Civil Engineering and Development Department

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

Quarterly Environmental Monitoring and Audit Report – May to July 2017

(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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TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Introduction

1. This is the 3rd Quarterly 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 summary report presents the EM&A works performed in the period between May 2017 and July 2017.

2. During the reporting quarter, the following works contracts were undertaken within the site:
   - Contract No. NE/2015/01 – Tseung Kwan O – Lam Tin Tunnel – Main Tunnel and Associated Works; and
   - Contract No. NE/2015/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works.
   - Contract No. NE/2015/03 – Tseung Kwan O – Lam Tin Tunnel – Northern Footbridge.

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Site Inspections/Audits were conducted once per week. The implementation of the environmental mitigation measures, Event Action Plans and environmental complaint handling procedures were also checked.

4. Summary of the non-compliance in the reporting quarter for the Project is tabulated in **Table I**. Details of the environmental monitoring results is presented in **Section 3**.

Table I Non-compliance Record for the Project in the Reporting Quarter

Parameter	No. of Exceedance		No. of Exceedance due to Construction Activities of this Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
May 2017					
Air Quality	0	0	0	0	N/A
Noise	9	0	8	0	Refer to Appendix L
Groundwater Quality	N/A	N/A	N/A	N/A	N/A (Refer to Section 3.12)
Marine Water Quality	0	0	0	0	N/A
Groundwater Level Monitoring (Piezometer Monitoring)	N/A	N/A	N/A	N/A	N/A
Ecological	0	0	0	0	N/A
Cultural Heritage	0	0	0	0	N/A
Landfill Gas	0	0	0	0	N/A
June 2017					
Air Quality	0	0	0	0	N/A
Noise	6	0	5	0	Refer to Appendix L
Groundwater Quality	N/A	N/A	N/A	N/A	N/A (Refer to Section 3.12)

Parameter	No. of Exceedance		No. of Exceedance due to Construction Activities of this Project		Action Taken
	Action Level	Limit Level	Action Level	Limit Level	
Marine Water Quality	0	0	0	0	N/A
Groundwater Level Monitoring (Piezometer Monitoring)	N/A	N/A	N/A	N/A	N/A
Ecological	N/A	N/A	N/A	N/A	N/A
Cultural Heritage	0	0	0	0	N/A
Landfill Gas	0	0	0	0	N/A
July 2017					
Air Quality	0	0	0	0	N/A
Noise	2	0	2	0	Refer to Appendix L
Groundwater Quality	N/A	N/A	N/A	N/A	N/A (Refer to Section 3.12)
Marine Water Quality	16	20	0	0	N/A
Groundwater Level Monitoring (Piezometer Monitoring)	N/A	N/A	N/A	N/A	N/A
Ecological	N/A	N/A	N/A	N/A	N/A
Cultural Heritage	0	0	0	0	N/A
Landfill Gas	0	0	0	0	N/A

Key Information in the Reporting Quarter

5. Summary of key information in the reporting quarter is tabulated in **Table II**.

Table II Summary Table for Key Information in the Reporting Quarter

Event	Event Details		Action Taken	Status	Remark
	Number	Nature			
Complaint received / Complaint referred by EPD (May 2017)	10	Construction dust and noise nuisance	Investigation completed	Closed	Details refer to App L
Complaint received / Complaint referred by EPD (June 2017)	8	Construction dust nuisance / Construction noise nuisance / Oil Spill on marine works area	Investigation completed	Closed	
Complaint received / Complaint referred by EPD (July 2017)	3	Construction dust and noise nuisance	Under investigation	On-going	
Reporting Changes	0	---	N/A	N/A	---
Notifications of any summons & prosecutions received	0	---	N/A	N/A	---

6. Environmental monitoring works for the Project are considered effective and is generating data to categorically identify the environmental impacts from the works and influencing factors in the vicinity of monitoring stations.

1. INTRODUCTION

Background

1.1 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.

1.2 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**.

1.3 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.

Project Organizations

1.4 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)

1.5 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 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 Report Quarter

1.6 The major site activities undertaken in the reporting quarter are shown in **Appendix M**.

2. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

2.1 The EM&A Manual designates locations for environmental monitoring in terms of air quality, noise, groundwater quality, water quality, ecology, cultural heritage and landfill gas due to the Project. The Project area and monitoring locations are depicted in **Figures 1 - 6**. **Appendix A** gives details of monitoring requirements. Locations of the environmental sensitive receivers are shown in **Figures 3.1, 3.2, 4.1, 5.1, 6.2 and 9.2**.

Monitoring Methodology and Calibration Details

2.2 Monitoring works/equipments were conducted/calibrated regularly in accordance with the EM&A Manual. Copies of calibration certificates are attached in the appendices of the Monthly EM&A Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

2.3 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results. Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in **Appendix B**.

2.4 Should the monitoring results of the environmental monitoring parameters at any designated monitoring stations indicate that the Action / Limit Levels are exceeded, the actions in accordance with the Event and Action Plans in **Appendix N** was carried out.

Implementation Status of Environmental Mitigation Measures

2.5 Relevant mitigation measures as recommended in the project EIA report have been stipulated in the EM&A Manual for implementation by the Contractor. The implementation status of environmental mitigation measures (EMIS) is given in **Appendix I**.

Site Audit Summary

2.6 During site inspections in the reporting period, no non-conformance was identified. The observations and recommendations made during the reporting period are summarized in **Appendix H**.

Status of Waste Management

2.7 The amount of wastes generated by the activities of the Work Contracts within TKO-LTT during the reporting period is shown in **Appendix J**.

3. MONITORING RESULTS

Weather Conditions

3.1 The weather during monitoring sessions was summarized in **Table 3.1**.

Table 3.1 Summary of Weather Conditions in the Reporting Period

Reporting Month	General Weather Conditions
May 2017	Sunny, Cloudy and Rainy
June 2017	Sunny, Cloudy and Rainy
July 2017	Sunny, Cloudy and Rainy

3.2 The detail of weather conditions for each individual monitoring session was presented in monthly EM&A report.

Air Quality

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

May 2017

3.4 All 24-hour TSP monitoring was conducted as scheduled in the reporting month, except that monitoring at Station AM4(A) – Cha Kwo Ling Public Cargo Working Area Administrative Office on 8, 12 and 29 May 2017 were cancelled due to power supply failure. The monitoring were re-scheduled to 10, 22 May and 1 June 2017 respectively. No Action/Limit Level exceedance was recorded.

June 2017

3.5 All 24-hour TSP monitoring was conducted as scheduled in the reporting month, except that monitoring at Station AM4(A) – Cha Kwo Ling Public Cargo Working Area Administrative Office on 26 and 30 June 2017 were cancelled due to power supply failure. The monitoring were re-scheduled to 5 and 7 July 2017. No Action/Limit Level exceedance was recorded.

July 2017

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

3.7 The graphical presentations of the air quality monitoring results are shown in **Appendix C**.

Construction Noise

May 2017

3.8 All noise monitoring was conducted as scheduled in the reporting month. 9 Action Level exceedances were recorded due to the documented complaints received in the reporting month. No Limit Level exceedance was recorded.

June 2017

3.9 All noise monitoring was conducted as scheduled in the reporting month. 6 Action Level exceedances were recorded due to the documented complaints received in the reporting month. No Limit Level exceedance was recorded.

July 2017

3.10 All noise monitoring was conducted as scheduled in the reporting month. 2 Action Level exceedances were recorded due to the documented complaints received in the reporting month. No Limit Level exceedance was recorded.

3.11 The graphical presentations of the noise monitoring results are shown in **Appendix D**.

Water Quality

3.12 Groundwater quality monitoring was conducted as scheduled in the reporting quarter. According to the information provided by the Contractor, tunnel boring and tunnel construction works were carried out in Lam Tin side starting from July 2017. The Action and Limit Level for groundwater monitoring is under review during the reporting quarter, with the monitoring results obtained from November 2016 to June 2017 being used as a reference for the baseline condition.

3.13 The graphical presentations of the groundwater quality monitoring results are shown in **Appendix E**.

3.14 All marine water monitoring was conducted as scheduled in the reporting quarter, except the mid-ebb monitoring on 12 June 2017 which was cancelled due to hoist of Strong Wind Signal No.3. Sixteen (16) Action Level and twenty (20) Limit Level exceedances were recorded in July. These exceedances are considered to be non-project related.

3.15 The graphical presentations of the marine water quality monitoring results are shown in **Appendix F**.

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

Ecological Monitoring

3.17 Post-translocation coral monitoring survey shall be conducted once every 3 months for a period of 12 months after completion of coral translocation. The 2nd post-translocation coral monitoring survey was carried out on 12 May 2017. No action/limit level of mortality was recorded. The 3rd post-translocation coral monitoring survey is scheduled in August 2017. The results of coral monitoring survey are shown in Appendix O.

