


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 August 2018**

(version 1.0)

Approved By 
(Dr. Priscilla Choy,
Environmental Team Leader)

REMARKS:

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 22nd 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 August 2018.
2. During the reporting month, the following works contracts were undertaken:
 - Contract No. NE/2015/01 – Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works;
 - Contract No. NE/2015/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works;
 - Contract No. NE/2015/03 – Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge;
 - 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.

Environmental Monitoring Works

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

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

Environmental Monitoring	No. of Non-compliance (Exceedance)		No. of Non-compliance (Exceedance) due to Construction Activities of this Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
Air Quality	0	0	0	0	N/A
Noise	6	12	0	0	Refer to Appendix K & O
Groundwater Quality	1	5	0	0	Refer to Appendix K
Marine Water Quality	0	0	0	0	N/A
Groundwater Level Monitoring (Piezometer Monitoring)	0	N/A ²	0	N/A ²	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) Environmental complaints received in July 2018 are still under investigation.
(2) No Limit Level for Groundwater Level Monitoring (Piezometer Monitoring).

*Action Taken by the Contractor after received the complaint (Details of the complaints are shown in **Appendix O**)*

- Additional water filter tank was adopted to deck of derrick barge to reduce emission of dark smoke and exhaust
- Stockpile in Work Area A was covered except the operating area
- Air blowers were provided at the location where welding works to be carried out to dilute the smell
- Frequent water spraying along the slope area at Lam Tin Interchange
- Tarpaulin sheets were provided along the slope adjacent to the tennis court during preparation of surface blasting
- Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel
- Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel
- Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat
- Replaced and fixed the uneven metal plate on Lei Yue Mun Road near ambulance depot
- Rubber pad was placed between the vibration hammer and sheetpile to reduce the impact noise
- Quiet powered mechanical equipment was used on site as far as practicable to minimize the noise impact from the PME
- Tree protection zones were established and surrounded by fences to protect retained trees adjacent to the construction area
- Tree protection zone were free of machinery and material that are likely to be injurious to the tree

Air Quality Monitoring

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

Construction Noise Monitoring

7. All noise monitoring was conducted as scheduled in the reporting month. Six (6) Action Level exceedance was recorded due to the documented complaints received in this reporting month. Twelve (12) Limit Level exceedance was recorded in the reporting month.

Water Quality Monitoring

8. Groundwater quality monitoring was conducted as scheduled in the reporting month. One (1) Action Level exceedance and Five (5) Limit Level exceedances were recorded in the reporting month.
9. All marine water monitoring was conducted as scheduled in the reporting month. No

Action/Limit Level exceedance was recorded.

10. Construction phase daily piezometer monitoring by the Contractor commenced in August 2018. No Action Level exceedance was recorded in the reporting month.

Ecological Monitoring

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

Monitoring on Cultural Heritage

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 29, 8, 8, 29, 8 August 2018 respectively. Details of the audit findings and implementation status are presented in Section 10.

Waste Management

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

Key Information in the Reporting Month

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

Table II Summary Table for Key Information in the Reporting Month

Event	Event Details		Action Taken	Status
	Number	Nature		
Complaint received by Project Team / Complaint referred by EPD (August 2018)	12	Construction dust/ Noise nuisance/ Water Quality	Under investigation	On-going
Complaint received by Project Team / Complaint referred by EPD (July 2018)	9	Construction dust/ Noise nuisance/ Water Quality	Details refer to App O	Closed
Complaint received by Project Team / Complaint referred by EPD (June 2018)	11 ¹	Construction dust/ Noise nuisance/ Odour/ Dark Smoke/ Waste management/ Landscape	Details refer to App O	Closed
Notifications of any summons & prosecutions received	0	---	N/A	N/A

Note: (1) The number of complaint in June 2018 has been updated.

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 (August 2018)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2 , Area 3, Area 4
		Main Tunnel	1) Main tunnel Excavation
		TKO Interchange	1) Haul Road Construction, Site Formation and Slope Works 2) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Operation of Double Watertgate 2) Backfilling at Portion VIII 3) Construction of retaining wall at Portion VIII 4) Construction of U-trough structure at Portion VIII 5) Lower ground works at Portion V	

		6) Cable diversion works at Portion IV and V 7) Pre-bore and sheetpile works for 2100 pipe at Portion IV and VII 8) Sheetpile and Pre-bore works for decked U-trough at Portion VI 9) ELS works in Portion VIII 10) Retaining wall works at Portion VIII 11) Construction of desilting opening at Portion VIII 12) Treatment works of S/S Treatment Facility at Area A 13) Dredging works and reclamation works at Portion IX 14) Rock filling works at Portion IX
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Construction of Main deck 2) Construction of lift shaft
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Erection of Temporary Platform 2) Pre-drilling
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) Communication Liaison Center erection 6) Modification of traffic island 7) Fencing erection 8) Predrilling 9) Construction of Temporary cycle track 10) Construction of drainage and watermain

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 (September 2018)	Key environmental issues *	
NE/2015/01 - Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5	(A) / (B) / (C) / (D) / (E) / (G)
	Main Tunnel	1) Main Tunnel Excavation	(B)
	TKO Interchange	1) Haul Road Construction and Site Formation & Slope Works 2) Steel Platform for Bridge Construction	(A) / (C) / (D) / (E) / (F) / (I)

	3) Cavern Excavation	
NE/2015/02 - Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Relocation WSD flowmeter chamber 2) Backfilling in Portion VIII 3) Construction of U-trough structure in Portion VIII 4) Lower ground works at Portion V 5) Cable diversion works at Portion IV 6) Pre-bore and sheetpile works for 2100 pipe at Portion IV and VII 7) Pre-bore works for decked U-trough at Portion VI 8) Sheet pile works for decked U-trough at Portion VI 9) ELS works in Portion IV, VIII and VII 10) Retaining wall works at VIII 11) Construction of desilting opening for existing box culvert in Portion VIII 12) Operation of double Watergate 13) Treatment works of S/S Treatment Facility at Area A 14) Dredging works and reclamation works at Portion IX 15) Rock filling works at Portion IX	(A) / (B) / (C) / (D) / (E) / (G) / (I)
NE/2015/03 - Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Install steel mould for main deck 2) Construction of Pile Cap PC4 and Sump Pit	(A) / (B) / (C) / (D) / (E)
NE/2017/01 – Tseung Kwan O Interchange and Associated Works	1) Erection of Temporary Platform 2) Pre-drilling 3) Bored piling	(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) Piling Works 5) Communication Liaison Center erection 6) Modification of traffic island 7) Fencing erection 8) Pre-drilling 9) Construction of Temporary cycle track 10) Construction of drainage and watermain	(A) / (B) / (E) / (F) / (G)

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 22nd Monthly EM&A report summarizing the EM&A works for the Project in August 2018.

Purpose of the Report

- 1.2 This is the 22nd Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme during the reporting period in August 2018.

Structure of the Report

- 1.3 The structure of the report is as follows:

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

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

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

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

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

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

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

Section 8: **Landscape and Visual Monitoring Requirements** – summarises the

requirements of landscape and visual monitoring

Section 9: **Landfill Gas Monitoring** – summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, monitoring results and Limit Levels and Action Plan

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

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

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

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

Section 14: **Conclusions and Recommendation**

2. PROJECT INFORMATION

Background

- 2.1 In 2002, Civil Engineering and Development Department (CEDD) commissioned an integrated planning and engineering study under Agreement No. CE 87/2001 (CE) “Further Development of Tseung Kwan O – Feasibility Study” (the “TKO Study”) to formulate a comprehensive plan for further development of TKO New Town. It recommended to further develop TKO to house a total population of 450,000 besides the district’s continuous commercial and industrial developments.
- 2.2 At present, the Tseung Kwan O Tunnel is the main connection between Tseung Kwan O (TKO) and other areas in the territory. To cope with the anticipated transport need, the TKO Study recommended the provision of Tseung Kwan O – Lam Tin Tunnel (TKO-LTT) (hereinafter referred to as “the Project”) and Cross Bay Link (CBL) to meet the long-term traffic demand between TKO and the external areas. The site layout plan for the Project is shown in **Figure 1**.
- 2.3 The Environmental Impact Assessment (EIA) Report for the TKO-LTT project was approved under the Environmental Impact Assessment Ordinance (EIAO) in July 2013. The corresponding Environmental Permit (EP) was issued in August 2013 (EP no.: EP-458/2013). Variations to the EP was applied and the latest EP (EP no.: EP-458/2013/C) was issued by the Director of Environmental Protection (DEP) in January 2017.
- 2.4 The commencement dates of construction of this Project is:
- Contract No. NE/2015/01 and Contract No. NE/2015/02: 7 November 2016.
 - Contract No. NE/2015/03: 29 May 2017.
 - Contract No. NE/2017/02: 15 March 2018.
 - Contract No. NE/2017/01: 23 April 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. Chiang Nin Tat, Eric	2301 1384	2739 0076
AECOM	Engineer’s Representative	Mr. KY Chan	3922 9000	2759 1698
Cinotech	Environmental Team	Dr. Priscilla Choy	2151 2089	3107 1388
		Ms. Ivy Tam	2151 2090	
AnewR	Independent Environmental Checker	Mr. Adi Lee	2618 2836	3007 8648

Construction Activities undertaken during the Reporting Month

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

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

Contract No.	Project Title	Site Activities (August 2018)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5
		Main Tunnel	1) Main tunnel Excavation
		TKO Interchange	1) Haul Road Construction, Site Formation and Slope Works 2) Steel Platform for Bridge Construction
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Operation of Double Watertgate 2) Backfilling at Portion VIII 3) Construction of retaining wall at Portion VIII 4) Construction of U-trough structure at Portion VIII 5) Lower ground works at Portion V 6) Cable diversion works at Portion IV and V 7) Pre-bore and sheetpile works for 2100 pipe at Portion IV and VII 8) Sheetpile and Pre-bore works for decked U-trough at Portion VI 9) ELS works in Portion VIII 10) Retaining wall works at Portion VIII 11) Construction of desilting opening at Portion VIII 12) Treatment works of S/S Treatment Facility at Area A 13) Dredging works and reclamation works at Portion IX 14) Rock filling works at Portion IX	
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Construction of Main deck 2) Construction of lift shaft	
NE/2017/01	Tseung Kwan O – Lam Tin Tunnel – Tseung Kwan O Interchange and Associated Works	1) Erection of Temporary Platform 2) Pre-drilling	
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) Communication Liaison Center erection	

		6) Modification of traffic island 7) Fencing erection 8) Predrilling 9) Construction of Temporary cycle track 10) Construction of drainage and watermain
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2.8 The construction programme showing the inter-relationship with environmental protection/mitigation measures are presented in **Table 2.3**.

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

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

Status of Environmental Licences, Notification and Permits

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

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

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
Environmental Permit (EP)				
N/A	EP-458/2013/C	20/1/2017	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation				
NE/2015/01	EPD Ref no.: 405305	21/07/2016	N/A	Valid
	EPD Ref no.: 405582	28/07/2016	N/A	Valid
NE/2015/02	EPD Ref no.: 406100	12/08/2016	N/A	Valid
NE/2015/03	EPD Ref no.: 416072	26/04/2017	N/A	Valid
NE/2017/02	EPD Ref no.: 429867	19/01/2018	N/A	Valid
NE/2017/01	EPD Ref no.: 430070	25/01/2018	N/A	Valid
Billing Account for Construction Waste Disposal				
NE/2015/01	Account No. 7025431	11/07/2016	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

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
NE/2017/01	Account No. 7029994	01/02/2018	N/A	Valid
Vessel Billing Account under construction waste disposal charging scheme				
NE/2015/01	Account No. 7027764	11/5/2018	10/10/2018	Valid
Registration of Chemical Waste Producer				
NE/2015/01	Waste Producer No. 5218-290-L2881-02	22/08/2016	N/A	Valid
	Waste Producer No. 5213-833-L2532-03	22/08/2016	N/A	Valid
NE/2015/02	Waste Producer No. 5213-838-C4094-01	23/08/2016	N/A	Valid
NE/2015/03	Waste Producer No. 5213-265-W3435-04	19/07/2017	N/A	Valid
NE/2017/02	Waste Producer No. 5213-833-Z4004-04	01/02/2018	N/A	Valid
NE/2017/01	Waste Producer No. 5213-833-C4262-01	12/02/2018	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance				
NE/2015/01	WT00025806-2016	18/07/2018	30/11/2021	Valid
	WT00026212-2016	16/05/2017	30/11/2021	Valid
	WT00027354-2017	22/03/2017	31/03/2022	Valid
	WT00027405-2017	22/03/2017	31/03/2022	Valid
	WT-00028495-2017	11/08/2017	31/08/2022	Valid
NE/2015/02	WT00026386-2016	15/12/2016	31/12/2021	Valid
	WT00027226-2017	23/02/2017	28/02/2022	Valid
NE/2015/03	WT00027295-2017	20/03/2017	18/04/2019	Valid
	WT00027266-2017	08/03/2017	18/04/2019	Valid
NE/2017/01	WT00030711-2018	11/04/2018	30/04/2023	Valid
	WT00030716-2018	23/05/2018	31/05/2023	Valid
NE/2017/02	WT00030654-2018	16/04/2018	30/04/2023	Valid
Construction Noise Permit (CNP)				
NE/2015/01	GW-RE0140-18	06/03/2018	05/09/2018	Valid
	GW-RE0309-18	04/05/2018	02/08/2018	Expired on 2 August 2018
	GW-RE0371-18	05/06/2018	04/09/2018	Valid
	GW-RE0373-18	01/06/2018	30/09/2018	Valid
	GW-RE0418-18	23/06/2018	22/12/2018	Valid
	GW-RE0421-18	25/06/2018	24/08/2018	Expired on 24 August 2018
	GW-RE0539-18	23/08/2018	22/10/2018	Valid
	GW-RE0524-18	02/08/2018	01/10/2018	Valid
NE/2015/02	GW-RE0353-18	16/05/2018	15/11/2018	Valid

Contract No.	Permit / License No.	Valid Period		Status
		From	To	
	GW-RE0243-18	01/05/2018	31/10/2018	Valid
	GW-RE0241-18	11/04/2018	10/10/2018	Valid
	GW-RE0384-18	02/06/2018	01/12/2018	Valid
	GW-RE0434-18	16/06/2018	15/01/2019	Valid
NE/2017/01	GW-RE0442-18	21/06/2018	02/11/2018	Valid
Marine Dumping Permit				
NE/2015/02	EP/MD/18-129	16/03/2018	15/09/2018	Valid
	EP/MD/18-139	15/05/2018	14/11/2018	Valid
NE/2017/01	EP/MD/19-003	13/08/2018	30/11/2018	Valid
Specified Process (SP) License				
NE/2015/01	L-11-053	09/03/2018	08/03/2021	Valid

Summary of EM&A Requirements

- 2.10 The EM&A programme requires construction noise monitoring, air quality monitoring, water quality monitoring, environmental site audit, etc. The EM&A requirements for each parameter are described in the following sections, including:
- All monitoring parameters;
 - Action and Limit levels for all environmental parameters;
 - Event Action Plans;
 - Environmental mitigation measures, as recommended in the Project EIA Report.
- 2.11 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 10 of this report.
- 2.12 This report presents the monitoring results, observations, locations, equipment, period, methodology and QA/QC procedures of the monitoring parameters of the required environmental monitoring works and audit works for the Project in August 2018.

3. AIR QUALITY

Monitoring Requirements

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

Monitoring Locations

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

Table 3.1 Locations for Air Quality Monitoring

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

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

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

Monitoring Equipment

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

Table 3.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
Calibrator	TISCH Model: TE-5025A	1
1-hour TSP Dust Meter	Sibata Model No.: LD-3 / LD-3B	0
	Met One Instruments Model No.: AEROCET-531	0
	Handheld Particle Counter Hal-HPC300 / Hal-HPC301	6
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 0.5µm and 5µm channels will show the cumulative counts of particles larger than 0.5µm and 5µm per cubic foot.
- The AEROCET-531 is now checked out and ready for use.
- To switch off the AEROCET-531 power to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, and display value and site condition were recorded during the monitoring period.

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

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

Maintenance/Calibration

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

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

24-hour TSP Monitoring

Instrumentation

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

3.10 The positioning of the HVS samplers are as follows:

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

- a minimum of 2 metres of separation from any supporting structure, measured horizontally is required;
- no furnace or incinerator flue is nearby;
- airflow around the sampler is unrestricted;
- the sampler is more than 20 metres from the dripline;
- any wire fence and gate, to protect the sampler, shall not cause any obstruction during monitoring;
- permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
- a secured supply of electricity is needed to operate the samplers.

Operating/analytical procedures for the operation of HVS

- 3.11 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- 3.12 For TSP sampling, fiberglass filters with a collection efficiency of > 99% for particles of 0.3µm diameter were used.
- 3.13 The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.
- 3.14 The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.
- 3.15 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- 3.16 The shelter lid was closed and secured with the aluminum strip.
- 3.17 The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- 3.18 After sampling, the filter was removed and sent to the HOKLAS laboratory (Wellab Ltd.) for weighing. The elapsed time will be also recorded.
- 3.19 Before weighing, all filters was equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

- 3.20 The following maintenance/calibration is required for the HVS:
- The high volume motors and their accessories will be properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking will be made to ensure that the equipment and necessary power supply are in good working condition.

- High volume samplers will be calibrated at bi-monthly intervals using TE-5025A Calibration Kit throughout all stages of the air quality monitoring.

Results and Observations

- 3.21 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 3.22 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 3.23 The air temperature, precipitation and the relative humidity data was obtained from Hong Kong Observatory where the wind speed and wind direction were recorded by the installed Wind Anemometer at rooftop of Yau Lai Estate Bik Lai House (41/F). The location is shown in **Figure 2**. This weather information for the reporting month is summarized in **Appendix C**.
- 3.24 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendix E** and **Appendix F** respectively.
- 3.25 The summary of exceedance record in reporting month is shown in **Appendix K**. No exceedance was recorded for the air quality monitoring.
- 3.26 According to our field observations, the major dust source identified at the designated air quality monitoring stations are as follows:

Table 3.4 Major Dust Source during Air Quality Monitoring

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

4. NOISE

Monitoring Requirements

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

Monitoring Locations

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

Table 4.1 Noise Monitoring Stations

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

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

Monitoring 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 955/ 957 / 977	6
	BSWA 801	2
Calibrator	SV30A	2
	Brüel & Kjær 4231	1

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

Table 4.3 Frequency and Parameters of Noise Monitoring

Monitoring Stations	Parameter	Period	Frequency	Measurement
CM1	L ₁₀ (30 min) dB(A) L ₉₀ (30 min) dB(A) L _{eq} (30 min) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade
CM2				Façade
CM3				Façade
CM4				Façade
CM5				Façade
CM6(A)				Free Field
CM7(A)				Free Field
CM8(A)				Façade
CM1	L ₁₀ (5 min) dB(A) L ₉₀ (5 min) dB(A) L _{eq} (5 min) dB(A)	1900 – 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_{eq}, L₉₀ and L₁₀ was recorded. In addition, noise sources was recorded on a standard record sheet.
 - Noise monitoring will be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. Supplementary monitoring was provided to ensure sufficient data would be

obtained.

Maintenance and Calibration

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

Results and Observations

- 4.9 All noise monitoring was conducted as scheduled in the reporting month. Six (6) Action Level exceedance was recorded due to the documented complaints received in this reporting month. Twelve (12) Limit Level exceedance for night-time construction noise monitoring was recorded in the reporting month and they were considered due to the road Traffic near Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.
- 4.10 Noise monitoring results and graphical presentations are shown in **Appendix G**.
- 4.11 The major noise source identified at the noise monitoring stations are shown in **Table 4.4**.

Table 4.4 Major Noise Source during Noise Monitoring

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

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

4.5, 4.6 and 4.7.**Table 4.5 Baseline Noise Level and Noise Limit Level for Monitoring Stations**

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

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

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

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

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	60.5	55
CM2	58.0	
CM3	60.2	
CM4	55.8	

Updated Construction Noise Assessment

Contract No. NE/2015/01, Contract No. NE/2015/02, Contract No. NE/2015/03, Contract No. NE/2017/01 and Contract No. NE/2017/02

4.13 Proposed noise mitigation measure and plant list for individual construction activities for Contract No. NE/2017/01 has been updated. Updated plant list and proposed mitigation measure are shown in Appendix S and highlighted in yellow.

4.14 No update of Construction Noise Assessment for the other contracts in the reporting period. Noise mitigation plan and their corresponding updated construction noise assessment can be found at the following address:

<http://cinotech.hk/projects/TseungKwanOLamTinTunnel/ep-submissions/>

Current Tunnel Blasting Arrangement

- 4.15 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.
- 4.16 Notwithstanding the information provided by the Engineer at paragraphs 4.6.4 and 6.6.12 of the EIA Report, to minimize blast nuisance to the public and to respond to the community concerns, the tunnel blast should be arranged, where possible, avoiding the blast to be carried out during night time and shortening the blast duration by arranging various work fronts to be blasted at different time slots. Hence, it has become more desirable to split one tunnel blasting operation, which may consist of several blasting work fronts along the tunnels, into a total of two to three tunnel blasts per day. The tunnel blasts, which locate outside the MTR Protection Zone (RPZ) possessing insignificant risk to the MTR's structures would be carried out during day time and before 22:00. For the tunnel blasts within and in close vicinity to RPZ, Contractor's blasting assessment report revealed that those blasts have to be carried out after train service and, generally, at around 01:40.

5. WATER QUALITY

Monitoring Requirements

Groundwater Quality

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

Marine Water Quality

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

Groundwater Level Monitoring (Piezometer Monitoring)

- 5.6 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the piezometer gate in plan. The monitoring is commenced in June 2018.

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 Equipments

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

Dissolved Oxygen (DO) and Temperature Measuring Equipment

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

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

Turbidity

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

pH

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

Water Depth Detector

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

Water Sampler

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

Sample Container and Storage

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

Calibration of In-Situ Instruments

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

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

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

Table 5.3 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty.
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	1
Multi-parameter Water Quality System	YSI 6820-C-M	0
	Aquaread AP-2000-D	0
	YSI EXO1 Multiparameter Sondes	5
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
Groundwater Quality			
Stream 1- Stream 3	<ul style="list-style-type: none"> • DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Turbidity, NTU • SS, mg/L • BOD₅, mg O₂/L • TOC, mg-TOC/L • Total Nitrogen, mg/L • Ammonia-N, mg NH₃-N/L • Total Phosphate, mg-P/L 	Mid-depth	Biweekly (When the tunnel construction works are found within 50m of the location, weekly.)
Marine Water Quality			
M1 M2 M3 M4 M5 M6 C1 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"> • 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If the water depth is less than 6m, omit mid-depth sampling. <p><u>M6</u></p> <ul style="list-style-type: none"> • at the vertical level where the water abstraction point of 	3 days per week / 2 per monitoring day (1 for mid-ebb and 1 for mid-flood)

Monitoring Stations	Parameters, unit	Depth	Frequency
		the intake is located(i.e. approximately mid-depth level)	
Water Quality Monitoring in Temporary Marine Embayment			
W1	<ul style="list-style-type: none"> • DO, mg/L • DO Saturation, % • pH • Water Temperature (°C) • Salinity, ppt 	<ul style="list-style-type: none"> • 3 water depths: 1m below water surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth monitoring only. • If the water depth is less than 6m, omit mid-depth monitoring 	Weekly during the period when the fully enclosed barrier is installed

Monitoring Methodology

Groundwater Quality

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

Marine Water Quality

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

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

Laboratory Analytical Methods

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

Table 5.5 Methods for Laboratory Analysis for Water Samples

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

Note:

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

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

QA/QC 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 ObservationsGroundwater 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 ₅ (mg O ₂ /L)	TOC (mg-TOC/L)	Total Nitrogen (mg/L)	NH ₃ -N (mg NH ₃ -N/L)	Total Phosphorus (mg-P/L)
16 August 2018	Stream 1	7.8	<i>7.5</i>	<i>6.2</i>	5	<i>4</i>	8	1.2	<0.05	<i>0.07</i>
	Stream 2	7.7	7.7	1.6	<2.5	<2	6	1.4	<0.05	<0.05
	Stream 3	7.6	7.7	2.0	<2.5	<2	6	1.3	<0.05	<0.05
28 August 2018	Stream 1	8.0	7.8	<i>2.2</i>	<2.5	<2	7	0.9	0.14	<0.05
	Stream 2	7.7	7.7	<i>2.9</i>	3	<2	6	1.5	<0.05	<0.05
	Stream 3	7.9	7.7	1.4	<2.5	<2	5	1.7	<0.05	<0.05
No. of Exceedance	Action Level	0	0	1	0	0	0	0	0	0
	Limit Level	0	1	2	0	1	0	0	0	1

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. One (1) Action Level exceedance and Five (5) Limit Level exceedances were recorded in the reporting month. The exceedances are considered due to rainfall and 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. Marine water monitoring results and graphical presentations are shown in **Appendix I**. Other relevant data was also recorded, such as monitoring location / position, time, sampling depth, weather conditions and any special phenomena or work underway nearby.
- 5.38 Calculated Action and Limit Levels for Marine Water Quality is presented in **Appendix I**. No Action/Limit Level exceedance was recorded in the reporting period.

Groundwater Level Monitoring (Piezometer Monitoring)

- 5.39 Daily piezometer monitoring at any time of the day shall be carried throughout the whole period when any tunnel construction activities are carried out within +/- 50m of the

piezometer gate in plan.

- 5.40 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. The fourth post-translocation coral monitoring was carried out on 07 November 2017.
- 6.4 Location of post-translocation coral monitoring is shown in **Figure 7**.

Event and Action Plan

- 6.5 The post-translocation monitoring result was evaluated against Action and Limit Levels presented in **Appendix A**. Evaluation was based on recorded changes in percentage of partial mortality of the corals.
- 6.6 If the defined Action Level or Limit Level for coral monitoring is exceeded, the actions as set out in **Appendix M** will be implemented.
- 6.7 If observations of any die-off / abnormal conditions of the translocated corals are made during the post-translocation monitoring, the ET shall inform the Contractor, IEC and AFCD, and liaise with AFCD to investigate any mitigation measures needed.

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

Monitoring Equipment

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

Table 7.1 Cultural Heritage Monitoring Equipment

Equipment	Manufacturer and Model	Quantity
Digital Level for tilting	Leica Serial No.: 701133	1
iCivil-1011 Inclinometer for building settlement	iCivil-1011 Inclinometer Serial No.: HK110118 / HK110120	2
Vibrographs for vibration monitoring	MiniMate Plus manufactured by InstanTel Model No.: 716A0403 / 721A2501	7

Monitoring Methodology

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

Alert, Alarm and Action Levels

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

Table 7.2 AAA Levels for Monitoring for Cultural Heritage

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

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

Results

- 7.9 In the reporting month, cultural heritage monitoring was carried out by the Contractor at the aforesaid location on 25 occasions. No AAA Level exceedance was recorded in the reporting month. The monitoring results are presented in **Appendix T**.

Mitigation Measures for Cultural Heritage

- 7.10 According to Condition 3.6 of the EP (EP No.: EP-458/2013/C), to prevent damage to Cha Kwo Ling Tin Hau Temple and its Fung Shui rocks (Child-given rocks) during the construction phase, a temporarily fenced-off buffer zone (Rocks buffer zone is 5 m from the edge of Rocks and 15m from the edge of Rocks alter) with allowance for public access (minimum 1 m) around the temple and the Fung Shui rocks shall be provided. The open yard in front of the temple should be kept as usual for annual Tin Hau festival.
- 7.11 As there is a large buffer distance from the current works to Cha Kwo Ling Tin Hau Temple and the Fung Shui rocks (Child-given rocks), the temporarily fenced-off rocks buffer zone and from the edge of Rocks alter is not required. The fenced-off rocks buffer zone would be implemented when there is construction activities in vicinity of the cultural heritage.

8. LANDSCAPE AND VISUAL IMPACT REQUIREMENTS

- 8.1 Landscape and visual mitigation measures during the construction phase shall be checked to ensure that they are fully realized and implemented on site.
- 8.2 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of landscape and visual mitigation measures listed in “Implementation Schedule and Recommended Mitigation Measures” (shown in **Appendix N**). The summaries of observations and recommendations related to landscape and visual impacts, if any, are shown in **Appendix L**.
- 8.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

9. LANDFILL GAS MONITORING

Monitoring Requirement

- 9.1 In accordance with the EM&A Manual, monitoring of landfill gas is required for construction works within the Sai Tso Wan Landfill Consultation Zone during the construction phase. This section presents the results of landfill gas measurements performed by the Contractor. **Appendix A** shows the Limit Levels for the monitoring works.
- 9.2 The “Landfill Gas Monitoring Proposal”, including the monitoring programme and detailed actions, is submitted to the EPD for approval. Details of monitoring in this Proposal is in line with the monitoring requirements stipulated in the EM&A Manual.

Monitoring Parameters and Frequency

- 9.3 Monitoring parameters for Landfill gas monitoring include Methane, Carbon dioxide and Oxygen.
- 9.4 According to the implementation schedule and recommended mitigation measures of the EM&A Manual, measurements of the following frequencies should be carried out:

Excavations deeper than 1m

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

Excavations between 300mm and 1m deep

- directly after the excavation has been completed; and
- periodically whilst the excavation remains open.

For excavations less than 300mm deep

- monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person

Monitoring Locations

- 9.5 Monitoring of oxygen, methane and carbon dioxide was performed for excavations at 1m depth or more within the Consultation Zone. In this reporting month, the area required to be monitored for landfill gas are shown below and **Figure 6** shows the landfill gas monitoring locations.

- | | |
|-----------------------------------|-------------|
| ➤ Excavation Locations: | Portion III |
| ➤ Manholes and Chambers: | N/A |
| ➤ Relocation of monitoring wells: | N/A |
| ➤ Any other Confined Spaces: | N/A |

Monitoring Equipment

- 9.6 **Table 9.1** summarizes the equipment employed by the Contractor for the landfill gas monitoring.

Table 9.1 Landfill Gas Monitoring Equipment

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

Results and Observations

- 9.7 In the reporting month, landfill gas monitoring was carried out by the Contractor at the aforesaid locations on 50 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: 1, 8, 15, 22 and 29 August 2018
 - Contract No. NE/2015/02: 1, 8, 15, 22 and 29 August 2018
 - Contract No. NE/2015/03: 1, 8, 15, 22 and 29 August 2018
 - Contract No. NE/2017/01: 1, 8, 16, 22 and 29 August 2018
 - Contract No. NE/2017/02: 1, 8, 15, 22 and 29 August 2018
- 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 29, 8, 8, 29, 8 August 2018 respectively.

Implementation Status of Environmental Mitigation Measures

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

11. WASTE MANAGEMENT

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

12. ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

- 12.1 Six (6) Action Level exceedances were recorded due to the documented complaints received in the reporting month and Twelve (12) Limit Level exceedances for night-time construction noise monitoring were recorded 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 One (1) Action Level exceedance and Five (5) Limit Level exceedances for groundwater quality monitoring were recorded in the reporting month. The Limit Level exceedances were considered due to rainfall and human activities, therefore non-Project related.
- 12.3 Actions carried out in accordance with the Event and Action Plans in **Appendix M** are presented in **Appendix K** – Summary of Exceedance.

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

- 12.5 Twelve (12) environmental complaints were received in the reporting month. The Cumulative Complaint Log is presented in **Appendix O**. The investigation status and result is also reported in **Appendix O**.

Summary of Environmental Summon and Successful Prosecution

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

13. FUTURE KEY ISSUES

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

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

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

Contract No.	Project Title	Site Activities (September 2018)	
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works	Lam Tin Interchange	1) EHC2 U-Trough 2) Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5
		Main Tunnel	1) Main Tunnel Excavation
		TKO Interchange	1) Haul Road Construction and Site Formation & Slope Works 2) Steel Platform for Bridge Construction 3) Cavern Excavation
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	1) Backfilling in Portion VIII 2) Construction of retaining wall in Portion VIII 3) Construction of U-trough structure in Portion VIII 4) Lower ground works at Portion VIII 5) Cable diversion works at Portion IV 6) Pre-bore and sheetpile works for 2100 pipe at Portion IV and VII 7) Pre-bore works for decked U-trough at Portion VI 8) ELS works in Portion VIII 9) Trench excavation and ELS works for 2100 pipe 10) Construction of desilting opening for existing box culvert in Portion VIII 11) Construction of DN2100 outfall at Portion VII 12) Laying of geotextile at Portion IX 13) Filing of granular filter at Portion IX 14) Installation of instrumentation at Portion IX 15) Operation of double Watergate 16) Treatment works of S/S Treatment Facility at Area A 17) Dredging works and reclamation works at Portion IX 18) Rock filling works at Portion IX 19) Installation of band drain in Portion IX 20) Filing surcharge at Portion IX	
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge	1) Install steel mould for main deck 2) Construction of Pile Cap PC4 and Sump pit	

NE/2017/01	Tseung Kwan O Interchange and Associated Works	<ol style="list-style-type: none"> 1) Site Accommodation 2) Erection of Temporary Platform 3) Pre-drilling 4) Bored piling
NE/2017/02	Tseung Kwan O - Lam Tin Tunnel - Road P2/D4 and Associated Works	<ol style="list-style-type: none"> 1) Trial pit 2) Underground utilities detection 3) Temporary traffic arrangement Setup 4) Site office erection 5) Communication Liaison Center erection 6) Modification of traffic island 7) Fencing erection 8) Predrilling 9) Construction of Temporary cycle track 10) Construction of drainage and watermain

Key Issues for the Coming Month

13.3 Key environmental issues in the coming month include:

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

Monitoring Schedule for the Next Month

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

14. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 14.1 This is the 22nd Environmental Monitoring and Audit (EM&A) Report which presents the EM&A works undertaken during the period in August 2018 in accordance with EM&A Manual and the requirement under EP.

Air Quality Monitoring

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

Construction Noise Monitoring

- 14.4 All noise monitoring was conducted as scheduled in the reporting month. Six (6) Action Level exceedances were recorded due to the documented complaints received in this reporting month and Twelve (12) Limit Level exceedances were recorded for nighttime construction noise in the reporting month. The exceedances recorded during night-time were considered due to road traffic near the Eastern Cross Harbour Tunnel Toll Plaza, therefore non-Project related.

Water Quality Monitoring

- 14.5 Groundwater quality monitoring was conducted as scheduled in the reporting month. One (1) Action Level exceedance and Five (5) Limit Level exceedances were recorded in the reporting month. The exceedances were considered due to rainfall and human activities, therefore non-Project related.
- 14.6 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.
- 14.7 All marine water monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Ecological Monitoring

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

Monitoring on Cultural Heritage

- 14.9 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

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

Landfill Gas Monitoring

- 14.11 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

- 14.12 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

- 14.13 Twelve (12) environmental complaints, no successful prosecution and notification of summon were received during the reporting period.

Recommendations

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

Air Quality Impact

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

Construction Noise

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

Water Quality Impact

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

Waste/Chemical Management

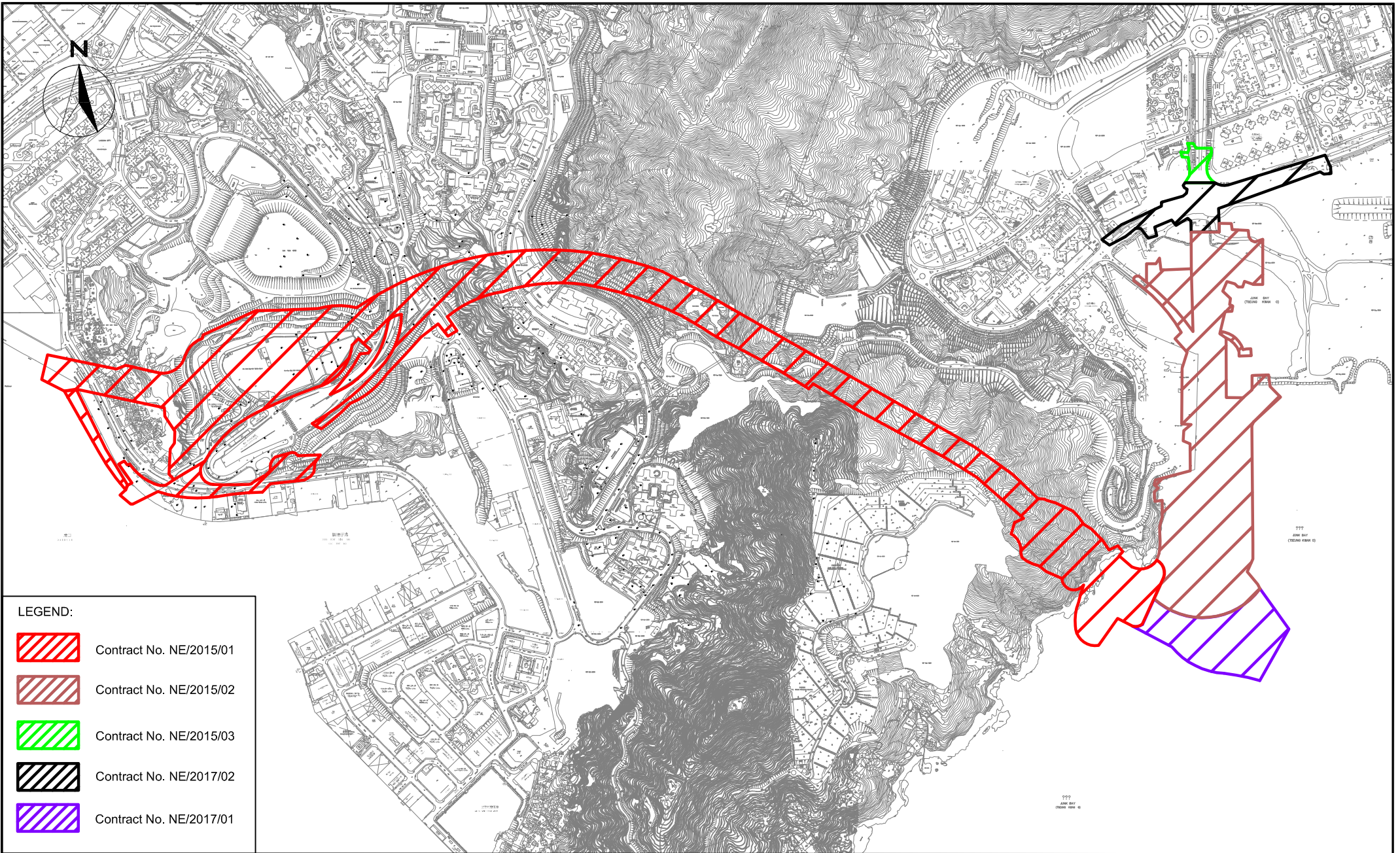
- To remove construction waste regularly.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the equipment.
- To provide drip tray to chemical containers to avoid any chemical leakage.
- To remove the oil stain and disposed of as chemical waste.
- To remove the stagnant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

Landscape and Visual


- To set up proper tree protection area.

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

FIGURES



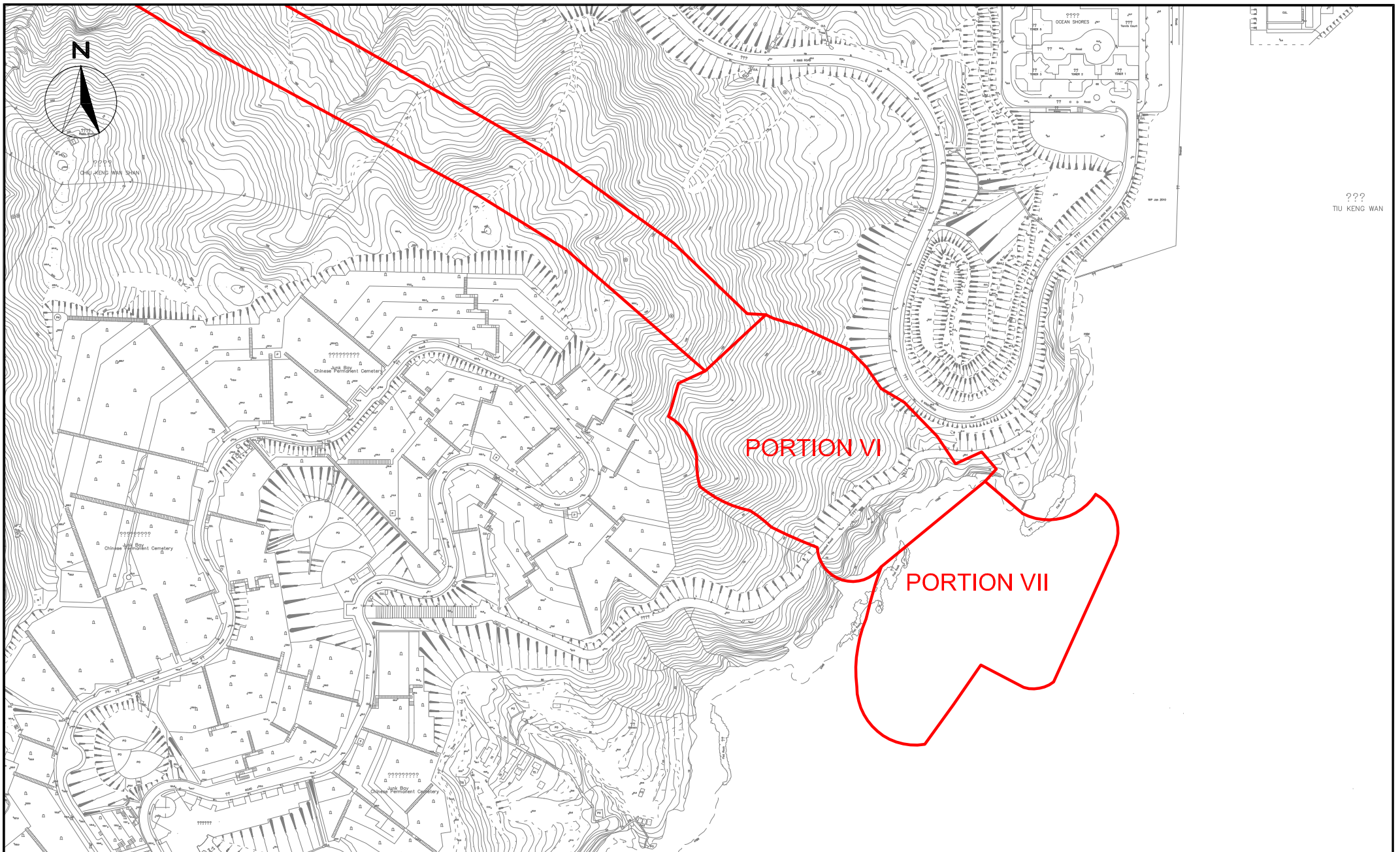
LEGEND:

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

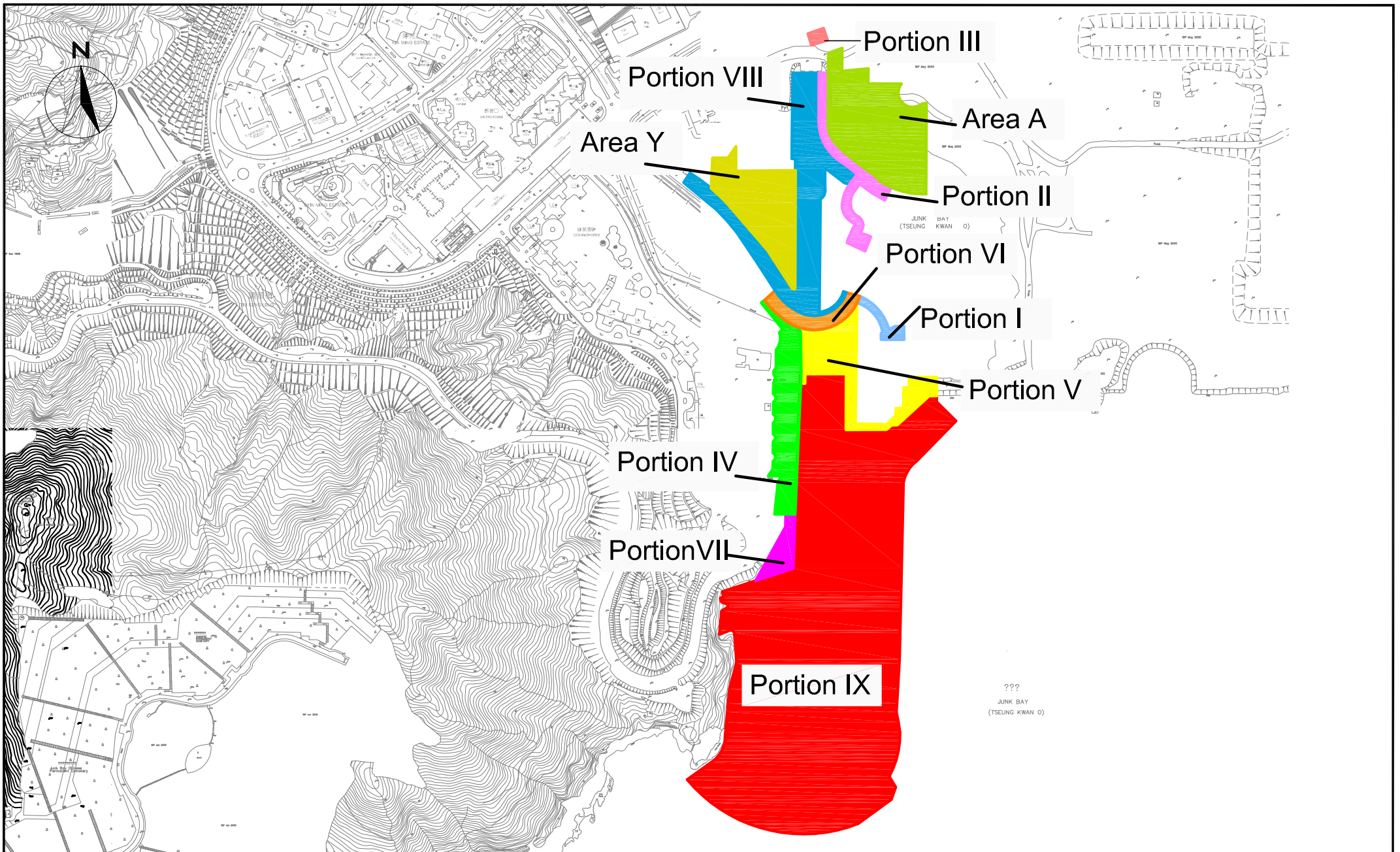
CINOTECH
Cinotech Consultants Limited

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

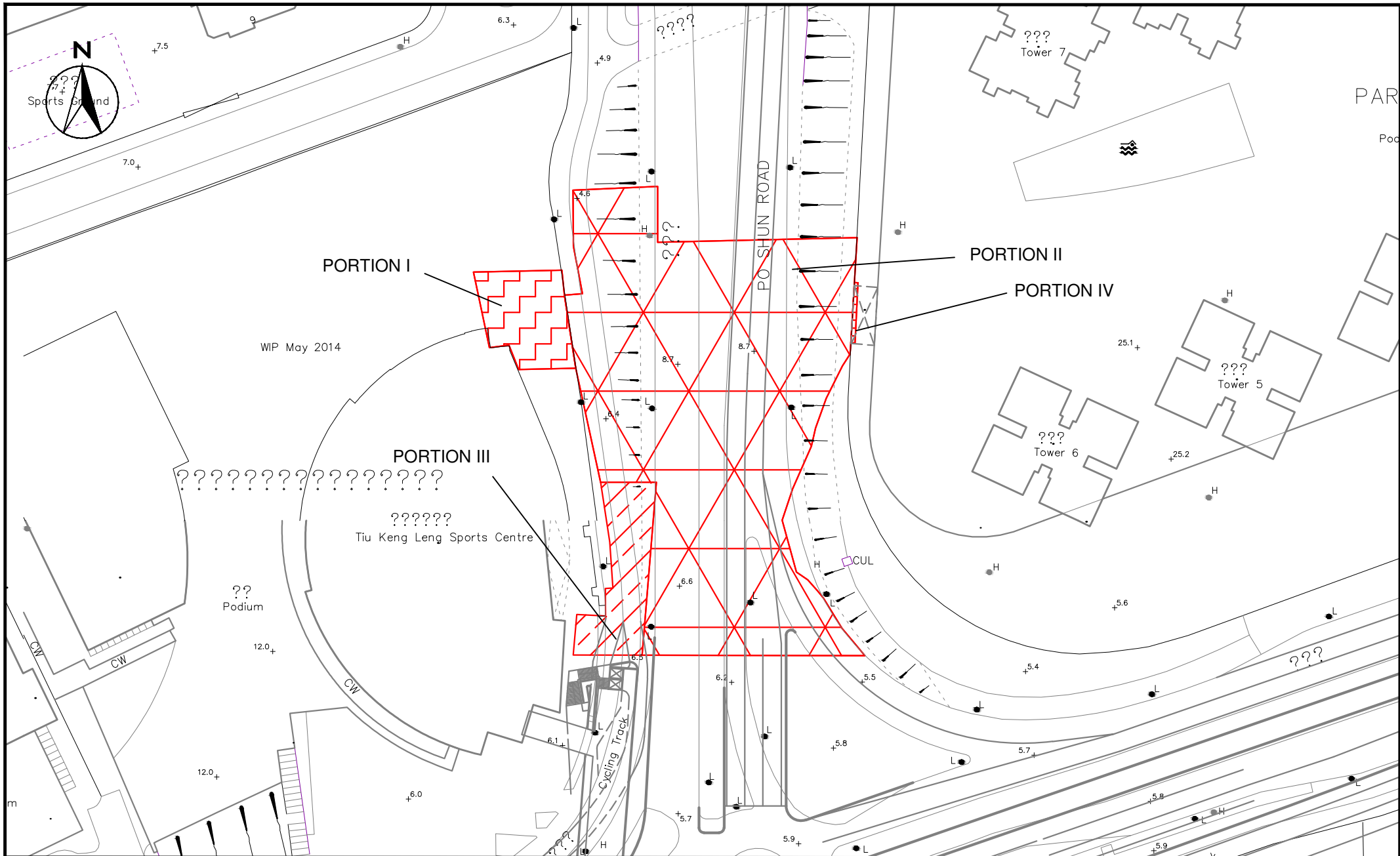
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JOB No.	MA16034	FIGURE NO.	1
		REV	-



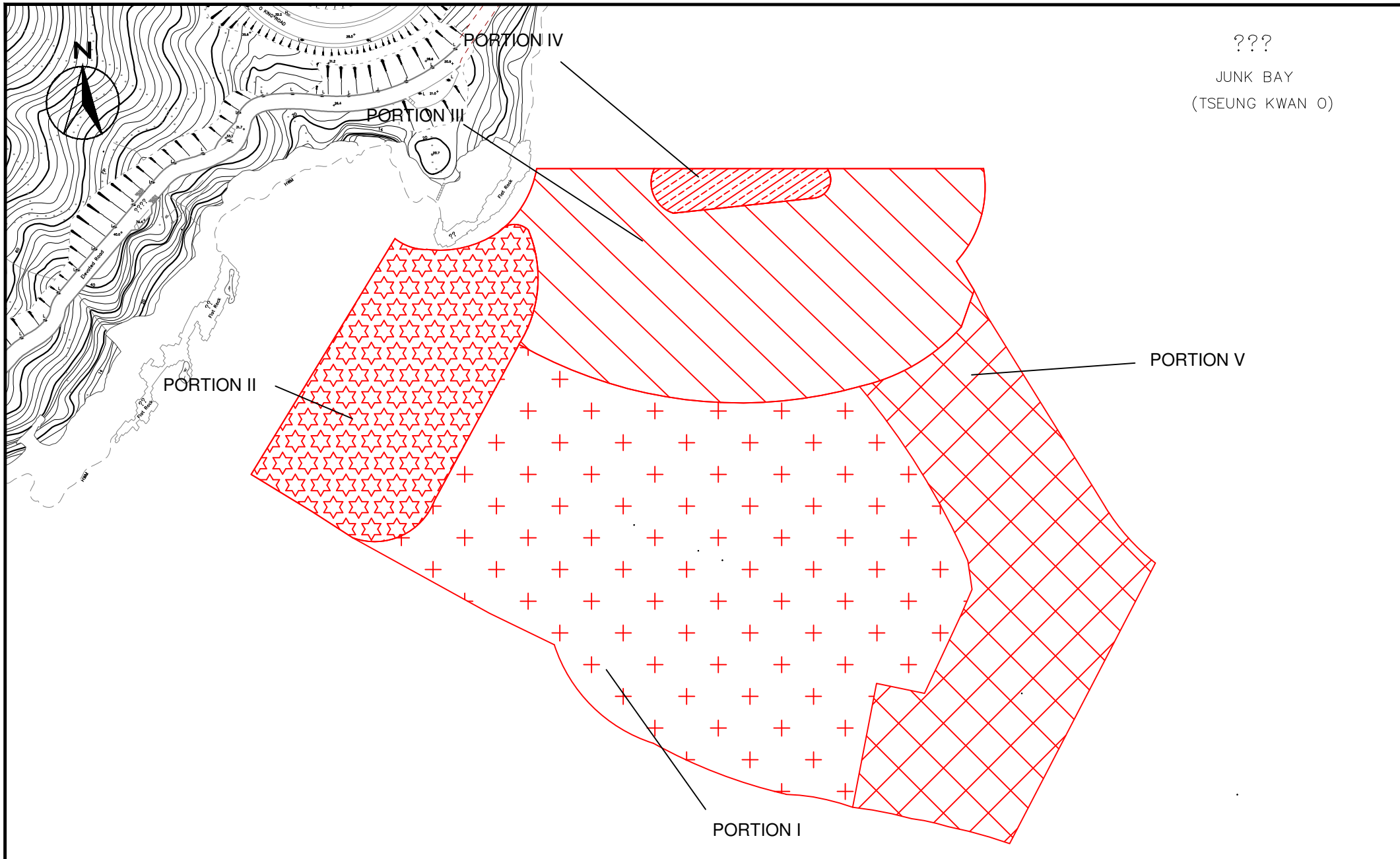
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JOB No.	MA16034	FIGURE NO.	1b	REV -



SCALE	N.T.S.	DATE	AUG 2017	
CHECK	JF	DRAWN	JW	
JOB No.	MA16034	FIGURE NO.	1c	REV -



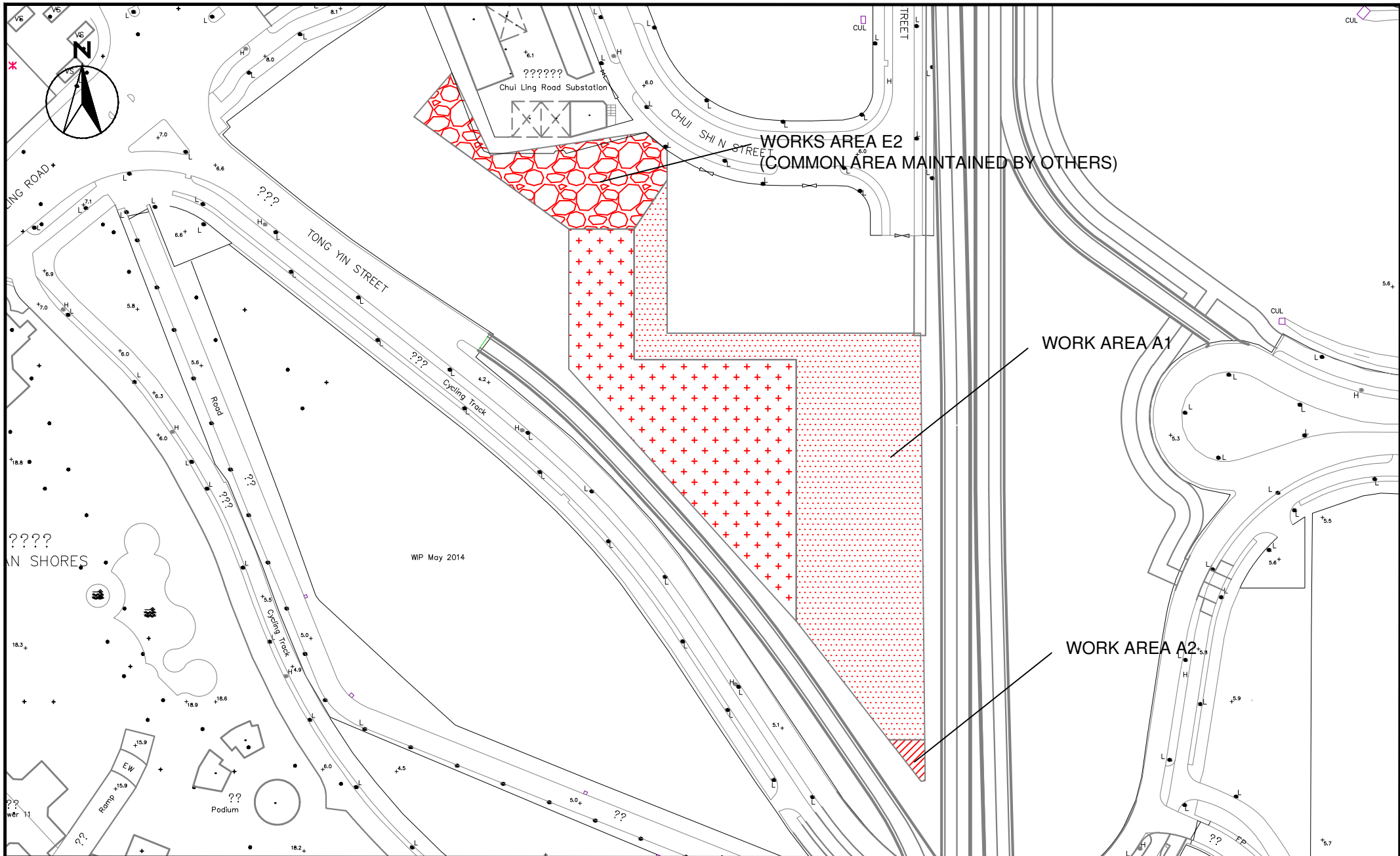
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		REV	-



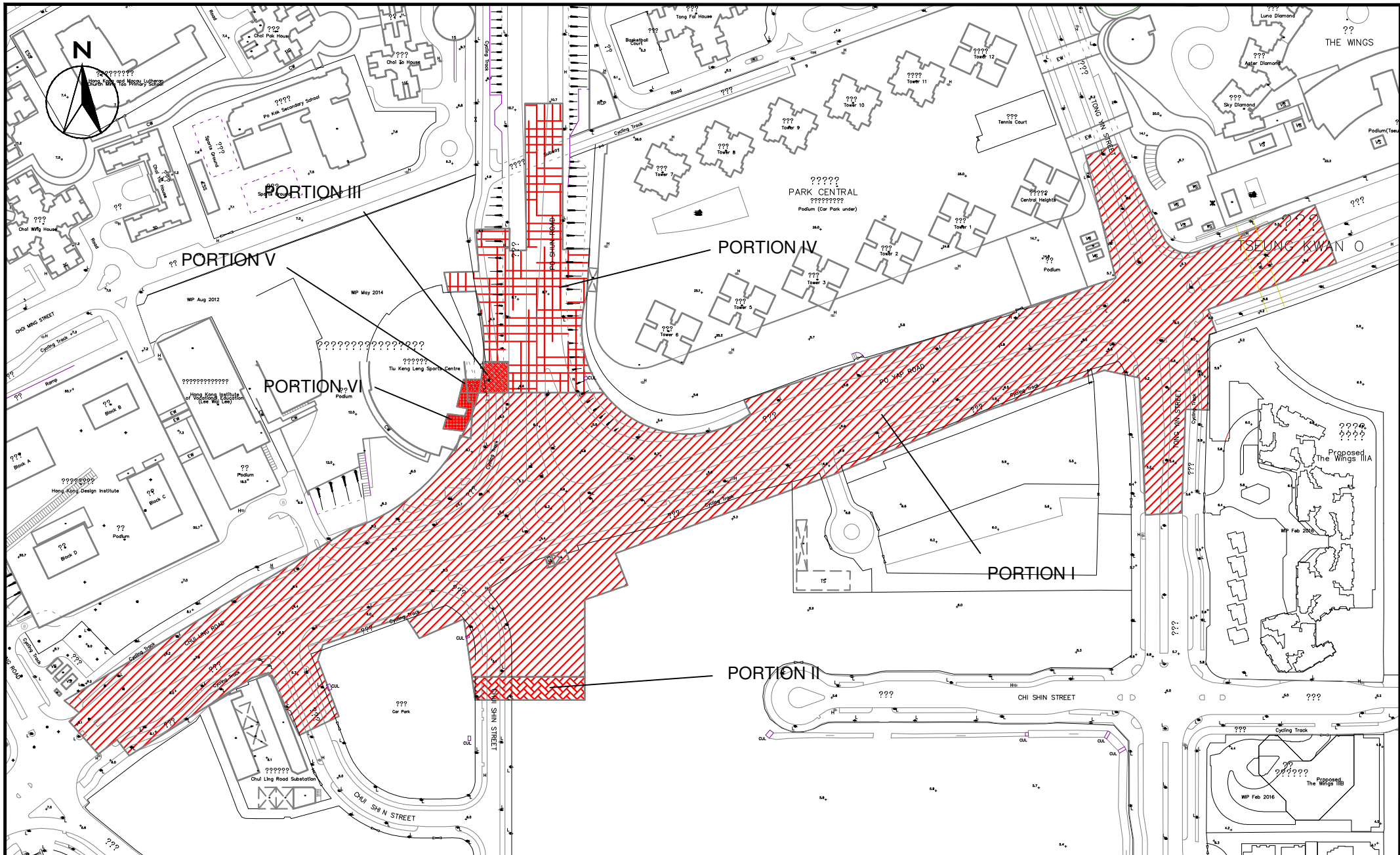
???

JUNK BAY
(TSEUNG KWAN O)

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CHECK	VC	DRAWN	AC
JOB No.	MA16034	FIGURE NO.	1e
		REV	-

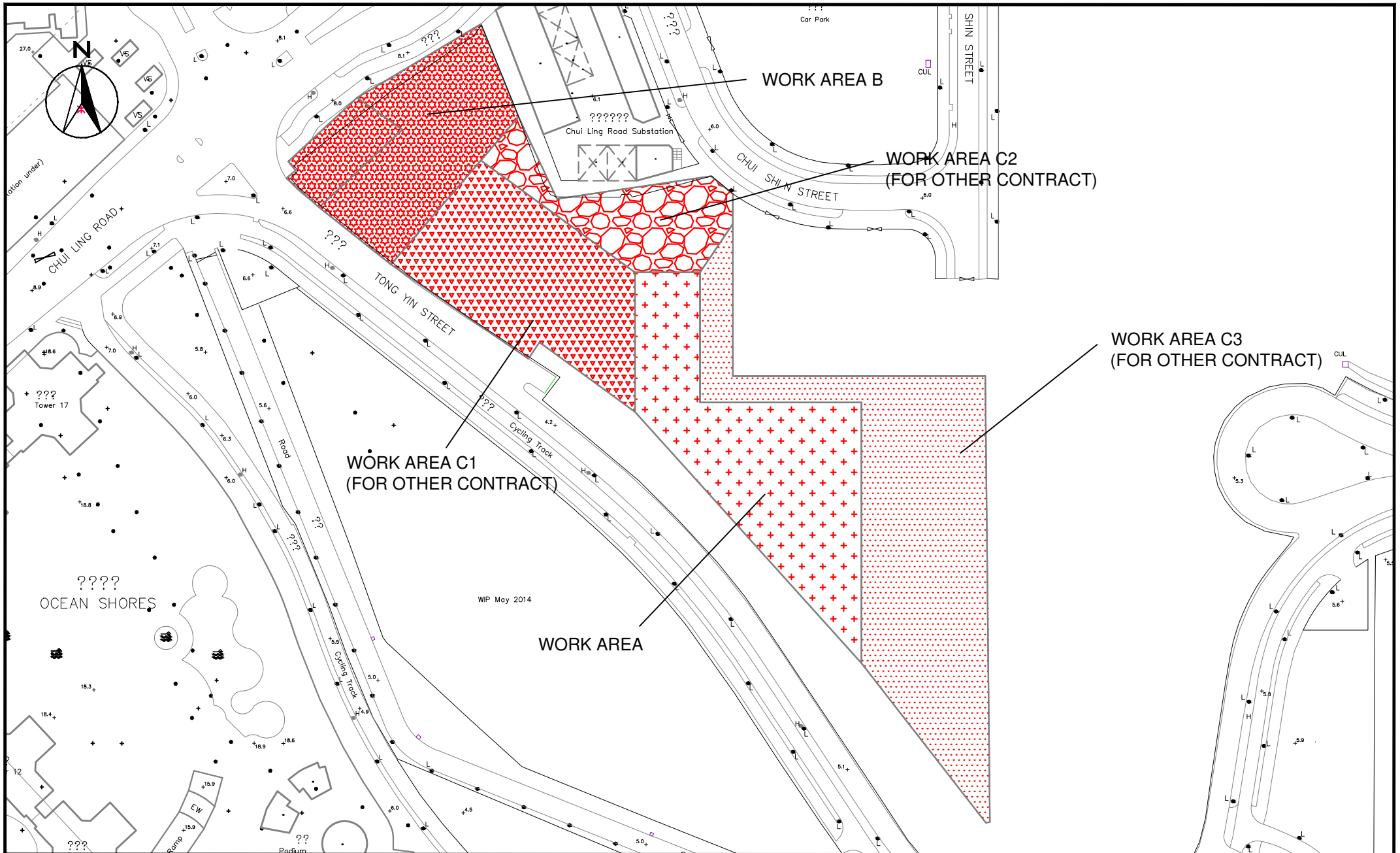


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JOB No.	MA16034	FIGURE NO.	1f	REV
				-

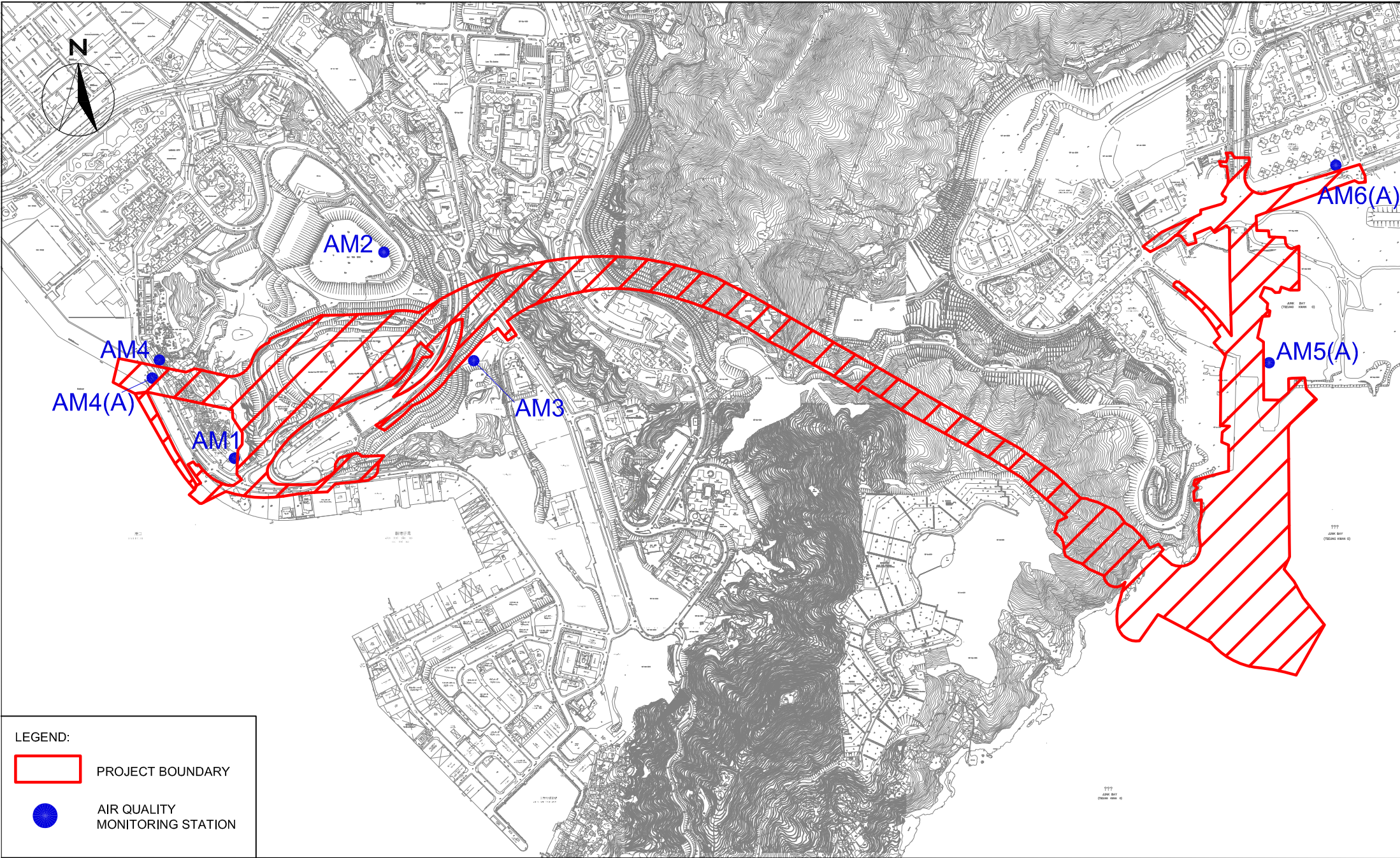


Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel
 - Design and Construction
 Site Portions under Work Contract No. NE/2017/02

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



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



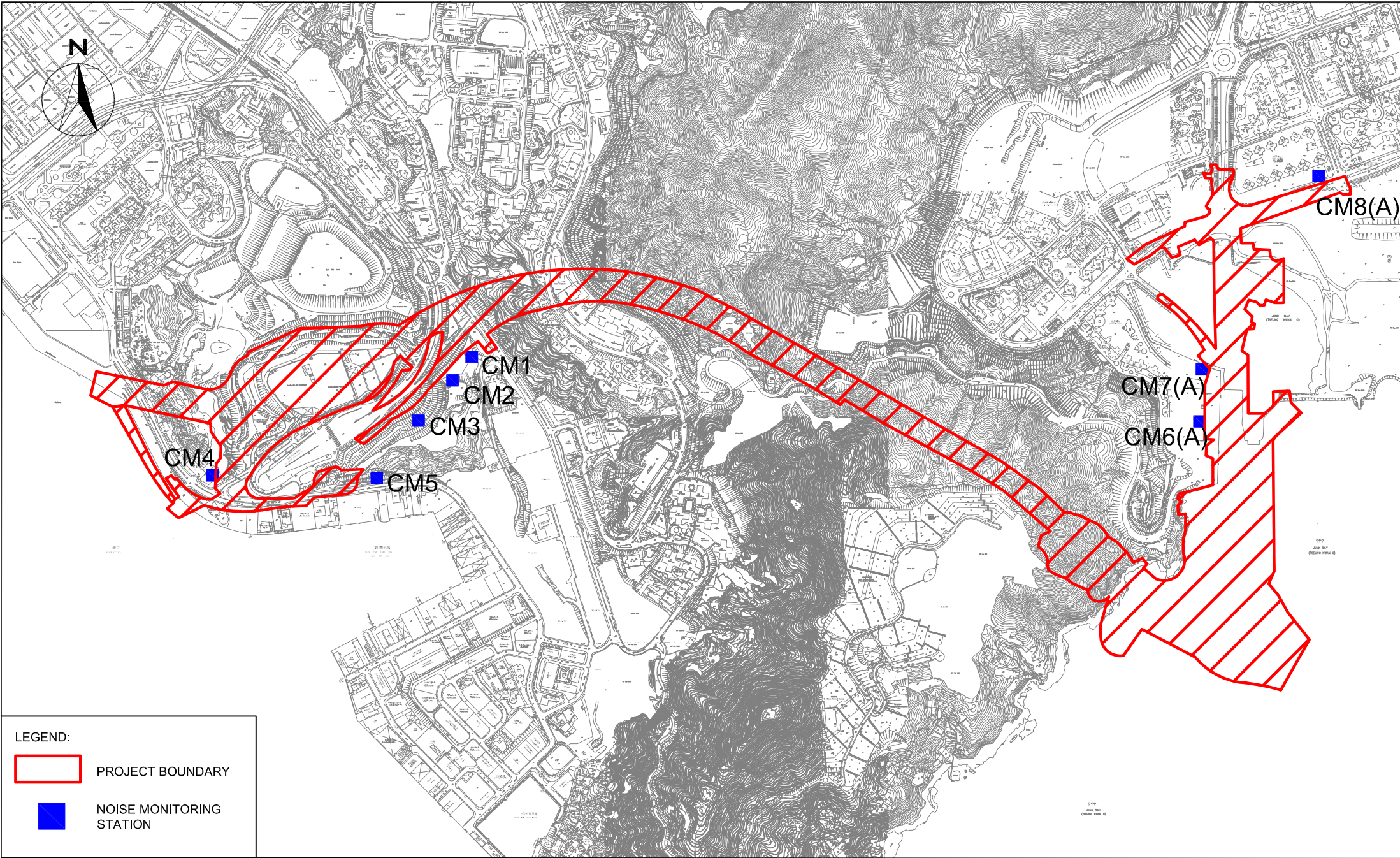
LEGEND:

- PROJECT BOUNDARY
- AIR QUALITY MONITORING STATION



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

SCALE	1:15000 @ A4	DATE	APR 2017	
CHECK	JF	DRAWN	JW	
JOB No.	MA16034	FIGURE NO.	2	REV
				-



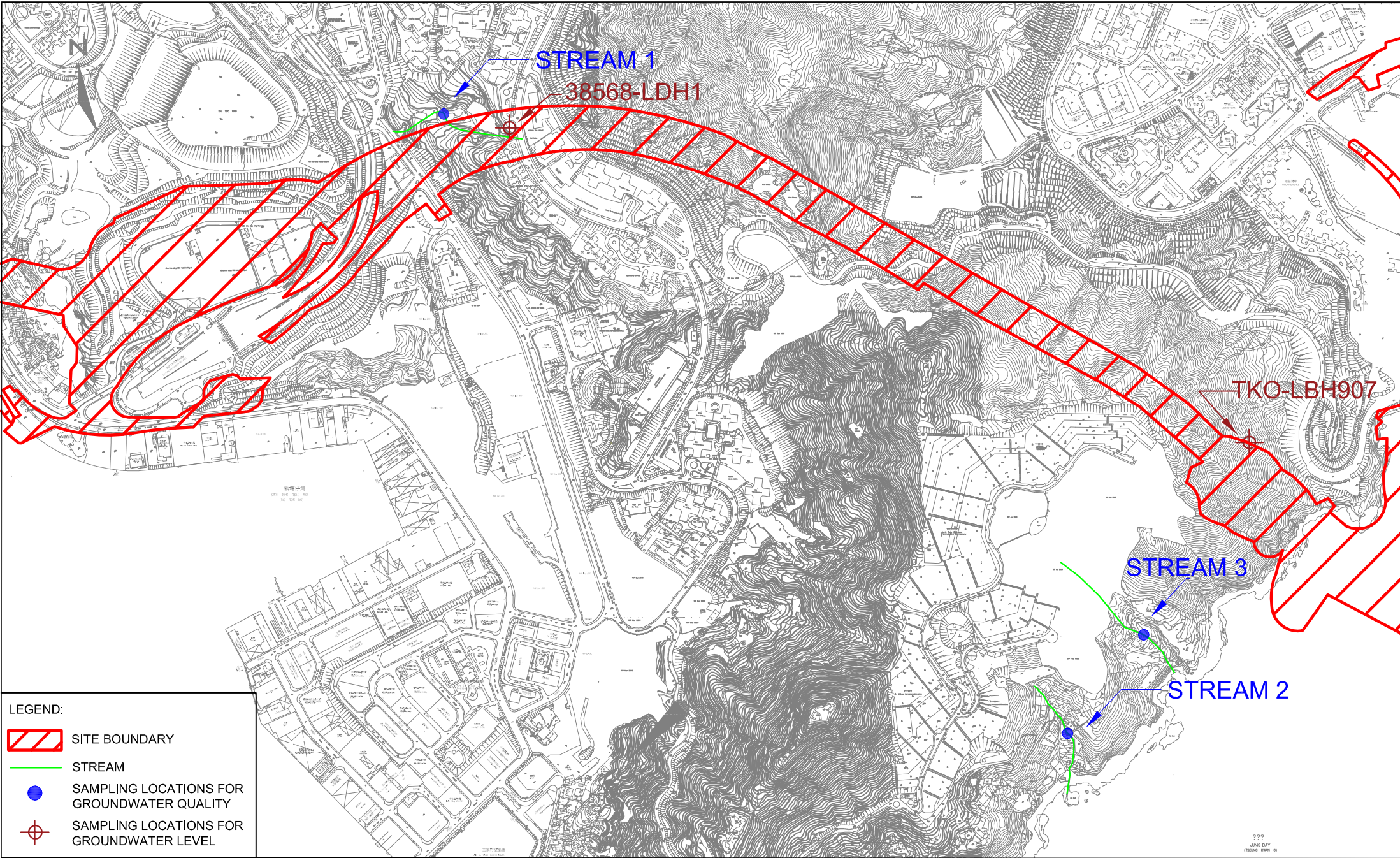
LEGEND:

- PROJECT BOUNDARY
- NOISE MONITORING STATION







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

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			-	



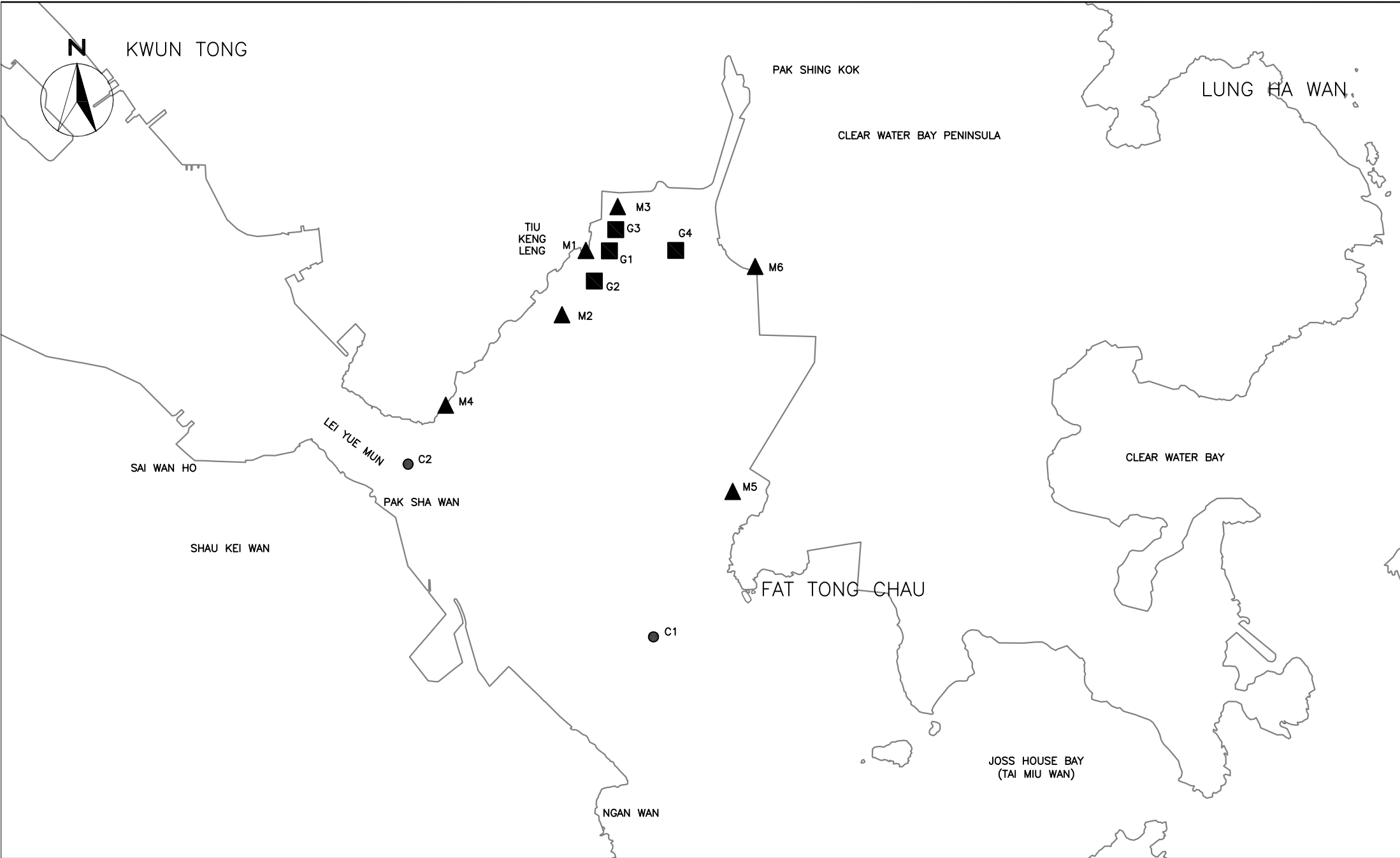
LEGEND:

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

CINOTECH
Cinotech Consultants Limited

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

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



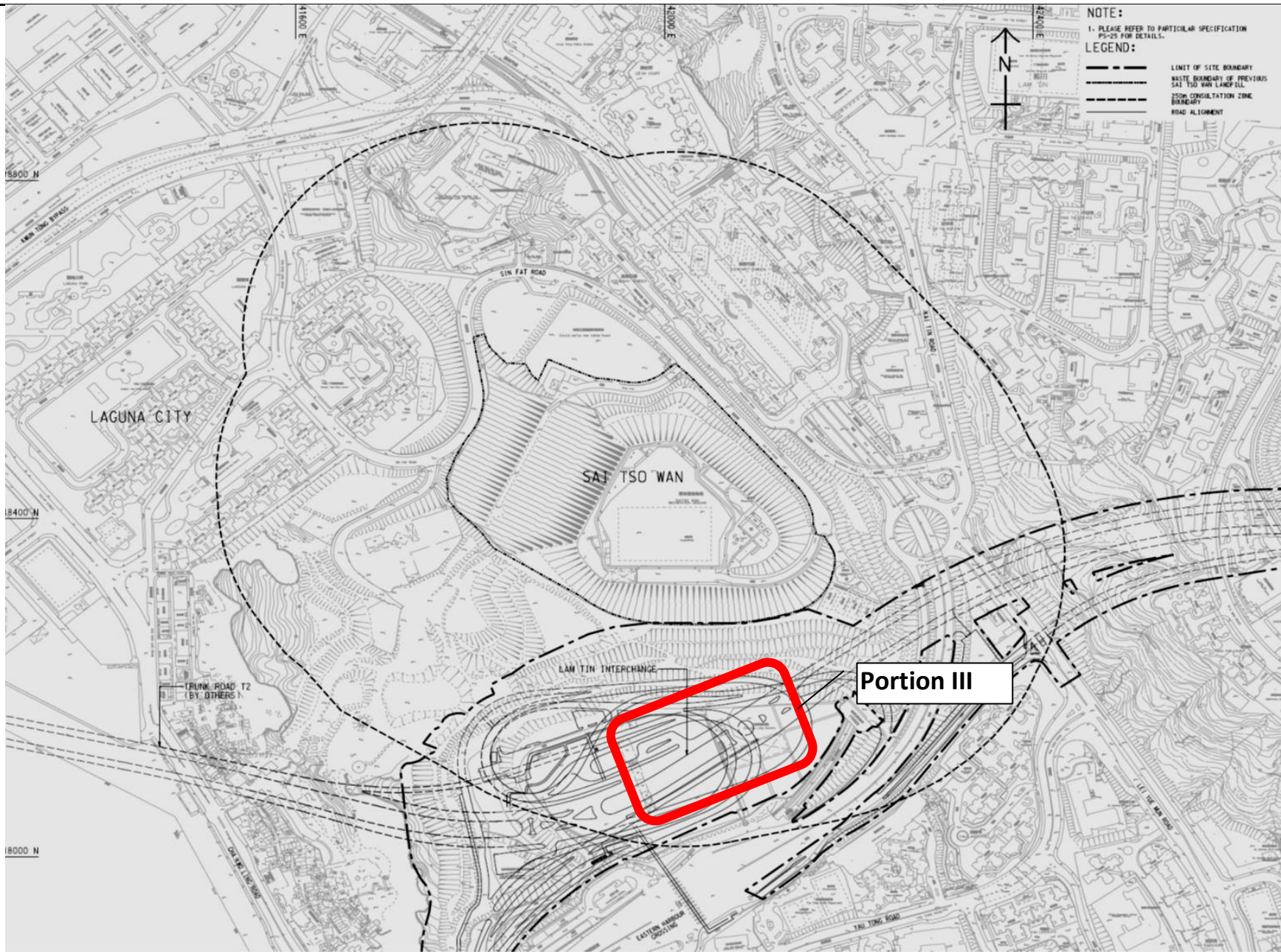
CINOTECH

Cinotech Consultants Limited

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

Locations of Water Quality Monitoring Stations

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

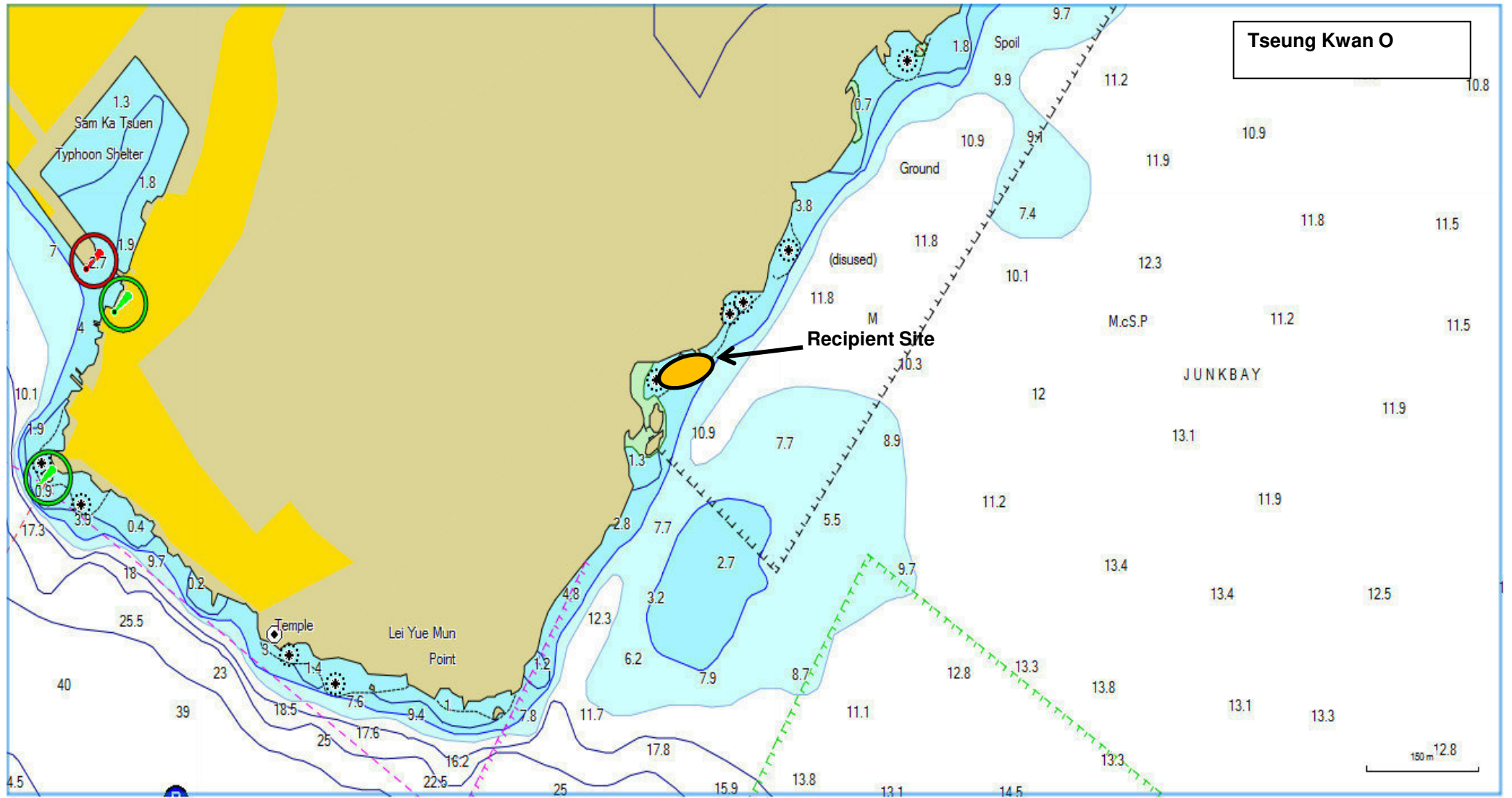


Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Locations of Landfill Gas Monitoring

Scale N.T.S
 Date Dec-16

Project No. MA16034
 Figure 6



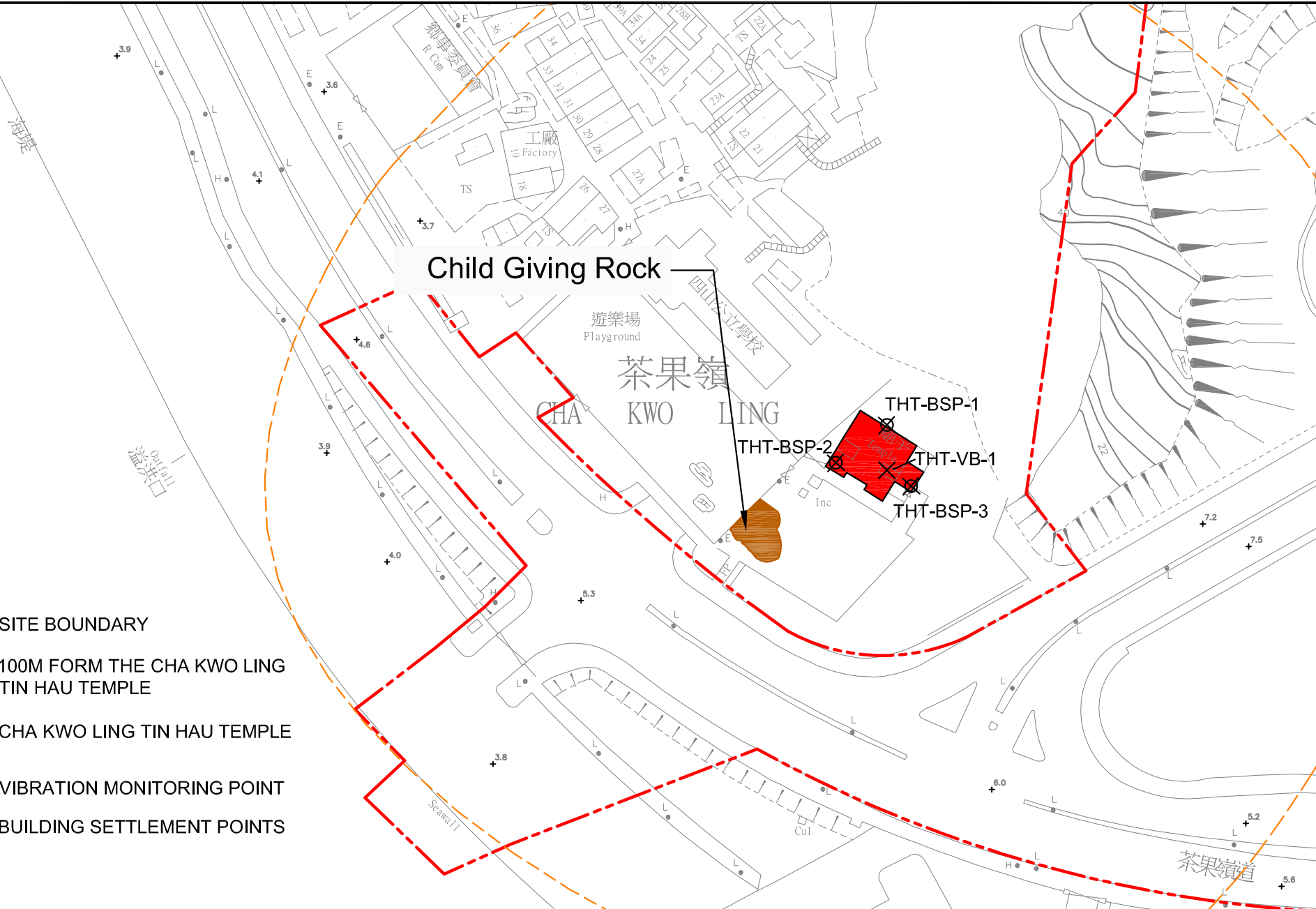
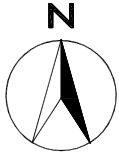


Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Location of Post-translocation Coral Monitoring

Scale N.T.S
 Date Mar-17

Project No. MA16034
 Figure 7

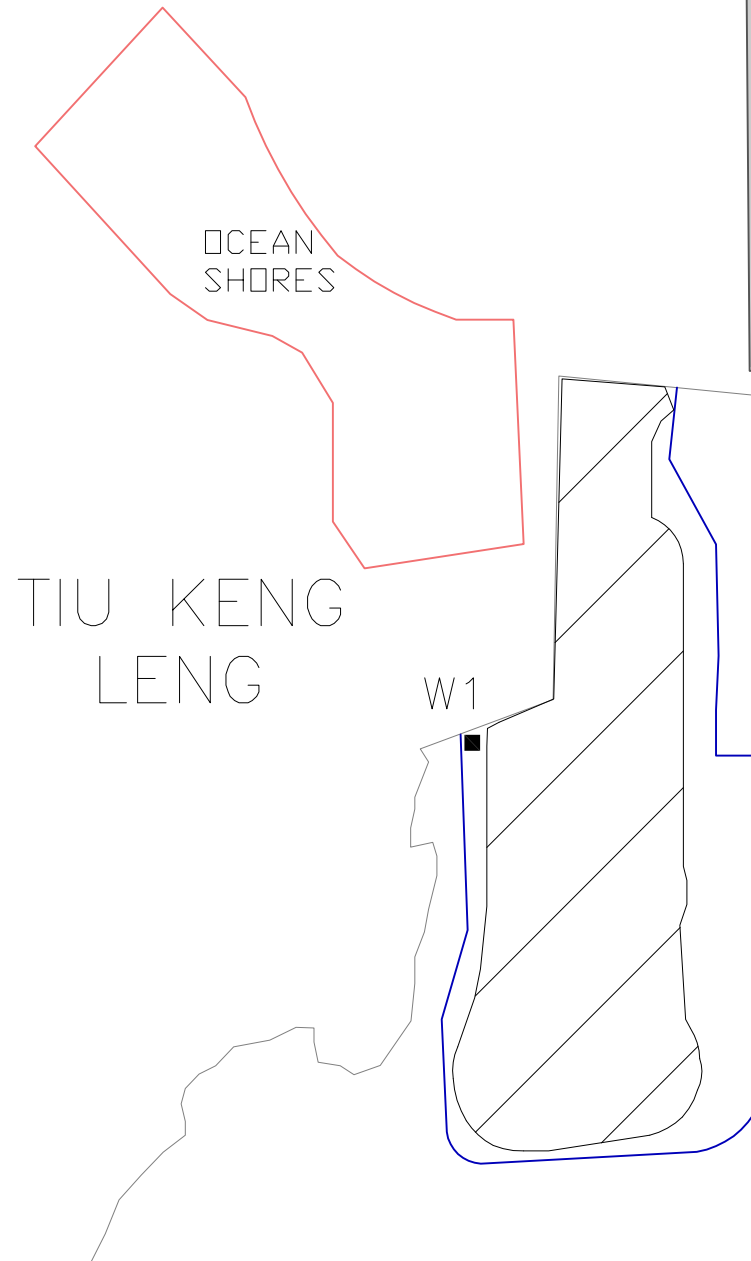
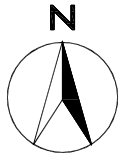




LEGEND

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

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



LEGEND



IMPACT STATIONS



LOCATION OF TEMPORARY MARINE EMBAYMENT BY STEEL COFFERDAM



RECLAMATION FOOTPRINT

CURRENT SHORELINE

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

**APPENDIX A
ACTION AND LIMIT LEVELS**

APPENDIX A – Action and Limit Levels

Air Quality

1-hr TSP

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

24-hr TSP

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

Noise

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

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

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

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

Water Quality

Groundwater

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

Notes:

1. For pH, non-compliance of the water quality limits occurs when monitoring result is out of the range of the limits.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, 5-day biochemical oxygen demand (BOD₅), Total organic carbon (TOC), Total Nitrogen, Ammonia-N and Total Phosphate, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

Groundwater Level Monitoring

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

Marine Water Quality

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

Notes:

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

Water Quality Monitoring in Temporary Marine Embayment

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

Notes:

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

Ecology

Post-translocation Coral Monitoring

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

Landfill Gas Monitoring

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

Alert, Alarm, Action Levels for Built Heritage Monitoring

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

**APPENDIX B
COPIES OF CALIBRATION
CERTIFICATES**

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/05/0012

Project No. AM1 - Tin Hau Temple

Date: 26-Jun-18

Next Due Date: 25-Aug-18

Operator: MH

Equipment No.: A-01-05

Model No.: GS2310

Serial No.: 10599

Ambient Condition			
Temperature, Ta (K)	302.5	Pressure, Pa (mmHg)	758.6

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	13.2	3.60	61.56	7.6	2.73
2	9.4	3.04	51.95	5.4	2.30
3	8.2	2.84	48.52	4.6	2.13
4	5.3	2.28	39.01	3.3	1.80
5	3.1	1.75	29.84	2.0	1.40

By Linear Regression of Y on X

Slope, mw = 0.0413

Intercept, bw = 0.1662

Correlation coefficient* = 0.9984

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.84

Remarks: _____

Conducted by: [Signature]

Signature: _____

Date: 26/6/2018

Checked by: [Signature]

Signature: _____

Date: 26/6/2018

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/05/0013

Project No. AMI - Tin Hau Temple

Date: 23-Aug-18

Next Due Date: 22-Oct-18

Operator: MH

Equipment No.: A-01-05

Model No.: GS2310

Serial No.: 10599

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	754.7

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	13.2	3.59	61.35	7.8	2.76
2	9.8	3.09	52.87	5.4	2.30
3	8.1	2.81	48.06	4.7	2.14
4	5.4	2.30	39.24	3.2	1.77
5	3.3	1.80	30.68	1.9	1.36

By Linear Regression of Y on X

Slope, mw = 0.0445

Intercept, bw = 0.0004

Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.75

Remarks: _____

Conducted by: 188 Mami HCC Signature: _____

Date: 23/8/2018

Checked by: Wk Tang Signature: _____

Date: 23/8/2018

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/08/0012

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 26-Jun-18

Next Due Date: 25-Aug-18

Operator: MH

Equipment No.: A-01-08

Model No.: GS2310

Serial No.: 1287

Ambient Condition			
Temperature, Ta (K)	301.5	Pressure, Pa (mmHg)	758.6

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	13.4	3.64	62.13	8.0	2.81
2	10.8	3.26	55.78	6.5	2.53
3	8.7	2.93	50.06	5.1	2.24
4	5.5	2.33	39.81	3.4	1.83
5	3.3	1.80	30.84	2.0	1.40

