	18.8	8.1	8.1	34.4	34.4	103.5	103.5	7.9	7.9	7.8	1.0	1.0	0.9	7.7	7.5	7.3
				Middle	5.0	18.8	18.8	8.1	8.1	34.5	34.5	101.3	101.3	7.7	7.7		0.9	1.0		5.3	5.3	
				Bottom	9.0	18.8	18.8	8.1	8.1	34.6	34.6	99.9	99.9	7.6	7.6		0.9	0.9		9.1	9.2	
M5	Fine	Calm	11:54	Surface	1.0	18.8	18.8	8.2	8.2	34.5	34.5	101.4	101.4	7.7	7.7	7.6	1.1	1.1	1.0	5.0	5.3	6.0
				Middle	5.6	18.9	18.9	8.1	8.1	34.7	34.7	99.5	99.5	7.6	7.6		1.1	1.1		8.1	8.6	
				Bottom	11.0	18.9	18.9	8.1	8.1	34.8	34.8	98.7	98.7	7.5	7.5		0.9	0.9		4.3	4.1	
M6	Fine	Calm	11:50	Surface	-	-	-	-	-	-	-	-	-	-	7.8	-	-	1.0	-	-	4.7	
				Middle	2.1	18.7	18.7	8.2	8.2	34.4	34.4	102.7	102.7	7.8		7.8	1.0		1.0	4.5		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 4 January 2019 (Mid-Flood Tide)**

<u>Parameter (unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.9 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.6 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.6 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 12.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.3 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 04 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	16:41	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	34.2 34.2	34.2	102.1 102.2	102.2	7.8 7.8	7.8	7.8	1.3 1.3	1.3	1.3	6.0 5.7	5.9	8.7
				Middle	9.1	18.3 18.3	18.3	8.2 8.2	8.2	34.2 34.2	34.2	101.9 101.9	101.9	7.8 7.8	7.8	7.8	1.3 1.3	1.3		9.6 10.5	10.1	
				Bottom	17.1	18.6 18.7	18.6	8.1 8.1	8.1	34.7 34.7	34.7	99.7 99.5	99.6	7.6 7.6	7.6	7.6	1.4 1.5	1.4		10.2 10.2	10.2	
C2	Fine	Calm	15:33	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.5 34.5	34.5	100.3 100.3	100.3	7.6 7.6	7.6	7.6	1.0 1.0	1.0	1.0	9.7 9.6	9.7	5.5
				Middle	16.1	18.8 18.8	18.8	8.1 8.1	8.1	34.8 34.8	34.8	97.2 97.2	97.2	7.4 7.4	7.4	7.4	0.9 0.9	0.9		3.4 3.4	3.4	
				Bottom	31.0	18.8 18.8	18.8	8.1 8.1	8.1	34.8 34.8	34.8	97.0 97.0	97.0	7.3 7.3	7.3	7.3	1.0 1.0	1.0		3.4 3.6	3.5	
G1	Fine	Calm	16:09	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	34.3 34.3	34.3	101.9 102.0	102.0	7.8 7.8	7.8	7.8	1.3 1.4	1.3	1.0	2.6 2.7	2.7	3.3
				Middle	4.0	18.7 18.7	18.7	8.2 8.2	8.2	34.7 34.7	34.7	101.8 101.9	101.9	7.7 7.7	7.7	7.7	0.9 0.9	0.9		2.2 2.3	2.3	
				Bottom	7.1	18.9 18.9	18.9	8.1 8.1	8.1	34.9 34.9	34.9	99.9 99.9	99.9	7.6 7.6	7.6	7.6	0.7 0.7	0.7		5.1 4.7	4.9	
G2	Fine	Calm	15:55	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	34.4 34.4	34.4	101.7 101.8	101.8	7.8 7.8	7.8	7.8	1.1 1.1	1.1	1.1	3.1 2.8	3.0	4.2
				Middle	5.0	18.6 18.6	18.6	8.1 8.1	8.1	34.6 34.6	34.6	101.1 101.1	101.1	7.7 7.7	7.7	7.7	1.1 1.1	1.1		4.4 4.1	4.3	
				Bottom	9.1	18.8 18.8	18.8	8.1 8.1	8.1	34.8 34.8	34.8	99.9 99.8	99.9	7.6 7.6	7.6	7.6	1.2 1.2	1.2		5.8 5.1	5.5	
G3	Fine	Calm	16:14	Surface	1.1	18.7 18.7	18.7	8.2 8.2	8.2	34.1 34.1	34.1	103.1 103.1	103.1	7.9 7.9	7.9	7.9	0.9 0.9	0.9	0.9	9.9 10.0	10.0	12.0
				Middle	4.1	18.8 18.8	18.8	8.2 8.2	8.2	34.7 34.7	34.7	100.6 100.6	100.6	7.6 7.6	7.6	7.6	0.8 0.8	0.8		14.2 13.9	14.1	
				Bottom	7.0	18.9 18.9	18.9	8.2 8.2	8.2	34.8 34.8	34.8	99.2 99.1	99.2	7.5 7.5	7.5	7.5	0.9 0.9	0.9		12.2 12.0	12.1	
G4	Fine	Calm	16:24	Surface	1.1	18.5 18.5	18.5	8.2 8.2	8.2	34.3 34.3	34.3	104.3 104.3	104.3	8.0 8.0	8.0	8.0	1.0 1.0	1.0	1.0	6.6 6.2	6.4	5.1
				Middle	4.0	18.5 18.5	18.5	8.2 8.2	8.2	34.4 34.4	34.4	103.1 103.1	103.1	7.9 7.9	7.9	7.9	1.0 1.0	1.0		5.2 5.7	5.5	
				Bottom	7.0	18.7 18.7	18.7	8.2 8.2	8.2	34.6 34.6	34.6	101.8 101.8	101.8	7.7 7.7	7.7	7.7	1.1 1.1	1.1		3.4 3.3	3.4	
M1	Fine	Calm	16:01	Surface	1.1	18.4 18.4	18.4	8.2 8.2	8.2	34.3 34.3	34.3	104.0 104.0	104.0	8.0 8.0	8.0	8.0	1.4 1.4	1.4	3.4	4.5 4.1	4.3	6.2
				Middle	3.1	18.5 18.5	18.5	8.2 8.2	8.2	34.4 34.4	34.4	101.0 101.0	101.0	7.7 7.7	7.7	7.7	4.1 4.1	4.1		8.0 7.5	7.8	
				Bottom	5.0	18.7 18.7	18.7	8.1 8.1	8.1	34.7 34.7	34.7	99.3 99.2	99.3	7.5 7.5	7.5	7.5	4.7 4.6	4.6		6.4 6.7	6.6	
M2	Fine	Calm	15:48	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	34.4 34.4	34.4	103.4 103.4	103.4	7.9 7.9	7.9	7.9	1.3 1.3	1.3	1.2	8.0 8.1	8.1	7.1
				Middle	6.0	18.6 18.6	18.6	8.1 8.1	8.1	34.6 34.6	34.6	101.9 102.0	102.0	7.8 7.8	7.8	7.8	1.1 1.1	1.1		8.0 8.2	8.1	
				Bottom	11.1	18.8 18.8	18.8	8.1 8.1	8.1	34.9 34.9	34.9	100.9 100.8	100.9	7.7 7.7	7.7	7.7	1.2 1.2	1.2		5.4 5.0	5.2	
M3	Fine	Calm	16:19	Surface	1.0	18.6 18.6	18.6	8.2 8.2	8.2	34.3 34.3	34.3	104.8 104.8	104.8	8.0 8.0	8.0	8.0	0.8 0.8	0.8	0.9	3.6 4.3	4.0	5.7
				Middle	4.0	18.7 18.7	18.7	8.2 8.2	8.2	34.5 34.5	34.5	103.5 103.5	103.5	7.9 7.9	7.9	7.9	0.9 0.9	0.9		4.5 4.8	4.7	
				Bottom	7.1	19.0 19.0	19.0	8.2 8.2	8.2	34.9 34.9	34.9	97.5 97.5	97.5	7.4 7.4	7.4	7.4	1.1 1.1	1.1		8.3 8.5	8.4	
M4	Fine	Calm	15:42	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	34.4 34.4	34.4	103.2 103.2	103.2	7.9 7.9	7.9	7.9	1.0 1.0	1.0	0.9	8.3 9.1	8.7	7.3
				Middle	5.3	18.6 18.6	18.6	8.1 8.1	8.1	34.6 34.5	34.6	101.7 102.1	101.9	7.7 7.8	7.8	7.8	0.9 0.9	0.9		8.6 8.6	8.6	
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.6 34.6	34.6	100.9 100.8	100.9	7.7 7.7	7.7	7.7	0.9 0.9	0.9		4.7 4.3	4.5	
M5	Fine	Calm	16:34	Surface	1.1	18.5 18.5	18.5	8.2 8.2	8.2	34.5 34.5	34.5	100.6 100.7	100.7	7.7 7.7	7.7	7.7	1.1 1.1	1.1	1.0	9.1 9.6	9.4	9.3
				Middle	6.0	18.7 18.6	18.7	8.1 8.1	8.1	34.7 34.7	34.7	100.1 100.2	100.2	7.6 7.6	7.6	7.6	1.1 1.1	1.1		11.0 10.3	10.7	
				Bottom	11.1	18.7 18.7	18.7	8.2 8.2	8.2	34.8 34.8	34.8	98.6 98.6	98.6	7.5 7.5	7.5	7.5	0.9 0.9	0.9		7.6 8.0	7.8	
M6	Fine	Calm	16:29	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	-	-	10.0	
				Middle	2.1	18.5 18.5	18.5	8.2 8.2	8.2	34.4 34.4	34.4	102.7 102.7	102.7	7.8 7.8	7.8	7.8	1.0 1.0		1.0	10.0 10.0		10.0
				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 7 January 2019 (Mid-Ebb Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.8 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 10.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 11.4 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 10.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 11.4 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.9 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 07 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	13:56	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	34.1 34.1	34.1	102.4 100.8	101.6	7.8 7.7	7.8	7.7	0.9 1.0	0.9	1.2	7.3 7.4	7.4	7.3
				Middle	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.3 34.2	34.2	99.7 99.6	99.7	7.6 7.6	7.6		1.1 1.0	1.0		8.5 8.4	8.5	
				Bottom	17.1	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	96.2 95.8	96.0	7.3 7.3	7.3		1.6 1.6	1.6		6.5 5.8	6.2	
C2	Fine	Calm	13:05	Surface	1.0	18.6 18.6	18.6	8.2 8.2	8.2	34.3 34.3	34.3	100.6 99.8	100.2	7.7 7.6	7.6	7.6	1.0 1.0	1.0	1.2	8.9 8.6	8.8	6.6
				Middle	16.6	18.6 18.6	18.6	8.2 8.2	8.2	34.3 34.3	34.3	97.6 98.9	98.3	7.4 7.6	7.5		1.2 1.0	1.1		5.0 5.0	5.0	
				Bottom	32.1	18.6 18.6	18.6	8.1 8.1	8.1	34.3 34.3	34.3	96.5 96.4	96.5	7.4 7.4	7.4		1.5 1.3	1.4		5.8 6.3	6.1	
G1	Fine	Calm	13:32	Surface	1.1	18.8 18.8	18.8	8.1 8.1	8.1	34.3 34.3	34.3	99.2 98.6	98.9	7.5 7.5	7.5	7.5	0.9 0.8	0.8	1.1	6.5 6.3	6.4	6.5
				Middle	4.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	98.1 98.3	98.2	7.5 7.5	7.5		1.0 0.9	1.0		7.3 7.2	7.3	
				Bottom	7.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	96.5 96.6	96.6	7.3 7.3	7.3		1.4 1.5	1.5		5.8 5.9	5.9	
G2	Fine	Calm	13:22	Surface	1.1	18.5 18.5	18.5	8.2 8.2	8.2	34.2 34.2	34.2	102.1 101.7	101.9	7.8 7.8	7.8	7.8	0.8 0.8	0.8	0.8	10.6 10.0	10.3	9.3
				Middle	5.0	18.5 18.5	18.5	8.2 8.2	8.2	34.2 34.2	34.2	101.5 101.7	101.6	7.8 7.8	7.8		0.9 0.9	0.9		11.7 12.2	12.0	
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.3 34.3	34.3	100.1 100.1	100.1	7.6 7.6	7.6		0.8 0.8	0.8		5.9 5.6	5.8	
G3	Fine	Calm	13:35	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	34.3 34.4	34.3	99.9 98.5	99.2	7.6 7.5	7.5	7.5	1.1 1.1	1.1	1.6	9.4 9.7	9.6	8.5
				Middle	4.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	99.2 98.7	99.0	7.5 7.5	7.5		1.5 1.4	1.4		7.8 7.3	7.6	
				Bottom	7.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	98.1 96.7	97.4	7.4 7.3	7.4		2.2 2.5	2.4		8.1 8.5	8.3	
G4	Fine	Calm	13:43	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	99.8 98.4	99.1	7.6 7.5	7.5	7.5	0.8 0.8	0.8	0.9	9.6 9.3	9.5	11.2
				Middle	4.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	99.0 98.4	98.7	7.5 7.5	7.5		0.9 0.8	0.8		7.1 7.7	7.4	
				Bottom	7.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	98.3 98.3	98.3	7.5 7.5	7.5		1.0 0.9	0.9		16.5 17.0	16.8	
M1	Fine	Calm	13:26	Surface	1.0	18.8 18.9	18.8	8.1 8.1	8.1	34.4 34.4	34.4	100.1 99.0	99.6	7.6 7.5	7.6	7.5	0.7 0.6	0.6	0.9	7.3 7.9	7.6	7.2
				Middle	3.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	98.2 99.2	98.7	7.5 7.5	7.5		1.0 0.9	1.0		5.5 6.5	6.0	
				Bottom	5.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	97.4 97.2	97.3	7.4 7.4	7.4		1.1 1.2	1.2		7.8 8.2	8.0	
M2	Fine	Calm	13:18	Surface	1.0	18.5 18.5	18.5	8.2 8.1	8.1	34.2 34.2	34.2	102.0 100.8	101.4	7.8 7.7	7.8	7.7	0.9 0.8	0.9	0.9	5.4 5.4	5.4	7.8
				Middle	5.5	18.5 18.5	18.5	8.2 8.2	8.2	34.2 34.2	34.2	100.8 101.0	100.9	7.7 7.7	7.7		0.9 0.8	0.9		12.8 13.2	13.0	
				Bottom	10.0	18.6 18.6	18.6	8.1 8.1	8.1	34.3 34.2	34.3	99.5 100.2	99.9	7.6 7.7	7.6		0.8 0.9	0.8		5.1 5.1	5.1	
M3	Fine	Calm	13:38	Surface	1.1	19.0 18.9	18.9	8.1 8.1	8.1	34.2 34.3	34.3	96.9 96.9	96.9	7.3 7.4	7.3	7.4	0.9 1.1	1.0	1.2	5.0 5.8	5.4	6.3
				Middle	4.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	97.1 97.6	97.4	7.4 7.4	7.4		1.4 1.3	1.3		5.0 5.3	5.2	
				Bottom	7.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	96.7 97.0	96.9	7.3 7.4	7.4		1.3 1.2	1.3		8.5 8.0	8.3	
M4	Fine	Calm	13:13	Surface	1.1	18.5 18.5	18.5	8.2 8.2	8.2	34.2 34.2	34.2	101.9 101.6	101.8	7.8 7.8	7.8	7.7	0.8 0.8	0.8	0.9	7.2 7.4	7.3	12.8
				Middle	5.0	18.5 18.5	18.5	8.2 8.2	8.2	34.2 34.2	34.2	100.8 100.7	100.8	7.7 7.7	7.7		0.8 1.0	0.9		12.2 12.5	12.4	
				Bottom	9.0	18.5 18.6	18.5	8.1 8.1	8.1	34.2 34.3	34.3	99.2 99.1	99.2	7.6 7.6	7.6		1.0 1.0	1.0		18.7 18.5	18.6	
M5	Fine	Calm	13:51	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	100.5 99.1	99.8	7.6 7.5	7.6	7.6	0.8 0.9	0.8	0.9	14.4 14.4	14.4	7.8
				Middle	6.1	18.8 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	99.1 99.0	99.1	7.5 7.5	7.5		0.9 0.9	0.9		4.5 3.8	4.2	
				Bottom	11.1	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	98.5 98.7	98.6	7.5 7.5	7.5		0.9 0.9	0.9		4.7 4.8	4.8	
M6	Fine	Calm	13:47	Surface	-	-	-	-	-	-	-	-	-	-	7.4	-	-	1.0	-	-	6.2	
				Middle	2.2	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	98.0 97.9	98.0	7.4 7.4		7.4	1.0 1.0		1.0	6.1 6.3		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 7 January 2019 (Mid-Flood Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.9 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 14.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 15.7 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 14.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 15.7 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 16.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 18.1 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 07 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	9:16	Surface	1.0	18.4 18.4	18.4	8.1 8.1	8.1	34.1 34.1	34.1	101.4 100.7	101.1	7.8 7.7	7.7	7.7	1.0 0.8	0.9	1.2	12.3 11.8	12.1	10.7
				Middle	9.1	18.6 18.5	18.5	8.1 8.1	8.1	34.3 34.2	34.2	99.4 100.2	99.8	7.6 7.7	7.6		1.2 1.0	1.1		6.1 5.9	6.0	
				Bottom	17.0	18.6 18.6	18.6	8.1 8.1	8.1	34.3 34.3	34.3	98.1 97.4	97.8	7.5 7.4	7.4		1.4 1.6	1.5		14.0 13.8	13.9	
C2	Fine	Calm	8:20	Surface	1.0	18.7 18.7	18.7	8.0 8.1	8.1	34.3 34.4	34.3	98.2 97.5	97.9	7.5 7.4	7.4	7.4	1.5 1.3	1.4	1.6	8.9 9.4	9.2	9.8
				Middle	16.6	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	96.7 96.6	96.7	7.4 7.4	7.4		1.6 1.6	1.6		11.1 11.0	11.1	
				Bottom	32.1	18.8 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	95.1 96.4	95.8	7.2 7.3	7.3		2.0 1.7	1.9		9.3 9.1	9.2	
G1	Fine	Calm	8:48	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.3 34.3	34.3	99.7 97.7	98.7	7.6 7.4	7.5	7.5	0.7 0.9	0.8	1.2	7.2 6.5	6.9	7.1
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	97.6 97.5	97.6	7.4 7.4	7.4		1.3 1.3	1.3		9.2 9.8	9.5	
				Bottom	7.0	18.7 18.8	18.7	8.1 8.1	8.1	34.4 34.4	34.4	97.1 96.9	97.0	7.4 7.4	7.4		1.4 1.4	1.4		4.9 4.9	4.9	
G2	Fine	Calm	8:38	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.3 34.4	34.3	99.6 97.4	98.5	7.6 7.4	7.5	7.4	1.2 1.3	1.2	1.6	4.4 4.1	4.3	12.1
				Middle	5.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	97.2 97.1	97.2	7.4 7.4	7.4		1.8 1.6	1.7		11.6 11.6	11.6	
				Bottom	9.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	96.8 96.6	96.7	7.4 7.3	7.3		1.9 1.8	1.8		20.4 20.4	20.4	
G3	Fine	Calm	8:52	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.3	34.3	100.4 97.7	99.1	7.6 7.4	7.5	7.5	0.5 0.6	0.6	0.6	3.4 3.5	3.5	4.8
				Middle	4.0	18.7 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	98.7 97.5	98.1	7.5 7.4	7.5		0.6 0.6	0.6		4.0 4.3	4.2	
				Bottom	7.0	18.9 18.9	18.9	8.1 8.1	8.1	34.5 34.5	34.5	97.7 97.5	97.6	7.4 7.4	7.4		0.6 0.7	0.6		6.6 6.7	6.7	
G4	Fine	Calm	9:03	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	98.4 97.7	98.1	7.5 7.4	7.5	7.5	1.3 1.1	1.2	1.3	4.1 3.9	4.0	4.8
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	98.3 97.8	98.1	7.5 7.4	7.5		1.0 1.2	1.1		3.9 3.7	3.8	
				Bottom	7.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	97.7 97.3	97.5	7.4 7.4	7.4		1.7 1.6	1.6		6.4 6.7	6.6	
M1	Fine	Calm	8:43	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.6 96.7	97.2	7.4 7.4	7.4	7.4	0.4 0.4	0.4	0.6	9.9 9.9	9.9	10.6
				Middle	3.1	18.8 18.7	18.8	8.1 8.1	8.1	34.4 34.3	34.3	97.1 96.6	96.9	7.4 7.4	7.4		0.6 0.5	0.5		6.8 6.6	6.7	
				Bottom	5.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	97.1 96.9	97.0	7.4 7.4	7.4		0.7 0.8	0.7		15.2 15.0	15.1	
M2	Fine	Calm	8:33	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.3 34.3	34.3	98.1 97.2	97.7	7.5 7.4	7.4	7.4	1.1 1.1	1.1	1.6	12.4 12.3	12.4	8.4
				Middle	5.5	18.8 18.7	18.8	8.1 8.1	8.1	34.4 34.4	34.4	96.9 97.1	97.0	7.4 7.4	7.4		1.7 1.8	1.8		6.5 6.6	6.6	
				Bottom	10.0	18.8 18.7	18.8	8.1 8.1	8.1	34.5 34.4	34.4	96.4 96.7	96.6	7.3 7.3	7.3		2.0 1.9	1.9		6.3 6.0	6.2	
M3	Fine	Calm	8:58	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	34.3 34.3	34.3	98.4 97.8	98.1	7.5 7.4	7.5	7.4	0.5 0.5	0.5	0.6	11.9 12.4	12.2	9.3
				Middle	4.0	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.4	34.4	97.9 97.8	97.9	7.4 7.4	7.4		0.6 0.5	0.6		9.1 8.9	9.0	
				Bottom	7.0	18.8 18.9	18.8	8.1 8.1	8.1	34.5 34.5	34.5	97.2 96.8	97.0	7.4 7.3	7.4		0.7 0.7	0.7		6.5 6.7	6.6	
M4	Fine	Calm	8:27	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	99.7 97.3	98.5	7.6 7.4	7.5	7.4	1.3 1.2	1.2	1.4	8.5 8.0	8.3	7.6
				Middle	5.0	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	97.5 97.1	97.3	7.4 7.4	7.4		1.5 1.4	1.4		4.8 4.2	4.5	
				Bottom	9.0	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	96.9 96.9	96.9	7.4 7.4	7.4		1.5 1.5	1.5		10.0 9.8	9.9	
M5	Fine	Calm	9:11	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	97.6 96.9	97.3	7.4 7.4	7.4	7.4	1.0 1.0	1.0	1.2	5.8 6.4	6.1	7.1
				Middle	6.1	18.8 18.8	18.8	8.1 8.1	8.1	34.4 34.5	34.4	96.9 96.5	96.7	7.4 7.3	7.3		1.1 1.1	1.1		7.2 6.8	7.0	
				Bottom	11.0	18.8 18.8	18.8	8.1 8.1	8.1	34.5 34.5	34.5	95.6 95.5	95.6	7.3 7.2	7.2		1.4 1.4	1.4		8.3 8.3	8.3	
M6	Fine	Calm	9:06	Surface	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	0.7	-	-	10.4
				Middle	2.2	18.7 18.7	18.7	8.1 8.1	8.1	34.4 34.4	34.4	98.2 98.1	98.2	7.5 7.5	7.5		0.7 0.7	0.7		10.2 10.6	10.4	
				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 9 January 2019 (Mid-Ebb Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.0 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.1 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 17.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 19.0 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 17.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 19.0 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.3 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 09 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Moderate	14:40	Surface	1.0	18.4 18.4	18.4	8.1 8.1	8.1	34.0 34.0	34.0	101.8 101.7	101.8	7.8 7.8	7.8	0.5 0.5	0.5	0.6	7.2 7.1	7.2	5.7	
				Middle	9.0	18.4 18.4	18.4	8.1 8.1	8.1	34.0 34.0	34.0	100.7 100.5	100.6	7.7 7.7	7.7	0.5 0.6	0.5		4.3 4.9	4.6		
				Bottom	17.1	18.5 18.5	18.5	8.1 8.1	8.1	34.1 34.0	34.1	99.3 100.0	99.7	7.6 7.7	7.6	0.7 0.6	0.6		5.0 5.8	5.4		
C2	Fine	Moderate	13:30	Surface	1.1	18.6 18.6	18.6	7.9 8.1	8.0	34.1 34.2	34.1	100.2 99.1	99.7	7.7 7.6	7.6	1.0 1.0	1.0	0.9	15.1 14.2	14.7	8.9	
				Middle	16.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	97.9 97.9	97.9	7.5 7.5	7.5	0.9 0.9	0.9		5.2 4.7	5.0		
				Bottom	32.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	97.9 97.9	97.9	7.5 7.5	7.5	0.8 0.8	0.8		7.0 7.3	7.2		
G1	Fine	Moderate	14:05	Surface	1.0	18.8 18.7	18.7	8.1 8.1	8.1	34.0 34.1	34.1	102.1 99.8	101.0	7.8 7.6	7.7	0.4 0.5	0.5	0.6	7.4 7.4	7.4	6.9	
				Middle	4.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.8 100.5	100.2	7.6 7.7	7.6	0.6 0.5	0.6		6.9 6.4	6.7		
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.5 98.6	98.6	7.5 7.5	7.5	0.8 0.9	0.8		7.0 6.5	6.8		
G2	Fine	Moderate	13:52	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	100.5 98.4	99.5	7.7 7.5	7.6	1.1 1.1	1.1	1.4	9.3 9.6	9.5	7.0	
				Middle	5.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.3 98.2	98.3	7.5 7.5	7.5	0.9 1.1	1.0		2.7 2.3	2.5		
				Bottom	9.0	18.7 18.7	18.7	8.1 8.1	8.1	34.3 34.3	34.3	97.2 96.1	96.7	7.4 7.3	7.4	1.9 2.1	2.0		9.2 9.0	9.1		
G3	Fine	Moderate	14:11	Surface	1.0	18.7 18.8	18.8	8.1 8.1	8.1	34.1 34.1	34.1	100.6 99.3	100.0	7.7 7.6	7.6	0.7 0.7	0.7	1.0	4.9 5.2	5.1	5.2	
				Middle	4.1	18.7 18.8	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.4 98.8	99.1	7.6 7.5	7.5	0.8 0.8	0.8		3.6 4.0	3.8		
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.9 98.1	98.0	7.5 7.5	7.5	1.5 1.4	1.5		6.8 6.6	6.7		
G4	Fine	Moderate	14:21	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	100.0 99.5	99.8	7.6 7.6	7.6	0.5 0.6	0.6	0.8	4.2 4.5	4.4	4.0	
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.1 99.0	99.1	7.6 7.5	7.5	0.8 0.7	0.7		3.6 4.1	3.9		
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	96.8 98.1	97.5	7.4 7.5	7.4	1.0 1.0	1.0		3.3 4.1	3.7		
M1	Fine	Moderate	13:59	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	100.3 97.6	99.0	7.6 7.4	7.5	0.6 0.5	0.5	1.0	5.8 6.0	5.9	7.3	
				Middle	3.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.1	34.1	98.8 97.6	98.2	7.5 7.4	7.5	0.7 0.7	0.7		6.3 5.9	6.1		
				Bottom	5.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.5 97.3	97.4	7.4 7.4	7.4	1.8 1.7	1.7		10.0 9.9	10.0		
M2	Fine	Moderate	13:46	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.4 99.1	99.3	7.6 7.5	7.6	1.0 1.1	1.0	1.0	8.1 8.1	8.1	5.6	
				Middle	6.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.0 98.4	98.2	7.5 7.5	7.5	0.9 1.0	1.0		4.3 4.0	4.2		
				Bottom	11.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.3 97.7	97.5	7.4 7.4	7.4	1.1 1.2	1.1		4.1 4.7	4.4		
M3	Fine	Moderate	14:15	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	33.9 34.1	34.0	101.0 100.8	100.9	7.7 7.7	7.7	0.4 0.4	0.4	0.6	10.6 10.3	10.5	8.1	
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.1 100.0	99.6	7.6 7.6	7.6	0.6 0.5	0.5		6.7 6.7	6.7		
				Bottom	7.0	18.7 18.8	18.8	8.1 8.1	8.1	34.2 34.2	34.2	98.7 97.1	97.9	7.5 7.4	7.4	0.8 0.9	0.8		7.0 7.1	7.1		
M4	Fine	Moderate	13:37	Surface	1.0	18.5 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	100.8 99.9	100.4	7.7 7.6	7.7	0.8 0.8	0.8	0.8	5.4 5.0	5.2	3.8	
				Middle	4.7	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	99.7 99.5	99.6	7.6 7.6	7.6	0.8 0.8	0.8		4.2 3.8	4.0		
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	99.5 99.5	99.5	7.6 7.6	7.6	0.8 0.8	0.8		2.5 2.1	2.3		
M5	Fine	Moderate	14:32	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.2 98.7	99.0	7.6 7.5	7.5	0.8 0.7	0.8	0.8	5.3 5.5	5.4	6.1	
				Middle	6.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.8 98.8	98.8	7.5 7.5	7.5	0.7 0.7	0.7		7.4 7.7	7.6		
				Bottom	11.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.0 98.4	98.2	7.5 7.5	7.5	0.9 0.8	0.8		5.6 5.0	5.3		
M6	Fine	Moderate	14:26	Surface	-	-	-	-	-	-	-	-	-	-	-	-	1.2	-	-	5.5		
				Middle	2.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.8 97.7	97.8	7.4 7.4	7.4	1.2 1.2		1.2	5.4 5.5		5.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 9 January 2019 (Mid-Flood Tide)**

<b><u>Parameter</u></b> <b><u>(unit)</u></b>	<b><u>Depth</u></b>	<b><u>Action Level</u></b>	<b><u>Limit Level</u></b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<b><u>4.9 mg/L</u></b>	<b><u>4.6 mg/L</u></b>
	Bottom	<b><u>4.2 mg/L</u></b>	<b><u>3.6 mg/L</u></b>
	<b><u>Station M6</u></b>		
	Intake Level	<b><u>5.0 mg/L</u></b>	<b><u>4.7 mg/L</u></b>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<b><u>19.3 NTU</u></b>	<b><u>22.2 NTU</u></b>
		or 120% of upstream control station's Turbidity at the same tide of the same day <b><u>CI: 1.6 NTU</u></b>	or 130% of upstream control station's Turbidity at the same tide of the same day <b><u>CI: 1.7 NTU</u></b>
	<b><u>Station M6</u></b>		
	Intake Level	<b><u>19.0 NTU</u></b>	<b><u>19.4 NTU</u></b>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<b><u>6.0 mg/L</u></b>	<b><u>6.9 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day <b><u>CI: 8.0 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day <b><u>CI: 8.7 mg/L</u></b>
	<b><u>Stations M1-M5</u></b>		
	Surface	<b><u>6.2 mg/L</u></b>	<b><u>7.4 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day <b><u>CI: 8.0 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day <b><u>CI: 8.7 mg/L</u></b>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<b><u>6.9 mg/L</u></b>	<b><u>7.9 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day <b><u>CI: 9.8 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day <b><u>CI: 10.7 mg/L</u></b>
	<b><u>Station M6</u></b>		
Intake Level	<b><u>8.3 mg/L</u></b>	<b><u>8.6 mg/L</u></b>	

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 09 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Moderate	10:35	Surface	1.1	18.4 18.4	18.4	8.1 8.1	8.1	34.1 34.1	34.1	100.9 100.3	100.6	7.7 7.7	7.7	7.7	0.8 0.8	0.8	1.0	6.7 6.7	6.7	7.2
				Middle	9.0	18.5 18.6	18.5	8.1 8.1	8.1	34.1 34.2	34.1	100.1 99.2	99.7	7.7 7.6	7.6	7.6	1.0 0.9	0.9		6.9 6.5	6.7	
				Bottom	18.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	96.2 96.2	96.2	7.3 7.3	7.3	7.3	1.4 1.2	1.3		8.2 8.2	8.2	
C2	Fine	Moderate	9:24	Surface	1.0	18.5 18.5	18.5	7.9 8.1	8.0	34.1 34.1	34.1	99.8 99.2	99.5	7.6 7.6	7.6	7.5	0.7 0.7	0.7	0.8	7.7 7.5	7.6	10.8
				Middle	16.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	97.0 96.6	96.8	7.4 7.4	7.4	7.4	0.7 0.8	0.8		8.6 8.1	8.4	
				Bottom	31.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	94.6 95.7	95.2	7.2 7.3	7.2	7.2	1.1 1.0	1.0		16.8 16.1	16.5	
G1	Fine	Moderate	10:00	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	98.9 98.3	98.6	7.5 7.5	7.5	7.5	0.7 0.6	0.7	0.8	5.3 4.9	5.1	5.9
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.1	34.2	98.3 98.5	98.4	7.5 7.5	7.5	7.5	0.8 0.8	0.8		9.8 9.8	9.8	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.3 97.9	97.6	7.4 7.5	7.4	7.4	1.0 1.0	1.0		2.9 2.9	2.9	
G2	Fine	Moderate	9:46	Surface	1.0	18.6 18.7	18.6	8.1 8.1	8.1	34.2 34.2	34.2	99.8 99.0	99.4	7.6 7.6	7.6	7.5	0.8 0.8	0.8	1.0	5.2 5.1	5.2	6.2
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.7 98.3	98.5	7.5 7.5	7.5	7.5	1.0 1.0	1.0		6.2 6.1	6.2	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.7 97.4	97.6	7.4 7.4	7.4	7.4	1.0 1.1	1.1		7.3 7.1	7.2	
G3	Fine	Moderate	10:04	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 34.0	34.0	100.5 99.4	100.0	7.7 7.6	7.6	7.6	0.4 0.4	0.4	0.5	5.0 5.2	5.1	7.6
				Middle	4.1	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.2	34.1	99.8 99.6	99.7	7.6 7.6	7.6	7.6	0.6 0.6	0.6		7.3 7.7	7.5	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.5 99.4	99.0	7.5 7.6	7.5	7.5	0.6 0.6	0.6		10.1 10.0	10.1	
G4	Fine	Moderate	10:17	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	100.9 98.7	99.8	7.7 7.5	7.6	7.6	0.8 0.8	0.8	0.9	7.7 7.3	7.5	10.6
				Middle	4.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	98.6 98.4	98.5	7.5 7.5	7.5	7.5	0.9 0.8	0.8		13.7 13.7	13.7	
				Bottom	7.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.0 98.1	98.1	7.5 7.5	7.5	7.5	1.2 1.1	1.2		10.5 10.8	10.7	
M1	Fine	Moderate	9:52	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	34.0 34.1	34.1	97.7 96.3	97.0	7.5 7.4	7.4	7.4	0.5 0.6	0.5	0.7	7.0 7.1	7.1	10.8
				Middle	3.0	18.6 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	96.7 96.6	96.7	7.4 7.4	7.4	7.4	0.6 0.7	0.7		8.8 8.7	8.8	
				Bottom	5.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	96.7 96.5	96.6	7.4 7.4	7.4	7.4	0.9 0.9	0.9		16.5 16.8	16.7	
M2	Fine	Moderate	9:39	Surface	1.1	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	101.0 99.3	100.2	7.7 7.6	7.6	7.6	0.6 0.6	0.6	1.1	12.3 12.0	12.2	8.6
				Middle	6.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.1 97.9	98.0	7.5 7.5	7.5	7.5	1.3 1.2	1.3		4.9 5.1	5.0	
				Bottom	11.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	97.1 96.8	97.0	7.4 7.4	7.4	7.4	1.4 1.4	1.4		8.3 8.7	8.5	
M3	Fine	Moderate	10:10	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	34.1 34.2	34.1	100.5 100.3	100.4	7.6 7.6	7.6	7.6	0.6 0.6	0.6	0.7	5.0 4.7	4.9	9.6
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	100.1 99.7	99.9	7.6 7.6	7.6	7.6	0.7 0.7	0.7		10.9 11.1	11.0	
				Bottom	7.1	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	99.5 99.2	99.4	7.6 7.6	7.6	7.6	0.7 0.8	0.8		12.8 12.9	12.9	
M4	Fine	Moderate	9:33	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	100.1 99.6	99.9	7.6 7.6	7.6	7.6	0.7 0.7	0.7	1.0	12.2 11.5	11.9	10.4
				Middle	5.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	98.5 98.7	98.6	7.5 7.5	7.5	7.5	1.0 0.9	1.0		7.4 7.5	7.5	
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	97.8 97.8	97.8	7.5 7.5	7.5	7.5	1.3 1.2	1.2		11.9 12.1	12.0	
M5	Fine	Moderate	10:28	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.6 98.2	98.4	7.5 7.5	7.5	7.5	0.9 0.9	0.9	0.8	7.2 7.4	7.3	8.0
				Middle	6.0	18.7 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	97.7 98.2	98.0	7.5 7.5	7.5	7.5	0.8 0.7	0.7		7.8 7.8	7.8	
				Bottom	11.1	18.7 18.6	18.6	8.1 8.1	8.1	34.2 34.2	34.2	97.1 97.6	97.4	7.4 7.4	7.4	7.4	0.8 0.8	0.8		9.2 8.3	8.8	
M6	Fine	Moderate	10:23	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	21.0
				Middle	2.0	18.7 18.7	18.7	8.1 8.1	8.1	34.2 34.2	34.2	98.9 98.8	98.9	7.5 7.5	7.5	7.5	1.1 1.1	1.1		21.1 20.9	21.0	
				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 2019 (Mid-Ebb Tide)**

SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>C2: 10.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>C2: 11.6 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>C2: 10.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>C2: 11.6 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>C2: 5.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>C2: 5.7 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 10 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Fine	Calm	15:59	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	7.3	4.4	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8		2.5
				Bottom	17.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6		3.6
C2	Fine	Calm	15:00	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	8.9	5.7	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8		3.8
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1		4.4
G1	Fine	Calm	15:31	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9	7.8	4.7	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9		3.9
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5		2.5
G2	Fine	Calm	15:20	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	3.5	4.2	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7		4.8
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3		4.3
G3	Fine	Calm	15:35	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	2.8	2.9	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5		1.7
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2		4.4
G4	Fine	Calm	15:45	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	7.2	5.9	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9		4.7
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0		5.9
M1	Fine	Calm	15:26	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	1.3	4.7	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1		4.4
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6		8.5
M2	Fine	Calm	15:16	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	2.7	3.9	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2		1.8
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4		7.3
M3	Fine	Calm	15:41	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	6.9	5.4	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6		5.5
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9		3.9
M4	Fine	Calm	15:10	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.2	6.4	
				Middle	4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8		4.6
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4		8.6
M5	Fine	Calm	15:53	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	5.6	4.6	
				Middle	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6		4.8
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4		3.4
M6	Fine	Calm	15:49	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	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 10 January 2019 (Mid-Flood Tide)**

SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>CI: 5.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>CI: 5.5 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>CI: 5.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>CI: 5.5 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>CI: 4.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>CI: 5.1 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 10 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Fine	Calm	10:26	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	4.5	4.3	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	4.0	4.1
				Bottom	18.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	3.6	3.9
C2	Fine	Calm	9:30	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0	7.8	7.9	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	8.2	8.4
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3	8.7	9.0
G1	Fine	Calm	9:58	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	3.5	3.6	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	3.4	3.4
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.8	6.7
G2	Fine	Calm	9:48	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.5	12.8	12.7	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	4.9	4.8
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	3.2	3.6
G3	Fine	Calm	10:02	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	5.3	5.3	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	5.0	4.9
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.5	5.5
G4	Fine	Calm	10:13	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	4.8	5.2	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	7.2	7.0
				Bottom	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	4.1	4.1
M1	Fine	Calm	9:53	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	6.0	6.1	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	5.9	6.0
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.3	6.4
M2	Fine	Calm	9:43	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	4.1	4.5	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	1.9	2.4
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	5.5	5.4
M3	Fine	Calm	10:08	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	4.0	3.7	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.4	6.5
				Bottom	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	5.1	5.0
M4	Fine	Calm	9:37	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	3.9	4.0	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	4.2	4.1
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	3.3	3.7
M5	Fine	Calm	10:21	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	4.3	4.3	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	6.8	6.8
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	4.1	4.3
M6	Fine	Calm	10:16	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.0	10.3	10.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 11 January 2019 (Mid-Ebb Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.5 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 14.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 15.3 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 14.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 15.3 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.4 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 11 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Calm	Sunny	15:25	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.9 33.9	33.9	102.2 101.9	102.1	7.8 7.8	7.8	0.3 0.2	0.3	0.6	4.0 4.7	4.4	6.8	
				Middle	9.0	18.5 18.5	18.5	8.1 8.1	8.1	34.0 34.0	34.0	100.4 101.1	100.8	7.7 7.7	7.7	0.5 0.5	0.5		6.4 6.1	6.3		
				Bottom	17.1	18.5 18.5	18.5	8.1 8.1	8.1	34.0 34.0	34.0	98.7 98.4	98.6	7.6 7.5	7.5	1.1 1.1	1.1		9.9 9.6	9.8		
C2	Calm	Sunny	15:34	Surface	1.1	18.8 18.9	18.8	8.1 8.1	8.1	34.0 34.0	34.0	101.0 100.8	100.9	7.7 7.7	7.7	0.6 0.6	0.6	0.9	11.7 11.9	11.8	9.4	
				Middle	16.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.0	34.0	97.9 98.7	98.3	7.5 7.5	7.5	0.9 0.9	0.9		11.4 11.6	11.5		
				Bottom	31.1	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	96.0 97.0	96.5	7.3 7.4	7.4	1.1 1.2	1.1		4.9 4.9	4.9		
G1	Calm	Sunny	14:53	Surface	1.0	19.0 19.0	19.0	8.1 8.1	8.1	34.1 34.1	34.1	101.5 101.2	101.4	7.7 7.7	7.7	0.7 0.7	0.7	0.7	5.8 6.1	6.0	7.3	
				Middle	4.0	18.7 18.8	18.8	8.1 8.1	8.1	34.1 34.1	34.1	100.5 100.7	100.6	7.7 7.7	7.7	0.8 0.8	0.8		9.4 8.7	9.1		
				Bottom	7.1	18.7 18.8	18.7	8.1 8.1	8.1	34.1 34.1	34.1	99.9 100.4	100.2	7.6 7.6	7.6	0.7 0.7	0.7		6.7 7.0	6.9		
G2	Calm	Sunny	14:42	Surface	1.0	18.8 18.8	18.8	8.1 8.0	8.0	34.0 34.0	34.0	101.5 100.8	101.2	7.7 7.7	7.7	0.4 0.4	0.4	0.7	11.5 11.1	11.3	12.5	
				Middle	5.1	18.8 18.8	18.8	8.1 8.0	8.0	34.1 34.1	34.1	100.8 101.1	101.0	7.7 7.7	7.7	0.6 0.6	0.6		5.7 6.3	6.0		
				Bottom	9.0	18.6 18.7	18.6	8.0 8.0	8.0	34.1 34.1	34.1	98.3 99.5	98.9	7.5 7.6	7.5	1.2 1.0	1.1		20.6 19.9	20.3		
G3	Calm	Sunny	14:57	Surface	1.0	18.9 18.9	18.9	8.1 8.1	8.1	34.1 34.1	34.1	101.8 101.2	101.5	7.7 7.7	7.7	0.9 0.9	0.9	1.0	8.7 8.8	8.8	14.6	
				Middle	4.0	18.9 18.8	18.9	8.1 8.1	8.1	34.1 34.1	34.1	101.4 100.8	101.1	7.7 7.7	7.7	1.1 1.1	1.1		9.0 9.0	9.0		
				Bottom	7.0	18.9 18.8	18.8	8.1 8.1	8.1	34.1 34.1	34.1	101.1 100.5	100.8	7.7 7.6	7.7	1.2 1.2	1.2		26.0 25.9	26.0		
G4	Calm	Sunny	15:07	Surface	1.1	19.2 19.1	19.2	8.1 8.1	8.1	34.1 34.1	34.1	101.2 101.5	101.4	7.6 7.7	7.7	0.5 0.6	0.6	0.8	7.3 7.8	7.6	7.1	
				Middle	4.0	18.9 19.0	18.9	8.1 8.1	8.1	34.1 34.1	34.1	100.6 100.8	100.7	7.6 7.6	7.6	0.8 0.7	0.7		8.1 8.0	8.1		
				Bottom	7.0	18.7 18.8	18.8	8.1 8.1	8.1	34.1 34.1	34.1	100.0 100.3	100.2	7.6 7.6	7.6	1.1 1.1	1.1		5.5 5.9	5.7		
M1	Calm	Sunny	14:48	Surface	1.0	19.3 19.1	19.2	8.1 8.1	8.1	34.0 34.0	34.0	101.1 99.4	100.3	7.6 7.5	7.6	0.9 0.9	0.9	1.0	4.4 4.7	4.6	8.0	
				Middle	3.0	19.0 19.0	19.0	8.1 8.1	8.1	34.1 34.1	34.1	99.3 99.1	99.2	7.5 7.5	7.5	0.9 0.9	0.9		9.1 8.7	8.9		
				Bottom	5.0	18.9 19.0	18.9	8.1 8.1	8.1	34.1 34.1	34.1	98.5 98.5	98.5	7.5 7.5	7.5	1.1 1.1	1.1		10.5 10.4	10.5		
M2	Calm	Sunny	14:38	Surface	1.1	18.7 18.7	18.7	8.0 8.0	8.0	34.0 34.0	34.0	101.0 100.5	100.8	7.7 7.7	7.7	0.6 0.6	0.6	0.7	7.1 6.4	6.8	5.6	
				Middle	6.1	18.7 18.7	18.7	8.0 8.0	8.0	34.1 34.1	34.1	100.6 100.8	100.7	7.7 7.7	7.7	0.6 0.5	0.6		3.6 3.1	3.4		
				Bottom	11.0	18.6 18.6	18.6	8.0 8.0	8.0	34.1 34.1	34.1	97.9 99.2	98.6	7.5 7.6	7.5	1.1 0.9	1.0		6.7 6.6	6.7		
M3	Calm	Sunny	15:01	Surface	1.0	19.0 19.1	19.1	8.1 8.1	8.1	34.0 34.0	34.0	100.3 101.5	100.9	7.6 7.7	7.6	0.5 0.5	0.5	0.5	10.2 10.0	10.1	6.8	
				Middle	4.0	18.9 19.0	19.0	8.1 8.1	8.1	34.1 34.0	34.1	101.4 101.2	101.3	7.7 7.7	7.7	0.6 0.5	0.5		4.2 4.6	4.4		
				Bottom	7.0	18.7 18.8	18.7	8.1 8.1	8.1	34.1 34.1	34.1	100.7 101.0	100.9	7.7 7.7	7.7	0.6 0.5	0.5		5.7 5.9	5.8		
M4	Calm	Sunny	14:33	Surface	1.1	19.0 18.9	18.9	8.0 8.0	8.0	34.1 34.1	34.1	100.4 101.0	100.7	7.6 7.7	7.6	0.6 0.6	0.6	0.7	4.8 4.7	4.8	7.6	
				Middle	5.0	18.9 18.9	18.9	8.0 8.0	8.0	34.1 34.1	34.1	100.5 100.6	100.6	7.6 7.6	7.6	0.7 0.7	0.7		8.2 8.3	8.3		
				Bottom	9.1	18.8 18.8	18.8	8.0 8.0	8.0	34.1 34.1	34.1	100.3 100.7	100.5	7.6 7.7	7.6	0.9 0.9	0.9		9.6 10.1	9.9		
M5	Calm	Sunny	15:18	Surface	1.0	19.0 19.0	19.0	8.1 8.1	8.1	34.1 34.1	34.1	101.3 101.3	101.3	7.7 7.7	7.7	0.5 0.5	0.5	0.6	8.7 8.7	8.7	8.0	
				Middle	6.0	18.6 18.5	18.5	8.1 8.1	8.1	34.0 34.0	34.0	101.3 101.3	101.3	7.7 7.8	7.7	0.5 0.5	0.5		7.3 7.7	7.5		
				Bottom	11.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	98.3 98.1	98.2	7.5 7.5	7.5	0.9 0.9	0.9		7.5 7.8	7.7		
M6	Calm	Sunny	15:13	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	5.5	
				Middle	2.0	19.2 19.2	19.2	8.1 8.1	8.1	34.1 34.1	34.1	101.2 101.2	101.2	7.6 7.6	7.6	0.5 0.5	0.5		5.9 5.0	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 11 January 2019 (Mid-Flood Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.6 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.8 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.2 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.2 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 11 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Calm	Cloudy	11:33	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	34.1 34.1	34.1	99.7 99.7	99.7	7.6 7.6	7.6	7.6	0.6 0.6	0.6	1.0	5.2 5.8	5.5	6.1
				Middle	9.0	18.5 18.5	18.5	8.1 8.1	8.1	34.1 34.0	34.1	98.2 99.4	98.8	7.5 7.6	7.6	7.6	1.0 1.0	1.0		5.9 6.2	6.1	
				Bottom	17.1	18.5 18.5	18.5	8.1 8.1	8.1	34.1 34.1	34.1	97.2 97.6	97.4	7.4 7.5	7.4	7.4	1.4 1.4	1.4		6.7 6.6	6.7	
C2	Calm	Cloudy	10:22	Surface	1.1	18.6 18.6	18.6	8.0 8.1	8.0	34.1 34.1	34.1	97.7 97.6	97.7	7.5 7.5	7.5	7.4	1.0 1.0	1.0	1.0	6.0 6.1	6.1	7.0
				Middle	16.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	96.0 96.3	96.2	7.3 7.4	7.3	7.3	1.0 1.0	1.0		5.0 5.7	5.4	
				Bottom	31.1	18.6 18.5	18.5	8.1 8.1	8.1	34.1 34.0	34.1	95.4 96.3	95.9	7.3 7.4	7.3	7.3	1.0 1.0	1.0		9.6 9.8	9.7	
G1	Calm	Cloudy	10:55	Surface	1.1	18.8 18.7	18.8	8.1 8.1	8.1	34.0 34.0	34.0	97.9 97.7	97.8	7.5 7.4	7.4	7.4	0.5 0.6	0.6	1.1	8.8 8.8	8.8	9.9
				Middle	4.1	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	97.2 97.2	97.2	7.4 7.4	7.4	7.4	1.3 1.2	1.2		9.1 9.0	9.1	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	96.8 97.0	96.9	7.4 7.4	7.4	7.4	1.5 1.5	1.5		12.1 11.4	11.8	
G2	Calm	Cloudy	10:43	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	98.9 98.2	98.6	7.5 7.5	7.5	7.5	0.8 0.8	0.8	1.0	6.3 7.0	6.7	6.8
				Middle	5.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	97.8 98.0	97.9	7.5 7.5	7.5	7.5	1.1 1.0	1.1		8.5 9.0	8.8	
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	97.5 97.5	97.5	7.4 7.4	7.4	7.4	1.1 1.1	1.1		5.2 4.8	5.0	
G3	Calm	Cloudy	10:59	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	34.0 34.0	34.0	97.8 97.6	97.7	7.5 7.4	7.4	7.4	0.7 0.8	0.7	0.9	10.5 10.4	10.5	8.2
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	96.8 96.7	96.8	7.4 7.4	7.4	7.4	1.0 1.0	1.0		11.1 10.6	10.9	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	96.3 96.4	96.4	7.3 7.4	7.3	7.3	1.0 1.0	1.0		3.2 3.4	3.3	
G4	Calm	Cloudy	11:18	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	99.2 98.5	98.9	7.6 7.5	7.5	7.5	0.4 0.4	0.4	0.5	10.1 10.4	10.3	9.2
				Middle	4.1	18.6 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	98.9 98.9	98.9	7.5 7.5	7.5	7.5	0.5 0.5	0.5		10.4 11.3	10.9	
				Bottom	7.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	98.1 98.1	98.1	7.5 7.5	7.5	7.5	0.7 0.8	0.7		6.1 6.9	6.5	
M1	Calm	Cloudy	10:50	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.0 34.0	34.0	96.1 95.3	95.7	7.3 7.3	7.3	7.3	0.9 0.8	0.8	1.0	4.8 5.4	5.1	7.3
				Middle	3.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.0	34.0	94.9 95.5	95.2	7.2 7.3	7.3	7.3	1.0 0.9	1.0		4.6 4.1	4.4	
				Bottom	5.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	93.9 92.6	93.3	7.2 7.1	7.1	7.1	1.2 1.3	1.2		12.5 12.4	12.5	
M2	Calm	Cloudy	10:38	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	34.0 34.0	34.0	98.5 98.4	98.5	7.5 7.5	7.5	7.5	0.9 1.0	1.0	1.1	14.2 13.8	14.0	11.5
				Middle	6.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	97.8 97.8	97.8	7.5 7.5	7.5	7.5	1.1 1.1	1.1		6.6 5.9	6.3	
				Bottom	11.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	97.2 97.4	97.3	7.4 7.4	7.4	7.4	1.3 1.2	1.2		14.2 14.1	14.2	
M3	Calm	Cloudy	11:12	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	34.0 34.0	34.0	97.1 98.1	97.6	7.4 7.5	7.4	7.4	0.7 0.7	0.7	0.6	5.7 5.4	5.6	7.3
				Middle	4.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	98.3 98.4	98.4	7.5 7.5	7.5	7.5	0.6 0.6	0.6		4.6 4.9	4.8	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	34.1 34.1	34.1	97.7 98.2	98.0	7.5 7.5	7.5	7.5	0.7 0.7	0.7		11.7 11.2	11.5	
M4	Calm	Cloudy	10:32	Surface	1.1	18.6 18.7	18.6	8.1 8.1	8.1	34.1 34.0	34.0	99.3 99.2	99.3	7.6 7.6	7.6	7.6	0.6 0.5	0.6	0.8	5.5 5.3	5.4	9.4
				Middle	5.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	98.4 98.6	98.5	7.5 7.5	7.5	7.5	0.9 0.8	0.8		7.4 7.7	7.6	
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	97.9 98.0	98.0	7.5 7.5	7.5	7.5	1.1 0.9	1.0		15.7 14.8	15.3	
M5	Calm	Cloudy	11:27	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	34.0 34.0	34.0	100.0 99.9	100.0	7.7 7.6	7.6	7.6	0.6 0.5	0.6	0.7	6.9 7.6	7.3	6.3
				Middle	6.0	18.4 18.4	18.4	8.1 8.1	8.1	34.0 34.0	34.0	99.5 99.4	99.5	7.6 7.6	7.6	7.6	0.7 0.8	0.7		5.9 6.2	6.1	
				Bottom	11.0	18.5 18.4	18.5	8.1 8.1	8.1	34.0 34.0	34.0	98.6 99.1	98.9	7.6 7.6	7.6	7.6	0.7 0.7	0.7		5.5 5.9	5.7	
M6	Calm	Cloudy	11:22	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	11.4
				Middle	2.1	18.6 18.6	18.6	8.1 8.1	8.1	34.1 34.1	34.1	98.9 98.8	98.9	7.5 7.5	7.5	7.5	0.8 0.8	0.8		11.5 11.2	11.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	

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

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

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.8 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 3.4 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 3.4 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.0 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



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

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	18:33	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	101.3 101.3	101.3	7.8 7.8	7.8	7.7	0.1 0.1	0.1	0.2	7.6 7.3	7.5	4.8
				Middle	9.0	18.6 18.6	18.6	8.1 8.1	8.1	33.8 33.8	33.8	100.1 100.3	100.2	7.7 7.7	7.7		0.2 0.2	0.2		4.4 5.3	4.9	
				Bottom	17.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	99.9 99.9	99.9	7.6 7.6	7.6		7.6	0.3 0.3		0.3	2.2 2.0	
C2	Cloudy	Calm	17:32	Surface	1.1	18.6 18.6	18.6	8.0 8.1	8.0	33.8 33.8	33.8	101.0 100.7	100.9	7.7 7.7	7.7	7.6	0.2 0.2	0.2	0.4	2.7 2.6	2.7	3.3
				Middle	16.1	18.7 18.7	18.7	8.0 8.1	8.1	33.9 33.9	33.9	98.4 98.4	98.4	7.5 7.5	7.5		0.4 0.3	0.3		1.8 2.0	1.9	
				Bottom	31.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	97.1 97.0	97.1	7.4 7.4	7.4		7.4	0.6 0.6		0.6	5.4 5.3	
G1	Cloudy	Calm	18:02	Surface	1.0	18.9 18.9	18.9	8.1 8.1	8.1	33.8 33.8	33.8	98.7 98.7	98.8	7.5 7.5	7.5	7.5	1.0 1.0	1.0	1.3	5.0 5.1	5.1	3.9
				Middle	4.1	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	98.4 98.2	98.3	7.5 7.5	7.5		1.4 1.3	1.3		3.8 4.2	4.0	
				Bottom	7.0	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	97.9 97.5	97.7	7.5 7.4	7.4		7.4	1.6 1.6		1.6	2.6 2.5	
G2	Cloudy	Calm	17:51	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	100.2 100.2	100.2	7.6 7.6	7.6	7.6	0.3 0.3	0.3	0.3	2.7 2.6	2.7	3.0
				Middle	5.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	99.8 100.0	99.9	7.6 7.6	7.6		0.3 0.3	0.3		2.7 2.5	2.6	
				Bottom	9.1	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	99.2 99.5	99.4	7.6 7.6	7.6		7.6	0.4 0.4		0.4	3.9 3.4	
G3	Cloudy	Calm	18:07	Surface	1.1	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	100.3 99.4	99.9	7.6 7.5	7.6	7.5	0.6 0.5	0.6	1.1	3.1 3.2	3.2	2.3
				Middle	4.1	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	97.0 97.9	97.5	7.4 7.4	7.4		1.4 1.4	1.4		1.0 1.1	1.1	
				Bottom	7.1	19.0 19.0	19.0	8.1 8.1	8.1	34.0 34.0	34.0	96.2 96.2	96.2	7.3 7.3	7.3		7.3	1.2 1.3		1.3	2.5 2.6	
G4	Cloudy	Calm	18:20	Surface	1.0	19.1 19.1	19.1	8.1 8.1	8.1	33.9 33.9	33.9	100.3 99.4	99.9	7.6 7.5	7.6	7.6	1.1 1.2	1.2	1.1	4.9 4.4	4.7	3.1
				Middle	4.1	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	99.7 99.6	99.7	7.6 7.6	7.6		0.7 0.7	0.7		1.1 1.0	1.1	
				Bottom	7.0	19.0 18.9	19.0	8.1 8.1	8.1	33.9 33.9	33.9	99.1 97.7	98.4	7.5 7.4	7.5		7.5	1.4 1.4		1.4	3.6 3.8	
M1	Cloudy	Calm	17:56	Surface	1.0	18.9 18.9	18.9	8.1 8.1	8.1	33.8 33.8	33.8	99.0 98.7	98.9	7.5 7.5	7.5	7.5	1.1 1.1	1.1	1.1	1.6 1.8	1.7	6.0
				Middle	3.0	18.9 18.9	18.9	8.1 8.1	8.1	33.8 33.8	33.8	98.8 98.6	98.7	7.5 7.5	7.5		1.1 1.1	1.1		7.2 7.0	7.1	
				Bottom	5.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	98.4 98.3	98.4	7.5 7.5	7.5		7.5	1.2 1.2		1.2	9.3 8.8	
M2	Cloudy	Calm	17:44	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	100.1 100.1	100.1	7.6 7.6	7.6	7.6	0.3 0.3	0.3	0.3	2.6 2.6	2.6	2.6
				Middle	6.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	99.8 99.7	99.8	7.6 7.6	7.6		0.3 0.3	0.3		1.0 1.2	1.1	
				Bottom	11.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	99.3 99.3	99.3	7.6 7.6	7.6		7.6	0.3 0.3		0.3	4.4 3.7	
M3	Cloudy	Calm	18:18	Surface	1.1	19.1 19.1	19.1	8.1 8.1	8.1	33.8 33.8	33.8	98.0 97.3	97.7	7.4 7.4	7.4	7.4	1.0 1.0	1.0	1.0	6.2 6.0	6.1	4.2
				Middle	4.1	19.1 19.1	19.1	8.1 8.1	8.1	33.8 33.8	33.8	98.5 98.3	98.4	7.5 7.5	7.5		0.9 0.9	0.9		3.1 3.0	3.1	
				Bottom	7.0	19.0 19.0	19.0	8.1 8.1	8.1	34.0 34.0	34.0	97.3 97.5	97.4	7.4 7.4	7.4		7.4	1.2 1.2		1.2	3.5 3.6	
M4	Cloudy	Calm	17:39	Surface	1.0	18.7 18.6	18.6	8.1 8.1	8.1	33.8 33.8	33.8	100.4 100.4	100.4	7.7 7.7	7.7	7.7	0.2 0.2	0.2	0.3	3.6 4.2	3.9	5.4
				Middle	5.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	100.1 100.1	100.1	7.6 7.7	7.6		0.3 0.3	0.3		2.7 2.6	2.7	
				Bottom	9.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	99.5 99.8	99.7	7.6 7.6	7.6		7.6	0.3 0.3		0.3	9.7 9.6	
M5	Cloudy	Calm	18:30	Surface	1.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	100.6 99.9	100.3	7.7 7.6	7.6	7.6	0.6 0.6	0.6	0.8	3.4 3.0	3.2	3.2
				Middle	6.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	99.5 99.7	99.6	7.6 7.6	7.6		0.7 0.7	0.7		2.6 2.7	2.7	
				Bottom	11.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	98.5 98.6	98.6	7.5 7.5	7.5		7.5	1.2 1.1		1.1	3.2 4.1	
M6	Cloudy	Calm	18:27	Surface	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	0.4	-	-	5.3
				Middle	2.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	101.6 101.5	101.6	7.7 7.7	7.7		0.4 0.4	0.4		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 14 January 2019 (Mid-Flood Tide)**

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.8 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 1.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 1.5 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 1.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 1.5 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 2.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 2.9 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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



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

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	12:09	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.9	33.9	99.0 98.5	98.8	7.6 7.5	7.5	7.5	0.5 0.5	0.5	0.5	1.2 1.1	1.2	1.4
				Middle	16.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	97.6 97.2	97.4	7.4 7.4	7.4		0.5 0.5	0.5		0.8 0.9	0.9	
				Bottom	31.1	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	97.1 97.1	97.1	7.4 7.4	7.4		0.6 0.6	0.6		2.2 2.3	2.3	
C2	Cloudy	Calm	13:14	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	100.8 100.8	100.8	7.7 7.7	7.7	7.7	0.1 0.1	0.1	0.3	4.8 5.0	4.9	4.3
				Middle	9.0	18.6 18.6	18.6	8.1 8.1	8.1	33.8 33.8	33.8	100.1 100.2	100.2	7.7 7.7	7.7		0.3 0.2	0.2		1.5 1.6	1.6	
				Bottom	17.1	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.8	33.8	98.7 98.9	98.8	7.5 7.6	7.5		0.5 0.5	0.5		6.1 6.5	6.3	
G1	Cloudy	Calm	12:41	Surface	1.1	19.0 19.0	19.0	8.1 8.1	8.1	33.8 33.7	33.8	99.0 98.0	98.5	7.5 7.4	7.5	7.4	0.7 0.7	0.7	0.8	4.2 3.7	4.0	3.2
				Middle	4.0	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	97.7 97.7	97.7	7.4 7.4	7.4		0.9 0.8	0.8		2.0 1.9	2.0	
				Bottom	7.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	96.8 96.5	96.7	7.4 7.3	7.3		0.9 1.0	1.0		3.3 3.8	3.6	
G2	Cloudy	Calm	12:27	Surface	1.0	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	100.7 100.3	100.5	7.7 7.6	7.6	7.6	0.3 0.3	0.3	0.3	3.7 4.1	3.9	2.4
				Middle	5.0	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	99.8 99.8	99.8	7.6 7.6	7.6		0.4 0.4	0.4		1.2 1.2	1.2	
				Bottom	9.1	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	99.2 99.0	99.1	7.6 7.5	7.6		0.4 0.4	0.4		2.0 1.9	2.0	
G3	Cloudy	Calm	12:47	Surface	1.0	19.1 19.1	19.1	8.1 8.1	8.1	33.8 33.5	33.6	97.6 97.6	97.6	7.4 7.4	7.4	7.4	1.0 1.0	1.0	1.2	1.0 1.0	1.0	2.2
				Middle	4.0	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	96.8 97.2	97.0	7.3 7.4	7.3		1.1 1.2	1.2		1.1 1.0	1.1	
				Bottom	7.0	19.0 19.0	19.0	8.1 8.1	8.1	34.0 34.0	34.0	95.9 96.6	96.3	7.3 7.3	7.3		1.4 1.3	1.4		4.8 4.3	4.6	
G4	Cloudy	Calm	12:59	Surface	1.1	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	99.8 98.5	99.2	7.6 7.5	7.5	7.5	0.4 0.4	0.4	0.7	6.1 6.0	6.1	4.7
				Middle	4.0	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	98.9 98.7	98.8	7.5 7.5	7.5		0.6 0.6	0.6		1.6 1.6	1.6	
				Bottom	7.0	18.9 18.9	18.9	8.1 8.1	8.1	34.0 34.0	34.0	96.6 97.3	97.0	7.3 7.4	7.4		1.1 1.1	1.1		6.5 6.4	6.5	
M1	Cloudy	Calm	12:34	Surface	1.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.8	33.8	98.2 98.3	98.3	7.5 7.5	7.5	7.5	1.1 1.0	1.0	1.5	3.4 2.9	3.2	3.6
				Middle	3.0	18.8 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	97.8 97.8	97.8	7.4 7.4	7.4		1.7 1.6	1.6		3.5 3.4	3.5	
				Bottom	5.0	18.8 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	97.5 97.7	97.6	7.4 7.4	7.4		1.9 1.9	1.9		4.1 4.0	4.1	
M2	Cloudy	Calm	12:22	Surface	1.0	18.7 18.8	18.7	8.1 8.1	8.1	33.8 33.9	33.8	100.1 100.4	100.3	7.6 7.7	7.6	7.6	0.2 0.2	0.2	0.3	2.7 2.8	2.8	2.3
				Middle	6.1	18.7 18.8	18.7	8.1 8.1	8.1	33.9 33.9	33.9	99.7 100.3	100.0	7.6 7.6	7.6		0.4 0.4	0.4		1.2 1.1	1.2	
				Bottom	11.0	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	99.4 99.3	99.4	7.6 7.6	7.6		0.3 0.3	0.3		3.0 3.2	3.1	
M3	Cloudy	Calm	12:52	Surface	1.1	19.1 19.2	19.2	8.1 8.1	8.1	33.5 33.4	33.5	97.8 97.7	97.8	7.4 7.4	7.4	7.4	1.0 1.0	1.0	1.1	2.4 2.3	2.4	4.9
				Middle	4.0	19.0 19.0	19.0	8.1 8.1	8.1	33.9 33.9	33.9	97.5 98.1	97.8	7.4 7.4	7.4		1.1 1.0	1.1		3.6 4.0	3.8	
				Bottom	7.0	19.0 19.0	19.0	8.1 8.1	8.1	34.0 34.0	34.0	96.4 95.7	96.1	7.3 7.3	7.3		1.3 1.4	1.3		8.5 8.7	8.6	
M4	Cloudy	Calm	12:16	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	99.8 99.9	99.9	7.6 7.6	7.6	7.6	0.4 0.3	0.4	0.4	12.8 13.3	13.1	5.8
				Middle	5.1	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.9	33.8	99.4 99.7	99.6	7.6 7.6	7.6		0.3 0.3	0.3		0.7 0.6	0.7	
				Bottom	9.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.9	33.8	99.3 99.5	99.4	7.6 7.6	7.6		0.4 0.4	0.4		3.5 4.0	3.8	
M5	Cloudy	Calm	13:08	Surface	1.1	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	99.7 99.6	99.7	7.6 7.6	7.6	7.6	0.3 0.4	0.3	0.4	10.5 10.0	10.3	4.6
				Middle	6.1	18.7 18.7	18.7	8.1 8.1	8.1	33.9 33.9	33.9	98.9 99.1	99.0	7.5 7.6	7.5		0.5 0.5	0.5		2.1 2.0	2.1	
				Bottom	11.0	18.8 18.8	18.8	8.1 8.1	8.1	33.9 33.9	33.9	98.2 98.3	98.3	7.5 7.5	7.5		0.5 0.5	0.5		1.5 1.5	1.5	
M6	Cloudy	Calm	13:03	Surface	-	-	-	-	-	-	-	-	-	-	7.6	-	-	0.4	-	-	2.7	
				Middle	2.0	18.9 18.9	18.9	8.1 8.1	8.1	33.9 33.9	33.9	100.5 100.5	100.5	7.6 7.6		7.6	0.4 0.4		0.4	2.5 2.8		2.7
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 16 January 2019 (Mid-Ebb Tide)**

<b><u>Parameter</u></b> <b><u>(unit)</u></b>	<b><u>Depth</u></b>	<b><u>Action Level</u></b>	<b><u>Limit Level</u></b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<b><u>4.9 mg/L</u></b>	<b><u>4.6 mg/L</u></b>
	Bottom	<b><u>4.2 mg/L</u></b>	<b><u>3.6 mg/L</u></b>
	<b><u>Station M6</u></b>		
	Intake Level	<b><u>5.0 mg/L</u></b>	<b><u>4.7 mg/L</u></b>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<b><u>19.3 NTU</u></b>	<b><u>22.2 NTU</u></b>
		or 120% of upstream control station's Turbidity at the same tide of the same day <b><u>C2: 0.6 NTU</u></b>	or 130% of upstream control station's Turbidity at the same tide of the same day <b><u>C2: 0.7 NTU</u></b>
	<b><u>Station M6</u></b>		
	Intake Level	<b><u>19.0 NTU</u></b>	<b><u>19.4 NTU</u></b>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<b><u>6.0 mg/L</u></b>	<b><u>6.9 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day <b><u>C2: 8.6 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day <b><u>C2: 9.3 mg/L</u></b>
	<b><u>Stations M1-M5</u></b>		
	Surface	<b><u>6.2 mg/L</u></b>	<b><u>7.4 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day <b><u>C2: 8.6 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day <b><u>C2: 9.3 mg/L</u></b>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<b><u>6.9 mg/L</u></b>	<b><u>7.9 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day <b><u>C2: 4.6 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day <b><u>C2: 4.9 mg/L</u></b>
	<b><u>Station M6</u></b>		
Intake Level	<b><u>8.3 mg/L</u></b>	<b><u>8.6 mg/L</u></b>	

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 16 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	8:31	Surface	1.0	18.6	18.6	8.1	8.1	33.7	33.7	100.0	99.9	7.7	7.6	7.6	0.8	0.8	0.9	2.9	2.7	5.9
				Middle	9.0	18.6	18.6	8.1	8.1	33.8	33.8	99.0	99.0	7.6	7.6		0.8	0.8		11.1	11.3	
				Bottom	17.0	18.6	18.6	8.1	8.1	33.8	33.8	97.6	97.8	7.5	7.5		1.0	1.0		3.9	3.6	
C2	Fine	Calm	7:13	Surface	1.0	18.6	18.6	8.1	8.1	33.8	33.8	98.8	99.2	7.6	7.6	7.5	0.5	0.5	0.5	7.2	7.2	5.0
				Middle	16.0	18.6	18.6	8.1	8.1	33.8	33.8	98.0	98.1	7.5	7.5		0.5	0.6		4.0	3.9	
				Bottom	31.0	18.6	18.6	8.1	8.1	33.8	33.8	97.9	97.9	7.5	7.5		0.5	0.5		3.6	3.8	
G1	Fine	Calm	7:56	Surface	1.0	18.6	18.7	8.1	8.1	33.6	33.6	99.2	99.0	7.6	7.6	7.6	0.5	0.5	0.6	5.9	6.0	4.8
				Middle	4.1	18.7	18.7	8.1	8.1	33.8	33.8	99.1	99.0	7.6	7.6		0.6	0.6		4.7	4.8	
				Bottom	7.0	18.7	18.7	8.1	8.1	33.8	33.8	98.7	98.7	7.5	7.5		0.7	0.7		3.5	3.6	
G2	Fine	Calm	7:42	Surface	1.0	18.6	18.6	8.1	8.1	33.7	33.7	99.4	99.6	7.6	7.6	7.6	0.5	0.5	0.6	5.3	5.2	4.1
				Middle	5.0	18.7	18.7	8.1	8.1	33.8	33.8	99.3	99.3	7.6	7.6		0.7	0.7		4.3	4.1	
				Bottom	9.1	18.7	18.7	8.1	8.1	33.8	33.8	98.8	98.8	7.5	7.5		0.7	0.7		2.8	3.1	
G3	Fine	Calm	8:03	Surface	1.1	18.9	18.9	8.1	8.1	33.7	33.7	96.8	96.5	7.4	7.3	7.3	1.7	1.7	1.8	3.9	3.7	4.5
				Middle	4.0	18.9	18.9	8.1	8.1	33.8	33.8	96.2	96.0	7.3	7.3		1.8	1.8		4.8	4.9	
				Bottom	7.0	19.0	19.0	8.1	8.1	33.9	33.9	95.9	95.6	7.3	7.3		1.8	1.8		4.8	4.8	
G4	Fine	Calm	8:15	Surface	1.0	18.6	18.6	8.1	8.1	33.7	33.7	99.6	99.4	7.6	7.6	7.6	0.6	0.6	0.6	3.5	3.7	5.1
				Middle	4.0	18.7	18.7	8.1	8.1	33.8	33.8	99.0	99.0	7.6	7.6		0.6	0.5		5.3	5.3	
				Bottom	7.0	18.7	18.7	8.1	8.1	33.8	33.8	98.5	98.5	7.5	7.5		0.7	0.7		6.2	6.3	
M1	Fine	Calm	7:50	Surface	1.0	18.7	18.7	8.1	8.1	33.7	33.7	99.2	98.5	7.6	7.5	7.5	0.6	0.6	0.6	3.0	3.3	3.4
				Middle	3.1	18.7	18.7	8.1	8.1	33.8	33.7	98.7	98.3	7.5	7.5		0.6	0.6		2.7	2.9	
				Bottom	5.1	18.7	18.7	8.1	8.1	33.8	33.8	98.2	97.9	7.5	7.5		0.6	0.6		4.3	4.2	
M2	Fine	Calm	7:35	Surface	1.0	18.7	18.6	8.1	8.1	33.8	33.8	99.9	99.7	7.6	7.6	7.6	0.6	0.6	0.7	2.7	2.7	3.7
				Middle	6.0	18.7	18.7	8.1	8.1	33.8	33.8	99.3	99.2	7.6	7.6		0.8	0.7		4.4	4.4	
				Bottom	11.0	18.7	18.7	8.1	8.1	33.8	33.8	98.8	98.7	7.5	7.5		0.8	0.8		4.1	4.1	
M3	Fine	Calm	8:08	Surface	1.0	18.9	18.9	8.1	8.1	33.5	33.6	97.2	96.9	7.4	7.4	7.3	1.1	1.0	1.3	2.9	3.1	3.3
				Middle	4.0	19.0	19.0	8.1	8.1	33.9	33.8	95.7	96.0	7.3	7.3		1.5	1.4		3.3	3.6	
				Bottom	7.0	19.0	19.0	8.1	8.1	33.9	33.9	95.5	95.6	7.3	7.3		1.5	1.5		3.2	3.1	
M4	Fine	Calm	7:25	Surface	1.1	18.6	18.6	8.1	8.1	33.8	33.8	99.9	99.5	7.6	7.6	7.6	0.7	0.6	0.7	1.9	1.9	3.1
				Middle	5.1	18.6	18.6	8.1	8.1	33.8	33.8	99.2	99.1	7.6	7.6		0.7	0.7		4.4	4.3	
				Bottom	9.1	18.6	18.6	8.1	8.1	33.8	33.8	98.8	98.8	7.6	7.5		0.8	0.8		3.0	3.1	
M5	Fine	Calm	8:25	Surface	1.1	18.6	18.6	8.1	8.1	33.8	33.8	99.3	99.1	7.6	7.6	7.6	0.7	0.7	0.7	4.1	4.3	4.3
				Middle	6.1	18.7	18.7	8.1	8.1	33.8	33.8	99.0	98.8	7.6	7.5		0.7	0.7		4.4	5.0	
				Bottom	11.0	18.7	18.7	8.1	8.1	33.8	33.8	98.4	98.3	7.5	7.5		0.7	0.7		3.8	3.7	
M6	Fine	Calm	8:21	Surface	-	-	-	-	-	-	-	-	-	-	7.5	-	-	0.9	-	-	1.5	
				Middle	2.1	18.7	18.7	8.1	8.1	33.8	33.8	98.3	98.3	7.5		7.5	0.9		0.9	1.4		1.5
				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 16 January 2019 (Mid-Flood Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.9 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.9 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.6 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.6 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.3 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 16 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	14:23	Surface	1.1	18.5 18.5	18.5	8.1 8.2	8.1	33.6 33.6	33.6	103.1 102.8	103.0	7.9 7.9	7.9	7.9	0.4 0.4	0.4	0.5	3.3 3.8	3.6	4.1
				Middle	9.0	18.5 18.4	18.4	8.1 8.2	8.1	33.6 33.6	33.6	102.3 101.9	102.1	7.9 7.8	7.8	0.4 0.4	0.4	3.4 3.1		3.3		
				Bottom	17.0	18.4 18.4	18.4	8.1 8.1	8.1	33.7 33.7	33.7	100.8 99.8	100.3	7.7 7.7	7.7	0.7 0.8	0.7	5.6 5.6		5.6		
C2	Fine	Calm	13:16	Surface	1.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	100.7 101.5	101.1	7.7 7.8	7.7	0.3 0.3	0.3	0.7	3.9 4.1	4.0	4.3	
				Middle	16.0	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	99.8 99.4	99.6	7.6 7.6	7.6	0.6 0.6	0.6		4.0 4.0	4.0		
				Bottom	31.0	18.6 18.6	18.6	8.1 8.1	8.1	33.8 33.7	33.7	98.5 98.5	98.5	7.5 7.5	7.5	1.0 1.0	1.0		4.6 5.0	4.8		
G1	Fine	Calm	13:50	Surface	1.0	19.3 19.2	19.2	8.1 8.1	8.1	33.7 33.6	33.6	100.7 99.0	99.6	7.6 7.5	7.5	0.6 0.8	0.7	1.3	4.0 3.5	3.8	5.0	
				Middle	4.1	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	98.9 98.3	98.6	7.6 7.5	7.5	1.3 1.3	1.3		6.8 7.0	6.9		
				Bottom	7.0	18.8 18.8	18.8	8.1 8.1	8.1	33.8 33.8	33.8	97.7 96.8	97.3	7.4 7.4	7.4	1.8 1.8	1.8		4.3 4.2	4.3		
G2	Fine	Calm	13:37	Surface	1.1	18.9 18.9	18.9	8.1 8.1	8.1	33.8 33.7	33.7	100.5 100.3	100.4	7.6 7.6	7.6	0.6 0.6	0.6	0.6	5.8 6.2	6.0	4.4	
				Middle	5.0	18.7 18.8	18.8	8.1 8.1	8.1	33.8 33.8	33.8	99.9 100.1	100.0	7.6 7.6	7.6	0.6 0.6	0.6		3.1 3.0	3.1		
				Bottom	9.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	99.5 99.3	99.4	7.6 7.6	7.6	0.7 0.7	0.7		4.1 4.4	4.3		
G3	Fine	Calm	13:54	Surface	1.0	19.2 19.2	19.2	8.1 8.1	8.1	33.5 33.5	33.5	99.3 98.4	98.9	7.5 7.5	7.5	1.2 1.0	1.1	1.5	6.9 6.3	6.6	7.1	
				Middle	4.0	19.0 19.0	19.0	8.1 8.1	8.1	33.8 33.8	33.8	97.8 96.7	97.3	7.4 7.3	7.4	1.3 1.4	1.3		8.2 8.2	8.2		
				Bottom	7.0	18.9 19.0	18.9	8.1 8.1	8.1	33.8 33.9	33.9	96.7 95.4	96.1	7.4 7.2	7.3	2.0 2.0	2.0		6.4 6.7	6.6		
G4	Fine	Calm	14:03	Surface	1.0	19.0 19.0	19.0	8.1 8.1	8.1	33.8 33.8	33.8	100.5 99.5	100.0	7.6 7.6	7.6	1.0 1.0	1.0	1.1	5.4 5.5	5.5	6.6	
				Middle	4.1	18.8 18.8	18.8	8.1 8.1	8.1	33.8 33.8	33.8	99.4 99.1	99.3	7.6 7.6	7.6	1.0 1.0	1.0		5.9 6.1	6.0		
				Bottom	7.0	18.7 18.8	18.8	8.1 8.1	8.1	33.8 33.8	33.8	98.7 98.9	98.8	7.5 7.5	7.5	1.4 1.3	1.3		8.1 8.3	8.2		
M1	Fine	Calm	13:43	Surface	1.1	18.8 18.9	18.8	8.1 8.1	8.1	33.8 33.8	33.8	99.6 99.5	99.6	7.6 7.6	7.6	1.3 1.3	1.3	1.3	3.9 4.2	4.1	5.1	
				Middle	3.0	18.8 18.8	18.8	8.1 8.1	8.1	33.8 33.8	33.8	99.7 99.3	99.5	7.6 7.6	7.6	1.2 1.2	1.2		3.5 3.2	3.4		
				Bottom	5.0	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	99.5 99.4	99.5	7.6 7.6	7.6	1.5 1.4	1.4		7.9 7.7	7.8		
M2	Fine	Calm	13:30	Surface	1.1	19.0 19.0	19.0	8.1 8.1	8.1	33.8 33.8	33.8	101.4 100.8	101.1	7.7 7.7	7.7	0.5 0.6	0.5	0.6	4.4 4.1	4.3	4.2	
				Middle	6.1	18.7 18.8	18.7	8.1 8.1	8.1	33.8 33.8	33.8	100.2 100.1	100.2	7.7 7.6	7.6	0.6 0.6	0.6		3.8 4.5	4.2		
				Bottom	11.1	18.7 18.7	18.7	8.1 8.1	8.1	33.8 33.8	33.8	99.7 99.6	99.7	7.6 7.6	7.6	0.6 0.7	0.6		4.1 4.4	4.3		
M3	Fine	Calm	13:59	Surface	1.1	19.2 19.1	19.2	8.1 8.1	8.1	33.6 33.7	33.6	98.4 98.7	98.6	7.5 7.5	7.5	0.9 0.9	0.9	1.0	4.4 4.3	4.4	4.1	
				Middle	4.1	18.9 18.9	18.9	8.1 8.1	8.1	33.8 33.8	33.8	99.0 98.7	98.9	7.5 7.5	7.5	0.9 0.9	0.9		3.7 4.0	3.9		
				Bottom	7.0	19.0 18.9	19.0	8.1 8.1	8.1	33.9 33.9	33.9	96.7 98.7	97.7	7.3 7.5	7.4	1.2 1.1	1.2		4.0 4.0	4.0		
M4	Fine	Calm	13:24	Surface	1.1	18.8 18.9	18.8	8.1 8.1	8.1	33.8 33.8	33.8	101.2 101.0	101.1	7.7 7.7	7.7	0.6 0.6	0.6	0.6	3.8 4.1	4.0	4.8	
				Middle	5.0	18.6 18.6	18.6	8.1 8.1	8.1	33.8 33.8	33.8	100.2 100.2	100.2	7.7 7.7	7.7	0.5 0.5	0.5		3.3 3.0	3.2		
				Bottom	9.0	18.6 18.6	18.6	8.1 8.1	8.1	33.8 33.8	33.8	99.9 99.9	99.9	7.6 7.6	7.6	0.6 0.6	0.6		7.3 7.4	7.4		
M5	Fine	Calm	14:16	Surface	1.1	18.8 18.8	18.8	8.1 8.2	8.1	33.7 33.7	33.7	101.8 101.1	101.5	7.8 7.7	7.7	0.6 0.6	0.6	0.7	3.7 3.2	3.5	4.2	
				Middle	6.0	18.7 18.6	18.6	8.1 8.2	8.1	33.7 33.7	33.7	100.9 100.1	100.5	7.7 7.7	7.7	0.8 0.7	0.7		4.2 4.4	4.3		
				Bottom	11.1	18.6 18.6	18.6	8.1 8.2	8.1	33.8 33.8	33.8	98.9 99.4	99.2	7.6 7.6	7.6	0.8 0.8	0.8		4.6 4.8	4.7		
M6	Fine	Calm	14:10	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	6.3	
				Middle	2.0	18.8 18.8	18.8	8.1 8.1	8.1	33.8 33.8	33.8	100.0 99.7	99.9	7.6 7.6	7.6	1.3 1.3	1.3		6.5 6.1	6.3		
				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 17 January 2019 (Mid-Ebb Tide)**

SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>C2: 7.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>C2: 8.2 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>C2: 7.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>C2: 8.2 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day  <u>C2: 6.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day  <u>C2: 7.3 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

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

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Calm	9:44	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	7.4	7.6	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4		7.6
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0		7.9
C2	Sunny	Calm	8:36	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.3	5.9	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9		5.9
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3		5.6
G1	Sunny	Calm	9:04	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.0	5.1	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6		6.2
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0		4.2
G2	Sunny	Calm	8:53	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	5.9	6.1	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4		5.5
				Bottom	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		6.8
G3	Sunny	Calm	9:11	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	5.8	6.2	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9		5.4
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0		7.3
G4	Sunny	Calm	9:25	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	7.8	7.7	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0		8.5
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3		6.9
M1	Sunny	Calm	8:59	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	5.1	4.9	
				Middle	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4		4.6
				Bottom	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6		5.1
M2	Sunny	Calm	8:49	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	7.4	7.4	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4		9.1
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.2		5.8
M3	Sunny	Calm	9:17	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	5.7	7.2	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4		3.6
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7		12.5
M4	Sunny	Calm	8:41	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	7.1	5.4	
				Middle	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3		4.8
				Bottom	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7		4.4
M5	Sunny	Calm	9:36	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	6.8	6.6	
				Middle	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4		4.8
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2		8.4
M6	Sunny	Calm	9:28	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9	
				Middle	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1		5.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6		-

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 2019 (Mid-Flood Tide)**

SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<b><u>6.0 mg/L</u></b>	<b><u>6.9 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day  <b><u>CI: 5.1 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day  <b><u>CI: 5.5 mg/L</u></b>
	<b><u>Stations M1-M5</u></b>		
	Surface	<b><u>6.2 mg/L</u></b>	<b><u>7.4 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day  <b><u>CI: 5.1 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day  <b><u>CI: 5.5 mg/L</u></b>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<b><u>6.9 mg/L</u></b>	<b><u>7.9 mg/L</u></b>
		or 120% of upstream control station's SS at the same tide of the same day  <b><u>CI: 9.4 mg/L</u></b>	or 130% of upstream control station's SS at the same tide of the same day  <b><u>CI: 10.2 mg/L</u></b>
	<b><u>Station M6</u></b>		
Intake Level	<b><u>8.3 mg/L</u></b>	<b><u>8.6 mg/L</u></b>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.