Monitoring on Cultural Heritage

3.18 Monitoring of vibration impacts at Cha Kwo Ling Tin Hau Temple commenced on 8 April 2017. No Alert Alarm and Action (AAA) Level exceedance was recorded in the reporting quarter.

Landscape and Visual Monitoring and Audit

3.19 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 **Appendix H**.

Landfill Gas Monitoring

3.20 Monitoring of landfill gases was commenced in December 2016 and were carried out by the Contractors at excavation location, Portion III in the reporting quarter. No Limit Level exceedance was recorded. The graphical presentations of the landfill gas monitoring results are shown in **Appendix G**.

Waste Management

3.21 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 **Appendix I**.

Influencing Factors on the Monitoring Results

3.22 During the reporting period, the major dust and noise source identified at the designated monitoring stations are as follows:

Table 3.2 Major Dust Sources during the Monitoring in the Reporting Period

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

Table 3.3 Major Noise Sources during the Monitoring in the Reporting Period

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. Non-compliance (exceedances) of the Environmental Quality Performance Limits (Action and Limit Levels)

Summary of Exceedances

4.1 Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed. A summary of exceedances is attached in **Appendix K**.

Air Quality

4.2 No Action/Limit Level exceedance was recorded in the reporting quarter.

Construction Noise

4.3 Seventeen (17) Action Level exceedances were recorded due to the documented complaints received from monitoring station in the reporting quarter.

Water Quality

4.4 Sixteen (16) Action Level and twenty (20) Limit Level exceedances were recorded during marine water quality monitoring in the reporting quarter. These exceedances are considered to be non-project related.

4.5 *Ecological Monitoring*
No action/limit level of mortality was exceeded in the monitoring survey conducted in the reporting quarter.

Monitoring on Cultural Heritage

4.6 No Alert Alarm and Action (AAA) Level exceedance was recorded in the reporting quarter.

Landscape and Visual

4.7 No non-compliance of the landscape and visual impact was recorded in the reporting quarter.

Landfill Gas

4.8 No Limit Level exceedance was recorded in the reporting quarter.

Review of the Reasons for and the Implications of Non-compliance

4.9 There was no non-compliance from the site audits in the reporting quarter. The observations and recommendations made in each individual site audit session were attached in the **Appendix H**.

Summary of Environmental Complaints and Prosecutions

4.10 21 cases of environmental complaints on this Project were received in the reporting quarter. The details were attached in the **Appendix L**.

4.11 No warning, summon and notification of successful prosecution was received in the reporting quarter.

5. COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

Effectiveness of Mitigation Measures

5.1 The mitigation measures recommended in the EIA report are considered effective in minimizing environmental impacts.

5.2 The Contractor has implemented the recommended mitigation measures except those mitigation measures not applicable at this stage.

5.3 Environmental monitoring works were performed in the reporting quarter and all monitoring results were checked and reviewed.

5.4 The summary record of non-compliance (exceedances) of Action/Limit Level for environmental monitoring in the reporting quarter has been presented in **Table I** above and in **Appendix K**.

5.5 21 cases of environmental complaints were received in the reporting quarter. The details were attached in the **Appendix L**.

5.6 No warning, summon and notification of successful prosecution was received in the reporting quarter.

Recommendations

5.7 Joint weekly site audits by the representatives of the Engineer, Contractor and the ET were conducted in the reporting quarter. The following recommendations was made to the Contractor for the coming reporting month:

Air Quality Impact

- To implement dust suppression measures such as water spray on all haul roads, stockpiles, dry surfaces, excavation and rock breaking works.
- To cover stockpile of dusty material by impervious material
- To properly display NRMM Label to Powered Mechanical Equipment on site
- To avoid smoke emission from Powered Mechanical Equipment on site
- To remove the dusty cement bags after use.
- To provide sand bag bunds to gullies at site access near the site office
- To provide top and three-side enclosure for grouting equipment on site
- To repair the gaps and the noise tarpaulin sheets to ensure the effectiveness of dust curtain.

Construction Noise

- 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 provide mitigation measures to PME as proposed in the approved NMP.
- To repair noise barrier of breaker on site.
- To provide proper acoustic material for enclosing the breaker head

Water Quality Impact

- To prevent any surface runoff discharge into any stream course or the waters in

vicinity.
- To review and implement temporary drainage system.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks or those accumulated in drainage.
- To provide bund to 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 provide and repair the silt curtain to fully enclose the site.
- To remove the dusty material to avoid mud/sand fall into the sea.
- To prevent silty water flow out of site during wheel washing
- To provide bunds or containment pit to prevent muddy water flow out of site.
- To remove the construction waste in U-channel.
- To set up proper drainage system within site.
- To cover or seal the gaps of covers of catchpit to prevent silt water or oil stain flow out of site.
- To remove the sand material deposited near the seafront.
- To provide sand bag bunds to gullies

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of oil drum on site.
- To provide label to identify waste storage area within site.
- To remove oil stain mixed with muddy water within site.
- To provide drip tray to chemical containers
- To remove the construction material from drip tray and provide a plug for drip tray on site.

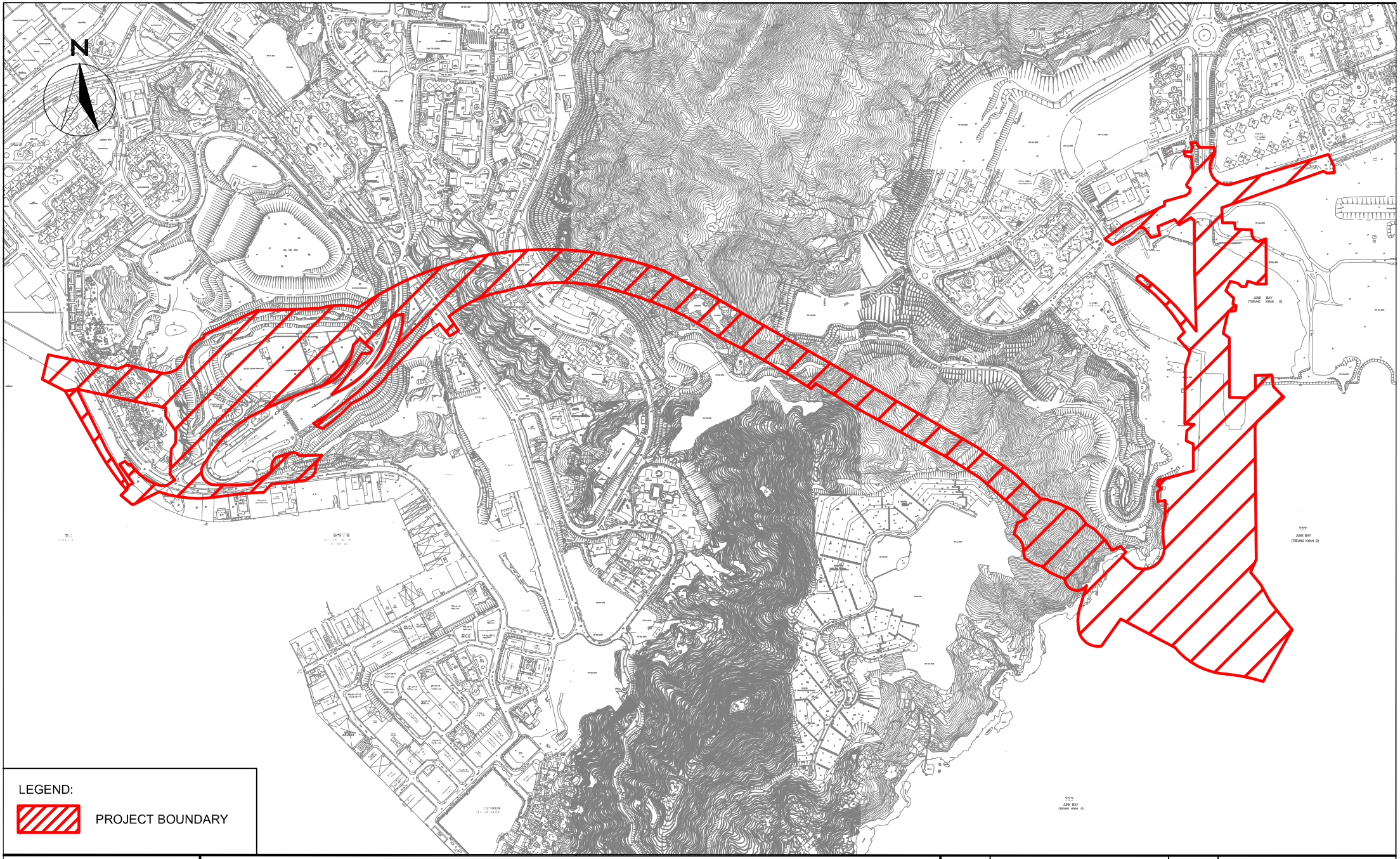
Landscape and Visual

- To remove the construction material near the tree and set up proper tree protection area

Permit/Licences
- To provide and display the Environmental Permit for the marine barge.
- To update the Environmental Permit displayed on crane barge.