By Linear Regression of Y on X

Slope, mw = 0.0446

Intercept, bw = 0.0361

Correlation coefficient* = 0.9995

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.87

Remarks: _____

Conducted by: Liz Man Ho Signature: *Liz Man Ho*
 Checked by: Wah Tang Signature: *Wah Tang*

Date: 26/6/2018
 Date: 26/6/2018

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/08/0013

Project No. AM2 - Sai Tso Wan Recreation Ground

Date: 23-Aug-18

Next Due Date: 22-Oct-18

Operator: MH

Equipment No.: A-01-08

Model No.: GS2310

Serial No.: 1287

Ambient Condition			
Temperature, Ta (K)	300	Pressure, Pa (mmHg)	753.8

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	13.6	3.66	62.55	8.1	2.82
2	10.2	3.17	54.17	6.2	2.47
3	8.6	2.91	49.74	5.4	2.31
4	5.4	2.31	39.42	3.3	1.80
5	3.3	1.80	30.81	2.0	1.40

By Linear Regression of Y on X

Slope, mw = 0.0451

Intercept, bw = 0.0290

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.93

Remarks: _____

Conducted by: LEE MAN HEV Signature: lee
 Checked by: W.K. Tang Signature: kwai

Date: 23/8/2018
 Date: 23/8/2018

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/03/0010

Project No. AM3 - Yau Lai Estate, Bik Lai House
 Date: 26-Jun-18 Next Due Date: 25-Aug-18
 Equipment No.: A-01-03 Model No.: GS2310

Operator: MH
 Serial No.: 10379

Ambient Condition			
Temperature, Ta (K)	301.4	Pressure, Pa (mmHg)	758

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.5	3.51	59.99	7.4	2.70
2	10.7	3.25	55.51	6.7	2.57
3	7.8	2.77	47.39	4.8	2.18
4	5.6	2.35	40.16	3.4	1.83
5	3.2	1.78	30.36	2.0	1.40

By Linear Regression of Y on X
 Slope, $m_w =$ 0.0448 Intercept, $b_w =$ 0.0431
 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

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

Therefore, Set Point; $W = (m_w \times Qstd + b_w)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.94

Remarks: _____

Conducted by: Lee Man Heo Signature: Lee Man Heo
 Checked by: W.K. Tang Signature: W.K. Tang

Date: 26/6/2018
 Date: 26/6/2018

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/03/0011

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

Date: 23-Aug-18

Next Due Date: 22-Oct-18

Operator: MH

Equipment No.: A-01-03

Model No.: GS2310

Serial No.: 10379

Ambient Condition			
Temperature, Ta (K)	301.9	Pressure, Pa (mmHg)	754.6

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	12.4	3.49	59.57	7.6	2.73
2	10.8	3.25	55.59	6.4	2.50
3	7.5	2.71	46.33	4.5	2.10
4	5.1	2.24	38.21	3.2	1.77
5	3.3	1.80	30.73	2.0	1.40

By Linear Regression of Y on X

Slope, mw = 0.0450

Intercept, bw = 0.0257

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 = $(mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.93

Remarks: _____

Conducted by: LEE MAN HO Signature: _____

Date: 23/8/2018

Checked by: WIK TANG Signature: _____

Date: 23/8/2018

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/54/0012

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

Date: 26-Jun-18

Next Due Date: 25-Aug-18

Operator: MH

Equipment No.: A-01-54

Model No.: TE-5170

Serial No.: 1536

Ambient Condition			
Temperature, Ta (K)	301.1	Pressure, Pa (mmHg)	759.3

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.4	4.03	68.81	9.7	3.10
2	12.8	3.56	60.79	7.8	2.78
3	10.3	3.19	54.53	6.5	2.54
4	6.9	2.61	44.64	4.2	2.04
5	4.2	2.04	34.83	2.7	1.63

By Linear Regression of Y on X

Slope, mw = 0.0437

Intercept, bw = 0.1134

Correlation coefficient* = 0.9990

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation	
From the TSP Field Calibration Curve, take Qstd = 43 CFM	
From the Regression Equation, the "Y" value according to	
$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$	
Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ <u>4.01</u>	

Remarks: _____

Conducted by: LEE WAN HOV Signature: Lee

Checked by: WIK TANG Signature: KINDI

Date: 26/6/2018

Date: 26/6/2018

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/37/0012

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

Date: 26-Jun-18

Next Due Date: 25-Aug-18

Operator: MH

Equipment No.: A-01-37

Model No.: GS2310

Serial No.: 1704

Ambient Condition			
Temperature, Ta (K)	301.7	Pressure, Pa (mmHg)	759

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.6	4.05	69.15	9.6	3.08
2	13.0	3.58	61.19	7.8	2.77
3	9.8	3.11	53.13	5.7	2.37
4	6.7	2.57	43.93	4.0	1.99
5	4.6	2.13	36.40	2.8	1.66

By Linear Regression of Y on X

Slope, mw = 0.0437

Intercept, bw = 0.0670

Correlation coefficient* = 0.9994

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.84

Remarks: _____

Conducted by: Mr. Man Mee Signature: Man Mee
 Checked by: W.K. Tang Signature: W.K. Tang

Date: 26/6/2018
 Date: 26/6/2018

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/37/0013

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

Date: 24-Aug-18

Next Due Date: 23-Oct-18

Operator: MH

Equipment No.: A-01-37

Model No.: GS2310

Serial No.: 1704

Ambient Condition			
Temperature, Ta (K)	303.3	Pressure, Pa (mmHg)	754.6

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.6	4.02	68.76	9.4	3.03
2	13.1	3.57	61.09	7.6	2.72
3	9.5	3.04	52.02	5.8	2.38
4	6.9	2.59	44.34	4.1	2.00
5	4.3	2.05	35.00	2.7	1.62

By Linear Regression of Y on X

Slope, mw = 0.0419

Intercept, bw = 0.1609

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; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.95

Remarks: _____

Conducted by: LEE MAN KUI Signature: _____

Date: 24/8/2018

Checked by: W.K. Tang Signature: _____

Date: 24/8/2018

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA16034/07/0012

Station AM6 - Park Central

Date: 23-Jul-18

Next Due Date: 22-Sep-18

Operator: MH

Equipment No.: A-01-07

Model No.: GS2310

Serial No.: 10592

Ambient Condition			
Temperature, Ta (K)	300.7	Pressure, Pa (mmHg)	753

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	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	11.6	3.37	57.67	7.2	2.66
2	9.7	3.09	52.74	6.3	2.49
3	7.5	2.71	46.37	4.9	2.19
4	5.3	2.28	38.98	3.4	1.83
5	3.3	1.80	30.76	2.1	1.44

By Linear Regression of Y on X

Slope, mw = 0.0462

Intercept, bw = 0.0289

Correlation coefficient* = 0.9988

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 4.13

Remarks: _____

Conducted by: Lee Man Hez

Signature: _____

Date: 23/7/2018

Checked by: Wk Tang

Signature: _____

Date: 23/7/2018

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)	$\sqrt{\Delta H (Ta/Pa)}$ (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	
QSTD	m=	2.06726	QA	m=	1.29448	
	b=	-0.00045		b=	-0.00028	
	r=	0.99992		r=	0.99992	

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

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.:	C/W/180329
Date of Issue:	2018-04-03
Date Received:	2018-03-29
Date Tested:	2018-03-29
Date Completed:	2018-04-03
Next Due Date:	2018-10-02

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

Description	: Weather Monitor II
Manufacturer	: Davis Instruments
Model No.	: 7440
Serial No.	: MC20813A11

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.:	C/W/180329
Date of Issue:	2018-04-03
Date Received:	2018-03-29
Date Tested:	2018-03-29
Date Completed:	2018-04-03
Next Due Date:	2018-10-02

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
90.1	90	0.1
135.3	135	0.3
180	180	0
225.2	225	0.2
270.1	270	0.1
315.3	315	0.3
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.:	29027A
Date of Issue:	2018-06-18
Date Received:	2018-06-15
Date Tested:	2018-06-15
Date Completed:	2018-06-18
Next Due Date:	2018-08-17

ATTN: Mr. W. K. Tang

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room 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)	1.137
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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.:	29669
Date of Issue:	2018-08-18
Date Received:	2018-08-16
Date Tested:	2018-08-16
Date Completed:	2018-08-18
Next Due Date:	2018-10-17

ATTN: Mr. W. K. Tang

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room 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)	1.147
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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.:	29661
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2018-10-12

ATTN: Mr. W. K. Tang

Page: 1 of 1

Certificate of Calibration

Item for Calibration:

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

Test Conditions:

Room 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)	1.177
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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.:	29026A
Date of Issue:	2018-06-11
Date Received:	2018-06-08
Date Tested:	2018-06-08
Date Completed:	2018-06-11
Next Due Date:	2018-08-10

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.	: 3011701016
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-03

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)	1.239
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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.:	29662
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2018-10-12

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. : 3011701016
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 5 minutes
 Equipment No. : A-27-03

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)	1.149
-------------------------	-------

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.:	29026C
Date of Issue:	2018-06-11
Date Received:	2018-06-08
Date Tested:	2018-06-08
Date Completed:	2018-06-11
Next Due Date:	2018-08-10

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)	1.239
-------------------------	-------

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.:	29664
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2018-10-12

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)	1.161
-------------------------	-------

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.:	29026D
Date of Issue:	2018-06-11
Date Received:	2018-06-08
Date Tested:	2018-06-08
Date Completed:	2018-06-11
Next Due Date:	2018-08-10

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.	: 3011701013
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-08

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)	1.220
-------------------------	-------

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.:	29665
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2018-10-12

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.	: 3011701013
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 5 minutes
Equipment No.	: A-27-08

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)	1.162
-------------------------	-------

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.:	29026E
Date of Issue:	2018-06-11
Date Received:	2018-06-08
Date Tested:	2018-06-08
Date Completed:	2018-06-11
Next Due Date:	2018-08-10

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. : 3011701010
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 5 minutes
 Equipment No. : A-27-10

Test Conditions:

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

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	1.213
-------------------------	-------

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.:	29667
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2018-10-12

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. : 3011701010
 Flow rate : 0.1 cfm
 Zero Count Test : 0 count per 5 minutes
 Equipment No. : A-27-10

Test Conditions:

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

Test Specifications & Methodology:

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

Results:

Correlation Factor (CF)	1.133
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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.:	C/N/170915A
Date of Issue:	2017-09-18
Date Received:	2017-09-15
Date Tested:	2017-09-15
Date Completed:	2017-09-18
Next Due Date:	2018-09-17

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 955
Serial No.	: 12563
Microphone No.	: 34377
Equipment No.	: N-08-03

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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


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/170825
Date of Issue:	2017-08-28
Date Received:	2017-08-25
Date Tested:	2017-08-25
Date Completed:	2017-08-28
Next Due Date:	2018-08-27

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 23 degree Celsius
Relative Humidity	: 60 %

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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/170818
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 61 %

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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.:	29499
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2019-08-12

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

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

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

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.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 61 %

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

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.:	29500
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2019-08-12

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.	: 21460
Microphone No.	: 43679
Equipment No.	: N-08-09

Test conditions:

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

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

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

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

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description : 'SVANTEK' Integrating Sound Level Meter
Manufacturer : SVANTEK
Model No. : SVAN 977
Serial No. : 45467
Microphone No. : 62838
Equipment No. : N-08-13

Test conditions:

Room Temperature : 22 degree Celsius
Relative Humidity : 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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



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/170915C
Date of Issue:	2017-09-18
Date Received:	2017-09-15
Date Tested:	2017-09-15
Date Completed:	2017-09-18
Next Due Date:	2018-09-17

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 977
Serial No.	: 45482
Microphone No.	: 63626
Equipment No.	: N-08-14

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 60%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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


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/171215
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-12-17

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 64%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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/171215B
Date of Issue:	2017-12-18
Date Received:	2017-12-15
Date Tested:	2017-12-15
Date Completed:	2017-12-18
Next Due Date:	2018-12-17

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 20 degree Celsius
Relative Humidity	: 64%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

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

PREPARED AND CHECKED BY:

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/170929
Date of Issue:	2017-09-30
Date Received:	2017-09-29
Date Tested:	2017-09-29
Date Completed:	2017-09-30
Next Due Date:	2018-09-29

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 60 %

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
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/170929B
Date of Issue:	2017-09-30
Date Received:	2017-09-29
Date Tested:	2017-09-29
Date Completed:	2017-09-30
Next Due Date:	2018-09-29

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

Room Temperature	: 21 degree Celsius
Relative Humidity	: 60 %

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
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/170818C
Date of Issue:	2017-08-21
Date Received:	2017-08-18
Date Tested:	2017-08-18
Date Completed:	2017-08-21
Next Due Date:	2018-08-20

ATTN: Mr. W.K. Tang

Page: 1 of 1

Certificate of Calibration

Item for calibration:

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

Test conditions:

Room Temperature	: 22 degree Celsius
Relative Humidity	: 61 %

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

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



PATRICK TSE
Laboratory Manager

TEST REPORT

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

Test Report No.:	29683
Date of Issue:	2018-08-20
Date Received:	2018-08-17
Date Tested:	2018-08-17
Date Completed:	2018-08-20
Next Due Date:	2019-08-19

ATTN: Mr. W.K. Tang

Page: 1 of 1

Item for calibration:

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

Test conditions:

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

Methodology:

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

Results:

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

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

Test Report No.:	29025A
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-06
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16H102985
- EXO conductivity/Temperature Sensor, Ti	599870	16G102307
- EXO Turbidity Sensor, Ti	599101-01	16H102463
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	16J100416

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.:	29025A
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

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

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.00	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.22	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

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

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.01	9.0-11.0	Pass
50 NTU	50.06	45.0-55.0	Pass
100 NTU	100.6	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29672
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-06
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16H102985
- EXO conductivity/Temperature Sensor, Ti	599870	16G102307
- EXO Turbidity Sensor, Ti	599101-01	16H102463
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	16J100416

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.:	29672
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer- E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.002	-0.002	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.00	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.16	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Acceptance Criteria	Comment
8.02	8.06	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.05	9.0-11.0	Pass
50 NTU	50.01	45.0-55.0	Pass
100 NTU	100.9	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29025B
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

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

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.:	29025B
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer- E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.703	-0.003	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.05	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.20	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

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

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.20	9.0-11.0	Pass
50 NTU	50.16	45.0-55.0	Pass
100 NTU	100.4	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29673
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

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

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.:	29673
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

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

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

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.88	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Acceptance Criteria	Comment
8.02	8.06	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.02	9.0-11.0	Pass
50 NTU	50.08	45.0-55.0	Pass
100 NTU	100.0	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29025D
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-20
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16J100944
- EXO conductivity/Temperature Sensor, Ti	599870	16H100178
- EXO Turbidity Sensor, Ti	599101-01	16J101097
- EXO pH Sensor Assembly, Guarded, Ti	599701	17K103109

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.:	29025D
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

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

Reference thermometer- E431 Readings ($^{\circ}\text{C}$)	Instrument Readings ($^{\circ}\text{C}$)	Correction ($^{\circ}\text{C}$)	Comment
20.0	20.004	-0.004	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.03	4.00 \pm 0.10	Pass
pH QC buffer 6.86	6.87	6.86 \pm 0.10	Pass
pH QC buffer 9.18	9.20	9.18 \pm 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

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

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.16	9.0-11.0	Pass
50 NTU	50.43	45.0-55.0	Pass
100 NTU	100.2	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29675
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-20
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16J100944
- EXO conductivity/Temperature Sensor, Ti	599870	16H100178
- EXO Turbidity Sensor, Ti	599101-01	16J101097
- EXO pH Sensor Assembly, Guarded, Ti	599701	17K103109

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.:	29675
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

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

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

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.17	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Acceptance Criteria	Comment
8.02	8.03	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.04	9.0-11.0	Pass
50 NTU	50.13	45.0-55.0	Pass
100 NTU	100.3	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29025G
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-132
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17B102219
- EXO conductivity/Temperature Sensor, Ti	599870	17B100807
- EXO Turbidity Sensor, Ti	599101-01	17B102262
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	16J101314

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.:	29025G
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer- E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.7	20.701	-0.001	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.06	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.22	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

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

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.26	9.0-11.0	Pass
50 NTU	50.34	45.0-55.0	Pass
100 NTU	100.1	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29677
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-132
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17B102219
- EXO conductivity/Temperature Sensor, Ti	599870	17B100807
- EXO Turbidity Sensor, Ti	599101-01	17B102262
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	16J101314

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.:	29677
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

Reference thermometer- E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.001	-0.001	N/A

pH performance checking

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

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Acceptance Criteria	Comment
8.02	8.06	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.09	9.0-11.0	Pass
50 NTU	50.05	45.0-55.0	Pass
100 NTU	100.0	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29025H
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-164
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17K101623
- EXO conductivity/Temperature Sensor, Ti	599870	17H103446
- EXO Turbidity Sensor, Ti	599101-01	17K100331
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	17K103099

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.:	29025H
Date of Issue:	2018-05-25
Date Received:	2018-05-25
Date Tested:	2018-05-25
Date Completed:	2018-05-25
Next Due Date:	2018-08-24
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

Reference thermometer- E431 Readings ($^{\circ}\text{C}$)	Instrument Readings ($^{\circ}\text{C}$)	Correction ($^{\circ}\text{C}$)	Comment
20.7	20.703	-0.003	N/A

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.02	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.20	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	$<0.1\text{mg/L}$	Pass

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

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.33	9.0-11.0	Pass
50 NTU	50.36	45.0-55.0	Pass
100 NTU	100.2	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Acceptance Criteria	Comment
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.:	29678
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

ATTN: Miss Mei Ling Tang

Page: 1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-164
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17K101623
- EXO conductivity/Temperature Sensor, Ti	599870	17H103446
- EXO Turbidity Sensor, Ti	599101-01	17K100331
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	17K103099

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.:	29678
Date of Issue:	2018-08-25
Date Received:	2018-08-25
Date Tested:	2018-08-25
Date Completed:	2018-08-25
Next Due Date:	2018-11-24

Page: 2 of 2

Certificate of Calibration

Results:

Conductivity performance checking

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

Temperature performance checking

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

pH performance checking

	Instrument Readings (pH unit)	Acceptance Criteria	Comment
pH QC buffer 4.00	4.03	4.00 \pm 0.10	Pass
pH QC buffer 6.86	6.89	6.86 \pm 0.10	Pass
pH QC buffer 9.18	9.22	9.18 \pm 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Acceptance Criteria	Comment
Zero DO solution	0.05	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Acceptance Criteria	Comment
8.02	8.06	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Acceptance Criteria	Comment
10 NTU	10.04	9.0-11.0	Pass
50 NTU	50.01	45.0-55.0	Pass
100 NTU	100.2	90.0-110.0	Pass

Depth performance checking

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

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

CALIBRATION CERTIFICATE

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

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

*References are traceable to NIST or equivalent.

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

Authorized by: _____



(Wong, Keefe Solomon)

Date: 11 April 2018



The Safety Company

MSA Corporate Center • 1000 Cranberry Woods Drive • Cranberry Township, PA 16066

www.msasafety.com

Telephone: (800) MSA-2222

ALTAIR5X CERTIFICATE OF CALIBRATION

Serial Number: 137333

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



Factory Calibration Date: 06/18/18

Set Points

	METHANE 0-100.00 %LEL	O2 0-30.00 %VOL	CO 0-2000.00 PPM	H2S 0-200.00 PPM	NH3 0-100.00 PPM	
↓ (Low)	10.00 %LEL	19.50 %VOL	25.00 PPM	10.00 PPM	25.00 PPM	
↑ (High)	20.00 %LEL	23.00 %VOL	100.00 PPM	15.00 PPM	50.00 PPM	
STEL			100.00 PPM	15.00 PPM	35.00 PPM	
TWA			25.00 PPM	10.00 PPM	25.00 PPM	
Calibrated Value	Methane 1.452 %VOL	O2 15.07 %VOL	CO 60.41 PPM	H2S 19.29 PPM	NH3 25 PPM	
Cylinder Lot #	122- 401120204-1	122- 401120204-1	122- 401120204-1	122- 401120204-1	216662	

Calibration Certification

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

Conformance Statement

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

Process Certified By:

Calibrated By: S.Key

JIM HOFFMAN
QUALITY ENGINEER

APPENDIX C
WEATHER INFORMATION

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

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 August 2018	27.9 – 32.4	78	2.7
2 August 2018	26.6 – 32.9	78	6.1
3 August 2018	29.1 – 31.8	77	Trace
4 August 2018	27.3 – 32.5	79	5.0
5 August 2018	28.9 – 33.1	77	0.5
6 August 2018	28.8 – 33.8	76	0.0
7 August 2018	28.4 – 34.2	78	0.0
8 August 2018	27.1 – 33.9	75	0.5
9 August 2018	29.2 – 33.6	74	Trace
10 August 2018	26.0 – 29.5	92	47.9
11 August 2018	25.8 – 28.2	93	51.9
12 August 2018	25.8 – 28.1	93	18.9
13 August 2018	27.3 – 32.6	84	0.1
14 August 2018	26.4 – 30.9	90	32.9
15 August 2018	25.0 – 28.3	86	2.2
16 August 2018	26.7 – 29.0	89	3.2
17 August 2018	25.5 – 28.3	91	36.1
18 August 2018	25.9 – 30.9	84	21.8
19 August 2018	26.4 – 30.4	84	31.2

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

I. General Information

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
20 August 2018	26.1 – 30.5	88	61.1
21 August 2018	26.7 – 30.2	86	25.7
22 August 2018	24.7 – 31.8	83	26.4
23 August 2018	24.6 – 30.9	86	24.9
24 August 2018	25.6 – 31.9	82	0.1
25 August 2018	27.8 – 32.9	73	0.0
26 August 2018	25.5 – 31.4	77	80.2
27 August 2018	25.2 – 29.9	87	27.3
28 August 2018	25.2 – 29.2	93	71.6
29 August 2018	26.1 – 29.3	89	23.3
30 August 2018	26.9 – 28.9	87	6.3
31 August 2018	27.0 – 29.0	88	7.2

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

** Trace means rainfall less than 0.05 mm

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

II. Mean Wind Speed and Wind Direction

Date	Time	Wind Speed m/s	Direction
1-Aug-2018	00:00	1.9	N
1-Aug-2018	01:00	1.9	NNE
1-Aug-2018	02:00	1.7	N
1-Aug-2018	03:00	1.7	ENE
1-Aug-2018	04:00	1.4	N
1-Aug-2018	05:00	1.3	NE
1-Aug-2018	06:00	1.4	NE
1-Aug-2018	07:00	1.5	ENE
1-Aug-2018	08:00	1.6	NE
1-Aug-2018	09:00	2	NNE
1-Aug-2018	10:00	1.8	NE
1-Aug-2018	11:00	2.1	NNE
1-Aug-2018	12:00	2.1	NNE
1-Aug-2018	13:00	2.1	NNE
1-Aug-2018	14:00	2.1	ENE
1-Aug-2018	15:00	2	N
1-Aug-2018	16:00	1.9	N
1-Aug-2018	17:00	1.8	NE
1-Aug-2018	18:00	1.7	ENE
1-Aug-2018	19:00	1.5	WSW
1-Aug-2018	20:00	1.7	N
1-Aug-2018	21:00	1.6	W
1-Aug-2018	22:00	1.7	WNW
1-Aug-2018	23:00	1.8	WNW
2-Aug-2018	00:00	1.9	NW
2-Aug-2018	01:00	1.8	W
2-Aug-2018	02:00	1.9	N
2-Aug-2018	03:00	1.7	W
2-Aug-2018	04:00	1.3	W
2-Aug-2018	05:00	1.3	WSW
2-Aug-2018	06:00	1	W
2-Aug-2018	07:00	1.1	WSW
2-Aug-2018	08:00	1.1	WNW
2-Aug-2018	09:00	1.4	WNW
2-Aug-2018	10:00	1.9	WNW
2-Aug-2018	11:00	2.3	WNW
2-Aug-2018	12:00	2.1	WNW

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

II. Mean Wind Speed and Wind Direction

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

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

II. Mean Wind Speed and Wind Direction

4-Aug-2018	03:00	2.2	N
4-Aug-2018	04:00	1.6	E
4-Aug-2018	05:00	1.9	NNE
4-Aug-2018	06:00	1.8	NE
4-Aug-2018	07:00	1.7	SW
4-Aug-2018	08:00	1.9	ESE
4-Aug-2018	09:00	2.1	ENE
4-Aug-2018	10:00	2.1	ESE
4-Aug-2018	11:00	2.3	ENE
4-Aug-2018	12:00	2.3	NNE
4-Aug-2018	13:00	2.4	NE
4-Aug-2018	14:00	2.2	ENE
4-Aug-2018	15:00	2.4	NE
4-Aug-2018	16:00	2.2	ENE
4-Aug-2018	17:00	1.7	NE
4-Aug-2018	18:00	1.8	E
4-Aug-2018	19:00	1.4	ESE
4-Aug-2018	20:00	1.4	WSW
4-Aug-2018	21:00	1.6	WSW
4-Aug-2018	22:00	1.9	SW
4-Aug-2018	23:00	1.5	ENE
5-Aug-2018	00:00	1.7	SW
5-Aug-2018	01:00	1.7	ESE
5-Aug-2018	02:00	2	ESE
5-Aug-2018	03:00	1.8	SE
5-Aug-2018	04:00	1.8	SE
5-Aug-2018	05:00	1.7	SE
5-Aug-2018	06:00	1.9	NNE
5-Aug-2018	07:00	1.7	WSW
5-Aug-2018	08:00	1.6	E
5-Aug-2018	09:00	2	SW
5-Aug-2018	10:00	2.2	E
5-Aug-2018	11:00	1.8	ESE
5-Aug-2018	12:00	2.2	NE
5-Aug-2018	13:00	2.2	N
5-Aug-2018	14:00	2.4	SW
5-Aug-2018	15:00	2.5	W
5-Aug-2018	16:00	2.1	ENE

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

II. Mean Wind Speed and Wind Direction

5-Aug-2018	17:00	2	NE
5-Aug-2018	18:00	2.2	WNW
5-Aug-2018	19:00	1.6	NE
5-Aug-2018	20:00	1.8	N
5-Aug-2018	21:00	2	N
5-Aug-2018	22:00	1.8	WNW
5-Aug-2018	23:00	1.8	NE
6-Aug-2018	00:00	2	NE
6-Aug-2018	01:00	2.3	N
6-Aug-2018	02:00	2.1	NNE
6-Aug-2018	03:00	2.1	N
6-Aug-2018	04:00	2.1	SE
6-Aug-2018	05:00	1.7	SE
6-Aug-2018	06:00	1.7	SE
6-Aug-2018	07:00	1.6	ENE
6-Aug-2018	08:00	1.7	ENE
6-Aug-2018	09:00	2	NE
6-Aug-2018	10:00	2.2	ESE
6-Aug-2018	11:00	2.7	NE
6-Aug-2018	12:00	2.5	SW
6-Aug-2018	13:00	2.8	WNW
6-Aug-2018	14:00	2.3	NE
6-Aug-2018	15:00	2.2	NNE
6-Aug-2018	16:00	2.3	E
6-Aug-2018	17:00	2.1	ESE
6-Aug-2018	18:00	2	ESE
6-Aug-2018	19:00	2.1	SSE
6-Aug-2018	20:00	2	NE
6-Aug-2018	21:00	1.7	ENE
6-Aug-2018	22:00	1.7	NNE
6-Aug-2018	23:00	1.6	NE
7-Aug-2018	00:00	1.7	NW
7-Aug-2018	01:00	1.5	E
7-Aug-2018	02:00	1.5	WSW
7-Aug-2018	03:00	1.3	E
7-Aug-2018	04:00	1.3	E
7-Aug-2018	05:00	1.4	NNE
7-Aug-2018	06:00	1.3	NNE

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

II. Mean Wind Speed and Wind Direction

7-Aug-2018	07:00	1.2	NNE
7-Aug-2018	08:00	1.5	NNE
7-Aug-2018	09:00	1.9	NE
7-Aug-2018	10:00	2.1	SE
7-Aug-2018	11:00	2.2	ESE
7-Aug-2018	12:00	2.4	SE
7-Aug-2018	13:00	2.5	SSE
7-Aug-2018	14:00	2.4	SSE
7-Aug-2018	15:00	2.4	E
7-Aug-2018	16:00	2.3	ESE
7-Aug-2018	17:00	2.3	ENE
7-Aug-2018	18:00	1.9	SSE
7-Aug-2018	19:00	1.6	ESE
7-Aug-2018	20:00	1.4	ESE
7-Aug-2018	21:00	1.5	S
7-Aug-2018	22:00	1.4	ESE
7-Aug-2018	23:00	1.4	SE
8-Aug-2018	00:00	1.1	W
8-Aug-2018	01:00	1.2	N
8-Aug-2018	02:00	1.1	ENE
8-Aug-2018	03:00	1	W
8-Aug-2018	04:00	1.2	WSW
8-Aug-2018	05:00	1.3	ESE
8-Aug-2018	06:00	1.4	NNE
8-Aug-2018	07:00	1.3	ENE
8-Aug-2018	08:00	1.4	ENE
8-Aug-2018	09:00	1.6	NE
8-Aug-2018	10:00	1.8	ENE
8-Aug-2018	11:00	1.9	ENE
8-Aug-2018	12:00	2	ENE
8-Aug-2018	13:00	2.2	N
8-Aug-2018	14:00	2.4	W
8-Aug-2018	15:00	2.4	E
8-Aug-2018	16:00	2.1	E
8-Aug-2018	17:00	1.8	N
8-Aug-2018	18:00	1.6	N
8-Aug-2018	19:00	1.5	E
8-Aug-2018	20:00	1.5	E

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

II. Mean Wind Speed and Wind Direction

8-Aug-2018	21:00	1.8	WNW
8-Aug-2018	22:00	1.5	WNW
8-Aug-2018	23:00	1.3	WNW
9-Aug-2018	00:00	1.4	SSW
9-Aug-2018	01:00	1.4	S
9-Aug-2018	02:00	1.3	NE
9-Aug-2018	03:00	1.3	NNE
9-Aug-2018	04:00	1.3	NE
9-Aug-2018	05:00	1.4	ESE
9-Aug-2018	06:00	1.2	SSE
9-Aug-2018	07:00	1.3	ENE
9-Aug-2018	08:00	1.5	NE
9-Aug-2018	09:00	2	NE
9-Aug-2018	10:00	2.2	NE
9-Aug-2018	11:00	2.3	NE
9-Aug-2018	12:00	2.5	NE
9-Aug-2018	13:00	2.5	NE
9-Aug-2018	14:00	2.1	ENE
9-Aug-2018	15:00	2.3	ENE
9-Aug-2018	16:00	2.4	E
9-Aug-2018	17:00	2.4	NE
9-Aug-2018	18:00	2	W
9-Aug-2018	19:00	1.6	N
9-Aug-2018	20:00	1.4	NW
9-Aug-2018	21:00	1.4	NE
9-Aug-2018	22:00	1.3	ENE
9-Aug-2018	23:00	1.3	E
10-Aug-2018	00:00	1.3	W
10-Aug-2018	01:00	1.2	NNE
10-Aug-2018	02:00	1	N
10-Aug-2018	03:00	1	S
10-Aug-2018	04:00	1	SSE
10-Aug-2018	05:00	1	E
10-Aug-2018	06:00	0.9	ENE
10-Aug-2018	07:00	1	ENE
10-Aug-2018	08:00	1.1	NE
10-Aug-2018	09:00	1.4	E
10-Aug-2018	10:00	1.7	NW

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

II. Mean Wind Speed and Wind Direction

10-Aug-2018	11:00	2	ENE
10-Aug-2018	12:00	2.2	ENE
10-Aug-2018	13:00	2.4	WSW
10-Aug-2018	14:00	2.3	WSW
10-Aug-2018	15:00	2.2	W
10-Aug-2018	16:00	2.2	WSW
10-Aug-2018	17:00	2.3	W
10-Aug-2018	18:00	1.9	W
10-Aug-2018	19:00	1.4	ENE
10-Aug-2018	20:00	1.4	S
10-Aug-2018	21:00	1.2	SSW
10-Aug-2018	22:00	1.4	SSW
10-Aug-2018	23:00	1.1	NE
11-Aug-2018	00:00	1.4	E
11-Aug-2018	01:00	0.9	N
11-Aug-2018	02:00	1	NNE
11-Aug-2018	03:00	0.9	NNE
11-Aug-2018	04:00	0.9	NE
11-Aug-2018	05:00	0.9	NNE
11-Aug-2018	06:00	0.9	ENE
11-Aug-2018	07:00	0.9	NNE
11-Aug-2018	08:00	1.2	ENE
11-Aug-2018	09:00	1.6	NNE
11-Aug-2018	10:00	1.9	NNE
11-Aug-2018	11:00	2	SSE
11-Aug-2018	12:00	2	ENE
11-Aug-2018	13:00	2	ENE
11-Aug-2018	14:00	1.9	NE
11-Aug-2018	15:00	1.9	NE
11-Aug-2018	16:00	1.8	SSW
11-Aug-2018	17:00	1.7	E
11-Aug-2018	18:00	1.6	WNW
11-Aug-2018	19:00	1.4	SE
11-Aug-2018	20:00	1.5	SSW
11-Aug-2018	21:00	1.5	SW
11-Aug-2018	22:00	1.5	SW
11-Aug-2018	23:00	1.3	WNW
12-Aug-2018	00:00	1.3	WNW

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

II. Mean Wind Speed and Wind Direction

12-Aug-2018	01:00	1.2	SSW
12-Aug-2018	02:00	1.2	WSW
12-Aug-2018	03:00	1.2	SW
12-Aug-2018	04:00	1.2	WNW
12-Aug-2018	05:00	1.3	WNW
12-Aug-2018	06:00	1.1	SW
12-Aug-2018	07:00	1.2	WNW
12-Aug-2018	08:00	1.3	W
12-Aug-2018	09:00	1.5	WNW
12-Aug-2018	10:00	1.7	W
12-Aug-2018	11:00	2	W
12-Aug-2018	12:00	2.3	SW
12-Aug-2018	13:00	2.2	N
12-Aug-2018	14:00	2.1	SSW
12-Aug-2018	15:00	2.3	NW
12-Aug-2018	16:00	2	W
12-Aug-2018	17:00	2	W
12-Aug-2018	18:00	1.8	SSW
12-Aug-2018	19:00	1.6	ENE
12-Aug-2018	20:00	1.5	ENE
12-Aug-2018	21:00	1.4	WNW
12-Aug-2018	22:00	1.2	N
12-Aug-2018	23:00	1.2	SSE
13-Aug-2018	00:00	1	SE
13-Aug-2018	01:00	1.1	W
13-Aug-2018	02:00	1.1	SSE
13-Aug-2018	03:00	1	NE
13-Aug-2018	04:00	1.1	ESE
13-Aug-2018	05:00	1.2	ENE
13-Aug-2018	06:00	1.2	E
13-Aug-2018	07:00	1.3	E
13-Aug-2018	08:00	1.3	NE
13-Aug-2018	09:00	1.6	NE
13-Aug-2018	10:00	2	ENE
13-Aug-2018	11:00	2.1	NE
13-Aug-2018	12:00	2.5	NNE
13-Aug-2018	13:00	2.1	NE
13-Aug-2018	14:00	2.1	NNE

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

II. Mean Wind Speed and Wind Direction

13-Aug-2018	15:00	2.2	NNE
13-Aug-2018	16:00	2.1	NNE
13-Aug-2018	17:00	1.9	NE
13-Aug-2018	18:00	1.9	NNE
13-Aug-2018	19:00	1.6	NE
13-Aug-2018	20:00	1.3	NE
13-Aug-2018	21:00	1.1	ESE
13-Aug-2018	22:00	1.1	ENE
13-Aug-2018	23:00	1.2	ENE
14-Aug-2018	00:00	1	ESE
14-Aug-2018	01:00	0.9	ESE
14-Aug-2018	02:00	1	ENE
14-Aug-2018	03:00	1.1	N
14-Aug-2018	04:00	1	NNW
14-Aug-2018	05:00	0.9	N
14-Aug-2018	06:00	0.9	NE
14-Aug-2018	07:00	1.1	N
14-Aug-2018	08:00	1.4	N
14-Aug-2018	09:00	1.8	N
14-Aug-2018	10:00	1.8	NNE
14-Aug-2018	11:00	2.1	NNE
14-Aug-2018	12:00	2.1	NE
14-Aug-2018	13:00	2.2	NNW
14-Aug-2018	14:00	1.8	NNW
14-Aug-2018	15:00	2	N
14-Aug-2018	16:00	1.9	N
14-Aug-2018	17:00	2.1	N
14-Aug-2018	18:00	1.9	N
14-Aug-2018	19:00	1.3	N
14-Aug-2018	20:00	1.3	N
14-Aug-2018	21:00	1.2	N
14-Aug-2018	22:00	1.2	N
14-Aug-2018	23:00	1.2	N
15-Aug-2018	00:00	1.1	N
15-Aug-2018	01:00	1	NNE
15-Aug-2018	02:00	1	NNE
15-Aug-2018	03:00	0.9	N
15-Aug-2018	04:00	1.2	N

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

II. Mean Wind Speed and Wind Direction

15-Aug-2018	05:00	1.2	N
15-Aug-2018	06:00	1.2	N
15-Aug-2018	07:00	1.4	NNE
15-Aug-2018	08:00	1.5	N
15-Aug-2018	09:00	1.7	N
15-Aug-2018	10:00	1.8	N
15-Aug-2018	11:00	2.2	N
15-Aug-2018	12:00	2.2	SSW
15-Aug-2018	13:00	1.8	SSE
15-Aug-2018	14:00	1.6	N
15-Aug-2018	15:00	1.8	SE
15-Aug-2018	16:00	1.9	E
15-Aug-2018	17:00	1.8	E
15-Aug-2018	18:00	1.8	W
15-Aug-2018	19:00	1.3	WNW
15-Aug-2018	20:00	1.3	N
15-Aug-2018	21:00	1.3	WNW
15-Aug-2018	22:00	1.2	E
15-Aug-2018	23:00	1.1	WNW
16-Aug-2018	00:00	1.4	N
16-Aug-2018	01:00	1.3	SW
16-Aug-2018	02:00	1.2	SW
16-Aug-2018	03:00	1.2	SW
16-Aug-2018	04:00	1.2	NW
16-Aug-2018	05:00	1.3	ENE
16-Aug-2018	06:00	1.2	E
16-Aug-2018	07:00	1.5	NE
16-Aug-2018	08:00	1.3	SSW
16-Aug-2018	09:00	1.7	ENE
16-Aug-2018	10:00	1.9	NE
16-Aug-2018	11:00	2.1	S
16-Aug-2018	12:00	2.3	NNE
16-Aug-2018	13:00	2	ENE
16-Aug-2018	14:00	2	ESE
16-Aug-2018	15:00	1.9	SSE
16-Aug-2018	16:00	2	E
16-Aug-2018	17:00	2	E
16-Aug-2018	18:00	1.7	E

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

II. Mean Wind Speed and Wind Direction

16-Aug-2018	19:00	1.7	ENE
16-Aug-2018	20:00	1.4	SSW
16-Aug-2018	21:00	1.7	SSW
16-Aug-2018	22:00	1.3	SSW
16-Aug-2018	23:00	1.3	W
17-Aug-2018	00:00	1.3	SSE
17-Aug-2018	01:00	1.2	SSE
17-Aug-2018	02:00	0.8	SSE
17-Aug-2018	03:00	0.8	SSE
17-Aug-2018	04:00	0.9	N
17-Aug-2018	05:00	0.9	SE
17-Aug-2018	06:00	1.3	SE
17-Aug-2018	07:00	0.9	SE
17-Aug-2018	08:00	1	N
17-Aug-2018	09:00	1.5	S
17-Aug-2018	10:00	1.6	S
17-Aug-2018	11:00	1.8	SE
17-Aug-2018	12:00	2.1	WSW
17-Aug-2018	13:00	2.1	S
17-Aug-2018	14:00	2.1	S
17-Aug-2018	15:00	2.3	SE
17-Aug-2018	16:00	2.4	SSE
17-Aug-2018	17:00	1.9	ENE
17-Aug-2018	18:00	1.8	SW
17-Aug-2018	19:00	1.7	SSW
17-Aug-2018	20:00	1.9	NNE
17-Aug-2018	21:00	1.7	ESE
17-Aug-2018	22:00	1.6	E
17-Aug-2018	23:00	1.5	E
18-Aug-2018	00:00	1.3	NE
18-Aug-2018	01:00	1.6	N
18-Aug-2018	02:00	1.3	N
18-Aug-2018	03:00	1.3	SW
18-Aug-2018	04:00	1.4	SSW
18-Aug-2018	05:00	1.3	NNW
18-Aug-2018	06:00	1.4	N
18-Aug-2018	07:00	1.2	N
18-Aug-2018	08:00	1.3	N

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

II. Mean Wind Speed and Wind Direction

18-Aug-2018	09:00	1.5	N
18-Aug-2018	10:00	1.9	N
18-Aug-2018	11:00	1.8	ENE
18-Aug-2018	12:00	2.1	ENE
18-Aug-2018	13:00	2.2	SSW
18-Aug-2018	14:00	2.5	E
18-Aug-2018	15:00	2.4	E
18-Aug-2018	16:00	2.3	N
18-Aug-2018	17:00	2.1	ENE
18-Aug-2018	18:00	2.1	ENE
18-Aug-2018	19:00	2.1	ENE
18-Aug-2018	20:00	1.9	ENE
18-Aug-2018	21:00	1.9	NE
18-Aug-2018	22:00	1.9	N
18-Aug-2018	23:00	1.7	E
19-Aug-2018	00:00	1.8	NE
19-Aug-2018	01:00	1.8	ENE
19-Aug-2018	02:00	1.8	ENE
19-Aug-2018	03:00	1.8	ESE
19-Aug-2018	04:00	1.8	ESE
19-Aug-2018	05:00	1.9	SSE
19-Aug-2018	06:00	1.6	ESE
19-Aug-2018	07:00	1.5	ESE
19-Aug-2018	08:00	1.7	SE
19-Aug-2018	09:00	2.1	S
19-Aug-2018	10:00	2	S
19-Aug-2018	11:00	2.3	SSE
19-Aug-2018	12:00	2.2	SE
19-Aug-2018	13:00	2.4	SSE
19-Aug-2018	14:00	2.6	SE
19-Aug-2018	15:00	2.7	ENE
19-Aug-2018	16:00	2.4	SSW
19-Aug-2018	17:00	2.5	SSE
19-Aug-2018	18:00	2.2	SSE
19-Aug-2018	19:00	2.1	S
19-Aug-2018	20:00	2	SSE
19-Aug-2018	21:00	1.8	SSW
19-Aug-2018	22:00	2	SSW

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

II. Mean Wind Speed and Wind Direction

19-Aug-2018	23:00	2	S
20-Aug-2018	00:00	1.7	S
20-Aug-2018	01:00	1.8	NE
20-Aug-2018	02:00	1.7	SE
20-Aug-2018	03:00	1.8	SSE
20-Aug-2018	04:00	1.7	SSE
20-Aug-2018	05:00	1.9	SSE
20-Aug-2018	06:00	2	SSE
20-Aug-2018	07:00	1.7	SSE
20-Aug-2018	08:00	1.6	NE
20-Aug-2018	09:00	2.3	SSE
20-Aug-2018	10:00	2.3	SSE
20-Aug-2018	11:00	2.4	SE
20-Aug-2018	12:00	2.3	NNE
20-Aug-2018	13:00	2.6	NE
20-Aug-2018	14:00	2.7	NE
20-Aug-2018	15:00	2.4	W
20-Aug-2018	16:00	2.6	NW
20-Aug-2018	17:00	2.4	WNW
20-Aug-2018	18:00	2	NW
20-Aug-2018	19:00	2	NW
20-Aug-2018	20:00	1.8	NW
20-Aug-2018	21:00	1.7	WNW
20-Aug-2018	22:00	1.7	S
20-Aug-2018	23:00	1.9	NNW
21-Aug-2018	00:00	1.7	N
21-Aug-2018	01:00	1.7	ESE
21-Aug-2018	02:00	2	ESE
21-Aug-2018	03:00	2.1	ESE
21-Aug-2018	04:00	1.8	NNW
21-Aug-2018	05:00	2	E
21-Aug-2018	06:00	1.9	SE
21-Aug-2018	07:00	1.7	WSW
21-Aug-2018	08:00	2	NW
21-Aug-2018	09:00	2.1	WNW
21-Aug-2018	10:00	2.3	WNW
21-Aug-2018	11:00	2.5	ESE
21-Aug-2018	12:00	2.6	ESE

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

II. Mean Wind Speed and Wind Direction

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

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

II. Mean Wind Speed and Wind Direction

23-Aug-2018	03:00	1.4	ENE
23-Aug-2018	04:00	1.1	SSE
23-Aug-2018	05:00	1.1	ESE
23-Aug-2018	06:00	1.1	NE
23-Aug-2018	07:00	1.1	SW
23-Aug-2018	08:00	1.3	NNE
23-Aug-2018	09:00	1.7	ENE
23-Aug-2018	10:00	2	ENE
23-Aug-2018	11:00	2.3	ESE
23-Aug-2018	12:00	2.2	ENE
23-Aug-2018	13:00	2.1	NE
23-Aug-2018	14:00	2	NE
23-Aug-2018	15:00	2.1	E
23-Aug-2018	16:00	2.3	ENE
23-Aug-2018	17:00	2	NE
23-Aug-2018	18:00	1.8	NE
23-Aug-2018	19:00	1.6	ENE
23-Aug-2018	20:00	1.4	SW
23-Aug-2018	21:00	1.3	ESE
23-Aug-2018	22:00	1.4	SSE
23-Aug-2018	23:00	1.4	SE
24-Aug-2018	00:00	1.5	NNE
24-Aug-2018	01:00	1.6	E
24-Aug-2018	02:00	1.5	SW
24-Aug-2018	03:00	1.4	NW
24-Aug-2018	04:00	1.6	NE
24-Aug-2018	05:00	1.7	NNE
24-Aug-2018	06:00	1.5	NNE
24-Aug-2018	07:00	1.4	NNE
24-Aug-2018	08:00	1.7	NE
24-Aug-2018	09:00	1.8	E
24-Aug-2018	10:00	2.2	NE
24-Aug-2018	11:00	2.3	E
24-Aug-2018	12:00	2.2	NE
24-Aug-2018	13:00	2.3	ESE
24-Aug-2018	14:00	2.2	SE
24-Aug-2018	15:00	2.4	S
24-Aug-2018	16:00	2.2	S

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

II. Mean Wind Speed and Wind Direction

24-Aug-2018	17:00	2.1	E
24-Aug-2018	18:00	1.7	WSW
24-Aug-2018	19:00	1.8	SW
24-Aug-2018	20:00	1.6	ESE
24-Aug-2018	21:00	1.7	WSW
24-Aug-2018	22:00	1.7	NE
24-Aug-2018	23:00	1.6	SW
25-Aug-2018	00:00	1.8	SW
25-Aug-2018	01:00	1.8	SW
25-Aug-2018	02:00	1.8	W
25-Aug-2018	03:00	1.4	WSW
25-Aug-2018	04:00	1.6	WSW
25-Aug-2018	05:00	1.5	SSW
25-Aug-2018	06:00	1.5	WNW
25-Aug-2018	07:00	1.4	W
25-Aug-2018	08:00	1.5	NE
25-Aug-2018	09:00	1.7	NE
25-Aug-2018	10:00	1.7	NE
25-Aug-2018	11:00	2.2	SW
25-Aug-2018	12:00	2.4	WNW
25-Aug-2018	13:00	2.1	WNW
25-Aug-2018	14:00	2	WSW
25-Aug-2018	15:00	2	WNW
25-Aug-2018	16:00	2	SW
25-Aug-2018	17:00	1.8	SW
25-Aug-2018	18:00	1.6	SW
25-Aug-2018	19:00	1.4	WNW
25-Aug-2018	20:00	1.2	WNW
25-Aug-2018	21:00	1.1	W
25-Aug-2018	22:00	1.2	W
25-Aug-2018	23:00	1.2	SSW
26-Aug-2018	00:00	1.1	SW
26-Aug-2018	01:00	1	WNW
26-Aug-2018	02:00	0.9	WNW
26-Aug-2018	03:00	1.3	W
26-Aug-2018	04:00	1	W
26-Aug-2018	05:00	0.8	WNW
26-Aug-2018	06:00	0.7	WNW

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

II. Mean Wind Speed and Wind Direction

26-Aug-2018	07:00	1.1	W
26-Aug-2018	08:00	1.3	SSW
26-Aug-2018	09:00	1.6	SW
26-Aug-2018	10:00	1.9	WNW
26-Aug-2018	11:00	2.2	WNW
26-Aug-2018	12:00	2.6	SSW
26-Aug-2018	13:00	2.8	S
26-Aug-2018	14:00	2.3	S
26-Aug-2018	15:00	2.1	S
26-Aug-2018	16:00	2.3	WNW
26-Aug-2018	17:00	2	WNW
26-Aug-2018	18:00	1.7	WNW
26-Aug-2018	19:00	1.5	WSW
26-Aug-2018	20:00	1.1	SW
26-Aug-2018	21:00	1.3	WNW
26-Aug-2018	22:00	1.3	WNW
26-Aug-2018	23:00	1.3	WSW
27-Aug-2018	00:00	1.5	WSW
27-Aug-2018	01:00	1.3	SW
27-Aug-2018	02:00	1.3	WSW
27-Aug-2018	03:00	1.2	SSW
27-Aug-2018	04:00	1.3	WNW
27-Aug-2018	05:00	1.1	WNW
27-Aug-2018	06:00	1.1	WNW
27-Aug-2018	07:00	1.2	W
27-Aug-2018	08:00	1.3	W
27-Aug-2018	09:00	1.7	WSW
27-Aug-2018	10:00	2.1	WSW
27-Aug-2018	11:00	2.1	WSW
27-Aug-2018	12:00	2.2	WSW
27-Aug-2018	13:00	2.2	SW
27-Aug-2018	14:00	2.3	W
27-Aug-2018	15:00	2.3	W
27-Aug-2018	16:00	2.1	W
27-Aug-2018	17:00	2.2	NW
27-Aug-2018	18:00	1.6	W
27-Aug-2018	19:00	1.3	W
27-Aug-2018	20:00	1.3	WNW

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

II. Mean Wind Speed and Wind Direction

27-Aug-2018	21:00	1.6	W
27-Aug-2018	22:00	0.9	WSW
27-Aug-2018	23:00	1.3	WNW
28-Aug-2018	00:00	1.3	WNW
28-Aug-2018	01:00	1.2	WNW
28-Aug-2018	02:00	1.3	WNW
28-Aug-2018	03:00	1.2	WSW
28-Aug-2018	04:00	1.3	S
28-Aug-2018	05:00	1.3	SW
28-Aug-2018	06:00	1.1	SSW
28-Aug-2018	07:00	1.2	W
28-Aug-2018	08:00	1.4	WSW
28-Aug-2018	09:00	1.7	WNW
28-Aug-2018	10:00	3.8	WNW
28-Aug-2018	11:00	3.8	WSW
28-Aug-2018	12:00	3.8	WSW
28-Aug-2018	13:00	3.7	WSW
28-Aug-2018	14:00	3.6	W
28-Aug-2018	15:00	3.6	WSW
28-Aug-2018	16:00	3.4	W
28-Aug-2018	17:00	3.6	WSW
28-Aug-2018	18:00	3.2	WSW
28-Aug-2018	19:00	2.8	NNE
28-Aug-2018	20:00	2.9	WSW
28-Aug-2018	21:00	3.1	WSW
28-Aug-2018	22:00	3	SW
28-Aug-2018	23:00	3.1	SW
29-Aug-2018	00:00	3.2	SW
29-Aug-2018	01:00	3.2	W
29-Aug-2018	02:00	3.4	W
29-Aug-2018	03:00	3.3	WNW
29-Aug-2018	04:00	3.2	NE
29-Aug-2018	05:00	3.3	ESE
29-Aug-2018	06:00	3.3	WSW
29-Aug-2018	07:00	3.1	SSW
29-Aug-2018	08:00	3.4	SW
29-Aug-2018	09:00	3.6	SW
29-Aug-2018	10:00	4	WSW

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

II. Mean Wind Speed and Wind Direction

29-Aug-2018	11:00	4.3	W
29-Aug-2018	12:00	4.2	WNW
29-Aug-2018	13:00	4	NW
29-Aug-2018	14:00	4.1	WNW
29-Aug-2018	15:00	3.9	WNW
29-Aug-2018	16:00	3.9	WNW
29-Aug-2018	17:00	3.7	W
29-Aug-2018	18:00	3.5	W
29-Aug-2018	19:00	3.4	WNW
29-Aug-2018	20:00	3.3	W
29-Aug-2018	21:00	3.3	W
29-Aug-2018	22:00	3.5	SSW
29-Aug-2018	23:00	3.3	WSW
30-Aug-2018	00:00	3.4	SW
30-Aug-2018	01:00	3.5	WSW
30-Aug-2018	02:00	3.3	WNW
30-Aug-2018	03:00	1.4	WSW
30-Aug-2018	04:00	1.7	WNW
30-Aug-2018	05:00	1.6	NW
30-Aug-2018	06:00	1.5	WNW
30-Aug-2018	07:00	1.5	W
30-Aug-2018	08:00	1.7	W
30-Aug-2018	09:00	2	WSW
30-Aug-2018	10:00	2.2	SW
30-Aug-2018	11:00	2.3	WNW
30-Aug-2018	12:00	2.6	WNW
30-Aug-2018	13:00	2.6	WNW
30-Aug-2018	14:00	2.5	SW
30-Aug-2018	15:00	2.4	SW
30-Aug-2018	16:00	2.2	WSW
30-Aug-2018	17:00	2.1	WSW
30-Aug-2018	18:00	1.9	WSW
30-Aug-2018	19:00	1.9	SW
30-Aug-2018	20:00	1.8	WNW
30-Aug-2018	21:00	1.7	WNW
30-Aug-2018	22:00	1.7	WNW
30-Aug-2018	23:00	1.7	W
31-Aug-2018	00:00	1.3	WNW

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

II. Mean Wind Speed and Wind Direction

31-Aug-2018	01:00	1.2	WNW
31-Aug-2018	02:00	1.2	WNW
31-Aug-2018	03:00	1.3	WNW
31-Aug-2018	04:00	1.2	SW
31-Aug-2018	05:00	1.2	WSW
31-Aug-2018	06:00	1.2	NW
31-Aug-2018	07:00	1.2	WNW
31-Aug-2018	08:00	1.1	W
31-Aug-2018	09:00	1.3	WNW
31-Aug-2018	10:00	1.4	WNW
31-Aug-2018	11:00	1.4	WNW
31-Aug-2018	12:00	1.4	WNW
31-Aug-2018	13:00	1.5	WNW
31-Aug-2018	14:00	1.5	WNW
31-Aug-2018	15:00	1.4	SW
31-Aug-2018	16:00	1.3	WSW
31-Aug-2018	17:00	1.4	SW
31-Aug-2018	18:00	1.4	SW
31-Aug-2018	19:00	1.3	WNW
31-Aug-2018	20:00	1.4	WNW
31-Aug-2018	21:00	1.4	SW
31-Aug-2018	22:00	1.4	WSW
31-Aug-2018	23:00	1.3	SW

**APPENDIX D
ENVIRONMENTAL MONITORING
SCHEDULES**

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
			1-Aug	2-Aug	3-Aug	4-Aug	
			24 hr TSP	1 hr TSP X3 [AM1, AM2, AM3, AM4] [AM5(A), AM6(A)] Noise [Daytime (07:00-19:00)] [CM1, CM2, CM4] [CM6(A), CM7(A), CM8(A)] Noise [Evening time (19:00-23:01)] [CM1, CM2, CM3, CM4] Noise [Night-time (23:00-07:01)] [CM1, CM2, CM3, CM4]			
5-Aug	6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug	
Noise [Daytime (07:00-19:00)] [CM1, CM2, CM3, CM4]	24 hr TSP	1 hr TSP X3 [AM1, AM2, AM3, AM4] Noise [Daytime (07:00-19:00)] [CM1, CM2, CM4]	1 hr TSP X3 [AM5(A), AM6(A)] Noise [Daytime (07:00-19:00)] [CM6(A), CM7(A), CM8(A)]	Noise [Daytime (07:00-19:00)] [CM3, CM5]	24 hr TSP Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3, CM4] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3, CM4]		
12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug	
Noise [Daytime (07:00-19:00)] [CM1, CM2, CM3, CM4]	1 hr TSP X3 [AM1, AM2, AM3, AM4] Noise [Daytime (07:00-19:00)] [CM1, CM2, CM4]	1 hr TSP X3 [AM5(A), AM6(A)] Noise [Daytime (07:00-19:00)] [CM6(A), CM7(A), CM8(A)]		24 hr TSP Noise [Daytime (07:00-19:00)] [CM3, CM5]	1 hr TSP X3 [AM1, AM2, AM3, AM4] Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3, CM4] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3, CM4]		
19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug	
Noise [Daytime (07:00-19:00)] [CM1, CM2, CM3, CM4]	1 hr TSP X3 [AM5(A), AM6(A)] Noise [Daytime (07:00-19:00)] [CM6(A), CM7(A), CM8(A)]	Noise [Daytime (07:00-19:00)] [CM3, CM5]	24 hr TSP	1 hr TSP X3 [AM1, AM2, AM3, AM4] Noise [Daytime (07:00-19:00)] [CM1, CM2, CM4]	1 hr TSP X3 [AM5(A), AM6(A)] Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3, CM4] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3, CM4]		
26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug		
Noise [Daytime (07:00-19:00)] [CM1, CM2, CM3, CM4]		24 hr TSP Noise [Daytime (07:00-19:00)] [CM3, CM5]	1 hr TSP X3 [AM1, AM2, AM3, AM4] Noise [Daytime (07:00-19:00)] [CM1, CM2, CM4]	1 hr TSP X3 [AM5(A), AM6(A)] Noise [Daytime (07:00-19:00)] [CM6(A), CM7(A), CM8(A)]	Noise [Evening time (19:00-23:00)] [CM1, CM2, CM3, CM4] Noise [Night-time (23:00-07:00)] [CM1, CM2, CM3, CM4]		

Air Quality Monitoring Station

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

Noise Monitoring Station

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

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Aug	2-Aug	3-Aug	4-Aug
			Mid-Flood 08:27 Mid-Ebb 15:00		Mid-Flood 09:59 Mid-Ebb 16:15	
5-Aug	6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug
	Mid-Flood 14:08 Mid-Ebb 19:27		Mid-Ebb 09:43 Mid-Flood 16:46		Mid-Ebb 11:25 Mid-Flood 18:30	
12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug
	Mid-Flood 07:07 Mid-Ebb 13:50		Mid-Flood 08:48 Mid-Ebb 15:18		Mid-Flood 10:40 Mid-Ebb 16:52	
19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug
	Mid-Ebb 08:37 Mid-Flood 15:49		Mid-Ebb 10:07 Mid-Flood 17:34		Mid-Ebb 11:16 Mid-Flood 18:33	
26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	
	Mid-Ebb 12:56 Mid-Flood 19:44		Mid-Flood 07:41 Mid-Ebb 14:04		Mid-Flood 09:08 Mid-Ebb 15:16	

Monitoring Station:

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Aug	2-Aug	3-Aug	4-Aug
5-Aug	6-Aug	7-Aug	8-Aug	9-Aug	10-Aug	11-Aug
				Mid-Ebb 10:35 Mid-Flood 17:43		
12-Aug	13-Aug	14-Aug	15-Aug	16-Aug	17-Aug	18-Aug
				Mid-Flood 09:40 Mid-Ebb 16:02		
19-Aug	20-Aug	21-Aug	22-Aug	23-Aug	24-Aug	25-Aug
		Mid-Ebb 09:28 Mid-Flood 16:57				
26-Aug	27-Aug	28-Aug	29-Aug	30-Aug	31-Aug	
		Mid-Flood 06:59 Mid-Ebb 13:29				

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 (August 2018)

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

Monitoring Location:
Stream 1, Stream 2, Stream 3

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

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

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

Air Quality Monitoring Station

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

Noise Monitoring Station

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

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Sep
2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep
		Mid-Ebb 07:09 Mid-Flood 14:09		Mid-Ebb 09:24 Mid-Flood 16:45		Mid-Ebb 11:11 Mid-Flood 18:07
9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep
	Mid-Ebb 12:45 Mid-Flood 19:15		Mid-Flood 07:49 Mid-Ebb 14:10		Mid-Flood 09:26 Mid-Ebb 15:32	
16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep
		Mid-Ebb 07:27 Mid-Flood 19:57		Mid-Ebb 09:14 Mid-Flood 17:06		Mid-Ebb 10:42 Mid-Flood 17:56
23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep
	Mid-Ebb 11:54 Mid-Flood 18:35		Mid-Ebb 13:04 Mid-Flood 19:20		Mid-Flood 08:17 Mid-Ebb 14:18	

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

Monitoring Station:

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Sep
2-Sep	3-Sep	4-Sep	5-Sep	6-Sep	7-Sep	8-Sep
			Mid-Ebb 08:21 Mid-Flood 15:46			
9-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep	15-Sep
				Mid-Flood 08:37 Mid-Ebb 14:50		
16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep	22-Sep
					Mid-Ebb 10:00 Mid-Flood 17:31	
23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep	29-Sep
				Mid-Flood 07:33 Mid-Ebb 13:41		
30-Sep						

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

Monitoring Station:
W1

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

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

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

Monitoring Location:

Stream 1, Stream 2, Stream 3

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

Appendix E - 1-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
2-Aug-18	13:00	Sunny	246.2
2-Aug-18	14:00	Sunny	232.0
2-Aug-18	15:00	Sunny	239.4
7-Aug-18	13:00	Sunny	176.3
7-Aug-18	14:00	Sunny	171.8
7-Aug-18	15:00	Sunny	180.7
13-Aug-18	9:00	Sunny	224.6
13-Aug-18	10:00	Sunny	202.0
13-Aug-18	11:00	Sunny	199.7
17-Aug-18	9:00	Cloudy	100.3
17-Aug-18	10:00	Cloudy	95.9
17-Aug-18	11:00	Cloudy	92.4
23-Aug-18	13:00	Cloudy	73.0
23-Aug-18	14:00	Cloudy	78.9
23-Aug-18	15:00	Cloudy	85.9
29-Aug-18	13:00	Cloudy	271.4
29-Aug-18	14:00	Cloudy	256.9
29-Aug-18	15:00	Cloudy	254.3
Average			176.8
Maximum			271.4
Minimum			73.0

Location AM2 - Sai Tso Wan Recreation Ground			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
2-Aug-18	13:10	Sunny	144.3
2-Aug-18	14:10	Sunny	151.4
2-Aug-18	15:10	Sunny	146.2
7-Aug-18	13:00	Sunny	145.2
7-Aug-18	14:00	Sunny	154.8
7-Aug-18	15:00	Sunny	143.5
13-Aug-18	13:30	Sunny	146.6
13-Aug-18	14:30	Sunny	150.0
13-Aug-18	15:30	Sunny	160.1
17-Aug-18	13:00	Cloudy	79.8
17-Aug-18	14:00	Cloudy	79.1
17-Aug-18	15:00	Cloudy	69.1
23-Aug-18	13:30	Fine	72.4
23-Aug-18	14:30	Fine	66.8
23-Aug-18	15:30	Fine	65.1
29-Aug-18	9:00	Cloudy	249.4
29-Aug-18	10:00	Cloudy	244.4
29-Aug-18	11:00	Cloudy	246.3
Average			139.7
Maximum			249.4
Minimum			65.1

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-Aug-18	9:00	Sunny	225.5
2-Aug-18	10:00	Sunny	225.4
2-Aug-18	11:00	Sunny	221.8
7-Aug-18	8:30	Sunny	138.8
7-Aug-18	9:30	Sunny	145.2
7-Aug-18	10:30	Sunny	131.8
13-Aug-18	9:00	Sunny	161.6
13-Aug-18	10:00	Sunny	165.2
13-Aug-18	11:00	Sunny	171.8
17-Aug-18	13:00	Cloudy	123.4
17-Aug-18	14:00	Cloudy	132.3
17-Aug-18	15:00	Cloudy	111.3
23-Aug-18	9:00	Cloudy	75.2
23-Aug-18	10:00	Cloudy	67.5
23-Aug-18	11:00	Cloudy	68.8
29-Aug-18	8:30	Cloudy	247.5
29-Aug-18	9:30	Cloudy	244.2
29-Aug-18	10:30	Cloudy	251.5
		Average	161.6
		Maximum	251.5
		Minimum	67.5

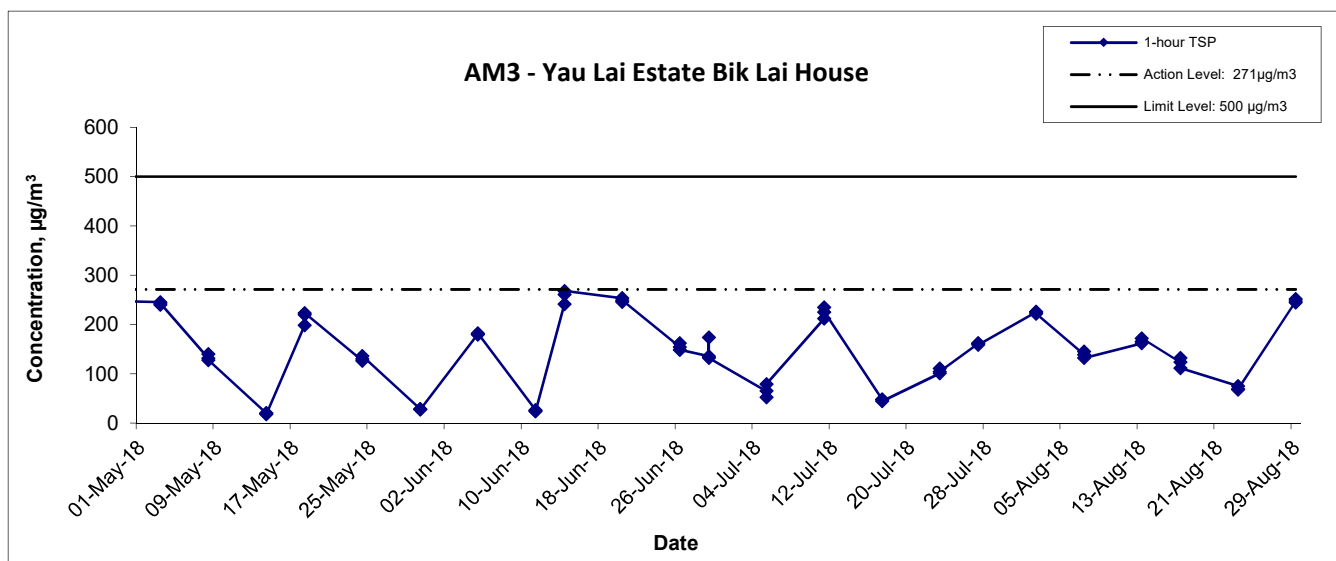
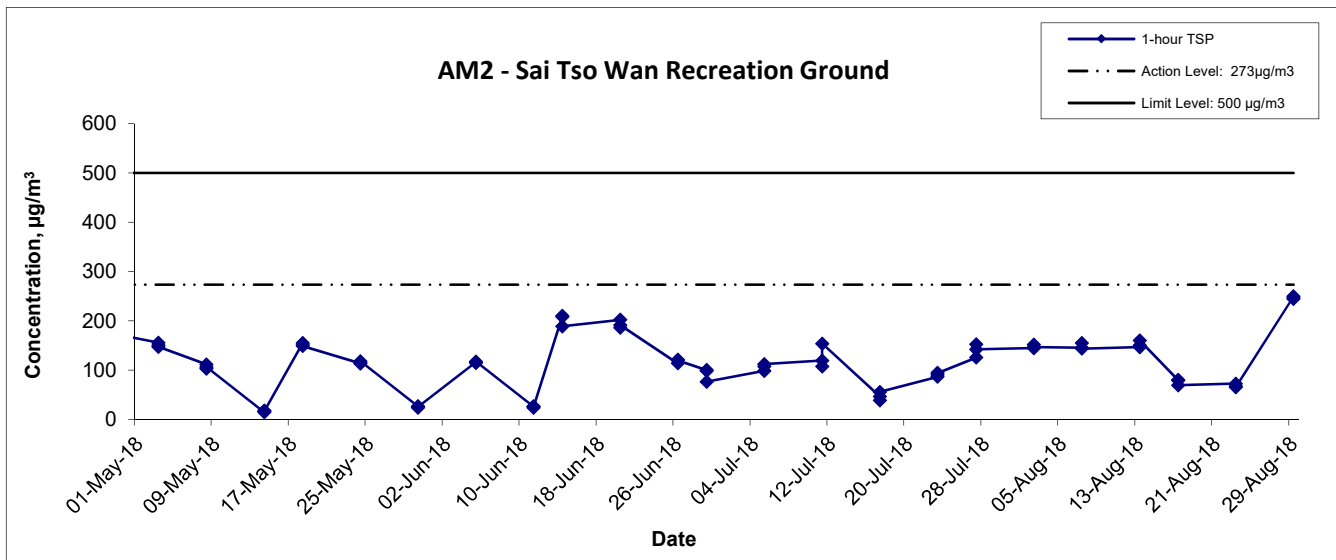
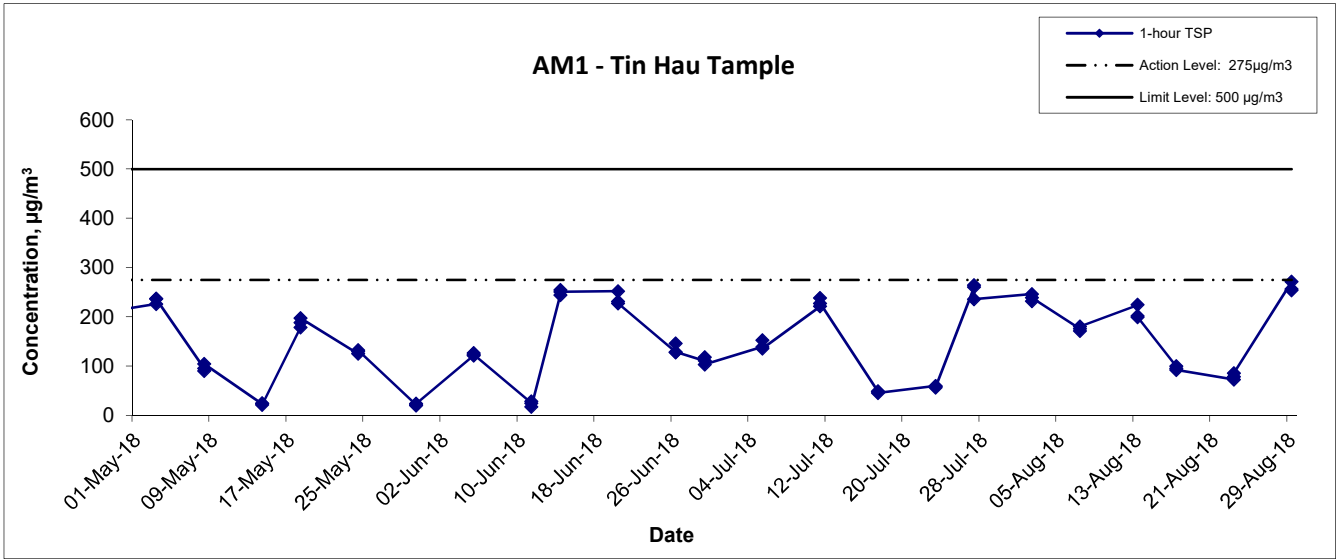
Location AM4 - Sitting-out Area at Cha Kwo Ling Village			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
2-Aug-18	9:00	Sunny	239.5
2-Aug-18	10:00	Sunny	245.9
2-Aug-18	11:00	Sunny	248.5
7-Aug-18	9:00	Sunny	168.7
7-Aug-18	10:00	Sunny	149.3
7-Aug-18	11:00	Sunny	139.9
13-Aug-18	13:00	Sunny	206.3
13-Aug-18	14:00	Sunny	218.8
13-Aug-18	15:00	Sunny	202.4
17-Aug-18	9:00	Cloudy	93.6
17-Aug-18	10:00	Cloudy	98.2
17-Aug-18	11:00	Cloudy	100.7
23-Aug-18	9:00	Cloudy	50.8
23-Aug-18	10:00	Cloudy	51.1
23-Aug-18	11:00	Cloudy	40.0
29-Aug-18	13:40	Cloudy	252.9
29-Aug-18	14:40	Cloudy	265.6
29-Aug-18	15:40	Cloudy	265.1
		Average	168.7
		Maximum	265.6
		Minimum	40.0

Appendix E - 1-hour TSP Monitoring Results

Location AM5(A) - Tseung Kwan O DSD Desilting Compound			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
2-Aug-18	13:00	Sunny	162.1
2-Aug-18	14:00	Sunny	154.7
2-Aug-18	15:00	Sunny	152.1
8-Aug-18	13:00	Cloudy	36.4
8-Aug-18	14:00	Cloudy	36.4
8-Aug-18	15:00	Cloudy	34.1
14-Aug-18	9:00	Rainy	143.8
14-Aug-18	10:00	Rainy	135.3
14-Aug-18	11:00	Rainy	138.7
20-Aug-18	9:00	Cloudy	34.4
20-Aug-18	10:00	Cloudy	34.4
20-Aug-18	11:00	Cloudy	32.1
24-Aug-18	8:50	Cloudy	52.8
24-Aug-18	9:50	Cloudy	51.6
24-Aug-18	10:50	Cloudy	43.6
30-Aug-18	9:00	Cloudy	48.2
30-Aug-18	10:00	Cloudy	48.2
30-Aug-18	11:00	Cloudy	45.9
		Average	76.9
		Maximum	162.1
		Minimum	32.1

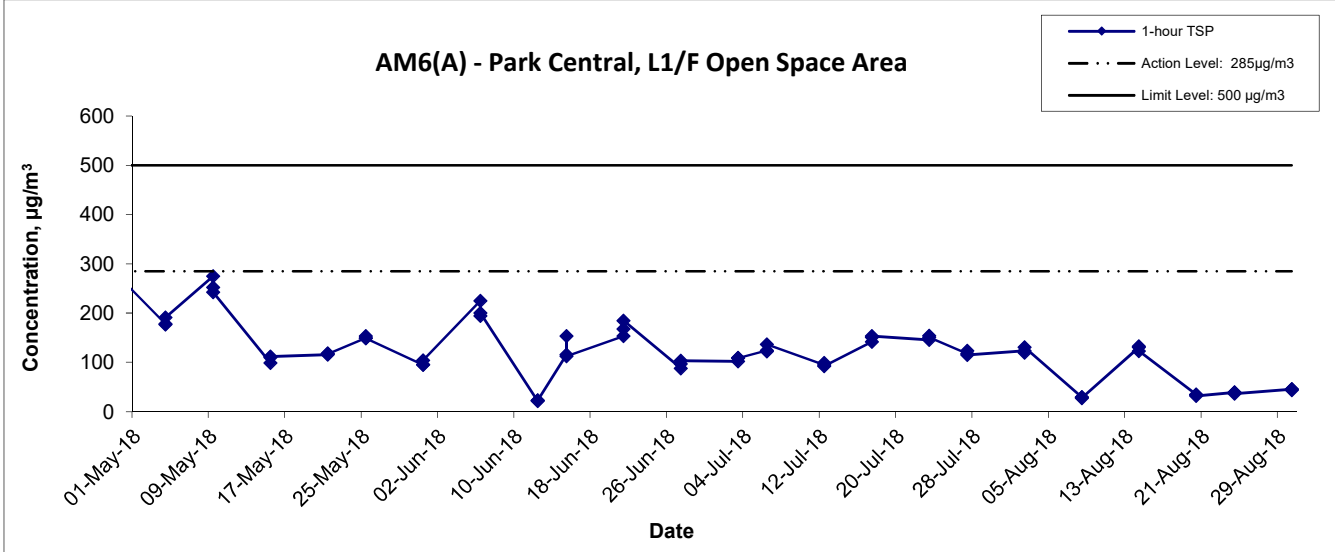
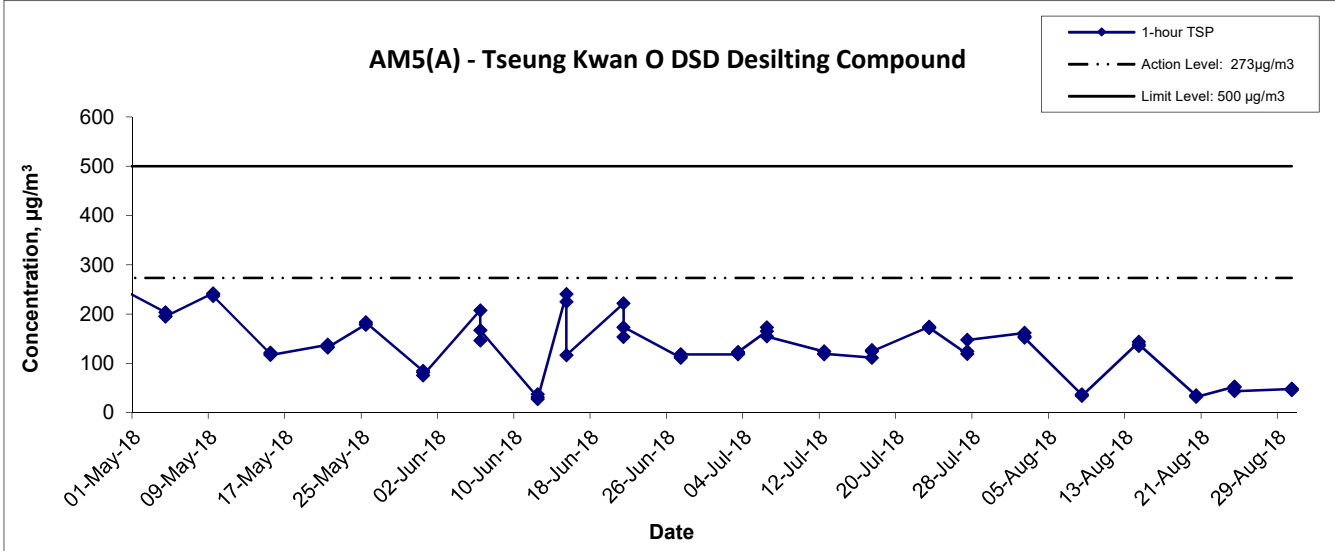
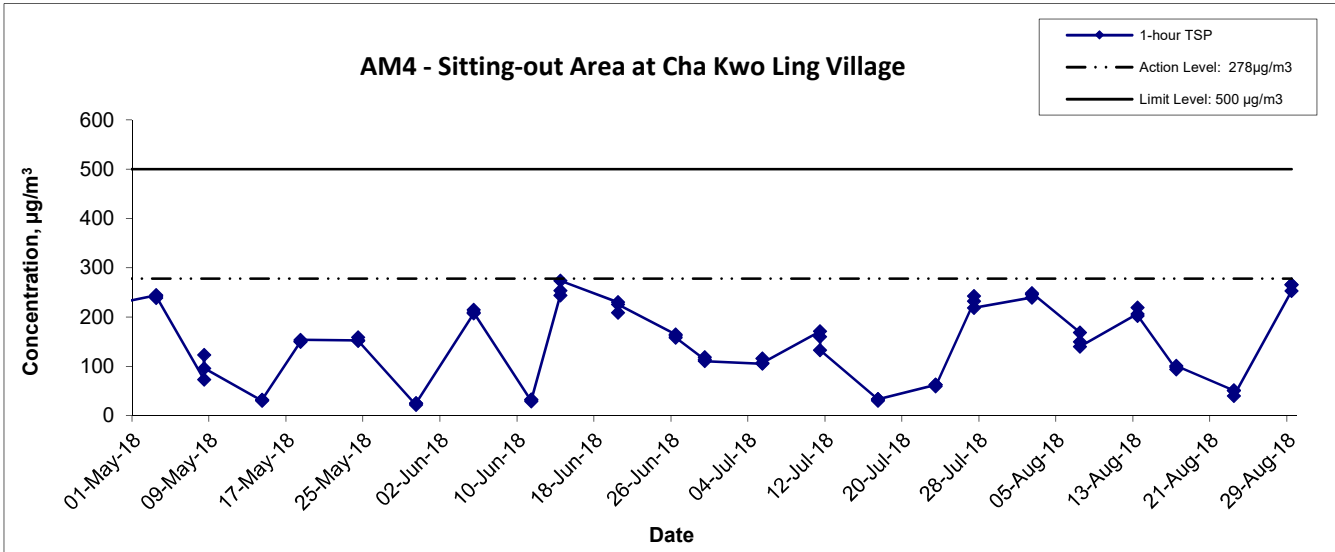
Location AM6(A) - Park Central, L1/F Open Space Area			
Date	Time	Weather	Particulate Concentration ($\mu\text{g}/\text{m}^3$)
2-Aug-18	9:00	Sunny	123.8
2-Aug-18	10:00	Sunny	119.8
2-Aug-18	11:00	Sunny	130.8
8-Aug-18	9:00	Cloudy	29.6
8-Aug-18	10:00	Cloudy	29.6
8-Aug-18	11:00	Cloudy	27.3
14-Aug-18	13:00	Cloudy	131.0
14-Aug-18	14:00	Cloudy	133.0
14-Aug-18	15:00	Cloudy	122.9
20-Aug-18	13:00	Cloudy	34.4
20-Aug-18	14:00	Cloudy	34.4
20-Aug-18	15:00	Cloudy	32.1
24-Aug-18	13:30	Cloudy	39.0
24-Aug-18	14:30	Cloudy	39.0
24-Aug-18	15:30	Cloudy	36.7
30-Aug-18	13:00	Cloudy	45.9
30-Aug-18	14:00	Cloudy	45.9
30-Aug-18	15:00	Cloudy	43.6
		Average	66.6
		Maximum	133.0
		Minimum	27.3

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	
		Aug 18	E	

1-hr TSP Concentration Levels



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

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

Appendix F - 24-hour TSP Monitoring Results

Location AM1 - Tin Hau Temple

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
1-Aug-18	Sunny	304.0	756.7	3.6507	3.9139	0.2632	3986.8	4010.8	24.0	1.21	1.21	1.21	1736.3	151.6
6-Aug-18	Sunny	303.8	757.0	3.6210	3.7809	0.1599	4010.8	4034.8	24.0	1.21	1.21	1.21	1737.3	92.0
10-Aug-18	Sunny	300.5	754.1	3.3057	3.4151	0.1094	4058.4	4082.4	24.0	1.21	1.21	1.21	1744.0	62.7
16-Aug-18	Cloudy	300.5	752.5	2.8631	2.9603	0.0972	4082.4	4106.4	24.0	1.21	1.21	1.21	1742.0	55.8
22-Aug-18	Cloudy	301.7	753.2	3.0061	3.1276	0.1215	4106.4	4130.4	24.0	1.21	1.21	1.21	1739.1	69.9
28-Aug-18	Windy	300.9	754.0	3.2760	3.3598	0.0838	4130.4	4154.4	24.0	1.23	1.23	1.23	1769.2	47.4
													Min	47.4
													Max	151.6
													Average	79.9

Location AM2 - Sai Tso Wan Recreation Ground

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
1-Aug-18	Sunny	303.5	756.1	3.6135	3.6851	0.0716	24959.1	24983.1	24.0	1.22	1.22	1.22	1750.5	40.9
6-Aug-18	Sunny	303.6	757.2	2.8706	2.9536	0.0830	24983.1	25007.1	24.0	1.22	1.22	1.22	1751.5	47.4
10-Aug-18	Sunny	300.9	754.0	3.6418	3.6919	0.0501	25007.1	25031.1	24.0	1.22	1.22	1.22	1755.7	28.5
16-Aug-18	Cloudy	300.2	752.6	2.8769	2.9435	0.0666	25031.1	25055.1	24.0	1.22	1.22	1.22	1756.1	37.9
22-Aug-18	Cloudy	302.0	753.9	2.9900	3.0490	0.0590	25055.1	25079.1	24.0	1.22	1.22	1.22	1752.3	33.7
28-Aug-18	Windy	300.8	753.7	3.6427	3.6963	0.0536	25079.1	25103.1	24.0	1.21	1.21	1.21	1742.5	30.8
													Min	28.5
													Max	47.4
													Average	36.5

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
1-Aug-18	Sunny	303.8	756.4	3.2555	3.3238	0.0683	13382.7	13406.7	24.0	1.21	1.21	1.21	1735.7	39.3
6-Aug-18	Sunny	303.3	756.5	3.6176	3.6893	0.0717	13406.7	13430.7	24.0	1.21	1.21	1.21	1737.3	41.3
10-Aug-18	Sunny	300.3	754.7	3.6318	3.6880	0.0562	13430.7	13454.7	24.0	1.21	1.21	1.21	1744.1	32.2
16-Aug-18	Cloudy	300.4	751.9	2.8371	2.8929	0.0558	13454.7	13478.7	24.0	1.21	1.21	1.21	1740.4	32.1
22-Aug-18	Cloudy	301.3	753.5	2.9922	3.0459	0.0537	13478.7	13502.7	24.0	1.21	1.21	1.21	1739.7	30.9
28-Aug-18	Windy	301.2	754.1	3.6297	3.6707	0.0410	13502.7	13526.7	24.0	1.21	1.21	1.21	1748.7	23.4
													Min	23.4
													Max	41.3
													Average	33.2

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
1-Aug-18	Sunny	303.6	756.5	3.6274	3.7946	0.1672	10369.2	10393.2	24.0	1.21	1.21	1.21	1737.8	96.2
6-Aug-18	Sunny	303.8	756.7	2.8650	3.1190	0.2540	10393.2	10417.2	24.0	1.21	1.21	1.21	1737.4	146.2
10-Aug-18	Sunny	300.2	754.4	3.3305	3.4696	0.1391	10417.2	10441.2	24.0	1.21	1.21	1.21	1745.6	79.7
16-Aug-18	Cloudy	300.1	752.8	2.8942	3.0245	0.1303	10441.2	10465.2	24.0	1.21	1.21	1.21	1744.0	74.7
22-Aug-18	Cloudy	301.6	753.3	3.1944	3.3911	0.1967	10465.2	10489.2	24.0	1.21	1.21	1.21	1740.0	113.0
28-Aug-18	Windy	301.7	754.4	3.2853	3.4351	0.1498	10489.2	10513.2	24.0	1.22	1.22	1.22	1750.8	85.6
													Min	74.7
													Max	146.2
													Average	99.2

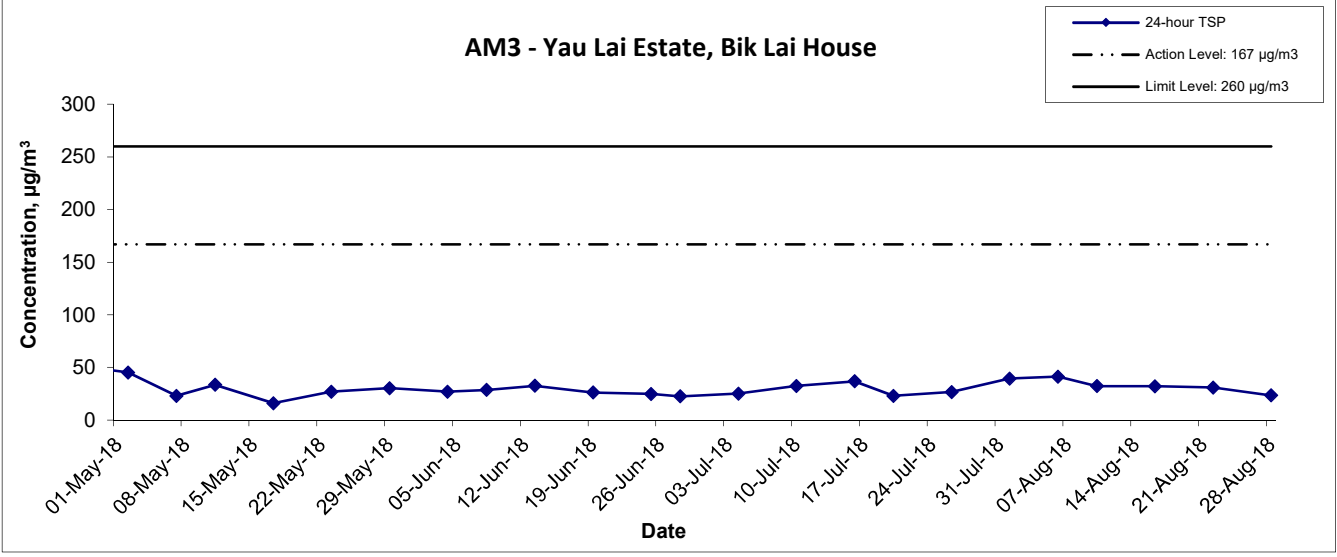
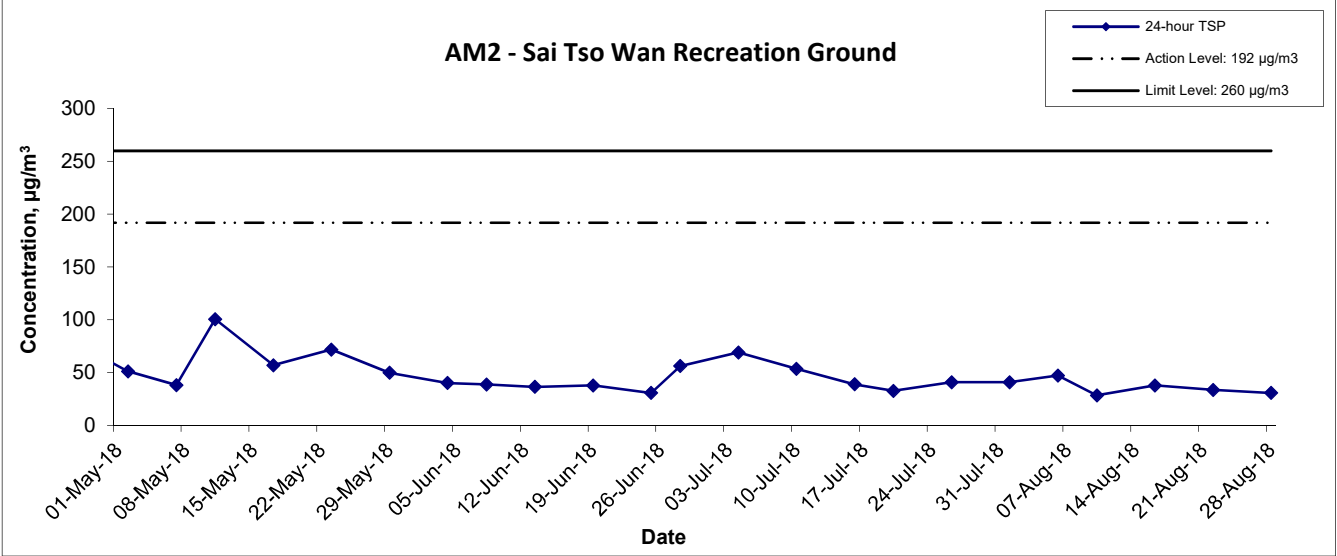
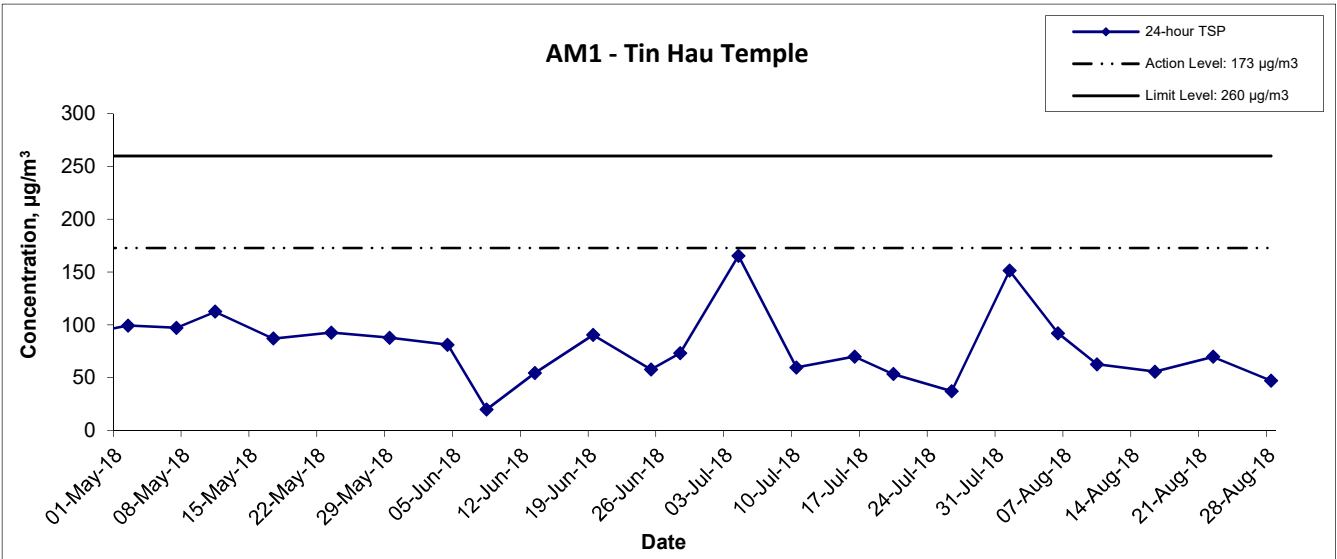
Location AM5(A) - Tseung Kwan O DSD Desilting Compound

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
1-Aug-18	Sunny	303.5	756.2	3.6357	3.6735	0.0378	26704.3	26728.3	24.0	1.20	1.20	1.20	1734.3	21.8
6-Aug-18	Sunny	303.3	756.7	3.6308	3.6766	0.0458	26728.3	26752.3	24.0	1.21	1.20	1.21	1735.5	26.4
10-Aug-18	Sunny	300.4	753.4	2.8902	2.9164	0.0262	26752.3	26776.3	24.0	1.21	1.21	1.21	1740.2	15.1
16-Aug-18	Cloudy	300.1	752.2	2.9365	2.9711	0.0346	26776.3	26800.3	24.0	1.21	1.21	1.21	1739.7	19.9
22-Aug-18	Cloudy	301.1	753.0	3.6130	3.6451	0.0321	26800.3	26824.3	24.0	1.21	1.21	1.21	1737.6	18.5
28-Aug-18	Windy	299.3	753.7	3.6497	3.6845	0.0348	26824.3	26848.3	24.0	1.23	1.23	1.23	1776.4	19.6
													Min	15.1
													Max	26.4
													Average	20.2

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

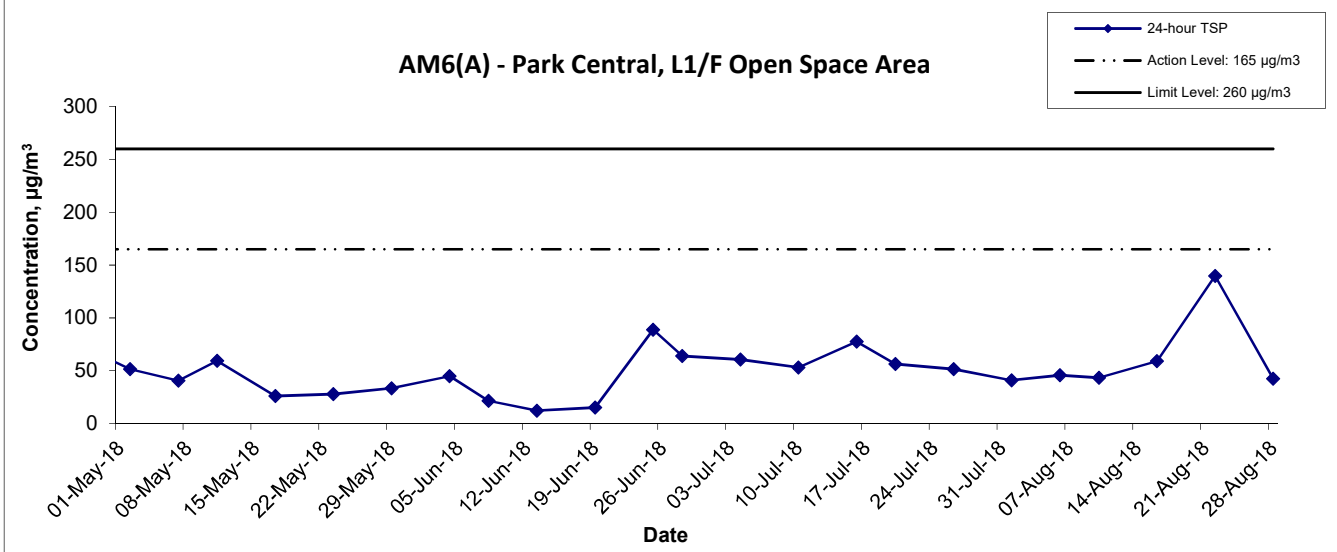
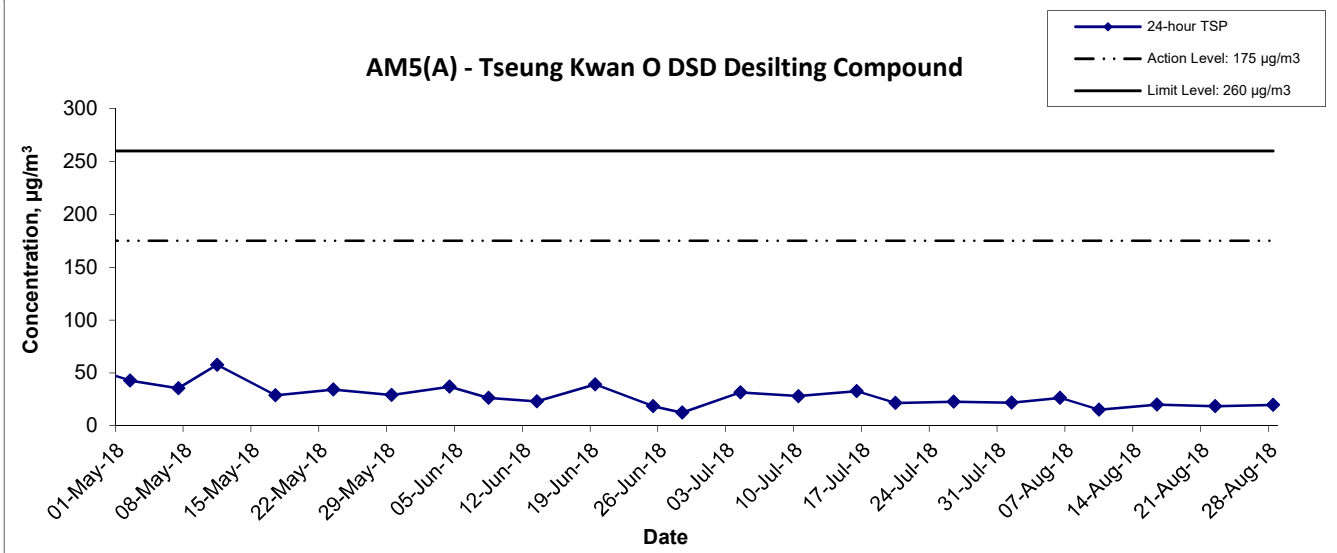
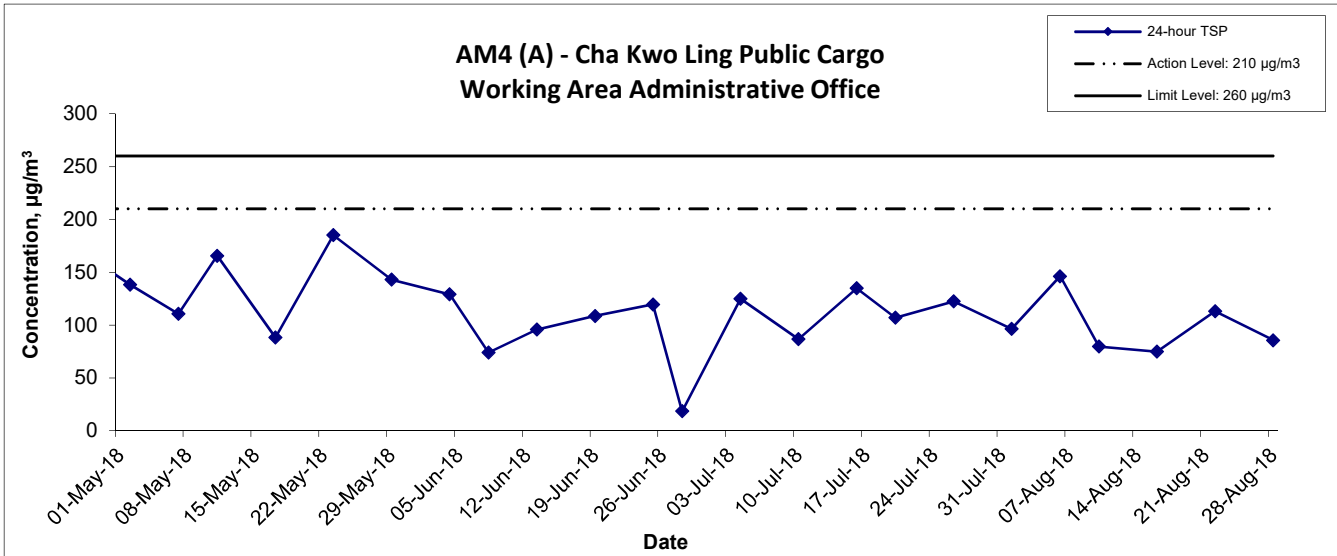
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate Weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final			
1-Aug-18	Sunny	303.7	756.6	3.6424	3.7134	0.0710	17171.8	17195.8	24.0	1.21	1.21	1.21	1739.8	40.8
6-Aug-18	Sunny	306.2	756.2	2.9543	3.0334	0.0791	17195.8	17219.8	24.0	1.20	1.20	1.20	1732.1	45.7
10-Aug-18	Sunny	300.1	753.7	2.9617	3.0376	0.0759	17219.8	17243.8	24.0	1.21	1.21	1.21	1746.9	43.4
16-Aug-18	Cloudy	300.4	753.3	3.6241	3.7275	0.1034	17243.8	17267.8	24.0	1.21	1.21	1.21	1745.6	59.2
22-Aug-18	Cloudy	301.3	753.5	3.6069	3.8503	0.2434	17267.8	17291.8	24.0	1.21	1.21	1.21	1743.2	139.6
28-Aug-18	Cloudy	299.7	754.1	3.6341	3.7083	0.0742	17291.8	17315.8	24.0	1.21	1.21	1.21	1748.6	42.4
													Min	40.8
													Max	139.6
													Average	61.9