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

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Calm	15:19	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	4.3	5.8	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		5.2
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6		7.9
C2	Sunny	Calm	13:06	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	6.7	5.8	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3		6.2
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8		4.6
G1	Sunny	Calm	14:01	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	6.4	7.3	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5		7.5
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0		8.0
G2	Sunny	Calm	13:39	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	7.4	6.8	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4		4.4
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1		8.6
G3	Sunny	Calm	14:15	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	6.7	6.3	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3		5.9
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4		6.4
G4	Sunny	Calm	14:41	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	5.5	6.7	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5		7.3
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1		7.4
M1	Sunny	Calm	13:50	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.5	5.9	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3		6.3
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8		5.0
M2	Sunny	Calm	13:25	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	4.5	5.7	
				Middle	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.0		7.0
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6		5.5
M3	Sunny	Calm	14:29	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	8.1	6.3	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8		5.8
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7		4.9
M4	Sunny	Calm	13:18	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.2	5.9	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1		7.4
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9		5.1
M5	Sunny	Calm	15:07	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	7.3	6.0	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2		4.1
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9		6.5
M6	Sunny	Calm	14:50	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6		5.7
				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 18 January 2019 (Mid-Ebb Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.4 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.6 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.6 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 4.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 4.3 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 18 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	11:08	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	33.6 33.6	33.6	102.8 102.5	102.7	7.9 7.9	7.9	7.8	0.0 0.0	0.0	0.1	4.8 4.6	4.7	3.3
				Middle	9.0	18.4 18.4	18.4	8.2 8.2	8.2	33.7 33.7	33.7	101.3 101.8	101.6	7.8 7.8	7.8		0.0 0.0	0.0		2.9 2.8	2.9	
				Bottom	17.0	18.4 18.4	18.4	8.2 8.2	8.2	33.7 33.7	33.7	100.6 100.4	100.5	7.7 7.7	7.7		0.1 0.1	0.1		2.5 2.4	2.5	
C2	Fine	Calm	10:01	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.6	33.6	99.9 100.2	100.1	7.7 7.7	7.7	7.7	0.4 0.3	0.4	0.3	7.3 7.5	7.4	5.0
				Middle	16.0	18.4 18.4	18.4	8.1 8.1	8.1	33.6 33.6	33.6	100.3 100.4	100.4	7.7 7.7	7.7		0.3 0.2	0.2		4.3 4.2	4.3	
				Bottom	31.0	18.4 18.4	18.4	8.1 8.1	8.1	33.6 33.6	33.6	100.0 100.2	100.1	7.7 7.7	7.7		0.3 0.3	0.3		3.3 3.3	3.3	
G1	Fine	Calm	10:38	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.6	33.6	100.3 99.8	100.1	7.7 7.7	7.7	7.6	0.4 0.3	0.3	0.4	4.4 4.3	4.4	3.9
				Middle	4.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.6	33.6	99.3 99.7	99.5	7.6 7.6	7.6		0.4 0.4	0.4		3.1 3.2	3.2	
				Bottom	7.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	98.9 99.2	99.1	7.6 7.6	7.6		0.4 0.4	0.4		4.1 4.1	4.1	
G2	Fine	Calm	10:26	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.8 99.7	99.8	7.7 7.7	7.7	7.6	0.4 0.4	0.4	0.4	3.9 3.7	3.8	4.7
				Middle	5.1	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.7	33.6	99.6 99.6	99.6	7.6 7.6	7.6		0.4 0.4	0.4		6.7 6.6	6.7	
				Bottom	9.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.2 99.1	99.2	7.6 7.6	7.6		0.5 0.5	0.5		3.6 3.5	3.6	
G3	Fine	Calm	10:43	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.4 33.2	33.3	100.2 99.6	99.9	7.7 7.6	7.7	7.7	0.4 0.3	0.3	0.4	4.5 4.6	4.6	3.7
				Middle	4.1	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.7	33.6	99.7 100.0	99.9	7.6 7.7	7.7		0.3 0.4	0.4		3.3 3.3	3.3	
				Bottom	7.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.5 99.8	99.7	7.6 7.6	7.6		0.5 0.4	0.4		3.3 3.3	3.3	
G4	Fine	Calm	10:52	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	99.4 99.3	99.4	7.6 7.6	7.6	7.6	0.5 0.5	0.5	0.5	3.4 3.4	3.4	4.3
				Middle	4.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	99.1 99.1	99.1	7.6 7.6	7.6		0.5 0.5	0.5		6.2 6.1	6.2	
				Bottom	7.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	98.6 98.7	98.7	7.6 7.6	7.6		0.6 0.5	0.5		3.3 3.1	3.2	
M1	Fine	Calm	10:31	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	98.6 97.4	98.0	7.6 7.5	7.5	7.5	0.7 0.8	0.7	0.7	3.3 3.5	3.4	4.8
				Middle	3.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	98.3 97.8	98.1	7.5 7.5	7.5		0.7 0.8	0.7		6.8 6.6	6.7	
				Bottom	5.0	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	97.1 97.2	97.2	7.4 7.4	7.4		0.9 0.7	0.8		4.3 4.3	4.3	
M2	Fine	Calm	10:19	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.9 99.6	99.8	7.7 7.6	7.7	7.6	0.5 0.4	0.4	0.5	3.4 3.4	3.4	4.2
				Middle	6.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.4 99.4	99.4	7.6 7.6	7.6		0.5 0.5	0.5		4.3 4.5	4.4	
				Bottom	11.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	98.9 99.1	99.0	7.6 7.6	7.6		0.4 0.5	0.5		4.9 4.9	4.9	
M3	Fine	Calm	10:47	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.4	33.5	99.2 98.6	98.9	7.6 7.5	7.6	7.6	0.4 0.5	0.4	0.5	3.9 4.1	4.0	3.7
				Middle	4.0	18.6 18.6	18.6	8.1 8.1	8.1	33.6 33.7	33.6	99.0 99.1	99.1	7.6 7.6	7.6		0.5 0.4	0.4		2.9 2.8	2.9	
				Bottom	7.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	99.6 98.5	99.1	7.6 7.5	7.6		0.5 0.6	0.6		4.1 4.1	4.1	
M4	Fine	Calm	10:12	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.6	33.6	100.2 100.1	100.2	7.7 7.7	7.7	7.7	0.4 0.3	0.4	0.4	6.6 6.7	6.7	4.9
				Middle	5.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.6	33.6	99.7 99.8	99.8	7.6 7.7	7.7		0.4 0.4	0.4		3.9 3.8	3.9	
				Bottom	9.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.6	33.6	99.3 99.4	99.4	7.6 7.6	7.6		0.4 0.4	0.4		4.2 4.2	4.2	
M5	Fine	Calm	11:02	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.6	33.6	100.4 99.3	99.9	7.7 7.6	7.7	7.6	0.3 0.4	0.4	0.4	5.4 5.5	5.5	4.6
				Middle	6.1	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.7	33.6	98.9 98.7	98.8	7.6 7.6	7.6		0.6 0.4	0.5		5.1 4.9	5.0	
				Bottom	11.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	98.4 98.2	98.3	7.5 7.5	7.5		0.5 0.4	0.4		3.3 3.2	3.3	
M6	Fine	Calm	10:57	Surface	-	-	-	-	-	-	-	-	-	-	7.7	-	-	0.3	-	-	5.4	
				Middle	2.1	18.5 18.5	18.5	8.2 8.2	8.2	33.6 33.6	33.6	100.8 100.8	100.8	7.7 7.7		7.7	0.3 0.3		0.3	5.3 5.5		5.4
				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 18 January 2019 (Mid-Flood Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.5 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.4 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 18 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	16:02	Surface	1.0	18.1 18.1	18.1	8.2 8.2	8.2	33.5 33.5	33.5	104.6 104.0	104.3	8.1 8.1	8.1	8.0	0.3 0.3	0.3	0.3	3.7 3.6	3.7	3.7
				Middle	9.1	18.3 18.3	18.3	8.2 8.2	8.2	33.6 33.6	33.6	102.6 102.9	102.8	7.9 7.9	7.9		0.1 0.1	0.1		4.8 4.8	4.8	
				Bottom	17.0	18.3 18.3	18.3	8.2 8.2	8.2	33.6 33.6	33.6	101.8 101.9	101.9	7.8 7.9	7.8		0.4 0.3	0.4		2.6 2.7	2.7	
C2	Fine	Calm	15:10	Surface	1.0	18.4 18.4	18.4	8.1 8.1	8.1	33.6 33.6	33.6	102.9 103.2	103.1	7.9 7.9	7.9	7.9	0.3 0.2	0.2	0.2	2.6 2.5	2.6	3.5
				Middle	16.0	18.4 18.4	18.4	8.1 8.1	8.1	33.6 33.6	33.6	102.8 103.7	103.3	7.9 8.0	7.9		0.2 0.1	0.1		3.1 3.1	3.1	
				Bottom	31.1	18.4 18.4	18.4	8.1 8.1	8.1	33.6 33.6	33.6	102.7 103.4	103.1	7.9 8.0	7.9		0.2 0.2	0.2		4.9 4.9	4.9	
G1	Fine	Calm	15:36	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.6	33.6	101.9 101.6	101.8	7.8 7.8	7.8	7.8	0.4 0.4	0.4	0.5	4.2 4.0	4.1	4.3
				Middle	4.1	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.6	33.6	101.6 101.5	101.6	7.8 7.8	7.8		0.5 0.5	0.5		5.0 5.1	5.1	
				Bottom	7.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	101.1 101.0	101.1	7.7 7.7	7.7		0.5 0.5	0.5		3.7 3.8	3.8	
G2	Fine	Calm	15:26	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	102.8 102.2	102.5	7.9 7.8	7.9	7.8	0.3 0.3	0.3	0.4	6.9 7.0	7.0	5.0
				Middle	5.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	102.0 101.8	101.9	7.8 7.8	7.8		0.4 0.3	0.3		3.5 3.4	3.5	
				Bottom	9.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	100.7 101.1	100.9	7.7 7.8	7.7		0.5 0.4	0.5		4.5 4.5	4.5	
G3	Fine	Calm	15:39	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.6	33.5	101.3 100.9	101.1	7.8 7.7	7.7	7.7	1.1 0.9	1.0	0.6	5.2 5.3	5.3	4.8
				Middle	4.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	101.0 101.2	101.1	7.7 7.8	7.7		0.4 0.4	0.4		5.0 5.0	5.0	
				Bottom	7.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	101.2 101.4	101.3	7.8 7.8	7.8		0.4 0.4	0.4		4.3 4.2	4.3	
G4	Fine	Calm	15:48	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	102.0 101.7	101.9	7.8 7.8	7.8	7.8	0.6 0.6	0.6	0.8	5.2 5.1	5.2	5.3
				Middle	4.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	101.9 101.8	101.9	7.8 7.8	7.8		0.6 0.7	0.6		2.9 3.0	3.0	
				Bottom	7.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	101.5 101.4	101.5	7.8 7.8	7.8		1.1 1.0	1.0		7.9 7.8	7.9	
M1	Fine	Calm	15:31	Surface	1.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	99.4 98.4	98.9	7.6 7.5	7.6	7.6	1.3 1.4	1.4	1.4	3.2 3.3	3.3	5.8
				Middle	3.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	98.7 98.5	98.6	7.6 7.5	7.5		1.4 1.4	1.4		7.4 7.2	7.3	
				Bottom	5.1	18.6 18.7	18.7	8.1 8.1	8.1	33.7 33.7	33.7	98.5 98.1	98.3	7.5 7.5	7.5		1.3 1.4	1.4		6.8 6.9	6.9	
M2	Fine	Calm	15:22	Surface	1.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	102.5 101.5	102.0	7.9 7.8	7.8	7.8	0.4 0.4	0.4	0.5	5.2 5.2	5.2	5.4
				Middle	6.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	100.7 100.7	100.7	7.7 7.7	7.7		0.5 0.4	0.5		4.1 4.1	4.1	
				Bottom	11.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.5 100.6	100.1	7.6 7.7	7.7		0.6 0.5	0.6		7.0 6.9	7.0	
M3	Fine	Calm	15:43	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.3 33.3	33.3	99.7 100.6	100.2	7.7 7.7	7.7	7.7	0.5 0.6	0.5	0.6	3.8 3.7	3.8	4.8
				Middle	4.1	18.6 18.6	18.6	8.1 8.1	8.1	33.6 33.6	33.6	100.5 100.6	100.6	7.7 7.7	7.7		0.6 0.7	0.6		6.7 6.5	6.6	
				Bottom	7.1	18.6 18.6	18.6	8.1 8.1	8.1	33.7 33.7	33.7	100.4 100.1	100.3	7.7 7.7	7.7		0.6 0.6	0.6		4.0 4.0	4.0	
M4	Fine	Calm	15:17	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.6 33.7	33.6	102.0 100.5	101.3	7.8 7.7	7.8	7.7	0.4 0.4	0.4	0.5	6.2 5.9	6.1	4.4
				Middle	5.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	101.3 100.3	100.8	7.8 7.7	7.7		0.5 0.5	0.5		4.1 3.9	4.0	
				Bottom	9.0	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	99.6 100.1	99.9	7.6 7.7	7.7		0.6 0.5	0.5		3.0 3.0	3.0	
M5	Fine	Calm	15:56	Surface	1.1	18.4 18.4	18.4	8.1 8.2	8.1	33.6 33.7	33.6	102.9 102.6	102.8	7.9 7.9	7.9	7.9	0.3 0.3	0.3	0.3	3.4 3.3	3.4	3.2
				Middle	6.1	18.4 18.4	18.4	8.2 8.2	8.2	33.6 33.6	33.6	102.7 102.7	102.7	7.9 7.9	7.9		0.3 0.3	0.3		3.4 3.5	3.5	
				Bottom	11.1	18.4 18.4	18.4	8.2 8.2	8.2	33.6 33.6	33.6	102.2 102.4	102.3	7.9 7.9	7.9		0.4 0.3	0.3		2.6 2.7	2.7	
M6	Fine	Calm	15:52	Surface	-	-	-	-	-	-	-	-	-	-	-	7.8	-	-	0.4	-	-	8.9
				Middle	2.1	18.5 18.5	18.5	8.1 8.1	8.1	33.7 33.7	33.7	102.4 102.3	102.4	7.9 7.8	7.8		0.4 0.4	0.4		8.9 8.8	8.9	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 0.9 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.0 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 14.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 15.9 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 14.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 15.9 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.8 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 21 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	13:48	Surface	1.1	18.4 18.3	18.4	8.2 8.2	8.2	33.4 33.4	33.4	99.8 99.2	99.5	7.9 7.9	7.9	0.4 0.4	0.4	0.5	5.3 5.2	5.3	6.5	
				Middle	9.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.8 99.8	99.8	7.9 7.8	7.8	0.4 0.5	0.4		9.5 9.4	9.5		
				Bottom	17.0	18.4 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.4 99.4	98.9	7.6 7.7	7.6	0.7 0.5	0.6		4.7 4.7	4.7		
C2	Sunny	Calm	12:47	Surface	1.0	18.6 18.6	18.6	8.0 8.1	8.1	33.3 33.4	33.3	100.0 100.0	100.0	7.7 7.7	7.7	0.7 0.7	0.7	0.7	12.3 12.1	12.2	7.4	
				Middle	16.0	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.4	33.4	98.4 98.3	98.4	7.6 7.6	7.6	0.8 0.8	0.8		5.4 5.6	5.5		
				Bottom	31.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.5 95.7	97.1	7.6 7.4	7.5	0.8 0.7	0.7		4.4 4.5	4.5		
G1	Sunny	Calm	13:14	Surface	1.1	18.8 18.6	18.7	8.2 8.1	8.1	33.4 33.5	33.4	99.1 99.1	99.4	7.7 7.7	7.7	0.8 0.8	0.8	0.8	3.4 3.5	3.5	7.6	
				Middle	4.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.4 99.3	99.4	7.7 7.7	7.7	0.8 0.7	0.8		16.7 16.6	16.7		
				Bottom	7.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.7 99.5	99.6	7.7 7.6	7.6	0.8 0.8	0.8		2.6 2.5	2.6		
G2	Sunny	Calm	13:04	Surface	1.0	18.5 18.5	18.5	8.2 8.2	8.2	33.4 33.4	33.4	99.5 99.1	99.3	8.0 7.9	7.9	0.4 0.5	0.5	0.5	6.4 6.3	6.4	5.2	
				Middle	5.1	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.9 99.5	99.7	7.9 7.9	7.9	0.4 0.4	0.4		6.3 6.2	6.3		
				Bottom	9.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	100.0 100.0	100.0	7.9 7.9	7.9	0.6 0.6	0.6		2.9 3.0	3.0		
G3	Sunny	Calm	13:18	Surface	1.0	18.7 18.8	18.7	8.1 8.1	8.1	33.4 33.4	33.4	99.6 99.6	99.6	7.8 7.7	7.7	0.4 0.5	0.5	0.7	1.9 1.9	1.9	3.5	
				Middle	4.1	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.6 99.7	99.7	7.7 7.7	7.7	0.8 0.7	0.8		6.0 6.2	6.1		
				Bottom	7.1	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.1 99.4	99.3	7.7 7.7	7.7	0.9 0.8	0.9		2.5 2.5	2.5		
G4	Sunny	Calm	13:31	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.4 99.3	99.4	7.8 7.8	7.8	0.4 0.4	0.4	0.5	6.7 6.7	6.7	4.4	
				Middle	4.0	18.6 18.7	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.6 99.7	99.7	7.8 7.8	7.8	0.5 0.4	0.4		2.9 2.9	2.9		
				Bottom	7.1	18.5 18.5	18.5	8.1 8.1	8.1	33.5 33.5	33.5	99.2 99.8	99.5	7.7 7.7	7.7	0.9 0.7	0.8		3.5 3.5	3.5		
M1	Sunny	Calm	13:10	Surface	1.1	18.7 18.6	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.5 100.0	99.8	7.8 7.7	7.7	1.0 1.2	1.1	1.1	3.7 3.8	3.8	5.7	
				Middle	3.0	18.6 18.7	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.6 99.3	99.5	7.8 7.8	7.8	0.8 0.9	0.9		4.2 4.4	4.3		
				Bottom	5.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.8 99.8	99.8	7.7 7.7	7.7	1.4 1.3	1.4		8.9 8.9	8.9		
M2	Sunny	Calm	13:00	Surface	1.1	18.4 18.4	18.4	8.2 8.1	8.1	33.4 33.4	33.4	99.7 99.8	99.8	7.9 7.9	7.9	0.5 0.5	0.5	0.6	4.5 4.6	4.6	4.9	
				Middle	5.1	18.3 18.3	18.3	8.2 8.1	8.1	33.4 33.4	33.4	99.6 99.2	99.4	7.9 7.9	7.9	0.7 0.7	0.7		4.5 4.7	4.6		
				Bottom	9.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.3 99.0	99.2	7.9 7.9	7.9	0.6 0.5	0.6		5.5 5.5	5.5		
M3	Sunny	Calm	13:25	Surface	1.1	18.7 18.8	18.8	8.1 8.1	8.1	33.4 33.3	33.3	99.5 99.1	99.3	7.8 7.7	7.7	0.6 0.6	0.6	0.6	6.4 6.4	6.4	5.0	
				Middle	4.0	18.6 18.7	18.6	8.1 8.1	8.1	33.5 33.4	33.5	100.0 99.6	99.8	7.8 7.8	7.8	0.4 0.5	0.5		3.6 3.6	3.6		
				Bottom	7.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.6 99.8	99.7	7.8 7.8	7.8	0.7 0.8	0.8		4.8 5.1	5.0		
M4	Sunny	Calm	12:54	Surface	1.0	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.4	33.4	100.0 100.0	100.0	7.7 7.7	7.7	0.7 0.7	0.7	0.7	6.4 6.3	6.4	5.9	
				Middle	4.0	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.4	33.4	99.8 99.9	99.9	7.7 7.7	7.7	0.6 0.6	0.6		4.7 4.7	4.7		
				Bottom	8.0	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.4	33.4	99.6 99.8	99.7	7.7 7.7	7.7	0.8 0.7	0.7		6.7 6.7	6.7		
M5	Sunny	Calm	13:41	Surface	1.0	18.6 18.7	18.7	8.1 8.2	8.1	33.5 33.5	33.5	99.5 99.3	99.4	7.9 7.9	7.9	0.5 0.5	0.5	0.5	5.7 5.8	5.8	5.0	
				Middle	6.0	18.6 18.5	18.5	8.1 8.1	8.1	33.5 33.5	33.5	99.4 99.4	99.4	7.8 7.8	7.8	0.5 0.5	0.5		4.3 4.2	4.3		
				Bottom	11.1	18.5 18.5	18.5	8.1 8.1	8.1	33.5 33.5	33.5	99.2 99.2	99.2	7.7 7.7	7.7	0.6 0.6	0.6		5.0 5.1	5.1		
M6	Sunny	Calm	13:35	Surface	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	6.2		
				Middle	2.1	18.6 18.6	18.6	8.2 8.2	8.2	33.5 33.5	33.5	99.9 99.9	99.9	7.9 7.9	7.9	0.8 0.8		0.8	6.2 6.1		6.2	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 21 January 2019 (Mid-Flood Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.9 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 2.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 2.7 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 2.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 2.7 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 21 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	17:30	Surface	1.1	18.3 18.4	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.4 99.1	99.3	7.9 7.9	7.9	7.8	0.4 0.4	0.4	0.5	2.1 2.1	2.1	3.2
				Middle	9.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.4 99.3	99.4	7.8 7.8	7.8	7.8	0.4 0.4	0.4		3.4 3.4	3.4	
				Bottom	17.1	18.4 18.4	18.4	8.1 8.1	8.1	33.5 33.5	33.5	99.5 99.5	99.5	7.7 7.7	7.7	7.7	0.7 0.7	0.7		4.2 4.2	4.2	
C2	Sunny	Calm	16:26	Surface	1.0	18.6 18.6	18.6	8.2 8.1	8.2	33.4 33.4	33.4	99.4 99.8	99.6	7.8 7.7	7.7	7.6	0.7 0.7	0.7	0.8	7.4 7.3	7.4	6.3
				Middle	16.1	18.5 18.5	18.5	8.2 8.1	8.1	33.5 33.5	33.5	98.3 97.8	98.1	7.5 7.5	7.5	7.5	0.8 0.8	0.8		6.9 7.0	7.0	
				Bottom	32.1	18.5 18.5	18.5	8.1 8.1	8.1	33.5 33.5	33.5	97.3 97.0	97.2	7.5 7.5	7.5	7.5	0.8 0.9	0.8		4.7 4.7	4.7	
G1	Sunny	Calm	16:57	Surface	1.1	18.9 18.8	18.9	8.1 8.1	8.1	33.3 33.3	33.3	100.0 99.8	99.9	7.8 7.8	7.8	7.8	0.5 0.4	0.4	0.5	7.7 7.6	7.7	4.7
				Middle	4.0	18.8 18.8	18.8	8.1 8.1	8.1	33.5 33.4	33.4	99.9 99.7	99.8	7.8 7.8	7.8	7.8	0.5 0.5	0.5		4.0 4.2	4.1	
				Bottom	7.0	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.2 99.1	99.2	7.7 7.7	7.7	7.7	0.7 0.7	0.7		2.2 2.3	2.3	
G2	Sunny	Calm	16:46	Surface	1.0	18.6 18.4	18.5	8.2 8.2	8.2	33.4 33.4	33.4	99.7 99.2	99.5	8.0 7.9	7.9	7.9	0.4 0.4	0.4	0.4	3.7 3.5	3.6	3.5
				Middle	5.0	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	99.5 99.3	99.4	8.0 7.9	8.0	8.0	0.3 0.3	0.3		3.2 3.1	3.2	
				Bottom	9.1	18.4 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.2 99.4	99.3	7.9 7.9	7.9	7.9	0.4 0.5	0.4		3.8 3.8	3.8	
G3	Sunny	Calm	17:01	Surface	1.0	18.8 18.8	18.8	8.2 8.1	8.1	33.4 33.3	33.4	99.2 99.4	99.3	7.8 7.7	7.8	7.7	0.6 0.6	0.6	0.8	4.1 4.1	4.1	3.0
				Middle	4.1	18.7 18.6	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.6 99.5	99.6	7.8 7.7	7.7	7.7	0.7 1.0	0.8		1.9 1.9	1.9	
				Bottom	7.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.3 99.3	99.3	7.6 7.6	7.6	7.6	0.9 0.9	0.9		2.9 3.0	3.0	
G4	Sunny	Calm	17:16	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.7 99.6	99.7	7.9 7.8	7.8	7.8	0.5 0.5	0.5	0.6	5.3 5.5	5.4	4.9
				Middle	4.1	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.2 99.1	99.2	7.8 7.8	7.8	7.8	0.6 0.4	0.5		5.6 5.7	5.7	
				Bottom	7.1	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.1 99.8	99.5	7.7 7.7	7.7	7.7	0.9 1.0	0.9		3.6 3.5	3.6	
M1	Sunny	Calm	16:51	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.4 33.4	33.4	99.5 100.0	99.8	7.8 7.7	7.7	7.7	0.7 0.6	0.6	1.0	2.1 2.0	2.1	3.7
				Middle	3.1	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.5	33.5	99.4 99.6	99.5	7.8 7.7	7.7	7.7	0.9 1.1	1.0		3.9 3.8	3.9	
				Bottom	5.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.2 99.3	99.3	7.7 7.7	7.7	7.7	1.6 1.4	1.5		5.1 5.1	5.1	
M2	Sunny	Calm	16:41	Surface	1.0	18.5 18.6	18.6	8.2 8.2	8.2	33.4 33.4	33.4	99.5 99.1	99.3	7.9 7.9	7.9	7.9	0.5 0.4	0.4	0.4	4.2 4.2	4.2	4.0
				Middle	6.0	18.5 18.5	18.5	8.2 8.2	8.2	33.4 33.4	33.4	99.3 99.2	99.3	7.9 7.9	7.9	7.9	0.4 0.4	0.4		3.4 3.6	3.5	
				Bottom	11.0	18.4 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	99.1 99.2	99.2	7.8 7.8	7.8	7.8	0.5 0.5	0.5		4.4 4.4	4.4	
M3	Sunny	Calm	17:08	Surface	1.0	18.8 18.9	18.9	8.1 8.1	8.1	33.4 33.1	33.3	99.8 99.5	99.7	7.9 7.8	7.8	7.8	0.6 0.6	0.6	0.7	1.3 1.3	1.3	4.7
				Middle	4.1	18.6 18.7	18.7	8.1 8.1	8.1	33.5 33.4	33.4	99.8 99.7	99.8	7.7 7.7	7.7	7.7	0.7 0.8	0.8		3.2 3.2	3.2	
				Bottom	7.1	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.9 99.2	99.6	7.7 7.7	7.7	7.7	0.7 0.8	0.8		9.8 9.6	9.7	
M4	Sunny	Calm	16:34	Surface	1.0	18.5 18.5	18.5	8.2 8.1	8.1	33.4 33.4	33.4	99.7 99.5	99.6	7.7 7.6	7.7	7.7	0.7 0.7	0.7	0.7	3.9 4.0	4.0	5.2
				Middle	5.1	18.5 18.5	18.5	8.2 8.1	8.1	33.4 33.4	33.4	99.2 99.0	99.1	7.7 7.6	7.6	7.6	0.7 0.7	0.7		7.5 7.6	7.6	
				Bottom	9.0	18.4 18.5	18.4	8.1 8.1	8.1	33.4 33.4	33.4	99.6 98.4	99.0	7.7 7.6	7.6	7.6	0.8 0.9	0.8		4.2 4.2	4.2	
M5	Sunny	Calm	17:24	Surface	1.0	18.6 18.6	18.6	8.2 8.2	8.2	33.4 33.5	33.5	99.6 99.7	99.7	7.9 7.9	7.9	7.9	0.4 0.5	0.5	0.5	8.2 8.3	8.3	6.0
				Middle	6.1	18.4 18.5	18.5	8.2 8.2	8.2	33.4 33.5	33.4	99.2 99.3	99.3	7.9 7.9	7.9	7.9	0.5 0.5	0.5		6.5 6.4	6.5	
				Bottom	11.1	18.4 18.5	18.4	8.2 8.2	8.2	33.4 33.4	33.4	99.1 99.8	99.5	7.8 7.8	7.8	7.8	0.4 0.5	0.4		3.2 3.1	3.2	
M6	Sunny	Calm	17:19	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7	-	-	4.7
				Middle	2.0	18.6 18.6	18.6	8.1 8.1	8.1	33.5 33.5	33.5	99.7 99.6	99.7	7.9 7.9	7.9	7.9	0.7 0.7	0.7		4.7 4.7	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 23 January 2019 (Mid-Ebb Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.3 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.4 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.4 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.4 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 3.7 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 4.0 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/23/2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	14:00	Surface	1.0	18.7 18.7	18.7	8.1 8.1	8.1	33.4 33.4	33.4	101.2 99.4	100.3	7.7 7.6	7.7	7.6	1.3 1.3	1.3	1.2	3.1 3.1	3.1	3.8
				Middle	9.0	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	98.7 98.3	98.5	7.6 7.6	7.6		1.1 1.0	1.0		3.2 2.8	3.0	
				Bottom	17.0	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	98.0 97.8	97.9	7.6 7.6	7.6		1.2 1.3	1.2		5.2 5.2	5.2	
C2	Sunny	Calm	12:41	Surface	1.1	18.4 18.4	18.4	8.2 8.1	8.1	33.4 33.4	33.4	100.4 99.3	99.9	7.7 7.6	7.7	7.7	0.9 1.0	0.9	1.0	6.5 6.4	6.5	4.2
				Middle	16.0	18.2 18.2	18.2	8.2 8.1	8.2	33.4 33.4	33.4	99.0 98.3	98.7	7.7 7.6	7.6		1.0 1.0	1.0		2.8 3.1	3.0	
				Bottom	31.0	18.1 18.2	18.1	8.2 8.1	8.1	33.4 33.4	33.4	98.1 98.0	98.1	7.6 7.6	7.6		1.1 1.1	1.1		3.4 2.7	3.1	
G1	Sunny	Calm	13:19	Surface	1.0	18.5 18.5	18.5	8.1 8.1	8.1	33.3 33.3	33.3	100.6 100.4	100.5	7.7 7.7	7.7	7.7	0.9 0.9	0.9	0.9	2.9 3.5	3.2	3.8
				Middle	4.0	18.5 18.3	18.4	8.1 8.1	8.1	33.4 33.4	33.4	100.2 99.4	99.8	7.7 7.7	7.7		0.8 0.8	0.8		6.2 6.3	6.3	
				Bottom	7.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.9 99.0	99.0	7.6 7.6	7.6		0.9 0.9	0.9		2.1 2.0	2.1	
G2	Sunny	Calm	13:04	Surface	1.1	18.0 18.5	18.3	8.1 8.1	8.1	33.8 33.4	33.6	100.8 99.5	100.2	7.8 7.6	7.7	7.6	0.8 0.8	0.8	1.0	3.5 3.2	3.4	5.6
				Middle	5.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.6 98.0	98.3	7.6 7.6	7.6		1.1 1.1	1.1		9.2 9.3	9.3	
				Bottom	9.1	18.2 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.8 97.8	97.8	7.5 7.5	7.5		1.2 1.1	1.2		4.0 4.1	4.1	
G3	Sunny	Calm	13:25	Surface	1.0	18.7 18.6	18.6	8.1 8.2	8.1	33.4 33.3	33.3	101.8 102.1	102.0	7.8 7.8	7.8	7.8	0.8 0.9	0.8	0.8	13.7 13.5	13.6	7.5
				Middle	4.0	18.3 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	101.0 101.3	101.2	7.8 7.8	7.8		0.8 0.9	0.9		4.1 4.1	4.1	
				Bottom	7.0	18.2 18.1	18.2	8.2 8.2	8.2	33.4 33.4	33.4	101.0 101.0	101.0	7.8 7.8	7.8		0.7 0.8	0.7		4.4 4.9	4.7	
G4	Sunny	Calm	13:36	Surface	1.0	18.6 18.5	18.6	8.1 8.2	8.1	33.4 33.4	33.4	102.0 102.8	102.4	7.8 7.9	7.9	7.8	0.7 0.7	0.7	0.8	5.6 5.3	5.5	7.1
				Middle	4.0	18.5 18.4	18.5	8.1 8.1	8.1	33.4 33.4	33.4	101.5 101.7	101.6	7.8 7.8	7.8		0.8 0.8	0.8		10.0 10.6	10.3	
				Bottom	7.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	102.4 101.7	102.1	7.9 7.9	7.9		0.9 0.9	0.9		5.6 5.4	5.5	
M1	Sunny	Calm	13:12	Surface	1.0	18.4 18.3	18.4	8.2 8.2	8.2	33.3 33.3	33.3	101.8 101.3	101.6	7.8 7.8	7.8	7.8	0.8 0.8	0.8	0.9	2.3 1.9	2.1	2.5
				Middle	3.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.3	33.3	101.3 101.1	101.2	7.8 7.8	7.8		1.0 0.9	1.0		2.9 3.0	3.0	
				Bottom	5.0	18.2 18.3	18.2	8.2 8.2	8.2	33.4 33.4	33.4	100.8 100.6	100.7	7.8 7.8	7.8		1.1 1.1	1.1		2.6 2.1	2.4	
M2	Sunny	Calm	12:58	Surface	1.0	18.5 18.6	18.5	8.1 8.1	8.1	33.4 33.4	33.4	101.1 99.8	100.5	7.8 7.7	7.7	7.7	0.9 0.9	0.9	0.9	5.8 5.9	5.9	5.1
				Middle	6.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	99.4 98.8	99.1	7.7 7.6	7.6		1.0 0.9	1.0		4.4 4.2	4.3	
				Bottom	11.1	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.8 98.4	98.1	7.5 7.6	7.6		1.0 1.0	1.0		5.0 5.5	5.3	
M3	Sunny	Calm	13:30	Surface	1.0	18.7 18.6	18.6	8.1 8.2	8.1	33.2 33.3	33.3	100.0 102.2	101.1	7.7 7.8	7.8	7.8	0.9 0.9	0.9	0.9	8.4 7.8	8.1	6.3
				Middle	4.1	18.4 18.5	18.5	8.2 8.2	8.2	33.4 33.4	33.4	101.8 101.8	101.8	7.8 7.8	7.8		0.9 0.9	0.9		7.9 8.4	8.2	
				Bottom	7.1	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	102.6 102.2	102.4	7.9 7.9	7.9		0.9 0.8	0.8		2.6 2.4	2.5	
M4	Sunny	Calm	12:50	Surface	1.0	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.4	33.4	99.2 98.7	99.0	7.6 7.6	7.6	7.6	0.9 0.9	0.9	1.0	6.4 7.2	6.8	3.8
				Middle	5.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.5 98.0	98.3	7.6 7.6	7.6		1.1 1.1	1.1		2.2 2.1	2.2	
				Bottom	9.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.2 98.0	98.1	7.6 7.6	7.6		1.1 1.0	1.1		2.3 2.4	2.4	
M5	Sunny	Calm	13:51	Surface	1.0	18.6 18.6	18.6	8.1 8.1	8.1	33.4 33.4	33.4	100.6 98.7	99.7	7.7 7.6	7.6	7.6	0.9 0.8	0.9	0.9	3.4 3.9	3.7	3.9
				Middle	6.0	18.4 18.5	18.4	8.1 8.1	8.1	33.4 33.4	33.4	98.5 98.1	98.3	7.6 7.5	7.6		0.9 0.9	0.9		5.7 5.5	5.6	
				Bottom	11.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.3 97.8	98.1	7.6 7.5	7.6		1.0 1.0	1.0		2.5 2.2	2.4	
M6	Sunny	Calm	13:45	Surface	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	1.2	-	-	3.8
				Middle	2.1	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.4	33.4	99.6 99.5	99.6	7.7 7.7	7.7		1.2 1.2	1.2		3.7 3.9	3.8	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 23 January 2019 (Mid-Flood Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 2.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 2.6 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.7 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.7 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.9 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.2 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/23/2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	9:28	Surface	1.0	18.2 18.2	18.2	8.1 8.2	8.1	33.4 33.4	33.4	102.5 100.8	101.7	7.9 7.8	7.9	7.8	1.1 1.2	1.1	1.4	2.8 2.9	2.9	2.9
				Middle	9.1	18.0 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	100.6 100.3	100.5	7.8 7.8	7.8		1.2 1.2	1.2		2.7 2.3	2.5	
				Bottom	17.0	18.0 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	100.2 100.0	100.1	7.8 7.8	7.8		2.0 2.0	2.0		3.4 3.1	3.3	
C2	Sunny	Calm	8:10	Surface	1.1	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	99.5 99.6	99.6	7.7 7.7	7.7	7.7	1.7 1.8	1.8	1.7	5.1 4.3	4.7	5.2
				Middle	16.1	18.2 18.1	18.1	8.1 8.1	8.1	33.4 33.4	33.4	99.0 98.8	98.9	7.7 7.6	7.7		1.9 1.9	1.9		5.9 5.5	5.7	
				Bottom	31.0	18.1 18.1	18.1	8.1 8.1	8.1	33.4 33.4	33.4	98.8 99.0	98.9	7.6 7.7	7.6		1.5 1.5	1.5		4.9 5.2	5.1	
G1	Sunny	Calm	8:49	Surface	1.0	18.1 18.1	18.1	8.1 8.1	8.1	33.3 33.2	33.2	101.2 100.1	100.7	7.8 7.8	7.8	7.8	0.8 0.8	0.8	0.9	4.4 4.5	4.5	4.1
				Middle	4.0	18.1 18.1	18.1	8.1 8.1	8.1	33.4 33.3	33.3	100.7 100.1	100.4	7.8 7.8	7.8		0.9 0.9	0.9		3.7 3.0	3.4	
				Bottom	7.0	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	100.0 99.6	99.8	7.7 7.7	7.7		1.1 1.1	1.1		4.4 4.7	4.6	
G2	Sunny	Calm	8:32	Surface	1.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.7 97.7	97.7	7.5 7.5	7.5	7.5	1.2 1.2	1.2	1.2	5.8 6.2	6.0	6.2
				Middle	5.1	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.6 97.4	97.5	7.5 7.5	7.5		1.3 1.3	1.3		5.4 5.1	5.3	
				Bottom	9.1	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.5 97.3	97.4	7.5 7.5	7.5		1.1 1.1	1.1		7.5 7.0	7.3	
G3	Sunny	Calm	8:55	Surface	1.0	18.1 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	100.4 100.5	100.5	7.8 7.8	7.8	7.8	1.2 1.2	1.2	1.1	4.5 3.8	4.2	4.9
				Middle	4.0	18.2 18.2	18.2	8.1 8.2	8.1	33.4 33.4	33.4	101.1 100.4	100.8	7.8 7.8	7.8		1.2 1.3	1.2		4.5 5.0	4.8	
				Bottom	7.0	18.2 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	101.1 100.8	101.0	7.8 7.8	7.8		1.0 0.9	1.0		6.2 5.5	5.9	
G4	Sunny	Calm	9:07	Surface	1.1	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	101.7 100.4	101.1	7.9 7.8	7.8	7.8	1.0 1.1	1.0	1.1	6.0 6.1	6.1	7.7
				Middle	4.0	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	101.1 100.1	100.6	7.8 7.7	7.8		1.1 1.2	1.1		6.5 5.9	6.2	
				Bottom	7.1	18.1 18.1	18.1	8.1 8.1	8.1	33.4 33.4	33.4	100.6 100.0	100.3	7.8 7.7	7.8		1.2 1.1	1.2		10.4 11.0	10.7	
M1	Sunny	Calm	8:40	Surface	1.0	18.1 18.1	18.1	8.1 8.1	8.1	33.3 33.3	33.3	101.7 100.8	101.3	7.9 7.8	7.8	7.8	0.9 1.0	1.0	1.0	5.9 5.4	5.7	6.7
				Middle	3.0	18.1 18.1	18.1	8.1 8.1	8.1	33.3 33.3	33.3	101.1 100.3	100.7	7.8 7.8	7.8		1.0 1.1	1.1		6.7 6.1	6.4	
				Bottom	5.0	18.1 18.1	18.1	8.1 8.1	8.1	33.3 33.3	33.3	100.7 100.0	100.4	7.8 7.7	7.8		0.9 1.0	1.0		8.1 8.1	8.1	
M2	Sunny	Calm	8:27	Surface	1.1	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.5 98.3	98.4	7.6 7.6	7.6	7.6	1.0 1.0	1.0	1.2	7.3 7.7	7.5	7.5
				Middle	6.1	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.1 98.0	98.1	7.6 7.6	7.6		1.2 1.2	1.2		6.8 6.9	6.9	
				Bottom	11.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.7 97.7	97.7	7.5 7.5	7.5		1.3 1.3	1.3		8.0 8.4	8.2	
M3	Sunny	Calm	9:01	Surface	1.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	101.8 100.5	101.2	7.9 7.8	7.8	7.8	1.1 1.0	1.1	1.1	4.4 4.2	4.3	5.2
				Middle	4.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	100.6 100.1	100.4	7.8 7.7	7.7		1.1 1.1	1.1		3.6 3.6	3.6	
				Bottom	7.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	100.5 100.2	100.4	7.8 7.7	7.7		1.0 1.1	1.0		7.2 7.9	7.6	
M4	Sunny	Calm	8:20	Surface	1.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	98.4 98.5	98.5	7.6 7.6	7.6	7.6	1.2 1.2	1.2	1.1	7.3 7.8	7.6	5.5
				Middle	5.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.9 98.7	98.3	7.6 7.6	7.6		1.0 1.0	1.0		2.3 2.8	2.6	
				Bottom	9.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	97.6 98.5	98.1	7.5 7.6	7.6		1.2 1.3	1.2		6.1 6.7	6.4	
M5	Sunny	Calm	9:19	Surface	1.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	99.9 98.0	99.0	7.7 7.6	7.6	7.6	1.1 1.0	1.0	0.9	6.3 6.7	6.5	9.9
				Middle	6.1	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	97.6 97.2	97.4	7.5 7.5	7.5		0.9 1.0	0.9		13.5 13.9	13.7	
				Bottom	11.0	18.1 18.1	18.1	8.1 8.1	8.1	33.4 33.4	33.4	98.4 97.5	98.0	7.6 7.5	7.6		0.7 0.7	0.7		9.6 9.3	9.5	
M6	Sunny	Calm	9:13	Surface	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	1.2	-	-	5.9
				Middle	2.0	18.2 18.2	18.2	8.1 8.1	8.1	33.4 33.4	33.4	100.1 100.1	100.1	7.7 7.7	7.7		1.2 1.2	1.2		5.8 5.9	5.9	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

**Appendix I - Action and Limit Levels for Marine Water Quality on 24 January 2019 (Mid-Ebb Tide)**

SS in mg/L (See Note 2 and 4)	<b>Stations G1-G4</b>		
	Surface	<u><b>6.0 mg/L</b></u>	<u><b>6.9 mg/L</b></u>
		or 120% of upstream control station's SS at the same tide of the same day <u><b>C2: 15.2 mg/L</b></u>	or 130% of upstream control station's SS at the same tide of the same day <u><b>C2: 16.5 mg/L</b></u>
	<b>Stations M1-M5</b>		
	Surface	<u><b>6.2 mg/L</b></u>	<u><b>7.4 mg/L</b></u>
		or 120% of upstream control station's SS at the same tide of the same day <u><b>C2: 15.2 mg/L</b></u>	or 130% of upstream control station's SS at the same tide of the same day <u><b>C2: 16.5 mg/L</b></u>
	<b>Stations G1-G4, M1-M5</b>		
Bottom	<u><b>6.9 mg/L</b></u>	<u><b>7.9 mg/L</b></u>	
	or 120% of upstream control station's SS at the same tide of the same day <u><b>C2: 10.3 mg/L</b></u>	or 130% of upstream control station's SS at the same tide of the same day <u><b>C2: 11.2 mg/L</b></u>	
<b>Station M6</b>			
Intake Level	<u><b>8.3 mg/L</b></u>	<u><b>8.6 mg/L</b></u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 24 January 2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Moderate	10:53	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9	5.9	5.9	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2		5.0
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8		6.3
C2	Sunny	Moderate	9:07	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.7	12.7	8.3	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5		3.8
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3		8.9
G1	Sunny	Moderate	10:03	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3	9.1	6.7	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6		3.7
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2		7.1
G2	Sunny	Moderate	9:38	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	3.8	4.8	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5		3.0
				Bottom	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2		7.3
G3	Sunny	Moderate	10:18	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	6.3	6.3	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7		8.3
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7		4.3
G4	Sunny	Moderate	10:35	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	8.7	6.7	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1		5.7
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2		6.2
M1	Sunny	Moderate	9:49	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	7.6	6.0	
				Middle	3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5		4.8
				Bottom	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8		5.3
M2	Sunny	Moderate	9:30	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	4.2	4.8	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1		4.1
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0		6.2
M3	Sunny	Moderate	10:25	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	4.7	4.3	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3		5.4
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1		3.1
M4	Sunny	Moderate	9:21	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	4.3	5.8	
				Middle	5.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1		3.9
				Bottom	9.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.1		8.6
M5	Sunny	Moderate	10:45	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	2.9	4.7	
				Middle	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4		5.8
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0		5.5
M6	Sunny	Moderate	10:41	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5	
				Middle	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5		9.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-

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



**Appendix I - Action and Limit Levels for Marine Water Quality on 24 January 2019 (Mid-Flood Tide)**

SS in mg/L (See Note 2 and 4)	<b>Stations G1-G4</b>		
	Surface	<u><b>6.0 mg/L</b></u>	<u><b>6.9 mg/L</b></u>
		or 120% of upstream control station's SS at the same tide of the same day <u><b>C1: 4.6 mg/L</b></u>	or 130% of upstream control station's SS at the same tide of the same day <u><b>C1: 4.9 mg/L</b></u>
	<b>Stations M1-M5</b>		
	Surface	<u><b>6.2 mg/L</b></u>	<u><b>7.4 mg/L</b></u>
		or 120% of upstream control station's SS at the same tide of the same day <u><b>C1: 4.6 mg/L</b></u>	or 130% of upstream control station's SS at the same tide of the same day <u><b>C1: 4.9 mg/L</b></u>
	<b>Stations G1-G4, M1-M5</b>		
	Bottom	<u><b>6.9 mg/L</b></u>	<u><b>7.9 mg/L</b></u>
		or 120% of upstream control station's SS at the same tide of the same day <u><b>C1: 5.3 mg/L</b></u>	or 130% of upstream control station's SS at the same tide of the same day <u><b>C1: 5.8 mg/L</b></u>
	<b>Station M6</b>		
Intake Level	<u><b>8.3 mg/L</b></u>	<u><b>8.6 mg/L</b></u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 24 January 2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
C1	Sunny	Moderate	15:20	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	3.7	3.8	4.5	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.4		5.4
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	4.5		4.5
C2	Sunny	Moderate	13:45	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	5.6	5.9	5.7	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	5.7		5.9
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9	4.9		5.4
G1	Sunny	Moderate	14:30	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	5.0	4.7	4.7	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	5.4		5.2
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	4.5		4.4
G2	Sunny	Moderate	14:12	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.1	5.3	4.0	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	4.1		3.7
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	3.1		3.1
G3	Sunny	Moderate	14:44	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	3.3	3.3	3.3	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	3.7		3.6
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	3.2		3.1
G4	Sunny	Moderate	15:00	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	2.7	2.9	4.6	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	4.7		4.4
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	6.2		6.5
M1	Sunny	Moderate	14:25	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.7	6.8	6.7	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.8		6.6
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.4		6.6
M2	Sunny	Moderate	13:59	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	4.8	5.1	5.1	
				Middle	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	6.4		6.6
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	3.5		3.8
M3	Sunny	Moderate	14:50	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	3.0	3.0	4.5	
				Middle	4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	4.6		5.0
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.6		5.5
M4	Sunny	Moderate	13:53	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	4.2	4.2	6.0	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	5.0		5.0
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	8.9		9.0
M5	Sunny	Moderate	15:11	Surface	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	4.0	4.1	3.5	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	2.9		3.3
				Bottom	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	3.3		3.3
M6	Sunny	Moderate	15:07	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.9	9.3		9.6
				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 25 January 2019 (Mid-Ebb Tide)**

<b><u>Parameter (unit)</u></b>	<b><u>Depth</u></b>	<b><u>Action Level</u></b>	<b><u>Limit Level</u></b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.2 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.3 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 10.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 11.3 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 10.4 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 11.3 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>	
	or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.2 mg/L</u>	
<b><u>Station M6</u></b>			
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/25/2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	15:08	Surface	1.1	18.7 18.7	18.7	8.2 8.2	8.2	33.4 33.4	33.4	105.5 105.6	105.6	8.1 8.1	8.1	8.0	0.8 0.8	0.8	0.9	3.7 3.6	3.7	7.4
				Middle	9.0	18.4 18.5	18.4	8.2 8.2	8.2	33.4 33.4	33.4	103.5 104.0	103.8	8.0 8.0	8.0		0.8 0.9	0.9		8.1 8.0	8.1	
				Bottom	17.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	101.3 101.4	101.4	7.8 7.8	7.8		1.0 0.9	0.9		10.5 10.6	10.6	
C2	Sunny	Calm	14:19	Surface	1.1	18.7 18.7	18.7	8.1 8.1	8.1	33.5 33.5	33.5	104.6 105.0	104.8	8.0 8.0	8.0	7.9	0.8 0.8	0.8	0.9	8.7 8.7	8.7	7.3
				Middle	16.5	18.3 18.3	18.3	8.1 8.1	8.1	33.5 33.5	33.5	100.8 100.8	100.8	7.8 7.8	7.8		1.0 0.9	1.0		6.0 6.2	6.1	
				Bottom	32.1	18.3 18.3	18.3	8.1 8.1	8.1	33.5 33.5	33.5	100.7 100.2	100.5	7.8 7.7	7.7		0.9 1.0	1.0		7.0 7.2	7.1	
G1	Sunny	Calm	14:42	Surface	1.0	18.7 18.8	18.8	8.3 8.2	8.2	33.4 33.4	33.4	107.2 107.1	107.2	8.2 8.2	8.2	8.2	0.8 0.9	0.8	0.9	3.5 3.4	3.5	6.6
				Middle	4.0	18.6 18.5	18.6	8.2 8.2	8.2	33.4 33.4	33.4	106.6 105.8	106.2	8.2 8.1	8.1		0.8 0.9	0.8		9.7 9.5	9.6	
				Bottom	7.2	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	103.4 103.2	103.3	8.0 8.0	8.0		1.1 1.1	1.1		6.7 6.7	6.7	
G2	Sunny	Calm	14:34	Surface	1.1	18.8 18.8	18.8	8.2 8.2	8.2	33.4 33.4	33.4	104.7 104.6	104.7	8.0 8.0	8.0	8.0	0.9 0.8	0.9	1.0	7.1 7.3	7.2	5.0
				Middle	5.1	18.6 18.6	18.6	8.2 8.2	8.2	33.4 33.4	33.4	104.5 104.3	104.4	8.0 8.0	8.0		0.9 0.9	0.9		3.1 3.1	3.1	
				Bottom	9.0	18.3 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	101.5 102.6	102.1	7.8 7.9	7.9		1.2 1.1	1.1		4.7 4.7	4.7	
G3	Sunny	Calm	14:46	Surface	1.1	19.0 19.0	19.0	8.3 8.3	8.3	33.3 33.3	33.3	109.0 109.7	109.4	8.3 8.4	8.3	8.3	0.8 0.7	0.8	0.8	6.5 6.4	6.5	5.6
				Middle	4.1	18.5 18.8	18.6	8.2 8.2	8.2	33.4 33.4	33.4	106.9 108.5	107.7	8.2 8.3	8.2		0.8 0.8	0.8		7.5 7.6	7.6	
				Bottom	7.1	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	107.0 107.1	107.1	8.2 8.2	8.2		0.9 0.8	0.8		2.8 2.8	2.8	
G4	Sunny	Calm	14:54	Surface	1.1	19.2 19.2	19.2	8.3 8.2	8.3	33.4 33.4	33.4	110.7 111.0	110.9	8.4 8.4	8.4	8.4	0.6 0.7	0.7	0.8	6.6 6.5	6.6	5.1
				Middle	4.0	18.5 19.1	18.8	8.2 8.2	8.2	33.4 33.4	33.4	107.3 110.5	108.9	8.2 8.4	8.3		0.8 0.7	0.8		2.7 2.7	2.7	
				Bottom	7.1	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	106.7 107.3	107.0	8.2 8.3	8.2		0.9 0.9	0.9		6.1 6.1	6.1	
M1	Sunny	Calm	14:38	Surface	1.1	18.8 18.9	18.8	8.3 8.3	8.3	33.4 33.4	33.4	108.5 109.6	109.1	8.3 8.4	8.3	8.3	0.9 0.9	0.9	0.9	7.2 7.1	7.2	8.4
				Middle	3.0	18.6 18.8	18.7	8.3 8.3	8.3	33.4 33.4	33.4	107.3 109.7	108.5	8.2 8.4	8.3		0.9 0.8	0.9		10.2 10.4	10.3	
				Bottom	5.1	18.5 18.6	18.6	8.3 8.3	8.3	33.4 33.4	33.4	106.1 108.7	107.4	8.1 8.3	8.2		1.0 0.9	0.9		7.7 7.6	7.7	
M2	Sunny	Calm	14:30	Surface	1.0	18.9 18.9	18.9	8.2 8.2	8.2	33.4 33.4	33.4	105.6 105.3	105.5	8.1 8.0	8.0	8.0	0.9 0.8	0.9	1.0	8.6 8.6	8.6	7.6
				Middle	5.5	18.7 18.7	18.7	8.2 8.2	8.2	33.4 33.4	33.4	104.9 104.7	104.8	8.0 8.0	8.0		1.0 0.9	1.0		7.7 7.7	7.7	
				Bottom	10.0	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	102.4 101.9	102.2	7.9 7.8	7.9		1.1 1.2	1.1		6.3 6.6	6.5	
M3	Sunny	Calm	14:50	Surface	1.0	19.1 19.0	19.1	8.3 8.3	8.3	33.1 33.2	33.2	108.3 110.5	109.4	8.2 8.4	8.3	8.3	0.6 0.7	0.7	0.8	6.8 6.5	6.7	5.1
				Middle	4.1	18.8 18.7	18.7	8.3 8.3	8.3	33.4 33.4	33.4	109.2 109.9	109.6	8.3 8.4	8.4		0.8 0.8	0.8		5.0 5.1	5.1	
				Bottom	7.1	18.5 18.5	18.5	8.3 8.3	8.3	33.4 33.4	33.4	109.1 110.0	109.6	8.4 8.5	8.4		0.8 0.9	0.8		3.6 3.7	3.7	
M4	Sunny	Calm	14:25	Surface	1.1	18.7 18.7	18.7	8.2 8.2	8.2	33.4 33.4	33.4	105.5 105.5	105.5	8.1 8.1	8.1	8.0	0.8 0.9	0.8	1.0	7.8 7.5	7.7	6.7
				Middle	6.0	18.5 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	104.2 103.9	104.1	8.0 8.0	8.0		1.0 1.0	1.0		6.7 6.7	6.7	
				Bottom	11.0	18.2 18.2	18.2	8.2 8.2	8.2	33.5 33.5	33.5	100.6 100.6	100.6	7.8 7.8	7.8		1.3 1.3	1.3		5.8 5.9	5.9	
M5	Sunny	Calm	15:03	Surface	1.1	18.5 18.5	18.5	8.2 8.2	8.2	33.4 33.4	33.4	105.6 104.5	105.1	8.1 8.0	8.1	8.0	0.9 0.9	0.9	0.9	6.7 6.7	6.7	5.5
				Middle	6.1	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	104.6 103.6	104.1	8.0 8.0	8.0		0.8 0.9	0.9		4.0 4.0	4.0	
				Bottom	11.1	18.4 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	103.2 103.0	103.1	7.9 7.9	7.9		1.1 1.0	1.1		5.8 5.9	5.9	
M6	Sunny	Calm	14:58	Surface	-	-	-	-	-	-	-	-	-	-	8.5	-	-	0.7	-	-	5.6	
				Middle	2.0	18.9 19.0	18.9	8.3 8.3	8.3	33.4 33.4	33.4	111.5 112.0	111.8	8.5 8.5		8.5	0.7 0.7		0.7	5.6 5.6		5.6
				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 25 January 2019 (Mid-Flood Tide)**

<b><u>Parameter (unit)</u></b>	<b><u>Depth</u></b>	<b><u>Action Level</u></b>	<b><u>Limit Level</u></b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.7 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.8 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.9 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.9 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>	
	or 120% of upstream control station's SS at the same tide of the same day <u>CI: 12.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 13.1 mg/L</u>	
<b><u>Station M6</u></b>			
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/25/2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	11:17	Surface	1.0	18.5 18.4	18.4	8.1 8.1	8.1	33.3 33.4	33.3	101.6 101.2	101.4	7.8 7.8	7.8	7.8	0.9 1.0	0.9	1.1	6.9 6.8	6.9	11.7
				Middle	9.1	18.2 18.4	18.3	8.1 8.1	8.1	33.4 33.3	33.3	100.4 100.6	100.5	7.8 7.8	7.8	1.1 1.0	1.1	17.8 18.3		18.1		
				Bottom	17.1	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	100.8 100.4	100.6	7.8 7.8	7.8	1.4 1.4	1.4	10.0 10.1		10.1		
C2	Sunny	Calm	10:26	Surface	1.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	102.5 102.4	102.5	7.9 7.9	7.9	1.1 1.1	1.1	2.3	4.1 4.0	4.1	7.7	
				Middle	16.1	18.2 18.2	18.2	8.1 8.1	8.1	33.3 33.3	33.3	100.0 100.0	100.0	7.7 7.7	7.7	3.0 2.5	2.7		6.3 6.3	6.3		
				Bottom	31.0	18.2 18.2	18.2	8.1 8.1	8.1	33.3 33.3	33.3	99.5 99.8	99.7	7.7 7.7	7.7	3.1 2.8	3.0		12.4 12.8	12.6		
G1	Sunny	Calm	10:50	Surface	1.0	18.4 18.5	18.5	8.2 8.2	8.2	33.2 33.2	33.2	104.1 103.8	104.0	8.0 8.0	8.0	0.8 0.7	0.7	0.9	7.4 7.5	7.5	6.5	
				Middle	4.0	18.3 18.4	18.4	8.1 8.2	8.1	33.3 33.3	33.3	103.0 103.7	103.4	7.9 8.0	8.0	1.0 0.9	0.9		8.0 7.9	8.0		
				Bottom	7.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	100.7 103.0	101.9	7.8 7.9	7.9	1.2 1.0	1.1		4.2 4.1	4.2		
G2	Sunny	Calm	10:40	Surface	1.1	18.4 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	99.5 99.3	99.4	7.7 7.6	7.7	1.1 1.1	1.1	1.2	18.2 17.7	18.0	11.0	
				Middle	5.1	18.3 18.4	18.3	8.1 8.1	8.1	33.3 33.3	33.3	98.7 99.0	98.9	7.6 7.6	7.6	1.3 1.2	1.3		8.7 8.5	8.6		
				Bottom	9.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	98.1 98.0	98.1	7.6 7.6	7.6	1.4 1.3	1.3		6.5 6.4	6.5		
G3	Sunny	Calm	10:53	Surface	1.0	18.4 18.5	18.4	8.1 8.1	8.1	33.1 33.1	33.1	101.6 102.0	101.8	7.8 7.9	7.8	1.1 1.1	1.1	1.1	10.3 10.2	10.3	6.6	
				Middle	4.0	18.4 18.3	18.4	8.1 8.1	8.1	33.4 33.4	33.4	102.2 101.8	102.0	7.9 7.8	7.9	1.1 1.2	1.1		6.9 6.8	6.9		
				Bottom	7.0	18.3 18.3	18.3	8.1 8.1	8.1	33.4 33.4	33.4	102.2 101.7	102.0	7.9 7.8	7.9	1.1 1.2	1.1		2.8 2.8	2.8		
G4	Sunny	Calm	11:02	Surface	1.1	18.6 18.7	18.6	8.2 8.2	8.2	33.3 33.2	33.3	103.8 104.0	103.9	8.0 8.0	8.0	0.6 0.7	0.6	0.9	3.9 3.8	3.9	5.8	
				Middle	4.0	18.4 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	100.9 101.0	101.0	7.8 7.8	7.8	1.0 1.0	1.0		2.9 2.9	2.9		
				Bottom	7.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	101.2 101.2	101.2	7.8 7.8	7.8	0.9 0.9	0.9		10.4 10.6	10.5		
M1	Sunny	Calm	10:45	Surface	1.0	18.4 18.4	18.4	8.2 8.1	8.1	33.3 33.3	33.3	102.6 101.4	102.0	7.9 7.8	7.9	1.0 0.9	0.9	0.9	8.2 7.8	8.0	10.6	
				Middle	3.0	18.4 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	102.3 101.9	102.1	7.9 7.9	7.9	1.0 0.9	1.0		9.4 9.6	9.5		
				Bottom	5.0	18.4 18.4	18.4	8.1 8.1	8.1	33.4 33.3	33.3	101.5 101.9	101.7	7.8 7.9	7.8	0.9 1.1	1.0		14.3 14.4	14.4		
M2	Sunny	Calm	10:37	Surface	1.1	18.5 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	100.0 99.3	99.7	7.7 7.6	7.7	1.1 1.3	1.2	1.3	6.9 6.7	6.8	4.9	
				Middle	5.1	18.4 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	99.1 99.0	99.1	7.6 7.6	7.6	1.4 1.4	1.4		4.3 4.4	4.4		
				Bottom	9.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	98.4 98.1	98.3	7.6 7.6	7.6	1.6 1.3	1.4		3.5 3.5	3.5		
M3	Sunny	Calm	10:57	Surface	1.1	18.4 18.5	18.5	8.2 8.2	8.2	33.3 33.1	33.2	102.5 102.5	102.5	7.9 7.9	7.9	1.1 1.0	1.0	1.0	4.6 4.6	4.6	4.8	
				Middle	4.1	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.3	33.3	103.0 102.6	102.8	7.9 7.9	7.9	1.0 0.9	0.9		5.5 5.6	5.6		
				Bottom	7.1	18.4 18.3	18.3	8.2 8.1	8.1	33.4 33.4	33.4	103.0 100.3	101.7	7.9 7.7	7.8	1.0 1.1	1.1		4.2 4.3	4.3		
M4	Sunny	Calm	10:32	Surface	1.1	18.4 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	99.5 99.7	99.6	7.7 7.7	7.7	0.9 1.0	1.0	1.1	5.5 5.4	5.5	8.0	
				Middle	6.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	99.0 99.4	99.2	7.6 7.7	7.6	1.1 1.3	1.2		9.0 9.3	9.2		
				Bottom	11.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	98.6 98.8	98.7	7.6 7.6	7.6	1.3 1.2	1.2		9.3 9.2	9.3		
M5	Sunny	Calm	11:13	Surface	1.1	18.4 18.4	18.4	8.1 8.1	8.1	33.3 33.3	33.3	101.3 100.3	100.8	7.8 7.7	7.8	1.0 0.9	1.0	1.0	16.8 16.4	16.6	9.6	
				Middle	6.1	18.3 18.4	18.3	8.1 8.1	8.1	33.3 33.3	33.3	100.2 100.0	100.1	7.7 7.7	7.7	1.0 0.9	0.9		5.2 5.2	5.2		
				Bottom	11.0	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	99.6 99.4	99.5	7.7 7.7	7.7	1.1 0.9	1.0		7.0 6.9	7.0		
M6	Sunny	Calm	11:08	Surface	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	3.3		
				Middle	2.1	18.3 18.3	18.3	8.1 8.1	8.1	33.3 33.3	33.3	102.7 102.7	102.7	7.9 7.9	7.9	1.1 1.1		1.1	3.3 3.3		3.3	
				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 28 January 2019 (Mid-Ebb Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 2.2 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 2.4 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.3 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.6 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.3 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.8 mg/L</u>		or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>	
<b><u>Station M6</u></b>			
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/28/2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	18:53	Surface	1.1	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	112.7 112.7	112.7	8.7 8.7	8.7	8.7	0.7 0.7	0.7	0.8	4.1 3.7	3.9	4.4
				Middle	9.0	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	112.4 112.4	112.4	8.7 8.7	8.7		0.7 0.7	0.7		5.2 5.5	5.4	
				Bottom	17.1	18.0 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	110.3 110.1	110.2	8.5 8.5	8.5		8.5	0.9 0.9		0.9	3.8 4.0	
C2	Cloudy	Calm	17:53	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	33.3 33.4	33.3	120.9 120.2	120.6	9.3 9.3	9.3	8.9	0.7 0.8	0.8	1.3	7.3 7.0	7.2	5.9
				Middle	16.0	18.1 18.2	18.2	8.1 8.2	8.2	33.4 33.4	33.4	109.5 112.6	111.1	8.5 8.7	8.6		1.1 1.2	1.1		3.9 4.2	4.1	
				Bottom	31.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	109.5 110.3	109.9	8.5 8.5	8.5		8.5	1.8 1.9		1.9	6.4 6.6	
G1	Cloudy	Calm	18:22	Surface	1.0	18.6 18.6	18.6	8.3 8.3	8.3	33.3 33.3	33.3	126.2 127.1	126.7	9.7 9.8	9.7	9.7	0.8 0.9	0.9	0.9	6.4 6.5	6.5	5.2
				Middle	4.1	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	125.5 125.9	125.7	9.6 9.7	9.7		1.0 0.9	1.0		5.2 5.1	5.2	
				Bottom	7.0	18.3 18.4	18.4	8.2 8.3	8.3	33.3 33.3	33.3	115.7 117.4	116.6	8.9 9.0	9.0		9.0	0.9 1.1		1.0	3.9 3.8	
G2	Cloudy	Calm	18:09	Surface	1.0	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	126.7 123.7	125.2	9.7 9.5	9.6	9.3	1.4 1.4	1.4	1.2	6.3 6.5	6.4	6.9
				Middle	5.8	18.3 18.4	18.3	8.2 8.3	8.2	33.4 33.3	33.3	117.6 118.2	117.9	9.1 9.1	9.1		1.0 1.1	1.0		8.4 8.6	8.5	
				Bottom	11.0	18.3 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	111.2 111.8	111.5	8.6 8.6	8.6		8.6	1.0 1.1		1.1	6.0 5.7	
G3	Cloudy	Calm	18:27	Surface	1.0	18.6 18.6	18.6	8.3 8.3	8.3	33.3 33.3	33.3	129.4 127.2	128.3	9.9 9.8	9.8	9.7	0.9 0.9	0.9	1.0	5.1 5.0	5.1	4.7
				Middle	4.1	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	123.0 127.0	125.0	9.5 9.8	9.6		0.9 1.0	0.9		5.5 5.6	5.6	
				Bottom	7.1	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.4	33.3	116.2 117.1	116.7	8.9 9.0	9.0		9.0	1.1 1.1		1.1	3.3 3.6	
G4	Cloudy	Calm	18:37	Surface	1.0	18.4 18.4	18.4	8.3 8.3	8.3	33.4 33.4	33.4	123.6 123.6	123.6	9.5 9.5	9.5	9.2	1.1 1.1	1.1	1.3	5.8 5.8	5.8	5.6
				Middle	4.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	111.7 116.4	114.1	8.6 9.0	8.8		1.3 1.4	1.4		5.3 5.2	5.3	
				Bottom	7.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	112.9 112.8	112.9	8.7 8.7	8.7		8.7	1.4 1.4		1.4	5.8 5.7	
M1	Cloudy	Calm	18:15	Surface	1.1	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	121.8 121.4	121.6	9.4 9.3	9.3	9.2	1.0 1.0	1.0	1.2	6.5 6.2	6.4	4.8
				Middle	3.0	18.5 18.4	18.5	8.3 8.2	8.2	33.3 33.3	33.3	120.8 115.5	118.2	9.3 8.9	9.1		1.3 1.2	1.3		4.0 3.9	4.0	
				Bottom	5.1	18.4 18.4	18.4	8.3 8.2	8.2	33.3 33.3	33.3	118.0 114.8	116.4	9.1 8.8	9.0		9.0	1.5 1.5		1.5	4.1 4.2	
M2	Cloudy	Calm	18:05	Surface	1.0	18.4 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	123.9 124.7	124.3	9.5 9.6	9.6	9.5	0.9 0.9	0.9	1.1	5.5 5.5	5.5	5.0
				Middle	5.1	18.4 18.4	18.4	8.3 8.2	8.2	33.3 33.3	33.3	123.7 123.6	123.7	9.5 9.5	9.5		1.1 1.0	1.1		2.9 2.6	2.8	
				Bottom	9.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	116.7 115.2	116.0	9.0 8.9	8.9		8.9	1.2 1.2		1.2	6.6 6.7	
M3	Cloudy	Calm	18:32	Surface	1.1	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.1	33.2	122.3 124.2	123.3	9.4 9.6	9.5	9.4	0.8 0.9	0.8	1.1	3.3 3.3	3.3	3.6
				Middle	4.0	18.4 18.5	18.4	8.3 8.3	8.3	33.4 33.3	33.3	119.7 121.1	120.4	9.2 9.3	9.3		1.0 1.0	1.0		4.2 4.2	4.2	
				Bottom	7.0	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	110.8 111.1	111.0	8.5 8.6	8.5		8.5	1.4 1.4		1.4	3.3 3.1	
M4	Cloudy	Calm	18:01	Surface	1.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	118.1 118.4	118.3	9.1 9.1	9.1	8.9	1.0 0.9	1.0	1.8	5.6 5.8	5.7	5.5
				Middle	6.1	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	111.9 114.3	113.1	8.6 8.8	8.7		1.8 2.0	1.9		4.0 4.2	4.1	
				Bottom	11.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	112.1 113.5	112.8	8.7 8.8	8.7		8.7	2.5 2.4		2.4	6.7 6.8	
M5	Cloudy	Calm	18:46	Surface	1.0	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	110.8 110.3	110.6	8.6 8.5	8.6	8.5	0.9 0.9	0.9	0.9	8.7 9.1	8.9	6.7
				Middle	5.6	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	109.3 109.3	109.3	8.5 8.5	8.5		1.1 1.1	1.1		6.1 6.1	6.1	
				Bottom	10.1	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	108.9 109.2	109.1	8.4 8.5	8.4		8.4	0.8 0.8		0.8	5.3 5.0	
M6	Cloudy	Calm	18:40	Surface	-	-	-	-	-	-	-	-	-	-	-	9.8	-	-	0.9	-	-	7.4
				Middle	2.0	18.3 18.3	18.3	8.3 8.3	8.3	33.4 33.4	33.4	126.9 128.1	127.5	9.8 9.9	9.8		0.9 0.9	0.9		7.3 7.4	7.4	
				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 28 January 2019 (Mid-Flood Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 1.5 NTU</u>
	<b><u>Station M6</u></b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.8 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 3.5 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 3.8 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.7 mg/L</u>		or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.1 mg/L</u>	
<b><u>Station M6</u></b>			
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/28/2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	13:17	Surface	1.1	18.1 18.2	18.1	8.2 8.3	8.2	33.4 33.4	33.4	112.9 112.3	112.6	8.7 8.7	8.7	8.5	0.7 0.5	0.6	0.9	3.0 2.9	3.0	3.6
				Middle	9.3	18.0 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	107.0 108.1	107.6	8.3 8.4	8.3		1.1 1.0	1.0		4.1 3.8	4.0	
				Bottom	17.4	18.0 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	105.6 106.2	105.9	8.2 8.2	8.2		1.2 1.2	1.2		4.1 3.8	4.0	
C2	Cloudy	Calm	12:02	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	33.3 33.3	33.3	111.9 112.6	112.3	8.6 8.7	8.6	8.4	0.6 0.6	0.6	0.7	5.9 5.8	5.9	4.9
				Middle	16.0	18.3 18.3	18.3	8.2 8.2	8.2	33.3 33.3	33.3	105.8 107.2	106.5	8.2 8.3	8.2		0.7 0.7	0.7		4.2 4.2	4.2	
				Bottom	31.0	18.3 18.3	18.3	8.2 8.2	8.2	33.3 33.3	33.3	106.1 107.2	106.7	8.2 8.3	8.2		0.8 0.8	0.8		4.4 4.9	4.7	
G1	Cloudy	Calm	12:42	Surface	1.0	18.5 18.6	18.6	8.3 8.3	8.3	33.2 33.2	33.2	117.6 117.7	117.7	9.0 9.0	9.0	8.9	0.7 0.7	0.7	0.8	4.6 4.9	4.8	5.4
				Middle	4.0	18.3 18.3	18.3	8.2 8.2	8.2	33.3 33.3	33.3	113.6 114.6	114.1	8.8 8.8	8.8		0.6 0.6	0.6		5.3 5.5	5.4	
				Bottom	7.1	18.2 18.3	18.3	8.2 8.2	8.2	33.4 33.3	33.4	106.9 109.4	108.2	8.3 8.4	8.3		1.0 1.0	1.0		6.2 6.1	6.2	
G2	Cloudy	Calm	12:29	Surface	1.0	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	115.9 115.4	115.7	8.9 8.9	8.9	8.8	1.0 0.9	0.9	0.9	11.4 11.3	11.4	8.1
				Middle	6.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	112.6 111.5	112.1	8.7 8.6	8.7		0.7 0.8	0.8		7.4 7.2	7.3	
				Bottom	11.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	109.6 109.7	109.7	8.5 8.5	8.5		1.1 1.0	1.0		5.5 5.7	5.6	
G3	Cloudy	Calm	12:50	Surface	1.1	18.6 18.6	18.6	8.3 8.3	8.3	33.3 33.3	33.3	119.5 118.0	118.8	9.2 9.1	9.1	9.1	0.8 0.9	0.9	1.0	5.8 5.7	5.8	5.4
				Middle	4.0	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	117.1 119.4	118.3	9.0 9.2	9.1		1.0 1.0	1.0		5.3 5.2	5.3	
				Bottom	7.0	18.3 18.4	18.4	8.2 8.3	8.2	33.4 33.4	33.4	108.7 111.7	110.2	8.4 8.6	8.5		1.2 1.2	1.2		5.5 5.1	5.3	
G4	Cloudy	Calm	13:00	Surface	1.0	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	117.3 117.5	117.4	9.0 9.0	9.0	8.8	0.9 0.8	0.8	1.3	7.5 7.1	7.3	6.5
				Middle	4.1	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	111.7 111.7	111.7	8.6 8.6	8.6		1.5 1.5	1.5		4.1 4.3	4.2	
				Bottom	7.1	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	108.4 109.0	108.7	8.4 8.4	8.4		1.8 1.8	1.8		8.0 7.7	7.9	
M1	Cloudy	Calm	12:35	Surface	1.0	18.4 18.4	18.4	8.2 8.2	8.2	33.2 33.2	33.2	113.1 111.5	112.3	8.7 8.6	8.6	8.6	1.0 1.1	1.1	1.1	4.3 4.3	4.3	5.1
				Middle	3.0	18.4 18.4	18.4	8.2 8.2	8.2	33.3 33.3	33.3	111.3 111.6	111.5	8.6 8.6	8.6		1.0 1.0	1.0		5.6 5.4	5.5	
				Bottom	5.0	18.4 18.4	18.4	8.2 8.2	8.2	33.3 33.3	33.3	109.9 110.3	110.1	8.5 8.5	8.5		1.3 1.2	1.3		5.3 5.5	5.4	
M2	Cloudy	Calm	12:18	Surface	1.0	18.4 18.3	18.4	8.3 8.3	8.3	33.3 33.3	33.3	117.0 119.5	118.3	9.0 9.2	9.1	8.9	0.6 0.6	0.6	0.7	8.5 8.3	8.4	5.7
				Middle	4.9	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	112.1 112.0	112.1	8.7 8.7	8.7		0.8 0.8	0.8		4.7 4.4	4.6	
				Bottom	9.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	109.5 109.4	109.5	8.5 8.5	8.5		0.8 0.8	0.8		4.2 4.1	4.2	
M3	Cloudy	Calm	12:54	Surface	1.0	18.6 18.6	18.6	8.3 8.3	8.3	33.3 33.3	33.3	117.5 116.7	117.1	9.0 9.0	9.0	8.9	0.9 0.8	0.8	0.9	5.5 5.5	5.5	9.0
				Middle	4.1	18.4 18.4	18.4	8.2 8.2	8.2	33.4 33.4	33.4	116.2 114.1	115.2	8.9 8.8	8.9		0.9 0.9	0.9		12.6 12.6	12.6	
				Bottom	7.0	18.3 18.3	18.3	8.2 8.2	8.2	33.4 33.4	33.4	112.2 109.7	111.0	8.6 8.5	8.5		1.1 1.2	1.2		9.0 8.8	8.9	
M4	Cloudy	Calm	12:10	Surface	1.0	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	116.5 117.9	117.2	9.0 9.1	9.0	8.8	0.5 0.5	0.5	0.6	6.7 6.4	6.6	8.2
				Middle	6.0	18.2 18.3	18.2	8.2 8.2	8.2	33.3 33.3	33.3	111.4 112.7	112.1	8.6 8.7	8.6		0.7 0.6	0.6		6.7 6.9	6.8	
				Bottom	10.8	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	109.3 112.0	110.7	8.4 8.7	8.5		0.8 0.8	0.8		11.2 11.3	11.3	
M5	Cloudy	Calm	13:09	Surface	1.0	18.2 18.3	18.2	8.2 8.2	8.2	33.4 33.4	33.4	114.3 115.5	114.9	8.8 8.9	8.9	8.8	0.6 0.6	0.6	0.8	6.4 6.4	6.4	6.3
				Middle	5.5	18.1 18.2	18.1	8.2 8.2	8.2	33.4 33.4	33.4	113.0 112.5	112.8	8.7 8.7	8.7		0.9 0.9	0.9		5.9 6.3	6.1	
				Bottom	10.0	18.1 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	108.7 109.3	109.0	8.4 8.5	8.4		1.0 1.0	1.0		6.3 6.3	6.3	
M6	Cloudy	Calm	13:04	Surface	-	-	-	-	-	-	-	-	-	-	-	8.9	-	-	1.3	-	-	6.1
				Middle	2.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	114.8 115.0	114.9	8.9 8.9	8.9		1.3 1.3	1.3		6.3 5.9	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 30 January 2019 (Mid-Ebb Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b>Stations G1-G4, M1-M5</b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b>Station M6</b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b>Stations G1-G4, M1-M5</b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.4 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 1.6 NTU</u>
	<b>Station M6</b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b>Stations G1-G4</b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 13.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 14.3 mg/L</u>
	<b>Stations M1-M5</b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 13.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 14.3 mg/L</u>
	<b>Stations G1-G4, M1-M5</b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.6 mg/L</u>		or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>	
<b>Station M6</b>			
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/30/2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	9:42	Surface	1.1	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	116.4 118.8	117.6	9.0 9.2	9.1	9.0	0.6 0.6	0.6	0.6	8.5 8.8	8.7	7.8
				Middle	9.0	18.1 18.1	18.1	8.3 8.3	8.3	33.4 33.4	33.4	114.5 115.1	114.8	8.9 8.9	8.9		0.4 0.5	0.5		8.3 8.7	8.5	
				Bottom	17.0	18.1 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	111.4 110.9	111.2	8.6 8.6	8.6		0.8 0.9	0.9		6.2 6.3	6.3	
C2	Sunny	Moderate	8:23	Surface	1.0	18.3 18.3	18.3	8.1 8.2	8.1	33.2 33.3	33.2	111.9 112.2	112.1	8.6 8.7	8.6	8.5	0.7 0.9	0.8	1.0	11.0 11.0	11.0	7.6
				Middle	15.6	18.2 18.1	18.1	8.2 8.2	8.2	33.3 33.4	33.4	108.8 109.1	109.0	8.4 8.4	8.4		1.0 1.0	1.0		6.3 6.5	6.4	
				Bottom	31.1	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	107.8 108.4	108.1	8.3 8.4	8.4		1.3 1.1	1.2		5.4 5.6	5.5	
G1	Sunny	Moderate	9:13	Surface	1.0	18.3 18.3	18.3	8.2 8.3	8.2	33.2 33.2	33.2	113.4 115.4	114.4	8.8 8.9	8.8	8.9	1.5 1.5	1.5	1.1	7.6 7.5	7.6	7.1
				Middle	4.0	18.2 18.2	18.2	8.3 8.2	8.2	33.4 33.3	33.3	116.7 115.4	116.1	9.0 8.9	9.0		0.8 0.9	0.9		8.6 8.1	8.4	
				Bottom	7.0	18.2 18.2	18.2	8.3 8.3	8.3	33.4 33.4	33.4	117.4 116.1	116.8	9.1 9.0	9.0		0.8 0.9	0.9		5.7 5.1	5.4	
G2	Sunny	Moderate	8:58	Surface	1.1	18.2 18.2	18.2	8.3 8.2	8.2	33.3 33.3	33.3	118.0 117.9	118.0	9.1 9.1	9.1	9.2	0.8 0.8	0.8	0.8	5.2 5.6	5.4	6.3
				Middle	4.0	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	119.2 120.2	119.7	9.2 9.3	9.3		0.7 0.6	0.7		5.0 4.1	4.6	
				Bottom	7.1	18.2 18.2	18.2	8.3 8.3	8.3	33.4 33.4	33.4	118.3 118.3	118.3	9.1 9.1	9.1		0.8 0.8	0.8		8.4 9.2	8.8	
G3	Sunny	Moderate	9:20	Surface	1.1	18.4 18.2	18.3	8.2 8.2	8.2	33.3 33.3	33.3	112.3 115.8	114.1	8.7 8.9	8.8	8.8	1.7 1.7	1.7	1.3	5.8 5.7	5.8	7.8
				Middle	4.0	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	113.6 114.1	113.9	8.8 8.8	8.8		1.1 1.1	1.1		11.4 10.5	11.0	
				Bottom	7.1	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	114.8 114.4	114.6	8.9 8.9	8.9		0.9 1.0	1.0		6.7 6.7	6.7	
G4	Sunny	Moderate	9:32	Surface	1.0	18.3 18.2	18.3	8.3 8.3	8.3	33.3 33.3	33.3	116.1 116.1	116.1	9.0 9.0	9.0	8.9	1.2 1.2	1.2	1.1	4.2 4.7	4.5	4.8
				Middle	4.0	18.2 18.2	18.2	8.2 8.3	8.2	33.4 33.3	33.3	115.2 116.2	115.7	8.9 9.0	8.9		1.2 1.2	1.2		5.7 5.9	5.8	
				Bottom	7.1	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	114.4 115.3	114.9	8.9 8.9	8.9		1.1 0.9	1.0		4.2 4.2	4.2	
M1	Sunny	Moderate	9:05	Surface	1.0	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	110.0 114.1	112.1	8.5 8.8	8.7	8.7	1.4 1.3	1.3	1.4	3.5 3.4	3.5	6.1
				Middle	3.0	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	113.5 114.3	113.9	8.8 8.8	8.8		1.5 1.4	1.4		6.4 6.8	6.6	
				Bottom	5.0	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	113.4 114.0	113.7	8.8 8.8	8.8		1.5 1.4	1.4		8.5 8.0	8.3	
M2	Sunny	Moderate	8:53	Surface	1.1	18.2 18.2	18.2	8.3 8.2	8.2	33.3 33.3	33.3	118.1 119.5	118.8	9.1 9.2	9.2	9.2	0.7 0.8	0.8	0.8	6.3 6.0	6.2	5.5
				Middle	6.0	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	119.9 120.1	120.0	9.3 9.3	9.3		0.8 0.8	0.8		4.9 5.0	5.0	
				Bottom	11.1	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	113.6 113.6	113.6	8.8 8.8	8.8		0.8 0.8	0.8		5.5 5.3	5.4	
M3	Sunny	Moderate	9:27	Surface	1.0	18.5 18.4	18.4	8.2 8.2	8.2	33.3 33.3	33.3	112.3 112.2	112.3	8.6 8.7	8.6	8.6	1.0 1.3	1.2	1.4	7.6 7.3	7.5	6.9
				Middle	4.0	18.3 18.2	18.2	8.2 8.2	8.2	33.3 33.4	33.4	112.2 111.2	111.7	8.7 8.6	8.6		1.5 1.3	1.4		8.0 7.5	7.8	
				Bottom	7.1	18.2 18.2	18.2	8.2 8.2	8.2	33.4 33.4	33.4	109.7 109.4	109.6	8.5 8.5	8.5		1.5 1.8	1.7		5.6 5.6	5.6	
M4	Sunny	Moderate	8:39	Surface	1.1	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	113.5 116.2	114.9	8.8 9.0	8.9	8.9	0.7 0.7	0.7	0.7	7.1 7.6	7.4	6.6
				Middle	5.1	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	114.0 115.9	115.0	8.8 9.0	8.9		0.6 0.7	0.6		5.0 5.2	5.1	
				Bottom	9.1	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	114.2 114.9	114.6	8.8 8.9	8.9		0.7 0.7	0.7		7.2 7.2	7.2	
M5	Sunny	Moderate	9:39	Surface	1.0	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	115.7 116.9	116.3	8.9 9.0	9.0	9.0	0.9 0.8	0.8	0.8	7.7 7.2	7.5	7.1
				Middle	6.1	18.1 18.2	18.2	8.3 8.3	8.3	33.4 33.4	33.4	114.4 117.4	115.9	8.9 9.1	9.0		0.8 0.8	0.8		8.7 8.7	8.7	
				Bottom	11.0	18.1 18.1	18.1	8.3 8.3	8.3	33.4 33.4	33.4	113.6 114.1	113.9	8.8 8.8	8.8		0.7 0.6	0.6		4.6 5.4	5.0	
M6	Sunny	Moderate	9:36	Surface	-	-	-	-	-	-	-	-	-	-	8.9	-	-	0.8	-	-	6.0	
				Middle	2.0	18.2 18.2	18.2	8.2 8.2	8.2	33.3 33.3	33.3	114.4 114.7	114.6	8.8 8.9		8.9	0.8 0.8		0.8	6.0 5.9		6.0
				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 30 January 2019 (Mid-Flood Tide)**

<b>Parameter (unit)</b>	<b>Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
DO in mg/L (See Note 1 and 4)	<b>Stations G1-G4, M1-M5</b>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<b>Station M6</b>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<b>Stations G1-G4, M1-M5</b>		
	Bottom	<u>19.3 NTU</u>	<u>22.2 NTU</u>
		or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.8 NTU</u>	or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 0.9 NTU</u>
	<b>Station M6</b>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<b>Stations G1-G4</b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>
	<b>Stations M1-M5</b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>
	<b>Stations G1-G4, M1-M5</b>		
Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>	
	or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.9 mg/L</u>	
<b>Station M6</b>			
	Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/30/2019**

**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	15:25	Surface	1.1	17.7 18.2	17.9	8.3 8.3	8.3	33.7 33.4	33.6	114.0 119.6	116.8	8.9 9.2	9.1	8.9	0.2 0.3	0.2	0.4	4.3 4.1	4.2	5.6
				Middle	9.1	18.0 18.1	18.1	8.3 8.3	8.3	33.4 33.4	33.4	113.7 114.6	114.2	8.8 8.9	8.8		0.4 0.4	0.4		5.6 6.0	5.8	
				Bottom	17.1	18.0 18.0	18.0	8.2 8.2	8.2	33.4 33.4	33.4	108.9 108.8	108.9	8.4 8.4	8.4		0.7 0.7	0.7		7.2 6.5	6.9	
C2	Sunny	Moderate	14:18	Surface	1.1	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	124.7 128.2	126.5	9.6 9.9	9.7	9.6	0.6 0.6	0.6	0.5	5.9 6.8	6.4	7.1
				Middle	15.6	18.3 18.2	18.3	8.3 8.3	8.3	33.3 33.3	33.3	125.4 120.6	123.0	9.7 9.3	9.5		0.3 0.4	0.4		6.6 6.6	6.6	
				Bottom	31.1	18.2 18.1	18.2	8.2 8.2	8.2	33.3 33.3	33.3	114.7 113.7	114.2	8.9 8.8	8.8		0.4 0.5	0.5		8.4 8.3	8.4	
G1	Sunny	Moderate	14:53	Surface	1.1	18.4 18.5	18.4	8.3 8.3	8.3	33.3 33.3	33.3	125.4 130.1	127.8	9.6 10.0	9.8	9.9	1.4 1.4	1.4	1.4	16.8 17.2	17.0	10.2
				Middle	4.1	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	128.6 129.6	129.1	9.9 10.0	9.9		1.4 1.5	1.4		6.4 6.3	6.4	
				Bottom	7.0	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	122.3 122.9	122.6	9.4 9.5	9.5		1.4 1.3	1.4		7.1 7.1	7.1	
G2	Sunny	Moderate	14:41	Surface	1.1	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	127.1 130.2	128.7	9.8 10.0	9.9	9.9	1.1 0.9	1.0	1.0	5.2 5.8	5.5	5.9
				Middle	5.1	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	129.1 129.9	129.5	10.0 10.0	10.0		1.0 1.0	1.0		6.3 6.2	6.3	
				Bottom	9.0	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	125.6 122.0	123.8	9.7 9.4	9.6		0.8 0.9	0.9		6.3 5.5	5.9	
G3	Sunny	Moderate	14:58	Surface	1.0	18.5 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	130.2 127.2	128.7	10.0 9.8	9.9	9.6	1.3 1.5	1.4	1.6	13.2 12.5	12.9	11.6
				Middle	4.0	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	121.3 117.6	119.5	9.4 9.1	9.2		1.5 1.7	1.6		12.6 12.0	12.3	
				Bottom	7.0	18.2 18.2	18.2	8.2 8.3	8.2	33.4 33.4	33.4	114.0 115.7	114.9	8.8 8.9	8.9		1.9 1.9	1.9		9.5 9.6	9.6	
G4	Sunny	Moderate	15:09	Surface	1.1	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	124.3 123.8	124.1	9.6 9.5	9.6	9.6	1.5 1.4	1.4	1.8	6.2 5.9	6.1	6.6
				Middle	4.0	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	123.1 124.7	123.9	9.5 9.6	9.6		1.5 1.5	1.5		6.7 6.7	6.7	
				Bottom	7.1	18.1 18.2	18.2	8.2 8.3	8.2	33.4 33.4	33.4	110.8 113.6	112.2	8.6 8.8	8.7		2.7 2.4	2.5		7.3 6.5	6.9	
M1	Sunny	Moderate	14:49	Surface	1.1	18.4 18.3	18.4	8.3 8.3	8.3	33.3 33.3	33.3	111.9 118.2	115.1	8.6 9.1	8.9	9.0	1.5 1.8	1.6	1.7	5.0 4.2	4.6	6.3
				Middle	3.0	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	118.7 121.1	119.9	9.1 9.3	9.2		1.7 1.6	1.6		6.3 6.4	6.4	
				Bottom	5.1	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	117.9 120.8	119.4	9.1 9.3	9.2		1.8 1.8	1.8		7.7 8.2	8.0	
M2	Sunny	Moderate	14:28	Surface	1.0	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	129.1 131.5	130.3	9.9 10.1	10.0	10.1	0.9 0.9	0.9	0.8	7.6 7.1	7.4	10.1
				Middle	6.1	18.4 18.4	18.4	8.3 8.3	8.3	33.3 33.3	33.3	130.9 132.4	131.7	10.1 10.2	10.1		0.8 0.9	0.9		10.4 10.8	10.6	
				Bottom	11.1	18.2 18.3	18.3	8.3 8.3	8.3	33.4 33.3	33.3	119.3 124.2	121.8	9.2 9.6	9.4		0.6 0.7	0.7		12.2 12.2	12.2	
M3	Sunny	Moderate	15:03	Surface	1.0	18.4 18.3	18.4	8.3 8.3	8.3	33.3 33.3	33.3	131.9 123.0	127.5	10.2 9.5	9.8	9.6	1.3 1.2	1.2	1.1	6.2 5.5	5.9	7.0
				Middle	4.0	18.3 18.3	18.3	8.3 8.3	8.3	33.3 33.3	33.3	121.1 122.8	122.0	9.3 9.5	9.4		1.1 1.1	1.1		10.1 9.6	9.9	
				Bottom	7.1	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	115.9 117.8	116.9	9.0 9.1	9.0		1.0 1.0	1.0		5.1 5.2	5.2	
M4	Sunny	Moderate	14:24	Surface	1.0	18.1 18.4	18.2	8.3 8.3	8.3	33.5 33.3	33.4	124.2 130.6	127.4	9.6 10.1	9.8	9.5	0.6 0.6	0.6	0.7	7.1 7.2	7.2	5.6
				Middle	5.0	18.2 18.3	18.2	8.3 8.3	8.3	33.3 33.3	33.3	117.1 120.9	119.0	9.0 9.3	9.2		0.6 0.6	0.6		4.5 5.4	5.0	
				Bottom	9.0	18.1 18.1	18.1	8.2 8.2	8.2	33.4 33.4	33.4	112.1 112.9	112.5	8.7 8.7	8.7		1.0 0.9	0.9		4.8 4.8	4.8	
M5	Sunny	Moderate	15:17	Surface	1.1	18.2 18.2	18.2	8.3 8.3	8.3	33.4 33.4	33.4	124.8 125.0	124.9	9.6 9.7	9.6	9.5	0.6 0.6	0.6	0.7	7.6 6.9	7.3	6.0
				Middle	6.0	18.1 18.1	18.1	8.3 8.3	8.3	33.4 33.4	33.4	121.6 121.4	121.5	9.4 9.4	9.4		0.5 0.5	0.5		7.4 6.6	7.0	
				Bottom	11.0	18.1 18.1	18.1	8.3 8.3	8.3	33.4 33.4	33.4	114.1 116.1	115.1	8.8 9.0	8.9		1.0 0.8	0.9		3.7 4.0	3.9	
M6	Sunny	Moderate	15:15	Surface	-	-	-	-	-	-	-	-	-	-	-	10.1	-	-	0.8	-	-	11.3
				Middle	2.1	18.2 18.2	18.2	8.3 8.3	8.3	33.3 33.3	33.3	129.5 131.2	130.4	10.0 10.1	10.1		0.7 0.8	0.8		11.3 11.2	11.3	
				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 31 January 2019 (Mid-Ebb Tide)**

SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 9.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.8 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 9.1 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 9.8 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.3 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>C2: 5.8 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.



**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/31/2019**

**(Mid-Ebb Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Moderate	10:22	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	4.3	5.1	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5		3.6
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4		7.4
C2	Sunny	Moderate	8:31	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	7.6	5.9	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7		5.7
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5		4.5
G1	Sunny	Moderate	9:20	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.3	6.4	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1		7.1
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6		6.7
G2	Sunny	Moderate	9:03	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.5	7.0	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.5		9.6
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9		5.0
G3	Sunny	Moderate	9:27	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.9	7.0	8.4	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2		8.1
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.2		10.0
G4	Sunny	Moderate	9:48	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	7.7	10.4	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.1		13.9
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6		9.6
M1	Sunny	Moderate	9:14	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	2.6	4.5	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0		2.9
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8		7.9
M2	Sunny	Moderate	8:53	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	5.1	4.6	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7		3.7
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0		5.0
M3	Sunny	Moderate	9:39	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7	8.7	7.3	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6		6.7
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5		6.5
M4	Sunny	Moderate	8:40	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	5.6	6.4	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9		5.9
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6		7.7
M5	Sunny	Moderate	10:11	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5	10.3	8.5	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3		6.3
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0		8.9
M6	Sunny	Moderate	10:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.0		7.1
				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 2019 (Mid-Flood Tide)**

SS in mg/L (See Note 2 and 4)	<b><u>Stations G1-G4</u></b>		
	Surface	<u>6.0 mg/L</u>	<u>6.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 mg/L</u>
	<b><u>Stations M1-M5</u></b>		
	Surface	<u>6.2 mg/L</u>	<u>7.4 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.0 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.6 mg/L</u>
	<b><u>Stations G1-G4, M1-M5</u></b>		
	Bottom	<u>6.9 mg/L</u>	<u>7.9 mg/L</u>
		or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>	or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.8 mg/L</u>
	<b><u>Station M6</u></b>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

1. (Not used)
2. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
3. All the figures given in the table are used for reference only and EPD may amend the figures whenever it is considered as necessary.
4. Action and limit values are derived based on baseline water quality monitoring results to show the actual baseline water quality condition.