Cultural Heritage
- To properly set up fenced-off buffer zone around Tin Hau Temple.

FIGURES



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

Site Layout Plan

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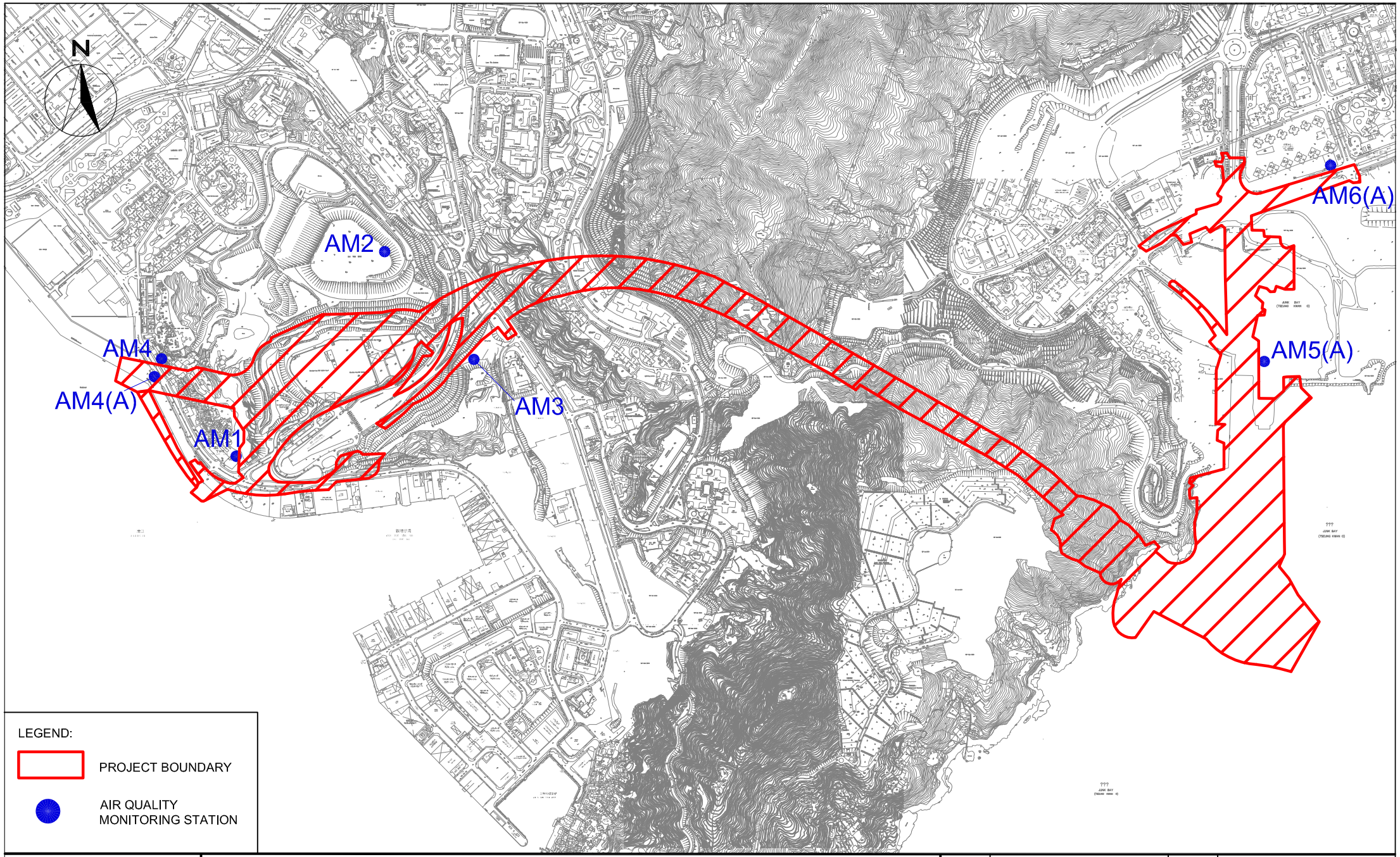

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Air Quality Monitoring Stations

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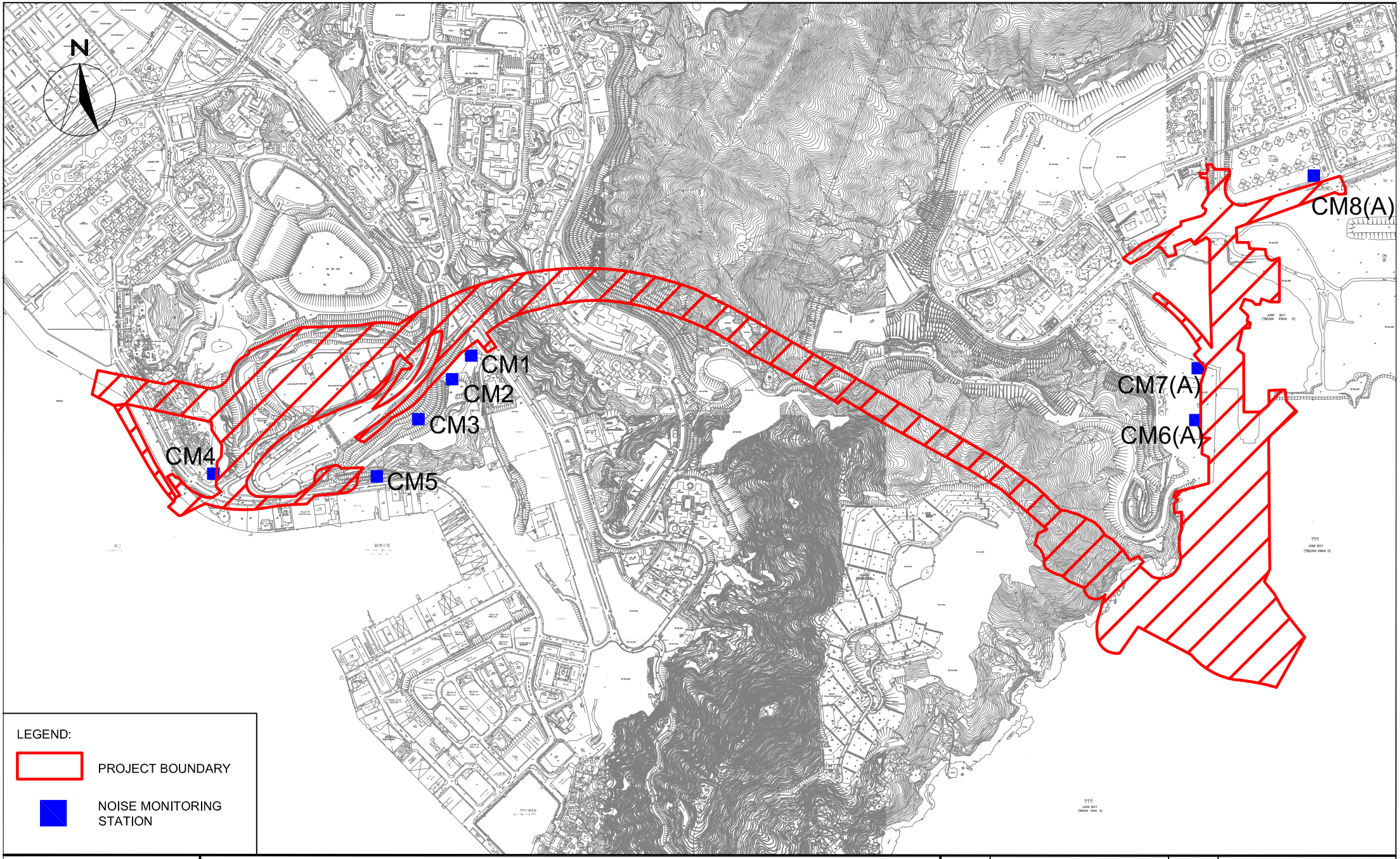