24-hr TSP Concentration Levels



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24-hr TSP Concentration Levels



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

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

Appendix G - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)

Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
2-Aug-18	10:00	Sunny	67.0	69.6	62.7	65.5	61.7
7-Aug-18	15:40	Sunny	73.4	75.3	71.0		72.6
13-Aug-18	11:00	Sunny	64.5	66.2	60.6		64.5 Measured ≤ Baseline
23-Aug-18	11:10	Cloudy	73.6	76.2	70.3		72.9
29-Aug-18	10:30	Cloudy	74.8	78.1	72.6		74.3

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
2-Aug-18	9:00	Sunny	73.2	76.3	70.2	63.6	72.7
7-Aug-18	14:30	Sunny	74.4	76.7	73.8		74.0
13-Aug-18	10:00	Sunny	63.5	65.7	60.0		63.5 Measured ≤ Baseline
23-Aug-18	9:50	Cloudy	72.1	73.8	69.8		71.4
29-Aug-18	9:15	Cloudy	74.5	77.2	71.3		74.1

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
9-Aug-18	10:10	Sunny	72.4	74.1	70.3	65.6	71.4
16-Aug-18	13:10	Cloudy	72.4	75.4	70.4		71.4
21-Aug-18	11:30	Cloudy	73.6	75.7	70.5		72.9
28-Aug-18	8:55	Cloudy	73.8	75.9	71.0		73.1

Location CM4 - Tin Hau Temple, Cha Kwo Ling							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
2-Aug-18	13:00	Sunny	62.0	64.6	58.3	62.0	62.0 Measured ≤ Baseline
7-Aug-18	13:30	Sunny	60.1	62.1	54.3		60.1 Measured ≤ Baseline
13-Aug-18	9:00	Sunny	64.8	67.2	60.3		61.6
23-Aug-18	13:30	Cloudy	63.4	65.7	57.3		57.8
29-Aug-18	14:30	Cloudy	66.9	68.8	61.3		65.2

Location CM5 - CCC Kei Faat Primary School, Yau Tong							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
9-Aug-18	11:10	Sunny	69.2	71.3	65.9	68.2	62.3
16-Aug-18	14:00	Cloudy	68.5	70.4	66.2		56.7
21-Aug-18	10:50	Cloudy	69.7	71.9	66.3		64.4
28-Aug-18	9:30	Cloudy	70.2	72.6	66.6		65.9

Appendix G - Noise Monitoring Results

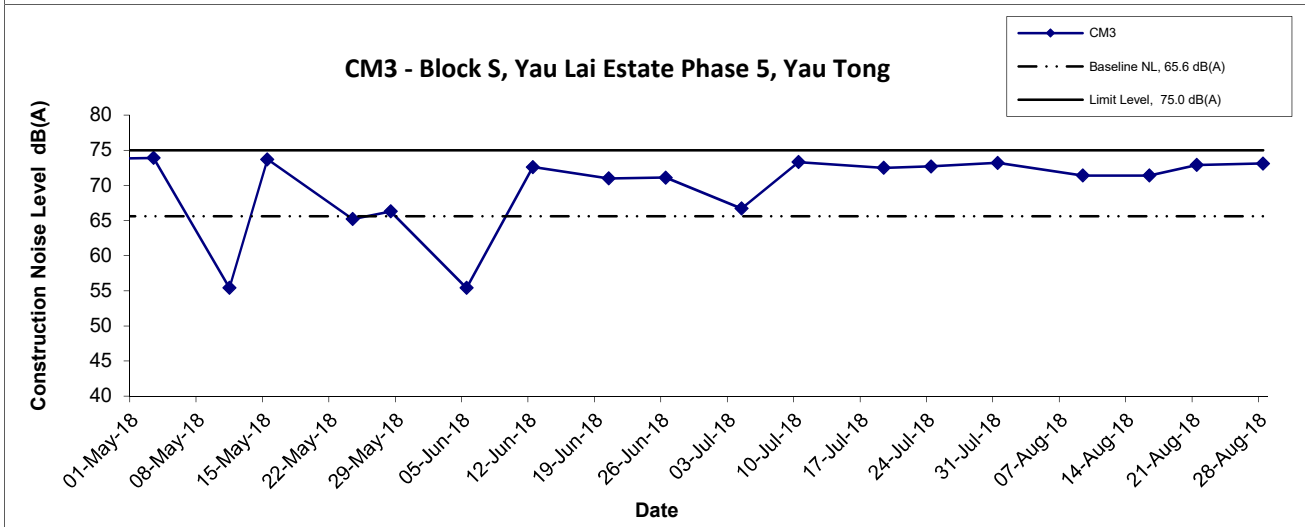
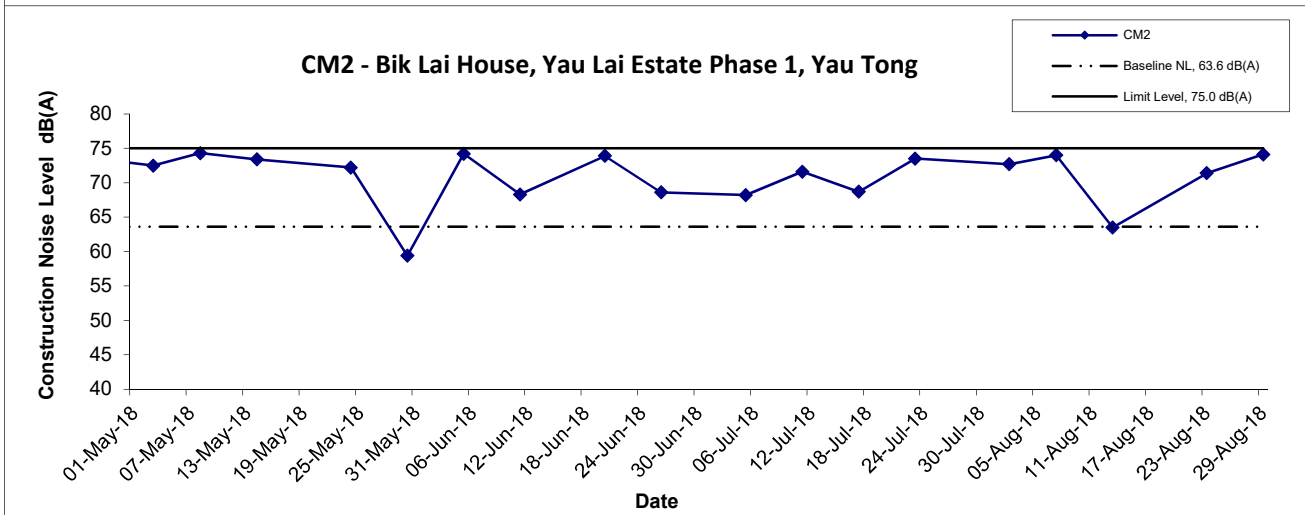
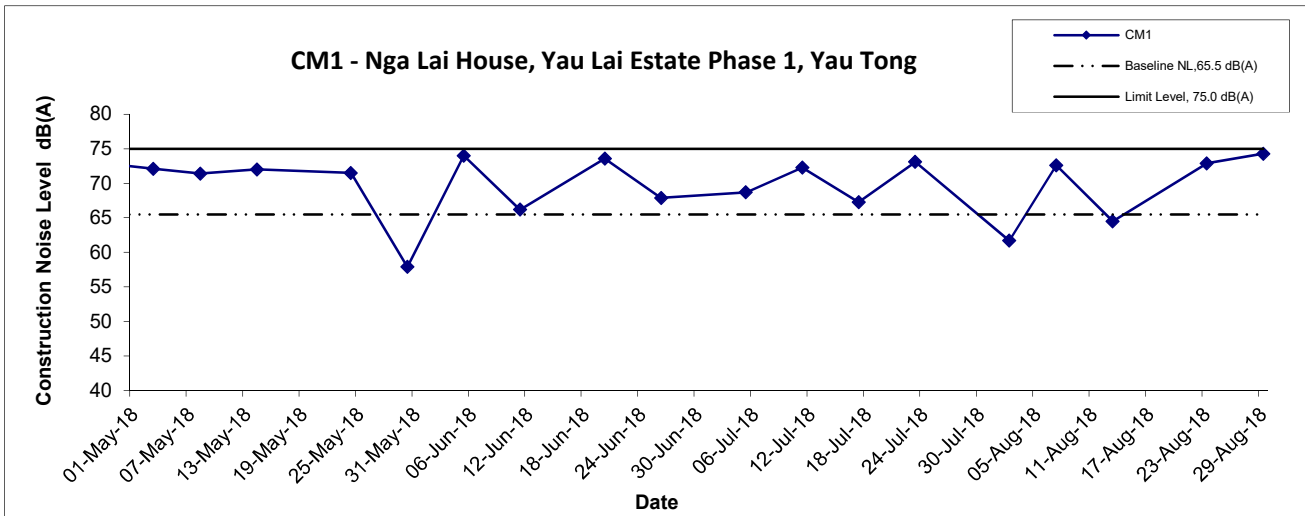
(0700-1900 hrs on Normal Weekdays)

Location CM6(A) - Site Boundary of Contract No. NE/2015/02 near Tower 1, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
2-Aug-18	14:15	Sunny	72.4	73.6	62.3	61.9	72.0
8-Aug-18	14:15	Cloudy	66.8	67.9	62.6		65.1
14-Aug-18	10:05	Cloudy	70.4	72.3	68.2		69.7
20-Aug-18	14:00	Cloudy	66.7	67.9	61.8		65.0
30-Aug-18	14:00	Cloudy	66.5	67.4	62.8		64.7

Location CM7(A) - Site Boundary of Contract No. NE/2015/02 near Tower 7, Ocean Shores							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
2-Aug-18	15:01	Sunny	65.3	66.9	58.7	58.3	64.3
8-Aug-18	15:07	Cloudy	64.9	65.7	60.7		63.8
14-Aug-18	10:43	Cloudy	66.4	68.9	58.3		65.7
20-Aug-18	15:30	Cloudy	66.0	67.5	61.6		65.2
30-Aug-18	15:00	Cloudy	68.8	69.3	62.9		68.4

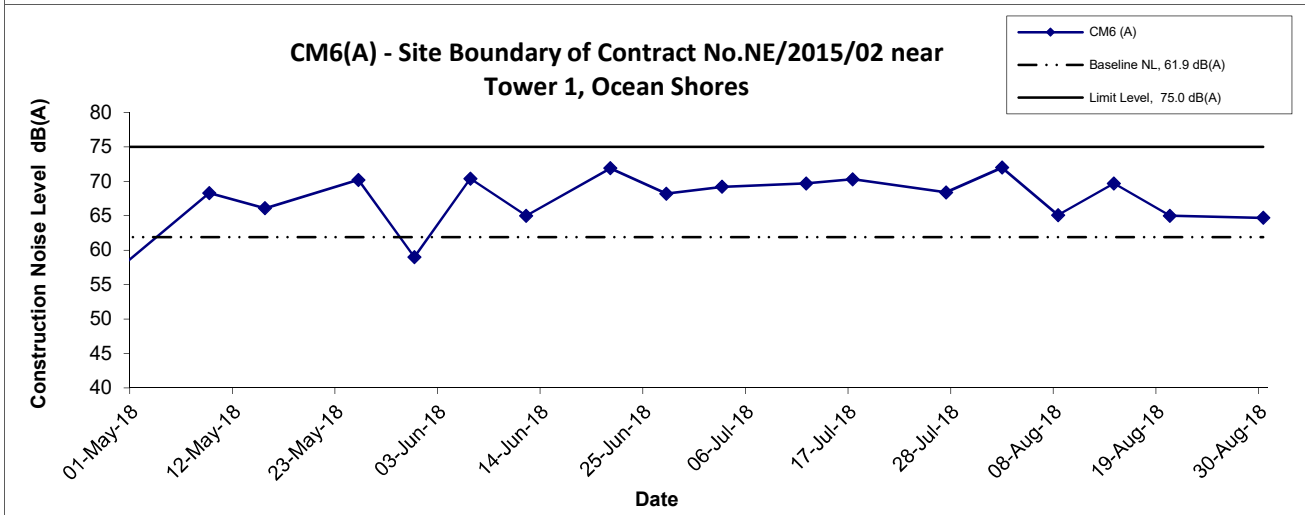
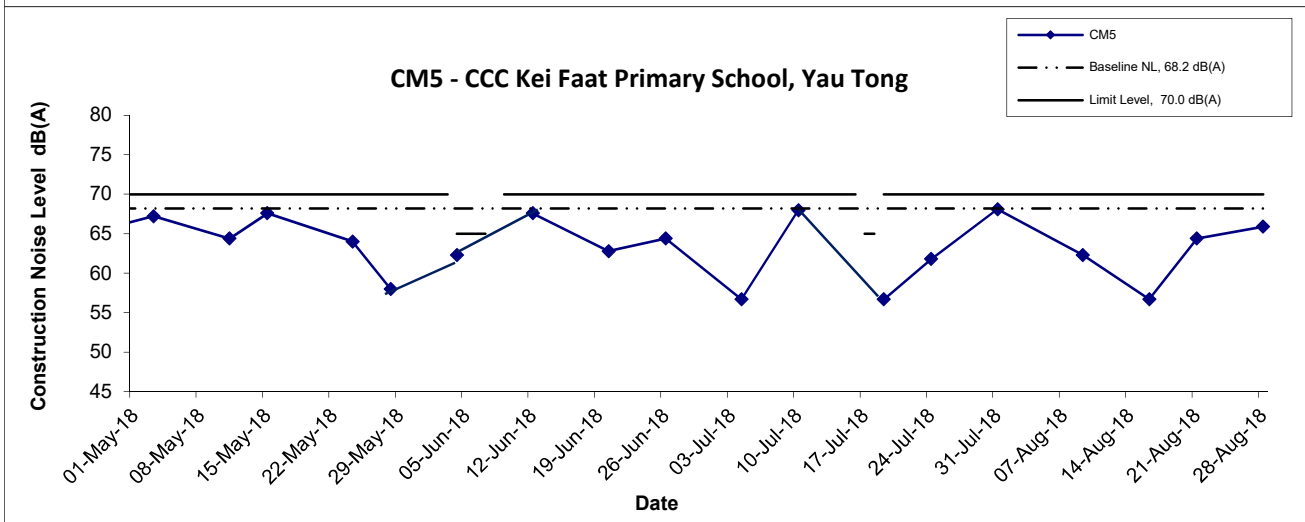
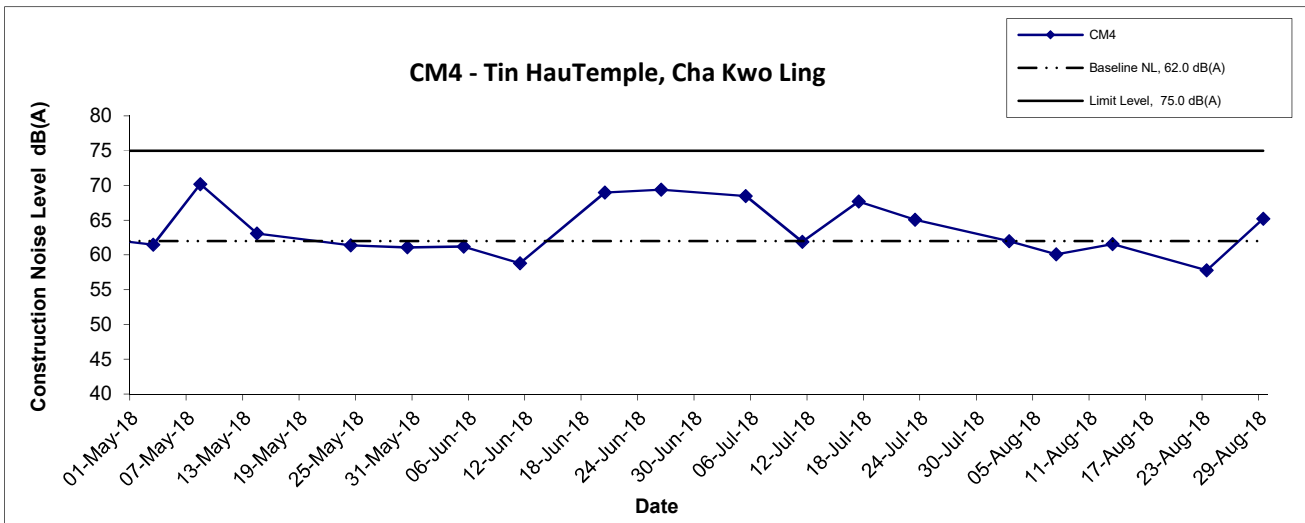
Location CM8(A) - Park Central, L1/F Open Space Area							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}
2-Aug-18	11:00	Sunny	62.6	64.9	58.7	69.1	62.6 Measured \leq Baseline
8-Aug-18	11:00	Cloudy	66.7	67.8	61.4		66.7 Measured \leq Baseline
14-Aug-18	14:01	Cloudy	64.6	66.7	57.8		64.6 Measured \leq Baseline
20-Aug-18	13:15	Cloudy	66.5	67.8	62.4		66.5 Measured \leq Baseline
30-Aug-18	10:00	Cloudy	66.7	67.9	62.8		66.7 Measured \leq Baseline

Noise Levels



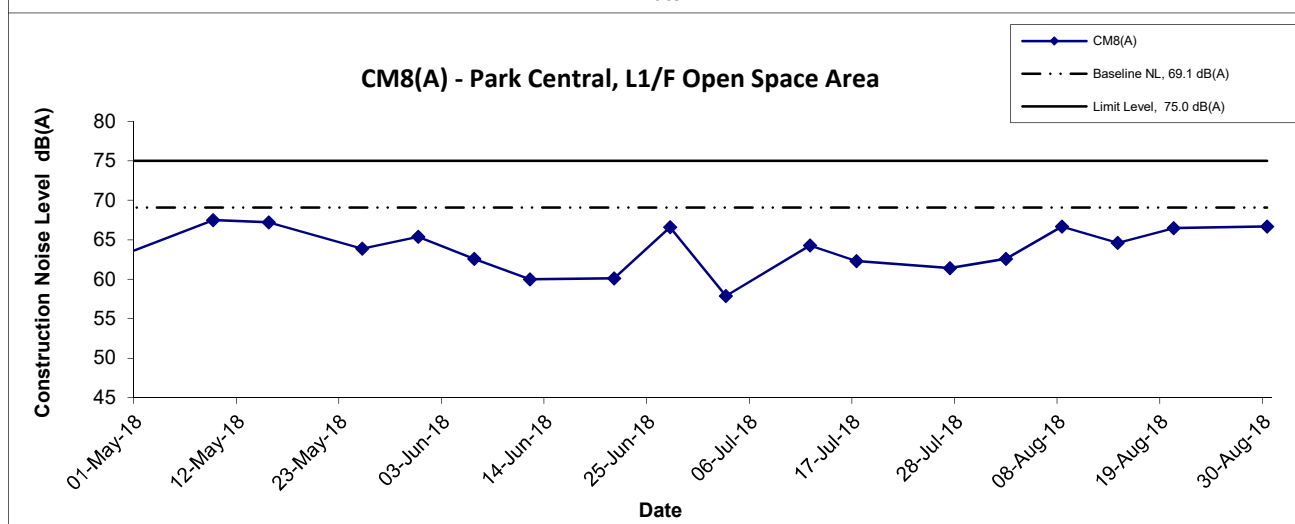
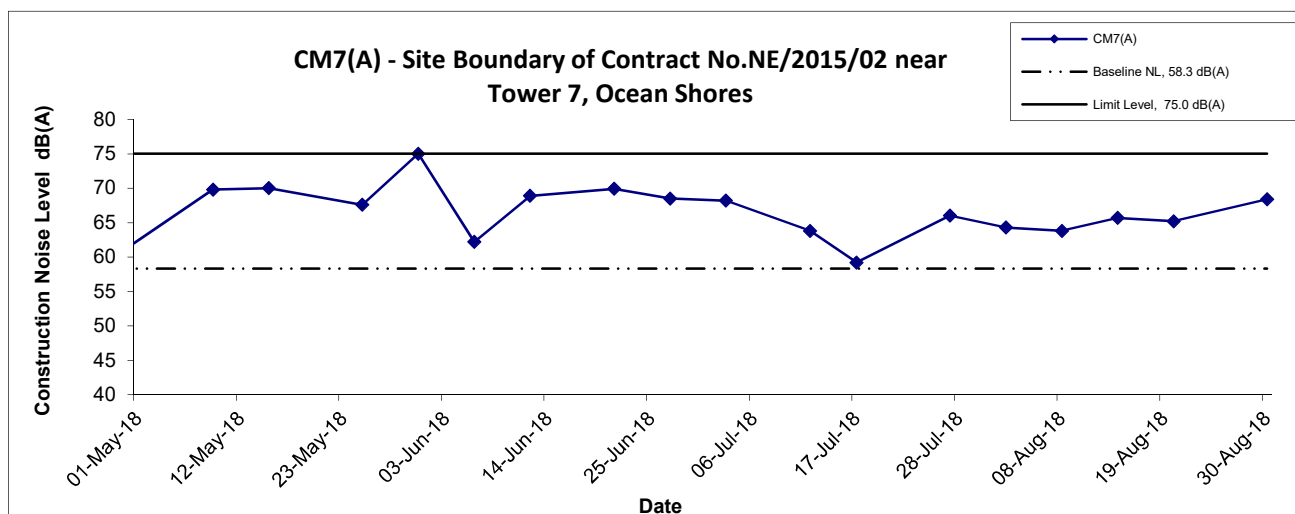
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA16034	
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Noise Levels



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 N.T.S	Project No. MA16034	<h1 style="margin: 0;">CINOTECH</h1>
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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	<h1 style="margin: 0;">CINOTECH</h1>
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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 _{eq}	Construction Noise Level L _{eq}	
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}			
2-Aug-18	22:45	Cloudy	64.5	65.9	62.5	64.5	64.4	48.1	
	22:50		64.7	66.0	62.7				
	22:50		64.2	65.6	63.0				
5-Aug-18	11:10	Sunny	65.1	66.8	63.1	65.0		64.4	56.1
	11:15		64.8	66.7	62.3				
	11:20		65.0	66.6	63.0				
10-Aug-18	22:30	Cloudy	64.3	65.6	62.4	64.3		64.4	64.3 Measured ≤ Baseline
	22:35		64.3	65.8	62.4				
	22:40		64.2	65.4	62.9				
12-Aug-18	11:45	Cloudy	66.1	67.5	64.6	66.2		64.4	61.5
	11:50		66.0	67.3	64.4				
	11:55		66.4	67.7	64.3				
17-Aug-18	22:35	Cloudy	65.7	66.8	64.4	65.5	64.4	59.0	
	22:40		65.3	66.6	64.0				
	22:45		65.4	66.7	64.0				
19-Aug-18	11:35	Cloudy	66.5	67.9	65.0	66.1	64.4	61.2	
	11:40		66.0	66.6	64.0				
	11:45		65.9	66.7	64.1				
24-Aug-18	22:40	Cloudy	65.9	67.2	64.2	65.7	64.4	59.8	
	22:45		66.0	67.2	64.6				
	22:50		65.1	66.1	64.0				
26-Aug-18	11:30	Sunny	66.5	68.2	64.8	66.0	64.4	60.9	
	11:35		65.7	66.8	64.4				
	11:40		65.8	66.9	63.3				
31-Aug-18	22:20	Cloudy	65.8	67.2	64.2	66.2	64.4	61.5	
	22:25		65.9	66.9	64.6				
	22:30		66.7	68.3	64.7				

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong									
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}	
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}			
2-Aug-18	22:15	Cloudy	64.4	65.7	63.0	64.4	64.2	50.9	
	22:20		65.0	66.0	63.2				
	22:25		63.8	65.4	62.1				
5-Aug-18	11:30	Sunny	67.2	67.9	65.6	67.6		64.2	64.9
	11:35		67.9	69.8	65.6				
	11:40		67.7	69.1	65.5				
10-Aug-18	21:30	Cloudy	65.4	66.7	64.0	65.0		64.2	57.3
	21:35		64.9	65.9	63.6				
	21:40		64.8	66.2	63.1				
12-Aug-18	11:20	Cloudy	65.4	66.9	63.5	65.2		64.2	58.3
	11:25		65.5	66.9	64.0				
	11:30		64.8	66.0	63.3				
17-Aug-18	22:05	Cloudy	64.7	65.9	63.3	64.6	64.2	54.0	
	22:10		64.7	65.9	63.2				
	22:15		64.5	65.9	63.2				
19-Aug-18	11:00	Cloudy	67.5	68.6	66.3	67.6	64.2	64.9	
	11:05		67.6	68.9	66.1				
	11:10		67.6	68.8	66.2				
24-Aug-18	20:55	Cloudy	65.7	67.2	63.5	65.6	64.2	60.0	
	21:00		65.6	66.8	64.0				
	21:05		65.5	66.8	63.2				
26-Aug-18	11:00	Cloudy	66.2	67.6	64.3	65.3	64.2	58.8	
	11:05		64.4	65.5	63.2				
	11:10		65.1	66.7	63.4				
31-Aug-18	21:45	Cloudy	65.2	66.3	64.0	65.1	64.2	57.8	
	21:50		65.1	66.3	63.6				
	21:55		65.1	66.0	63.7				

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong									
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}	
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}			
2-Aug-18	21:40	Cloudy	64.9	65.9	62.9	65.2	64.7	55.6	
	21:45		65.2	66.4	63.6				
	21:50		65.5	66.8	63.5				
5-Aug-18	10:40	Sunny	64.4	66.0	62.0	64.4		64.7	64.4 Measured ≤ Baseline
	10:45		64.9	66.5	62.7				
	10:50		63.8	65.2	60.8				
10-Aug-18	20:50	Cloudy	64.7	66.3	62.6	65.1		64.7	54.5
	20:55		65.6	66.6	63.5				
	21:00		65.1	66.4	63.2				
12-Aug-18	10:50	Cloudy	65.2	66.5	63.5	65.1		64.7	54.5
	10:55		64.8	66.2	63.1				
	11:00		65.2	66.5	63.5				
17-Aug-18	21:35	Cloudy	66.0	66.9	64.1	65.8	64.7	59.3	
	21:40		65.6	67.4	64.1				
	21:45		65.9	66.7	64.1				
19-Aug-18	10:25	Cloudy	65.0	66.6	63.1	64.9	64.7	51.4	
	10:30		63.3	64.8	55.2				
	10:35		66.0	67.6	64.3				
24-Aug-18	20:20	Cloudy	66.3	68.0	64.0	66.4	64.7	61.5	
	20:25		66.5	67.7	65.1				
	20:30		66.3	67.6	64.3				
26-Aug-18	10:05	Sunny	63.9	65.7	55.5	63.7	64.7	63.7 Measured ≤ Baseline	
	10:30		63.3	64.5	61.7				
	10:35		64.0	65.3	62.4				
31-Aug-18	20:20	Cloudy	65.9	67.3	64.4	65.8	64.7	59.3	
	20:25		65.7	67.0	64.2				
	20:30		65.8	67.1	64.6				

Appendix G - Noise Monitoring Results

Location CM4 - Tin Hau Temple, Cha Kwo Ling								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
2-Aug-18	21:00	Cloudy	49.2	51.7	44.8	50.1	50.1 Measured ≤ Baseline	
	21:05		50.0	52.2	44.6			
	21:10		50.9	53.8	44.4			
5-Aug-18	10:15	Sunny	58.4	60.4	56.3	58.1	51.6	
	10:20		58.6	60.5	56.4			
	10:25		57.0	58.4	54.8			
10-Aug-18	20:15	Cloudy	51.0	53.1	46.3	52.7	52.7 Measured ≤ Baseline	
	20:20		52.8	54.6	46.8			
	20:25		53.8	55.4	47.7			
12-Aug-18	10:00	Cloudy	61.0	62.9	58.1	59.8	56.6	
	10:05		58.6	60.3	57.0			
	10:10		59.5	61.8	57.0			
17-Aug-18	21:00	Cloudy	55.6	60.3	47.8	55.3	55.3 Measured ≤ Baseline	
	21:05		55.8	59.4	47.6			
	21:10		54.3	58.1	46.1			
19-Aug-18	10:00	Cloudy	53.7	56.4	46.5	56.0	56.0 Measured ≤ Baseline	
	10:05		54.1	56.5	46.4			
	10:10		58.4	59.5	52.3			
24-Aug-18	19:30	Cloudy	52.9	55.8	46.5	52.7	52.7 Measured ≤ Baseline	
	19:35		52.4	55.5	46.5			
	19:40		52.9	55.8	47.4			
26-Aug-18	10:00	Sunny	56.3	59.6	50.4	56.2	56.2 Measured ≤ Baseline	
	10:05		56.2	58.8	51.7			
	10:10		56.1	58.8	51.3			
31-Aug-18	19:30	Cloudy	52.9	55.4	48.0	54.6	54.6 Measured ≤ Baseline	
	19:35		55.7	59.1	48.4			
	19:40		54.8	57.7	49.6			

Appendix G - Noise Monitoring Results

(Restricted Hours - 2300-0700 on all days)

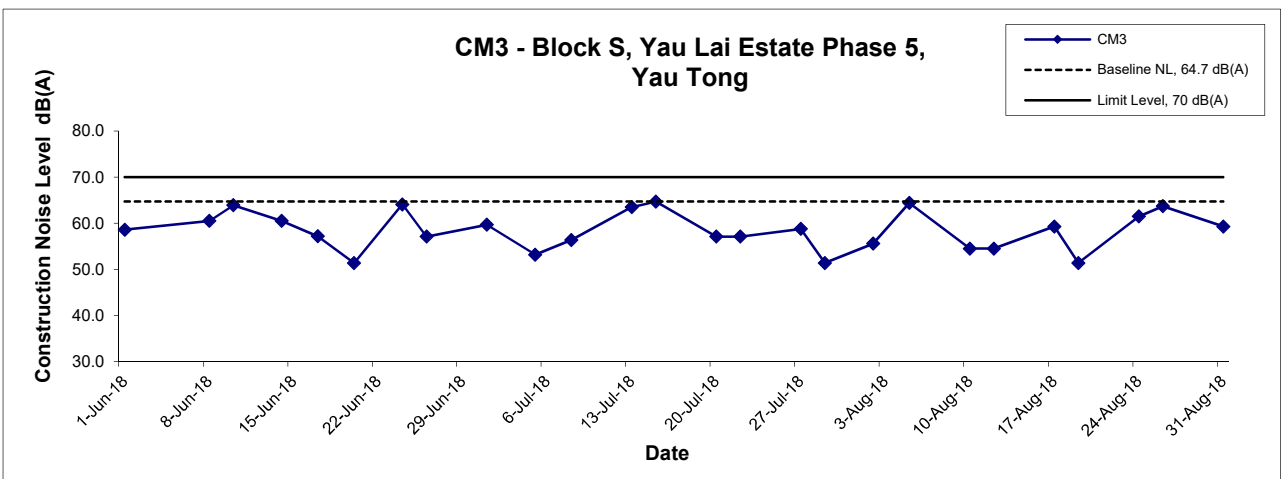
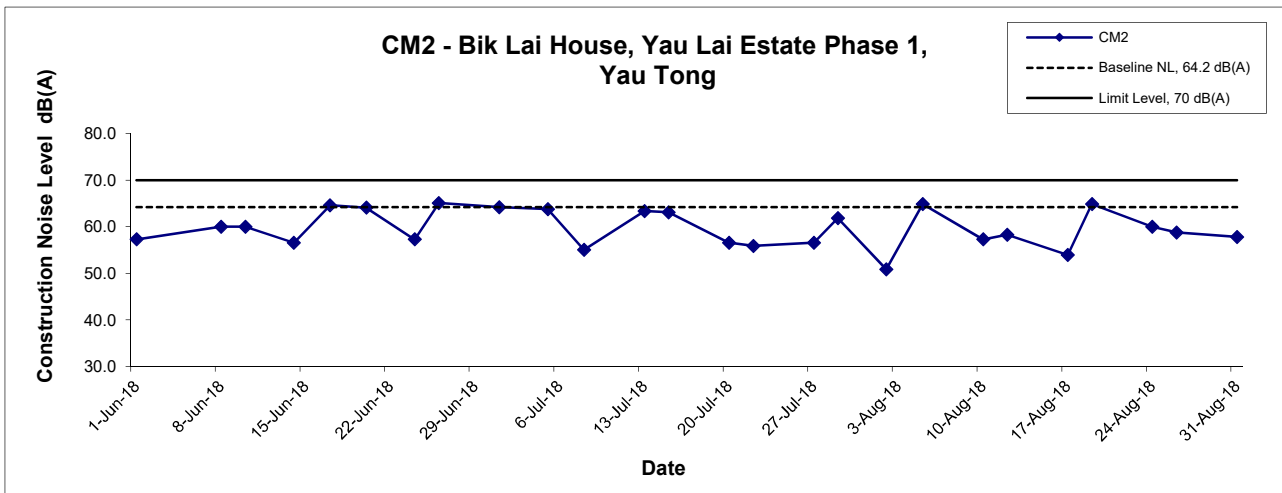
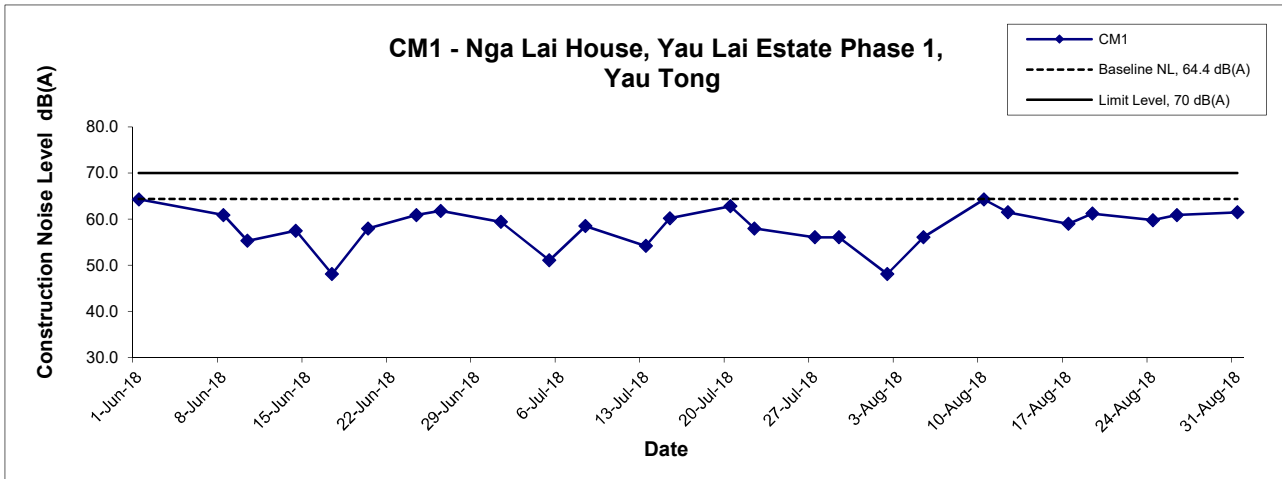
Location CM1 - Nga Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
2-Aug-18	23:00	Cloudy	64.6	65.9	62.6	64.2	60.5	61.8
	23:05		63.6	65.5	61.7			
	23:10		64.3	65.8	61.8			
10-Aug-18	23:00	Cloudy	64.5	65.0	62.2	64.3		62.0
	23:05		64.4	65.3	62.2			
	23:10		64.0	65.3	62.0			
17-Aug-18	23:05	Cloudy	64.6	65.9	63.6	64.9		62.9
	23:10		64.9	66.2	63.7			
	23:15		65.1	66.5	63.7			
24-Aug-18	23:00	Cloudy	65.5	66.8	63.9	65.5	63.8	
	23:05		65.7	67.4	63.5			
	23:10		65.3	66.8	63.5			
31-Aug-18	23:00	Cloudy	65.7	67.2	64.0	65.6	64.0	
	23:05		65.4	66.7	63.7			
	23:10		65.6	66.9	64.0			

Location CM2 - Bik Lai House, Yau Lai Estate Phase 1, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
2-Aug-18	23:40	Cloudy	62.6	63.9	60.4	62.4	58.0	60.4
	23:45		62.8	64.4	60.2			
	23:50		61.8	63.7	59.6			
10-Aug-18	23:30	Cloudy	64.1	65.5	62.2	64.0		62.7
	23:35		64.4	65.9	62.8			
	23:40		63.3	64.6	61.9			
17-Aug-18	23:35	Cloudy	64.5	65.9	62.0	64.4		63.3
	23:40		64.4	66.0	62.1			
	23:45		64.4	65.8	62.1			
24-Aug-18	23:30	Cloudy	63.8	65.2	62.1	64.0	62.7	
	23:35		64.1	65.5	62.6			
	23:40		64.1	65.6	62.5			
31-Aug-18	23:30	Cloudy	64.0	65.4	62.4	63.9	62.6	
	23:35		63.9	64.9	62.5			
	23:40		63.8	64.9	62.2			

Location CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
2-Aug-18	0:10	Cloudy	62.1	64.1	59.9	61.6	60.2	56.0
	0:15		62.2	64.4	59.4			
	0:20		60.2	61.9	56.5			
10-Aug-18	0:15	Cloudy	61.6	63.2	60.5	61.3		54.8
	0:20		61.0	62.8	59.9			
	0:25		61.2	63.1	59.6			
17-Aug-18	0:05	Cloudy	64.7	66.7	63.3	64.4		62.3
	0:10		64.2	66.1	63.0			
	0:15		64.3	66.0	63.1			
25-Aug-18	0:25	Cloudy	61.4	62.5	59.2	61.1	53.8	
	0:30		61.1	62.4	59.0			
	0:35		60.8	62.1	58.8			
31-Aug-18	0:25	Cloudy	61.0	62.3	59.5	61.1	53.8	
	0:30		61.5	63.0	59.8			
	0:35		60.9	62.2	59.3			

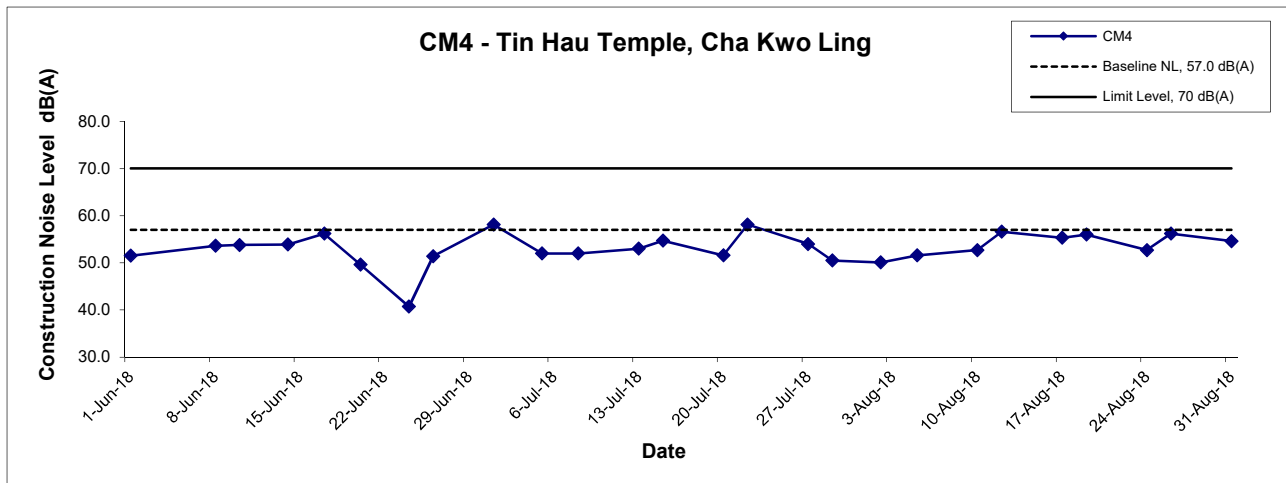
Location CM4 - Tin Hau Temple, Cha Kwo Ling								
Date	Time	Weather	dB (A) (5-min)				Baseline Level L _{eq}	Construction Noise Level L _{eq}
			L _{eq}	L ₁₀	L ₉₀	Average L _{eq}		
2-Aug-18	0:45	Cloudy	48.4	49.6	44.2	48.5	55.8	48.5 Measured ≤ Baseline
	0:50		48.9	50.1	44.6			
	0:55		48.2	49.5	44.2			
10-Aug-18	1:10	Cloudy	49.6	51.7	45.8	49.7		49.7 Measured ≤ Baseline
	1:15		49.9	52.0	45.9			
	1:20		49.5	51.3	45.5			
17-Aug-18	0:35	Cloudy	50.2	53.0	46.2	50.4		50.4 Measured ≤ Baseline
	0:40		50.6	53.9	45.9			
	0:45		50.4	53.2	44.3			
25-Aug-18	1:00	Cloudy	49.2	50.3	44.8	49.1	49.1 Measured ≤ Baseline	
	1:05		48.7	49.9	44.7			
	1:10		49.3	50.3	45.0			
31-Aug-18	1:05	Cloudy	50.0	51.8	45.9	49.5	49.5 Measured ≤ Baseline	
	1:10		49.4	50.9	45.6			
	1:15		49.1	50.8	45.6			

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



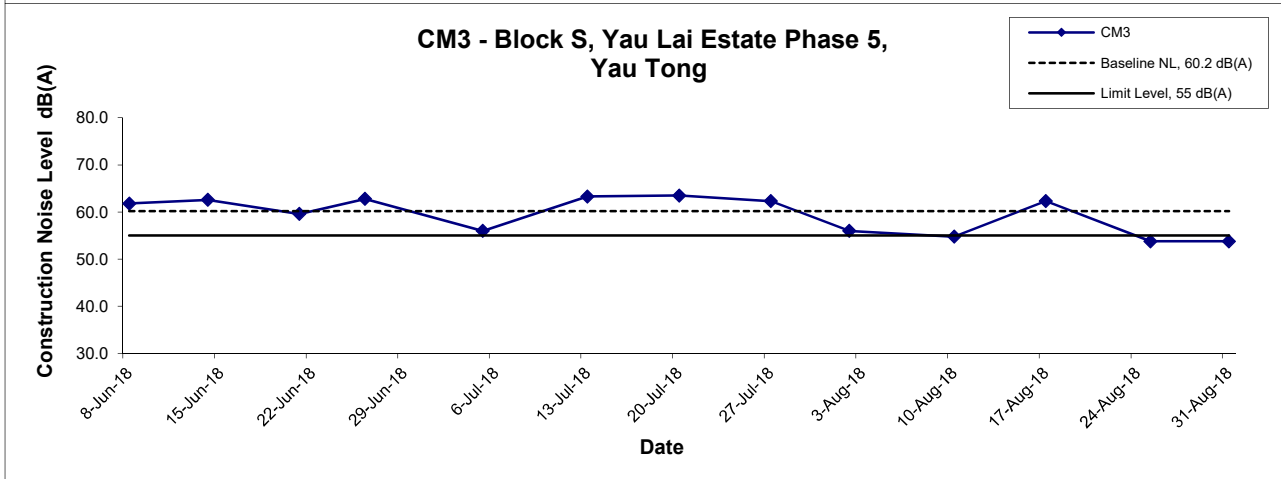
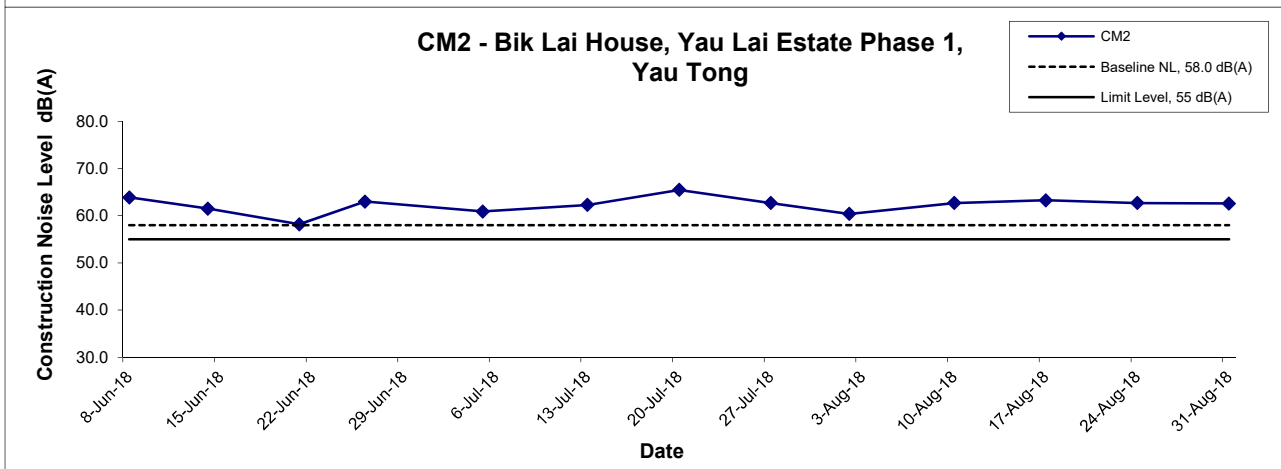
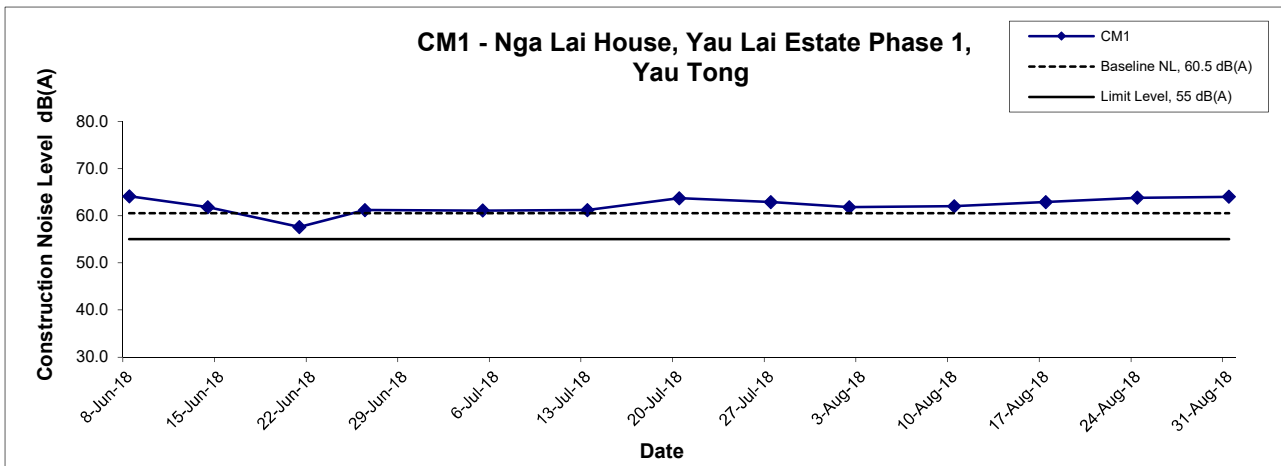
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
	Date Aug 18	Appendix G	

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



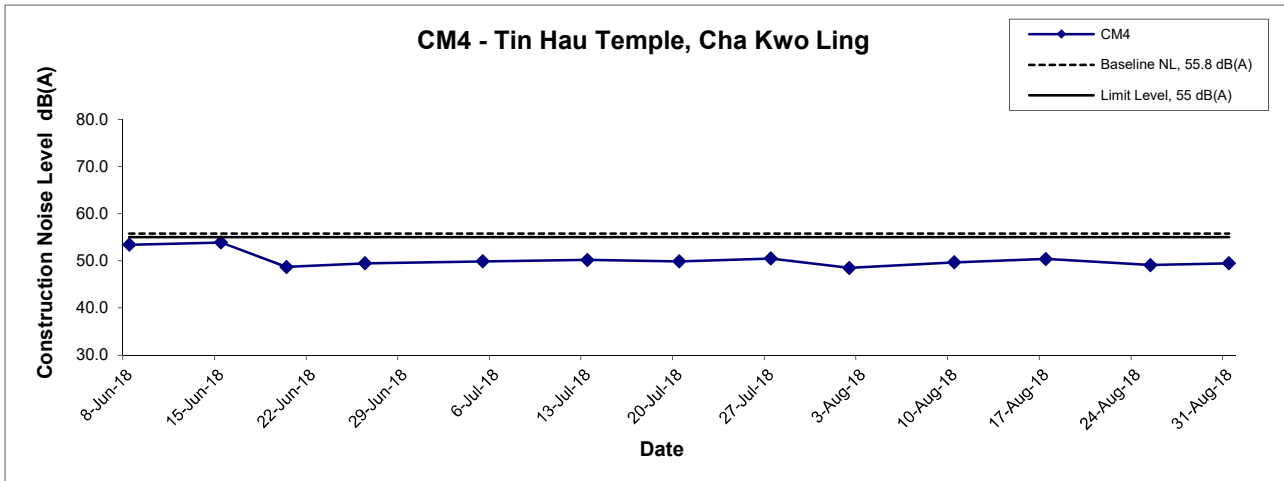
Title Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Restricted Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
	Date Aug 18	Appendix G	

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



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

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



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

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

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

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
16-Aug-18	Sunny	10:30	Middle	29.2	29.2	7.8	7.8	0.3	0.3	98.1	98.1	7.5	7.5	6.2	6.2
				29.2		7.8		0.3		98.1		7.5		6.1	
28-Aug-18	Cloudy	10:25	Middle	27.0	27.0	8.0	8.0	0.5	0.5	97.5	97.6	7.8	7.8	2.2	2.2
				27.0		8.0		0.5		97.6		7.8		2.1	

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
16-Aug-18	Sunny	11:01	Middle	28.3	28.3	7.7	7.7	0.1	0.1	97.6	97.9	7.6	7.7	1.5	1.6
				28.2		7.7		0.1		98.1		7.7		1.6	
28-Aug-18	Cloudy	10:45	Middle	26.5	26.5	7.7	7.7	0.1	0.1	96.1	96.1	7.7	7.7	2.9	2.9
				26.5		7.7		0.1		96.1		7.7		2.9	

Groundwater Quality Monitoring Results at Stream 3

Date	Weather Condition	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)	
				Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
16-Aug-18	Sunny	11:30	Middle	28.2	28.3	7.6	7.6	0.1	0.1	98.4	98.5	7.7	7.7	2.0	2.0
				28.3		7.6		0.1		98.6		7.7		2.0	
28-Aug-18	Cloudy	10:58	Middle	26.9	27.0	7.9	7.9	0.1	0.1	96.3	96.3	7.7	7.7	1.4	1.4
				27.0		7.9		0.1		96.3		7.7		1.4	

Agreement No. CE/59/2015 (EP)

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

Summary of Groundwater Quality Monitoring Results

Location	Date	Parameters (unit)								
		pH	Dissolved Oxygen (mg/L)	Turbidity (NTU)	SS (mg/L)	BOD ₅ (mg O ₂ /L)	TOC (mg-TOC/L)	Total Nitrogen (mg/L)	NH ₃ -N (mg NH ₃ -N/L)	Total Phosphorus (mg-P/L)
16-Aug-18	Stream 1	7.8	<u>7.5</u>	<u>6.2</u>	5	<u>4</u>	8	1.2	<0.05	<u>0.07</u>
	Stream 2	7.7	7.7	1.6	<2.5	<2	6	1.4	<0.05	<0.05
	Stream 3	7.6	7.7	2.0	<2.5	<2	6	1.3	<0.05	<0.05
28-Aug-18	Stream 1	8	7.8	<u>2.2</u>	<2.5	<2	7	0.9	0.14	<0.05
	Stream 2	7.7	7.7	<u>2.9</u>	3	<2	6	1.5	<0.05	<0.05
	Stream 3	7.9	7.7	1.4	<2.5	<2	5	1.7	<0.05	<0.05

TEST REPORT

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

Report No.:	29505
Date of Issue:	2018-08-27
Date Received:	2018-08-16
Date Tested:	2018-08-16
Date Completed:	2018-08-27

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Sample Description : 3 liquid samples as received from client said to be groundwater
Laboratory No. : 29505
Project No. : MA16034 (Groundwater)
Project Name : Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O –
Lam Tin Tunnel – Design and Construction
Custody No. : MA16034(Groundwater)/20180816
Sampling Date : 2018-08-16

Tests Requested & Methodology:

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

Results:

Sample ID	Stream 1	Stream 2	Stream 3
Sampling Depth	S	S	S
Sample No.	29505-1	29505-2	29505-3
Total Suspended Solids (mg/L)	5	<2.5	<2.5
Biochemical Oxygen Demand (mg O ₂ /L)	4	<2	<2
Total Organic Carbon (mg-TOC/L)	8	6	6
Nitrogen (Total Kjeldahl + nitrate + nitrite) (mg N/L)	1.2	1.4	1.3
Ammonia (mg NH ₃ -N/L)	<0.05	<0.05	<0.05
Total Phosphorus (mg-P/L)	0.07	<0.05	<0.05

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

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

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

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

Report No.:	29585
Date of Issue:	2018-09-06
Date Received:	2018-08-28
Date Tested:	2018-08-28
Date Completed:	2018-09-06

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Sample Description : 3 liquid samples as received from client said to be groundwater
Laboratory No. : 29585
Project No. : MA16034 (Groundwater)
Project Name : Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O –
 Lam Tin Tunnel – Design and Construction
Custody No. : MA16034(Groundwater)/20180828
Sampling Date : 2018-08-28

Tests Requested & Methodology:

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

Results:

Sample ID	Stream 1	Stream 2	Stream 3
Sampling Depth	S	S	S
Sample No.	29585-1	29585-2	29585-3
Total Suspended Solids (mg/L)	<2.5	3	<2.5
Biochemical Oxygen Demand (mg O ₂ /L)	<2	<2	<2
Total Organic Carbon (mg-TOC/L)	7	6	5
Nitrogen (Total Kjeldahl + nitrate + nitrite) (mg N/L)	0.9	1.5	1.7
Ammonia (mg NH ₃ -N/L)	0.14	<0.05	<0.05
Total Phosphorus (mg-P/L)	<0.05	<0.05	<0.05

Remarks: 1) < = less than

2) S = Surface, M = Middle, B = Bottom

3) * Limit of Reporting is reported as Detection Limit

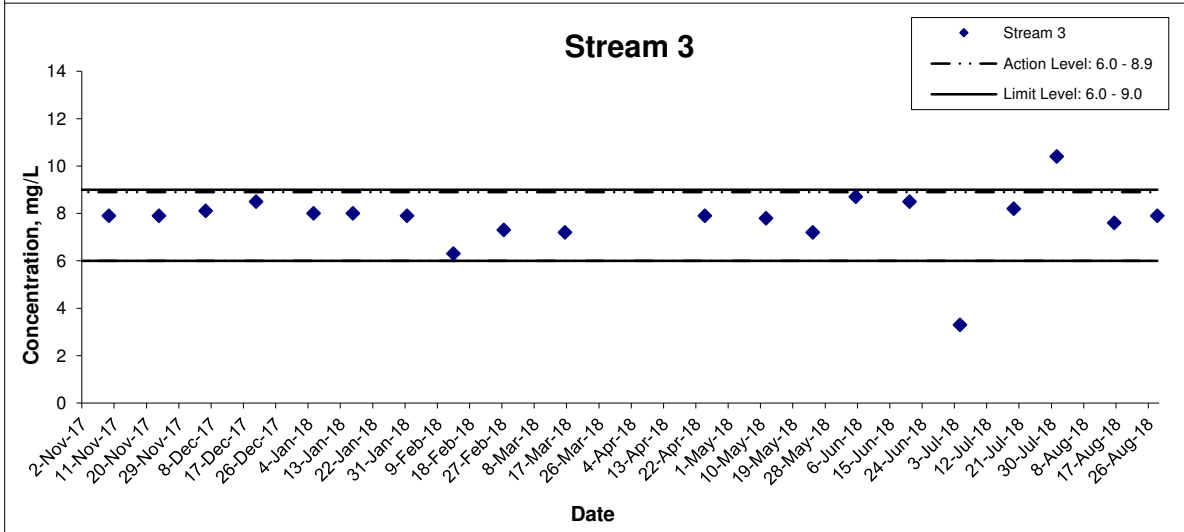
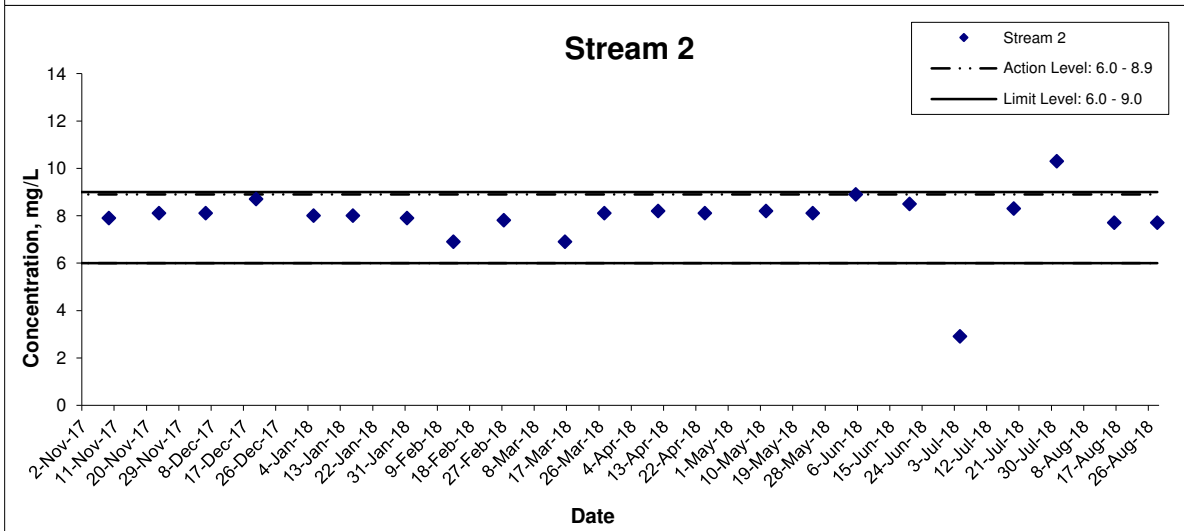
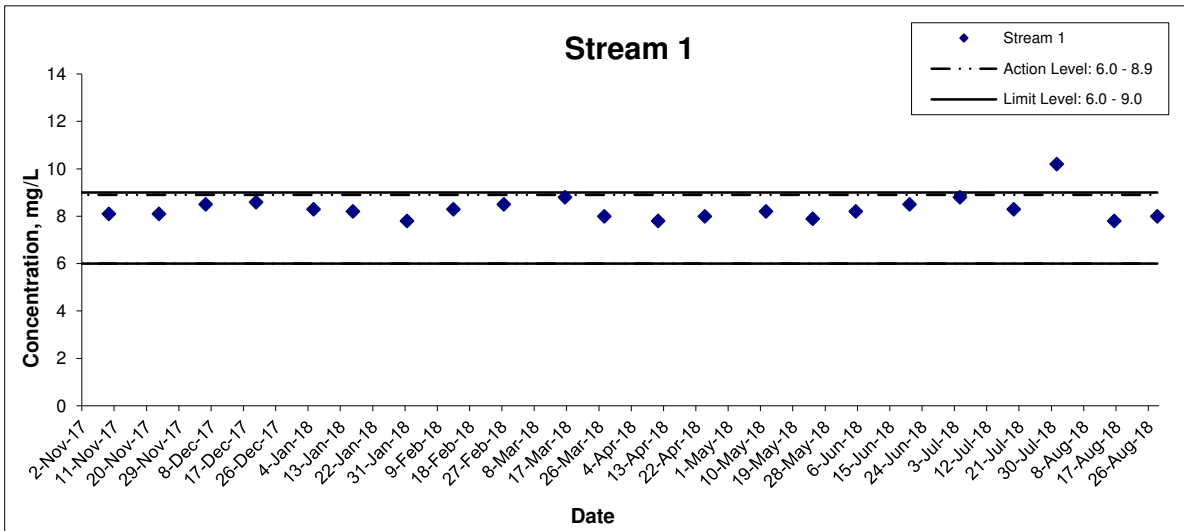
*****END OF REPORT*****

PREPARED AND CHECKED BY:

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


PATRICK TSE
 Laboratory Manager

pH



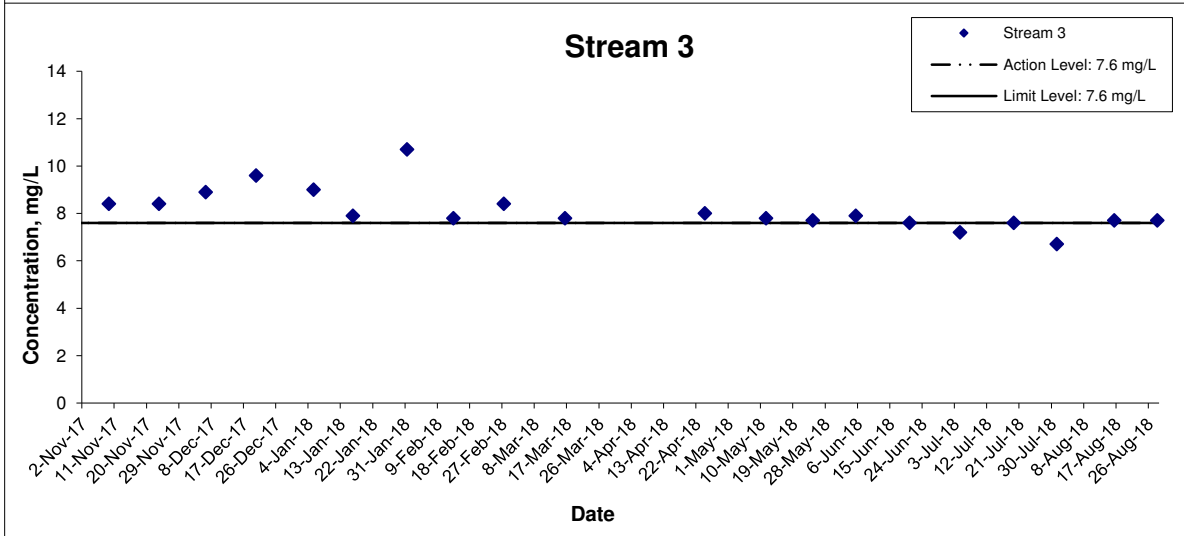
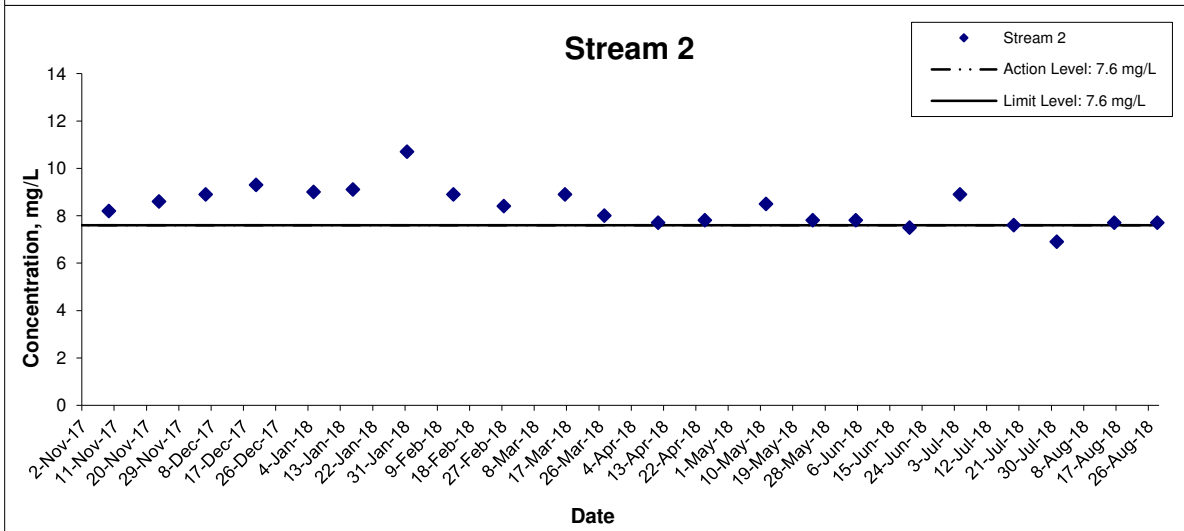
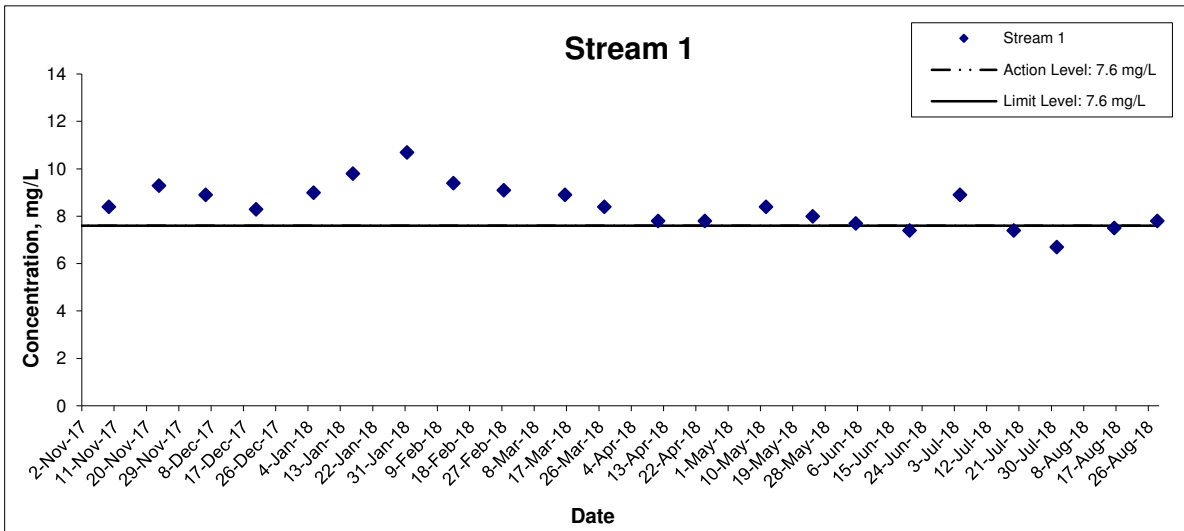
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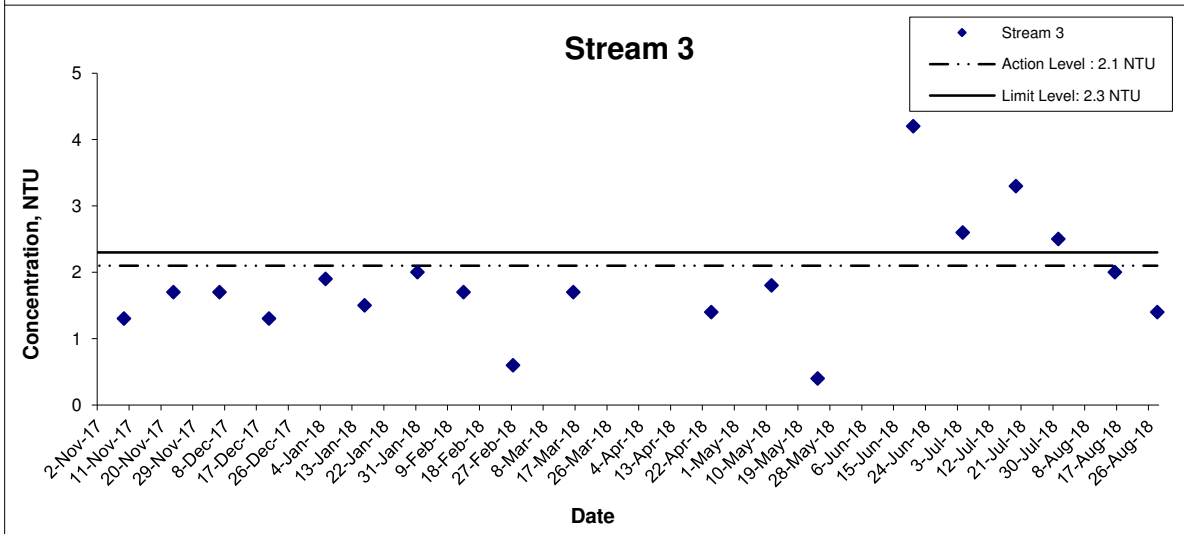
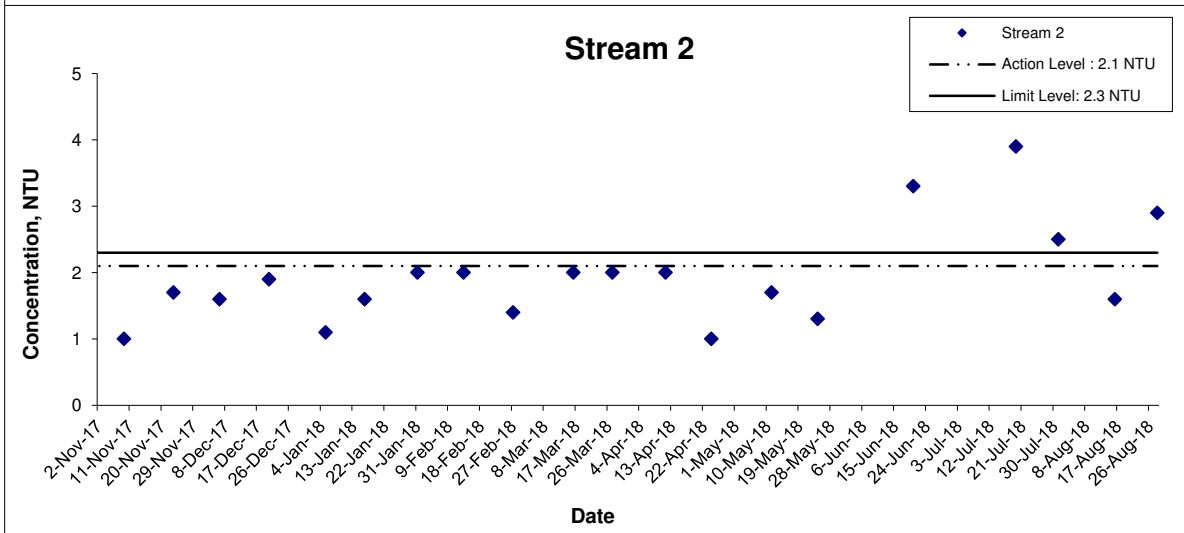
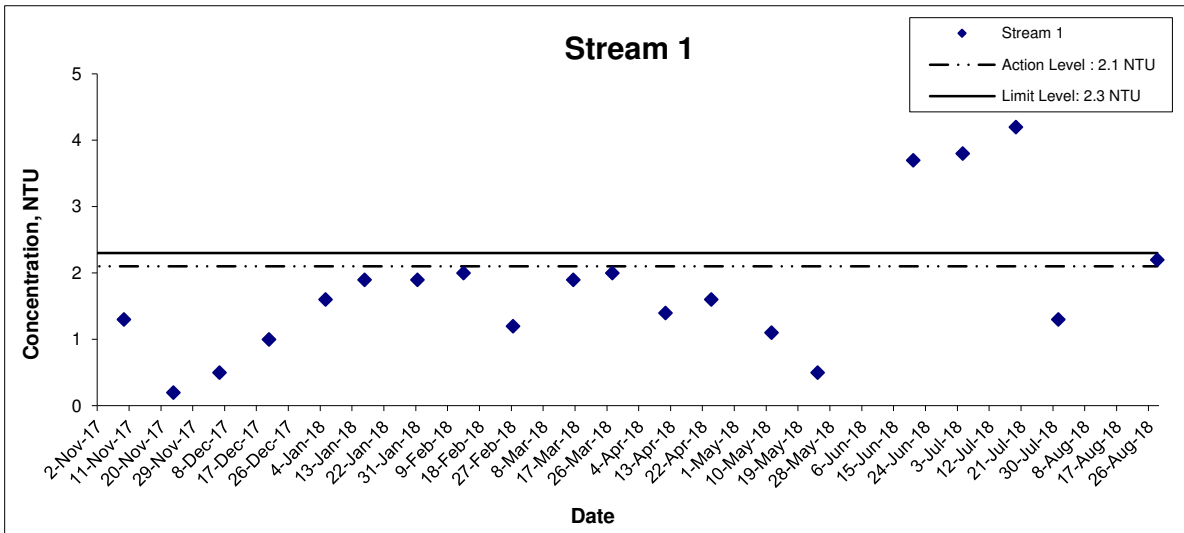


Dissolved Oxygen



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Turbidity



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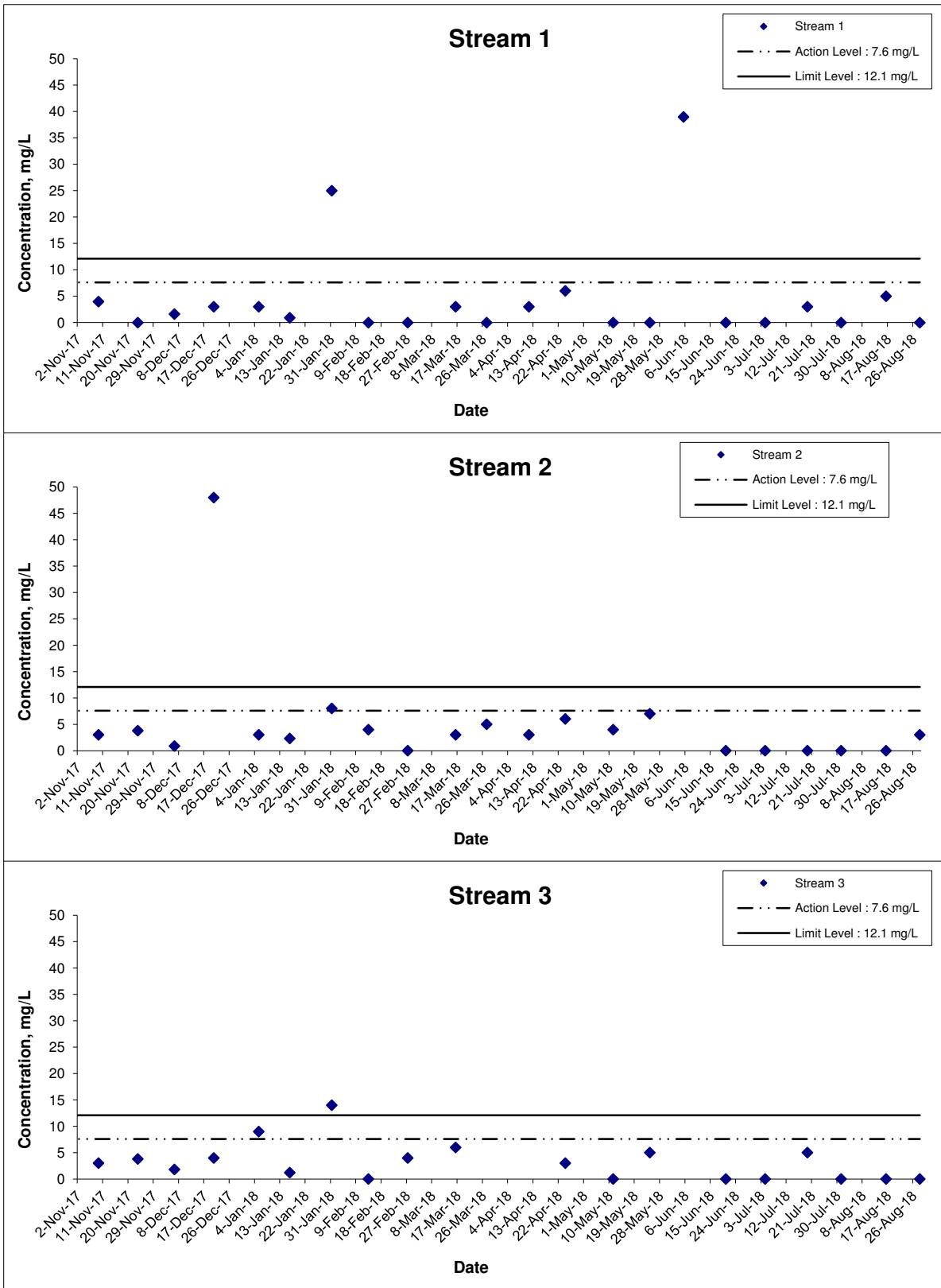
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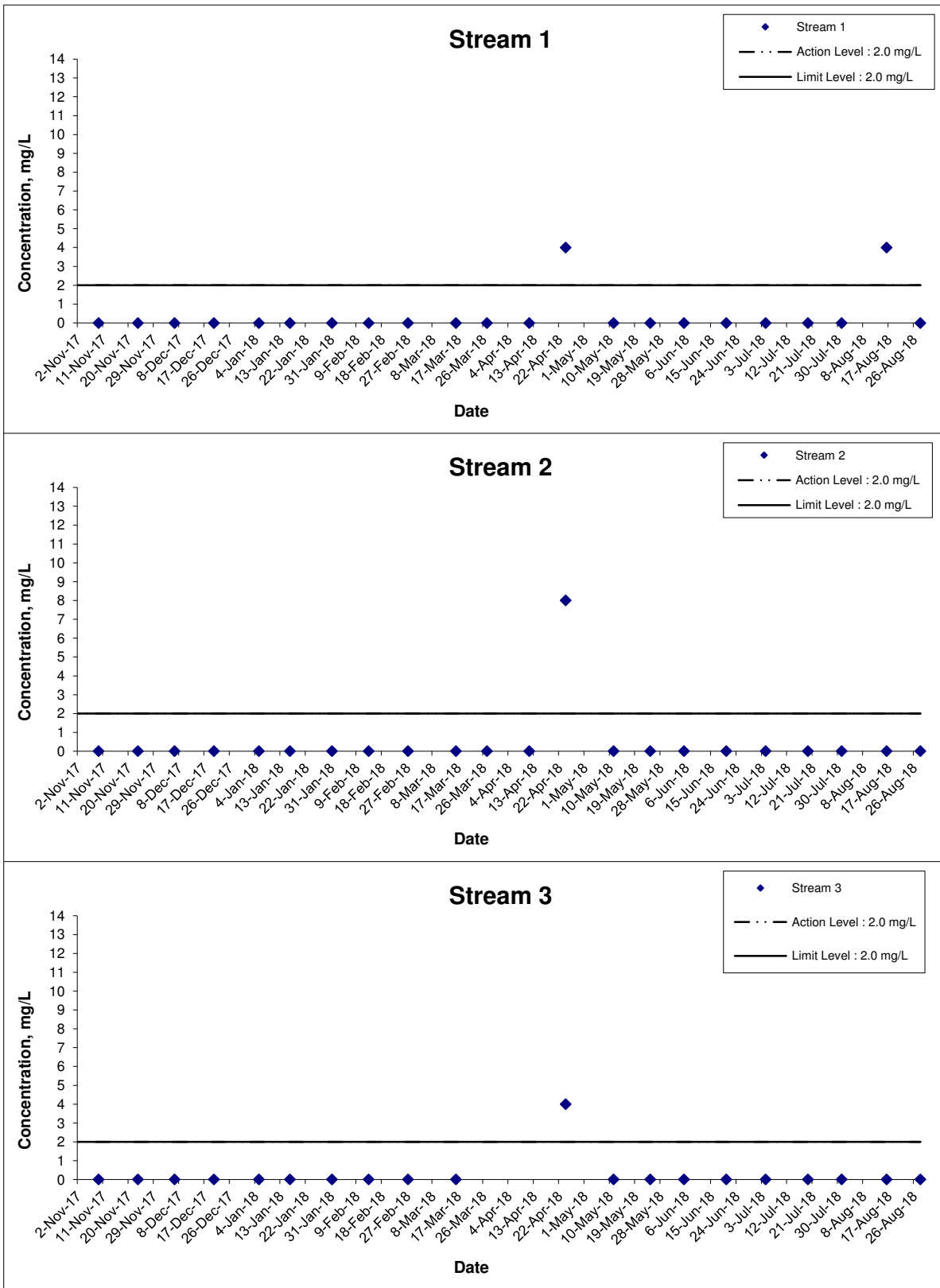
Suspended Solids



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

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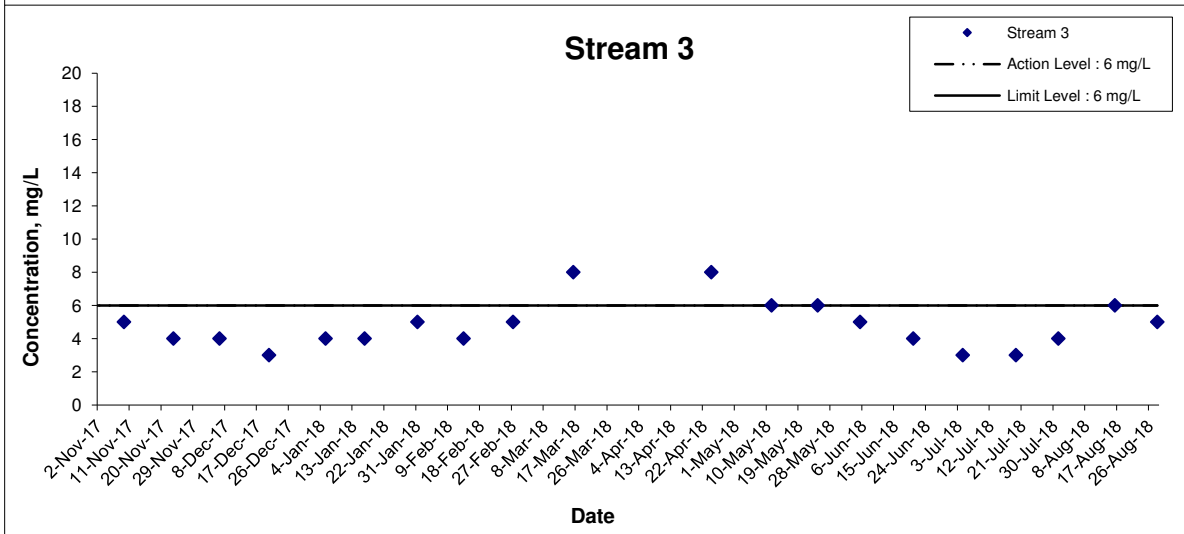
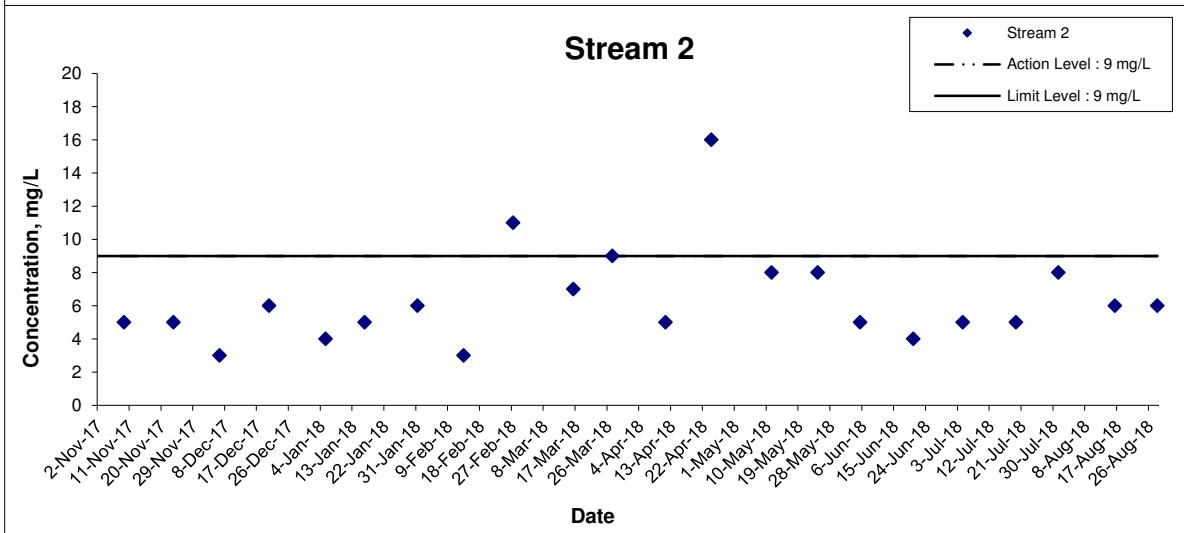
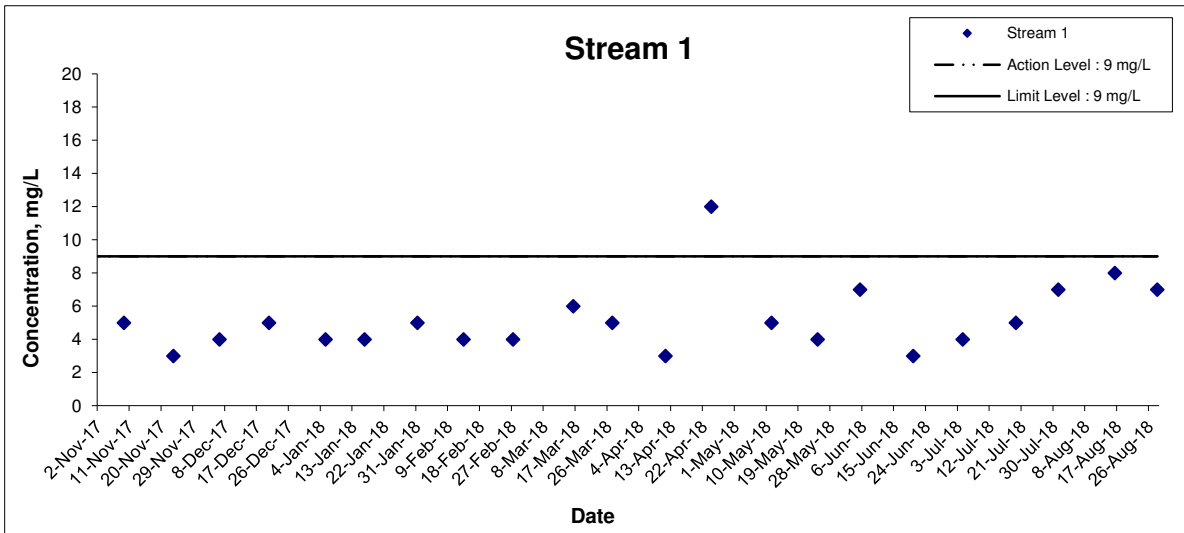
5-day Biochemical Oxygen Demand (BOD₅)



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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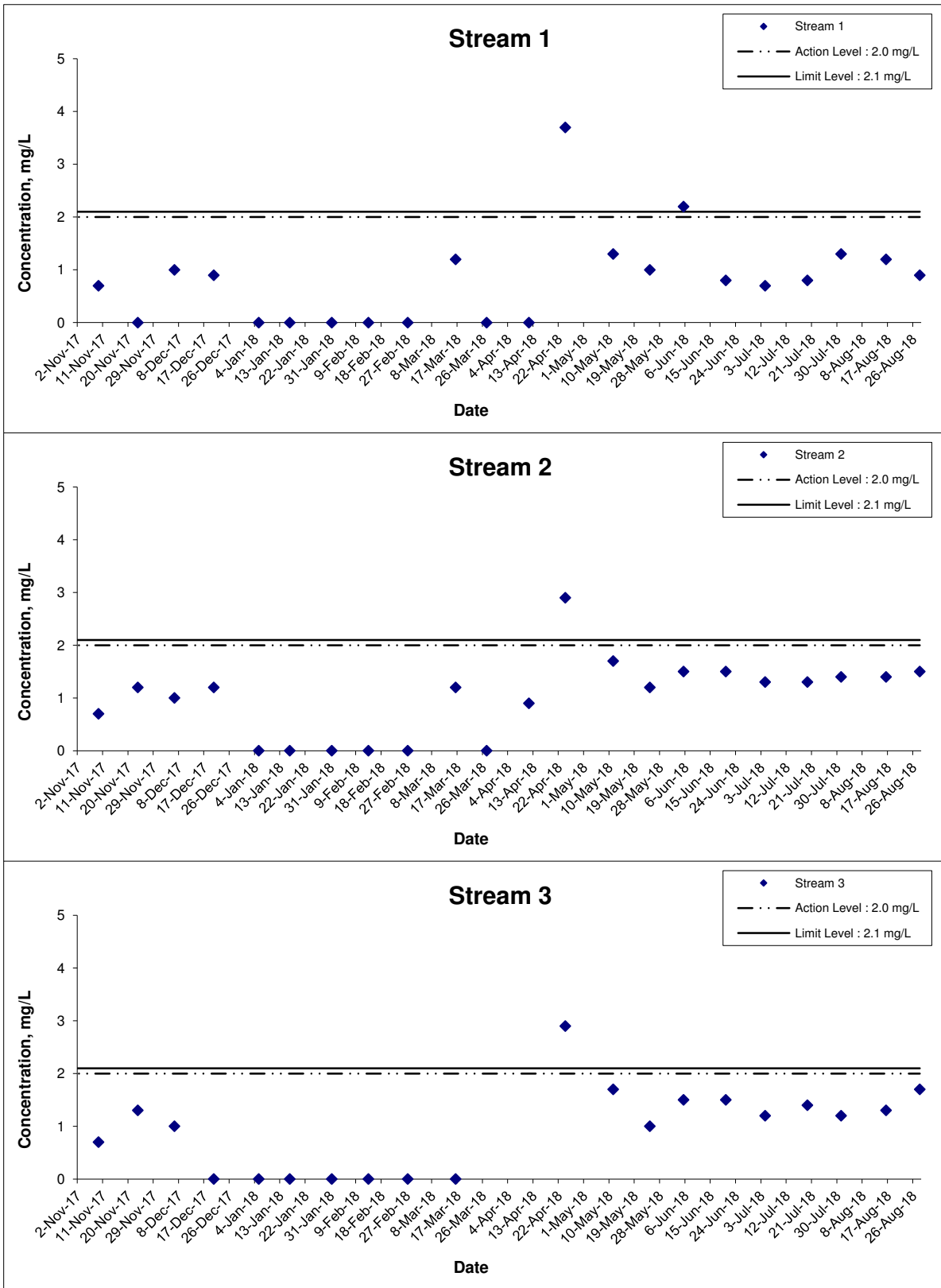
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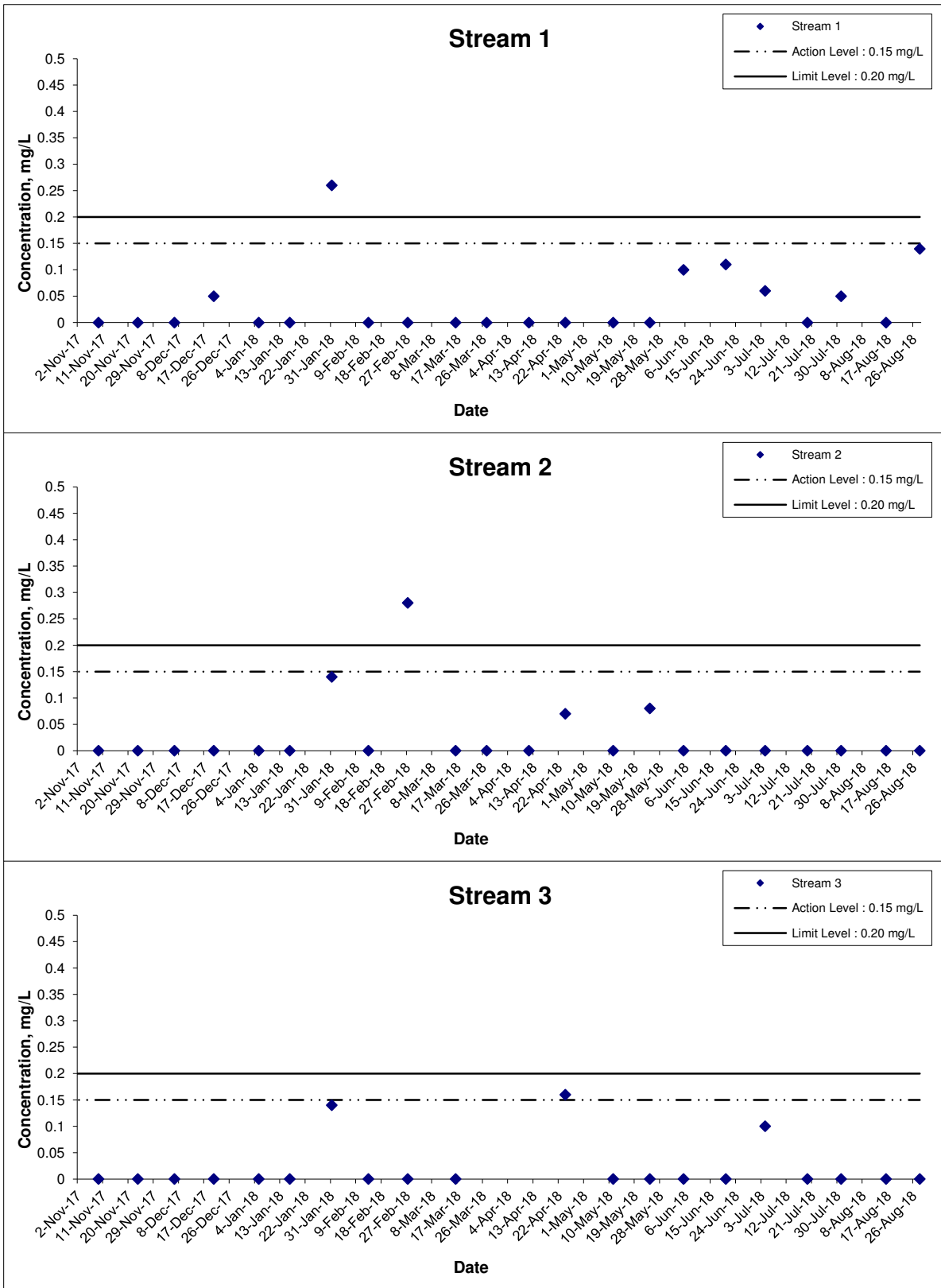
Total Nitrogen



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

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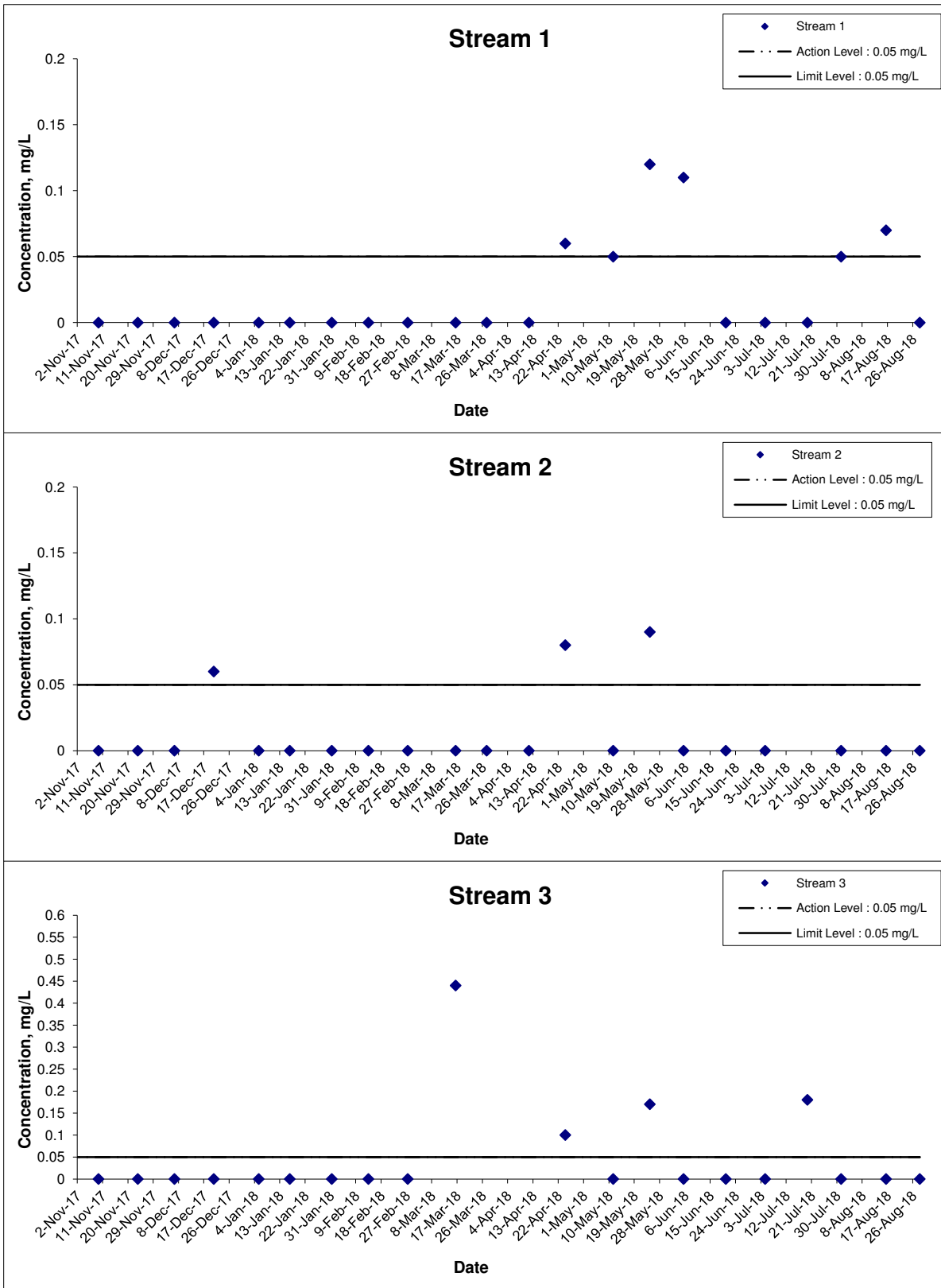
Ammonia-Nitrogen