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction**  
**Water Quality Monitoring Results on 01/31/2019**

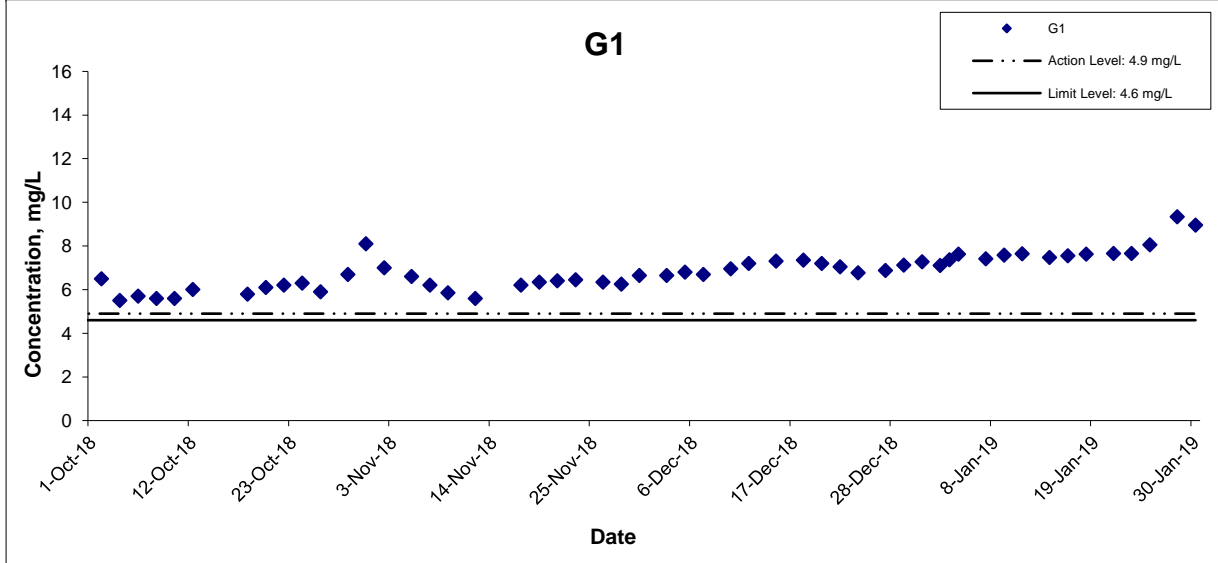
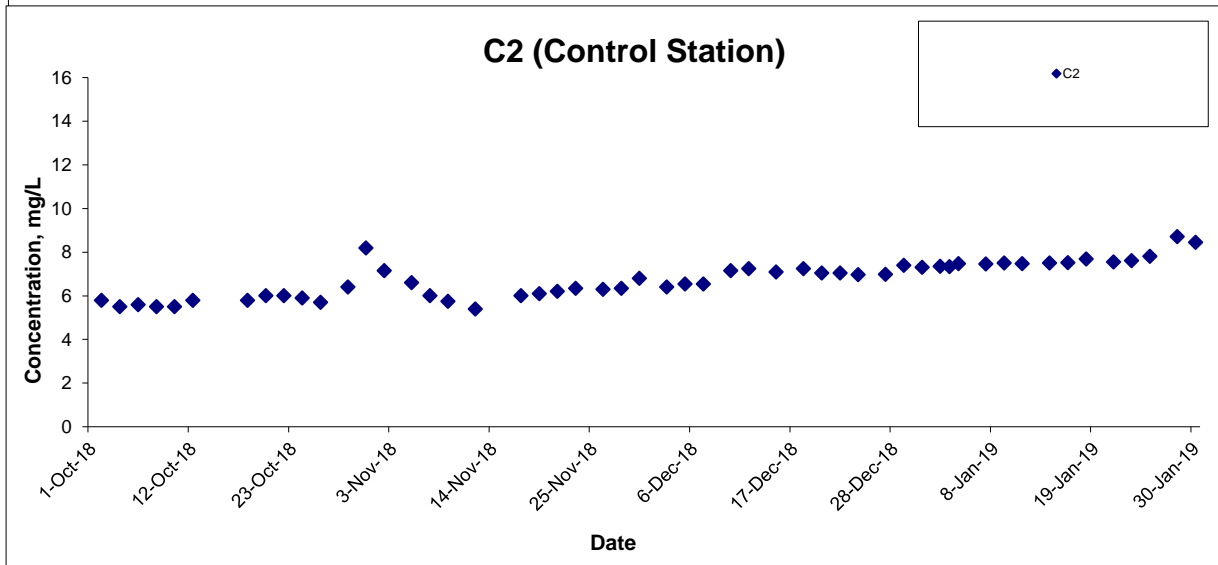
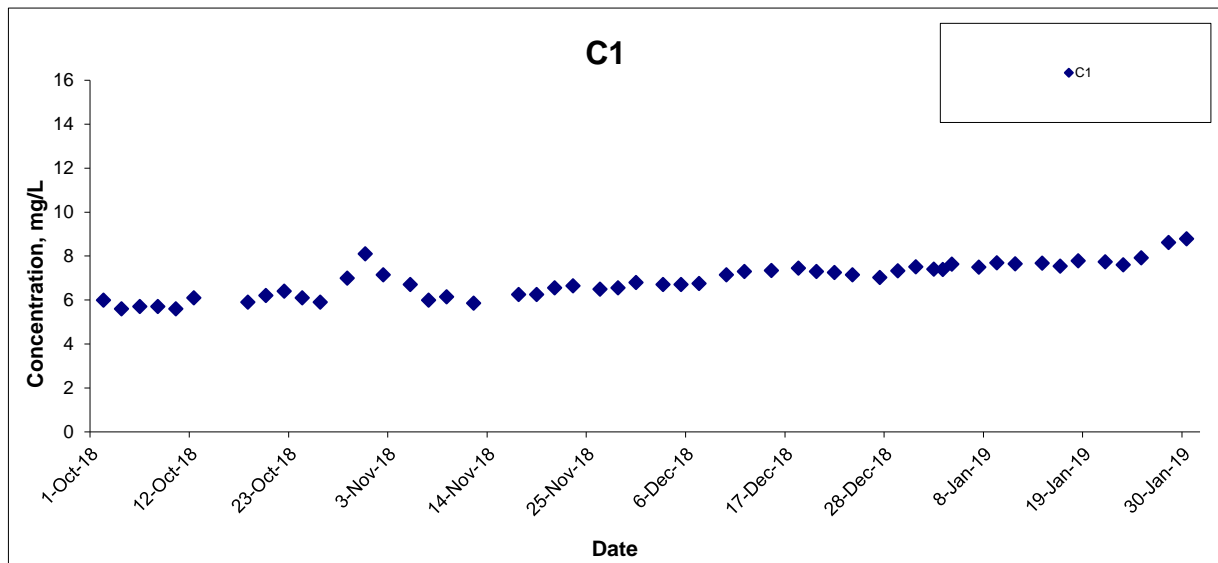
**(Mid-Flood Tide)**

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Moderate	15:11	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	6.6	6.7	
				Middle	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	6.7	6.7
				Bottom	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.8	6.8
C2	Sunny	Moderate	13:33	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	6.2	6.3	
				Middle	16.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.8	13.0	12.9
				Bottom	31.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.3	11.7	11.5
G1	Sunny	Moderate	14:17	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	7.6	7.6	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3	14.4	14.4
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.7	13.5	13.6
G2	Sunny	Moderate	14:01	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0	10.4	10.2	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.9	6.9
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6	9.6	9.6
G3	Sunny	Moderate	14:25	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	7.8	7.8	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.8	10.6	10.7
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	8.0	8.1
G4	Sunny	Moderate	14:40	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	7.4	7.6	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2	6.0	6.1
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	5.5	5.6
M1	Sunny	Moderate	14:09	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.7	11.9	11.8	
				Middle	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.6	18.7	18.7
				Bottom	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.7	16.3	16.0
M2	Sunny	Moderate	13:52	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	7.9	8.0	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.7	8.1	7.9
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	4.5	4.5
M3	Sunny	Moderate	14:31	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.1	4.8	5.0	
				Middle	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	7.6	7.6
				Bottom	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.9	8.8	8.9
M4	Sunny	Moderate	13:41	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	6.1	6.1	
				Middle	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	6.2	6.3
				Bottom	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	5.3	5.3
M5	Sunny	Moderate	14:59	Surface	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3	5.1	5.2	
				Middle	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.2	5.3
				Bottom	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	7.2	7.2
M6	Sunny	Moderate	14:50	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.8	10.9	10.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

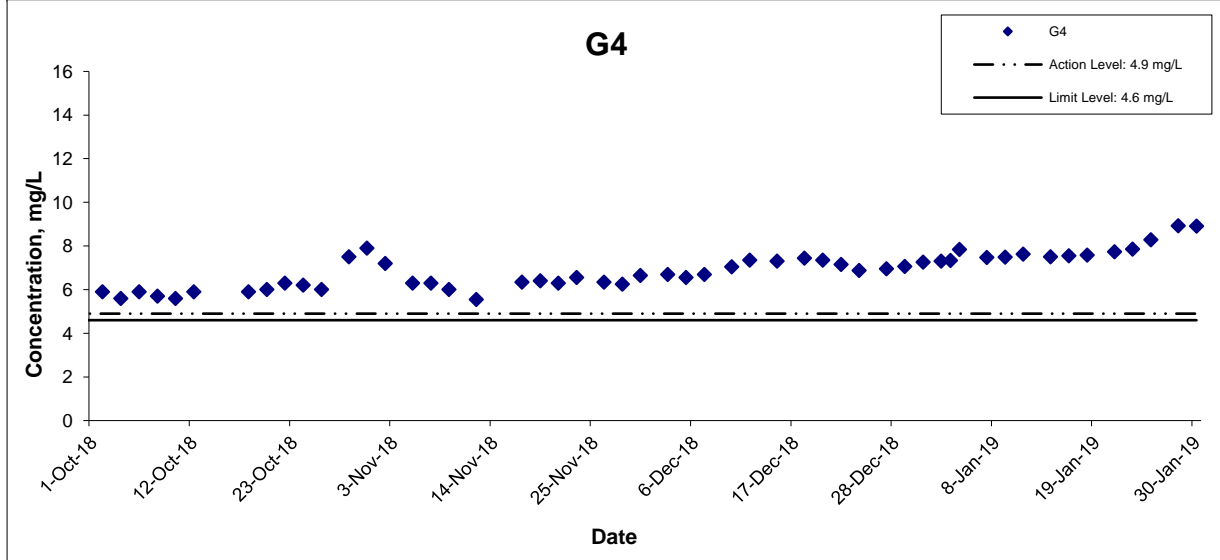
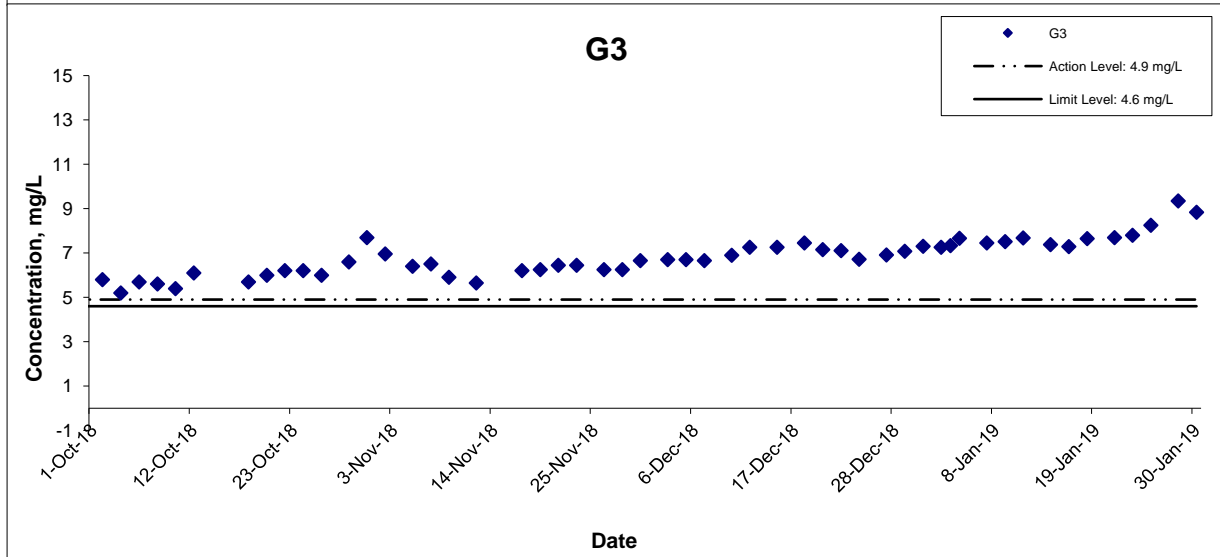
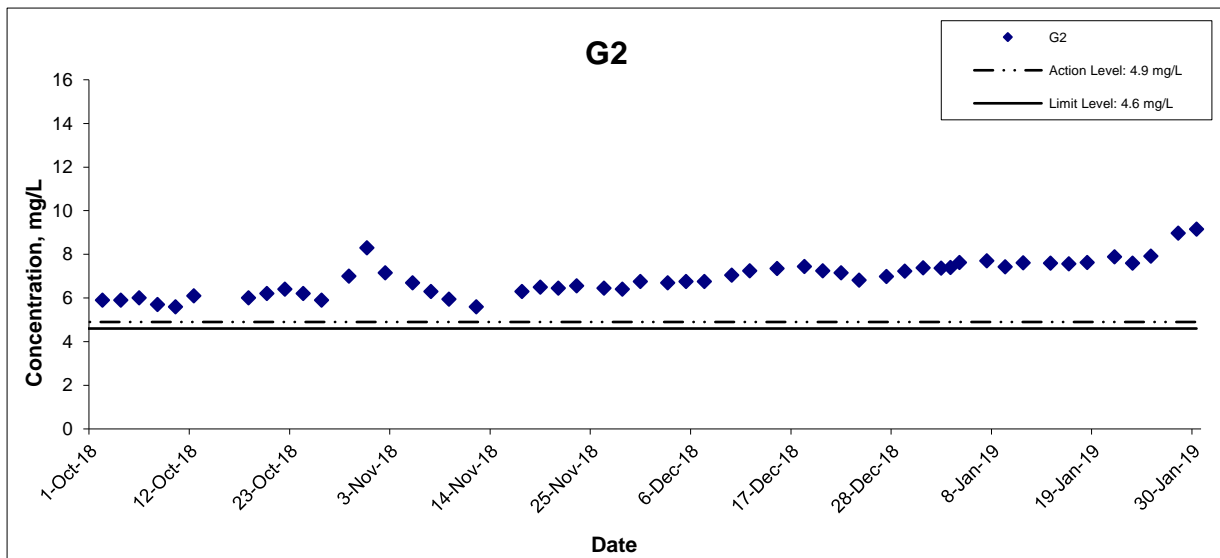


## Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



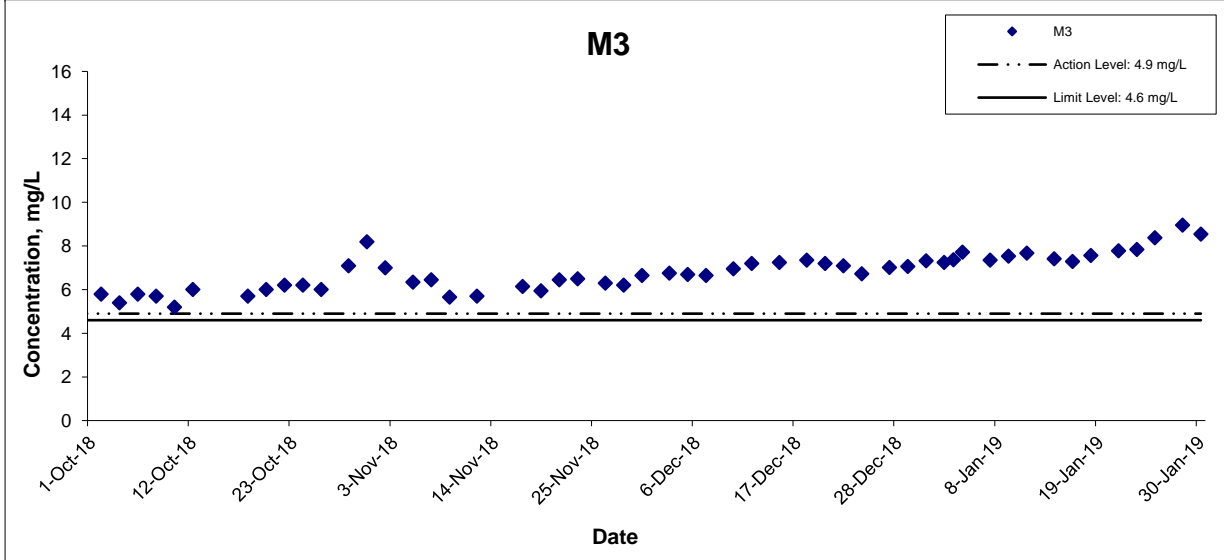
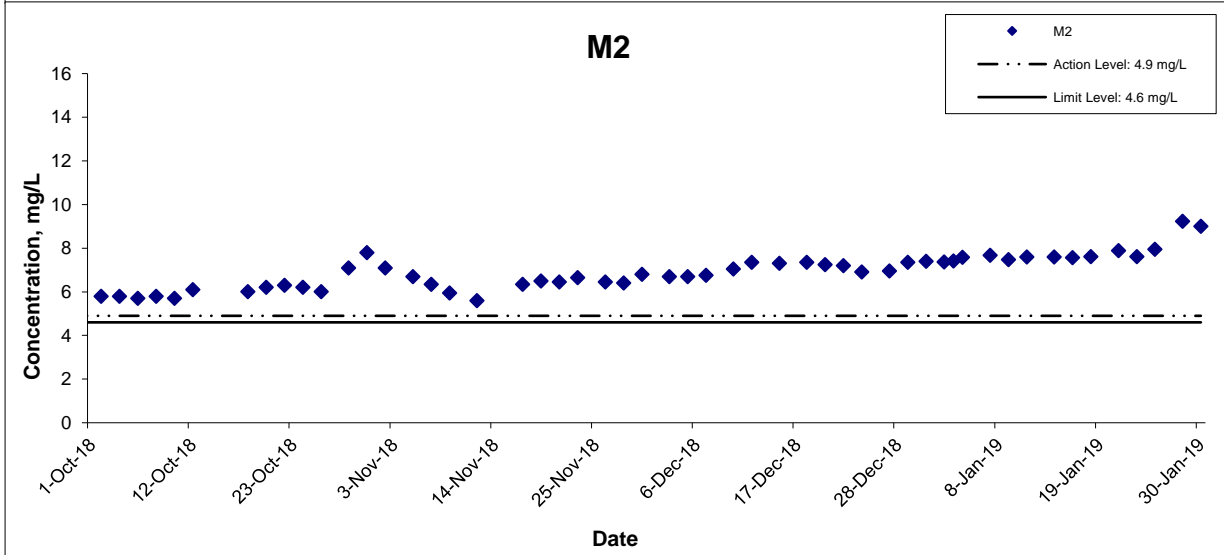
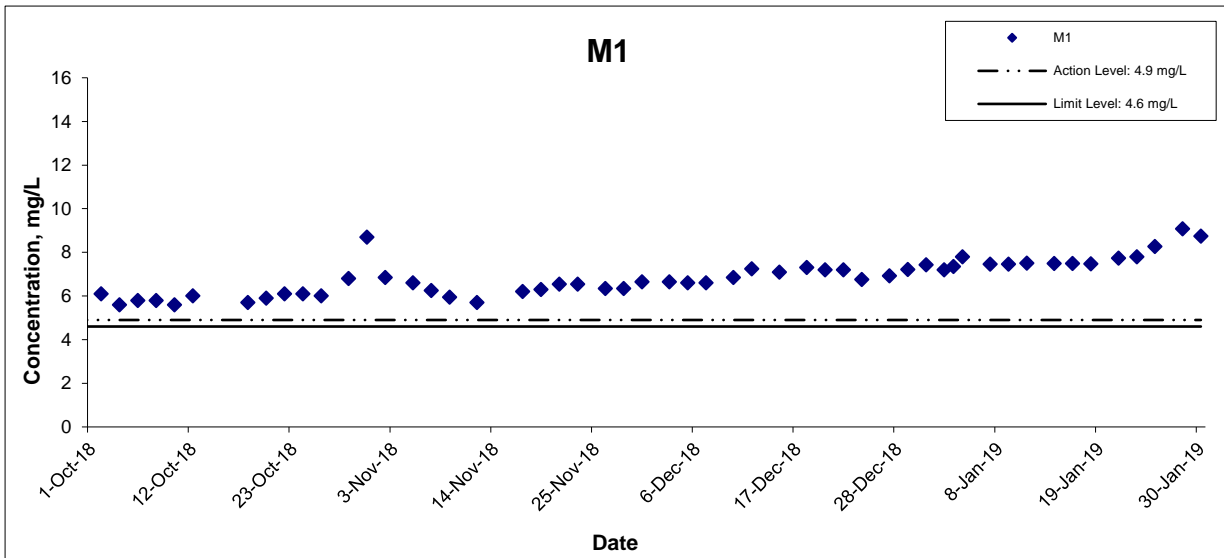
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction  Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
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## Dissolved Oxygen (Depth-averaged)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



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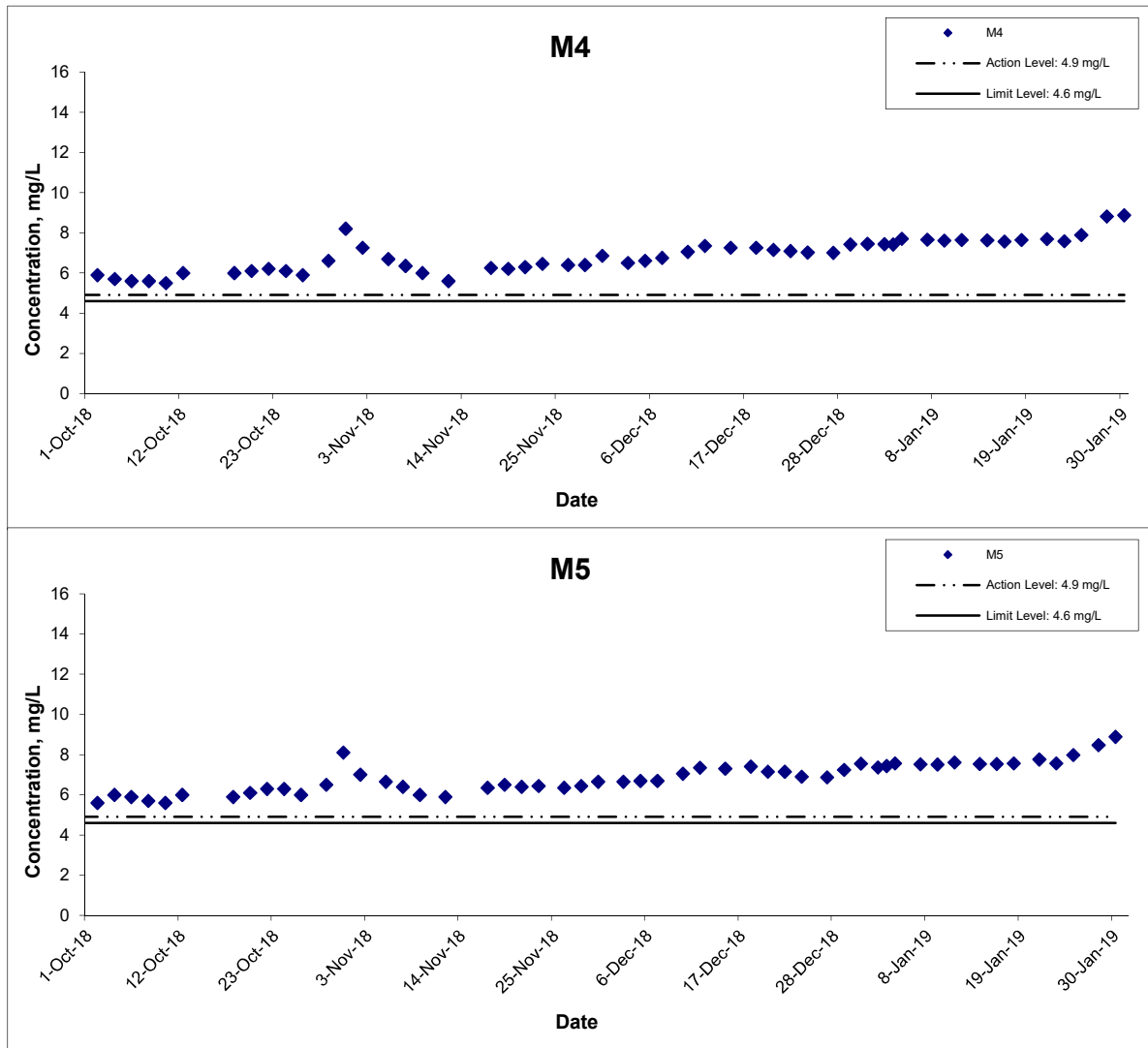
## Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

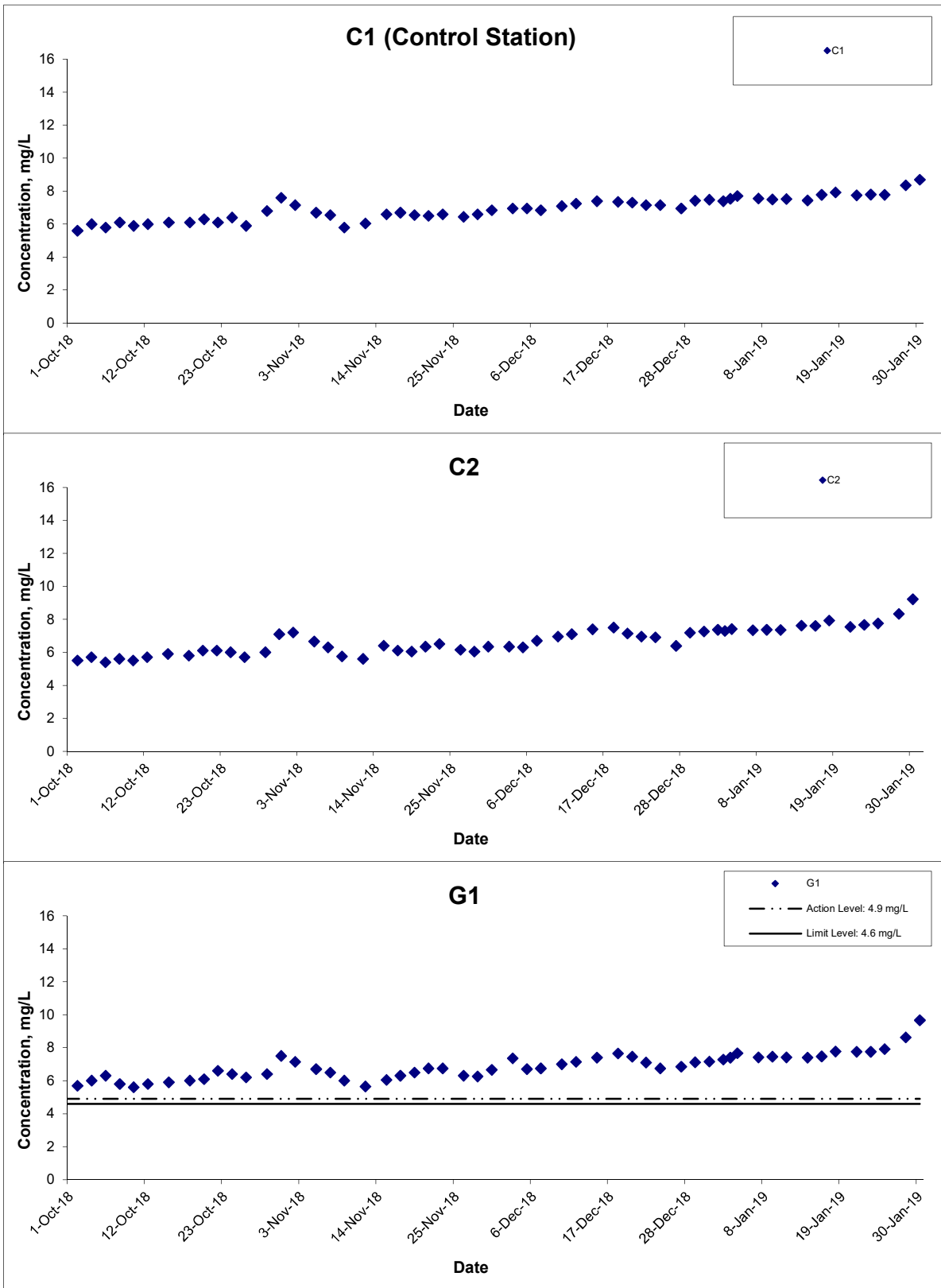
Date Jan 19

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



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

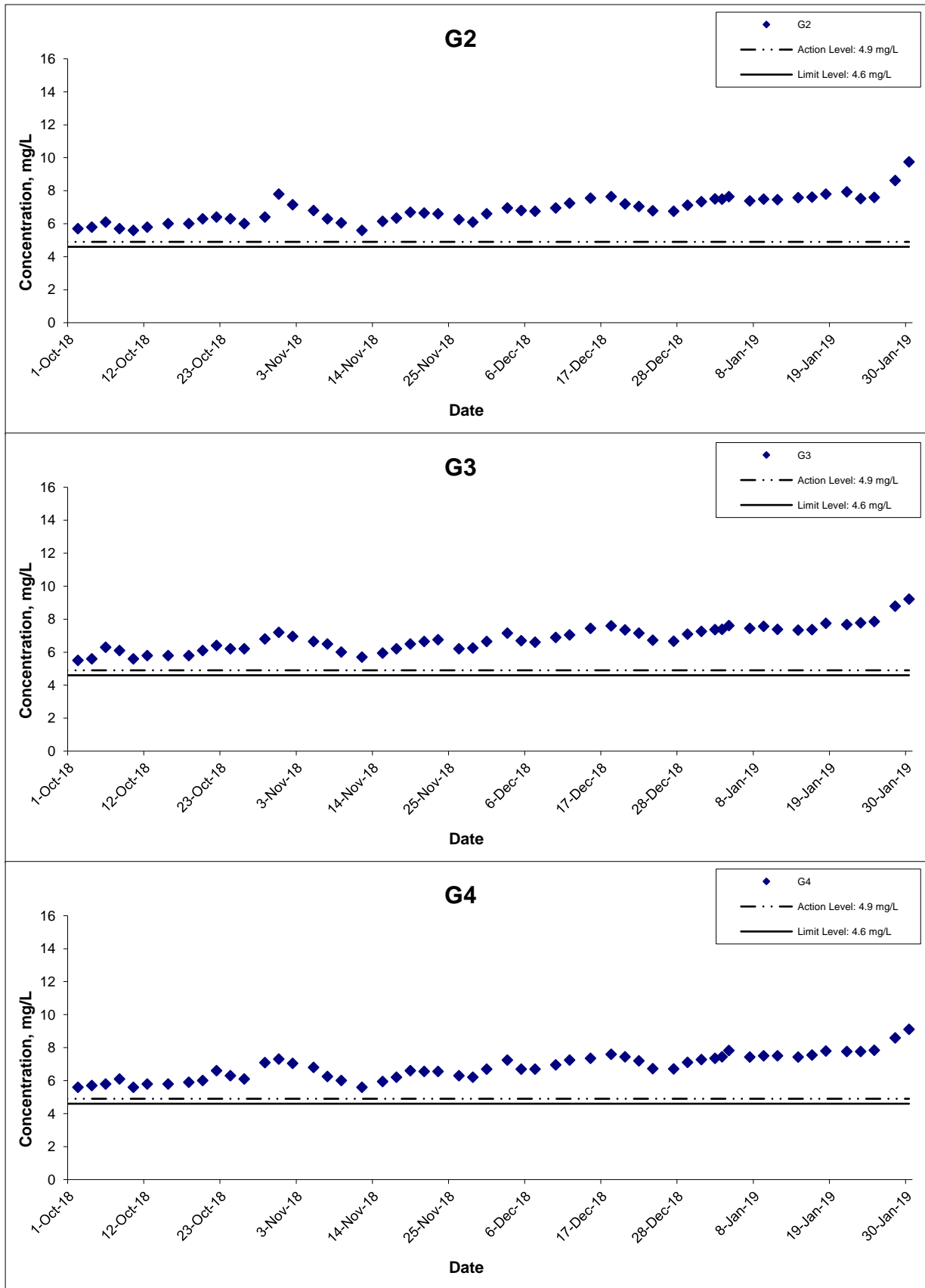
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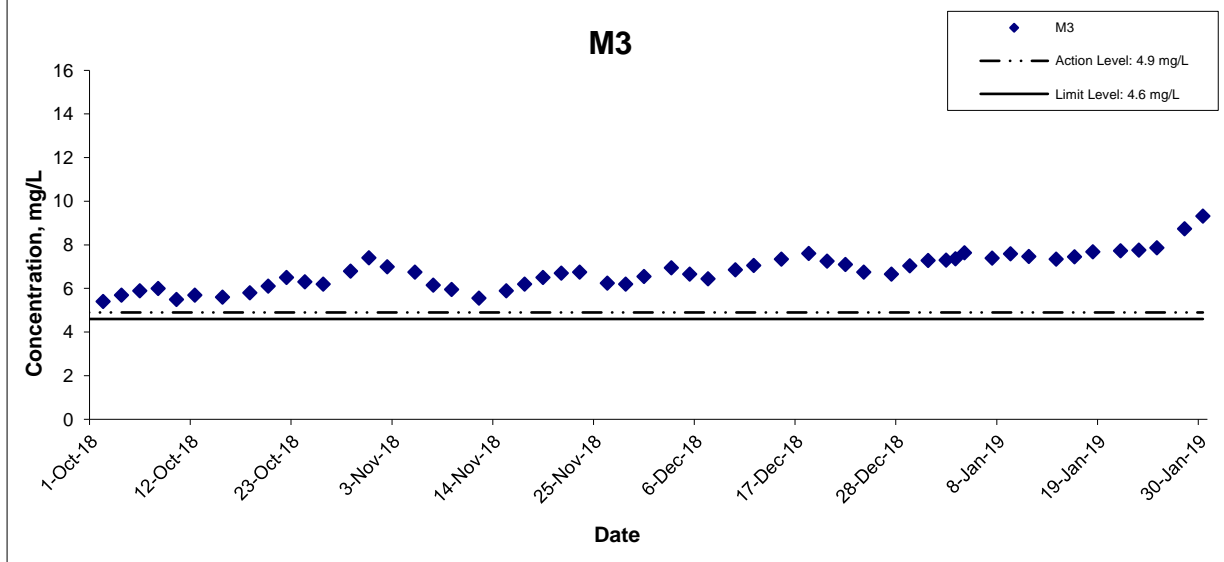
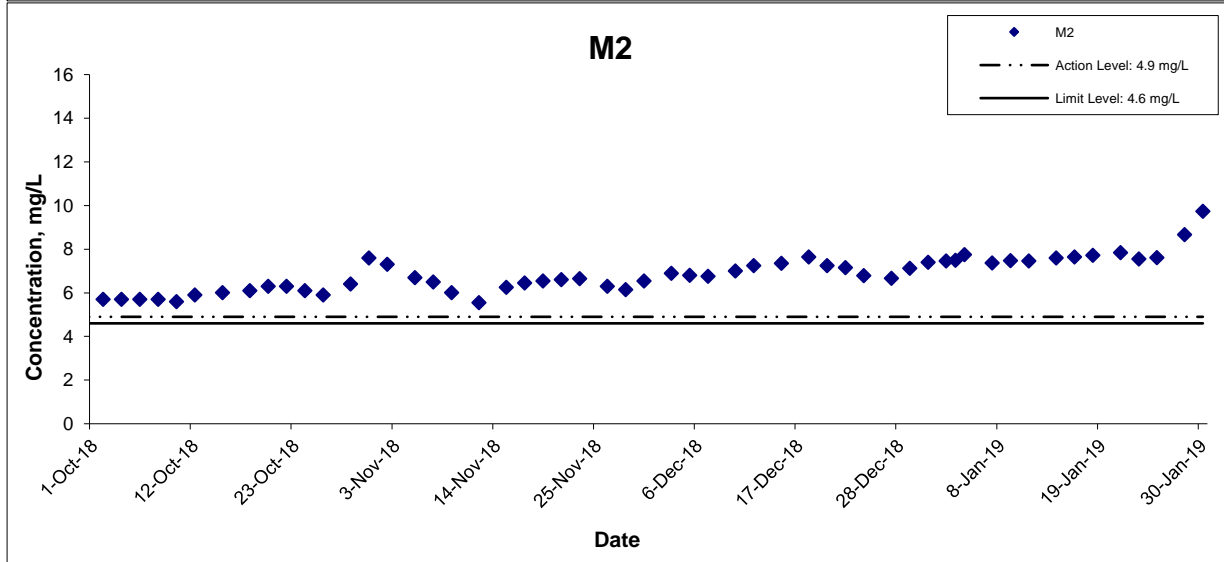
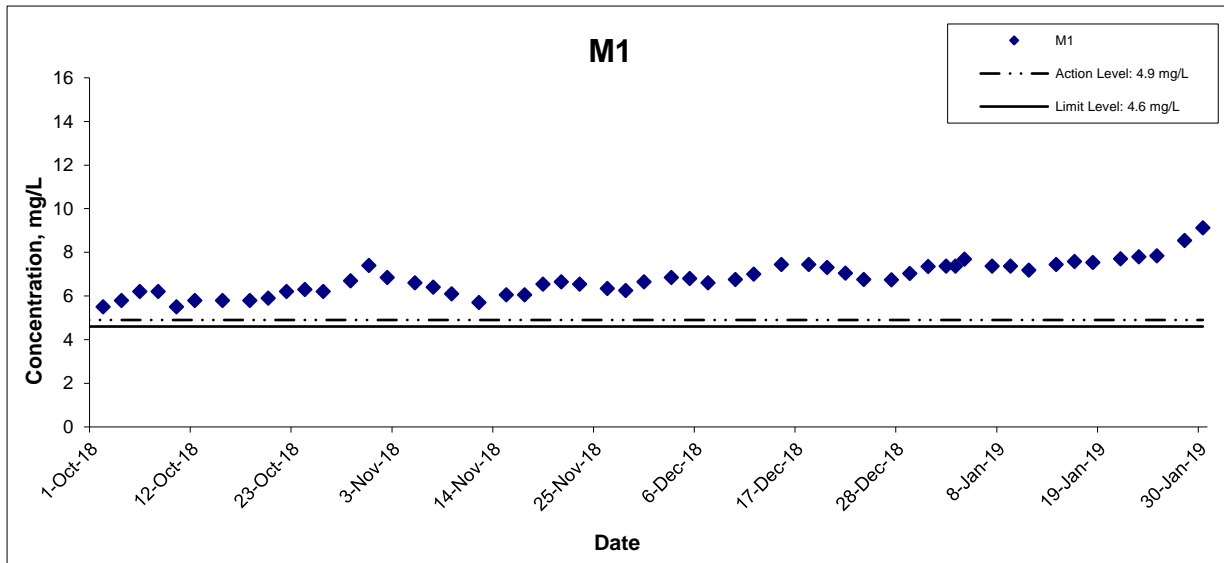
## Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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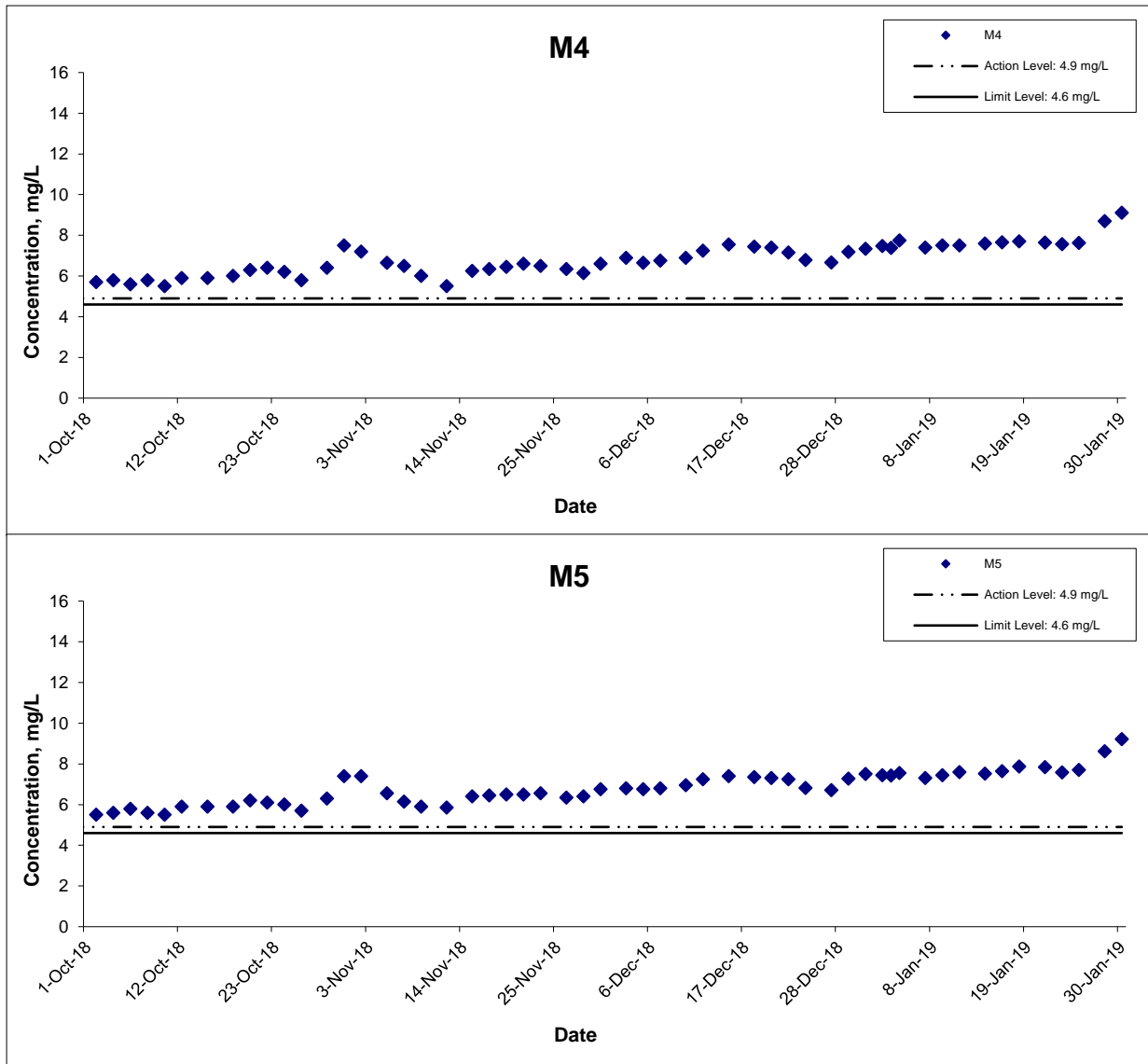


## Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



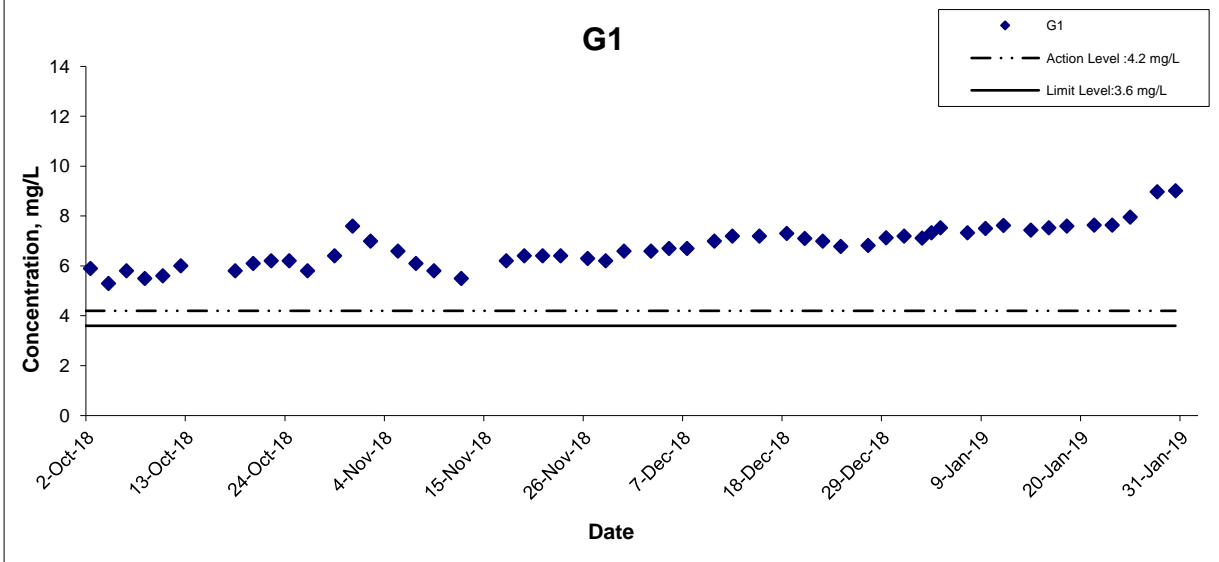
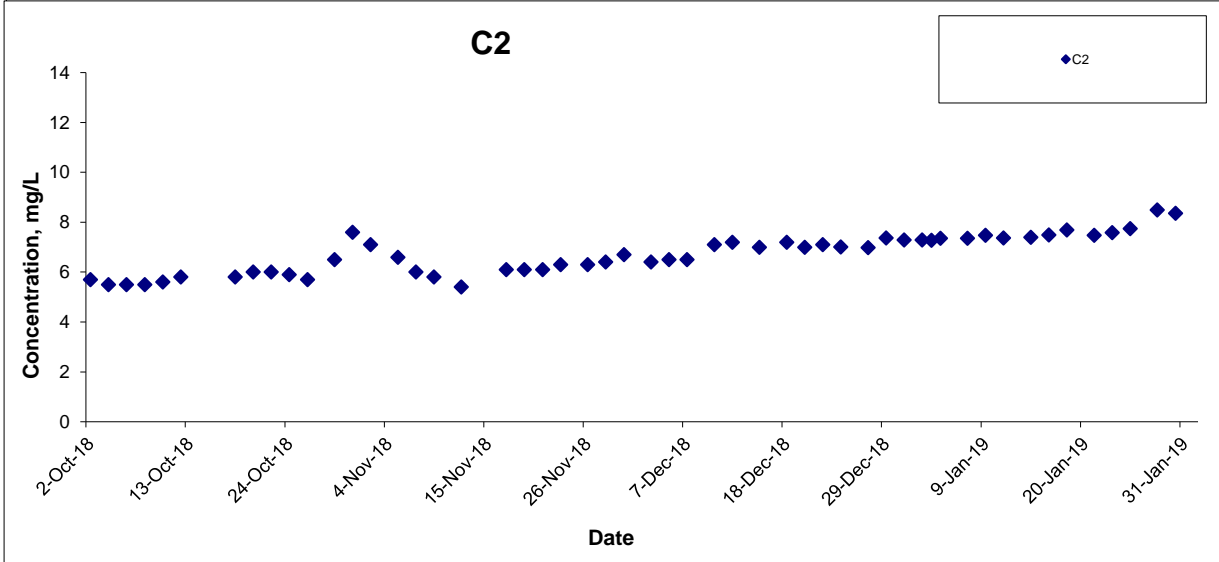
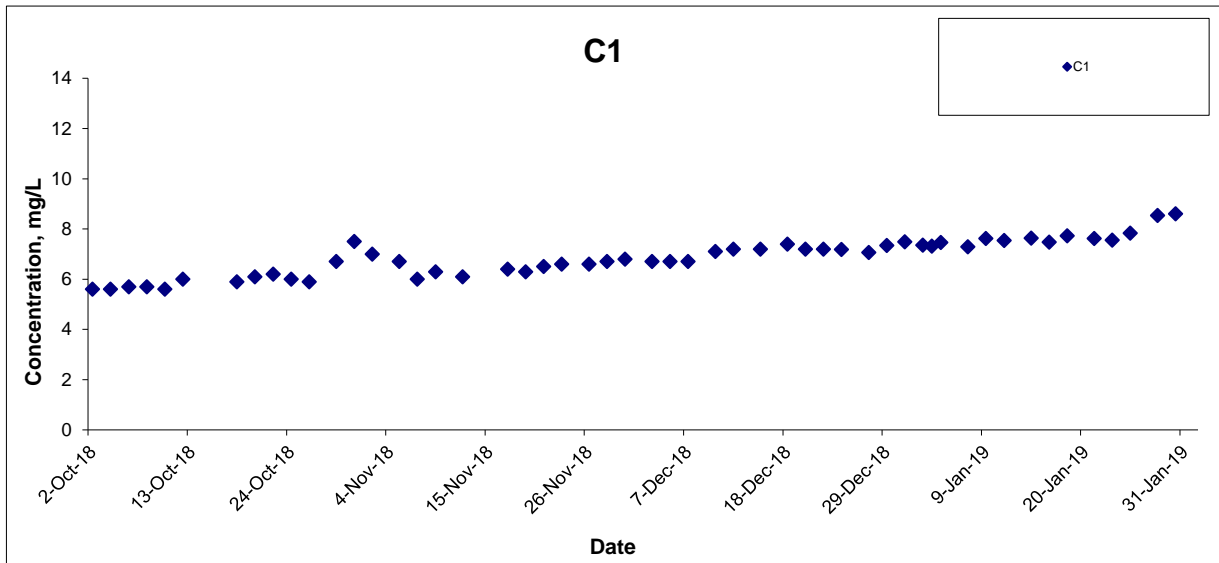
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## Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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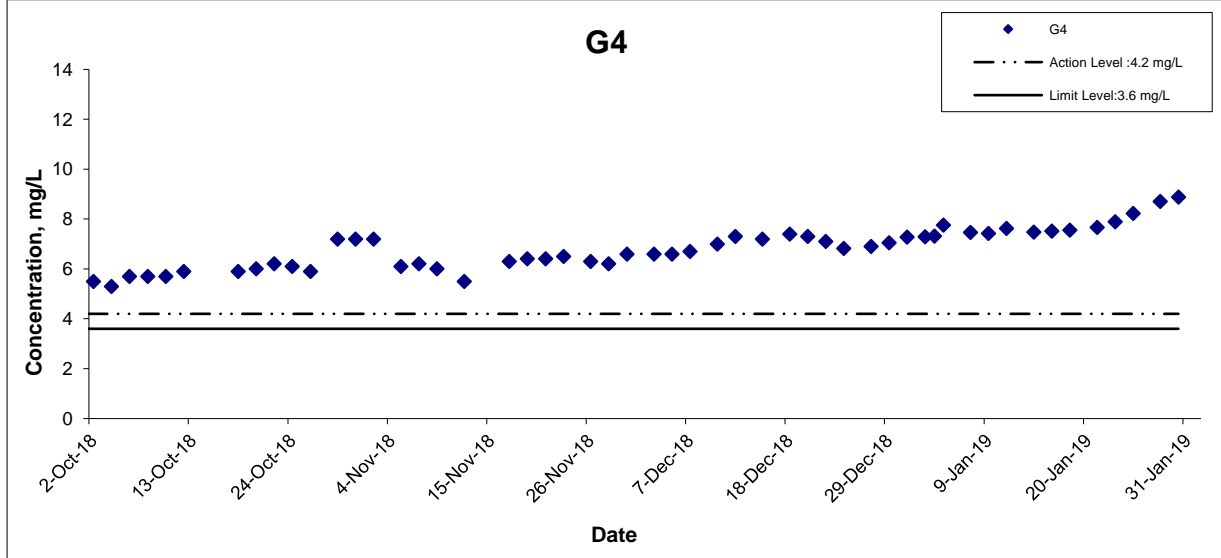
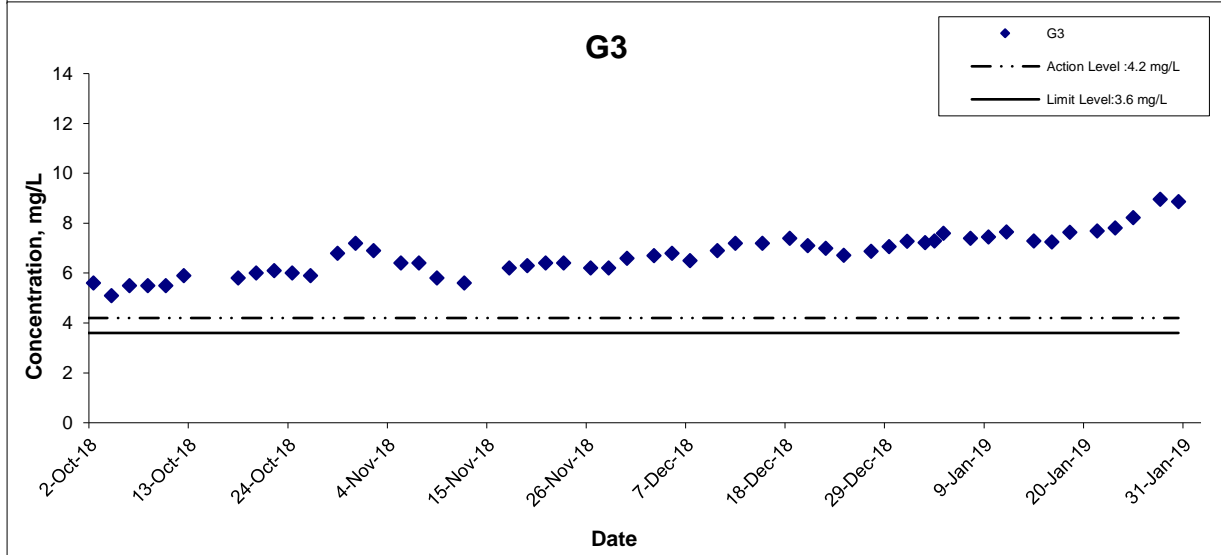
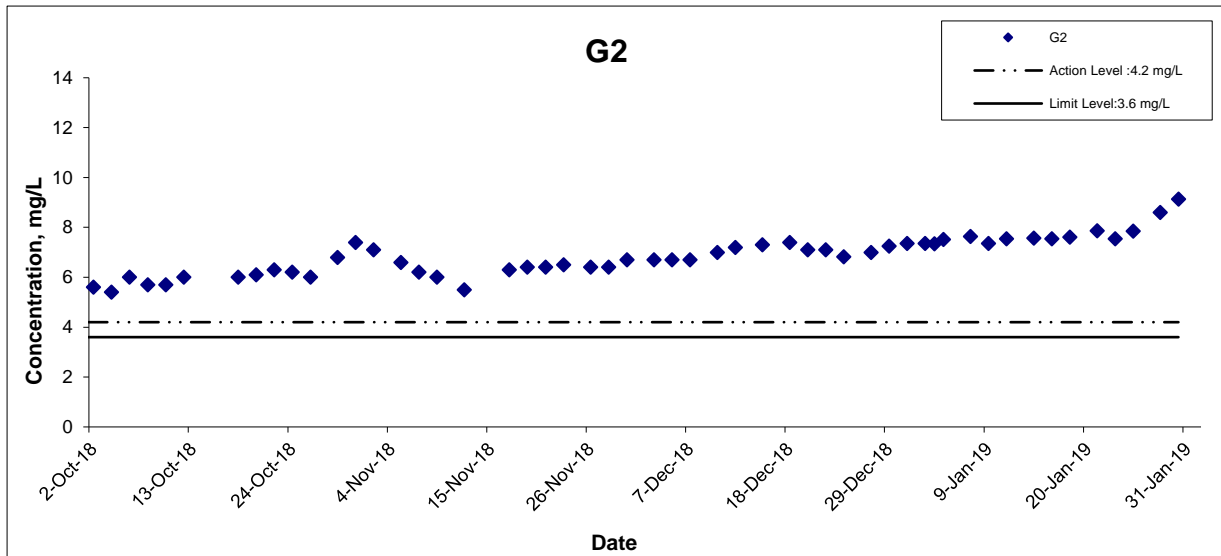
## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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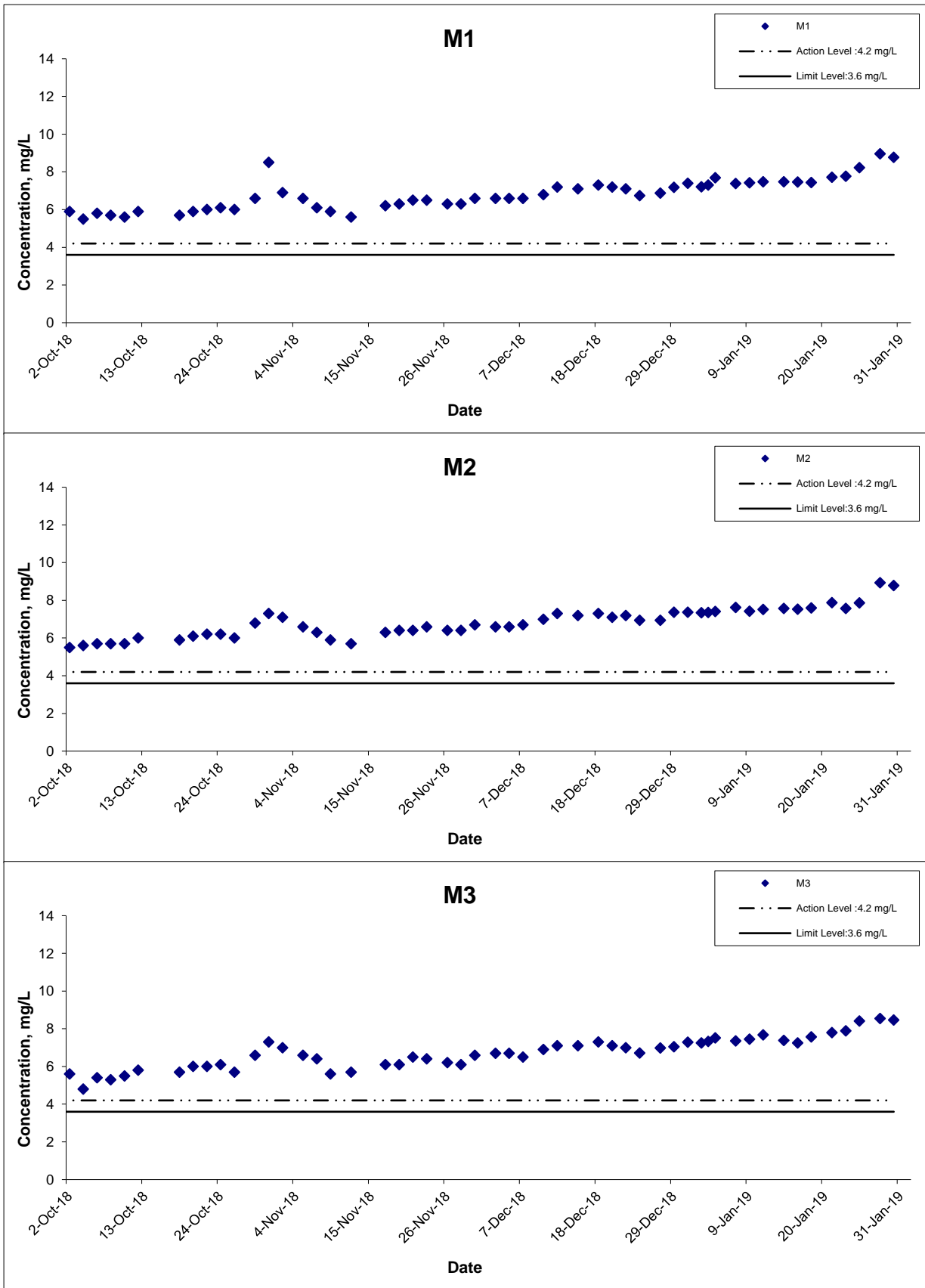


## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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

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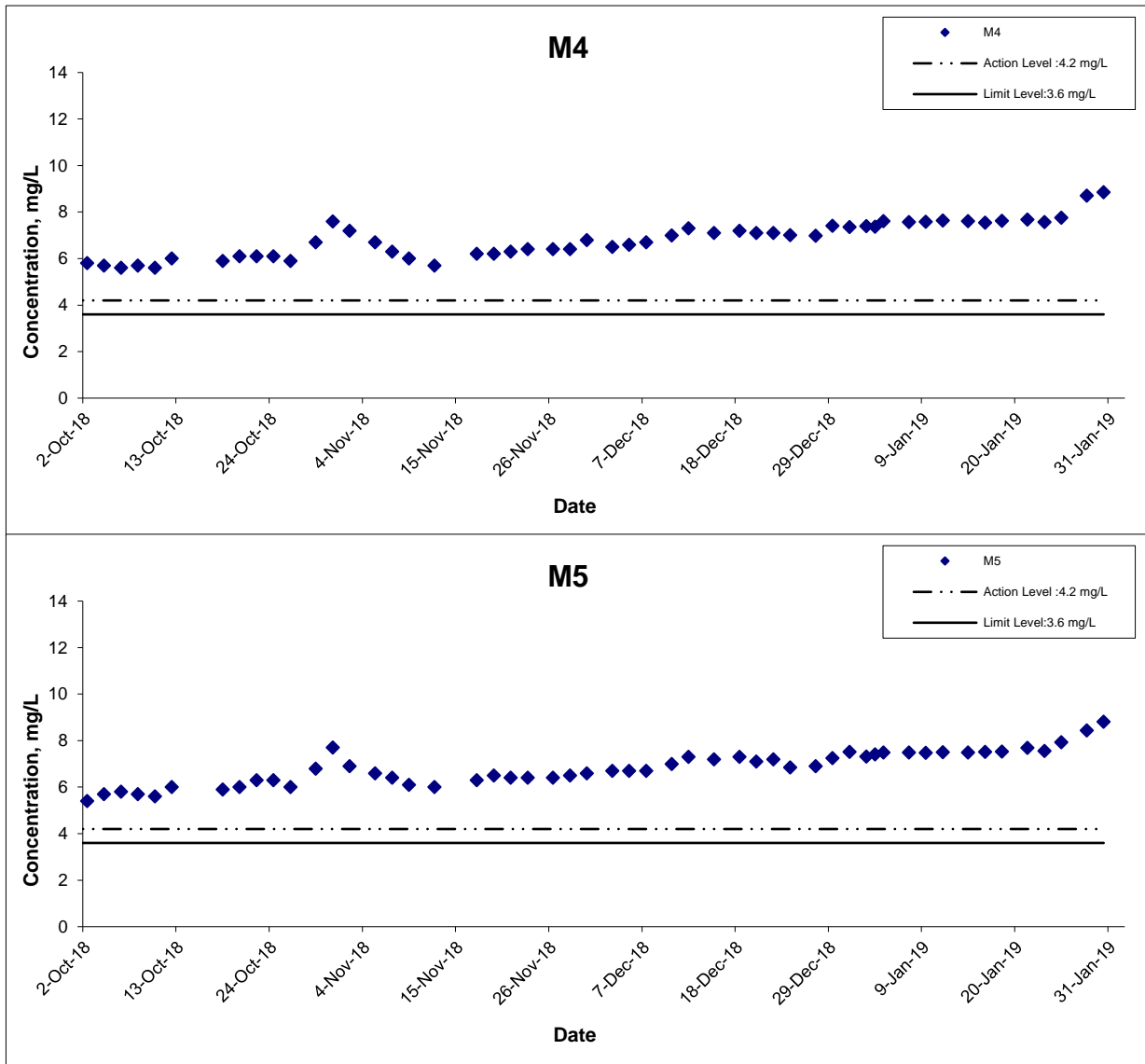
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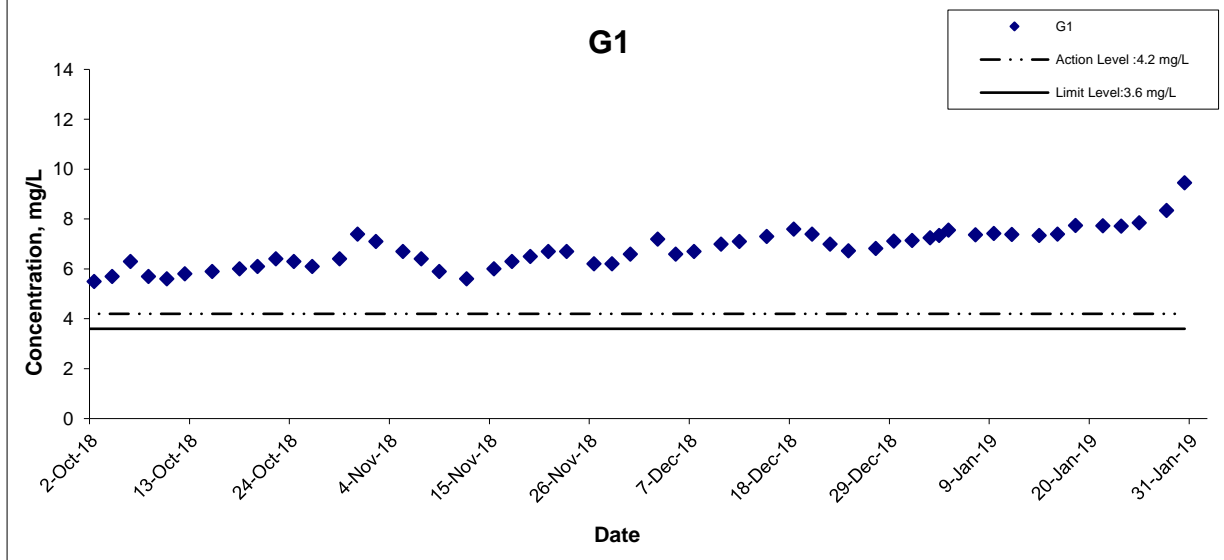
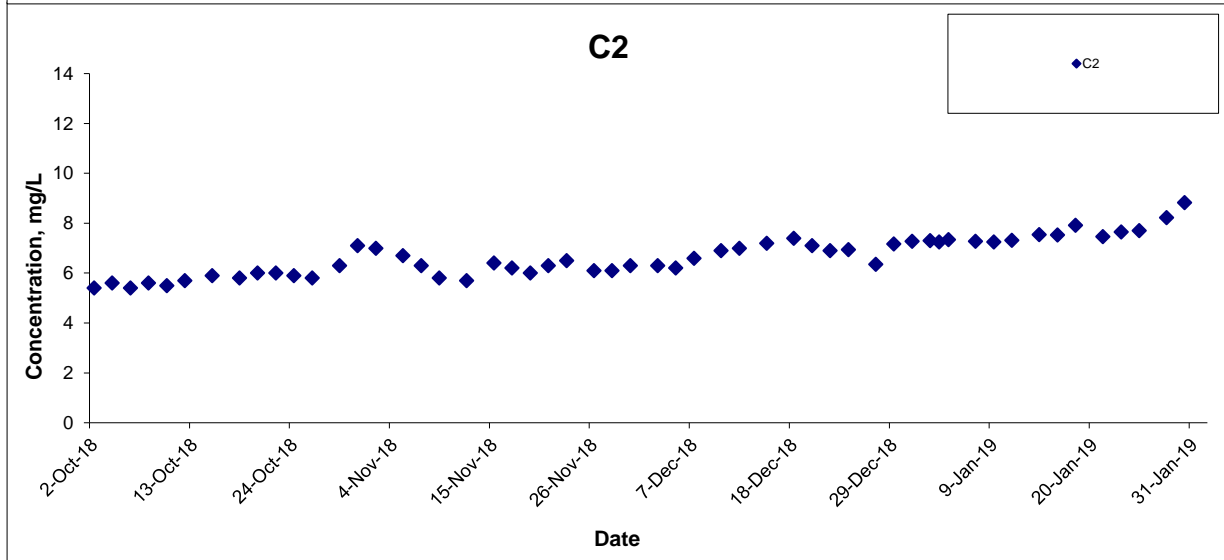
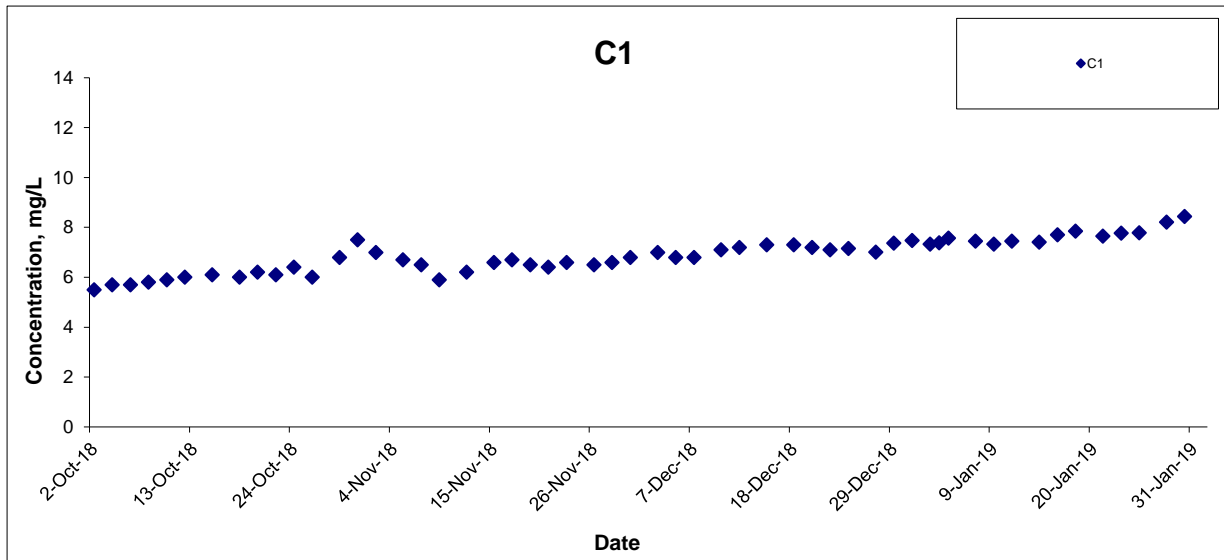
## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

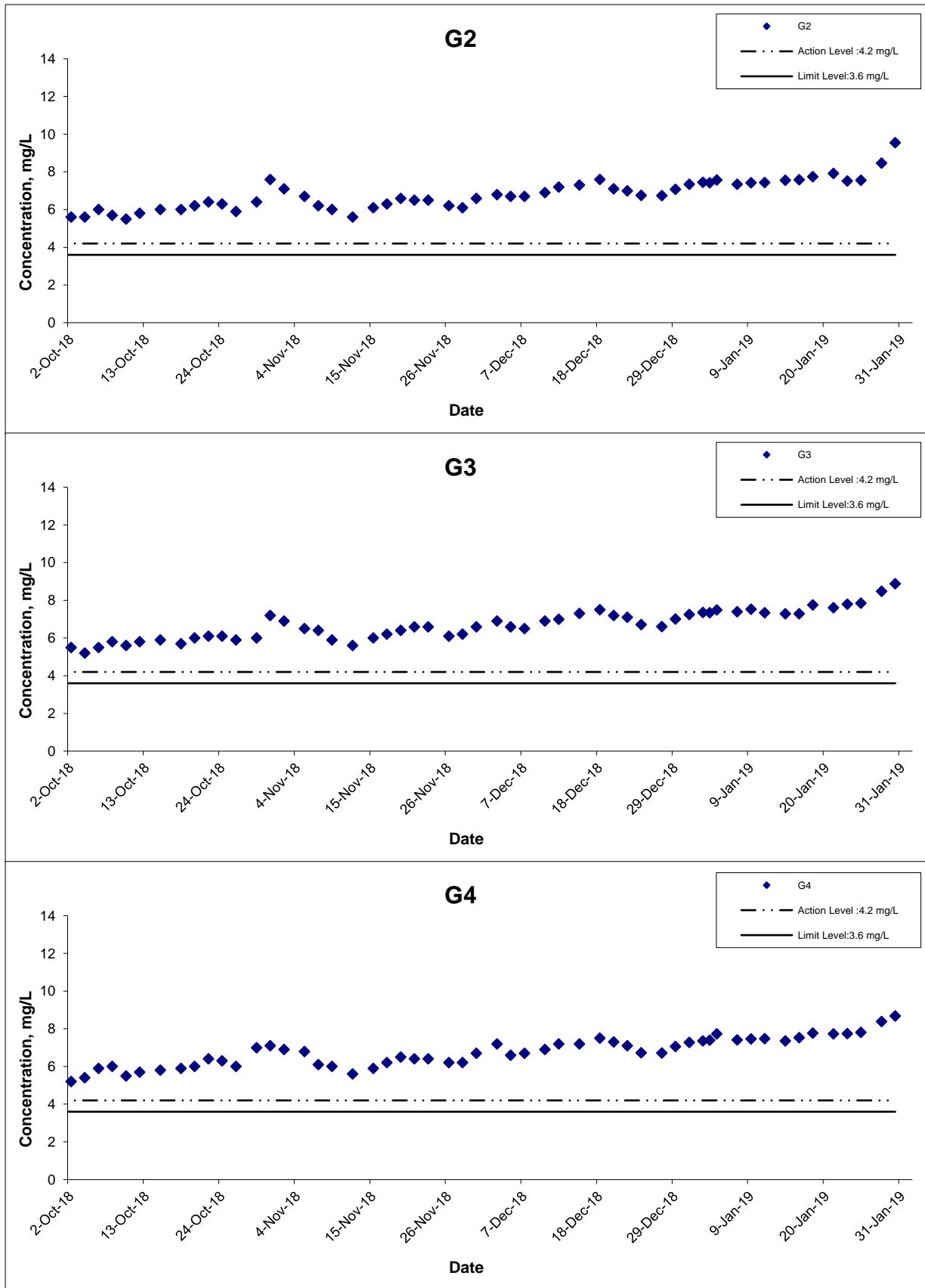
Date Jan 19

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## Dissolved Oxygen (Bottom) at Mid-Flood Tide



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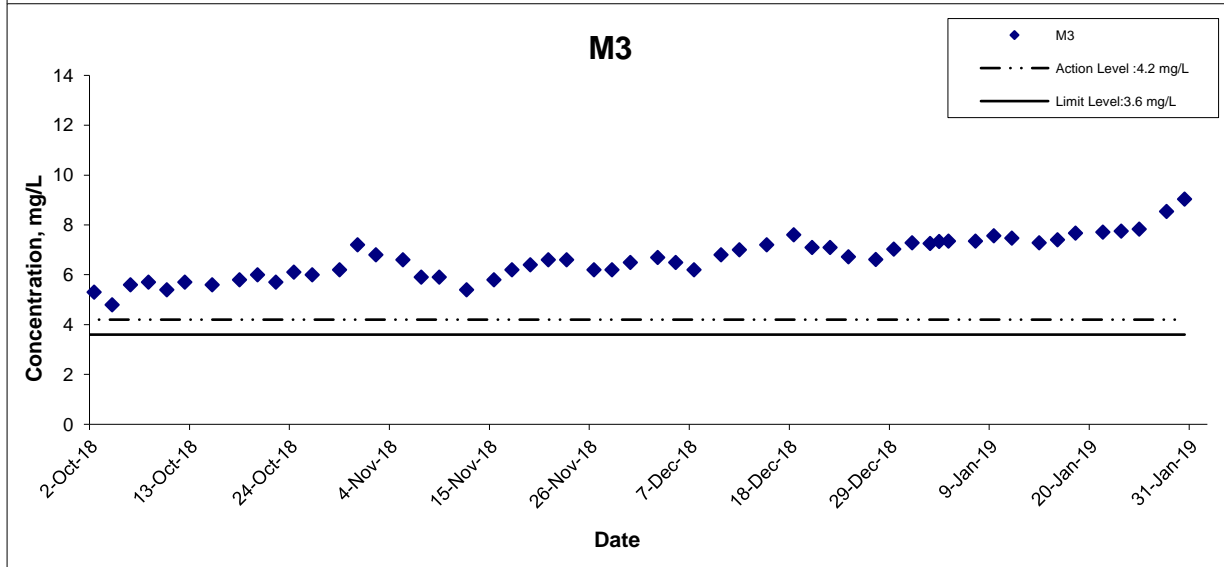
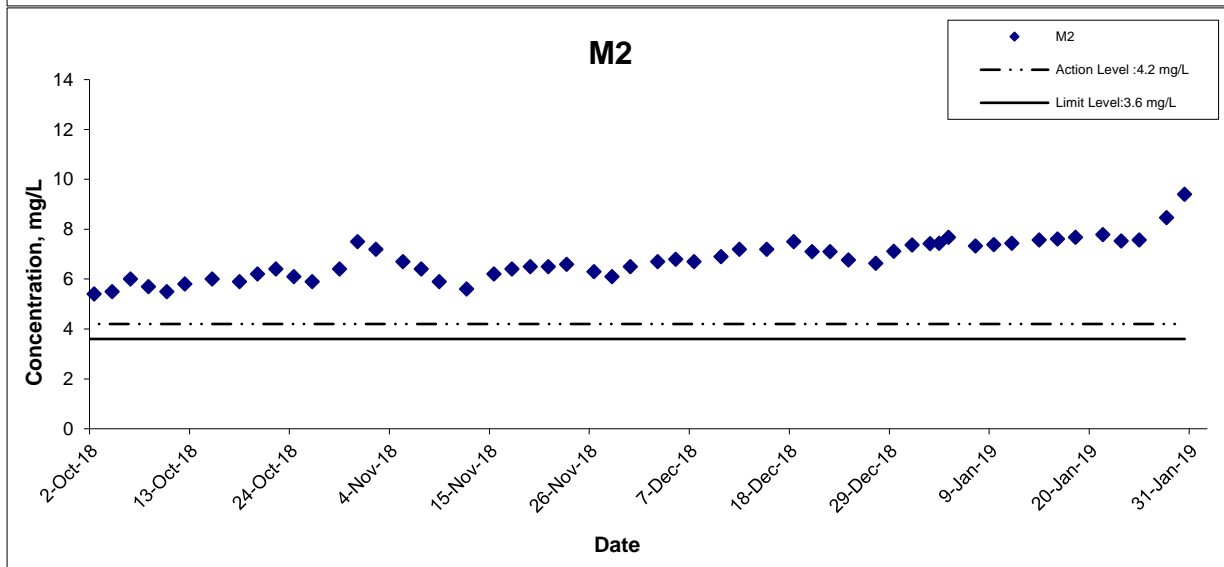
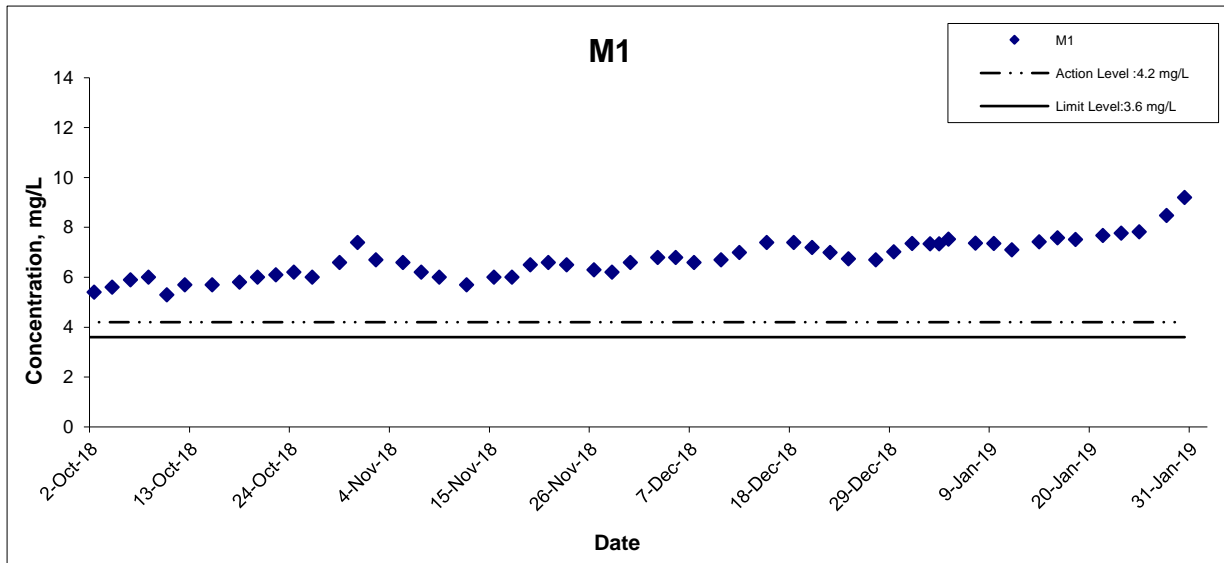
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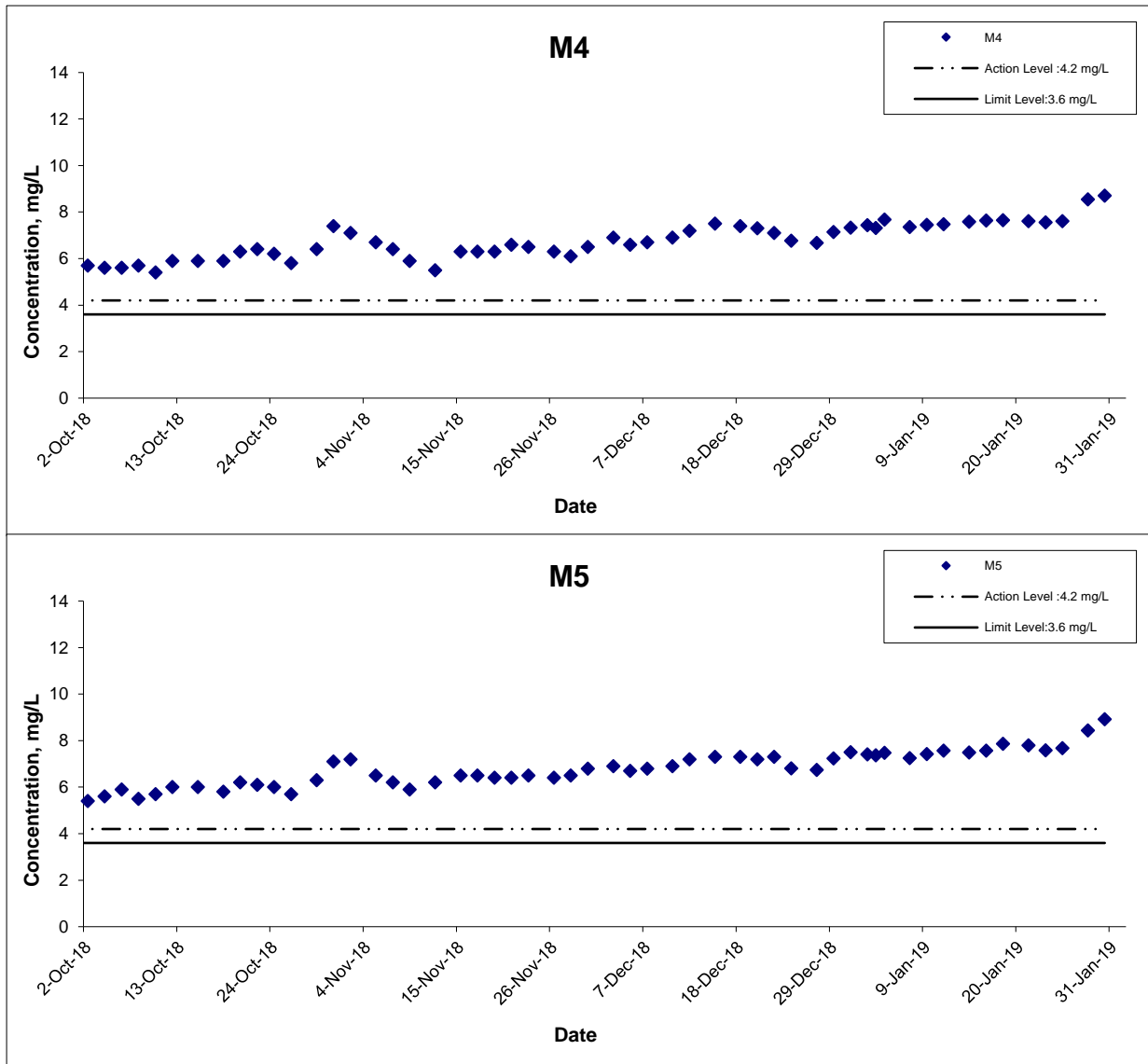
## Dissolved Oxygen (Bottom) at Mid-Flood Tide



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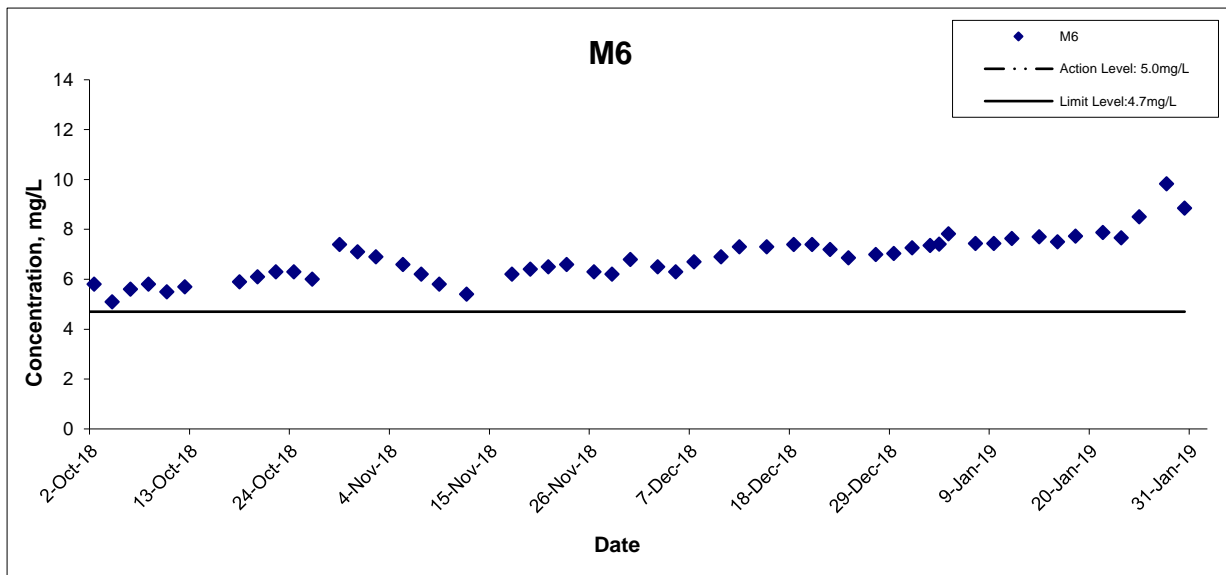


## Dissolved Oxygen (Bottom) at Mid-Flood Tide



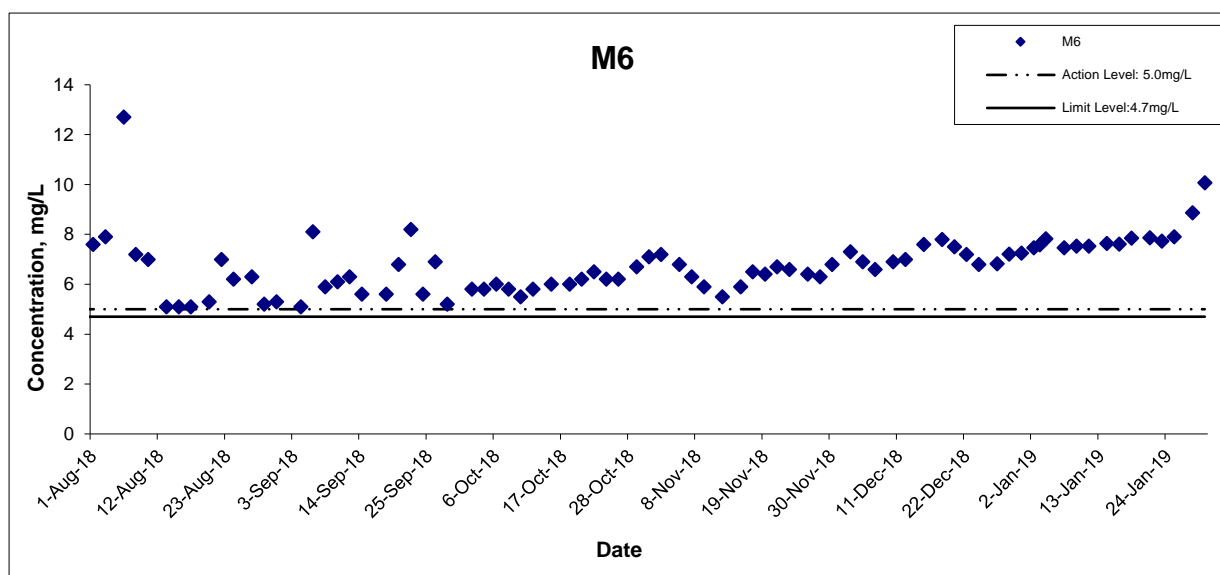
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## Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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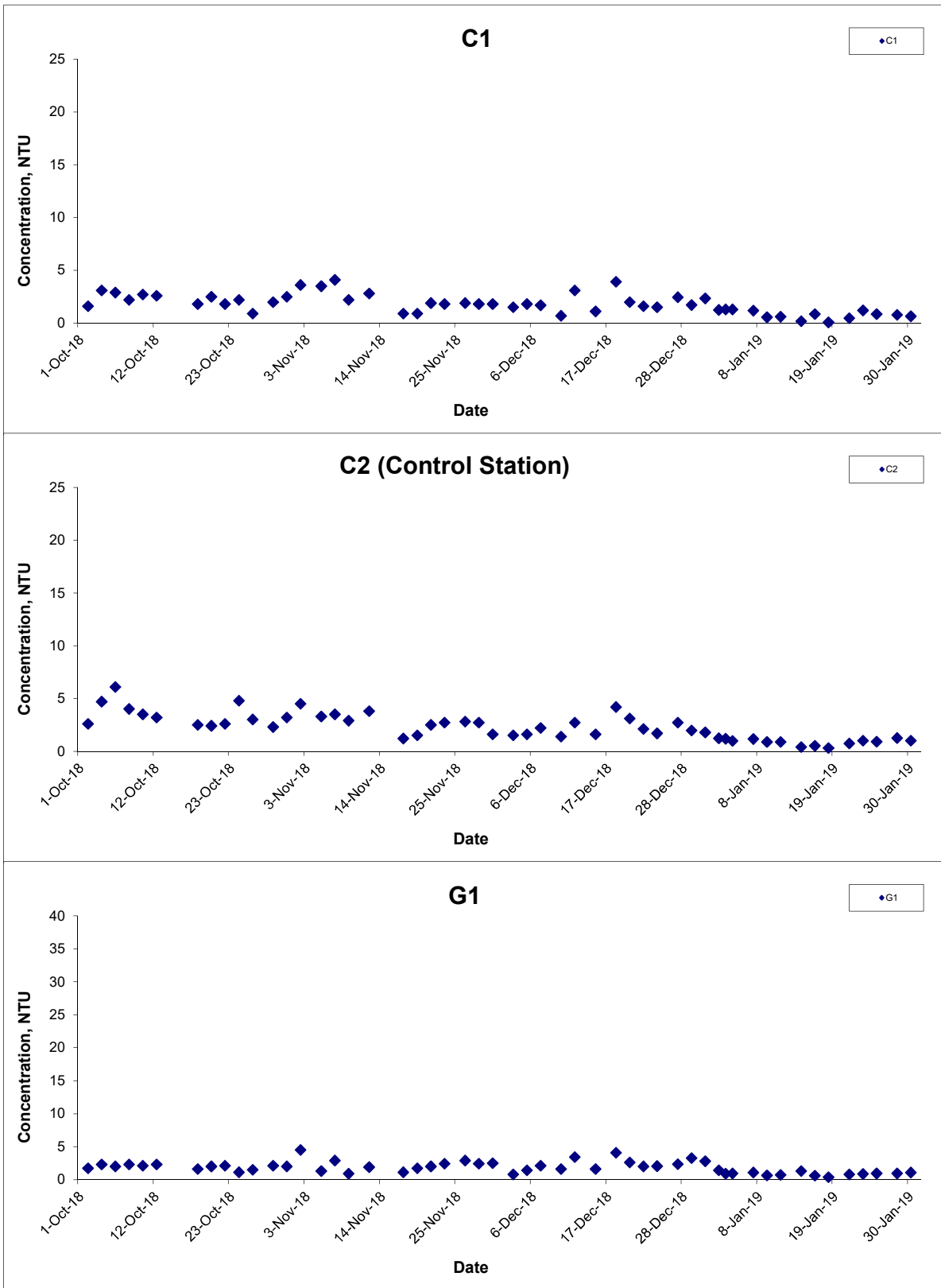
## Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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



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

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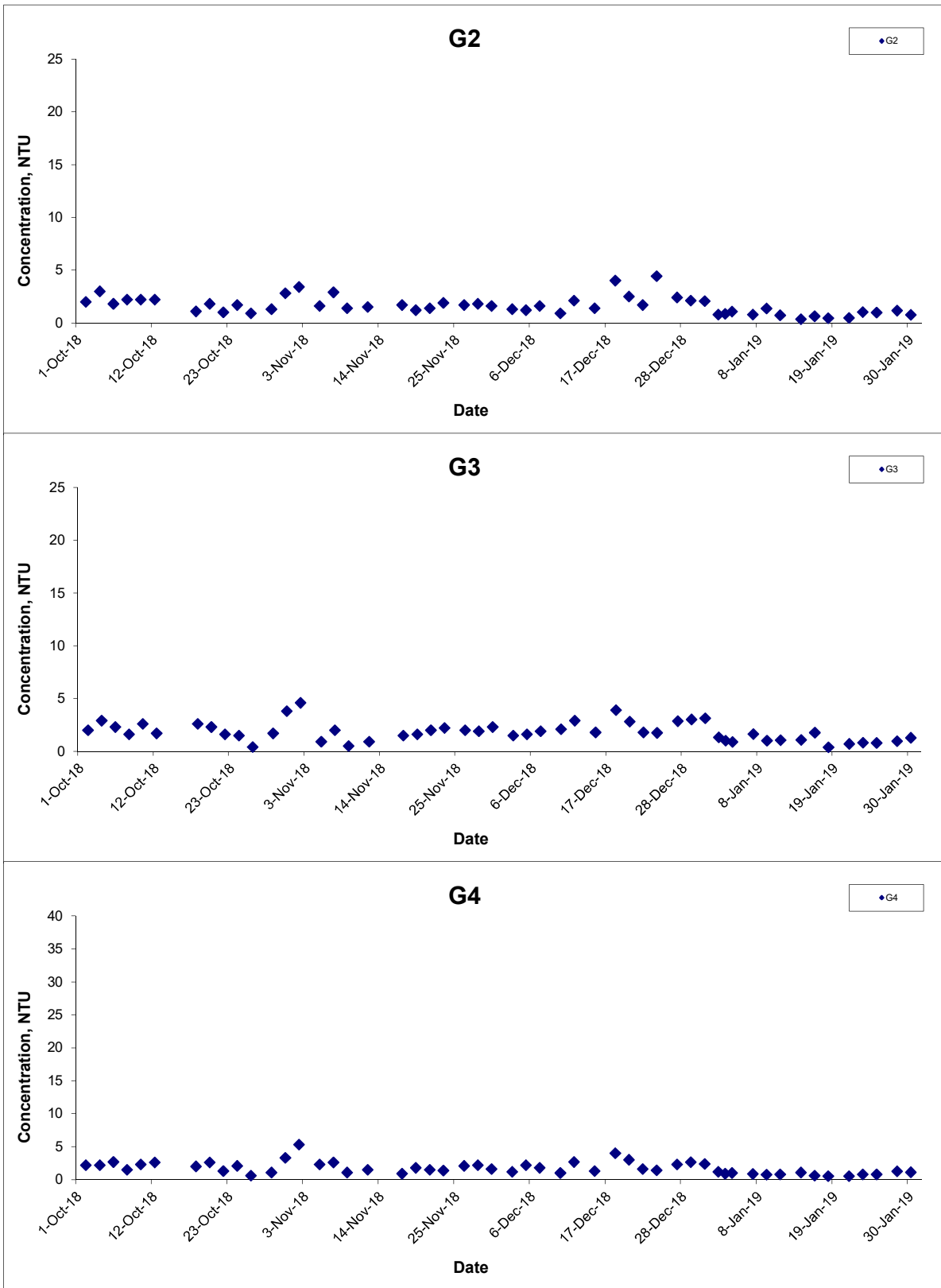
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### Turbidity (Depth-averaged) at Mid-Ebb Tide