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Noise Monitoring Stations

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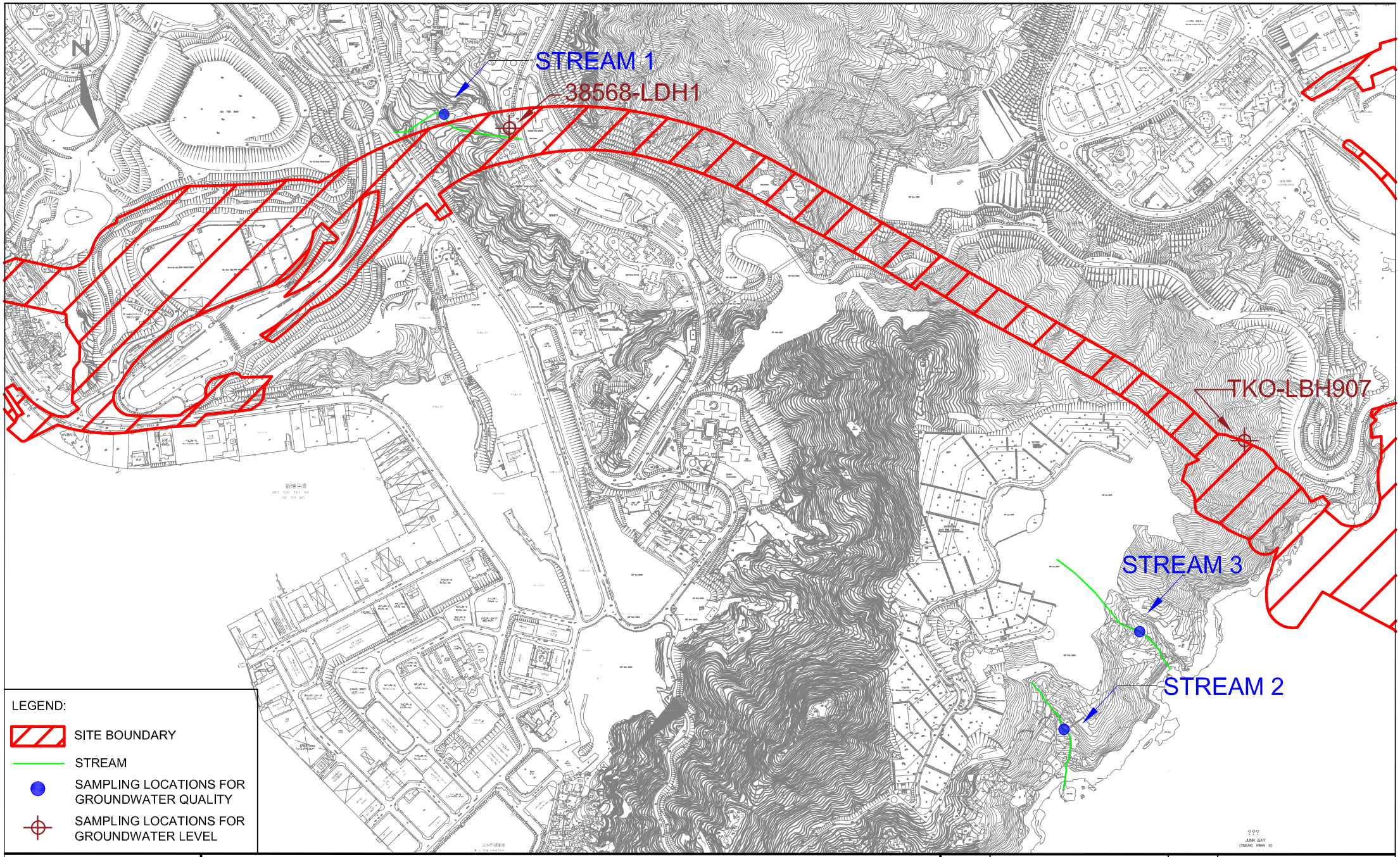

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Location of Streams for Groundwater Quality and Groundwater Level Monitoring

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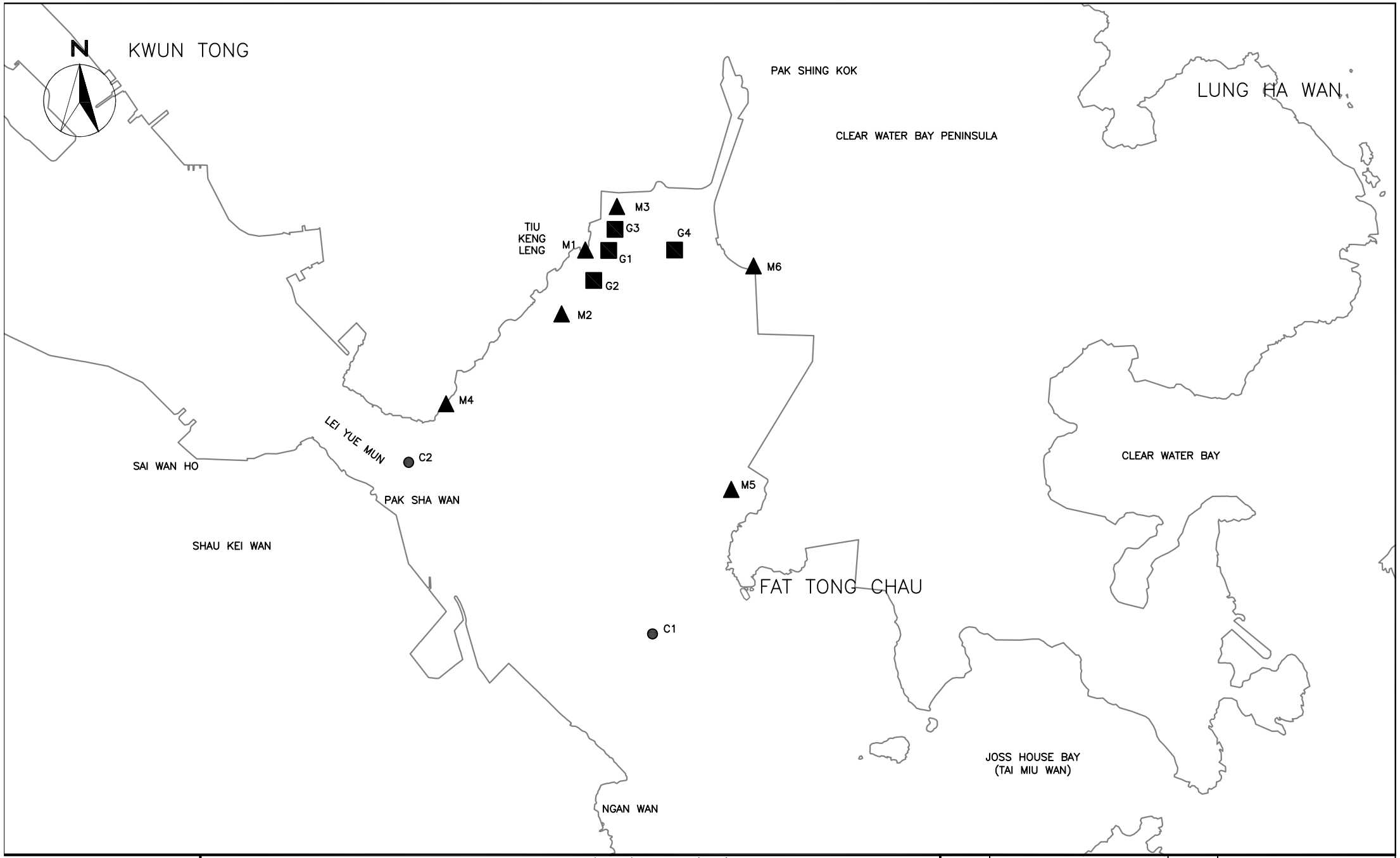