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**

Appendix I - Action and Limit Levels for Marine Water Quality on 1 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.3 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.3 mg/L</u>	<u>7.9 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>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 01 August 2018**

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	15:05	Surface	1	27.7 27.4	27.6	7.9 7.9	7.9	27.6 27.9	27.8	89.2 88.3	88.8	6.0 6.0	6.0	5.4	1.7 1.7	1.7	2.3	5.5 5.4	5.5	5.8
				Middle	9	24.7 24.9	24.8	7.8 7.8	7.8	30.2 30.1	30.2	68.6 68.5	68.6	4.8 4.8	4.8	5.5 5.2	2.5 2.4	2.5		5.4		
				Bottom	17	24.2 24.3	24.3	7.8 7.8	7.8	30.6 30.5	30.6	63.2 63.6	63.4	4.5 4.5	4.5	6.4 6.7	2.7 2.8	2.8		6.6		
C2	Cloudy	Calm	13:59	Surface	1	28.9 28.8	28.9	8.0 8.0	8.0	26.3 26.3	26.3	107.3 107.2	107.3	7.2 7.0	7.1	5.8	1.4 1.5	1.5	3.4	4.9 5.0	5.0	5.4
				Middle	16	24.3 24.1	24.2	7.8 7.8	7.8	30.5 30.6	30.6	63.6 62.7	63.2	4.5 4.4	4.5	5.1 4.9	4.5 4.2	4.4		5.0		
				Bottom	31	24.2 24.2	24.2	7.8 7.8	7.8	30.6 30.6	30.6	62.9 62.6	62.8	4.4 4.4	4.4	6.0 6.1	4.7 4.1	4.4		6.1		
G1	Cloudy	Calm	14:32	Surface	1	28.8 28.9	28.9	8.2 8.2	8.2	27.7 27.6	27.7	172.3 153.6	163.0	11.4 10.2	10.8	8.6	1.1 1.1	1.1	1.3	4.6 4.5	4.6	4.1
				Middle	4	26.9 27.1	27.0	7.9 7.9	7.9	28.8 28.7	28.8	92.2 90.8	91.5	6.3 6.2	6.3	3.6 3.8	1.1 1.2	1.2		3.7		
				Bottom	7	26.4 25.9	26.2	7.8 7.8	7.8	29.2 29.7	29.5	66.1 59.7	62.9	4.5 4.1	4.3	4.1 4.0	1.7 1.6	1.7		4.1		
G2	Cloudy	Calm	14:21	Surface	1	29.1 29.0	29.1	8.2 8.2	8.2	27.7 27.7	27.7	175.6 165.7	170.7	11.6 10.9	11.3	8.6	1.0 1.1	1.1	1.6	5.4 5.3	5.4	6.0
				Middle	5	26.8 26.5	26.7	7.9 7.9	7.9	28.9 29.1	29.0	89.7 81.5	85.6	6.1 5.6	5.9	6.6 6.6	1.2 1.3	1.3		6.6		
				Bottom	9	24.9 24.9	24.9	7.8 7.8	7.8	30.3 30.4	30.4	64.2 62.4	63.3	4.5 4.4	4.5	5.9 5.9	2.5 2.5	2.5		5.9		
G3	Cloudy	Calm	14:37	Surface	1	29.2 29.0	29.1	8.1 8.0	8.1	27.5 27.6	27.6	143.0 142.0	142.5	9.4 9.1	9.3	7.5	1.5 1.5	1.5	1.6	4.8 4.7	4.8	5.5
				Middle	4	27.1 27.3	27.2	7.9 7.9	7.9	28.8 28.7	28.8	79.7 86.2	83.0	5.4 5.8	5.6	5.3 5.0	1.4 1.4	1.4		5.2		
				Bottom	7	26.5 26.0	26.3	7.8 7.8	7.8	29.2 29.6	29.4	63.2 63.2	63.2	4.3 4.3	4.3	6.6 6.5	1.9 2.0	2.0		6.6		
G4	Cloudy	Calm	14:48	Surface	1	28.4 28.6	28.5	8.1 8.2	8.2	27.8 27.7	27.8	150.6 145.8	148.2	10.0 9.7	9.9	8.1	1.2 1.2	1.2	1.6	4.4 4.3	4.4	5.4
				Middle	4	27.2 26.9	27.1	7.9 7.9	7.9	28.6 28.8	28.7	89.7 91.5	90.6	6.1 6.2	6.2	5.0 5.1	1.1 1.0	1.1		5.1		
				Bottom	7	25.8 26.5	26.2	7.8 7.8	7.8	29.7 29.2	29.5	62.9 65.8	64.4	4.3 4.5	4.4	6.8 6.5	2.5 2.4	2.5		6.7		
M1	Cloudy	Calm	14:27	Surface	1	29.3 29.3	29.3	8.1 8.1	8.1	27.4 27.4	27.4	148.6 145.1	146.9	9.8 9.7	9.8	8.1	1.0 1.2	1.1	1.3	3.0 3.0	3.0	3.2
				Middle	3	27.1 27.3	27.2	7.9 7.9	7.9	28.7 28.6	28.7	95.1 90.4	92.8	6.4 6.1	6.3	2.5 2.5	1.1 1.1	1.2		2.5		
				Bottom	5	26.7 26.6	26.7	7.8 7.8	7.8	29.0 29.1	29.1	74.1 69.7	71.9	5.0 4.8	4.9	3.9 4.0	1.4 1.5	1.5		4.0		
M2	Cloudy	Calm	14:14	Surface	1	28.4 28.2	28.3	8.2 8.1	8.2	27.8 28.0	27.9	164.9 151.5	158.2	11.0 10.1	10.6	8.9	1.1 1.1	1.1	1.3	5.2 5.2	5.2	4.8
				Middle	5.5	27.7 27.5	27.6	8.0 8.0	8.0	28.3 28.4	28.4	106.3 101.7	104.0	7.2 6.9	7.1	4.0 3.9	1.0 1.1	1.1		4.0		
				Bottom	10	24.9 24.9	24.9	7.8 7.8	7.8	30.3 30.3	30.3	65.3 59.4	62.4	4.6 4.1	4.4	5.0 5.1	1.5 1.8	1.7		5.1		
M3	Cloudy	Calm	14:42	Surface	1	29.3 28.5	28.9	8.1 7.9	8.0	27.2 27.9	27.6	137.7 137.7	137.7	9.1 9.1	9.1	7.3	1.6 1.8	1.7	1.7	4.3 4.8	4.6	4.5
				Middle	4	27.1 27.0	27.1	7.8 7.8	7.8	28.8 28.9	28.9	86.2 72.1	79.2	5.8 4.9	5.4	4.5 4.3	1.4 1.4	1.4		4.4		
				Bottom	7	26.4 26.2	26.3	7.8 7.8	7.8	29.4 29.5	29.5	62.9 62.3	62.6	4.3 4.3	4.3	4.4 4.5	1.9 2.0	2.0		4.5		
M4	Cloudy	Calm	14:08	Surface	1	28.6 28.6	28.6	8.2 8.2	8.2	27.8 27.8	27.8	164.2 153.1	158.7	10.9 10.2	10.6	9.6	1.2 1.3	1.3	1.4	3.6 3.8	3.7	4.9
				Middle	4.5	28.1 28.1	28.1	8.1 8.0	8.1	28.1 28.1	28.1	133.7 124.7	129.2	8.9 8.3	8.6	5.4 5.4	1.2 1.3	1.3		5.4		
				Bottom	8	26.0 25.8	25.9	7.9 7.8	7.9	29.4 29.7	29.6	79.8 71.7	75.8	5.5 4.9	5.2	5.5 5.9	1.4 1.5	1.5		5.7		
M5	Cloudy	Calm	14:58	Surface	1	28.0 28.0	28.0	8.0 8.0	8.0	27.8 27.8	27.8	118.8 115.4	117.1	8.0 7.7	7.9	7.8	1.5 1.4	1.5	2.3	5.7 5.8	5.8	5.9
				Middle	6	27.9 27.9	27.9	8.0 8.0	8.0	27.8 27.8	27.8	115.3 113.5	114.4	7.8 7.6	7.7	5.7 5.9	1.4 1.4	1.4		5.8		
				Bottom	11	24.8 24.8	24.8	7.8 7.8	7.8	30.3 30.4	30.4	65.2 64.7	65.0	4.6 4.5	4.6	5.9 6.1	3.8 4.0	3.9		6.0		
M6	Cloudy	Calm	14:52	Surface	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	1.1	-	-	4.7
				Middle	2.3	27.5 27.6	27.6	8.0 8.0	8.0	28.5 28.4	28.5	99.2 99.5	99.4	6.7 6.7	6.7	4.7 4.6	1.1 1.1	1.1		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 1 August 2018 (Mid-Flood Tide)

<u>Parameter</u> <u>(unit)</u>	<u>Depth</u>	<u>Action Level</u>	<u>Limit Level</u>
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.4 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.8 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.5 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.5 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>	<u>7.9 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>
<u>Station M6</u>			
Intake Level		<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 01 August 2018

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	09:42	Surface	1	28.2	28.2	8.0	8.0	27.6	27.7	110.5	105.9	7.4	7.1	6.0	1.4	1.3	2.1	5.8	5.8	6.7
				Middle	9.5	25.4	25.6	7.8	7.8	30.0	29.9	69.1	68.3	4.8	4.8		1.4	1.3		7.4	7.4	
				Bottom	18	23.8	23.8	7.8	7.8	30.9	30.9	62.5	61.6	4.4	4.4		3.7	3.7		6.8	6.8	
C2	Cloudy	Calm	08:31	Surface	1	27.8	28.1	7.8	7.9	28.0	27.7	86.0	88.9	5.8	6.0	5.3	1.2	1.3	2.6	5.1	5.0	6.0
				Middle	16.5	24.9	25.0	7.7	7.8	30.3	30.2	66.2	66.6	4.6	4.6		2.3	2.4		6.1	6.1	
				Bottom	32	23.9	23.6	7.8	7.8	30.8	30.9	61.9	61.6	4.4	4.4		4.1	3.9		4.0	6.6	
G1	Cloudy	Calm	09:09	Surface	1	28.4	28.5	8.0	8.0	27.9	27.8	119.8	121.2	8.0	8.1	6.6	0.9	0.9	2.0	5.8	5.9	6.8
				Middle	4	26.9	26.7	7.8	7.8	28.9	29.0	73.7	72.4	5.0	4.9		1.3	1.3		8.3	8.5	
				Bottom	7	24.7	24.6	7.8	7.8	30.5	30.5	66.7	65.0	4.7	4.7		3.9	3.9		6.1	6.1	
G2	Cloudy	Calm	08:53	Surface	1	28.3	28.3	8.0	8.0	27.9	28.0	115.1	115.1	7.7	7.7	6.4	1.0	1.0	1.6	4.7	4.7	5.3
				Middle	5	25.3	25.4	7.8	7.8	30.1	30.1	72.2	71.8	5.0	5.0		1.8	1.8		5.4	5.4	
				Bottom	9	24.5	24.6	7.8	7.8	30.5	30.5	64.7	66.0	4.5	4.6		2.1	2.1		5.9	5.9	
G3	Cloudy	Calm	09:13	Surface	1	28.6	28.7	8.0	8.1	27.8	27.8	124.7	122.1	8.3	8.2	6.6	0.9	0.9	2.2	4.4	4.4	5.7
				Middle	4	25.8	26.0	7.8	7.8	29.6	29.5	68.1	70.5	4.7	4.9		1.7	1.8		6.2	6.2	
				Bottom	7	25.2	25.4	7.8	7.8	30.1	30.0	69.2	64.8	4.8	4.7		3.7	3.8		6.5	6.4	
G4	Cloudy	Calm	09:25	Surface	1	28.5	28.6	8.0	8.0	27.5	27.3	118.0	116.5	7.9	7.8	6.3	1.0	1.0	2.4	4.8	5.0	5.7
				Middle	4	26.0	25.9	7.8	7.8	29.5	29.5	67.7	67.8	4.7	4.7		2.1	2.0		6.1	6.0	
				Bottom	7	24.6	24.6	7.8	7.8	30.5	30.5	63.2	64.7	4.4	4.5		4.2	4.3		6.1	6.1	
M1	Cloudy	Calm	09:04	Surface	1	28.6	28.6	8.1	8.1	27.7	27.7	123.8	124.8	8.2	8.5	7.2	0.8	0.8	1.7	5.3	5.4	5.6
				Middle	3	27.6	27.7	7.9	7.9	28.5	28.5	87.0	85.5	5.9	5.8		1.0	1.0		5.4	5.4	
				Bottom	5	25.4	25.6	7.8	7.8	30.1	29.9	66.8	67.8	4.6	4.7		3.1	3.3		6.1	6.1	
M2	Cloudy	Calm	08:48	Surface	1	28.3	28.2	8.1	8.1	27.8	27.9	123.3	123.3	8.2	8.2	6.6	1.0	1.0	1.6	5.4	5.4	5.2
				Middle	5.5	24.8	24.8	7.8	7.8	30.4	30.4	72.4	70.5	5.1	5.0		1.7	1.7		4.4	4.2	
				Bottom	10	24.6	24.6	7.8	7.8	30.5	30.5	66.7	65.7	4.7	4.7		1.9	2.0		6.0	6.0	
M3	Cloudy	Calm	09:19	Surface	1	28.9	28.7	8.1	8.1	27.5	27.8	95.7	95.7	6.4	6.4	5.6	2.0	2.0	2.5	4.6	4.7	4.2
				Middle	4	26.0	26.0	7.8	7.8	29.7	29.7	71.3	69.6	4.9	4.8		2.5	2.6		4.3	4.3	
				Bottom	7	25.4	25.3	7.8	7.8	30.0	30.1	68.2	64.4	4.7	4.6		2.8	2.9		3.7	3.7	
M4	Cloudy	Calm	08:42	Surface	1	28.1	28.1	8.0	8.0	28.0	28.0	108.4	106.2	7.3	7.2	7.2	1.1	1.1	1.4	5.3	5.2	5.4
				Middle	4.5	28.1	28.1	8.0	8.0	28.0	28.0	107.6	105.6	7.2	7.2		1.3	1.3		4.8	4.6	
				Bottom	8	26.7	26.9	7.8	7.9	29.0	28.9	68.9	72.6	4.7	4.8		1.9	1.9		6.5	6.5	
M5	Cloudy	Calm	09:35	Surface	1	27.9	27.9	8.0	8.0	28.0	28.0	101.4	99.9	6.8	6.7	5.9	1.1	1.1	2.1	5.2	5.2	5.7
				Middle	6	27.1	26.4	7.8	7.8	28.7	29.1	74.3	70.8	5.0	5.0		1.2	1.3		5.9	5.9	
				Bottom	11	24.2	24.2	7.8	7.8	30.7	30.7	61.2	60.5	4.3	4.3		3.8	3.8		6.0	6.0	
M6	Cloudy	Calm	09:30	Surface	-	-	-	-	-	-	-	-	-	-	7.6	-	-	0.8	-	-	6.7	
				Middle	2.5	28.3	28.3	8.0	8.0	27.6	27.6	110.8	113.8	7.4		7.6	0.8		0.8	6.9		6.7
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

Appendix I - Action and Limit Levels for Marine Water Quality on 3 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 6.7 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 7.3 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.4 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.4 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 8.0 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.7 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 03 August 2018**

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	16:29	Surface	1	28.7 28.8	28.8	7.9 7.9	7.9	29.3 29.1	29.2	85.5 83.6	84.6	5.6 5.5	5.6	5.0	2.6 2.6	2.6	2.8	5.3 5.4	5.4	5.8
				Middle	9	26.6 26.7	26.7	7.9 7.9	7.9	32.4 32.3	32.4	65.2 65.2	65.2	4.4 4.4	4.4		2.9 3.0	3.0		5.8 5.9	5.8	
				Bottom	17	26.3 26.6	26.5	7.9 7.9	7.9	32.9 32.4	32.7	64.5 65.2	64.9	4.3 4.4	4.4		2.9 2.8	2.9		6.2 6.1	6.2	
C2	Rainy	Moderate	15:03	Surface	1	30.3 30.2	30.3	7.9 7.9	7.9	26.9 27.0	27.0	103.2 97.5	100.4	6.6 6.2	6.4	5.4	1.7 1.8	1.8	3.7	5.8 5.6	5.7	6.4
				Middle	16.5	26.2 26.1	26.2	7.9 7.9	7.9	32.9 33.1	33.0	64.2 63.9	64.1	4.3 4.3	4.3		3.6 3.6	3.6		6.8 6.6	6.7	
				Bottom	32	26.2 26.1	26.2	7.9 7.9	7.9	32.9 33.0	33.0	63.9 63.8	63.9	4.3 4.3	4.3		5.6 5.6	5.6		6.7 6.7	6.7	
G1	Rainy	Moderate	15:41	Surface	1	29.9 29.8	29.9	8.2 8.2	8.2	29.0 29.0	29.0	141.8 138.8	140.3	9.2 9.0	9.1	7.4	1.1 1.0	1.1	2.1	4.7 4.4	4.6	4.6
				Middle	4	29.4 28.9	29.2	8.1 8.0	8.1	29.3 30.3	29.8	88.9 85.9	87.4	5.8 5.6	5.7		1.2 1.3	1.3		3.4 3.4	3.4	
				Bottom	7	26.2 26.4	26.3	7.9 7.9	7.9	33.1 32.9	33.0	66.3 67.1	66.7	4.5 4.5	4.5		3.9 4.0	4.0		5.8 5.8	5.8	
G2	Rainy	Moderate	15:26	Surface	1	29.9 29.8	29.9	8.2 8.2	8.2	29.1 29.1	29.1	140.1 137.1	138.6	9.1 8.9	9.0	6.8	1.0 1.2	1.1	2.3	5.6 5.7	5.7	5.1
				Middle	5	27.0 26.9	27.0	7.9 7.9	7.9	32.3 32.3	32.3	66.3 67.1	66.7	4.4 4.5	4.5		2.6 2.5	2.6		4.3 4.1	4.2	
				Bottom	9	26.1 26.1	26.1	7.9 7.9	7.9	33.1 33.1	33.1	64.1 63.7	63.9	4.3 4.3	4.3		3.1 3.1	3.1		5.6 5.4	5.5	
G3	Rainy	Moderate	15:50	Surface	1	29.7 29.7	29.7	8.1 8.1	8.1	29.1 29.1	29.1	140.9 129.9	135.4	9.2 8.4	8.8	8.3	1.1 1.2	1.2	2.4	3.9 3.9	3.9	4.9
				Middle	4	29.5 29.5	29.5	8.1 8.1	8.1	29.2 29.2	29.2	119.5 118.7	119.1	7.7 7.7	7.7		1.4 1.5	1.5		5.1 5.1	5.1	
				Bottom	7	26.2 26.3	26.3	7.9 7.9	7.9	33.0 33.0	33.0	65.6 65.8	65.7	4.4 4.4	4.4		4.6 4.5	4.6		5.9 5.5	5.7	
G4	Rainy	Moderate	16:05	Surface	1	30.3 30.3	30.3	8.2 8.2	8.2	28.6 28.6	28.6	146.5 147.4	147.0	9.5 9.5	9.5	8.9	0.9 0.9	0.9	2.4	3.9 4.1	4.0	4.4
				Middle	4	29.8 29.4	29.6	8.1 8.1	8.1	29.0 33.4	29.2	130.4 120.9	125.7	8.5 7.8	8.2		1.2 1.3	1.3		3.8 3.8	3.8	
				Bottom	7	26.2 26.1	26.2	7.9 7.9	7.9	33.1 33.1	33.1	68.2 63.3	65.8	4.6 4.3	4.5		5.0 5.0	5.0		5.5 5.5	5.5	
M1	Rainy	Moderate	15:35	Surface	1	29.7 29.7	29.7	8.1 8.1	8.1	29.2 29.2	29.2	125.3 126.0	125.7	8.1 8.1	8.1	7.8	1.1 1.0	1.1	2.1	4.6 4.5	4.6	4.8
				Middle	3	29.5 29.5	29.5	8.1 8.1	8.1	29.5 29.5	29.5	114.6 114.8	114.7	7.4 7.4	7.4		1.2 1.2	1.2		4.6 4.8	4.7	
				Bottom	5	26.9 29.4	28.2	7.9 8.1	8.0	32.4 29.5	31.0	110.8 113.9	112.4	7.4 7.4	7.4		3.9 4.2	4.1		5.0 4.9	5.0	
M2	Rainy	Moderate	15:19	Surface	1	29.7 29.7	29.7	8.2 8.1	8.2	29.2 29.2	29.2	138.4 132.2	135.3	9.0 8.6	8.8	7.0	1.1 1.1	1.1	1.9	5.5 5.4	5.5	4.6
				Middle	6	27.1 27.7	27.4	7.9 7.9	7.9	32.0 31.4	31.7	76.4 76.8	76.6	5.1 5.1	5.1		1.6 1.6	1.6		4.3 4.3	4.3	
				Bottom	11	26.1 26.1	26.1	7.9 7.9	7.9	33.1 33.1	33.1	65.3 65.0	65.2	4.4 4.4	4.4		3.0 3.0	3.0		4.0 4.0	4.0	
M3	Rainy	Moderate	15:58	Surface	1	29.8 29.8	29.8	8.2 8.2	8.2	29.1 29.0	29.1	145.5 138.7	142.1	9.5 9.0	9.3	8.8	1.2 1.2	1.2	2.5	5.1 5.0	5.1	5.9
				Middle	4	29.6 29.6	29.6	8.1 8.1	8.1	29.2 29.2	29.2	126.7 125.0	125.9	8.2 8.1	8.2		1.3 1.3	1.3		7.7 7.8	7.8	
				Bottom	7	26.4 26.5	26.5	7.9 7.9	7.9	33.0 33.0	33.0	65.1 66.0	65.6	4.4 4.4	4.4		5.1 4.9	5.0		4.8 4.7	4.8	
M4	Rainy	Moderate	15:11	Surface	1	29.5 29.5	29.5	8.0 8.0	8.0	28.8 29.0	28.9	108.4 112.6	110.5	7.0 7.3	7.2	7.5	1.7 1.5	1.6	2.5	6.1 6.1	6.1	6.3
				Middle	5	29.3 29.2	29.3	8.1 8.1	8.1	29.6 29.8	29.7	121.8 118.4	120.1	7.9 7.7	7.8		1.2 1.1	1.2		6.0 6.2	6.1	
				Bottom	9	26.0 26.0	26.0	7.9 7.9	7.9	33.2 33.2	33.2	64.7 64.9	64.8	4.4 4.4	4.4		4.4 4.7	4.6		6.7 6.7	6.7	
M5	Rainy	Moderate	16:19	Surface	1	29.3 29.2	29.3	8.0 8.0	8.0	28.9 29.0	29.0	109.1 105.1	107.1	7.1 6.8	7.0	5.7	1.9 1.9	1.9	3.6	6.0 6.1	6.1	5.0
				Middle	5.5	26.5 26.3	26.4	7.9 7.9	7.9	32.6 33.0	32.8	65.9 64.7	65.3	4.4 4.3	4.4		3.9 4.0	4.0		4.2 4.0	4.1	
				Bottom	10	26.1 26.1	26.1	7.9 7.9	7.9	33.1 33.1	33.1	65.8 65.2	65.5	4.4 4.4	4.4		4.7 4.8	4.8		5.0 4.7	4.9	
M6	Rainy	Moderate	16:12	Surface	-	-	-	-	-	-	-	-	-	-	-	9.2	-	-	1.2	-	-	7.9
				Middle	1	30.0 30.0	30.0	8.2 8.2	8.2	28.7 28.8	28.8	140.2 141.2	140.7	9.1 9.2	9.2		1.2 1.1	1.2		7.8 8.0	7.9	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 3 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 5.8 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 6.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.7 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.3 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.7 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.3 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.6 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 03 August 2018

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	11:21	Surface	1	29.8 29.9	29.9	8.1 8.1	8.1	28.6 28.4	28.5	117.2 116.1	116.7	7.6 7.5	7.6	6.2	1.2 1.3	1.3	2.8	5.6 5.6	5.6	6.0
				Middle	9	26.3 26.3	26.3	7.9 7.9	7.9	32.9 32.9	32.9	71.0 71.1	71.1	4.8 4.8	4.8		2.1 2.2	2.2		6.0 6.1	6.1	
				Bottom	17	25.8 25.8	25.8	7.9 7.9	7.9	33.3 33.3	33.3	71.4 71.2	71.3	4.8 4.8	4.8		4.8 4.8	4.8		6.3 6.3	6.3	
C2	Rainy	Moderate	09:51	Surface	1	28.6 28.2	28.4	7.9 7.9	7.9	29.5 30.2	29.9	86.3 84.3	85.3	5.7 5.6	5.7	5.2	1.7 1.8	1.8	3.0	5.3 5.2	5.3	5.1
				Middle	16.5	26.1 26.1	26.1	7.9 7.9	7.9	33.0 33.1	33.1	68.5 68.6	68.6	4.6 4.6	4.6		2.5 2.6	2.6		5.5 5.3	5.4	
				Bottom	32	25.9 25.9	25.9	7.9 7.9	7.9	33.3 33.3	33.3	69.4 69.7	69.6	4.7 4.7	4.7		4.5 4.4	4.5		4.5 4.6	4.6	
G1	Rainy	Moderate	10:33	Surface	1	29.8 29.9	29.9	8.1 8.1	8.1	28.9 28.7	28.8	112.1 114.1	113.1	7.2 7.3	7.3	5.9	1.0 0.9	1.0	1.8	5.5 5.4	5.5	5.3
				Middle	4	26.8 27.0	26.9	7.9 7.9	7.9	32.4 32.2	32.3	65.7 64.8	65.3	4.4 4.3	4.4		2.4 2.2	2.3		5.7 5.8	5.8	
				Bottom	7	26.2 26.2	26.2	7.9 7.9	7.9	33.0 32.9	33.0	69.1 69.0	69.1	4.6 4.6	4.6		2.3 2.1	2.2		4.5 4.5	4.5	
G2	Rainy	Moderate	10:19	Surface	1	29.3 29.5	29.4	8.0 8.1	8.1	29.4 29.3	29.4	103.4 104.0	103.7	6.7 6.7	6.7	5.7	1.0 0.9	1.0	1.9	5.4 5.5	5.5	6.2
				Middle	5	26.3 26.5	26.4	7.9 7.9	7.9	32.9 32.7	32.8	68.9 69.9	69.4	4.6 4.7	4.7		2.3 2.2	2.3		6.6 6.5	6.6	
				Bottom	9	26.1 26.1	26.1	7.9 7.9	7.9	33.1 33.1	33.1	69.0 69.4	69.2	4.6 4.7	4.7		2.3 2.4	2.4		6.6 6.5	6.6	
G3	Rainy	Moderate	10:40	Surface	1	29.7 28.6	29.2	8.1 7.9	8.0	28.8 30.3	29.6	113.4 112.8	113.1	7.4 7.4	7.4	6.1	0.7 0.7	0.7	2.6	4.1 4.1	4.1	5.3
				Middle	4	27.2 26.8	27.0	7.9 7.9	7.9	31.8 32.5	32.2	71.7 70.9	71.3	4.8 4.7	4.8		1.9 2.2	2.1		6.0 6.0	6.0	
				Bottom	7	26.3 26.4	26.4	7.9 7.9	7.9	33.0 33.0	33.0	68.2 68.7	68.5	4.6 4.6	4.6		5.0 5.1	5.1		5.8 5.7	5.8	
G4	Rainy	Moderate	10:57	Surface	1	29.9 30.3	30.1	8.1 8.1	8.1	28.8 28.4	28.6	126.1 125.6	125.9	8.1 8.1	8.1	6.3	0.8 0.8	0.8	2.7	5.1 4.9	5.0	5.9
				Middle	4	26.7 26.8	26.8	7.9 7.9	7.9	32.4 32.4	32.4	66.4 65.2	65.9	4.4 4.4	4.4		2.1 2.1	2.1		6.1 5.9	6.0	
				Bottom	7	26.2 26.3	26.3	7.9 7.9	7.9	33.0 33.0	33.0	64.2 65.6	65.0	4.3 4.4	4.4		5.2 5.1	5.2		6.7 6.4	6.6	
M1	Rainy	Moderate	10:27	Surface	1	29.9 30.0	30.0	8.1 8.1	8.1	28.9 28.8	28.9	111.5 111.7	111.6	7.2 7.2	7.2	5.8	0.7 0.7	0.7	2.0	4.6 4.8	4.7	5.2
				Middle	3	26.9 26.7	26.8	7.9 7.9	7.9	32.3 32.6	32.5	65.9 66.1	66.0	4.4 4.4	4.4		2.4 2.5	2.5		5.1 5.1	5.1	
				Bottom	5	26.4 26.4	26.4	7.9 7.9	7.9	32.8 32.8	32.8	65.6 65.1	65.4	4.4 4.4	4.4		2.7 2.8	2.8		5.8 5.8	5.8	
M2	Rainy	Moderate	10:11	Surface	1	29.5 29.5	29.5	8.1 8.0	8.1	29.3 29.2	29.3	110.1 107.2	108.7	7.1 6.9	7.0	5.9	0.9 1.0	1.0	2.3	5.1 5.5	5.3	5.5
				Middle	6	26.1 26.1	26.1	7.9 7.9	7.9	33.1 33.1	33.1	70.2 70.4	70.3	4.7 4.7	4.7		2.4 2.4	2.4		5.6 5.6	5.6	
				Bottom	11	26.0 26.0	26.0	7.9 7.9	7.9	33.2 33.2	33.2	68.4 69.1	68.8	4.6 4.7	4.7		3.5 3.6	3.6		5.8 5.6	5.7	
M3	Rainy	Moderate	10:49	Surface	1	29.7 29.8	29.8	8.1 8.1	8.1	28.9 28.7	28.8	109.7 111.4	110.6	7.0 7.2	7.1	5.9	0.8 0.8	0.8	2.3	6.2 6.0	6.1	6.4
				Middle	4	27.3 26.8	27.1	7.9 7.9	7.9	31.8 32.4	32.1	70.2 69.3	69.8	4.7 4.6	4.7		1.8 1.9	1.9		6.1 6.4	6.3	
				Bottom	7	26.4 26.4	26.4	7.9 7.9	7.9	33.0 33.0	33.0	69.6 69.9	69.8	4.7 4.7	4.7		4.2 4.1	4.2		6.8 6.7	6.8	
M4	Rainy	Moderate	10:01	Surface	1	29.4 29.5	29.5	8.0 8.0	8.0	29.4 29.4	29.4	109.1 107.3	108.2	7.0 6.9	7.0	5.8	0.9 1.1	1.0	2.4	3.9 3.5	3.7	4.1
				Middle	5	26.6 26.6	26.6	7.9 7.9	7.9	32.5 32.6	32.6	67.8 69.9	68.9	4.5 4.7	4.6		2.4 2.5	2.5		4.0 3.8	3.9	
				Bottom	9	26.5 26.6	26.6	7.9 7.9	7.9	32.7 32.5	32.6	66.4 67.2	66.8	4.4 4.5	4.5		3.7 3.5	3.6		4.8 4.8	4.8	
M5	Rainy	Moderate	11:11	Surface	1	29.6 29.6	29.6	8.0 8.0	8.0	28.8 28.6	28.7	103.4 102.4	102.9	6.6 6.6	6.6	5.6	1.3 1.5	1.4	2.4	5.3 5.4	5.4	6.0
				Middle	5.5	26.6 26.5	26.6	7.9 7.9	7.9	32.6 32.7	32.7	70.3 67.9	69.1	4.7 4.5	4.6		2.2 2.4	2.3		6.9 7.0	7.0	
				Bottom	10	26.0 26.0	26.0	7.9 7.9	7.9	33.2 33.2	33.2	70.3 68.9	69.6	4.7 4.6	4.7		3.5 3.4	3.5		5.5 5.7	5.6	
M6	Rainy	Moderate	11:05	Surface	-	-	-	-	-	-	-	-	-	-	-	7.9	-	-	0.8	-	-	5.3
				Middle	1	29.9 29.8	29.9	8.1 8.1	8.1	28.8 28.9	28.9	122.4 122.6	122.5	7.9 7.9	7.9		0.8 0.8	0.8		5.4 5.2	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 6 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.8 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 6.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.5 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.5 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.7 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.3 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Calm	18:04	Surface	1	27.8 27.8	27.8	9.9 8.5	9.2	30.2 30.2	30.2	185.5 182.0	183.8	12.3 12.2	4.4 4.5	4.5	8.4	2.2 2.4	2.3	3.5	4.1 4.2	4.2	4.3
				Middle	9	23.7 23.9	23.8	9.9 8.6	9.3	33.4 33.1	33.3	63.2 64.1	63.7	4.4 4.5	4.5	2.8 2.7		2.8	4.2 4.2		4.2		
				Bottom	17	22.9 22.9	22.9	9.4 8.5	9.0	33.9 33.9	33.9	61.0 60.9	61.0	4.3 4.3	4.3	5.6 5.2		5.4	4.6 4.5		4.6		
C2	Sunny	Calm	19:20	Surface	1	28.3 28.0	28.2	8.1 7.8	8.0	28.5 28.9	28.7	139.0 130.0	134.5	9.3 8.7	9.0	6.7	2.4 2.5	2.5	4.0	4.6 4.6	4.6	5.8	
				Middle	16.5	23.2 23.2	23.2	8.3 8.1	8.2	33.8 33.8	33.8	61.8 62.9	62.4	4.4 4.4	4.4		4.7 4.4	4.6		7.1 7.2	7.2		
				Bottom	32	23.2 23.2	23.2	8.1 8.0	8.1	33.8 33.8	33.8	61.9 62.4	62.2	4.4 4.4	4.4		4.9 4.6	4.8		5.6 5.5	5.6		
G1	Sunny	Calm	18:45	Surface	1	28.3 28.4	28.4	8.3 8.2	8.3	30.3 30.2	30.3	178.6 184.7	181.7	11.7 12.2	12.0	8.6	1.6 1.6	1.6	1.9	4.4 4.5	4.5	5.3	
				Middle	4	25.2 25.2	25.2	8.3 8.2	8.3	31.8 31.9	31.9	76.0 75.5	75.8	5.2 5.2	5.2		2.0 1.9	2.0		4.8 4.7	4.8		
				Bottom	7	24.9 24.2	24.6	8.3 8.2	8.3	32.4 33.1	32.8	66.4 66.6	66.5	4.6 4.6	4.6		2.1 2.0	2.1		6.4 6.5	6.5		
G2	Sunny	Calm	18:56	Surface	1	26.4 26.8	26.6	8.2 8.1	8.2	31.1 30.9	31.0	118.2 135.9	127.1	8.0 9.2	8.6	7.2	2.2 2.2	2.2	2.3	4.6 4.6	4.6	5.2	
				Middle	5	25.4 25.4	25.4	8.2 8.1	8.2	31.8 31.7	31.8	85.7 83.4	84.6	5.9 5.7	5.8		2.4 2.4	2.4		4.2 4.4	4.3		
				Bottom	9	24.2 24.4	24.3	8.2 8.1	8.2	33.0 32.8	32.9	69.0 68.4	68.7	4.8 4.7	4.8		2.4 2.3	2.4		6.5 6.6	6.6		
G3	Sunny	Calm	18:38	Surface	1	28.1 28.0	28.1	8.3 8.2	8.3	30.4 30.4	30.4	174.9 177.5	176.2	11.6 11.7	11.7	9.4	1.4 1.4	1.4	1.7	4.9 5.0	5.0	5.6	
				Middle	4	25.8 26.1	26.0	8.3 8.2	8.3	31.8 31.6	31.7	98.7 107.4	103.1	6.7 7.3	7.0		1.5 1.5	1.5		5.3 5.5	5.4		
				Bottom	7	25.0 24.8	24.9	8.3 8.2	8.3	32.3 32.6	32.5	69.2 72.7	71.0	4.8 5.0	4.9		2.2 2.3	2.3		6.2 6.4	6.3		
G4	Sunny	Calm	18:24	Surface	1	28.7 28.7	28.7	8.5 8.1	8.3	30.1 30.1	30.1	190.0 190.5	190.3	12.4 12.5	12.5	8.8	2.3 2.4	2.4	3.0	4.2 4.2	4.2	5.0	
				Middle	4	25.2 25.3	25.3	8.5 8.2	8.4	31.9 31.7	31.8	72.7 75.9	74.3	5.0 5.2	5.1		2.9 2.9	2.9		4.9 4.8	4.9		
				Bottom	7	24.5 24.2	24.4	8.2 8.2	8.2	32.7 33.0	32.9	64.0 66.3	65.2	4.4 4.6	4.5		3.6 3.6	3.6		5.7 5.8	5.8		
M1	Sunny	Calm	18:51	Surface	1	27.0 27.2	27.1	8.2 8.2	8.2	30.8 30.8	30.8	148.5 144.6	146.6	10.0 9.7	9.9	8.3	2.2 2.2	2.2	2.4	5.2 5.1	5.2	4.6	
				Middle	3	25.7 25.8	25.8	8.2 8.1	8.2	31.5 31.5	31.5	94.3 100.9	97.6	6.4 6.9	6.7		2.4 2.3	2.4		4.4 4.2	4.3		
				Bottom	5	25.3 25.3	25.3	8.2 8.1	8.2	32.0 31.9	32.0	79.1 77.3	78.2	5.4 5.3	5.4		2.4 2.5	2.5		4.3 4.2	4.3		
M2	Sunny	Calm	19:01	Surface	1	27.8 26.6	27.2	8.1 8.0	8.1	30.5 30.9	30.7	163.8 132.6	148.2	10.9 8.9	9.9	7.8	2.0 2.1	2.1	2.8	4.3 4.2	4.3	4.5	
				Middle	6	25.4 24.5	25.0	8.1 8.0	8.1	31.8 32.8	32.3	84.9 79.2	82.1	5.8 5.5	5.7		2.3 2.4	2.4		4.3 4.3	4.3		
				Bottom	11	23.7 23.6	23.7	8.1 8.0	8.1	33.4 33.5	33.5	64.1 61.8	63.0	4.5 4.3	4.4		3.7 3.9	3.8		4.9 4.9	4.9		
M3	Sunny	Calm	18:32	Surface	1	28.7 28.4	28.6	8.3 8.3	8.3	30.3 30.5	30.4	198.4 178.6	188.5	13.0 11.7	12.4	9.3	1.4 1.5	1.5	2.8	3.6 3.9	3.8	4.8	
				Middle	4	25.6 25.7	25.7	8.4 8.4	8.4	31.9 32.0	32.0	94.1 82.4	88.3	6.4 5.7	6.1		1.8 1.9	1.9		4.4 4.4	4.4		
				Bottom	7	24.4 24.2	24.3	8.4 8.4	8.4	33.0 32.7	32.9	64.0 63.1	63.6	4.4 4.4	4.4		5.1 4.8	5.0		6.3 6.3	6.3		
M4	Sunny	Calm	19:10	Surface	1	27.6 27.9	27.8	8.2 8.2	8.2	30.4 30.5	30.5	175.0 175.2	175.1	11.6 11.6	11.6	8.6	2.0 2.0	2.0	2.2	5.0 4.9	5.0	5.6	
				Middle	5	25.1 25.1	25.1	8.2 8.2	8.2	32.2 32.2	32.2	81.8 79.2	80.5	5.6 5.4	5.5		2.2 2.2	2.2		6.3 6.5	6.4		
				Bottom	9	24.8 24.8	24.8	8.1 8.1	8.1	32.5 32.4	32.5	70.3 67.6	69.0	4.9 4.7	4.8		2.3 2.3	2.3		5.3 5.5	5.4		
M5	Sunny	Calm	18:12	Surface	1	28.6 28.7	28.7	8.3 8.2	8.3	30.1 30.1	30.1	199.9 200.8	200.4	13.1 13.2	13.2	9.4	1.4 1.5	1.5	2.3	3.5 3.6	3.6	4.0	
				Middle	5.5	25.1 25.1	25.1	8.5 8.3	8.4	32.0 32.1	32.1	79.2 82.7	81.0	5.5 5.7	5.6		1.7 1.8	1.8		3.3 3.3	3.3		
				Bottom	10	23.9 23.8	23.9	8.5 8.4	8.5	33.2 33.2	33.2	64.3 62.9	63.6	4.5 4.4	4.5		3.4 3.6	3.5		5.0 4.9	5.0		
M6	Sunny	Calm	18:21	Surface	-	-	-	-	-	-	-	-	-	-	12.8	-	-	2.1	-	-	6.8		
				Middle	1.3	28.8 28.8	28.8	8.3 8.3	8.3	30.0 30.0	30.0	195.1 195.5	195.3	12.8 12.8		12.8	2.0 2.1		2.1	6.8 6.8		6.8	
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 7.1 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 7.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.6 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.6 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.5 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	13:04	Surface	1	27.8 27.8	27.8	10.1 8.5	9.3	30.2 30.2	30.2	184.8 180.1	182.5	12.3 12.0	12.2	8.7	2.3 2.3	2.3	3.8	4.7 4.7	4.7	5.1
				Middle	9	23.8 23.8	23.8	10.0 8.5	9.3	33.3 33.3	33.3	69.7 73.8	71.8	4.9 5.2	5.1		3.1 3.4	3.3		4.8 5.0	4.9	
				Bottom	17	22.9 22.9	22.9	9.5 8.6	9.1	33.9 33.9	33.9	65.7 65.4	65.6	4.6 4.6	4.6		6.0 5.7	5.9		5.8 5.8	5.8	
C2	Sunny	Calm	14:19	Surface	1	28.2 28.0	28.1	8.0 7.8	7.9	28.6 28.8	28.7	132.0 128.4	130.2	8.8 8.6	8.7	6.6	2.8 2.9	2.9	4.5	5.5 5.3	5.4	6.1
				Middle	16.5	23.2 23.2	23.2	8.4 8.1	8.3	33.8 33.8	33.8	62.2 64.1	63.2	4.4 4.5	4.5		5.2 4.9	5.1		6.6 6.8	6.7	
				Bottom	32	23.1 23.1	23.1	8.2 8.1	8.2	33.8 33.8	33.8	62.1 62.6	62.4	4.4 4.4	4.4		5.2 5.5	5.4		6.2 6.3	6.3	
G1	Sunny	Calm	13:44	Surface	1	27.9 28.3	28.1	8.2 8.2	8.2	30.6 30.2	30.4	161.3 183.3	172.3	10.7 12.1	11.4	8.6	2.0 2.1	2.1	2.8	5.2 5.3	5.3	6.1
				Middle	4	25.4 25.3	25.4	8.3 8.1	8.2	31.8 32.0	31.9	85.0 82.9	84.0	5.8 5.7	5.8		2.3 2.4	2.4		6.1 6.1	6.1	
				Bottom	7	24.9 24.1	24.5	8.3 8.2	8.3	32.4 33.2	32.8	66.6 68.0	67.3	4.6 4.7	4.7		3.7 4.0	3.9		6.9 6.7	6.8	
G2	Sunny	Calm	13:55	Surface	1	27.5 26.7	27.1	8.2 8.1	8.2	30.7 30.9	30.8	145.5 135.7	140.6	9.7 9.1	9.4	7.7	2.4 2.5	2.5	2.7	4.1 4.2	4.2	5.3
				Middle	5	25.4 25.4	25.4	8.2 8.0	8.1	31.8 31.7	31.8	88.0 85.5	86.8	6.0 5.9	6.0		2.8 2.7	2.8		6.3 6.4	6.4	
				Bottom	9	24.2 24.4	24.3	8.2 8.1	8.2	33.1 32.8	33.0	66.3 69.7	68.0	4.6 4.8	4.7		3.0 2.8	2.9		5.3 5.2	5.3	
G3	Sunny	Calm	13:37	Surface	1	27.4 28.1	27.8	8.3 8.2	8.3	30.8 30.4	30.6	159.9 174.9	167.4	10.7 11.5	11.1	9.1	2.0 1.9	2.0	2.3	4.4 4.2	4.3	4.8
				Middle	4	25.8 26.0	25.9	8.3 8.2	8.3	31.8 31.6	31.7	101.1 106.7	103.9	6.9 7.2	7.1		2.0 2.0	2.0		4.2 4.6	4.4	
				Bottom	7	25.0 24.7	24.9	8.3 8.2	8.3	32.4 32.6	32.5	68.0 57.7	62.9	4.7 4.0	4.4		2.9 2.7	2.8		5.9 5.7	5.8	
G4	Sunny	Calm	13:23	Surface	1	28.7 28.7	28.7	8.5 8.2	8.4	30.1 30.1	30.1	187.0 183.1	185.1	12.3 12.0	12.2	8.7	2.7 2.8	2.8	3.9	4.2 4.1	4.2	5.0
				Middle	4	25.1 25.4	25.3	8.5 8.1	8.3	31.9 31.7	31.8	74.2 77.9	76.1	5.1 5.3	5.2		3.3 3.3	3.3		5.3 5.2	5.3	
				Bottom	7	24.3 24.3	24.3	8.2 8.2	8.2	32.9 33.0	33.0	64.1 62.7	63.4	4.5 4.4	4.5		5.5 5.6	5.6		5.4 5.3	5.4	
M1	Sunny	Calm	13:50	Surface	1	27.1 27.1	27.1	8.2 8.2	8.2	30.8 30.7	30.8	151.1 138.7	144.9	10.1 9.3	9.7	8.3	2.6 2.6	2.6	2.8	4.2 4.0	4.1	5.1
				Middle	3	25.7 25.9	25.8	8.2 8.1	8.2	31.5 31.4	31.5	96.7 105.6	101.2	6.6 7.2	6.9		2.7 2.8	2.8		5.5 5.5	5.5	
				Bottom	5	25.3 25.3	25.3	8.2 8.1	8.2	32.0 31.9	32.0	79.5 77.9	78.7	5.5 5.4	5.5		2.7 3.0	2.9		5.8 5.5	5.7	
M2	Sunny	Calm	14:01	Surface	1	27.7 26.6	27.2	8.1 8.0	8.1	30.5 30.9	30.7	159.0 151.1	155.1	10.6 10.1	10.4	8.0	2.7 2.9	2.8	3.5	3.6 3.7	3.7	4.4
				Middle	6	25.4 24.5	25.0	8.1 8.0	8.1	31.8 32.8	32.3	84.7 77.9	81.3	5.8 5.4	5.6		2.8 2.9	2.9		4.4 4.3	4.4	
				Bottom	11	23.7 23.6	23.7	8.2 8.0	8.1	33.4 33.5	33.5	66.2 63.2	64.7	4.6 4.4	4.5		4.6 5.0	4.8		5.1 5.2	5.2	
M3	Sunny	Calm	13:32	Surface	1	28.7 28.5	28.6	8.2 8.2	8.2	30.3 30.3	30.3	196.4 192.2	194.3	12.8 12.6	12.7	9.5	1.8 1.9	1.9	2.8	5.1 5.1	5.1	6.2
				Middle	4	25.7 25.7	25.7	8.4 8.4	8.4	31.9 32.1	32.0	98.1 85.0	91.6	6.7 5.8	6.3		2.0 2.0	2.0		6.7 6.9	6.8	
				Bottom	7	24.6 24.2	24.4	8.4 8.4	8.4	32.8 32.7	32.8	66.8 67.4	67.1	4.6 4.7	4.7		4.4 4.5	4.5		6.5 6.7	6.6	
M4	Sunny	Calm	14:09	Surface	1	27.5 28.1	27.8	8.1 8.1	8.1	30.5 30.4	30.5	172.0 183.0	177.5	11.5 12.1	11.8	8.7	2.4 2.3	2.4	2.5	4.2 4.2	4.2	5.1
				Middle	5	25.1 25.0	25.1	8.2 8.3	8.3	32.2 32.2	32.2	82.4 80.3	81.4	5.7 5.5	5.6		2.5 2.5	2.5		5.7 5.7	5.7	
				Bottom	9	24.8 24.8	24.8	8.2 8.1	8.2	32.4 32.5	32.5	72.7 66.6	69.7	5.0 4.6	4.8		2.7 2.7	2.7		5.2 5.3	5.3	
M5	Sunny	Calm	13:12	Surface	1	28.6 28.7	28.7	8.3 8.2	8.3	30.1 30.2	30.2	197.4 199.8	198.6	12.9 13.1	13.0	9.4	1.9 1.8	1.9	2.8	3.6 3.8	3.7	4.7
				Middle	5.5	25.1 25.1	25.1	8.4 8.2	8.3	32.0 32.1	32.1	83.2 85.5	84.4	5.7 5.9	5.8		2.2 2.1	2.2		4.6 4.6	4.6	
				Bottom	10	23.9 23.8	23.9	8.5 8.4	8.5	33.2 33.2	33.2	62.2 62.9	62.6	4.3 4.4	4.4		4.4 4.1	4.3		5.7 5.9	5.8	
M6	Sunny	Calm	13:21	Surface	-	-	-	-	-	-	-	-	-	-	12.7	-	-	2.5	-	-	4.0	
				Middle	1.3	28.8 28.8	28.8	8.3 8.3	8.3	30.0 30.0	30.0	192.2 195.3	193.8	12.6 12.8		12.7	2.5 2.4		2.5	4.0 4.0		4.0
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.8 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 9.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.1 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.1 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.8 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Calm	10:19	Surface	1	26.9 26.7	26.8	8.3 8.3	8.3	30.9 31.2	31.1	86.3 85.8	86.1	5.8 5.8	5.8	5.4	0.6 0.5	0.6	2.9	5.7 5.8	5.8	5.8
				Middle	9	23.9 24.0	24.0	8.2 8.2	8.2	34.3 34.2	34.3	68.8 71.8	70.3	4.8 5.0	4.9		1.4 1.7	1.6		6.7 6.7	6.7	
				Bottom	17	23.4 23.4	23.4	8.2 8.2	8.2	34.8 34.7	34.8	62.5 62.4	62.5	4.4 4.4	4.4		6.6 6.1	6.4		4.9 4.8	4.9	
C2	Sunny	Calm	09:22	Surface	1	28.4 28.3	28.4	8.3 8.4	8.4	29.1 29.2	29.2	103.9 99.8	101.9	6.9 6.6	6.8	5.6	0.3 0.3	0.3	5.5	5.9 5.8	5.9	5.7
				Middle	17	23.6 23.6	23.6	8.2 8.2	8.2	34.5 34.6	34.6	61.5 61.1	61.3	4.3 4.3	4.3		9.1 8.9	9.0		5.2 5.3	5.3	
				Bottom	33	23.5 23.5	23.5	8.2 8.2	8.2	34.6 34.6	34.6	61.5 62.2	61.9	4.3 4.3	4.3		7.1 7.5	7.3		6.1 5.8	6.0	
G1	Sunny	Calm	09:51	Surface	1	27.1 27.2	27.2	8.4 8.4	8.4	31.5 31.4	31.5	109.1 109.9	109.5	7.3 7.3	7.3	6.5	0.3 0.3	0.3	0.4	4.4 4.4	4.4	5.2
				Middle	4.5	25.9 25.9	25.9	8.3 8.3	8.3	32.6 32.6	32.6	83.2 82.0	82.6	5.6 5.6	5.6		0.1 0.1	0.1		7.3 7.1	7.2	
				Bottom	8	24.4 24.3	24.4	8.2 8.2	8.2	34.0 34.0	34.0	66.2 66.8	66.5	4.6 4.6	4.6		0.8 0.8	0.8		4.0 4.0	4.0	
G2	Sunny	Calm	09:43	Surface	1	27.3 27.4	27.4	8.5 8.5	8.5	31.2 31.1	31.2	130.3 129.7	130.0	8.7 8.6	8.7	6.7	0.6 0.7	0.7	0.9	3.8 3.8	3.8	5.0
				Middle	5.5	25.7 25.0	25.4	8.3 8.2	8.3	32.6 33.3	33.0	64.4 67.9	66.2	4.5 4.7	4.6		0.6 0.7	0.7		5.4 5.3	5.4	
				Bottom	10	24.1 24.1	24.1	8.2 8.2	8.2	34.2 34.2	34.2	64.2 61.2	62.7	4.4 4.2	4.3		1.2 1.3	1.3		5.7 5.6	5.7	
G3	Sunny	Calm	09:56	Surface	1	27.6 27.5	27.6	8.5 8.5	8.5	31.1 31.1	31.1	134.7 126.6	130.7	8.9 8.4	8.7	6.8	1.0 1.0	1.0	1.2	5.0 5.0	5.0	5.5
				Middle	4.5	25.6 26.0	25.8	8.3 8.3	8.3	32.7 32.5	32.6	70.8 74.2	72.5	4.8 5.0	4.9		0.9 0.9	0.9		4.7 4.8	4.8	
				Bottom	8	24.5 24.4	24.5	8.2 8.2	8.2	33.8 33.9	33.9	65.9 64.6	65.0	4.5 4.5	4.5		1.6 1.7	1.7		6.7 6.5	6.6	
G4	Sunny	Calm	10:04	Surface	1	27.5 27.2	27.4	8.6 8.5	8.6	31.4 31.5	31.5	138.9 130.0	134.5	8.7 8.7	8.7	6.8	0.7 0.6	0.8	1.1	4.7 4.6	4.7	4.8
				Middle	4	25.2 25.5	25.4	8.2 8.3	8.3	33.2 32.9	33.1	71.3 71.4	71.4	4.9 4.9	4.9		1.2 1.2	1.2		4.2 4.3	4.3	
				Bottom	7	24.5 24.4	24.5	8.2 8.2	8.2	33.8 33.9	33.9	65.6 62.5	64.1	4.5 4.3	4.4		1.2 1.1	1.2		5.4 5.1	5.3	
M1	Sunny	Calm	09:48	Surface	1	27.5 27.4	27.5	8.5 8.3	8.3	31.6 31.6	31.6	91.5 87.0	89.3	6.1 5.8	6.0	5.7	0.6 0.6	0.6	0.6	3.0 3.0	3.0	4.2
				Middle	3.5	26.3 26.3	26.3	8.3 8.3	8.3	32.3 32.2	32.3	77.6 82.7	80.2	5.2 5.6	5.4		0.6 0.5	0.6		5.5 5.7	5.6	
				Bottom	6	25.7 25.6	25.7	8.3 8.3	8.3	32.7 32.8	32.8	67.1 67.9	67.5	4.5 4.6	4.6		0.5 0.5	0.5		4.1 4.1	4.1	
M2	Sunny	Calm	09:39	Surface	1	27.7 27.7	27.7	8.6 8.6	8.6	31.0 31.0	31.0	142.1 139.1	140.6	9.4 9.2	9.3	7.2	1.0 1.0	1.0	2.3	4.9 4.8	4.9	5.2
				Middle	6	25.3 25.4	25.4	8.3 8.3	8.3	33.0 33.0	33.0	72.9 74.0	73.5	5.0 5.0	5.0		1.2 1.3	1.3		4.6 4.6	4.6	
				Bottom	11	23.7 23.7	23.7	8.2 8.2	8.2	34.6 34.6	34.6	65.4 63.6	64.5	4.5 4.4	4.5		4.5 4.4	4.5		5.9 6.1	6.0	
M3	Sunny	Calm	09:59	Surface	1	27.1 27.2	27.2	8.4 8.4	8.4	31.6 31.4	31.5	107.3 105.5	106.4	7.2 7.0	7.1	6.0	1.0 1.0	1.0	1.4	4.5 4.6	4.6	5.3
				Middle	4.5	26.0 25.8	25.9	8.2 8.2	8.2	32.6 32.7	32.7	71.3 69.3	70.3	4.8 4.7	4.8		1.0 1.1	1.1		6.2 6.4	6.3	
				Bottom	8	24.4 24.4	24.4	8.2 8.2	8.2	33.9 33.9	33.9	68.4 67.1	67.8	4.7 4.6	4.7		2.0 2.0	2.0		5.1 5.1	5.1	
M4	Sunny	Calm	09:34	Surface	1	27.7 27.7	27.7	8.6 8.6	8.6	30.9 30.9	30.9	141.4 138.1	139.8	9.4 9.2	9.3	7.7	0.2 0.2	0.2	0.4	3.9 4.0	4.0	4.6
				Middle	4.5	26.1 25.9	26.0	8.3 8.3	8.3	32.2 32.5	32.4	83.8 94.1	89.0	5.7 6.4	6.1		0.3 0.3	0.3		5.0 5.0	5.0	
				Bottom	8	25.4 25.3	25.4	8.3 8.3	8.3	32.9 33.1	33.0	73.7 68.7	71.2	5.0 4.7	4.9		0.6 0.5	0.6		4.8 4.7	4.8	
M5	Sunny	Calm	10:13	Surface	1	26.8 26.8	26.8	8.4 8.4	8.4	31.2 31.1	31.2	91.8 90.1	91.0	6.2 6.1	6.2	5.9	1.3 1.1	1.2	4.0	4.3 4.5	4.4	5.5
				Middle	6	25.0 26.7	25.9	8.3 8.4	8.4	33.1 31.3	32.2	74.2 87.6	80.9	5.0 5.9	5.5		3.7 3.2	3.5		5.7 5.9	5.8	
				Bottom	11	23.8 23.8	23.8	8.2 8.2	8.2	34.5 34.5	34.5	65.4 69.5	67.5	4.5 4.8	4.7		7.4 7.4	7.4		6.1 6.2	6.2	
M6	Sunny	Calm	10:08	Surface	-	-	-	-	-	-	-	-	-	-	-	9.0	-	-	1.5	-	-	4.2
				Middle	2.4	27.2 27.2	27.2	8.5 8.5	8.5	31.5 31.5	31.5	135.5 134.1	134.8	9.0 8.9	9.0		1.6 1.4	1.5		4.1 4.2	4.2	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 10.1 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 10.9 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>		
	Surface	<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.8 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.2 mg/L</u>
	<u>Stations M1-M5</u>		
	Surface	<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.8 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.2 mg/L</u>
	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.4 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.9 mg/L</u>
	<u>Station M6</u>		
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Sunny	Calm	16:12	Surface	1	28.3	28.3	8.7	8.7	30.6	30.6	163.4	160.9	10.7	10.6	7.6	1.1	1.2	3.9	4.8	4.8	5.3	
				Middle	9	25.2	24.8	25.0	8.3	8.3	32.9	33.3	66.3	67.5	4.5		4.6	2.1		2.0	5.9		5.9
				Bottom	17	23.2	23.2	23.2	8.3	8.3	34.8	34.8	62.9	63.5	4.4		4.4	8.7		8.4	5.3		5.3
C2	Sunny	Calm	15:18	Surface	1	27.7	27.6	8.5	8.5	30.8	31.1	138.6	138.8	9.2	9.2	7.2	1.6	1.6	2.7	4.7	4.8	4.9	
				Middle	16	25.5	25.2	25.4	8.3	8.3	32.9	33.0	81.2	76.3	5.5		5.2	1.2		1.3	4.7		4.8
				Bottom	31	23.8	24.5	24.2	8.2	8.2	34.4	34.1	66.3	69.7	4.6		4.7	5.4		5.3	5.0		5.1
G1	Sunny	Calm	15:43	Surface	1	27.6	27.7	8.5	8.6	31.6	31.5	147.2	145.3	9.7	9.6	7.7	2.0	2.0	2.4	4.7	4.8	6.0	
				Middle	4	25.5	25.6	25.6	8.3	8.3	32.7	32.7	83.1	84.0	5.7		5.8	2.4		2.5	7.6		7.7
				Bottom	7	24.9	24.9	24.9	8.3	8.3	33.3	33.3	69.1	68.1	4.7		4.7	2.5		2.6	5.6		5.6
G2	Sunny	Calm	15:34	Surface	1	27.3	27.2	8.6	8.6	31.5	31.6	142.7	140.5	9.5	9.4	8.5	1.9	1.9	3.6	5.7	5.7	5.2	
				Middle	5	26.3	26.6	26.5	8.4	8.5	32.1	32.0	110.5	111.9	7.4		7.5	1.9		1.9	4.8		4.8
				Bottom	9	24.2	24.3	24.3	8.2	8.2	34.1	34.1	68.4	67.1	4.7		4.6	7.1		7.1	5.0		5.1
G3	Sunny	Calm	15:47	Surface	1	27.4	27.5	8.5	8.5	31.6	31.5	120.3	116.8	8.0	7.8	6.4	2.6	2.6	4.5	4.7	4.7	5.0	
				Middle	4	25.2	25.1	25.2	8.3	8.3	33.0	33.1	72.6	70.5	5.0		4.9	3.2		3.6	5.1		5.2
				Bottom	7	24.6	24.4	24.5	8.2	8.2	33.8	33.9	64.0	63.2	4.4		4.4	3.9		7.4	4.9		5.1
G4	Sunny	Calm	15:55	Surface	1	26.8	26.8	8.5	8.5	31.9	32.0	127.3	123.5	8.5	8.3	6.8	2.6	2.6	3.8	4.5	4.7	5.0	
				Middle	4	25.5	25.6	25.6	8.3	8.3	32.6	32.6	76.7	76.4	5.2		5.2	2.6		2.7	4.6		4.8
				Bottom	7	24.6	24.7	24.7	8.2	8.2	33.6	33.6	62.3	63.2	4.3		4.4	5.9		6.0	5.4		5.4
M1	Sunny	Calm	15:39	Surface	1	27.5	27.6	8.5	8.5	31.6	31.6	133.6	135.5	8.9	9.0	7.7	1.9	2.1	2.2	5.2	5.2	5.3	
				Middle	3	25.8	26.0	26.0	8.4	8.4	32.5	32.4	91.7	93.9	6.2		6.4	2.2		2.3	5.1		5.2
				Bottom	5	25.5	25.5	25.5	8.3	8.3	32.7	32.8	78.8	78.6	5.4		5.4	2.4		2.3	5.4		5.4
M2	Sunny	Calm	15:29	Surface	1	28.5	28.4	8.7	8.7	31.1	31.2	185.1	183.4	12.1	12.0	9.0	1.1	1.2	3.0	5.3	5.3	5.3	
				Middle	5.5	25.4	25.2	25.2	8.3	8.3	32.9	33.1	87.4	87.3	6.0		6.0	2.5		2.7	5.2		5.2
				Bottom	10	23.8	23.8	23.8	8.2	8.2	34.5	34.6	71.0	64.2	4.9		4.7	5.2		5.1	5.3		5.5
M3	Sunny	Calm	15:50	Surface	1	26.7	26.9	8.5	8.5	32.0	31.9	112.1	112.2	7.5	7.5	6.1	2.5	2.7	4.1	4.1	4.1	4.8	
				Middle	4	25.1	25.2	25.2	8.3	8.3	33.1	33.1	68.3	67.5	4.7		4.7	4.9		4.6	4.9		4.9
				Bottom	7	24.9	24.6	24.8	8.2	8.2	33.3	33.5	67.5	63.6	4.6		4.5	4.9		4.9	5.5		5.5
M4	Sunny	Calm	15:24	Surface	1	28.3	28.3	8.7	8.7	31.2	31.2	177.2	175.5	11.6	11.5	11.2	0.8	0.9	1.2	4.4	4.6	5.3	
				Middle	4.5	28.0	28.2	28.1	8.6	8.6	31.2	31.2	163.3	163.6	10.7		10.8	1.2		1.3	5.2		5.3
				Bottom	8	26.8	26.9	26.9	8.4	8.5	31.8	31.8	115.4	123.8	7.7		8.0	1.4		1.5	6.0		6.1
M5	Sunny	Calm	16:05	Surface	1	28.0	27.9	8.6	8.6	30.5	30.6	140.1	139.1	9.3	9.2	7.8	1.2	1.3	4.2	4.6	4.6	4.6	
				Middle	6	26.1	25.4	25.8	8.4	8.4	32.2	32.5	94.2	91.8	6.4		6.3	1.8		1.9	4.1		4.1
				Bottom	11	24.3	24.3	24.3	8.3	8.3	33.9	33.9	63.9	61.4	4.4		4.3	9.2		9.3	4.9		5.0
M6	Sunny	Calm	16:00	Surface	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	1.1	-	-	5.0	
				Middle	2.3	26.3	26.3	8.4	8.4	32.0	32.0	105.7	106.2	7.1	7.2		1.1	1.1		5.0	5.0		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 10.7 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 11.6 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.6 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.2 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Calm	11:09	Surface	1	28.2	28.2	8.6	8.6	30.9	30.9	105.0	104.7	6.9	6.9	6.2	1.3	1.3	3.9	5.4	5.4	5.6
				Middle	9	26.6	26.8	8.5	8.5	31.9	31.8	78.8	80.6	5.3	5.4		4.1	4.1		5.2	5.1	
				Bottom	17	25.4	25.5	8.4	8.4	32.9	32.9	61.1	62.7	4.2	4.3		6.4	6.3		6.5	6.4	
C2	Rainy	Calm	10:15	Surface	1	27.6	27.7	8.5	8.5	30.9	30.9	96.1	95.8	6.4	6.4	5.9	1.9	2.0	5.4	5.2	5.2	5.5
				Middle	16	26.5	26.6	8.4	8.4	31.9	31.8	76.2	77.7	5.1	5.3		5.2	5.2		5.8	5.8	
				Bottom	31	26.0	25.9	8.4	8.4	32.3	32.4	70.3	69.2	4.8	4.7		8.7	8.9		5.4	5.5	
G1	Rainy	Calm	10:43	Surface	1	28.6	28.6	8.7	8.7	30.4	30.4	117.9	116.3	7.7	7.6	7.5	0.3	0.3	2.7	4.7	4.7	5.9
				Middle	4	28.6	28.6	8.6	8.6	30.5	30.5	111.4	111.8	7.3	7.3		0.4	0.4		9.7	9.9	
				Bottom	7	28.2	28.2	8.6	8.6	30.7	30.8	102.1	100.0	6.7	6.6		7.2	7.3		3.2	3.2	
G2	Rainy	Calm	10:34	Surface	1	29.0	29.0	8.7	8.7	30.5	30.5	115.8	115.7	7.5	7.5	7.3	0.2	0.2	1.2	4.5	4.5	5.6
				Middle	5	28.8	28.8	8.6	8.6	30.5	30.5	107.1	107.2	7.0	7.0		1.4	1.4		5.8	5.8	
				Bottom	9	28.3	28.3	8.6	8.6	30.8	30.8	103.0	102.4	6.8	6.8		2.1	2.1		6.4	6.4	
G3	Rainy	Calm	10:47	Surface	1	28.6	28.6	8.7	8.7	30.3	30.3	117.5	117.3	7.7	7.7	7.6	0.2	0.2	0.5	4.5	4.5	4.0
				Middle	4	28.6	28.6	8.7	8.7	30.4	30.5	112.4	113.3	7.4	7.5		0.3	0.3		4.6	4.5	
				Bottom	7	28.4	28.5	8.6	8.6	30.4	30.5	106.1	108.3	7.0	7.1		1.1	1.0		2.9	3.0	
G4	Rainy	Calm	10:56	Surface	1	28.9	28.9	8.7	8.7	30.5	30.5	118.0	116.9	7.7	7.6	7.5	0.3	0.3	1.6	3.1	3.1	4.0
				Middle	3.5	28.8	28.8	8.7	8.7	30.5	30.5	112.2	111.8	7.3	7.3		0.4	0.5		4.3	4.3	
				Bottom	6	28.4	28.5	8.6	8.6	30.6	30.6	107.7	107.7	7.1	7.1		4.1	4.1		4.6	4.7	
M1	Rainy	Calm	10:39	Surface	1	28.9	28.9	8.7	8.7	30.5	30.5	112.7	112.7	7.3	7.3	7.3	0.7	0.7	0.9	4.4	4.4	4.4
				Middle	3	28.9	28.9	8.6	8.7	30.5	30.5	111.0	111.6	7.2	7.3		1.0	1.0		3.0	3.0	
				Bottom	5	28.7	28.8	8.6	8.6	30.6	30.6	101.6	106.0	6.6	6.9		1.0	1.0		2.9	5.7	
M2	Rainy	Calm	10:30	Surface	1	29.0	29.0	8.7	8.7	30.5	30.5	115.3	114.4	7.5	7.5	7.3	0.3	0.3	2.2	4.5	4.6	3.7
				Middle	6	28.8	28.8	8.6	8.6	30.6	30.6	107.4	107.0	7.0	7.0		1.1	1.2		2.6	2.6	
				Bottom	11	27.5	27.5	8.5	8.5	31.4	31.4	88.0	88.9	5.8	5.9		5.1	5.2		3.8	3.8	
M3	Rainy	Calm	10:50	Surface	1	28.6	28.5	8.6	8.6	30.3	30.1	114.9	106.2	7.5	7.0	7.5	2.4	2.4	1.1	5.1	5.2	5.0
				Middle	4	28.7	28.7	8.7	8.7	30.4	30.4	120.1	119.6	7.9	7.9		0.3	0.3		5.1	5.2	
				Bottom	7	28.6	28.6	8.7	8.7	30.5	30.5	112.7	109.5	7.4	7.2		0.7	0.7		4.5	4.5	
M4	Rainy	Calm	10:23	Surface	1	29.0	29.0	8.6	8.6	30.6	30.6	114.1	114.1	7.4	7.4	7.3	0.4	0.4	0.7	3.6	3.6	4.0
				Middle	4.5	28.9	28.9	8.6	8.6	30.6	30.6	109.2	109.4	7.1	7.1		0.6	0.6		3.5	3.5	
				Bottom	8	28.4	28.4	8.6	8.6	30.8	30.8	103.4	103.5	6.8	6.8		1.0	1.1		4.8	4.8	
M5	Rainy	Calm	11:05	Surface	1	28.5	28.5	8.6	8.6	30.6	30.6	111.6	110.8	7.3	7.3	6.9	1.7	1.7	2.1	4.7	4.6	5.6
				Middle	5.5	27.8	27.8	8.6	8.6	31.1	31.1	98.1	98.1	6.5	6.5		2.0	2.0		5.6	5.7	
				Bottom	10	26.4	26.4	8.4	8.4	32.1	32.1	76.7	76.8	5.2	5.2		2.5	2.6		6.2	6.4	
M6	Rainy	Calm	11:00	Surface	-	-	-	-	-	-	-	-	-	-	-	7.7	-	-	0.1	-	-	6.3
				Middle	2	28.9	28.9	8.7	8.7	30.5	30.5	117.0	117.3	7.6	7.7		0.1	0.1		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 10 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 9.4 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 10.1 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.5 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.5 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 8.0 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.7 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition*	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Calm	18:03	Surface	1	28.3	28.3	8.6	8.6	30.6	30.6	109.0	108.7	7.2	7.2	6.1	1.8	1.8	4.3	5.3	5.4	5.7
				Middle	9	26.0	26.2	8.4	8.4	32.4	32.2	72.2	73.3	4.9	5.0		3.3	3.3		5.1	5.1	
				Bottom	17	23.9	24.0	8.3	8.3	34.3	34.2	64.4	64.6	4.5	4.5		7.8	7.8		6.7	6.7	
C2	Rainy	Calm	17:08	Surface	1	28.0	28.1	8.5	8.6	29.8	29.9	100.6	101.3	6.7	6.8	6.0	1.6	1.6	3.3	5.3	5.4	5.1
				Middle	16	27.2	27.3	8.4	8.4	30.9	30.8	76.8	78.3	5.1	5.2		3.1	3.1		4.1	4.0	
				Bottom	31	27.2	27.2	8.4	8.4	31.0	31.0	76.9	77.8	5.1	5.2		5.2	5.3		6.0	6.0	
G1	Rainy	Calm	17:40	Surface	1	28.3	28.3	8.5	8.5	29.5	29.7	105.2	103.9	7.0	6.9	6.7	2.3	2.4	1.9	3.8	3.9	5.0
				Middle	4	28.1	28.1	8.4	8.5	30.9	30.9	98.5	98.7	6.5	6.5		1.6	1.7		5.1	5.1	
				Bottom	7	28.0	28.0	8.5	8.5	31.0	31.0	96.5	96.6	6.4	6.4		1.6	1.6		6.0	6.0	
G2	Rainy	Calm	17:23	Surface	1	28.3	28.3	8.6	8.6	30.6	30.6	104.0	104.3	6.8	6.9	6.9	1.7	1.7	3.0	4.5	4.6	6.0
				Middle	5	28.2	28.2	8.6	8.6	30.9	30.9	101.5	102.5	6.7	6.8		0.9	1.0		7.5	7.5	
				Bottom	9	27.6	27.6	8.5	8.5	31.2	31.2	89.5	89.9	5.9	6.0		6.2	6.2		5.8	5.8	
G3	Rainy	Calm	17:44	Surface	1	28.2	28.2	8.5	8.5	28.5	28.5	101.0	101.2	6.7	6.8	6.6	2.6	2.6	3.2	5.2	5.2	5.7
				Middle	4	28.1	28.1	8.5	8.5	30.8	30.9	98.0	95.4	6.3	6.3		2.9	3.0		5.2	5.2	
				Bottom	7	27.9	27.9	8.5	8.5	31.0	31.0	92.0	91.7	6.1	6.1		3.9	3.9		6.5	6.7	
G4	Rainy	Calm	17:51	Surface	1	28.5	28.5	8.6	8.6	30.0	30.1	112.7	110.2	7.4	7.3	7.1	1.8	1.8	1.7	4.1	4.3	5.2
				Middle	3.5	28.1	28.1	8.6	8.6	30.9	30.9	103.8	103.5	6.8	6.8		1.3	1.4		4.7	4.7	
				Bottom	6	28.0	28.0	8.5	8.5	31.0	31.0	97.5	98.7	6.4	6.5		2.0	1.9		6.8	6.7	
M1	Rainy	Calm	17:27	Surface	1	28.5	28.4	8.6	8.6	29.1	29.9	102.5	101.7	6.8	6.7	6.7	3.2	3.2	2.5	1.1	1.2	4.2
				Middle	3	28.1	28.2	8.6	8.6	30.9	30.9	98.5	99.3	6.5	6.6		2.0	2.0		5.6	5.6	
				Bottom	5	28.1	28.1	8.6	8.6	30.9	30.9	98.3	98.3	6.5	6.5		2.2	2.3		5.8	5.9	
M2	Rainy	Calm	17:19	Surface	1	28.5	28.6	8.6	8.6	30.2	30.2	108.6	108.8	7.1	7.1	6.7	2.6	2.7	5.1	5.2	5.1	4.7
				Middle	6	27.8	28.1	8.5	8.6	31.1	31.0	88.9	95.0	5.9	6.3		4.3	4.4		4.1	4.2	
				Bottom	11	27.4	27.5	8.5	8.5	31.4	31.4	85.4	86.6	5.7	5.7		8.1	8.2		4.8	4.7	
M3	Rainy	Calm	17:47	Surface	1	28.2	28.3	8.5	8.5	30.1	29.8	100.5	100.5	6.6	6.7	6.5	3.1	3.1	4.1	5.5	5.4	6.0
				Middle	4	28.0	28.0	8.5	8.5	31.0	31.0	95.3	94.6	6.3	6.3		3.3	3.4		6.3	6.3	
				Bottom	7	27.8	27.8	8.5	8.5	31.1	31.1	87.5	87.1	5.8	5.8		5.7	5.8		6.3	6.4	
M4	Rainy	Calm	17:16	Surface	1	28.7	28.7	8.6	8.6	29.9	30.0	115.9	113.7	7.6	7.5	6.8	1.2	1.2	2.5	4.2	4.3	4.7
				Middle	5	27.2	27.7	8.5	8.5	31.4	31.1	87.9	91.3	5.9	6.1		2.3	2.3		4.3	4.3	
				Bottom	9	27.2	27.5	8.5	8.5	31.5	31.4	84.4	87.3	5.6	5.8		4.0	4.0		5.5	5.6	
M5	Rainy	Calm	17:58	Surface	1	27.6	27.6	8.5	8.5	30.7	30.7	90.5	89.9	6.0	6.0	5.9	2.3	2.3	5.0	4.8	4.8	5.4
				Middle	5.5	27.4	27.4	8.5	8.5	31.2	31.2	86.2	86.0	5.7	5.7		3.7	3.7		5.2	5.1	
				Bottom	10	26.2	26.2	8.4	8.4	32.3	32.3	71.7	70.7	4.8	4.8		8.8	9.0		6.2	6.3	
M6	Rainy	Calm	17:55	Surface	-	-	-	-	-	-	-	-	-	-	7.0	-	-	1.5	-	-	4.5	
				Middle	2	28.2	28.3	8.6	8.6	30.7	30.7	105.8	105.9	7.0		7.0	1.4		1.5	4.5		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 13 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.2 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.8 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.5 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.5 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.9 mg/L</u>	<u>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>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 13 August 2018**

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
C1	Cloudy	Moderate	13:48	Surface	1	27.8 27.9	27.9	8.3 8.3	8.3	31.1 31.0	31.1	78.3 77.1	77.7	5.2 5.1	5.2	5.2	3.3	4.4	3.4 3.2	3.3	5.1 5.2	5.2	4.2	
				Middle	9	27.6 27.6	27.6	8.3 8.3	8.3	31.4 31.5	31.5	76.8 76.8	76.8	5.1 5.1	5.1		4.0 4.0		4.0	4.5 4.5	4.5	4.5 4.5		4.5
				Bottom	17	27.2 27.2	27.2	8.3 8.3	8.3	32.1 32.0	32.1	67.7 67.9	67.8	4.5 4.5	4.5		5.9 5.9		5.9	2.7 2.8	2.8	2.8 2.8		2.8
C2	Cloudy	Moderate	12:34	Surface	1	28.1 28.0	28.1	8.2 8.3	8.3	30.9 30.9	30.9	81.8 80.0	80.9	5.4 5.3	5.4	5.3	2.2	4.9	2.2 2.1	2.2	4.6 4.5	4.6	4.9	
				Middle	16.5	27.5 27.5	27.5	8.3 8.3	8.3	31.8 31.7	31.8	77.9 77.6	77.8	5.2 5.1	5.2		5.8 5.6		5.7	3.6 3.6	3.6	3.6 3.6		3.6
				Bottom	32	27.3 27.4	27.4	8.3 8.3	8.3	32.0 31.9	32.0	68.4 69.2	68.8	4.5 4.6	4.6		7.4 6.1		6.8	6.5 6.6	6.6	6.6 6.6		6.6
G1	Cloudy	Moderate	13:07	Surface	1	28.2 28.2	28.2	8.3 8.3	8.3	31.1 31.1	31.1	81.7 80.6	81.2	5.4 5.3	5.4	5.3	1.7	2.9	1.7 1.6	1.7	3.5 3.6	3.6	2.4	
				Middle	4	27.7 27.7	27.7	8.3 8.3	8.3	31.4 31.4	31.4	76.7 78.4	77.6	5.1 5.2	5.2		2.9 2.9		2.9	2.1 2.1	2.1	2.1 2.1		2.1
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.5 31.4	31.5	68.5 70.2	69.4	4.5 4.6	4.6		4.1 4.2		4.2	1.3 1.4	1.4	1.4 1.4		1.4
G2	Cloudy	Moderate	12:56	Surface	1	28.0 28.1	28.1	8.3 8.3	8.3	31.2 31.2	31.2	83.6 82.0	82.8	5.5 5.4	5.5	5.5	1.4	2.0	1.4 1.4	1.4	1.9 1.9	1.9	3.0	
				Middle	5	27.8 27.8	27.8	8.3 8.3	8.3	31.3 31.3	31.3	81.6 80.9	81.3	5.4 5.3	5.4		1.5 1.5		1.5	2.3 2.3	2.3	2.3 2.3		2.3
				Bottom	9	27.6 27.6	27.6	8.3 8.3	8.3	31.5 31.5	31.5	70.1 69.6	69.9	4.6 4.6	4.6		2.8 3.2		3.0	4.9 4.9	4.9	4.9 4.9		4.9
G3	Cloudy	Moderate	13:13	Surface	1	28.1 28.2	28.2	8.3 8.3	8.3	31.0 30.8	30.9	77.8 76.0	76.9	5.1 5.0	5.1	5.1	1.6	4.0	1.6 1.6	1.6	2.7 2.8	2.8	4.3	
				Middle	4	27.7 27.7	27.7	8.3 8.3	8.3	31.3 31.3	31.3	75.5 75.0	75.3	5.0 5.0	5.0		2.5 2.6		2.6	4.8 4.9	4.9	4.9 4.9		4.9
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.5 31.5	31.5	66.2 63.5	64.9	4.4 4.2	4.3		7.6 7.9		7.8	5.2 5.1	5.2	5.1 5.1		5.2
G4	Cloudy	Moderate	13:23	Surface	1	27.8 28.0	27.9	8.3 8.3	8.3	31.4 31.3	31.4	78.1 76.6	77.4	5.2 5.0	5.1	5.2	3.0	2.3	3.0 3.0	3.0	4.3 4.3	4.3	3.5	
				Middle	4	27.6 27.7	27.7	8.3 8.3	8.3	31.4 31.4	31.4	79.4 78.0	78.7	5.3 5.2	5.3		1.6 1.7		1.7	3.6 3.8	3.7	3.7 3.8		3.7
				Bottom	7	27.5 27.6	27.6	8.3 8.3	8.3	31.5 31.5	31.5	67.7 70.5	69.1	4.5 4.7	4.6		2.1 2.3		2.2	2.5 2.6	2.6	2.5 2.6		2.6
M1	Cloudy	Moderate	13:03	Surface	1	28.0 28.0	28.0	8.3 8.3	8.3	31.1 31.1	31.1	75.9 76.3	76.1	5.0 5.0	5.0	5.0	2.9	3.0	2.9 3.0	3.0	3.1 3.2	3.2	4.8	
				Middle	3	27.7 27.8	27.8	8.3 8.3	8.3	31.4 31.3	31.4	76.9 74.4	75.7	5.1 4.9	5.0		2.8 2.9		2.9	4.3 4.2	4.3	4.3 4.2		4.3
				Bottom	5	27.7 27.7	27.7	8.3 8.3	8.3	31.4 31.4	31.4	67.9 68.5	68.2	4.5 4.5	4.5		3.0 2.9		3.0	6.8 6.7	6.8	6.8 6.7		6.8
M2	Cloudy	Moderate	12:51	Surface	1	28.1 28.1	28.1	8.3 8.3	8.3	31.2 31.2	31.2	76.2 75.4	75.8	5.0 5.0	5.0	5.0	1.2	2.4	1.2 1.3	1.3	3.2 3.4	3.3	4.2	
				Middle	6	27.8 27.8	27.8	8.4 8.3	8.4	31.5 31.4	31.5	75.1 74.3	74.7	5.0 4.9	5.0		1.6 1.3		1.5	3.7 3.7	3.7	3.7 3.7		3.7
				Bottom	11	27.6 27.5	27.6	8.3 8.3	8.3	31.6 31.6	31.6	70.0 69.2	69.6	4.6 4.6	4.6		4.1 4.5		4.3	5.4 5.5	5.5	5.5 5.5		5.5
M3	Cloudy	Moderate	13:17	Surface	1	27.9 27.8	27.9	8.3 8.3	8.3	30.9 31.0	31.0	75.4 72.8	74.1	5.0 4.8	4.9	5.1	2.8	4.4	2.8 2.6	2.7	4.7 4.7	4.7	4.1	
				Middle	4	27.7 27.7	27.7	8.3 8.3	8.3	31.4 31.3	31.4	79.8 79.2	79.5	5.3 5.2	5.3		3.2 2.8		3.0	3.1 3.3	3.2	3.2 3.3		3.2
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.5 31.5	31.5	65.8 65.8	65.8	4.4 4.4	4.4		7.3 7.4		7.4	4.5 4.4	4.5	4.5 4.4		4.5
M4	Cloudy	Moderate	12:45	Surface	1	28.1 28.1	28.1	8.3 8.3	8.3	31.2 31.3	31.3	78.3 77.1	77.7	5.1 5.1	5.1	5.1	1.2	1.3	1.2 1.2	1.2	2.5 2.5	2.5	2.9	
				Middle	5	28.0 28.0	28.0	8.3 8.3	8.3	31.3 31.3	31.3	76.5 76.2	76.4	5.0 5.0	5.0		1.3 1.3		1.3	3.0 3.0	3.0	3.0 3.0		3.0
				Bottom	9	27.9 28.0	28.0	8.4 8.3	8.4	31.4 31.3	31.4	76.3 75.8	76.1	5.0 5.0	5.0		1.3 1.3		1.3	3.0 3.1	3.1	3.0 3.1		3.1
M5	Cloudy	Moderate	13:36	Surface	1	28.1 28.2	28.2	8.4 8.4	8.4	31.4 31.3	31.4	77.7 76.5	77.1	5.1 5.0	5.1	5.1	1.4	2.2	1.4 1.4	1.4	4.6 4.5	4.6	5.1	
				Middle	6	27.9 27.8	27.9	8.4 8.4	8.4	31.5 31.5	31.5	76.2 75.3	75.8	5.0 5.0	5.0		1.8 1.7		1.8	5.9 5.9	5.9	5.9 5.9		5.9
				Bottom	11	27.7 27.7	27.7	8.4 8.4	8.4	31.5 31.5	31.5	73.0 72.6	72.8	4.8 4.8	4.8		3.4 3.5		3.5	4.6 4.7	4.7	4.6 4.7		4.7
M6	Cloudy	Moderate	13:30	Surface	-	-	-	-	-	-	-	-	-	-	5.2	-	2.0	-	-	-	-	3.4		
				Middle	2.4	27.6 27.6	27.6	8.3 8.3	8.3	31.4 31.4	31.4	77.7 78.2	78.0	5.1 5.2		5.2		1.9 2.0	2.0	3.4 3.4	3.4		3.4 3.4	3.4
				Bottom	-	-	-	-	-	-	-	-	-	-		-		-	-	-	-		-	-

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

Appendix I - Action and Limit Levels for Marine Water Quality on 13 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 6.6 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 7.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.6 mg/L</u>	<u>6.9 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>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.6 mg/L</u>	<u>7.4 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>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.1 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.7 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 13 August 2018