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

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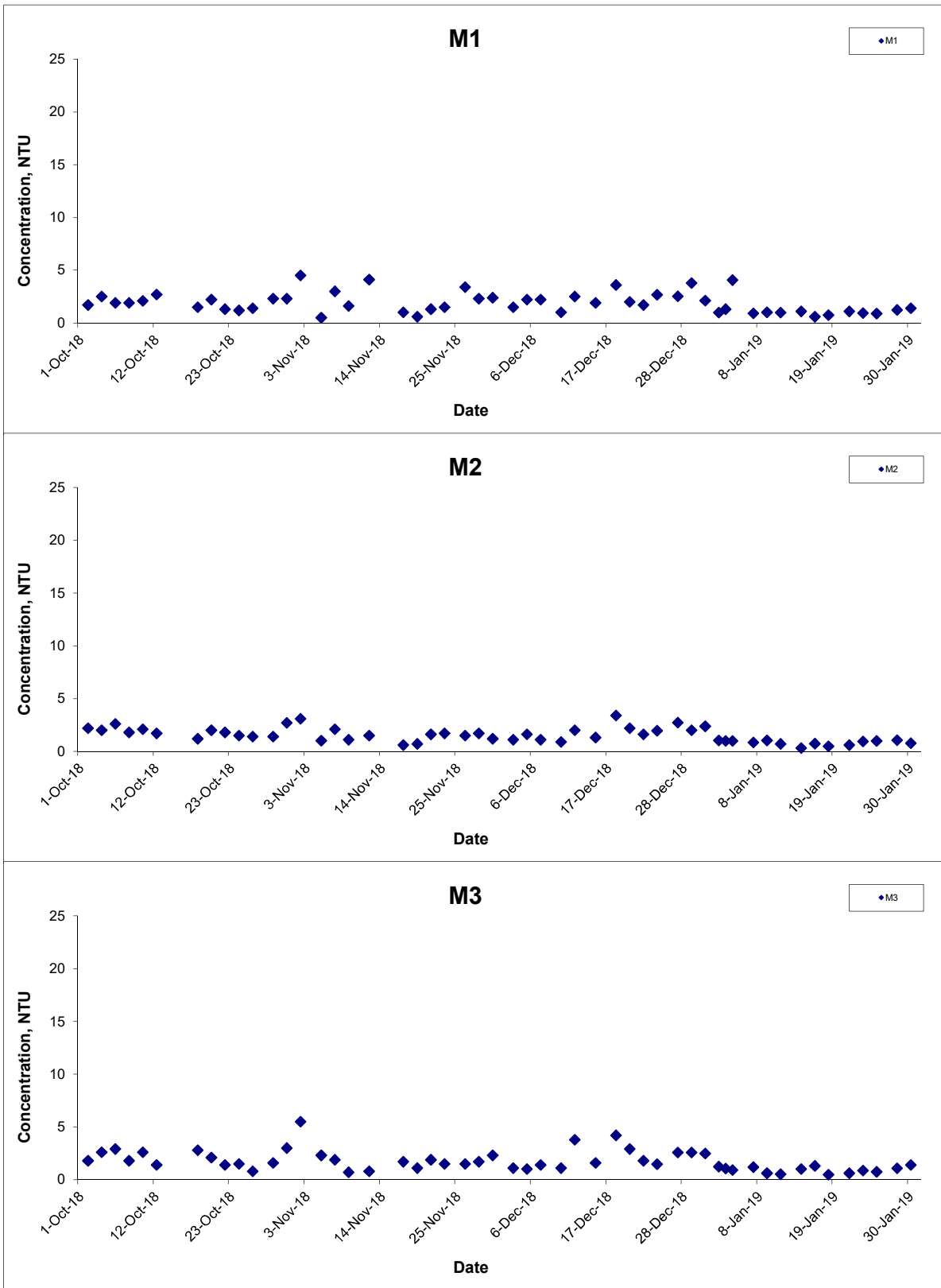
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### Turbidity (Depth-averaged) at Mid-Ebb Tide



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

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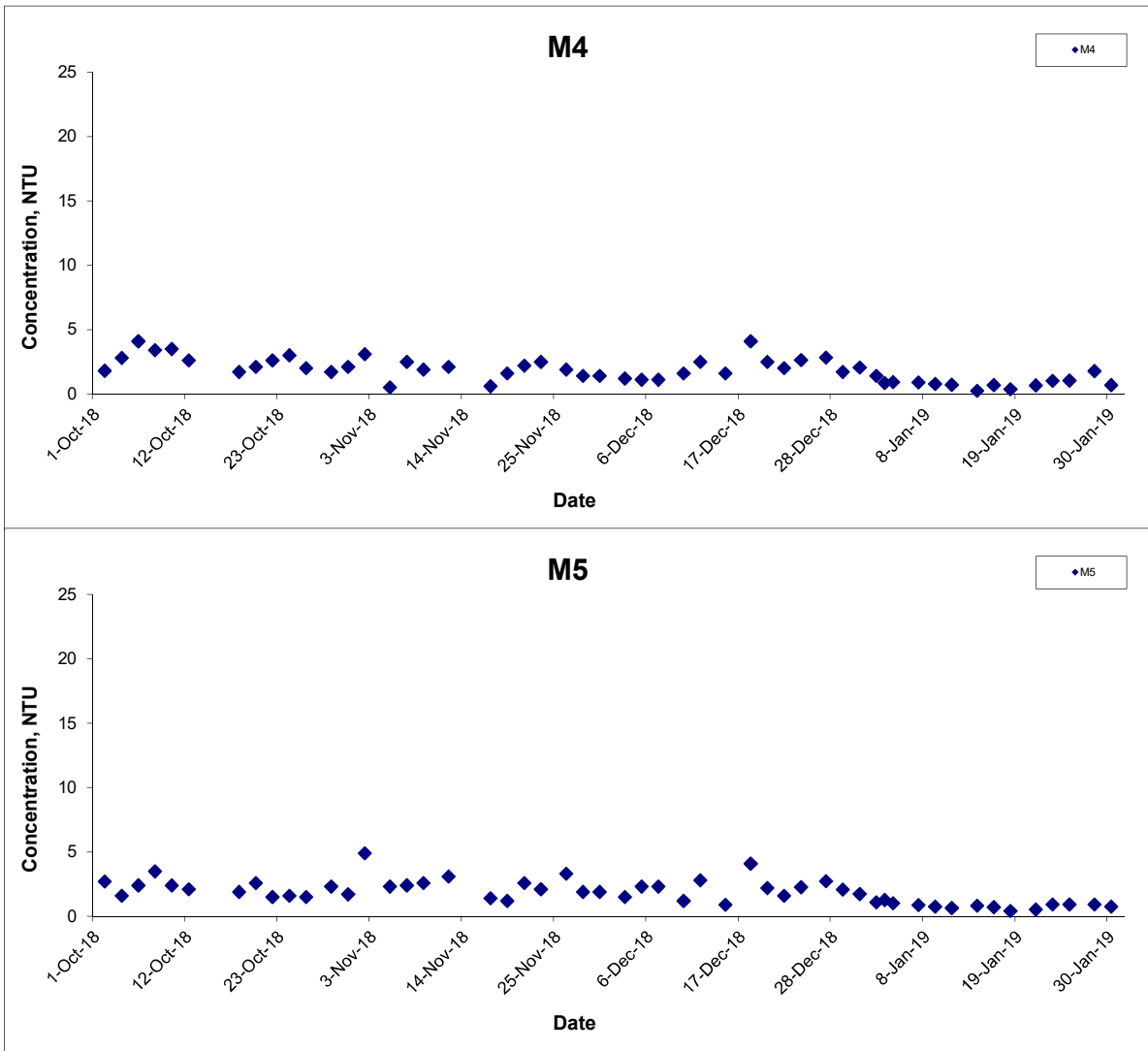
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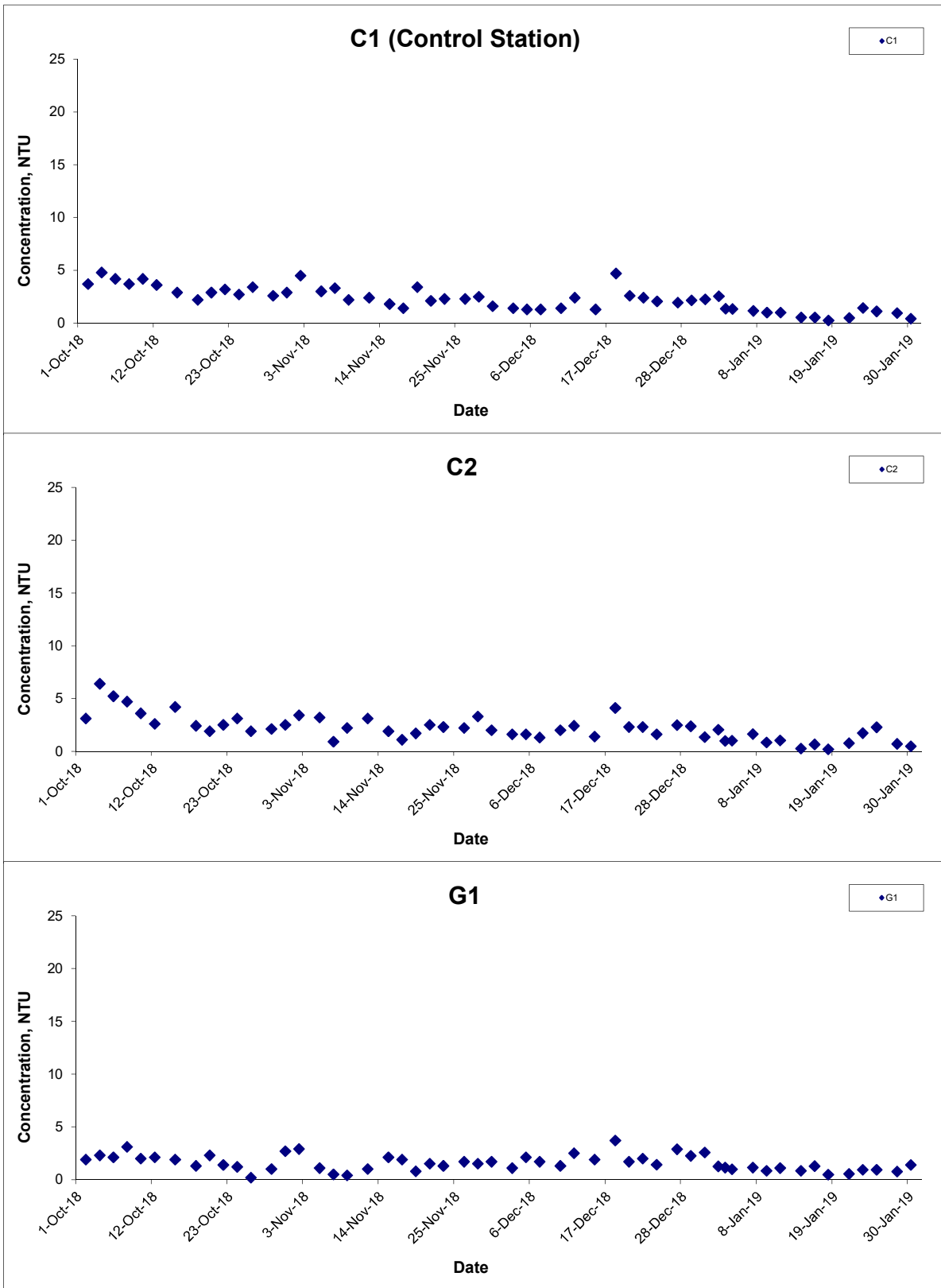


### Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	Scale	N.T.S	Project No.	MA16034	CINOTECH
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## Turbidity (Depth-averaged) at Mid-Flood Tide



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

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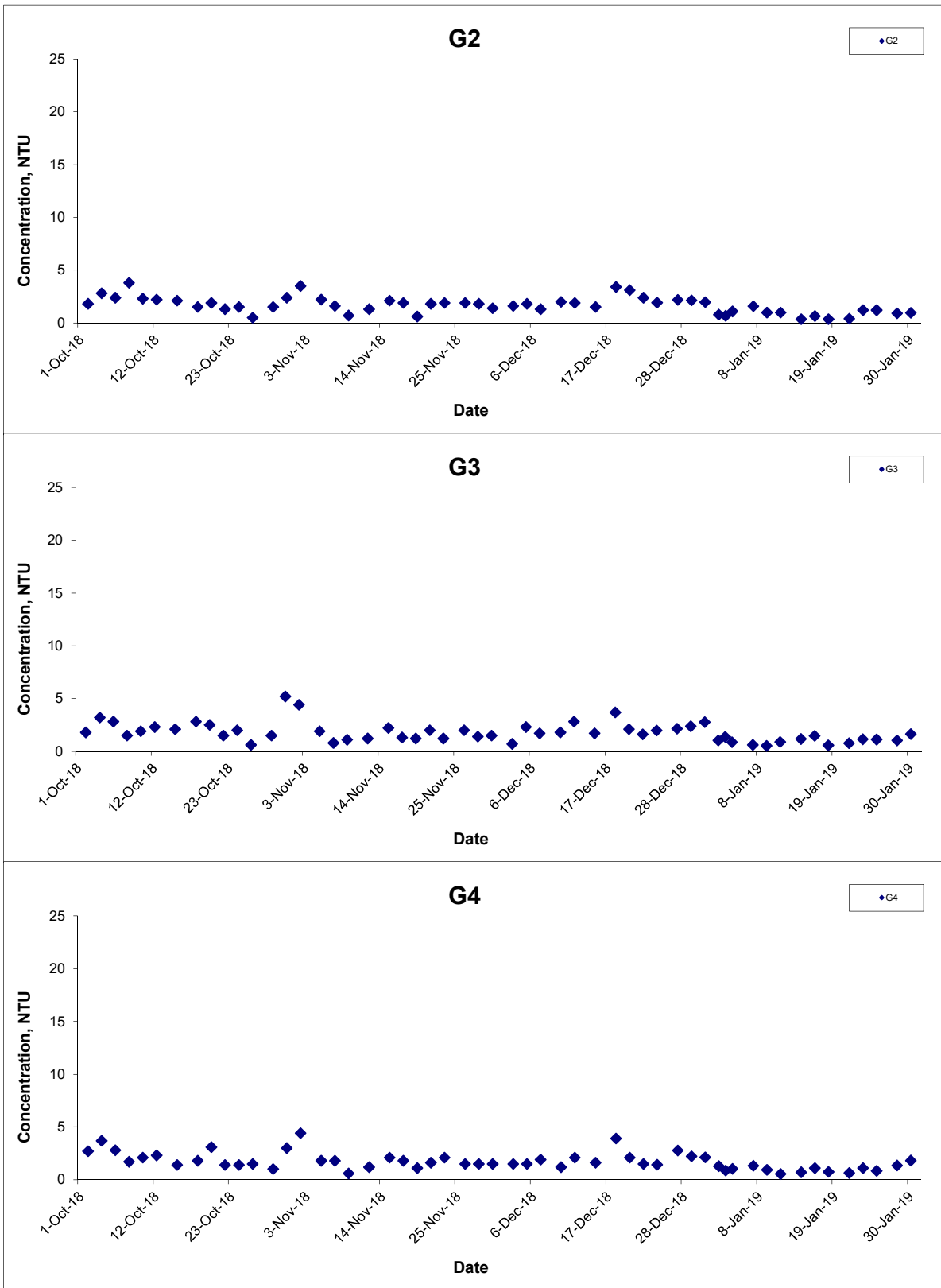
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### Turbidity (Depth-averaged) at Mid-Flood Tide



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

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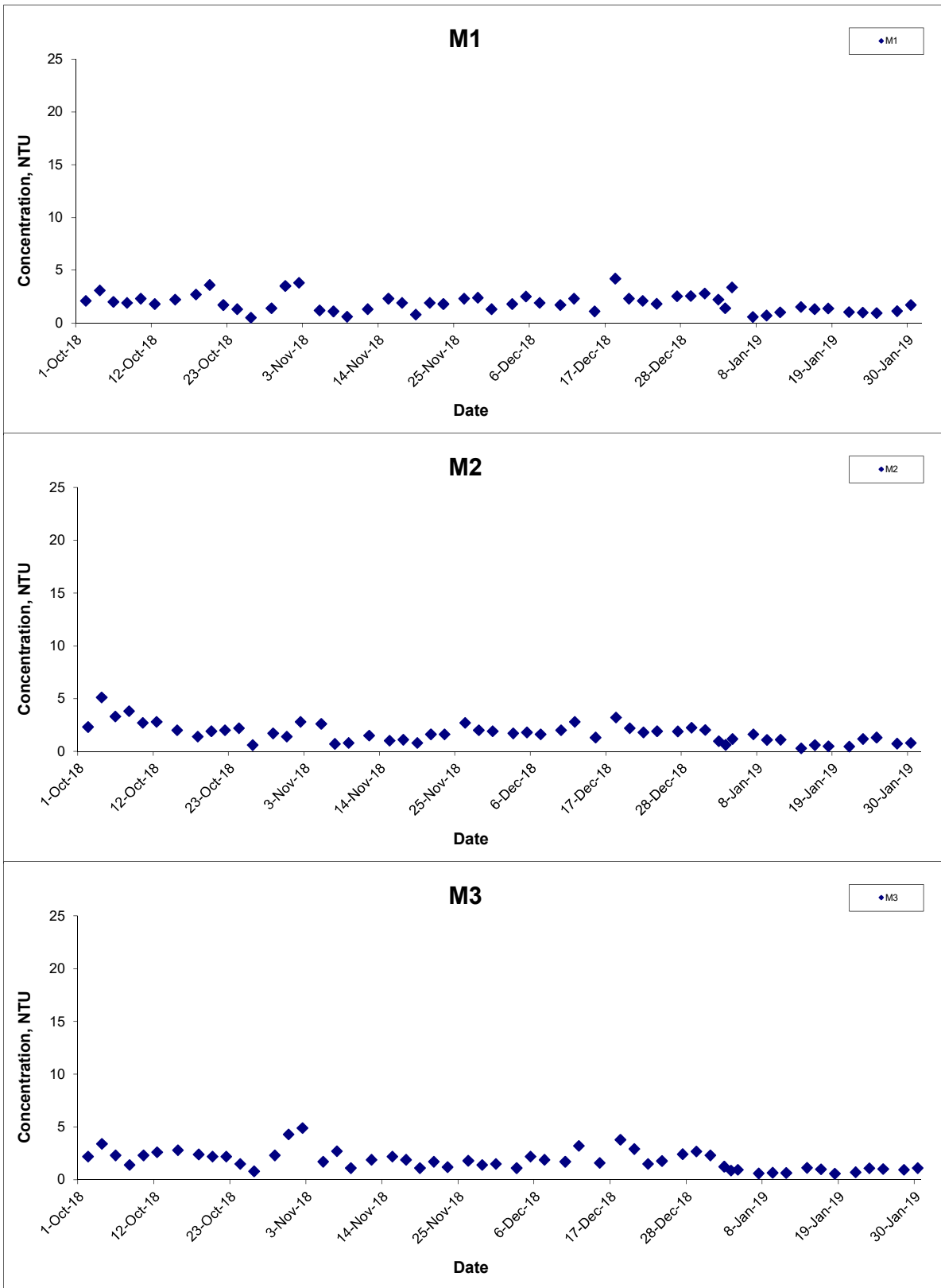
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### Turbidity (Depth-averaged) at Mid-Flood Tide



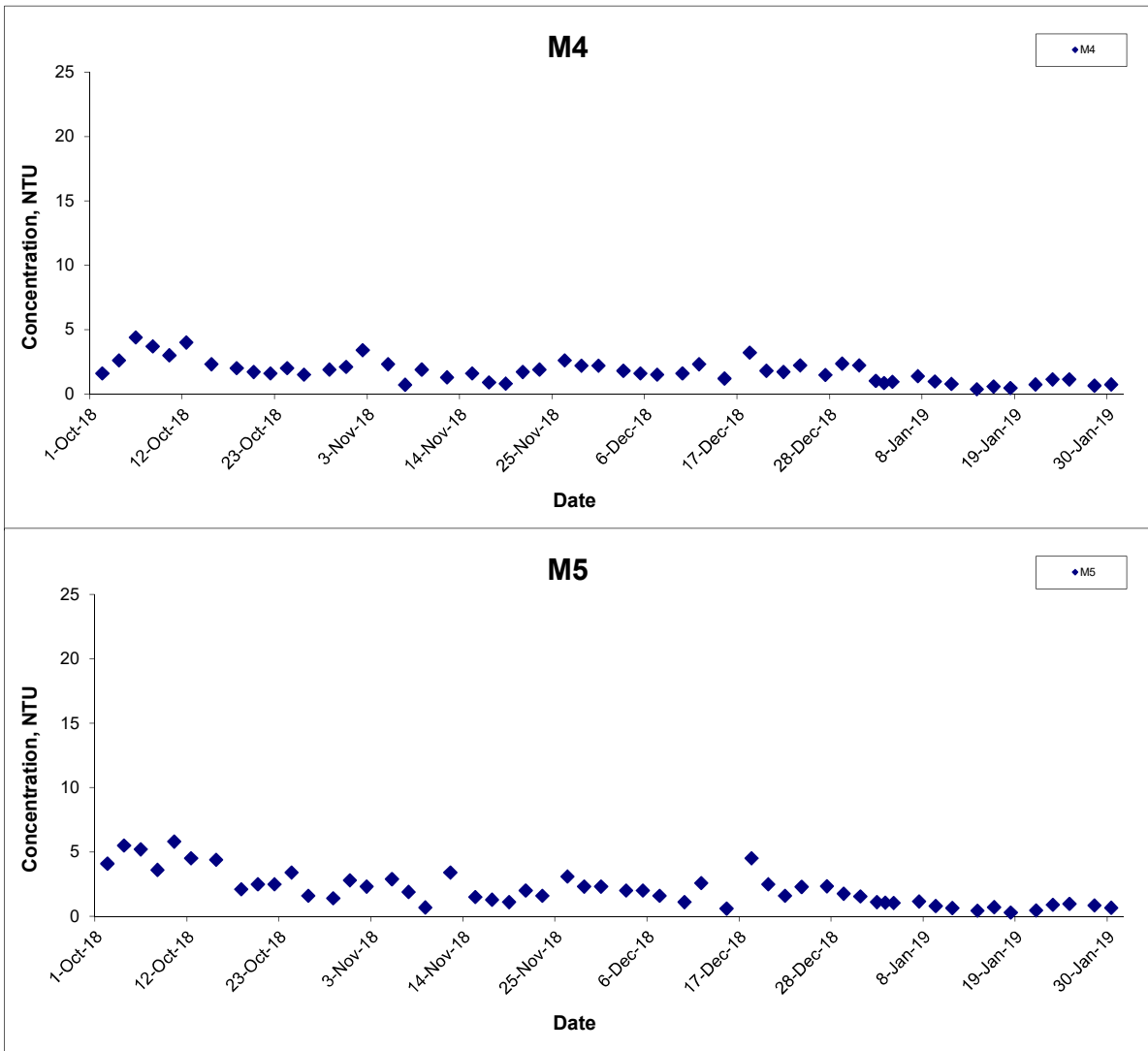
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Graphical Presentation of Water Quality Monitoring Results

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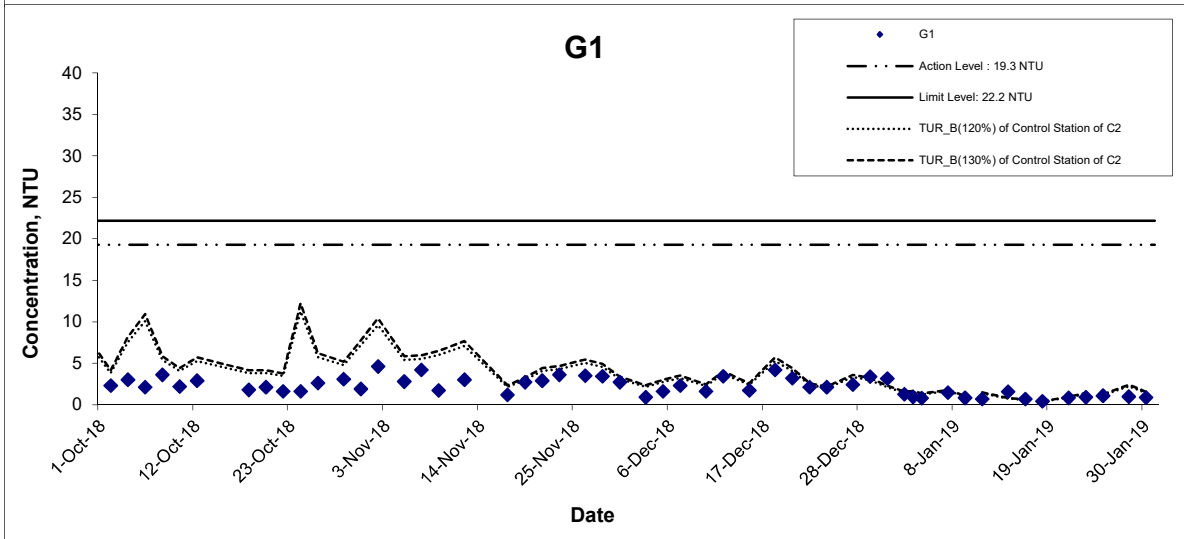
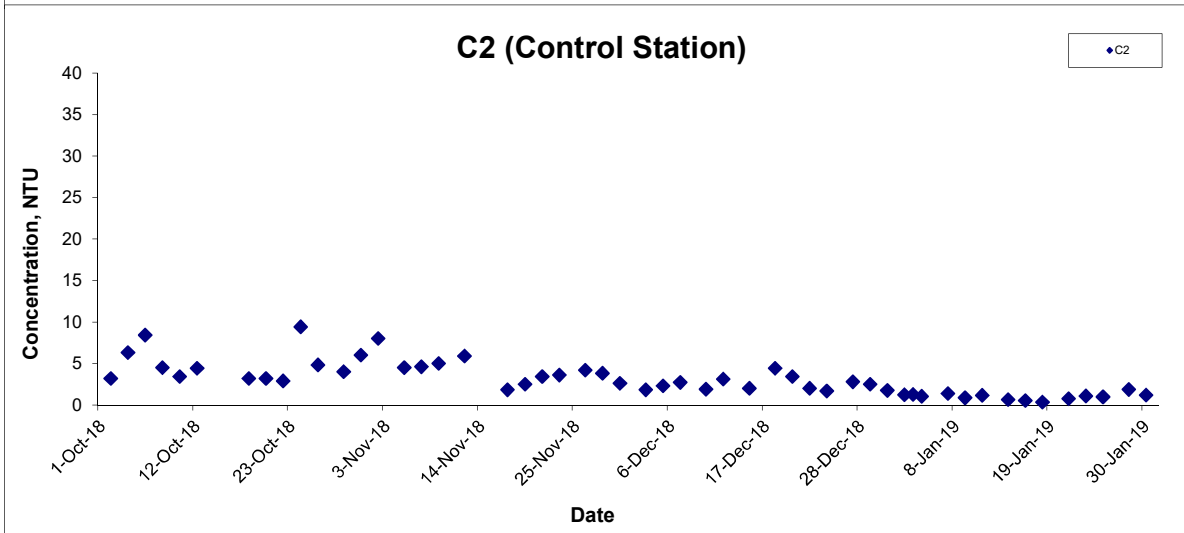
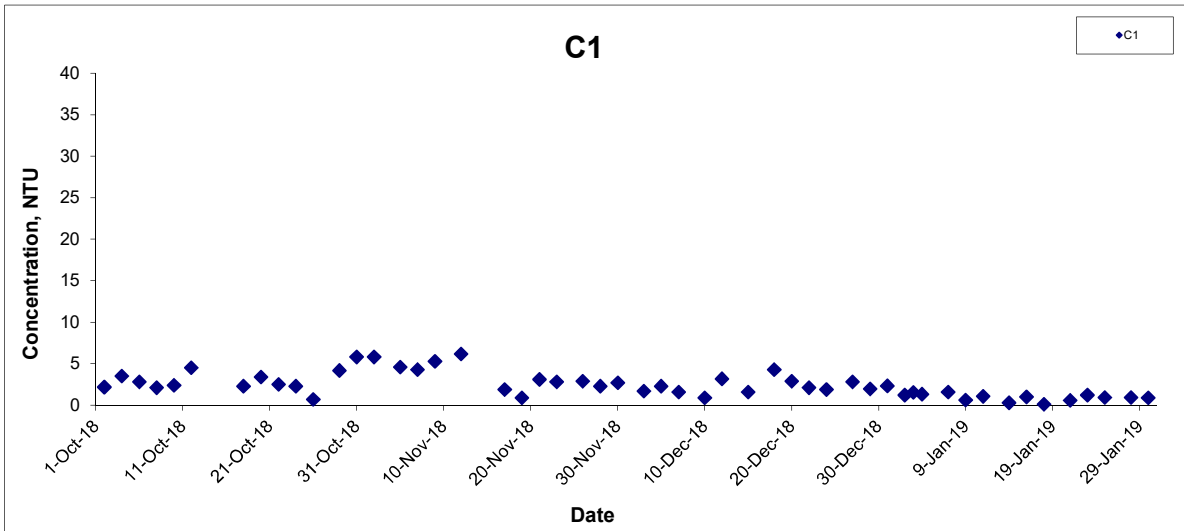


## Turbidity (Depth-averaged) at Mid-Flood Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	Scale N.T.S	Project No. MA16034	<b>CINOTECH</b>
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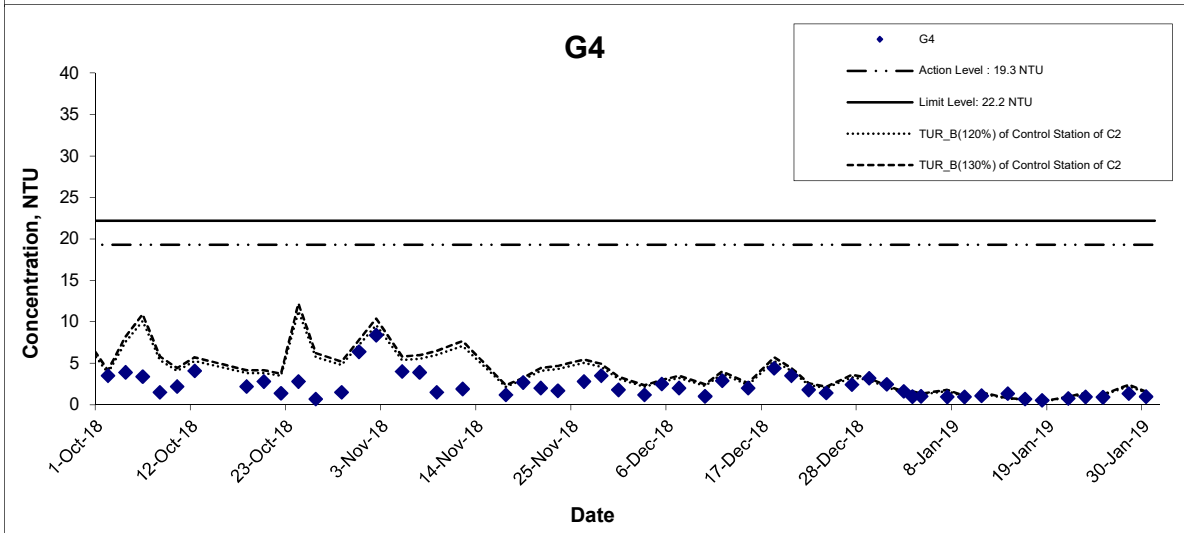
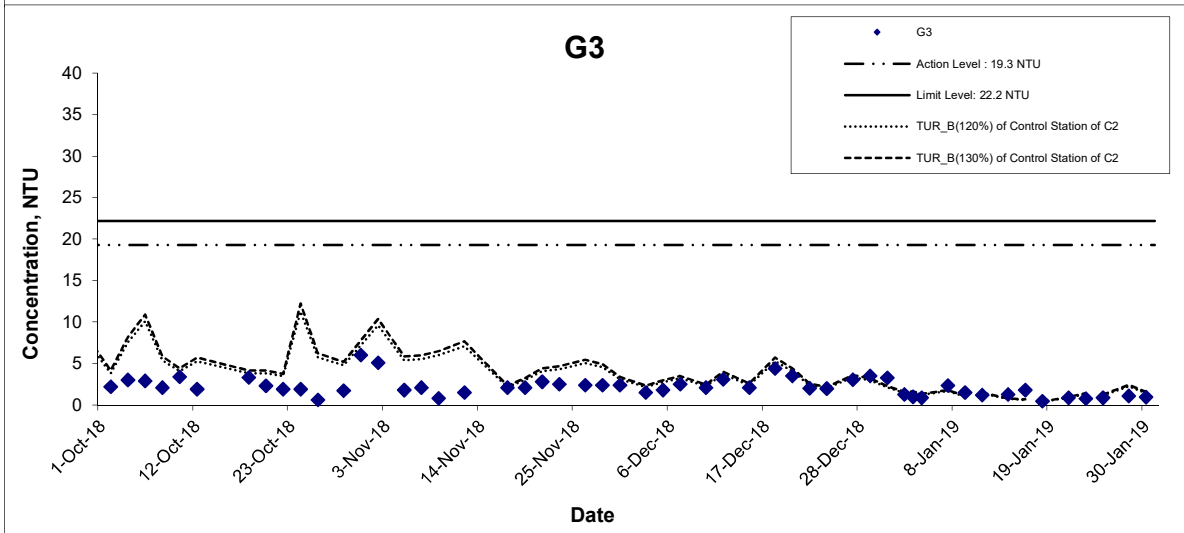
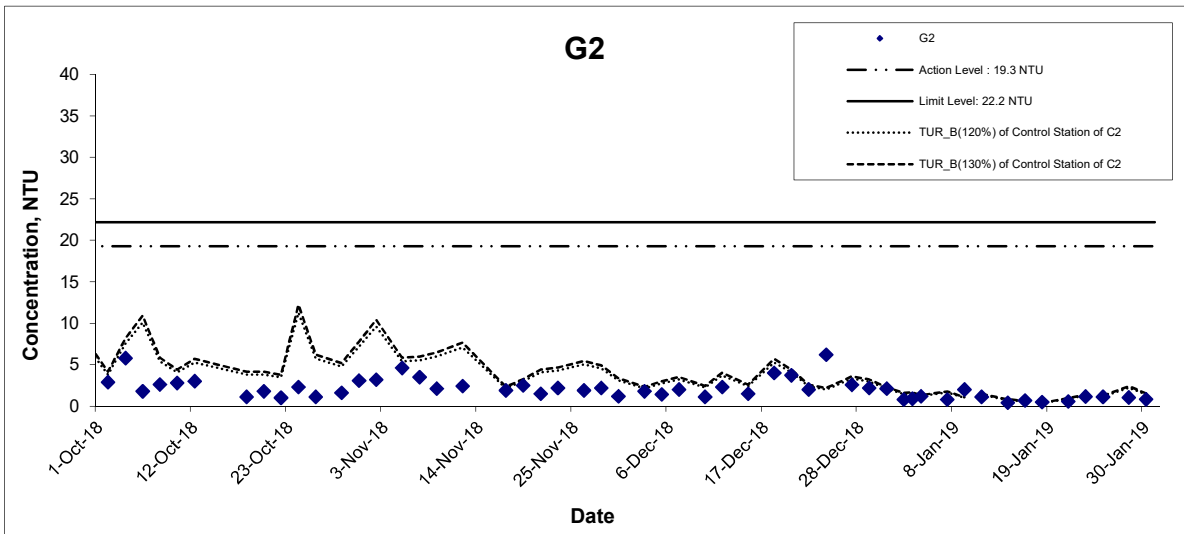
### Turbidity (Bottom) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	Scale	N.T.S	Project No.	MA16034	<b>CINOTECH</b>
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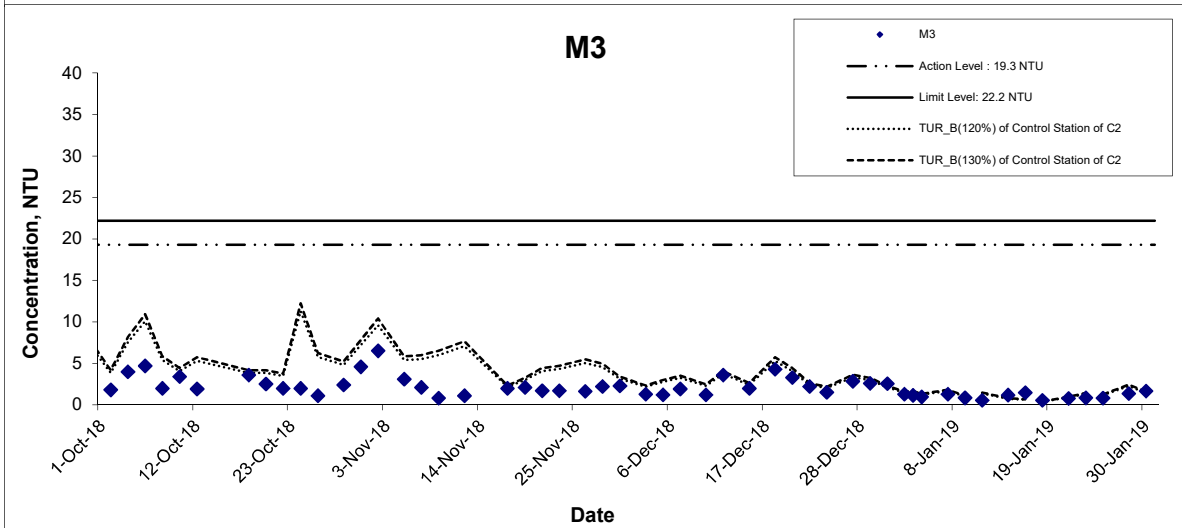
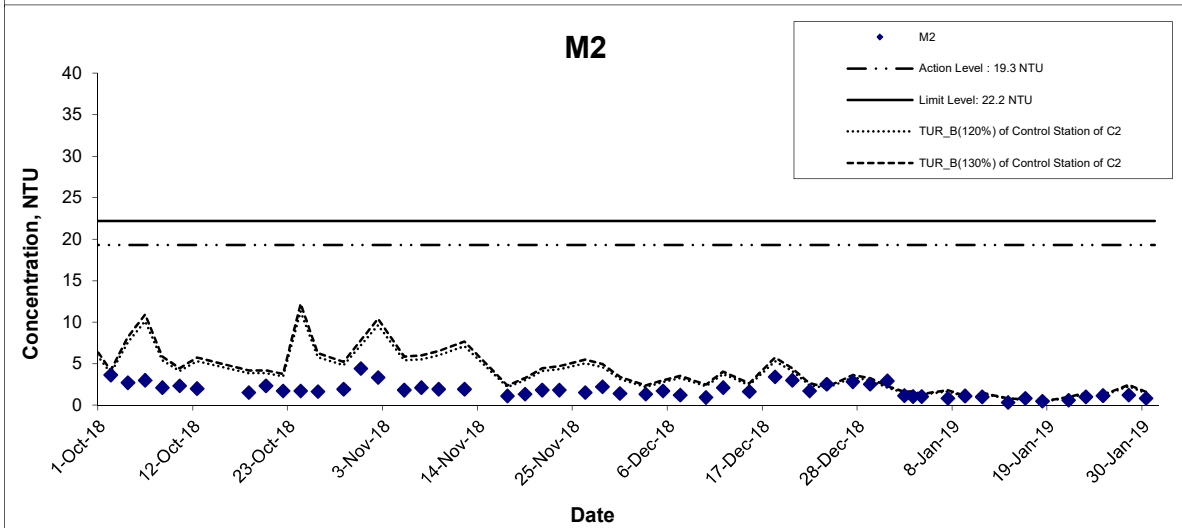
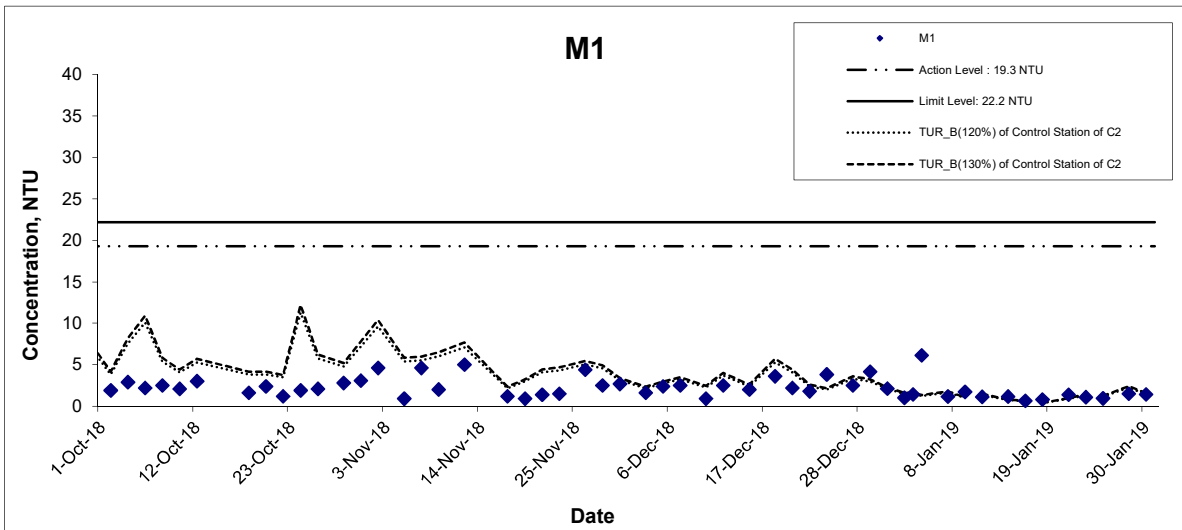


### Turbidity (Bottom) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	Scale	N.T.S	Project No.	MA16034	<b>CINOTECH</b>
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## Turbidity (Bottom) at Mid-Ebb Tide



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

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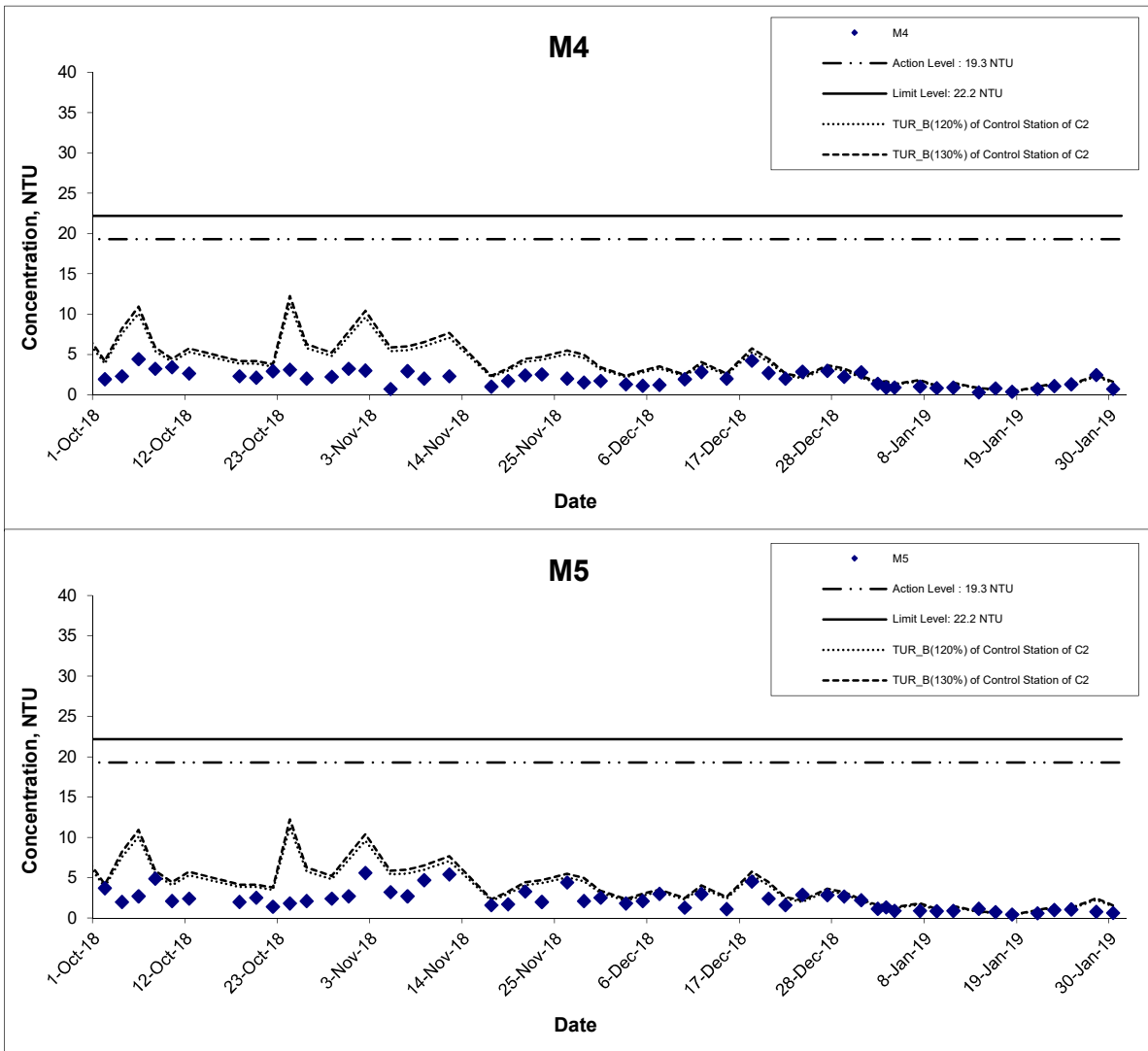
Date Jan 19

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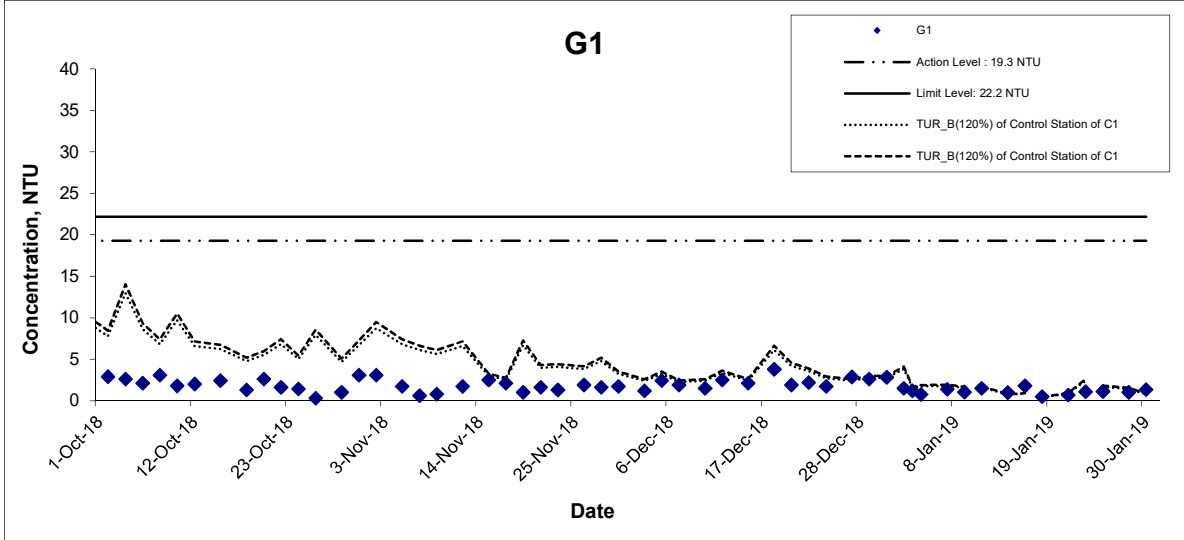
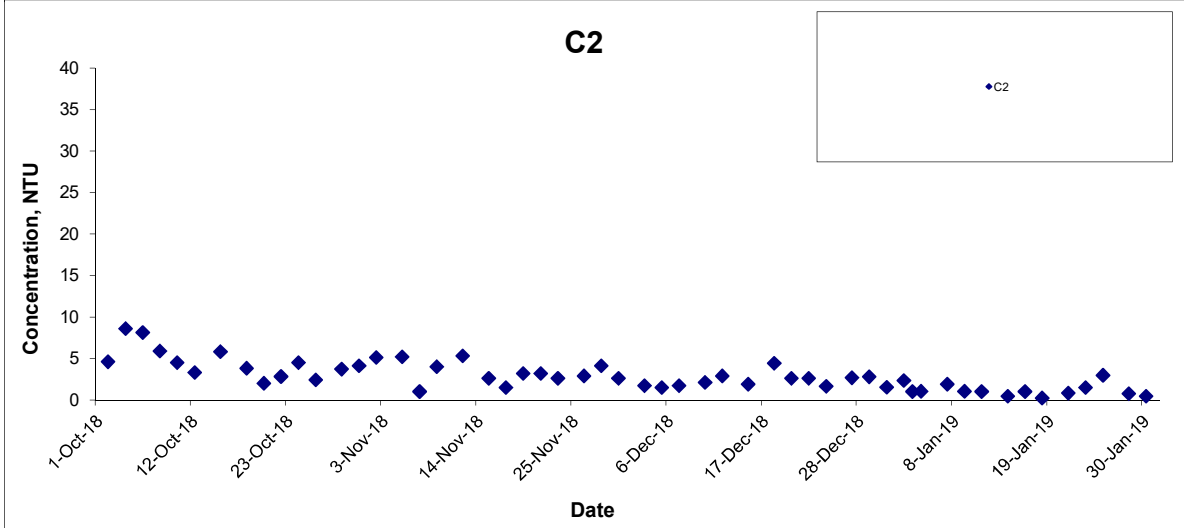
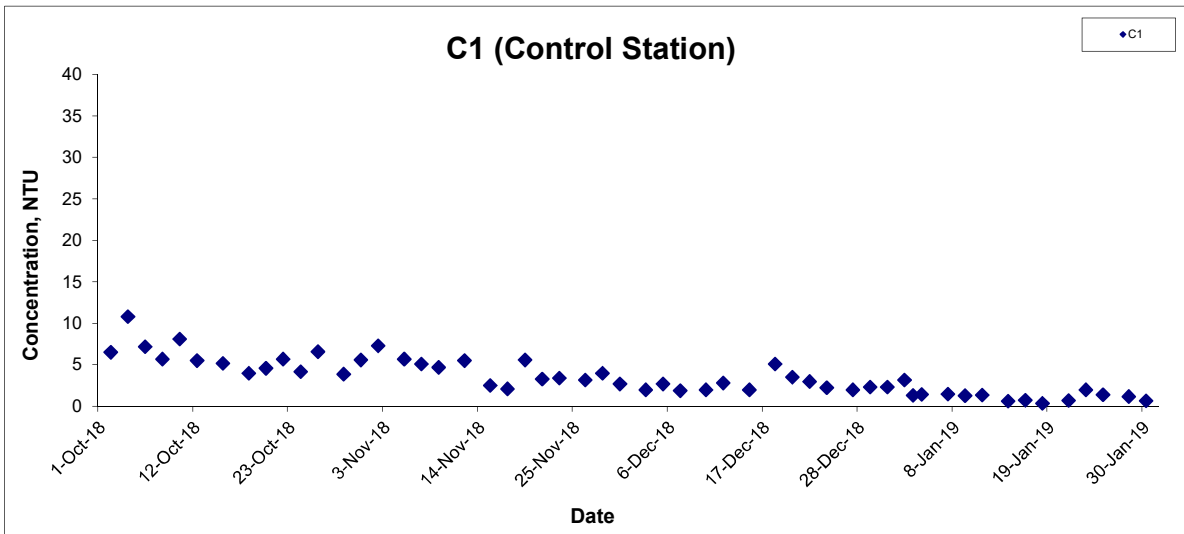
## Turbidity (Bottom) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	Scale	N.T.S	Project No.	MA16034	CINOTECH
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## Turbidity (Bottom) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

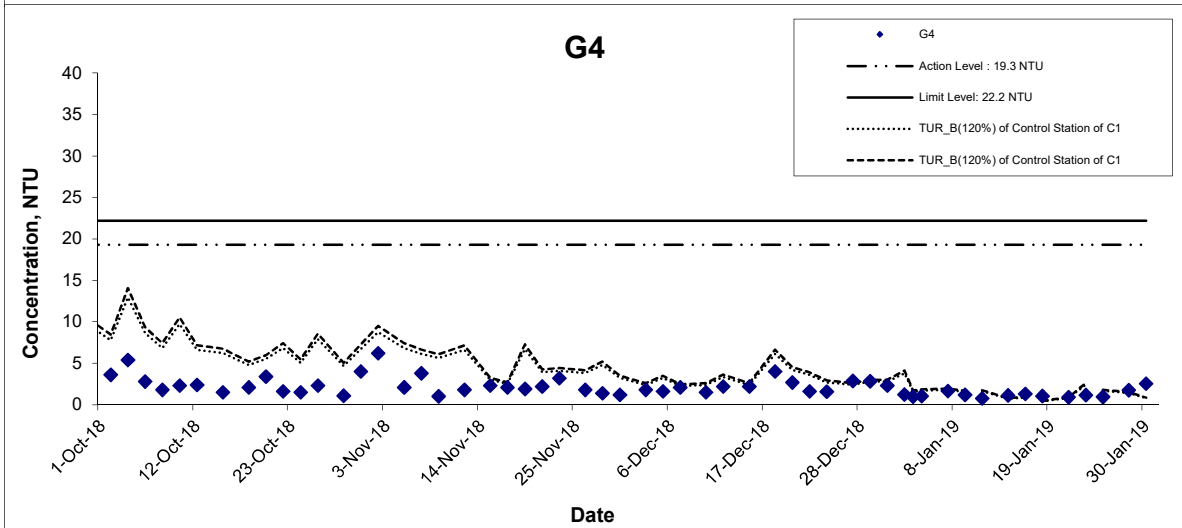
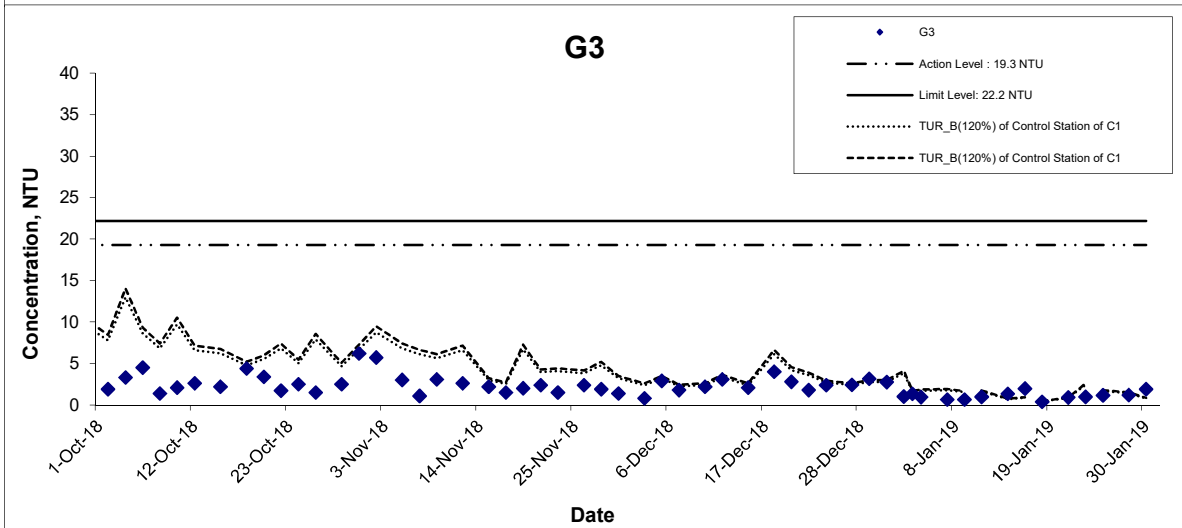
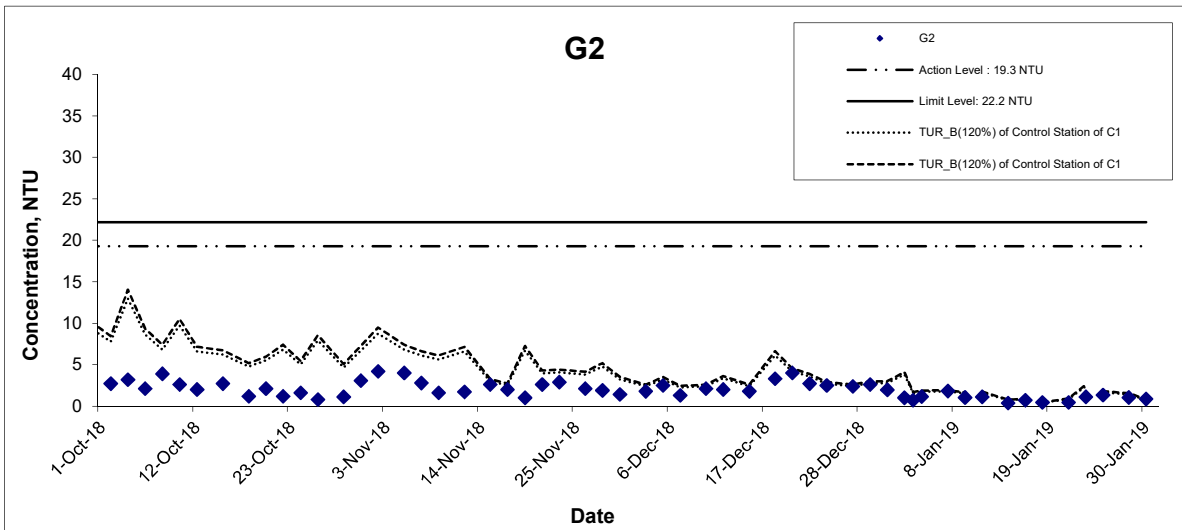
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## Turbidity (Bottom) at Mid-Flood Tide



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

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Scale N.T.S

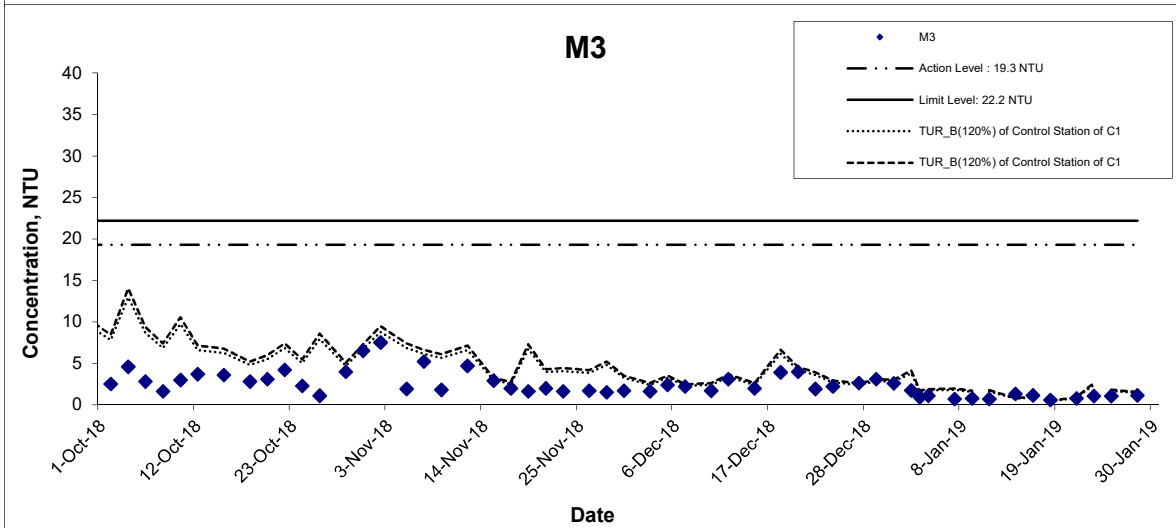
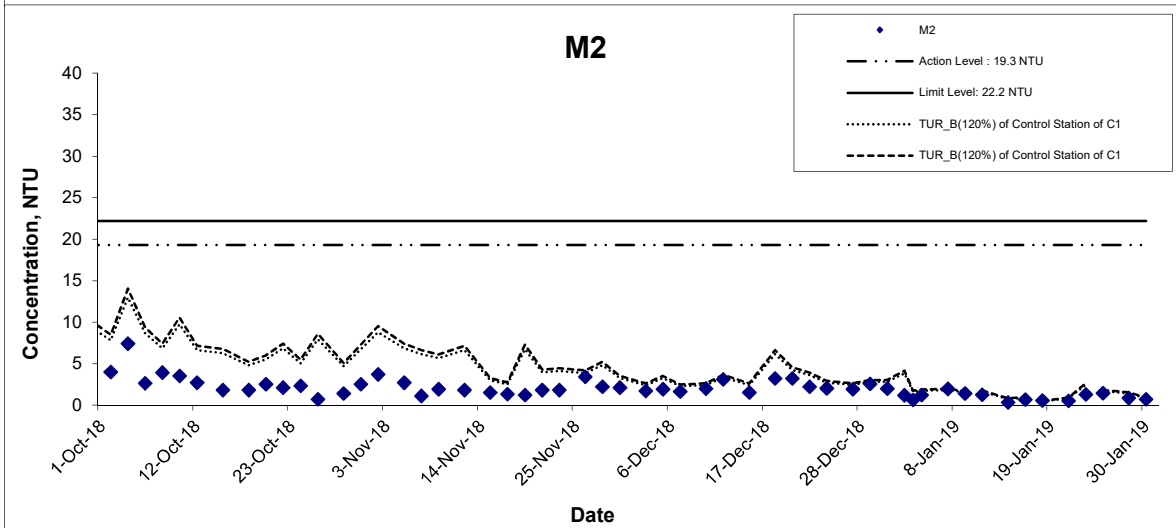
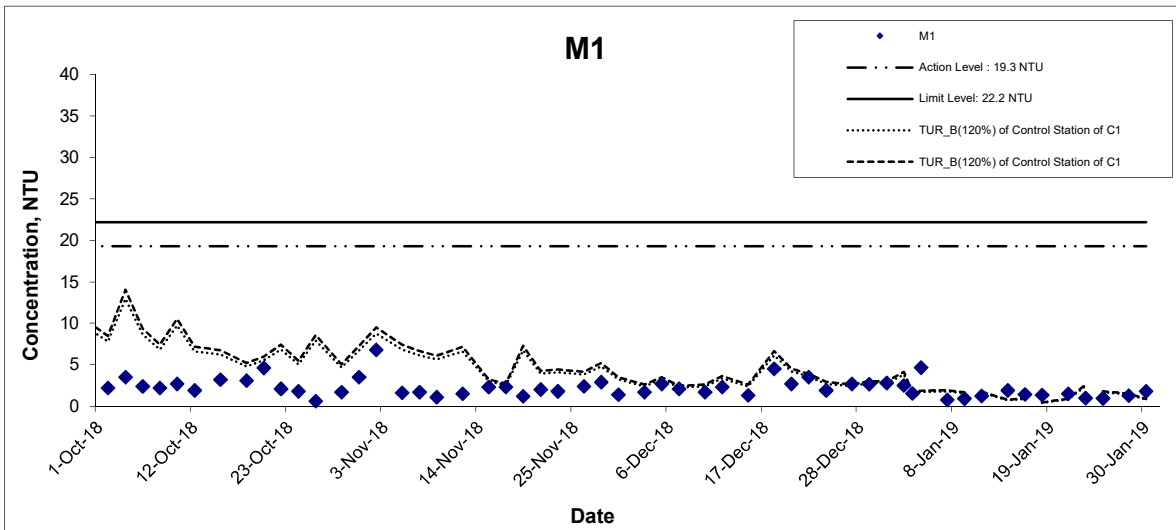
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## Turbidity (Bottom) at Mid-Flood Tide



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

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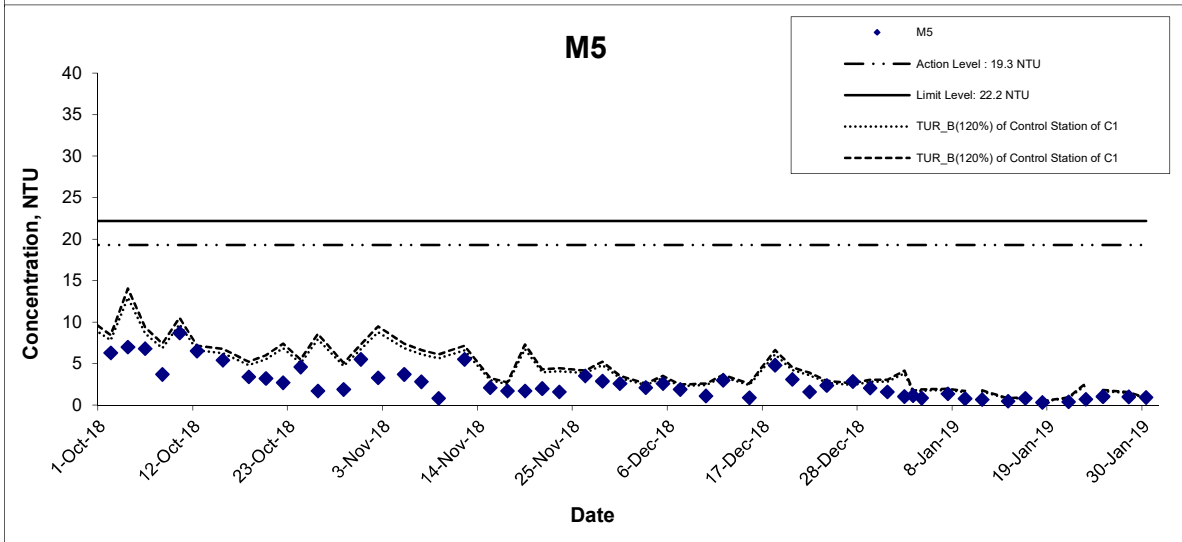
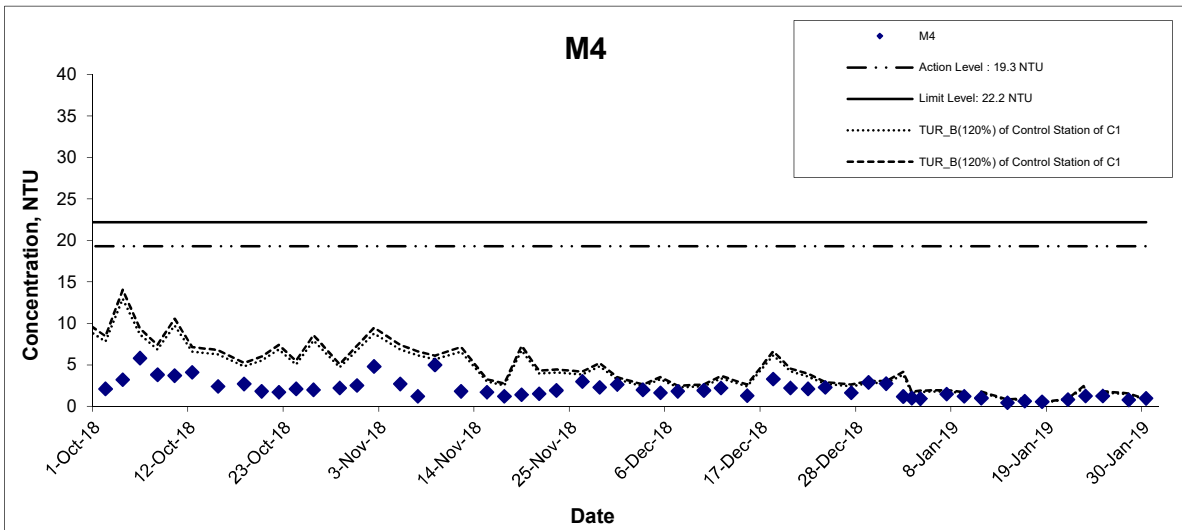
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## Turbidity (Bottom) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

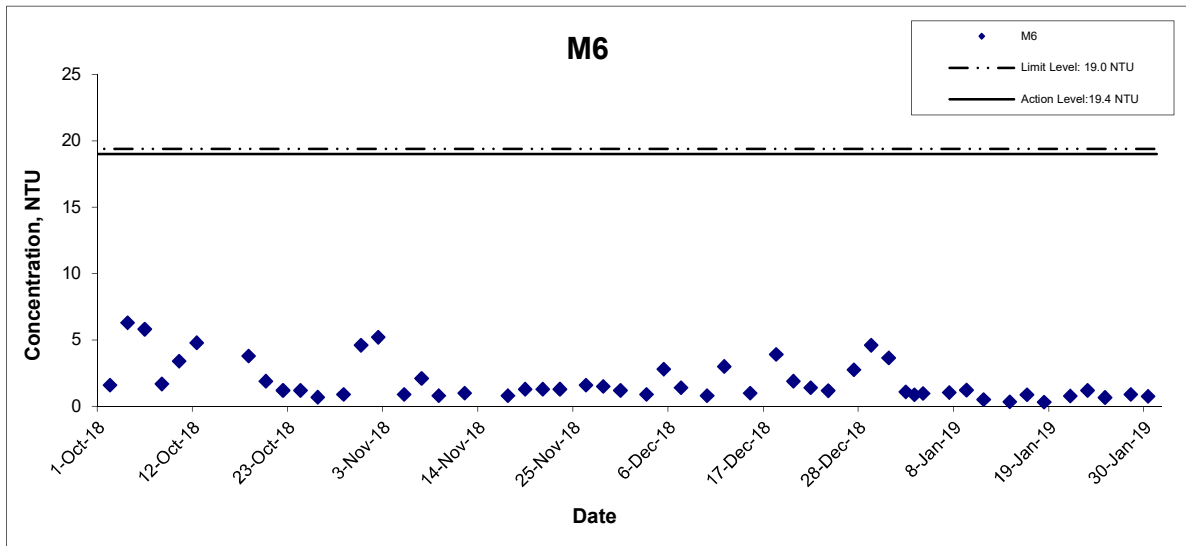
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## Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

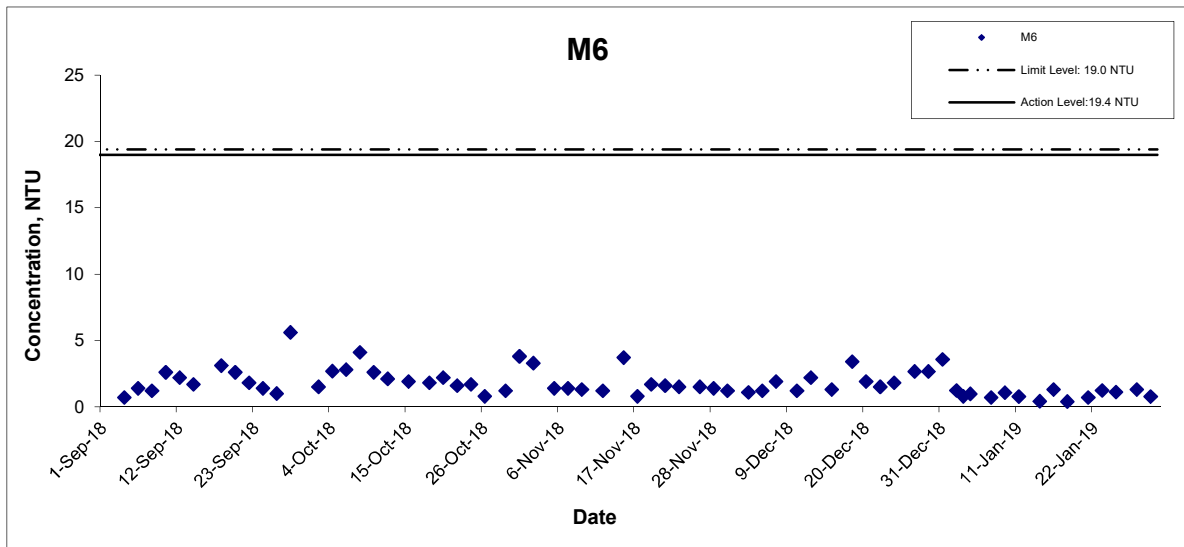
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## Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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

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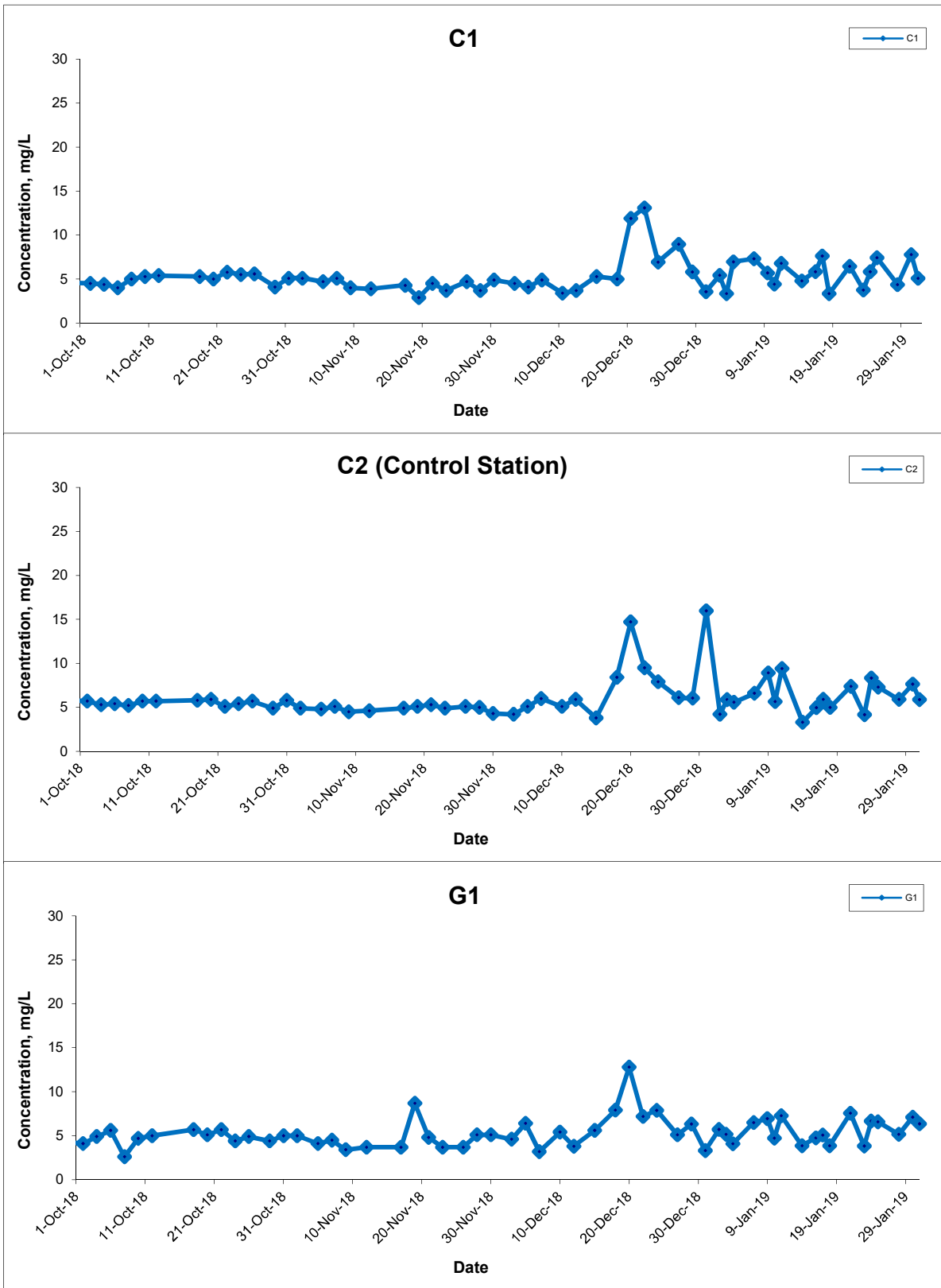
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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Scale N.T.S

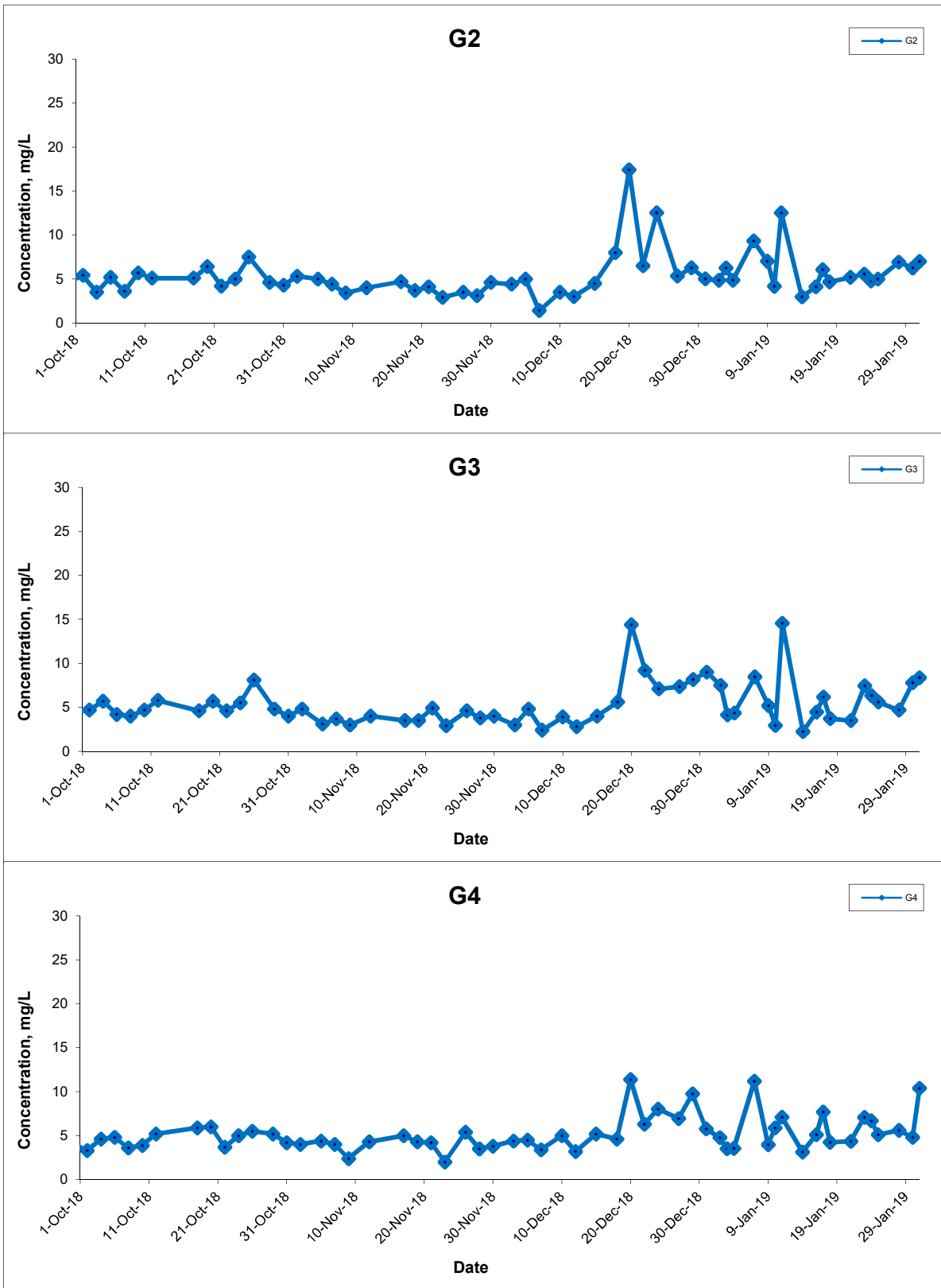
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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

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Scale N.T.S

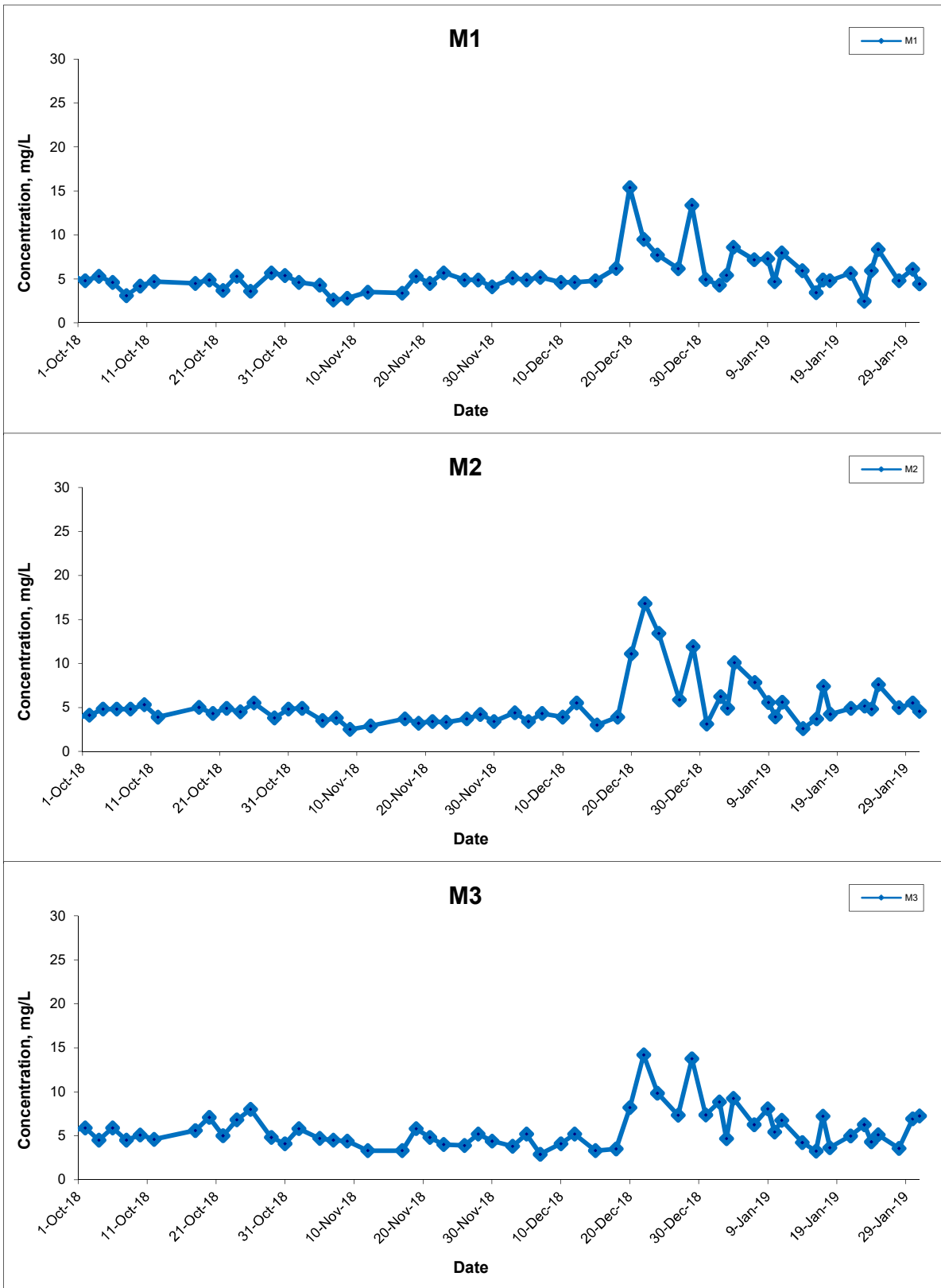
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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

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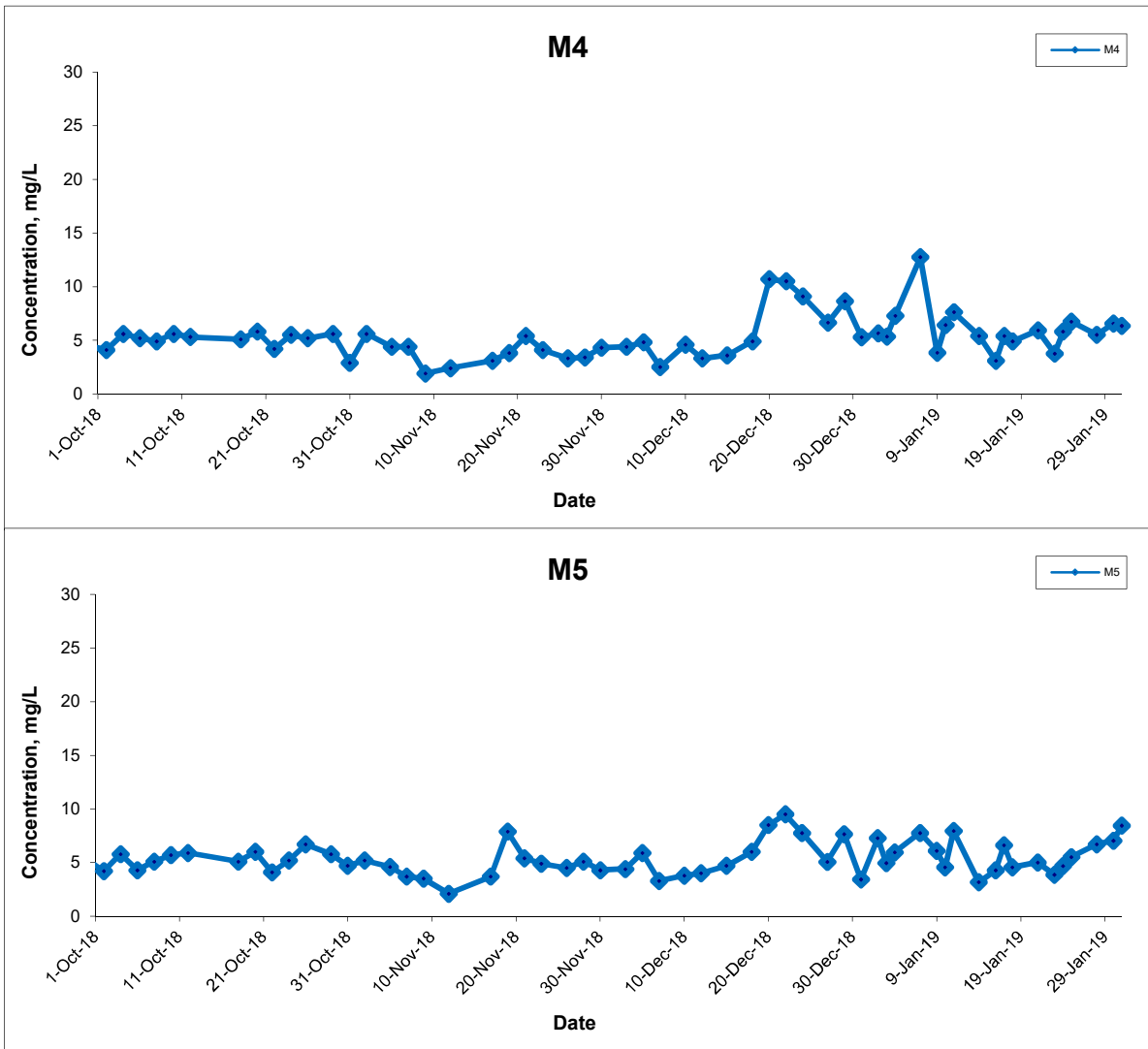
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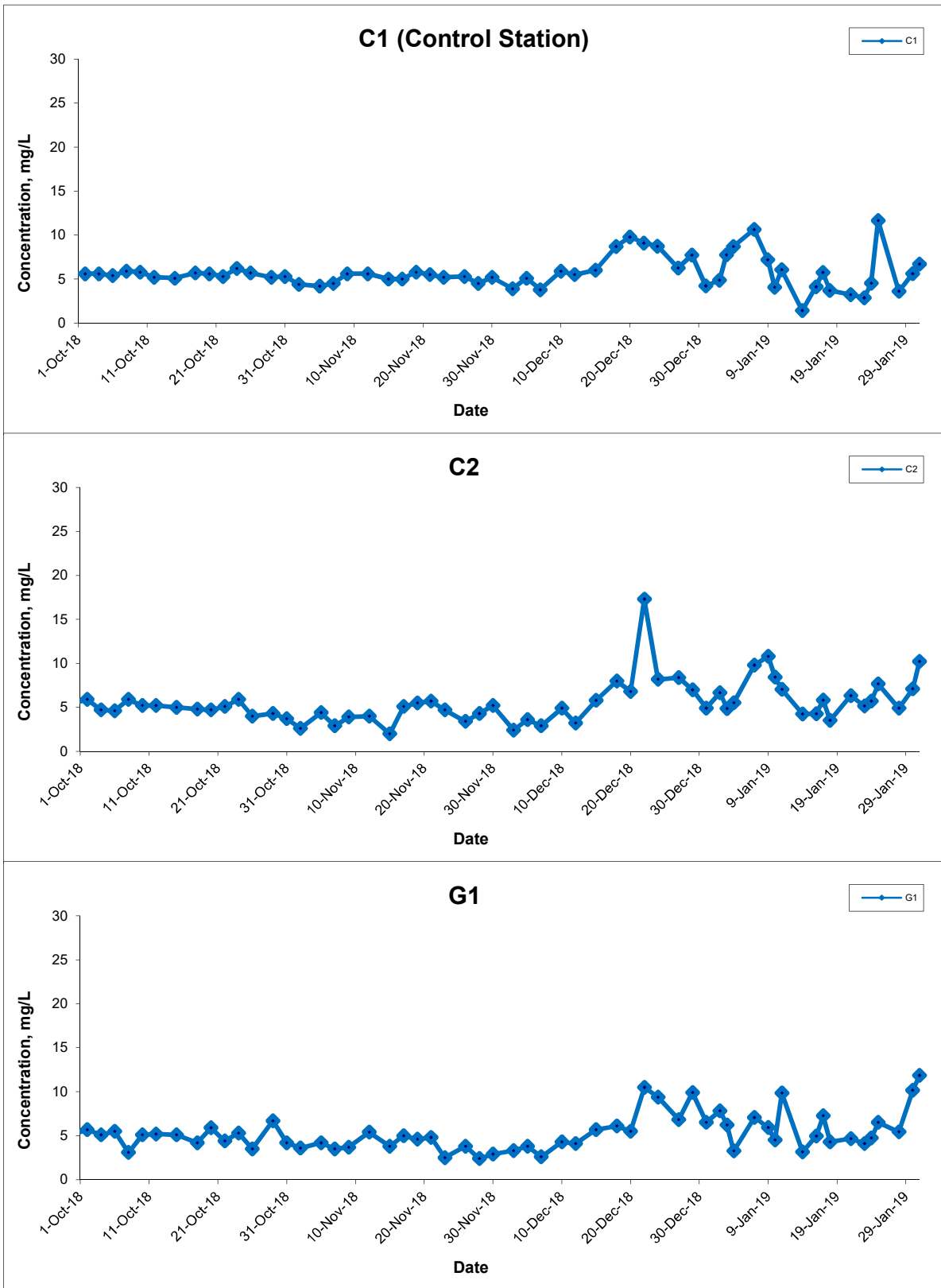


## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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