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction

Locations of Water Quality Monitoring Stations

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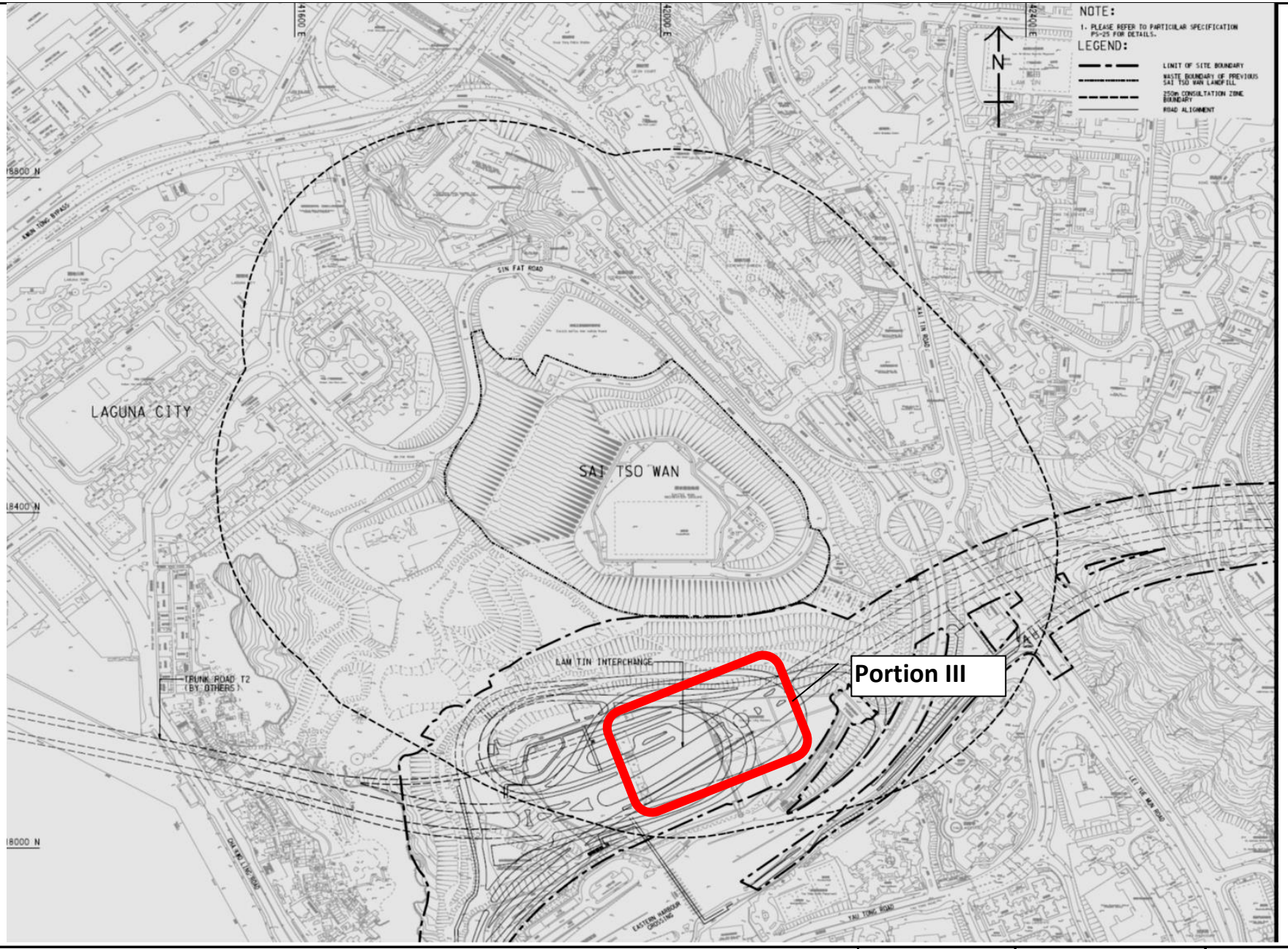
PROJECT NO.	MA16034	FIGURE NO.	5
		REV	–



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

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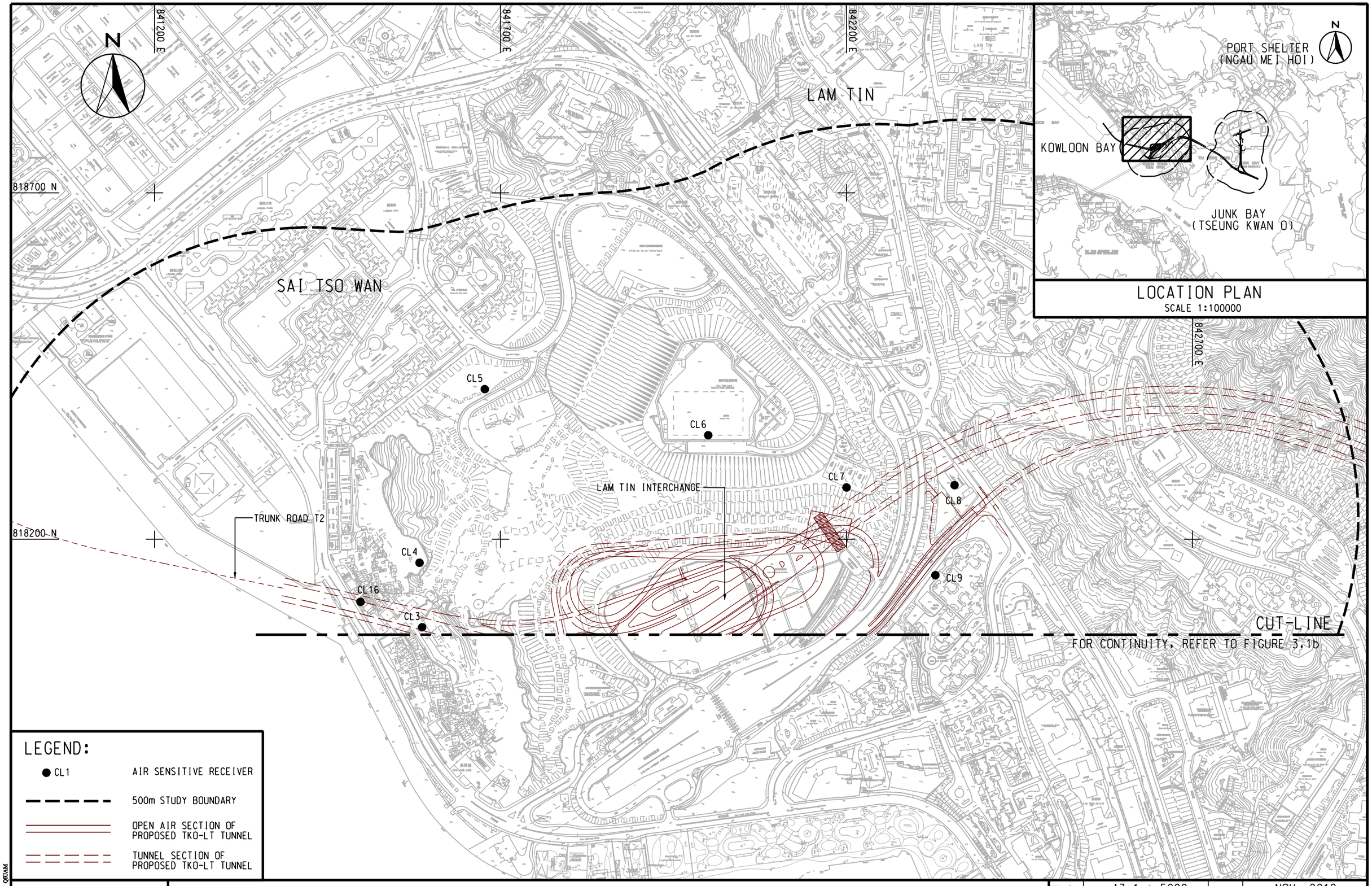

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS IN THE STUDY AREA DURING CONSTRUCTION PHASE (LAM TIN)

SHEET 1 OF 2

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		REV	-

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841200 E

841700 E

842200 E

818200 N

817700 N

817200 N

CUT LINE

FOR CONTINUITY, REFER TO FIGURE 3.1a

CL15

CL2

CL1

CL13

CL14

CL10

CL11

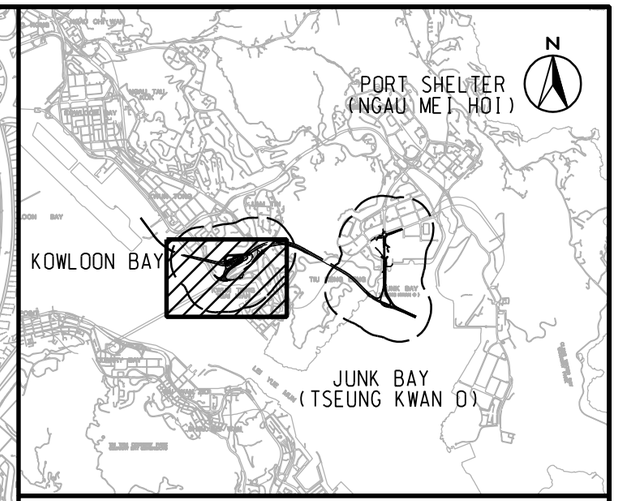
CL12

VICTORIA HARBOUR

KOWLOON BAY

YAU TONG

CHA KWO LING ROAD



LOCATION PLAN

SCALE 1:100000

LEGEND:

- CL1 — AIR SENSITIVE RECEIVER
- 500m STUDY BOUNDARY
- OPEN AIR SECTION OF PROPOSED TKO-LT TUNNEL
- TUNNEL SECTION OF PROPOSED TKO-LT TUNNEL