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	08:08	Surface	1	27.9 28.0	28.0	8.4 8.4	8.4	31.4 31.4	31.4	78.6 79.8	79.2	5.2 5.3	5.3	5.4	5.1 1.1	1.2	2.5	1.3 5.5	5.5	5.3
				Middle	9	28.0 28.2	28.1	8.4 8.4	8.4	31.5 31.6	31.6	81.7 83.5	82.6	5.4 5.5	5.5		0.9 0.8	0.9		4.5 4.4	4.5	
				Bottom	17	25.7 25.9	25.8	8.3 8.3	8.3	33.5 33.4	33.5	63.6 63.9	63.8	4.3 4.3	4.3		5.5 5.5	5.5		5.9 5.8	5.9	
C2	Cloudy	Moderate	06:45	Surface	1	27.7 27.7	27.7	8.3 8.3	8.3	31.2 31.2	31.2	76.7 77.1	76.9	5.1 5.1	5.1	5.2	0.9 1.0	1.0	1.5	1.7 1.8	1.8	1.5
				Middle	17	27.9 27.9	27.9	8.3 8.4	8.4	31.6 31.5	31.6	79.7 79.8	79.8	5.2 5.3	5.3		1.5 1.5	1.5		2.2 2.1	2.2	
				Bottom	33	27.9 27.9	27.9	8.3 8.4	8.4	31.6 31.6	31.6	79.7 79.5	79.6	5.2 5.2	5.2		2.1 1.8	2.0		<0.5 <0.5	<0.5	
G1	Cloudy	Moderate	07:29	Surface	1	27.7 27.6	27.7	8.4 8.3	8.4	31.2 31.2	31.2	82.1 80.7	81.4	5.4 5.3	5.4	5.4	1.2 1.2	1.2	2.7	3.6 3.5	3.6	2.9
				Middle	4	27.6 27.6	27.6	8.3 8.3	8.3	31.3 31.3	31.3	81.4 79.9	80.7	5.4 5.3	5.4		1.9 1.9	1.9		3.3 3.3	3.3	
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.4 31.4	31.4	72.5 70.9	71.7	4.8 4.7	4.8		5.0 5.1	5.1		1.7 1.7	1.7	
G2	Cloudy	Moderate	07:13	Surface	1	27.6 27.7	27.7	8.3 8.3	8.3	31.0 31.1	31.1	82.9 81.7	82.3	5.5 5.4	5.5	5.5	0.6 0.5	0.6	1.4	4.3 4.3	4.3	3.2
				Middle	5	27.6 27.6	27.6	8.3 8.3	8.3	31.3 31.3	31.3	81.7 81.1	81.4	5.4 5.4	5.4		1.4 1.6	1.5		2.6 2.5	2.6	
				Bottom	9	27.6 27.6	27.6	8.3 8.3	8.3	31.4 31.4	31.4	72.8 72.5	72.7	4.8 4.8	4.8		2.2 2.1	2.2		2.5 2.6	2.6	
G3	Cloudy	Moderate	07:37	Surface	1	27.6 27.7	27.7	8.3 8.3	8.3	31.0 31.0	31.0	82.9 76.6	77.5	5.5 5.1	5.2	5.2	1.3 1.3	1.3	1.3	2.3 2.3	2.3	3.1
				Middle	4	27.6 27.5	27.6	8.3 8.3	8.3	31.1 31.1	31.1	77.3 76.4	76.9	5.1 5.1	5.1		1.2 1.1	1.2		3.6 3.6	3.6	
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.2 31.3	31.3	70.3 70.2	70.3	4.7 4.7	4.7		1.3 1.2	1.3		3.4 3.5	3.5	
G4	Cloudy	Moderate	07:48	Surface	1	27.6 27.6	27.6	8.3 8.3	8.3	31.0 31.0	31.0	80.0 78.3	79.2	5.3 5.2	5.3	5.3	0.5 0.6	0.6	1.2	3.7 3.7	3.7	3.8
				Middle	4	27.6 27.6	27.6	8.3 8.3	8.3	31.3 31.3	31.3	80.2 79.5	79.9	5.3 5.3	5.3		0.8 0.9	0.9		2.2 2.2	2.2	
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.3 31.3	31.3	71.9 71.9	71.9	4.8 4.8	4.8		2.3 2.1	2.2		5.6 5.6	5.6	
M1	Cloudy	Moderate	07:22	Surface	1	27.6 27.6	27.6	8.3 8.3	8.3	31.0 31.0	31.0	81.2 78.6	79.9	5.4 5.2	5.3	5.3	1.7 1.8	1.8	1.7	2.4 2.5	2.5	2.7
				Middle	3	27.7 27.7	27.7	8.3 8.3	8.3	31.1 31.2	31.2	80.5 78.9	79.7	5.3 5.2	5.3		1.7 1.9	1.8		3.1 3.1	3.1	
				Bottom	5	27.7 27.7	27.7	8.4 8.4	8.4	31.2 31.2	31.2	73.8 73.8	73.8	4.9 4.9	4.9		1.6 1.4	1.5		2.3 2.4	2.4	
M2	Cloudy	Moderate	07:07	Surface	1	27.7 27.7	27.7	8.3 8.3	8.3	31.2 31.1	31.2	83.2 82.6	82.9	5.5 5.5	5.5	5.5	0.1 0.1	0.1	0.5	5.7 5.6	5.7	3.4
				Middle	6	27.6 27.6	27.6	8.3 8.3	8.3	31.4 31.4	31.4	81.4 80.6	81.0	5.4 5.3	5.4		0.5 0.5	0.5		2.0 2.0	2.0	
				Bottom	11	27.5 27.5	27.5	8.3 8.3	8.3	31.5 31.5	31.5	72.0 71.5	71.8	4.8 4.7	4.8		0.8 0.8	0.8		2.5 2.5	2.5	
M3	Cloudy	Moderate	07:42	Surface	1	27.6 27.6	27.6	8.3 8.3	8.3	31.0 31.0	31.0	78.7 77.0	77.9	5.2 5.1	5.2	5.2	1.3 1.1	1.2	1.4	2.6 2.6	2.6	5.0
				Middle	4	27.6 27.6	27.6	8.3 8.3	8.3	31.1 31.1	31.1	77.3 76.9	77.1	5.1 5.1	5.1		1.5 1.5	1.5		6.1 6.0	6.1	
				Bottom	7	27.6 27.6	27.6	8.3 8.3	8.3	31.2 31.2	31.2	69.2 68.9	69.1	4.6 4.6	4.6		1.6 1.6	1.6		6.2 6.5	6.4	
M4	Cloudy	Moderate	06:59	Surface	1	27.6 27.7	27.7	8.3 8.3	8.3	31.2 31.2	31.2	82.2 82.3	82.3	5.4 5.5	5.5	5.5	1.4 1.3	1.4	1.5	5.4 5.5	5.5	4.0
				Middle	5	27.6 27.6	27.6	8.3 8.3	8.3	31.3 31.2	31.3	81.7 81.4	81.6	5.4 5.4	5.4		1.4 1.4	1.4		4.0 4.1	4.1	
				Bottom	9	27.5 27.6	27.6	8.3 8.3	8.3	31.3 31.3	31.3	72.9 73.2	73.1	4.8 4.9	4.9		1.8 1.6	1.7		2.5 2.5	2.5	
M5	Cloudy	Moderate	07:58	Surface	1	27.6 27.6	27.6	8.3 8.3	8.3	31.1 31.1	31.1	80.4 79.3	79.9	5.3 5.3	5.3	5.3	0.9 1.1	1.0	4.0	1.9 1.9	1.9	4.6
				Middle	6	27.5 27.5	27.5	8.3 8.3	8.3	31.6 31.6	31.6	78.6 78.2	78.4	5.2 5.2	5.2		4.9 5.3	5.1		5.7 5.8	5.8	
				Bottom	11	27.4 27.4	27.4	8.3 8.3	8.3	31.9 32.3	32.1	71.0 71.7	71.4	4.7 4.7	4.7		5.7 5.9	5.8		6.1 6.0	6.1	
M6	Cloudy	Moderate	07:54	Surface	-	-	-	-	-	-	-	-	-	-	-	5.1	-	-	2.9	-	-	3.4
				Middle	2.4	27.6 27.6	27.6	8.3 8.3	8.3	31.3 31.3	31.3	76.9 76.9	76.9	5.1 5.1	5.1		2.9 2.9	2.9		3.4 3.4	3.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.4 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.9 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.1 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.6 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.1 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.6 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.8 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
C1	Cloudy	Moderate	15:08	Surface	1	27.9 27.9	27.9	8.2 8.2	8.2	29.6 29.6	29.6	79.3 79.0	79.2	5.3 5.3	5.3	5.3	5.3	3.0 3.0	3.0	3.1	4.1 4.2	4.2	6.9
				Middle	9	27.8 27.8	27.8	8.2 8.2	8.2	29.8 29.8	29.8	79.1 79.1	79.1	5.3 5.3	5.3	3.1 2.9		3.0	12.3 12.8		12.6		
				Bottom	17	27.8 27.8	27.8	8.2 8.2	8.2	29.8 29.8	29.8	71.6 71.6	71.6	4.8 4.8	4.8	3.3 3.3		3.3	3.9 3.8		3.9		
C2	Cloudy	Moderate	13:54	Surface	1	27.8 27.8	27.8	8.4 8.6	9.0	29.4 29.5	29.5	77.2 77.1	77.2	5.2 5.1	5.1	5.3	3.8 3.6	3.7	4.2	5.1 5.0	5.1	5.0	
				Middle	16.5	27.8 27.8	27.8	8.9 8.5	8.7	29.7 29.8	29.8	79.0 78.4	78.7	5.3 5.2	5.3		4.2 4.3	4.3		3.4 3.5	3.5		
				Bottom	32	27.8 27.8	27.8	8.8 8.5	8.7	29.8 29.9	29.9	71.5 70.9	71.2	4.8 4.7	4.8		4.3 4.6	4.5		6.6 6.4	6.5		
G1	Cloudy	Moderate	14:32	Surface	1	27.9 28.0	28.0	8.4 8.3	8.4	29.4 29.3	29.4	82.2 82.1	82.2	5.5 5.5	5.5	5.4	1.7 1.7	1.7	2.0	5.1 5.3	5.2	3.0	
				Middle	4	27.8 27.8	27.8	8.4 8.3	8.4	29.7 29.7	29.7	79.0 79.6	79.3	5.3 5.3	5.3		2.4 2.3	2.4		1.9 1.8	1.9		
				Bottom	7	27.8 27.8	27.8	8.4 8.3	8.4	29.8 29.8	29.8	70.5 70.5	70.5	4.7 4.7	4.7		2.0 2.0	2.0		1.9 1.9	1.9		
G2	Cloudy	Moderate	14:21	Surface	1	27.9 27.9	27.9	8.4 8.3	8.4	29.5 29.5	29.5	83.4 82.4	82.9	5.6 5.5	5.6	5.5	1.5 1.5	1.5	2.3	2.6 2.5	2.6	3.8	
				Middle	5	27.8 27.8	27.8	8.4 8.3	8.4	29.8 29.7	29.8	80.4 80.7	80.6	5.4 5.4	5.4		1.6 1.5	1.6		3.5 3.5	3.5		
				Bottom	9	27.8 27.8	27.8	8.4 8.3	8.4	29.9 29.9	29.9	69.2 69.7	69.5	4.6 4.6	4.6		4.1 3.7	3.9		5.3 5.2	5.3		
G3	Cloudy	Moderate	14:39	Surface	1	28.0 28.0	28.0	8.4 8.3	8.4	29.1 28.9	29.0	83.0 82.4	82.7	5.5 5.5	5.5	5.5	1.6 1.6	1.6	2.1	1.7 1.7	1.7	1.8	
				Middle	4	27.8 27.8	27.8	8.4 8.3	8.4	29.4 29.5	29.5	80.6 79.4	80.0	5.4 5.3	5.4		2.0 1.8	1.9		2.0 2.0	2.0		
				Bottom	7	27.8 27.8	27.8	8.4 8.3	8.4	29.7 29.7	29.7	68.6 67.4	68.0	4.6 4.5	4.6		2.8 2.8	2.8		1.5 1.6	1.6		
G4	Cloudy	Moderate	14:51	Surface	1	28.2 28.1	28.2	8.1 8.2	8.2	29.3 29.1	29.2	77.0 74.3	75.7	5.1 4.9	5.0	5.0	1.0 0.9	1.0	1.8	2.9 2.8	2.9	2.9	
				Middle	4	27.8 27.9	27.9	8.2 8.2	8.2	29.6 29.6	29.6	73.5 73.7	73.6	4.9 4.9	4.9		1.0 1.2	1.1		2.4 2.3	2.4		
				Bottom	7	27.8 27.8	27.8	8.2 8.2	8.2	29.7 29.6	29.7	65.6 69.8	67.7	4.4 4.7	4.6		3.3 3.1	3.2		3.4 3.5	3.5		
M1	Cloudy	Moderate	14:27	Surface	1	27.9 27.9	27.9	8.4 8.4	8.4	29.4 29.4	29.4	77.6 75.7	76.7	5.2 5.0	5.1	5.1	1.9 1.7	1.8	2.0	1.6 1.6	1.6	2.5	
				Middle	3	27.8 27.8	27.8	8.4 8.4	8.4	29.5 29.6	29.6	76.4 74.9	75.7	5.1 5.0	5.1		2.0 1.8	1.9		2.6 2.6	2.6		
				Bottom	5	27.8 27.8	27.8	8.4 8.4	8.4	29.7 29.7	29.7	74.0 72.9	73.5	4.9 4.9	4.9		2.4 2.0	2.2		3.1 3.2	3.2		
M2	Cloudy	Moderate	14:15	Surface	1	27.9 27.9	27.9	8.4 8.4	8.4	29.5 29.5	29.5	76.7 74.1	75.4	5.1 4.9	5.0	5.0	1.7 1.7	1.7	2.9	1.8 1.8	1.8	1.5	
				Middle	6	27.9 27.9	27.9	8.4 8.4	8.4	29.7 29.7	29.7	74.6 73.7	74.2	5.0 4.9	5.0		1.7 1.7	1.7		1.6 1.6	1.6		
				Bottom	11	27.8 27.8	27.8	8.4 8.4	8.4	29.9 29.9	29.9	69.0 70.1	69.6	4.6 4.7	4.7		5.2 5.1	5.2		1.2 1.2	1.2		
M3	Cloudy	Moderate	14:45	Surface	1	28.0 28.0	28.0	8.3 8.3	8.3	28.7 28.5	28.6	77.1 77.7	77.4	5.2 5.2	5.2	5.1	1.5 1.5	1.5	1.7	2.3 2.3	2.3	2.0	
				Middle	4	27.8 27.8	27.8	8.3 8.3	8.3	29.5 29.5	29.5	74.7 73.8	74.3	5.0 4.9	5.0		1.8 1.8	1.8		2.4 2.4	2.4		
				Bottom	7	27.7 27.7	27.7	8.3 8.3	8.3	29.6 29.6	29.6	70.8 70.5	70.7	4.7 4.7	4.7		1.8 1.8	1.8		1.4 1.4	1.4		
M4	Cloudy	Moderate	14:08	Surface	1	27.9 28.1	28.0	8.8 8.6	8.7	29.8 29.6	29.7	75.9 76.3	76.1	5.0 5.1	5.1	5.0	1.7 1.6	1.7	2.4	2.6 2.7	2.7	2.9	
				Middle	5	27.8 27.8	27.8	8.9 8.6	8.8	29.9 29.9	29.9	73.1 73.3	73.2	4.9 4.9	4.9		2.4 2.3	2.4		1.8 1.8	1.8		
				Bottom	9	27.8 27.8	27.8	8.8 8.6	8.7	30.0 29.9	30.0	72.5 72.4	72.5	4.8 4.8	4.8		3.2 3.0	3.1		4.3 4.3	4.3		
M5	Cloudy	Moderate	15:02	Surface	1	28.1 28.0	28.1	8.1 8.2	8.2	29.7 29.7	29.7	80.3 77.2	78.8	5.3 5.1	5.2	5.2	2.5 2.7	2.6	3.4	2.3 2.4	2.4	3.7	
				Middle	6	27.8 27.8	27.8	8.1 8.2	8.2	29.8 29.8	29.8	76.6 75.7	76.2	5.1 5.0	5.1		3.3 3.3	3.3		2.4 2.4	2.4		
				Bottom	11	27.8 27.8	27.8	8.2 8.2	8.2	29.9 29.9	29.9	70.8 69.9	70.4	4.7 4.7	4.7		4.1 4.5	4.3		6.3 6.1	6.2		
M6	Cloudy	Moderate	14:57	Surface	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	1.7	-	-	4.3	
				Middle	2.1	27.9 27.9	27.9	8.2 8.2	8.2	29.6 29.6	29.6	78.0 77.6	77.8	5.2 5.2	5.2		1.7 1.6	1.7		4.2 4.3	4.3		
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 6.4 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 6.9 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.6 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.9 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 4.6 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 4.9 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.3 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.9 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	10:06	Surface	1	27.8	27.8	8.1	8.1	29.5	29.5	74.4	73.6	5.0	5.0	5.1	1.6	1.6	2.8	3.8	3.8	4.6
				Middle	9	28.0	28.0	8.1	8.1	30.0	30.0	77.4	77.6	5.1	5.2		1.5	1.4		3.8	3.9	
				Bottom	17	27.6	27.6	8.1	8.1	30.3	30.3	71.5	71.8	4.8	4.8		5.1	5.3		6.1	6.1	
C2	Cloudy	Moderate	08:39	Surface	1	27.7	27.7	8.0	8.1	29.4	29.4	76.8	76.4	5.1	5.1	5.2	2.1	2.2	3.0	4.1	4.0	2.9
				Middle	16.5	27.7	27.7	8.1	8.1	29.6	29.6	77.5	77.5	5.2	5.2		2.3	2.4		2.5	2.5	
				Bottom	32	27.8	27.7	8.1	8.1	29.8	29.7	71.6	69.6	4.8	4.7		4.3	4.4		2.0	2.1	
G1	Cloudy	Moderate	09:34	Surface	1	27.6	27.6	8.1	8.1	29.4	29.5	79.7	78.8	5.3	5.3	5.3	2.1	2.1	2.2	2.0	2.0	2.4
				Middle	4	27.7	27.7	8.1	8.1	29.6	29.6	77.8	77.7	5.2	5.2		2.0	2.0		2.3	2.4	
				Bottom	7	27.8	27.8	8.1	8.1	29.9	29.9	70.1	70.1	4.7	4.7		2.4	2.4		2.7	2.7	
G2	Cloudy	Moderate	09:22	Surface	1	27.6	27.6	8.1	8.1	29.2	29.2	81.0	80.2	5.4	5.4	5.4	1.3	1.3	1.4	2.8	2.8	2.8
				Middle	5	27.8	27.8	8.1	8.1	29.8	29.8	79.2	78.8	5.3	5.3		1.3	1.3		2.8	2.8	
				Bottom	9	27.9	27.9	8.1	8.1	29.9	29.9	72.3	71.9	4.8	4.8		1.5	1.5		2.9	2.8	
G3	Cloudy	Moderate	09:39	Surface	1	27.6	27.6	8.0	8.1	29.5	29.5	79.1	78.4	5.3	5.3	5.2	1.6	1.6	1.9	3.0	3.0	2.2
				Middle	4	27.7	27.7	8.0	8.1	29.7	29.7	78.8	76.7	5.1	5.1		1.9	1.9		2.1	2.1	
				Bottom	7	27.7	27.7	8.0	8.1	29.8	29.8	66.9	66.8	4.5	4.5		2.4	2.3		1.4	1.4	
G4	Cloudy	Moderate	09:49	Surface	1	27.7	27.7	8.1	8.1	29.5	29.5	77.7	77.7	5.2	5.2	5.3	1.2	1.3	1.3	2.0	2.0	1.9
				Middle	4	27.8	27.8	8.1	8.1	29.7	29.7	79.0	78.6	5.3	5.3		1.1	1.2		1.0	1.0	
				Bottom	7	27.8	27.8	8.1	8.1	29.8	29.8	71.5	71.2	4.8	4.8		1.4	1.5		2.8	2.8	
M1	Cloudy	Moderate	09:28	Surface	1	27.6	27.6	8.1	8.1	29.3	29.3	78.4	77.5	5.3	5.2	5.2	1.7	1.7	2.1	1.6	1.6	2.6
				Middle	3	27.7	27.7	8.1	8.1	29.5	29.5	76.0	75.7	5.1	5.1		1.9	1.9		1.8	1.8	
				Bottom	5	27.7	27.7	8.1	8.1	29.7	29.7	66.4	65.8	4.4	4.4		2.5	2.7		4.3	4.3	
M2	Cloudy	Moderate	09:16	Surface	1	27.7	27.7	8.1	8.1	29.6	29.6	80.6	79.9	5.4	5.4	5.4	1.6	1.5	2.4	4.1	4.1	3.9
				Middle	6	27.8	27.8	8.1	8.1	29.8	29.8	79.9	79.6	5.3	5.3		1.7	1.7		2.6	2.6	
				Bottom	11	27.9	27.9	8.1	8.1	30.0	30.0	71.9	71.2	4.8	4.8		4.1	4.0		4.9	5.0	
M3	Cloudy	Moderate	09:43	Surface	1	27.7	27.7	8.1	8.1	29.5	29.5	78.8	77.7	5.3	5.2	5.1	1.7	1.6	2.3	3.2	3.2	3.7
				Middle	4	27.7	27.7	8.1	8.1	29.7	29.7	73.8	73.8	4.9	4.9		2.0	2.0		4.6	4.6	
				Bottom	7	27.7	27.7	8.1	8.1	29.8	29.8	71.5	70.8	4.8	4.8		3.5	3.4		3.3	3.4	
M4	Cloudy	Moderate	09:09	Surface	1	27.7	27.7	8.1	8.2	29.5	29.5	81.2	80.5	5.4	5.4	5.4	1.7	1.7	2.8	3.6	3.6	2.1
				Middle	5	27.7	27.7	8.2	8.2	29.7	29.7	79.5	78.9	5.3	5.3		2.7	2.8		1.3	1.3	
				Bottom	9	27.7	27.7	8.3	8.3	29.7	29.8	71.3	70.3	4.8	4.8		3.9	3.8		1.4	1.4	
M5	Cloudy	Moderate	10:00	Surface	1	27.7	27.7	8.0	8.1	29.6	29.6	77.4	77.3	5.2	5.2	5.2	1.9	2.0	3.4	3.0	3.1	4.3
				Middle	6	27.7	27.7	8.0	8.1	29.7	29.7	76.6	76.4	5.1	5.1		3.7	4.0		5.1	5.2	
				Bottom	11	27.7	27.7	8.0	8.1	29.8	30.0	69.9	70.2	4.7	4.7		4.5	4.3		4.6	4.7	
M6	Cloudy	Moderate	09:54	Surface	-	-	-	-	-	-	-	-	-	-	-	5.1	-	-	2.0	-	-	4.5
				Middle	1.9	27.7	27.7	8.0	8.0	29.6	29.6	76.0	75.9	5.1	5.1		1.9	2.0		4.4	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 17 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 7.9 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.6 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.3 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	17:24	Surface	1	28.0	28.0	7.5	7.5	30.5	30.6	77.4	76.9	5.1	5.1	5.1	2.2	2.2	4.4	3.9	3.9	3.8
				Middle	9	27.9	27.9	7.6	7.6	31.6	31.6	77.0	77.4	5.1	5.1		3.2	3.4		3.0	3.1	
				Bottom	17	26.7	26.8	7.6	7.6	32.8	32.7	67.6	68.9	4.5	4.6		7.3	7.5		4.4	4.4	
C2	Cloudy	Calm	16:07	Surface	1	28.1	28.1	7.4	7.4	29.5	29.5	75.0	76.1	5.1	5.1	5.0	2.3	2.3	4.4	5.2	5.2	6.3
				Middle	16.5	27.2	27.3	7.5	7.5	32.1	32.1	74.3	74.1	4.9	4.9		4.4	4.3		7.3	7.3	
				Bottom	32	27.2	27.2	7.5	7.5	32.2	32.2	69.5	69.4	4.6	4.6		6.5	6.6		6.3	6.4	
G1	Cloudy	Calm	16:48	Surface	1	28.2	28.2	7.5	7.5	30.3	30.3	77.7	76.7	5.1	5.1	5.0	2.6	2.6	2.8	2.9	2.9	2.3
				Middle	4	28.1	28.1	7.6	7.6	31.1	31.1	74.8	74.7	4.9	4.9		2.1	2.0		2.0	2.1	
				Bottom	7	28.0	28.0	7.5	7.5	31.3	31.3	71.9	71.9	4.7	4.7		3.6	3.8		2.1	2.0	
G2	Cloudy	Calm	16:34	Surface	1	28.3	28.3	7.5	7.5	30.0	30.0	79.2	78.6	5.1	5.2	5.1	2.2	2.2	2.9	4.8	4.9	4.4
				Middle	5	28.1	28.2	7.5	7.5	31.0	31.0	75.1	75.4	4.9	5.0		2.4	2.4		3.3	3.4	
				Bottom	9	28.0	28.0	7.5	7.5	31.3	31.3	72.6	72.8	4.8	4.8		4.3	4.1		5.0	5.0	
G3	Cloudy	Calm	16:54	Surface	1	28.1	28.1	7.5	7.5	30.2	30.1	77.8	77.8	5.1	5.2	5.1	6.1	6.0	6.3	4.1	4.2	4.9
				Middle	4	28.0	28.0	7.5	7.5	31.2	31.2	74.6	75.1	4.9	5.0		5.9	5.9		5.2	5.1	
				Bottom	7	27.9	27.9	7.5	7.5	31.4	31.4	70.8	70.2	4.7	4.7		6.9	7.0		5.4	5.5	
G4	Cloudy	Calm	17:06	Surface	1	28.2	28.2	7.5	7.5	30.2	30.3	79.7	79.1	5.3	5.3	5.3	2.5	2.6	2.9	3.4	3.5	3.0
				Middle	4	28.0	28.0	7.5	7.6	31.2	31.2	81.0	80.8	5.3	5.3		2.4	2.4		2.7	2.7	
				Bottom	7	27.9	27.9	7.6	7.6	31.4	31.4	73.5	73.6	4.8	4.9		3.5	3.7		2.9	2.9	
M1	Cloudy	Calm	16:41	Surface	1	28.3	28.3	7.5	7.5	29.1	29.1	81.1	80.5	5.4	5.4	5.1	2.1	2.2	2.5	3.9	3.9	4.3
				Middle	3	28.2	28.2	7.5	7.5	30.8	30.8	72.2	71.8	4.8	4.8		2.6	2.6		5.4	5.4	
				Bottom	5	28.1	28.1	7.5	7.5	31.1	31.1	69.1	69.6	4.5	4.6		2.7	2.8		3.5	3.6	
M2	Cloudy	Calm	16:25	Surface	1	28.2	28.2	7.5	7.5	30.4	30.4	79.7	79.2	5.3	5.3	5.2	1.7	1.7	3.5	3.2	3.3	3.9
				Middle	6	28.0	28.1	7.5	7.5	31.1	31.1	76.0	76.1	5.0	5.0		1.6	1.6		2.5	2.6	
				Bottom	11	27.8	27.8	7.6	7.6	31.6	31.6	72.6	72.6	4.8	4.8		7.1	7.1		5.7	5.7	
M3	Cloudy	Calm	16:59	Surface	1	28.2	28.2	7.5	7.5	30.6	30.5	79.7	78.8	5.3	5.2	5.0	3.7	3.9	5.5	5.8	5.8	4.8
				Middle	4	28.1	28.1	7.5	7.5	31.2	31.2	72.7	72.4	4.8	4.8		5.1	5.0		2.7	2.8	
				Bottom	7	27.9	27.9	7.5	7.5	31.3	31.4	69.3	70.2	4.6	4.6		7.5	7.5		5.8	5.9	
M4	Cloudy	Calm	16:17	Surface	1	28.1	28.1	7.5	7.5	30.9	30.9	78.1	77.8	5.1	5.1	5.0	1.6	1.6	2.6	4.8	4.9	3.0
				Middle	5	27.9	27.9	7.5	7.5	31.2	31.3	75.0	74.4	4.9	4.9		2.5	2.6		2.6	2.6	
				Bottom	9	27.6	27.6	7.5	7.5	31.7	31.7	72.7	72.3	4.8	4.8		3.4	3.6		1.4	1.4	
M5	Cloudy	Calm	17:18	Surface	1	28.1	28.1	7.5	7.5	30.3	30.3	76.9	76.1	5.1	5.1	5.1	2.2	2.2	3.1	3.7	3.7	2.8
				Middle	5.5	28.1	28.1	7.5	7.5	30.7	30.7	76.2	76.0	5.0	5.0		1.9	2.0		2.5	2.5	
				Bottom	10	27.8	27.9	7.6	7.6	31.4	31.3	72.8	73.8	4.8	4.9		4.9	5.0		2.1	2.2	
M6	Cloudy	Calm	17:12	Surface	-	-	-	-	-	-	-	-	-	-	5.1	-	-	1.3	-	-	1.8	
				Middle	2.1	28.3	28.3	7.5	7.6	30.9	30.9	77.3	77.1	5.1		5.1	1.3		1.3	1.8		1.8
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 4.9 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 5.3 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.0 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.0 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.5 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Calm	11:51	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	30.4 30.4	30.4	76.8 75.5	76.2	5.1 5.1	5.1	5.3	1.8 1.9	2.0	2.4	2.1 4.2	4.2	4.0
				Middle	9	28.2 28.3	28.3	7.6 7.6	7.6	31.5 31.5	31.5	84.1 84.3	84.2	5.5 5.5	5.5		1.0 1.0	1.0		2.5 2.5	2.5	
				Bottom	17	27.0 27.0	27.0	7.6 7.6	7.6	32.7 32.6	32.7	73.8 74.0	73.9	4.9 4.9	4.9		3.9 4.2	4.1		5.4 5.3	5.4	
C2	Rainy	Calm	10:26	Surface	1	28.0 28.0	28.0	7.4 7.5	7.5	29.9 30.4	30.2	81.1 78.2	79.7	5.4 5.2	5.3	5.4	1.8 1.7	1.8	2.5	2.8 2.9	2.9	3.9
				Middle	16.5	27.9 27.9	27.9	7.6 7.5	7.6	31.2 31.2	31.2	81.5 80.9	81.2	5.4 5.3	5.4		2.5 2.7	2.6		4.1 4.1	4.1	
				Bottom	32	27.9 27.9	27.9	7.5 7.5	7.5	31.2 31.2	31.2	72.2 72.9	72.6	4.8 4.8	4.8		3.0 3.0	3.0		4.5 4.9	4.7	
G1	Rainy	Calm	11:10	Surface	1	28.1 28.1	28.1	7.6 7.6	7.6	31.0 31.0	31.0	83.7 82.0	82.9	5.5 5.4	5.5	5.5	1.5 1.4	1.5	2.3	1.9 1.9	1.9	3.1
				Middle	4	28.1 28.1	28.1	7.6 7.6	7.6	31.1 31.1	31.1	81.1 81.4	81.3	5.3 5.4	5.4		2.6 2.4	2.5		4.2 4.3	4.3	
				Bottom	7	28.0 28.0	28.0	7.6 7.6	7.6	31.1 31.1	31.1	74.0 73.7	73.9	4.9 4.9	4.9		2.8 2.8	2.8		3.2 3.2	3.2	
G2	Rainy	Calm	10:57	Surface	1	28.2 28.2	28.2	7.5 7.6	7.6	30.9 30.9	30.9	78.2 76.3	77.3	5.1 5.0	5.1	5.1	1.3 1.3	1.3	2.3	3.2 3.2	3.2	2.8
				Middle	5	28.0 28.0	28.0	7.6 7.6	7.6	31.1 31.1	31.1	76.2 75.5	75.9	5.0 5.0	5.0		1.8 1.8	1.8		2.3 2.3	2.3	
				Bottom	9	27.8 27.9	27.9	7.6 7.6	7.6	31.5 31.4	31.5	74.8 74.5	74.7	4.9 4.9	4.9		3.7 3.8	3.8		2.9 2.9	2.9	
G3	Rainy	Calm	11:16	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	30.7 30.7	30.7	82.0 80.6	81.3	5.4 5.3	5.4	5.4	1.8 1.9	1.9	2.2	2.9 2.9	2.9	3.6
				Middle	4	28.1 28.1	28.1	7.5 7.5	7.5	31.0 30.9	31.0	81.1 80.8	81.0	5.3 5.3	5.3		2.1 2.0	2.1		4.7 4.7	4.7	
				Bottom	7	28.1 28.1	28.1	7.6 7.5	7.6	31.1 31.1	31.1	79.1 78.7	78.9	5.2 5.2	5.2		2.6 2.4	2.5		3.2 3.1	3.2	
G4	Rainy	Calm	11:30	Surface	1	28.1 28.2	28.2	7.5 7.5	7.5	30.8 30.8	30.8	78.7 79.0	78.9	5.2 5.2	5.2	5.3	1.4 1.3	1.4	2.6	3.2 3.5	3.4	3.3
				Middle	4	28.1 28.1	28.1	7.6 7.6	7.6	31.1 31.1	31.1	81.7 80.8	81.3	5.4 5.3	5.4		2.1 2.3	2.2		2.3 2.3	2.3	
				Bottom	7	28.0 28.0	28.0	7.6 7.6	7.6	31.2 31.2	31.2	80.1 80.4	80.3	5.3 5.3	5.3		4.1 4.2	4.2		4.3 4.2	4.3	
M1	Rainy	Calm	11:04	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	31.1 31.0	31.1	78.3 76.4	77.4	5.2 5.0	5.1	5.2	1.8 1.6	1.7	3.0	3.5 3.6	3.6	5.3
				Middle	3	28.1 28.1	28.1	7.5 7.5	7.5	31.1 31.1	31.1	80.0 79.4	79.7	5.3 5.2	5.3		3.0 3.1	3.1		6.8 7.1	7.0	
				Bottom	5	28.1 28.1	28.1	7.6 7.6	7.6	31.1 31.1	31.1	80.6 80.8	80.7	5.3 5.3	5.3		4.1 4.2	4.2		5.4 5.4	5.4	
M2	Rainy	Calm	10:47	Surface	1	28.0 28.1	28.1	7.5 7.6	7.6	30.9 30.9	30.9	77.6 77.2	77.4	5.1 5.1	5.1	5.1	1.6 1.4	1.5	2.7	4.7 4.7	4.7	4.0
				Middle	6	27.9 27.9	27.9	7.6 7.6	7.6	31.3 31.3	31.3	75.7 75.4	75.6	5.0 5.0	5.0		1.9 1.9	1.9		3.0 3.0	3.0	
				Bottom	11	27.7 27.7	27.7	7.6 7.6	7.6	31.7 31.7	31.7	73.6 73.7	73.7	4.9 4.9	4.9		4.4 4.7	4.6		4.5 4.3	4.4	
M3	Rainy	Calm	11:23	Surface	1	28.2 28.2	28.2	7.5 7.6	7.6	30.9 30.9	30.9	82.9 82.0	82.5	5.5 5.4	5.5	5.5	1.9 2.1	2.0	2.0	4.7 4.8	4.8	3.5
				Middle	4	28.2 28.1	28.2	7.6 7.6	7.6	31.0 31.0	31.0	82.8 80.9	81.9	5.4 5.3	5.4		1.9 2.1	2.0		3.9 4.0	4.0	
				Bottom	7	28.2 28.2	28.2	7.6 7.5	7.6	31.1 31.1	31.1	71.3 70.2	70.8	4.7 4.6	4.7		1.9 1.9	1.9		1.8 1.8	1.8	
M4	Rainy	Calm	10:40	Surface	1	28.2 28.2	28.2	7.6 7.6	7.6	31.1 31.0	31.1	80.7 77.6	79.2	5.3 5.1	5.2	5.1	1.6 1.5	1.6	2.2	1.8 1.8	1.8	2.2
				Middle	5	27.9 27.9	27.9	7.6 7.6	7.6	31.5 31.4	31.5	75.8 75.5	75.7	5.0 5.0	5.0		2.6 2.3	2.5		2.8 2.8	2.8	
				Bottom	9	27.8 27.9	27.9	7.6 7.6	7.6	31.5 31.5	31.5	75.0 74.9	75.0	4.9 4.9	4.9		2.6 2.4	2.5		1.8 1.9	1.9	
M5	Rainy	Calm	11:42	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	30.4 30.4	30.4	76.2 75.1	75.7	5.0 5.0	5.0	5.0	1.8 1.8	1.8	2.5	1.8 1.8	1.8	3.6
				Middle	5.5	28.1 28.1	28.1	7.5 7.5	7.5	30.8 30.8	30.8	75.6 75.3	75.5	5.0 5.0	5.0		1.6 1.6	1.6		3.6 3.6	3.6	
				Bottom	10	27.8 27.8	27.8	7.6 7.6	7.6	31.5 31.5	31.5	72.1 71.9	72.0	4.8 4.7	4.8		4.1 4.2	4.2		5.2 5.3	5.3	
M6	Rainy	Calm	11:37	Surface	-	-	-	-	-	-	-	-	-	-	-	5.1	-	-	1.5	-	-	3.4
				Middle	2.1	28.2 28.2	28.2	7.5 7.5	7.5	31.0 31.0	31.0	76.8 77.0	76.9	5.1 5.1	5.1		1.5 1.5	1.5		3.4 3.3	3.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 20 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.4 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 5.9 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.0 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.5 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.4 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 20 August 2018**

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Calm	09:13	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	30.0 29.9	30.0	86.9 85.9	86.4	5.8 5.7	5.8	5.2	0.6 0.6	0.6	1.5	3.4 3.3	3.4	3.2
				Middle	8.5	26.1 24.8	25.5	7.5 7.5	7.5	32.7 33.9	33.3	69.4 65.9	67.7	4.7 4.5	4.6		1.5 1.5	1.5		2.7 2.6	2.7	
				Bottom	16	23.9 23.8	23.9	7.5 7.5	7.5	34.5 34.6	34.6	64.7 64.5	64.6	4.5 4.5	4.5		2.3 2.3	2.3		3.4 3.4	3.4	
C2	Rainy	Calm	08:11	Surface	1	28.4 28.4	28.4	7.4 7.5	7.5	29.0 29.0	29.0	84.7 83.8	84.3	5.6 5.5	5.6	5.0	1.0 1.0	1.0	3.0	4.9 5.0	5.0	5.4
				Middle	16	24.3 24.3	24.3	7.5 7.5	7.5	34.2 34.2	34.2	63.3 62.9	63.1	4.4 4.3	4.4		3.5 3.5	3.5		5.5 5.6	5.6	
				Bottom	31	24.3 24.3	24.3	7.5 7.5	7.5	34.2 34.2	34.2	63.2 62.9	63.1	4.4 4.3	4.4		4.5 4.5	4.5		5.7 5.6	5.7	
G1	Rainy	Calm	08:41	Surface	1	27.9 27.9	27.9	7.5 7.6	7.6	29.0 28.4	28.7	79.5 79.4	79.5	5.3 5.3	5.3	5.3	0.6 0.6	0.6	1.5	2.1 2.0	2.1	3.6
				Middle	4	27.5 27.4	27.5	7.5 7.5	7.5	30.9 31.3	31.1	79.0 79.6	79.3	5.3 5.3	5.3		0.8 0.8	0.8		4.9 4.9	4.9	
				Bottom	7	26.1 26.2	26.2	7.5 7.5	7.5	32.8 32.7	32.8	64.4 65.6	65.0	4.3 4.4	4.4		3.1 3.2	3.2		3.7 3.6	3.7	
G2	Rainy	Calm	08:31	Surface	1	27.9 28.0	28.0	7.5 7.5	7.5	30.0 30.0	30.0	78.9 79.2	79.1	5.2 5.3	5.3	5.2	0.6 0.7	0.7	1.4	2.4 2.4	2.4	3.0
				Middle	5	26.8 26.8	26.8	7.5 7.5	7.5	31.9 32.0	32.0	75.1 75.2	75.2	5.0 5.0	5.0		1.1 1.2	1.2		1.9 1.9	1.9	
				Bottom	9	25.9 25.5	25.7	7.5 7.5	7.5	32.9 33.3	33.1	65.7 63.1	64.4	4.4 4.3	4.4		2.4 2.4	2.4		4.6 4.7	4.7	
G3	Rainy	Calm	08:46	Surface	1	28.1 28.0	28.1	7.6 7.5	7.6	29.2 29.0	29.1	89.0 88.1	88.6	5.9 5.9	5.9	5.7	2.7 2.6	2.7	2.4	4.4 4.6	4.5	5.4
				Middle	4	27.4 27.7	27.6	7.5 7.5	7.5	31.3 30.3	30.8	80.5 80.1	80.3	5.4 5.3	5.4		2.0 2.0	2.0		5.6 5.9	5.8	
				Bottom	7	26.8 26.9	26.9	7.5 7.5	7.5	32.0 31.9	32.0	65.1 69.3	67.2	4.4 4.6	4.5		2.4 2.3	2.4		5.7 5.9	5.8	
G4	Rainy	Calm	08:57	Surface	1	27.7 27.5	27.6	7.5 7.5	7.5	26.1 26.9	26.5	81.4 82.0	81.7	5.5 5.6	5.6	5.3	4.1 4.1	4.1	5.2	5.5 5.4	5.5	4.0
				Middle	4.5	27.1 27.0	27.1	7.5 7.5	7.5	31.5 31.5	31.5	74.3 73.6	74.0	5.0 4.9	5.0		6.3 6.3	6.3		4.7 4.7	4.7	
				Bottom	8	26.8 26.8	26.8	7.5 7.5	7.5	32.0 32.1	32.1	69.6 69.9	69.8	4.7 4.7	4.7		5.1 5.2	5.2		1.6 1.7	1.7	
M1	Rainy	Calm	08:36	Surface	1	28.0 28.1	28.1	7.5 7.5	7.5	28.4 28.1	28.3	84.1 85.1	84.6	5.6 5.7	5.7	5.7	0.7 0.7	0.7	0.8	1.6 1.6	1.6	2.7
				Middle	3	27.8 28.0	27.9	7.5 7.5	7.5	30.9 30.7	30.8	83.4 84.4	83.9	5.5 5.6	5.6		0.7 0.7	0.7		3.3 3.4	3.4	
				Bottom	5	27.1 27.5	27.3	7.5 7.5	7.5	31.7 31.2	31.5	73.7 74.9	74.3	4.9 5.0	5.0		1.1 1.0	1.1		3.0 3.1	3.1	
M2	Rainy	Calm	08:26	Surface	1	27.9 27.9	27.9	7.5 7.5	7.5	29.5 30.1	29.8	85.8 86.4	86.1	5.7 5.7	5.7	5.4	0.7 0.6	0.7	1.2	2.4 2.4	2.4	3.4
				Middle	6	26.4 27.1	26.8	7.5 7.5	7.5	32.4 31.6	32.0	73.6 74.8	74.2	4.9 5.0	5.0		1.0 1.0	1.0		2.9 2.9	2.9	
				Bottom	11	25.0 24.9	25.0	7.5 7.5	7.5	33.7 33.8	33.8	65.9 65.3	65.6	4.5 4.5	4.5		1.8 1.9	1.9		5.0 5.0	5.0	
M3	Rainy	Calm	08:51	Surface	1	28.1 28.0	28.1	7.5 7.5	7.5	28.6 27.7	28.2	84.8 85.5	85.2	5.7 5.7	5.7	5.5	2.0 2.1	2.1	2.5	5.1 5.5	5.3	5.3
				Middle	4	27.5 27.8	27.7	7.5 7.5	7.5	31.3 31.0	31.2	76.6 81.1	78.9	5.1 5.4	5.3		1.0 1.1	1.1		5.6 5.5	5.6	
				Bottom	7	26.3 26.2	26.3	7.5 7.5	7.5	32.7 32.7	32.7	63.6 64.4	64.0	4.3 4.3	4.3		4.3 4.1	4.2		4.9 4.9	4.9	
M4	Rainy	Calm	08:21	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	30.0 30.0	30.0	89.1 89.5	89.3	5.9 5.9	5.9	5.5	0.6 0.6	0.6	1.4	3.7 3.6	3.7	2.3
				Middle	6	27.5 26.7	27.1	7.5 7.5	7.5	31.1 32.1	31.6	79.5 73.7	76.6	5.3 4.9	5.1		0.8 0.9	0.9		1.8 1.8	1.8	
				Bottom	11	25.6 25.7	25.7	7.5 7.5	7.5	33.2 33.1	33.2	64.5 65.3	64.9	4.4 4.4	4.4		2.6 2.5	2.6		1.4 1.4	1.4	
M5	Rainy	Calm	09:07	Surface	1	27.6 27.7	27.7	7.5 7.5	7.5	30.5 30.1	30.3	79.0 79.2	79.1	5.3 5.3	5.3	5.2	1.1 1.0	1.1	1.7	1.2 1.2	1.2	2.2
				Middle	5.5	27.2 27.3	27.3	7.5 7.5	7.5	31.4 31.3	31.4	76.6 76.4	76.5	5.1 5.1	5.1		1.4 1.4	1.4		1.6 1.6	1.6	
				Bottom	10	24.6 24.6	24.6	7.5 7.5	7.5	34.1 34.1	34.1	64.5 65.4	65.0	4.4 4.5	4.5		2.6 2.6	2.6		3.6 3.7	3.7	
M6	Rainy	Calm	09:02	Surface	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	0.6	-	-	7.8
				Middle	2.1	28.3 28.4	28.4	7.6 7.6	7.6	30.2 30.2	30.2	92.9 93.8	93.4	6.1 6.2	6.2		0.6 0.6	0.6		7.8 7.8	7.8	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

Appendix I - Action and Limit Levels for Marine Water Quality on 20 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.0 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.2 mg/L</u>	<u>6.9 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>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.2 mg/L</u>	<u>7.4 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>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.1 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.7 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

**Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 20 August 2018**

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Fine	Calm	15:33	Surface	1	28.0 27.9	28.0	7.6 7.5	7.6	29.2 29.7	29.5	95.9 89.7	92.8	6.4 6.0	6.2	5.4	1.6 1.6	1.6	3.3	5.2 5.2	5.2	5.4
				Middle	8.5	25.7 25.6	25.7	7.5 7.5	7.5	32.8 33.0	32.9	68.9 63.6	66.3	4.7 4.3	4.5		1.5 1.8	1.7		5.3 5.1	5.2	
				Bottom	16	23.5 23.6	23.6	7.5 7.5	7.5	34.6 34.6	34.6	64.8 63.5	64.2	4.5 4.4	4.5		6.6 6.8	6.7		5.9 5.8	5.9	
C2	Fine	Calm	14:31	Surface	1	28.3 28.1	28.2	7.4 7.5	7.5	29.1 29.1	29.1	86.7 86.9	86.8	5.8 5.8	5.8	5.1	1.1 1.2	1.2	3.4	4.4 4.5	4.5	4.2
				Middle	16	24.5 24.9	24.7	7.4 7.5	7.5	33.9 33.7	33.8	62.7 62.6	62.7	4.3 4.3	4.3		3.1 2.6	2.9		5.0 5.0	5.0	
				Bottom	31	24.0 24.3	24.2	7.5 7.5	7.5	34.3 34.1	34.2	62.3 61.9	62.1	4.3 4.3	4.3		6.1 6.0	6.1		3.1 3.1	3.1	
G1	Fine	Calm	14:57	Surface	1	28.2 28.1	28.2	7.5 7.5	7.5	30.1 30.3	30.2	90.7 88.8	89.8	6.0 5.9	6.0	5.5	0.6 0.6	0.6	1.3	2.9 2.9	2.9	3.7
				Middle	4	27.6 27.3	27.5	7.5 7.5	7.5	30.9 31.4	31.2	74.3 73.7	74.0	4.9 4.9	4.9		1.1 1.1	1.1		3.2 3.2	3.2	
				Bottom	7	25.8 25.8	25.8	7.5 7.5	7.5	33.0 33.0	33.0	64.1 62.0	63.1	4.3 4.2	4.3		2.0 2.1	2.1		5.0 4.9	5.0	
G2	Fine	Calm	14:48	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	29.9 30.0	30.0	89.5 87.2	88.4	5.9 5.8	5.9	5.5	0.9 0.9	0.9	1.6	4.4 4.3	4.4	3.8
				Middle	5.5	26.9 27.4	27.2	7.5 7.5	7.5	31.6 31.1	31.4	75.4 76.5	76.0	5.0 5.1	5.1		1.0 1.0	1.0		3.7 3.7	3.7	
				Bottom	10	25.0 24.9	25.0	7.5 7.5	7.5	33.8 33.8	33.8	63.0 61.8	62.4	4.3 4.2	4.3		2.9 2.7	2.8		3.2 3.2	3.2	
G3	Fine	Calm	15:03	Surface	1	28.2 25.7	27.0	7.5 7.5	7.5	29.9 33.1	31.5	85.0 83.5	84.3	5.6 5.7	5.7	5.0	0.8 0.8	0.8	1.7	2.8 2.8	2.8	3.9
				Middle	4	26.8 26.7	26.8	7.5 7.5	7.5	32.1 32.2	32.2	64.2 64.5	64.4	4.3 4.3	4.3		2.0 2.0	2.0		3.6 3.6	3.6	
				Bottom	7	25.7 25.7	25.7	7.5 7.5	7.5	33.1 33.1	33.1	63.3 63.3	63.3	4.3 4.3	4.3		2.3 2.2	2.3		5.2 5.2	5.2	
G4	Fine	Calm	15:16	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	30.0 30.0	30.0	89.1 88.3	88.7	5.9 5.9	5.9	5.2	0.7 0.7	0.7	1.8	5.4 5.4	5.4	5.4
				Middle	4	27.4 27.5	27.5	7.5 7.5	7.5	31.4 31.4	31.4	64.7 67.3	66.0	4.3 4.5	4.4		1.7 1.6	1.7		5.4 5.4	5.4	
				Bottom	7	25.9 25.9	25.9	7.5 7.5	7.5	32.8 32.6	32.7	65.6 65.7	65.7	4.4 4.4	4.4		2.9 2.8	2.9		5.4 5.4	5.4	
M1	Fine	Calm	14:53	Surface	1	28.1 28.0	28.1	7.5 7.5	7.5	29.9 30.1	30.0	90.6 86.3	88.5	6.0 5.7	5.9	5.5	0.7 0.7	0.7	1.2	2.1 2.0	2.1	2.8
				Middle	3	27.8 27.6	27.7	7.5 7.5	7.5	30.7 30.9	30.8	79.7 73.9	76.8	5.3 4.9	5.1		0.8 0.9	0.9		1.8 1.8	1.8	
				Bottom	5	27.3 26.8	27.1	7.5 7.5	7.5	31.4 32.2	31.8	67.8 61.1	64.5	4.5 4.1	4.3		1.8 1.9	1.9		4.5 4.5	4.5	
M2	Fine	Calm	14:44	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	30.0 30.0	30.0	95.8 94.3	95.1	6.3 6.2	6.3	5.5	0.5 0.5	0.5	2.0	5.6 5.8	5.7	4.2
				Middle	6	26.8 26.7	26.8	7.5 7.5	7.5	32.1 32.2	32.2	70.0 67.0	68.5	4.7 4.5	4.6		1.3 1.3	1.3		4.1 4.1	4.1	
				Bottom	11	24.7 24.7	24.7	7.5 7.5	7.5	34.0 33.9	34.0	63.5 64.3	63.9	4.4 4.4	4.4		4.0 4.1	4.1		2.8 3.0	2.9	
M3	Fine	Calm	15:09	Surface	1	28.2 28.2	28.2	7.5 7.6	7.6	29.8 29.8	29.8	91.2 91.3	91.3	6.0 6.0	6.0	5.3	0.8 0.9	0.9	1.7	3.7 3.7	3.7	5.3
				Middle	4	26.6 27.4	27.0	7.5 7.5	7.5	31.8 31.4	31.6	66.5 66.4	66.5	4.5 4.4	4.5		1.7 1.7	1.7		5.9 5.7	5.8	
				Bottom	7	25.5 25.3	25.4	7.5 7.5	7.5	33.4 33.4	33.4	63.7 65.5	64.6	4.3 4.5	4.4		2.5 2.5	2.5		6.4 6.3	6.4	
M4	Fine	Calm	14:38	Surface	1	28.1 28.1	28.1	7.6 7.5	7.6	29.8 29.9	29.9	97.9 94.3	96.1	6.5 6.2	6.4	5.8	0.9 0.9	0.9	1.2	4.3 4.5	4.4	4.3
				Middle	6	27.3 27.6	27.5	7.5 7.5	7.5	31.4 30.8	31.1	74.2 78.1	76.2	4.9 5.2	5.1		0.8 0.8	0.8		4.6 4.6	4.6	
				Bottom	11	25.7 25.8	25.8	7.5 7.5	7.5	33.1 33.0	33.1	62.8 64.2	63.5	4.3 4.3	4.3		1.8 1.8	1.8		3.8 3.7	3.8	
M5	Fine	Calm	15:26	Surface	1	28.1 28.1	28.1	7.6 7.6	7.6	29.5 29.5	29.5	98.7 96.8	97.8	6.5 6.4	6.5	5.7	1.1 1.2	1.2	2.5	3.2 3.3	3.3	4.4
				Middle	5.5	26.7 26.7	26.7	7.5 7.5	7.5	31.7 31.7	31.7	72.3 71.9	72.1	4.9 4.8	4.9		1.5 1.5	1.5		5.6 5.7	5.7	
				Bottom	10	24.8 25.0	24.9	7.5 7.5	7.5	33.9 33.7	33.8	62.6 64.1	63.4	4.3 4.4	4.4		4.7 4.8	4.8		4.1 4.1	4.1	
M6	Fine	Calm	15:21	Surface	-	-	-	-	-	-	-	-	-	-	-	5.3	-	-	0.7	-	-	3.7
				Middle	2.1	27.8 27.7	27.8	7.5 7.5	7.5	30.7 30.7	30.7	79.5 79.1	79.3	5.3 5.2	5.3		0.7 0.7	0.7		3.7 3.7	3.7	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 7.56 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 8.19 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.64 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.11 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 5.64 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.11 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.92 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.58 mg/L</u>
<u>Station M6</u>			
Intake Level		<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	09:39	Surface	1	27.9 27.7	27.8	7.9 7.8	7.9	29.9 30.2	30.1	81.7 79.6	80.7	5.4 5.3	5.4	5.1	2.4 2.4	2.4	4.4	4.5 4.4	4.5	4.3
				Middle	9	25.0 25.0	25.0	7.8 7.8	7.8	33.5 33.5	33.5	70.0 68.0	69.0	4.8 4.7	4.8	4.0 3.8	3.9	5.3 5.4		5.4		
				Bottom	17	23.4 23.5	23.5	7.8 7.8	7.8	34.7 34.7	34.7	66.0 65.0	65.5	4.6 4.5	4.6	7.1 6.9	7.0	2.9 2.9		2.9		
C2	Cloudy	Calm	08:40	Surface	1	28.1 28.1	28.1	7.6 7.8	7.7	29.1 29.2	29.2	81.3 77.7	79.5	5.4 5.2	5.3	5.2	1.6 1.8	1.7	4.7	4.6 4.7	4.7	5.6
				Middle	16.5	23.6 23.8	23.7	7.8 7.8	7.8	34.6 34.5	34.6	70.5 73.0	71.8	4.9 5.1	5.0	6.5 5.6	6.1	5.4 5.5		5.5		
				Bottom	32	23.6 23.6	23.6	7.8 7.8	7.8	34.6 34.6	34.6	63.3 63.6	63.5	4.4 4.4	4.4	6.5 6.1	6.3	6.6 6.5		6.6		
G1	Cloudy	Calm	09:06	Surface	1	28.2 27.9	28.1	8.0 7.9	8.0	30.0 30.4	30.2	93.6 90.4	92.0	6.2 6.0	6.1	5.4	1.5 1.4	1.5	1.7	5.2 5.2	5.2	5.2
				Middle	4	27.7 27.6	27.7	7.9 7.8	7.9	30.7 30.9	30.8	69.8 69.9	69.9	4.6 4.6	4.6	1.5 1.5	1.5	6.2 6.3		6.3		
				Bottom	7	26.5 26.7	26.6	7.8 7.8	7.8	32.1 31.9	32.0	66.3 67.0	66.7	4.5 4.5	4.5	2.0 2.2	2.1	4.2 4.0		4.1		
G2	Cloudy	Calm	08:56	Surface	1	28.3 28.2	28.3	8.0 8.0	8.0	29.9 29.9	29.9	99.7 97.4	98.6	6.6 6.4	6.5	5.9	0.9 0.9	0.9	1.8	4.7 4.7	4.7	3.9
				Middle	5	27.8 27.8	27.8	7.9 7.9	7.9	30.7 30.7	30.7	79.3 76.9	78.1	5.3 5.1	5.2	0.8 0.8	0.8	3.3 3.4		3.4		
				Bottom	9	25.0 25.3	25.2	7.8 7.8	7.8	33.7 33.4	33.6	72.2 72.1	72.2	4.9 4.9	4.9	3.5 3.7	3.6	3.5 3.5		3.5		
G3	Cloudy	Calm	09:10	Surface	1	27.8 27.8	27.8	7.8 7.8	7.8	30.6 30.6	30.6	90.5 86.2	88.4	6.0 5.7	5.9	5.7	0.9 0.9	0.9	1.1	5.1 5.4	5.3	4.7
				Middle	4	27.4 27.5	27.5	7.8 7.8	7.8	31.3 31.2	31.3	81.8 83.3	82.6	5.4 5.5	5.5	1.0 1.0	1.0	4.3 4.4		4.4		
				Bottom	7	26.9 26.8	26.9	7.8 7.8	7.8	31.7 31.8	31.8	75.0 73.8	74.4	5.0 4.9	5.0	1.3 1.3	1.3	4.2 4.4		4.3		
G4	Cloudy	Calm	09:20	Surface	1	28.2 28.1	28.2	7.9 7.9	7.9	29.7 29.9	29.8	85.7 81.3	83.5	5.7 5.4	5.6	5.5	0.8 0.8	0.8	1.6	5.4 5.3	5.4	5.2
				Middle	4	27.2 27.2	27.2	7.8 7.8	7.8	31.3 31.4	31.4	81.0 80.0	80.5	5.4 5.3	5.4	1.1 1.0	1.1	4.3 4.1		4.2		
				Bottom	7	26.6 26.5	26.6	7.8 7.8	7.8	32.1 32.2	32.2	71.3 67.9	69.6	4.8 4.6	4.7	2.9 2.7	2.8	6.0 6.1		6.1		
M1	Cloudy	Calm	09:01	Surface	1	28.2 28.1	28.2	7.9 7.9	7.9	29.8 29.9	29.9	84.7 80.1	82.4	5.6 5.3	5.5	5.2	1.2 1.2	1.2	1.2	3.5 3.7	3.6	3.3
				Middle	3	27.8 27.8	27.8	7.8 7.8	7.8	30.5 30.5	30.5	74.3 74.1	74.2	4.9 4.9	4.9	1.4 1.3	1.4	3.0 3.1		3.1		
				Bottom	5	27.7 27.5	27.6	7.8 7.8	7.8	30.7 31.1	30.9	69.6 63.5	66.6	4.6 4.2	4.4	1.2 1.0	1.1	3.2 3.4		3.3		
M2	Cloudy	Calm	08:51	Surface	1	28.2 28.2	28.2	8.0 7.9	8.0	30.0 30.0	30.0	99.2 97.0	98.1	6.6 6.4	6.5	6.1	1.2 1.3	1.3	3.0	4.6 4.8	4.7	5.5
				Middle	6	27.5 27.0	27.3	7.9 7.8	7.9	31.1 31.6	31.4	88.1 80.9	84.5	5.9 5.4	5.7	1.0 1.1	1.1	8.6 8.7		8.7		
				Bottom	11	24.0 24.0	24.0	7.8 7.8	7.8	34.4 34.4	34.4	62.8 63.3	63.1	4.3 4.4	4.4	6.3 6.6	6.5	3.0 3.2		3.1		
M3	Cloudy	Calm	09:14	Surface	1	27.8 27.8	27.8	7.8 7.8	7.8	30.4 30.6	30.5	81.1 81.8	81.5	5.4 5.4	5.4	5.4	0.9 0.9	0.9	1.6	4.5 4.8	4.7	4.0
				Middle	4	27.4 27.4	27.4	7.8 7.8	7.8	31.1 31.2	31.2	80.3 78.2	79.3	5.3 5.2	5.3	1.0 1.1	1.1	4.3 4.3		4.3		
				Bottom	7	26.5 26.5	26.5	7.8 7.8	7.8	32.2 32.2	32.2	69.4 67.2	68.3	4.7 4.5	4.6	2.7 2.6	2.7	3.1 3.1		3.1		
M4	Cloudy	Calm	08:47	Surface	1	28.2 28.2	28.2	7.9 7.9	7.9	29.9 29.9	29.9	94.5 94.6	94.6	6.3 6.3	6.3	6.1	1.5 1.4	1.5	1.6	3.5 3.7	3.6	4.4
				Middle	5	28.0 28.0	28.0	7.9 7.9	7.9	30.4 30.3	30.4	89.6 89.5	89.6	5.9 5.9	5.9	1.4 1.4	1.4	4.4 4.3		4.4		
				Bottom	9	26.4 26.3	26.4	7.8 7.8	7.8	32.0 32.4	32.2	64.3 64.1	64.2	4.3 4.3	4.3	2.0 2.0	2.0	5.2 5.0		5.1		
M5	Cloudy	Calm	09:33	Surface	1	28.2 28.1	28.2	7.9 7.9	7.9	29.4 29.3	29.4	97.0 94.2	95.6	6.4 6.3	6.4	5.9	1.3 1.3	1.3	3.2	5.3 5.2	5.3	5.5
				Middle	5.5	27.6 27.1	27.4	7.9 7.8	7.9	30.9 31.5	31.2	82.5 77.2	79.9	5.5 5.2	5.4	1.2 1.5	1.4	5.2 5.3		5.3		
				Bottom	10	24.0 24.0	24.0	7.8 7.8	7.8	34.4 34.4	34.4	61.8 62.0	61.9	4.3 4.3	4.3	7.0 6.7	6.9	5.9 5.8		5.9		
M6	Cloudy	Calm	09:25	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	-	-	3.8	
				Middle	2.4	28.0 28.0	28.0	7.8 7.8	7.8	30.3 30.3	30.3	80.6 81.3	81.0	5.3 5.4	5.4	0.6 0.5	0.6		3.9 3.7	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 22 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 14.0 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 15.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 6.2 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 6.8 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.0 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.5 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	17:06	Surface	1	28.7 28.1	28.4	8.3 8.0	8.2	30.2 30.4	30.3	119.0 114.7	116.9	7.8 7.6	7.7	6.1	3.0 3.1	3.1	6.4	5.2 5.2	5.2	5.5
				Middle	9	25.6 25.2	25.4	7.8 7.8	7.8	32.8 33.2	33.0	64.4 63.8	64.1	4.4 4.4	4.4		4.0 4.9	4.5		5.5 5.4	5.5	
				Bottom	17	23.1 23.1	23.1	7.9 7.9	7.9	34.8 34.9	34.9	61.6 61.3	61.5	4.3 4.3	4.3		12.0 11.4	11.7		5.7 5.8	5.8	
C2	Cloudy	Calm	16:08	Surface	1	28.2 28.3	28.3	8.1 8.0	8.1	30.3 30.2	30.3	118.3 110.3	114.3	7.8 7.3	7.6	6.2	1.6 1.9	1.8	4.4	4.3 4.4	4.4	4.1
				Middle	16	24.5 24.6	24.6	7.8 7.8	7.8	33.8 33.7	33.8	67.5 68.4	68.0	4.6 4.7	4.7		4.4 4.1	4.3		3.3 3.3	3.3	
				Bottom	31	23.6 23.9	23.8	7.8 7.8	7.8	34.6 34.3	34.5	65.9 65.1	65.5	4.6 4.5	4.6		7.0 7.2	7.1		4.7 4.7	4.7	
G1	Cloudy	Calm	16:37	Surface	1	28.4 28.3	28.4	8.1 8.1	8.1	30.1 30.2	30.2	147.6 132.0	139.8	9.7 8.7	9.2	7.3	0.7 0.7	0.7	0.9	3.3 3.4	3.4	5.0
				Middle	4	27.4 27.3	27.4	7.9 7.9	7.9	31.1 31.2	31.2	80.5 79.6	80.1	5.4 5.3	5.4		0.5 0.5	0.5		6.7 6.7	6.7	
				Bottom	7	25.6 25.6	25.6	7.8 7.8	7.8	33.0 33.0	33.0	74.0 76.1	75.1	5.0 5.2	5.1		1.5 1.5	1.5		4.9 4.8	4.9	
G2	Cloudy	Calm	16:28	Surface	1	28.5 28.4	28.5	8.2 8.2	8.2	30.1 30.0	30.1	159.7 154.4	157.1	10.5 10.2	10.4	8.3	3.2 3.3	3.3	4.3	4.6 4.7	4.7	3.9
				Middle	5.5	27.5 27.5	27.5	7.9 7.9	7.9	30.8 30.9	30.9	91.7 90.9	91.3	6.1 6.1	6.1		2.9 2.9	2.9		3.8 3.8	3.8	
				Bottom	10	24.6 24.7	24.7	7.8 7.8	7.8	33.9 33.9	33.9	62.1 64.3	63.2	4.3 4.4	4.4		6.9 6.4	6.7		3.2 3.4	3.3	
G3	Cloudy	Calm	16:42	Surface	1	28.6 28.8	28.7	8.2 8.3	8.3	29.8 29.5	29.7	162.8 184.0	173.4	10.7 12.1	11.4	9.2	3.6 3.5	3.6	5.2	5.1 5.1	5.1	6.0
				Middle	4	27.2 27.8	27.5	7.9 8.0	8.0	31.5 30.7	31.1	101.5 103.5	102.5	6.8 6.9	6.9		3.5 3.5	3.5		7.0 7.3	7.2	
				Bottom	7	25.6 25.5	25.6	7.8 7.8	7.8	33.2 33.3	33.3	69.9 71.5	70.7	4.7 4.9	4.8		8.4 8.4	8.4		5.8 5.7	5.8	
G4	Cloudy	Calm	16:51	Surface	1	28.5 28.4	28.5	8.2 8.1	8.2	29.9 30.0	30.0	166.2 143.2	154.7	10.9 9.4	10.2	7.8	2.2 2.2	2.2	3.4	4.6 4.6	4.6	5.2
				Middle	4	27.5 27.7	27.6	7.9 7.9	7.9	31.2 30.8	31.0	80.9 80.5	80.7	5.4 5.3	5.4		1.6 1.8	1.7		7.1 7.2	7.2	
				Bottom	7	25.5 25.8	25.7	7.8 7.8	7.8	33.1 32.9	33.0	73.4 74.7	74.1	5.0 5.1	5.1		6.6 6.2	6.4		3.6 3.7	3.7	
M1	Cloudy	Calm	16:34	Surface	1	28.7 28.6	28.7	8.1 8.1	8.1	30.1 30.1	30.1	136.0 129.9	133.0	8.9 8.5	8.7	7.9	1.0 1.1	1.1	0.9	5.2 5.2	5.2	4.7
				Middle	3	28.0 28.0	28.0	8.0 8.0	8.0	30.5 30.5	30.5	102.8 107.3	105.1	6.8 7.1	7.0		0.7 0.7	0.7		4.5 4.6	4.6	
				Bottom	5	26.8 26.9	26.9	7.9 7.9	7.9	31.8 31.6	31.7	65.6 70.3	68.0	4.4 4.7	4.6		1.0 1.0	1.0		4.2 4.4	4.3	
M2	Cloudy	Calm	16:24	Surface	1	28.7 28.6	28.7	8.2 8.2	8.2	30.1 30.1	30.1	177.0 163.9	170.5	11.6 10.8	11.2	8.3	1.4 1.4	1.4	2.5	4.2 4.4	4.3	3.9
				Middle	5.5	26.5 27.1	26.8	7.9 7.9	7.9	32.2 31.3	31.8	79.6 78.6	79.1	5.3 5.3	5.3		1.3 1.3	1.3		4.0 4.0	4.0	
				Bottom	10	24.5 24.5	24.5	7.8 7.8	7.8	34.0 34.0	34.0	68.5 67.3	67.9	4.7 4.6	4.7		5.0 4.7	4.9		3.3 3.4	3.4	
M3	Cloudy	Calm	16:47	Surface	1	28.6 28.5	28.6	8.2 8.2	8.2	29.8 29.9	29.9	171.6 157.6	164.6	11.3 10.4	10.9	8.8	2.2 2.2	2.2	3.3	4.2 4.3	4.3	4.4
				Middle	4	27.6 27.8	27.7	7.9 8.0	8.0	30.9 30.7	30.8	100.1 102.4	101.3	6.6 6.8	6.7		2.1 2.5	2.3		3.7 3.8	3.8	
				Bottom	7	25.4 25.4	25.4	7.8 7.8	7.8	33.3 33.4	33.4	67.0 67.6	67.3	4.6 4.6	4.6		5.6 5.3	5.5		5.1 5.3	5.2	
M4	Cloudy	Calm	16:18	Surface	1	28.4 28.5	28.5	8.2 8.2	8.2	30.2 30.2	30.2	165.5 164.8	165.2	10.9 10.8	10.9	8.8	2.9 2.9	2.9	2.8	5.3 5.3	5.3	5.6
				Middle	4.5	27.6 27.7	27.7	7.9 8.0	8.0	30.9 30.8	30.9	100.5 100.4	100.5	6.7 6.7	6.7		2.3 2.3	2.3		5.9 5.7	5.8	
				Bottom	8	26.2 26.2	26.2	7.8 7.8	7.8	32.5 32.5	32.5	67.4 67.8	67.6	4.5 4.6	4.6		3.2 3.2	3.2		5.6 5.7	5.7	
M5	Cloudy	Calm	17:01	Surface	1	28.4 28.4	28.4	8.2 8.2	8.2	30.1 30.1	30.1	152.1 153.9	153.0	10.0 10.1	10.1	8.1	1.9 1.8	1.9	3.9	4.8 4.6	4.7	4.1
				Middle	5.5	27.4 27.4	27.4	7.9 7.9	7.9	30.9 30.9	30.9	91.1 88.5	89.8	6.1 5.9	6.0		2.3 2.2	2.3		4.3 4.3	4.3	
				Bottom	10	24.6 24.4	24.5	7.8 7.8	7.8	33.9 34.1	34.0	63.4 66.2	64.8	4.4 4.6	4.5		7.6 7.4	7.5		3.1 3.2	3.2	
M6	Cloudy	Calm	16:56	Surface	-	-	-	-	-	-	-	-	-	-	-	7.0	-	-	2.5	-	-	4.5
				Middle	2.3	28.0 27.9	28.0	8.0 8.0	8.0	30.3 30.3	30.3	106.7 104.5	105.6	7.1 6.9	7.0		2.5 2.5	2.5		4.4 4.5	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 24 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 7.7 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.3 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.4 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.9 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.4 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.9 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.4 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.9 mg/L</u>
<u>Station M6</u>			
Intake Level		<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	11:05	Surface	1	27.3 27.4	27.4	8.0 8.0	8.0	30.8 30.8	30.8	108.1 108.3	108.2	7.2 7.2	7.2	6.0	1.0 0.9	1.0	2.8	4.3 4.2	4.3	3.2
				Middle	9	24.0 24.0	24.0	7.9 7.9	7.9	34.2 34.1	34.2	68.1 66.9	67.5	4.7 4.6	4.7		2.4 2.4	2.4		3.0 3.0	3.0	
				Bottom	17	23.1 23.1	23.1	7.9 7.9	7.9	34.8 34.8	34.8	65.7 65.2	65.5	4.6 4.6	4.6		4.9 4.9	4.9		2.4 2.3	2.4	
C2	Sunny	Moderate	10:09	Surface	1	27.2 27.0	27.1	7.7 7.8	7.8	30.8 30.9	30.9	94.3 93.9	94.1	6.3 6.3	6.3	5.4	1.7 1.9	1.8	4.9	4.5 4.4	4.5	4.7
				Middle	17	23.2 23.2	23.2	7.8 7.8	7.8	34.7 34.7	34.7	63.4 64.0	63.7	4.4 4.5	4.5		6.3 6.5	6.4		4.3 4.2	4.3	
				Bottom	33	23.1 23.2	23.2	7.8 7.8	7.8	34.7 34.7	34.7	63.5 63.7	63.6	4.5 4.5	4.5		6.3 6.4	6.4		5.2 5.3	5.3	
G1	Sunny	Moderate	10:39	Surface	1	27.0 26.9	27.0	8.0 8.0	8.0	30.9 31.0	31.0	98.6 92.6	95.6	6.6 6.2	6.4	5.9	1.2 1.3	1.3	2.1	4.4 4.5	4.5	4.3
				Middle	4	26.3 26.4	26.4	8.0 7.9	8.0	31.9 31.7	31.8	80.4 77.3	78.9	5.4 5.2	5.3		1.9 1.8	1.9		5.0 5.0	5.0	
				Bottom	7	24.9 25.7	25.3	7.9 7.9	7.9	33.3 32.5	32.9	68.3 72.5	70.4	4.7 4.9	4.8		3.1 2.9	3.0		3.4 3.6	3.5	
G2	Sunny	Moderate	10:29	Surface	1	27.2 27.1	27.2	8.1 8.1	8.1	31.0 31.0	31.0	111.3 110.2	110.8	7.4 7.4	7.4	6.6	1.9 1.9	1.9	3.1	3.2 3.2	3.2	2.8
				Middle	5	26.3 26.4	26.4	7.9 8.0	8.0	32.0 32.0	32.0	84.0 84.8	84.4	5.7 5.7	5.7		2.6 2.6	2.6		2.4 2.4	2.4	
				Bottom	9	23.9 24.0	24.0	7.9 7.8	7.9	34.3 34.2	34.3	62.9 63.1	63.0	4.4 4.4	4.4		4.7 4.9	4.8		2.7 2.8	2.8	
G3	Sunny	Moderate	10:43	Surface	1	27.2 27.0	27.1	7.9 8.0	8.0	30.7 30.8	30.8	85.6 88.8	87.2	5.7 6.0	5.9	5.6	1.8 1.5	1.7	2.5	4.2 4.3	4.3	3.8
				Middle	4	26.3 26.3	26.3	7.9 8.0	8.0	31.8 31.8	31.8	77.1 80.1	78.6	5.2 5.4	5.3		1.8 1.7	1.8		3.9 3.9	3.9	
				Bottom	7	25.0 25.1	25.1	7.9 7.8	7.9	33.3 33.2	33.3	65.2 65.5	65.4	4.5 4.5	4.5		4.1 3.9	4.0		3.3 3.2	3.3	
G4	Sunny	Moderate	10:51	Surface	1	27.1 27.1	27.1	8.1 8.0	8.1	30.9 31.0	31.0	107.3 104.1	105.7	7.2 7.0	7.1	6.3	1.2 1.1	1.2	3.4	4.5 4.7	4.6	4.7
				Middle	4	25.8 26.4	26.1	7.9 8.0	8.0	32.4 31.8	32.1	74.3 85.2	79.8	5.0 5.7	5.4		2.5 2.5	2.5		4.1 4.2	4.2	
				Bottom	7	24.7 25.0	24.9	7.9 7.9	7.9	33.5 33.2	33.4	66.8 68.6	67.7	4.6 4.7	4.7		6.6 6.2	6.4		5.4 5.4	5.4	
M1	Sunny	Moderate	10:34	Surface	1	27.1 27.1	27.1	8.0 8.0	8.0	30.9 31.0	31.0	98.5 102.8	100.7	6.6 6.9	6.8	6.6	1.5 1.5	1.5	2.0	3.1 3.2	3.2	3.6
				Middle	3	26.7 26.8	26.8	8.0 8.0	8.0	31.3 31.2	31.3	92.6 95.6	94.1	6.2 6.4	6.3		2.1 1.9	2.0		3.2 3.3	3.3	
				Bottom	5	26.2 26.2	26.2	7.9 7.9	7.9	32.0 32.0	32.0	73.8 69.3	71.6	5.0 4.7	4.9		2.3 2.7	2.5		4.4 4.2	4.3	
M2	Sunny	Moderate	10:25	Surface	1	27.2 27.1	27.2	8.1 8.1	8.1	30.9 31.0	31.0	112.7 105.4	109.1	7.5 7.1	7.3	6.5	1.2 1.4	1.3	2.6	4.3 4.3	4.3	3.7
				Middle	6	25.5 26.4	26.0	7.9 8.0	8.0	32.7 31.9	32.3	84.3 84.7	84.5	5.7 5.7	5.7		2.6 2.9	2.8		2.4 2.4	2.4	
				Bottom	11	23.8 23.6	23.7	7.9 7.9	7.9	34.3 34.5	34.4	67.0 66.8	66.9	4.7 4.7	4.7		3.5 3.6	3.6		4.2 4.3	4.3	
M3	Sunny	Moderate	10:47	Surface	1	26.8 26.8	26.8	8.0 8.0	8.0	31.1 31.1	31.1	102.2 103.2	102.7	6.9 6.9	6.9	6.4	1.3 1.3	1.3	3.5	2.9 2.9	2.9	3.7
				Middle	4	26.4 26.4	26.4	8.0 8.0	8.0	31.7 31.7	31.7	86.6 84.2	85.4	5.8 5.7	5.8		1.7 1.6	1.7		3.1 3.0	3.1	
				Bottom	7	24.6 25.0	24.8	7.8 7.8	7.8	33.8 33.4	33.6	64.3 65.2	64.8	4.4 4.5	4.5		7.1 7.7	7.4		5.1 5.2	5.2	
M4	Sunny	Moderate	10:19	Surface	1	27.2 27.1	27.2	8.1 8.1	8.1	30.4 30.6	30.5	115.9 114.9	115.4	7.8 7.7	7.8	7.0	2.0 2.0	2.0	2.9	3.1 3.0	3.1	3.9
				Middle	5	26.6 26.6	26.6	8.0 8.0	8.0	31.3 31.3	31.3	92.0 91.2	91.6	6.2 6.1	6.2		2.6 2.6	2.6		4.4 4.6	4.5	
				Bottom	9	25.3 24.8	25.1	7.8 7.8	7.8	32.9 33.5	33.2	66.0 66.2	66.1	4.5 4.5	4.5		4.0 4.2	4.1		4.1 4.2	4.2	
M5	Sunny	Moderate	11:00	Surface	1	27.1 27.2	27.2	8.1 8.0	8.1	30.9 30.8	30.9	110.9 109.6	110.3	7.4 7.3	7.4	6.2	1.0 1.1	1.1	3.6	4.6 4.7	4.7	3.2
				Middle	6	24.5 24.3	24.4	7.9 7.8	7.9	33.6 33.9	33.8	73.4 71.6	72.5	5.1 4.9	5.0		3.8 4.4	4.1		3.1 3.0	3.1	
				Bottom	11	23.4 23.4	23.4	7.9 7.9	7.9	34.6 34.6	34.6	64.1 62.8	63.5	4.5 4.4	4.5		5.4 5.9	5.7		1.8 1.8	1.8	
M6	Sunny	Moderate	10:55	Surface	-	-	-	-	-	-	-	-	-	-	5.6	-	-	1.5	-	-	3.1	
				Middle	2.4	26.6 26.6	26.6	7.9 7.9	7.9	31.6 31.6	31.6	83.0 82.1	82.6	5.6 5.5		5.6	1.5 1.5		1.5	3.0 3.1		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 24 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C1: 18.48 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C1: 20.02 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C1: 5.2 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C1: 5.6 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C1: 5.2 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C1: 5.6 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C1: 7.0 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C1: 7.5 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Sunny	Moderate	18:06	Surface	1	27.4 27.4	27.4	8.1 8.1	8.1	31.5 31.5	31.5	115.8 115.9	115.9	7.7 7.7	7.7	6.7	2.0 1.9	2.0	7.0	4.3 4.2	4.3	5.2
				Middle	9	25.1 24.9	25.0	7.9 7.9	7.9	33.1 33.3	33.2	81.8 80.9	81.4	5.6 5.5	5.6		3.4 3.5	3.5		5.5 5.5	5.5	
				Bottom	17	22.9 23.0	23.0	7.9 7.9	7.9	34.9 34.9	34.9	69.0 69.8	69.4	4.9 4.9	4.9		15.5 15.2	15.4		5.8 5.8	5.8	
C2	Sunny	Moderate	17:06	Surface	1	27.6 27.6	27.6	8.1 8.1	8.1	31.5 31.4	31.5	120.9 126.9	123.9	8.0 8.4	8.2	6.5	1.5 1.7	1.6	4.5	2.7 2.8	2.8	3.2
				Middle	16	24.7 24.6	24.7	7.9 7.9	7.9	33.5 33.5	33.5	69.7 70.0	69.9	4.8 4.8	4.8		4.2 4.2	4.2		3.2 3.2	3.2	
				Bottom	31	24.3 24.3	24.3	7.9 7.9	7.9	33.8 33.8	33.8	65.9 67.5	66.7	4.6 4.7	4.7		7.7 7.5	7.6		3.6 3.6	3.6	
G1	Sunny	Moderate	17:35	Surface	1	27.3 27.0	27.2	8.2 8.1	8.2	31.0 31.1	31.1	128.7 118.4	123.6	8.6 7.9	8.3	6.9	2.7 2.7	2.7	3.3	4.1 4.3	4.2	4.9
				Middle	4	26.1 26.1	26.1	8.0 8.0	8.0	32.2 32.2	32.2	77.8 80.5	79.2	5.3 5.4	5.4		3.3 3.0	3.2		3.7 3.7	3.7	
				Bottom	7	25.1 25.1	25.1	7.9 7.9	7.9	33.1 33.1	33.1	75.1 75.3	75.2	5.1 5.2	5.2		4.1 4.1	4.1		6.7 6.7	6.7	
G2	Sunny	Moderate	17:25	Surface	1	27.5 27.2	27.4	8.2 8.2	8.2	30.9 31.1	31.0	148.9 142.0	145.5	9.9 9.5	9.7	8.0	2.8 3.0	2.9	4.1	2.5 2.5	2.5	3.3
				Middle	5.5	26.3 25.7	26.0	8.0 7.9	8.0	31.9 32.5	32.2	93.9 92.7	93.3	6.3 6.3	6.3		3.7 4.0	3.9		3.2 3.1	3.2	
				Bottom	10	24.3 24.2	24.3	7.9 7.9	7.9	33.8 33.9	33.9	69.0 67.7	68.4	4.8 4.7	4.8		5.5 5.6	5.6		4.4 4.2	4.3	
G3	Sunny	Moderate	17:40	Surface	1	27.9 27.2	27.6	8.2 8.1	8.2	29.4 30.7	30.1	132.3 106.6	119.5	8.8 7.1	8.0	6.5	4.3 4.3	4.3	4.5	4.3 4.3	4.3	4.5
				Middle	4	25.6 25.9	25.8	7.9 7.9	7.9	32.6 32.3	32.5	70.5 75.7	73.1	4.8 5.1	5.0		3.8 3.8	3.8		5.7 5.8	5.8	
				Bottom	7	24.7 24.8	24.8	7.9 7.9	7.9	33.5 33.4	33.5	66.1 68.9	67.5	4.5 4.7	4.6		5.2 5.3	5.3		3.5 3.5	3.5	
G4	Sunny	Moderate	17:49	Surface	1	27.3 27.4	27.4	8.2 8.2	8.2	30.9 30.6	30.8	149.6 138.4	144.0	10.0 9.2	9.6	7.4	1.9 1.8	1.9	2.7	3.7 3.7	3.7	3.3
				Middle	4	26.0 26.0	26.0	8.0 7.9	8.0	32.3 32.3	32.3	79.0 75.5	77.3	5.3 5.1	5.2		2.5 2.6	2.6		2.6 2.5	2.6	
				Bottom	7	25.3 24.9	25.1	7.9 7.9	7.9	32.9 33.3	33.1	62.8 64.3	63.6	4.3 4.4	4.4		3.4 4.0	3.7		3.7 3.7	3.7	
M1	Sunny	Moderate	17:31	Surface	1	27.7 27.6	27.7	8.1 8.1	8.1	30.7 30.7	30.7	120.9 121.6	121.3	8.0 8.1	8.1	6.9	1.5 1.6	1.6	1.8	2.7 2.8	2.8	4.1
				Middle	3	26.5 26.4	26.5	8.0 8.0	8.0	31.8 31.8	31.8	85.9 81.4	83.7	5.8 5.5	5.7		1.8 1.9	1.9		4.5 4.4	4.5	
				Bottom	5	25.8 25.9	25.9	8.0 7.9	8.0	32.4 32.4	32.4	74.7 74.5	74.6	5.1 5.1	5.1		2.0 2.0	2.0		4.8 4.9	4.9	
M2	Sunny	Moderate	17:20	Surface	1	27.7 28.0	27.9	8.3 8.3	8.3	30.9 30.8	30.9	162.7 163.8	163.3	10.8 10.8	10.8	8.1	1.7 1.7	1.7	3.4	4.9 4.8	4.9	4.3
				Middle	6	25.1 25.1	25.1	7.9 7.9	7.9	33.1 33.1	33.1	80.3 74.7	77.5	5.5 5.1	5.3		2.9 3.1	3.0		4.6 4.3	4.5	
				Bottom	11	23.8 23.8	23.8	7.9 7.9	7.9	34.2 34.2	34.2	67.0 66.9	67.0	4.7 4.7	4.7		5.5 5.2	5.4		3.4 3.3	3.4	
M3	Sunny	Moderate	17:44	Surface	1	27.5 27.6	27.6	8.2 8.2	8.2	30.6 30.5	30.6	135.7 137.2	136.5	9.0 9.1	9.1	7.9	2.4 2.4	2.4	3.3	3.2 3.3	3.3	4.0
				Middle	4	26.5 25.9	26.2	8.0 8.0	8.0	31.6 32.3	32.0	100.4 95.0	97.7	6.8 6.4	6.6		2.8 2.9	2.9		3.5 3.5	3.5	
				Bottom	7	24.9 24.9	24.9	7.9 7.9	7.9	33.3 33.4	33.4	69.9 62.9	66.4	4.8 4.3	4.6		4.4 4.5	4.5		5.3 5.2	5.3	
M4	Sunny	Moderate	17:13	Surface	1	27.9 27.8	27.9	8.3 8.3	8.3	30.9 30.9	30.9	164.5 163.6	164.1	10.9 10.8	10.9	9.9	1.5 1.6	1.6	2.1	4.6 4.7	4.7	4.5
				Middle	5	27.1 26.8	27.0	8.2 8.1	8.2	31.2 31.5	31.4	140.8 121.8	131.3	9.4 8.2	8.8		1.9 2.0	2.0		6.0 5.9	6.0	
				Bottom	9	26.3 26.3	26.3	8.0 8.0	8.0	31.9 31.9	31.9	96.3 92.1	94.2	6.5 6.2	6.4		2.6 2.6	2.6		2.6 2.7	2.7	
M5	Sunny	Moderate	18:00	Surface	1	27.0 26.9	27.0	8.1 8.1	8.1	31.5 31.6	31.6	120.3 120.5	120.4	8.0 8.1	8.1	6.8	2.4 2.5	2.5	4.1	3.8 3.7	3.8	3.8
				Middle	6	25.9 26.0	26.0	8.0 8.0	8.0	32.4 32.3	32.4	77.5 81.2	79.4	5.3 5.5	5.4		3.8 3.4	3.6		3.8 3.5	3.7	
				Bottom	11	23.7 23.7	23.7	7.9 7.9	7.9	34.3 34.3	34.3	67.9 67.6	67.8	4.7 4.7	4.7		6.3 6.2	6.3		4.0 3.9	4.0	
M6	Sunny	Moderate	17:55	Surface	-	-	-	-	-	-	-	-	-	-	6.2	-	-	0.9	-	-	2.9	
				Middle	2.3	26.5 26.4	26.5	8.0 8.0	8.0	31.8 31.9	31.9	92.7 91.8	92.3	6.2 6.2		6.2	0.9 0.8		0.9	2.9 2.9		2.9
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

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

Appendix I - Action and Limit Levels for Marine Water Quality on 27 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 6.0 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 6.5 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.1 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.1 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.8 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 8.5 mg/L</u>
<u>Station M6</u>			
Intake Level		<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 27 August 2018

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Calm	14:02	Surface	1	25.8 25.8	25.8	7.8 7.8	7.8	30.4 30.4	30.4	90.4 90.1	90.3	6.2 6.2	6.2	5.7	1.6 1.4	1.5	2.9	5.9 5.9	5.9	7.4
				Middle	9	24.2 24.2	24.2	7.9 7.9	7.9	31.7 31.8	31.8	72.4 71.9	72.2	5.1 5.0	5.1		3.2 3.1	3.2		9.5 9.6	9.6	
				Bottom	17	23.3 23.4	23.4	7.9 7.9	7.9	32.5 32.4	32.5	63.8 64.8	64.3	4.5 4.6	4.6		4.2 4.0	4.1		6.8 6.8	6.8	
C2	Cloudy	Calm	12:39	Surface	1	25.8 25.8	25.8	7.8 7.8	7.8	30.1 30.0	30.1	81.5 81.5	81.5	5.6 5.6	5.6	5.2	2.1 2.1	2.1	4.1	5.9 5.8	5.9	5.9
				Middle	16	23.9 23.7	23.8	7.9 7.9	7.9	32.1 32.2	32.2	67.6 67.1	67.4	4.8 4.7	4.8		5.3 5.0	5.2		5.4 5.4	5.4	
				Bottom	31	23.6 23.6	23.6	7.9 7.9	7.9	32.3 32.3	32.3	65.8 65.8	65.8	4.6 4.6	4.6		5.0 4.9	5.0		6.7 6.3	6.5	
G1	Cloudy	Calm	13:18	Surface	1	26.6 26.6	26.6	7.8 7.8	7.8	29.6 29.6	29.6	94.9 94.8	94.9	6.5 6.4	6.5	6.1	0.7 0.7	0.7	1.3	4.0 4.2	4.1	4.9
				Middle	4	25.7 25.6	25.7	7.9 7.9	7.9	30.7 30.7	30.7	82.2 81.3	81.8	5.6 5.6	5.6		1.2 1.2	1.2		5.1 5.1	5.1	
				Bottom	7	25.0 25.0	25.0	7.9 7.8	7.9	31.4 31.4	31.4	65.6 66.9	66.3	4.5 4.6	4.6		1.9 1.9	1.9		5.3 5.6	5.5	
G2	Cloudy	Calm	13:05	Surface	1	26.5 26.5	26.5	7.8 7.8	7.8	29.9 29.8	29.9	101.1 101.2	101.2	6.9 6.9	6.9	6.6	0.6 0.6	0.6	0.8	5.7 5.8	5.8	5.6
				Middle	5	25.8 25.8	25.8	7.8 7.9	7.9	30.5 30.5	30.5	91.0 91.3	91.2	6.2 6.3	6.3		0.9 0.9	0.9		4.9 4.9	4.9	
				Bottom	9	25.3 25.3	25.3	7.8 7.8	7.8	31.1 31.1	31.1	80.6 80.4	80.5	5.6 5.5	5.6		0.8 0.9	0.9		6.1 6.1	6.1	
G3	Cloudy	Calm	13:25	Surface	1	26.3 26.3	26.3	7.9 7.9	7.9	30.1 30.0	30.1	99.8 100.2	100.0	6.8 6.8	6.8	5.9	0.7 0.7	0.7	2.7	4.7 4.8	4.8	5.0
				Middle	4	25.3 25.2	25.3	7.9 7.9	7.9	31.1 31.1	31.1	74.4 71.3	72.9	5.1 4.9	5.0		1.6 1.6	1.6		5.9 6.1	6.0	
				Bottom	7	23.9 23.8	23.9	7.9 7.9	7.9	32.1 32.2	32.2	62.4 62.7	62.6	4.4 4.4	4.4		5.6 5.7	5.7		4.4 4.2	4.3	
G4	Cloudy	Calm	13:39	Surface	1	26.7 26.7	26.7	7.8 7.8	7.8	29.5 29.5	29.5	108.1 107.8	108.0	7.3 7.3	7.3	6.4	0.6 0.6	0.6	1.5	4.7 4.9	4.8	5.1
				Middle	4	25.2 25.2	25.2	7.8 7.8	7.8	31.1 31.1	31.1	79.3 79.2	79.3	5.5 5.5	5.5		0.9 1.0	1.0		5.5 5.7	5.6	
				Bottom	7	24.4 24.4	24.4	7.8 7.8	7.8	31.8 31.8	31.8	71.0 69.3	70.2	5.0 4.8	4.9		2.7 2.9	2.8		5.2 4.8	5.0	
M1	Cloudy	Calm	13:12	Surface	1	26.4 26.4	26.4	7.9 7.9	7.9	29.8 29.8	29.8	90.7 90.6	90.7	6.2 6.2	6.2	5.9	0.8 0.8	0.8	1.5	4.8 4.7	4.8	5.8
				Middle	3	25.5 25.5	25.5	7.9 7.9	7.9	30.8 30.9	30.9	80.8 80.3	80.6	5.6 5.5	5.6		1.7 1.6	1.7		7.7 7.7	7.7	
				Bottom	5	25.2 25.2	25.2	7.9 7.9	7.9	31.2 31.2	31.2	75.7 74.3	75.0	5.2 5.1	5.2		1.9 2.0	2.0		4.9 4.8	4.9	
M2	Cloudy	Calm	12:58	Surface	1	26.5 26.6	26.6	7.9 7.9	7.9	29.8 29.7	29.8	99.9 100.5	100.2	6.8 6.8	6.8	6.5	0.4 0.5	0.5	0.8	4.4 4.5	4.5	4.5
				Middle	6	25.7 25.7	25.7	7.9 7.9	7.9	30.8 30.8	30.8	88.8 90.0	89.4	6.1 6.2	6.2		0.7 0.8	0.8		5.0 5.0	5.0	
				Bottom	11	25.0 24.9	25.0	7.9 7.9	7.9	31.3 31.4	31.4	72.7 72.7	72.7	5.0 5.0	5.0		1.0 1.0	1.0		4.1 4.0	4.1	
M3	Cloudy	Calm	13:32	Surface	1	26.2 26.2	26.2	7.8 7.8	7.8	30.2 30.2	30.2	95.3 95.6	95.5	6.5 6.5	6.5	5.5	0.9 0.9	0.9	3.3	5.2 5.2	5.2	5.5
				Middle	4	25.3 25.4	25.4	7.8 7.8	7.8	31.0 31.0	31.0	65.4 65.9	65.7	4.5 4.5	4.5		3.6 3.2	3.4		4.9 4.9	4.9	
				Bottom	7	24.5 24.5	24.5	7.8 7.8	7.8	31.8 31.7	31.8	63.5 63.2	63.4	4.4 4.4	4.4		5.5 5.9	5.7		6.4 6.1	6.3	
M4	Cloudy	Calm	12:49	Surface	1	26.6 26.6	26.6	7.9 7.9	7.9	29.2 29.2	29.2	102.9 103.1	103.0	7.0 7.0	7.0	6.6	0.6 0.6	0.6	0.6	5.4 5.4	5.4	5.4
				Middle	6	25.7 25.7	25.7	7.9 7.9	7.9	30.5 30.2	30.4	90.2 90.5	90.4	6.2 6.2	6.2		0.6 0.6	0.6		4.3 4.3	4.3	
				Bottom	11	25.6 25.6	25.6	7.8 7.8	7.8	30.7 30.8	30.8	85.5 85.0	85.3	5.9 5.8	5.9		0.7 0.7	0.7		6.5 6.6	6.6	
M5	Cloudy	Calm	13:53	Surface	1	25.6 25.6	25.6	8.0 8.0	8.0	30.7 30.7	30.7	88.3 88.3	88.3	6.1 6.1	6.1	5.9	1.4 1.3	1.4	1.8	4.3 4.0	4.2	5.2
				Middle	5.5	25.2 25.3	25.3	8.0 8.0	8.0	31.1 31.1	31.1	82.5 82.2	82.4	5.7 5.7	5.7		1.6 1.6	1.6		5.7 5.8	5.8	
				Bottom	10	24.9 25.0	25.0	8.0 8.0	8.0	31.4 31.4	31.4	76.0 75.9	76.0	5.3 5.3	5.3		2.5 2.3	2.4		5.3 5.6	5.5	
M6	Cloudy	Calm	13:47	Surface	-	-	-	-	-	-	-	-	-	-	-	5.6	-	-	2.2	-	-	5.1
				Middle	2.1	25.4 25.4	25.4	7.9 7.9	7.9	31.0 31.0	31.0	81.4 81.1	81.3	5.6 5.6	5.6		2.1 2.2	2.2		5.1 5.0	5.1	
				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 27 August 2018 (Mid-Flood Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.0 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.4 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.9 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.4 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 5.9 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.8 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.4 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction
Water Quality Monitoring Results on 27 August 2018

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Moderate	19:35	Surface	1	26.4 26.4	26.4	7.8 7.8	7.8	30.4 30.4	30.4	97.3 96.9	97.1	6.6 6.6	6.6	5.9	1.2 1.0	1.1	3.4	4.4 4.5	4.5	5.3
				Middle	9	23.8 23.6	23.7	7.9 7.9	7.9	32.2 32.3	32.3	74.0 73.7	73.9	5.2 5.2	5.2		2.4 2.5	2.5		5.5 5.6	5.6	
				Bottom	17	22.9 22.9	22.9	7.9 8.0	8.0	32.8 32.7	32.8	67.1 67.1	67.1	4.8 4.8	4.8		6.5 6.9	6.7		5.4 6.0	5.7	
C2	Rainy	Moderate	18:20	Surface	1	25.9 26.0	26.0	8.0 8.0	8.0	30.4 30.3	30.4	93.5 93.8	93.7	6.4 6.4	6.4	5.9	1.6 1.6	1.6	1.9	3.8 3.6	3.7	5.0
				Middle	16	25.2 25.2	25.2	8.0 8.0	8.0	31.1 31.1	31.1	77.9 78.7	78.3	5.4 5.4	5.4		1.5 1.6	1.6		5.3 5.2	5.3	
				Bottom	31	24.6 24.6	24.6	7.9 7.9	7.9	31.5 31.5	31.5	64.4 64.2	64.3	4.5 4.5	4.5		2.5 2.4	2.5		6.1 5.9	6.0	
G1	Rainy	Moderate	18:55	Surface	1	25.9 26.1	26.0	7.9 7.9	7.9	30.6 30.3	30.5	94.1 94.5	94.3	6.4 6.5	6.5	5.9	1.3 1.3	1.3	3.5	4.7 4.5	4.6	5.6
				Middle	4	25.1 25.1	25.1	7.9 7.9	7.9	31.2 31.2	31.2	76.5 77.0	76.8	5.3 5.3	5.3		2.4 2.5	2.5		5.4 5.8	5.6	
				Bottom	7	24.5 24.4	24.5	7.9 7.9	7.9	31.6 31.7	31.7	63.8 62.8	63.3	4.5 4.4	4.5		6.7 6.5	6.6		6.8 6.5	6.7	
G2	Rainy	Moderate	18:43	Surface	1	25.9 26.0	26.0	7.8 7.8	7.8	30.5 30.4	30.5	95.8 95.3	95.6	6.6 6.5	6.6	5.9	0.7 0.8	0.8	2.5	4.9 4.9	4.9	5.4
				Middle	5.5	24.9 24.9	24.9	7.8 7.8	7.8	31.2 31.2	31.2	74.7 75.2	75.0	5.2 5.2	5.2		1.1 1.1	1.1		5.0 5.0	5.0	
				Bottom	10	24.0 24.0	24.0	7.9 7.9	7.9	32.0 32.0	32.0	64.7 64.4	64.6	4.5 4.5	4.5		5.7 5.7	5.7		6.4 6.0	6.2	
G3	Rainy	Moderate	19:01	Surface	1	26.7 26.7	26.7	7.8 7.8	7.8	29.6 29.6	29.6	106.1 106.1	106.1	7.2 7.2	7.2	6.5	0.9 0.9	0.9	1.6	3.3 3.5	3.4	4.3
				Middle	4	25.4 25.4	25.4	7.9 7.9	7.9	31.0 31.0	31.0	83.2 83.6	83.4	5.7 5.8	5.8		1.3 1.4	1.4		3.6 3.7	3.7	
				Bottom	7	24.9 24.9	24.9	7.9 7.9	7.9	31.4 31.4	31.4	66.1 65.8	66.0	4.6 4.6	4.6		2.4 2.4	2.4		5.9 5.9	5.9	
G4	Rainy	Moderate	19:15	Surface	1	26.6 26.8	26.7	7.9 7.9	7.9	30.0 29.9	30.0	108.2 109.0	108.6	7.3 7.4	7.4	6.4	1.0 1.1	1.1	3.9	4.2 4.4	4.3	4.8
				Middle	4	25.2 25.2	25.2	7.9 7.9	7.9	31.1 31.1	31.1	76.4 77.2	76.8	5.3 5.3	5.3		2.7 2.7	2.7		4.0 4.2	4.1	
				Bottom	7	24.7 24.7	24.7	7.9 7.8	7.9	31.6 31.5	31.6	69.1 69.3	69.2	4.8 4.8	4.8		7.9 7.8	7.9		5.9 5.8	5.9	
M1	Rainy	Moderate	18:50	Surface	1	26.1 26.2	26.2	7.8 7.8	7.8	30.3 30.2	30.3	89.9 89.9	89.9	6.1 6.1	6.1	5.9	0.8 0.8	0.8	2.0	4.5 4.5	4.5	6.0
				Middle	3	25.3 25.3	25.3	7.8 7.8	7.8	31.0 31.0	31.0	81.8 82.1	82.0	5.6 5.7	5.7		1.6 1.4	1.5		8.0 7.8	7.9	
				Bottom	5	24.7 24.7	24.7	7.9 7.9	7.9	31.4 31.4	31.4	68.8 69.7	69.3	4.8 4.8	4.8		3.6 3.6	3.6		5.6 5.7	5.7	
M2	Rainy	Moderate	18:36	Surface	1	26.6 26.6	26.6	7.9 7.9	7.9	29.9 29.9	29.9	108.4 108.4	108.4	7.4 7.4	7.4	6.3	0.5 0.5	0.5	2.4	4.4 4.3	4.4	5.2
				Middle	6	24.8 24.9	24.9	7.9 7.9	7.9	31.5 31.4	31.5	73.0 72.9	73.0	5.1 5.1	5.1		2.1 2.0	2.1		5.7 5.5	5.6	
				Bottom	11	23.9 23.9	23.9	8.0 8.0	8.0	32.1 32.1	32.1	70.8 70.6	70.7	5.0 5.0	5.0		4.6 4.4	4.5		5.9 5.4	5.7	
M3	Rainy	Moderate	19:08	Surface	1	26.0 26.0	26.0	7.8 7.8	7.8	30.3 30.3	30.3	93.7 93.0	93.4	6.4 6.4	6.4	6.2	1.1 1.1	1.1	1.4	4.8 4.8	4.8	4.6
				Middle	4	25.4 25.5	25.5	7.9 7.9	7.9	31.0 30.9	31.0	85.0 85.3	85.2	5.9 5.9	5.9		1.5 1.5	1.5		4.4 4.2	4.3	
				Bottom	7	25.2 25.3	25.3	7.9 7.9	7.9	31.2 31.1	31.2	79.0 78.8	78.9	5.5 5.4	5.5		1.5 1.7	1.6		4.5 4.9	4.7	
M4	Rainy	Moderate	18:29	Surface	1	27.0 26.9	27.0	7.9 7.9	7.9	29.7 29.8	29.8	119.3 119.3	119.3	8.1 8.1	8.1	6.8	0.6 0.6	0.6	1.7	4.1 4.1	4.1	4.9
				Middle	6	25.1 25.0	25.1	8.0 8.0	8.0	31.2 31.3	31.3	78.8 76.8	77.8	5.4 5.3	5.4		1.0 1.0	1.0		4.6 4.7	4.7	
				Bottom	11	24.3 24.4	24.4	8.0 8.0	8.0	31.8 31.8	31.8	62.6 62.2	62.4	4.4 4.3	4.4		3.6 3.5	3.6		5.7 6.1	5.9	
M5	Rainy	Moderate	19:27	Surface	1	25.8 25.8	25.8	7.8 7.8	7.8	30.5 30.5	30.5	83.8 83.5	83.7	5.7 5.7	5.7	5.6	1.9 1.9	1.9	3.0	3.2 3.5	3.4	4.9
				Middle	5.5	25.4 25.5	25.5	7.8 7.8	7.8	30.8 30.7	30.8	77.5 77.7	77.6	5.3 5.4	5.4		2.0 1.9	2.0		4.5 4.6	4.6	
				Bottom	10	24.0 23.8	23.9	7.9 7.9	7.9	31.9 32.1	32.0	72.0 71.4	71.7	5.1 5.0	5.1		4.9 5.1	5.0		6.5 6.7	6.6	
M6	Rainy	Moderate	19:21	Surface	-	- -	-	- -	-	- -	-	- -	-	- -	-	6.3	- -	-	1.2	- -	-	5.6
				Middle	2.3	25.8 25.8	25.8	7.9 7.9	7.9	30.7 30.7	30.7	92.4 92.1	92.3	6.3 6.3	6.3		1.2 1.2	1.2		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 29 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>C2: 9.0 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>C2: 9.8 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.1 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.1 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>C2: 7.7 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>C2: 7.6 mg/L</u>	<u>7.9 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>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Rainy	Rough	14:39	Surface	1	25.2 25.2	25.2	7.8 7.8	7.8	31.3 31.4	31.4	75.3 75.3	75.3	5.2 5.2	5.2	5.1	2.3 2.4	2.4	3.1	5.0 4.9	5.0	5.6
				Middle	9	23.9 23.9	23.9	7.8 7.8	7.8	32.7 32.7	32.7	70.2 71.2	70.7	4.9 5.0	5.0		3.5 3.6	3.6		5.2 5.5	5.4	
				Bottom	17	23.9 23.8	23.9	7.8 7.8	7.8	32.7 32.7	32.7	68.6 68.6	68.6	4.8 4.8	4.8		3.2 3.2	3.2		6.3 6.4	6.4	
C2	Rainy	Rough	13:34	Surface	1	25.6 25.6	25.6	7.8 7.8	7.8	30.9 30.9	30.9	77.3 77.2	77.3	5.3 5.3	5.3	5.2	1.8 1.8	1.8	4.1	5.8 5.9	5.9	5.9
				Middle	16	25.2 25.1	25.2	7.8 7.8	7.8	31.4 31.4	31.4	73.7 73.3	73.5	5.1 5.1	5.1		2.8 2.9	2.9		5.4 5.5	5.5	
				Bottom	31	23.6 23.6	23.6	7.8 7.8	7.8	33.0 33.0	33.0	67.7 67.5	67.6	4.8 4.7	4.8		7.5 7.5	7.5		6.2 6.4	6.3	
G1	Rainy	Rough	14:04	Surface	1	25.2 25.3	25.3	7.8 7.8	7.8	30.2 30.1	30.2	84.1 84.1	84.1	5.8 5.8	5.8	5.6	0.9 0.9	0.9	1.3	2.7 2.6	2.7	3.7
				Middle	4	24.9 24.9	24.9	7.8 7.8	7.8	31.4 31.3	31.4	76.5 76.5	76.5	5.3 5.3	5.3		1.4 1.4	1.4		4.8 4.8	4.8	
				Bottom	7	24.3 24.3	24.3	7.8 7.8	7.8	32.3 32.3	32.3	71.0 70.9	71.0	4.9 4.9	4.9		1.5 1.7	1.6		3.5 3.4	3.5	
G2	Rainy	Rough	13:52	Surface	1	25.1 25.1	25.1	7.8 7.8	7.8	31.2 31.2	31.2	83.7 83.4	83.6	5.8 5.8	5.8	5.5	0.9 0.8	0.9	2.9	4.4 4.4	4.4	4.1
				Middle	5.5	24.7 24.9	24.8	7.8 7.8	7.8	31.9 31.7	31.8	73.5 74.8	74.2	5.1 5.2	5.2		1.2 1.4	1.3		4.4 4.4	4.4	
				Bottom	10	23.7 23.7	23.7	7.8 7.8	7.8	33.1 33.1	33.1	64.1 64.2	64.2	4.5 4.5	4.5		6.2 6.7	6.5		3.4 3.4	3.4	
G3	Rainy	Rough	14:09	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	29.9 29.9	29.9	83.4 83.4	83.4	5.8 5.8	5.8	5.4	1.1 1.1	1.1	1.7	3.8 3.9	3.9	3.6
				Middle	4	24.9 24.9	24.9	7.8 7.8	7.8	31.3 31.3	31.3	72.5 72.0	72.3	5.0 5.0	5.0		1.5 1.5	1.5		3.2 3.3	3.3	
				Bottom	7	24.3 24.3	24.3	7.8 7.8	7.8	32.4 32.5	32.5	67.7 67.4	67.6	4.7 4.7	4.7		2.4 2.4	2.4		3.5 3.4	3.5	
G4	Rainy	Rough	14:22	Surface	1	25.6 25.6	25.6	7.9 7.9	7.9	30.0 29.7	29.9	91.7 91.4	91.6	6.3 6.3	6.3	6.3	0.5 0.6	0.6	0.9	4.7 4.6	4.7	4.1
				Middle	4	25.5 25.5	25.5	7.9 7.9	7.9	30.4 30.1	30.3	88.9 90.1	89.5	6.1 6.2	6.2		0.6 0.6	0.6		5.2 5.4	5.3	
				Bottom	7	25.0 25.1	25.1	7.8 7.8	7.8	31.7 31.6	31.7	71.1 71.5	71.3	4.9 4.9	4.9		1.4 1.3	1.4		2.2 2.3	2.3	
M1	Rainy	Rough	13:57	Surface	1	25.7 25.7	25.7	7.8 7.8	7.8	30.4 30.4	30.4	72.7 71.8	72.3	5.0 4.9	5.0	5.3	0.9 0.9	0.9	1.2	3.6 3.7	3.7	4.3
				Middle	3	25.1 25.1	25.1	7.8 7.8	7.8	31.4 31.4	31.4	79.7 80.1	79.9	5.5 5.5	5.5		0.9 0.9	0.9		3.3 3.4	3.4	
				Bottom	5	24.7 24.7	24.7	7.8 7.8	7.8	31.8 31.8	31.8	72.0 71.4	71.7	5.0 5.0	5.0		1.7 1.6	1.7		5.7 5.7	5.7	
M2	Rainy	Rough	13:47	Surface	1	25.2 25.2	25.2	7.8 7.8	7.8	31.2 31.3	31.3	84.0 83.4	83.7	5.8 5.8	5.8	5.5	0.3 0.3	0.3	1.1	4.4 4.3	4.4	4.9
				Middle	6	24.8 24.8	24.8	7.8 7.8	7.8	31.8 31.8	31.8	73.5 73.3	73.4	5.1 5.1	5.1		0.7 0.7	0.7		4.4 4.3	4.4	
				Bottom	11	23.9 23.8	23.9	7.8 7.8	7.8	32.8 32.9	32.9	67.1 66.5	66.8	4.7 4.7	4.7		2.1 2.2	2.2		6.1 5.9	6.0	
M3	Rainy	Rough	14:14	Surface	1	25.5 25.5	25.5	7.8 7.8	7.8	28.1 27.9	28.0	88.3 88.6	88.5	6.2 6.2	6.2	5.9	0.3 0.3	0.3	0.8	5.0 5.0	5.0	3.6
				Middle	4	25.1 25.1	25.1	7.8 7.8	7.8	31.1 31.1	31.1	80.9 80.3	80.6	5.6 5.6	5.6		0.4 0.4	0.4		3.3 3.4	3.4	
				Bottom	7	24.3 24.3	24.3	7.8 7.8	7.8	32.4 32.5	32.5	68.3 67.3	67.8	4.8 4.7	4.8		1.8 1.8	1.8		2.3 2.4	2.4	
M4	Rainy	Rough	13:42	Surface	1	24.9 24.8	24.9	7.8 7.8	7.8	31.6 31.6	31.6	76.1 76.7	76.4	5.3 5.3	5.3	5.3	2.4 2.4	2.4	2.0	4.5 4.3	4.4	5.5
				Middle	6	24.7 24.7	24.7	7.8 7.8	7.8	31.8 31.9	31.9	74.7 73.9	74.3	5.2 5.1	5.2		1.8 1.8	1.8		5.8 5.7	5.8	
				Bottom	11	24.2 24.3	24.3	7.8 7.8	7.8	32.4 32.3	32.4	69.4 69.5	69.5	4.8 4.8	4.8		1.7 1.7	1.7		6.2 6.1	6.2	
M5	Rainy	Rough	14:32	Surface	1	24.9 24.9	24.9	7.8 7.8	7.8	31.6 31.6	31.6	76.8 75.7	76.3	5.3 5.2	5.3	5.3	2.7 3.0	2.9	2.4	5.5 5.5	5.5	6.3
				Middle	5.5	24.9 24.8	24.9	7.8 7.8	7.8	31.6 31.6	31.6	75.7 75.3	75.5	5.2 5.2	5.2		1.9 1.9	1.9		6.6 6.9	6.8	
				Bottom	10	24.8 24.8	24.8	7.8 7.8	7.8	31.6 31.7	31.7	75.1 74.8	75.0	5.2 5.2	5.2		2.3 2.3	2.3		6.5 6.7	6.6	
M6	Rainy	Rough	14:27	Surface	-	-	-	-	-	-	-	-	-	-	-	5.6	-	-	0.6	-	-	4.3
				Middle	2.3	25.2 25.2	25.2	7.8 7.8	7.8	31.0 31.0	31.0	80.5 80.2	80.4	5.6 5.5	5.6		0.6 0.5	0.6		4.3 4.2	4.3	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 7.6 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.2 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.6 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.6 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.6 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 8.2 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	08:51	Surface	1	25.1 25.1	25.1	7.8 7.8	7.8	31.5 31.5	31.5	78.9 78.6	78.8	5.4 5.4	5.4	5.4	1.6 1.7	1.7	3.2	5.0 5.1	5.1	6.0
				Middle	9	24.8 24.8	24.8	7.9 7.9	7.9	31.8 31.8	31.8	77.0 77.2	77.1	5.3 5.3	5.3		1.7 1.7	1.7		6.5 6.8	6.7	
				Bottom	17	22.7 22.7	22.7	7.9 7.9	7.9	33.8 33.8	33.8	67.6 67.0	67.3	4.8 4.8	4.8		6.5 6.1	6.3		6.4 6.2	6.3	
C2	Cloudy	Moderate	07:47	Surface	1	25.2 25.3	25.3	7.8 7.8	7.8	31.3 31.1	31.2	78.9 77.9	78.4	5.4 5.4	5.4	5.3	1.0 0.9	1.0	3.0	5.6 5.5	5.6	5.4
				Middle	16	24.4 24.5	24.5	7.8 7.8	7.8	32.2 32.1	32.2	72.4 72.7	72.6	5.0 5.1	5.1		1.6 1.8	1.7		5.9 5.8	5.9	
				Bottom	31	23.3 23.3	23.3	7.8 7.8	7.8	33.3 33.3	33.3	67.0 67.1	67.1	4.7 4.7	4.7		6.3 6.3	6.3		4.6 4.7	4.7	
G1	Cloudy	Moderate	08:20	Surface	1	24.8 24.8	24.8	7.8 7.8	7.8	31.6 31.6	31.6	75.9 75.3	75.6	5.3 5.2	5.3	5.2	1.2 1.5	1.4	1.6	3.1 3.2	3.2	4.7
				Middle	4	24.4 24.4	24.4	7.8 7.8	7.8	32.1 32.1	32.1	71.6 71.2	71.4	5.0 5.0	5.0		1.6 1.5	1.6		4.8 4.8	4.8	
				Bottom	7	24.2 24.0	24.1	7.8 7.8	7.8	32.4 32.6	32.5	70.3 69.2	69.8	4.9 4.8	4.9		1.8 1.8	1.8		6.1 6.1	6.1	
G2	Cloudy	Moderate	08:07	Surface	1	24.9 24.9	24.9	7.8 7.8	7.8	31.4 31.3	31.4	77.3 76.9	77.1	5.4 5.3	5.4	5.2	1.2 1.3	1.3	1.7	4.2 4.2	4.2	3.7
				Middle	5	24.5 24.5	24.5	7.8 7.8	7.8	32.0 32.0	32.0	72.4 72.4	72.4	5.0 5.0	5.0		1.5 1.7	1.6		3.3 3.1	3.2	
				Bottom	9	23.7 23.8	23.8	7.8 7.8	7.8	33.0 32.9	33.0	68.0 68.2	68.1	4.8 4.8	4.8		2.2 2.3	2.3		3.6 3.5	3.6	
G3	Cloudy	Moderate	08:25	Surface	1	24.9 24.9	24.9	7.8 7.8	7.8	31.6 31.6	31.6	75.8 75.8	75.8	5.2 5.2	5.2	5.1	1.2 1.2	1.2	2.7	3.2 3.2	3.2	4.1
				Middle	4	24.8 24.8	24.8	7.8 7.8	7.8	31.9 31.9	31.9	71.4 70.8	71.1	4.9 4.9	4.9		1.3 1.3	1.3		4.6 4.5	4.6	
				Bottom	7	24.2 24.2	24.2	7.8 7.8	7.8	32.6 32.7	32.7	64.9 64.9	64.9	4.5 4.5	4.5		5.2 5.8	5.5		4.6 4.4	4.5	
G4	Cloudy	Moderate	08:35	Surface	1	25.0 25.0	25.0	7.9 7.9	7.9	31.5 31.5	31.5	78.9 78.6	78.8	5.5 5.4	5.5	5.3	0.9 1.0	1.0	2.1	4.3 4.4	4.4	4.3
				Middle	4	24.5 24.5	24.5	7.8 7.8	7.8	32.1 32.1	32.1	72.9 72.0	72.5	5.1 5.0	5.1		1.7 1.8	1.8		3.2 3.2	3.2	
				Bottom	7	23.9 23.9	23.9	7.8 7.8	7.8	32.8 32.8	32.8	68.2 67.9	68.1	4.8 4.8	4.8		3.8 3.3	3.6		5.2 5.2	5.2	
M1	Cloudy	Moderate	08:14	Surface	1	24.9 24.9	24.9	7.8 7.8	7.8	31.3 31.3	31.3	76.5 76.2	76.4	5.3 5.3	5.3	5.2	1.5 1.6	1.6	3.1	2.8 2.8	2.8	3.6
				Middle	3	24.7 24.7	24.7	7.8 7.8	7.8	31.8 31.9	31.9	72.6 71.7	72.2	5.0 5.0	5.0		2.7 2.9	2.8		3.2 3.3	3.3	
				Bottom	5	24.6 24.6	24.6	7.8 7.8	7.8	32.1 32.1	32.1	70.3 70.5	70.4	4.9 4.9	4.9		5.0 4.5	4.8		4.5 4.7	4.6	
M2	Cloudy	Moderate	08:00	Surface	1	24.9 24.9	24.9	7.9 7.9	7.9	31.3 31.3	31.3	78.5 78.2	78.4	5.4 5.4	5.4	5.2	0.8 0.7	0.8	2.8	3.6 3.6	3.6	4.5
				Middle	6	24.3 24.4	24.4	7.8 7.8	7.8	32.4 32.3	32.4	70.3 71.3	70.8	4.9 5.0	5.0		1.6 1.6	1.6		4.0 3.9	4.0	
				Bottom	11	23.4 23.4	23.4	7.8 7.8	7.8	33.3 33.3	33.3	64.9 65.0	65.0	4.6 4.6	4.6		6.2 6.0	6.1		5.7 6.0	5.9	
M3	Cloudy	Moderate	08:29	Surface	1	24.8 24.8	24.8	7.8 7.8	7.8	31.7 31.7	31.7	75.7 74.2	75.0	5.2 5.1	5.2	5.2	1.4 1.5	1.5	2.8	2.9 2.9	2.9	3.4
				Middle	4	24.6 24.6	24.6	7.8 7.8	7.8	32.0 32.0	32.0	73.5 72.6	73.1	5.1 5.0	5.1		1.9 1.9	1.9		3.8 3.7	3.8	
				Bottom	7	24.1 24.1	24.1	7.8 7.8	7.8	32.7 32.7	32.7	65.6 65.7	65.7	4.6 4.6	4.6		5.1 5.0	5.1		3.6 3.5	3.6	
M4	Cloudy	Moderate	07:54	Surface	1	24.6 24.6	24.6	7.9 7.9	7.9	31.8 31.8	31.8	75.5 75.2	75.4	5.2 5.2	5.2	5.0	1.4 1.4	1.4	2.6	3.2 3.3	3.3	3.6
				Middle	6	24.0 24.0	24.0	7.8 7.8	7.8	32.7 32.7	32.7	69.2 68.7	69.0	4.8 4.8	4.8		2.4 2.6	2.5		2.4 2.4	2.4	
				Bottom	11	23.6 23.7	23.7	7.8 7.8	7.8	33.1 33.1	33.1	66.2 66.1	66.2	4.6 4.6	4.6		3.9 4.0	4.0		5.2 5.1	5.2	
M5	Cloudy	Moderate	08:45	Surface	1	25.1 25.0	25.1	7.8 7.8	7.8	31.4 31.4	31.4	79.2 78.7	79.0	5.5 5.4	5.5	5.4	1.6 1.6	1.6	2.7	5.6 5.8	5.7	4.6
				Middle	5.5	24.9 24.9	24.9	7.8 7.8	7.8	31.6 31.7	31.7	75.6 75.3	75.5	5.2 5.2	5.2		2.0 2.0	2.0		3.7 3.7	3.7	
				Bottom	10	23.7 23.6	23.7	7.8 7.8	7.8	33.0 33.1	33.1	67.1 66.0	66.6	4.7 4.6	4.7		4.5 4.7	4.6		4.3 4.3	4.3	
M6	Cloudy	Moderate	08:41	Surface	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	0.9	-	-	5.4
				Middle	2.2	25.1 25.1	25.1	7.8 7.8	7.8	31.2 31.2	31.2	75.4 74.9	75.2	5.2 5.2	5.2		0.9 0.9	0.9		5.5 5.3	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 31 August 2018 (Mid-Ebb Tide)