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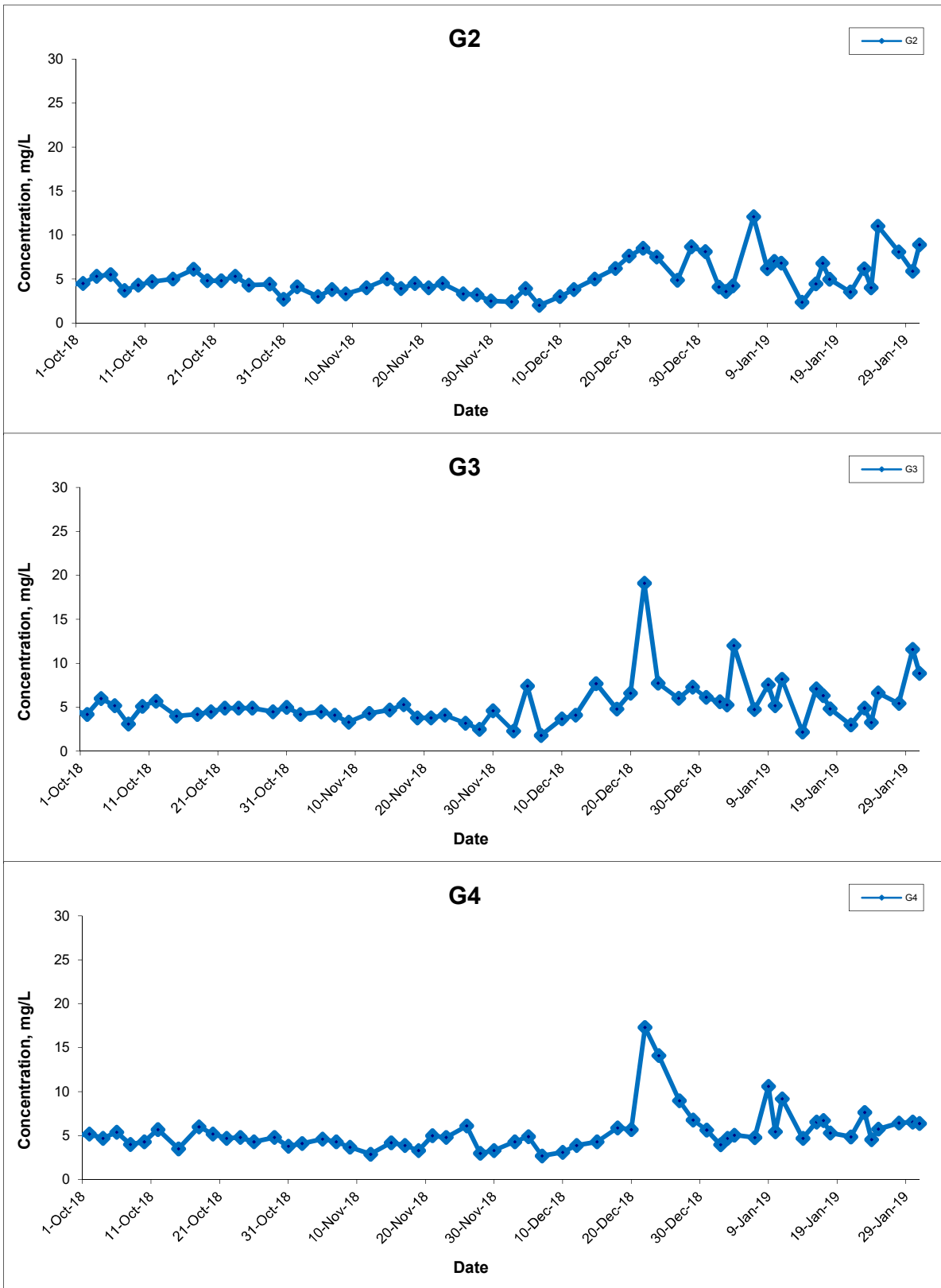
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## Suspended Solids (Depth-averaged) at Mid-Flood Tide



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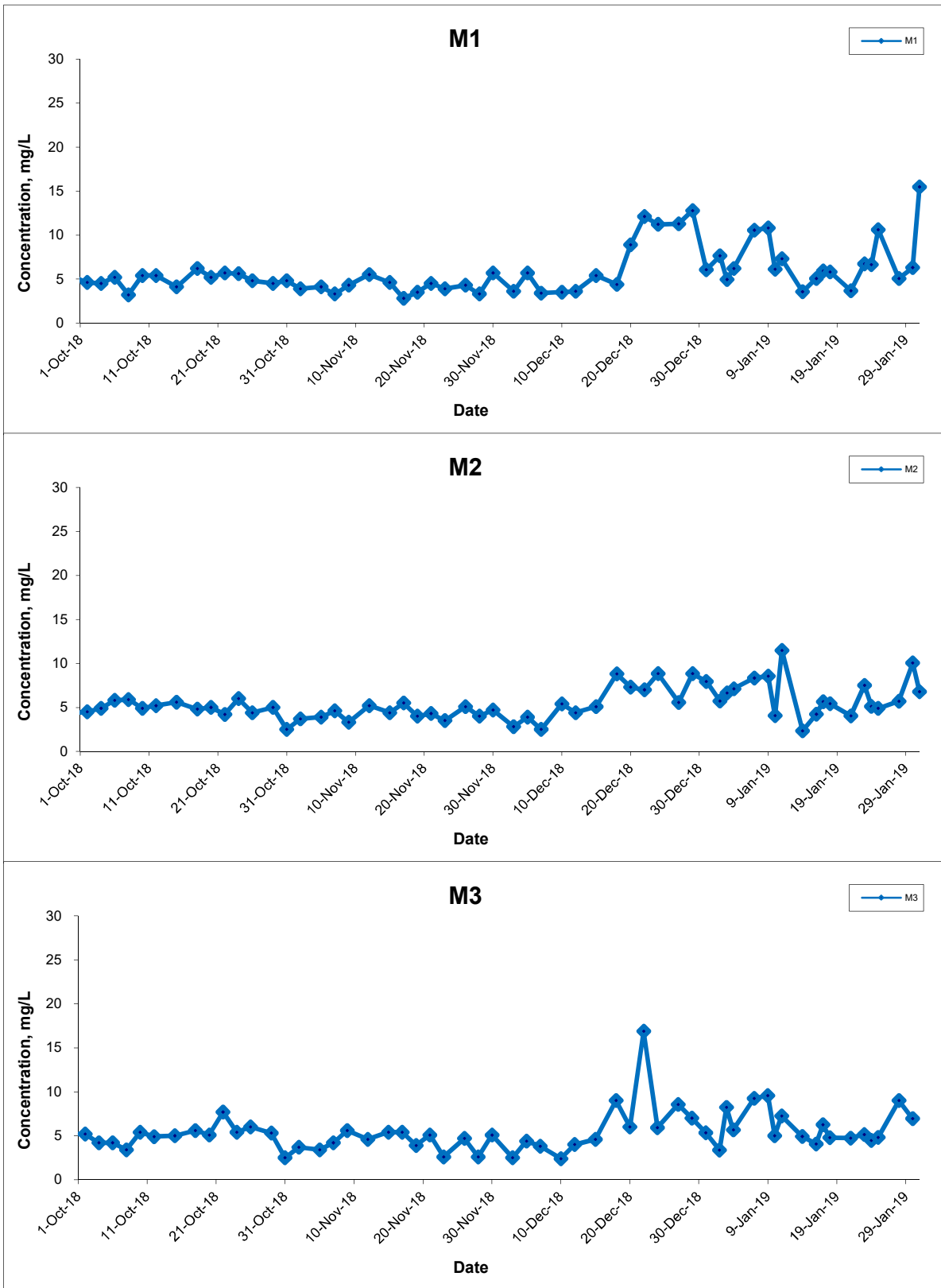
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## Suspended Solids (Depth-averaged) at Mid-Flood Tide



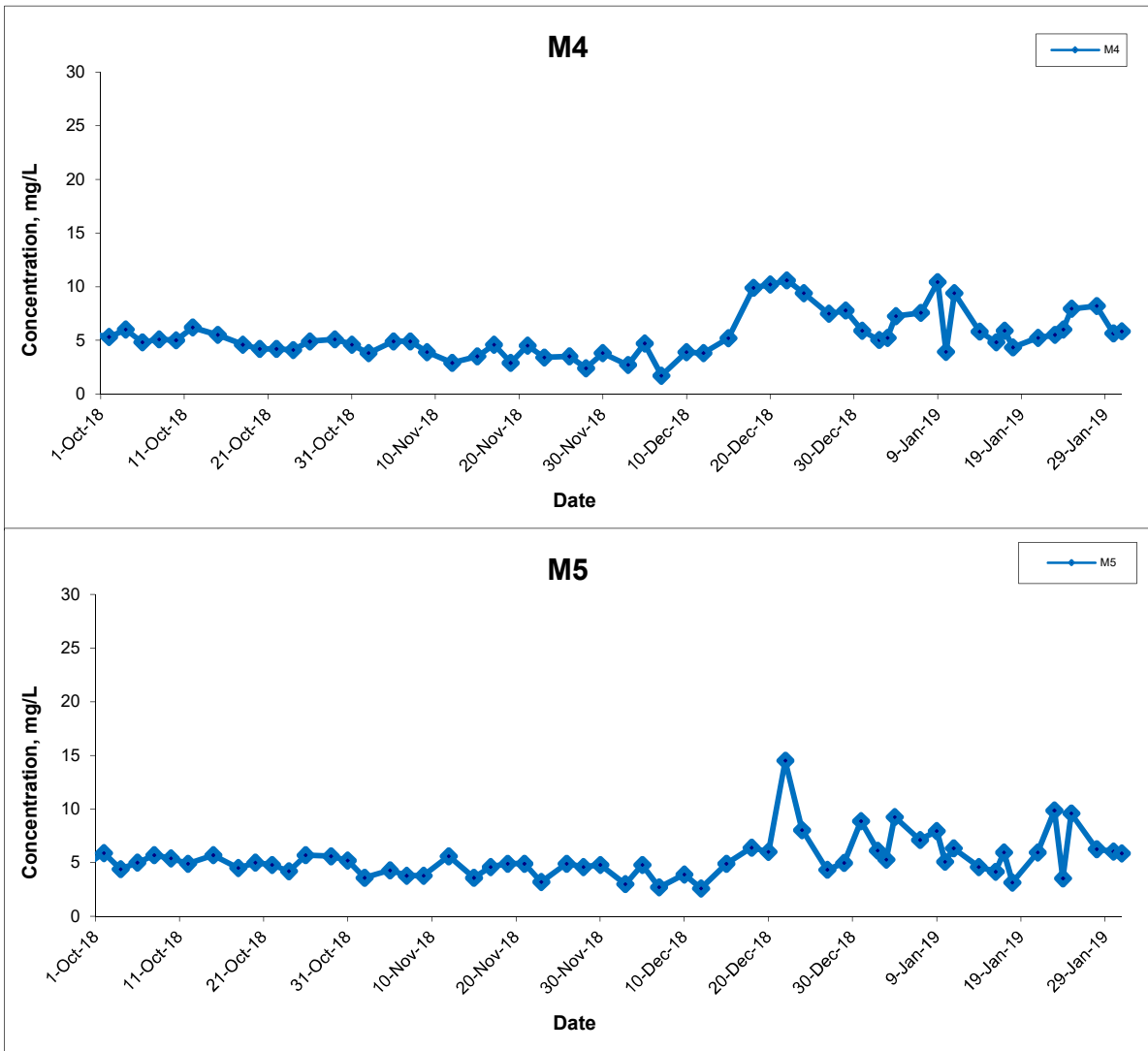
Title Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction  
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## Suspended Solids (Depth-averaged) at Mid-Flood Tide



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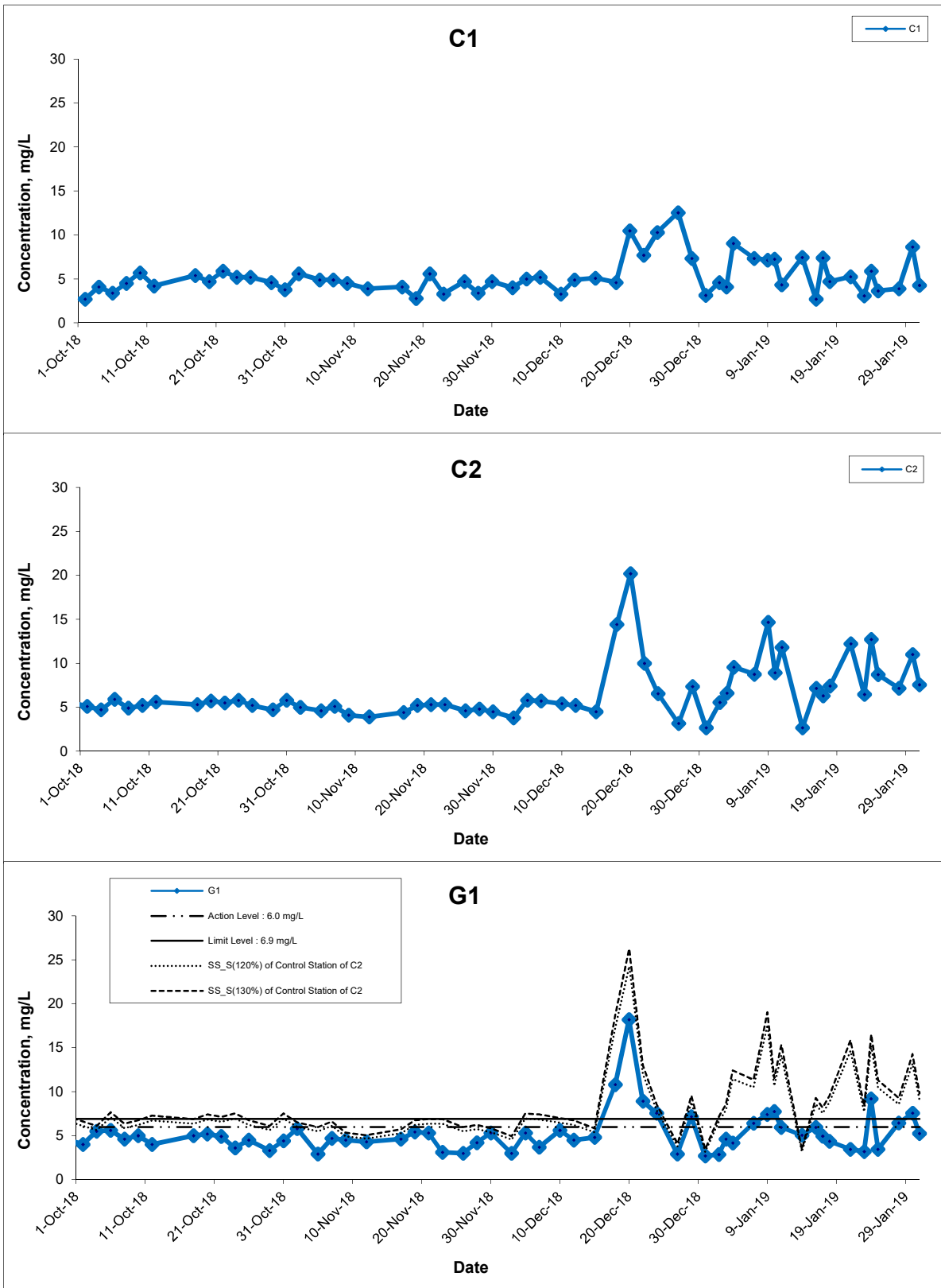
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## Suspended Solids (Surface) at Mid-Ebb Tide



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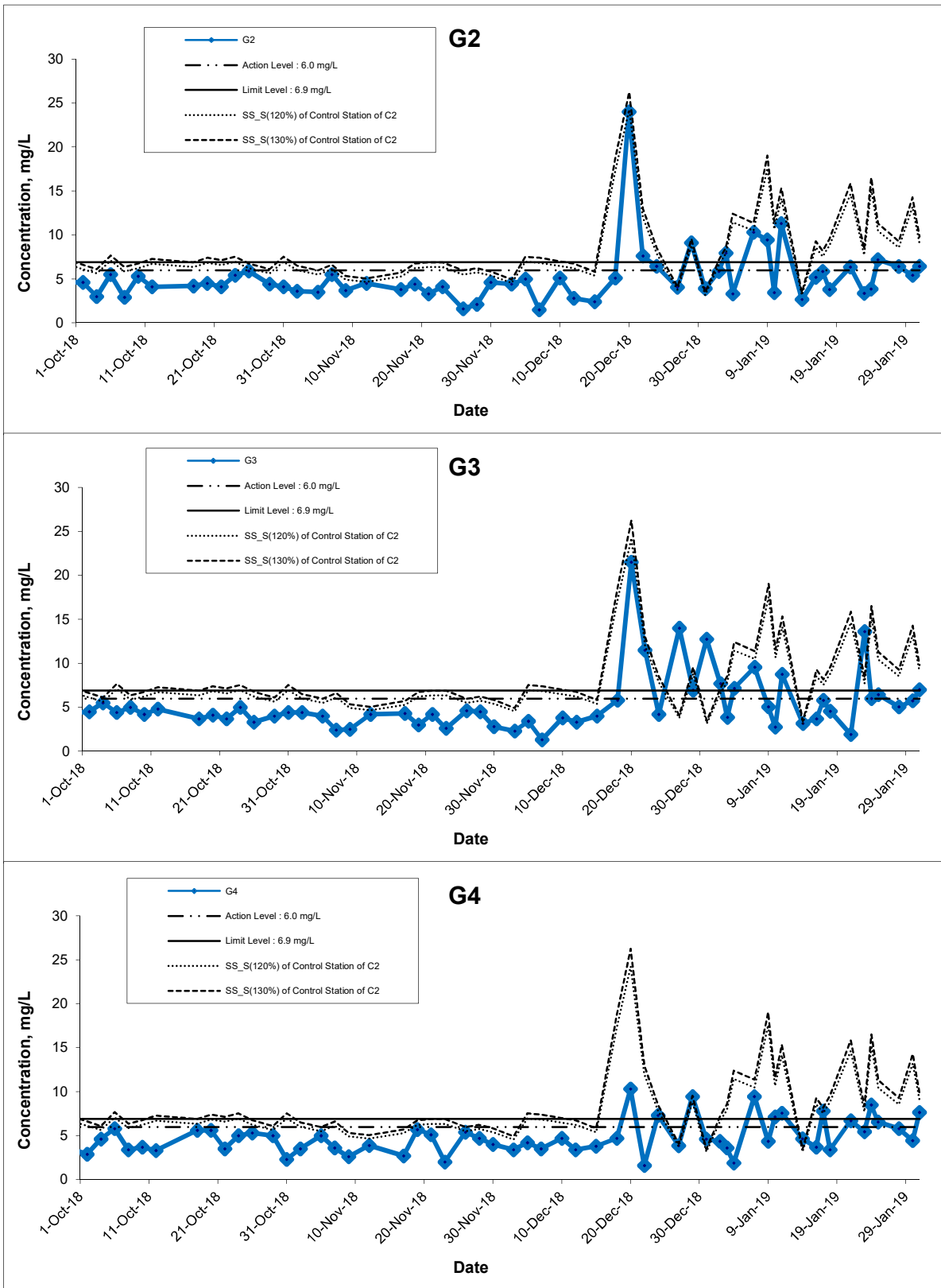
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## Suspended Solids (Surface) at Mid-Ebb Tide



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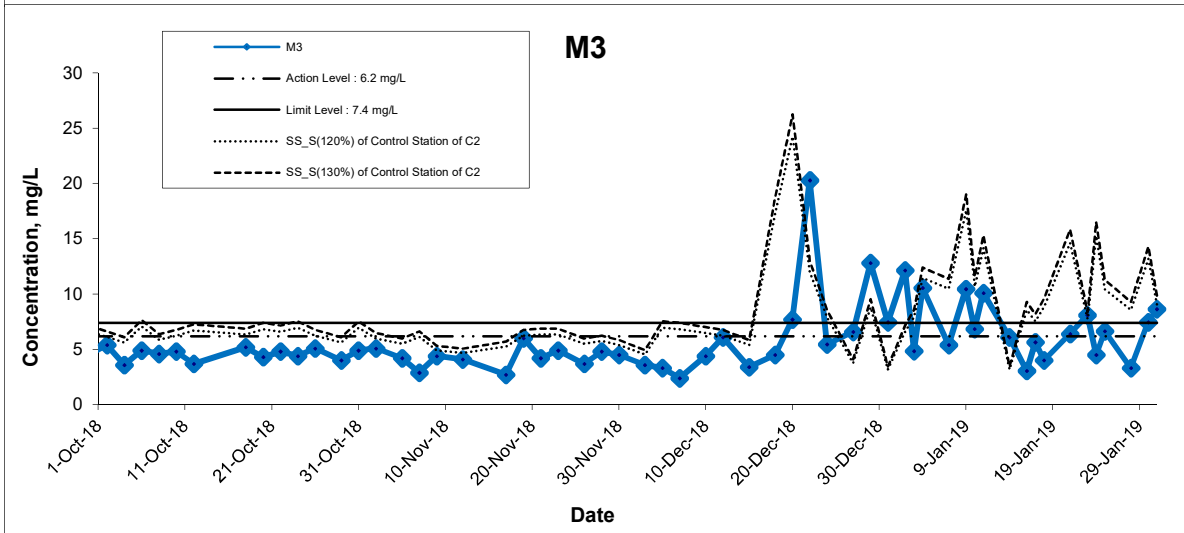
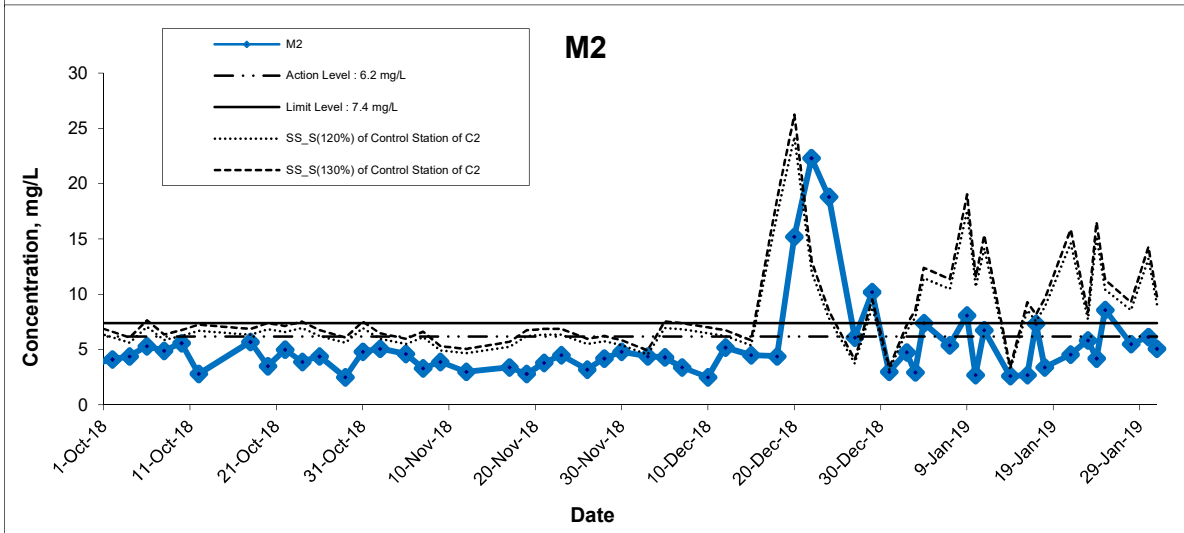
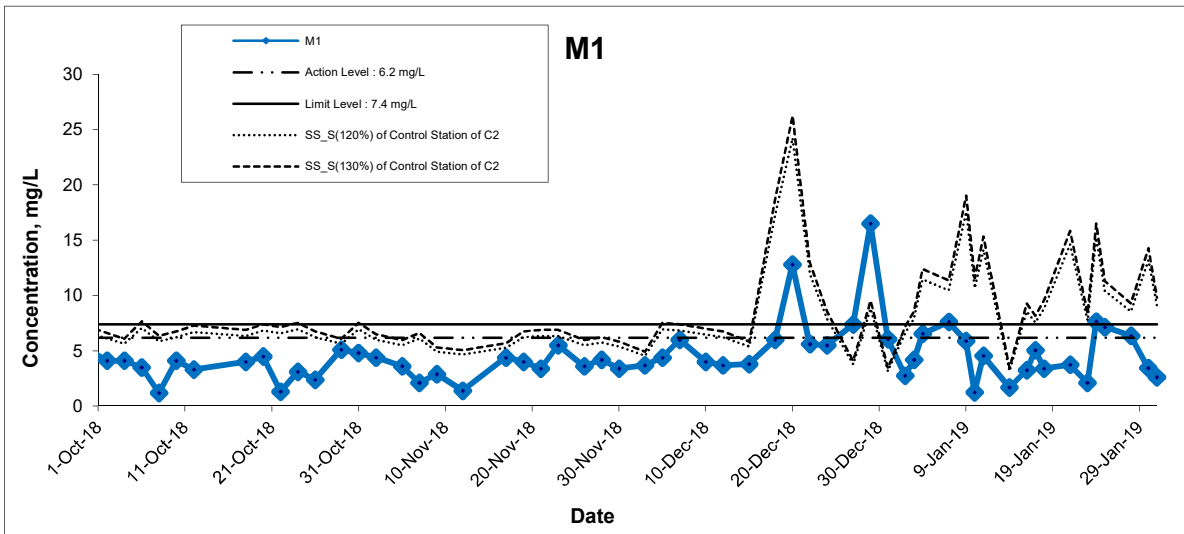
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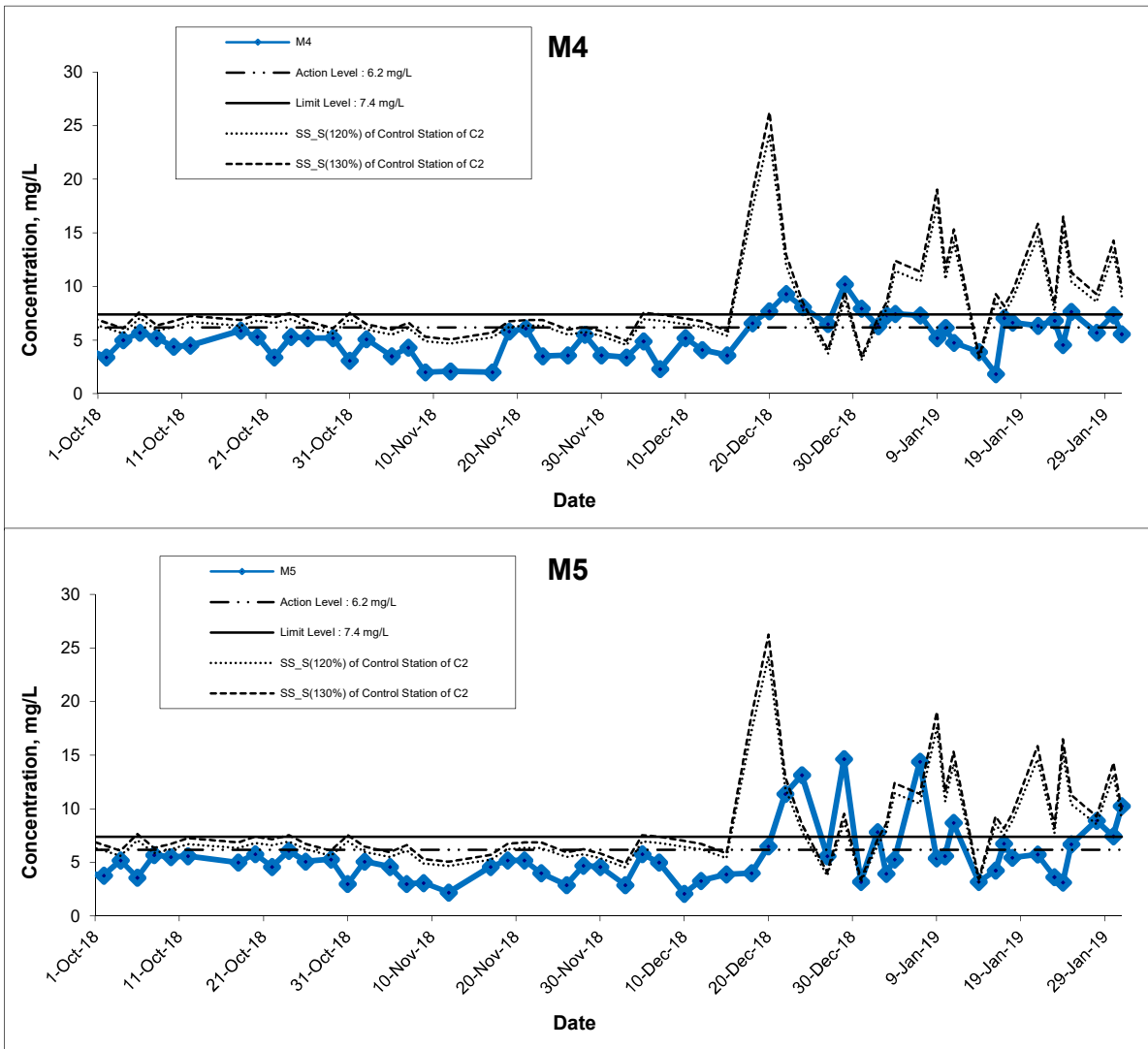


## Suspended Solids (Surface) at Mid-Ebb Tide



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## Suspended Solids (Surface) at Mid-Ebb Tide



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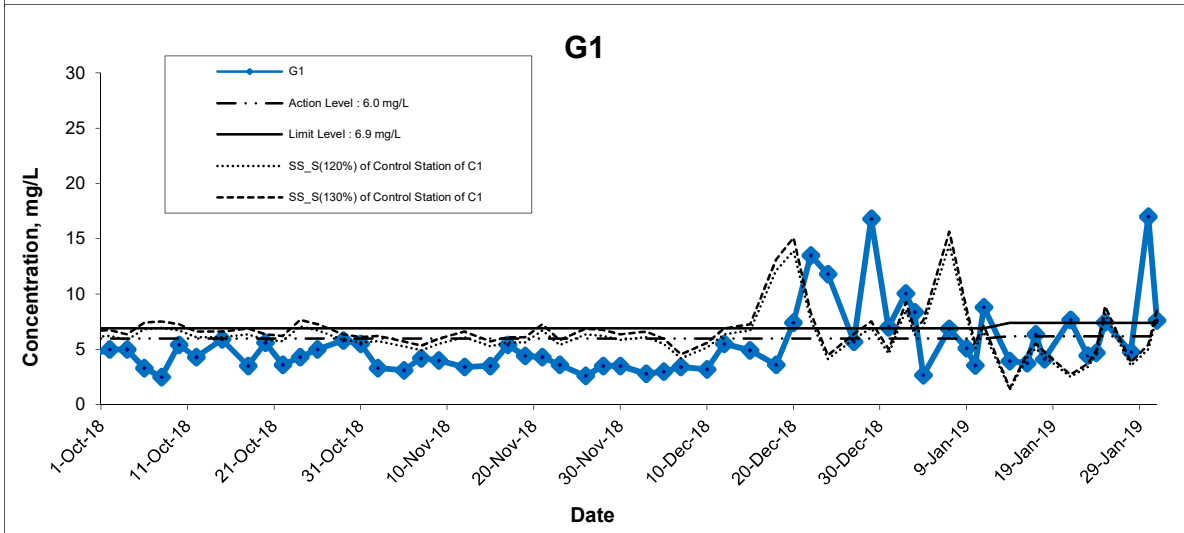
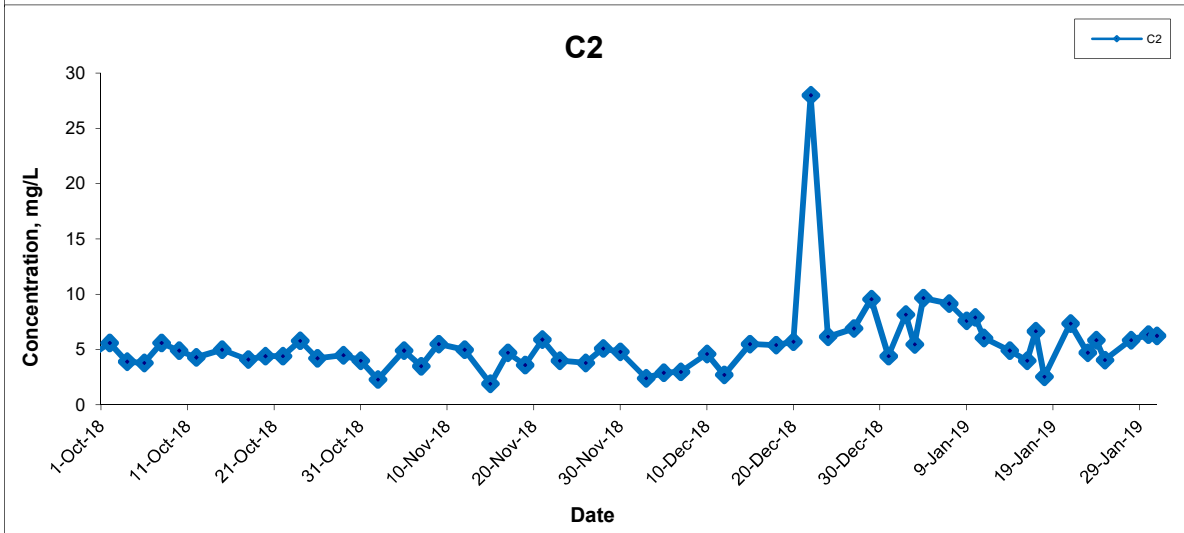
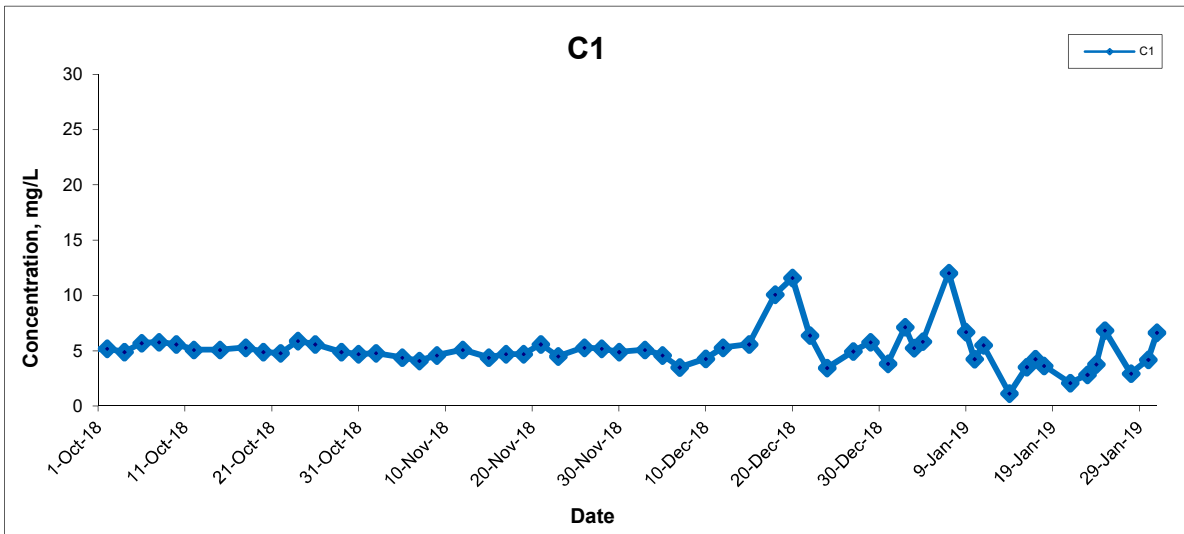
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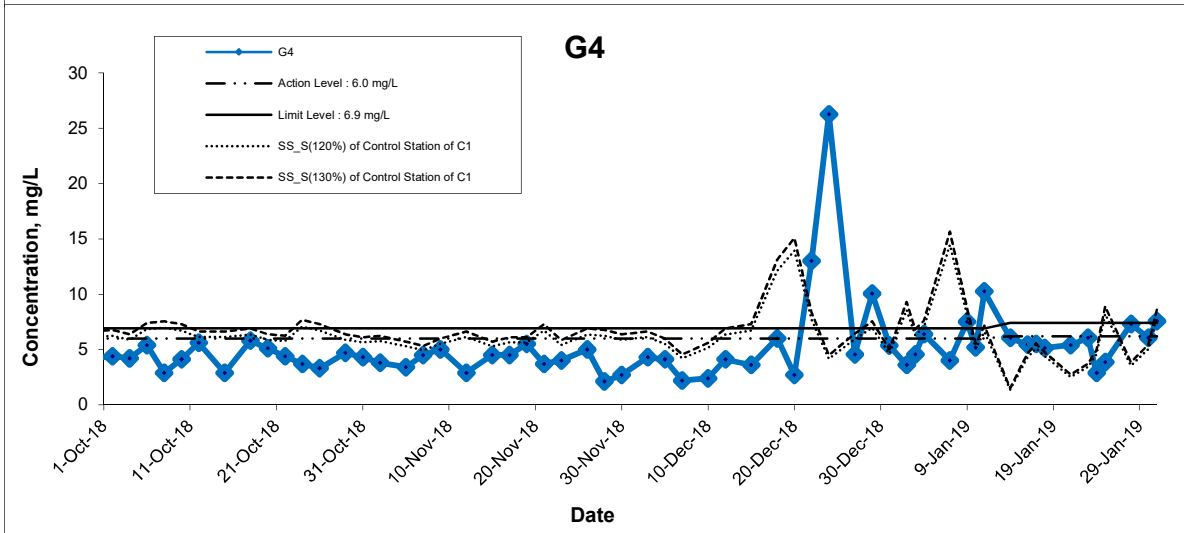
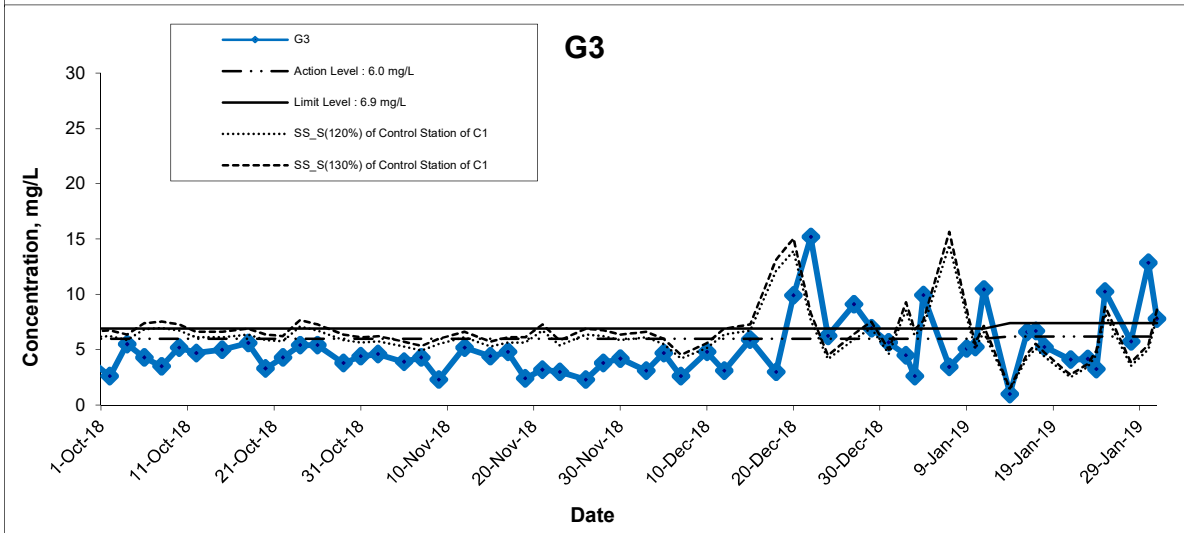
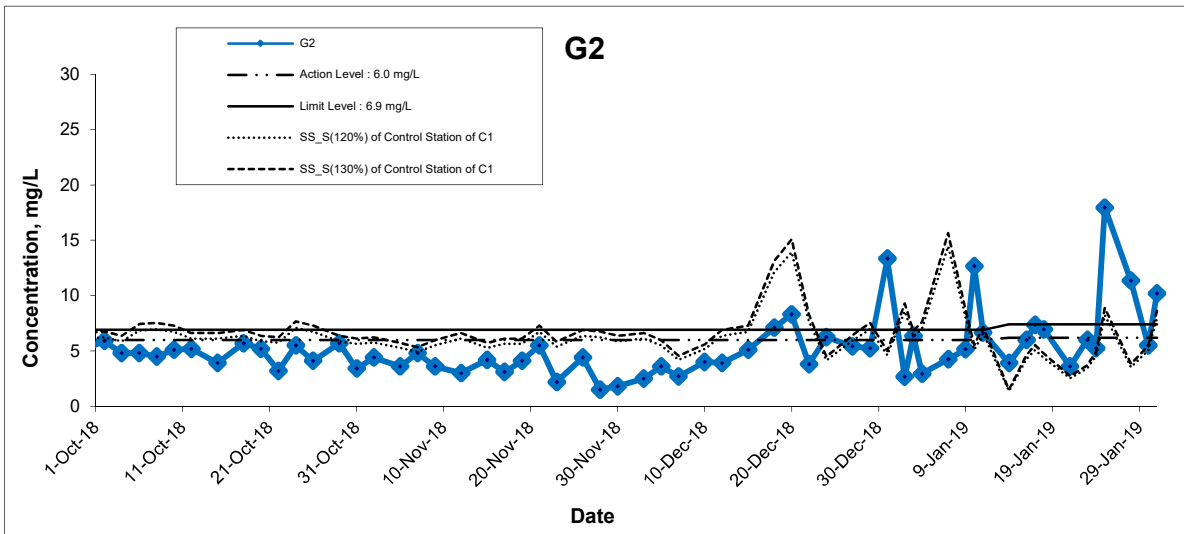


## Suspended Solids (Surface) at Mid-Flood Tide



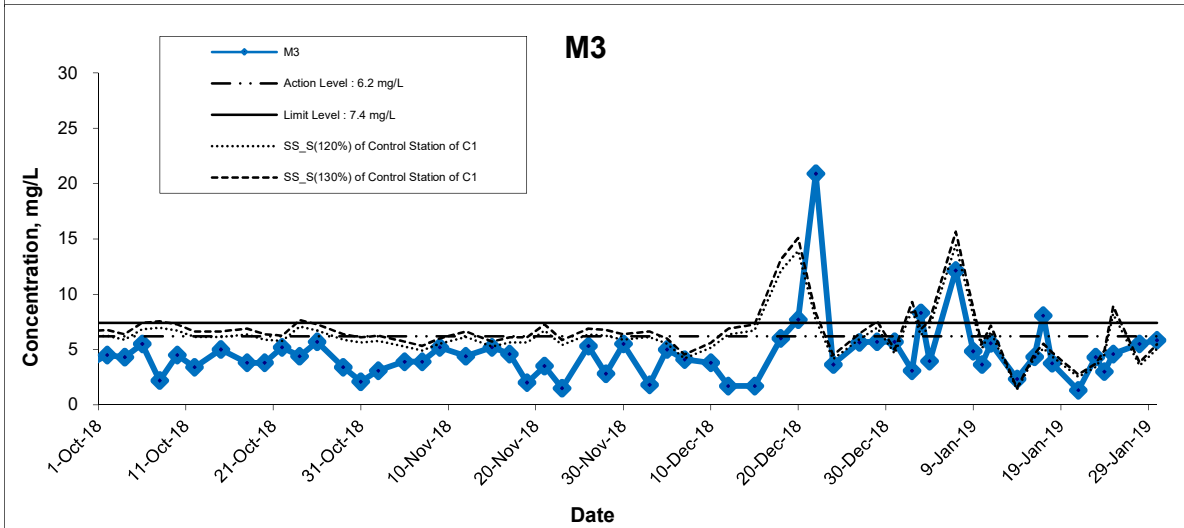
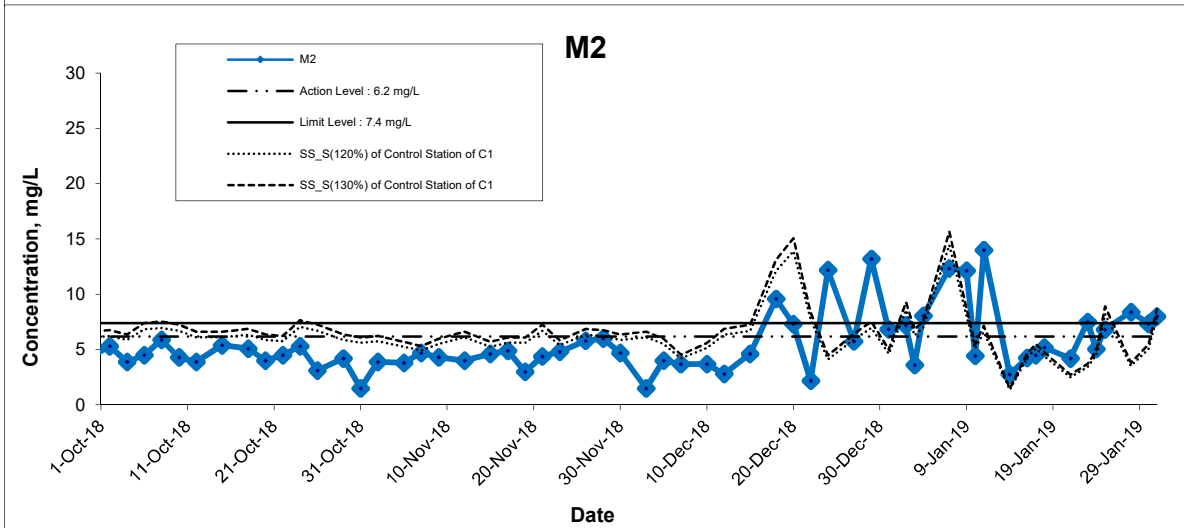
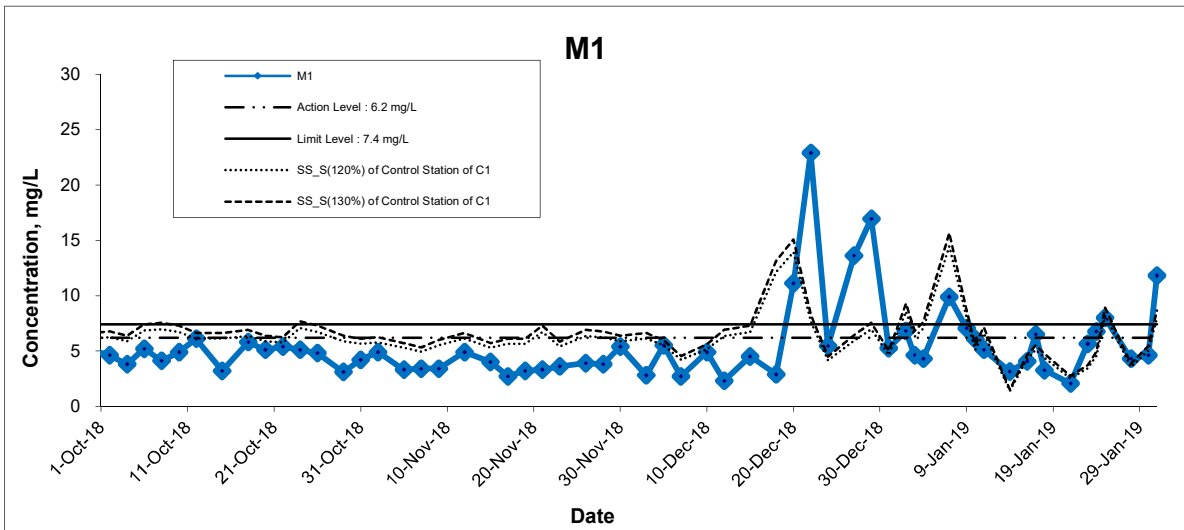
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## Suspended Solids (Surface) at Mid-Flood Tide



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

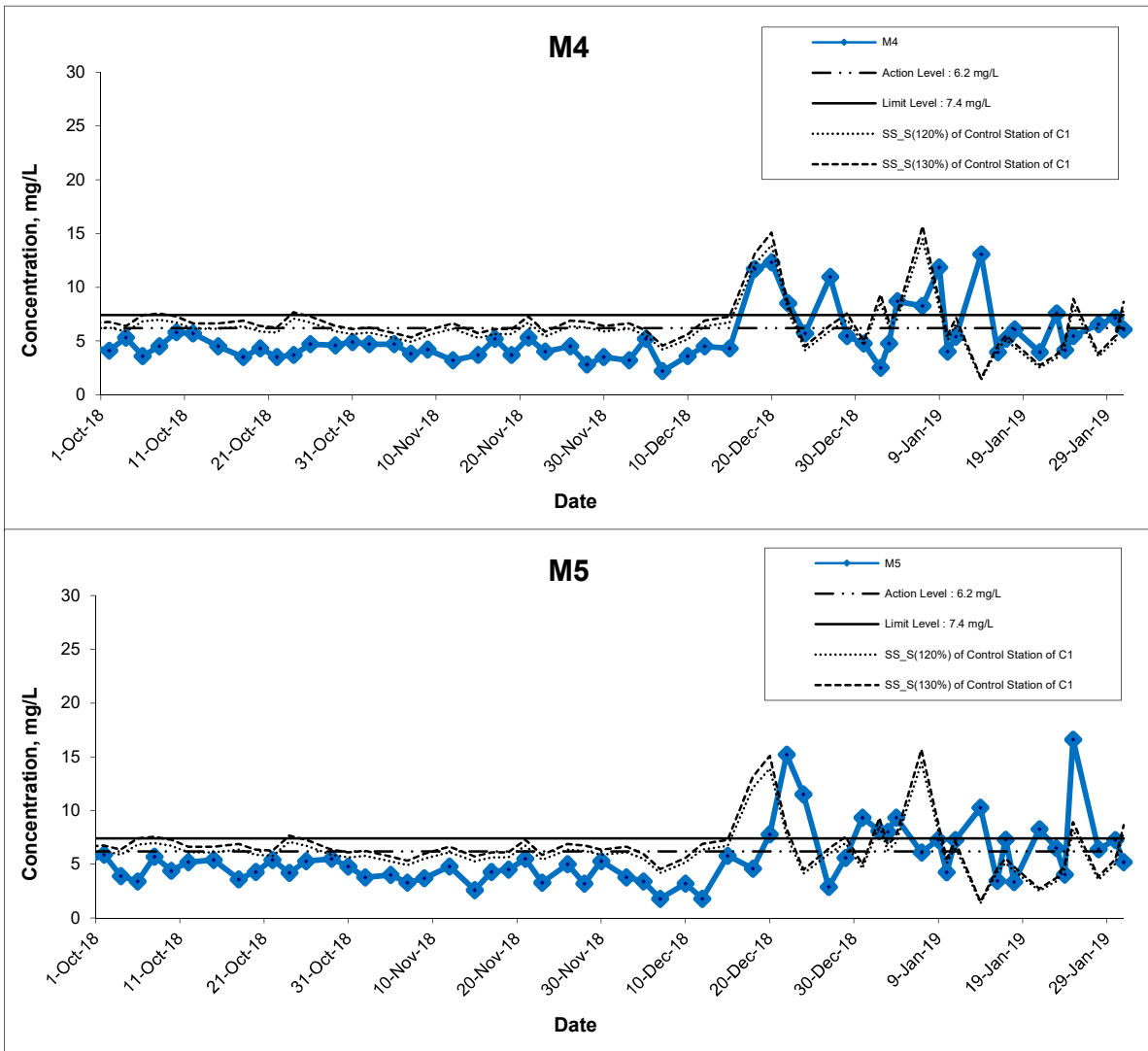
## Suspended Solids (Surface) at Mid-Flood Tide



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

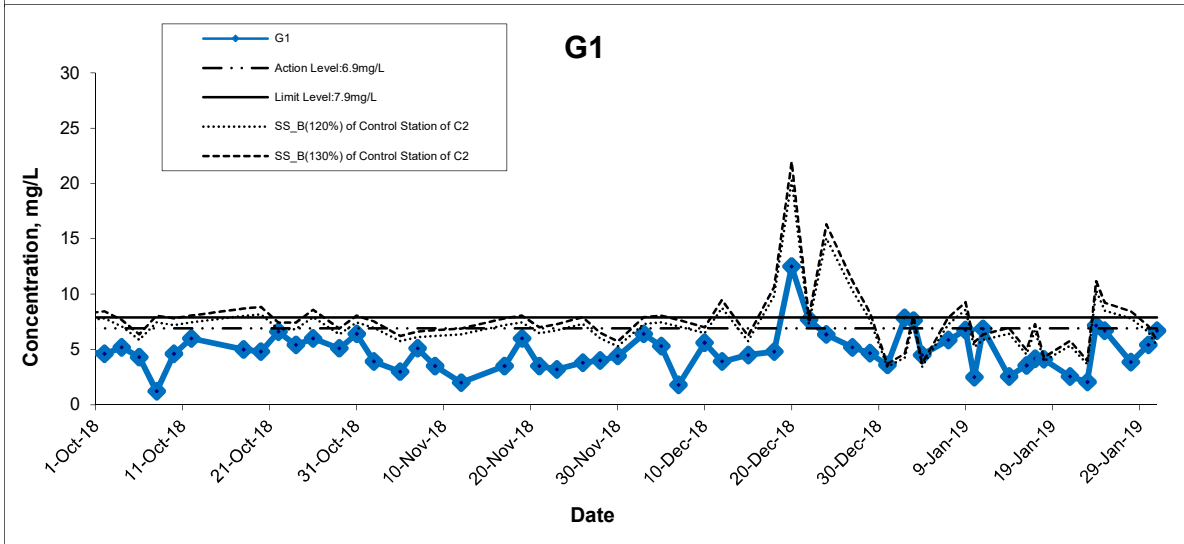
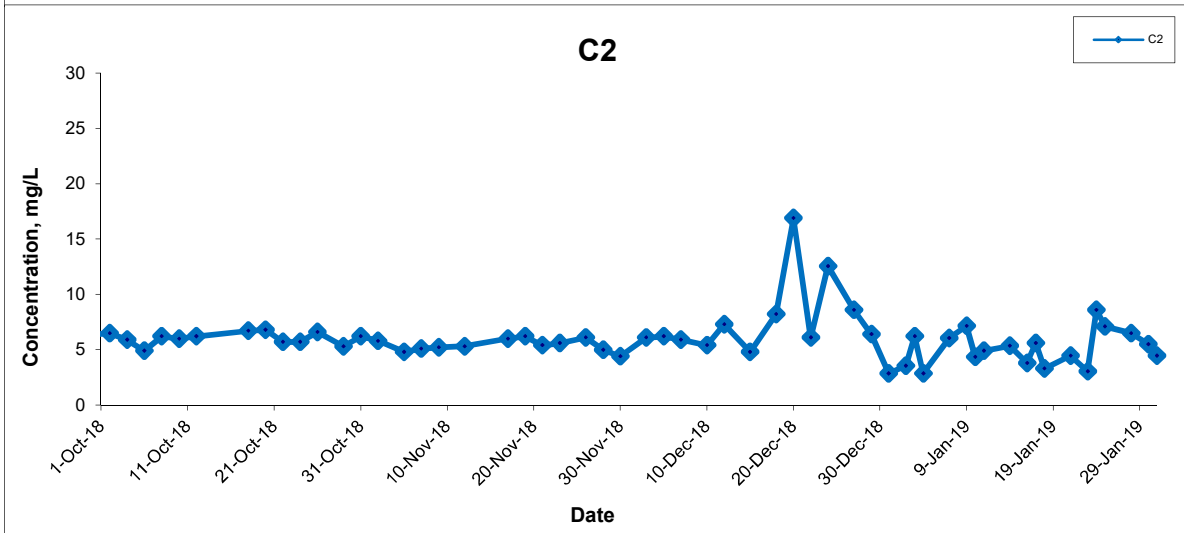
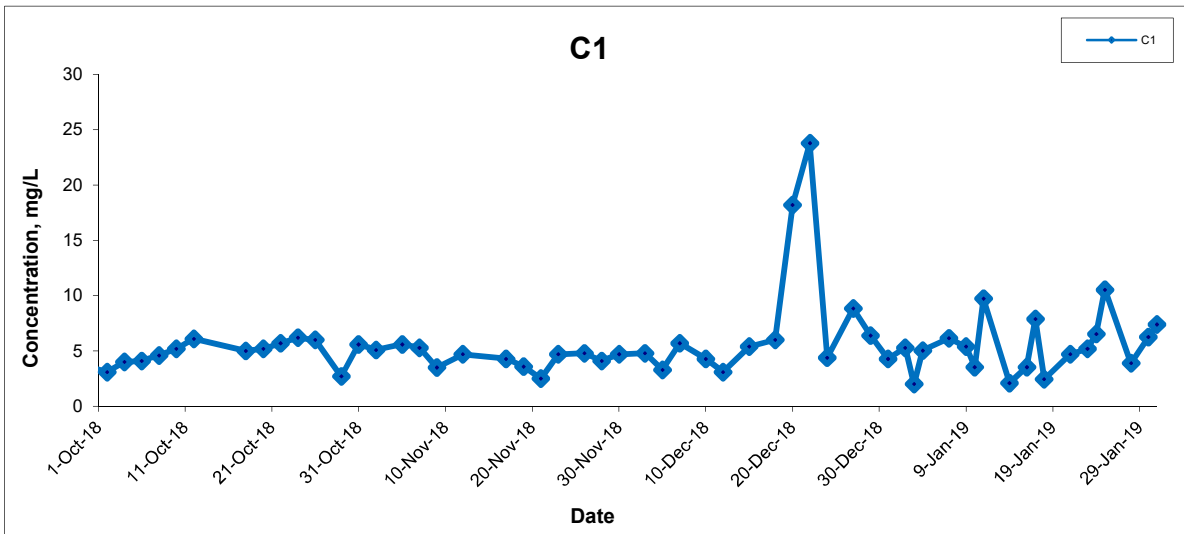


## Suspended Solids (Surface) at Mid-Flood Tide



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

### Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

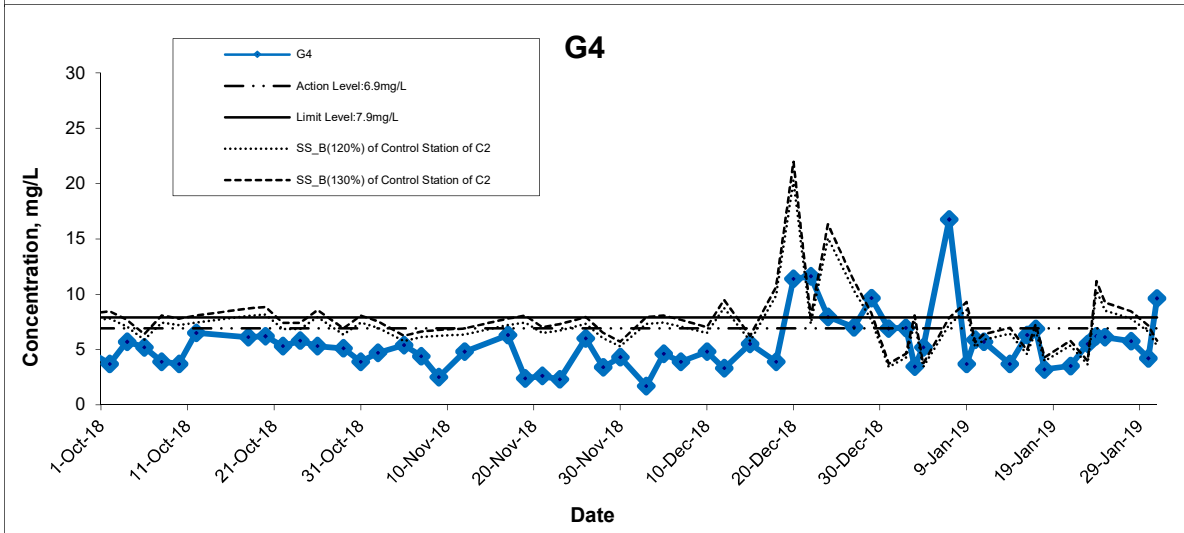
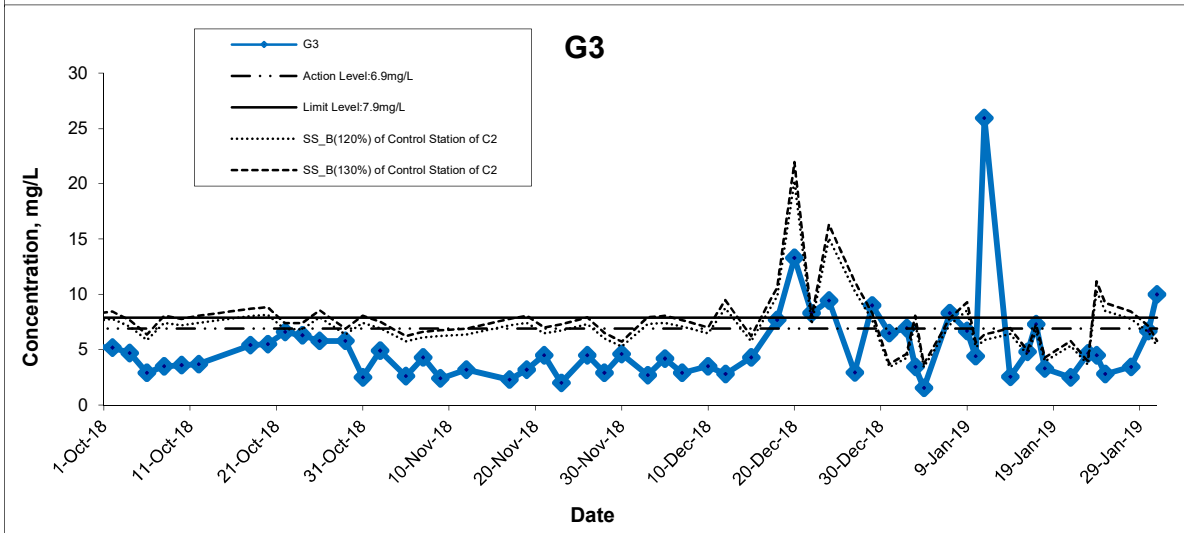
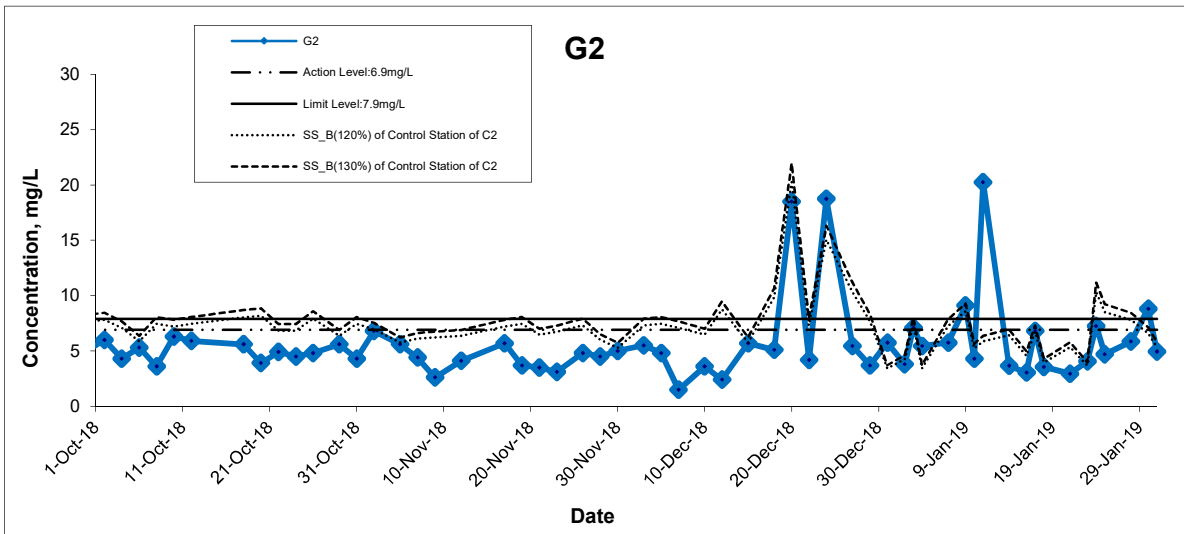
Date Jan 19

Project No. MA16034

Appendix I



## Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

Date Jan 19

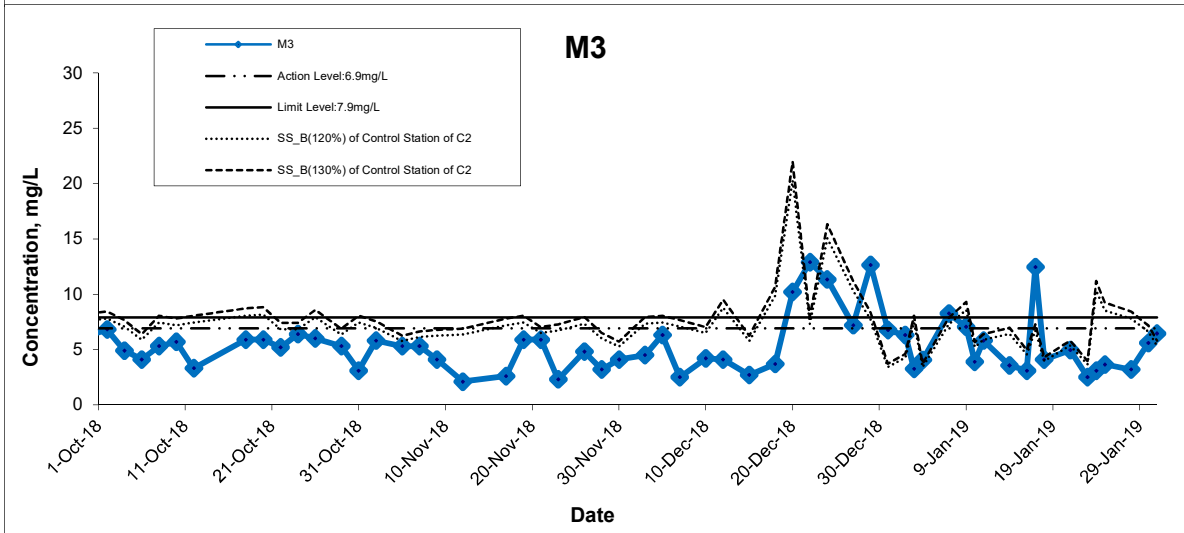
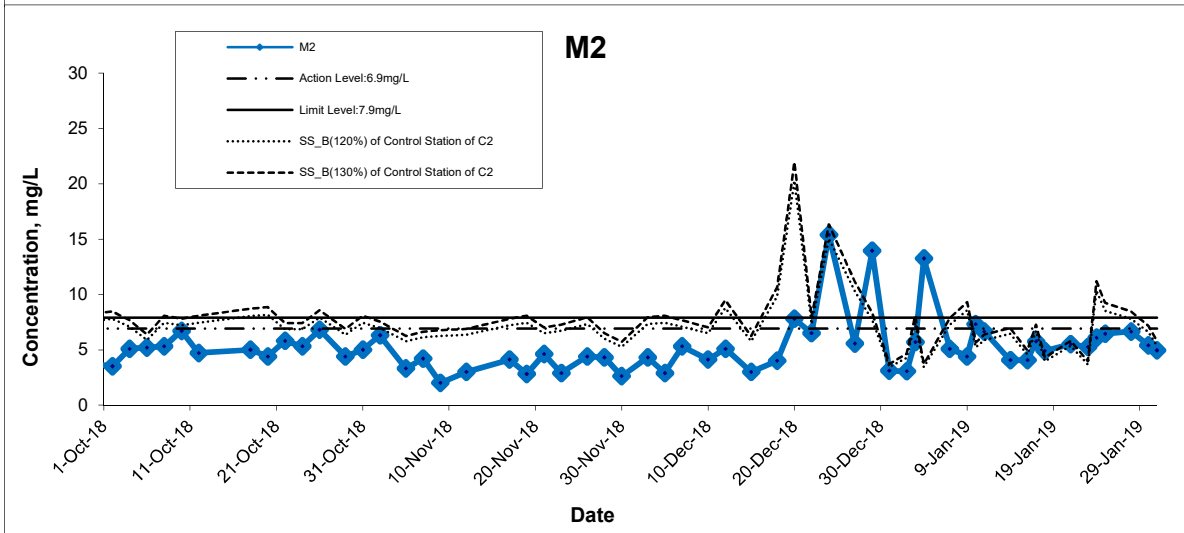
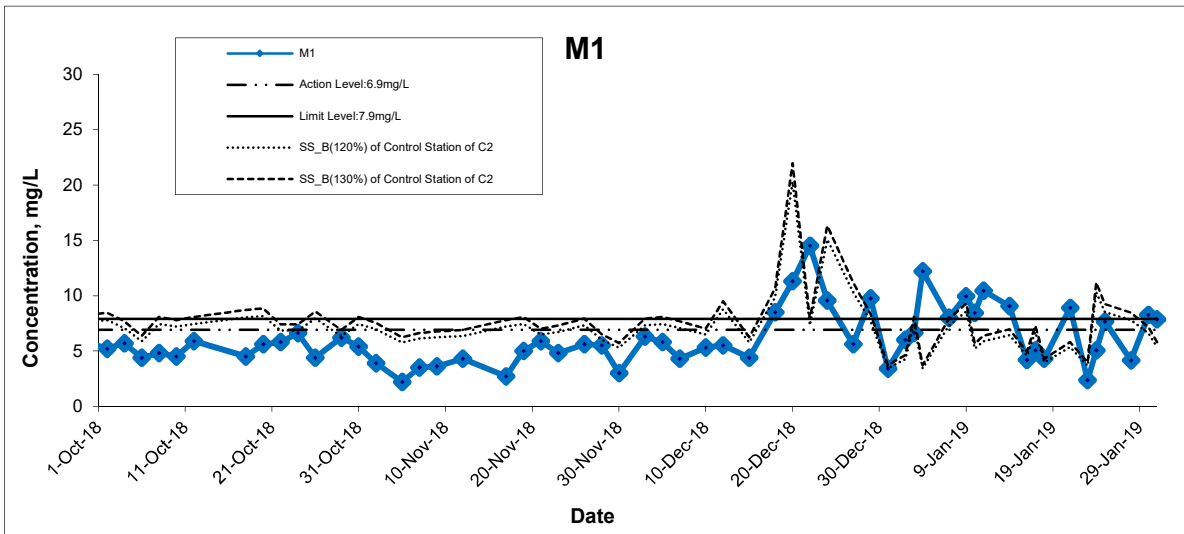
Project No. MA16034

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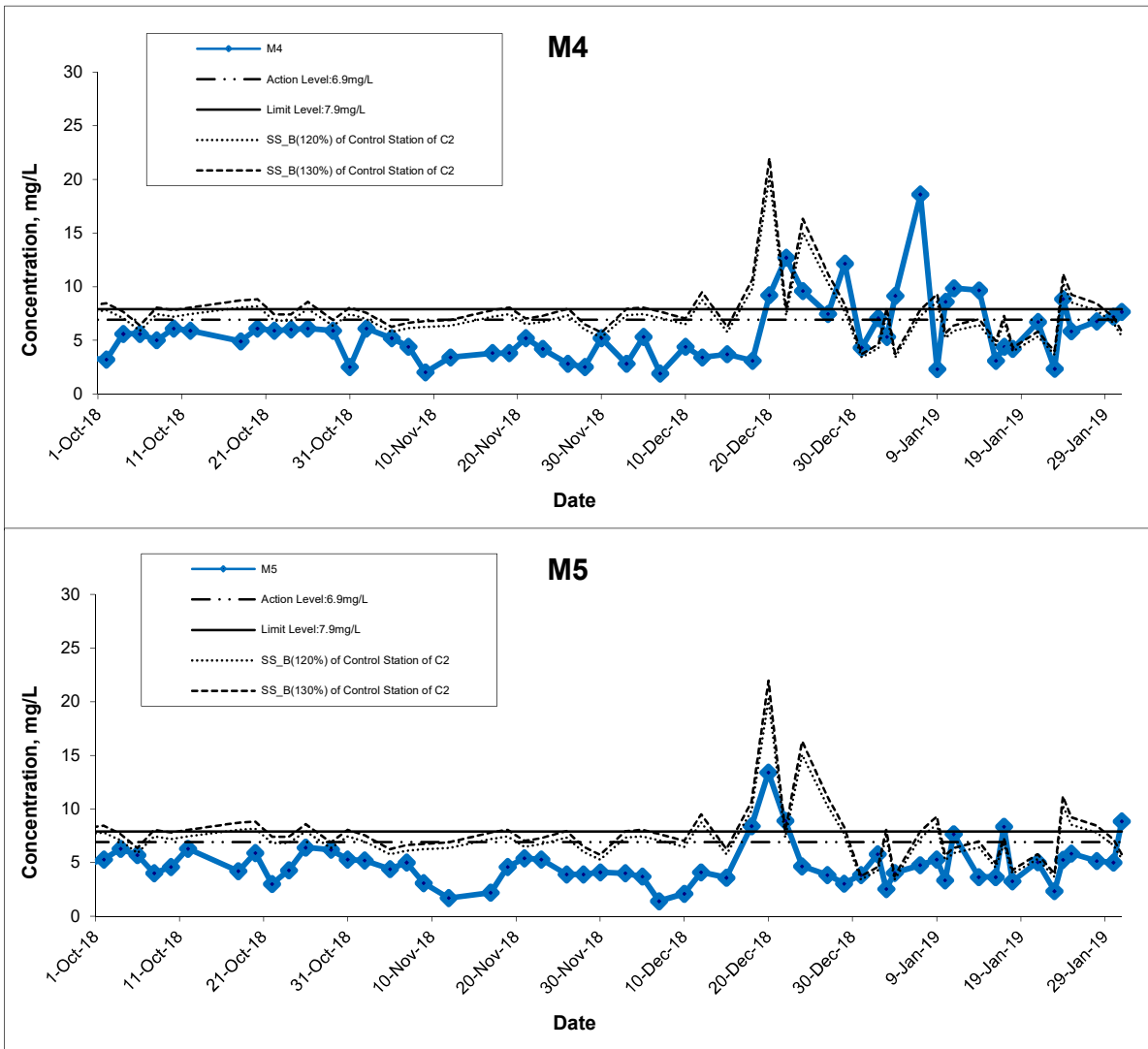
## Suspended Solids (Bottom) at Mid-Ebb Tide



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



## Suspended Solids (Bottom) at Mid-Ebb Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

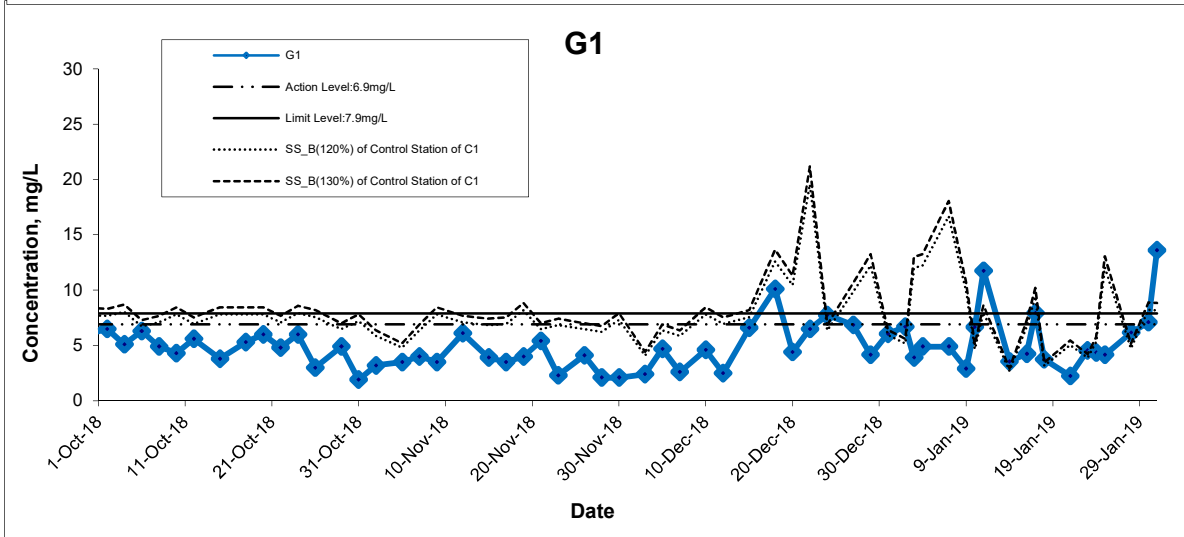
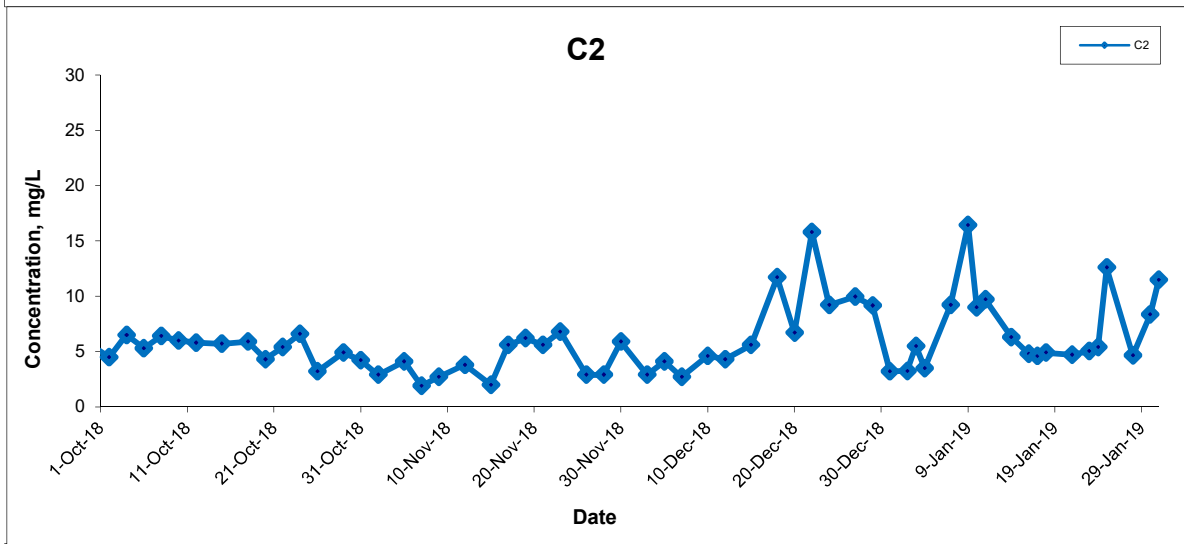
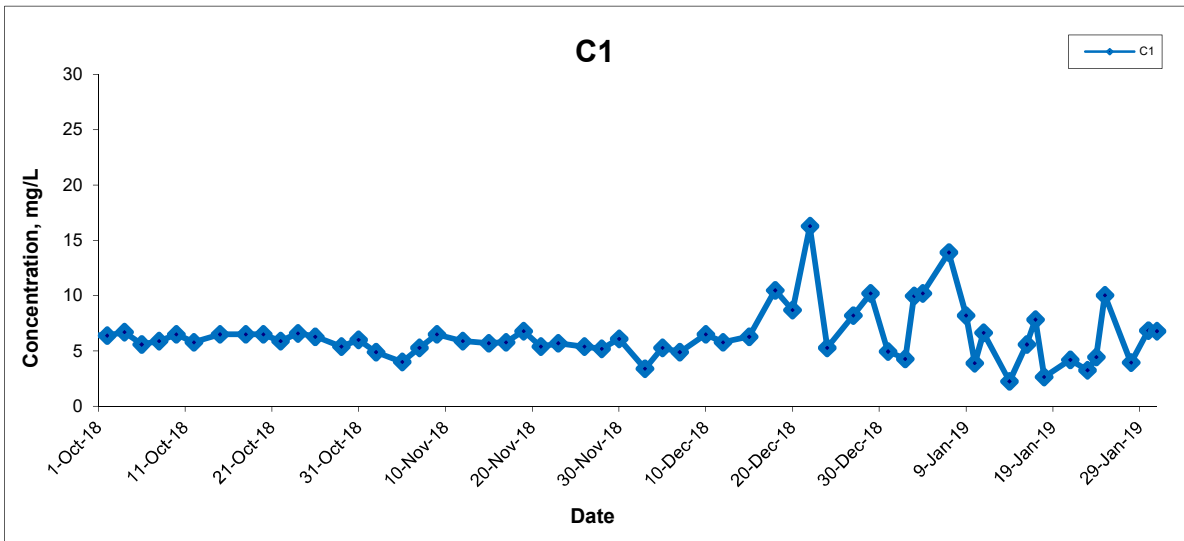
Date Jan 19

Project No. MA16034

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### Suspended Solids (Bottom) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

Date Jan 19

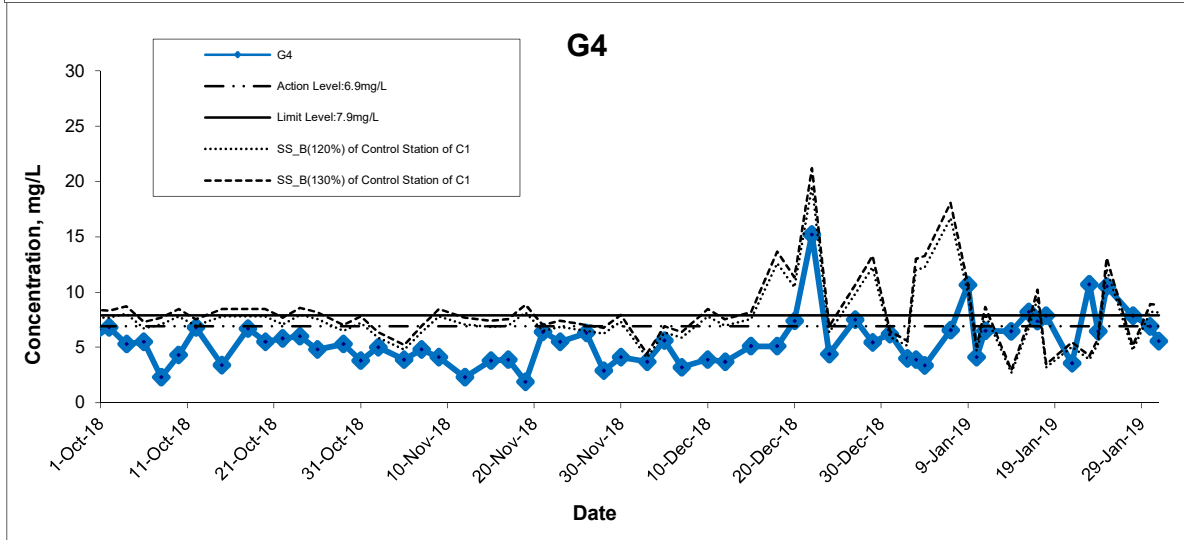
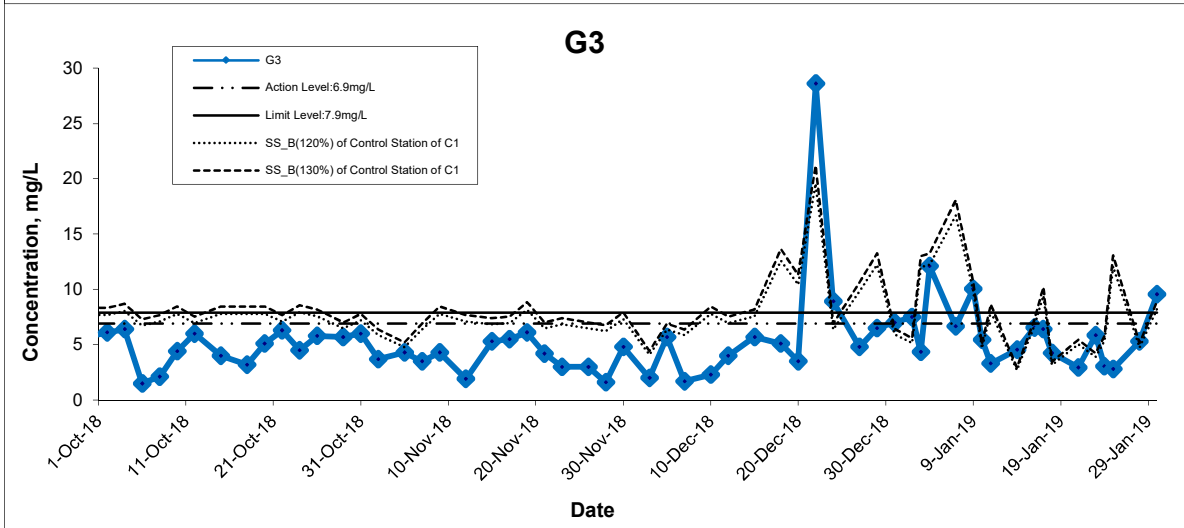
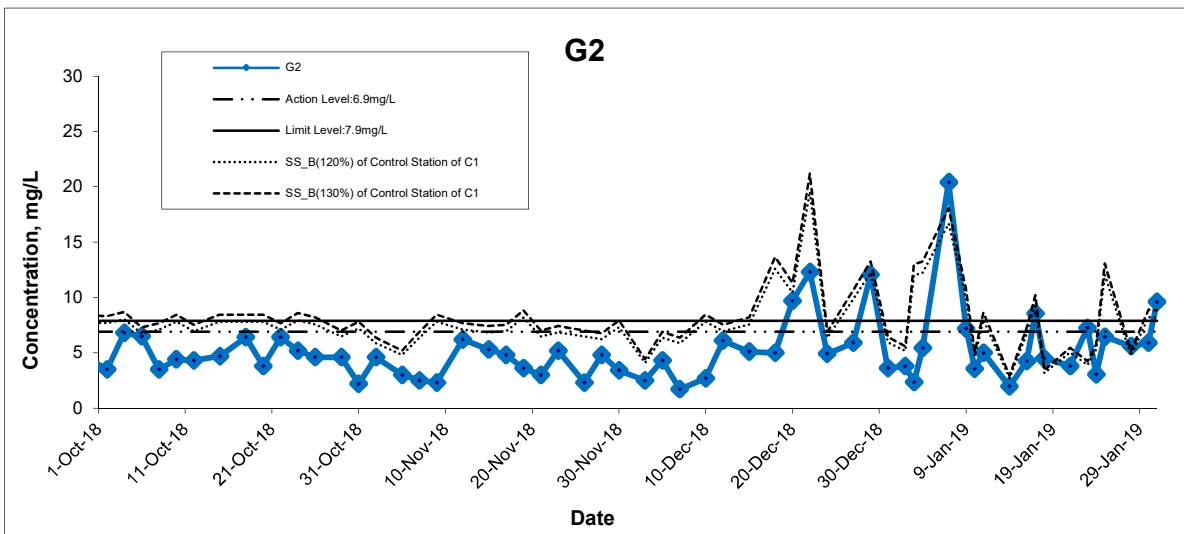
Project No. MA16034

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## Suspended Solids (Bottom) at Mid-Flood Tide



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

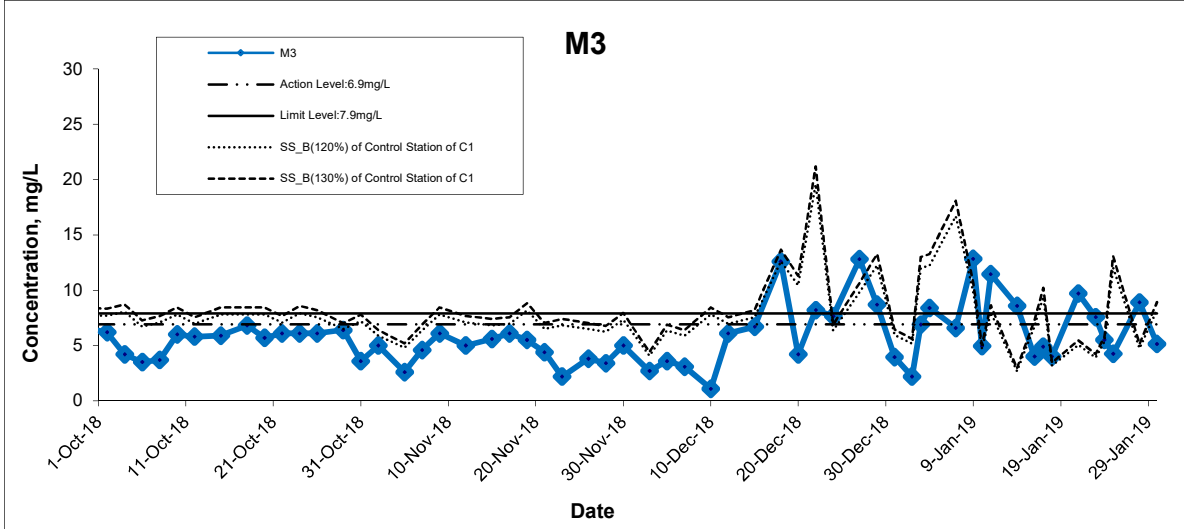
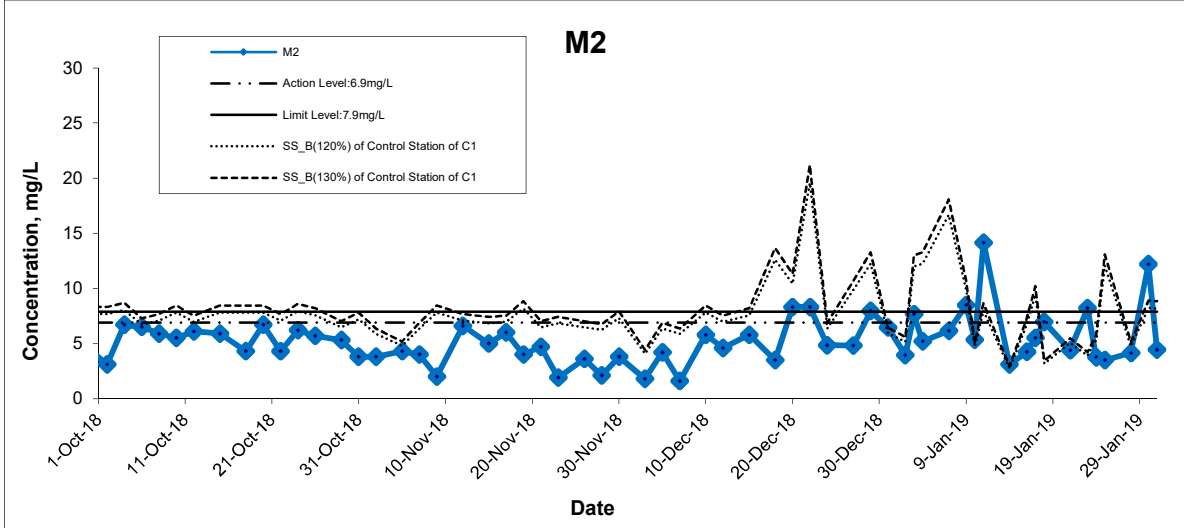
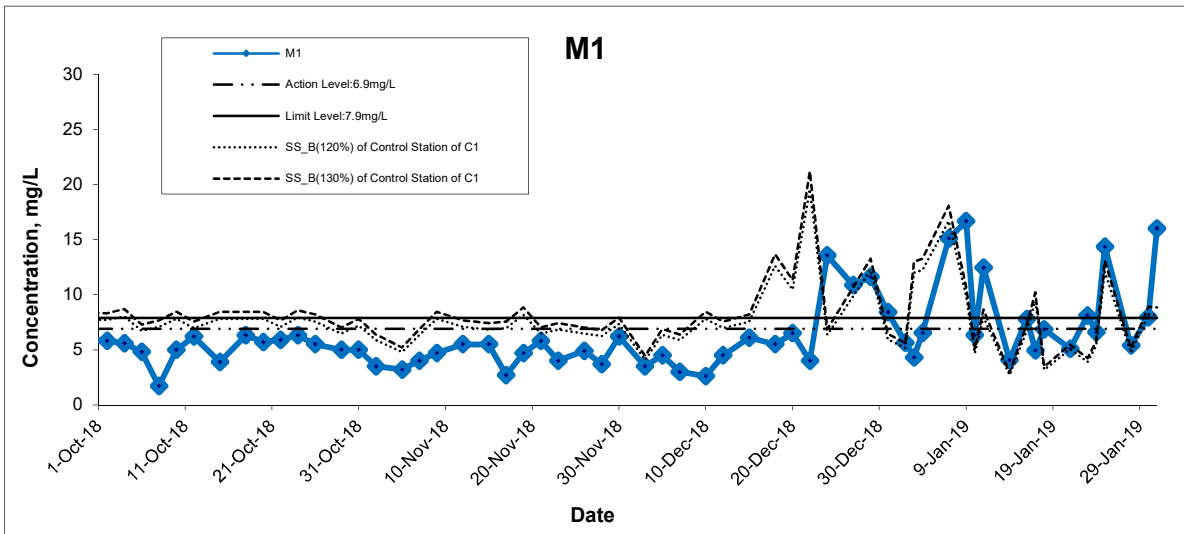
Date Jan 19