AECOM

AGREEMENT NO. CE 42/2008 (CE)

TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS IN THE STUDY AREA DURING CONSTRUCTION PHASE (LAM TIN)

SHEET 2 OF 2

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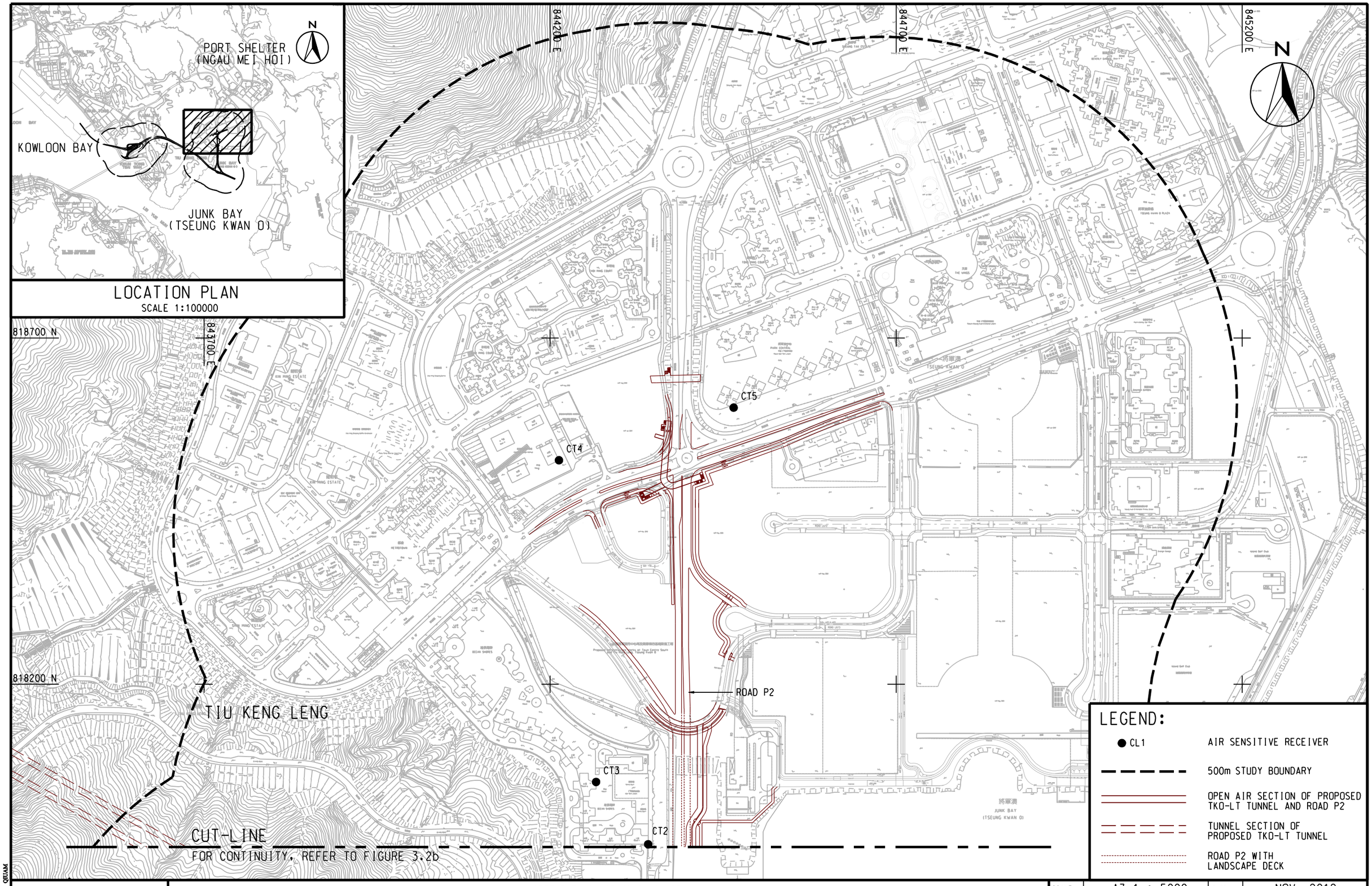

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS IN THE STUDY AREA DURING CONSTRUCTION PHASE (TSEUNG KWAN O)

SHEET 1 OF 2

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		REV	-

Plot File by : 1/16/2013 QUAM

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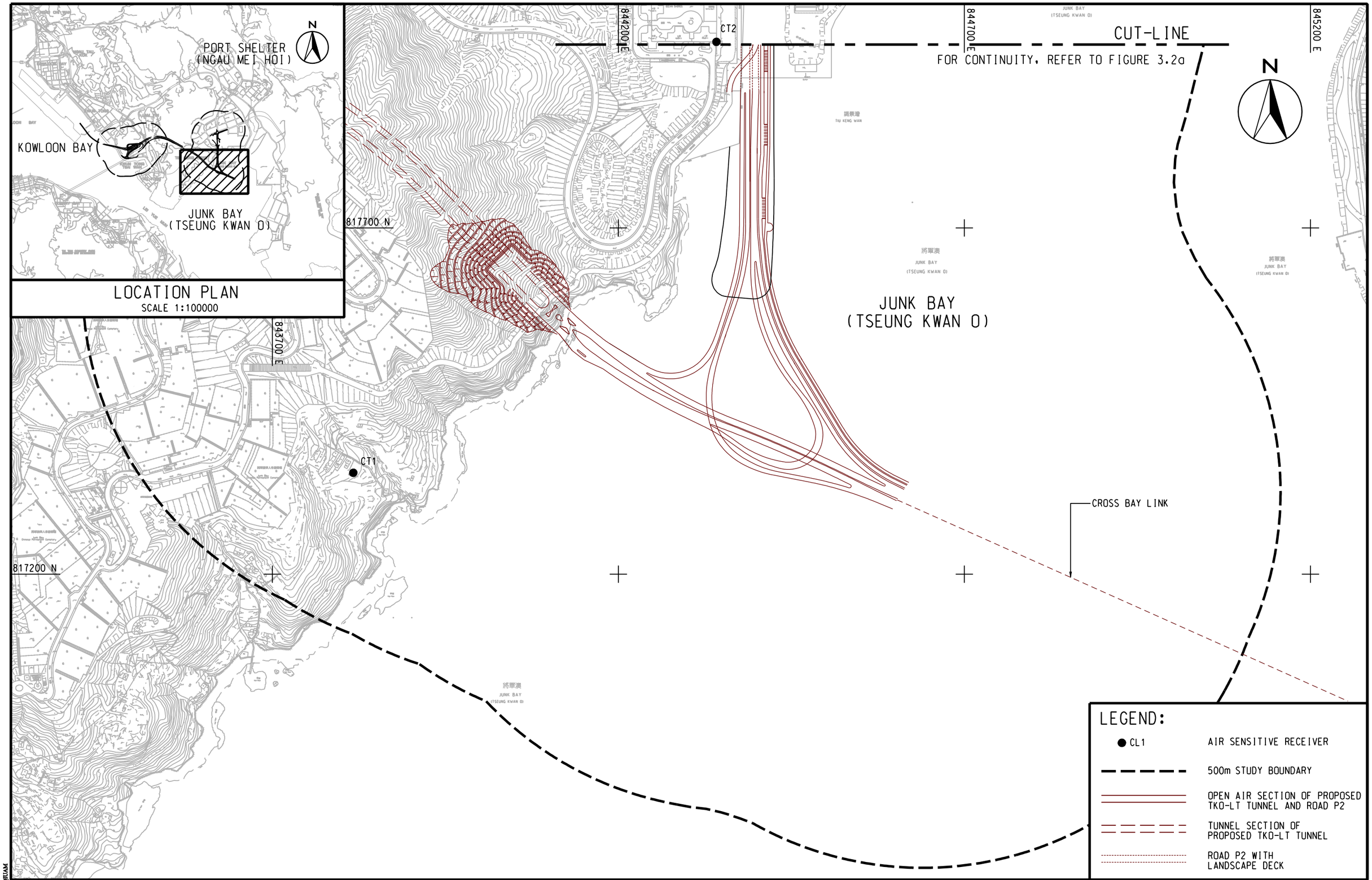

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS IN THE STUDY AREA DURING CONSTRUCTION PHASE (TSEUNG KWAN O)

SHEET 2 OF 2

SCALE	A3 1 : 5000	DATE	NOV. 2012
CHECK	–	DRAWN	HLL
JOB No.	60097677	DRAWING No.	FIGURE 3.2b
		REV	–

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PORT SHELTER
(NGAU MEI HOI)