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 7.9 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 8.6 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.0 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.5 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.0 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.5 mg/L</u>
<u>Station M6</u>			
Intake Level	<u>8.3 mg/L</u>	<u>8.6 mg/L</u>	

Notes:

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

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

(Mid-Ebb Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	15:36	Surface	1	25.6 25.5	25.6	7.8 7.8	7.8	30.0 30.0	30.0	76.8 76.5	76.7	5.3 5.3	5.3	5.2	2.0 2.0	2.0	3.0	4.7 4.7	4.7	4.8
				Middle	9	23.7 23.9	23.8	7.8 7.8	7.8	32.5 32.2	32.4	70.1 71.3	70.7	4.9 5.0	5.0		2.8 2.9	2.9		5.3 5.1	5.2	
				Bottom	17	23.0 23.1	23.1	7.8 7.8	7.8	33.3 33.2	33.3	64.6 64.4	64.5	4.6 4.6	4.6		4.0 4.0	4.0		4.5 4.6	4.6	
C2	Cloudy	Moderate	14:24	Surface	1	26.5 26.4	26.5	7.7 7.7	7.7	28.7 28.8	28.8	80.9 79.3	80.1	5.5 5.4	5.5	5.2	1.7 1.7	1.7	4.8	4.6 4.6	4.6	5.4
				Middle	16	23.1 23.1	23.1	7.8 7.8	7.8	33.2 33.2	33.2	67.8 67.2	67.5	4.8 4.8	4.8		6.1 5.8	6.0		5.7 5.8	5.8	
				Bottom	31	22.9 22.9	22.9	7.8 7.8	7.8	33.4 33.5	33.5	63.9 63.7	63.8	4.5 4.5	4.5		6.9 6.3	6.6		5.6 5.9	5.8	
G1	Cloudy	Moderate	15:00	Surface	1	25.5 25.4	25.5	7.8 7.8	7.8	29.9 29.9	29.9	83.7 82.2	83.0	5.8 5.7	5.8	5.3	1.1 1.2	1.2	2.2	4.3 4.2	4.3	4.5
				Middle	4	24.9 24.9	24.9	7.8 7.8	7.8	31.2 31.2	31.2	69.3 69.9	69.6	4.8 4.8	4.8		1.8 1.8	1.8		3.9 4.0	4.0	
				Bottom	7	24.0 24.1	24.1	7.8 7.8	7.8	32.4 32.3	32.4	63.5 62.7	63.1	4.4 4.4	4.4		3.5 3.6	3.6		5.2 5.3	5.3	
G2	Cloudy	Moderate	14:47	Surface	1	25.7 25.7	25.7	7.8 7.8	7.8	30.3 30.3	30.3	84.1 82.6	83.4	5.8 5.7	5.8	5.6	1.5 1.6	1.6	2.0	4.8 4.9	4.9	5.9
				Middle	5.5	25.1 25.1	25.1	7.8 7.8	7.8	31.0 31.0	31.0	76.5 76.8	76.7	5.3 5.3	5.3		1.9 1.8	1.9		7.1 7.4	7.3	
				Bottom	10	23.4 23.7	23.6	7.8 7.8	7.8	33.0 32.6	32.8	65.8 66.4	66.1	4.6 4.7	4.7		2.5 2.7	2.6		5.4 5.3	5.4	
G3	Cloudy	Moderate	15:05	Surface	1	25.5 25.5	25.5	7.8 7.8	7.8	29.7 29.7	29.7	78.9 78.6	78.8	5.5 5.4	5.5	5.3	1.8 1.8	1.8	2.5	3.4 3.5	3.5	5.7
				Middle	4	25.0 25.1	25.1	7.8 7.8	7.8	31.1 30.9	31.0	71.3 72.1	71.7	4.9 5.0	5.0		1.4 1.4	1.4		7.5 7.6	7.6	
				Bottom	7	23.6 23.7	23.7	7.8 7.8	7.8	32.8 32.8	32.8	62.2 63.0	62.6	4.4 4.4	4.4		4.4 4.1	4.3		6.2 6.0	6.1	
G4	Cloudy	Moderate	15:19	Surface	1	25.9 25.9	25.9	7.8 7.8	7.8	29.4 29.1	29.3	87.6 87.2	87.4	6.0 6.0	6.0	5.7	1.6 1.6	1.6	2.2	4.9 5.2	5.1	4.9
				Middle	4	25.3 25.3	25.3	7.8 7.8	7.8	30.8 30.8	30.8	77.2 77.3	77.3	5.3 5.3	5.3		2.0 1.9	2.0		3.7 3.7	3.7	
				Bottom	7	23.8 23.8	23.8	7.8 7.8	7.8	32.5 32.5	32.5	66.6 66.7	66.7	4.7 4.7	4.7		2.8 3.0	2.9		6.0 5.7	5.9	
M1	Cloudy	Moderate	14:53	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	30.0 29.9	30.0	78.2 78.5	78.4	5.4 5.4	5.4	5.3	1.6 1.6	1.6	2.3	3.2 3.3	3.3	3.3
				Middle	3	25.2 25.2	25.2	7.8 7.8	7.8	30.8 30.7	30.8	75.2 74.9	75.1	5.2 5.2	5.2		1.9 2.0	2.0		2.7 2.6	2.7	
				Bottom	5	24.8 24.8	24.8	7.8 7.8	7.8	31.4 31.4	31.4	66.3 68.4	67.4	4.6 4.7	4.7		3.1 3.4	3.3		3.9 3.8	3.9	
M2	Cloudy	Moderate	14:41	Surface	1	25.6 25.6	25.6	7.8 7.8	7.8	30.3 30.2	30.3	84.5 85.1	84.8	5.8 5.9	5.9	5.5	1.1 1.1	1.1	2.3	4.0 4.2	4.1	3.7
				Middle	6	24.9 24.8	24.9	7.8 7.8	7.8	31.2 31.3	31.3	72.2 72.9	72.6	5.0 5.1	5.1		1.7 1.7	1.7		3.5 3.4	3.5	
				Bottom	11	23.2 22.9	23.1	7.8 7.8	7.8	33.2 33.4	33.3	64.6 64.6	64.6	4.6 4.6	4.6		4.1 4.1	4.1		3.4 3.4	3.4	
M3	Cloudy	Moderate	15:12	Surface	1	25.6 25.6	25.6	7.8 7.8	7.8	28.8 28.9	28.9	74.6 74.5	74.6	5.2 5.2	5.2	5.2	4.1 4.4	4.3	3.1	5.4 5.6	5.5	5.3
				Middle	4	25.3 25.3	25.3	7.8 7.7	7.8	30.6 30.6	30.6	75.6 75.1	75.4	5.2 5.2	5.2		0.8 0.8	0.8		6.2 6.0	6.1	
				Bottom	7	24.0 23.9	24.0	7.8 7.8	7.8	32.5 32.5	32.5	61.5 60.2	60.9	4.3 4.2	4.3		4.0 4.3	4.2		4.4 4.3	4.4	
M4	Cloudy	Moderate	14:34	Surface	1	25.6 25.7	25.7	7.8 7.8	7.8	30.2 30.2	30.2	84.1 83.2	83.7	5.8 5.7	5.8	5.6	1.2 1.2	1.2	3.1	5.3 5.2	5.3	3.5
				Middle	6	25.0 25.0	25.0	7.8 7.8	7.8	31.2 31.1	31.2	76.2 76.4	76.3	5.3 5.3	5.3		1.3 1.3	1.3		2.6 2.7	2.7	
				Bottom	11	23.0 22.9	23.0	7.8 7.8	7.8	33.4 33.5	33.5	64.0 63.5	63.8	4.5 4.5	4.5		6.8 6.9	6.9		2.5 2.4	2.5	
M5	Cloudy	Moderate	15:29	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	30.5 30.5	30.5	80.9 79.9	80.4	5.6 5.5	5.6	5.4	2.0 2.0	2.0	3.9	3.3 3.2	3.3	3.8
				Middle	5.5	24.8 24.8	24.8	7.8 7.8	7.8	31.2 31.2	31.2	73.5 72.8	73.2	5.1 5.1	5.1		2.3 2.3	2.3		3.0 3.0	3.0	
				Bottom	10	23.3 23.5	23.4	7.8 7.8	7.8	33.0 32.8	32.9	63.7 63.7	63.7	4.5 4.5	4.5		7.3 7.5	7.4		5.0 5.1	5.1	
M6	Cloudy	Moderate	15:25	Surface	-	-	-	-	-	-	-	-	-	-	-	5.2	-	-	2.1	-	-	5.2
				Middle	2.2	24.9 24.9	24.9	7.8 7.8	7.8	31.2 31.3	31.3	73.0 74.7	73.9	5.1 5.2	5.2		2.0 2.1	2.1		5.1 5.2	5.2	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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

Parameter (unit)	Depth	Action Level	Limit Level
DO in mg/L (See Note 1 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Depth Average	<u>4.9 mg/L</u>	<u>4.6 mg/L</u>
	Bottom	<u>4.2 mg/L</u>	<u>3.6 mg/L</u>
	<u>Station M6</u>		
	Intake Level	<u>5.0 mg/L</u>	<u>4.7 mg/L</u>
Turbidity in NTU (See Note 2 and 4)	<u>Stations G1-G4, M1-M5</u>		
	Bottom	<u>19.3 NTU</u> or 120% of upstream control station's Turbidity at the same tide of the same day <u>CI: 5.3 NTU</u>	<u>22.2 NTU</u> or 130% of upstream control station's Turbidity at the same tide of the same day <u>CI: 5.7 NTU</u>
	<u>Station M6</u>		
	Intake Level	<u>19.0 NTU</u>	<u>19.4 NTU</u>
	SS in mg/L (See Note 2 and 4)	<u>Stations G1-G4</u>	
Surface		<u>6.0 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.6 mg/L</u>	<u>6.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 mg/L</u>
<u>Stations M1-M5</u>			
Surface		<u>6.2 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 5.6 mg/L</u>	<u>7.4 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 6.1 mg/L</u>
<u>Stations G1-G4, M1-M5</u>			
Bottom		<u>6.9 mg/L</u> or 120% of upstream control station's SS at the same tide of the same day <u>CI: 6.5 mg/L</u>	<u>7.9 mg/L</u> or 130% of upstream control station's SS at the same tide of the same day <u>CI: 7.0 mg/L</u>
<u>Station M6</u>			
Intake Level		<u>8.3 mg/L</u>	<u>8.6 mg/L</u>

Notes:

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

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

(Mid-Flood Tide)

Location	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
C1	Cloudy	Moderate	10:20	Surface	1	25.6 25.6	25.6	7.8 7.8	7.8	30.3 30.2	30.3	76.6 76.0	76.3	5.3 5.2	5.3	5.1	1.2 1.2	1.2	2.3	4.6 4.7	4.7	5.9
				Middle	9	23.5 23.9	23.7	7.8 7.8	7.8	32.8 32.3	32.6	67.8 68.5	68.2	4.8 4.8	4.8		1.4 1.4	1.4		7.7 7.3	7.5	
				Bottom	17	22.6 22.6	22.6	7.9 7.9	7.9	33.7 33.7	33.7	65.5 65.3	65.4	4.7 4.7	4.7		4.5 4.3	4.4		5.4 5.4	5.4	
C2	Cloudy	Moderate	09:08	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	30.4 30.4	30.4	75.4 75.3	75.4	5.2 5.2	5.2	5.1	2.0 2.0	2.0	3.2	3.5 3.5	3.5	4.5
				Middle	16	24.4 24.3	24.4	7.8 7.8	7.8	31.9 31.9	31.9	71.6 71.3	71.5	5.0 5.0	5.0		2.2 2.4	2.3		4.3 4.3	4.3	
				Bottom	31	23.5 24.1	23.8	7.8 7.8	7.8	32.8 32.1	32.5	65.6 66.4	66.0	4.6 4.6	4.6		5.1 5.3	5.2		5.7 5.6	5.7	
G1	Cloudy	Moderate	09:41	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	29.8 29.8	29.8	80.9 79.9	80.4	5.6 5.5	5.6	5.5	1.1 1.1	1.1	1.4	3.1 3.3	3.2	4.2
				Middle	4	25.1 25.1	25.1	7.8 7.8	7.8	31.0 31.0	31.0	77.7 77.1	77.4	5.4 5.3	5.4		1.3 1.3	1.3		4.8 5.0	4.9	
				Bottom	7	24.8 24.7	24.8	7.8 7.8	7.8	31.4 31.5	31.5	69.8 68.8	69.3	4.8 4.8	4.8		1.8 1.8	1.8		4.4 4.5	4.5	
G2	Cloudy	Moderate	09:29	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	30.3 30.3	30.3	85.3 83.8	84.6	5.9 5.8	5.9	5.7	0.7 0.7	0.7	1.3	3.7 3.7	3.7	4.0
				Middle	5	25.1 25.1	25.1	7.8 7.8	7.8	31.0 31.0	31.0	77.9 77.9	77.9	5.4 5.4	5.4		1.1 1.1	1.1		3.9 3.8	3.9	
				Bottom	9	24.5 24.4	24.5	7.8 7.8	7.8	31.8 31.9	31.9	68.4 66.9	67.7	4.8 4.7	4.8		1.9 2.0	2.0		4.4 4.4	4.4	
G3	Cloudy	Moderate	09:48	Surface	1	25.5 25.5	25.5	7.8 7.8	7.8	28.5 28.8	28.7	83.2 83.2	83.2	5.8 5.8	5.8	5.5	0.7 0.8	0.8	1.2	4.3 4.4	4.4	4.2
				Middle	4	25.1 25.1	25.1	7.8 7.8	7.8	31.1 31.1	31.1	74.7 74.2	74.5	5.2 5.1	5.2		1.3 1.3	1.3		3.4 3.4	3.4	
				Bottom	7	24.8 24.8	24.8	7.8 7.8	7.8	31.4 31.4	31.4	71.4 71.1	71.3	5.0 4.9	5.0		1.5 1.6	1.6		4.8 4.7	4.8	
G4	Cloudy	Moderate	10:01	Surface	1	25.5 25.5	25.5	7.8 7.8	7.8	29.1 28.4	28.8	88.5 87.1	87.8	6.1 6.1	6.1	5.7	0.9 0.8	0.9	2.0	3.7 3.6	3.7	4.3
				Middle	4	25.1 25.1	25.1	7.8 7.8	7.8	30.9 30.9	30.9	75.2 75.7	75.5	5.2 5.2	5.2		1.2 1.1	1.2		4.6 4.5	4.6	
				Bottom	7	24.3 24.2	24.3	7.8 7.8	7.8	32.1 32.2	32.2	65.1 65.3	65.2	4.5 4.6	4.6		3.9 3.7	3.8		4.6 4.7	4.7	
M1	Cloudy	Moderate	09:35	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	29.4 29.6	29.5	83.9 81.5	82.7	5.8 5.7	5.8	5.5	1.8 1.9	1.9	2.1	4.5 4.5	4.5	4.3
				Middle	3	25.1 25.0	25.1	7.8 7.8	7.8	31.0 31.1	31.1	73.1 72.4	72.8	5.1 5.0	5.1		1.9 1.9	1.9		4.1 4.3	4.2	
				Bottom	5	24.9 24.9	24.9	7.8 7.8	7.8	31.3 31.2	31.3	70.5 70.7	70.6	4.9 4.9	4.9		2.6 2.6	2.6		4.1 4.0	4.1	
M2	Cloudy	Moderate	09:21	Surface	1	25.3 25.4	25.4	7.8 7.8	7.8	30.6 30.4	30.5	81.8 82.7	82.3	5.7 5.7	5.7	5.3	0.9 0.9	0.9	2.4	3.8 3.8	3.8	4.1
				Middle	6	24.4 24.4	24.4	7.8 7.8	7.8	31.8 31.7	31.8	68.5 69.3	68.9	4.8 4.8	4.8		1.8 1.9	1.9		4.5 4.5	4.5	
				Bottom	11	23.2 23.2	23.2	7.8 7.8	7.8	33.2 33.2	33.2	63.9 63.6	63.8	4.5 4.5	4.5		4.4 4.4	4.4		3.8 3.9	3.9	
M3	Cloudy	Moderate	09:54	Surface	1	25.4 25.4	25.4	7.8 7.8	7.8	29.0 28.7	28.9	79.9 80.1	80.0	5.6 5.6	5.6	5.4	1.1 1.2	1.2	1.6	3.2 3.2	3.2	3.5
				Middle	4	25.1 25.1	25.1	7.8 7.8	7.8	31.0 31.0	31.0	74.7 75.2	75.0	5.2 5.2	5.2		1.6 1.6	1.6		2.9 2.8	2.9	
				Bottom	7	24.8 24.8	24.8	7.8 7.8	7.8	31.4 31.4	31.4	70.6 71.7	71.2	4.9 5.0	5.0		2.0 2.0	2.0		4.3 4.3	4.3	
M4	Cloudy	Moderate	09:15	Surface	1	25.3 25.3	25.3	7.8 7.8	7.8	30.7 30.6	30.7	85.0 84.8	84.9	5.9 5.9	5.9	5.9	1.2 1.2	1.2	1.4	3.4 3.4	3.4	3.9
				Middle	6	25.2 25.3	25.3	7.8 7.8	7.8	30.8 30.7	30.8	82.8 84.5	83.7	5.7 5.8	5.8		1.3 1.2	1.3		2.9 3.1	3.0	
				Bottom	11	24.9 25.0	25.0	7.8 7.8	7.8	31.2 31.1	31.2	74.0 74.4	74.2	5.1 5.2	5.2		1.7 1.6	1.7		5.2 5.1	5.2	
M5	Cloudy	Moderate	10:14	Surface	1	25.5 25.5	25.5	7.8 7.8	7.8	30.3 30.3	30.3	77.4 76.2	76.8	5.3 5.3	5.3	5.1	1.7 1.6	1.7	2.8	4.0 4.0	4.0	4.8
				Middle	5.5	24.8 24.7	24.8	7.8 7.8	7.8	31.4 31.5	31.5	69.5 69.0	69.3	4.8 4.8	4.8		2.5 2.3	2.4		4.9 5.0	5.0	
				Bottom	10	23.4 23.4	23.4	7.8 7.8	7.8	33.0 33.0	33.0	65.0 63.5	64.3	4.6 4.5	4.6		4.1 4.4	4.3		5.2 5.4	5.3	
M6	Cloudy	Moderate	10:09	Surface	-	-	-	-	-	-	-	-	-	-	-	5.3	-	-	1.9	-	-	3.5
				Middle	2.2	25.2 25.2	25.2	7.8 7.8	7.8	30.7 30.7	30.7	77.1 76.7	76.9	5.3 5.3	5.3		1.8 1.9	1.9		3.4 3.5	3.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	

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

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*
9-Aug-18	Sunny	Calm	09:07	Surface	1	27.9 27.9	27.9	7.9 7.9	7.9	30.2 30.2	30.2	93.8 93.9	93.9	6.2 6.2	6.2	6.2
				Middle	-	-	-	-	-	-	-	-	-	-	-	
				Bottom	3	27.9 27.9	27.9	7.9 7.9	7.9	30.3 30.3	30.3	92.0 91.7	91.9	6.1 6.1	6.1	
16-Aug-18	Sunny	Calm	14:45	Surface	1	28.2 28.4	28.3	7.5 7.5	7.5	30.2 29.4	29.8	74.9 75.1	75.0	4.9 5.0	5.0	5.0
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	3.3	28.4 28.4	28.4	7.5 7.5	7.5	29.4 29.4	29.4	77.4 77.2	77.3	5.1 5.1	5.1	
21-Aug-18	Cloudy	Calm	10:31	Surface	1	27.8 27.9	27.9	8.2 8.2	8.2	28.0 27.9	28.0	74.6 73.4	74.0	5.0 4.9	5.0	5.0
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	2.7	27.7 27.7	27.7	8.2 8.2	8.2	28.5 28.5	28.5	66.2 66.4	66.3	4.5 4.5	4.5	
28-Aug-18	Cloudy	Calm	12:40	Surface	1	26.8 26.7	26.8	7.8 7.9	7.9	30.9 31.1	31.0	79.0 78.4	78.7	5.3 5.3	5.3	5.3
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	3.9	26.5 26.6	26.6	7.9 7.9	7.9	31.4 31.3	31.4	69.1 71.2	70.2	4.7 4.8	4.8	

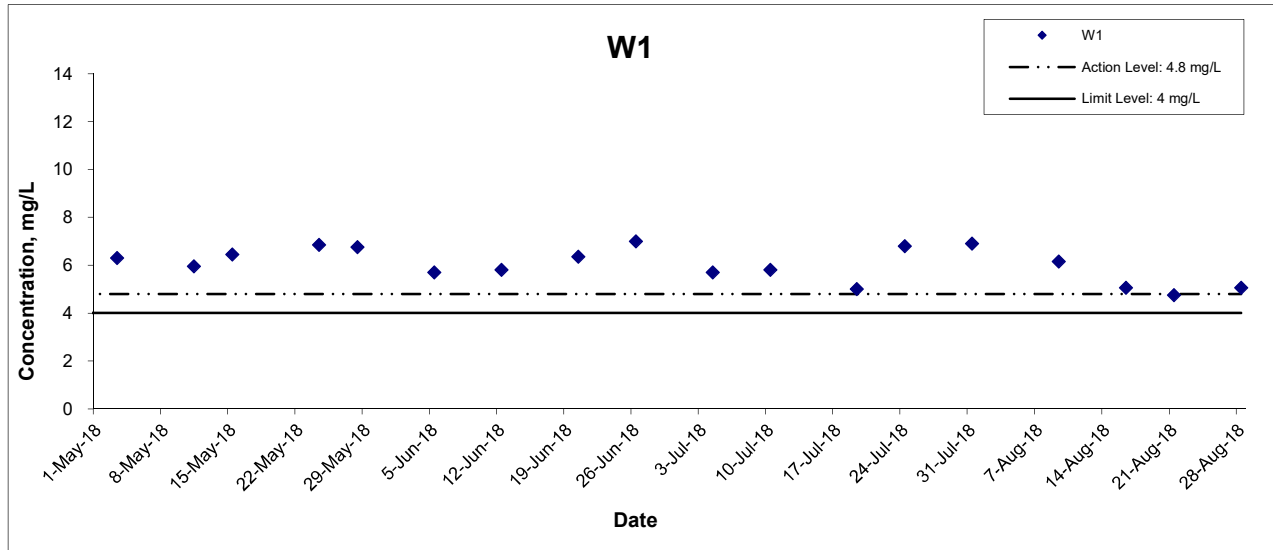
Water Quality Monitoring Results at W1 - Mid-Flood Tide

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*
9-Aug-18	Sunny	Calm	16:16	Surface	1	28.3 28.3	28.3	7.8 7.8	7.8	30.3 30.4	30.4	99.9 99.5	99.7	6.6 6.6	6.6	6.6
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	2	28.0 28.0	28.0	7.8 7.8	7.8	30.5 30.5	30.5	93.2 92.8	93.0	6.2 6.1	6.2	
16-Aug-18	Sunny	Calm	09:37	Surface	1	28.2 28.4	28.3	7.5 7.5	7.5	29.3 29.3	29.3	74.8 74.8	74.8	5.0 4.9	5.0	5.0
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	3.6	28.4 28.2	28.3	7.5 7.5	7.5	29.2 30.2	29.7	78.4 78.0	78.2	5.2 5.1	5.2	
21-Aug-18	Cloudy	Calm	17:22	Surface	1	28.2 28.2	28.2	8.5 8.5	8.5	28.2 28.2	28.2	80.9 80.8	80.9	5.4 5.4	5.4	5.4
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	3.3	27.8 27.8	27.8	8.4 8.4	8.4	28.5 28.5	28.5	61.9 62.2	62.1	4.2 4.2	4.2	
28-Aug-18	Cloudy	Calm	07:27	Surface	1	26.7 26.7	26.7	7.7 7.8	7.8	29.8 30.9	30.4	77.3 75.8	76.6	5.2 5.1	5.2	5.2
				Middle	-	-	-	-	-	-	-	-	-	-		
				Bottom	3.5	26.5 26.6	26.6	7.8 7.8	7.8	31.8 31.8	31.8	64.1 66.0	65.1	4.3 4.4	4.4	

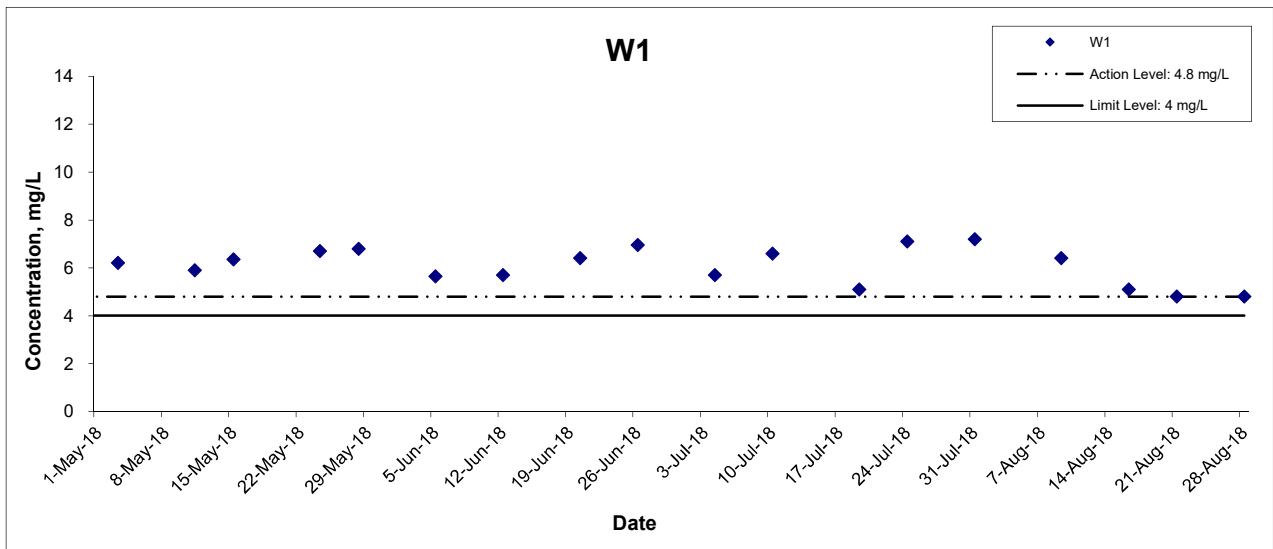
Remarks: *DA: Depth-Averaged

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

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

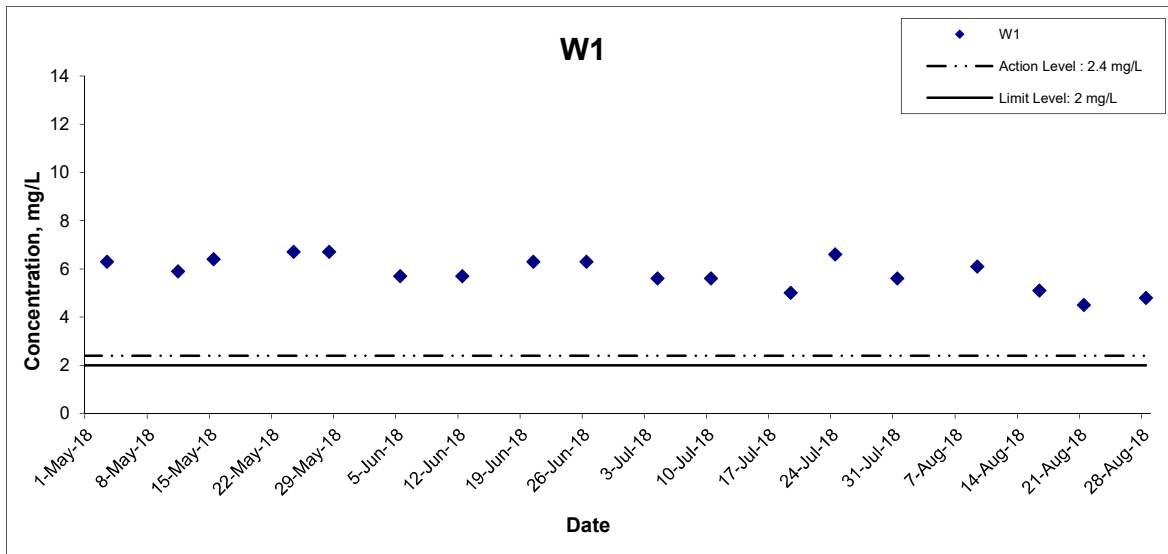


Dissolved Oxygen (Depth-Averaged) at Mid-Flood Tide

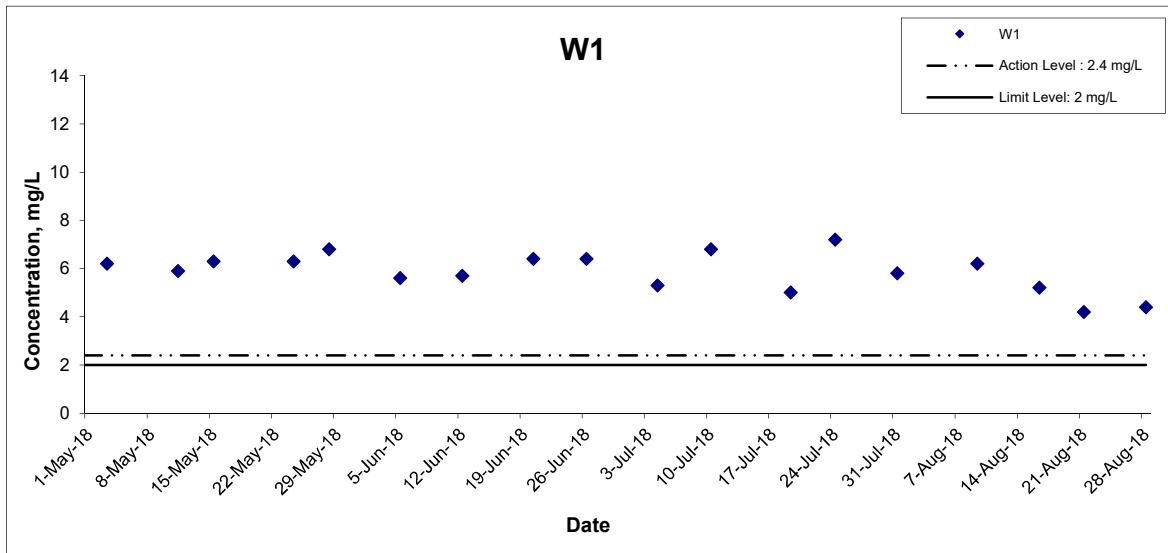


Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction	Scale	N.T.S	Project No.	MA16034	CINOTECH
	Graphical Presentation of Additional Water Quality Monitoring Results	Date	Aug 18	Appendix	I	

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 Aug 18	Appendix I	

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

TEST REPORT

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

Report No.:	QC29505
Date of Issue:	2018-08-27
Date Received:	2018-08-16
Date Tested:	2018-08-16
Date Completed:	2018-08-27

ATTN: Ms. Mei Ling Tang
QC report:

Page: 1 of 2

Method Blank

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

Method QC

Parameter	MQC1	Acceptance
Suspended Solids (SS) (%)	102	80-120
Biochemical Oxygen Demand (mg O ₂ /L)	183	170-220
Total Organic Carbon (%)	93	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	98	80-120
Total Phosphorus (%)	89	80-120

Remarks: 1) <= less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 29505.

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


PATRICK TSE
Laboratory Manager

TEST REPORT

Report No.:	QC29505
Date of Issue:	2018-08-27
Date Received:	2018-08-16
Date Tested:	2018-08-16
Date Completed:	2018-08-27
Page:	2 of 2

QC report:

Sample Duplicate

Parameter	29505-3 chk	Acceptance
Suspended Solids (SS) (%)	N/A	RPD \leq 20%
Biochemical Oxygen Demand (%)	N/A	RPD \leq 20%
Total Organic Carbon (%)	4	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	29505-3 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	87	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	93	80-120
Total Phosphorus (%)	89	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 29505.

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

TEST REPORT

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

Report No.:	QC29585
Date of Issue:	2018-09-06
Date Received:	2018-08-28
Date Tested:	2018-08-28
Date Completed:	2018-09-06

ATTN: Ms. Mei Ling Tang
QC report:

Page: 1 of 2

Method Blank

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

Method QC

Parameter	MQC1	Acceptance
Suspended Solids (SS) (%)	97	80-120
Biochemical Oxygen Demand (mg O ₂ /L)	196	170-220
Total Organic Carbon (%)	95	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	98	80-120
Total Phosphorus (%)	97	80-120

Remarks: 1) < = less than

2) N/A = Not applicable

3) This report is the summary of quality control data for report number 29585.

PREPARED AND CHECKED BY:

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


PATRICK TSE
Laboratory Manager

TEST REPORT

Report No.:	QC29585
Date of Issue:	2018-09-06
Date Received:	2018-08-28
Date Tested:	2018-08-28
Date Completed:	2018-09-06

Page: 2 of 2

QC report:

Sample Duplicate

Parameter	29585-3 chk	Acceptance
Suspended Solids (SS) (%)	N/A	RPD \leq 20%
Biochemical Oxygen Demand (%)	N/A	RPD \leq 20%
Total Organic Carbon (%)	6	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	29585-3 spk	Acceptance
Suspended Solids (SS) (%)	N/A	N/A
Biochemical Oxygen Demand (%)	N/A	N/A
Total Organic Carbon (%)	110	80-120
Nitrogen (Total Kjeldahl + nitrate + nitrite)	N/A	N/A
Ammonia (%)	96	80-120
Total Phosphorus (%)	85	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 29585.

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

TEST REPORT

QC REPORT

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

Report No.:	29400
Date of Issue:	2018/8/2
Date Received:	2018/8/1
Date Tested:	2018/8/1
Date Completed:	2018/8/2

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/1

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180801

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.6	3.8	5	98

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29413
Date of Issue:	2018/8/6
Date Received:	2018/8/3
Date Tested:	2018/8/3
Date Completed:	2018/8/6

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel -
Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/8/3
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)180803

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	6.1	6.0	2	101

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29426
Date of Issue:	2018/8/7
Date Received:	2018/8/6
Date Tested:	2018/8/6
Date Completed:	2018/8/7

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel -
Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/8/6
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)180806

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	5.0	5.2	4	108

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29446
Date of Issue:	2018/8/9
Date Received:	2018/8/8
Date Tested:	2018/8/8
Date Completed:	2018/8/9

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/8

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180808

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.9	4.0	3	100

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29460
Date of Issue:	2018/8/13
Date Received:	2018/8/10
Date Tested:	2018/8/10
Date Completed:	2018/8/13

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/10

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180810

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.6	3.5	5	100

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29467
Date of Issue:	2018/8/14
Date Received:	2018/8/13
Date Tested:	2018/8/13
Date Completed:	2018/8/14

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/13

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180813

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
C2se	4.6	4.7	1	100

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	26475
Date of Issue:	2018/8/16
Date Received:	2018/8/15
Date Tested:	2018/8/15
Date Completed:	2018/8/16

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

Project Name: Enviromental Team for Tseung Kwan O - Lam Tin Tunnel -
Design and Construction Agreement No. CE/59/2015 (EP)
Project No.: MA16034
Sampling Date: 2018/8/15
Number of Sample: 136
Custody No.: MA16034-CE/59/2015(EP)180815

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	2.6	2.7	4	

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

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



PATRICK TSE
Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29495
Date of Issue:	2018/8/20
Date Received:	2018/8/17
Date Tested:	2018/8/17
Date Completed:	2018/8/20

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/17

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180817

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.8	4.7	2	102

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29509
Date of Issue:	2018/8/21
Date Received:	2018/8/20
Date Tested:	2018/8/20
Date Completed:	2018/8/21

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/20

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180820

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.7	3.6	2	98

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29527
Date of Issue:	2018/8/23
Date Received:	2018/8/22
Date Tested:	2018/8/22
Date Completed:	2018/8/23

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/22

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180822

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.5	3.7	5	102

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29541
Date of Issue:	2018/8/27
Date Received:	2018/8/24
Date Tested:	2018/8/24
Date Completed:	2018/8/27

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/24

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180824

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	3.1	3.0	3	100

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29554
Date of Issue:	2018/8/28
Date Received:	2018/8/27
Date Tested:	2018/8/27
Date Completed:	2018/8/28

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/27

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180827

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	5.4	5.5	1	106

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29579
Date of Issue:	2018/8/30
Date Received:	2018/8/29
Date Tested:	2018/8/29
Date Completed:	2018/8/30

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/29

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180829

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	4.5	4.3	4	99

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

TEST REPORT

QC REPORT

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

Report No.:	29594
Date of Issue:	2018/9/3
Date Received:	2018/8/31
Date Tested:	2018/8/31
Date Completed:	2018/9/3

ATTN: Ms. Mei Ling Tang

Page: 1 of 1

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

Project No.: MA16034

Sampling Date: 2018/8/31

Number of Sample: 136

Custody No.: MA16034-CE/59/2015(EP)180831

Total Suspended Solids Sampling Point	Duplicate Analysis			QC Recovery, %
	Trial 1, mg/L	Trial 2, mg/L	Difference, %	
M4se	5.3	5.3	2	98

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

PREPARED AND CHECKED BY:

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



PATRICK TSE

Laboratory Manager

**APPENDIX K
SUMMARY OF EXCEEDANCE**

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

Appendix K – Summary of Exceedance

Reporting Period: August 2018

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

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise

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

Limit Level for Construction Noise

(Twelve (12) Limit Level exceedances for nighttime construction noise monitoring were recorded in the reporting month. The limit level exceedances were considered non-Project related)

Date	Monitoring Location	Measured Level (L_{eq} dB(A))	Baseline Noise Level (L_{eq} dB(A))	Construction Noise Level (L_{eq} dB(A))	Limit Level
2 August 2018	CM1	64.2	60.5 (54.4 – 69.8)	<u>61.8</u>	55
10 August 2018		64.3		<u>62.0</u>	
17 August 2018		64.9		<u>62.9</u>	
24 August 2018		65.5		<u>63.8</u>	
31 August 2018		65.6		<u>64.0</u>	
2 August 2018	CM2	62.4	58.0 (50.8 – 66.8)	<u>60.4</u>	
10 August 2018		64.0		<u>62.7</u>	
17 August 2018		64.4		<u>63.3</u>	
24 August 2018		64.0		<u>62.7</u>	
31 August 2018		63.9		<u>62.6</u>	
2 August 2018	CM3	61.8	60.2 (53.0 – 67.4)	<u>56.0</u>	
17 August 2018		64.4		<u>62.3</u>	

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

Appendix K – Summary of Exceedance

(C) Exceedance Report for Water Quality

(No exceedance for marine water quality monitoring in the reporting month)

One (1) Action Level exceedance and Five (5) Limit Level exceedances in groundwater quality monitoring as followed:

Date	Monitoring Location	Monitoring Parameter	Monitoring Results	Action Level	Limit Level
16 August 2018	Stream 1	Turbidity (NTU)	<u>6.2</u>	2.1	2.3
		Dissolved Oxygen	<u>7.5</u>	7.6	7.6
		Biochemical Oxygen Demand	<u>4</u>	2.0	2.0
		Total Phosphate	<u>0.07</u>	0.05	0.05
28 August 2018	Stream 1	Turbidity (NTU)	<u>2.2</u>	2.1	2.3
	Stream 2	Turbidity (NTU)	<u>2.9</u>	2.1	2.3

(D) Exceedance Report for Ecology
(NIL in the reporting month)

(E) Exceedance Report for Cultural Heritage
(NIL in the reporting month)

(F) Exceedance Report for Landfill Gas
(NIL in the reporting month)

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

- Notification of Exceedances

NOE No. 180802_noise (CM1-CM3) **Exceedance Level:** Limit

Date of Measurement: 02 August 2018 – 03 August 2018

Time of Measurement: 23:00-00:25

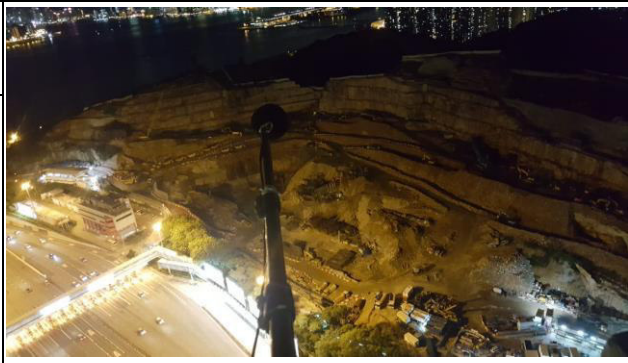
Date of Noise Monitoring: 02 August 2018 – 03 August 2018

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	64.2	60.5 (54.4 – 69.8)	<u>61.8</u>	When one documented complaint is received.	55.0	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:40-23:55	62.4	58.0 (50.8 – 66.8)	<u>60.4</u>			
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	00:10-00:25	61.8	60.2 (53.0 – 67.4)	<u>56.0</u>			

Field Observation(s) and Conclusion

<p>(a) Statement of exceedance(s) Construction noise measured at CM1, CM2 & CM3 exceeded the construction noise (night time) limit level.</p>	
<p>(b) Cause of exceedance(s) The exceedance was not considered related to the Project works:</p> <ul style="list-style-type: none"> • According to our field observation, road traffic noise were identified as the dominant noise source. No noticeable noise from blasting / associated works was identified. • No major construction activity was observed in Lam Tin Interchange during monitoring (see photo). 	

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

Part C – Recommendation: No further action is required.

ETL Signature: 

Date: 06 August, 2018

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

- Notification of Exceedances

NOE No. 180810_noise (CM1-CM2) **Exceedance Level:** Limit

Date of Measurement: 10 August 2018 – 11 August 2018

Time of Measurement: 23:00-01:25

Date of Noise Monitoring: 10 August 2018 –11 August 2018

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

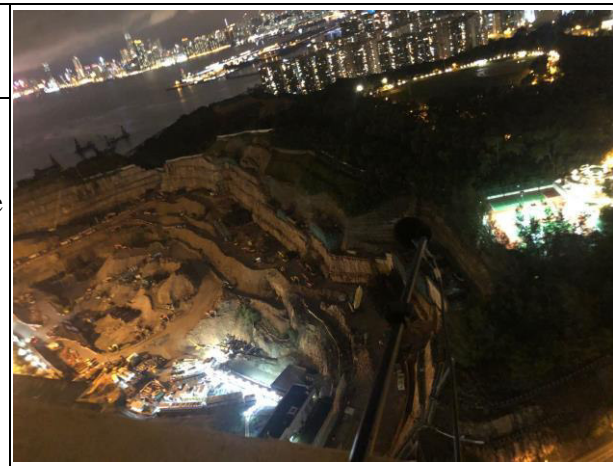
Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	64.3	60.5 (54.4 – 69.8)	<u>62.0</u>	When one documented complaint is received.	55.0	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:40-23:55	64.0	58.0 (50.8 – 66.8)	<u>62.7</u>			

Field Observation(s) and Conclusion

(a) Statement of exceedance(s)
Construction noise measured at CM1 & CM2 exceeded the construction noise (night time) limit level.

(b) Cause of exceedance(s)
The exceedance was not considered related to the Project works:

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



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

Part C – Recommendation: No further action is required.

ETL Signature: 

Date: 14 August, 2018

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

- Notification of Exceedances

NOE No. 180817_noise (CM1-CM3) **Exceedance Level:** Limit

Time of Measurement: 23:05-00:20

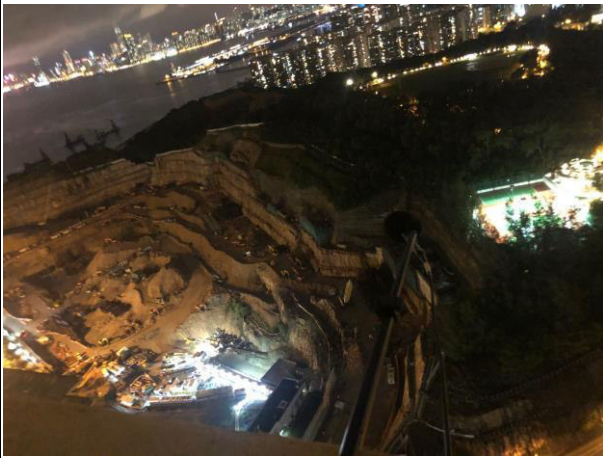
Date of Noise Monitoring: 17 August 2018 –18 August 2018

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:05-23:20	64.9	60.5 (54.4 – 69.8)	<u>62.9</u>	When one documented complaint is received.	55.0	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:40-23:55	64.4	58.0 (50.8 – 66.8)	<u>63.3</u>			
CM3	Block S, Yau Lai Estate Phase 5, Yau Tong	00:05-00:20	64.4	60.2 (53.0 – 67.4)	<u>62.3</u>			

Field Observation(s) and Conclusion

<p>(a) Statement of exceedance(s) Construction noise measured at CM1, CM2& CM3 exceeded the construction noise (night time) limit level.</p>	
<p>(b) Cause of exceedance(s) The exceedance was not considered related to the Project works:</p> <ul style="list-style-type: none"> According to our field observation, road traffic noise were identified as the dominant noise source. No noticeable noise from blasting / associated works was identified. No major construction activity was observed in Lam Tin Interchange during monitoring (see photo). 	

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

Part C – Recommendation: No further action is required.

ETL Signature: 

Date: 27 August, 2018

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

- Notification of Exceedances

NOE No. 180824_noise (CM1-CM2) **Exceedance Level:** Limit

Time of Measurement: 23:00-23:45

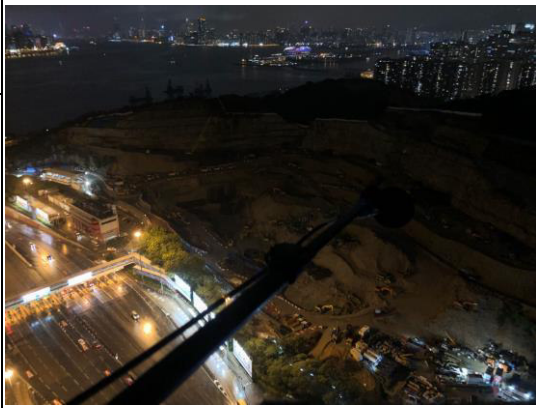
Date of Noise Monitoring: 24 August 2018 –25 August 2018

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L _{eq} dB(A))	Baseline Noise Level (L _{eq} dB(A))	Construction Noise Level (L _{eq} dB(A))	Action Level	Limit Level (L _{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	65.5	60.5 (54.4 – 69.8)	<u>63.8</u>	When one documented complaint is received.	55.0	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:30-23:45	64.0	58.0 (50.8 – 66.8)	<u>62.7</u>			

Field Observation(s) and Conclusion

<p>(a) Statement of exceedance(s) Construction noise measured at CM1 & CM2 exceeded the construction noise (night time) limit level.</p>	
<p>(b) Cause of exceedance(s) The exceedance was not considered related to the Project works:</p> <ul style="list-style-type: none"> According to our field observation, road traffic noise were identified as the dominant noise source. No noticeable noise from blasting / associated works was identified. No major construction activity was observed in Lam Tin Interchange during monitoring (see photo). 	

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

Part C – Recommendation: No further action is required.

ETL Signature: 

Date: 27 August, 2018

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

NOE No. 180831_noise (CM1-CM2) Exceedance Level: Limit

Time of Measurement: 23:00-23:45

Date of Noise Monitoring: 31 August 2018 –1 September 2018

Part A – Exceedance Summary Tables

Table I: Parameter(s) – Construction Noise

Station	Location	Time	Measured Level (L_{eq} dB(A))	Baseline Noise Level (L_{eq} dB(A))	Construction Noise Level (L_{eq} dB(A))	Action Level	Limit Level (L_{eq} dB(A))	Level exceeded
CM1	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	23:00-23:15	65.6	60.5 (54.4 – 69.8)	<u>64.0</u>	When one documented complaint is received.	55.0	Limit
CM2	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	23:30-23:45	63.9	58.0 (50.8 – 66.8)	<u>62.6</u>			

Field Observation(s) and Conclusion

(a) Statement of exceedance(s)

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

(b) Cause of exceedance(s)

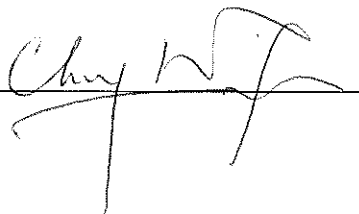
The exceedance was not considered related to the Project works:

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

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

Part C – Recommendation: No further action is required.

ETL Signature: _____



Date: 6 September, 2018

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: 16 August 2018

Part A – Summary of Exceedance Records

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
16 August 2018	Turbidity (NTU)	Stream 1	<u>6.2</u>	2.1	2.3	(2), (3)	No
	Dissolved Oxygen		<u>7.5</u>	7.6	7.6	(2), (3)	No
	Biochemical Oxygen Demand		<u>4.0</u>	2.0	2.0	(2), (3)	No
	Total Phosphate		<u>0.07</u>	0.05	0.05	(2), (3)	No

Note: For Dissolved Oxygen, non-compliance of the water quality limits occurs when monitoring result is lower than the Action/Limit Level.

Bold Italic means Action Level exceedance

Bold Italic with underline means Limit Level exceedance

- *Remarks
- (1) –The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.
 - (2) –The vertical distance between Stream 1 and the tunnel construction site is more than 44 meters. Therefore, Stream 1 will not be affected by any tunnel construction works as its elevation is above the tunnel construction site (**Figure 1 & 2**).
 - (3) –Other(s): Based on the information from HKO, rainfall was recorded on 31 July 2018 (Ref: Daily Rainfall Distribution extracted from HKO).

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, rainfall 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.).

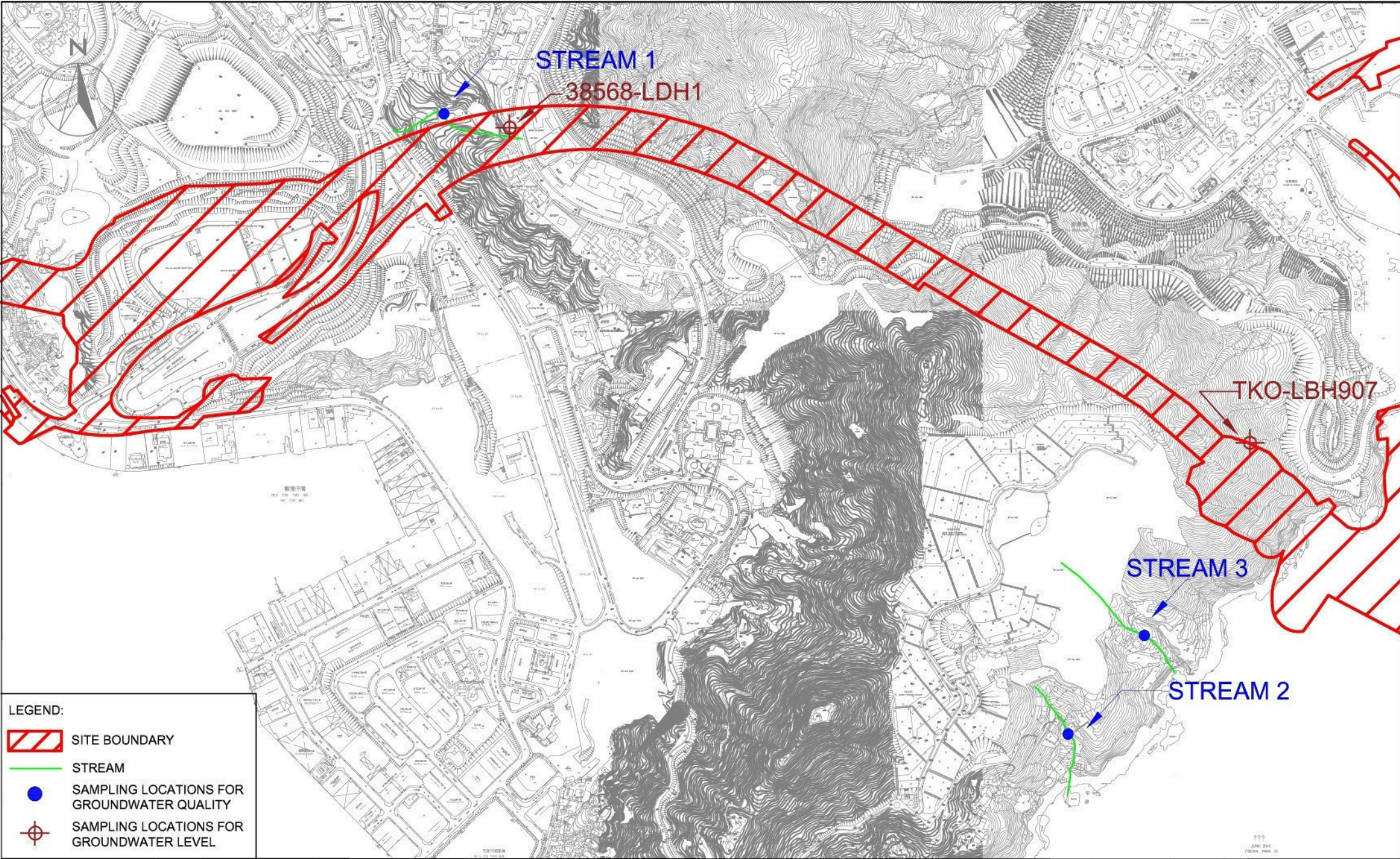
Therefore, ET recommend to suspend the water quality monitoring for the streams in accordance with the EM&A Manual, Section 4. For the details, please refer to the separate proposal for suspension of stream water monitoring.

Reviewed by: Dr. Priscilla Choy
 (Environmental Team Leader)

Date: 30 August, 2018

Signature: 

FIGURE



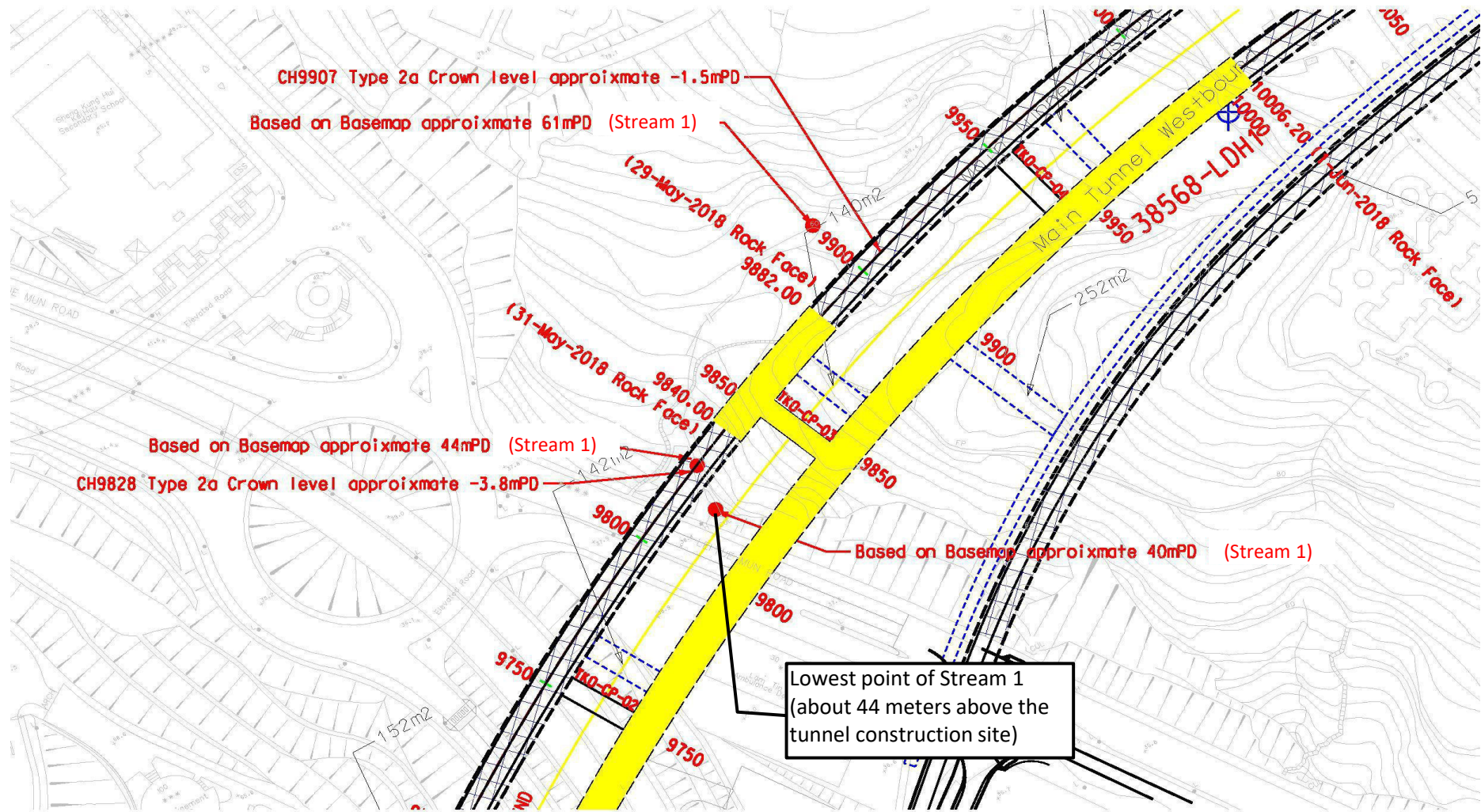
LEGEND:

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



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

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



Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Location of Stream 1 and the Main Tunnel Construction

Scale	N.T.S	Project No.	MA16034
Date	May-18	Figure	2



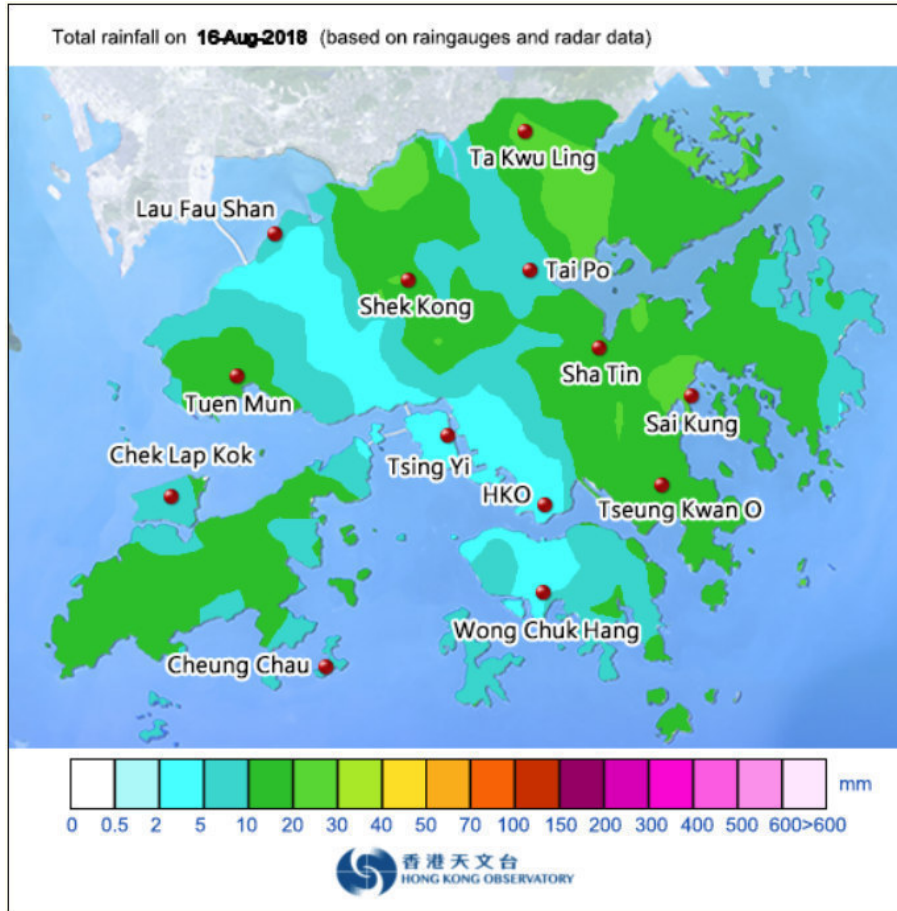
**APPENDIX A
DAILY RAINFALL DISTRIBUTION
EXTRACTED FROM HKO**

Agreement No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction - Investigation Report for Environmental Quality Action & Limit Exceedances

Daily Rainfall Distribution:



Rainfall recorded in Sai Kung region on 16 August 2018			
Time	Rainfall (mm)	Standby Signal No. 1	Thunderstorm Warning
23:45-00:45	0-3mm	-	-
00:45-01:45	0-5mm	-	-
01:45-02:45	0-4mm	-	-
02:45-03:45	-	-	-
03:45-04:45	0-1mm	-	-
04:45-05:45	0-1mm	-	-
05:45-06:45	0-1mm	-	-
06:45-07:45	-	-	-
07:45-08:45	-	-	-
08:45-09:45	-	-	-
09:45-10:45	-	-	-
10:45-11:45	-	-	-
11:45-12:45	-	-	-
12:45-13:45	-	-	-
13:45-14:45	-	-	-
14:45-15:45	-	-	-
15:45-16:45	0-13mm	-	-
16:45-17:45	0-1mm	-	-
17:45-18:45	-	-	-
18:45-19:45	-	-	-
19:45-20:45	-	-	-
20:45-21:45	-	-	-
21:45-22:45	-	-	-
22:45-23:45	-	-	-

**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: 28 August 2018

Part A – Summary of Exceedance Records

Date	Monitoring Parameter	Monitoring Location	Monitoring Results	Action Level	Limit Level	Justification*	Exceedance due to the Project
28 August 2018	Turbidity (NTU)	Stream 1	2.2	2.1	2.3	(2), (3)	No
		Stream 2	<u>2.9</u>			(1), (3)	

Note: For Dissolved Oxygen, non-compliance of the water quality limits occurs when monitoring result is lower than the Action/Limit Level.

Bold Italic means Action Level exceedance

Bold Italic with underline means Limit Level exceedance

- *Remarks
- (1) –The distance between the tunnel construction activities and monitoring stations of stream 2 and 3 are about 1000 meters.
 - (2) –The vertical distance between Stream 1 and the tunnel construction site is more than 44 meters. Therefore, Stream 1 will not be affected by any tunnel construction works as its elevation is above the tunnel construction site (**Figure 1 & 2**).
 - (3) –Other(s): Based on the information from HKO, rainfall was recorded on 28 August 2018 (Ref: Daily Rainfall Distribution extracted from HKO).

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, rainfall 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

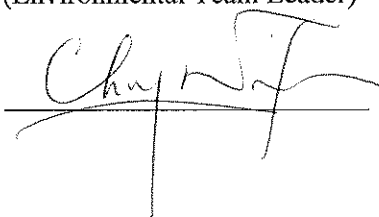
The monitoring of stream water is considered not representative to monitor the potential impacts on groundwater due to the Project after consideration of the location & elevation of the stream(s) and the non-project related factors (e.g. human activities etc.).

Therefore, ET recommend 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.

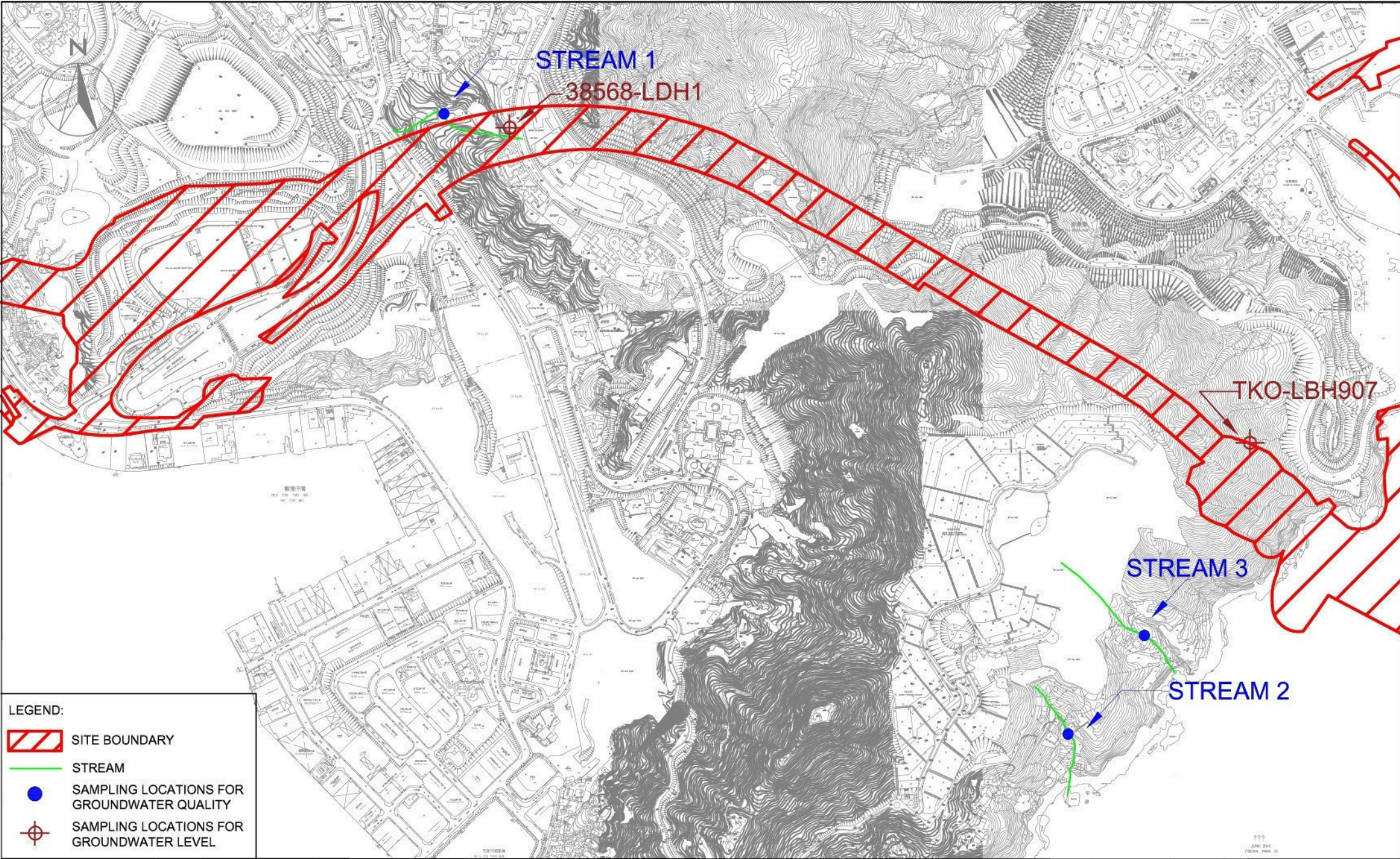
Reviewed by: Dr. Priscilla Choy
(Environmental Team Leader)

Date: 11 September, 2018

Signature:



FIGURE



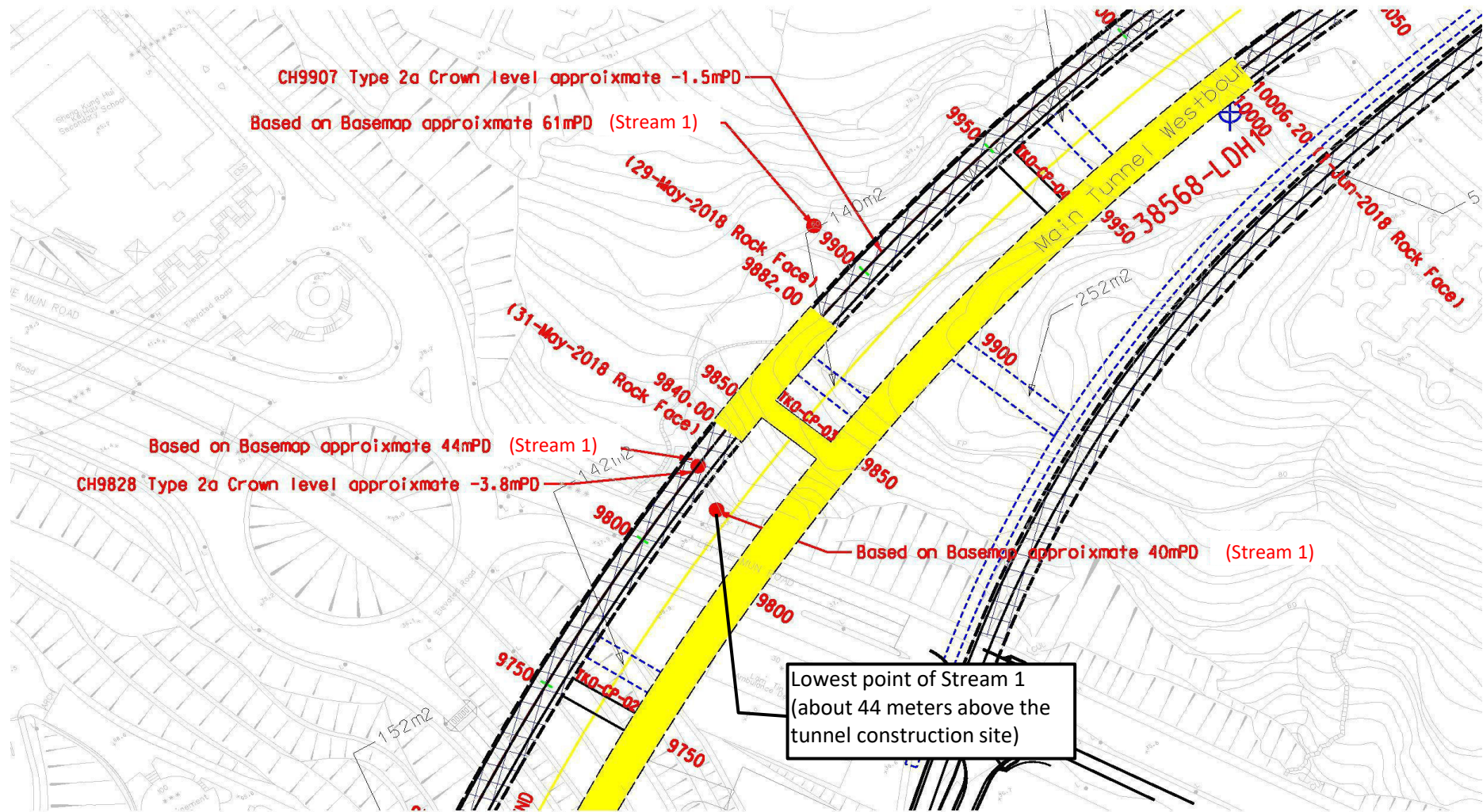
LEGEND:

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



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

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



Title Agreement No. CE/59/2015 (EP)
 Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
 Location of Stream 1 and the Main Tunnel Construction

Scale	N.T.S	Project No.	MA16034
Date	May-18	Figure	2



**APPENDIX A
DAILY RAINFALL DISTRIBUTION
EXTRACTED FROM HKO**

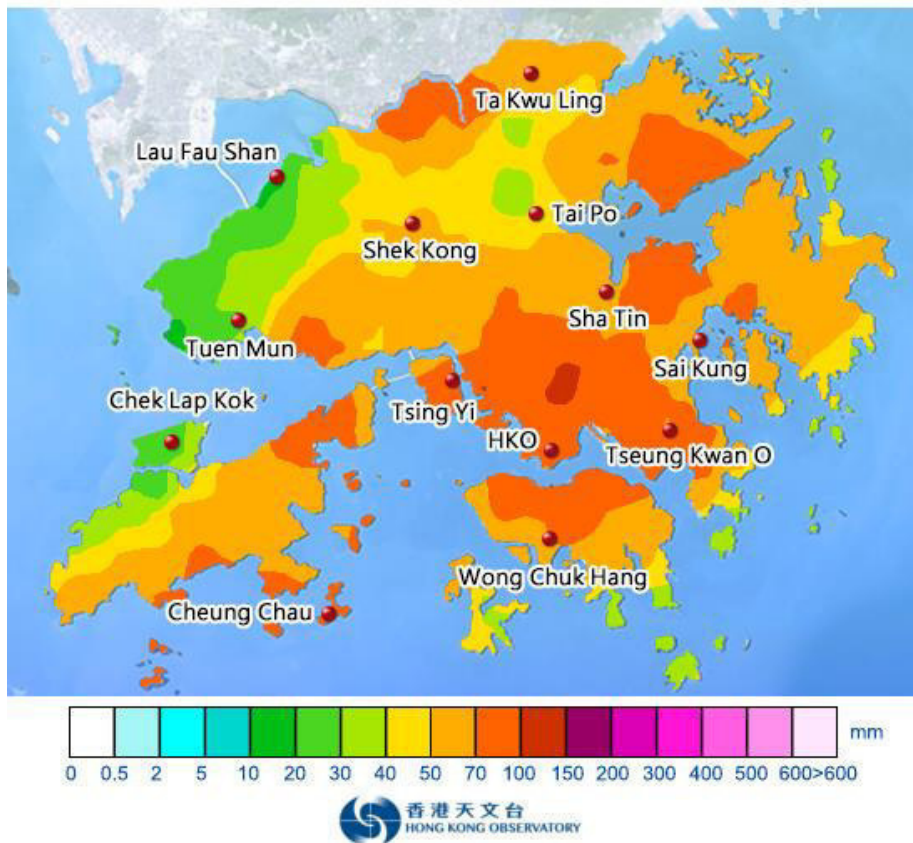
Agreement No. CE 59/2015 (EP)

Environmental Team for Tseung Kwan O – Lam Tin Tunnel

Design and Construction - Investigation Report for Environmental Quality Action & Limit Exceedances

Daily Rainfall Distribution:

Total rainfall on **28-Aug-2018** (based on raingauges and radar data)



Rainfall recorded in Sai Kung region on 28 August 2018			
Time	Rainfall (mm)	Standby Signal No. 1	Thunderstorm Warning
23:45-00:45	0-11mm	-	-
00:45-01:45	0-30mm	-	-
01:45-02:45	0-5mm	-	-
02:45-03:45	0-3mm	-	-
03:45-04:45	0-7mm	-	-
04:45-05:45	-	-	-
05:45-06:45	-	-	-
06:45-07:45	-	-	-
07:45-08:45	-	-	-
08:45-09:45	-	-	-
09:45-10:45	0-2mm	-	-
10:45-11:45	0-8mm	-	Yes
11:45-12:45	-	-	Yes
12:45-13:45	1-24mm	-	Yes
13:45-14:45	8-21mm	-	Yes
14:45-15:45	3-6mm	-	Yes
15:45-16:45	1-4mm	-	Yes
16:45-17:45	0-6mm	-	Yes
17:45-18:45	1-6mm	-	Yes
18:45-19:45	0-3mm	-	Yes
19:45-20:45	0-1mm	-	-
20:45-21:45	-	-	-
21:45-22:45	-	-	-
22:45-23:45	-	-	-

**APPENDIX L
SITE AUDIT SUMMARY**

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

Appendix L - Site Audit Summary (August 2018)

Contract No. NE/2015/01

Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
The contractor was reminded to deploy the silt curtain properly to avoid muddy water discharge during rainy season on TKO side before the commencement of construction work.	25 July 2018	#	Follow up action will be reported in the next reporting month
	1 August 2018	✓	Improved/rectified on 1 August 2018.
Floating refuse was found on the water around the silt curtain, the Contractor was reminded to arrange collection and removal of waste.	25 July 2018	✓	Improved/rectified on 1 August 2018.
The silt curtain on TKO side was not deployed properly, where gaps were observed. The Contractor was reminded to repair it immediately to avoid any sediment from entering the open water.	15 August 2018	✗	Item remarked on 22 August 2018.
	22 August 2018	#	Item remarked on 29 August 2018
	29 August 2018	#	Follow up action will be reported in the next reporting month
Beside the site office, the water drainage was seen clogged. Contractor should ensure the water drainage function properly to prevent flooding during rainy season.	29 August 2018	#	Follow up action will be reported in the next reporting month
Noise			
Noise barrier for drill rig at portion 4c was not found, contractor was reminded to install it before commencement of work.	1 August 2018	✓	Improved/rectified on 8 August 2018.
Landscape and Visual			
--	--	--	--
Air Quality			
The 3-sided screen for trucks at the tipping hall was found damaged, the contractor was reminded to fix the screen to avoid dust dispersion during unloading.	1 August 2018	✓	Improved/rectified on 8 August 2018.
Waste / Chemical Management			
Accumulation of general refuse at the collection point of WA1a (Blue House) should be avoided. Contractor was reminded to arrange regular collection of waste.	8 August 2018	✓	Improved/rectified on 15 August 2018.
A drip tray in portion 2 on LT side contained sediments and general refuse, the Contractor was reminded to clear the waste and maintain a good condition of drip tray.	15 August 2018	✓	Improved/rectified on 22 August 2018.
On TKO side, chemical container was not stored properly, contractor was reminded to place chemical container in designated area properly to prevent leakage.	22 August 2018	✓	Improved/rectified on 29 August 2018.
On the platform of TKO side, stagnant water was observed in the drip tray of chemical containers, Contractor was reminded to clear it and ensure no overflow stagnant water.	29 August 2018	#	Follow up action will be reported in the next reporting month
Impact on Cultural Heritage			

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 (August 2018)

Items	Date	Status*	Follow up Action
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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 (August 2018)

Contract No. NE/2015/02

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

Items	Date	Status*	Follow up Action
Water Quality			
The height of stockpile in Work Area A was observed over the concrete block wall. The Contractor should keep the stockpile below the concrete block wall as per the Sediment Management Plan.	25 July 2018	✓	Improved/rectified on 1 August 2018. The height of stockpile was observed complied with the latest revision of the SMP.
Silt curtains surrounding the cofferdam were observed damaged. The Contractor should ensure the integrity of the silt curtains at all time.	25 July 2018	✗	Item remarked on 1 August 2018.
	1 August 2018	✓	Improved/rectified on 8 August 2018.
Silt curtains near DSD Desilting Compound was damaged and improperly deployed. The Contractor should ensure its integrity at all time.	29 August 2018	#	Follow up action will be reported in the next reporting month
Noise			
Preparation of piling work in Portion 4 was observed during site inspection. The Contractor was reminded to properly implement the mitigation measures as per CNMP before start of any piling works.	25 July 2018	✓	Improved/rectified on 1 August 2018.
Noise barrier was observed damaged in Portion V. The Contractor should ensure the integrity of the noise barrier at all time. The construction works had been suspended during site inspection.	8 August 2018	✓	Improved/rectified on 15 August 2018.
Landscape and Visual			
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Air Quality			
Heavy smoke was observed emitted from derrick barge. The Contractor should enhance the control measure to reduce dark smoke emission.	8 August 2018	✓	Improved/rectified on 15 August 2018.
The retractable tube was not deployed properly for the preboring works in Portion 4. The Contractor should ensure the integrity of the retractable tube for preboring works at all time. The concerned pre boring works was stopped immediately.	22 August 2018	✓	Improved/rectified on 29 August 2018.
Waste / Chemical Management			
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Impact on Cultural Heritage			
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Permits / Licenses			
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- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month
- * Non-compliance of mitigation measure
- Non-compliance but rectified by the contractor

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 (August 2018)

Contract No. NE/2015/03

Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
<i>Water Quality</i>			
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<i>Noise</i>			
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<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
--	--	--	--
<i>Waste / Chemical Management</i>			
--	--	--	--
<i>Impact on Cultural Heritage</i>			
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<i>Permits / Licenses</i>			
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- ✓ Observation/reminder was made during site audit but improved/rectified by the contractor in the next site audit
- ✗ Observation/reminder was made during site audit but not yet improved/rectified by the contractor in the next site audit
- # Follow up action will be reported in next reporting month

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

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

Appendix L - Site Audit Summary (August 2018)

Contract No. NE/2017/01

Tseung Kwan O - Lam Tin Tunnel – Tsueng Kwan O Interchange and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
--	--	--	--
Noise			
--	--	--	--
Landscape and Visual			
--	--	--	--
Air Quality			
--	--	--	--
Waste / Chemical Management			
A small tray with stagnant water or chemical waste was not stored properly, Contractor was reminded to replace the tray with a proper container to avoid overflow.	8 August 2018	✓	Improved/rectified on 16 August 2018.
Drip tray should be provided for chemical containers to avoid any leakage on the site.	22 August 2018	✓	Improved/rectified on 29 August 2018.
Impact on Cultural Heritage			
--	--	--	--
Permits / Licenses			

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

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

Appendix L - Site Audit Summary (August 2018)

Contract No. NE/2017/02

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

Items	Date	Status*	Follow up Action
<i>Water Quality</i>			
The Contractor should enhance the control measure for the gully near the TKO Sport Centre in Portion 1 to prevent potential surface runoff.	8 August 2018	✓	Improved/rectified on 15 August 2018.
Ponding water was observed in Portion 1. The Contractor should avoid ponding water as far as possible.	29 August 2018	#	Follow up action will be reported in the next reporting month
<i>Noise</i>			
--	--	--	--
<i>Landscape and Visual</i>			
--	--	--	--
<i>Air Quality</i>			
Dry surface and uncovered stockpile were observed in Portion 1. The Contractor should enhance the dust mitigation measures in Portion 1.	25 July 2018	✓	Improved/rectified on 1 August 2018.
The Contractor was reminded to provide thorough wheel washing before leaving Portion 1 and clean up the area outside the site entrance for dust suppression.	8 August 2018	✓	Improved/rectified on 15 August 2018.
<i>Waste / Chemical Management</i>			
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<i>Impact on Cultural Heritage</i>			
--	--	--	--
<i>Permits / Licenses</i>			

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

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

APPENDIX M
EVENT AND ACTION PLANS

Event and Action Plan for Air Quality (Dust)

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	8. If exceedance stops, cease additional monitoring.			
Limit level being exceeded by one sampling	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor ,IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals;

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	3. Supervise the implementation of remedial measures.	4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.			

Event and Action Plan for Marine Water Quality

Event	Action			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day at water sensitive receiver(s)	<ul style="list-style-type: none"> • Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; • If exceedance is found to be caused by the reclamation activities, repeat <i>in-situ</i> measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • If exceedance occurs at WSD salt water intake, inform WSD; • Discuss mitigation measures with IEC and Contractor; • Repeat measurement on next day of exceedance. 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal. 	<ul style="list-style-type: none"> • Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Amend working methods if appropriate; • Discuss with ET and IEC and propose mitigation measures to IEC and ER; • Implement the agree mitigation measures.
Action level being exceeded by two or more consecutive	<ul style="list-style-type: none"> • Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; 	<ul style="list-style-type: none"> • Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal; 	<ul style="list-style-type: none"> • Inform the Engineer and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	IEC	ER	CONTRACTOR
<p>sampling days at water sensitive receiver(s)</p>	<ul style="list-style-type: none"> • If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Ensure mitigation measures are implemented; • Prepare to increase the monitoring frequency to daily; • If exceedance occurs at WSD salt water intake, inform WSD; • Repeat measurement on next day of exceedance. 	<ul style="list-style-type: none"> • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures.
<p>Limit level being exceeded by one sampling day at water sensitive receiver(s)</p>	<ul style="list-style-type: none"> • Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; 	<ul style="list-style-type: none"> • Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; 	<ul style="list-style-type: none"> • Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	IEC	ER	CONTRACTOR
	<ul style="list-style-type: none"> • If exceedance is found to be caused by the reclamation activities, repeat <i>in-situ</i> measurement to confirm findings; • Inform IEC, contractor, AFCD and EPD • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level; • If exceedance occurs at WSD salt water intake, inform WSD. 	<ul style="list-style-type: none"> • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and submit proposal of mitigation measures to IEC and ER within 3 working days of notification; • Implement the agreed mitigation measures.
Limit level being exceeded by two or more consecutive sampling days at	<ul style="list-style-type: none"> • Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; 	<ul style="list-style-type: none"> • Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; 	<ul style="list-style-type: none"> • Discuss with IC(E), ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods; 	<ul style="list-style-type: none"> • Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	IEC	ER	CONTRACTOR
water sensitive receiver(s)	<ul style="list-style-type: none"> • If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IC(E), AFCD, contractor and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IC(E), ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days; • If exceedance occurs at WSD salt water intake, inform WSD. 	<ul style="list-style-type: none"> • Assess the effectiveness of the implemented mitigation measures. 	<ul style="list-style-type: none"> • Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures; • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. 	<ul style="list-style-type: none"> • Check all plant and equipment and consider changes of working methods; • Discuss with ET, IC(E) and ER and submit proposal of mitigation measures to IC(E) and ER within 3 working days of notification; • Implement the agreed mitigation measures; • As directed by the Engineer, to slow down or to stop all or part of the construction activities.

Limit Levels and Action Plan for Landfill Gas

Parameter	Limit Level	Action
Oxygen	<19%	<ul style="list-style-type: none"> • Ventilate to restore oxygen to >19%
	<18%	<ul style="list-style-type: none"> • Stop works • Evacuate personnel/prohibit entry • Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. > 0.5% by volume)	<ul style="list-style-type: none"> • Prohibit hot works • Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. > 1% by volume)	<ul style="list-style-type: none"> • Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore methane to <10% LEL
Carbon Dioxide	>0.5%	<ul style="list-style-type: none"> • Ventilate to restore carbon dioxide to < 0.5%
	>1.5%	<ul style="list-style-type: none"> • Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore carbon dioxide to < 0.5%

Event and Action Plan for Coral Post-Translocation Monitoring

Event	Action			
	ET Leader	IEC	ER	Contractor
Action Level Exceedance	1. Check monitoring data; 2. Inform the IEC, ER and Contractor of the findings; 3. Increase the monitoring to at least once a month to confirm findings; 4. Propose mitigation measures for consideration	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.
Limit Level Exceedance	Undertake Steps 1-4 as in the Action Level Exceedance. If further exceedance of Limit Level, suspend construction works until an effective solution is identified.	1. Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.