Project No. MA16034

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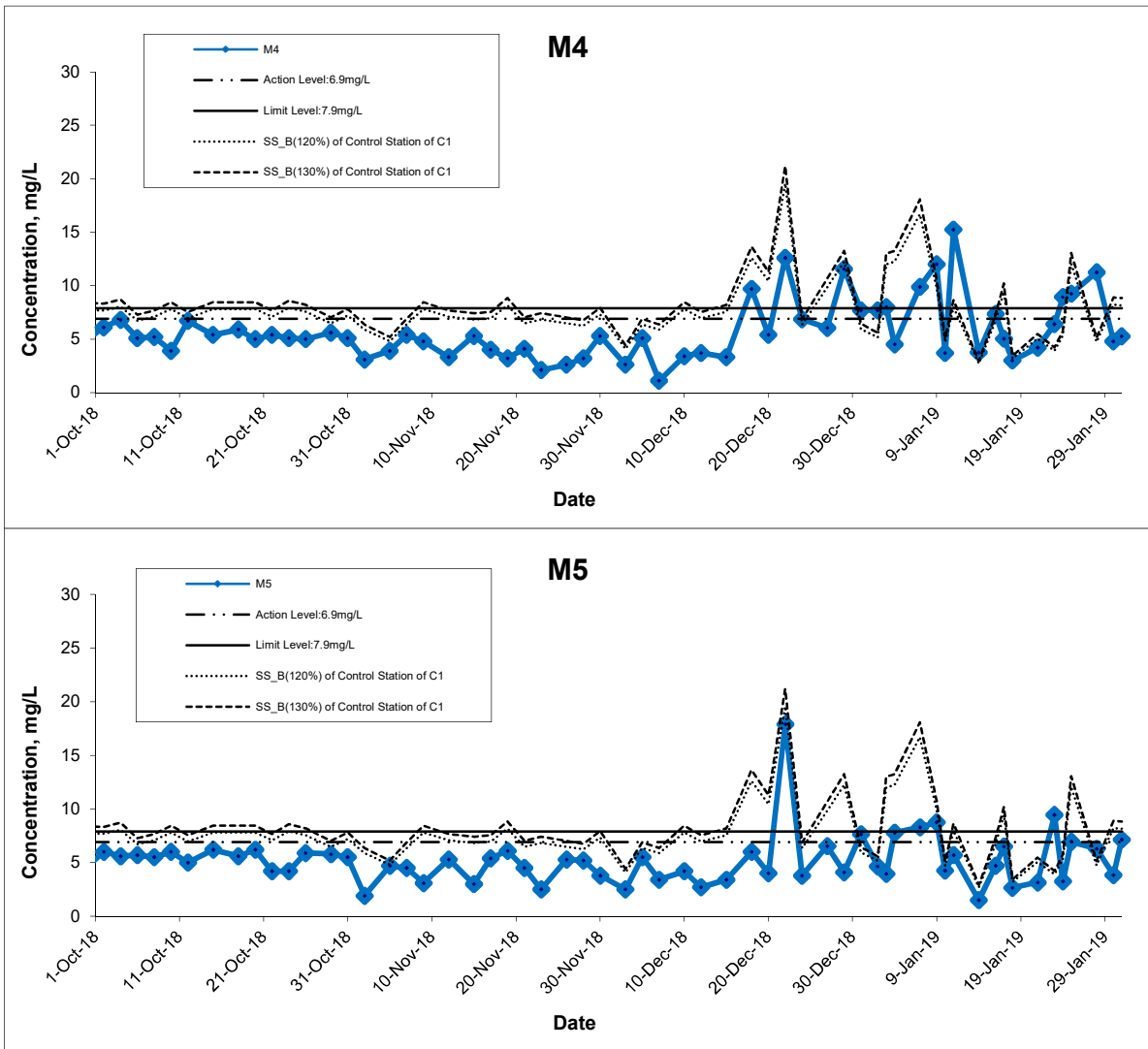


## Suspended Solids (Bottom) at Mid-Flood Tide



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

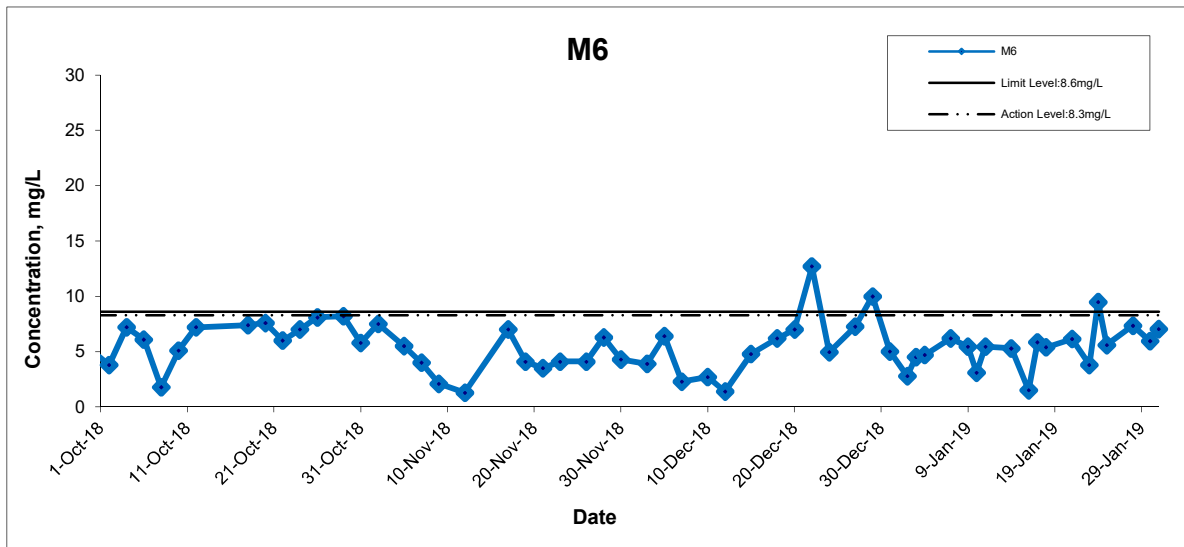
## Suspended Solids (Bottom) at Mid-Flood Tide



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



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



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

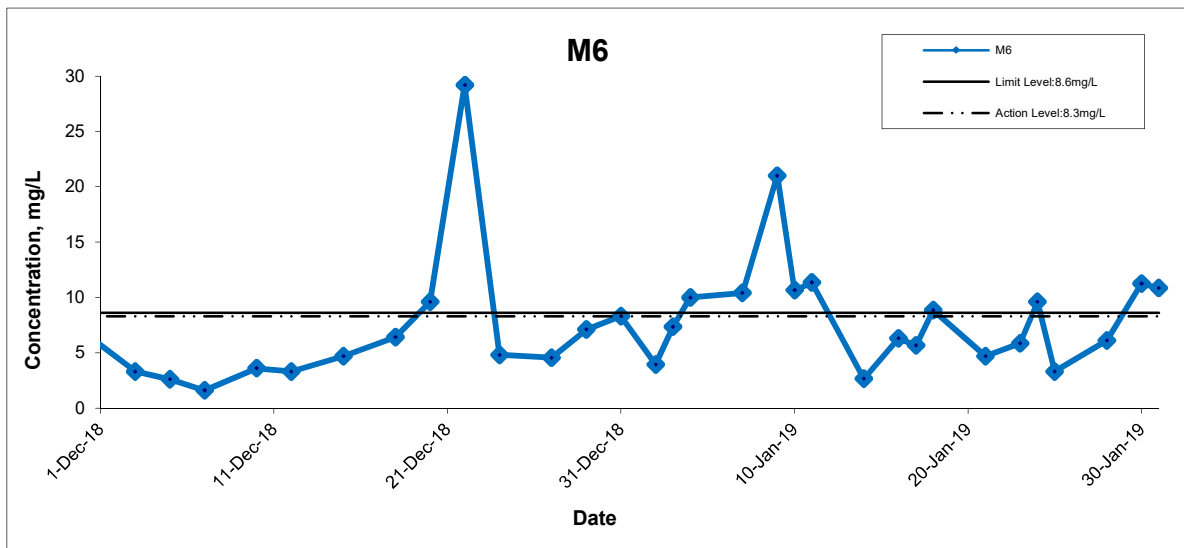
Date Jan 19

Project No. MA16034

Appendix I



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



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

Graphical Presentation of Water Quality Monitoring Results

Scale N.T.S

Date Jan 19

Project No. MA16034

Appendix I



**Water Quality Monitoring Results at W1 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*
4-Jan-19	Fine	Calm	11:21	Surface	1.1	21.1 21.1	21.1	8.0 8.1	8.0	32.3 32.3	32.3	89.0 89.1	89.1	6.6 6.6	6.6	6.6
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.2	21.0 21.1	21.0	8.0 8.1	8.0	32.3 32.3	32.3	88.0 88.3	88.2	6.6 6.6	6.6	
11-Jan-19	Cloudy	Calm	15:11	Surface	1.1	19.1 19.1	19.1	8.1 8.1	8.1	33.5 33.5	33.5	95.8 96.3	96.1	7.3 7.3	7.3	7.3
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	19.0 19.0	19.0	8.1 8.1	8.1	33.5 33.5	32.3	95.7 95.7	95.7	7.3 7.3	7.3	
14-Jan-19	Cloudy	Calm	18:13	Surface	1.1	19.2 19.2	19.2	8.1 8.1	8.1	33.9 33.9	33.9	95.6 95.6	95.6	7.2 7.2	7.2	7.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	19.2 19.2	19.2	8.1 8.1	8.1	33.9 33.9	32.3	95.3 95.3	95.3	7.2 7.2	7.2	
21-Jan-19	Sunny	Calm	13:22	Surface	1.1	18.8 18.8	18.8	8.1 8.1	8.1	33.5 33.5	33.5	96.7 96.3	96.5	7.4 7.4	7.4	7.4
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	18.8 18.7	18.7	8.1 8.1	8.1	33.6 33.6	32.3	96.6 96.2	96.4	7.4 7.4	7.4	
30-Jan-19	Sunny	Moderate	09:30	Surface	1.1	18.5 18.5	18.5	8.2 8.2	8.2	33.3 33.3	33.3	105.1 105.1	105.1	8.1 8.1	8.1	8.1
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.6	18.4 18.4	18.4	8.2 8.2	8.2	33.3 33.3	32.3	104.0 104.0	104.0	8.1 8.1	8.1	

**Water Quality Monitoring Results at W1 - Mid-Flood Tide**

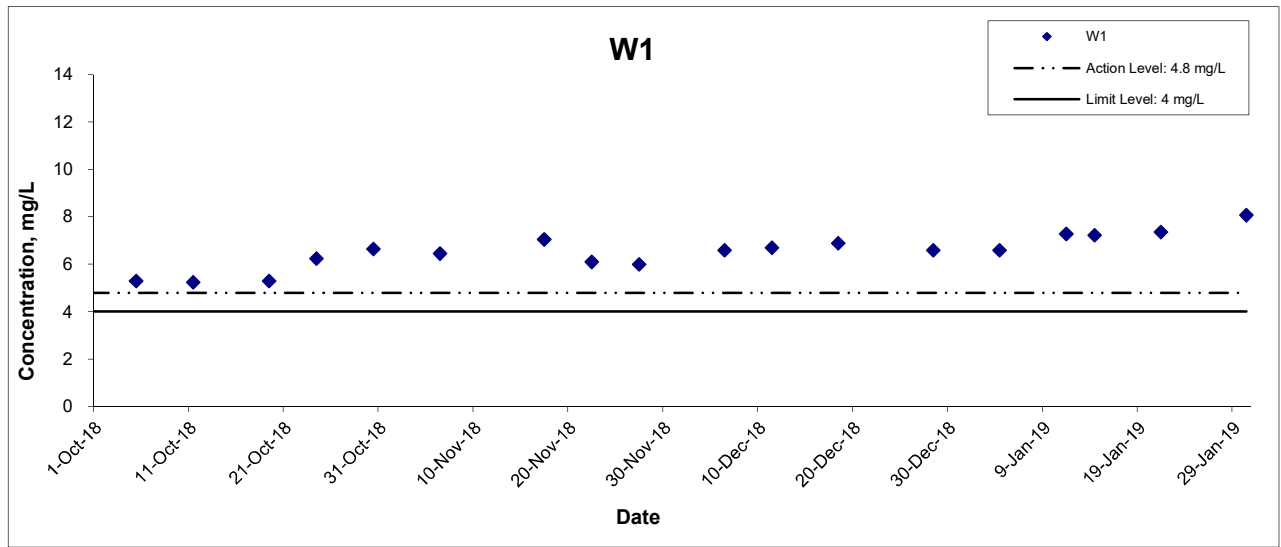
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*
4-Jan-19	Fine	Calm	16:39	Surface	1.0	21.1 21.1	21.1	8.0 8.0	8.0	32.3 32.3	32.3	89.6 89.2	89.4	6.6 6.6	6.6	6.6
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.3	21.0 21.0	21.0	8.0 8.0	8.0	32.3 32.3	32.3	88.3 88.0	88.2	6.6 6.6	6.6	
11-Jan-19	Cloudy	Calm	11:08	Surface	1.0	18.9 18.9	18.9	8.1 8.1	8.1	34.2 34.2	34.2	94.4 94.3	94.4	7.2 7.2	7.2	7.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.0	18.8 18.8	18.8	8.1 8.1	8.1	34.2 34.2	32.3	93.0 93.0	93.0	7.2 7.2	7.2	
14-Jan-19	Cloudy	Calm	12:50	Surface	1.0	19.2 19.2	19.2	8.1 8.1	8.1	33.9 33.9	33.9	95.8 95.8	95.8	7.2 7.2	7.2	7.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	19.2 19.2	19.2	8.1 8.1	8.1	34.0 34.0	32.3	95.1 95.1	95.1	7.2 7.2	7.2	
21-Jan-19	Sunny	Calm	17:05	Surface	1.1	18.8 18.8	18.8	8.1 8.1	8.1	33.5 33.6	33.5	97.1 96.6	96.9	7.4 7.4	7.4	7.4
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.1	18.8 18.8	18.8	8.1 8.1	8.1	33.6 33.6	32.3	96.8 96.7	96.8	7.4 7.4	7.4	
30-Jan-19	Sunny	Moderate	15:20	Surface	1.1	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	33.3	109.0 109.1	109.1	8.4 8.4	8.4	8.4
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3.6	18.5 18.5	18.5	8.3 8.3	8.3	33.3 33.3	32.3	109.2 109.2	109.2	8.4 8.4	8.4	

Remarks: \*DA: Depth-Averaged

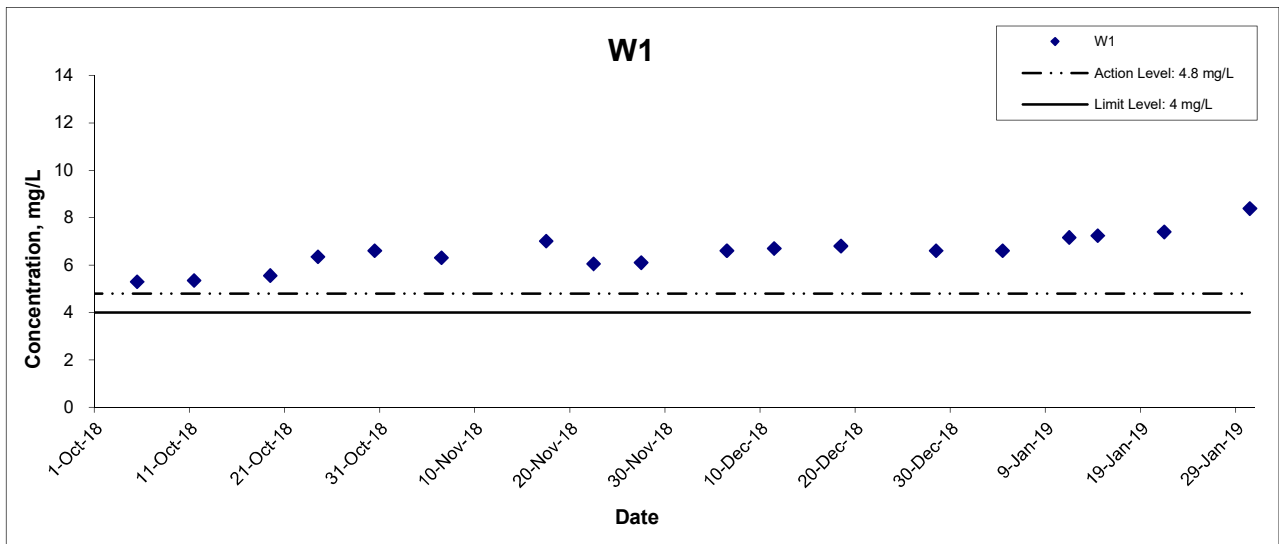
\*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



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



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



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

Graphical Presentation of Additional Water Quality Monitoring Results

Scale N.T.S

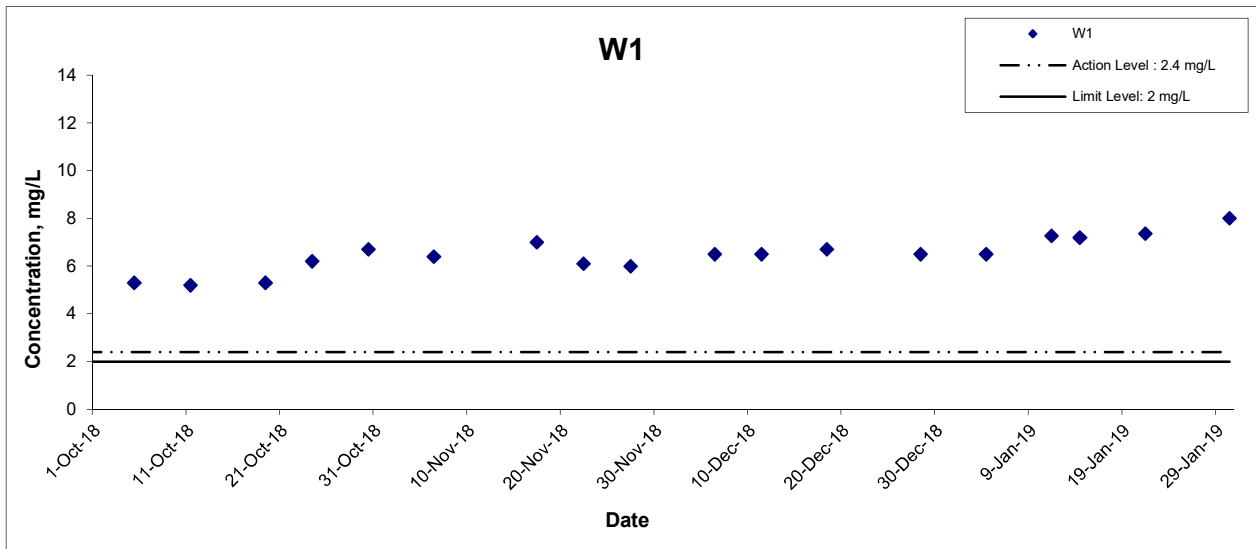
Date Feb-19

Project No. MA16034

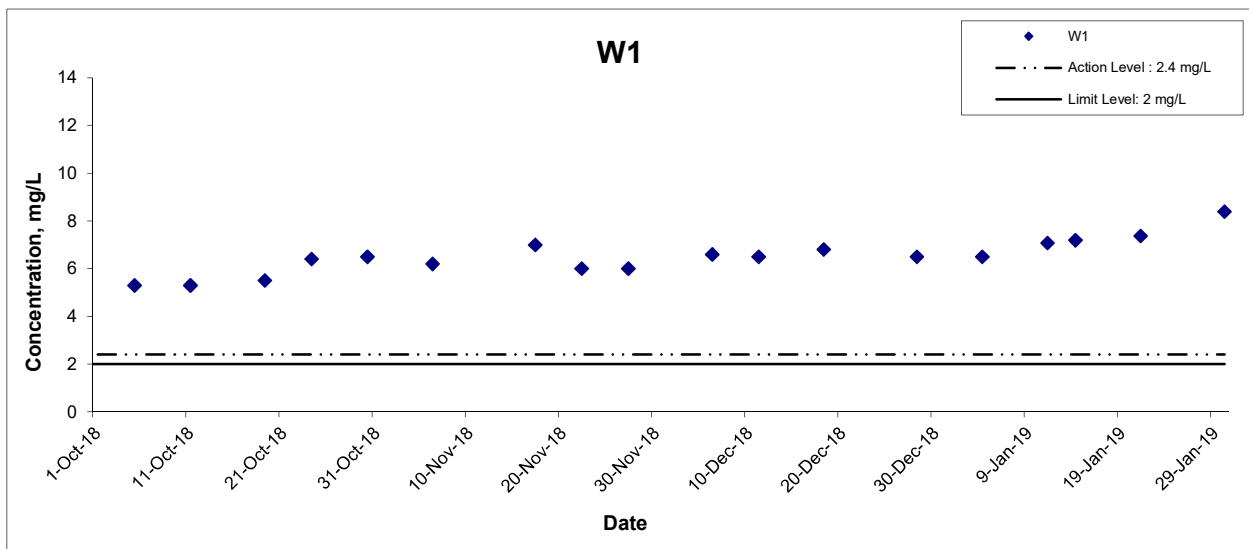
Appendix I



### Dissolved Oxygen (Bottom) at Mid-Ebb Tide



### Dissolved Oxygen (Bottom) at Mid-Flood Tide



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

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

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**TEST REPORT**

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

Report No.:	QC30538
Date of Issue:	2019-01-24
Date Received:	2019-01-15
Date Tested:	2019-01-15
Date Completed:	2019-01-24

**ATTN:** Mr. Henry Leung  
**QC report:**

Page: 1 of 2

**Method Blank**

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

**Method QC**

Parameter	MQC1	Acceptance
Suspended Solids (SS) (%)	100	80-120
Biochemical Oxygen Demand (mg O <sub>2</sub> /L)	190	170-220
Total Organic Carbon (%)	91	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	100	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 30538.

\*\*\*\*\*

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

  
**PATRICK TSE**  
Laboratory Manager

## TEST REPORT

Report No.:	QC30538
Date of Issue:	2019-01-24
Date Received:	2019-01-15
Date Tested:	2019-01-15
Date Completed:	2019-01-24

Page: 2 of 2

**QC report:**

**Sample Duplicate**

Parameter	30538-3 chk	Acceptance
Suspended Solids (SS) (%)	N/A	RPD $\leq$ 20%
Biochemical Oxygen Demand (%)	N/A	RPD $\leq$ 20%
Total Organic Carbon (%)	3	RPD $\leq$ 20%
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	N/A	RPD $\leq$ 20%
Total Phosphorus (%)	N/A	RPD $\leq$ 20%

**Sample Spike**

Parameter	30538-3 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 (%)	94	80-120
Total Phosphorus (%)	101	80-120

Remarks: 1)  $\leq$  less than

2) N/A = Not applicable

3) This report is the summary of quality control data for report number 30538.

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

## TEST REPORT

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

Report No.:	QC30551
Date of Issue:	2019-02-12
Date Received:	2019-01-29
Date Tested:	2019-01-29
Date Completed:	2019-02-12

**ATTN:** Mr. Henry Leung  
**QC report:**

Page: 1 of 2

**Method Blank**

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

**Method QC**

Parameter	MQC1	Acceptance
Suspended Solids (SS) (%)	102	80-120
Biochemical Oxygen Demand (mg O <sub>2</sub> /L)	192	170-220
Total Organic Carbon (%)	99	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	100	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 30551.

\*\*\*\*\*

*PREPARED AND CHECKED BY:*

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

  
**PATRICK TSE**  
*General Manager*



## TEST REPORT

Report No.:	QC30551
Date of Issue:	2019-02-12
Date Received:	2019-01-29
Date Tested:	2019-01-29
Date Completed:	2019-02-12

Page: 2 of 2

**QC report:**

**Sample Duplicate**

Parameter	30551-3 chk	Acceptance
Suspended Solids (SS) (%)	N/A	RPD $\leq$ 20%
Biochemical Oxygen Demand (%)	N/A	RPD $\leq$ 20%
Total Organic Carbon (%)	3	RPD $\leq$ 20%
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	N/A	RPD $\leq$ 20%
Total Phosphorus (%)	4	RPD $\leq$ 20%

**Sample Spike**

Parameter	30551-3 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	98	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	96	80-120
Total Phosphorus (%)	102	80-120

Remarks: 1)  $\leq$  less than

2) N/A = Not applicable

3) This report is the summary of quality control data for report number 30551.

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

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**APPENDIX K  
SUMMARY OF EXCEEDANCE**

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**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 2019**

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

**(B) Exceedance Report for Construction Noise**

**Action Level for Construction Noise**

**(Thirty-seven (37) Action Level exceedances were recorded due to the documented complaints received in this reporting month.)**

**Limit Level for Construction Noise**

**(Ten (10) Limit Level exceedances for nighttime construction noise monitoring were recorded in the reporting month. Two (2) Limit Level exceedances for daytime construction noise monitoring were recorded in the reporting month. The limit level exceedances were considered non-Project related as detailed in relevant notification of exceedance below.)**

**Exceedance recorded during night-time**

Date	Monitoring Location	Measured Level (L <sub>eq</sub> dB(A))	Baseline Noise Level (L <sub>eq</sub> dB(A))	Construction Noise Level (L <sub>eq</sub> dB(A))	Limit Level
04 January 2019	CM1	67.3	63.7	<u>65</u>	55
11 January 2019		66.7	62.8	<u>64</u>	
17 January 2019		66.8	63.7	<u>64</u>	
26 January 2019		66.7	61.1	<u>65</u>	
04 January 2019	CM2	64.0	60.8	<u>61</u>	
12 January 2019		64.7	59.7	<u>64</u>	
17 January 2019		64.8	60.8	<u>63</u>	
26 January 2019		64.7	59.7	<u>63</u>	
12 January 2019	CM3	62.8	60.5	<u>59</u>	
25 January 2019		64.2	62.9	<u>58</u>	

**Exceedance recorded during daytime**

Date	Monitoring Location	Measured Level (L <sub>eq</sub> dB(A))	Baseline Noise Level (L <sub>eq</sub> dB(A))	Construction Noise Level (L <sub>eq</sub> dB(A))	Limit Level
8 January 2019	CM3	76.1	65.6	<u>76</u>	75
8 January 2019	CM5	74.7	68.2	<u>74</u>	70



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

**Appendix K – Summary of Exceedance**

**(C) Exceedance Report for Water Quality**

**(Eighty-seven (87) Action Level and three hundred and twenty two (322) Limit Level exceedance in marine water quality monitoring. Refer to next page for details. The reasons are under investigation.)**

**(Nine (9) Limit Level exceedances in groundwater quality monitoring as follows. The exceedances are considered not project-related as detailed in relevant notification of exceedance below.)**

<b>Date</b>	<b>Monitoring Location</b>	<b>Monitoring Parameter</b>	<b>Monitoring Results</b>	<b>Action Level</b>	<b>Limit Level</b>
2019/01/15	Stream 1	Total Phosphorus	<b><u>0.10</u></b>	0.05	0.05
2019/01/15	Stream 2	SS	<b><u>24</u></b>	7.6	12.1
2019/01/15	Stream 2	Total Nitrogen	<b><u>2.3</u></b>	2.0	2.1
2019/01/15	Stream 2	Total Phosphorus	<b><u>0.12</u></b>	0.05	0.05
2019/01/29	Stream 1	Total Phosphorus	<b><u>0.06</u></b>	0.05	0.05
2019/01/29	Stream 2	Turbidity	<b><u>6.5</u></b>	2.1	2.3
2019/01/29	Stream 2	SS	<b><u>13</u></b>	7.6	12.1
2019/01/29	Stream 2	Total Phosphorus	<b><u>0.1</u></b>	0.05	0.05
2019/01/29	Stream 3	Total Phosphorus	<b><u>0.06</u></b>	0.05	0.05

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

**(D) Exceedance Report for Ecology**  
**(NIL in the reporting month)**

**(E) Exceedance Report for Cultural Heritage**  
**(NIL in the reporting month)**

**(F) Exceedance Report for Landfill Gas**  
**(NIL in the reporting month)**

**Agreement No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**-Investigation Report of Environmental Quality Limit Exceedances**

Date of Noise Monitoring: 28 December 2018

**Part A – Exceedance Summary Tables**

**Table I: Parameter – Construction Noise**

Station	Location	Time	Measured Level (Leq dB(A))	Baseline Noise Level (Leq dB(A))	Construction Noise Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	16:10	77.1	65.6	<b><u>77</u></b>	When one documented complaint is received	<b>75</b>	Limit
		16:45	77.3		<b><u>77</u></b>			

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

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#### Part B – Source of Exceedance

The major noise sources and reasons for exceedances identified at CM3 are as follows:

1. Construction activities under this Project at Site Portion II and IVC:

According to information confirmed by the Engineer, the PME's were in operation at site Portion II and IVC during the two 30-minute noise measurements.

**Table I** shows the list of PME's operated on 28 December 2018.

**Table I – Site activities at Portion II and IVC on 28 December 2018**

Portion	Type of PME	Quantity of PME provided by the contractor	Mitigation Measures Applied?	Photo
II	Breaker	3	No	Photo 1
	Roller Compactor	1	Not required	Photo 1
IVC	Breaker	2	Yes but incomplete	Photo 2, 4, 5
	Hand-held pneumatic breaker	2	Yes	Photo 2, 3
	Roller	1	Not required	Photo 2

2. According to the observation from monitoring site staff, some movable noise barriers have been erected but not placed close enough to the noise source (excavator-mounted breaker).
3. The contractor's self-review also mentioned that due to uneven ground conditions on slopes, movable noise barriers could not be placed against the breakers. Some movable noise barriers were also found defective or not in use on site.
4. Road Traffic Noise at slips roads approaching Eastern Harbour Crossing Tunnel.



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Design and Construction

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Photo 1  
Breaker operation in Portion II





Photo 2  
PMEs distribution at Portion IVC



Photo 3  
Hand-held pneumatic breakers with noise mitigation measures at Portion IVC





Photo 4

Gap in between cantilever of noise barriers for breaker in portion IVC



Photo 5

Gaps in noise barrier footing for breaker in portion IVC



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##### Part C – Actions Taken

The Engineer's Representative has instructed the contractor to stop the breaking and drilling works in Portion II, IVB and IVC on 2 Jan 2019.

The contractor has carried out investigation and has proposed and implemented the following noise mitigation measures to avoid further exceedance including:

1. Further enhanced acoustic mat cover for the hand held pneumatic breakers at Portion IVC during operation. (refer to **Photo 6**);
2. Gaps in between cantilever and footing of noise barriers has been amended. (refer to **Photo 7** and **Photo 8**);
3. The contractor promised to level uneven ground condition in order to erect noise barriers in portion II.
4. The contractor promised to relocate the movable barriers according to the operation of breakers so as to screen the breaker head to at least 1m above ground level for all noise sensitive receivers in different directions.
5. The contractor is studying the use of additional noise mitigation measures for Portion IVC, including the feasibility of erecting semi-enclosure.
6. As informed by the Engineer's Representative, the works in Portion II, IVB and IVC have been resumed upon the completion of movable barriers (refer to **Photo 9**, **Photo 10** and **Photo 11**) on 9 Jan.

In addition, the ET has reminded the Contractor to strictly follow the requirements in the approved Noise Mitigation Plan (NMP) including:

1. Quantity of each type of PME in operation on site should be consistent with the proposed quantity in the approved NMP;
2. Mitigation measures (such as temporary noise barrier/full enclosure) should be provided to PME as proposed in the approved NMP;
3. 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.

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Photo 6

Hand-held pneumatic breakers with further enhanced noise mitigation measures (acoustic mat cover) at Portion IVC



Photo 7

Rectified cantilever noise barrier and sound absorption materials implemented on-site for Portion IVC

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**Photo 8**  
Rectified noise barrier footing at Slope Q of Portion IVC



**Photo 9, Photo 10 and Photo 11**  
Movable noise barrier (3m by 3m with 1m cantilever at a tilting angle of 45 degrees) implemented on-site for Portion II



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##### 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 was increased from weekly to twice a week and additional noise monitoring was carried out on 3 January 2019 at Station CM3. The results of monitoring is presented as below:

**Monitoring Date: 3 January 2019**

Station	Location	Date	Time	Measured Level (Leq dB(A))	Baseline Noise Level (Leq dB(A))	Construction Noise Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	3 Jan 2019	13:00	75.0	65.6	74	When one documented complaint is received	75	No Exceedance

No Limit Level Exceedance is recorded during the additional noise monitoring. As no exceedance has been recorded for 2 consecutive monitoring on 2 and 3 Jan, no further additional monitoring is required.


No further exceedances was recorded after the completion of enhanced noise mitigation measures on 9 Jan. The implemented noise mitigation measures by the Contractor are considered effective.

##### Part E – Recommendations

The Contractor is recommended to further minimize noise nuisance by implementing mitigation measures as below:

1. Make sure the cantilever noise barriers along site Portion IVC are complete and effective;
2. To strictly follow the requirements in the approved Noise Mitigation Plan.
3. To continue to properly implement noise mitigation measures as recommended in the Environmental Monitoring & Audit Manual and approved Noise Mitigation Plan; and
4. To well-maintain all the PME condition and check all the mitigation measurements implemented on site regularly.
5. To reschedule operation time and reduce operation duration of each PME.
6. To turn off or throttle down idle PME.

Reviewed by:



Dr. HF Chan

Title: Environmental Team Leader

Date: 15 January 2019

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: 8 January 2019

Part A – Exceedance Summary Tables

Table I: Parameter – Construction Noise

Station	Location	Time	Measured Level (Leq dB(A))	Baseline Noise Level (Leq dB(A))	Construction Noise Level (Leq dB(A))	Action Level	Limit Level (Leq dB(A))	Level exceeded
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	13:15	76.1	65.6	<b><u>76</u></b>	When one documented complaint is received	<b>75</b>	Limit
CM5	CCC Kei Faat Primary School, Yau Tong	14:45	74.7	68.2	<b><u>74</u></b>	When one documented complaint is received	<b>70</b>	Limit

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

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### Environmental Team for Tseung Kwan O – Lam Tin Tunnel

#### Design and Construction

#### -Investigation Report of Environmental Quality Limit Exceedances

##### Field Observation(s) and Conclusion

(a) Statement of exceedance(s)

Construction noise measured at CM3 & CM5 exceeded the construction noise (day time) limit level.

(b) Cause of exceedance(s)

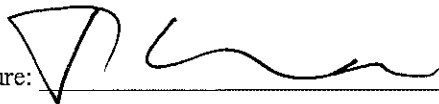
The exceedance was not considered related to the Project works:

- According to our field observation, road traffic noise was identified as the dominant noise source. The breaking and drilling works in Lam Tin Interchange site Portion II, IVB and IVC were suspended due to construction noise exceedance measured on 28 Dec 2018.
- General excavation and earthworks at Portion III and Portion IVC using excavators and dump trucks during monitoring.
- L90 values at CM3 Block S, Yau Lai Estate Phase 5 and CM5 CCC Kei Faat Primary School were 74.2dB(A) and 73.1dB(A) respectively. L90 is generally considered to be representing the background or ambient level of a noise environment.
- No prominent construction noise from a particular type of equipment was heard. High level of traffic noise was also noted during the measurement at both noise monitoring stations. As the corrected noise levels were calculated based on the background noise levels measured during the baseline monitoring period, it may not represent the actual background noise level during the impact measurement, especially the traffic condition of the Eastern Harbour Crossing can vary. Based on the on-site observation, the exceedance was considered due to the high background noise level.

**Part B – Conclusion:** The exceedances of day time noise limit level were not due to the Project.

**Part C – Recommendation:** No further action is required.

ETL Signature:



Date: 22 January, 2019



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

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

Monitoring Parameter: Groundwater Quality

Date of Monitoring: 15 January 2019

**Part A – Summary of Exceedance Records**

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
15 Jan 2019	Total Phosphorus (mg-P/L)	Stream 1	<b><u>0.10</u></b>	0.05	0.05	(1)	No
15 Jan 2019	Suspended Solids	Stream 2	<b><u>24</u></b>	7.6	12.1	(2)	No
15 Jan 2019	Total Nitrogen (mg-N/L)	Stream 2	<b><u>2.3</u></b>	2.0	2.1	(2)	No
15 Jan 2019	Total Phosphorus (mg-P/L)	Stream 2	<b><u>0.12</u></b>	0.05	0.05	(2)	No

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

\*Remarks

- (1) – Stream 1 is at a higher ground level than the construction site, therefore construction runoff cannot reach Stream 1.  
(2) – The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.

**Part B – Conclusions:**

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

**Part C – Recommendations**

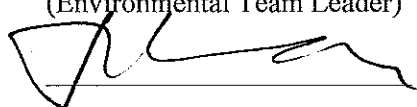
The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

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

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

Date: 28 January, 2019

Signature:



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

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

Monitoring Parameter: Groundwater Quality

Date of Monitoring: 29 January 2019

**Part A – Summary of Exceedance Records**

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
29 Jan 2019	Total Phosphorus (mg-P/L)	Stream 1	<b><u>0.06</u></b>	0.05	0.05	(1)	No
29 Jan 2019	Turbidity (NTU)	Stream 2	<b><u>6.5</u></b>	2.1	2.3	(2)	No
29 Jan 2019	Suspended Solids	Stream 2	<b><u>13</u></b>	7.6	12.1	(2)	No
29 Jan 2019	Total Phosphorus (mg-P/L)	Stream 2	<b><u>0.10</u></b>	0.05	0.05	(2)	No
29 Jan 2019	Total Phosphorus (mg-P/L)	Stream 3	<b><u>0.06</u></b>	0.05	0.05	(2)	No

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

\*Remarks

- (1) – Stream 1 is at a higher ground level than the construction site, therefore construction runoff cannot reach Stream 1.
- (2) – The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.

**Part B – Conclusions:**

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

**Part C – Recommendations**

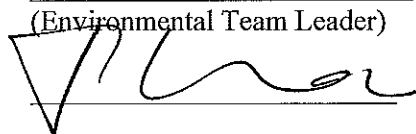
The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

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

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

Date: 15 February, 2019

Signature:



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 2 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.2	G4	08:33	1.5	1.6	<b><i><u>1.6</u></i></b>

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



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**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	5.6	G3	10:23	6.0	6.9	6.7	7.2	<b><u>7.7</u></b>
				M3	10:33	6.2	7.4			<b><u>12.2</u></b>
				M4	09:46					<b>6.3</b>
				M5	11:04					<b><u>7.9</u></b>
		Bottom	3.6	G1	10:17	6.9	7.9	4.3	4.6	<b><u>7.9</u></b>
				G3	10:23					<b><u>7.0</u></b>
				G4	10:50					<b><u>7.0</u></b>
				M1	10:08					<b><u>6.0</u></b>
				M3	10:33					<b><u>6.3</u></b>
				M4	09:46					<b><u>7.1</u></b>
M5	11:04	<b><u>5.8</u></b>								

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

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**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	7.2	G1	15:26	6.0	6.9	8.6	9.3	<b><u>10.1</u></b>
				M1	16:17	6.2	7.4			<b>6.8</b>
				M2	15:03					<b>7.2</b>
				M5	15:59					<b>8.1</b>
		Bottom	4.3	G1	15:26	6.9	7.9	5.2	5.6	<b><u>6.7</u></b>
				G3	15:32					<b><u>7.5</u></b>
				M1	16:17					<b><u>5.7</u></b>
				M4	14:57					<b><u>7.7</u></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 3 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	6.6	G2	10:32	6.0	6.9	7.9	8.6	<b><u>8.0</u></b>
				M4	10:20	6.2	7.4			<b>7.3</b>
		Bottom	6.2	G1	10:49	6.9	7.9	7.4	8.1	<b>7.6</b>
				G2	10:32					<b>7.1</b>
Mid-Flood	C1	Surface	5.3	G1	15:59	6.0	6.9	6.3	6.8	<b><u>8.4</u></b>
				G2	15:44					<b>6.4</b>
				M3	16:10	6.2	7.4			<b><u>8.3</u></b>
				M5	16:31					<b><u>8.0</u></b>
		Bottom	10.0	M2	15:38	6.9	7.9	12.0	13.0	<b>7.7</b>
				M4	15:30					<b><u>8.0</u></b>

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



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**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 4 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.0	M1	08:33	1.2	1.3	<u>6.1</u>
			Mid-flood	C1	1.4		16:01	1.7	1.9	<u>4.6</u>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	5.9	G3	16:14	6.0	6.9	7.0	7.6	<u>10.0</u>
				G4	16:24					<u>6.4</u>
				M2	15:48	6.2	7.4			<u>8.1</u>
				M4	15:42					<u>8.7</u>
				M5	16:34					<u>9.4</u>
		Intake	n.a.	M6	16:29	8.3	8.6	n.a.	n.a.	<u>10.0</u>
		Bottom	10.2	G3	16:14	6.9	7.9	12.2	13.3	<u>12.1</u>
				M3	16:19					<u>8.4</u>
				M5	16:34					<u>7.8</u>

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**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	9.6	G3	11:30	6.0	6.9	11.5	12.4	<b><u>7.2</u></b>
				M1	11:16	6.2	7.4			<b>6.6</b>
				M2	11:03					<b>7.4</b>
				M3	11:37					<b><u>10.6</u></b>
				M4	10:54					<b><u>7.5</u></b>
		Bottom	2.9	G1	11:23	6.9	7.9	3.4	3.7	<b><u>4.5</u></b>
				G2	11:09					<b><u>5.5</u></b>
				G4	11:45					<b><u>5.2</u></b>
				M1	11:16					<b><u>12.2</u></b>
				M2	11:03					<b><u>13.3</u></b>
				M3	11:37					<b><u>4.1</u></b>
				M4	10:54					<b><u>9.2</u></b>
				M5	11:54					<b><u>4.1</u></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 7 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.4	G3	13:35	1.7	1.8	<u>2.4</u>
			Mid-flood	C1	1.5	M2	08:33	1.8	1.9	<u>1.9</u>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	12.1	G1	08:48	6.0	6.9	14.5	15.7	<u>6.9</u>
				M1	08:43					<u>9.9</u>
				M2	08:33					<u>12.4</u>
				M3	08:58					<u>12.2</u>
				M4	08:27					<u>8.3</u>
		Intake	n.a.	M6	09:06	8.3	8.6	n.a.	n.a.	<u>10.4</u>
		Bottom	13.9	G2	08:38	6.9	7.9	16.7	18.1	<u>20.4</u>
				M1	08:43					<u>15.1</u>
				M4	08:27					<u>9.9</u>
				M5	09:11					<u>8.3</u>



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)		
Mid-Ebb	C2	Surface	8.8	G1	13:32	6.0	6.9	10.5	11.4	<b><i>6.4</i></b>		
				G2	13:22					<b><i><u>10.3</u></i></b>		
				G3	13:35					<b><i><u>9.6</u></i></b>		
				G4	13:43	<b><i><u>9.5</u></i></b>						
				M1	13:26	<b><i><u>7.6</u></i></b>						
				M4	13:13	<b><i>7.3</i></b>						
		Bottom	6.1	G3	13:35	6.2	7.4	6.9	7.9	7.3	7.9	<b><i><u>14.4</u></i></b>
				G4	13:43							<b><i><u>8.3</u></i></b>
				M1	13:26							<b><i><u>16.8</u></i></b>
				M3	13:38							<b><i><u>8.0</u></i></b>
				M4	13:13					<b><i><u>8.3</u></i></b>		
										<b><i><u>18.6</u></i></b>		

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 9 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.8	G2	13:52	1.0	1.1	<u>2.0</u>
						G3	14:11			<u>1.5</u>
						M1	13:59			<u>1.7</u>
						M2	13:46			<u>1.1</u>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	14.7	G1	14:05	6.0	6.9	17.6	19.0	<u>7.4</u>
				G2	13:52					<u>9.5</u>
				M2	13:46					<u>8.1</u>
		Bottom	7.2	M3	14:15	6.2	7.4	8.6	9.3	<u>10.5</u>
				G2	09:46	6.9	7.9			<u>9.1</u>
				M1	09:52					<u>10.0</u>
M3	10:10	<u>7.1</u>								

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	6.7	G4	10:17	6.2	7.4	8.0	8.7	<b><u>7.5</u></b>
				M1	09:52					<b><u>7.1</u></b>
				M2	09:39					<b><u>12.2</u></b>
				M4	09:33					<b><u>11.9</u></b>
				M5	10:28					<b><u>7.3</u></b>
		Intake	n.a.	M6	10:23	8.3	8.6	n.a.	n.a.	<b><u>21.0</u></b>
		Bottom	8.2	G2	09:46	6.9	7.9	9.8	8.7	<b><u>7.2</u></b>
				G3	10:04					<b><u>10.1</u></b>
				G4	10:17					<b><u>10.7</u></b>
				M1	09:52					<b><u>16.7</u></b>
				M2	09:39					<b><u>8.5</u></b>
				M3	10:10					<b><u>12.9</u></b>
				M4	09:33					<b><u>12.0</u></b>
M5	10:28	<b><u>8.8</u></b>								

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 10 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	8.9	G1	15:31	6.0	6.9	10.7	11.6	<b><u>7.8</u></b>
				G4	15:45					<b><u>7.2</u></b>
				M3	15:41					<b>6.9</b>
		Bottom	4.4	G4	15:45	6.9	7.9	5.2	5.7	<b><u>5.9</u></b>
				M1	15:26					<b><u>8.5</u></b>
				M2	15:16					<b><u>7.3</u></b>
				M3	15:41					<b><u>8.6</u></b>
Mid-Flood	C1	Surface	4.3	G2	09:48	6.0	6.9	5.1	5.5	<b><u>12.7</u></b>
				G3	10:02					<b>5.3</b>
				G4	10:13					<b>5.2</b>
				M1	09:53					<b><u>6.1</u></b>
		Intake	n.a.	M6	10:16	8.3	8.6	n.a.	n.a.	<b><u>10.7</u></b>
		Bottom	3.9	G1	09:58	6.9	7.9	4.7	5.1	<b><u>6.7</u></b>
				G3	10:02					<b><u>5.5</u></b>
				M1	09:53					<b><u>6.4</u></b>
				M2	09:43					<b><u>5.4</u></b>
				M3	10:08					<b>5.0</b>

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



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 11 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	11.8	G2	14:42	6.0	6.9	14.2	15.3	<b><u>11.3</u></b>
				G3	14:57					<b><u>8.8</u></b>
				G4	15:07					<b><u>7.6</u></b>
				M2	14:38	6.2	7.4			<b><u>6.8</u></b>
				M3	15:01					<b><u>10.1</u></b>
				M5	15:18					<b><u>8.7</u></b>
		Bottom	4.9	G1	14:53	6.9	7.9	5.9	6.4	<b><u>6.9</u></b>
				G2	14:42					<b><u>20.3</u></b>
				G3	14:57					<b><u>26.0</u></b>
				M1	14:48					<b><u>10.5</u></b>
				M2	14:38					<b><u>6.7</u></b>
				M4	14:33					<b><u>9.9</u></b>
M5	15:18	<b><u>7.7</u></b>								

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

***Bold Italic with underline*** means Limit Level exceedance

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	<u><b>Measured Value (mg/L)</b></u>
Mid-Flood	C1	Surface	5.5	G1	10:55	6.0	6.9	6.6	7.2	<u><b>8.8</b></u>
				G2	10:43					<u><b>6.7</b></u>
				G3	10:59					<u><b>10.5</b></u>
				G4	11:18					<u><b>10.3</b></u>
				M2	10:38					<u><b>14.0</b></u>
				M5	11:27					<u><b>7.3</b></u>
		Intake	n.a.	M6	11:22	8.3	8.6	n.a.	n.a.	<u><b>11.4</b></u>
		Bottom	6.7	G1	10:55	6.9	7.9	8.0	8.6	<u><b>11.8</b></u>
				M1	10:50					<u><b>12.5</b></u>
				M2	10:38					<u><b>14.2</b></u>
				M3	11:12					<u><b>11.5</b></u>
				M4	10:32					<u><b>15.3</b></u>

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

***Bold Italic with underline*** means Limit Level exceedance

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 14 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.6	G1	18:02	0.7	0.8	<b><u>1.6</u></b>
						G3	18:07			<b><u>1.3</u></b>
						G4	18:20			<b><u>1.4</u></b>
						M1	17:56			<b><u>1.2</u></b>
						M3	18:18			<b><u>1.2</u></b>
						M5	18:30			<b><u>1.1</u></b>
			Mid-flood	C1	0.6	G1	12:41	0.7	0.8	<b><u>1.0</u></b>
						G3	12:47			<b><u>1.4</u></b>
						G4	12:59			<b><u>1.1</u></b>
						M1	12:34			<b><u>1.9</u></b>
			M3	12:52			<b><u>1.3</u></b>			

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	1.2	G1	12:41	6.0	6.9	1.4	1.5	<b><u>4.0</u></b>
				G2	12:27					<b><u>3.9</u></b>
				G4	12:59					<b><u>6.1</u></b>
				M1	12:34					<b><u>3.2</u></b>
				M2	12:22	<b><u>2.8</u></b>				
				M3	12:52	6.2	7.4			<b><u>2.4</u></b>
				M4	12:16	<b><u>13.1</u></b>				
				M5	13:08	<b><u>10.3</u></b>				
		Bottom	2.3	G1	12:41	6.9	7.9	2.7	2.9	<b><u>3.6</u></b>
				G3	12:47					<b><u>4.6</u></b>
				G4	12:59					<b><u>6.5</u></b>
				M1	12:34					<b><u>4.1</u></b>
				M2	12:22					<b><u>3.1</u></b>
				M3	12:52					<b><u>8.6</u></b>
M4	12:16	<b><u>3.8</u></b>								

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



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	2.7	G1	18:02	6.0	6.9	3.2	3.4	<b><u>5.1</u></b>
				G4	18:20					<b><u>4.7</u></b>
				M3	18:18	6.2	7.4			<b><u>6.1</u></b>
				M4	17:39					<b><u>3.9</u></b>
		Bottom	5.4	M1	17:56	6.9	7.9	6.4	7.0	<b><u>9.1</u></b>
				M4	17:39					<b><u>9.7</u></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 16 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.5	G1	07:56	0.6	0.7	<b><i>0.7</i></b>
						G2	07:42			<b><i>0.7</i></b>
						G3	08:03			<b><u>1.8</u></b>
						G4	08:15			<b><i>0.7</i></b>
						M2	07:35			<b><u>0.8</u></b>
						M3	08:08			<b><u>1.5</u></b>
						M4	07:25			<b><u>0.8</u></b>
						M5	08:25			<b><i>0.7</i></b>
			Mid-flood	C1	0.7	G1	13:50	0.9	0.9	<b><u>1.8</u></b>
						G3	13:54			<b><u>2.0</u></b>
G4	14:03	<b><u>1.3</u></b>								
M1	13:43	<b><u>1.4</u></b>								
M3	13:59	<b><u>1.2</u></b>								

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)								
Mid-Flood	C1	Surface	3.6	G2	13:37	6.0	6.9	4.3	4.6	<b><i>6.0</i></b>								
				G3	13:54					<b><i>6.6</i></b>								
				G4	14:03					<b><i>5.5</i></b>								
				M3	13:59					<b><i>4.4</i></b>								
		Bottom	5.6	G4	14:03	6.9	7.9	6.7	7.3	<b><i>8.2</i></b>								
				M1	13:43					<b><i>7.8</i></b>								
				M4	13:24					<b><i>7.4</i></b>								
				Mid-Ebb	C2					Bottom	3.8	G3	08:03	6.9	7.9	4.6	4.9	<b><i>4.8</i></b>
												G4	08:15					<b><i>6.3</i></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 17 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	6.3	G4	9:25	6.0	6.9	7.6	8.2	<b><u>7.8</u></b>
				M2	8:49	6.2	7.4			<b><u>7.4</u></b>
				M4	8:41					<b><u>7.1</u></b>
				M5	9:36					<b><u>6.8</u></b>
		Bottom	5.6	G2	8:53	6.9	7.9	6.7	7.3	<b><u>6.8</u></b>
				G3	9:11					<b><u>7.3</u></b>
				G4	9:25					<b><u>6.9</u></b>
				M3	9:17					<b><u>12.5</u></b>
				M5	9:36					<b><u>8.4</u></b>

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

***Bold Italic with underline*** means Limit Level exceedance



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	<u><b>Measured Value (mg/L)</b></u>
Mid-Flood	C1	Surface	4.3	G1	14:01	6.0	6.9	5.1	5.5	<u><b>6.4</b></u>
				G2	13:39					<u><b>7.4</b></u>
				G3	14:15					<u><b>6.7</b></u>
				G4	14:41					<b>5.5</b>
				M1	13:50	6.2	7.4			<u><b>6.5</b></u>
				M3	14:29					<u><b>8.1</b></u>
				M4	13:18					<b>5.2</b>
				M5	15:07					<u><b>7.3</b></u>
		Bottom	7.9	G1	14:01	6.9	7.9	9.4	10.2	<u><b>8.0</b></u>
				G2	13:39					<u><b>8.6</b></u>
G4	14:41			<b>7.4</b>						

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

***Bold Italic with underline*** means Limit Level exceedance

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 18 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)		
Bottom	19.3	22.2	Mid-ebb	C2	0.3	G2	10:26	0.4	0.4	<b><u>0.5</u></b>		
						G4	10:52			<b><u>0.5</u></b>		
						M1	10:31			<b><u>0.8</u></b>		
						M2	10:19			<b><u>0.5</u></b>		
						M3	10:47			<b><u>0.6</u></b>		
			Mid-flood	C1	0.4			G1	15:36	0.4	0.5	<b><u>0.5</u></b>
								G2	15:26			<b><u>0.5</u></b>
								G4	15:48			<b><u>1.0</u></b>
								M1	15:31			<b><u>1.4</u></b>
								M2	15:22			<b><u>0.6</u></b>
								M3	15:43			<b><u>0.6</u></b>
								M4	15:17			<b><u>0.5</u></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)		
Mid-Flood	C1	Surface	3.7	G2	15:26	6.0	6.9	4.4	4.7	<b><u>7.0</u></b>		
				G3	15:39					<b><u>5.3</u></b>		
				G4	15:48					<b><u>5.2</u></b>		
				M2	15:22					6.2	7.4	<b><u>5.2</u></b>
				M4	15:17							<b><u>6.1</u></b>
		Intake	n.a.	M6	15:52	8.3	8.6	n.a.	n.a.	<b><u>8.9</u></b>		
		Bottom	2.7	G1	15:36	6.9	7.9	3.2	3.4	<b><u>3.8</u></b>		
				G2	15:26					<b><u>4.5</u></b>		
				G3	15:39					<b><u>4.3</u></b>		
				G4	15:48					<b><u>7.9</u></b>		
				M2	15:22					<b><u>6.9</u></b>		
				M3	15:43					<b><u>7.0</u></b>		
		M4	15:17	<b><u>4.0</u></b>								

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	7.4	M4	10:12	6.2	7.4	8.9	9.6	<b>6.7</b>
		Bottom	3.3	G1	10:38	6.9	7.9	4.0	4.3	<b>4.1</b>
				M1	10:31					<b>4.3</b>
				M2	10:19					<b><u>4.9</u></b>
				M3	10:47					<b>4.1</b>
				M4	10:12					<b>4.2</b>

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



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 21 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.7	M1	13:10	0.9	1.0	<b><u>1.4</u></b>
			Mid-flood	C1	0.7	G3	17:01	0.8	0.9	<b>0.9</b>
						G4	17:16			<b>0.9</b>
						M1	16:51			<b><u>1.5</u></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)		
Mid-Flood	C1	Surface	2.1	G1	16:57	6.0	6.9	2.5	2.7	<b><u>7.7</u></b>		
				G2	16:46					<b><u>3.6</u></b>		
				G3	17:01					<b><u>4.1</u></b>		
				G4	17:16					<b><u>5.4</u></b>		
		Bottom	4.2	M2	16:41	6.2	7.4	5.0	5.5	<b><u>4.2</u></b>		
				M4	16:34					<b><u>4.0</u></b>		
				M5	17:24					<b><u>8.3</u></b>		
				M1	16:51					<b><u>5.1</u></b>		
				M3	17:08	6.9	7.9	5.0	5.5	<b><u>9.7</u></b>		
Mid-Ebb	C2	Surface	12.2	G2	13:04	6.0	6.9	14.6	15.9	<b><u>6.4</u></b>		
				G4	13:31					<b><u>6.7</u></b>		
				M3	13:25					6.2	7.4	<b><u>6.4</u></b>
				M4	12:54							<b><u>6.4</u></b>
		Bottom	4.5	M1	13:10	6.9	7.9	5.3	5.8	<b><u>8.9</u></b>		
				M2	13:00					<b><u>5.5</u></b>		
				M4	12:54					<b><u>6.7</u></b>		

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 23 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	2.9	G1	08:49	6.0	6.9	3.4	3.7	<u>4.5</u>
				G2	08:32					<u>6.0</u>
				G3	08:55					<u>4.2</u>
				G4	09:07					<u>6.1</u>
				M1	08:40	6.2	7.4			<u>5.7</u>
				M2	08:27					<u>7.5</u>
				M3	09:01					<u>4.3</u>
				M4	08:20					<u>7.6</u>
		M5	09:19	<u>6.5</u>						
		Bottom	3.3	G1	08:49	6.9	7.9	3.9	4.2	<u>4.6</u>
				G2	08:32					<u>7.3</u>
				G3	08:55					<u>5.9</u>
				G4	09:07					<u>10.7</u>
				M1	08:40					<u>8.1</u>
M2	08:27			<u>8.2</u>						
M3	09:01	<u>7.6</u>								

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
				M4	08:20					<b><u>6.4</u></b>
				M5	09:19					<b><u>9.5</u></b>

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	6.5	G3	13:25	6.0	6.9	7.7	8.4	<b><u>13.6</u></b>
				M3	13:30	6.2	7.4			<b><u>8.1</u></b>
				M4	12:50					<b><u>6.8</u></b>
		Bottom	3.1	G2	13:04	6.9	7.9	3.7	4.0	<b><u>4.1</u></b>
				G3	13:25					<b><u>4.7</u></b>
				G4	13:36					<b><u>5.5</u></b>
				M2	12:58					<b><u>5.3</u></b>

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



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 24 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	12.7	G1	10:03	6.0	6.9	15.2	16.5	<b><u>9.2</u></b>
				G4	10:35					<b><u>8.5</u></b>
				M1	09:49					<b><u>7.7</u></b>
		Intake	N.A.	M6	10:41	8.3	8.6	N.A.	N.A.	<b><u>9.5</u></b>
		Bottom	8.6	G1	10:03	6.9	7.9	10.3	11.2	<b><u>7.2</u></b>
				G2	09:38					<b><u>7.3</u></b>
M4	10:35			<b><u>8.9</u></b>						

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

***Bold Italic with underline*** means Limit Level exceedance

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	<u><b>Measured Value (mg/L)</b></u>
Mid-Flood	C1	Surface	3.8	G1	14:30	6.0	6.9	4.6	4.9	<b><i>4.7</i></b>
				G2	14:12					<b><u>5.3</u></b>
				M1	14:25	6.2	7.4			<b><u>6.8</u></b>
				M2	13:59					<b><u>5.1</u></b>
		Intake	N.A.	M6	15:07	8.3	8.6	N.A.	N.A.	<b><u>9.6</u></b>
		Bottom	4.5	G4	15:00	6.9	7.9	5.3	5.8	<b><u>6.5</u></b>
				M1	14:25					<b><u>6.6</u></b>
				M3	14:50					<b><u>5.5</u></b>
				M4	13:53					<b><u>9.0</u></b>

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

***Bold Italic with underline*** means Limit Level exceedance

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 25 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	0.7	M4	14:25	1.2	1.3	<b><i>1.3</i></b>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	8.7	G2	14:34	6.0	6.9	10.4	11.3	<u>7.2</u>
				G3	14:46					<b>6.5</b>
				G4	14:54					<b>6.6</b>
				M1	14:38	6.2	7.4			<b>7.2</b>
				M2	14:30					<b>8.6</b>
				M3	14:50					<b>6.7</b>
				M4	14:25					<u>7.7</u>
				M5	15:03					<b>6.7</b>
		Bottom	7.1	M1	14:38	6.9	7.9			8.5

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**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	6.9	G1	10:50	6.0	6.9	8.2	8.9	<b><u>7.5</u></b>
				G2	10:40					<b><u>18.0</u></b>
				G3	10:53					<b><u>10.3</u></b>
				M1	10:45	6.2	7.4			<b><u>8.0</u></b>
				M2	10:37					<b><u>6.8</u></b>
				M5	11:13					<b><u>16.6</u></b>
		Bottom	10.1	G4	11:02	6.9	7.9	12.1	13.1	<b><u>10.5</u></b>
				M1	10:45					<b><u>14.4</u></b>
				M4	10:32					<b><u>9.3</u></b>
				M5	11:13					<b><u>7.0</u></b>

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



**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 28 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.9	M4	18:01	2.3	2.5	<b>2.4</b>
			Mid-flood	C1	1.2	G4	13:00	1.4	1.6	<b><u>1.8</u></b>

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	7.2	G1	18:22	6.0	6.9	8.6	9.3	<b>6.5</b>
				G2	18:09					<b>6.4</b>
				M1	18:15	6.2	7.4			<b>6.4</b>
				M5	18:46					<b><u>8.9</u></b>

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**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	3.0	G1	12:42	6.0	6.9	3.5	3.8	<u><b>4.8</b></u>
				G2	12:29					<u><b>11.4</b></u>
				G3	12:50					<u><b>5.8</b></u>
				G4	13:00					<u><b>7.3</b></u>
				M1	12:35	6.2	7.4			<u><b>4.3</b></u>
				M2	12:18					<u><b>8.4</b></u>
				M3	12:54					<u><b>5.5</b></u>
				M4	12:10					<u><b>6.6</b></u>
		M5	13:09	<u><b>6.4</b></u>						
		Bottom	4.0	G1	12:42	6.9	7.9	4.7	5.1	<u><b>6.2</b></u>
				G2	12:29					<u><b>5.6</b></u>
				G3	12:50					<u><b>5.3</b></u>
				G4	13:00					<u><b>7.9</b></u>
				M1	12:35					<u><b>5.4</b></u>
				M3	12:54					<u><b>8.9</b></u>
				M4	12:10					<u><b>11.3</b></u>
M5	13:09			<u><b>6.3</b></u>						

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 30 January 2019

**Part A – Exceedance Summary Tables**

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

Depth	Baseline Action Level (NTU)	Baseline Limit Level (NTU)	Tide	Control Station(s)	Measured Value at Control Station (NTU)	Station(s)	Time (hrs)	120% of Control Station Action Level (NTU)	130% of Control Station Limit Level (NTU)	Measured Value (NTU)
Bottom	19.3	22.2	Mid-ebb	C2	1.2	M3	09:27	1.5	1.6	<u>1.7</u>
			Mid-flood	C1	0.7	G1	14:53	0.8	0.9	<u>1.4</u>
						G2	14:41			<u>0.9</u>
						G3	14:58			<u>1.9</u>
						G4	15:09			<u>2.5</u>
						M1	14:49			<u>1.8</u>
						M3	15:03			<u>1.0</u>
						M4	14:24			<u>0.9</u>
						M5	15:17			<u>0.9</u>

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**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	11.0	G1	09:13	6.0	6.9	13.2	14.3	<u>7.6</u>
				M3	09:27	6.2	7.4			<u>7.5</u>
				M4	08:39					<u>7.4</u>
				M5	09:39					<u>7.5</u>
		Bottom	5.5	G2	08:58	6.9	7.9	6.6	7.2	<u>8.8</u>
				G3	09:20					<u>6.7</u>
				M1	09:05					<u>8.3</u>
				M4	08:39					<u>7.2</u>



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**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	4.2	G1	14:53	6.0	6.9	5.0	5.5	<b><u>17.0</u></b>
				G2	14:41					<b>5.5</b>
				G3	14:58					<b><u>12.9</u></b>
				G4	15:09					<b><u>6.1</u></b>
				M2	14:28	6.2	7.4			<b><u>7.4</u></b>
				M3	15:03					<b><u>5.9</u></b>
				M4	14:24					<b><u>7.2</u></b>
				M5	15:17					<b><u>7.3</u></b>
		Intake	15:15	8.3	8.6	N.A.	N.A.	<b><u>11.3</u></b>		
		Bottom	6.9	G1	14:53	6.9	7.9	8.2	8.9	<b>7.1</b>
				G3	14:58					<b><u>9.6</u></b>
				M1	14:49					<b><u>8.0</u></b>
				M2	14:28					<b><u>12.2</u></b>

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 31 January 2019

**Part A – Exceedance Summary Tables**

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

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Ebb	C2	Surface	7.6	G2	09:03	6.0	6.9	9.1	9.8	<b>6.5</b>
				G3	09:27					<b><u>7.0</u></b>
				G4	09:48					<b><u>7.7</u></b>
				M3	09:39	6.2	7.4			<b><u>8.7</u></b>
				M5	10:11					<b><u>10.3</u></b>
		Bottom	4.5	G1	09:20	6.9	7.9	5.3	5.8	<b><u>6.7</u></b>
				G3	09:27					<b><u>10.0</u></b>
				G4	09:48					<b><u>9.6</u></b>
				M1	09:14					<b><u>7.9</u></b>
				M3	09:39					<b><u>6.5</u></b>
				M4	08:40					<b><u>7.7</u></b>
M5	10:11	<b><u>8.9</u></b>								

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

**Contract No. CE 59/2015 (EP)**

**Environmental Team for Tseung Kwan O – Lam Tin Tunnel**

**Design and Construction**

**- Notification of Environmental Quality Limit Exceedances**

Tide	Control Station(s)	Depth	Measured Value at Control Station (mg/L)	Station(s)	Time (hrs)	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Measured Value (mg/L)
Mid-Flood	C1	Surface	6.7	G1	14:17	6.0	6.9	8.0	8.6	<b><u>7.6</u></b>
				G2	14:01					<b><u>10.2</u></b>
				G3	14:25					<b><u>7.8</u></b>
				G4	14:40					<b><u>7.6</u></b>
				M1	14:09	6.2	7.4			<b><u>11.8</u></b>
				M2	13:52					<b><u>8.0</u></b>
		Intake	N.A.	M6	14:50	8.3	8.6	N.A.	N.A.	<b><u>10.9</u></b>
		Bottom	6.8	G1	14:17	6.9	7.9	8.2	8.8	<b><u>13.6</u></b>
				G2	14:01					<b><u>9.6</u></b>
				G3	14:25					<b><u>8.1</u></b>
				M1	14:09					<b><u>16.0</u></b>
				M3	14:31					<b><u>8.9</u></b>
				M5	14:59					<b><u>7.2</u></b>

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

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**APPENDIX L  
SITE AUDIT SUMMARY**

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

**Appendix L - Site Audit Summary (January 2019)**

**Contract No. NE/2015/01**

*Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works*

Items	Date	Status*	Follow up Action
<b>Water Quality</b>			
Oil was observed floating on the sea both within and outside silt curtain at Portion VI. The Contractor is reminded to clear the oil and check for any damage of the silt curtain	02 January 2019	✓	Improved/rectified on 09 January 2019.
Part of the silt curtain was floating. The Contractor is reminded to check whether the curtain has been set to the seabed	09 January 2019	✗	Item was not rectified and remarked on 16, 22 and 30 January 2019
Washing water was seen overflowing from the bored pile case in platform 1D. The Contractor should ensure that the pumping rate is sufficient to avoid discharging waste water into the sea.	30 January 2019	#	Follow up action will be reported in the next reporting month.
<b>Ecology</b>			
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<b>Noise</b>			
Damaged noise barrier was observed at LTI. Contractor should repair /replace the noise barrier to increase the effectiveness if noise reduction	12 December 2018	✓	Improved/rectified on 02 January 2019.
Sufficient noise barriers should be provided and used properly for noisy PME as practically at LTI according to CNMP.	19 December 2018	✓	Improved/rectified on 02 January 2019.
The damaged acoustic fabric on the breaker should be repaired.	02 January 2019	✓	Improved/rectified on 09 January 2019.
Gaps on the noise barrier should be covered by acoustic fabric.	02 January 2019	✓	Improved/rectified on 09 January 2019.
Noise barriers are placed away from the rock breaking point. The Contractor is reminded to place the barrier close to the breaking point for effective noise screening.	16 January 2019	✓	Improved/rectified on 22 January 2019.
<b>Landscape and Visual</b>			
Materials underneath tree crown (tree protection zone) should be removed.	16 January 2019	✓	Improved/rectified on 22 January 2019.
<b>Air Quality</b>			
Regular watering on dry surface should be applied to minimize erosion.	02 January 2019	✓	Improved/rectified on 09 January 2019.
	09 January 2019	✓	Improved/rectified on 16 January 2019.
	16 January 2019	✗	Item was not rectified and remarked on 22 and 30 January 2019.
Water spray should aim at the rock breaking point for effective dust suppression.	09 January 2019	✓	Improved/rectified on 16 January 2019.
Materials should be watered before loading/unloading.	16 January 2019	✓	Improved/rectified on 22 January 2019.
<b>Waste / Chemical Management</b>			
Oil stain was observed on the ground. The Contractor is reminded to clear up and to regularly maintain plant equipment.	09 January 2019	✓	Improved/rectified on 16 January 2019.
	22 January 2019	✓	Improved/rectified on 30 January 2019.

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

**Appendix L - Site Audit Summary (January 2019)**

Items	Date	Status*	Follow up Action
<i>Impact on Cultural Heritage</i>			
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<i>Permits / Licenses</i>			
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- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month
- \* Non-compliance of mitigation measure
- Non-compliance but improved by the contractor

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

**Appendix L - Site Audit Summary (January 2019)**

**Contract No. NE/2015/02**

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

Items	Date	Status*	Follow up Action
<b>Water Quality</b>			
A derrick lighter barge sank inside the cofferdam.	02 January 2019	✓	Improved/rectified on 09 January 2019.
Floating refuse was found between the cofferdam and silt curtain.	02 January 2019	✓	Improved/rectified on 09 January 2019.
Oil slick found dispersing from the cofferdam to neighbouring works area.	02 January 2019	✓	Improved/rectified on 09 January 2019.
The cofferdam did not contain the oil leakage within the dredging/filling area.	02 January 2019	✓	Improved/rectified on 09 January 2019.
A barge is filled with excess material that may spill over.	16 January 2019	✓	Improved/rectified on 23 January 2019.
Stockpiling of construction materials are found near seafront without cover.	29 January 2019	#	Follow up action will be reported in the next reporting month.
<b>Noise</b>			
Sound proof canvases on a derrick lighter barge is rolled up and not in use.	09 January 2019	✓	Improved/rectified on 16 January 2019.
Some derrick lighter barges are not installed with sound proofing canvases or the canvases are hanged up.	29 January 2019	#	Follow up action will be reported in the next reporting month.
<b>Landscape and Visual</b>			
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<b>Air Quality</b>			
Some idle equipment is not turned off.	16 January 2019	✓	Improved/rectified on 23 January 2019.
<b>Waste / Chemical Management</b>			
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<b>Impact on Cultural Heritage</b>			
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<b>Permits / Licenses</b>			
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- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month
- \* Non-compliance of mitigation measure
- Non-compliance but rectified by the contractor

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

**Appendix L - Site Audit Summary (January 2019)**

**Contract No. NE/2015/03**

*Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge*

Items	Date	Status*	Follow up Action
<b>Water Quality</b>			
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<b>Noise</b>			
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<b>Landscape and Visual</b>			
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<b>Air Quality</b>			
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<b>Waste / Chemical Management</b>			
Chemical storage area is neither bunded or locked	02 January 2019	✓	Improved/rectified on 16 January 2019.
<b>Impact on Cultural Heritage</b>			
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<b>Permits / Licenses</b>			
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- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month
- \* Non-compliance of mitigation measure
- Non-compliance but rectified by the contractor



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

**Appendix L - Site Audit Summary (January 2019)**

**Contract No. NE/2017/01**

*Tseung Kwan O - Lam Tin Tunnel – Tsueng Kwan O Interchange and Associated Works*

Items	Date	Status*	Follow up Action
<b>Water Quality</b>			
Broken silt curtain should be repaired.	27 Decemeber 2018	✓	Improved/rectified on 02 January 2019.
The waste water and oil in the drip tray should be removed on Siu Fai.	29 January 2019	#	Follow up action will be reported in the next reporting month.
<b>Noise</b>			
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<b>Landscape and Visual</b>			
--	--	--	--
<b>Air Quality</b>			
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<b>Waste / Chemical Management</b>			
Dripping oil from bored piling machine on Wai Lung should be cleared.	27 December 2018	✓	Improved/rectified on 02 January 2019.
Oil on seawater should be cleared.	02 January 2019	✓	Improved/rectified on 10 January 2019.
Dripping oil was observed on the flood at Siu Fai 883.	10 January 2019	✓	Improved/rectified on 17 January 2019.
Oil was observed on the floor at Shing Wo.	29 January 2019	#	Follow up action will be reported in the next reporting month.
The waste water and oil in the drip tray should be removed on Siu Fai	29 January 2019	#	Follow up action will be reported in the next reporting month.
<b>Impact on Cultural Heritage</b>			
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<b>Permits / Licenses</b>			
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- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month

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

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

**Appendix L - Site Audit Summary (January 2019)**

**Contract No. NE/2017/02**

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

Items	Date	Status*	Follow up Action
<b><i>Water Quality</i></b>			
A pond/still water is found near a GI hole, next to the vehicle washing area.	02 January 2019	✓	Improved/rectified on 09 January 2019.
Ponds/still water are found near an excavation hole and next to the vehicle washing area.	16 January 2019	✓	Improved/rectified on 23 January 2019.
<b><i>Noise</i></b>			
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<b><i>Landscape and Visual</i></b>			
--	--	--	--
<b><i>Air Quality</i></b>			
<b><i>Waste / Chemical Management</i></b>			
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<b><i>Impact on Cultural Heritage</i></b>			
--	--	--	--
<b><i>Permits / Licenses</i></b>			
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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

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**APPENDIX M**  
**EVENT AND ACTION PLANS**

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**Event and Action Plan for Air Quality (Dust)**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of complaint and propose remedial measures;</li> <li>2. Inform IEC and ER;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and ER;</li> <li>3. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase monitoring frequency to daily;</li> <li>6. Discuss with IEC and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and ER;</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ET on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>2. Implement the agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>



EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	8. If exceedance stops, cease additional monitoring.			
Limit level being exceeded by one sampling	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform Contractor, IEC, ER, and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>
Limit level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> <li>1. Notify IEC, ER, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> </ol>

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	5. Carry out analysis of Contractor’s working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor’s remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	3. Supervise the implementation of remedial measures.	4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

**Event and Action Plan for Construction Noise**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Notify IEC and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC, ER and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analysed results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC;</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC, ER, EPD and Contractor;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

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**

<b>Event</b>	<b>Action</b>			
	<b>ET</b>	<b>IEC</b>	<b>ER</b>	<b>CONTRACTOR</b>
Action level being exceeded by one sampling day at water sensitive receiver(s)	<ul style="list-style-type: none"> <li>Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;</li> <li>If exceedance is found to be caused by the reclamation activities, repeat <i>in-situ</i> measurement to confirm findings;</li> <li>Inform IEC and contractor;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>If exceedance occurs at WSD salt water intake, inform WSD;</li> <li>Discuss mitigation measures with IEC and Contractor;</li> <li>Repeat measurement on next day of exceedance.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss with ET and Contractor on the mitigation measures;</li> <li>Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss with IEC on the proposed mitigation measures;</li> <li>Make agreement on the mitigation proposal.</li> </ul>	<ul style="list-style-type: none"> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment;</li> <li>Amend working methods if appropriate;</li> <li>Discuss with ET and IEC and propose mitigation measures to IEC and ER;</li> <li>Implement the agree mitigation measures.</li> </ul>
Action level being exceeded by two or more consecutive	<ul style="list-style-type: none"> <li>Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;</li> </ul>	<ul style="list-style-type: none"> <li>Discuss with ET and Contractor on the mitigation measures;</li> </ul>	<ul style="list-style-type: none"> <li>Discuss with IEC on the proposed mitigation measures;</li> <li>Make agreement on the mitigation proposal;</li> </ul>	<ul style="list-style-type: none"> <li>Inform the Engineer and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> </ul>

Event	Action			
	ET	IEC	ER	CONTRACTOR
<p>sampling days at water sensitive receiver(s)</p>	<ul style="list-style-type: none"> <li>• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings;</li> <li>• Inform IEC and contractor;</li> <li>• Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>• Discuss mitigation measures with IEC and Contractor;</li> <li>• Ensure mitigation measures are implemented;</li> <li>• Prepare to increase the monitoring frequency to daily;</li> <li>• If exceedance occurs at WSD salt water intake, inform WSD;</li> <li>• Repeat measurement on next day of exceedance.</li> </ul>	<ul style="list-style-type: none"> <li>• Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>• Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Check all plant and equipment and consider changes of working methods;</li> <li>• Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</li> <li>• Implement the agreed mitigation measures.</li> </ul>
<p>Limit level being exceeded by one sampling day at water sensitive receiver(s)</p>	<ul style="list-style-type: none"> <li>• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss with ET and Contractor on the mitigation measures;</li> <li>• Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>• Request Contractor to critically review the working methods;</li> </ul>	<ul style="list-style-type: none"> <li>• Inform the ER and confirm notification of the non-compliance in writing;</li> <li>• Rectify unacceptable practice;</li> </ul>

Event	Action			
	ET	IEC	ER	CONTRACTOR
	<ul style="list-style-type: none"> <li>• If exceedance is found to be caused by the reclamation activities, repeat <i>in-situ</i> measurement to confirm findings;</li> <li>• Inform IEC, contractor, AFCD and EPD</li> <li>• Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>• Discuss mitigation measures with IEC, ER and Contractor;</li> <li>• Ensure mitigation measures are implemented;</li> <li>• Increase the monitoring frequency to daily until no exceedance of Limit level;</li> <li>• If exceedance occurs at WSD salt water intake, inform WSD.</li> </ul>	<ul style="list-style-type: none"> <li>• Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Make agreement on the mitigation measures to be implemented;</li> <li>• Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Check all plant and equipment and consider changes of working methods;</li> <li>• Discuss with ET, IEC and ER and submit proposal of mitigation measures to IEC and ER within 3 working days of notification;</li> <li>• Implement the agreed mitigation measures.</li> </ul>
Limit level being exceeded by two or more consecutive sampling days at	<ul style="list-style-type: none"> <li>• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss with ET and Contractor on the mitigation measures;</li> <li>• Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss with IC(E), ET and Contractor on the proposed mitigation measures;</li> <li>• Request Contractor to critically review the working methods;</li> </ul>	<ul style="list-style-type: none"> <li>• Inform the ER and confirm notification of the non-compliance in writing;</li> <li>• Rectify unacceptable practice;</li> </ul>

Event	Action			
	ET	IEC	ER	CONTRACTOR
water sensitive receiver(s)	<ul style="list-style-type: none"> <li>• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings;</li> <li>• Inform IC(E), AFCD, contractor and EPD;</li> <li>• Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>• Discuss mitigation measures with IC(E), ER and Contractor;</li> <li>• Ensure mitigation measures are implemented;</li> <li>• Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days;</li> <li>• If exceedance occurs at WSD salt water intake, inform WSD.</li> </ul>	<ul style="list-style-type: none"> <li>• Assess the effectiveness of the implemented mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Make agreement on the mitigation measures to be implemented;</li> <li>• Assess the effectiveness of the implemented mitigation measures;</li> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Check all plant and equipment and consider changes of working methods;</li> <li>• Discuss with ET, IC(E) and ER and submit proposal of mitigation measures to IC(E) and ER within 3 working days of notification;</li> <li>• Implement the agreed mitigation measures;</li> <li>• As directed by the Engineer, to slow down or to stop all or part of the construction activities.</li> </ul>



### Limit Levels and Action Plan for Landfill Gas

Parameter	Limit Level	Action
Oxygen	<19%	<ul style="list-style-type: none"> <li>• Ventilate to restore oxygen to &gt;19%</li> </ul>
	<18%	<ul style="list-style-type: none"> <li>• Stop works</li> <li>• Evacuate personnel/prohibit entry</li> <li>• Increase ventilation to restore oxygen to &gt;19%</li> </ul>
Methane	>10% LEL (i.e. > 0.5% by volume)	<ul style="list-style-type: none"> <li>• Prohibit hot works</li> <li>• Ventilate to restore methane to &lt;10% LEL</li> </ul>
	>20% LEL (i.e. > 1% by volume)	<ul style="list-style-type: none"> <li>• Stop works</li> <li>• Evacuate personnel / prohibit entry</li> <li>• Increase ventilation to restore methane to &lt;10% LEL</li> </ul>
Carbon Dioxide	>0.5%	<ul style="list-style-type: none"> <li>• Ventilate to restore carbon dioxide to &lt; 0.5%</li> </ul>
	>1.5%	<ul style="list-style-type: none"> <li>• Stop works</li> <li>• Evacuate personnel / prohibit entry</li> <li>• Increase ventilation to restore carbon dioxide to &lt; 0.5%</li> </ul>

**Event and Action Plan for Coral Post-Translocation Monitoring**

<b>Event</b>	<b>Action</b>			
	<b>ET Leader</b>	<b>IEC</b>	<b>ER</b>	<b>Contractor</b>
<b>Action Level Exceedance</b>	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.
<b>Limit Level Exceedance</b>	Undertake Steps 1-4 as in the Action Level Exceedance. If further exceedance of Limit Level, suspend construction works until an effective solution is identified.	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.