KOWLOON BAY

JUNK BAY
(TSEUNG KWAN O)

LOCATION PLAN
SCALE 1 : 90000

841700 E

842000 E

842300 E

818300 N

818000 N

817 900 N

PLANNED RESIDENTIAL SITE AT EX-CHA KWO LING KAOLIN MINE SITE

TKO-LT TUNNEL VENTILATION BUILDING

YAU LAI ESTATE PHASE 1

YAU LAI ESTATE PHASE 5

CHA KWO LING TSUEN

PHYSARTRAIN 90'S SPORTS & LEISURE CENTRE

TIN HAU TEMPLE

SKH YAUTONG KEI HIN PRIMARY SCHOOL

CCC KEI FAAT PRIMARY SCHOOL

YAU TONG ROAD

CHA KWO LING ROAD

EASTERN HARBOUR CROSSING

TOWNGAS PIGGING STATION

LEGEND:

- 300m NOISE STUDY BOUNDARY
- LIMIT OF WORKS AREA FOR TKOLTT
- PROPOSED TKO-LT TUNNEL ALIGNMENT
- NOISE SENSITIVE RECEIVER (EDUCATIONAL))
- NOISE SENSITIVE RECEIVER (RESIDENTIAL)

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF NOISE SENSITIVE RECEIVERS

SHEET 1 OF 4

SCALE	A3 1 : 3000	DATE	NOV. 2012
CHECK	--	DRAWN	HLL
JOB No.	60097677	DRAWING No.	FIGURE 4.1
		REV	--

Plot File by : 1/15/2013 QIUAM

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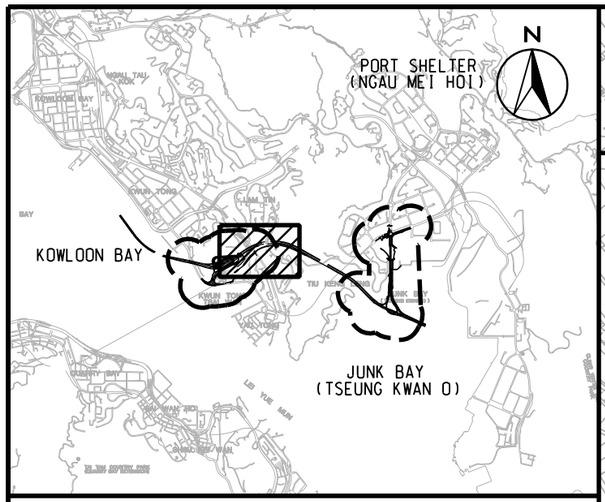

LOCATION PLAN
SCALE 1 : 90000

842000 E
842300 E
842600 E
842900 E
818300 N
818000 N
817 900 N

TKO-LT TUNNEL VENTILATION BUILDING
YAU LAI ESTATE PHASE 1
YAU LAI ESTATE PHASE 5
KWONG TIN ESTATE

LEGEND:
- 300m NOISE STUDY BOUNDARY
- LIMIT OF WORKS AREA FOR TKOLTT
- PROPOSED TKO-LT TUNNEL ALIGNMENT
- NOISE SENSITIVE RECEIVER (RESIDENTIAL)

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF NOISE SENSITIVE RECEIVERS

SHEET 2 OF 4

SCALE	A3 1 : 3000	DATE	NOV. 2012
CHECK	--	DRAWN	HLL
JOB No.	60097677	DRAWING No.	FIGURE 4.1
		REV	--

Plot File by : 1/15/2013 QIUAM

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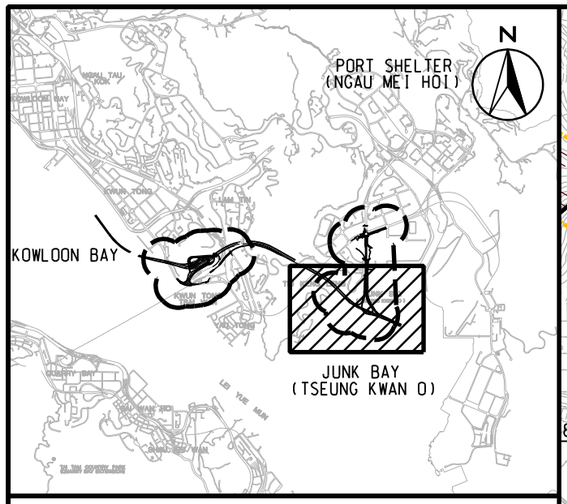

LOCATION PLAN
SCALE 1 : 90000

LEGEND:

- 300m NOISE STUDY BOUNDARY
- PROPOSED TKO-LT TUNNEL ALIGNMENT
- LIMIT OF WORKS AREA FOR TKOLTT
- NOISE SENSITIVE RECEIVER (RESIDENTIAL)

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF NOISE SENSITIVE RECEIVERS

SHEET 3 OF 4

SCALE	A3 1 : 5000	DATE	JAN. 2013
CHECK	--	DRAWN	HLLS
JOB No.	60097677	DRAWING No.	FIGURE 4.1
		REV	--

Plot File by : 24/01/2013 XIONGCJ

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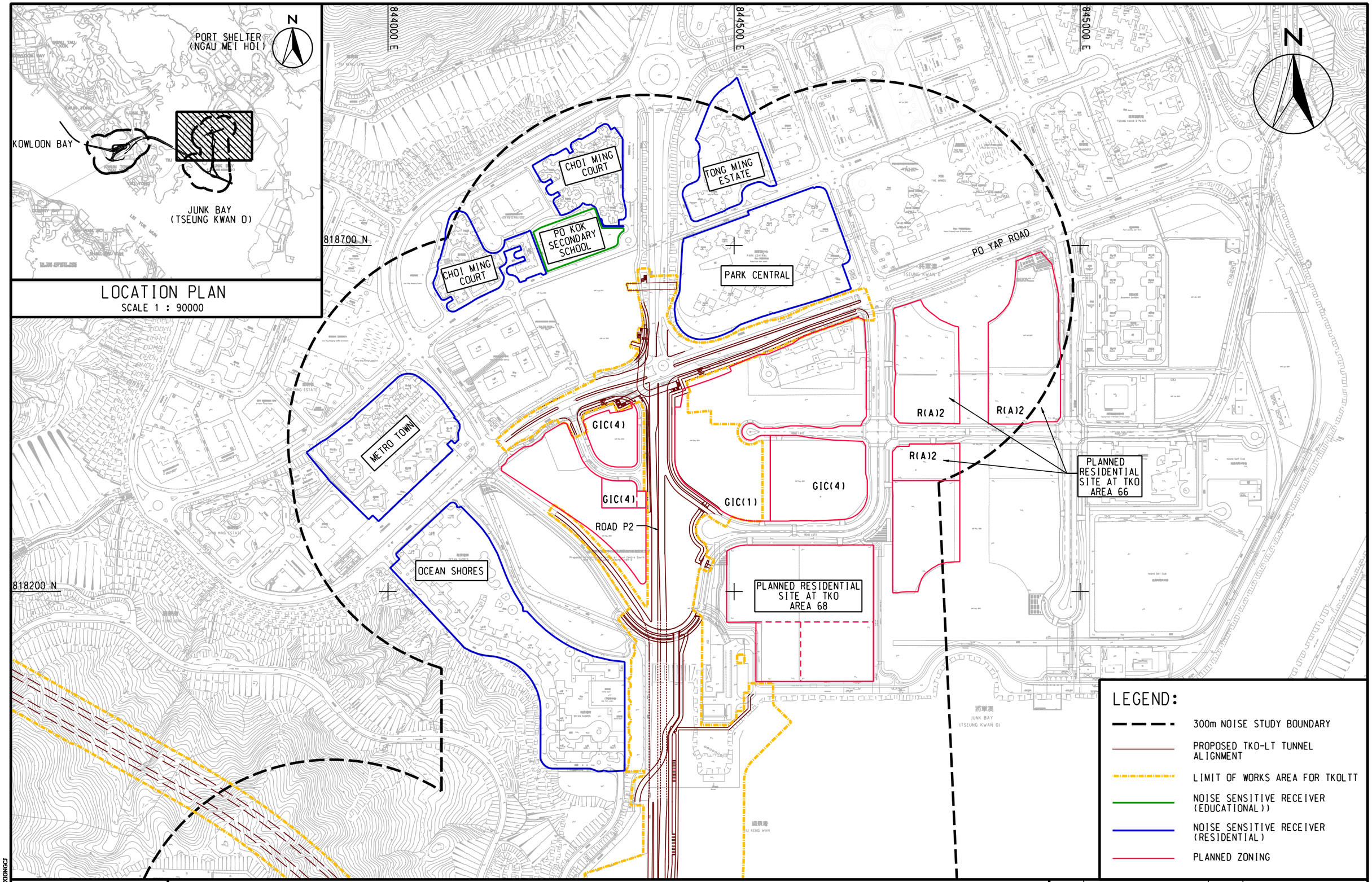