Mitigation Measures for Vibration Monitoring

Level	Contingency Action
Alert Level	<ul style="list-style-type: none"> ● The Engineer shall be informed immediately. ● The Contractor shall submit an investigation report to describe works being undertaken. To review the instrument responses and to study the cause of undue response. ● The Contractor shall review and increase the instrumentation monitoring and reporting frequency, if applicable. ● The Contractor shall submit a detailed plan of action describing the measures to be taken should the concerned instrument reach the action level to the Engineer for approval.
Alarm Level	<ul style="list-style-type: none"> ● The Engineer shall be informed immediately. ● The active construction works may require to be suspended subject to the Engineer's review of monitoring data. ● The Contractor shall immediately implement the measures as defined in the detailed plan of action to prevent further ground movement and groundwater drawdown etc. ● The Contractor shall prepare a detailed investigation report to study the cause of the exceedance ● The Contractor shall propose a contingency plan for the Engineer's approval in the event that alarm value is reached or exceeded ● The Contractor shall develop an emergency plan for the Engineer's approval in the event the applied contingency measures cannot control the situation. ● The Contractor shall meet the Engineer to discuss the instrument response and review the effectiveness of the implemented measures. ● The Contractor shall carry out design review of the works

Action Level	<ul style="list-style-type: none">● Consideration shall be given to suspend all active construction works and the Engineer shall be informed immediately● The Contractor shall immediately implement the measures defined in the contingency plan● The Contractor shall implement the measures defined in the emergency plan in the event that the applied contingency measures are found inadequate● The Contractor shall provide a complete report to examine the construction method and review the response of the instruments with full history of the monitoring data and construction activities and necessary design update● To resume the suspended activities, the Contractor shall demonstrate to the Engineer's satisfaction that it is safe to do so with approval from the Engineer.
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**APPENDIX N
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

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

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

- 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	*(1)
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall / mixing area in Work Area A, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	^
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs. - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, 	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	*(1) *(1)

App N - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

August 2018

EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<p>watering shall be applied to aggregate fines.</p> <ul style="list-style-type: none"> - Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. - Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. - Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. - Imposition of speed controls for vehicles on site haul roads. - Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. - Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if 						<p>*(1)</p> <p>^</p> <p>N/A</p> <p>*(1)</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

App N - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

August 2018

EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	dusty conditions arise.						
/	Emission from Vehicles and Plants <ul style="list-style-type: none"> • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD) 	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^ *(2) ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Sediment Manage ment Plan	<ul style="list-style-type: none"> - Tarpaulin sheets will be provided to cover dredged materials during transportation offsite. - Water Sprinklers will be installed along outer steel frame. Dusty materials will be dampened by spraying water to suppress dust generation during mixing operation - Subject to the odour intensity and instruction by the <i>Supervisor</i>, odour suppressant will be applied over the marine sediments via water blaster to minimize the impact. 	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, APCO	^ ^ ^

App N - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

August 2018

EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<ul style="list-style-type: none"> - The unloading / loading areas of the marine sediments will be barricaded with minimum 3.5m high barrier facing the nearest resident to minimize the dust impact. The mixing area and curing area will be enclosed with 3-sides and roof to minimize the dust impact. - The mixing area will be established with retractable roof on top and with corrugated steel sheet at side enclosure by 5.4m high concrete block walls to prevent spread of dust during the mixing process with cement. - Handling and mixing of cement will follow the Air Pollution Control (Construction Dust) Regulation to avoid fugitive dust emissions. - The discharge of cement from silo hopper to the concrete mixer truck will be 4-side enclosed by Tarpaulin to minimize the dust emission. - The mixing of cement and water will be confined in the concrete mixer truck until the pre-mixing completed. The hydrated cement will then be unloaded to the mixing area to mix with the sediment. - Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front. - The soil filled platform is covered by a layer of sand fill material, and frequent water spray will be carried out on the sand surface for dust control. - Any excessive air emissions will be inspected and recorded. - Sediment height of treated marine sediment being kept 0.9 m below the top level of concrete block wall during rainy season. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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Noise Impact (Construction Phase)							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	#(3)
Noise Mitigation Plan	Use of Temporary Noise Barriers (i.e Acoustic box, SilentUp and etc.) or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	#(3)
S4.9	<p>Good Site Practice</p> <ul style="list-style-type: none"> - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program - Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. - Mobile plant, if any, should be sited as far away from NSRs as possible. - Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. 	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^ ^

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	<ul style="list-style-type: none"> - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 						<p>^</p> <p>^</p>
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	N/A
Water Quality Impact (Construction Phase)							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m ³ , with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall 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 3,000m³ (i.e. 1,000 m³ 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"> - Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. - Sufficient stock of silt curtain should be provided on site. 	Control potential impacts from marine works	Contractor	NE/2015/01, NE/2015/02, NE/2017/01	Construction stage	EIAO	*(4) / #(4)
Sediment Manage ment Plan	<ul style="list-style-type: none"> - Loading of barges and hoppers will be controlled to prevent splashing of dredged materials into the surrounding water. Barges or hoppers will not be filled to a level that will cause the overflow of materials or pollute water during loading or transportation. - Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved. - Monitoring of the barge loading shall be conducted to ensure that loss of material does not take during transportation. - Transport barges or vessels shall be equipped with automatic self-monitoring devices. - Vehicles containing any untreated / treated marine sediments will be suitably covered to limit potential dust emissions or potential contaminated wastewater 	Control potential impacts from Cement s/s process	Contractor	NE/2015/02	Construction stage	EIAO, WPCO	^ ^ ^ ^

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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"> - The leachate from the untreated marine sediment will be collected and treated in the mixing pool for cement s/s treatment. - A 300mm diameter U-channel will be constructed along the perimeter of the cement s/s treatment facility to collect the run-off, if any, shall be collected and discharged according to the Water Pollution Control Ordinance (WPCO). Cleaning for the u-channel and desilting pits shall be conducted on weekly basic. - The stockpile area of treated marine sediment will be surrounded by the perimeter concrete block walls with geotextile membranes installed at the inner face of the concrete block walls. The types of perimeter wall can be used interchangeably. The Structural Feasibility of the perimeter wall for the changes of height of the stockpile had been checked and certified by ICE. - The mixing areas will be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater and will be confined by partition concrete block walls for carrying out the mixing and temporary stockpile of treated sediment. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p>
S5.8.3	<p>Other good site practices should be undertaken during filling operations include:</p> <ul style="list-style-type: none"> - all marine works should adopt the environmental friendly construction methods as far as practically possible including the use of cofferdams to cover the construction area to separate the construction works from the sea; - floating single silt curtain shall be employed for all marine works; 	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>*(4)</p>

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

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S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	<p>To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> - Before carrying out any dredging and underwater filling works, a temporary barrier shall first be constructed to a height above the high water mark to completely enclose the works site (without any opening at the barrier wall) - The temporary barrier fully enclosing the dredging and underwater filling works site shall not be removed before completion of all dredging and underwater filling works. - Water quality sampling and testing shall be carried out to demonstrate that the water quality inside the enclosed barrier is comparable to the ambient or baseline levels prior to the removal of the fully enclosed barrier. - Silt curtains shall be deployed for the installation and removal of the temporary barrier and at the double water gates marine access opening during its operation. 	Control potential impacts from dredging and filling works for Reclamation for Road P2	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^ ^ N/A ^

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S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.6	Any practical options for the diversion and realignment of drainage should comply with both engineering and environmental requirements in order to ensure adequate hydraulic capacity of all drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	^
S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the corresponding WCZ under the TM-DSS.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	*(6)

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

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

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		based construction					
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	#(5)
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	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	*(7)
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	*(8)
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	*(10)/ #(10) ^ ^
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,	*(9)

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<i>Ecological Impact</i>							
S6.8.4	<p><i>Measures to Minimize Disturbance</i></p> <ul style="list-style-type: none"> - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - Hoarding or fencing should be erected around the works area boundaries during the construction phase. The hoarding would screen adjacent habitats from construction phase activities, reduce noise disturbance to these habitats and also to restrict access to habitats adjacent to works areas by site workers; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities 	<p>Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation</p>	<p>Design Team / Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^ ^ ^</p>
S6.8.5	<p><i>Standard Good Site Practice</i></p> <ul style="list-style-type: none"> - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter 	<p>Reduce disturbance to surrounding habitats</p>	<p>Contractor</p>	<p>Land-based works are</p>	<p>Construction Phase</p>	<p>N/A</p>	<p>^ ^ ^ ^ ^</p>

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	the nearby watercourses.						
S6.8.6	<p>Measure to Minimize Groundwater Inflow</p> <ul style="list-style-type: none"> - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - During the tunnel excavation, pre-excavation grouting could be adopted to reduce the groundwater inflow and ensure that the tunnel would meet the long term water tightness requirements. 	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	<p>Measure to Minimize Impact on Corals</p> <p><u>Coral translocation</u></p> <ul style="list-style-type: none"> - It is recommended to translocate the affected coral colonies, except the locally common <i>Oulastrea crispata</i>, within the reclamation area and bridge footprint to the other suitable locations as far as practicable. - The coral translocation should be conducted during the winter months (November-March) in order to avoid disturbance during their spawning period (i.e. July to October). - A detailed coral translocation plan with a description on the methodology for pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage. 	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"> - The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation. <p><u>Post translocation Monitoring</u></p> <ul style="list-style-type: none"> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - Information gathered during each posttranslocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey. 						<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
<p>S6.8.9</p> <p>S6.8.10</p>	<p><i>Measure to Control Water Quality Impact</i></p> <ul style="list-style-type: none"> - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. - Diverting of the site runoff to silt trap facilities before discharging into storm drain; - Proper waste and dumping management; and - Standard good-site practice for land-based construction. 	<p>Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical</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>Compensation for Vegetation Loss</p> <ul style="list-style-type: none"> - Felling of mature trees should be compensated by planting of standard or heavy standard trees within or in vicinity of the affected area as far as practicable. Such compensatory planting for trees should be provided with at least a 1:1 ratio. In addition, vegetation at the temporarily affected area should be reinstated with species similar to the existing condition. 	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
Fisheries Impact							
S7.7.3	<p>Measure to Control Water Quality Impact</p> <ul style="list-style-type: none"> - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. 	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
Waste Management (Construction Phase)							
S8.6.3	<p>Good Site Practices and Waste Reduction Measures</p> <ul style="list-style-type: none"> - Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; 	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"> - Training of site personnel in site cleanliness, proper waste management and chemical handling procedures; - Provision of sufficient waste disposal points and regular collection of waste; - Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. 					Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^ ^
S8.6.4	<p><i>Good Site Practices and Waste Reduction Measures (con't)</i></p> <ul style="list-style-type: none"> - Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; - Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; - Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste. 	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	*(11) ^ ^ ^ ^
S8.6.5	<p><i>Good Site Practices and Waste Reduction Measures (con't)</i></p> <p>The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for</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>Good Site Practices and Waste Reduction Measures (con't)</p> <ul style="list-style-type: none"> - C&D materials would be reused in the project and other local concurrent projects as far as possible. 	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.7	<p>Storage, Collection and Transportation of Waste</p> <p>Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include:</p> <ul style="list-style-type: none"> - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse. 	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^ ^
S8.6.8/	Storage, Collection and Transportation of Waste (con't)	To minimize	Contractor	All work	Construction		

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Waste Manage ment Plan	<ul style="list-style-type: none"> - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); - Waste should be disposed of at licensed waste disposal facilities/ alternative disposal ground approved by RE and DEP; and - Maintain records of quantities of waste generated, recycled and disposed. 	potential adverse environmental impacts arising from waste collection and disposal		sites	Phase		^ ^ ^ ^ ^
S8.6.9/ Waste Manage ment Plan	<p><i>Storage, Collection and Transportation of Waste (con't)</i></p> <ul style="list-style-type: none"> - Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed. 	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^
S8.6.11 - S8.6.13/	<p><i>Sorting of C&D Materials</i></p> <ul style="list-style-type: none"> - Sorting to be performed to recover the inert materials, reusable and recyclable 	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"> - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - The C&D materials should at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled in the reclamation as far as practicable before delivery to PFRFs. While opportunities for reusing the non-inert portion should be investigated before disposal of at designated landfills 	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>Sediments</p> <ul style="list-style-type: none"> - Sediment encountered may be reused as filling material on-site after cement stabilization. Cement-stabilization process is undertaken by mixing sediment and cement and will convert sediment to earth filling material. The treated sediment has to comply with Risk-Based Remediation Goals (RBRGs) before being reused in order not to raise any land contamination issue. The adoption of RBRGs to assess stabilized sediment has been proposed in the current C&DMMP. MFC has no adverse comment on the current C&DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening 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. 	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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	<ul style="list-style-type: none"> - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP 						N/A
S8.6.17 – S8.6.20	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during boring, excavation, transportation and disposal of sediments or cement stabilization of sediment. - A treatment area should be confined for carrying out the cement stabilization mixing and temporary stockpile. The area should be designed to prevent leachate from entering the ground. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring, excavation and 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 	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		^ ^ *(6)

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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"> - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. 						N/A
S8.6.21/ Waste Manage ment Plan	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is responsible for the provision and management of disposal capacity and facilities for the excavated sediment, while the permit of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the DEP. 	To ensure the sediment to be disposed of in an authorized and least impacted way	NE/2015/02, NE/2017/01	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	<p>Sediments (con't)</p> <ul style="list-style-type: none"> - For allocation of sediment disposal sites and application of marine dumping permit, separate SSTP has to be submitted to EPD for agreement under DASO. Additional site investigation, based on the SSTP, maybe carried out in order to confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal. 	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A

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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"> - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. - Another possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal. 						<p>N/A</p> <p>N/A</p>
S8.6.26/ Waste Management Plan	<p>Chemical Wastes.</p> <ul style="list-style-type: none"> - If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical 	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>General Refuse</p> <ul style="list-style-type: none"> - General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material. 	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
Impact on Cultural Heritage (Construction Phase)							
S9.6.4	<p>Dust and visual impacts</p> <ul style="list-style-type: none"> - Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided; - The open yard in front of the temple should be kept as usual for annual Tin Hau festival; - Monitoring of vibration impacts should be conducted when the construction works are less than 100m from the temple. 	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^ ^ ^
S9.6.4	<p>Indirect vibration impact</p> <ul style="list-style-type: none"> - Vibration level is suggest to be controlled within a peak particle velocity (ppv) 	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.	^ ^ ^
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.	^ ^ ^
<i>Landscape and Visual Impact (Construction Phase)</i>							
Table 10.8.1/ Landscape Mitigation Plan	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during construction period	N/A	^
Table 10.8.1/ Landscape	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^

App N - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

August 2018

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
pe Mitigation Plan							
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 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	^

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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
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 10.8.1/ Landsca pe	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	^

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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
Mitigation Plan							
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 TKO and Lam Tin and permanent	Construction planning and reclamation stages	N/A	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
				reclamation for TKO Interchange slip roads and Road P2			
Landfill Gas Hazard (Design and Construction Phase)							
S11.5.9	A Safety Officer, trained in the use of gas detection equipment and landfill gas-related hazards, should be present on site throughout the groundworks phase. The Safety Officer should be provided with an intrinsically safe portable instrument, which is appropriately calibrated and able to measure the following gases in the ranges indicated below: Methane 0-100% LEL and 0100% v/v Carbon dioxide 0-100% Oxygen 0-21%	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	^
S11.5.10 S11.5.25	Safety Measures - For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards. - An excavation procedure or code of practice to minimize landfill gas related risk	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour Department's	^ ^

App N - IMPLEMENTATION SCHEDULE AND RECOMMENDED MITIGATION MEASURES

August 2018

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<p>should be devised and carried out.</p> <ul style="list-style-type: none"> - No worker should be allowed to work alone at any time in or near to any excavation. At least one other worker should be available to assist with a rescue if needed. - Smoking, naked flames and all other sources of ignition should be prohibited within 15m of any excavation or ground-level confined space. “No smoking” and “No naked flame” notices should be posted prominently on the construction site and, if necessary, special areas should be designed for smoking. - Welding, flame-cutting or other hot works should be confined to open areas at least 15m from any trench or excavation. - Welding, flame-cutting or other hot works may only be carried out in trenches or confined spaces when controlled by a “permit to work” procedure, properly authorized by the Safety Officer (or, in the case of small developments, other appropriately qualified person). - The permit to work procedure should set down clearly the requirements for continuous monitoring for methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person, in attendance outside the 'confined area', who should be responsible for reviewing the gas measurements as they are made, and who should have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. 					Code of Practice for Safety and Health at Work in Confined Space	<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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August 2018

EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<p>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"> - Where there are any temporary site offices, or any other buildings located within the Sai Tso Wan Landfill Consultation Zone which have enclosed spaces with the capacity to accumulate landfill gas, then they should either be located in an area which has been proven to be free of landfill gas (by survey using portable gas detectors); or be raised clear of the ground by a minimum of 500mm. This aims to create a clear void under the structure which is ventilated by natural air movement such that emission of gas from the ground are mixed and diluted by air. - Any electrical equipment, such as motors and extension cords, should be intrinsically safe. During piping assembly or conduiting construction, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed to prevent the migration of gases through the pipeline/conduit. All piping /conduiting should be capped at the end of each working day. - During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site. - Fire drills should be organized at not less than six monthly intervals. - The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow. 						<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p>

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August 2018

EIA Ref. / EP Submiss ion	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<ul style="list-style-type: none"> - All personnel who work on the site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices (in Chinese and English) should be posted at prominent position around the site warning danger of the potential hazards. - Service runs within the Consultation Zone should be designated as “special routes”; utilities companies should be informed of this and precautionary measures should be implemented. Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces such as manholes and service chambers, and that appropriate monitoring procedures are in place to prevent hazards due to asphyxiating atmospheres in confined spaces. Detailed guidance on entry into confined spaces is given in Code of Practice on Safety and Health at Work in Confined Spaces (Labour Department, Hong Kong). - Periodically during ground-works construction within the 250m Consultation Zone, the works area should be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment. The monitoring frequency and areas to be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriately qualified person. 						^
S11.5.26 - S11.5.31	<p>Monitoring</p> <ul style="list-style-type: none"> ● Routine monitoring should be carried out in all excavations, manholes, chambers, relocation of monitoring wells and any other confined spaces that 	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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EIA Ref. / EP Submission	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	<p>may have been created. All measurements in excavations should be made with the extended monitoring tube located not more than 10 mm from the exposed ground surface. Monitoring should be performed properly to make sure that the area is free of landfill gas before any man enters into the area.</p> <ul style="list-style-type: none"> ● For excavations deeper than 1m, measurements should be carried out: <ul style="list-style-type: none"> - at the ground surface before excavation commences;- - immediately before any worker enters the excavation; - at the beginning of each working day for the entire period the excavation remains open; and - periodically throughout the working day whilst workers are in the excavation. ● For excavations between 300mm and 1m deep, measurements should be carried out: <ul style="list-style-type: none"> - directly after the excavation has been completed; and - periodically whilst the excavation remains open. ● For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person. ● Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person. ● The exact frequency of monitoring should be determined prior to the commencement of works, but should be at least once per day, and be carried out by a suitably qualified or qualified person before starting the work of the 	hazards		Landfill Consultation Zone		Guidance Note	<p>^</p> <p>^</p> <p>^</p> <p>^</p>

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August 2018

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>day. Measurements shall be recorded and kept as a record of safe working conditions with copies of the site diary and submitted to the Engineer for approval. The Contractor may elect to carry out monitoring via an automated monitoring system.</p>						
S11.5.32	<p>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.</p>	<p>construction stage within the Sai Tso Wan Protect the workers from landfill gas hazards</p>	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	N/A

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

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

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
<i>Air Quality Impact</i>					
* (1)	S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	NE/2015/01	Construction of Lam Tin Interchange	The 3-sided screen for trucks at the tipping hall was found damaged, the contractor was reminded to fix the screen to avoid dust dispersion during unloading
	S3.8.7 / Sediment Management Plan	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: <ul style="list-style-type: none"> - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs. - 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. - Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. 	NE/2017/02	Construction of Road P2/D4	Dry surface and uncovered stockpile were observed in Portion 1. The Contractor should enhance the dust mitigation measures in Portion 1.
			NE/2017/02	Construction of Road P2/D4	The Contractor was reminded to provide thorough wheel washing before leaving Portion 1 and clean up the area outside the site entrance for dust suppression.
			NE/2015/02	Construction of Road P2	The retractable tube was not deployed properly for the preboring works in Portion 4. The Contractor should ensure the integrity of the retractable tube for preboring works at all time. The concerned pre boring works was stopped immediately.
*(2)	/	Emission from Vehicles and Plants <ul style="list-style-type: none"> - All vehicles shall be shut down in intermittent use. 	NE/2015/02	Construction of Road P2	Heavy smoke was observed emitted from derrick barge. The Contractor should enhance the control

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Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
		<ul style="list-style-type: none"> - Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. - All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD) 			measure to reduce dark smoke emission.
Noise Impact (Construction Phase)					
* (3)	Noise Mitigation Plan	<ul style="list-style-type: none"> - 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 - Use of quiet PME / QPME 	NE/2015/01	Construction of Lam Tin Interchange	Noise barrier for drill rig at portion 4c was not see found, contractor was reminded to install it before commencement of work.
			NE/2015/02	Construction of Road P2	Preparation of piling work in Portion 4 was observed during site inspection. The Contractor was reminded to properly implement the mitigation measures as per CNMP before start of any piling works.
			NE/2015/02	Construction of Road P2	Noise barrier was observed damaged in Portion V. The Contractor should ensure the integrity of the noise barrier at all time. The construction works had been suspended during site inspection.
Water Quality Impact (Construction Phase)					
* (4)	Silt curtain deployment Plan	<ul style="list-style-type: none"> - Silt curtains should be deployed properly to surround the works area. - Maintenance of silt curtain should be provided. - Sufficient stock of silt curtain should be provided on site. 	NE/2015/01	Construction of TKO Portal	The Contractor was reminded to deploy the silt curtain properly to avoid muddy water discharge during rainy season on TKO side before the commencement of construction work.
			NE/2015/02	Construction of P2 Road	Silt curtains near DSD Desilting Compound was damaged and improperly deployed. The Contractor should ensure its integrity at all time.
			NE/2015/02	Construction of P2 Road	Silt curtain surrounding the cofferdam were observed damaged and improperly deployed. The Contractor should ensure its integrity at all time.
#(4)			NE/2015/01	Construction of TKO Portal	The silt curtain on TKO side was not deployed properly, where gaps were observed. The Contractor was reminded to repair it immediately to avoid any sediment from entering the open water.

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Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
#(5)	S5.8.16	<p>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.</p> <p>Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.</p>	NE/2017/02	Construction of Road P2/D4	Ponding water was observed in Portion 1. The Contractor should avoid ponding water as far as possible.
*(6)	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/2017/02	Construction of Road P2/D4	The Contractor should enhance the control measure for the gully near the TKO Sport Centre in Portion 1 to prevent potential surface runoff.

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Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
# (7)	S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: <ul style="list-style-type: none"> - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow. 	NE/2015/01	Construction of Lam Tin Interchange	Beside the site office, the water drainage was seen clogged, Contractor should ensure the water drainage is functioning properly to prevent flooding during rainy season.
*(8)	Sediment Management Plan	<ul style="list-style-type: none"> - Treated marine sediments in the stockpiling area shall be covered by tarpaulin sheets or similar material except the operating earthwork front. 	NE/2015/02	Construction of Road P2	The height of stockpile in Work Area A was observed over the concrete block wall. The Contractor should keep the stockpile below the concrete block wall as per the Sediment Management Plan.
*(9)	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/2015/01	Construction of TKO Portal	Floating refuse was found on the water around the silt curtain, the Contractor was reminded to arrange collection and removal of waste.
Waste/ Chemical Management					
*(10)	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: <ul style="list-style-type: none"> - suitable containers should be used to hold the chemical wastes to avoid 	NE/2015/01	Construction of Lam Tin Interchange	A drip tray in portion 2 on LT side contained sediments and general refuse, the Contractor was reminded to clear the waste and maintain a good condition of drip tray.
			NE/2017/01	Construction of TKO Interchange	A small tray with stagnant water or chemical waste was not stored properly, Contractor was reminded to

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Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
		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.			replace the tray with a proper container to avoid overflow.
			NE/2015/01	Construction of TKO Portal	On TKO side, chemical container was not stored properly, contractor was reminded to place chemical container in designated area properly to prevent leakage.
			NE/2017/01	Construction of TKO Interchange	Drip tray should be provided for chemical containers to avoid any leakage on the site.
# (10)			NE/2015/01	Construction of TKO Portal	On the platform of TKO side, stagnant water was observed in the drip tray of chemical containers, Contractor was reminded to clear it and ensure no overflow stagnant water.
*(11)	S8.6.4	<i>Good Site Practices and Waste Reduction Measures (con't)</i> - Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; - Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; - Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	NE/2015/01	Construction of Lam Tin Interchange	Accumulation of general refuse at the collection point of WA1a (Blue House) should be avoided. Contractor was reminded to arrange regular collection of waste.

**APPENDIX O
SUMMARIES OF ENVIRONMENTAL
COMPLAINT, WARNING, SUMMON
AND NOTIFICATION OF SUCCESSFUL
PROSECUTION**

Appendix O - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions**Cumulative Complaint Log for Tseung Kwan O - Lam Tin Tunnel**

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
213	31 st August 2018	31 st August 2018/ Construction of Lam Tin Interchange	Public	Air Quality	The complainant complained about the dust nuisance at LTI.	N	Under Investigation	On-going
212	27 th August 2018	27 th August 2018/ Construction of Road P2	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from breaker and excavator in LTI.	Y	Under Investigation	On-going
211	22 nd August 2018	22 nd August 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about the dark smoke emitted from derrick barge outside Ocean Shores.	N	Under Investigation	On-going
210	21 st August 2018	21 st August 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about the dark smoke emitted from derrick barge outside Ocean Shores.	N	Under Investigation	On-going
209	21 st August 2018	20 th & 21 st August 2018/ Construction of Road P2	DC Member	Air Quality	The complainant complained about the dark smoke emitted from derrick barge outside Ocean Shores on 20 and 21 of August.	N	Under Investigation	On-going
208	20 th August 2018	17 th August/ Construction of Road P2	DC Member	Water Quality	The complainant complained that muddy water was discharged from the construction site.	N	Under Investigation	On-going
207	18 th August 2018	18 th August 2018/ Construction of Lam Tin	Resident of Yau Lai Estate	Air Quality	The complainant complained about dust nuisance from surface blasting.	N	Under Investigation	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		Interchange						
206	13 th August 2018	13 th August 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from the breaker at LTI and complained lack of noise barrier.	Y	Under Investigation	On-going
205	10 th August 2018	10 th August 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance of construction work starting from 7 am and lack of noise barrier.	Y	Under Investigation	On-going
204	9 th August 2018	9 th August 2018/ Construction of Lam Tin Interchange	Resident of Tak Tin Estate	Noise	The complainant complained about noise nuisance and vibration from blasting activity	Y	Under Investigation	On-going
203	9 th August 2018	9 th August 2018/ Construction of Lam Tin Interchange	Property Management of Tak Tin Estate	Noise	The complainant complained about the noise nuisance during 8pm	Y	Under Investigation	On-going
202	1 st August 2018	1 st August 2018/ Construction of Lam Tin Interchange	Resident of Yeung Mei House	Noise	The complainant complained about the construction noise during night-time.	Y	<p>A valid Construction Noise Permit (CNP) (No. GW-RE0421-18) was granted to the Contractor for the construction site at Lam Tin Interchange</p> <p>The number of excavators that were used on 01 August was covered by the CNP.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <ul style="list-style-type: none"> ➤ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat 	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
201	26 th July 2018	26 th July 2018 / Construction of P2/D4	Public	Water quality	The complainant complained about the polluted effluent at the nearby surface drain near the construction of elevator.	N	The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows: ➤ Sandbags barrier was placed along the working area to prevent direct discharge	Closed
200	26 th July 2018	26 th July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on 24 th July 2018, the situation has yet been addressed.	Y	See Investigation / Mitigation Measures for Complaint No. 197	Closed
	24 th July 2018	23 rd July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about a yellow breaker working without noise barrier.	Y	See Investigation / Mitigation Measures for Complaint No. 197	Closed
199	25 th July 2018	25 th July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained about the noise from piling works at Portion IV.	Y	See Investigation / Mitigation Measures for Complaint No. 198	Closed
198	21 st July 2018	21 st July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained about the noise from metal occasionally in the marine works area.	Y	Based on the noise monitoring results in July 2018, no Limit Level Exceedance was recorded at Station CM6(A) and CM7(A). It is considered that no adverse construction noise impact was brought to the nearby sensitive receivers during the construction. The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows: <u>Noise:</u> ➤ Acoustic box was utilized for breaking works to minimize noise nuisance ➤ Acoustic barriers were provided for pre-boring works ➤ Regular site checking would be performed to ensure the type and quantity of PME are in order with the updated Construction Noise Assessment. ➤ Additional acoustic materials were wrapped around the	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
							vibration hammer ➤ Quieter plant, i.e. quality powered mechanical equipment was used as far as practicable to minimize noise impact from PME	
197	21 st July 2018	21 st July 2018 / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance from breaker.	Y	According to the EM&A Manual of this Project, additional weekly noise monitoring in Cha Kwo Ling and Lam Tin during night-time has been carried out at Station CM1 – Nga Lai House, Yau Lai Estate Phase 1, Yau Tong, Station CM2 – Bik Lai House, Yau Lai Estate Phase 1, Yau Tong, CM3 - Block S, Yau Lai Estate Phase 5, Yau Tong. no Limit Level Exceedance was recorded at Station CM1, CM2 and CM3. The summary of daytime and evening time noise monitoring results which conducted by ET in July and early August 2018 at Station CM1, CM2 and CM3 The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows: <ul style="list-style-type: none"> ➤ Noise barriers were erected between the PMEs and NSR to reduce noise nuisance ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat 	Closed
196	20 th July 2018	Not specified / Construction of Lam Tin Interchange	Property Management Office of Hong Pak Court	Air Quality	The complainant complained about the dust problem after blasting work in the afternoon.	N	The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows: <ul style="list-style-type: none"> ➤ Blasting cage were surrounded with impervious material during surface blasting ➤ Water spraying was provided at the blasting cage to enhance dust suppression 	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
195	17 th July 2018	16 th July 2018 / Construction of Road P2	SKDC member	Noise	The complainant complained the noise from works area near Ocean Shores	Y	See Investigation / Mitigation Measures for Complaint No. 198	Closed
194	12 th July 2018	12 th July 2018/ Construction of Road P2/ D4 and Northern Footbridge	Residents of Metrotown	Air Quality	The complainant complained the dusty problem next to Chui Ling Road Substation.	N	The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows: <ul style="list-style-type: none"> ➤ Water spraying was provided at least 8 times a day. ➤ Access road was paved to minimize dust emission from truck traffic. 	Closed
193	12 th July 2018	12 th July 2018 / Construction of Road P2	Residents of Metrotown	Air Quality	The complainant complained the dust problem from the partially covered stockpile in Work Area A.	N	According to the information provided and confirmed by the Engineer, loading and unloading of treated sediment was conducted in Work Area A. According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at Station AM5(A) – Tseung Kwan O DSD Desilting Compound and AM6(A) – Park Central, L1/F Open Space Area. no Action or Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) from 3 to 12 July 2018. It is considered that no adverse air quality impact was brought to the nearby sensitive receivers during the construction period The Contractors had implemented environmental mitigation measures to reduce dust nuisance from construction activities to the nearby sensitive receivers as follows: <ul style="list-style-type: none"> ➤ Covered the stockpile of treated marine sediment with tarpaulin sheets 	Closed
192	23 rd July 2018	Not specified/ Construction of Lam Tin	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27 th June, 2 nd and 3 rd July 2018, the	Y	The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		Interchange			complainant complained that the situation has not yet been addressed.		Proposed Mitigation Measures” of EM&A Manual as follows: ➤ Replaced and fixed the uneven metal plate on Lei Yue Mun Road near ambulance depot	
	3 rd July 2018	3 rd July 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27 th June, 2 nd July 2018, the complainant complained that the situation has not yet been addressed.	Y		Closed
	2 nd July 2018	2 nd July 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	Follow up on the complaint on 27 th June 2018, the complainant complained that the situation has not yet been addressed.	Y		Closed
	27 th June 2018	26 th and 27 th June 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the construction noise at Lam Tin Interchange during night-time.	Y		Closed
191	25 th June 2018	23 rd June 2018/ Construction of Road P2	Public	Air Quality	The complainant complained the dark smoke emission from construction barge and the smell from welding works.	N	<p>According to the information provided and confirmed by the Engineer, dredging and welding works are conducted on 23 June 2018 during the time of complaint.</p> <p>The Contractors had implemented environmental mitigation measures to reduce odour nuisance from construction activities to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Air blowers were provided at the location where welding works to be carried out to dilute the smell ➤ Additional water filter tank was adopted on deck level of derrick barges to reduce emission of dark smoke and exhaust smell 	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
190	22 nd June 2018	Not Specific/ Construction of Lam Tin Interchange	Public	Waste Management	The complainant complaint about the housekeeping of the construction site.	N	<p>From the Daily Record Summary provided by the Contractor and confirmation by the RE, there was no irregularity, and together with the site inspection conducted by the environmental team in June, construction waste on pavement was not observed.</p> <p>Despite, the Contractor was reminded to follow the relevant mitigation measures related to waste management:</p> <ul style="list-style-type: none"> ➤ Ensure trucks have enclosed the containers before leaving the site to reduce the impact during transportation (Photo 3); ➤ Training of site personnel in proper waste management and chemical handling procedures to ensure proper disposal of construction waste; ➤ Proper storage and site practices to minimize the potential for damage or contamination of construction materials 	Closed
189	20 th June 2018	28 th May 2018/ Construction of Road P2	SKDC member	Air Quality	The complainant complained the dark smoke emission from the same construction vessel.	N	See Investigation / Mitigation Measures for Complaint No. 181.	Closed
188	20 th June 2018	20 th June 2018/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained about construction noise starting from 6 am.	Y	<p>The construction activities in Lam Tin Interchange (Work site No.101) on 20th of June possessed of 6 no. of excavators between 7-8 am, 6 no. of breakers, excavator mounted between 8-10 am. The quantity of excavators and breakers were consistent with the Construction Noise Mitigation Plan (Construction Activity Group 1.1)</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <ul style="list-style-type: none"> ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat 	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
187	7 th June 2018	7 th June 2018/ Construction of Road P2	Resident of Ocean Shores	Air Quality	The complainant complained about the smell of machinery exhaust affecting the podium of Ocean Shores (swimming pool). The complainant suspected the exhaust was originated from the nearby barges.	N	<p>According to the information provided and confirmed by the Engineer, dredging works and placing rock fill were conducted during the time of complaint. Dredger, derrick barge, tug boat and hopper barge were being operated for the mentioned works.</p> <p>According to the site inspections conducted by ET and IEC in May and June 2018, no exhausted smell from construction vessel was identified in Portion IV, VII and IX.</p> <p>The Contractors had implemented environmental mitigation measures to minimize the air nuisance to the nearby sensitive receivers as follows: <u>Odour Emission from Exhausted Gas:</u></p> <ul style="list-style-type: none"> ➤ Additional water filter tank was adopted on the deck level of derrick barges to reduce emission of dark smoke and exhaust smell 	Closed
186	6 th June 2018	6 th June 2018/ Construction of Lam Tin Interchange	Resident of Chung Pak House, Hong Pak Court	Noise	The complainant complained about the construction noise at Lam Tin Interchange.	Y	A valid Construction Noise Permit (CNP) (No. GW-RE0278-18) was granted to the Contractor for the construction site at Lam Tin Interchange. The number of excavator and dump trucks that were used on 6 June were covered by the CNP.	Closed
185	6 th June 2018	30 th May and 30 th September 2017/ Construction of Road P2	SKDC member	Noise	The complainant complained about the noise affecting nearby resident in early morning near Ocean Shores.	Y	See Investigation / Mitigation Measures for Complaint No. 50 and 81.	Closed
184	6 th June 2018	Not specified / Construction of Road P2	SKDC member	Landscape	The complainant complained about excessive tree felling near Ocean Shores.	N	According to the information provided and confirmed by the Engineer, tree removal application for the concerned area has granted approval from District Lands Office (DLO) on 1 August 2017 and 18 April 2018 together with the tree compensatory plans. The felling of a total of 85 trees at the concerned area were in accordance with the approved tree removal application by the	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<p>DLO. None of them are registered Old and Valuable Tree and neither of them are rare nor endangered species. The number of retained trees at the concerned location complies with the latest tree removal application.</p> <p>The Contractor had taken initiatives to minimize nuisance from construction works to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Tree protection zones were established and surrounded by fences to protect retained trees adjacent to the construction area. ➤ Tree protection zone were free of machinery and material that are likely to be injurious to the tree. ➤ Regular tree assessments were conducted by qualified Arborist to monitor the condition of retained trees. 	
183	4 th June 2018	4 th June 2018/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	N/A	The complainant complained about the blasting works during night-time.	N	<p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures”</p> <ul style="list-style-type: none"> ➤ Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel ➤ Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel 	Closed
182	1 st June 2018	Not specified/ Construction of Lam Tin Interchange	Sin Fat Road Tennis Court	Air Quality	The complainant complained about the dust	N	<p>The Contractor had taken initiatives to minimize nuisance from construction works to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Frequent water spraying along the slope area at LTI. ➤ Tarpaulin sheets were provided along the slope adjacent to the tennis court during preparation of surface blasting. 	Closed
181	29 th May 2018	Not specified/ Construction of Road P2	Public	Air Quality	The complainant complained about the black smoke emission from the construction	N	<p>According to the information provided and confirmed by the Engineer, dredging and placing rock fill material were conducted during the time of complaint.</p>	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
					vessel.		<p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <p><u>Air Quality:</u></p> <ul style="list-style-type: none"> ➤ As confirmed by the Engineer, the concerned barge was removed off site for further maintenance; ➤ Additional water filter tank was adopted to reduce emission of dark smoke and exhaust. <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	
180	25 th May 2018	24 th May 2018/ Construction of Road P2	SKDC member Mr. Cheung Chin Pang	Odour	The complainant complained about smell of exhaust gas affecting high level residents (60/F and above) of Metrotown Tower 10.	N	<p>According to the information provided and confirmed by the Engineer, modification of temporary marine platform and welding works were conducted during the time of complaint.</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <p><u>Air Quality:</u></p> <ul style="list-style-type: none"> ➤ Additional water filter tank was adopted to reduce emission of dark smoke and exhaust. <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	Closed
179	24 th May 2018	24 th May 2018/ Construction of Northern footbridge	Public	Air Quality	The complainant complained construction dust generated from the CEDD construction works site between Tong	N	<p>According to the information provided and confirmed by the Engineer, construction works including steel bar fixing, scaffolding, trimming formation level, compaction, removal of road marking and handling of treated sediment were conducted</p>	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		Road P2/D4 and Road P2			Yin Street and Tiu Keng Leng Sport Centre (Po Yap Road) as a result of insufficient dust suppression measures		<p>during the time of complaint.</p> <p>As shown in the Air Quality Monitoring Results, no Action/Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) in May 2018. It is considered that no adverse construction dust impact was brought to the nearby sensitive receivers during the construction period of this Project</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Water spraying was provided at least 8 times a day; ➤ Surface near public access was hard paved; ➤ Stockpile in Work Area A was covered except the operating area <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	
178	23 rd May 2018	22 nd May 2018/ Construction of TKO Portal	Public	N/A	The complainant complained construction works was carried out on 22 May (which was a public holiday) around 1500 hour at the sea area near Ocean shore Block 2.	N	<p>According to the information provided and confirmed by the Engineer, modification of temporary marine platform and welding works were conducted during the time of complaint.</p> <p>One valid Construction Noise Permit (CNP) (No. GE-RE0309-18) was granted to the Contractor (Leighton – China State Joint Venture) (Contract No. NE/2015/01) for the marine construction site near Ocean Shores. According to the CNP, Group O to T of the PME listed in condition 3.a. are allowed to operate during general holiday (including Sunday) from 0900 – 2300 hours.</p> <p>As confirmed by the Engineer, only a group of PME (listed in Group Q) was operated during the time of complaint. No welding machine was operated in Zone A. No derrick barge and flat top barge were operated beyond Zone C.</p>	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ Preinstalled speaker was used on derrick barge to minimize the noise disturbance from on-site communication. <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	
177	22 nd May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Air Quality & Noise	The complainant complained about the dust nuisance and construction noise at Lam Tin Interchange	Y	<p>According to the Engineer's Site Diaries, the major construction activities performed in May 2018 included rock breaking, drilling and excavation at Lam Tin Interchange. Construction works for night-time included blasting and excavation.</p> <p>According to the EM&A Manual of this Project, regular air quality monitoring has been carried out at Station AM2 – Sai Tso Wan Recreation Ground and AM3 – Yau Lai Estate, Bik Lai House. Based on the Air Quality Monitoring Results which conducted by ET, no Action or Limit Level Exceedance was recorded at Station AM2 and AM3. It is considered that no adverse air quality impact was brought to the nearby sensitive receivers during the time of complaint.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as follows:</p> <p><u>Air Quality:</u></p> <ul style="list-style-type: none"> ➤ Frequent water spraying on unpaved area and haul roads at Lam Tin Interchange 	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<p>Noise:</p> <ul style="list-style-type: none"> ➤ Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel ➤ Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel ➤ Erected movable cantilever noise barriers and the breaker head was wrapped with Silent Mat and TMD; ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat ➤ Drill rig was covered with Silent Mat and TMR <p>The environmental conditions of the site and the control of works will be continuously reviewed and monitored by the Engineer and the Environmental Team.</p>	
176	21 st May 2018	21 st May 2018/ Construction of Road P2	Public	Air Quality	The complainant complained about dust/dirt being brought onto Tong Yin Street by the vehicles travelling to and from TKO-LTT construction site, causing dust problem and air nuisance.	N	<p>According to the information confirmed by the Engineer, all dump trucks were covered and wheel washed before leaving the works site on 21 May 2018.</p> <p>As shown in the Air Quality Monitoring Results, no Action/Limit Level Exceedance was recorded at Station AM5(A) and AM6(A) in May 2018. It is considered that no adverse construction dust impact was brought to the nearby sensitive receivers during the construction period of this Project</p> <p>The Contractors had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Water spraying was provided at least 8 times a day. ➤ Street washing truck would be provided once a week to clean the dust on the public street. 	Closed

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							<ul style="list-style-type: none"> ➤ Additional notice would be set up to remind the truck driver to perform wheel-washing properly before leaving site. ➤ Deployed staff at the access to check the dump trucks to ensure the dump truck are properly covered and wheel-washed before leaving site. <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	
175	19 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during nighttime.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
174	19 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during nighttime.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
173	16 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court,	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
172	15 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
171	15 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Bik Lai Estate	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
170	15 th May 2018	Not specified/ Construction site near Cha Kwo Ling Tsuen	Anonymous	Noise	The complainant complained the noise nuisance due to the construction work near Cha Kwo Ling Tsuen during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
169	14 th May 2018	Not specified/ Construction of Lam Tin Interchange	Kowloon East District Council Member Mr. Tam Man Ho	Noise	The complainant complained the noise nuisance due to the construction work and night time blasting works at the Lam Tin Interchange.	Y	<p>According to the latest CNMP of this Contract, the subgroups of work activities undertaken near noise sensitive receivers in the reporting period:</p> <p>The construction activities of Lam Tin Interchange (Work site No.101) on 14th of May 2018 possessed of 6 no. of breakers, excavator mounted which were consistent with the quantities of breaker in the Construction Noise Mitigation Plan (Construction Activity Group1.1)</p> <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel; ➤ Erected movable cantilever noise barriers and the breaker head was wrapped with Silent Mat and TMD; ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat; <p>As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which</p>	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4. The environmental conditions of the site and the control of works will be continuously reviewed and monitored by the Engineer and the Environmental Team.	
168	14 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate, Yung Lai House	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange during night-time.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
167	13 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Nga Court, Chung Pak House	Noise	The complainant complained the noise nuisance due to the construction work on Sunday morning and night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
166	13 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Hong Pak Court	Noise	The complainant complained the noise nuisance due to the construction work at around 5:00 am and night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 165.	Closed
165	13 th May 2018	13 th May 2018/ Construction of Lam Tin Interchange	Property Management Office of Hong Nga Court	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange on 13 th May 2018 (Sunday morning).	Y	A valid Construction Noise Permit (CNP) (No. GW-RE0278-18) was granted to the Contractor for the construction site at Lam Tin Interchange (location of construction site is shown in Figure 1). According to the conditions in the CNP, only one group among Group A to R of the powered mechanical equipment is allowed to be operated during 0800-2300 hours on general holidays (including Sundays); and 1900-2300 hours on any day not being a general holiday. The number of excavators, dump trucks, craned lorry and breakers that were used on 13th, 14th, 15th & 22nd of May were covered by the CNP.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<p>Other good site practices recommended in the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual and the Noise Mitigation Plan of this Contract had been implemented by the Contractor, including the following:</p> <ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; • Mobile plant, if any, should be sited as far away from NSRs as possible; • Plants known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs <p>As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4.</p>	
164	12 th May 2018	12 th May 2018/ Construction of Lam Tin Interchange	Resident of Hong Nga Court	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
163	12 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed
162	11 th May 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Lung Pak House	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 160.	Closed

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

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<p>complaint.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <p><u>Air Quality:</u></p> <ul style="list-style-type: none"> ➤ Frequent water spraying on unpaved area and haul roads at Lam Tin; <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ Ensured blasting doors were closed while blasting associated works was undertaken in the tunnel; ➤ Installed steel-type blasting door mounted with sound absorptive lining to absorb construction noise in the tunnel; ➤ Erected movable cantilever noise barriers and the breaker head was wrapped with Silent Mat and TMD; ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat; ➤ Drill rig was covered with Silent Mat and TMR. <p>As shown by the Noise Monitoring Results conducted by ET, no Limit Level Exceedance was recorded at Station CM1, CM2, CM3 and CM4. The summary of noise monitoring results which conducted by ETL in May 2018 at Station CM1, CM2, CM3 and CM4.</p> <p>With the implementation of environmental mitigation measures by Contractors on site, it is considered that air quality and noise nuisance by the works has been brought to a minimum level and no adverse impact was brought to the nearby sensitive receivers during the construction of Lam Tin Interchange under this Project.</p> <p>The environmental conditions of the site and the control of works</p>	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							will be continuously reviewed and monitored by the Engineer and the Environmental Team.	
159	3 rd May 2018	2 nd and 3 rd May 2018 / Construction of Road P2	Public	Odour	The complainant complained the odour nuisance from the construction vessel.	N	According to the information provided and confirmed by the Engineer, major construction activity including dredging, loading and unloading of marine sediment was conducted during the time of complaint	Closed
	30 th April 2018	Not specified / Construction of Road P2	Public	Noise & Odour	The complainant complained the construction noise and odour nuisance from the construction vessel.	Y	<p>The use of dredger and derrick barge conformed to the proposed quantity and type of PME stated in the updated Construction Noise Assessment of CNMP.</p> <p>Based on the noise monitoring results in April and May 2018, no Limit Level Exceedance was recorded at Station CM6(A) and CM7(A). It is considered that no adverse construction noise impact was brought to the nearby sensitive receivers during the construction.</p> <p>The Contractors had implemented environmental mitigation measures to reduce construction nuisance from construction activities to the nearby sensitive receivers as follows:</p> <p><u>Noise:</u></p> <ul style="list-style-type: none"> ➤ Noise source on the barge was covered with acoustic materials. ➤ Additional sound absorptive blankets were used to reduce the nuisance from the engine of the barge. ➤ Nylon rope was used instead of wire rope to reduce friction secure the barge in place. ➤ Maintenance of barge including lubrication of moving parts was performed to minimized noise from worn or loose parts. <p><u>Air Quality:</u></p>	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							<ul style="list-style-type: none"> ➤ Additional water filter tank was adopted to reduce emission of dark smoke and exhaust smell. <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	
158	30 th April 2018	Not specified/ Construction of Lam Tin Interchange	Property Management Office of Kwong Tin Estate	Noise	The complainant complained the noise nuisance due to the breaking work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
157	26 th April 2018	26 th April 2018 / Construction of TKO portal	Resident of Laguna City	Light	The complainant complained that two spotlights were used during daytime and nighttime causing light nuisance to the residents. She requested to direct the strong lighting toward the sea.	N	<p>According to the information provided and confirmed by the Engineer, no major construction activity was conducted at the location of complaint on 26 April 2018.</p> <p>Upon the receipt of the complaint, as confirmed by the Engineer, the Contractor had taken initiatives to maintain the environmental conditions in the works area as shown below:</p> <ul style="list-style-type: none"> ➤ The spotlights at the Cha Kwo Ling Public Cargo Working Administrative Office were switched off during daytime; and ➤ The illumination angle of spotlights was turned facing downwards to avoid light overspill <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p>	Closed
156	25 th April 2018	Not specified/ Construction	Resident of Yau Lai	Noise	The complainant complained the noise	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		of Lam Tin Interchange	Estate, Yau Lai Estate		nuisance due to the breaking work at Lam Tin Interchange.			
155	23 th April 2018	23 th April 2018 / Construction of Road P2	Public	Noise	The complainant complained about noise from construction activities at the sea area near Ocean Shore Block 6 starting 8:30-8:45am on 23 April 2018. She suspected the noise is from drilling/breaking works.	Y	<p>According to the information provided and confirmed by the Engineer, construction works including excavation and pre-boring works in Portion IV were conducted on 23 April 2018. One unit of excavator and two units of mini backhoe were in operation for excavation works while two units of drill rigs were in operation for the pre-boring works in Portion IV.</p> <p>As confirmed by the Engineer, no breaking works were carried out during the time of complaint in Portion IV. Therefore, pre-boring works at Portion IV is regarded the source of noise nuisance.</p> <p>The Contractor had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ Acoustics barriers were provided to the drill rigs for pre-boring works (see photo 1). ➤ Maintenance was provided to the rotary head of the drill rig to minimize noise nuisance from worn or loose parts. ➤ Regular site checking would be performed to ensure the type and quantity of powered mechanical equipment are in order with the updated Construction Noise Assessment. ➤ Acoustic box was utilized for breaking works to minimize noise nuisance <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p> <p>The use of excavator did not conform the proposed quantity of</p>	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							powered mechanical equipment stated in the CNMP. Therefore, it is regarded as a non-compliance.	
154	23 th April 2018	Not specified/ Construction of Lam Tin Interchange	Kwun Tong District Council Member Mr. Lai Shu Ho	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
153	23 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noisy breaking work from two breakers at Lam Tin Interchange. He requested the Contractor to review the noise mitigation measures on site.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
152	20 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Nga Lai Estate, Yau Lai Estate	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
151	17 th April 2018	Not specified/ Construction of Lam Tin Interchange	Property Management Office of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work at Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
150	17 th April 2018	Not specified/ Construction of Lam Tin Interchange	Sham Shui Po District Council Member Mr. Ho Kai Ming	Noise	The complainant complained the noise nuisance during night time blasting works at the Lam Tin Interchange.	Y	See Investigation / Mitigation Measures for Complaint No. 145.	Closed
149	16 th April 2018	Not specified / Construction of Road P2	Resident of Ocean Shore	Noise	The complaint is about the noise generated from a poorly maintained excavator.	Y	According to the information provided and confirmed by the Engineer, two units of excavators were in operation for excavation works in Portion VI on 16 and 18 April 2018. Excessive sound from movement of the poorly maintained excavator is considered source of noise nuisance.	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
	18 th April 2018	Not specified / Construction of Road P2	Resident of Ocean Shore	Noise	The complaint is about the noise generated from a poorly maintained excavator.	Y	<p>The Contractor had implemented environmental mitigation measures to minimize the noise nuisance to the nearby noise sensitive receivers as follows:</p> <ul style="list-style-type: none"> ➤ As confirmed by the Engineer, the use of concerned excavator was stopped and it was replaced with a new excavator. ➤ Regular site checking would be performed to ensure the type and quantity of PME are in order with the updated Construction Noise Assessment <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the construction works to the nearby residents.</p> <p>The use of excavator did not conform the proposed quantity of powered mechanical equipment stated in the CNMP. Therefore, it is regarded as a non-compliance.</p>	Closed
148	15 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noisy construction work at Lam Tin Interchange.	Y	According to the Engineer's Site Diary, the major construction activities performed in the reporting period included rock breaking and excavation at Lam Tin Interchange.	Closed
147	15 th April 2018	Not specified/ Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noisy construction work at Lam Tin Interchange on public holiday.	Y	According to the latest CNMP of this Contract, the subgroups of work activities undertaken near noise sensitive receivers in the reporting period are as follows:	
145	2 nd April 2018	Public holiday/ Construction Works near Eastern Harbour	Resident of Yau Lai Estate	Noise	The complainant complained the noise nuisance due to the construction work near Eastern Harbour Crossing tunnel portal on	Y	<ul style="list-style-type: none"> - Construction of Lam Tin Interchange (LTI); <p>The construction activities of Lam Tin Interchange (Work site No.101) on 17th, 23rd & 25th of April possessed of 7 no. of breakers, which were consistent with the quantities of breakers in</p>	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		Crossing tunnel portal			public holiday. (started from 9:00 am)		<p>the Construction Noise Mitigation Plan (Group 1.1.8)</p> <p>A valid Construction Noise Permit (CNP) (No. GW-RE0084-18) was granted to the Contractor for the construction site at Lam Tin Interchange. According to the conditions in the CNP, only one group among Group A to N of the powered mechanical equipment is allowed to be operated during 08:00 - 23:00 hours on general holiday (including Sunday). The operations on 2nd & 15th of April involved 1 no. of excavator, 2 no. of dump trucks, which were covered by the CNP. Therefore, no violation of CNP (No. GW-RE0084-18) condition was identified during the time of complaints.</p> <p>The Contractor had implemented environmental mitigation measures in accordance with the “Implementation Schedule of Proposed Mitigation Measures” of EM&A Manual as follows:</p> <ul style="list-style-type: none"> ➤ Powered mechanical equipment (PME) for rock breaking were equipped with TMD and SilentMat at Slope H in Lam Tin Interchange; ➤ PMEs at Portion IVC were mounted and shielded with SilentMat; ➤ Noise barriers were placed next to the breaker at Slope H in Lam Tin Interchange to reduce the noise nuisance to nearby NSRs; ➤ Cantilevered noise barriers were erected next to breakers wrapped with TMD and SilentMat at Portion IVC; ➤ Ensured blasting doors were closed while mucking out in the tunnel was undertaken; and ➤ Installed steel-type blasting door mounted with sound absorptive lining to absorb noise due to construction works in the tunnel <p>The Engineer and the Environmental Team have reminded the Contractor to properly implement mitigation measures to effectively minimize construction nuisance caused by the</p>	

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							construction works to the nearby residents.	

Cumulative Complaint Log since commencement of Project

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
November 2016	0	0	0
December 2016	11	0	0
January 2017	15	0	0
February 2017	4	0	0
March 2017	6	0	0
April 2017	1	0	0
May 2017	10	0	0
June 2017	8	0	0
July 2017	3	0	0
August 2017	8	0	0
September 2017	14	0	0
October 2017	8	0	0
November 2017	12	0	0
December 2017	10	1	0
January 2018	11	0	0
February 2018	6	0	0
March 2018	17	0	0
April 2018	15	0	0
May 2018	22	0	0
June 2018	11	0	1
July 2018	9	0	0
August 2018	12	0	0
Total	213	1	1

Cumulative Log for Notifications of Summons

Contract No.	Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
NE/2015/01	--	--	--	--	--	--
NE/2015/02	KTS2 4138/ 2017	25 June 2017/ Marine construction site at Junk Bay	Contrary to: Sections 6 (1) (b) and 6 (5), Noise Control Ordinance, Cap.400	The Summon was issued on 22 Dec 2017 First hearing on 29 Mar 2018	0	1
NE/2015/03	--	--	--	--	--	--
NE/2017/01	--	--	--	--	--	--
NE/2017/02	--	--	--	--	--	--

Cumulative Log for Successful Prosecutions

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

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

Monthly Summary Waste Flow Table for 2018



Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a. Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
January	118.887	44.216	25.727	60.437	32.723	0.000	0.000	0.308	0.000	1.200	0.094
February	76.419	34.880	8.626	54.212	13.581	0.000	0.000	0.000	0.000	0.800	0.046
March	140.974	31.352	57.578	49.166	34.230	0.000	0.000	0.020	0.000	0.000	0.052
April	123.925	30.310	57.340	42.266	24.319	0.000	0.000	0.368	0.000	1.200	0.058
May	113.094	32.375	0.000	70.782	42.312	0.000	0.000	0.294	0.000	1.000	0.034
June	134.902	48.193	0.000	117.435	17.467	0.000	0.000	0.437	0.000	1.322	0.096
Sub-total	708.201	221.326	149.271	394.298	164.632	0.000	0.000	1.427	0.000	5.522	0.380
July	117.365	54.326	0.000	112.069	5.296	0.000	0.000	0.000	0.000	0.000	0.083
August	114.745	56.904	2.877	105.498	6.370	0.000	0.000	0.000	0.000	0.960	0.073
September											
October											
November											
December											
Total	940.311	332.556	152.148	611.865	176.298	0.000	0.000	1.427	0.000	6.482	0.536

Total inert C&D waste generated = c+d+e

Total inert C&D waste recycled = c+d

$$\% \text{ of recycled inert C\&D waste} = \frac{\text{Total C\&D waste recycled}}{\text{Total C\&D waste generated}}$$

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01



- Notes:
- (1) The performance target are given in PS Clause 6(14)
 - (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
 - (4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m³. (PS Clause 1.105(4) refers)
 - (5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
 - (6) Conversion factors for reporting purpose:
in-situ: rock = 2.5 tonnes/m³; soil = 2.0 tonnes/m³
 - (7) excavated: rock = 2.0 tonnes/m³; soil = 1.8 tonnes/m³; broken concrete and bitumen = 2.4 tonnes/m³, soil and rock = 1.9 tonnes/m³
 - (8) C&D Waste = 0.9 tonnes/m³; bentonite slurry = 2.8 tonnes/m³
Diesel density: 0.8kg/l
Numbers are rounded off to the nearest three decimal places
The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"

Monthly Summary Waste Flow Table for 2018 Year

Contract No.: 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 ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m ³]
Jan	0.30510	0.00000	0.11060	0.00000	0.00850	0.18600	0.00000	0.00000	0.00000	0.00000	0.07544
Feb	1.12247	0.00000	0.01080	0.00000	1.08367	0.02800	32.04000	0.00000	0.00000	0.00000	0.05240
Mar	6.50826	0.00000	0.04500	0.00000	6.46326	0.00000	23.74000	0.00000	0.00000	0.00000	0.04520
Apr	3.82690	0.00000	0.00000	0.00000	3.82690	0.00000	26.37000	0.00000	0.00000	0.00000	0.03010
May	11.03519	0.00000	8.30510	0.00000	2.64644	0.08365	24.18000	0.00000	0.00000	0.00000	0.06998
June	2.50750	0.00000	0.00000	0.00000	1.58194	0.92556	11.32000	0.00000	0.00000	0.00000	0.06814
SUB-TOTAL	25.30542	0.00000	8.47150	0.00000	15.61071	1.22321	117.65000	0.00000	0.00000	0.00000	0.34126
Jul	6.86021	0.00000	5.62591	0.00000	1.00141	0.23290	6.81000	0.00000	0.00000	0.00000	0.06658
Aug	84.94282	0.00000	3.14738	0.00000	2.48573	79.30971	0.00000	0.00000	0.00000	0.00000	0.06072
Sep											
Oct											
Nov											
Dec											
TOTAL	117.10845	0.00000	17.24479	0.00000	19.09784	80.76582	124.46000	0.00000	0.00000	0.00000	0.46856

Note: Conversion to 1000m³ for general refuse is weight in 1000kg multiply by 0.002
 Conversion to 1000m³ for Inert C&D is weight in 1000kg multiply by 0.0005
 Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material
 Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material



Monthly Summary of Waste Flow Table for 2018

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	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
		<i>(see Note 1)</i>						<i>(see Note 2)</i>		
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000m ³)	
Jan	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0.1430
Mar	0	0	0	0	0	0	0	0	0	0
Apr	0	0.0390	0	0	0	0	0	0	0	0.0585
May	0	0	0	0	0	0	0	0	0	0.0325
Jun	0	0.1519	0	0	1.3675	0	0	0	0	0.0455
Jul	0	0.2265	0	0	2.0387	0	0	0	0	0.0065
Sub-total	0	0.4175	0	0	3.4062	0	0	0	0	0.286
Aug	0	0.209625	0	0	1.886625	0	0	0	0	0.0325
Sept										
Oct										
Nov										
Dec										
Total	0	0.6271	0	0	5.2928	0	0	0	0	0.3185

Notes:

- (1) Broken concrete for recycling into aggregates.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (3) Use the conversion factor: 1 full load of 24t / 30t dumping truck being equivalent to 6.5m³ / 8.125 m³ by volume.

Name of Department : CEDD

Contract No. : NE/2015/03

Monthly Summary Waste Flow Table for 2018 (year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock & Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemicals Waste	Others, e.g. general refuse
	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m ³)
Accumulated From 2017	0.84697	0	0.175365	0.290915	0.350135	0.03056	0	0	0	0	0.03079
Jan	0.2397525	0	0	0.0642025	0.17555	0	0	0	0	0	0.00614
Feb	0.0722875	0	0	0.0722875	0	0	0	0	0	0	0
Mar	0.05853	0	0	0	0.05853	0	0	0	0	0	0
Apr	0.007575	0	0	0	0.007575	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0	0.001258
June	0	0	0	0	0	0	0	0	0	0	0
Sub-total											
July	0	0	0	0	0	0	0	0	0	0	0
Aug	0.00145	0	0	0	0	0	0	0	0	0	0
Sept											
Oct											
Nov											
Dec											
Total	1.226559	0	0.175365	0.427405	0.59179	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 ms.

Monthly Summary Waste Flow Table for 2018

Name of Department: Civil Engineering and Development Department

Contract No.: NE/2017/01

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Feb	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mar	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Apr	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
May	0.0222	0.0060	0.0000	0.0000	0.0162	0.0000	0.0000	0.0000	0.0000	0.0000	0.0024
Jun	0.0078	0.0000	0.0000	0.0000	0.0078	0.0000	0.0000	0.0000	0.0000	0.0000	0.0055
Sub-total	0.0300	0.0060	0.0000	0.0000	0.0240	0.0000	0.0000	0.0000	0.0000	0.0000	0.0079
Jul	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0091
Aug	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027
Sep											
Oct											
Nov											
Dec											
Total	0.0300	0.0060	0.0000	0.0000	0.0240	0.0000	0.0000	0.0000	0.0000	0.0000	0.0197

- Notes:
1. Assume the density of soil fill is 2 ton/m³.
 2. Assume the density of rock and broken concrete is 2.5 ton/m³.
 3. Assume the density of mixed rock and soil is 1.9 ton/m³.
 4. Assume the density of slurry and bentonite is 2.8 ton/m³.
 5. The slurry and bentonite are disposed at Tseung Kwan O Area 137 Fill Bank.
 6. Assume the density of C&D waste is 0.9 ton/m³.
 7. The non-inert C&D wastes are disposed at NENT.

**APPENDIX Q
TENTATIVE CONSTRUCTION
PROGRAMME**

High Level 3 Months Look Ahead Programme

Activities	Sep-18	Oct-18	Nov-18
Lam Tin Interchange			
EHC2 U-Trough			
Site Formation - Area 1G1 & 1G2 &5			
Site Formation - Area 2			
Site Formation - Area 3			
Site Formation - Area 4			
Main Tunnel			
MT Excavation			
MT Lining Works			
TKO Interchange			
Haul Road Construction, Site Formation & Slope Works			
Steel Platform for Bridge Construction			
Cavern Excavation			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018					
											Aug	Sep	Oct	Nov	Dec	
NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Aug-18)																
Notification of Compensation Event (NCE)																
B21810	NCE no.128: Granular Filter for Dredged Trench	P2-Cal.A	0	0	20-Aug-18 A	20-Aug-18 A		100%		0						
Preliminaries, Submission, Contractor's Design Submission and Approval																
Preliminaries																
Design Submission of Physical Model																
LC10242	Design the Physical Model	P2-Cal.A	14	9	02-Jun-18 A	28-Aug-18	525	35.71%		-74						
LC10244	Review and Discuss the Physical Model	P2-Cal.A	21	21	29-Aug-18	18-Sep-18	525	0%		0						
LC10246	Re-submission of Physical Model	P2-Cal.A	14	14	19-Sep-18	02-Oct-18	525	0%		0						
LC10248	Approve the Physical Model	P2-Cal.A	21	21	03-Oct-18	23-Oct-18	525	0%		0						
LC10250	Fabrication of Physical Model	P2-Cal.A	90	90	24-Oct-18	21-Jan-19	525	0%		0						
General Submission and Acceptance																
S10240	Prepare/Submit the Weather Protection Scheme	P2-Cal.A	30	20	21-Aug-17 A	08-Sep-18	660	33.33%		-354						
Contractor's Design Submission and Acceptance																
Foundation Design																
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44																
S11260-03	3rd Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	5	01-Jun-18 A	24-Aug-18	-283	64.29%		-71						
S11260-04	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	25-Aug-18	14-Sep-18	-283	0%		0						
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH105)																
S11270-03	4th Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	5	09-Aug-18 A	24-Aug-18	-283	64.29%		-2						
S11270-04	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	25-Aug-18	14-Sep-18	-283	0%		0						
AIP Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH105 - CH305)																
S11279-03	4th Resubmit AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	14	5	09-Aug-18 A	24-Aug-18	-283	64.29%		-2						
S11279-04	Review and Accept AIP Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	25-Aug-18	14-Sep-18	-283	0%		0						
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 1 CT01 CH366.059-201.44																
S11360	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	25-Aug-18	14-Sep-18	-283	0%		0						
S11380	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	15-Sep-18	05-Oct-18	-283	0%		0						
S11400	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	14	14	06-Oct-18	19-Oct-18	-283	0%		0						
S11410	Review and comment by GEO	P2-Cal.A	14	14	20-Oct-18	02-Nov-18	-283	0%		0						
S11420	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 1)	P2-Cal.A	21	21	03-Nov-18	23-Nov-18	-283	0%		0						
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 2 (S200 CH821 - P2 CH105)																
S11422	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	25-Aug-18	14-Sep-18	-283	0%		0						
S11424	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	15-Sep-18	05-Oct-18	-283	0%		0						
S11426	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	14	14	06-Oct-18	19-Oct-18	-283	0%		0						
S11428	Review and comment by GEO	P2-Cal.A	14	14	20-Oct-18	02-Nov-18	-283	0%		0						
S11430	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 2)	P2-Cal.A	21	21	03-Nov-18	23-Nov-18	-283	0%		0						
DDA Submission for Foundation of Road P2 Structure (Reclaimed Section) Zone 3 (P2 CH105 - CH305)																
S11432	Prepare and Submit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	25-Aug-18	14-Sep-18	-283	0%		0						
S11434	Review and Discuss DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	15-Sep-18	05-Oct-18	-283	0%		0						
S11436	Resubmit DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	14	14	06-Oct-18	19-Oct-18	-283	0%		0						
S11438	Review and comment by GEO	P2-Cal.A	14	14	20-Oct-18	02-Nov-18	-283	0%		0						
S11439	Review and Accept DDA Submission for Foundation of Road P2 Structure (Reclaimed Section Zone 3)	P2-Cal.A	21	21	03-Nov-18	23-Nov-18	-283	0%		0						
E&M Design																

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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Aug-18)

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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018						
											Aug	Sep	Oct	Nov	Dec		
Statutory Approval for E&M Works																▼ Statutory Approval for E&M Works	
S11570-11	FSD Approval for Underpass GBP	P2-Cal.A	0	0	12-Oct-18	12-Oct-18	33	0%		0						◆ FSD Approval for Underpass GBP	
S11570-12	FSD Approval for Plant room GBP	P2-Cal.A	0	0	12-Oct-18	12-Oct-18	33	0%		0						◆ FSD Approval for Plant room GBP	
Detail Design for E&M Works (Tunnel and associated)																	▼ Detail Design for E&M Works (Tunnel and associated)
MVAC Detail Design																	▼ MVAC Detail Design
Plantroom																	▼ Plantroom
S11577	Formal Submission to Supervisor	P2-Cal.A	8	8	04-May-18 A	27-Aug-18	72	0%		-108						Formal Submission to Supervisor	
S11578	Accept detail design by the Supervisor	P2-Cal.A	7	7	28-Aug-18	03-Sep-18	72	0%		0						Accept detail design by the Supervisor	
Underpass																	▼ Underpass
S11630	Formal Submission to Supervisor	P2-Cal.A	8	8	28-Apr-18 A	27-Aug-18	72	0%		-114						Formal Submission to Supervisor	
S11640	Accept detail design by the Supervisor	P2-Cal.A	7	7	28-Aug-18	03-Sep-18	72	0%		0						Accept detail design by the Supervisor	
FS Detail Design																	▼ FS Detail Design
Underpass																	▼ Underpass
S11649	FSD review GBP	P2-Cal.A	28	7	19-Oct-17 A	26-Aug-18	33	75%		-284						FSD review GBP	
S11650-01	2nd review by EMSD	P2-Cal.A	15	10	19-Mar-18 A	05-Sep-18	33	33.33%		-156						2nd review by EMSD	
S11651	Accept detail design by the Supervisor	P2-Cal.A	7	7	06-Sep-18	12-Sep-18	33	0%		0						Accept detail design by the Supervisor	
Plantroom																	▼ Plantroom
S11652-10	FSD review GBP	P2-Cal.A	28	7	19-Oct-17 A	26-Aug-18	33	75%		-284						FSD review GBP	
S11652-21	2nd review by FSD/EMSD	P2-Cal.A	15	10	19-Mar-18 A	05-Sep-18	33	33.33%		-156						2nd review by FSD/EMSD	
S11652-23	Accept detail design by the Supervisor	P2-Cal.A	7	7	06-Sep-18	12-Sep-18	33	0%		0						Accept detail design by the Supervisor	
Plumbing and Drainage Detail Design																	▼ Plumbing and Drainage Detail Design
Underpass																	▼ Underpass
S11656	Design Coordination for PD Services	P2-Cal.A	60	7	03-May-17 A	26-Aug-18	48	88.33%		-421						Design Coordination for PD Services	
S11657	1st review by HyD/EMSD	P2-Cal.A	15	3	09-Apr-18 A	29-Aug-18	48	80%		-128						1st review by HyD/EMSD	
S11657-01	2nd review by HyD/EMSD	P2-Cal.A	15	15	30-Aug-18	13-Sep-18	48	0%		0						2nd review by HyD/EMSD	
S11658	Formal Submission to Supervisor	P2-Cal.A	7	7	14-Sep-18	20-Sep-18	48	0%		0						Formal Submission to Supervisor	
S11659	Accept detail design by the Supervisor	P2-Cal.A	7	7	21-Sep-18	27-Sep-18	48	0%		0						Accept detail design by the Supervisor	
Plantroom																	▼ Plantroom
S11660-07	Design Coordination for PD Services	P2-Cal.A	60	7	01-Apr-17 A	26-Aug-18	53	88.33%		-453						Design Coordination for PD Services	
S11660-09	2nd review by HyD/EMSD	P2-Cal.A	15	13	17-May-18 A	08-Sep-18	53	13.33%		-100						2nd review by HyD/EMSD	
S11660-10	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Sep-18	15-Sep-18	53	0%		0						Formal Submission to Supervisor	
S11660-11	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Sep-18	22-Sep-18	53	0%		0						Accept detail design by the Supervisor	
Electrical Detail Design																	▼ Electrical Detail Design
Underpass Lighting																	▼ Underpass Lighting
S11660-15	Design Coordination for EL Services	P2-Cal.A	60	15	30-May-17 A	03-Sep-18	53	75%		-402						Design Coordination for EL Services	
S11660-17	2nd review by EMSD/HyD	P2-Cal.A	15	5	06-Jul-18 A	08-Sep-18	53	66.67%		-50						2nd review by EMSD/HyD	
S11660-19	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Sep-18	15-Sep-18	53	0%		0						Formal Submission to Supervisor	
S11660-20	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Sep-18	22-Sep-18	53	0%		0						Accept detail design by the Supervisor	
External Road Lighting																	▼ External Road Lighting
S11660-23	Design Coordination for EL Services	P2-Cal.A	60	15	07-Mar-17 A	03-Sep-18	53	75%		-486						Design Coordination for EL Services	
S11660-25	2nd review by EMSD/CLP/ HyD	P2-Cal.A	15	5	06-Jul-18 A	08-Sep-18	53	66.67%		-50						2nd review by EMSD/CLP/ HyD	
S11660-27	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Sep-18	15-Sep-18	53	0%		0						Formal Submission to Supervisor	
S11660-28	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Sep-18	22-Sep-18	53	0%		0						Accept detail design by the Supervisor	

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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018					
											Aug	Sep	Oct	Nov	Dec	
Plantroom												Plantroom				
S11664	Design Coordination for EL Services	P2-Cal.A	60	15	07-Mar-17 A	03-Sep-18	53	75%		-486	Design Coordination for EL Services					
S11666	2nd review by EMSD/HyD	P2-Cal.A	15	5	06-Jul-18 A	08-Sep-18	53	66.67%		-50	2nd review by EMSD/HyD					
S11667	Formal Submission to Supervisor	P2-Cal.A	7	7	09-Sep-18	15-Sep-18	53	0%		0	Formal Submission to Supervisor					
S11668	Accept detail design by the Supervisor	P2-Cal.A	7	7	16-Sep-18	22-Sep-18	53	0%		0	Accept detail design by the Supervisor					
ELV And SCADA Detail Design												ELV And SCADA Detail Design				
Underpass												Underpass				
S11669-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	29-Aug-18	58	83.33%		-323	Design Coordination for ELV & SCADA					
S11669-19	2nd review by EMSD	P2-Cal.A	15	5	21-Jun-18 A	03-Sep-18	58	66.67%		-60	2nd review by EMSD					
S11669-29	Formal Submission to Supervisor	P2-Cal.A	7	7	04-Sep-18	10-Sep-18	58	0%		0	Formal Submission to Supervisor					
S11669-30	Accept detail design by the Supervisor	P2-Cal.A	7	7	11-Sep-18	17-Sep-18	58	0%		0	Accept detail design by the Supervisor					
Plantroom												Plantroom				
S11670-10	Design Coordination for ELV & SCADA	P2-Cal.A	60	10	12-Aug-17 A	29-Aug-18	58	83.33%		-323	Design Coordination for ELV & SCADA					
S11670-19	2nd review by EMSD	P2-Cal.A	15	5	21-Jun-18 A	03-Sep-18	58	66.67%		-60	2nd review by EMSD					
S11670-29	Formal Submission to Supervisor	P2-Cal.A	7	7	04-Sep-18	10-Sep-18	58	0%		0	Formal Submission to Supervisor					
S11670-30	Accept detail design by the Supervisor	P2-Cal.A	7	7	11-Sep-18	17-Sep-18	58	0%		0	Accept detail design by the Supervisor					
Design of Architectural Finishes for Internal Walls of U-Trough Structures												Design of Architectural Finishes for Internal Walls of U-Trough Structures				
S11675	Prepare and Submit Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)	P2-Cal.A	21	21	08-Sep-18	28-Sep-18	76	0%		0	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	29-Sep-18	19-Oct-18	76	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	20-Oct-18	02-Nov-18	76	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	03-Nov-18	23-Nov-18	76	0%		0	Review and Accept Design of Architectural Finishes for Internal Walls of U-Trough Structures (VE and PC Panel)					
Irrigation System												Irrigation System				
S11787-01	2nd review by LCSD	P2-Cal.A	21	21	20-Aug-18	09-Sep-18	29	0%		0	2nd review by LCSD					
S11788	Prepare & Submission of Form 542	P2-Cal.A	14	14	10-Sep-18	23-Sep-18	29	0%		0	Prepare & Submission of Form 542					
S11789	Reviewed by WSD	P2-Cal.A	28	28	24-Sep-18	21-Oct-18	29	0%		0	Reviewed by WSD					
S11790	Formal Submission to Supervisor	P2-Cal.A	14	14	22-Oct-18	04-Nov-18	29	0%		0	Formal Submission to Supervisor					
S11800	Review and Accept Submission for Waterpoints and associated elements	P2-Cal.A	21	21	05-Nov-18	25-Nov-18	29	0%		0	Review and Accept Submission for Waterpoints and associated elements					
Contractor Cost Saving Design												Contractor Cost Saving Design				
AIP Submission for CSD2 of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)												AIP Submission for CSD2 of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)				
S11959	Review and Accept AIP Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	17	17-Jul-18 A	05-Sep-18	-288	19.05%		-30	Review and Accept AIP Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)					
S11960	Review and Accept AIP Submission for CSD of Reclaimed Section by HYD (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	28	17	09-Aug-18 A	05-Sep-18	-288	39.29%		0	Review and Accept AIP Submission for CSD of Reclaimed Section by HYD (S200 CH674 - CH755, S300 CH326-CH355)					
DDA Submission for CSD2 of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)												DDA Submission for CSD2 of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)				
S11962	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	21	06-Sep-18	26-Sep-18	-288	0%		0	Prepare and Submit DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)					
S11964	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	21	27-Sep-18	17-Oct-18	-288	0%		0	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)					
S11966	Resubmit DDA for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	14	14	18-Oct-18	31-Oct-18	-288	0%		0	Resubmit DDA for CSD of Reclaimed Section (S200 CH674 - CH755, S300 CH326-CH355)					
S11967	Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	21	21	01-Nov-18	21-Nov-18	-281	0%		0	Review and Accept DDA Submission for CSD of Reclaimed Section by CEDD (S200 CH674 - CH755, S300 CH326-CH355)					
S11968	Review and Accept DDA Submission for CSD of Reclaimed Section by HYD (S200 CH674 - CH755, S300 CH326-CH355)	P2-Cal.A	28	28	01-Nov-18	28-Nov-18	-288	0%		0	Review and Accept DDA Submission for CSD of Reclaimed Section by HYD (S200 CH674 - CH755, S300 CH326-CH355)					
AIP Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)												AIP Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)				
S11973	Review and Accept AIP Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)	P2-Cal.A	21	17	17-Jul-18 A	05-Sep-18	-30	19.05%		-30	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	17	09-Aug-18 A	05-Sep-18	-30	39.29%		0	Review and Accept AIP Submission for CSD of Reclaimed Section by HyD (S200 CH821 - P2 CH305)					
DDA Submission for CSD3 of Reclaimed Section (S200 CH821 - P2 CH305)												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	06-Sep-18	26-Sep-18	-30	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	27-Sep-18	17-Oct-18	-30	0%		0	Review and Discuss DDA Submission for CSD of Reclaimed Section (S200 CH821 - P2 CH305)					

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											Aug	Sep	Oct	Nov	Dec			
S16388	Excavation and ELS Works (Reclaimed Section) Award	P2-Cal.A	0	0	30-Sep-18	192	0%	0										
Structural Works for Retaining Wall (Reclaimed Section)			P2-Cal.A	143	28	14-Mar-18 A	16-Sep-18	288		-44								
S16390	Invitation, Submission and Opening of Tender for Structural Works for Retaining Wall	P2-Cal.A	14	7	14-Mar-18 A	26-Aug-18	288	50%		-152								
S16391	Tender Interview and Recommendation to PM for Structural Works for Retaining Wall	P2-Cal.A	21	21	27-Aug-18	16-Sep-18	288	0%		0								
S16392	Structural Works for Retaining Wall Award	P2-Cal.A	0	0	16-Sep-18	288	0%			0								
Structural Works for U-Trough, Underpass and Abutment			P2-Cal.A	99	37	14-Mar-18 A	25-Sep-18	281		-97								
S16420	Invitation, Submission and Opening of Tender for Structural Works for U-Trough, Underpass and Abutment	P2-Cal.A	60	7	14-Mar-18 A	26-Aug-18	281	88.33%		-106								
S16440	Tender Interview and Recommendation to PM for Structural Works for U-Trough, Underpass and Abutment	P2-Cal.A	30	30	27-Aug-18	25-Sep-18	281	0%		0								
S16460	Structural Works for U-Trough, Underpass and Abutment Award	P2-Cal.A	0	0	25-Sep-18	281	0%			0								
Drainage and Sewerage Works (Existing Land) (At Grade Section)			P2-Cal.A	63	63	20-Aug-18	21-Oct-18	193		0								
S17104	Submission and Opening of Tender for Drainage and Sewerage Works	P2-Cal.A	42	42	20-Aug-18	30-Sep-18	193	0%		0								
S17106	Tender Interview and Recommendation to PM for Drainage and Sewerage Works	P2-Cal.A	21	21	01-Oct-18	21-Oct-18	193	0%		0								
S17108	Drainage and Sewerage Works Award	P2-Cal.A	0	0	21-Oct-18	193	0%			0								
Water Works (To be Incorporated in Irrigation Package)			P2-Cal.A	21	21	20-Aug-18	09-Sep-18	332		0								
S17160	Tender Interview and Recommendation to PM for Water Works	P2-Cal.A	21	21	20-Aug-18	09-Sep-18	332	0%		0								
S17180	Water Works Award	P2-Cal.A	0	0	09-Sep-18	332	0%			0								
Irrigation Works			P2-Cal.A	21	21	20-Aug-18	09-Sep-18	228		0								
S17320	Tender Interview and Recommendation to PM for Irrigation Works	P2-Cal.A	21	21	20-Aug-18	09-Sep-18	228	0%		0								
S17340	Irrigation Works Award	P2-Cal.A	0	0	09-Sep-18	228	0%			0								
Section 3 of the Works All Works within Portion IV, V, VI, VII, VIII, and IX				494	218	25-Apr-17 A	25-Mar-19	183		-206								
Existing Land Section				494	218	25-Apr-17 A	25-Mar-19	183		-206								
Retaining Wall P2-A CH 500- 650				494	218	25-Apr-17 A	25-Mar-19	183		-206								
LC11929	CLP cable Diversion and relocation WSD flowmeter chamber(by others)(NCE-029&30)ref CLP meeting completed on end of Aug	P2-Cal.A	494	12	25-Apr-17 A	31-Aug-18	77	97.57%		0								
LC11929-01	Relocation WSD flowmeter chamber(by others)(NCE-029&30) After CLP cable diversion	P2-Cal.A	14	14	01-Sep-18	14-Sep-18	77	0%		0								
LC11932	Removal of existing planter (NCE-019, EW-014, PMI-61 & CE-95)	P2-Cal.C	12	5	16-Apr-18 A	06-Sep-18	145	58.33%		-108								
Bay 1-2			P2-Cal.C	107	96	19-Jul-18 A	12-Dec-18	230		-16								
LC11940-1	Excavation of Bay 1 - 2	P2-Cal.C	5	3	19-Jul-18 A	22-Aug-18	230	40%		-25								
LC11941	Laying Blinding	P2-Cal.C	3	3	23-Aug-18	25-Aug-18	230	0%		0								
LC11942	Construction of Base Slab - Bay 1	P2-Cal.C	10	10	27-Aug-18	06-Sep-18	230	0%		0								
LC11943	Construction of Base Slab - Bay 2	P2-Cal.C	10	10	07-Sep-18	18-Sep-18	230	0%		0								
LC11944	Construction of Wall Stem - Bay 1	P2-Cal.C	10	10	19-Sep-18	02-Oct-18	230	0%		0								
LC11945	Construction of Wall Stem - Bay 2	P2-Cal.C	10	10	03-Oct-18	13-Oct-18	230	0%		0								
LC11946	Waterproofing coating Works RW P2-A (Bay 1 - 2)	P2-Cal.C	15	15	15-Oct-18	01-Nov-18	230	0%		0								
LC11947	Backfilling Works RW P2-A Back Side (Bay 1 - 2) (Incl. soil test)	P2-Cal.C	35	35	02-Nov-18	12-Dec-18	230	0%	6	0								
Bay 5-15			P2-Cal.C	253	178	26-Apr-18 A	25-Mar-19	88		-20								
LC11961	ELS and Open Cut Excavation of Bay 5 - 8	P2-Cal.C	35	6	26-Apr-18 A	25-Aug-18	80	82.86%		-66								
LC11962	Laying Blinding (Bay 5 - 8)	P2-Cal.C	7	4	28-May-18 A	30-Aug-18	91	42.86%		-73								
LC11965	Construction of Base Slab - Bay 7	P2-Cal.C	10	10	31-Aug-18	11-Sep-18	91	0%		0								
LC11965-01	Excavation of Desilting Opening (CE078)	P2-Cal.C	10	10	27-Aug-18	06-Sep-18	80	0%		0								
LC11965-02	Construction of Desilting Opening (CE078)	P2-Cal.C	15	15	07-Sep-18	24-Sep-18	80	0%		0								
LC11966	Construction of Base Slab - Bay 8	P2-Cal.C	10	10	26-Sep-18	08-Oct-18	80	0%		0								
LC11969	Construction of Wall Stem - Bay 7	P2-Cal.C	10	10	12-Sep-18	22-Sep-18	161	0%		0								
LC11970	Construction of Wall Stem - Bay 8	P2-Cal.C	10	10	09-Oct-18	20-Oct-18	80	0%		0								

█ Primary Baseline █ Critical Remaining Work
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											Aug	Sep	Oct	Nov	Dec			
LC11971	ELS and Open Cut Excavation of Bay 9 - 15	P2-Cal.C	35	35	15-Sep-18	29-Oct-18	63	0%		0								
LC11972	Laying Blinding (Bay 9 - 15)	P2-Cal.C	10	10	30-Oct-18	09-Nov-18	63	0%		0								
LC11973	Construction of Base Slab - Bay 9	P2-Cal.C	10	10	10-Nov-18	21-Nov-18	63	0%		0								
LC11987	Waterproofing coating Works RW P2-A (Bay 5 - 15)	P2-Cal.C	15	15	27-Jul-18 A	12-Feb-19	63	0%		-148								
LC11988	Backfilling Works RW P2-A Back Side (Bay 5 - 15) (Incl. Soil Test)	P2-Cal.C	35	35	07-Aug-18 A	25-Mar-19	88	0%	12	-154								
P2 Road		P2-Cal.C	192	84	19-Mar-18 A	28-Nov-18	212			-16								
P2 CH 318 - 363		P2-Cal.C	152	69	16-Apr-18 A	23-Nov-18	-126			-32								
ELS P2 CH318-363 & SR2 CH100-110		P2-Cal.C	152	69	16-Apr-18 A	23-Nov-18	-126			-32								
LC12950-01	Construction of 1350 temporary pipe for existing 1350 pipe diversion	P2-Cal.C	14	14	15-Sep-18	03-Oct-18	-124	0%		0								
LC12951	Overcome obstruction by Pre-bore method at CH318-363 (NCE072, NCE075 and CE067)	P2-Cal.C	60	26	16-Apr-18 A	03-Oct-18	-124	56%		-81								
LC12952	Installation of sheetpile wall at CH318-363	P2-Cal.C	60	40	19-May-18 A	23-Oct-18	-124	33.33%		-69								
LC12953	Installation of Dewatering System and King Posts	P2-Cal.C	20	20	28-Sep-18	23-Oct-18	-124	0%		0								
LC12956	Excavation to +1.0 ~ +1.3mPD (4600m3)	P2-Cal.C	5	5	26-Oct-18	31-Oct-18	-126	0%		0								
LC12957	Installation of 1st layer strut/waler @ +2.0 ~ +2.3mPD	P2-Cal.C	15	15	01-Nov-18	17-Nov-18	-126	0%		0								
LC12958	Excavation to -1.0 ~ -1.6mPD (3810m3)	P2-Cal.C	5	5	19-Nov-18	23-Nov-18	-126	0%		0								
P2 CH 411 - 500		P2-Cal.C	192	84	19-Mar-18 A	28-Nov-18	212			-16								
Structure P2 CH 411 - 500 (U Trough A)		P2-Cal.C	192	84	19-Mar-18 A	28-Nov-18	212			-16								
Wall Stem		P2-Cal.C	192	84	19-Mar-18 A	28-Nov-18	212			-16								
LC15120	Waterproofing of wall stem, backfill & removal of strut/waling at Bay 4 & 5 (NCE108)(CE0117)(NCE110)(NCE116)(NCE119)	P2-Cal.C	30	22	19-Mar-18 A	13-Sep-18	164	26.67%		-116								
LC15130	Waterproofing of wall stem, backfill & removal of strut/waling at Bay 2 & 3 (NCE108)(CE0117)(NCE110)(NCE116)(NCE119)	P2-Cal.C	30	25	13-Apr-18 A	17-Sep-18	164	16.67%		-101								
LC15140	Waterproofing of wall stem, backfill & removal of strut/waling at Bay 1 (NCE108)(CE0117)(NCE110)(NCE116)(NCE119)	P2-Cal.C	30	28	14-Apr-18 A	20-Sep-18	164	6.67%		-103								
LC15160	Construction of wall stem at Bay 2 & 3 - 2nd pour	P2-Cal.C	13	13	21-Sep-18	08-Oct-18	164	0%		0								
LC15170	Construction of wall stem at Bay 4 & 5 - 2nd pour	P2-Cal.C	13	13	09-Oct-18	24-Oct-18	177	0%		0								
LC15185	Waterproofing of wall stem, backfill & removal of strut/waling at Bay 1 to 3	P2-Cal.C	30	30	09-Oct-18	13-Nov-18	164	0%		0								
LC15190	Waterproofing of wall stem, backfill & removal of strut/waling at Bay 4 to 7	P2-Cal.C	30	30	25-Oct-18	28-Nov-18	177	0%		0								
LC15230	Construction of wall stem Final Pour at Bay 1	P2-Cal.C	13	13	14-Nov-18	28-Nov-18	164	0%		0								
LC15250	Construction of Drainage and Manhole	P2-Cal.C	60	5	06-Apr-18 A	30-Oct-18	232	91.67%		-111								
LC15260	Backfilling of Engineered Fill Material (3430m3) inside U-trough	P2-Cal.C	15	5	15-May-18 A	05-Nov-18	232	66.67%		-129								
SR2		P2-Cal.C	139	97	28-May-18 A	13-Dec-18	189			-28								
Retaining Wall SR2-A & B CH250 - 310		P2-Cal.C	71	70	03-Aug-18 A	21-Nov-18	168			-21								
Retaining Wall SR2-B		P2-Cal.C	71	70	03-Aug-18 A	21-Nov-18	168			-21								
LC16593	Excavation, Blinding & W/P of RW SR2-A & B Bay 1 - 3 (RFI-105)	P2-Cal.C	21	10	03-Aug-18 A	08-Sep-18	168	52.38%		-11								
LC16600	Construction of Base Slab (RW SR2-A & B Bay 1)(RFI-105)	P2-Cal.C	15	15	10-Sep-18	27-Sep-18	168	0%		0								
LC16610	Construction of Base Slab (RW SR2-A & B Bay 2)(RFI-105)	P2-Cal.C	15	15	28-Sep-18	16-Oct-18	168	0%		0								
LC16615	Construction of Base Slab (RW SR2-A & B Bay 3)(RFI-105)	P2-Cal.C	15	15	18-Oct-18	03-Nov-18	168	0%		0								
LC16620	Construction of Wall Stem (RW SR2-A & B Bay 1)(RFI-105)	P2-Cal.C	15	15	05-Nov-18	21-Nov-18	168	0%		0								
SR2 CH170 - 250		P2-Cal.C	139	97	28-May-18 A	13-Dec-18	189			-28								
Structure SR2 CH 170 - 250 (U Trough A)		P2-Cal.C	139	97	28-May-18 A	13-Dec-18	189			-28								
LC17340	Waterproofing of wall stem, backfill & removal of strut/waling at CH170 - 182.5 (NCE107)(NCE110)(NCE116)(NCE119)	P2-Cal.C	10	8	28-May-18 A	28-Aug-18	168	20%		-68								
LC17345	Waterproofing of wall stem, backfill & removal of strut/waling at CH182.5 - 195 (NCE107)(NCE110)(NCE116)(NCE119)	P2-Cal.C	10	8	28-May-18 A	06-Sep-18	189	20%		-76								
LC17350	Waterproofing of wall stem, backfill & removal of strut/waling at CH195 - 208 (NCE107)(NCE110)(NCE116)(NCE119)	P2-Cal.C	10	8	28-May-18 A	15-Sep-18	189	20%		-84								
LC17355	Waterproofing of wall stem, backfill & removal of strut/waling at CH208 - 222 (NCE107)(NCE110)(NCE116)(NCE119)	P2-Cal.C	10	8	02-Jun-18 A	26-Sep-18	189	20%		-87								
LC17360	Waterproofing of wall stem, backfill & removal of strut/waling at CH222 - 236 (NCE107)(NCE110)(NCE116)(NCE119)	P2-Cal.C	10	8	02-Jun-18 A	06-Oct-18	189	20%		-95								

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											Aug	Sep	Oct	Nov	Dec				
LC17365	Waterproofing of wall stem, backfill & removal of strut/waling at CH236 - 250 (NCE110)(NCE116)(NCE119)	P2-Cal.C	10	10	08-Oct-18	19-Oct-18	189	0%		0									
LC17370	Construction of wall stem 2nd pour (top level) at CH208 - 222	P2-Cal.C	9	9	20-Oct-18	30-Oct-18	189	0%		0									
LC17375	Construction of wall stem 2nd pour (top level) at CH182.5 - 195	P2-Cal.C	9	9	20-Oct-18	30-Oct-18	189	0%		0									
LC17385	Construction of wall stem 2nd pour (top level) at CH222 - 236	P2-Cal.C	9	9	31-Oct-18	09-Nov-18	189	0%		0									
LC17390	Construction of wall stem 2nd pour (top level) at CH195 - 208	P2-Cal.C	9	9	31-Oct-18	09-Nov-18	198	0%		0									
LC17395	Construction of wall stem 2nd pour (top level) at CH170 - 182.5	P2-Cal.C	9	9	10-Nov-18	20-Nov-18	189	0%		0									
LC17400	Construction of Drainage and Manhole Cover	P2-Cal.C	40	20	28-Jun-18 A	13-Dec-18	189	50%		-101									
Portion IV & VII		P2-Cal.C	164	74	13-Apr-18 A	16-Nov-18	-204			-16									
Construction of DN2100 stormwater at Portion IV & VII		P2-Cal.C	164	74	13-Apr-18 A	16-Nov-18	-204			-16									
Preboring		P2-Cal.C	92	10	13-Apr-18 A	30-Aug-18	-203			-24									
Rig 1		P2-Cal.C	14	10	13-Jul-18 A	30-Aug-18	-204			-28									
LC17666-01	Stage 9 -- Preboring for Dia. 2100 Drain Pipe (no.981-1003)(28 nos.@ 2nos./d)(CE 041)	P2-Cal.C	14	10	13-Jul-18 A	30-Aug-18	-204	28.57%		-28									
Rig 2		P2-Cal.C	52	10	13-Apr-18 A	30-Aug-18	-203			-64									
LC17676	Stage 8 -- Preboring for Dia. 2100 Drain Pipe (no.1004-1128)(125nos.@ 2.4nos./d)(CE 041) (NCE110,111,116)	P2-Cal.C	52	10	13-Apr-18 A	30-Aug-18	-203	80.77%		-64									
ELS		P2-Cal.C	9	7	15-Aug-18 A	07-Sep-18	-203			-12									
Installation Sheet Pile - 24m		P2-Cal.C	9	7	15-Aug-18 A	07-Sep-18	-203			-12									
LC17687-01	Stage 8 -- Sheet Pile installation 24m length for SMH9109 - 9108 (105 nos.@15pcs./d)	P2-Cal.C	7	7	31-Aug-18	07-Sep-18	-203	0%		0									
LC17687-02	Stage 9 -- Sheet Pile installation 24m length for SMH9108 - 9107 (90 nos.@15pcs./d)	P2-Cal.C	6	5	15-Aug-18 A	05-Sep-18	-204	16.67%		-13									
Drainage works		P2-Cal.C	125	74	11-Jun-18 A	16-Nov-18	-204			-7									
SMH9103-SMH9104		P2-Cal.C	92	41	11-Jun-18 A	08-Oct-18	-185			-7									
LC17690	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9103 to SMH9104) (NCE116)(NCE118)	P2-Cal.C	10	5	11-Jun-18 A	24-Aug-18	-201	50%		-53									
LC17690-2	Bedding And Inspection	P2-Cal.C	3	3	25-Aug-18	28-Aug-18	-185	0%		0									
LC17690-25	Installation of Precast Manhole (SMH9103 and SMH9104)	P2-Cal.C	1	1	29-Aug-18	29-Aug-18	-185	0%		0									
LC17690-3	Manhole construction and Pipe Laying (SMH9103 and SMH9104)	P2-Cal.C	20	20	30-Aug-18	21-Sep-18	-185	0%		0									
LC17690-5	Inspection & Backfill	P2-Cal.C	14	14	20-Sep-18	08-Oct-18	-185	0%		0									
SMH9104-SMH9105		P2-Cal.C	31	31	11-Aug-18 A	24-Sep-18	-175			-7									
LC17691-2	Bedding And Inspection	P2-Cal.C	3	3	11-Aug-18 A	22-Aug-18	-175	0%		-7									
LC17691-3	Manhole construction and Pipe Laying (SMH9105)	P2-Cal.C	16	16	23-Aug-18	10-Sep-18	-175	0%		0									
LC17691-5	Inspection & Backfill	P2-Cal.C	14	14	08-Sep-18	24-Sep-18	-175	0%		0									
SMH9105-SMH9106		P2-Cal.C	42	42	25-Aug-18	15-Oct-18	-191			0									
LC17692	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9105 to SMH9106)	P2-Cal.C	10	10	25-Aug-18	05-Sep-18	-201	0%		0									
LC17692-2	Bedding And Inspection	P2-Cal.C	3	3	06-Sep-18	08-Sep-18	-191	0%		0									
LC17692-25	Installation of Precast Manhole (SMH9106)	P2-Cal.C	1	1	10-Sep-18	10-Sep-18	-191	0%		0									
LC17692-3	Manhole construction and Pipe Laying (SMH9106)	P2-Cal.C	16	16	11-Sep-18	29-Sep-18	-191	0%		0									
LC17692-5	Inspection & Backfill	P2-Cal.C	14	14	28-Sep-18	15-Oct-18	-191	0%		0									
SMH9106-SMH9107		P2-Cal.C	42	42	31-Aug-18	22-Oct-18	-196			0									
LC17693	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9106 to SMH9107)	P2-Cal.C	10	10	31-Aug-18	11-Sep-18	-196	0%		0									
LC17693-2	Bedding And Inspection	P2-Cal.C	3	3	12-Sep-18	14-Sep-18	-196	0%		0									
LC17693-25	Installation of Precast Manhole (SMH9107)	P2-Cal.C	1	1	15-Sep-18	15-Sep-18	-196	0%		0									
LC17693-3	Manhole construction and Pipe Laying (SMH9107)	P2-Cal.C	16	16	17-Sep-18	06-Oct-18	-196	0%		0									
LC17693-5	Inspection & Backfill	P2-Cal.C	14	14	05-Oct-18	22-Oct-18	-196	0%		0									
SMH9107-SMH9108		P2-Cal.C	45	45	06-Sep-18	31-Oct-18	-204			0									
LC17694	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9107 to SMH9108)	P2-Cal.C	10	10	06-Sep-18	17-Sep-18	-204	0%		0									

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											Aug	Sep	Oct	Nov	Dec
LC17695	Bedding And Inspection	P2-Cal.C	3	3	18-Sep-18	20-Sep-18	-204	0%							
LC17695-01	Installation of Precast Manhole (SMH9108 & 9108A)	P2-Cal.C	2	2	21-Sep-18	22-Sep-18	-204	0%							
LC17696	Manhole construction and Pipe Laying (SMH9108 & 9108A)	P2-Cal.C	18	18	24-Sep-18	16-Oct-18	-204	0%							
LC17698	Inspection & Backfill	P2-Cal.C	14	14	15-Oct-18	31-Oct-18	-204	0%							
SMH9108-SMH9109			42	42	08-Sep-18	30-Oct-18	-203	0%							
LC17699	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9108 to SMH9109)	P2-Cal.C	10	10	08-Sep-18	19-Sep-18	-203	0%							
LC17701	Bedding And Inspection	P2-Cal.C	3	3	20-Sep-18	22-Sep-18	-203	0%							
LC17701-01	Installation of Precast Manhole (SMH9109)	P2-Cal.C	1	1	24-Sep-18	24-Sep-18	-203	0%							
LC17702	Manhole construction and Pipe Laying (SMH9109)	P2-Cal.C	16	16	26-Sep-18	15-Oct-18	-203	0%							
LC17704	Inspection & Backfill	P2-Cal.C	14	14	13-Oct-18	30-Oct-18	-203	0%							
SMH9109-SMH9110			42	42	06-Sep-18	27-Oct-18	-201	0%							
LC17705	Trench Excavation and Strut Installation for Construction of Dia. 2100 Drain Pipe (SMH9109-9110)	P2-Cal.C	10	10	06-Sep-18	17-Sep-18	-201	0%							
LC17707	Bedding And Inspection	P2-Cal.C	3	3	18-Sep-18	20-Sep-18	-201	0%							
LC17707-01	Installation of Precast Manhole (SMH9110)	P2-Cal.C	1	1	21-Sep-18	21-Sep-18	-201	0%							
LC17708	Manhole construction and Pipe Laying (SMH9110)	P2-Cal.C	16	16	22-Sep-18	12-Oct-18	-201	0%							
LC17710	Inspection & Backfill	P2-Cal.C	14	14	11-Oct-18	27-Oct-18	-201	0%							
SMH9110-Outfall			93	74	18-Jul-18 A	16-Nov-18	-204								
LC17712	Removal of Existing Seawall and Trench Excavation	P2-Cal.C	21	12	18-Jul-18 A	01-Sep-18	-193	42.86%							
LC17713	Bedding And Inspection	P2-Cal.C	3	3	03-Sep-18	05-Sep-18	-193	0%							
LC17714	Installation of Precast Outfall	P2-Cal.C	5	5	06-Sep-18	11-Sep-18	-193	0%							
LC17715	Lay Dia. 2100 Drainage for Existing Outfalls along Existing Seawall (SMH9110- Outfall) (63m)	P2-Cal.C	10	10	12-Sep-18	22-Sep-18	-193	0%							
LC17716	Reinstatement of Seawall and Backfilling Works	P2-Cal.C	30	20	17-Aug-18 A	18-Oct-18	-193	33.33%							
LC17717	DSD Inspection and Permanent Diversion	P2-Cal.C	14	14	01-Nov-18	16-Nov-18	-204	0%							
New Reclaimed Section			409	208	06-Jan-18 A	15-Mar-19	-21								
Marine Works			409	208	06-Jan-18 A	15-Mar-19	-21								
Initial Works			79	72	03-May-18 A	14-Nov-18	-38								
MC10060	Installation of Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	7	7	28-Jun-18 A	27-Aug-18	-165	0%							
MC10070	Baseline for Piezometer/ O Well/ Extensometer (Type RB)	P2-Cal.C	10	10	03-Jul-18 A	07-Sep-18	-165	0%							
MC10080	Installation of Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	7	7	03-May-18 A	10-Nov-18	-244	0%							
MC10120	Baseline for Type 1 Settlement Marker (Type RA/ RB)	P2-Cal.C	3	3	12-Nov-18	14-Nov-18	-244	0%							
MC10156	Installation of Type 2 Settlement Marker (Type RA)	P2-Cal.C	7	7	20-Aug-18	27-Aug-18	-188	0%							
MC10160	Baseline for Type 2 Settlement Marker (Type RA)	P2-Cal.C	3	3	28-Aug-18	30-Aug-18	-188	0%							
MC10170	Installation of Type 2 Settlement Marker (Type RB)	P2-Cal.C	7	7	04-Oct-18	11-Oct-18	-125	0%							
MC10175	Baseline for Type 2 Settlement Marker (Type RB)	P2-Cal.C	3	3	12-Oct-18	15-Oct-18	-125	0%							
Steel Cofferdam and Water Gate			60	60	20-Aug-18	31-Oct-18	-26								
Steel Cofferdam Installation			60	60	20-Aug-18	31-Oct-18	-26								
Reinstatement works			60	60	20-Aug-18	31-Oct-18	-26								
Type 1			60	60	20-Aug-18	31-Oct-18	-26								
Removal of S/P at transition zone			60	60	20-Aug-18	31-Oct-18	-26								
MC10304-02	Removal of Underwater S/P	P2-Cal.C	60	60	20-Aug-18	31-Oct-18	-26	0%							
Dredging Work			94	68	20-Jul-18 A	09-Nov-18	-216								
MC10838	Dredge CH400-560 (Middle) (9258m3)	P2-Cal.C	20	5	20-Jul-18 A	24-Aug-18	-247	75%							
MC10840	Dredge CH400-440 (Bottom) (5188m3)	P2-Cal.C	10	10	23-Aug-18	03-Sep-18	-247	0%							