### Mitigation Measures for Vibration Monitoring

Level	Contingency Action
Alert Level	<ul style="list-style-type: none"> <li>● The Engineer shall be informed immediately.</li> <li>● 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.</li> <li>● The Contractor shall review and increase the instrumentation monitoring and reporting frequency, if applicable.</li> <li>● 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.</li> </ul>
Alarm Level	<ul style="list-style-type: none"> <li>● The Engineer shall be informed immediately.</li> <li>● The active construction works may require to be suspended subject to the Engineer's review of monitoring data.</li> <li>● The Contractor shall immediately implement the measures as defined in the detailed plan of action to prevent further ground movement and groundwater drawdown etc.</li> <li>● The Contractor shall prepare a detailed investigation report to study the cause of the exceedance</li> <li>● The Contractor shall propose a contingency plan for the Engineer's approval in the event that alarm value is reached or exceeded</li> <li>● The Contractor shall develop an emergency plan for the Engineer's approval in the event the applied contingency measures cannot control the situation.</li> <li>● The Contractor shall meet the Engineer to discuss the instrument response and review the effectiveness of the implemented measures.</li> <li>● The Contractor shall carry out design review of the works</li> </ul>

Action Level	<ul style="list-style-type: none"><li>● Consideration shall be given to suspend all active construction works and the Engineer shall be informed immediately</li><li>● The Contractor shall immediately implement the measures defined in the contingency plan</li><li>● The Contractor shall implement the measures defined in the emergency plan in the event that the applied contingency measures are found inadequate</li><li>● 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</li><li>● 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.</li></ul>
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**APPENDIX N  
ENVIRONMENTAL MITIGATION  
IMPLEMENTATION SCHEDULE (EMIS)**

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

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

**Contract:NE/2015/01**

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

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	^
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> <li>- Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>- Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage,</li> </ul>	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	# (1) * (2) * (3)

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EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<p>watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> <li>- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>- 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.</li> <li>- 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.</li> <li>- Imposition of speed controls for vehicles on site haul roads.</li> <li>- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs</li> <li>- 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.</li> <li>- Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>• All vehicles shall be shut down in intermittent use.</li> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>• All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)</li> </ul>	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	^
<b>Noise Impact (Construction Phase)</b>							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^



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EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	*(4)
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> <li>- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program</li> <li>- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.</li> <li>- Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>- 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.</li> <li>- 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.</li> <li>- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^  ^  ^  ^  ^
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A

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EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		Project at the affected NSRs					
<b>Water Quality Impact (Construction Phase)</b>							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m <sup>3</sup> , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling barge trips per day shall be made with a maximum daily rate of 3,000m <sup>3</sup> (i.e. 1,000 m <sup>3</sup> per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
Silt Curtain Deploym ent Plan	<ul style="list-style-type: none"> <li>- Silt curtains should be deployed properly to surround the works area.</li> <li>- Maintenance of silt curtain should be provided.</li> <li>- Sufficient stock of silt curtain should be provided on site.</li> </ul>	Control potential impacts from marine works	Contractor	NE/2015/01	Construction stage	EIAO	# (5)

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EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- floating single silt curtain shall be employed for all marine works;</li> <li>- 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;</li> <li>- all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>- excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved;</li> <li>- adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;</li> <li>- 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;</li> <li>- any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;</li> <li>- 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</li> </ul>	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>* (6)</p>

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	<p>grounds; and</p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>						
S5.8.4	<p>Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.</p>	<p>Control potential impacts from filling activities and marine based construction</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>N/A</p>
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> <li>- 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)</li> <li>- 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.</li> <li>- Water quality sampling and testing shall be carried out to demonstrate that the water quality inside the enclosed barrier is comparable to the ambient or baseline levels prior to the removal of the fully enclosed barrier.</li> <li>- Silt curtains shall be deployed for the installation and removal of the temporary</li> </ul>	<p>Control potential impacts from dredging and filling works for Reclamation for Road P2</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>N/A  N/A  N/A  N/A</p>



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EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	barrier and at the double water gates marine access opening during its operation.						
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	* (7)

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

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**January 2019**

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

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



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

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

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

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



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

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

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

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



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<b>Ecological Impact</b>							
S6.8.4	<p><b>Measures to Minimize Disturbance</b></p> <ul style="list-style-type: none"> <li>- Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible.</li> <li>- 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;</li> <li>- Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities</li> </ul>	<p>Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation</p>	<p>Design Team / Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^  ^  ^</p>
S6.8.5	<p><b>Standard Good Site Practice</b></p> <ul style="list-style-type: none"> <li>- Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats.</li> <li>- Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.</li> <li>- Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.</li> <li>- General drainage arrangements should include sediment and oil traps to collect and control construction site run-off.</li> <li>- Open burning on works sites is illegal, and should be strictly prohibited.</li> <li>- Measures should also be put into place so that litter, fuel and solvents do not enter</li> </ul>	<p>Reduce disturbance to surrounding habitats</p>	<p>Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^  ^  ^  ^  ^</p>

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	the nearby watercourses.						
S6.8.6	<p><b>Measure to Minimize Groundwater Inflow</b></p> <ul style="list-style-type: none"> <li>- The drained tunnel construction method with groundwater inflow control measures would generally be adopted.</li> <li>- 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.</li> </ul>	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A  N/A
S6.8.8	<p><b>Measure to Minimize Impact on Corals</b></p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> <li>- It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, within the reclamation area and bridge footprint to the other suitable locations as far as practicable.</li> <li>- 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).</li> <li>- 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.</li> <li>- The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s)</li> </ul>	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^  ^  ^  ^

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	<p>who is/are approved by AFCD prior to commencement of coral translocation.</p> <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> <li>- A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities</li> <li>- 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.</li> </ul>						<p>^</p> <p>^</p>
<p>S6.8.9</p> <p>S6.8.10</p>	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> <li>- Diverting of the site runoff to silt trap facilities before discharging into storm drain;</li> <li>- Proper waste and dumping management; and</li> <li>- Standard good-site practice for land-based construction.</li> </ul>	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the</p>	<p>Design Team, contractor</p>	<p>Marine and landbased works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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		receiving water bodies					
S6.8.11	<p><b>Compensation for Vegetation Loss</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
<b>Fisheries Impact</b>							
S7.7.3	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> </ul>	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
<b>Waste Management (Construction Phase)</b>							
S8.6.3	<p><b>Good Site Practices and Waste Reduction Measures</b></p> <ul style="list-style-type: none"> <li>- 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;</li> </ul>	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)	^



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	<ul style="list-style-type: none"> <li>- Training of site personnel in site cleanliness, proper waste management and chemical handling procedures;</li> <li>- Provision of sufficient waste disposal points and regular collection of waste;</li> <li>- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and</li> <li>- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> </ul>					Land  (Miscellaneous Provisions)  Ordinance (Cap. 28)	^  ^  ^  ^
S8.6.4	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> <li>- Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and</li> <li>- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)  Land  (Miscellaneous Provisions)  Ordinance (Cap. 28)	^  ^  ^  ^
S8.6.5	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <p>The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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	<p>avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.</p> <p>The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.</p>						
S8.6.6	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <ul style="list-style-type: none"> <li>- C&amp;D materials would be reused in the project and other local concurrent projects as far as possible.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.7	<p><b><i>Storage, Collection and Transportation of Waste</i></b></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> <li>- Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution;</li> <li>- Maintain and clean storage areas routinely;</li> <li>- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and</li> <li>- Different locations should be designated to stockpile each material to enhance reuse.</li> </ul>	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^ ^
S8.6.8/	<b><i>Storage, Collection and Transportation of Waste (con't)</i></b>	To minimize	Contractor	All work	Construction		

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Waste Manage ment Plan	<ul style="list-style-type: none"> <li>- Remove waste in timely manner;</li> <li>- Waste collectors should only collect wastes prescribed by their permits;</li> <li>- Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;</li> <li>- 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);</li> <li>- Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and</li> <li>- Maintain records of quantities of waste generated, recycled and disposed.</li> </ul>	potential adverse environmental impacts arising from waste collection and disposal		sites	Phase		^ ^ ^ ^ ^ ^
S8.6.9/ Waste Manage ment Plan	<p><b>Storage, Collection and Transportation of Waste (con't)</b></p> <ul style="list-style-type: none"> <li>- Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction &amp; Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.</li> </ul>	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^
S8.6.11 - S8.6.13/ Waste	<p><b>Sorting of C&amp;D Materials</b></p> <ul style="list-style-type: none"> <li>- Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site.</li> </ul>	To minimize potential adverse	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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Management Plan	<ul style="list-style-type: none"> <li>- Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials.</li> <li>- The C&amp;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</li> </ul>	environmental				ETWB TCW No. 33/2002  ETWB TCW No. 19/2005	^  ^
S8.6.17 – S8.6.20	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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).</li> <li>- In order to minimise the potential odour / dust emissions during boring, excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.</li> <li>- In order to minimise the exposure to contaminated materials, workers should,</li> </ul>	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^  ^  ^  N/A





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	<p>avoid splashing and overflowing of the sediment slurry to the surrounding water.</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> </ul>						<p>^</p> <p>N/A</p> <p>N/A</p>
S8.6.26/ Waste Management	<p><b>Chemical Wastes.</b></p> <ul style="list-style-type: none"> <li>- 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</li> </ul>	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of	* (8)

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Plan	Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					Chemical Wastes  Waste Disposal (Chemical Waste) (General)  Regulation	
S8.6.27/ Waste Management Plan	<p><b>General Refuse</b></p> <ul style="list-style-type: none"> <li>- General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
<b>Impact on Cultural Heritage (Construction Phase)</b>							
S9.6.4	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> <li>- Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided;</li> <li>- The open yard in front of the temple should be kept as usual for annual Tin Hau festival;</li> <li>- Monitoring of vibration impacts should be conducted when the construction</li> </ul>	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^  ^  ^

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	works are less than 100m from the temple.						
S9.6.4	Indirect vibration impact - Vibration level is suggest to be controlled within a peak particle velocity (ppv) limit of 5mm/s measured inside the historical buildings; - Monitoring of vibration should be carried out during construction phase. - Tilting and settlement monitoring should will be applied on the Cha Kwo Ling Tin Hau Temple as well. - A proposal with details for the mitigation measures and monitoring of impacts on built heritage shall be submitted to AMO for comments before commencement of work.	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	^ ^ ^ ^
Built Heritage Mitigation Plan	- Established Alert, Alarm and Action Level for the monitoring parameters. - To increase the instrumentation monitoring and reporting frequency. - To propose detailed action plan or contingency plan for the Engineer's approval when AAA Level is reached or exceeded.	To prevent vibration impacts	NE/2015/01	Tin Hau Temple	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	^ ^ ^
<b>Landscape and Visual Impact (Construction Phase)</b>							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^



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Table 10.8.1/ Landsca pe Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works.  The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s )	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	* (9)
Table 10.8.1/ Landsca	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	To maximize preservation of existing trees	CEDD (via Contractor)	As per approved Tree	Site clearance	ETWB TC 3/2006 and as per tree protection	^

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pe Mitigation Plan	specification shall be provided in the Contract Specification and sufficient time for preparation shall be allowed in the construction programme.			Removal Application(s )		measures in Particular Specification	
Table 10.8.1/ Landsca pe Mitigation Plan	CM6 - Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	To maximize screening of the works	CEDD (via Contractor)	At Lam Tin Interchange and edge of Road P2 landscape deck, TKO	Beginning of construction period	N/A	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification	N/A
Table 10.8.1/ Landsca pe Mitigation Plan	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	^
Table	CM9 - Screening of works areas with hoardings with appropriate colours compatible	Reduction of	CEDD (via	Project site	Excretion of	N/A	^

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

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				TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2			
<b>Landfill Gas Hazard (Design and Construction Phase)</b>							
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	<b>Safety Measures</b>  - For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation	Protect the workers from landfill gas	Contractor	Project sites within the Sai Tso Wan	Construction phase	EPD's Landfill Gas Hazard Assessment	^



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	<p>Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards.</p> <ul style="list-style-type: none"> <li>- An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out.</li> <li>- 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.</li> <li>- 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.</li> <li>- Welding, flame-cutting or other hot works should be confined to open areas at least 15m from any trench or excavation.</li> <li>- 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).</li> <li>- 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</li> </ul>	hazards		Landfill Consultation Zone		Guidance Note Labour Department’s Code of Practice for Safety and Health at Work in Confined Space	^  ^  ^  ^  ^

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	<p>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.</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site.</li> </ul>						<p>^</p> <p>^</p> <p>^</p>

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	<ul style="list-style-type: none"> <li>- Fire drills should be organized at not less than six monthly intervals.</li> <li>- The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow.</li> <li>- 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.</li> <li>- Service runs within the Consultation Zone should be designated as "special routes"; utilities companies should be informed of this and precautionary measures should be implemented. Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces such as manholes and service chambers, and that appropriate monitoring procedures are in place to prevent hazards due to asphyxiating atmospheres in confined spaces. Detailed guidance on entry into confined spaces is given in Code of Practice on Safety and Health at Work in Confined Spaces (Labour Department, Hong Kong).</li> <li>- 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.</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>





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	<ul style="list-style-type: none"> <li>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.</li> </ul>						
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
<b>Noise Impact (Construction Phase)</b>					
# (1)	S3.8.7	Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> <li>• Regular watering on dry surface should be applied to minimize wind erosion.</li> </ul>
* (2)	S3.8.7	Use of frequent watering for particularly dusty construction areas and areas close to ASRs.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> <li>• Water spray should aim at the rock breaking point for effective dust suppression.</li> </ul>
* (3)	S3.8.7	Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> <li>• Materials should be watered before loading/unloading.</li> </ul>
* (4)	Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, Silent Up, and etc) or Full Enclosure for PME according to the approved Noise Mitigation Plan	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> <li>• Damaged noise barrier was observed at LTI. Contractor should repair /replace the noise barrier to increase the effectiveness of noise reduction</li> <li>• Sufficient noise barriers should be provided and used properly for noisy PMEs as practically at LTI according to CNMP.</li> </ul>

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					<ul style="list-style-type: none"> <li>The damaged acoustic fabric on the breaker should be repaired.</li> <li>Gaps on the noise barrier should be covered by acoustic fabric.</li> <li>Noise barriers are placed away from the rock breaking point. The Contractor is reminded to place the barrier close to the breaking point for effective noise screening.</li> </ul>
<b>Water Quality Impact (Construction Phase)</b>					
# (5)	Silt curtain deployment Plan	<ul style="list-style-type: none"> <li>Silt curtains should be deployed properly to surround the works area.</li> <li>Maintenance of silt curtain should be provided.</li> </ul>	NE/2015/01	Construction of TKO Portal	<ul style="list-style-type: none"> <li>Part of the silt curtain was floating. The Contractor is reminded to check whether the curtain has been set to the seabed</li> </ul>
* (6)	S5.8.3	<ul style="list-style-type: none"> <li>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</li> </ul>	NE/2015/01	Construction of TKO Portal	<ul style="list-style-type: none"> <li>Oil was observed floating on the sea both within and outside silt curtain at Portion VI. The Contractor is reminded to clear the oil and check for any damage of the silt curtain</li> </ul>
* (7)	S5.8.7	<p>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.</p>	NE/2015/01	Construction of TKO Portal	<ul style="list-style-type: none"> <li>Washing water was seen overflowing from the bored pile case in platform 1D. The Contractor should ensure that the pumping rate is sufficient to avoid discharging waste water into the sea.</li> </ul>
<b>Waste/ Chemical Management</b>					

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* (8)	S8.6.26/ Waste Managemen t Plan	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:  - storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> <li>Oil stain was observed on the ground. The Contractor is reminded to clear up and to regularly maintain plant equipment.</li> </ul>
* (9)	Table 10.8.1/ Landscape Mitigation Plan	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor’s works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	NE/2015/01	Construction of Lam Tin Interchange	<ul style="list-style-type: none"> <li>Materials underneath tree crown (tree protection zone) should be removed.</li> </ul>



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

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

**Contract: NE/2015/02**

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

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
<b>Air Quality Impact</b>							
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	^
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> <li>- Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>- Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>- Side enclosure and covering of any aggregate or dusty material storage piles to</li> </ul>	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^

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	<p>reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> <li>- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>- 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.</li> <li>- 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.</li> <li>- Imposition of speed controls for vehicles on site haul roads.</li> <li>- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs</li> <li>- 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.</li> <li>- Instigation of an environmental monitoring and auditing program to monitor the</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	construction process in order to enforce controls and modify method of work if dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>• All vehicles shall be shut down in intermittent use.</li> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>• All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)</li> </ul>	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	* (1) ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Sediment Manage ment Plan	<ul style="list-style-type: none"> <li>- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite.</li> <li>- Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation</li> <li>- Subject to the odour intensity and instruction by the <i>Supervisor</i>, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact.</li> </ul>	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	^ ^ ^

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	<ul style="list-style-type: none"> <li>- The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact.</li> <li>- The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement.</li> <li>- Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions.</li> <li>- The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission.</li> <li>- The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment.</li> <li>- Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front.</li> <li>- The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control.</li> <li>- Any excessive air emissions will be inspected and recorded.</li> <li>- Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season.</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>



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<b>Noise Impact (Construction Phase)</b>							
S4.8	<ul style="list-style-type: none"> <li>- 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 &amp; Pump and Concrete Pump.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	* (2)
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> <li>- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program</li> <li>- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.</li> <li>- Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>- 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.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^  ^  ^  ^

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	<ul style="list-style-type: none"> <li>- 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.</li> <li>- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>						<p>^</p> <p>^</p>
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A
<b>Water Quality Impact (Construction Phase)</b>							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m <sup>3</sup> , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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	<p>barge trips per day shall be made with a maximum daily rate of 3,000m<sup>3</sup> (i.e. 1,000 m<sup>3</sup> 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.</p>						
Silt Curtain Deploym ent Plan	<ul style="list-style-type: none"> <li>- Silt curtains should be deployed properly to surround the works area.</li> <li>- Maintenance of silt curtain should be provided.</li> <li>- Sufficient stock of silt curtain should be provided on site.</li> </ul>	Control potential impacts from marine works	Contractor	NE/2015/02	Construction stage	EIAO	^
Sediment Manage ment Plan	<ul style="list-style-type: none"> <li>- Loading of barges and hoppers will be controlled to prevent splashing of dredged materials into the surrounding water. Barges or hoppers will not be filled to a level that will cause the overflow of materials or pollute water during loading or transportation.</li> <li>- Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.</li> <li>- Monitoring of the barge loading shall be conducted to ensure that loss of material does not take during transportation.</li> <li>- Transport barges or vessels shall be equipped with automatic self-monitoring devices.</li> <li>- Vehicles containing any untreated / treated marine sediments will be suitably covered to limit potential dust emissions or potential contaminated wastewater</li> </ul>	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	^  ^  * (3)  ^  ^

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	<p>run-off, and truck bodies and tailgates will be sealed to prevent any discharge during transport or wet conditions.</p> <ul style="list-style-type: none"> <li>- The leachate from the untreated marine sediment will be collected and treated in the mixing pool for cement s/s treatment.</li> <li>- A 300mm diameter U-channel will be constructed along the perimeter of the cement s/s treatment facility to collect the run-off, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). Cleaning for the u-channel and desilting pits shall be conducted on weekly basic.</li> <li>- The stockpile area of treated marine sediment will be surrounded by the perimeter concrete block walls with geotextile membranes installed at the inner face of the concrete block walls. The types of perimeter wall can be used interchangeably. The Structural Feasibility of the perimeter wall for the changes of height of the stockpile had been checked and certified by ICE.</li> <li>- The mixing areas will be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater and will be confined by partition concrete block walls for carrying out the mixing and temporary stockpile of treated sediment.</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- floating single silt curtain shall be employed for all marine works;</li> </ul>	Control potential impacts from filling activities and marine-based	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	<p>* (4)</p> <p>^</p>



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	<ul style="list-style-type: none"> <li>- 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;</li> <li>- all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>- excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved;</li> <li>- adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;</li> <li>- 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;</li> <li>- any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;</li> <li>- 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</li> <li>- 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.</li> </ul>	<p>construction</p>					<p>* (5)</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>* (6)</p> <p>N/A</p>

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S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> <li>- 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)</li> <li>- 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.</li> <li>- Water quality sampling and testing shall be carried out to demonstrate that the water quality inside the enclosed barrier is comparable to the ambient or baseline levels prior to the removal of the fully enclosed barrier.</li> <li>- 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.</li> </ul>	Control potential impacts from dredging and filling works for Reclamation for Road P2	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^  ^  N/A  ^

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

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



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S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m <sup>3</sup> capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m <sup>3</sup> should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (7)

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

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

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



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

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

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

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



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

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	(General) Regulation should be observed and complied with for control of chemical wastes.	spillage of chemicals					
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided.  Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:  - suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;  - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and  - storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^  ^  ^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	* (8)

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<b>Ecological Impact</b>							
S6.8.4	<p><b>Measures to Minimize Disturbance</b></p> <ul style="list-style-type: none"> <li>- Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible.</li> <li>- 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;</li> <li>- Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities</li> </ul>	<p>Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation</p>	<p>Design Team / Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^  ^  ^</p>
S6.8.5	<p><b>Standard Good Site Practice</b></p> <ul style="list-style-type: none"> <li>- Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats.</li> <li>- Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.</li> <li>- Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.</li> <li>- General drainage arrangements should include sediment and oil traps to collect and control construction site run-off.</li> <li>- Open burning on works sites is illegal, and should be strictly prohibited.</li> <li>- Measures should also be put into place so that litter, fuel and solvents do not enter</li> </ul>	<p>Reduce disturbance to surrounding habitats</p>	<p>Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^  ^  ^  ^  ^</p>

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	the nearby watercourses.						
S6.8.6	<p><b>Measure to Minimize Groundwater Inflow</b></p> <ul style="list-style-type: none"> <li>- The drained tunnel construction method with groundwater inflow control measures would generally be adopted.</li> <li>- 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.</li> </ul>	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A  N/A
S6.8.8	<p><b>Measure to Minimize Impact on Corals</b></p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> <li>- It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, within the reclamation area and bridge footprint to the other suitable locations as far as practicable.</li> <li>- 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).</li> <li>- 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.</li> </ul>	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^  ^  ^  ^



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	<ul style="list-style-type: none"> <li>- The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation.</li> </ul> <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> <li>- A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities</li> <li>- 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.</li> </ul>						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
<p>S6.8.9</p> <p>S6.8.10</p>	<p><b><i>Measure to Control Water Quality Impact</i></b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> <li>- Diverting of the site runoff to silt trap facilities before discharging into storm drain;</li> <li>- Proper waste and dumping management; and</li> <li>- Standard good-site practice for land-based construction.</li> </ul>	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical</p>	<p>Design Team, contractor</p>	<p>Marine and landbased works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

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		spillage and construction site runoff to the receiving water bodies					
S6.8.11	<p><b>Compensation for Vegetation Loss</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
<b>Fisheries Impact</b>							
S7.7.3	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> </ul>	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
<b>Waste Management (Construction Phase)</b>							
S8.6.3	<p><b>Good Site Practices and Waste Reduction Measures</b></p> <ul style="list-style-type: none"> <li>- 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;</li> </ul>	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)	^

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	<ul style="list-style-type: none"> <li>- Training of site personnel in site cleanliness, proper waste management and chemical handling procedures;</li> <li>- Provision of sufficient waste disposal points and regular collection of waste;</li> <li>- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and</li> <li>- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> </ul>					Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^  ^  ^  ^
S8.6.4	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> <li>- Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and</li> <li>- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)  Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^  ^  ^  ^
S8.6.5	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <p>The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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	<p>avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.</p> <p>The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.</p>						
S8.6.6	<p><b>Good Site Practices and Waste Reduction Measures (con't)</b></p> <ul style="list-style-type: none"> <li>- C&amp;D materials would be reused in the project and other local concurrent projects as far as possible.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.7	<p><b>Storage, Collection and Transportation of Waste</b></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> <li>- Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution;</li> <li>- Maintain and clean storage areas routinely;</li> <li>- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and</li> <li>- Different locations should be designated to stockpile each material to enhance reuse.</li> </ul>	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^  ^  ^  ^
S8.6.8/	<b>Storage, Collection and Transportation of Waste (con't)</b>	To minimize	Contractor	All work	Construction		

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Waste Manage ment Plan	<ul style="list-style-type: none"> <li>- Remove waste in timely manner;</li> <li>- Waste collectors should only collect wastes prescribed by their permits;</li> <li>- Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;</li> <li>- 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);</li> <li>- Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and</li> <li>- Maintain records of quantities of waste generated, recycled and disposed.</li> </ul>	potential adverse environmental impacts arising from waste collection and disposal		sites	Phase		^  ^  ^  ^  ^
S8.6.9/ Waste Manage ment Plan	<p><b><i>Storage, Collection and Transportation of Waste (con't)</i></b></p> <ul style="list-style-type: none"> <li>- Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction &amp; Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.</li> </ul>	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^
S8.6.11 - S8.6.13/	<p><b><i>Sorting of C&amp;D Materials</i></b></p> <ul style="list-style-type: none"> <li>- Sorting to be performed to recover the inert materials, reusable and recyclable</li> </ul>	To minimize potential	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^



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Waste Manage ment Plan	<p>materials before disposal off-site.</p> <ul style="list-style-type: none"> <li>- Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials.</li> <li>- The C&amp;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</li> </ul>	adverse environmental				<p>ETWB TCW No. 33/2002</p> <p>ETWB TCW No. 19/2005</p>	<p>^</p> <p>^</p>
S8.6.15 – S8.6.16/ Waste Manage ment Plan	<p><b>Sediments</b></p> <ul style="list-style-type: none"> <li>- 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&amp;DMMP. MFC has no adverse comment on the current C&amp;DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination.</li> </ul>	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02	All works areas with sediments concern	Construction Phase	RBRG	N/A

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	<ul style="list-style-type: none"> <li>- 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</li> </ul>						N/A
S8.6.17 – S8.6.20	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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).</li> <li>- In order to minimise the potential odour / dust emissions during boring, excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks. Loading of the excavated sediment to the barge</li> </ul>	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^  ^  ^

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	<p>should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.</p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>						N/A
S8.6.21/ Waste Management Plan	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A

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S8.6.24 - S8.6.28/ Waste Manage ment Plan	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excavated sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002.</li> <li>- 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).</li> <li>- 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.</li> <li>- 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</li> </ul>	To ensure handling of sediments are in accordance to statutory requirements	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^  ^  ^  ^

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	<p>level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> </ul>						<p>N/A</p> <p>N/A</p>
S8.6.26/ Waste Management Plan	<p><b>Chemical Wastes.</b></p> <ul style="list-style-type: none"> <li>- 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</li> </ul>	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	^



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	waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					(Chemical Waste) (General) Regulation	
S8.6.27/ Waste Management Plan	<p><b>General Refuse</b></p> <ul style="list-style-type: none"> <li>- General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
<b>Impact on Cultural Heritage (Construction Phase)</b>							
S9.6.4	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> <li>- Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided;</li> <li>- The open yard in front of the temple should be kept as usual for annual Tin Hau festival;</li> <li>- Monitoring of vibration impacts should be conducted when the construction works are less than 100m from the temple.</li> </ul>	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^  ^ ^
S9.6.4	<p>Indirect vibration impact</p> <ul style="list-style-type: none"> <li>- Vibration level is suggest to be controlled within a peak particle velocity (ppv)</li> </ul>	To prevent indirect vibration	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings	^

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	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.	impact				by CEDD; GCHIA; AMO.	^ ^ ^
<b><i>Landscape and Visual Impact (Construction Phase)</i></b>							
Table 10.8.1/ Landsca pe Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1/	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.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular	^

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

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Plan				deck, TKO			
Table 10.8.1/ Landsca pe Mitigation Plan	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification	N/A
Table 10.8.1/ Landsca pe Mitigation Plan	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A	^
Table 10.8.1/ Landsca	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion and integration	CEDD (via Contractor)	Built structures	Design and construction stage	N/A	^

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pe Mitigation Plan		with environment					
Table 10.8.1/ Landsca pe Mitigation Plan	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A	^
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with existing coastlin	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and permanent reclamation for TKO Interchange slip roads and Road P2.	Construction planning and reclamation stages	N/A	N/A



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

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

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
<b>Air Quality Impact (Construction Phase)</b>					
* (1)	/	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>• All vehicles shall be shut down in intermittent use.</li> </ul>	NE/2015/02	Construction of Road P2	<ul style="list-style-type: none"> <li>• Some idle equipment is not turned off.</li> </ul>
<b>Noise Impact (Construction Phase)</b>					
* (2)	Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, Silent Up, and etc) or Full Enclosure for PME according to the approved Noise Mitigation Plan	NE/2015/02	Construction of Road P2	<ul style="list-style-type: none"> <li>• Sound proof canvases on a derrick lighter barge is rolled up and not in use.</li> <li>• Some derrick lighter barges are not installed with sound proofing canvases or the canvases are hanged up.</li> </ul>
<b>Water Quality Impact (Construction Phase)</b>					
* (3)	Sediment Management Plan	- Monitoring of the barge loading shall be conducted to ensure that loss of material does not take during transportation.	NE/2015/02	Construction of Road P2	<ul style="list-style-type: none"> <li>• A barge is filled with excess material that may spill over.</li> </ul>
* (4) (5) (6)	5.8.3	<ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> </ul>	NE/2015/02	Construction of Road P2	<ul style="list-style-type: none"> <li>• A derrick lighter barge sank inside the cofferdam.</li> <li>• Oil slick found dispersing from the cofferdam to neighbouring works area.</li> <li>• The cofferdam did not contain the oil leakage within the dredging/filling area.</li> </ul>

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		- 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			
* (7)	S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m <sup>3</sup> should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	NE/2015/02	Construction of Road P2	<ul style="list-style-type: none"> <li>• Stockpiling of construction materials are found near seafront without cover.</li> </ul>
* (8)	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	<ul style="list-style-type: none"> <li>• Floating refuse was found between the cofferdam and silt curtain.</li> </ul>

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

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

**Contract: NE/2017/02**

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

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S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	^
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> <li>- Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>- Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage,</li> </ul>	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^

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	<p>watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> <li>- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>- 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.</li> <li>- 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.</li> <li>- Imposition of speed controls for vehicles on site haul roads.</li> <li>- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs</li> <li>- 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.</li> <li>- Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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	dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>• All vehicles shall be shut down in intermittent use.</li> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>• All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)</li> </ul>	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^ ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Sediment Manage ment Plan	<ul style="list-style-type: none"> <li>- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite.</li> <li>- Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation</li> <li>- Subject to the odour intensity and instruction by the <i>Supervisor</i>, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact.</li> </ul>	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	^ ^ ^



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	<ul style="list-style-type: none"> <li>- The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact.</li> <li>- The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement.</li> <li>- Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions.</li> <li>- The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission.</li> <li>- The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment.</li> <li>- Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front.</li> <li>- The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control.</li> <li>- Any excessive air emissions will be inspected and recorded.</li> <li>- Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season.</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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<b>Noise Impact (Construction Phase)</b>							
S4.8	<ul style="list-style-type: none"> <li>- 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 &amp; Pump and Concrete Pump.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> <li>- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program</li> <li>- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.</li> <li>- Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>- 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.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^ ^

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	<ul style="list-style-type: none"> <li>- 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.</li> <li>- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>						<p>^</p> <p>^</p>
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	^
<b>Water Quality Impact (Construction Phase)</b>							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m <sup>3</sup> , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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	barge trips per day shall be made with a maximum daily rate of 3,000m <sup>3</sup> (i.e. 1,000 m <sup>3</sup> per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.						
S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the corresponding WCZ under the TM-DSS.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include:  - use of sediment traps; and  - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^  N/A  ^
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (1)



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S5.8.10	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m <sup>3</sup> capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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

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

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S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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		based construction					
S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected. Prescriptive measures in the form of an Action Plan with pre-emptive and re-active to preserve the groundwater levels at all times during the tunnel construction are set out in Table 5.18.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A



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S5.8.28	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.29 - S5.8.31	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an online standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site runoff from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	based construction					
S5.8.44	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:  - suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;  - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^  ^



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	- storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.						^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
<b>Ecological Impact</b>							
S6.8.4	<p><b>Measures to Minimize Disturbance</b></p> <ul style="list-style-type: none"> <li>- Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible.</li> <li>- 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;</li> <li>- Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities</li> </ul>	Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation	Design Team / Contractor	Land-based works are	Construction Phase	N/A	^  ^  ^
S6.8.5	<p><b>Standard Good Site Practice</b></p> <ul style="list-style-type: none"> <li>- Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats.</li> <li>- Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.</li> </ul>	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^  ^

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	<ul style="list-style-type: none"> <li>- Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.</li> <li>- General drainage arrangements should include sediment and oil traps to collect and control construction site run-off.</li> <li>- Open burning on works sites is illegal, and should be strictly prohibited.</li> <li>- Measures should also be put into place so that litter, fuel and solvents do not enter the nearby watercourses.</li> </ul>						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S6.8.6	<p><b>Measure to Minimize Groundwater Inflow</b></p> <ul style="list-style-type: none"> <li>- The drained tunnel construction method with groundwater inflow control measures would generally be adopted.</li> <li>- 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.</li> </ul>	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	<p>N/A</p> <p>N/A</p>
S6.8.8	<p><b>Measure to Minimize Impact on Corals</b></p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> <li>- It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, within the reclamation area and bridge footprint to the other suitable locations as far as practicable.</li> <li>- 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).</li> <li>- A detailed coral translocation plan with a description on the methodology for</li> </ul>	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	<p>^</p> <p>^</p> <p>^</p>

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	<p>pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage.</p> <ul style="list-style-type: none"> <li>- The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation.</li> </ul> <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> <li>- A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities</li> <li>- 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.</li> </ul>						<p>^</p> <p>^</p> <p>^</p>
<p>S6.8.9 S6.8.10</p>	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> <li>- Diverting of the site runoff to silt trap facilities before discharging into storm drain;</li> <li>- Proper waste and dumping management; and</li> <li>- Standard good-site practice for land-based construction.</li> </ul>	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater</p>	<p>Design Team, contractor</p>	<p>Marine and landbased works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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		discharge, accidental chemical spillage and construction site runoff to the receiving water bodies					
S6.8.11	<p><b>Compensation for Vegetation Loss</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
<b>Fisheries Impact</b>							
S7.7.3	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> </ul>	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
<b>Waste Management (Construction Phase)</b>							
S8.6.3	<b>Good Site Practices and Waste Reduction Measures</b>	To reduce waste	Contractor	All work	Construction	Waste Disposal	

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	<ul style="list-style-type: none"> <li>- 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;</li> <li>- Training of site personnel in site cleanliness, proper waste management and chemical handling procedures;</li> <li>- Provision of sufficient waste disposal points and regular collection of waste;</li> <li>- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and</li> <li>- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> </ul>	management impacts		sites	Phase	Ordinance (Cap. 354)  Land (Miscellaneous Provisions)  Ordinance (Cap. 28)	^  ^  ^  ^
S8.6.4	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> <li>- Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and</li> <li>- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)  Land (Miscellaneous Provisions)  Ordinance (Cap. 28)	^  ^  ^



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S8.6.5	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <p>The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <ul style="list-style-type: none"> <li>- C&amp;D materials would be reused in the project and other local concurrent projects as far as possible.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.7	<p><b><i>Storage, Collection and Transportation of Waste</i></b></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> <li>- Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution;</li> <li>- Maintain and clean storage areas routinely;</li> <li>- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and</li> </ul>	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^  ^  ^

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	<ul style="list-style-type: none"> <li>- Different locations should be designated to stockpile each material to enhance reuse.</li> </ul>						^
S8.6.8/ Waste Manage ment Plan	<p><b><i>Storage, Collection and Transportation of Waste (con't)</i></b></p> <ul style="list-style-type: none"> <li>- Remove waste in timely manner;</li> <li>- Waste collectors should only collect wastes prescribed by their permits;</li> <li>- Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;</li> <li>- 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);</li> <li>- Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and</li> <li>- Maintain records of quantities of waste generated, recycled and disposed.</li> </ul>	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		^ ^ ^ ^ ^ ^
S8.6.9/ Waste Manage ment Plan	<p><b><i>Storage, Collection and Transportation of Waste (con't)</i></b></p> <ul style="list-style-type: none"> <li>- Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction &amp; Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.</li> </ul>	To minimize potential adverse environmental impacts arising from waste collection and	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

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		disposal					
S8.6.11 - S8.6.13/ Waste Manage ment Plan	<p><b>Sorting of C&amp;D Materials</b></p> <ul style="list-style-type: none"> <li>- Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site.</li> <li>- Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials.</li> <li>- The C&amp;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</li> </ul>	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010  ETWB TCW No. 33/2002  ETWB TCW No. 19/2005	^  ^  ^
S8.6.15 – S8.6.16/ Waste Manage ment Plan	<p><b>Sediments</b></p> <ul style="list-style-type: none"> <li>- 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&amp;DMMP. MFC has no adverse comment on the current C&amp;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</li> </ul>	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	RBRG	N/A

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	<p>results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination.</p> <ul style="list-style-type: none"> <li>- 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</li> </ul>						N/A
S8.6.17 – S8.6.20	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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).</li> <li>- In order to minimise the potential odour / dust emissions during boring,</li> </ul>	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^  ^  ^

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	<p>excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.</p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>						N/A
S8.6.21/ Waste Management Plan	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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</li> </ul>	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A





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	<p>avoid splashing and overflowing of the sediment slurry to the surrounding water.</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- 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.</li> </ul>						<p>^</p> <p>N/A</p> <p>N/A</p>
S8.6.26/ Waste Management	<p><b>Chemical Wastes.</b></p> <ul style="list-style-type: none"> <li>- 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</li> </ul>	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of	^

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Plan	Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					Chemical Wastes  Waste Disposal (Chemical Waste) (General)  Regulation	
S8.6.27/ Waste Manage ment Plan	<p><b>General Refuse</b></p> <p>- General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</p>	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
<b>Landscape and Visual Impact (Construction Phase)</b>							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^

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Table 10.8.1/ Landsca pe Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works.  The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s )	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	^
Table 10.8.1/ Landsca	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	To maximize preservation of existing trees	CEDD (via Contractor)	As per approved Tree	Site clearance	ETWB TC 3/2006 and as per tree protection	^

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pe Mitigation Plan	specification shall be provided in the Contract Specification and sufficient time for preparation shall be allowed in the construction programme.			Removal Application(s )		measures in Particular Specification	
Table 10.8.1/ Landsca pe Mitigation Plan	CM6 - Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	To maximize screening of the works	CEDD (via Contractor)	At Lam Tin Interchange and edge of Road P2 landscape deck, TKO	Beginning of construction period	N/A	^
Table 10.8.1/ Landsca pe Mitigation Plan	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification	N/A
Table 10.8.1/ Landsca pe Mitigation Plan	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	^
Table	CM9 - Screening of works areas with hoardings with appropriate colours compatible	Reduction of	CEDD (via	Project site	Excretion of	N/A	^



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

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				TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2			

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

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

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
<b><i>Water Quality Impact (Construction Phase)</i></b>					
* (1)	S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	NE/2017/02	Construction of Road P2/D4	<ul style="list-style-type: none"> <li>• A pond/still water is found near a GI hole, next to the vehicle washing area.</li> <li>• Ponds/still water are found near an excavation hole and next to the vehicle washing area.</li> </ul>

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

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

**Contract: NE/2015/03**

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

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S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	^
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> <li>- Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.</li> <li>- Use of frequent watering for particularly dusty construction areas and areas close to ASRs.</li> <li>- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage,</li> </ul>	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	^ ^ ^

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	<p>watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> <li>- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>- 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.</li> <li>- 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.</li> <li>- Imposition of speed controls for vehicles on site haul roads.</li> <li>- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs</li> <li>- 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.</li> <li>- Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if</li> </ul>						<p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>



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	dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>• All vehicles shall be shut down in intermittent use.</li> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>• All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)</li> </ul>	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	^
<b>Noise Impact (Construction Phase)</b>							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^

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EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> <li>- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program</li> <li>- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.</li> <li>- Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>- 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.</li> <li>- 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.</li> <li>- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^  ^  ^  ^  ^
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A

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		Project at the affected NSRs					
<b>Water Quality Impact (Construction Phase)</b>							
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	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^

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

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



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

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

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

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

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



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

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

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

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

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<b>Ecological Impact</b>							
S6.8.4	<p><b>Measures to Minimize Disturbance</b></p> <ul style="list-style-type: none"> <li>- Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible.</li> <li>- 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;</li> <li>- Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities</li> </ul>	<p>Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation</p>	<p>Design Team / Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^  ^  ^</p>
S6.8.5	<p><b>Standard Good Site Practice</b></p> <ul style="list-style-type: none"> <li>- Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats.</li> <li>- Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.</li> <li>- Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.</li> <li>- General drainage arrangements should include sediment and oil traps to collect and control construction site run-off.</li> <li>- Open burning on works sites is illegal, and should be strictly prohibited.</li> <li>- Measures should also be put into place so that litter, fuel and solvents do not enter</li> </ul>	<p>Reduce disturbance to surrounding habitats</p>	<p>Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^  ^  ^  ^  ^</p>



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	the nearby watercourses.						
S6.8.8	-						
S6.8.9 S6.8.10	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Proper waste and dumping management; and</li> <li>- Standard good-site practice for land-based construction.</li> </ul>	Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the receiving water bodies	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	^ ^

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S6.8.11	<p><b>Compensation for Vegetation Loss</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>Such compensatory planting for trees should be provided with at least a 1:1 ratio.</li> <li>In addition, vegetation at the temporarily affected area should be reinstated with species similar to the existing condition.</li> </ul>	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
<b>Waste Management (Construction Phase)</b>							
S8.6.3	<p><b>Good Site Practices and Waste Reduction Measures</b></p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- Training of site personnel in site cleanliness, proper waste management and chemical handling procedures;</li> <li>- Provision of sufficient waste disposal points and regular collection of waste;</li> <li>- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and</li> <li>- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> </ul>	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)  Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^  ^  ^  ^
S8.6.4	<p><b>Good Site Practices and Waste Reduction Measures (con't)</b></p> <ul style="list-style-type: none"> <li>- Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)	^

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	disposal; - Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; - Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.					Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^  ^  ^
S8.6.5	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <p>The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials.</p> <p>The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <p>- C&amp;D materials would be reused in the project and other local concurrent projects as far as possible.</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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S8.6.7	<p><b>Storage, Collection and Transportation of Waste</b></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> <li>- Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution;</li> <li>- Maintain and clean storage areas routinely;</li> <li>- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and</li> <li>- Different locations should be designated to stockpile each material to enhance reuse.</li> </ul>	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^  ^  ^  ^
S8.6.8/ Waste Management Plan	<p><b>Storage, Collection and Transportation of Waste (con't)</b></p> <ul style="list-style-type: none"> <li>- Remove waste in timely manner;</li> <li>- Waste collectors should only collect wastes prescribed by their permits;</li> <li>- Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers;</li> <li>- 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);</li> <li>- Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and</li> <li>- Maintain records of quantities of waste generated, recycled and disposed.</li> </ul>	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		^  ^  ^  ^  ^

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S8.6.9/ Waste Management Plan	<p><b>Storage, Collection and Transportation of Waste (con't)</b></p> <ul style="list-style-type: none"> <li>- Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction &amp; Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.</li> </ul>	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^
S8.6.11 - S8.6.13/ Waste Management Plan	<p><b>Sorting of C&amp;D Materials</b></p> <ul style="list-style-type: none"> <li>- Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site.</li> <li>- Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials.</li> <li>- The C&amp;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</li> </ul>	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010  ETWB TCW No. 33/2002  ETWB TCW No. 19/2005	^  ^  ^
-	-						
S8.6.17 – S8.6.20	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- Requirements of the Air Pollution Control (Construction Dust) Regulation, where</li> </ul>	To determine the best handling	Contractor	All works areas with	Construction Phase		^





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Plan	Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					Chemical Wastes  Waste Disposal (Chemical Waste) (General)  Regulation	
S8.6.27/ Waste Management Plan	<p><b>General Refuse</b></p> <ul style="list-style-type: none"> <li>- General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
<b>Impact on Cultural Heritage (Construction Phase)</b>							
S9.6.4	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> <li>- Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided;</li> <li>- The open yard in front of the temple should be kept as usual for annual Tin Hau festival;</li> <li>- Monitoring of vibration impacts should be conducted when the construction</li> </ul>	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^  ^  ^

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

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

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



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

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

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

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
<b><i>Waste / Chemical Management (Construction Phase)</i></b>					
* (1)	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.	NE/2015/03	Construction of Northern Footbridge	Chemical storage area is neither bunded nor locked.

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

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

**Contract: NE/2017/01**

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

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<b><i>Air Quality Impact (Construction Phase)</i></b>							
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	N/A
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	N/A
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs.	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	N/A  N/A

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	<ul style="list-style-type: none"> <li>- Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.</li> <li>- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.</li> <li>- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.</li> <li>- Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.</li> <li>- 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.</li> <li>- 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.</li> <li>- Imposition of speed controls for vehicles on site haul roads.</li> <li>- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs</li> <li>- 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.</li> </ul>						<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>^</p> <p>N/A</p>

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	<ul style="list-style-type: none"> <li>- 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.</li> </ul>						N/A
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> <li>• All vehicles shall be shut down in intermittent use.</li> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.</li> <li>• All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)</li> </ul>	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	N/A ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Sediment Manage ment Plan	<ul style="list-style-type: none"> <li>- Tarpaulin sheets will be provided to cover dredged materials during transportation offsite.</li> <li>- Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation</li> </ul>	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	N/A  N/A  N/A



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	<ul style="list-style-type: none"> <li>- Subject to the odour intensity and instruction by the <i>Supervisor</i>, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact.</li> <li>- The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact.</li> <li>- The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement.</li> <li>- Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions.</li> <li>- The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission.</li> <li>- The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment.</li> <li>- Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front.</li> <li>- The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control.</li> <li>- Any excessive air emissions will be inspected and recorded.</li> </ul>						<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>

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	<ul style="list-style-type: none"> <li>- Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season.</li> </ul>						
<b>Noise Impact (Construction Phase)</b>							
S4.8	<ul style="list-style-type: none"> <li>- 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 &amp; Pump and Concrete Pump.</li> </ul>	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	^
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> <li>- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program</li> <li>- Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.</li> </ul>	To minimize construction noise impact arising from the Project at the	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^  ^

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	<ul style="list-style-type: none"> <li>- Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>- 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.</li> <li>- 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.</li> <li>- Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	affected NSRs					<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A
<b>Water Quality Impact (Construction Phase)</b>							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m <sup>3</sup> , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling barge trips per day shall be made with a maximum daily rate of 3,000m <sup>3</sup> (i.e. 1,000 m <sup>3</sup> per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
Silt Curtain Deploym ent Plan	<ul style="list-style-type: none"> <li>- Silt curtains should be deployed properly to surround the works area.</li> <li>- Maintenance of silt curtain should be provided.</li> <li>- Sufficient stock of silt curtain should be provided on site.</li> </ul>	Control potential impacts from marine works	Contractor	NE/2015/01, NE/2015/02, NE/2017/01	Construction stage	EIAO	^ * (1) ^
Sediment Manage ment Plan	<ul style="list-style-type: none"> <li>- Loading of barges and hoppers will be controlled to prevent splashing of dredged materials into the surrounding water. Barges or hoppers will not be filled to a level that will cause the overflow of materials or pollute water during loading or transportation.</li> <li>- Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.</li> <li>- Monitoring of the barge loading shall be conducted to ensure that loss of material does not take during transportation.</li> </ul>	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	N/A  ^  ^

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	<ul style="list-style-type: none"> <li>- Transport barges or vessels shall be equipped with automatic self-monitoring devices.</li> <li>- Vehicles containing any untreated / treated marine sediments will be suitably covered to limit potential dust emissions or potential contaminated wastewater run-off, and truck bodies and tailgates will be sealed to prevent any discharge during transport or wet conditions.</li> <li>- The leachate from the untreated marine sediment will be collected and treated in the mixing pool for cement s/s treatment.</li> <li>- A 300mm diameter U-channel will be constructed along the perimeter of the cement s/s treatment facility to collect the run-off, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). Cleaning for the u-channel and desilting pits shall be conducted on weekly basis.</li> <li>- The stockpile area of treated marine sediment will be surrounded by the perimeter concrete block walls with geotextile membranes installed at the inner face of the concrete block walls. The types of perimeter wall can be used interchangeably. The Structural Feasibility of the perimeter wall for the changes of height of the stockpile had been checked and certified by ICE.</li> <li>- The mixing areas will be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater and will be confined by partition concrete block walls for carrying out the mixing and temporary stockpile of treated sediment.</li> </ul>						<p>^</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>



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S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- floating single silt curtain shall be employed for all marine works;</li> <li>- 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;</li> <li>- all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>- excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved;</li> <li>- adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;</li> <li>- 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;</li> <li>- any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;</li> <li>- 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</li> </ul>	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>N/A</p> <p>^</p> <p>^</p> <p>^</p>

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	<p>grounds; and</p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>						N/A
S5.8.4	<p>Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.</p>	<p>Control potential impacts from filling activities and marine based construction</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	N/A
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> <li>- 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)</li> <li>- 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.</li> <li>- Water quality sampling and testing shall be carried out to demonstrate that the water quality inside the enclosed barrier is comparable to the ambient or baseline levels prior to the removal of the fully enclosed barrier.</li> <li>- Silt curtains shall be deployed for the installation and removal of the temporary</li> </ul>	<p>Control potential impacts from dredging and filling works for Reclamation for Road P2</p>	<p>CEDD's Contractors</p>	<p>Work site</p>	<p>Construction Phase</p>	<p>ProPECC PN 1/94, EIAOTM, WPCO</p>	<p>N/A  N/A  N/A  N/A</p>

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

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

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



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

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

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

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

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



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

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

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

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	(General) Regulation should be observed and complied with for control of chemical wastes.	spillage of chemicals					
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided.  Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	^
S5.8.46	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The "Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes" published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:  - suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;  - chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and  - storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^  # (2), * (3) / * (4) / # (5) / # (6)  ^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^

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<b>Ecological Impact</b>							
S6.8.4	<p><b>Measures to Minimize Disturbance</b></p> <ul style="list-style-type: none"> <li>- Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible.</li> <li>- 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;</li> <li>- Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities</li> </ul>	Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation	Design Team / Contractor	Land-based works are	Construction Phase	N/A	^  N/A  N/A
S6.8.5	<p><b>Standard Good Site Practice</b></p> <ul style="list-style-type: none"> <li>- Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats.</li> <li>- Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works.</li> <li>- Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.</li> <li>- General drainage arrangements should include sediment and oil traps to collect and control construction site run-off.</li> <li>- Open burning on works sites is illegal, and should be strictly prohibited.</li> <li>- Measures should also be put into place so that litter, fuel and solvents do not enter</li> </ul>	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	N/A  ^  ^  N/A  ^  ^



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	the nearby watercourses.						
S6.8.6	<p><b>Measure to Minimize Groundwater Inflow</b></p> <ul style="list-style-type: none"> <li>- The drained tunnel construction method with groundwater inflow control measures would generally be adopted.</li> <li>- 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.</li> </ul>	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A
S6.8.8	<p><b>Measure to Minimize Impact on Corals</b></p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> <li>- It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, within the reclamation area and bridge footprint to the other suitable locations as far as practicable.</li> <li>- 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).</li> <li>- 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.</li> <li>- The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s)</li> </ul>	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	N/A

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	<p>who is/are approved by AFCD prior to commencement of coral translocation.</p> <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> <li>- A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities</li> <li>- 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.</li> </ul>						<p>N/A</p> <p>N/A</p>
<p>S6.8.9</p> <p>S6.8.10</p>	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> <li>- Diverting of the site runoff to silt trap facilities before discharging into storm drain;</li> <li>- Proper waste and dumping management; and</li> <li>- Standard good-site practice for land-based construction.</li> </ul>	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the</p>	<p>Design Team, contractor</p>	<p>Marine and land based works area</p>	<p>Construction phase</p>	<p>WQO</p>	<p>N/A</p> <p>^</p> <p>^</p> <p>N/A</p>

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		receiving water bodies					
S6.8.11	<p><b>Compensation for Vegetation Loss</b></p> <ul style="list-style-type: none"> <li>- 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.</li> </ul>	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	N/A
<b>Fisheries Impact</b>							
S7.7.3	<p><b>Measure to Control Water Quality Impact</b></p> <ul style="list-style-type: none"> <li>- Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.</li> </ul>	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
<b>Waste Management (Construction Phase)</b>							
S8.6.3	<p><b>Good Site Practices and Waste Reduction Measures</b></p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- Training of site personnel in site cleanliness, proper waste management and chemical handling procedures;</li> <li>- Provision of sufficient waste disposal points and regular collection of waste;</li> </ul>	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)  Land (Miscellaneous Provisions)	^  ^  ^

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	<ul style="list-style-type: none"> <li>- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and</li> <li>- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> </ul>					Ordinance (Cap. 28)	^  N/A
S8.6.4	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <ul style="list-style-type: none"> <li>- 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;</li> <li>- 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;</li> <li>- Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and</li> <li>- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354)  Land (Miscellaneous Provisions)  Ordinance (Cap. 28)	^  N/A  ^  ^
S8.6.5	<p><b><i>Good Site Practices and Waste Reduction Measures (con't)</i></b></p> <p>The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of</p>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

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	<p>areas for segregation and temporary storage of reusable and recyclable materials.</p> <p>The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.</p>						
S8.6.6	<p><b>Good Site Practices and Waste Reduction Measures (con't)</b></p> <ul style="list-style-type: none"> <li>- C&amp;D materials would be reused in the project and other local concurrent projects as far as possible.</li> </ul>	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	N/A
S8.6.7	<p><b>Storage, Collection and Transportation of Waste</b></p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> <li>- Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution;</li> <li>- Maintain and clean storage areas routinely;</li> <li>- Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and</li> <li>- Different locations should be designated to stockpile each material to enhance reuse.</li> </ul>	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ N/A ^
S8.6.8/ Waste Manage ment	<p><b>Storage, Collection and Transportation of Waste (con't)</b></p> <ul style="list-style-type: none"> <li>- Remove waste in timely manner;</li> <li>- Waste collectors should only collect wastes prescribed by their permits;</li> <li>- Impacts during transportation, such as dust and odour, should be mitigated by</li> </ul>	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase		^ ^ ^



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Plan	the use of covered trucks or in enclosed containers; - Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed.	impacts arising from waste collection and disposal					^  ^ ^
S8.6.9/ Waste Manage ment Plan	<b><i>Storage, Collection and Transportation of Waste (con't)</i></b> - Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^
S8.6.11 - S8.6.13/ Waste Manage ment Plan	<b><i>Sorting of C&amp;D Materials</i></b> - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - The C&D materials should at least be segregated into inert and non-inert	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010  ETWB TCW No. 33/2002	^  ^ ^



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	<p>contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP</p>						
<p>S8.6.17 – S8.6.20</p>	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- 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).</li> <li>- In order to minimise the potential odour / dust emissions during boring, excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.</li> <li>- In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when</li> </ul>	<p>To determine the best handling and treatment of sediment</p>	<p>Contractor</p>	<p>All works areas with sediments concern</p>	<p>Construction Phase</p>	<p>^  ^  ^</p>	<p>N/A</p>

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	handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						
S8.6.21/ Waste Manage ment Plan	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>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.</li> </ul>	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^
S8.6.23	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>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.</li> </ul>	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^
S8.6.24 - S8.6.28/ Waste Manage	<p><b>Sediments (con't)</b></p> <ul style="list-style-type: none"> <li>The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excavated sediment would be disposed of according to its determined disposal</li> </ul>	To ensure handling of sediments are in accordance to	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	^





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

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	at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.						
S8.6.27/ Waste Manage ment Plan	<p><b>General Refuse</b></p> <ul style="list-style-type: none"> <li>- General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
<b>Impact on Cultural Heritage (Construction Phase)</b>							
S9.6.4	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> <li>- Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided;</li> <li>- The open yard in front of the temple should be kept as usual for annual Tin Hau festival;</li> <li>- Monitoring of vibration impacts should be conducted when the construction works are less than 100m from the temple.</li> </ul>	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	N/A  N/A  N/A
S9.6.4	<p>Indirect vibration impact</p> <ul style="list-style-type: none"> <li>- Vibration level is suggest to be controlled within a peak particle velocity (ppv) limit of 5mm/s measured inside the historical buildings;</li> <li>- Monitoring of vibration should be carried out during construction phase.</li> <li>- Tilting and settlement monitoring should will be applied on the Cha Kwo Ling Tin Hau Temple as well.</li> </ul>	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	N/A N/A N/A N/A

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	<ul style="list-style-type: none"> <li>- 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.</li> </ul>						
Built Heritage Mitigation Plan	<ul style="list-style-type: none"> <li>- Established Alert, Alarm and Action Level for the monitoring parameters.</li> <li>- To increase the instrumentation monitoring and reporting frequency.</li> <li>- To propose detailed action plan or contingency plan for the Engineer's approval when AAA Level is reached or exceeded.</li> </ul>	To prevent vibration impacts	NE/2015/01	Tin Hau Temple	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	N/A N/A N/A
<b><i>Landscape and Visual Impact (Construction Phase)</i></b>							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	N/A
Table 10.8.1/ Landscape Mitigation Plan	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	N/A
Table	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical,	To allow re-use	CEDD (via	General	Site clearance	As per the	N/A

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

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Mitigation Plan				landscape deck, TKO			
Table 10.8.1/ Landsca pe Mitigation Plan	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification	N/A
Table 10.8.1/ Landsca pe Mitigation Plan	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	N/A
Table 10.8.1/ Landsca pe Mitigation Plan	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A	N/A
Table 10.8.1/	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion	CEDD (via Contractor)	Built structures	Design and construction	N/A	N/A



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Landscape Mitigation Plan		and integration with environment			stage		
Table 10.8.1/ Landscape Mitigation Plan	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A	N/A
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with existing coastlin	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads	Construction planning and reclamation stages	N/A	N/A

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				and Road P2			

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

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

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
<b>Water Quality (Construction Phase)</b>					
* (1)	Silt Curtain Deployme nt Plan	- Maintenance of silt curtain should be provided.	NE/2017/01	Construction of TKO Interchange	• Broken silt curtain should be repaired.
# (2)	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	NE/2017/01	Construction of TKO Interchange	• The waste water and oil in the drip tray should be removed on Siu Fai.

		<p>given as follows:</p> <ul style="list-style-type: none"> <li>- suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;</li> <li>- chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and</li> <li>- storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</li> </ul>			
<b>Waste Management (Construction Phase)</b>					
* (3) / * (4) / # (5) / # (6)	S5.8.46	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The “Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes” published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> <li>- suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;</li> <li>- chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and</li> </ul> <p>storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.</p>	NE/2017/01	Construction of TKO Interchange	<ul style="list-style-type: none"> <li>• Dripping oil from bored piling machine on Wai Lung should be cleared.</li> <li>• Oil on seawater should be cleared.</li> <li>• Dripping oil was observed on the flood at Siu Fai 883.</li> <li>• Oil was observed on the floor at Shing Wo.</li> <li>• The waste water and oil in the drip tray should be removed on Siu Fai</li> </ul>

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**APPENDIX O  
SUMMARIES OF ENVIRONMENTAL  
COMPLAINT, WARNING, SUMMON  
AND NOTIFICATION OF SUCCESSFUL  
PROSECUTION**

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**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
299	31 <sup>st</sup> January 2019	31 <sup>st</sup> January 2019/Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about construction noise.	Y	Under Investigation	On-going
298	30 <sup>th</sup> January 2019	30 <sup>th</sup> January 2019/Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Under Investigation	On-going
297	30 <sup>th</sup> January 2019	30 <sup>th</sup> January 2019/Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complained about the noise from safety alarm at the site near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Under Investigation	On-going
296	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	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
295	30 <sup>th</sup> January 2019	30 <sup>th</sup> January 2019/Construction Site of Footbridge between Tiu Keng Leng Sport Centre and Park Central	Resident of Park Central	Noise & Air Quality	Complained about construction noise & dust.	Y	Under Investigation	On-going
294	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the noise from the Steel cable wire for anchoring between barge and pier.	Y	Under Investigation	On-going
293	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction of Road P2	Resident in O King Road	Air Quality	Complained about black smoke emission and odour.	N	Under Investigation	On-going
292	30 <sup>th</sup> January 2019	30 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from loading and unloading.	Y	Under Investigation	On-going
291	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Cha Kwo Ling Tsuen	Noise & Air Quality	Complained about construction noise & dust (Day & Nighttime)	Y	Under Investigation	On-going
290	7 <sup>th</sup> January 2019	7 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Cha Kwo Ling Tsuen	Noise & Air Quality	Complained about construction noise & dust (Day & Nighttime)	Y	Under Investigation	On-going
289	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from breaking work.	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
288	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complained about the construction noise from breaking work.	Y	Under Investigation	On-going
287	29 <sup>th</sup> January 2019	29 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	District Council	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
286	24 <sup>th</sup> January 2019	24 <sup>th</sup> January 2019/Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
285	18 <sup>th</sup> January 2019	18 <sup>th</sup> January 2019/Construction of Road P2	Public	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
284	17 <sup>th</sup> January 2019	17 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Yung Lai House	Noise	Complained about the construction noise from Kam Tin Interchange.	Y	Under Investigation	On-going
283	17 <sup>th</sup> January 2019	17 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	Y	Under Investigation	On-going
282	17 <sup>th</sup> January 2019	17 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan with generator near Tiu Keng Leng Sport Centre and Park Central.	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
281	16 <sup>th</sup> January 2019	16 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	Y	Under Investigation	On-going
280	15 <sup>th</sup> January 2019	15 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	Y	Under Investigation	On-going
279	15 <sup>th</sup> January 2019	15 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	Y	Under Investigation	On-going
278	15 <sup>th</sup> January 2019	15 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre	Y	Under Investigation	On-going
277	14 <sup>th</sup> January 2019	14 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	Y	Under Investigation	On-going
276	14 <sup>th</sup> January 2019	14 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from an air blower/fan near Tiu Keng Leng Sport Centre and Park Central.	Y	Under Investigation	On-going
275	12 <sup>th</sup> January 2019	12 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	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
274	11 <sup>th</sup> January 2019	11 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Under Investigation	On-going
273	8 <sup>th</sup> January 2019	8 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Under Investigation	On-going
272	7 <sup>th</sup> January 2019	7 <sup>th</sup> January 2019/Construction of Road D4	Resident of Park Central	Noise	Complained about the night time construction noise near Park Central.	Y	Under Investigation	On-going
271	12 <sup>th</sup> January 2019	12 <sup>th</sup> January 2019/Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	Under Investigation	On-going
270	11 <sup>th</sup> -12 <sup>th</sup> January 2019	11 <sup>th</sup> -12 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
269	11 <sup>th</sup> January 2019	11 <sup>th</sup> January 2019/Construction of Road D4	Public	Noise	Complained about the construction noise from a crane near footbridge between Tiu Keng Leng Sport Centre and Park Central	Y	Under Investigation	On-going
268	10 <sup>th</sup> January 2019	10 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	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
267	8 <sup>th</sup> January 2019	8 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
266	7 <sup>th</sup> January 2019	7 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the construction noise at Lam Tin Interchange.	Y	Under Investigation	On-going
265	7 <sup>th</sup> January 2019	7 <sup>th</sup> January 2019/Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	Under Investigation	On-going
264	7 <sup>th</sup> January 2019	7 <sup>th</sup> January 2019/Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	Under Investigation	On-going
263	7 <sup>th</sup> January 2019	7 <sup>th</sup> January 2019/Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
262	2 <sup>nd</sup> January 2019	2 <sup>nd</sup> January 2019/Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking activities.	Y	Under Investigation	On-going
261	1 <sup>st</sup> January 2019	1 <sup>st</sup> January 2019/Coastal near TKO cemetery	General Public	Water	Complained concerning oil leakage/stain on the sea surface near the sunken barge at C2 site.	N	Under Investigation	On-going
260	30 <sup>th</sup> December 2018	26 <sup>th</sup> December 2018/Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	Complained about the construction noise from tunnel works of Lam Tin Interchange.	Y	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
259	26 <sup>th</sup> December 2018	26 <sup>th</sup> December 2018/ Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about the construction noise from tunnel works of Lam Tin Interchange.	Y	Under Investigation	On-going
258	26 <sup>th</sup> December 2018	26 <sup>th</sup> December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise of Lam Tin Interchange.	Y	Under Investigation	On-going
257	26 <sup>th</sup> December 2018	26 <sup>th</sup> December 2018/ Construction of Lam Tin Interchange	Management Section of Hong Nga Court	Noise	Complained about the construction noise of Lam Tin Interchange.	Y	Under Investigation	On-going
256	18 <sup>th</sup> December 2018	18 <sup>th</sup> December 2018/ Construction of Lam Tin Interchange	Engineering Section of Ocean Shore	Noise	Complained about the construction noise from the marine works.	Y	See Investigation / Mitigation Measures for Complaint No. 257	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
255	18 <sup>th</sup> December 2018	18 <sup>th</sup> December 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from the marine works.	Y	<p>There was no major construction works at the concerned area during the time of complaint and confirmed by the Resident Engineer. Steel cable wire for anchoring between barge and pier is considered as a possible noise source. The complaint is considered project related.</p> <p><u>Mitigation measures:</u>            Cable wire for anchoring between barge and pier has been replaced by rope between 27 Dec and 2 Jan to reduce noise impact. In addition, other good site practices recommended in the “Implementation Schedule of Proposed Mitigation Measures” of EM&amp;A Manual and the approved CNMP of this Contract had been implemented by the Contractor, including the following:</p> <ul style="list-style-type: none"> <li>• Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program;</li> <li>• Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby noise sensitive receivers;</li> <li>• Machines and plants that may be in intermittent use should be shut down between works periods or should be throttled down to minimum.</li> </ul>	Closed
254	17 <sup>th</sup> December 2018	15 <sup>th</sup> December 2018/ Construction of Road P2	Resident of Ocean Shore	Noise	Complained about the construction noise from breaking and piling activities	Y	<p>No exceedance was recorded in the noise monitoring result. The number of PME operated in LTI was consistent with the proposed Construction Noise mitigation Plan (CNMP)</p> <p>The following recommendations were made to enhance the mitigation measures:</p> <ul style="list-style-type: none"> <li>• To frequently check and repair operating PME if any loosen or worn parts of the equipment to reduce excessive noise disturbance;</li> <li>• Noise barriers should be designed and erected around the noise sources to block the direct line-of-sight from the NSR as per the CNMP;</li> <li>• To ensure all erected noise barriers and sound proofing canvases wrapped on PME are intact and in good condition.</li> </ul>	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
253	16 <sup>th</sup> December 2018	16 <sup>th</sup> December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
252	15 <sup>th</sup> December 2018	15 <sup>th</sup> December 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	Complained about the construction noise from Tunnel Works	Y	Under Investigation	On-going
251	30 <sup>th</sup> November 2018	30 <sup>th</sup> November 2018/ Construction of Road D4	Resident of Park Central	Noise & Air	Complained about the construction noise and dust resuspension in Road D4.	Y	<p>The number of PMEs operated on site and on-time percentage from 19 to 30 November complied with the CNMP, thus, no violation was identified.</p> <p>Based on the noise and air monitoring results in November 2018, no Limit Level Exceedance was recorded.</p> <p><b>Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>• A more effective acoustic barrier was erected between the drill rig and Park Central.</li> <li>• Frequent water spraying along the Po Yap Road for eight times a day,</li> <li>• Stockpile are covered with impervious material to avoid dust resuspension</li> </ul>	Closed
250	28 <sup>th</sup> November 2018	27 <sup>th</sup> November 2018/ Construction of TKO portal	Public	Noise	Complained about the construction noise from the marine works.	Y	Under Investigation	On-going
249	26 <sup>th</sup> November 2018	25 <sup>th</sup> November 2018/ Public sea in TKO	Resident of Ocean Shore	Noise	Complained about the noise nuisance from the operation of derrick barge on Sunday.	Y	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
248	25 <sup>th</sup> November 2018	25 <sup>th</sup> November 2018/ Public sea in TKO	Public	Noise	Complained about the noise nuisance from the operation of derrick barge on Sunday.	Y	Under Investigation	On-going
247	25 <sup>th</sup> November 2018	20 <sup>th</sup> November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from the Excavators in LTI on Sunday morning.	Y	Under Investigation	On-going
246	20 <sup>th</sup> November 2018	20 <sup>th</sup> November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance during transfer of material in evening time at LTI	Y	Under Investigation	On-going
245	20 <sup>th</sup> November 2018	19 <sup>th</sup> November 2018/ Lam Tin Interchange	Public	Noise	Complained about the noise nuisance from rock dropping during evening time	Y	Under Investigation	On-going
244	20 <sup>th</sup> November 2018	20 <sup>th</sup> November 2018/ Lam Tin Interchange	Public	Noise	Complained about construction noise during night time from LTI	Y	Under Investigation	On-going
243	19 <sup>th</sup> November 2018	19 <sup>th</sup> November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from dump truck in evening time	Y	Under Investigation	On-going
242	8 <sup>th</sup> November 2018	8 <sup>th</sup> November 2018/ Lam Tin Interchange	Public	Noise	Complained about construction noise during night time from LTI	Y	Under Investigation	On-going
241	8 <sup>th</sup> November 2018	8 <sup>th</sup> November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the construction noise during evening time from LTI.	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
240	7 <sup>th</sup> November 2018	7 <sup>th</sup> November 2018/ Lam Tin Interchange	Public	Noise	Complained about the construction noise and dust nuisance.	Y	Under Investigation	On-going
239	6 <sup>th</sup> November 2018	6 <sup>th</sup> November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during evening time	Y	Under Investigation	On-going
238	6 <sup>th</sup> November 2018	6 <sup>th</sup> November 2018/ Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Complained about the noise nuisance from LTI during evening time	Y	Under Investigation	On-going

**Cumulative Complaint Log since commencement of Project**

<b>Reporting Month</b>	<b>Number of Complaints in Reporting Month</b>	<b>Number of Summons in Reporting Month</b>	<b>Number of Prosecutions in Reporting Month</b>
November 2016	0	0	0
December 2016	11	0	0
January 2017	15	0	0
February 2017	4	0	0
March 2017	6	0	0
April 2017	1	0	0
May 2017	10	0	0
June 2017	8	0	0
July 2017	3	0	0
August 2017	8	0	0
September 2017	14	0	0
October 2017	8	0	0
November 2017	12	0	0
December 2017	10	1	0
January 2018	11	0	0
February 2018	6	0	0
March 2018	17	0	0
April 2018	15	0	0
May 2018	22	0	0
June 2018	11	0	1
July 2018	9	0	0
August 2018	12	0	0
September 2018	11	0	0
October 2018	13	0	0

<b>Reporting Month</b>	<b>Number of Complaints in Reporting Month</b>	<b>Number of Summons in Reporting Month</b>	<b>Number of Prosecutions in Reporting Month</b>
November 2018	14	0	0
December 2018	9	0	0
January 2019	39	0	0
<b>Total</b>	<b>299</b>	<b>1</b>	<b>1</b>



**Cumulative Log for Notifications of Summons**

<b>Contract No.</b>	<b>Log Ref.</b>	<b>Date/Location</b>	<b>Subject</b>	<b>Status</b>	<b>Total no. Received in this reporting month</b>	<b>Total no. Received since project commencement</b>
NE/2015/01	--	--	--	--	--	--
NE/2015/02	KTS24138/2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	The Summon was issued on 22 Dec 2017 First hearing on 29 Mar 2018	0	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--

**Cumulative Log for Successful Prosecutions**

<b>Contract No.</b>	<b>Log Ref.</b>	<b>Date/Location</b>	<b>Subject</b>	<b>Status</b>	<b>Total no. Received in this reporting month</b>	<b>Total no. Received since project commencement</b>
NE/2015/01	--	--	--	--	--	--
NE/2015/02	KTS24138/2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	Successful prosecution to the subcontractor on 27 June 2018	0	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--

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

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Monthly Summary Waste Flow Table for 2019

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

Total inert C&D waste generated = c+d+e

Total inert C&D waste recycled = c+d

% of recycled inert C&D waste = Total C&D waste recycled / Total C&D waste generated

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01



- Notes:
- (1) The performance target are given in PS Clause 6(14)
  - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site
  - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
  - (4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m<sup>3</sup>. (PS Clause 1.105(4) refers)
  - (5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
  - (6) Conversion factors for reporting purpose:  
in-situ: rock = 2.5 tonnes/m<sup>3</sup>; soil = 2.0 tonnes/m<sup>3</sup>
  - (7) excavated: rock = 2.0 tonnes/m<sup>3</sup>; soil = 1.8 tonnes/m<sup>3</sup>; broken concrete and bitumen = 2.4 tonnes/m<sup>3</sup>, soil and rock = 1.9 tonnes/m<sup>3</sup>
  - (8) C&D Waste = 0.9 tonnes/m<sup>3</sup>; bentonite slurry = 2.8 tonnes/m<sup>3</sup>  
Diesel density: 0.8kg/l  
Numbers are rounded off to the nearest three decimal places  
The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"

Monthly Summary Waste Flow Table for 2019 Year

NE/2015/02

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 <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m <sup>3</sup> ]
Jan	4.80913	0.00000	1.09752	0.00000	2.94501	0.76660	135.43000	0.00000	0.00000	4.11600	0.07932
Feb											
Mar											
Apr											
May											
June											
<b>SUB-TOTAL</b>	<b>4.80913</b>	<b>0.00000</b>	<b>1.09752</b>	<b>0.00000</b>	<b>2.94501</b>	<b>0.76660</b>	<b>135.43000</b>	<b>0.00000</b>	<b>0.00000</b>	<b>4.11600</b>	<b>0.07932</b>
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
<b>TOTAL</b>	<b>4.80913</b>	<b>0.00000</b>	<b>1.09752</b>	<b>0.00000</b>	<b>2.94501</b>	<b>0.76660</b>	<b>135.43000</b>	<b>0.00000</b>	<b>0.00000</b>	<b>4.11600</b>	<b>0.07932</b>

Note: Conversion to 1000m<sup>3</sup> for general refuse is weight in 1000kg multiply by 0.002  
 Conversion to 1000m<sup>3</sup> for Inert C&D is weight in 1000kg multiply by 0.0005  
 Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material  
 Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material



### Monthly Summary of Waste Flow Table for 2019

Name of Person completing the Record: Ricky Hon

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated (in '000m <sup>3</sup> )	Broken Concrete (see Note 1)	Reused in the Contract (in '000m <sup>3</sup> )	Reused in other Projects (in '000m <sup>3</sup> )	Disposed as Public Fill (in '000m <sup>3</sup> )	Metals (in '000 Kg)	Paper/ cardboard packaging (in '000 Kg)	Plastics (see Note 2)	Chemical Waste (in '000 Kg)	Others, e.g. general refuse (in '000m <sup>3</sup> )
		(in '000m <sup>3</sup> )						(in '000 Kg)		
Accum. quantity from 2018	9.6056	0.9411	0	0	8.1185	0	0	0	0	0.546
Jan	0.34255	0.0336	0	0	0.3027	0	0	0	0	0.00625
<b>Sub-total</b>	<b>9.94815</b>	<b>0.9747</b>	<b>0</b>	<b>0</b>	<b>8.4212</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.55225</b>
Feb	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0
Sept	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>9.94815</b>	<b>0.9747</b>	<b>0</b>	<b>0</b>	<b>8.4212</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.5523</b>

Notes:

- (1) Broken concrete for recycling into aggregates.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (3) Use the conversion factor: 1 full load of 24t / 30t dumping truck being equivalent to 6.5m<sup>3</sup> / 8.125 m<sup>3</sup> by volume.





**Monthly Summary Waste Flow Table For 2019**

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Chemical Waste	Others, e.g. General Refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	0	0	0	0	0	0	0	0	0	0	0
Feb											
Mar											
Apr											
May											
Jun											
<b>Sub-total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

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

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 (in '000 m <sup>3</sup> )	Hard Rock & Large Broken Concrete (in '000 m <sup>3</sup> )	Reused in the Contract (in '000 m <sup>3</sup> )	Reused in other Projects (in '000 m <sup>3</sup> )	Disposed as Public Fill (in '000 m <sup>3</sup> )	Imported Fill (in '000 m <sup>3</sup> )	Metals (in '000 kg)	Paper/ cardboard packaging (in '000 kg)	Plastics (see Note 3) (in '000 kg)	Chemicals Waste (in '000 kg)	Others, e.g. general refuse (in '000 m <sup>3</sup> )
Accumulated From 2018	1.234385	0	0.175365	0.427405	0.59793	0.03056	0	0	0	0	0.038188
Jan	0.00022	0	0	0	0	0	0	0	0	0	0
Feb											
Mar											
Apr											
May											
June											
Sub-total											
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	1.234605	0	0.17365	0.427405	0.59793	0.03056	0	0	0	0	0.038188

- 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 m<sup>3</sup>.

Monthly Summary Waste Flow Table for 2019

Name of Department: Civil Engineering and Development Department

Contract No.: NE/2017/01

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	0.0400	0.0000	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0015
Feb											
Mar											
Apr											
May											
Jun											
<b>Sub-total</b>	0.0400	0.0000	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0015
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
<b>Total</b>	0.0400	0.0000	0.0000	0.0400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0015

- Notes:
1. Assume the density of soil fill is 2 ton/m<sup>3</sup>.
  2. Assume the density of rock and broken concrete is 2.5 ton/m<sup>3</sup>.
  3. Assume the density of mixed rock and soil is 1.9 ton/m<sup>3</sup>.
  4. Assume the density of slurry and bentonite is 2.8 ton/m<sup>3</sup>.
  5. The slurry and bentonite are disposed at Tseung Kwan O Area 137 Fill Bank.
  6. Assume the density of C&D waste is 0.9 ton/m<sup>3</sup>.
  7. The non-inert C&D wastes are disposed at NENT.

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**APPENDIX Q  
TENTATIVE CONSTRUCTION  
PROGRAMME**

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## High Level 3 Months Look Ahead Programme

Activities	Feb-19	Mar-19	Apr-19
<b>Lam Tin Interchange</b>			
EHC2 U-Trough			
Site Formation - Area 1G1 & 1G2 &5			
Site Formation - Area 2			
Site Formation - Area 3			
Site Formation - Area 4			
<b>Main Tunnel</b>			
MT Excavation			
MT Lining Works			
<b>TKO Interchange</b>			
Haul Road Construction, Site Formation & Slope Works			
Steel Platform for Bridge Construction			
Cavern Excavation			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019	Jan	Feb	2019	Mar	Apr	May	
<b>NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Jan-19)</b>																		
<b>Preliminaries, Submission, Contractor's Design Submission and Approval</b>																		
<b>General Submission and Acceptance</b>																		
S10240	Prepare/Submit the Weather Protection Scheme	P2-Cal.A	30	20	21-Aug-17 A	08-Feb-19	633	33.33%		-507								
<b>Contractor's Design Submission and Acceptance</b>																		
<b>Foundation Design</b>																		
<b>AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44</b>																		
S11260-03	3rd Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	5	01-Jun-18 A	24-Jan-19	-118	64.29%		-224								
S11260-04	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	25-Jan-19	14-Feb-19	-118	0%		0								
<b>AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH105)</b>																		
S11270-04	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	20-Dec-18 A	09-Feb-19	-92	0%		-31								
<b>AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH105 - CH305)</b>																		
S11279-08	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	20-Jan-19	09-Feb-19	-53	0%		0								
<b>DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44</b>																		
S11360	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	25-Jan-19	14-Feb-19	-118	0%		0								
S11380	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	15-Feb-19	07-Mar-19	-118	0%		0								
S11400	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	14	08-Mar-19	21-Mar-19	-118	0%		0								
S11410	Review and comment by Hyd	P2-Cal.A	14	14	22-Mar-19	04-Apr-19	-118	0%		0								
S11420	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	05-Apr-19	25-Apr-19	-118	0%		0								
<b>DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH105)</b>																		
S11424	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	20-Dec-18 A	09-Feb-19	-92	0%		-31								
S11426	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	14	10-Feb-19	23-Feb-19	-92	0%		0								
S11428	Review and comment by Hyd	P2-Cal.A	14	14	24-Feb-19	09-Mar-19	-92	0%		0								
S11430	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	10-Mar-19	30-Mar-19	-92	0%		0								
<b>DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH105 - CH305)</b>																		
S11438	Review and comment by Hyd	P2-Cal.A	14	10	20-Oct-18 A	29-Jan-19	-53	28.57%		-88								
S11439-02	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	30-Jan-19	19-Feb-19	-53	0%		0								
<b>E&amp;M Design</b>																		
<b>Statutory Approval for E&amp;M Works</b>																		
S11570-11	FSD Approval for Underpass GBP	P2-Cal.A	0	0	14-Mar-19	14-Mar-19	40	0%		0								
S11570-12	FSD Approval for Plant room GBP	P2-Cal.A	0	0	14-Mar-19	14-Mar-19	40	0%		0								
<b>Detail Design for E&amp;M Works (Tunnel and associated)</b>																		
<b>MVAC Detail Design</b>																		
<b>Plantroom</b>																		
S11577	Formal Submission to Supervisor	P2-Cal.A	8	8	04-May-18 A	27-Jan-19	79	0%		-261								
S11578	Accept detail design by the Supervisor	P2-Cal.A	7	7	28-Jan-19	03-Feb-19	79	0%		0								
<b>Underpass</b>																		
S11630	Formal Submission to Supervisor	P2-Cal.A	8	8	28-Apr-18 A	27-Jan-19	79	0%		-267								
S11640	Accept detail design by the Supervisor	P2-Cal.A	7	7	28-Jan-19	03-Feb-19	79	0%		0								
<b>FS Detail Design</b>																		
<b>Underpass</b>																		
S11649	FSD review GBP	P2-Cal.A	28	7	19-Oct-17 A	26-Jan-19	40	75%		-437								
S11650-01	2nd review by EMSD	P2-Cal.A	15	10	19-Mar-18 A	05-Feb-19	40	33.33%		-309								

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

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

3 Monthly Rolling Programme  
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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance-BL1	2019	Jan	Feb	Mar	Apr	May
S11651	Accept detail design by the Supervisor	P2-Cal.A	7	7	06-Feb-19	12-Feb-19	40	0%		0						
<b>Plantroom</b>		P2-Cal.A	443	24	19-Oct-17 A	12-Feb-19	40			-39						
S11652-10	FSD review GBP	P2-Cal.A	28	7	19-Oct-17 A	26-Jan-19	40	75%		-437						
S11652-21	2nd review by FSD/EMSD	P2-Cal.A	15	10	19-Mar-18 A	05-Feb-19	40	33.33%		-309						
S11652-23	Accept detail design by the Supervisor	P2-Cal.A	7	7	06-Feb-19	12-Feb-19	40	0%		0						
<b>Plumbing and Drainage Detail Design</b>		P2-Cal.A	397	39	01-Apr-17 A	27-Feb-19	55			-301						
<b>Underpass</b>		P2-Cal.A	397	39	03-May-17 A	27-Feb-19	55			-269						
S11656	Design Coordination for PD Services	P2-Cal.A	60	7	03-May-17 A	26-Jan-19	55	88.33%		-574						
S11657	1st review by HyD/EMSD	P2-Cal.A	15	3	09-Apr-18 A	29-Jan-19	55	80%		-281						
S11657-01	2nd review by HyD/EMSD	P2-Cal.A	15	15	30-Jan-19	13-Feb-19	55	0%		0						
S11658	Formal Submission to Supervisor	P2-Cal.A	7	7	14-Feb-19	20-Feb-19	55	0%		0						
S11659	Accept detail design by the Supervisor	P2-Cal.A	7	7	21-Feb-19	27-Feb-19	55	0%		0						
<b>Plantroom</b>		P2-Cal.A	384	34	01-Apr-17 A	22-Feb-19	60			-309						
S11660-07	Design Coordination for PD Services	P2-Cal.A	60	7	01-Apr-17 A	26-Jan-19	60	88.33%		-606						
S11660-09	2nd review by HyD/EMSD	P2-Cal.A	15	13	17-May-18 A	08-Feb-19	60	13.33%		-253						
S11660-10	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Feb-19	15-Feb-19	60	0%		0						
S11660-11	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Feb-19	22-Feb-19	60	0%		0						
<b>Electrical Detail Design</b>		P2-Cal.A	538	34	07-Mar-17 A	22-Feb-19	60			-180						
<b>Underpass Lighting</b>		P2-Cal.A	538	34	30-May-17 A	22-Feb-19	60			-96						
S11660-15	Design Coordination for EL Services	P2-Cal.A	60	15	30-May-17 A	03-Feb-19	60	75%		-555						
S11660-17	2nd review by EMSD/HyD	P2-Cal.A	15	5	06-Jul-18 A	08-Feb-19	60	66.67%		-203						
S11660-19	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Feb-19	15-Feb-19	60	0%		0						
S11660-20	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Feb-19	22-Feb-19	60	0%		0						
<b>External Road Lighting</b>		P2-Cal.A	518	34	07-Mar-17 A	22-Feb-19	60			-200						
S11660-23	Design Coordination for EL Services	P2-Cal.A	60	15	07-Mar-17 A	03-Feb-19	60	75%		-639						
S11660-25	2nd review by EMSD/CLP/ HyD	P2-Cal.A	15	5	06-Jul-18 A	08-Feb-19	60	66.67%		-203						
S11660-27	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Feb-19	15-Feb-19	60	0%		0						
S11660-28	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Feb-19	22-Feb-19	60	0%		0						
<b>Plantroom</b>		P2-Cal.A	391	34	07-Mar-17 A	22-Feb-19	60			-327						
S11664	Design Coordination for EL Services	P2-Cal.A	60	15	07-Mar-17 A	03-Feb-19	60	75%		-639						
S11666	2nd review by EMSD/HyD	P2-Cal.A	15	5	06-Jul-18 A	08-Feb-19	60	66.67%		-203						
S11667	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Feb-19	15-Feb-19	60	0%		0						
S11668	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Feb-19	22-Feb-19	60	0%		0						
<b>ELV And SCADA Detail Design</b>		P2-Cal.A	425	29	12-Aug-17 A	17-Feb-19	65			-130						
<b>Underpass</b>		P2-Cal.A	425	29	12-Aug-17 A	17-Feb-19	65			-130						
S11669-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	29-Jan-19	65	83.33%		-476						
S11669-19	2nd review by EMSD	P2-Cal.A	15	5	21-Jun-18 A	03-Feb-19	65	66.67%		-213						
S11669-29	Formal Submission to Supervisor	P2-Cal.A	7	7	04-Feb-19	10-Feb-19	65	0%		0						
S11669-30	Accept detail design by the Supervisor	P2-Cal.A	7	7	11-Feb-19	17-Feb-19	65	0%		0						
<b>Plantroom</b>		P2-Cal.A	386	29	12-Aug-17 A	17-Feb-19	65			-169						
S11670-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	29-Jan-19	65	83.33%		-476						
S11670-19	2nd review by EMSD	P2-Cal.A	15	5	21-Jun-18 A	03-Feb-19	65	66.67%		-213						
S11670-29	Formal Submission to Supervisor	P2-Cal.A	7	7	04-Feb-19	10-Feb-19	65	0%		0						

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

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

3 Monthly Rolling Programme  
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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019	Jan	Feb	Mar	Apr	May
S11670-30	Accept detail design by the Supervisor	P2-Cal.A	7	7	11-Feb-19	17-Feb-19	65	0%		0			Accept detail design by the Supervisor			
<b>Design of Architectural Finishes for Internal Walls of U-Trough Structures</b>		P2-Cal.A	189	67	15-Sep-18 A	27-Mar-19	88			-5			Design of Architectural Finishes for Internal Walls of U-Trough Structures			
S11675	Prepare and Submit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	11	15-Sep-18 A	30-Jan-19	88	47.62%		-117			Prepare and Submit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)			
S11680	Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	31-Jan-19	20-Feb-19	88	0%		0			Review and Discuss Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)			
S11700	Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	14	14	21-Feb-19	06-Mar-19	88	0%		0			Resubmit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)			
S11720	Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	07-Mar-19	27-Mar-19	88	0%		0			Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)			
<b>Irrigation System</b>		P2-Cal.A	220	98	15-Sep-18 A	27-Apr-19	53			-5			Irrigation System			
S11787-01	2nd review by LCSD	P2-Cal.A	21	21	15-Sep-18 A	09-Feb-19	53	0%		-127			2nd review by LCSD			
S11788	Prepare & Submission of Form 542	P2-Cal.A	14	14	10-Feb-19	23-Feb-19	53	0%		0			Prepare & Submission of Form 542			
S11789	Reviewed by WSD	P2-Cal.A	28	28	24-Feb-19	23-Mar-19	53	0%		0			Reviewed by WSD			
S11790	Formal Submission to Supervisor	P2-Cal.A	14	14	24-Mar-19	06-Apr-19	53	0%		0			Formal Submission to Supervisor			
S11800	Review and Accept Submission for Waterpoints and associated elements	P2-Cal.A	21	21	07-Apr-19	27-Apr-19	53	0%		0			Review and Accept Submission for Waterpoints and associated elements			
<b>Contractor Cost Saving Design</b>		P2-Cal.A	265	112	20-Oct-18 A	11-May-19	-20			61			Contractor Cost Saving Design			
<b>AIP Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)</b>		P2-Cal.A	174	28	20-Oct-18 A	16-Feb-19	-20			54			AIP Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)			
S11973-02	Review and Accept AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	20-Jan-19	09-Feb-19	-13	0%		0			Review and Accept AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)			
S11974	Review and Accept AIP Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)	P2-Cal.A	28	28	20-Oct-18 A	16-Feb-19	-20	0%		-92			Review and Accept AIP Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)			
<b>DDA Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)</b>		P2-Cal.A	84	84	17-Feb-19	11-May-19	-20			0			DDA Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)			
S11975	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	17-Feb-19	09-Mar-19	-20	0%		0			Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)			
S11976	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	10-Mar-19	30-Mar-19	-20	0%		0			Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)			
S11977	Resubmit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	14	14	31-Mar-19	13-Apr-19	-20	0%		0			Resubmit DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)			
S11978	Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (S200 CH821 - P2 CH305)	P2-Cal.A	21	21	14-Apr-19	04-May-19	-13	0%		0			Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (S200 CH821 - P2 CH305)			
S11979	Review and Accept DDA Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)	P2-Cal.A	28	28	14-Apr-19	11-May-19	-20	0%		0			Review and Accept DDA Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)			
<b>Major Construction Works Method Statement</b>		P2-Cal.A	126	95	19-Dec-18 A	24-Apr-19	-47			-1			Major Construction Works Method Statement			
<b>Removal of Temporary Steel Cofferdam</b>		P2-Cal.A	67	67	14-Feb-19	21-Apr-19	-61			0			Removal of Temporary Steel Cofferdam			
S13810	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	18	18	14-Feb-19	03-Mar-19	-82	0%		0			Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 1)			
S13811	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	21	21	04-Mar-19	24-Mar-19	-82	0%		0			Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 1)			
S13812	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	7	7	25-Mar-19	31-Mar-19	-82	0%		0			Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 1)			
S13813	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 1)	P2-Cal.A	21	21	01-Apr-19	21-Apr-19	-82	0%		0			Accept Method Statement for Removal of Temporary Steel Cofferdam (type 1)			
S13814	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	18	18	14-Feb-19	03-Mar-19	-82	0%		0			Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 2)			
S13815	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	21	21	04-Mar-19	24-Mar-19	-82	0%		0			Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 2)			
S13816	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	7	7	25-Mar-19	31-Mar-19	-82	0%		0			Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 2)			
S13817	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 2)	P2-Cal.A	21	21	01-Apr-19	21-Apr-19	-82	0%		0			Accept Method Statement for Removal of Temporary Steel Cofferdam (type 2)			
S13818-1	Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	18	18	14-Feb-19	03-Mar-19	-61	0%		0			Prepare and Submit Method Statement for Removal of Temporary Steel Cofferdam (type 3)			
S13818-2	Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	21	21	04-Mar-19	24-Mar-19	-61	0%		0			Review and Discuss Method Statement for Removal of Temporary Steel Cofferdam (type 3)			
S13818-3	Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	7	7	25-Mar-19	31-Mar-19	-61	0%		0			Resubmit Method Statement for Removal of Temporary Steel Cofferdam (type 3)			
S13818-4	Accept Method Statement for Removal of Temporary Steel Cofferdam (type 3)	P2-Cal.A	21	21	01-Apr-19	21-Apr-19	-61	0%		0			Accept Method Statement for Removal of Temporary Steel Cofferdam (type 3)			
<b>Installation of Pre-Bored Socketed H-Pile (Reclaimed Section)</b>		P2-Cal.A	38	28	09-Jan-19 A	16-Feb-19	-47			-1			Installation of Pre-Bored Socketed H-Pile (Reclaimed Section)			
S13972	Resubmit Method Statement for Installation of Pre-bored Socket H-Pile (Reclaimed Section)	P2-Cal.A	7	7	09-Jan-19 A	26-Jan-19	-47	0%		-11			Resubmit Method Statement for Installation of Pre-bored Socket H-Pile (Reclaimed Section)			
S13973	Accept Method Statement for Installation of Pre-bored Socket H-Pile (Reclaimed Section)	P2-Cal.A	21	21	27-Jan-19	16-Feb-19	-47	0%		0			Accept Method Statement for Installation of Pre-bored Socket H-Pile (Reclaimed Section)			
<b>ELS of Underpass (P2 CH105-318)</b>		P2-Cal.A	67	67	17-Feb-19	24-Apr-19	-47			0			ELS of Underpass (P2 CH105-318)			
S14056	Prepare and Submit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	18	18	17-Feb-19	06-Mar-19	-47	0%		0			Prepare and Submit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)			
S14057	1st Review and Discuss Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	21	21	07-Mar-19	27-Mar-19	-47	0%		0			1st Review and Discuss Method Statement for Excavation and ELS of Underpass (P2 CH105-318)			
S14058	Resubmit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	7	7	28-Mar-19	03-Apr-19	-47	0%		0			Resubmit Method Statement for Excavation and ELS of Underpass (P2 CH105-318)			

█ Primary Baseline    █ Critical Remaining Work  
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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019	Jan	Feb	Mar	Apr	May
S14059	Accept Method Statement for Excavation and ELS of Underpass (P2 CH105-318)	P2-Cal.A	21	21	04-Apr-19	24-Apr-19	-47	0%		0						
<b>Construction of U-Troughs structure (P2 CH318-363)</b>		P2-Cal.A	105	74	19-Dec-18 A	03-Apr-19	-223			-1						
S14122	Prepare and Submit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	18	18	19-Dec-18 A	06-Feb-19	-223	0%		-32						
S14124	Review and Discuss Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	21	21	07-Feb-19	27-Feb-19	-223	0%		0						
S14126	Resubmit Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	14	14	28-Feb-19	13-Mar-19	-223	0%		0						
S14128	Accept Method Statement for Construction of U-Troughs Structure (P2 CH318-363)	P2-Cal.A	21	21	14-Mar-19	03-Apr-19	-223	0%		0						
<b>Procurement of Major Material</b>		P2-Cal.A	1015	408	20-Jan-17 A	02-Mar-20	136			-123						
<b>Civil/Structural</b>		P2-Cal.A	1015	408	20-Jan-17 A	02-Mar-20	136			-123						
S14981	Procurement and Delivery of Steel H-Pile	P2-Cal.A	800	184	31-Jan-17 A	22-Jul-19	-256	77%		-103						
S14983	Procurement and Delivery of ELS Walling & Struts Members	P2-Cal.A	1015	408	20-Jan-17 A	02-Mar-20	-239	59.8%		-123						
S14997	Offsite Fabrication of Steel Works for the Sign Gantry	P2-Cal.A	60	60	23-Feb-19	23-Apr-19	450	0%		0						
S14999	Offsite Fabrication of Traffic and directional signs	P2-Cal.A	60	60	17-Apr-19	15-Jun-19	397	0%		0						
<b>Subletting Package</b>		P2-Cal.A	172	87	05-Oct-18 A	16-Apr-19	397			-22						
<b>Installation of Socketed H-Pile (Reclaimed Section)</b>		P2-Cal.A	0	0	30-Jan-19	30-Jan-19	26			0						
S16384	Installation of Pre-bored Socketed H-Pile (Reclaimed Section) Award	P2-Cal.A	0	0	30-Jan-19	30-Jan-19	26	0%		0						
<b>ELS Works (Reclaimed Section)</b>		P2-Cal.A	109	24	05-Oct-18 A	12-Feb-19	240			-22						
S16386	Invitation, Submission and Opening of Tender for Excavation and ELS Works (Reclaimed Section)	P2-Cal.A	14	3	05-Oct-18 A	22-Jan-19	240	78.57%		-96						
S16387	Tender Interview and Recommendation to PM for Excavation and ELS Works (Reclaimed Section)	P2-Cal.A	21	21	23-Jan-19	12-Feb-19	240	0%		0						
S16388	Excavation and ELS Works (Reclaimed Section) Award	P2-Cal.A	0	0	12-Feb-19	12-Feb-19	240	0%		0						
<b>Structural Works for Retaining Wall (Reclaimed Section)</b>		P2-Cal.A	45	20	24-Oct-18 A	08-Feb-19	314			-63						
S16391	Tender Interview and Recommendation to PM for Structural Works for Retaining Wall	P2-Cal.A	30	20	24-Oct-18 A	08-Feb-19	314	33.33%		-78						
S16392	Structural Works for Retaining Wall Award	P2-Cal.A	0	0	08-Feb-19	08-Feb-19	314	0%		0						
<b>Structural Works for U-Trough, Underpass and Abutment</b>		P2-Cal.A	45	20	24-Oct-18 A	08-Feb-19	317			-63						
S16440	Tender Interview and Recommendation to PM for Structural Works for U-Trough, Underpass and Abutment	P2-Cal.A	30	20	24-Oct-18 A	08-Feb-19	317	33.33%		-78						
S16460	Structural Works for U-Trough, Underpass and Abutment Award	P2-Cal.A	0	0	08-Feb-19	08-Feb-19	317	0%		0						
<b>Installation of Bored Pile</b>		P2-Cal.A	42	42	06-Mar-19	16-Apr-19	47			0						
S16800	Prepare Installation of Bored Pile Tender Document for PM Acceptance	P2-Cal.A	7	7	06-Mar-19	12-Mar-19	47	0%		0						
S16820	Invitation, Submission and Opening of Tender for Installation of Bored Pile	P2-Cal.A	14	14	13-Mar-19	26-Mar-19	47	0%		0						
S16840	Tender Interview and Recommendation to PM for Installation of Bored Pile	P2-Cal.A	21	21	27-Mar-19	16-Apr-19	47	0%		0						
S16860	Installation of Bored Pile Award	P2-Cal.A	0	0	16-Apr-19	16-Apr-19	47	0%		0						
<b>Road Works</b>		P2-Cal.A	42	42	20-Jan-19	02-Mar-19	180			0						
S17200	Prepare Road Works Tender Document for PM Acceptance	P2-Cal.A	7	7	20-Jan-19	26-Jan-19	180	0%		0						
S17220	Submission and Opening of Tender for Road Works	P2-Cal.A	14	14	27-Jan-19	09-Feb-19	180	0%		0						
S17240	Tender Interview and Recommendation to PM for Road Works	P2-Cal.A	21	21	10-Feb-19	02-Mar-19	180	0%		0						
S17260	Road Works Award	P2-Cal.A	0	0	02-Mar-19	02-Mar-19	180	0%		0						
<b>Traffic and Directional Signs</b>		P2-Cal.A	42	42	06-Mar-19	16-Apr-19	397			0						
S17440	Prepare Traffic and Directional Signs Tender Document for PM Acceptance	P2-Cal.A	7	7	06-Mar-19	12-Mar-19	397	0%		0						
S17460	Submission and Opening of Tender for Traffic and Directional Signs	P2-Cal.A	14	14	13-Mar-19	26-Mar-19	397	0%		0						
S17480	Tender Interview and Recommendation to PM for Traffic and Directional Signs	P2-Cal.A	21	21	27-Mar-19	16-Apr-19	397	0%		0						
S17500	Traffic and Directional Signs Award	P2-Cal.A	0	0	16-Apr-19	16-Apr-19	397	0%		0						
<b>Section 2 of the Works (All Works Within Portion II)</b>		P2-Cal.C	49	49	07-Mar-19	08-May-19	94			0						
<b>Roadworks</b>		P2-Cal.C	49	49	07-Mar-19	08-May-19	94			0						
LC11807	TTA application of road works after removal of treated sediment stockpile & partial removal of concrete blockwall	P2-Cal.C	35	35	07-Mar-19	17-Apr-19	94	0%		0						

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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2019	Jan	Feb	Mar	Apr	May
LC11808	TTA Implementation (Site Entrance)	P2-Cal.C	14	14	18-Apr-19	08-May-19	94	0%		0						TTA Implementation (Site Entrance)
<b>Section 3 of the Works All Works within Portion IV, V, VI, VII, VIII, and IX</b>																
<b>Existing Land Section</b>																
<b>Retaining Wall P2-A CH 500- 650</b>																
<b>Bay 1-2</b>																
LC11947	Backfilling Works RW P2-A Back Side (Bay 1 - 2) (Incl. soil test)	P2-Cal.C	35	35	21-Jan-19	05-Mar-19	236	0%	6	0						Backfilling Works RW P2-A Back Side (Bay 1 - 2) (Incl. soil test)
<b>Bay 5-15</b>																
LC11972-1	Construction of CCTV High Mast Footing - Base Slab (PMI 090)	P2-Cal.C	10	10	21-Jan-19	31-Jan-19	126	0%		0						Construction of CCTV High Mast Footing - Base Slab (PMI 090)
LC11972-2	Construction of CCTV High Mast Footing - Column (PMI 090)	P2-Cal.C	10	10	01-Feb-19	15-Feb-19	126	0%		0						Construction of CCTV High Mast Footing - Column (PMI 090)
LC11987	Waterproofing coating Works RW P2-A (Bay 5 - 15)	P2-Cal.C	15	5	27-Jul-18 A	21-Feb-19	126	66.67%		-156						Waterproofing coating Works RW P2-A (Bay 5 - 15)
LC11988	Backfilling Works RW P2-A Back Side (Bay 5 - 15) (Incl. Soil Test)	P2-Cal.C	35	20	07-Aug-18 A	16-Mar-19	166	42.86%	12	-147						Backfilling Works RW P2-A Back Side (Bay 5 - 15) (Incl. Soil Test)
LC11989	Excavation and Drainage Works (Bay 1 - 15)	P2-Cal.C	60	60	22-Feb-19	08-May-19	126	0%		0						Excavation and Drainage Works (Bay 1 - 15)
<b>P2 Road</b>																
<b>P2 CH 318 - 363</b>																
<b>ELS P2 CH318-363 &amp; SR2 CH100-110</b>																
LC12951	Overcome obstruction by Pre-bore method at CH318-363 (NCE072, 075, 131, 136 and CE067)	P2-Cal.C	60	8	16-Apr-18 A	29-Jan-19	-211	87%		-178						Overcome obstruction by Pre-bore method at CH318-363 (NCE072, 075, 131, 136 and CE067)
LC12952	Installation of sheetpile wall at CH318-363	P2-Cal.C	60	8	19-May-18 A	08-Feb-19	-211	86.67%		-156						Installation of sheetpile wall at CH318-363
LC12953	Installation of Dewatering System and King Posts	P2-Cal.C	20	15	22-Sep-18 A	09-Feb-19	-212	25%		-92						Installation of Dewatering System and King Posts
LC12956	Excavation to +1.0 ~ +1.3mPD (4600m3)	P2-Cal.C	5	5	11-Feb-19	15-Feb-19	-212	0%		0						Excavation to +1.0 ~ +1.3mPD (4600m3)
LC12957	Installation of 1st layer strut/waler @ +2.0 ~ +2.3mPD	P2-Cal.C	15	15	16-Feb-19	05-Mar-19	-212	0%		0						Installation of 1st layer strut/waler @ +2.0 ~ +2.3mPD
LC12958	Excavation to -1.0 ~ -1.6mPD (3810m3)	P2-Cal.C	5	5	06-Mar-19	11-Mar-19	-212	0%		0						Excavation to -1.0 ~ -1.6mPD (3810m3)
LC12959	Installation of 2nd layer strut/waler @ -0.6 ~ -1.0mPD	P2-Cal.C	15	15	12-Mar-19	28-Mar-19	-212	0%		0						Installation of 2nd layer strut/waler @ -0.6 ~ -1.0mPD
LC12961	Excavation to -2.9 ~ -4.6mPD (3810m3)	P2-Cal.C	5	5	29-Mar-19	03-Apr-19	-212	0%		0						Excavation to -2.9 ~ -4.6mPD (3810m3)
LC12962	Installation of 3rd layer strut/waler @ -1.9 ~ -3.6mPD	P2-Cal.C	15	15	04-Apr-19	25-Apr-19	-212	0%		0						Installation of 3rd layer strut/waler @ -1.9 ~ -3.6mPD
<b>P2 CH 411- 500</b>																
<b>Structure P2 CH 411 - 500 (U Trough A)</b>																
<b>Wall Stem</b>																
LC15170	Construction of wall stem at Bay 4 & 5 - 2nd pour	P2-Cal.C	13	13	21-Jan-19	04-Feb-19	193	0%		0						Construction of wall stem at Bay 4 & 5 - 2nd pour
LC15230	Construction of wall stem Final Pour at Bay 1	P2-Cal.C	13	13	21-Jan-19	04-Feb-19	180	0%		0						Construction of wall stem Final Pour at Bay 1
LC15235	Construction of wall stem Final Pour at Bay 2 & 3	P2-Cal.C	13	13	08-Feb-19	22-Feb-19	180	0%		0						Construction of wall stem Final Pour at Bay 2 & 3
LC15240	Backfilling and Removal of Sheetpile at the edge	P2-Cal.C	35	35	23-Feb-19	04-Apr-19	180	0%		0						Backfilling and Removal of Sheetpile at the edge
LC15250	Construction of Drainage and Manhole (NCE143)	P2-Cal.C	60	5	06-Apr-18 A	13-Feb-19	218	91.67%		-196						Construction of Drainage and Manhole (NCE143)
LC15260	Backfilling of Engineered Fill Material (3430m3) inside U-trough	P2-Cal.C	15	5	15-May-18 A	19-Feb-19	218	66.67%		-214						Backfilling of Engineered Fill Material (3430m3) inside U-trough
LC15270	Installation of Precast Concrete Profile Barrier (192m)	P2-Cal.C	30	30	06-Apr-19	16-May-19	180	0%		0						Installation of Precast Concrete Profile Barrier (192m)
<b>SR2</b>																
<b>Retaining Wall SR2-A &amp; B CH250 - 310</b>																
<b>Retaining Wall SR2-B</b>																
LC16593	Excavation, Blinding & W/P of RW SR2-A & B Bay 1 - 3 (RFI-105; MJ & W/P details not finalised)	P2-Cal.C	21	4	03-Aug-18 A	24-Jan-19	172	80.95%		-123						Excavation, Blinding & W/P of RW SR2-A & B Bay 1 - 3 (RFI-105; MJ & W/P details not finalised)
LC16615	Construction of Base Slab (RW SR2-A & B Bay 3)(RFI-105)	P2-Cal.C	15	15	25-Jan-19	14-Feb-19	172	0%		0						Construction of Base Slab (RW SR2-A & B Bay 3)(RFI-105)
LC16860	Construction of Drainage and Manhole	P2-Cal.C	40	40	15-Feb-19	02-Apr-19	172	0%	10	0						Construction of Drainage and Manhole
LC16865	Backfilling Works of back side (SR2- A & B - Bay 1)	P2-Cal.C	30	30	15-Feb-19	21-Mar-19	182	0%	10	0						Backfilling Works of back side (SR2- A & B - Bay 1)
LC16880	Installation of Precast Concrete Profile Barrier	P2-Cal.C	40	40	03-Apr-19	25-May-19	172	0%	10	0						Installation of Precast Concrete Profile Barrier
<b>SR2 CH170 - 250</b>																