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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018					
											Aug	Sep	Oct	Nov	Dec	
MC10844	Dredge CH440-480 (Bottom) (14912m3)	P2-Cal.C	15	15	04-Sep-18	20-Sep-18	-247	0%		0						
MC10845	Dredge CH480-560 (+O/S 20 to 80) (Bottom) (2243m3); 300m3/day - Derrick	P2-Cal.C	8	8	31-Aug-18	08-Sep-18	-231	0%		0						
MC10848	Dredge CH480-560 for treatment stage 1 (Bottom) (6000m3); 600m3/day	P2-Cal.C	10	10	21-Sep-18	04-Oct-18	-241	0%		0						
MC10855	Dredge CH480-560 for treatment stage 2 (Bottom) (18000m3); 600m3/day	P2-Cal.C	30	30	05-Oct-18	09-Nov-18	-216	0%		0						
Bathymetric and Seismic Survey																
MC10995	Survey CH400-440	P2-Cal.C	2	2	04-Sep-18	05-Sep-18	-247	0%		0						
MC11015	Survey CH440-480	P2-Cal.C	2	2	21-Sep-18	22-Sep-18	-247	0%		0						
MC11018	Survey CH480-560 (+O/S 20 to 80)	P2-Cal.C	2	2	10-Sep-18	11-Sep-18	-227	0%		0						
MC11025	Survey CH480-560 - stage 1	P2-Cal.C	2	2	05-Oct-18	06-Oct-18	-241	0%		0						
MC11035	Survey CH480-560 - stage 2	P2-Cal.C	2	2	10-Nov-18	12-Nov-18	-216	0%		0						
Filling of Recycle G400 Rock at Dredged Trench																
MC11145	Fill Recycle G400 at CH262-312 (22016m3)	P2-Cal.C	13	4	10-Jul-18 A	23-Aug-18	-248	69.23%	0	-26						
MC11165	Fill Recycle G400 at CH312-362 (22354m3)	P2-Cal.C	13	9	06-Aug-18 A	03-Sep-18	-248	30.77%	0	-12						
MC11185	Fill Recycle G400 at CH362-412 (25473m3)	P2-Cal.C	12	12	06-Sep-18	19-Sep-18	-247	0%	0	0						
MC11205	Fill Recycle G400 at CH412-442 (19909m3)	P2-Cal.C	10	10	24-Sep-18	06-Oct-18	-247	0%	0	0						
MC11225	Fill Recycle G400 at CH442-512 (24332m3) (+O/S 20 to 80)	P2-Cal.C	14	14	15-Oct-18	31-Oct-18	-247	0%	0	0						
MC11235	Fill Recycle G400 at CH442-512 (6000m3) - Stage 1 (West Side)	P2-Cal.C	6	6	08-Oct-18	13-Oct-18	-247	0%	0	0						
MC11245	Fill Recycle G400 at CH442-560 (91060m3) - Stage 2 (East Side)	P2-Cal.C	43	43	13-Nov-18	04-Jan-19	-216	0%	0	0						
Construction of Seawall Foundation (Dredged Area)																
Laying of Type A Rockfill (Base)																
MC11265	Type A Rockfill CH213-262 (797m3)	P2-Cal.C	1	1	07-Aug-18 A	20-Aug-18	-243	0%	0	-11						
MC11275	Type A Rockfill CH262-312 (952m3)	P2-Cal.C	2	2	24-Aug-18	25-Aug-18	-245	0%	0	0						
MC11285	Type A Rockfill CH312-362 (860m3)	P2-Cal.C	1	1	04-Sep-18	04-Sep-18	-248	0%	0	0						
MC11295	Type A Rockfill CH362-412 (917m3)	P2-Cal.C	1	1	20-Sep-18	20-Sep-18	-247	0%	0	0						
MC11305	Type A Rockfill CH412-442 (773m3)	P2-Cal.C	1	1	08-Oct-18	08-Oct-18	-245	0%	0	0						
MC11315	Type A Rockfill CH442-500 (2222m3)	P2-Cal.C	2	2	01-Nov-18	02-Nov-18	-247	0%	0	0						
Laying of Geotextile Type A (Base)																
MC11355	Geotextile Type A CH210-262 (929m2)	P2-Cal.C	1	1	21-Aug-18	21-Aug-18	-243	0%	0	0						
MC11365	Geotextile Type A CH262-312 (1023m2)	P2-Cal.C	1	1	27-Aug-18	27-Aug-18	-245	0%	0	0						
MC11375	Geotextile Type A CH312-362 (952m2)	P2-Cal.C	1	1	05-Sep-18	05-Sep-18	-248	0%	0	0						
MC11385	Geotextile Type A CH362-412 (952m2)	P2-Cal.C	1	1	21-Sep-18	21-Sep-18	-247	0%	0	0						
MC11395	Geotextile Type A CH412-442 (673m2)	P2-Cal.C	1	1	09-Oct-18	09-Oct-18	-245	0%	0	0						
MC11405	Geotextile Type A CH442-500 (1567m2)	P2-Cal.C	2	2	03-Nov-18	05-Nov-18	-247	0%	0	0						
Laying of Granular Filter (Base)																
MC11425	Granular Filter CH112-162 (2051m3) (EW089 1 to 18 Jul 2018 +14WD ,EW092 21 to 30 Jun & 19 Jul to progress+ 9WD)	P2-Cal.C	28	3	28-Jun-18 A	22-Aug-18	-257	89.29%	0	-19						
MC11429	Additional Geotextile CH112-162 (889m2) (PMI No.93)	P2-Cal.C	2	1	17-Aug-18 A	23-Aug-18	-256	50%	0	-4						
MC11435	Granular Filter CH162-212 (2219m3) (EW089 1 to 18 Jul 2018 +14WD ,EW092 21 to 30 Jun & 19 Jul to progress+ 9WD)	P2-Cal.C	28	4	12-Jul-18 A	27-Aug-18	-249	85.71%	0	-12						
MC11439	Additional Geotextile CH162-212 (915m2) (PMI No.93)	P2-Cal.C	2	2	28-Aug-18	29-Aug-18	-232	0%	0	0						
MC11445	Granular Filter CH212-262 (1665m3)	P2-Cal.C	2	2	28-Aug-18	29-Aug-18	-248	0%	0	0						
MC11455	Granular Filter CH262-312 (1217m3)	P2-Cal.C	2	2	30-Aug-18	31-Aug-18	-247	0%	0	0						
MC11465	Granular Filter CH312-362 (852m3)	P2-Cal.C	1	1	06-Sep-18	06-Sep-18	-248	0%	0	0						
MC11475	Granular Filter CH362-412 (893m3)	P2-Cal.C	1	1	22-Sep-18	22-Sep-18	-247	0%	0	0						
MC11485	Granular Filter CH412-442 (743m3)	P2-Cal.C	1	1	10-Oct-18	10-Oct-18	-245	0%	0	0						

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Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018				
											Aug	Sep	Oct	Nov	Dec
MC11495	Granular Filter CH442-500 (2164m3)	P2-Cal.C	2	2	06-Nov-18	07-Nov-18	-247	0%	0	0					■ Granular Filter CH442-500 (2164m3)
Laying Geotextile Type A (Ground Treatment)		P2-Cal.C	92	67	29-Jun-18 A	12-Nov-18	-247			-21					▼ Laying Geotextile Type A (Ground Treatment)
MC12015	Geotextile Type A (Dredged Area) and Granular Filter CH95-162 (1292m2) (EW089 1 to 18 Jul 2018 +14WD_EW092)	P2-Cal.C	3	2	29-Jun-18 A	24-Aug-18	-257	33.33%	0	-45					■ Geotextile Type A (Dredged Area) and Granular Filter CH95-162 (1292m2) (EW089 1 to 18 Jul 2018 +14WD_EW092)
MC12025	Geotextile Type A (Dredged Area) and Granular Filter CH162-212 (1400m2)	P2-Cal.C	3	3	28-Aug-18	30-Aug-18	-249	0%	0	0					■ Geotextile Type A (Dredged Area) and Granular Filter CH162-212 (1400m2)
MC12035	Geotextile Type A (Dredged Area) and Granular Filter CH212-CH262 (1796m2)	P2-Cal.C	3	3	31-Aug-18	03-Sep-18	-249	0%	0	0					■ Geotextile Type A (Dredged Area) and Granular Filter CH212-CH262 (1796m2)
MC12045	Geotextile Type A (No-Dredged Area) CH262-312 (2426m2)	P2-Cal.C	4	4	04-Sep-18	07-Sep-18	-249	0%	0	0					■ Geotextile Type A (No-Dredged Area) CH262-312 (2426m2)
MC12055	Geotextile Type A (No-Dredged Area) CH312-362 (2606m2)	P2-Cal.C	4	4	08-Sep-18	12-Sep-18	-249	0%	0	0					■ Geotextile Type A (No-Dredged Area) CH312-362 (2606m2)
MC12065	Geotextile Type A (No-Dredged Area) CH362-412 (2566m2)	P2-Cal.C	4	4	24-Sep-18	28-Sep-18	-247	0%	0	0					■ Geotextile Type A (No-Dredged Area) CH362-412 (2566m2)
MC12075	Geotextile Type A (No-Dredged Area) CH412-442 (1878m2)	P2-Cal.C	3	3	11-Oct-18	13-Oct-18	-245	0%	0	0					■ Geotextile Type A (No-Dredged Area) CH412-442 (1878m2)
MC12085	Geotextile Type A (No-Dredged Area) CH442-530 (2540m2)	P2-Cal.C	4	4	08-Nov-18	12-Nov-18	-247	0%	0	0					■ Geotextile Type A (No-Dredged Area) CH442-530 (2540m2)
Placing Sand Blanket (Non-Dredged Area)		P2-Cal.C	62	62	04-Sep-18	17-Nov-18	-247			0					▼ Placing Sand Blanket (Non-Dredged Area)
MC12105	Sand Blanket CH225-275 (1205m3)	P2-Cal.C	3	3	04-Sep-18	06-Sep-18	-248	0%	0	0					■ Sand Blanket CH225-275 (1205m3)
MC12115	Sand Blanket CH275-325 (2316m3)	P2-Cal.C	5	5	11-Sep-18	15-Sep-18	-249	0%	0	0					■ Sand Blanket CH275-325 (2316m3)
MC12125	Sand Blanket CH325-375 (2467m3)	P2-Cal.C	5	5	27-Sep-18	03-Oct-18	-247	0%	0	0					■ Sand Blanket CH325-375 (2467m3)
MC12135	Sand Blanket CH375-425 (2465m3)	P2-Cal.C	5	5	13-Oct-18	19-Oct-18	-245	0%	0	0					■ Sand Blanket CH375-425 (2465m3)
MC12145	Sand Blanket CH425-442 (2923m3)	P2-Cal.C	2	2	20-Oct-18	22-Oct-18	-230	0%	0	0					■ Sand Blanket CH425-442 (2923m3)
MC12155	Sand Blanket CH442-530 (2468m3)	P2-Cal.C	5	5	13-Nov-18	17-Nov-18	-247	0%	0	0					■ Sand Blanket CH442-530 (2468m3)
Installation of Band Drain (Non-Dredged Area)		P2-Cal.C	61	61	07-Sep-18	20-Nov-18	-249			0					▼ Installation of Band Drain (Non-Dredged Area)
MC12163	Band Drain CH38-95 (1510nos) - Land Plant	P2-Cal.C	12	12	20-Oct-18	02-Nov-18	-257	0%	0	0					■ Band Drain CH38-95 (1510nos) - Land Plant
MC12175	Band Drain CH225-275 (693nos)	P2-Cal.C	7	7	07-Sep-18	14-Sep-18	-248	0%	0	0					■ Band Drain CH225-275 (693nos)
MC12185	Band Drain CH275-325 (1512nos)	P2-Cal.C	15	15	17-Sep-18	05-Oct-18	-249	0%	0	0					■ Band Drain CH275-325 (1512nos)
MC12195	Band Drain CH325-375 (1481nos)	P2-Cal.C	15	15	06-Oct-18	24-Oct-18	-249	0%	0	0					■ Band Drain CH325-375 (1481nos)
MC12205	Band Drain CH375-425 (1722nos)	P2-Cal.C	17	17	25-Oct-18	13-Nov-18	-249	0%	0	0					■ Band Drain CH375-425 (1722nos)
MC12215	Band Drain CH425-442 (609nos)	P2-Cal.C	6	6	14-Nov-18	20-Nov-18	-249	0%	0	0					■ Band Drain CH425-442 (609nos)
Filling of Reclamation Fill to Seabed Level		P2-Cal.C	69	70	08-Aug-18 A	17-Nov-18	-195			-16					▼ Filling of Reclamation Fill to Seabed Level
MC12335	Reclamation Fill CH95-125 (2432m3) - Land	P2-Cal.C	4	1	08-Aug-18 A	25-Aug-18	-257	75%	0	-12					■ Reclamation Fill CH95-125 (2432m3) - Land
MC12345	Reclamation Fill CH125-175 (4904m3) - Land	P2-Cal.C	5	5	31-Aug-18	05-Sep-18	-233	0%	0	0					■ Reclamation Fill CH125-175 (4904m3) - Land
MC12355	Reclamation Fill CH175-225 (3632m3) - Land	P2-Cal.C	5	5	06-Sep-18	11-Sep-18	-227	0%	0	0					■ Reclamation Fill CH175-225 (3632m3) - Land
MC12365	Reclamation Fill CH225-275 (3760m3)	P2-Cal.C	6	6	15-Sep-18	21-Sep-18	-175	0%	0	0					■ Reclamation Fill CH225-275 (3760m3)
MC12375	Reclamation Fill CH275-325 (4829m3)	P2-Cal.C	5	5	06-Oct-18	11-Oct-18	-184	0%	0	0					■ Reclamation Fill CH275-325 (4829m3)
MC12385	Reclamation Fill CH325-375 (3454m3)	P2-Cal.C	4	4	25-Oct-18	29-Oct-18	-191	0%	0	0					■ Reclamation Fill CH325-375 (3454m3)
MC12395	Reclamation Fill CH375-398 (2152m3)	P2-Cal.C	3	3	14-Nov-18	16-Nov-18	-204	0%	0	0					■ Reclamation Fill CH375-398 (2152m3)
Laying of Geotextile Type A on Top of Reclamation Fill		P2-Cal.C	69	69	27-Aug-18	17-Nov-18	-195			0					▼ Laying of Geotextile Type A on Top of Reclamation
MC12415	Geotextile Type A CH80-115 (437m2)	P2-Cal.C	1	1	27-Aug-18	27-Aug-18	-257	0%	0	0					■ Geotextile Type A CH80-115 (437m2)
MC12425	Geotextile Type A CH115-165 (683m2)	P2-Cal.C	1	1	06-Sep-18	06-Sep-18	-233	0%	0	0					■ Geotextile Type A CH115-165 (683m2)
MC12435	Geotextile Type A CH165-215 (784m2)	P2-Cal.C	1	1	12-Sep-18	12-Sep-18	-227	0%	0	0					■ Geotextile Type A CH165-215 (784m2)
MC12445	Geotextile Type A CH215-265 (905m2)	P2-Cal.C	1	1	22-Sep-18	22-Sep-18	-175	0%	0	0					■ Geotextile Type A CH215-265 (905m2)
MC12455	Geotextile Type A CH265-315 (1156m2)	P2-Cal.C	1	1	12-Oct-18	12-Oct-18	-184	0%	0	0					■ Geotextile Type A CH265-315 (1156m2)
MC12465	Geotextile Type A CH315-365 (1077m2)	P2-Cal.C	1	1	30-Oct-18	30-Oct-18	-189	0%	0	0					■ Geotextile Type A CH315-365 (1077m2)
MC12475	Geotextile Type A CH365-388 (518m2)	P2-Cal.C	1	1	17-Nov-18	17-Nov-18	-195	0%	0	0					■ Geotextile Type A CH365-388 (518m2)
Construction of Eastern Seawall Up to +2.5mPD		P2-Cal.C	94	72	04-Jul-18 A	22-Nov-18	-192			-25					▼ Construction of Eastern Seawall Up to +2.5mPD
Filling of G400 Rock as East Seawall Core (+2.5mPD)		P2-Cal.C	94	72	04-Jul-18 A	22-Nov-18	-195			-25					▼ Filling of G400 Rock as East Seawall Core (+2.5mPD)
MC11505	Fill G400 at CH80-115 (2508m3) for Vertical Seawall	P2-Cal.C	2	1	04-Jul-18 A	28-Aug-18	-257	50%	0	-46					■ Fill G400 at CH80-115 (2508m3) for Vertical Seawall

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											Aug	Sep	Oct	Nov	Dec				
MC11515	Fill G400 at CH115-165 (3900m3) for Vertical Seawall	P2-Cal.C	2	2	07-Sep-18	08-Sep-18	-224	0%	0	0									
MC11525	Fill G400 at CH165-215 (5826m3) for Vertical Seawall	P2-Cal.C	3	3	13-Sep-18	15-Sep-18	-227	0%	0	0									
MC11535	Fill G400 at CH215-265 (10232m3)	P2-Cal.C	6	6	24-Sep-18	02-Oct-18	-175	0%	0	0									
MC11545	Fill G400 at CH265-315 (11705m3)	P2-Cal.C	9	9	13-Oct-18	24-Oct-18	-184	0%	0	0									
MC11555	Fill G400 at CH315-365 (12252m3)	P2-Cal.C	10	10	31-Oct-18	10-Nov-18	-189	0%	0	0									
MC11565	Fill G400 at CH365-388 (6115m3)	P2-Cal.C	4	4	19-Nov-18	22-Nov-18	-195	0%	0	0									
Laying of Type A Rockfill as East Seawall Core (+2.5mPD)		P2-Cal.C	34	34	03-Oct-18	12-Nov-18	-185			0									
MC11605	Type A Rockfill CH80-115 (2023m3) After Vertical Seawall Completion	P2-Cal.C	4	4	03-Oct-18	06-Oct-18	-257	0%	0	0									
MC11615	Type A Rockfill CH115-165 (2880m3) After Vertical Seawall Completion	P2-Cal.C	4	4	08-Oct-18	11-Oct-18	-257	0%	0	0									
MC11625	Type A Rockfill CH165-215 (3059m3) After Vertical Seawall Completion	P2-Cal.C	4	4	01-Nov-18	05-Nov-18	-227	0%	0	0									
MC11635	Type A Rockfill CH215-265 (823m3)	P2-Cal.C	1	1	06-Nov-18	06-Nov-18	-191	0%	0	0									
MC11645	Type A Rockfill CH265-315 (735m3)	P2-Cal.C	1	1	07-Nov-18	07-Nov-18	-188	0%	0	0									
MC11655	Type A Rockfill CH315-365 (735m3)	P2-Cal.C	1	1	12-Nov-18	12-Nov-18	-185	0%	0	0									
Laying of Geotextile Type A as East Seawall Core (+2.5mPD)		P2-Cal.C	31	31	08-Oct-18	13-Nov-18	-185			0									
MC11705	Geotextile Type A CH80-115 (757m2)	P2-Cal.C	1	1	08-Oct-18	08-Oct-18	-254	0%	0	0									
MC11715	Geotextile Type A CH115-165 (1138m2)	P2-Cal.C	1	1	12-Oct-18	12-Oct-18	-257	0%	0	0									
MC11725	Geotextile Type A CH165-215 (1212m2)	P2-Cal.C	1	1	06-Nov-18	06-Nov-18	-227	0%	0	0									
MC11735	Geotextile Type A CH215-265 (1243m2)	P2-Cal.C	1	1	07-Nov-18	07-Nov-18	-191	0%	0	0									
MC11745	Geotextile Type A CH265-315 (1282m2)	P2-Cal.C	1	1	08-Nov-18	08-Nov-18	-188	0%	0	0									
MC11755	Geotextile Type A CH315-365 (1308m2)	P2-Cal.C	1	1	13-Nov-18	13-Nov-18	-185	0%	0	0									
Laying of Granular Filter as East Seawall Core (+2.5mPD)		P2-Cal.C	31	31	09-Oct-18	14-Nov-18	-185			0									
MC11805	Granular Filter CH80-115 (739m3)	P2-Cal.C	1	1	09-Oct-18	09-Oct-18	-254	0%	0	0									
MC11815	Granular Filter CH115-165 (1061m3)	P2-Cal.C	2	2	13-Oct-18	15-Oct-18	-257	0%	0	0									
MC11825	Granular Filter CH165-215 (1112m3)	P2-Cal.C	2	2	07-Nov-18	08-Nov-18	-227	0%	0	0									
MC11835	Granular Filter CH215-265 (877m3)	P2-Cal.C	1	1	09-Nov-18	09-Nov-18	-192	0%	0	0									
MC11845	Granular Filter CH265-315 (904m3)	P2-Cal.C	1	1	10-Nov-18	10-Nov-18	-189	0%	0	0									
MC11855	Granular Filter CH315-365 (923m3)	P2-Cal.C	1	1	14-Nov-18	14-Nov-18	-185	0%	0	0									
Construction of Vertical Seawall		P2-Cal.C	52	52	29-Aug-18	31-Oct-18	-227			0									
Construction of Vertical Seawall (Type 2 & 3)		P2-Cal.C	29	29	29-Aug-18	03-Oct-18	-257			0									
MC11905	Installation of guidance rail for leveling stone	P2-Cal.C	2	2	29-Aug-18	30-Aug-18	-257	0%	0	0									
MC11915	Seawall (Type 2 & 3) Laying of leveling stone Type 2 & 3	P2-Cal.C	3	3	31-Aug-18	03-Sep-18	-257	0%	0	0									
MC11925	Seawall (Type 2 & 3) Laying of M9 (18 nos)	P2-Cal.C	2	2	04-Sep-18	05-Sep-18	-257	0%	0	0									
MC11935	Seawall (Type 2 & 3) Laying 1st Layer (39 nos)	P2-Cal.C	4	4	06-Sep-18	10-Sep-18	-257	0%	0	0									
MC11945	Seawall (Type 2 & 3) Laying 2nd Layer (32 nos)	P2-Cal.C	3	3	11-Sep-18	13-Sep-18	-257	0%	0	0									
MC11950	Connection of existing Vertical Seawall - 3 Layer (RFI-151)	P2-Cal.C	15	15	14-Sep-18	03-Oct-18	-257	0%	0	0									
Construction of Vertical Seawall (Type 1 & 4)		P2-Cal.C	36	36	17-Sep-18	31-Oct-18	-227			0									
MC11955	Installation of guidance rail for leveling stone	P2-Cal.C	2	2	17-Sep-18	18-Sep-18	-227	0%	0	0									
MC11965	Seawall (Type 1 & 4) Laying of leveling stone Type 1 & 4	P2-Cal.C	5	5	19-Sep-18	24-Sep-18	-227	0%	0	0									
MC11975	Seawall (Type 1 & 4) Laying of M9 (65 nos)	P2-Cal.C	7	7	26-Sep-18	04-Oct-18	-227	0%	0	0									
MC11985	Seawall (Type 1 & 4) Laying 1st Layer (124 nos)	P2-Cal.C	12	12	05-Oct-18	19-Oct-18	-227	0%	0	0									
MC11995	Seawall (Type 1 & 4) Laying 2nd Layer (105 nos)	P2-Cal.C	10	10	20-Oct-18	31-Oct-18	-227	0%	0	0									
Construction of Western Seawall Up to +1.3mPD		P2-Cal.C	37	37	06-Oct-18	19-Nov-18	-182			0									
Filling of G400 Rock as West Seawall Core (+1.3mPD)		P2-Cal.C	35	35	06-Oct-18	16-Nov-18	-182			0									

█ Primary Baseline █ Critical Remaining Work
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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Aug-18)

3 Monthly Rolling Programme
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Date	Revision	Checked	Approved
20-Aug-18			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018									
											Aug	Sep	Oct	Nov	Dec					
MC12495	Fill G400 CH270-320 (4241m3)	P2-Cal.C	2	2	06-Oct-18	08-Oct-18	-164	0%	0	0										
MC12505	Fill G400 CH320-370 (4679m3)	P2-Cal.C	2	2	25-Oct-18	26-Oct-18	-172	0%	0	0										
MC12515	Fill G400 CH370-420 (5159m3)	P2-Cal.C	3	3	14-Nov-18	16-Nov-18	-182	0%	0	0										
Laying of Type A Rockfill as West Seawall Core (+1.3mPD)		P2-Cal.C	34	34	09-Oct-18	17-Nov-18	-182			0										
MC12535	Type A Rockfill CH270-320 (511m3)	P2-Cal.C	1	1	09-Oct-18	09-Oct-18	-164	0%	0	0										
MC12545	Type A Rockfill CH320-370 (541m3)	P2-Cal.C	1	1	27-Oct-18	27-Oct-18	-172	0%	0	0										
MC12555	Type A Rockfill CH370-420 (554m3)	P2-Cal.C	1	1	17-Nov-18	17-Nov-18	-182	0%	0	0										
Laying of Geotextile Type A as West Seawall Core (+1.3mPD)		P2-Cal.C	34	34	10-Oct-18	19-Nov-18	-182			0										
MC12575	Geotextile Type A CH270-320 (807m2)	P2-Cal.C	1	1	10-Oct-18	10-Oct-18	-164	0%	0	0										
MC12585	Geotextile Type A CH320-370 (541m2)	P2-Cal.C	1	1	29-Oct-18	29-Oct-18	-172	0%	0	0										
MC12595	Geotextile Type A CH370-420 (805m2)	P2-Cal.C	1	1	19-Nov-18	19-Nov-18	-182	0%	0	0										
Laying of Granular Filter as West Seawall Core (+1.3mPD)		P2-Cal.C	16	16	11-Oct-18	30-Oct-18	-172			0										
MC12615	Granular Filter CH270-320 (533m3)	P2-Cal.C	1	1	11-Oct-18	11-Oct-18	-164	0%	0	0										
MC12625	Granular Filter CH320-370 (543m3)	P2-Cal.C	1	1	30-Oct-18	30-Oct-18	-172	0%	0	0										
Filling of Reclamation Fill to -2.0mPD		P2-Cal.C	61	61	07-Sep-18	20-Nov-18	-193			0										
MC12655-05	Reclamation Fill to -2.0mPD CH80-155 (2603m3) - West Side	P2-Cal.C	5	5	07-Sep-18	12-Sep-18	-233	0%	0	0										
MC12665	Reclamation Fill to -2.0mPD CH80-155 (2603m3)	P2-Cal.C	2	2	13-Oct-18	15-Oct-18	-257	0%	0	0										
MC12665-01	Reclamation Fill to -2.0mPD CH155-215 (2760m3) - West Side	P2-Cal.C	5	5	13-Sep-18	18-Sep-18	-186	0%	0	0										
MC12665-02	Reclamation Fill to -2.0mPD CH155-215 (2760m3)	P2-Cal.C	2	2	09-Nov-18	10-Nov-18	-227	0%	0	0										
MC12675	Reclamation Fill to -2.0mPD CH215-255 (4528m3)	P2-Cal.C	4	4	12-Nov-18	15-Nov-18	-193	0%	0	0										
MC12675-01	Reclamation Fill to -2.0mPD CH255-315 (8839m3)	P2-Cal.C	4	4	16-Nov-18	20-Nov-18	-193	0%	0	0										
Filling of Reclamation Fill -2.0 to +2.5mPD		P2-Cal.C	41	41	04-Oct-18	21-Nov-18	-188			0										
MC12885	Reclamation Fill to +2.5mPD CH40-80 (7902m3) - Sandfill	P2-Cal.C	6	6	04-Oct-18	10-Oct-18	-249	0%	0	0										
MC12895	Reclamation Fill to +2.5mPD CH80-150 (11412m3)	P2-Cal.C	4	4	16-Oct-18	20-Oct-18	-257	0%	0	0										
MC12895-01	Reclamation Fill to +2.5mPD CH150-205 (8538m3)	P2-Cal.C	4	4	12-Nov-18	15-Nov-18	-227	0%	0	0										
MC12905	Reclamation Fill to +2.5mPD CH205-255 (7553m3)	P2-Cal.C	5	5	16-Nov-18	21-Nov-18	-188	0%	0	0										
Filling of Compacted Fill +2.5 to +3.5 & Temp Fill +3.5 to +5.5mPD		P2-Cal.C	76	74	04-Jul-18 A	21-Nov-18	-227			-42										
MC12950	Compacted Fill to +5.5mPD CH0-38 (5300m3)	P2-Cal.C	6	3	04-Jul-18 A	27-Aug-18	-251	50%	0	-41										
MC12955	Compacted Fill to +5.5mPD CH38-90 (7689m3)	P2-Cal.C	7	7	02-Nov-18	09-Nov-18	-257	0%	0	0										
MC12965	Compacted Fill to +5.5mPD CH90-140 (4460m3)	P2-Cal.C	5	5	10-Nov-18	15-Nov-18	-227	0%	0	0										
MC12965-01	Compacted Fill to +5.5mPD CH140-190 (4476m3)	P2-Cal.C	5	5	16-Nov-18	21-Nov-18	-227	0%	0	0										
Surcharge			200	200	28-Aug-18	15-Mar-19	-316			0										
Placing Surcharge		P2-Cal.C	68	68	28-Aug-18	17-Nov-18	-222			0										
MC13015	Placing Surcharge Area 1a (CH0-30) (2990m3)	P2-Cal.C	3	3	28-Aug-18	30-Aug-18	-251	0%	0	0										
MC13020	Placing Surcharge Area 1b (CH30-86) (4852m3)	P2-Cal.C	5	5	10-Nov-18	15-Nov-18	-257	0%	0	0										
MC13035	Placing Surcharge Area 2a (CH86-135) (1173m3)	P2-Cal.C	2	2	16-Nov-18	17-Nov-18	-222	0%	0	0										
Surcharging		P2-Cal.A	197	197	31-Aug-18	15-Mar-19	-316			0										
MC13155	Surcharge Area 1a (CH0-30) (2990m3)	P2-Cal.A	120	120	31-Aug-18	28-Dec-18	-310	0%	0	0										
MC13160	Surcharge Area 1b (CH30-86) (4852m3)	P2-Cal.A	120	120	16-Nov-18	15-Mar-19	-316	0%	0	0										
MC13175	Surcharge Area 2a (CH86-135) (1173m3)	P2-Cal.A	60	60	18-Nov-18	16-Jan-19	-274	0%	0	0										
Armour Protection		P2-Cal.C	17	17	16-Nov-18	05-Dec-18	-101			0										
Laying of Underlayer Armour Rock (East)		P2-Cal.C	17	17	16-Nov-18	05-Dec-18	-101			0										
MC13775	Armour CH71-190 (berm stone 820m3)	P2-Cal.C	17	17	16-Nov-18	05-Dec-18	-101	0%	0	0										

█ Primary Baseline █ Critical Remaining Work
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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Aug-18)

3 Monthly Rolling Programme
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Date	Revision	Checked	Approved
20-Aug-18			

Activity ID	Activity Name	Calendar	Original Duration	Remaining Duration	Start	Finish	Total Float	Activity % Complete	TRA	Variance - BL1	2018								
											Aug	Sep	Oct	Nov	Dec				
Full-scale Treatment of Cement S/S of Marine Sediment																			
MC14075	Treatment (Supsend due to no stockpile area 17 Jul 18 to 19 Sep 18)	P2-Cal.C	313	128	06-Jan-18 A	22-Jan-19	24	72.8%		3									
MC14080	Curing, Stockpiling and Filling	P2-Cal.C	313	128	06-Jan-18 A	22-Jan-19	24	59.11%		3									
Modification Works of Existing Seawall																			
MC14145	Excavation and Removal of existing seawall	P2-Cal.C	50	50	19-Sep-18	19-Nov-18	26	0%		0									
MC14165	Excavation down to -0.5mPD	P2-Cal.C	20	20	09-Oct-18	01-Nov-18	26	0%		0									
MC14185	Installation of Guidance Rail	P2-Cal.C	4	4	02-Nov-18	06-Nov-18	26	0%		0									
MC14205	Installation of Leveling Stone (47nos.)	P2-Cal.C	6	6	07-Nov-18	13-Nov-18	26	0%		0									
MC14225	Installation of Seawall (39nos)	P2-Cal.C	5	5	14-Nov-18	19-Nov-18	26	0%		0									
Land Works																			
Road P2 Underpass (CH105-CH318)																			
Underpass																			
Underpass P2 CH 105 - 318																			
Ground Investigation																			
LC17783	Completion of abandoning temp. 1500mm DN	P2-Cal.C	0	0	16-Nov-18	16-Nov-18	-204	0%		0									
Section 4 of the Works - Preservation and Protection of Existing Trees																			
LC25260	Preservation and Protection of Existing Trees	P2-Cal.A	1451	1011	12-Jan-17 A	04-Aug-21	-312	30.32%		-215									
LC25280	Nursery Transplanted Trees at the Contractor's holding nursery	P2-Cal.A	1177	1011	28-Apr-17 A	26-May-21	-242	14.1%		-313									

— Primary Baseline — Critical Remaining Work
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NE/2015/02 Tseung Kwan O - Lam Tin Tunnel-Road P2 and Associated Works (Aug-18)

3 Monthly Rolling Programme
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Date	Revision	Checked	Approved
20-Aug-18			

NE/2017/02 - Updated Programme (Aug 2018)

Activity ID	Activity Name	Original Duration	Calendar	Activity % Complete	Remaining Duration	Start	Finish	Late Start	Late Finish	Total Float	Time Risk Allowance	2018												2019												2020												2021												
												Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NE/2017/02 - Updated Programme (Aug 2018)																																																												
Contractual Dates		1471				1210 17-Nov-17 A	29-Nov-21	08-Aug-18	29-Nov-21	0																																																		
Contractual Dates		1461				1190 17-Nov-17 A	29-Nov-21	08-Aug-18	29-Nov-21	0																																																		
Commencement Date		0	7d			0 20-Nov-17 A	30-Nov-17 A	08-Aug-18	08-Aug-18																																																			
K10000	Contract Date	0	7d	100%		0 20-Nov-17 A		08-Aug-18																																																				
K10010	Starting Date	0	7d	100%		0 30-Nov-17 A		08-Aug-18																																																				
Key Dates (contract)		195	7d			195 18-May-20	29-Nov-20	18-May-20	29-Nov-20	0																																																		
K10020	Key Date 1 - Completion of works for the T&C of route-wide lighting, E&M and TCSS	0	7d	0%	0		18-May-20*		18-May-20	0																																																		
K10030	Key Date 2 - Completion of works for the opening of Road P2	0	7d	0%	0		29-Nov-20*		29-Nov-20	0																																																		
Key Dates (planned)		205	7d			205 07-May-20	28-Nov-20	18-May-20	29-Nov-20	1																																																		
K10040	Key Date 1 - Completion of works for the T&C of route-wide lighting, E&M and TCSS (pl)	0	7d	0%	0		07-May-20*		18-May-20	11																																																		
K10050	Key Date 2 - Completion of works for the opening of Road P2 (planned)	0	7d	0%	0		28-Nov-20*		29-Nov-20	1																																																		
Completion Dates (contract)		1190	7d			1190 27-Aug-18	29-Nov-21	27-Aug-18	29-Nov-21	0																																																		
K10060	Section 1 - All works not covered by other Sections	0	7d	0%	0		01-Aug-20*		01-Aug-20	0																																																		
K10070	Section 2 - Bridgeworks	0	7d	0%	0		29-Nov-20*		29-Nov-20	0																																																		
K10080	Section 3 - Preservation and Protection of Existing Trees	0	7d	0%	0		29-Nov-20*		29-Nov-20	0																																																		
K10090	Section 4 - Landscape Softworks	0	7d	0%	0		29-Nov-20*		29-Nov-20	0																																																		
K10100	Section 5 - Establishment Works	0	7d	0%	0		29-Nov-21*		29-Nov-21	0																																																		
K10110	Section 6 - Community Liaison Centre	0	7d	0%	0		27-Aug-18*		27-Aug-18	0																																																		
Completion Dates (planned)		1189	7d			1189 27-Aug-18	28-Nov-21	27-Aug-18	29-Nov-21	1																																																		
K10120	Section 1 - All works not covered by other Sections (planned)	0	7d	0%	0		24-Jul-20*		01-Aug-20	8																																																		
K10130	Section 2 - Bridgeworks (planned)	0	7d	0%	0		28-Nov-20*		29-Nov-20	1																																																		
K10140	Section 3 - Preservation and Protection of Existing Trees (planned)	0	7d	0%	0		28-Nov-20*		29-Nov-20	1																																																		
K10150	Section 4 - Landscape Softworks (planned)	0	7d	0%	0		28-Nov-20*		29-Nov-20	1																																																		
K10160	Section 5 - Establishment Works (planned)	0	7d	0%	0		28-Nov-21*		29-Nov-21	1																																																		
K10170	Section 6 - Community Liaison Centre (planned)	0	7d	0%	0		27-Aug-18*		27-Aug-18	0																																																		
Access Dates		477	6d			0 17-Nov-17 A	21-Sep-19	21-Sep-19	29-Nov-21	650																																																		
K10180	Portion I	0	6d	100%		0 30-Nov-17 A		29-Nov-21																																																				
K10190	Portion II	0	6d	100%		0 30-Nov-17 A		29-Nov-21																																																				
K10200	Portion III	0	6d	100%		0 17-Nov-17 A		29-Nov-21																																																				
K10210	Portion IV	0	6d	0%	0	0 21-Sep-19*		21-Sep-19																																																				
K10220	Portion V	0	6d	100%		0 30-Nov-17 A		29-Nov-21																																																				
K10230	Portion VI	0	6d	100%		0 30-Nov-17 A		29-Nov-21																																																				
Subcontracting		404				143 20-Nov-17 A	28-Dec-18	08-Aug-18	10-Aug-20	591																																																		
S10000	Proposal on competitive process for selection of suppliers of Plant and Materials, Equip	21	7d	100%		0 20-Nov-17 A	11-Dec-17 A	15-May-19	15-May-19																																																			
S10010	Acceptance of proposal on competitive process	21	7d	100%		0 11-Dec-17 A	18-Dec-17 A	15-May-19	15-May-19																																																			
S10020	Subcontracting procedure	3	6d	100%		0 04-Dec-17 A	06-Dec-17 A	08-Aug-18	08-Aug-18																																																			
S10030	Acceptance of subcontracting procedure	6	7d	100%		0 07-Dec-17 A	12-Dec-17 A	08-Aug-18	08-Aug-18																																																			
Subcontract Packages		319	6d			118 30-Nov-17 A	28-Dec-18	08-Aug-18	10-Aug-20	477																																																		
S10040	SC003 - Community Liaison Centre subcontract	48	6d	100%		0 07-Dec-17 A	21-Feb-18 A	08-Aug-18	08-Aug-18																																																			
S10050	SC004 - Contractor's site office subcontract	48	6d	100%		0 07-Dec-17 A	08-Feb-18 A	01-Aug-20	01-Aug-20																																																			
S10060	SC002 - Pre-construction condition survey subcontract	48	6d	100%		0 07-Dec-17 A	27-Feb-18 A	08-Aug-18	08-Aug-18																																																			
S10070	SC011 - Instrumentation subcontract	48	6d	85%	7	08-Mar-18 A	16-Aug-18	13-Aug-18	21-Aug-18	5																																																		
S10080	SC005 - Site security system subcontract	48	6d	100%		0 07-Dec-17 A	27-Feb-18 A	08-Aug-18	08-Aug-18																																																			
S10090	SC006 - ICE for temporary works and Contractor's Design works	48	6d	100%		0 07-Dec-17 A	20-Mar-18 A	08-Aug-18	08-Aug-18																																																			
S10100	SC028 - Landscaping subcontract	48	6d	100%		0 07-Dec-17 A	15-Feb-18 A	23-Aug-18	23-Aug-18																																																			
S10110	Traffic consultant (1st stage)	17	6d	100%		0 30-Nov-17 A	08-Dec-17 A	08-Aug-18	08-Aug-18																																																			
S10120	SC008 - Traffic consultant (2nd stage)	48	6d	100%		0 13-Dec-17 A	19-Apr-18 A	01-Sep-18	01-Sep-18																																																			
S10130	SC013 - Road, Drainage, Watermain subcontract	48	6d	100%		0 08-Feb-18 A	03-May-18 A	08-Aug-18	08-Aug-18																																																			
S10150	SC010 - Ground investigation subcontract	48	6d	100%		0 08-Mar-18 A	04-May-18 A	18-Sep-18	18-Sep-18																																																			
S10160	SC018 - Bored pile subcontract	48	6d	0%	48	09-Aug-18*	05-Oct-18	27-Sep-18	23-Nov-18	41																																																		
S10170	SC019 - Socketted H-pile subcontract	48	6d	100%		0 02-May-18 A	24-Jul-18 A	19-Sep-18	19-Sep-18																																																			
S10180	SC031 - Road lighting system and electrical system for footbridge subcontract	48	6d	25%	36	27-Jul-18 A	18-Sep-18	04-Oct-18	15-Nov-18	47																																																		
S10190	SC017 - Fences, railing, parapets, crash gate and untensioned beam barriers	48	6d	0%	48	09-Aug-18*	05-Oct-18	26-Oct-18	20-Dec-18	64																																																		
S10200	SC015 - Flexible surfacing, milling and resurfacing	48	6d	100%		0 05-May-18 A	03-Jul-18 A	21-Dec-18	21-Dec-18																																																			
S10220	SC029 - Irrigation system subcontract	48	6d	0%	48	09-Aug-18*	05-Oct-18	25-Apr-19	22-Jun-19	209																																																		
S10230	SC030 - Lift system subcontract	48	6d	50%	24	02-Jul-18 A	04-Sep-18	18-Apr-19	21-May-19	207																																																		
S10240	SC022 - Footbridge waterproofing	48	6d	0%	48	01-Sep-18*	30-Oct-18	28-Mar-20	29-May-20	466																																																		
S10250	SC025 - Glazing subcontract	48	6d	0%	48	02-Oct-18*	27-Nov-18	05-Jul-19	29-Aug-19	222																																																		
S10260	SC032 - Canopy for footbridge and cladding of arch subcontract	48	6d	0%	48	02-Oct-18*	27-Nov-18	17-Jun-19	12-Aug-19	207																																																		
S10270	SC020 - Footbridge RC works subcontract	48	6d	0%	48	01-Nov-18*	28-Dec-18	25-Jan-19	25-Mar-19	70																																																		
S10280	SC021 - Prestressing, bearing and fabricated movement joint subcontract	48	6d	0%	48	01-Nov-18*	28-Dec-18	25-Jul-19	19-Sep-19	214																																																		
S10290	SC023 - Footbridge steelworks (steel arch & lift beams)	48	6d	0%	48	01-Nov-18*	28-Dec-18	05-Nov-19	02-Jan-20	299																																																		
S10300	SC026 - Footbridge finishing	48	6d	0%	48	01-Nov-18*	28-Dec-18	13-Jun-20	10-Aug-20	477																																																		
General Submissions		974				713 20-Nov-17 A	20-Jul-20	08-Aug-18	28-Sep-20	70																																																		
C10000	Draft Safety Plan (submission)	14	7d	100%		0 20-Nov-17 A	19-Dec-17 A	08-Aug-18	08-Aug-18																																																			
C10010	Safety Plan (submission)	6	6d	100%		0 20-Dec-17 A	06-Jan-18 A	08-Aug-18	08-Aug-18																																																			
C10020	Safety Plan (PM's acceptance)	21	7d	100%		0 07-Jan-18 A	24-Jan-18 A	08-Aug-18	08-Aug-18																																																			
C10030	Environmental Management Plan (prepare & submit)	21	7d	100%		0 20-Nov-17 A	11-Dec-17 A	08-Aug-18	08-Aug-18																																																			
C10040	Environmental Management Plan (review & discuss)	6	7d	100%		0 12-Dec-17 A	11-Jan-18 A	08-Aug-18	08-Aug-18																																																			
C10050	Environmental Management Plan (resubmit)	6	6d	100%		0 12-Jan-18 A	30-Jan-18 A	08-Aug-18	08-Aug-18																																																			
C10060	Environmental Management Plan (PM's acceptance)	21	7d	100%		0 31-Jan-18 A	25-Feb-18 A	08-Aug-18	08-Aug-18																																																			
C10070	Subcontractor Management Plan (submission)	30	7d	100%		0 20-Nov-17 A	20-Dec-17 A	08-Aug-18	08-Aug-18																																																			
C10080	Subcontractor Management Plan (PM's comments)	21	7d	100%		0 21-Dec-17 A	05-Jan-18 A	08-Aug-18	08-Aug-18																																																			
C10090	Subcontractor Management Plan (resubmit)	56	6d	100%		0 06-Jan-18 A	15-Mar-18 A	08-Aug-18	08-Aug-18																																																			
C10100	Subcontractor Management Plan (PM's acceptance)	21	7d	100%		0 16-Mar-18 A	06-Apr-18 A	08-Aug-18	08-Aug-18																																																			
C10110	Noise Mitigation Plan (prepare & submit)	1	6d	100%		0 13-Jan-18 A	15-Feb-18 A	29-Sep-18	29-Sep-18																																																			

- Baseline: Programme of July 2018
- ◆ Milestone
- Actual Work
- Remaining Work
- Critical Remaining Work
- Summary

NE/2017/02 - Tseung Kwan O - Lam Tin Tunnel
 Road P2/D4 and Associated Works
 Updated Programme (August 2018)

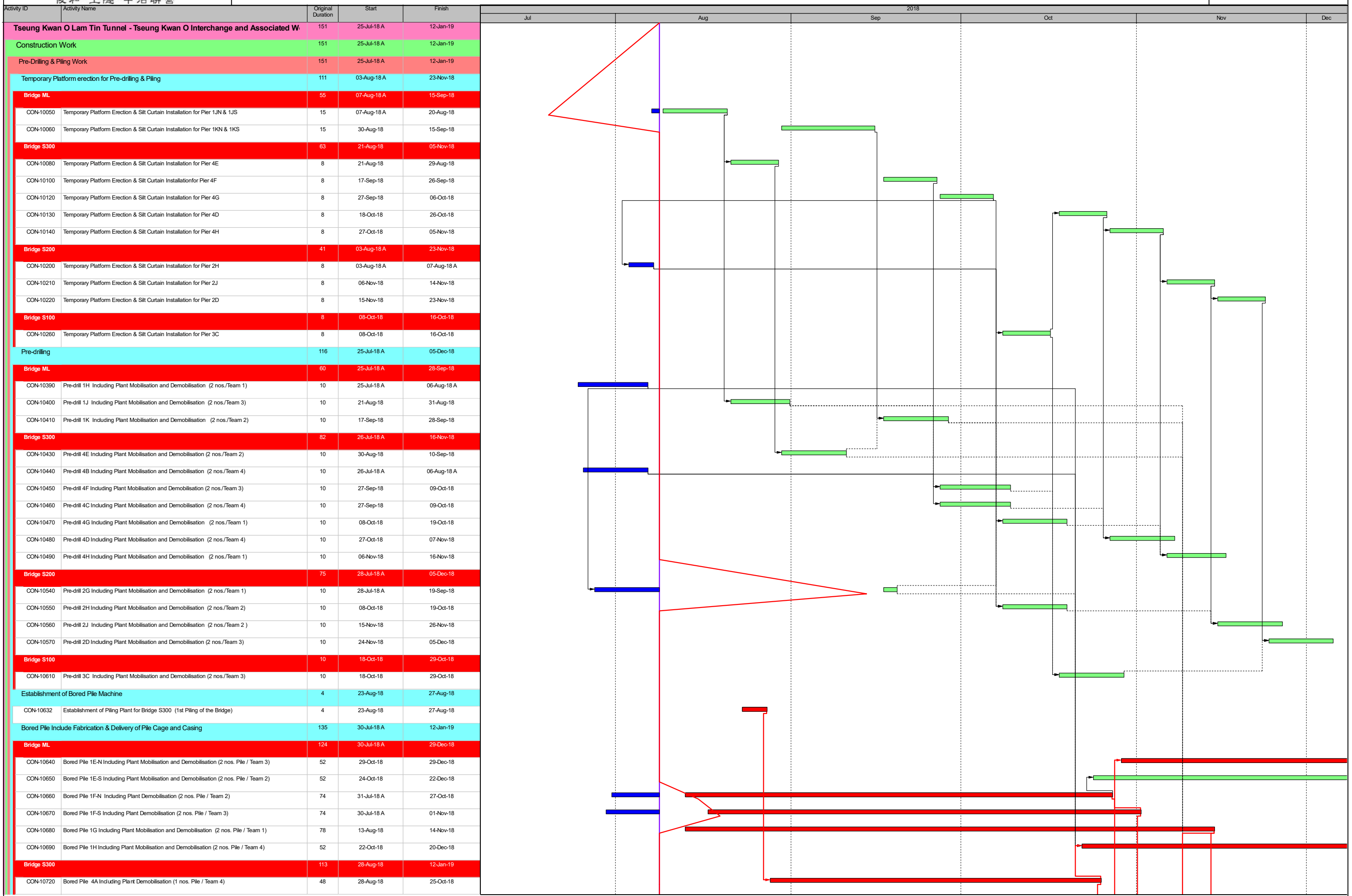
Date	Revision	Checked	Approved
08-Aug-18	RWP-2018-08 (Data date 8-Aug-18)	TC	

Subject: 3 Months Look Ahead Programme

Activities	Sep, 2018	Oct, 2018	Nov, 2018
Construction of Main deck			
Construction of lift shaft			
Bearing installation at Tiu Keng Leng Sports Centre			

Subject: Construction Programme (Aug, 2018)

Activities	Week 1	Week 2	Week 3	Week 4
Construction of Main deck				
Construction of lift shaft				



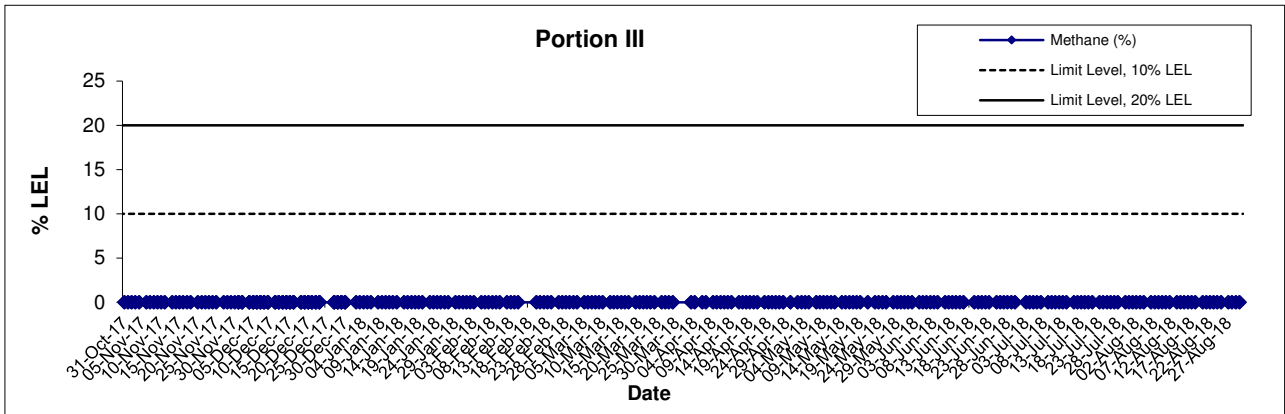
Activity ID	Activity Name	Original Duration	Start	Finish	2018						
					Jul	Aug	Sep	Oct	Nov	Dec	
CON-10760	Bored Pile 4E Including Plant Mobilisation and Demobilisation (2 nos. Pile / Team 1)	52	10-Nov-18	12-Jan-19							
	Curing and Bored Pile Test (Sonic + Interface Core/Full Core)	40	26-Oct-18	11-Dec-18							
	Bridge ML	38	29-Oct-18	11-Dec-18							
CON-10940	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1F-N Including Plant Mobilisation and Demobilisation	23	29-Oct-18	23-Nov-18							
CON-10950	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1F-S Including Plant Mobilisation and Demobilisation	23	02-Nov-18	28-Nov-18							
CON-10960	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 1G Including Plant Mobilisation and Demobilisation	23	15-Nov-18	11-Dec-18							
	Bridge S300	23	26-Oct-18	21-Nov-18							
CON-11020	Curing and Bored Pile Test (Sonic + Full Core/Interface Core) 4A Including Plant Mobilisation and Demobilisation	23	26-Oct-18	21-Nov-18							
	Removal of Temp. Working platform	11	22-Nov-18	04-Dec-18							
	Bridge ML	5	29-Nov-18	04-Dec-18							
CON-11250	Removal of Temporary Platform Erection for Pier 1F-N & 1F-S	5	29-Nov-18	04-Dec-18							
	Bridge S300	5	22-Nov-18	27-Nov-18							
CON-11300	Removal of Temporary Platform Erection for Pier 4A	5	22-Nov-18	27-Nov-18							
	Pile Cap Construction	28	28-Nov-18	02-Jan-19							
	Installation of Precast Shell	28	28-Nov-18	02-Jan-19							
	Bridge S300	28	28-Nov-18	02-Jan-19							
CON-11600	Install Precast Shell for Pier 4A (1 nos. Shell / Team 1)	28	28-Nov-18	02-Jan-19							

**APPENDIX R
RECORD OF LANDFILL GAS
MONITORING BY CONTRACTOR**

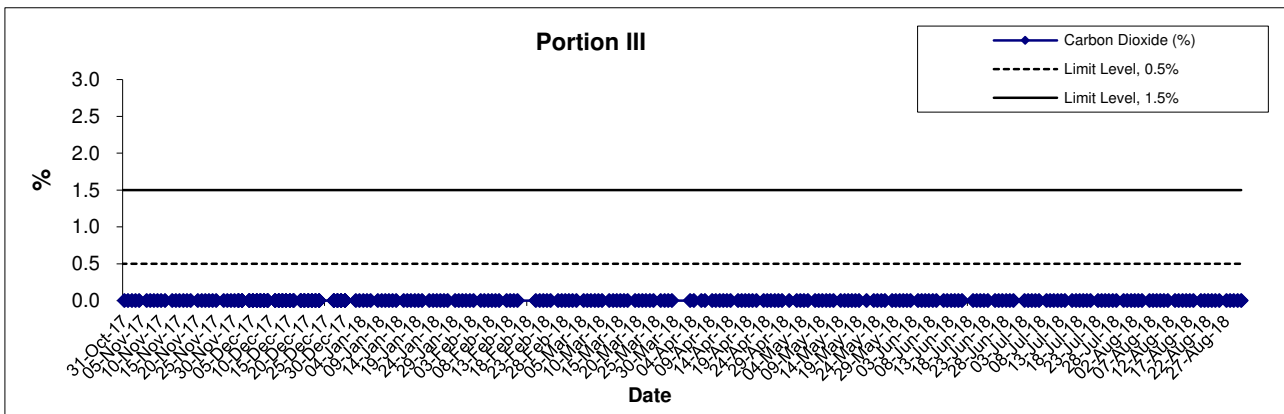
APPENDIX R - RECORD OF LANDFILL GAS MONITORING BY THE CONTRACTOR

Location	Date of Measurement	Sampling time	Weather Condition	Temperature (°C)	Methane (%)	Carbon dioxide (%)	Oxygen (%)
Portion III	1-Aug-18	08:30	Cloudy	27	0	0	20.9
	1-Aug-18	13:04	Cloudy	33	0	0	20.9
	2-Aug-18	08:30	Cloudy	26	0	0	20.9
	2-Aug-18	13:00	Cloudy	32	0	0	20.9
	3-Aug-18	08:29	Sunny	29	0	0	20.9
	3-Aug-18	13:02	Cloudy	33	0	0	20.9
	4-Aug-18	08:30	Rainy	27	0	0	20.9
	4-Aug-18	13:01	Cloudy	32	0	0	20.9
	6-Aug-18	08:30	Sunny	28	0	0	20.9
	6-Aug-18	13:02	Sunny	33	0	0	20.9
	7-Aug-18	08:28	Sunny	28	0	0	20.9
	7-Aug-18	13:00	Sunny	34	0	0	20.9
	8-Aug-18	08:30	Sunny	27	0	0	20.9
	8-Aug-18	13:00	Sunny	34	0	0	20.9
	9-Aug-18	08:28	Sunny	29	0	0	20.9
	9-Aug-18	12:59	Sunny	34	0	0	20.9
	10-Aug-18	08:30	Rainy	26	0	0	20.9
	10-Aug-18	13:02	Rainy	30	0	0	20.9
	11-Aug-18	08:30	Rainy	25	0	0	20.9
	11-Aug-18	13:03	Rainy	29	0	0	20.9
	13-Aug-18	08:30	Cloudy	27	0	0	20.9
	13-Aug-18	13:02	Cloudy	32	0	0	20.9
	14-Aug-18	08:30	Rainy	26	0	0	20.9
	14-Aug-18	13:02	Rainy	30	0	0	20.9
	15-Aug-18	08:30	Cloudy	26	0	0	20.9
	15-Aug-18	13:02	Cloudy	31	0	0	20.9
	16-Aug-18	08:30	Cloudy	25	0	0	20.9
	16-Aug-18	13:00	Cloudy	29	0	0	20.9
	17-Aug-18	08:29	Cloudy	25	0	0	20.9
	17-Aug-18	13:03	Sunny	29	0	0	20.9
	18-Aug-18	08:30	Rainy	25	0	0	20.9
18-Aug-18	13:01	Rainy	31	0	0	20.9	
20-Aug-18	08:30	Rainy	26	0	0	20.9	
20-Aug-18	13:00	Rainy	32	0	0	20.9	
21-Aug-18	08:30	Rainy	26	0	0	20.9	
21-Aug-18	13:00	Rainy	30	0	0	20.9	
22-Aug-18	08:30	Rainy	24	0	0	20.9	
22-Aug-18	13:01	Rainy	32	0	0	20.9	
23-Aug-18	08:30	Rainy	24	0	0	20.9	
23-Aug-18	13:00	Rainy	31	0	0	20.9	
24-Aug-18	08:30	Cloudy	25	0	0	20.9	
24-Aug-18	13:00	Cloudy	32	0	0	20.9	
25-Aug-18	08:30	Sunny	27	0	0	20.9	
25-Aug-18	13:00	Cloudy	32	0	0	20.9	
27-Aug-18	08:30	Rainy	25	0	0	20.9	
27-Aug-18	13:00	Rainy	32	0	0	20.9	
28-Aug-18	08:30	Rainy	28	0	0	20.9	
28-Aug-18	13:04	Rainy	30	0	0	20.9	
29-Aug-18	08:30	Rainy	25	0	0	20.9	
29-Aug-18	13:02	Rainy	30	0	0	20.9	
30-Aug-18	08:29	Cloudy	26	0	0	20.9	
30-Aug-18	13:04	Sunny	29	0	0	20.9	
31-Aug-18	08:29	Cloudy	25	0	0	20.9	
31-Aug-18	13:04	Cloudy	31	0	0	20.9	

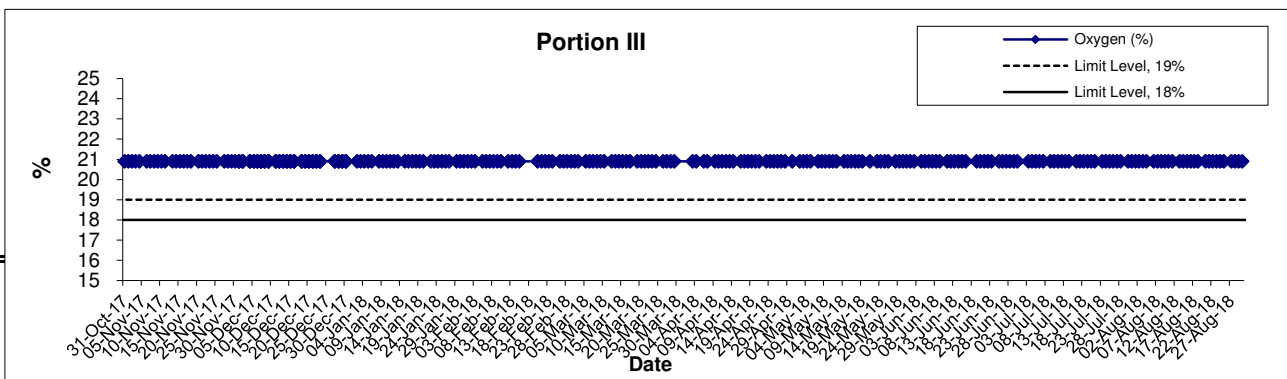
Methane



Carbon Dioxide



Oxygen



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 Landfill Gas Measurement		Date	Appendix	
		Aug 18	R	

**APPENDIX S
UPDATED CONSTRUCTION NOISE
ASSESSMENT**

Our Ref: MA16034/Corres/Out/vc180802

Civil Engineering and Development Department
East Development Office
East Division 1
Project Division (1)
Suite 1213 Chinachem Golden Plaza,
77 Mody Road,
Tsim Sha Tsui East, Kowloon

By Mail

Attn: Mr. CHIANG Nin Tat, Eric

3rd August 2018

Dear Mr. Chiang,

Agreement No. CE 59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel - Design and Construction
(Environmental Permit (EP) No. EP-458/2013/C)
Contract No. NE/2017/01 – Certification of Noise Mitigation Plan (Rev. 01)

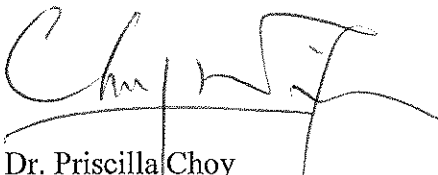
We refer to the Noise Mitigation Plan (Rev. 01) submitted by Chun Wo – STEC – CMGC Joint Venture on 1st August 2018 via email.

We have no comment on the plan and hereby certify it in accordance with Clause 2.5 of Environmental Permit (EP No.: EP-458/2013/C).

Should you have any queries, please contact our Ms. Vivian Choi at 2157 3881 or the undersigned at 2151 2089.

Yours faithfully,

For and on behalf of
Cinotech Consultants Limited



Dr. Priscilla Choy
Environmental Team Leader

c.c. AECOM
ANewR
CW-STEC-CMGC JV

Mr. KY Chan
Mr. Adi Lee
Mr. Clarence Yeung

By E-mail
By E-mail
By E-mail



Civil Engineering and Development Department
New Territories East Development Office
Suite 1213, Chinachem Golden Plaza
77 Mody Road
Tsimshatsui
Kowloon

Your reference:

Our reference: HKCEDD08/50/105148

Date: 6 August 2018

Attention: Mr Chiang Nin Tat, Eric

BY FAX & POST
(Fax no.: 2739 0076)

Dear Sirs

Agreement No.: NTE 06/2016
Independent Environmental Checker for Tseung Kwan O – Lam Tin Tunnel
Noise Mitigation Plan for Tseung Kwan O Interchange and Associated Works

We refer to emails of 30 July and 1 August 2018 from Chun Wo – STEC – CMGC Joint Venture attaching the Noise Mitigation Plan (Rev. 01) of the captioned.

We have no comment and hereby verify the captioned plan in accordance with Clause 2.5 of the Environmental Permit no. EP-458/2013/C.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Nic Lam at 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

Adi Lee
Independent Environmental Checker

LYMA/LHHN/CYYH/lhnh

cc CEDD – Mr Kenny Chan (email: hpchan@cedd.gov.hk)
AECOM – Mr K Y Chan (email: ky.chan@tko-ltt1-aecom.com)
AECOM – Ms Mandy Fu (email: mandy.ky.fu@tko-ltt1-aecom.com)
AECOM – Mr Jason Yu (email: jason.hk.yu@tko-ltt1-aecom.com)
AECOM – Mr Keith Leung (email: keith.yk.leung@tko-ltt1-aecom.com)
Cinotech – Dr Priscilla Choy (email: priscilla.choy@cinotech.com.hk)
Chun Wo – STEC – CMGC JV – Mr Clarence Yeung (email: clarence.yeung@chunwo.com)

Contract No:
NE/2017/01

Project Title:
Tseung Kwan O – Lam Tin Tunnel
Tseung Kwan O Interchange and Associated Works



俊和-上隧-中冶聯營
CW - STEC - CMGC JV

Noise Mitigation Plan

Document No: CWSTCMJV/940/CSF/0346-2018
Revision: 01
Date: 01 Aug 2018

Noise Mitigation Plan

Document No: CWSTCMJV/940/CSF/0346-2018
Revision: 01
Date: 01 Aug 2018

Prepared and checked by:

Position	Signature	Name	Date
Site Agent		David Tung	
Deputy Site Agent		Yau Ming Hong	

Prepared by:

Environmental Officer		Clarence Yeung	
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1.2	REQUIREMENT FOR NOISE MITIGATION PLAN (NMP)	3
2.	<u>DESCRIPTION OF CONSTRUCTION WORKS IN THE STUDY AREA</u>	4
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LIST OF APPENDIXES

Appendix A	Site Layout
Appendix B	Construction Programme

1. BACKGROUND

1.1 PROJECT DESCRIPTION

To cope with the anticipated transport need, “Further Development of Tseung Kwan O – Feasibility Study” (the “TKO Study”) recommended the provision of Tseung Kwan O – Lam Tin Tunnel (TKO-LT Tunnel) and Cross Bay Link (CBL) to meet the long-term traffic demand between TKO and the external areas.

The Tseung Kwan O – Lam Tin Tunnel is a dual-two lane highway connecting Tseung Kwan O and East Kowloon. Together with the future Trunk Road T2 in Kai Tak Development and Central Kowloon Route, it will form the new strategic route network of Hong Kong providing an East-West Express Link between Kowloon and Tseung Kwan O.

CW – STEC – CMGC JV (JV) was commissioned by Civil Engineering and Development Department (CEDD) as the appointed contractor for one of the contracts.

The Works to be executed under this Contract included, but not exclusively, the following items:

- i. Construction of marine viaducts forming the Tseung Kwan O Interchange at Junk Bay;
- ii. Construction of 7 bridges and 28 bridge piers with 30 pile caps and approx. 59 piles (including 3 interfacing piers to CBL);

A Site Layout showing the site boundary is shown in *Appendix A*.

1.2 REQUIREMENT FOR NOISE MITIGATION PLAN (NMP)

In accordance with the condition 2.5 of the EP-458/2013/C, the Permit Holder shall, no later than one month before the commencement of construction of the project, submit to the Director of Environmental Protection for approval three hard copies and two electronic copies of Noise Mitigation Plan detailing the temporary and permanent mitigation measures for the construction and operation phase traffic noise impacts arising from the Project. All noise mitigation measures implemented shall be properly maintained during construction of the project.

2. DESCRIPTION OF CONSTRUCTION WORKS IN THE STUDY AREA

2.1 NOISE SENSITIVE RECEIVERS (NSRS)

None of the NSR is identified within the 300m study areas with predicted residual construction noise impacts as shown in the *Appendix A*.

2.2 CONSTRUCTION ACTIVITIES

As mentioned in Section 1.1, the construction of TKO interchange and associated works is covered by this contract. The construction noise impacts of the Project may arise from the following major construction activities:

- Construction of Marine Piling works
- Construction of Marine Viaducts works
- Construction of Road paving works

These construction activities will involve the use of PME including Cranes, Concrete lorry mixer, Derrick barge, Generator, Piling - Oscillator, Piling – Reverse Circulation Drill, Backhoe etc.

2.3 UPDATED PRELIMINARY CONSTRUCTION PROGRAMME

The updated preliminary construction programme prepared by CW – STEC – CMGC JV has been used in this NMP and has been presented on monthly basis for the duration of the construction works in corresponding worksites.

The construction schedule has been adjusted to minimize concurrent construction works to be carried out in the vicinity as far as practicable. The updated preliminary construction programme is provided in *Appendix B*.

2.4 UPDATED POWERED MECHANICAL EQUIPMENT LIST

The Sound Power Level (SWL) for the PMEs have been adopted from EPD's Technical Memorandum on Noise from Construction Work Other than Percussive Piling (GW-TM), list of SWLs of other commonly used PME or British Standard BS 5228-1:2009. It should be noted that the PMEs to be adopted for individual construction activities are provided in the table below.

Table 2.4 PMEs to be adopted for individual construction activities

Bridge Structure for TKO Interchange				
	PME	TM or other reference	No. of PME	Noise Mitigation Measures
1	Sea Piling Works, Pile Cap & Piers			
	Air Compressor, air flow > 10m ³ /min and < 30m ³ /min	CNP 002	6	
	Concrete lorry mixer	CNP 044	12	
	Crane, mobile/barge mounted (diesel)	CNP 048	2	
	Derrick barge	CNP 061	6	Barrier
	Poker, vibratory, hand-held	CNP 170	4	
	Generator, silenced, 75dB(A) at 7m	CNP 102	4	
	Water pump (electric)	CNP 281	8	
	Excavator/loader, wheeled/tracked	CNP 081	2	
	Saw, circular, wood	CNP 201	2	
	Bar bender and cutter (electric)	CNP 021	3	
	Piling, large diameter bored, grab and chisel	CNP 164	2	
	Piling, large diameter bored, reverse circulation drill	CNP 166	4	
	Breaker, excavator mounted (pneumatic)	CNP 027	2	
	Tug boat	CNP 221	2	
	Drill rig, rotary type (diesel)	CNP 072	3	
	Roro barge	-	2	
2	Bridge Deck Construction			
	Generator, silenced, 75dB(A) at 7m	CNP 102	4	
	Breaker, hand-held, mass < 10kg	CNP 023	4	
	Derrick barge	CNP 061	4	Barrier
	Tug boat	CNP 221	4	
	Winch (electric)	CNP 262	4	
	Bar bender and cutter (electric)	CNP 021	4	
	Concrete lorry mixer	CNP 044	4	
	Concrete pump, stationary/lorry mounted	CNP 047	4	
	Poker, vibratory, hand-held	CNP 170	8	
	Flat top barge	-	4	
3	Roadworks, Drainage and Utilities			

	Dump truck, gross vehicle weight > 38 tonne	CNP067	2	
	Asphalt paver	CNP 004	1	
	Roller, vibratory	CNP 186	1	
	Generator, silenced, 75dB(A) at 7m	CNP 102	1	
	Paint line marker	CNP 161	1	

2.5 Operation Phases Traffic Noise Impacts

For traffic noise was predicted using the methodology provided in the UK Department of Transport Calculation of Road Traffic Noise (CRTN) 1988. The assessment was based on projected peak hour flows for the worst year within 15 years after opening of the road. Road traffic noise levels is presented in terms of noise levels exceeded for 10% of the one-hour period during the peak traffic flow, i.e. $L_{10,1hr}$ dB(A). The projected 2036 peak hour traffic flows and vehicle compositions which have been agreed by Transport Department (TD) as stated in the EIA report section 4.5.

As mentioned in the section 2.1, none of the NSR is identified within the 300m study area for this project and therefore it is considered the project has insignificant noise impact to the NSR. As the result, no direct mitigation such as noise barrier would be needed for the operation phase.

3. **RECOMMENDED NOISE MITIGATION MEASURES**

As the construction works are marine-based and therefore the noise mitigation measures can only be placed on the barge which would be located and stabilize the majority of the PMEs. We suggested adopting the following mitigation measures for the purpose of reducing the noise impact arise from our construction activities.

- Noise barrier will be used for noisy plants such as barge, generator etc. Movable temporary noise barriers that can be located close to noisy plant and be moved iteratively with the plant (Figure 1). The noise source from the barge mainly is the operation of the barge's winch, noise barrier will be erected surrounding the winch to mitigate the noise. The noise barrier will be made of minimum 50mm thick sound absorbing lining and minimum 10mm thick plywood.



Figure 1 Erection of noise barrier on the barge

- The JV will carefully plan the construction activity and locate all the PMEs as far as practicable to the NSR for the purpose of reducing the noise impacts to the surrounding environment.
- Reduce the percentage of using time of plant and equipment as far as practicable. It would be appropriate to restrict the number of operating PME within the works area at the same time and therefore reduce the level of noise impact.
- Regularly maintain the PMEs and plants for ensuring the PMEs are in good working orders and maximum the use of QPME.

3.1 CONCURRENT CONSTRUCTION WORKS

Until Feb 2018, it is noted that there are three concurrent construction works as stated below:

Table 3.1 Concurrent Construction Works

Contract No.	Project Title
NE/2015/01	Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works
NE/2015/02	Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works
NE/2015/03	Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge

4. CONCLUSION

In conclusion, since there is no NSR found within the 300m distance as mention in section 2.1, it would be considered the noise impact generated from the construction activities is insignificant to the NSR.

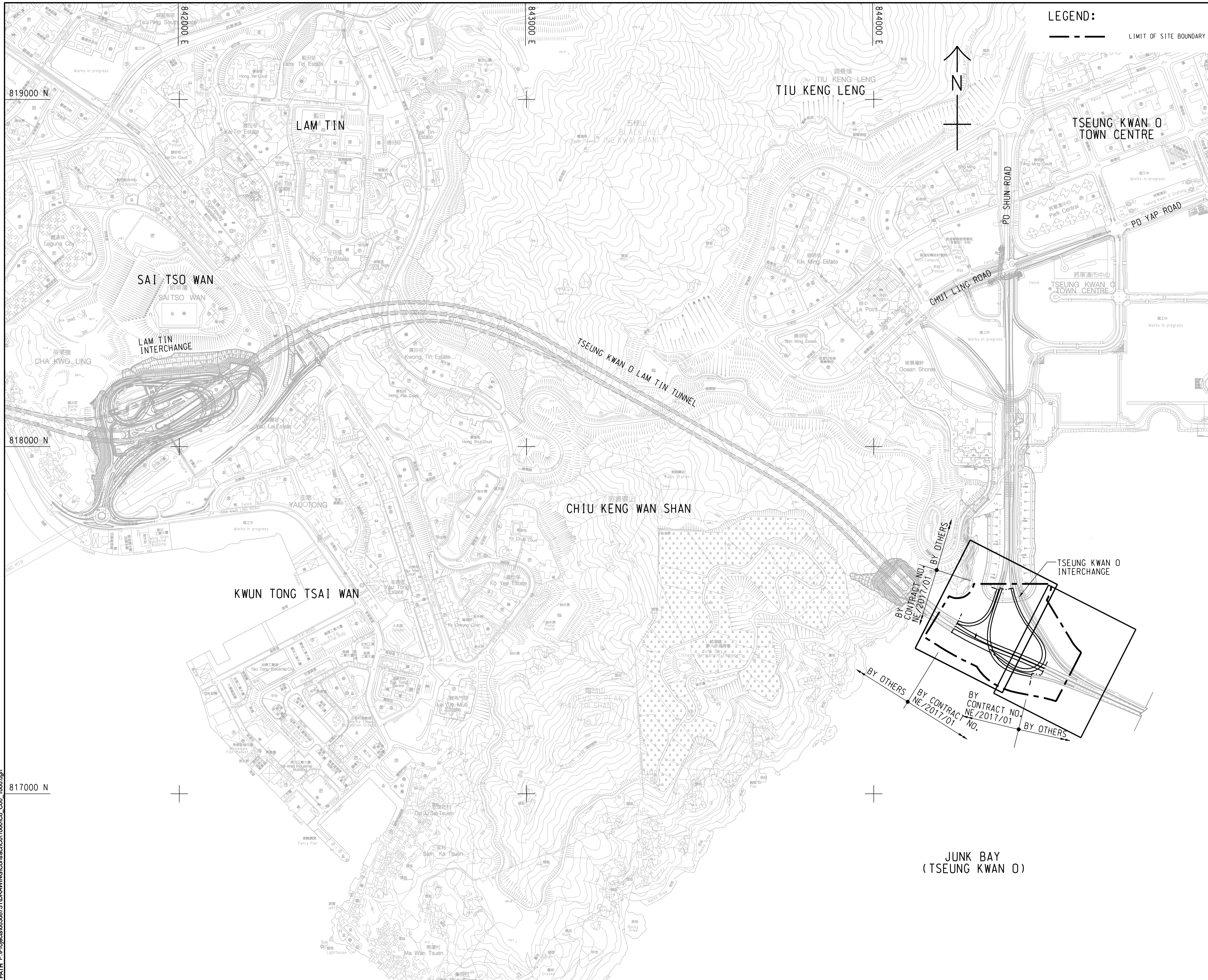
However, the JV would adopt and implement the mitigation measures to some of the PMEs during construction to minimize the noise impact arise from the construction activities, therefore the works would only have a slight effect to the NSR (Ocean Shores Block 1) during the construction phase.

NE/2017/01

Tseung Kwan O – Lam Tin Tunnel: Tseung Kwan O Interchange and Associated Works

Noise Mitigation Plan

Appendix A – Site Layout



LEGEND:
 - - - - - LIMIT OF SITE BOUNDARY



PROJECT
 項目
TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
 TSEUNG KWAN O - LAM TIN TUNNEL
 TSEUNG KWAN O INTERCHANGE AND ASSOCIATED WORKS

CLIENT
 業主
 土木工程拓展署
 Civil Engineering and Development Department

CONSULTANT
 工程顧問公司
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS
 分判工程顧問公司

ISSUE/REVISION
 修訂

I/R	DATE	DESCRIPTION	CHK.
-	JUN.17	TENDER DRAWING	RPCM

STATUS
 階段

SCALE
 比例
 A1 1 : 5000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60308751

CONTRACT NO.
 合約編號
 NE/2017/01

SHEET TITLE
 圖紙名稱
 KEY PLAN AND LOCATION PLAN

SHEET NUMBER
 圖紙編號
 60308751/C6/C00/1000

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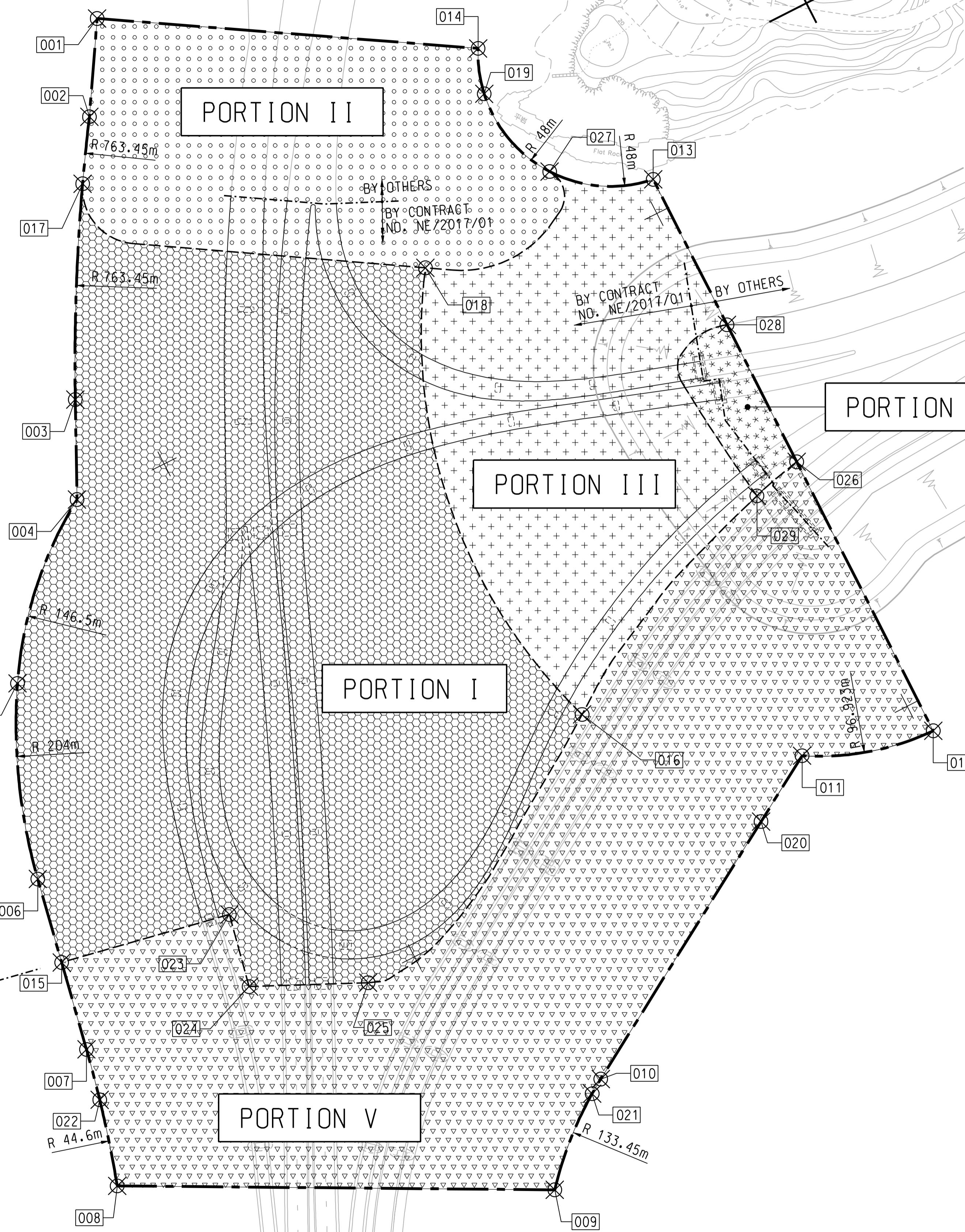
844100 E

NOTE:

1. ALL SETTING OUT POINTS SHOWN ON THIS SET OF DRAWINGS ARE FOR REFERENCE ONLY. THE EXACT LIMIT OF SITE BOUNDARY SHALL BE VERIFIED AND DETERMINED BY THE CONTRACTOR ON SITE.

LEGEND:

- LIMIT OF SITE BOUNDARY
- [Pattern] PORTION I
- [Pattern] PORTION II
- [Pattern] PORTION III
- [Pattern] PORTION IV
- [Pattern] PORTION V



SETTING OUT POINTS

POINTS	EASTING	NORTHING
001	844145.337	817451.381
002	844175.768	817432.789
003	844264.674	817381.875
004	844297.203	817366.044
005	844346.746	817316.716
006	844413.182	817291.188
007	844476.127	817278.972
008	844525.199	817266.527
009	844598.186	817407.066
010	844570.091	817440.045
011	844498.695	817557.994
012	844512.176	817604.423
013	844288.396	817604.423
014	844217.442	817569.406
015	844444.019	817285.204
016	844450.066	817495.320
017	844196.257	817419.620
018	844279.572	817516.430
019	844233.083	817563.928
020	844513.219	817533.974
021	844573.301	817434.873
022	844494.556	817274.992
023	844456.043	817347.195
024	844482.530	817341.744
025	844500.776	817380.791
026	844403.015	817604.423
027	844268.887	817572.299
028	844347.400	817604.380
029	844407.482	817586.009

PROJECT

TSEUNG KWAN O - LAM TIN TUNNEL

CONTRACT TITLE
TSEUNG KWAN O - LAM TIN TUNNEL
TSEUNG KWAN O INTERCHANGE AND
ASSOCIATED WORKS

CLIENT

土木工務拓展署
Civil Engineering and
Development Department

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.
-	JUN.17	TENDER DRAWING	RPCM

STATUS

SCALE

A1 1: 1000

DIMENSION UNIT

公尺/米

KEY PLAN

PROJECT NO.

60308751

CONTRACT NO.

NE/2017/01

SHEET TITLE

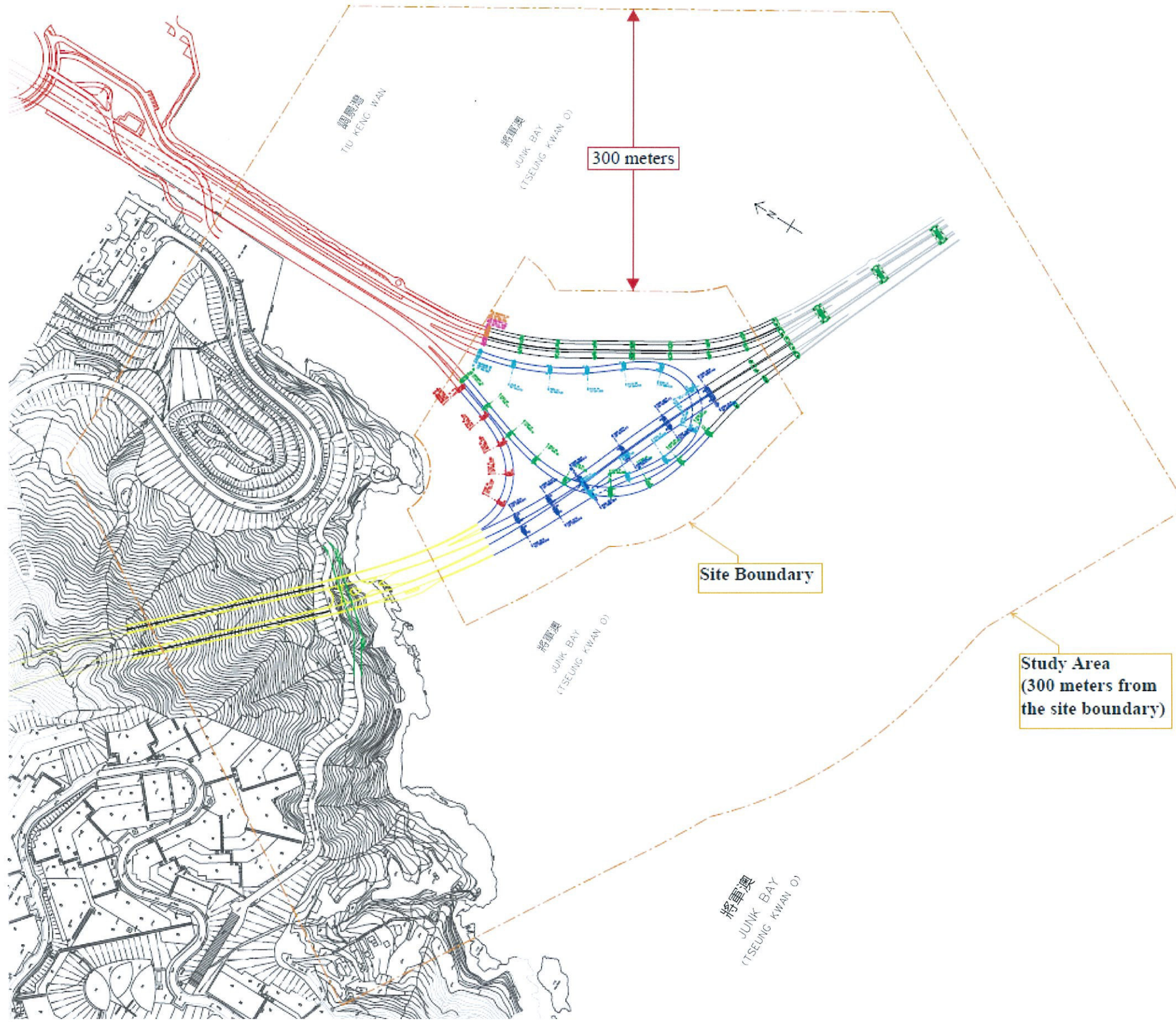
PORTION OF SITE

SHEET NUMBER

60308751/C6/C00/1011

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JUNK BAY
(TSEUNG KWAN O)



PROJECT TITLE:
 TSEUNG KWAN O – LAM TIN TUNNEL
 TSEUNG KWAN O – INTERCHANGE AND
 ASSOCIATED WORKS

DRAWING TITLE:
**TKO SITE SETTING OUT
 POINT (300m study area)**

SCALE: 1:2000
 DRAWING NO: JV-940-SK-000 (NMP)
 REV.: 0

REV.	DATE	REVISION NOTES	DRAWN BY	CHK BY	REV.	DATE	REVISION NOTES	DRAWN BY	CHK BY

CLIENT:
 土木工程拓展署
 Civil Engineering and
 Development Department

CONSULTING ENGINEER:


MAIN CONTRACTOR:

 俊和-上隧-中冶聯營
 CW - STEC - CMGC JV

NE/2017/01

Tseung Kwan O – Lam Tin Tunnel: Tseung Kwan O Interchange and Associated Works

Noise Mitigation Plan

Appendix B – Construction Programme

Activity ID	Activity Name	Original Duration	Start	Finish	2018												2019												2020												2021			
					Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1	Q2														
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
NE/2017/01 - TKO-LTT C6_180220		1168	10-Jan-18 A	22-Mar-21	[Summary Bar]																																							
Contract Date		1168	10-Jan-18 A	22-Mar-21	[Works Bar]																																							
Contract Date		12	10-Jan-18 A	22-Jan-18 A	[Milestone]																																							
CD000001	Contract Date	0	10-Jan-18 A		[Milestone]																																							
CD000003	Start Date	0	22-Jan-18 A		[Milestone]																																							
Key Dates		0	22-Mar-21	22-Mar-21	[Milestone]																																							
KD1000110	Completion date for the whole of the works	0		22-Mar-21*	[Milestone]																																							
Planned Completion Dates		173	30-Jul-20	19-Jan-21	[Works Bar]																																							
Preliminaries		1105	11-Jan-18 A	19-Jan-21	[Works Bar]																																							
Method Statement and Shop Drawing		442	26-Feb-18	13-May-19	[Works Bar]																																							
Contractor's Alternative Design (AD)		403	23-Jan-18 A	01-Mar-19	[Works Bar]																																							
Procurements & Subletting		752	26-Feb-18	18-Mar-20	[Works Bar]																																							
Regular Submission / Issue		1073	12-Feb-18	19-Jan-21	[Works Bar]																																							
Construction Works		796	16-Apr-18	16-Dec-20	[Works Bar]																																							
Temporary Platform and Ground Investigation		433	16-Apr-18	27-Sep-19	[Works Bar]																																							
Erect Temporary Platform		130	16-Apr-18	18-Sep-18	[Works Bar]																																							
Ground Investigation Works		423	27-Apr-18	27-Sep-19	[Works Bar]																																							
Bore Pile Construction (59nos) (Including plant mobilization)		442	03-Jul-18	23-Dec-19	[Works Bar]																																							
Bore Pile Construction at Bridge ML		198	03-Jul-18	28-Feb-19	[Works Bar]																																							
Bore Pile Construction at Bridge S200		260	05-Dec-18	23-Oct-19	[Works Bar]																																							
Bore Pile Construction at Bridge S300		439	06-Jul-18	23-Dec-19	[Works Bar]																																							
Bore Pile Construction at Bridge S100		140	13-Apr-19	03-Oct-19	[Works Bar]																																							
Pile Cap Construction		534	23-Jul-18	12-May-20	[Works Bar]																																							
Pre-cast Shell Casting		390	23-Jul-18	13-Nov-19	[Works Bar]																																							
Pre-cast Shell Installation (After Bore Pile Testing)		443	09-Nov-18	12-May-20	[Works Bar]																																							
In-fill Pour to Pile Cap		418	24-Nov-18	25-Apr-20	[Works Bar]																																							
Pier Construction		358	04-Mar-19	20-May-20	[Works Bar]																																							
Pier Construction at Bridge S100		127	09-Nov-19	16-Apr-20	[Works Bar]																																							
Pier Construction at Bridge S200		238	13-Jul-19	02-May-20	[Works Bar]																																							
Pier Construction at Bridge S300		358	04-Mar-19	20-May-20	[Works Bar]																																							
Pier Construction at Bridge ML		227	06-Mar-19	07-Dec-19	[Works Bar]																																							
Pier Head Segment Construction		344	26-Jun-19	20-Aug-20	[Works Bar]																																							
Precast Pier Head Segment Installation		330	26-Jun-19	04-Aug-20	[Works Bar]																																							
Cast-in-situ Diaphragm		343	27-Jun-19	20-Aug-20	[Works Bar]																																							
Segment Erection		342	28-Aug-19	21-Oct-20	[Works Bar]																																							
Bridge Furniture Installation		168	29-May-20	16-Dec-20	[Works Bar]																																							
Remaining works		142	31-Jul-20	19-Jan-21	[Works Bar]																																							



- ◆ Milestone
- Works
- Summary

**NE/2017/01 Tseung Kwan O - Lam Tin Tunnel
Tseung Kwan O Interchange and Associated Works**

Construction Programme

**APPENDIX T
CULTURAL HERITAGE MONITORING
RESULTS**

Appendix T – Cultural Heritage Monitoring Results

Date	Time	Tilting			Settlement (mm)			Vibration (mm/s)		
		Angle (deg) between THT-BSP-1 & THT-BSP-2	Angle (deg) between THT-BSP-1 & THT-BSP-3	Angle (deg) between THT-BSP-2 & THT-BSP-3	THT-BSP-1	THT-BSP-2	THT-BSP-3	Measurement Direction		
								Tran	Vertical	Longitudinal
1-Aug-18	15:13	1 : 6896	1 : 7009	0	+2	+0	+0	0.254	0.254	0.127
2-Aug-18	15:13	Measurement missing						0.127	0.254	0.127
3-Aug-18	17:09	Measurement missing						0.127	0.254	0.127
4-Aug-18	15:07	1 : 6896	1 : 7009	0	0	+0	+0	0.254	0.254	0.127
6-Aug-18	15:07	1 : 13792	1 : 14018	0	0	+0	+0	0.127	0.254	0.127
7-Aug-18	16:57	1 : 3448	1 : 4673	-1 : 16901	-1 : 16901	-2	-1	0.127	0.127	0.127
8-Aug-18	17:12	1 : 3448	1 : 4673	-1 : 16901	-1 : 16901	-1	+0	0.127	0.254	0.254
9-Aug-18	15:10	1 : 6896	1 : 7009	0	0	-1	-1	0.127	0.127	0.127
10-Aug-18	15:13	1 : 6896	1 : 7009	0	0	-1	-1	0.254	0.254	0.127
11-Aug-18	15:15	Bad weather						0.127	0.254	0.127
13-Aug-18	15:22	1 : 6896	1 : 7009	0	+2	+0	+0	0.127	0.254	0.127
14-Aug-18	15:24	1 : 3448	1 : 2804	1 : 16901	+3	-1	-2	0.095	0.142	0.158
15-Aug-18	15:26	1 : 6896	1 : 4673	1 : 16901	+1	-1	-2	0.254	0.254	0.127
16-Aug-18	15:32	1 : 13792	1 : 7009	1 : 16901	+0	-1	-2			
17-Aug-18	15:31	Bad weather						0.127	0.127	0.127
18-Aug-18	15:35	1 : 13792	1 : 7009	1 : 16901	+0	-1	-1	0.254	0.254	0.127
20-Aug-18	15:36	1 : 4597	1 : 4673	0	+2	-1	-1	0.127	0.254	0.127
21-Aug-18	15:39	Measurement missing						0.127	0.127	0.127
22-Aug-18	15:40	-1 : 13792	1 : 7009	1 : 5634	+0	+1	-2	0.127	0.254	0.254
23-Aug-18	15:41	1 : 6896	0	-1 : 8451	+0	-2	+0	0.127	0.254	0.127
24-Aug-18	15:41	0	1 : 14018	1 : 16901	+0	+0	-1	0.254	0.254	0.127
25-Aug-18	15:42	1 : 13792	1 : 4673	1 : 8451	+1	+0	-2	0.127	0.254	0.127
27-Aug-18	15:43	1 : 13792	1 : 4673	1 : 8451	+1	+0	-2	0.127	0.254	0.127
28-Aug-18	15:46	0	1 : 14018	1 : 16901	-1	-1	-2	0.127	0.254	0.254
30-Aug-18	15:46	0	1 : 14018	1 : 16901	+0	+0	-1	0.127	0.254	0.127
31-Aug-18		-1 : 4597	0	1 : 5634	-1	+2	-1	0.127	0.254	0.127
Alert Level		1:2000			6			4.5		
Alarm Level		1:1500			8			4.8		
Action Level		1:1000			10			5		

Note: **Bold** means Alert Level exceedance**Bold Italic** means Alarm Level exceedance**Bold Italic with underline** means Action Level exceedance

**APPENDIX U
PIEZOMETER MONITORING RESULTS**

Appendix U – Construction Phase Daily Piezometer Monitoring Results

Date	Daily Piezometer Monitoring	
	38568-LDH1	
01-Aug-18	+87.65	
04-Aug-18	+87.65	
05-Aug-18	+87.65	
06-Aug-18	+87.65	
07-Aug-18	+87.65	
09-Aug-18	+87.65	
10-Aug-18	+87.65	
11-Aug-18	+87.65	
12-Aug-18	+87.65	
13-Aug-18	+87.65	
14-Aug-18	+87.65	
16-Aug-18	+87.65	
17-Aug-18	+87.65	
18-Aug-18	+87.65	
19-Aug-18	+87.65	
20-Aug-18	+87.65	
21-Aug-18	+87.65	
23-Aug-18	+87.65	
24-Aug-18	+87.65	
25-Aug-18	+87.65	
26-Aug-18	+87.65	
27-Aug-18	+87.65	
28-Aug-18	+87.65	
30-Aug-18	+87.65	
31-Aug-18	+87.65	
Action Level(mpD)	+74.65	TKO-LBH907
		+17.59

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