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█ Actual Work    ◆ Milestone  
█ Remaining Work    ▼ Summary

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<b>Structure SR2 CH 170 - 250 (U Trough A)</b>																
LC17385	Construction of wall stem 2nd pour (top level) at CH222 - 236	P2-Cal.C	9	2	17-Dec-18 A	22-Jan-19	200	77.78%		-20						
LC17395	Construction of wall stem 2nd pour (top level) at CH170 - 182.5	P2-Cal.C	9	9	23-Jan-19	01-Feb-19	200	0%		0						
LC17400	Construction of Drainage and Manhole Cover (NCE143)	P2-Cal.C	40	20	28-Jun-18 A	28-Feb-19	200	50%		-161						
LC17510	Waterproofing, Backfilling and Remove sheetpile	P2-Cal.C	40	40	02-Feb-19	23-Mar-19	220	0%		0						
LC17520	Installation of Precast Concrete Profile Barrier	P2-Cal.C	40	40	01-Mar-19	17-Apr-19	200	0%		0						
<b>Portion IV &amp; VII</b>																
<b>Construction of DN2100 stormwater at Portion IV &amp; VII</b>																
<b>Drainage works</b>																
<b>SMH9103-SMH9104</b>																
LC17690-3	Manhole construction and Pipe Laying (SMH9103 and SMH9104)	P2-Cal.C	20	7	20-Dec-18 A	28-Jan-19	-203	65%		-11						
<b>SMH9104-SMH9105</b>																
LC17691-3	Manhole construction and Pipe Laying (SMH9105)	P2-Cal.C	16	8	10-Sep-18 A	29-Jan-19	-43	50%		-100						
<b>SMH9105-SMH9106</b>																
LC17692-3	Manhole construction and Pipe Laying (SMH9106)	P2-Cal.C	16	8	05-Nov-18 A	29-Jan-19	-43	50%		-55						
<b>SMH9106-SMH9107</b>																
LC17693-3	Manhole construction and Pipe Laying (SMH9107)	P2-Cal.C	16	10	10-Jan-19 A	31-Jan-19	-59	37.5%		-3						
LC17693-5	Inspection & Backfill	P2-Cal.C	14	14	30-Jan-19	18-Feb-19	-59	0%		0						
<b>SMH9107-SMH9108</b>																
LC17694	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9107 to SMH9108)	P2-Cal.C	10	5	03-Jan-19 A	25-Jan-19	-74	50%		-10						
LC17695	Bedding And Inspection	P2-Cal.C	3	3	26-Jan-19	29-Jan-19	-74	0%		0						
LC17695-01	Installation of Precast Manhole (SMH9108)	P2-Cal.C	1	1	30-Jan-19	30-Jan-19	-74	0%		0						
LC17696	Manhole construction and Pipe Laying (SMH9108)	P2-Cal.C	16	16	31-Jan-19	21-Feb-19	-74	0%		0						
LC17698	Inspection & Backfill	P2-Cal.C	14	14	20-Feb-19	07-Mar-19	-74	0%		0						
<b>SMH9108-SMH9109</b>																
LC17699	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9108 to SMH9109)	P2-Cal.C	10	7	03-Jan-19 A	28-Jan-19	-74	30%		-12						
LC17701	Bedding And Inspection	P2-Cal.C	3	2	14-Jan-19 A	30-Jan-19	-74	33.33%		-12						
LC17702	Manhole construction and Pipe Laying (SMH9109)	P2-Cal.C	16	16	31-Jan-19	21-Feb-19	-74	0%		0						
LC17704	Inspection & Backfill	P2-Cal.C	14	14	20-Feb-19	07-Mar-19	-74	0%		0						
<b>SMH9109-SMH9110</b>																
LC17705	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9109-9110)	P2-Cal.C	10	4	28-Aug-18 A	24-Jan-19	-70	60%		-113						
LC17707	Bedding And Inspection	P2-Cal.C	3	1	10-Sep-18 A	25-Jan-19	-70	66.67%		-110						
LC17708	Manhole construction and Pipe Laying (SMH9110)	P2-Cal.C	16	16	26-Jan-19	16-Feb-19	-70	0%		0						
LC17710	Inspection & Backfill	P2-Cal.C	14	14	15-Feb-19	02-Mar-19	-70	0%		0						
<b>SMH9110-Outfall</b>																
LC17713	Bedding And Inspection	P2-Cal.C	3	3	17-Jan-19 A	23-Jan-19	-70	0%		-3						
LC17715	Lay Dia. 2100 Drainage for Existing Outfalls along Existing Seawall (SMH9110- Outfall) (63m)	P2-Cal.C	10	10	23-Jan-19	02-Feb-19	-63	0%		0						
LC17716	Reinstatement of Seawall and Backfilling Works	P2-Cal.C	30	30	24-Jan-19	02-Mar-19	-70	0%		0						
<b>Inspection 2100 Drainage Pipe</b>																
LC17717	Inspection with DSD and Temporary Diversion from SMH9103 to Outfall	P2-Cal.C	14	14	08-Mar-19	23-Mar-19	-74	0%		0						
<b>New Reclaimed Section</b>																
<b>Marine Works</b>																
<b>Initial Works</b>																

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											Jan	Feb	Mar	Apr	May				
MC10050	Installation of Marine Survey Tower	P2-Cal.C	42	32	08-Sep-18 A	15-Mar-19	52	23.81%		-111									
MC10060	Installation of Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	7	2	28-Jun-18 A	22-Jan-19	-98	71.43%		-165									
MC10070	Baseline for Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	10	10	03-Jul-18 A	02-Feb-19	-98	0%		-169									
MC10080	Installation of Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	7	2	03-May-18 A	08-Feb-19	-109	71.43%		-223									
MC10120	Baseline for Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	3	3	09-Feb-19	12-Feb-19	-109	0%		0									
MC10156	Installation of Type 2 Settlement Marker (Type RA)	P2-Cal.C	7	7	21-Jan-19	28-Jan-19	-124	0%		0									
MC10160	Baseline for Type 2 Settlement Marker (Type RA)	P2-Cal.C	3	3	29-Jan-19	31-Jan-19	-124	0%		0									
MC10170	Installation of Type 2 Settlement Marker (Type RB)	P2-Cal.C	7	7	21-Jan-19	28-Jan-19	-6	0%		0									
MC10175	Baseline for Type 2 Settlement Marker (Type RB)	P2-Cal.C	3	3	29-Jan-19	31-Jan-19	-6	0%		0									
<b>Steel Cofferdam and Water Gate</b>		P2-Cal.C	60	60	21-Jan-19	03-Apr-19	-37			0									
<b>Steel Cofferdam Installation</b>		P2-Cal.C	60	60	21-Jan-19	03-Apr-19	-37			0									
<b>Reinstatement works</b>		P2-Cal.C	60	60	21-Jan-19	03-Apr-19	-37			0									
<b>Type 1</b>		P2-Cal.C	60	60	21-Jan-19	03-Apr-19	-37			0									
<b>Removal of S/P at transition zone</b>		P2-Cal.C	60	60	21-Jan-19	03-Apr-19	-37			0									
MC10304-02	Removal of Underwater S/P	P2-Cal.C	60	60	21-Jan-19	03-Apr-19	-37	0%		0									
<b>Dredging Work</b>		P2-Cal.C	45	31	29-Nov-18 A	28-Feb-19	-126			-28									
MC10846	Salvage of the Sunken Derrick Lighter	P2-Cal.C	24	7	31-Dec-18 A	28-Jan-19	-131	70.83%		0									
MC10848	Dredge CH480-560 for treatment stage 1 (Bottom) (6000m3); 600m3/day	P2-Cal.C	10	5	29-Nov-18 A	02-Feb-19	-131	50%		-44									
MC10855	Dredge CH480-560 for treatment stage 2 (Bottom) (18000m3); 600m3/day	P2-Cal.C	30	19	29-Nov-18 A	28-Feb-19	-126	36.67%		-43									
<b>Bathymetric and Seismic Survey</b>		P2-Cal.C	33	33	21-Jan-19	02-Mar-19	-117			0									
MC11018	Survey CH480-560 (+O/S 20 to 80)	P2-Cal.C	2	2	21-Jan-19	22-Jan-19	-125	0%		0									
MC11025	Survey CH480-560 - stage 1	P2-Cal.C	2	2	04-Feb-19	08-Feb-19	-131	0%		0									
MC11035	Survey CH480-560 - stage 2	P2-Cal.C	2	2	01-Mar-19	02-Mar-19	-117	0%		0									
<b>Filling of Recycle G400 Rock at Dredged Trench</b>		P2-Cal.C	120	76	13-Nov-18 A	26-Apr-19	-117			-12									
MC11205	Fill Recycle G400 at CH412-442 (19909m3)	P2-Cal.C	10	4	13-Nov-18 A	24-Jan-19	-127	60%		-50									
MC11225	Fill Recycle G400 at CH442-512 (24332m3) (+O/S 20 to 80)	P2-Cal.C	14	14	09-Feb-19	25-Feb-19	-131	0%		0									
MC11228	Fill Recycle G400 after Band Drain Installation (5850m3)	P2-Cal.C	10	10	25-Mar-19	04-Apr-19	-131	0%		0									
MC11235	Fill Recycle G400 at CH442-512 (6000m3) - Stage 1 (West Side)	P2-Cal.C	6	6	30-Jan-19	08-Feb-19	-131	0%		0									
MC11245	Fill Recycle G400 at CH442-560 (91060m3) - Stage 2 (East Side)	P2-Cal.C	43	43	04-Mar-19	26-Apr-19	-117	0%		0									
<b>Construction of Seawall Foundation (Dredged Area)</b>		P2-Cal.C	91	67	26-Nov-18 A	12-Apr-19	-131			-21									
<b>Laying of Type A Rockfill (Base)</b>		P2-Cal.C	87	63	26-Nov-18 A	08-Apr-19	-131			-21									
MC11275	Type A Rockfill CH250-312 (952m3)	P2-Cal.C	2	1	26-Nov-18 A	21-Jan-19	-127	50%		-44									
MC11285	Type A Rockfill CH312-362 (860m3)	P2-Cal.C	1	1	19-Jan-19 A	22-Jan-19	-127	0%		-2									
MC11295	Type A Rockfill CH362-412 (917m3)	P2-Cal.C	1	1	23-Jan-19	23-Jan-19	-120	0%		0									
MC11305	Type A Rockfill CH412-442 (773m3)	P2-Cal.C	1	1	25-Jan-19	25-Jan-19	-117	0%		0									
MC11315	Type A Rockfill CH442-500 (2222m3)	P2-Cal.C	2	2	26-Feb-19	27-Feb-19	-131	0%		0									
MC11318	Type A Rockfill after Band Drain at West Side (2000m3)	P2-Cal.C	2	2	06-Apr-19	08-Apr-19	-131	0%		0									
<b>Laying of Geotextile Type A (Base)</b>		P2-Cal.C	63	63	23-Jan-19	10-Apr-19	-131			0									
MC11375	Geotextile Type A CH312-362 (952m2)	P2-Cal.C	1	1	23-Jan-19	23-Jan-19	-127	0%		0									
MC11385	Geotextile Type A CH362-412 (952m2)	P2-Cal.C	1	1	24-Jan-19	24-Jan-19	-120	0%		0									
MC11395	Geotextile Type A CH412-442 (673m2)	P2-Cal.C	1	1	26-Jan-19	26-Jan-19	-117	0%		0									
MC11405	Geotextile Type A CH442-500 (1567m2)	P2-Cal.C	2	2	28-Feb-19	01-Mar-19	-131	0%		0									
MC11408	Geotextile Type A after Band Drain at West Side (1400m2)	P2-Cal.C	2	2	09-Apr-19	10-Apr-19	-131	0%		0									

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<b>Laying of Granular Filter (Base)</b>		P2-Cal.C	66	66	22-Jan-19	12-Apr-19	-131			0						
MC11455	Granular Filter CH262-312 (1217m3)	P2-Cal.C	2	2	22-Jan-19	23-Jan-19	-127	0%	0	0						
MC11465	Granular Filter CH312-362 (852m3)	P2-Cal.C	1	1	24-Jan-19	24-Jan-19	-127	0%	0	0						
MC11475	Granular Filter CH362-412 (893m3)	P2-Cal.C	1	1	25-Jan-19	25-Jan-19	-120	0%	0	0						
MC11485	Granular Filter CH412-442 (743m3)	P2-Cal.C	1	1	28-Jan-19	28-Jan-19	-117	0%	0	0						
MC11495	Granular Filter CH442-500 (2164m3)	P2-Cal.C	2	2	02-Mar-19	04-Mar-19	-131	0%	0	0						
MC11498	Granular Filter after Band Drain at West Side (2000m3)	P2-Cal.C	2	2	11-Apr-19	12-Apr-19	-131	0%	0	0						
<b>Laying Geotextile Type A</b>		P2-Cal.C	82	34	04-Aug-18 A	07-Mar-19	-131			-94						
MC12045	Geotextile Type A (No-Dredged Area) CH262-312 (2426m2)	P2-Cal.C	4	1	04-Aug-18 A	24-Jan-19	-127	75%	0	-139						
MC12055	Geotextile Type A (No-Dredged Area) CH312-362 (2606m2)	P2-Cal.C	4	2	06-Aug-18 A	26-Jan-19	-127	50%	0	-140						
MC12065	Geotextile Type A (No-Dredged Area) CH362-412 (2566m2)	P2-Cal.C	4	4	06-Aug-18 A	31-Jan-19	-121	0%	0	-144						
MC12075	Geotextile Type A (No-Dredged Area) CH412-442 (1878m2)	P2-Cal.C	3	3	01-Feb-19	04-Feb-19	-120	0%	0	0						
MC12085	Geotextile Type A (No-Dredged Area) CH442-530 (2540m2)	P2-Cal.C	4	4	04-Mar-19	07-Mar-19	-131	0%	0	0						
<b>Placing Sand Blanket (Non-Dredged Area)</b>		P2-Cal.C	60	38	05-Dec-18 A	12-Mar-19	-131			-18						
MC12105	Sand Blanket CH225-275 (1205m3)	P2-Cal.C	3	1	05-Dec-18 A	24-Jan-19	-127	66.67%	0	-38						
MC12115	Sand Blanket CH275-325 (2316m3)	P2-Cal.C	5	5	25-Jan-19	30-Jan-19	-127	0%	0	0						
MC12125	Sand Blanket CH325-375 (2467m3)	P2-Cal.C	5	5	31-Jan-19	08-Feb-19	-124	0%	0	0						
MC12135	Sand Blanket CH375-425 (2465m3)	P2-Cal.C	5	5	09-Feb-19	14-Feb-19	-122	0%	0	0						
MC12145	Sand Blanket CH425-442 (2923m3)	P2-Cal.C	2	2	15-Feb-19	16-Feb-19	-119	0%	0	0						
MC12155	Sand Blanket CH442-530 (2468m3)	P2-Cal.C	5	5	07-Mar-19	12-Mar-19	-131	0%	0	0						
<b>Installation of Band Drain (Non-Dredged Area)</b>		P2-Cal.C	69	50	30-Oct-18 A	23-Mar-19	-131			-50						
MC12163	Band Drain CH38-95 (1131nos) - Land Plant	P2-Cal.C	12	11	19-Jan-19 A	02-Feb-19	-149	8.33%	0	-1						
MC12175	Band Drain CH225-275 (340nos)	P2-Cal.C	3	3	24-Jan-19	26-Jan-19	-124	0%	0	0						
MC12185	Band Drain CH275-325 (1133nos)	P2-Cal.C	8	8	31-Jan-19	12-Feb-19	-127	0%	0	0						
MC12195	Band Drain CH325-375 (1450nos)	P2-Cal.C	10	7	30-Oct-18 A	20-Feb-19	-127	30%	0	-82						
MC12205	Band Drain CH375-425 (1021nos)	P2-Cal.C	7	5	06-Nov-18 A	26-Feb-19	-127	28.57%	0	-84						
MC12215	Band Drain CH425-442 (1018nos)	P2-Cal.C	6	6	27-Feb-19	05-Mar-19	-127	0%	0	0						
MC12225	Band Drain CH442-530 (1782nos)	P2-Cal.C	12	12	11-Mar-19	23-Mar-19	-131	0%	0	0						
<b>Filling of Reclamation Fill to Seabed Level</b>		P2-Cal.C	95	76	13-Dec-18 A	26-Apr-19	-131			-11						
MC12355	Reclamation Fill CH175-225 (3632m3) - Land	P2-Cal.C	5	5	21-Jan-19	25-Jan-19	-126	0%	0	0						
MC12365	Reclamation Fill CH225-275 (3760m3)	P2-Cal.C	5	5	28-Jan-19	01-Feb-19	-101	0%	0	0						
MC12375	Reclamation Fill CH275-325 (4829m3)	P2-Cal.C	5	5	13-Feb-19	18-Feb-19	-106	0%	0	0						
MC12385	Reclamation Fill CH325-375 (3454m3)	P2-Cal.C	4	4	21-Feb-19	25-Feb-19	-97	0%	0	0						
MC12395	Reclamation Fill CH375-398 (2152m3)	P2-Cal.C	3	3	27-Feb-19	01-Mar-19	-96	0%	0	0						
MC12405	Reclamation Fill CH398-500 (8036m3)	P2-Cal.C	9	9	13-Apr-19	26-Apr-19	-131	0%	0	0						
<b>Laying of Geotextile Type A on Top of Reclamation Fill</b>		P2-Cal.C	52	28	13-Dec-18 A	02-Mar-19	-91			-11						
MC12435	Geotextile Type A CH165-215 (784m2)	P2-Cal.C	1	1	13-Dec-18 A	26-Jan-19	-126	0%	0	-35						
MC12445	Geotextile Type A CH215-265 (905m2)	P2-Cal.C	1	1	02-Feb-19	02-Feb-19	-101	0%	0	0						
MC12455	Geotextile Type A CH265-315 (1156m2)	P2-Cal.C	1	1	19-Feb-19	19-Feb-19	-106	0%	0	0						
MC12465	Geotextile Type A CH315-365 (1077m2)	P2-Cal.C	1	1	26-Feb-19	26-Feb-19	-97	0%	0	0						
MC12475	Geotextile Type A CH365-388 (518m2)	P2-Cal.C	1	1	02-Mar-19	02-Mar-19	-91	0%	0	0						
<b>Construction of Eastern Seawall Up to +2.5mPD</b>		P2-Cal.C	49	49	05-Jan-19 A	21-Mar-19	-97			-13						
<b>Filling of G400 Rock as East Seawall Core (+2.5mPD)</b>		P2-Cal.C	40	40	18-Jan-19 A	18-Mar-19	-100			-8						

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MC11525	Fill G400 at CH165-215 (5826m3) for Vertical Seawall	P2-Cal.C	3	2	18-Jan-19 A	29-Jan-19	-126	33.33%	0	-7					
MC11535	Fill G400 at CH215-265 (10232m3)	P2-Cal.C	6	6	04-Feb-19	13-Feb-19	-101	0%	0	0					
MC11545	Fill G400 at CH265-315 (11705m3)	P2-Cal.C	9	9	20-Feb-19	01-Mar-19	-106	0%	0	0					
MC11555	Fill G400 at CH315-365 (12252m3)	P2-Cal.C	10	10	02-Mar-19	13-Mar-19	-100	0%	0	0					
MC11565	Fill G400 at CH365-388 (6115m3)	P2-Cal.C	4	4	14-Mar-19	18-Mar-19	-100	0%	0	0					
<b>Laying of Type A Rockfill as East Seawall Core (+2.5mPD)</b>		P2-Cal.C	47	47	05-Jan-19 A	19-Mar-19	-97			-13					
MC11615	Type A Rockfill CH115-165 (2880m3) After Vertical Seawall Completion	P2-Cal.C	4	2	05-Jan-19 A	22-Jan-19	-113	50%	0	-11					
MC11625	Type A Rockfill CH165-215 (3059m3) After Vertical Seawall Completion	P2-Cal.C	4	4	18-Feb-19	21-Feb-19	-126	0%	0	0					
MC11635	Type A Rockfill CH215-265 (823m3)	P2-Cal.C	1	1	22-Feb-19	22-Feb-19	-103	0%	0	0					
MC11645	Type A Rockfill CH265-315 (735m3)	P2-Cal.C	1	1	02-Mar-19	02-Mar-19	-106	0%	0	0					
MC11655	Type A Rockfill CH315-365 (735m3)	P2-Cal.C	1	1	14-Mar-19	14-Mar-19	-99	0%	0	0					
MC11665	Type A Rockfill CH365-388 (352m3)	P2-Cal.C	1	1	19-Mar-19	19-Mar-19	-97	0%	0	0					
<b>Laying of Geotextile Type A as East Seawall Core (+2.5mPD)</b>		P2-Cal.C	44	46	07-Jan-19 A	20-Mar-19	-97			-16					
MC11715	Geotextile Type A CH115-165 (1138m2)	P2-Cal.C	1	1	07-Jan-19 A	23-Jan-19	-113	0%	0	-14					
MC11725	Geotextile Type A CH165-215 (1212m2)	P2-Cal.C	1	1	22-Feb-19	22-Feb-19	-126	0%	0	0					
MC11735	Geotextile Type A CH215-265 (1243m2)	P2-Cal.C	1	1	23-Feb-19	23-Feb-19	-103	0%	0	0					
MC11745	Geotextile Type A CH265-315 (1282m2)	P2-Cal.C	1	1	04-Mar-19	04-Mar-19	-106	0%	0	0					
MC11755	Geotextile Type A CH315-365 (1308m2)	P2-Cal.C	1	1	15-Mar-19	15-Mar-19	-99	0%	0	0					
MC11765	Geotextile Type A CH365-388 (633m2)	P2-Cal.C	1	1	20-Mar-19	20-Mar-19	-97	0%	0	0					
<b>Laying of Granular Filter as East Seawall Core (+2.5mPD)</b>		P2-Cal.C	45	47	10-Jan-19 A	21-Mar-19	-97			-13					
MC11815	Granular Filter CH115-165 (1061m3)	P2-Cal.C	2	1	10-Jan-19 A	23-Jan-19	-113	50%	0	-10					
MC11825	Granular Filter CH165-215 (1112m3)	P2-Cal.C	2	2	23-Feb-19	25-Feb-19	-126	0%	0	0					
MC11835	Granular Filter CH215-265 (877m3)	P2-Cal.C	1	1	26-Feb-19	26-Feb-19	-104	0%	0	0					
MC11845	Granular Filter CH265-315 (904m3)	P2-Cal.C	1	1	05-Mar-19	05-Mar-19	-106	0%	0	0					
MC11855	Granular Filter CH315-365 (923m3)	P2-Cal.C	1	1	16-Mar-19	16-Mar-19	-99	0%	0	0					
MC11865	Granular Filter CH365-388 (420m3)	P2-Cal.C	1	1	21-Mar-19	21-Mar-19	-97	0%	0	0					
<b>Construction of Vertical Seawall</b>		P2-Cal.C	34	21	07-Dec-18 A	16-Feb-19	-126			-22					
<b>Construction of Vertical Seawall (Type 2 &amp; 3)</b>		P2-Cal.C	3	1	07-Dec-18 A	21-Jan-19	-138			-33					
MC11950	Connection of existing Vertical Seawall - 3 Layer (RFI-151)(PMI-097)	P2-Cal.C	3	1	07-Dec-18 A	21-Jan-19	-138	66.67%	0	-33					
<b>Construction of Vertical Seawall (Type 1 &amp; 4)</b>		P2-Cal.C	16	16	18-Jan-19 A	16-Feb-19	-126			-7					
MC11955	Installation of guidance rail for leveling stone	P2-Cal.C	2	2	18-Jan-19 A	30-Jan-19	-126	0%	0	-9					
MC11965	Seawall (Type 1 & 4) Laying of leveling stone Type 1 & 4	P2-Cal.C	5	3	19-Jan-19 A	31-Jan-19	-126	40%	0	-6					
MC11975	Seawall (Type 1 & 4) Laying of M9 (65 nos)	P2-Cal.C	7	7	28-Jan-19	04-Feb-19	-126	0%	0	0					
MC11985	Seawall (Type 1 & 4) Laying 1st Layer (124 nos)	P2-Cal.C	12	12	26-Jan-19	12-Feb-19	-126	0%	0	0					
MC11995	Seawall (Type 1 & 4) Laying 2nd Layer (105 nos)	P2-Cal.C	10	10	02-Feb-19	16-Feb-19	-126	0%	0	0					
<b>Construction of Western Seawall Up to +1.3mPD</b>		P2-Cal.C	18	18	13-Feb-19	05-Mar-19	-83			0					
<b>Filling of G400 Rock as West Seawall Core (+1.3mPD)</b>		P2-Cal.C	15	15	13-Feb-19	01-Mar-19	-83			0					
MC12495	Fill G400 CH270-320 (4241m3)	P2-Cal.C	2	2	13-Feb-19	14-Feb-19	-93	0%	0	0					
MC12505	Fill G400 CH320-370 (4679m3)	P2-Cal.C	2	2	21-Feb-19	22-Feb-19	-83	0%	0	0					
MC12515	Fill G400 CH370-420 (5159m3)	P2-Cal.C	3	3	27-Feb-19	01-Mar-19	-83	0%	0	0					
<b>Laying of Type A Rockfill as West Seawall Core (+1.3mPD)</b>		P2-Cal.C	14	14	15-Feb-19	02-Mar-19	-83			0					
MC12535	Type A Rockfill CH270-320 (511m3)	P2-Cal.C	1	1	15-Feb-19	15-Feb-19	-93	0%	0	0					
MC12545	Type A Rockfill CH320-370 (541m3)	P2-Cal.C	1	1	23-Feb-19	23-Feb-19	-83	0%	0	0					

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											Jan	Feb	Mar	Apr	May	
<b>Filling of Reclamation Fill -2.0 to +2.5mPD</b>												Filling of Reclamation Fill -2.0 to +2.5mPD				
MC12885	Reclamation Fill to +2.5mPD CH40-80 (7902m3)	P2-Cal.C	5	1	09-Jan-19 A	21-Jan-19	-149	80%	0	-6	Reclamation Fill to +2.5mPD CH40-80 (7902m3)					
MC12895	Reclamation Fill to +2.5mPD CH80-150 (11412m3)	P2-Cal.C	6	6	29-Jan-19	04-Feb-19	-115	0%	0	0	Reclamation Fill to +2.5mPD CH80-150 (11412m3)					
MC12895-01	Reclamation Fill to +2.5mPD CH150-205 (8538m3)	P2-Cal.C	4	4	28-Feb-19	04-Mar-19	-126	0%	0	0	Reclamation Fill to +2.5mPD CH150-205 (8538m3)					
MC12905	Reclamation Fill to +2.5mPD CH205-255 (7553m3)	P2-Cal.C	5	5	05-Mar-19	09-Mar-19	-100	0%	0	0	Reclamation Fill to +2.5mPD CH205-255 (7553m3)					
<b>Filling of Reclamation Fill to +1.3 to +2.5mPD</b>												Filling of Reclamation Fill to +1.3 to +2.5mPD				
MC12925	Reclamation Fill to +2.5mPD CH255-300 (3384m3)	P2-Cal.C	3	3	21-Mar-19	23-Mar-19	-106	0%	0	0	Reclamation Fill to +2.5mPD CH255-300 (3384m3)					
MC12925-01	Reclamation Fill to +2.5mPD CH300-335 (2327m3)	P2-Cal.C	2	2	02-Apr-19	03-Apr-19	-99	0%	0	0	Reclamation Fill to +2.5mPD CH300-335 (2327m3)					
MC12935	Reclamation Fill to +2.5mPD CH335-385 (3325m3)	P2-Cal.C	2	2	08-Apr-19	09-Apr-19	-97	0%	0	0	Reclamation Fill to +2.5mPD CH335-385 (3325m3)					
<b>Filling of Compacted Fill +2.5 to +3.5 &amp; Temp Fill +3.5 to +5.5mPD</b>												Filling of Compacted Fill +2.5 to +3.5 & Temp Fill +3.5 to +5.5mPD				
MC12955	Compacted Fill to +5.5mPD CH38-90 (7689m3)	P2-Cal.C	7	5	11-Jan-19 A	11-Feb-19	-149	28.57%	0	-17	Compacted Fill to +5.5mPD CH38-90 (7689m3)					
MC12965	Compacted Fill to +5.5mPD CH90-140 (4460m3)	P2-Cal.C	5	5	12-Feb-19	16-Feb-19	-118	0%	0	0	Compacted Fill to +5.5mPD CH90-140 (4460m3)					
MC12965-01	Compacted Fill to +5.5mPD CH140-190 (4476m3)	P2-Cal.C	5	5	05-Mar-19	09-Mar-19	-126	0%	0	0	Compacted Fill to +5.5mPD CH140-190 (4476m3)					
MC12975	Compacted Fill to +5.5mPD CH190-240 (5033m3)	P2-Cal.C	6	6	11-Mar-19	16-Mar-19	-100	0%	0	0	Compacted Fill to +5.5mPD CH190-240 (5033m3)					
MC12975-01	Compacted Fill to +5.5mPD CH240-300 (6013m3)	P2-Cal.C	6	6	25-Mar-19	30-Mar-19	-106	0%	0	0	Compacted Fill to +5.5mPD CH240-300 (6013m3)					
MC12985	Compacted Fill to +5.5mPD CH300-330 (5458m3)	P2-Cal.C	6	6	04-Apr-19	11-Apr-19	-99	0%	0	0	Compacted Fill to +5.5mPD CH300-330 (5458m3)					
MC12985-01	Compacted Fill to +5.5mPD CH330-380 (6823m3)	P2-Cal.C	8	8	12-Apr-19	24-Apr-19	-99	0%	0	0	Compacted Fill to +5.5mPD CH330-380 (6823m3)					
<b>Surcharge</b>												Placing Surcharge				
<b>Placing Surcharge</b>												Placing Surcharge				
MC13020	Placing Surcharge Area 1b (CH30-89) (4852m3)	P2-Cal.C	5	5	12-Feb-19	16-Feb-19	-149	0%	0	0	Placing Surcharge Area 1b (CH30-89) (4852m3)					
MC13035	Placing Surcharge Area 2a1 (CH89-135) (1173m3)	P2-Cal.C	2	2	18-Feb-19	19-Feb-19	-118	0%	0	0	Placing Surcharge Area 2a1 (CH89-135) (1173m3)					
MC13035-01	Placing Surcharge Area 2a2 (CH135-190) (1939m3)	P2-Cal.C	2	2	11-Mar-19	12-Mar-19	-126	0%	0	0	Placing Surcharge Area 2a2 (CH135-190) (1939m3)					
MC13055	Placing Surcharge Area 2b1 (CH190-235) (2661m3)	P2-Cal.C	3	3	18-Mar-19	20-Mar-19	-94	0%	0	0	Placing Surcharge Area 2b1 (CH190-235) (2661m3)					
MC13055-01	Placing Surcharge Area 2b2 (CH235-300) (2661m3)	P2-Cal.C	3	3	01-Apr-19	03-Apr-19	-106	0%	0	0	Placing Surcharge Area 2b2 (CH235-300) (2661m3)					
<b>Surcharging</b>												Surcharge Area 1a (CH0-30) (2990m3)				
MC13155	Surcharge Area 1a (CH0-30) (2990m3)	P2-Cal.A	120	82	13-Dec-18 A	11-Apr-19	-125	31.67%	0	-10	Surcharge Area 1a (CH0-30) (2990m3)					
MC13160	Surcharge Area 1b (CH30-89) (4852m3)	P2-Cal.A	120	120	17-Feb-19	16-Jun-19	-184	0%	0	0	Surcharge Area 1b (CH30-89) (4852m3)					
MC13175	Surcharge Area 2a1 (CH89-135) (1173m3)	P2-Cal.A	60	60	20-Feb-19	20-Apr-19	-134	0%	0	0	Surcharge Area 2a1 (CH89-135) (1173m3)					
MC13175-01	Surcharge Area 2a2 (CH135-190) (1939m3)	P2-Cal.A	60	60	13-Mar-19	11-May-19	-155	0%	0	0	Surcharge Area 2a2 (CH135-190) (1939m3)					
MC13195	Surcharge Area 2b1 (CH190-235) (2661m3)	P2-Cal.A	60	60	21-Mar-19	19-May-19	-117	0%	0	0	Surcharge Area 2b1 (CH190-235) (2661m3)					
MC13195-01	Surcharge Area 2b2 (CH235-300) (2661m3)	P2-Cal.A	60	60	04-Apr-19	02-Jun-19	-131	0%	0	0	Surcharge Area 2b2 (CH235-300) (2661m3)					
<b>Removal of Surcharge</b>												Removal of Surcharge				
MC13295	Removal of Surcharge Area 1a (CH0-30) (2990m3)	P2-Cal.C	3	3	12-Apr-19	15-Apr-19	-82	0%	0	0	Removal of Surcharge Area 1a (CH0-30) (2990m3)					
<b>Armour Protection</b>												Armour Protection				
<b>Laying of Underlayer Armour Rock (West)</b>												Laying of Underlayer Armour Rock (West)				
MC13615	Armour CH271-300 (965m3)	P2-Cal.C	2	2	04-Apr-19	06-Apr-19	-64	0%	0	0	Armour CH271-300 (965m3)					
MC13635	Armour CH300-375 (2501m3)	P2-Cal.C	4	4	10-Apr-19	13-Apr-19	-66	0%	0	0	Armour CH300-375 (2501m3)					
<b>Laying of Armour Rock (West)</b>												Laying of Armour Rock (West)				
MC13695	Armour CH271-300 (1833m3)	P2-Cal.C	3	3	08-Apr-19	10-Apr-19	-63	0%	0	0	Armour CH271-300 (1833m3)					
MC13715	Armour CH300-375 (4767m3)	P2-Cal.C	7	7	15-Apr-19	25-Apr-19	-66	0%	0	0	Armour CH300-375 (4767m3)					
<b>Laying of Underlayer Armour Rock (East)</b>												Laying of Underlayer Armour Rock (East)				
MC13775	Armour CH71-190 (berm stone 820m3)	P2-Cal.C	17	17	05-Mar-19	23-Mar-19	-68	0%	0	0	Armour CH71-190 (berm stone 820m3)					
MC13795	Armour CH190-250 (1218m3)	P2-Cal.C	2	2	25-Mar-19	26-Mar-19	-68	0%	0	0	Armour CH190-250 (1218m3)					

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MC13815	Armour CH250-300 (1674m3)	P2-Cal.C	3	3	04-Apr-19	08-Apr-19	-74	0%		0						
MC13835	Armour CH300-375 (2501m3)	P2-Cal.C	4	4	10-Apr-19	13-Apr-19	-74	0%		0						
<b>Laying of Armour Rock (East)</b>		P2-Cal.C	22	22	27-Mar-19	25-Apr-19	-74			0						
MC13895	Armour CH190-250 (2310m3)	P2-Cal.C	4	4	27-Mar-19	30-Mar-19	-68	0%		0						
MC13915	Armour CH250-300 (3181m3)	P2-Cal.C	5	5	09-Apr-19	13-Apr-19	-74	0%		0						
MC13935	Armour CH300-375 (4767m3)	P2-Cal.C	7	7	15-Apr-19	25-Apr-19	-74	0%		0						
<b>Full-scale Treatment of Cement S/S of Marine Sediment</b>		P2-Cal.C	393	106	06-Jan-18 A	03-Jun-19	94			-21						
MC14075	Treatment (Suspend due to no stockpile area 17 Jul 18 to 19 Sep 18)	P2-Cal.C	250	36	06-Jan-18 A	06-Mar-19	-126	85.6%		-94						
MC14080	Curing, Stockpiling and Filling	P2-Cal.C	313	70	06-Jan-18 A	16-Apr-19	105	77.64%		-65						
MC14085	Removal of Concrete Block Wall	P2-Cal.C	70	70	07-Mar-19	03-Jun-19	94	0%		0						
<b>Modification Works of Existing Seawall</b>		P2-Cal.C	60	60	18-Feb-19	03-May-19	5			0						
MC14145	Excavation and Removal of existing seawall	P2-Cal.C	15	15	18-Feb-19	06-Mar-19	5	0%		0						
MC14165	Excavation down to -0.5mPD	P2-Cal.C	20	20	07-Mar-19	29-Mar-19	5	0%		0						
MC14185	Installation of Guidance Rail	P2-Cal.C	4	4	30-Mar-19	03-Apr-19	5	0%		0						
MC14205	Installation of Leveling Stone (47nos.)	P2-Cal.C	6	6	04-Apr-19	11-Apr-19	5	0%		0						
MC14225	Installation of Seawall (39nos)	P2-Cal.C	5	5	12-Apr-19	17-Apr-19	5	0%		0						
MC14245	Construction of Mass Concrete Coping	P2-Cal.C	10	10	18-Apr-19	03-May-19	5	0%		0						
<b>Land Works</b>		P2-Cal.C	154	104	03-Nov-18 A	31-May-19	-101			-14						
<b>Road P2 Underpass (CH105-CH318)</b>		P2-Cal.C	154	104	03-Nov-18 A	31-May-19	-101			-14						
<b>Underpass</b>		P2-Cal.C	154	104	03-Nov-18 A	31-May-19	-101			-14						
<b>Underpass P2 CH 105 - 318</b>		P2-Cal.C	154	104	03-Nov-18 A	31-May-19	-101			-14						
<b>Ground Investigation (Non Surcharge)</b>		P2-Cal.C	111	61	03-Nov-18 A	04-Apr-19	-75			-14						
LC17761-01	Erection of Concrete Block Wall & Demolition of Existing Seawall to +3.5mPD	P2-Cal.C	50	30	03-Nov-18 A	27-Feb-19	-130	40%		-44						
LC17762	Pre-drilling Works (4 nos) PDA01-PDA04, PD001 at P2 CH264 - 305 (completed 2100 drain pipe)(west side) 13d/nos - Rig x 2	P2-Cal.C	26	3	19-Dec-18 A	29-Jan-19	-135	88.46%		-7						
LC17764	Pre-drilling Works (5 nos) PDA05-PDA07a at P2 CH208 - 264 (west side) 13d/nos - Rig x 2	P2-Cal.C	13	13	26-Jan-19	13-Feb-19	-132	0%		0						
LC17765	Pre-drilling Works (5 nos) PDB05-PDB09 at P2 CH208 - 264 - Rig x 2	P2-Cal.C	12	10	04-Jan-19 A	09-Feb-19	-132	20%		-17						
LC17766	Pre-drilling Works (8 nos) PDA08-PDA11 & PDB10-PDB13 at P2 CH159 - 208 - Rig x 2	P2-Cal.C	16	16	20-Feb-19	09-Mar-19	-118	0%		0						
LC17767	Pre-drilling Works (11 nos) PDA12-PDA16 & PDB14-PDB19 at P2 CH105 - 159 - Rig x 2	P2-Cal.C	20	20	13-Mar-19	04-Apr-19	-75	0%		0						
<b>Foundation (Non Surcharge)</b>		P2-Cal.C	99	99	26-Jan-19	31-May-19	-118			0						
LC17768	Installation of Socketed H-pile (7 nos) at P2 CH292 to CH305 (north side) - (Rig x 1)	P2-Cal.C	35	35	26-Jan-19	11-Mar-19	-134	0%		0						
LC17769	Installation of Socketed H-pile (10 nos) at P2 CH266 to CH305 (west side) - (Rig x 1)	P2-Cal.C	50	50	30-Jan-19	01-Apr-19	-125	0%		0						
LC17770	Installation of Socketed H-pile (13 nos) at P2 CH266 to CH305 (middle) Drilling to RH - 3d/nos - (Rig x 1)	P2-Cal.C	39	39	26-Jan-19	15-Mar-19	-135	0%		0						
LC17771	Installation of Socketed H-pile (10 nos) at P2 CH208 to CH266 (west side) - (Rig x 1)	P2-Cal.C	50	50	09-Feb-19	10-Apr-19	-132	0%		0						
LC17772	Installation of Socketed H-pile (20 nos) at P2 CH208 to CH266 (middle) Drilling to RH - 3d/nos - (Rig x 1)	P2-Cal.C	60	60	12-Mar-19	27-May-19	-134	0%		0						
LC17773	Installation of Socketed H-pile (13 nos) at P2 CH160 to CH208 (west side) - (Rig x 1)	P2-Cal.C	65	65	11-Mar-19	31-May-19	-118	0%		0						
LC17774	Installation of Socketed H-pile (18 nos) at P2 CH160 to CH208 (middle) Drilling to RH - 3d/nos - (Rig x 2)	P2-Cal.C	27	27	16-Mar-19	17-Apr-19	-135	0%		0						
LC17775	Installation of Socketed H-pile (13 nos) at P2 CH105 to CH160 (west side) - (Rig x 2)	P2-Cal.C	35	35	10-Apr-19	27-May-19	-132	0%		0						
LC17776	Installation of Socketed H-pile (20 nos) at P2 CH105 to CH160 (middle) Drilling to RH - 3d/nos - (Rig x 2)	P2-Cal.C	30	30	18-Apr-19	28-May-19	-135	0%		0						
<b>Ground Investigation (On Top Surcharge)</b>		P2-Cal.C	32	32	10-Jan-19 A	26-Mar-19	-51			-30						
LC17782	Pre-drilling Works (9 nos) PD005-PD007, PD009-PD011 & PD022-PD024 at P2 CH208 - 264 - (Rig x 2)	P2-Cal.C	16	12	10-Jan-19 A	02-Mar-19	-74	25%		-26						
LC17783	Completion of abandoning temp. 1500mm DN	P2-Cal.C	0	0		23-Mar-19	-74	0%		0						
LC17784	Pre-drilling Works (4 nos) PD012-PD015 at P2 CH159 - 208 - (Rig x 2)	P2-Cal.C	8	8	20-Feb-19	28-Feb-19	-29	0%		0						
LC17789	Pre-drilling Works (5 nos) PD016-PD020 at P2 CH105 - 159 - (Rig x 2)	P2-Cal.C	12	12	13-Mar-19	26-Mar-19	-51	0%		0						

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ELS		P2-Cal.C	64	64	18-Feb-19	08-May-19	-82	0%		0						ELS
LC17850	Pre-boring Works (97m; 180 hole)(east side) at P2 CH105 - 202 (Rig x 2)	P2-Cal.C	45	45	28-Feb-19	25-Apr-19	-81	0%		0						Pre-boring Works (97m; 180 hole)(east side)
LC17860	Installation of sheetpile wall (Bulkhead; 92pcs) at P2 CH105 (Rig x 1)	P2-Cal.C	14	14	13-Mar-19	28-Mar-19	-52	0%		0						Installation of sheetpile wall (Bulkhead; 92pcs) at P2 CH105 (Rig x 1)
LC17870	Installation of sheetpile wall (50m; 125pcs) at P2 CH268 - 318 (Rig x 1)	P2-Cal.C	16	16	16-Apr-19	08-May-19	-82	0%		0						Installation of sheetpile wall
LC17880	Pre-boring & Installation of sheetpile wall (21m; 54pcs) at P2 CH202 - 223 (Rig x 1)	P2-Cal.C	25	25	18-Feb-19	18-Mar-19	-122	0%		0						Pre-boring & Installation of sheetpile wall (21m; 54pcs) at P2 CH202 - 223 (Rig x 1)
LC18000	Installation of sheetpile wall (97m; 243pcs)(east side) at P2 CH105 - 202 (Rig x 1)	P2-Cal.C	40	40	15-Mar-19	06-May-19	-81	0%		0						Installation of sheetpile wall
LC18005	Installation of pipe pile wall (106nos. @1.5 nos/d) (Rig x 2)	P2-Cal.C	35	35	19-Mar-19	03-May-19	-122	0%		0						Installation of pipe pile wall (106
<b>Section 4 of the Works - Preservation and Protection of Existing Trees</b>		P2-Cal.A	1563	898	12-Jan-17 A	05-Jul-21	-138			-73						
LC25260	Preservation and Protection of Existing Trees	P2-Cal.A	1451	898	12-Jan-17 A	05-Jul-21	-138	38.11%		-185						
LC25280	Nursery Transplanted Trees at the Contractor's holding nursery	P2-Cal.A	1177	898	28-Apr-17 A	05-Jul-21	-138	23.7%		-353						

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3 Monthly Rolling Programme  
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Date	Revision	Checked	Approved
20-Jan-19			







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

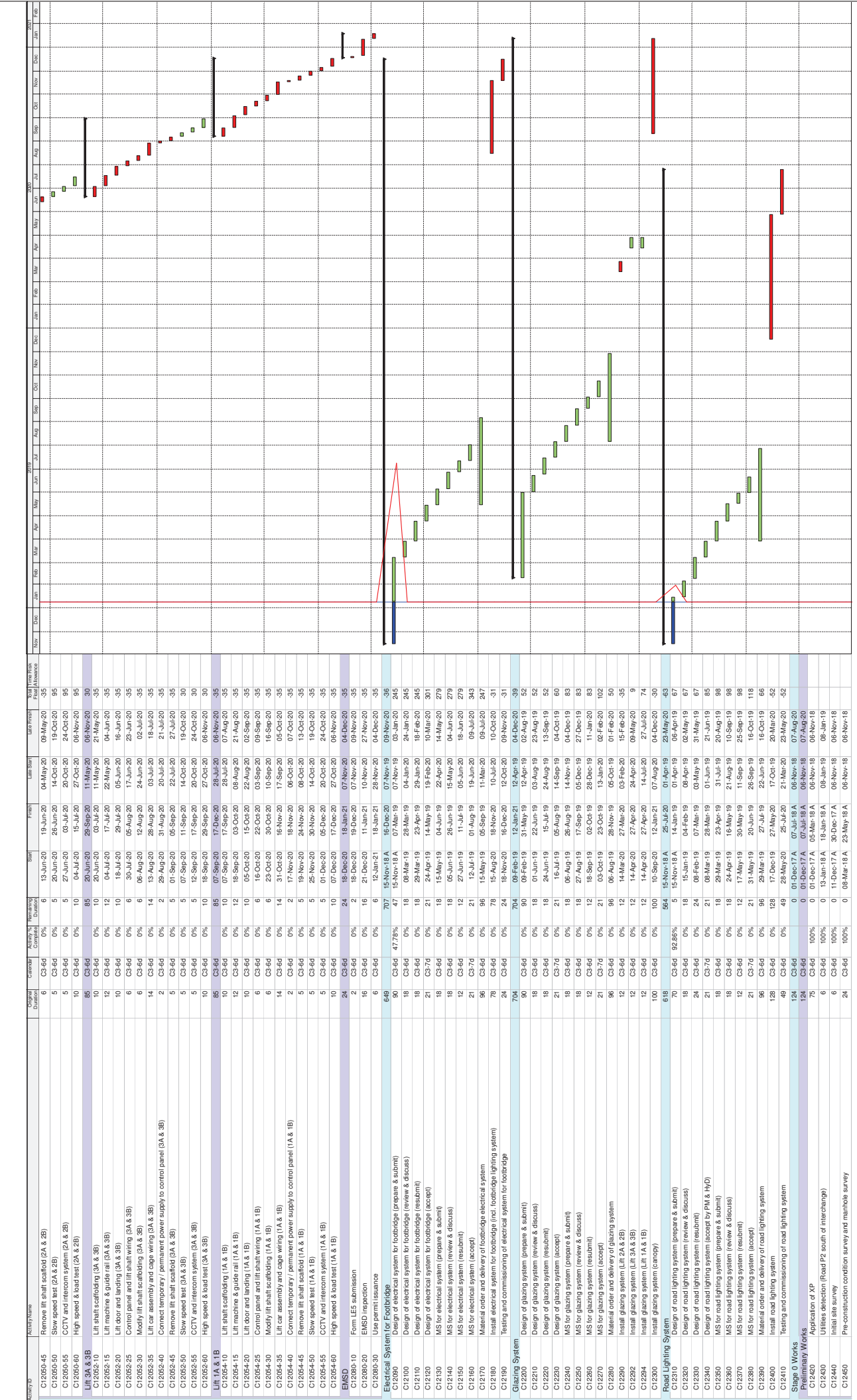
Actual Work  
 Remaining Work  
 Critical Remaining Work  
 Milestone  
 Summary

Date: 08-Jan-19  
 Revision: RWP-2019-01 (Data date 8-Jan-19)  
 Checked: TC  
 Approved

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Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
1	<b>Contract Award</b>	<b>0 days</b>	<b>Mon 29 Oct '18</b>	<b>Mon 29 Oct '18</b>	<b>NA</b>						
2	Letter of Acceptance	0 days	Mon 29 Oct '18	Mon 29 Oct '18	NA		6,20,10,9,8	◆ 29/10/18			
3	Commencement of the Works	0 days	Fri 9 Nov '18	Fri 9 Nov '18	NA		18,14,11,12,13	◆ 9/11/18			
4											
5	<b>Design Stage</b>	<b>242 days?</b>	<b>Mon 29 Oct '18</b>	<b>Fri 28 Jun '19</b>	<b>NA</b>						
6	Prepare and Submit Initial Works Programme	5 days	Mon 29 Oct '18	Fri 2 Nov '18	Fri 2 Nov '18 2						
7	Submit Staffing Proposal	7 days	Fri 9 Nov '18	Thu 15 Nov '18	Thu 15 Nov '18 3						
8	Submit Quality Plan	17 days	Mon 29 Oct '18	Wed 14 Nov '18	Wed 14 Nov '18 2						
9	Submit Draft Safety Plan	12 days	Mon 29 Oct '18	Fri 9 Nov '18	Fri 9 Nov '18 2						
10	Submit Safety Plan	46 days	Mon 29 Oct '18	Thu 13 Dec '18	Thu 13 Dec '18 2						
11	Submit Draft Environmental Management Plan	6 days	Fri 9 Nov '18	Wed 14 Nov '18	Wed 14 Nov '18 3						
12	Submit Environmental Management Plan	53 days	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18 3						
13	Submit Site Management Plan for Trip Ticket System	36 days	Fri 9 Nov '18	Fri 14 Dec '18	Fri 14 Dec '18 3						
14	Submit Sub-contractor Management Plan	17 days	Mon 29 Oct '18	Wed 14 Nov '18	Wed 14 Nov '18 3						
15											
16	Submit Software Quality Plan	57 days	Mon 29 Oct '18	Mon 24 Dec '18	Mon 24 Dec '18 3						
17	Submit Software Configuration Management Plan	60 days	Mon 29 Oct '18	Thu 27 Dec '18	Thu 27 Dec '18 3						
18	Submit Software Verification & Validation Plan	60 days	Mon 29 Oct '18	Thu 27 Dec '18	Thu 27 Dec '18 3						
19											
20	<b>Prepare / Submission of PSP for TKO-LTT TCSS and CBL TCSS</b>	<b>242 days?</b>	<b>Mon 29 Oct '18</b>	<b>Fri 28 Jun '19</b>	<b>NA 2</b>						
21	Submission of PSP - Central System Software	56 days	Fri 9 Nov '18	Thu 3 Jan '19	Thu 3 Jan '19		22				
22	Review and Comment the PSP	28 days	Thu 3 Jan '19	Thu 31 Jan '19	NA 21		23				
23	Resubmission of the PSP	10 days	Thu 31 Jan '19	Sun 10 Feb '19	NA 22		24				

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

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
24	Review and Approval of the PSP	28 days	Sun 10 Feb '19	Sun 10 Mar '19	NA 23		102				
25											
26	Submission of PSP - Central System Hardware	53 days?	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18		27				
27	Review and Comment the PSP	28 days	Mon 31 Dec '18	Mon 28 Jan '19	NA 26		28				
28	Resubmission of the PSP	10 days	Mon 28 Jan '19	Thu 7 Feb '19	NA 27		29				
29	Review and Approval of the PSP	28 days	Thu 7 Feb '19	Thu 7 Mar '19	NA 28		107				
30											
31	Submission of PSP - Traffic Control Devices	53 days?	Fri 9 Nov '18	Mon 31 Dec '18	Mon 31 Dec '18		32				
32	Review and Comment the PSP	28 days	Mon 31 Dec '18	Mon 28 Jan '19	NA 31		33				
33	Resubmission of the PSP	10 days	Mon 28 Jan '19	Thu 7 Feb '19	NA 32		34				
34	Review and Approval of the PSP	28 days	Thu 7 Feb '19	Thu 7 Mar '19	NA 33		112				
35											
36	Submission of PSP - Communication System	57 days?	Fri 9 Nov '18	Fri 4 Jan '19	Fri 4 Jan '19		37				
37	Review and Comment the PSP	28 days	Fri 4 Jan '19	Fri 1 Feb '19	NA 36		38				
38	Resubmission of the PSP	10 days	Fri 1 Feb '19	Mon 11 Feb '19	NA 37		39				
39	Review and Approval of the PSP	28 days	Mon 11 Feb '19	Mon 11 Mar '19	NA 38		117				
40											
41	Submission of PSP - Closed Circuit Television System	49 days?	Fri 9 Nov '18	Thu 27 Dec '18	Thu 27 Dec '18		42				
42	Review and Comment the PSP	28 days	Thu 27 Dec '18	Thu 24 Jan '19	NA 41		43				
43	Resubmission of the PSP	10 days	Thu 24 Jan '19	Sun 3 Feb '19	NA 42		44				
44	Review and Approval of the PSP	28 days	Sun 3 Feb '19	Sun 3 Mar '19	NA 43		122				
45											
46	Submission of PSP - Building PABX System	50 days?	Fri 9 Nov '18	Fri 28 Dec '18	Fri 28 Dec '18		47				
47	Review and Comment the PSP	28 days	Fri 28 Dec '18	Fri 25 Jan '19	NA 46		48				

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

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

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

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
72	Review and Comment the PSP	28 days	Tue 25 Dec '18	Tue 22 Jan '19	NA 71	73					
73	Resubmission of the PSP	10 days	Tue 22 Jan '19	Fri 1 Feb '19	NA 72	74					
74	Review and Approval of the PSP	28 days	Fri 1 Feb '19	Fri 1 Mar '19	NA 73	152					
75											
76	Submission of PSP - Operation Facilities	57 days	Fri 9 Nov '18	Sat 5 Jan '19	NA	77					
77	Review and Comment the PSP	28 days	Sat 5 Jan '19	Sat 2 Feb '19	NA 76	78					
78	Resubmission of the PSP	10 days	Sat 2 Feb '19	Tue 12 Feb '19	NA 77	79					
79	Review and Approval of the PSP	28 days	Tue 12 Feb '19	Tue 12 Mar '19	NA 78	157					
80											
81	Submission of PSP - Power Distribution System	57 days	Fri 9 Nov '18	Sat 5 Jan '19	NA	82					
82	Review and Comment the PSP	28 days	Sat 5 Jan '19	Sat 2 Feb '19	NA 81	83					
83	Resubmission of the PSP	10 days	Sat 2 Feb '19	Tue 12 Feb '19	NA 82	84					
84	Review and Approval of the PSP	28 days	Tue 12 Feb '19	Tue 12 Mar '19	NA 83	162					
85											
86	Submission of PSP - Enforcement System	60 days	Mon 29 Oct '18	Fri 28 Dec '18	NA	87					
87	Review and Comment the PSP	28 days	Fri 28 Dec '18	Fri 25 Jan '19	NA 86	88					
88	Resubmission of the PSP	10 days	Fri 25 Jan '19	Mon 4 Feb '19	NA 87	89					
89	Review and Approval of the PSP	28 days	Mon 4 Feb '19	Mon 4 Mar '19	NA 88	167					
90											
91	Submission of PSP - Government Optical Fibre System	49 days	Fri 9 Nov '18	Fri 28 Dec '18	NA	92					
92	Review and Comment the PSP	28 days	Fri 28 Dec '18	Fri 25 Jan '19	NA 91	93					
93	Resubmission of the PSP	10 days	Fri 25 Jan '19	Mon 4 Feb '19	NA 92	94					
94	Review and Approval of the PSP	28 days	Mon 4 Feb '19	Mon 4 Mar '19	NA 93	172					
95											

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

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
96	Submission of PSP - Overview	60 days	Fri 9 Nov '18	Tue 8 Jan '19	NA		97				
97	Review and Comment the PSP	28 days	Tue 8 Jan '19	Tue 5 Feb '19	NA 96		98				
98	Resubmission of the PSP	10 days	Tue 5 Feb '19	Fri 15 Feb '19	NA 97		99				
99	Review and Approval of the PSP	28 days	Fri 15 Feb '19	Fri 15 Mar '19	NA 98						
100											
101	<b>Prepare / Submission of FSP for TKO-LTT TCSS and CBL TCSS</b>	<b>119 days</b>	<b>Fri 1 Mar '19</b>	<b>Fri 28 Jun '19</b>	<b>NA</b>						
102	Submission of FSP - Central System Software	42 days	Sun 10 Mar '19	Sun 21 Apr '19	NA 24		103				
103	Review and Comment the FSP	28 days	Sun 21 Apr '19	Sun 19 May '19	NA 102		104				
104	Resubmission of the FSP	10 days	Sun 19 May '19	Wed 29 May '19	NA 103		105				
105	Review and Approval of the FSP	28 days	Wed 29 May '19	Wed 26 Jun '19	NA 104						
106											
107	Submission of FSP- Central System Hardware	42 days	Thu 7 Mar '19	Thu 18 Apr '19	NA 29		108				
108	Review and Comment the FSP	28 days	Thu 18 Apr '19	Thu 16 May '19	NA 107		109				
109	Resubmission of the FSP	10 days	Thu 16 May '19	Sun 26 May '19	NA 108		110				
110	Review and Approval of the FSP	28 days	Sun 26 May '19	Sun 23 Jun '19	NA 109						
111											
112	Submission of FSP - Traffic Control Devices	42 days	Thu 7 Mar '19	Thu 18 Apr '19	NA 34		113				
113	Review and Comment the FSP	28 days	Thu 18 Apr '19	Thu 16 May '19	NA 112		114				
114	Resubmission of the FSP	10 days	Thu 16 May '19	Sun 26 May '19	NA 113		115				
115	Review and Approval of the FSP	28 days	Sun 26 May '19	Sun 23 Jun '19	NA 114						
116											
117	Submission of FSP - Communication System	42 days	Mon 11 Mar '19	Mon 22 Apr '19	NA 39		118				
118	Review and Comment the FSP	28 days	Mon 22 Apr '19	Mon 20 May '19	NA 117		119				
119	Resubmission of the FSP	10 days	Mon 20 May '19	Thu 30 May '19	NA 118		120				

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



Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
120	Review and Approval of the FSP	28 days	Thu 30 May '19	Thu 27 Jun '19	NA 119						
121											
122	Submission of FSP - Closed Circuit Television System	42 days	Sun 3 Mar '19	Sun 14 Apr '19	NA 44		123				
123	Review and Comment the FSP	28 days	Sun 14 Apr '19	Sun 12 May '19	NA 122		124				
124	Resubmission of the FSP	10 days	Sun 12 May '19	Wed 22 May '19	NA 123		125				
125	Review and Approval of the FSP	28 days	Wed 22 May '19	Wed 19 Jun '19	NA 124						
126											
127	Submission of FSP - Building PABX System	42 days	Mon 4 Mar '19	Mon 15 Apr '19	NA 49		128				
128	Review and Comment the FSP	28 days	Mon 15 Apr '19	Mon 13 May '19	NA 127		129				
129	Resubmission of the FSP	10 days	Mon 13 May '19	Thu 23 May '19	NA 128		130				
130	Review and Approval of the FSP	28 days	Thu 23 May '19	Thu 20 Jun '19	NA 129						
131											
132	Submission of FSP - Emergency Telephone System	42 days	Mon 11 Mar '19	Mon 22 Apr '19	NA 54		133				
133	Review and Comment the FSP	28 days	Mon 22 Apr '19	Mon 20 May '19	NA 132		134				
134	Resubmission of the FSP	10 days	Mon 20 May '19	Thu 30 May '19	NA 133		135				
135	Review and Approval of the FSP	28 days	Thu 30 May '19	Thu 27 Jun '19	NA 134						
136											
137	Submission of FSP - Public Address System	42 days	Mon 4 Mar '19	Mon 15 Apr '19	NA 59		138				
138	Review and Comment the FSP	28 days	Mon 15 Apr '19	Mon 13 May '19	NA 137		139				
139	Resubmission of the FSP	10 days	Mon 13 May '19	Thu 23 May '19	NA 138		140				
140	Review and Approval of the FSP	28 days	Thu 23 May '19	Thu 20 Jun '19	NA 139						
141											
142	Submission of FSP - Radio System	42 days	Mon 4 Mar '19	Mon 15 Apr '19	NA 64		143				
143	Review and Comment the FSP	28 days	Mon 15 Apr '19	Mon 13 May '19	NA 142		144				

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

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
144	Resubmission of the FSP	10 days	Mon 13 May '19	Thu 23 May '19	NA 143		145				
145	Review and Approval of the FSP	28 days	Thu 23 May '19	Thu 20 Jun '19	NA 144						
146											
147	Submission of FSP - Detection System	42 days	Fri 8 Mar '19	Fri 19 Apr '19	NA 69		148				
148	Review and Comment the FSP	28 days	Fri 19 Apr '19	Fri 17 May '19	NA 147		149				
149	Resubmission of the FSP	10 days	Fri 17 May '19	Mon 27 May '19	NA 148		150				
150	Review and Approval of the FSP	28 days	Mon 27 May '19	Mon 24 Jun '19	NA 149						
151											
152	Submission of FSP - Manual Fallback System	42 days	Fri 1 Mar '19	Fri 12 Apr '19	NA 74		153				
153	Review and Comment the FSP	28 days	Fri 12 Apr '19	Fri 10 May '19	NA 152		154				
154	Resubmission of the FSP	10 days	Fri 10 May '19	Mon 20 May '19	NA 153		155				
155	Review and Approval of the FSP	28 days	Mon 20 May '19	Mon 17 Jun '19	NA 154						
156											
157	Submission of FSP - Operation Facilities	42 days	Tue 12 Mar '19	Tue 23 Apr '19	NA 79		158				
158	Review and Comment the FSP	28 days	Tue 23 Apr '19	Tue 21 May '19	NA 157		159				
159	Resubmission of the FSP	10 days	Tue 21 May '19	Fri 31 May '19	NA 158		160				
160	Review and Approval of the FSP	28 days	Fri 31 May '19	Fri 28 Jun '19	NA 159						
161											
162	Submission of FSP - Power Distribution System	42 days	Tue 12 Mar '19	Tue 23 Apr '19	NA 84		163				
163	Review and Comment the FSP	28 days	Tue 23 Apr '19	Tue 21 May '19	NA 162		164				
164	Resubmission of the FSP	10 days	Tue 21 May '19	Fri 31 May '19	NA 163		165				
165	Review and Approval of the FSP	28 days	Fri 31 May '19	Fri 28 Jun '19	NA 164						
166											
167	Submission of FSP - Enforcement System	42 days	Mon 4 Mar '19	Mon 15 Apr '19	NA 89		168				

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

**TSEUNG KWAN O – LAM TIN TUNNEL  
TRAFFIC CONTROL SURVEILLANCE SYSTEM (TCSS) AND ASSOCIATED WORKS  
3-MONTH ROLLING PROGRAMME**

Task No.	Task Name	Duration	Start	Finish	Actual Finish	Predecessors	Successors	Sep	Nov	Jan	Mar
168	Review and Comment the FSP	28 days	Mon 15 Apr '19	Mon 13 May '19	NA	167	169				
169	Resubmission of the FSP	10 days	Mon 13 May '19	Thu 23 May '19	NA	168	170				
170	Review and Approval of the FSP	28 days	Thu 23 May '19	Thu 20 Jun '19	NA	169					
171											
172	Submission of FSP - Government Optical Fibre System	42 days	Mon 4 Mar '19	Mon 15 Apr '19	NA	94	173				
173	Review and Comment the FSP	28 days	Mon 15 Apr '19	Mon 13 May '19	NA	172	174				
174	Resubmission of the FSP	10 days	Mon 13 May '19	Thu 23 May '19	NA	173	175				
175	Review and Approval of the FSP	28 days	Thu 23 May '19	Thu 20 Jun '19	NA	174					

Task		Project Summary		Inactive Summary		Manual Summary		External Milestone	
Split		External Tasks		Manual Task		Start-only		Progress	
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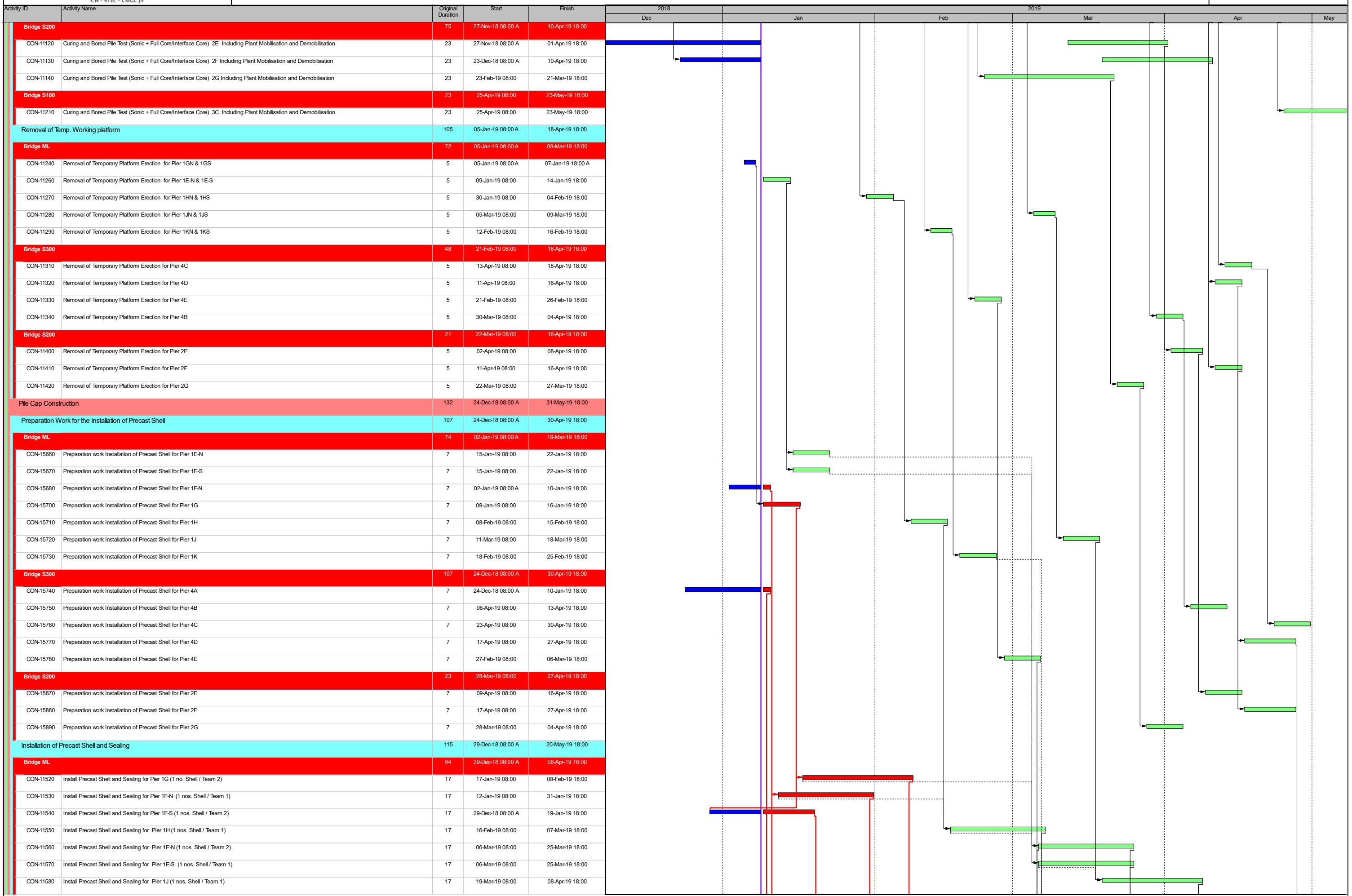
Subject: 3 Months Look Ahead Programme

Activities	Feb, 2019	Mar, 2019	Apr, 2019
Connection work to existing structure at Park Central			
Removal of scaffolding at +12.15 Platform and Staircase 1			
Erection of scaffolding for Pour 2 of Staircase 2			

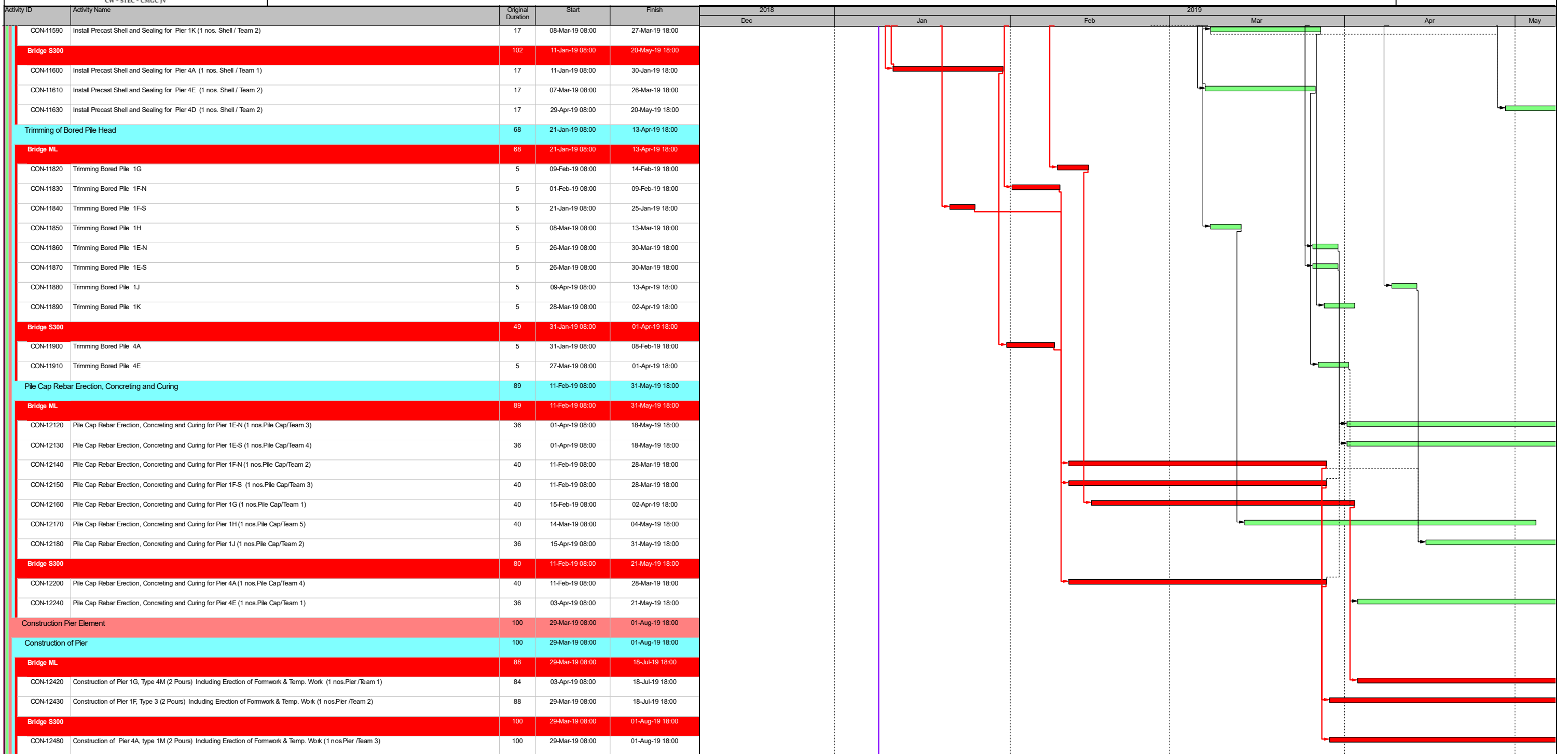
Subject: Construction Programme (Jan, 2019)

Activities	Week 1	Week 2	Week 3	Week 4
Construction of Pour 2 of main deck (GL4 – 5)				
Installation of Lift Car				

Activity ID	Activity Name	Original Duration	Start	Finish	2018		2019					
					Dec	Jan	Feb	Mar	Apr	May		
<b>Tseung Kwan O Lam Tin Tunnel - Tseung Kwan O Interchange and Associated Works</b>												
<b>Construction Work</b>												
<b>Pre-Drilling &amp; Piling Work</b>												
<b>Temporary Platform erection for Pre-drilling &amp; Piling</b>												
<b>Bridge S300</b>												
CON-10140	Temporary Platform Erection & Silt Curtain Installation for Pier 4H	8	28-Jan-19 08:00	08-Feb-19 18:00								
<b>Bridge S200</b>												
CON-10220	Temporary Platform Erection & Silt Curtain Installation for Pier 2D	8	18-Jan-19 08:00	26-Jan-19 18:00								
<b>Bridge S100</b>												
CON-10260	Temporary Platform Erection & Silt Curtain Installation for Pier 3C	8	09-Jan-19 08:00	17-Jan-19 18:00								
<b>Pre-drilling</b>												
<b>Bridge S300</b>												
CON-10450	Pre-drill 4F Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	09-Jan-19 08:00	19-Jan-19 18:00								
CON-10470	Pre-drill 4G Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	09-Jan-19 08:00	19-Jan-19 18:00								
CON-10490	Pre-drill 4H Including Plant Mobilisation and Demobilisation (2 nos./Team 1)	10	09-Feb-19 08:00	20-Feb-19 18:00								
<b>Bridge S200</b>												
CON-10570	Pre-drill 2D Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	01-Feb-19 08:00	15-Feb-19 18:00								
<b>Bridge S100</b>												
CON-10600	Pre-drill 3B Including Plant Mobilisation and Demobilisation (2 nos./Team 4)	10	03-Jan-19 08:00 A	15-Jan-19 18:00								
CON-10610	Pre-drill 3C Including Plant Mobilisation and Demobilisation (2 nos./Team 3)	10	21-Jan-19 08:00	31-Jan-19 18:00								
<b>Establishment of Bored Pile Machine</b>												
CON-10634	Establishment of Piling Plant for Bridge S100 (1st Piling of the Bridge)	4	27-Feb-19 08:00	02-Mar-19 18:00								
<b>Bored Pile Include Fabrication &amp; Delivery of Pile Cage and Casing</b>												
<b>Bridge ML</b>												
CON-10700	Bored Pile 1J Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	03-Nov-18 08:00 A	01-Feb-19 18:00								
CON-10710	Bored Pile 1K Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	13-Nov-18 08:00 A	15-Jan-19 18:00								
<b>Bridge S300</b>												
CON-10730	Bored Pile 4B Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	08-Oct-18 08:00 A	02-Mar-19 18:00								
CON-10740	Bored Pile 4C Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	10-Dec-18 08:00 A	15-Mar-19 18:00								
CON-10750	Bored Pile 4D Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	09-Jan-19 08:00	13-Mar-19 18:00								
CON-10760	Bored Pile 4E Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	21-Nov-18 08:00 A	25-Jan-19 18:00								
CON-10780	Bored Pile 4G Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	17-Apr-19 08:00	22-Jun-19 18:00								
<b>Bridge S200</b>												
CON-10840	Bored Pile 2D Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	29-Apr-19 08:00	02-Jul-19 18:00								
CON-10860	Bored Pile 2F Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	48	08-Oct-18 08:00 A	18-Mar-19 18:00								
CON-10870	Bored Pile 2G Including Plant Demobilisation (2 nos. Pile / Team 2)	52	27-Nov-18 08:00 A	22-Feb-19 18:00								
CON-10880	Bored Pile 2H Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 3)	52	04-Jan-19 08:00 A	14-May-19 18:00								
CON-10890	Bored Pile 2J Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 4)	52	12-Mar-19 08:00	17-May-19 18:00								
<b>Bridge S100</b>												
CON-10900	Bored Pile 3B Including Plant Demobilisation (2 nos. Pile / Team 1)	48	04-Mar-19 08:00	03-May-19 18:00								
CON-10910	Bored Pile 3C Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 2)	52	19-Feb-19 08:00	24-Apr-19 18:00								
<b>Curing and Bored Pile Test (Sonic + Interface Core/Full Core)</b>												
<b>Bridge ML</b>												
CON-10990	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1H Including Plant Mobilisation and Demobilisation	23	05-Dec-18 08:00 A	29-Jan-19 18:00								
CON-11000	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1J Including Plant Mobilisation and Demobilisation	23	02-Feb-19 08:00	04-Mar-19 18:00								
CON-11010	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1K Including Plant Mobilisation and Demobilisation	23	30-Dec-18 08:00 A	11-Feb-19 18:00								
<b>Bridge S300</b>												
CON-11030	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4C Including Plant Mobilisation and Demobilisation	23	16-Mar-19 08:00	12-Apr-19 18:00								
CON-11040	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4D Including Plant Mobilisation and Demobilisation	23	14-Mar-19 08:00	10-Apr-19 18:00								
CON-11050	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4E Including Plant Mobilisation and Demobilisation	23	05-Jan-19 08:00 A	20-Feb-19 18:00								
CON-11060	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4B Including Plant Mobilisation and Demobilisation	23	04-Mar-19 08:00	29-Mar-19 18:00								







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**APPENDIX R  
RECORD OF LANDFILL GAS  
MONITORING BY CONTRACTOR**

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**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-19	8:15	Sunny	15	0	0	20.9
	2-Jan-19	13:10	Sunny	16	0	0	20.9
	2-Jan-19	15:30	Sunny	17	0	0	20.9
	2-Jan-19	15:35	Sunny	17	0	0	20.9
	2-Jan-19	15:45	Sunny	17	0	0	20.9
	3-Jan-19	8:10	Sunny	16	0	0	20.9
	3-Jan-19	13:15	Sunny	17	0	0	20.9
	3-Jan-19	15:35	Sunny	18	0	0	20.9
	3-Jan-19	15:40	Sunny	18	0	0	20.9
	3-Jan-19	15:45	Sunny	18	0	0	20.9
	4-Jan-19	8:15	Sunny	15	0	0	20.9
	4-Jan-19	13:15	Sunny	17	0	0	20.9
	4-Jan-19	15:15	Sunny	18	0	0	20.9
	4-Jan-19	15:30	Sunny	18	0	0	20.9
	4-Jan-19	15:40	Sunny	18	0	0	20.9
	5-Jan-19	8:15	Sunny	17	0	0	20.9
	5-Jan-19	13:10	Sunny	18	0	0	20.9
	5-Jan-19	15:35	Sunny	19	0	0	20.9
	5-Jan-19	15:40	Sunny	19	0	0	20.9
	5-Jan-19	15:50	Sunny	19	0	0	20.9
	7-Jan-19	8:10	Sunny	17	0	0	20.9
	7-Jan-19	13:15	Sunny	18	0	0	20.9
	7-Jan-19	15:30	Sunny	19	0	0	20.9
	7-Jan-19	15:40	Sunny	19	0	0	20.9
	7-Jan-19	15:50	Sunny	19	0	0	20.9
	8-Jan-19	8:15	Sunny	16	0	0	20.9
	8-Jan-19	13:20	Sunny	17	0	0	20.9
	8-Jan-19	15:20	Sunny	18	0	0	20.9
	8-Jan-19	15:30	Sunny	18	0	0	20.9
	8-Jan-19	15:40	Sunny	18	0	0	20.9
	9-Jan-19	8:20	Sunny	15	0	0	20.9
	9-Jan-19	13:30	Sunny	16	0	0	20.9
	9-Jan-19	15:15	Sunny	17	0	0	20.9
	9-Jan-19	15:20	Sunny	17	0	0	20.9
	9-Jan-19	15:30	Sunny	17	0	0	20.9
	10-Jan-19	8:15	Sunny	17	0	0	20.9
	10-Jan-19	13:10	Sunny	18	0	0	20.9
	10-Jan-19	15:15	Sunny	19	0	0	20.9
	10-Jan-19	15:20	Sunny	19	0	0	20.9
	10-Jan-19	15:30	Sunny	19	0	0	20.9
	11-Jan-19	8:10	Sunny	16	0	0	20.9
	11-Jan-19	13:20	Sunny	17	0	0	20.9
	11-Jan-19	15:10	Sunny	18	0	0	20.9
	11-Jan-19	15:20	Sunny	18	0	0	20.9
	11-Jan-19	15:30	Sunny	18	0	0	20.9
	12-Jan-19	8:10	Sunny	18	0	0	20.9
	12-Jan-19	13:15	Sunny	19	0	0	20.9
	12-Jan-19	15:20	Sunny	20	0	0	20.9
12-Jan-19	15:25	Sunny	20	0	0	20.9	

**APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR**

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
	12-Jan-19	15:30	Sunny	20	0	0	20.9
	14-Jan-19	8:15	Sunny	17	0	0	20.9
	14-Jan-19	13:20	Sunny	18	0	0	20.9
	14-Jan-19	15:15	Sunny	19	0	0	20.9
	14-Jan-19	15:25	Sunny	19	0	0	20.9
	14-Jan-19	15:35	Sunny	19	0	0	20.9
	15-Jan-19	8:15	Rainy	17	0	0	20.9
	15-Jan-19	13:15	Rainy	18	0	0	20.9
	15-Jan-19	15:30	Rainy	19	0	0	20.9
	15-Jan-19	15:35	Rainy	19	0	0	20.9
	15-Jan-19	15:40	Rainy	19	0	0	20.9
	16-Jan-19	8:10	Cloudy	15	0	0	20.9
	16-Jan-19	13:15	Cloudy	16	0	0	20.9
	16-Jan-19	15:30	Cloudy	17	0	0	20.9
	16-Jan-19	15:40	Cloudy	17	0	0	20.9
	16-Jan-19	15:45	Cloudy	17	0	0	20.9
	17-Jan-19	8:10	Cloudy	17	0	0	20.9
	17-Jan-19	13:15	Sunny	18	0	0	20.9
	17-Jan-19	15:20	Sunny	19	0	0	20.9
	17-Jan-19	15:30	Sunny	19	0	0	20.9
	17-Jan-19	15:40	Sunny	19	0	0	20.9
	18-Jan-19	8:20	Sunny	15	0	0	20.9
	18-Jan-19	13:15	Sunny	16	0	0	20.9
	18-Jan-19	15:30	Sunny	17	0	0	20.9
	18-Jan-19	15:40	Sunny	17	0	0	20.9
	18-Jan-19	15:50	Sunny	17	0	0	20.9
	19-Jan-19	8:15	Sunny	17	0	0	20.9
	19-Jan-19	13:20	Sunny	18	0	0	20.9
	19-Jan-19	15:30	Sunny	19	0	0	20.9
	19-Jan-19	15:35	Sunny	19	0	0	20.9
	19-Jan-19	15:45	Sunny	19	0	0	20.9
	21-Jan-19	8:15	Sunny	18	0	0	20.9
	21-Jan-19	13:15	Sunny	19	0	0	20.9
	21-Jan-19	15:30	Sunny	20	0	0	20.9
	21-Jan-19	15:40	Sunny	20	0	0	20.9
	21-Jan-19	15:50	Sunny	20	0	0	20.9
	22-Jan-19	8:15	Sunny	18	0	0	20.9
	22-Jan-19	13:20	Sunny	19	0	0	20.9
	22-Jan-19	13:30	Sunny	20	0	0	20.9
	22-Jan-19	13:40	Sunny	20	0	0	20.9
	22-Jan-19	13:45	Sunny	20	0	0	20.9
	23-Jan-19	8:10	Sunny	16	0	0	20.9
	23-Jan-19	13:10	Sunny	17	0	0	20.9
	23-Jan-19	13:20	Sunny	19	0	0	20.9
	23-Jan-19	13:30	Sunny	19	0	0	20.9
	23-Jan-19	13:45	Sunny	19	0	0	20.9
	24-Jan-19	8:10	Sunny	17	0	0	20.9
	24-Jan-19	13:15	Sunny	18	0	0	20.9
	24-Jan-19	15:30	Sunny	19	0	0	20.9

**APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR**

<b>Location</b>	<b>Date of Measurement</b>	<b>Sampling time</b>	<b>Weather Condition</b>	<b>Temperature (°C)</b>	<b>Methane (%)</b>	<b>Carbon dioxide (%)</b>	<b>Oxygen (%)</b>
	24-Jan-19	15:40	Sunny	19	0	0	20.9
	24-Jan-19	15:50	Sunny	19	0	0	20.9
	25-Jan-19	8:15	Sunny	16	0	0	20.9
	25-Jan-19	13:20	Sunny	18	0	0	20.9
	25-Jan-19	15:30	Sunny	19	0	0	20.9
	25-Jan-19	15:40	Sunny	19	0	0	20.9
	25-Jan-19	15:50	Sunny	19	0	0	20.9
	26-Jan-19	8:15	Sunny	17	0	0	20.9
	26-Jan-19	13:10	Sunny	18	0	0	20.9
	26-Jan-19	15:30	Sunny	19	0	0	20.9
	26-Jan-19	15:40	Sunny	19	0	0	20.9
	26-Jan-19	15:50	Sunny	19	0	0	20.9
	28-Jan-19	8:10	Sunny	17	0	0	20.9
	28-Jan-19	13:15	Sunny	18	0	0	20.9
	28-Jan-19	15:30	Sunny	19	0	0	20.9
	28-Jan-19	15:40	Sunny	19	0	0	20.9
	28-Jan-19	15:50	Sunny	19	0	0	20.9
	29-Jan-19	8:15	Sunny	17	0	0	20.9
	29-Jan-19	13:15	Sunny	18	0	0	20.9
	29-Jan-19	15:30	Sunny	19	0	0	20.9
	29-Jan-19	15:35	Sunny	19	0	0	20.9
	29-Jan-19	14:40	Sunny	19	0	0	20.9
	30-Jan-19	8:15	Sunny	18	0	0	20.9
	30-Jan-19	13:15	Sunny	19	0	0	20.9
	30-Jan-19	15:15	Sunny	20	0	0	20.9
	30-Jan-19	15:30	Sunny	20	0	0	20.9
	30-Jan-19	15:40	Sunny	20	0	0	20.9
	31-Jan-19	8:15	Sunny	18	0	0	20.9
	31-Jan-19	13:20	Sunny	20	0	0	20.9
	31-Jan-19	15:30	Sunny	21	0	0	20.9
	31-Jan-19	15:40	Sunny	21	0	0	20.9
	31-Jan-19	15:50	Sunny	21	0	0	20.9

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**APPENDIX T  
CULTURAL HERITAGE MONITORING  
RESULTS**

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### Appendix T – Cultural Heritage Monitoring Results

Date	Tilting				Settlement (mm)			Vibration (mm/s)		
	THT-TM-01	THT-TM-02	THT-TM-03	THT-TM-04	THT-BSP-1	THT-BSP-2	THT-BSP-3	Measurement Direction		
								Tran	Vertical	Longitudinal
2-Jan-19	1 : 19564	1 : 23683	1 : 19565	-1 : 89999	+4	Stop monitoring	Stop monitoring	0.292	0.300	0.166
3-Jan-19	1 : 40906	1 : 14516	1 : 40908	1 : 45000	+2	Stop monitoring	Stop monitoring	0.158	0.181	0.087
4-Jan-19	1 : 56246	1 : 44998	1 : 15517	1 : 16071	+3	Stop monitoring	Stop monitoring	0.126	0.142	0.118
5-Jan-19	1 : 89993	1 : 23683	1 : 26470	6.835417	+1	Stop monitoring	Stop monitoring	0.126	0.213	0.102
7-Jan-19	1 : 56246	-1 : 224991	1 : 89999	6.419444	+3	Stop monitoring	Stop monitoring	0.110	0.095	0.118
8-Jan-19	-1 : 20453	1 : 64283	1 : 19565	1 : 18000	+4	Stop monitoring	Stop monitoring	0.110	0.087	0.087
9-Jan-19	-1 : 44997	1 : 28124	1 : 32142	1 : 18000	+2	Stop monitoring	Stop monitoring	0.150	0.205	0.181
10-Jan-19	-1 : 34613	1 : 44998	1 : 22500	1 : 20454	+2	Stop monitoring	Stop monitoring	0.189	0.134	0.268
11-Jan-19	-1 : 64281	1 : 34614	1 : 56249	1 : 13235	+2	Stop monitoring	Stop monitoring	0.150	0.252	0.095
12-Jan-19	-1 : 44997	1 : 64283	1 : 19565	1 : 16071	+3	Stop monitoring	Stop monitoring	0.426	0.315	0.197
14-Jan-19	1 : 26469	1 : 44998	1 : 15517	1 : 11250	+3	Stop monitoring	Stop monitoring	0.142	0.189	0.118
15-Jan-19	-1 : 44997	1 : 17999	1 : 19565	1 : 23684	+3	Stop monitoring	Stop monitoring	0.142	0.150	0.166
16-Jan-19	1 : 56246	1 : 14516	1 : 40908	1 : 18000	+2	Stop monitoring	Stop monitoring	0.205	0.307	0.339
17-Jan-19	-1 : 44997	1 : 44998	1 : 26470	1 : 20454	+2	Stop monitoring	Stop monitoring	0.150	0.213	0.370
18-Jan-19	-1 : 34613	1 : 28124	1 : 22500	1 : 11250	+2	Stop monitoring	Stop monitoring	0.197	0.449	0.315
19-Jan-19	-1 : 64281	1 : 23683	1 : 19565	1 : 11250	+1	Stop monitoring	Stop monitoring	0.126	0.181	0.189
21-Jan-19	1 : 56246	1 : 23683	1 : 32142	1 : 16071	+2	Stop monitoring	Stop monitoring	0.118	0.126	0.102

Date	Tilting				Settlement (mm)			Vibration (mm/s)		
	THT-TM-01	THT-TM-02	THT-TM-03	THT-TM-04	THT-BSP-1	THT-BSP-2	THT-BSP-3	Measurement Direction		
								Tran	Vertical	Longitudinal
22-Jan-19	1 : 40906	1 : 28124	1 : 40908	1 : 14516	+2	Stop monitoring	Stop monitoring	0.142	0.181	0.095
23-Jan-19	1 : 89993	1 : 44998	1 : 40908	1 : 23684	+1	Stop monitoring	Stop monitoring	0.173	0.142	0.142
24-Jan-19	-1 : 44997	1 : 34614	1 : 40908	1 : 16071	+3	Stop monitoring	Stop monitoring	0.197	0.150	0.292
25-Jan-19	1 : 56246	1 : 64283	1 : 40908	1 : 16071	+2	Stop monitoring	Stop monitoring	0.110	0.142	0.110
26-Jan-19	1 : 32140	1 : 64283	1 : 40908	1 : 23684	+2	Stop monitoring	Stop monitoring	0.221	0.323	0.173
28-Jan-19	-1 : 44997	1 : 64283	1 : 32142	1 : 20454	+3	Stop monitoring	Stop monitoring	0.434	0.323	0.189
29-Jan-19	-1 : 64281	1 : 44998	1 : 19565	1 : 20454	+1	Stop monitoring	Stop monitoring	0.166	0.181	0.142
30-Jan-19	-1 : 64281	1 : 34614	1 : 32142	1 : 23684	+2	Stop monitoring	Stop monitoring	0.166	0.134	0.142
31-Jan-19	-1 : 44997	1 : 64283	1 : 26470	1 : 20454	+2	Stop monitoring	Stop monitoring	0.158	0.158	0.166
Alert Level	1:2000				6			4.5		
Alarm Level	1:1500				8			4.8		
Action Level	1:1000				10			5		

Note: ***Bold*** means Alert Level exceedance

***Bold Italic*** means Alarm Level exceedance

***Bold Italic with underline*** means Action Level exceedance

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**APPENDIX U  
PIEZOMETER MONITORING RESULTS**

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