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

LOCATIONS OF NOISE SENSITIVE RECEIVERS

SHEET 4 OF 4

SCALE	A3 1 : 5000	DATE	JAN. 2013
CHECK	--	DRAWN	HLLS
JOB NO.	60097677	DRAWING NO. FIGURE 4.1	REV --

Plot File by : 24/01/2013 XIONGCJ

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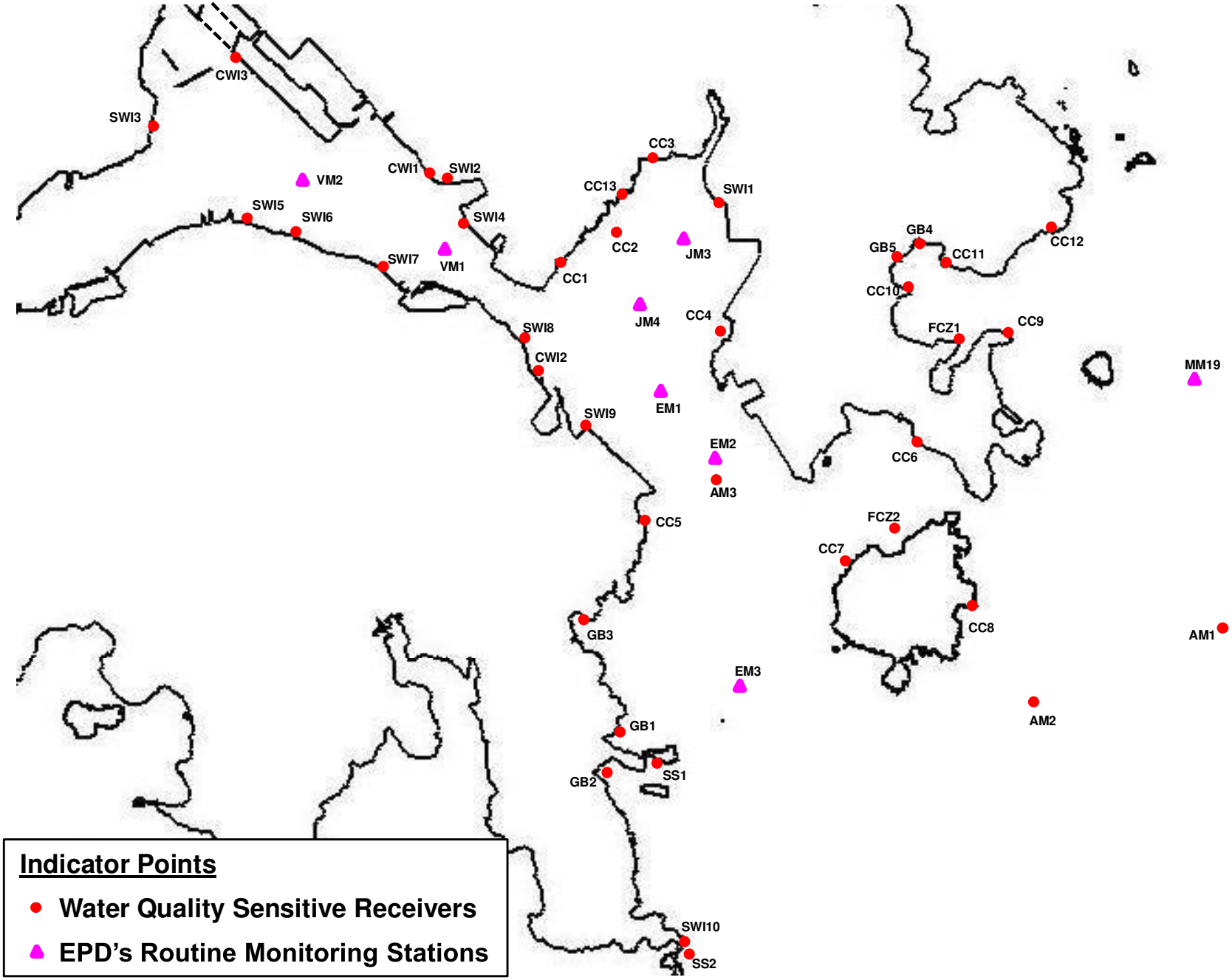

Indicator Points

- Water Quality Sensitive Receivers
- EPD's Routine Monitoring Stations

WSR ID	Description
SWI1	WSD's Salt Water Intakes at Tseung Kwan O
SWI2	WSD's Salt Water Intakes at Yau Tong
SWI3	WSD's Salt Water Intakes at Tai Wan
SWI4	WSD's Salt Water Intakes at Cha Kwo Lang
SWI5	WSD's Salt Water Intakes at North Point
SWI6	WSD's Salt Water Intakes at Quarry Bay
SWI7	WSD's Salt Water Intakes at Sai Wan Ho
SWI8	WSD's Salt Water Intakes at Heng Fa Chuen
SWI9	WSD's Salt Water Intakes at Siu Sai Wan
SWI10	Salt Water Intakes at Cape D'Aguilar for Swire Institute of Marine Science, The University of Hong Kong
CWI1	Cooling Water Intakes for Dairy Farm Ice Plant
CWI2	Cooling Water Intakes for Pamela Youde Nethersole Eastern Hospital
CWI3	Future Kai Tak Cooling Water Intakes
CC1	Coral Sites at Chiu Keng Wan
CC2	Coral Sites at Junk Bay
CC3	Coral Sites at Junk Island
CC4	Coral Sites at Fat Tong Chau West
CC5	Coral Sites at Tso Tui Wan North
CC6	Coral Sites at Joss House Bay
CC7	Coral Sites at Tung Lung Chau West
CC8	Coral Sites at Tung Lung Chau East
CC9	Coral Sites at Shek Mei Tau
CC10	Coral Sites at So Shi Tau
CC11	Coral Sites at Tai Wang Tau
CC12	Coral Sites at Po Keng Teng
CC13	Coral Sites at Junk Bay near Chiu Keng Wan
SS1	SSSI at Shek O Headland
SS2	SSSI at Cape D'Aguilar
FCZ1	Fish Culture Zone at Po Toi O
FCZ2	Fish Culture Zone at Tung Lung Chau
AM1	Spotted Occurrence of Amphioxus (historical record of summer survey)
AM2	Spotted Occurrence of Amphioxus (Yr 2006 record of summer survey)
AM3	Spotted Occurrence of Amphioxus (Yr 2006 record of summer survey)
GB1	Shek O Rocky Bay
GB2	Shek O Beach
GB3	Big Wave Bay Beach
GB4	Clear Water Bay First Beach
GB5	Clear Water Bay Second Beach

CEDD 土木工程拓展署 Civil Engineering and Development Department

Job Title: Agreement No. CE 42/2008 (CE) Tseung Kwan O – Lam Tin Tunnel and Associated Works – Investigation

Drawing Title: Locations of Water Quality Sensitive Receivers

Rev.	Description	Date
A	First Issue	4/11

Drawn: AN | Date: Nov 2011 | Checked: KL | Approved: ST | Scale:

Drawing No.: Figure 5.1

Status: Preliminary | Rev.: A

833900 E

838900 E

843900 E

848900 E

N

816700 N

811700 N

SHELTER ISLAND AREA POTENTIAL MARINE PARK

VICTORIA HARBOUR WCZ
VICTORIA HARBOUR

JUNK BAY
WCZ

WESTERN
BUFFER WCZ

TATHONG CHANNEL

EASTERN
BUFFER WCZ

EAST LAMMA CHANNEL

SHEK O HEADLAND SSSI

HOK TSUI (CAPE D'AGULIAR) SSSI

LEGEND:

- PROJECT BOUNDARY
- WATER CONTROL ZONE
- POTENTIAL MARINE PARK
- SSSI
- CORAL COMMUNITIES WITH LOW COVERAGE (<10%)
- CORAL COMMUNITIES WITH HIGH COVERAGE (>20%)
- CORAL TRANSLOCATION RECIPIENT SITE

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

MARINE ECOLOGICAL SENSITIVE RECEIVERS WITHIN AND IN VICINITY OF THE ASSESSMENT AREA

SCALE	A3 1:60000	DATE	MAY 2011
CHECK	-	DRAWN	DXL
JOB No.	60097677	DRAWING No.	FIGURE 6.2
		REV	-

Plot File by : 2012-09-25 HUANGLLS

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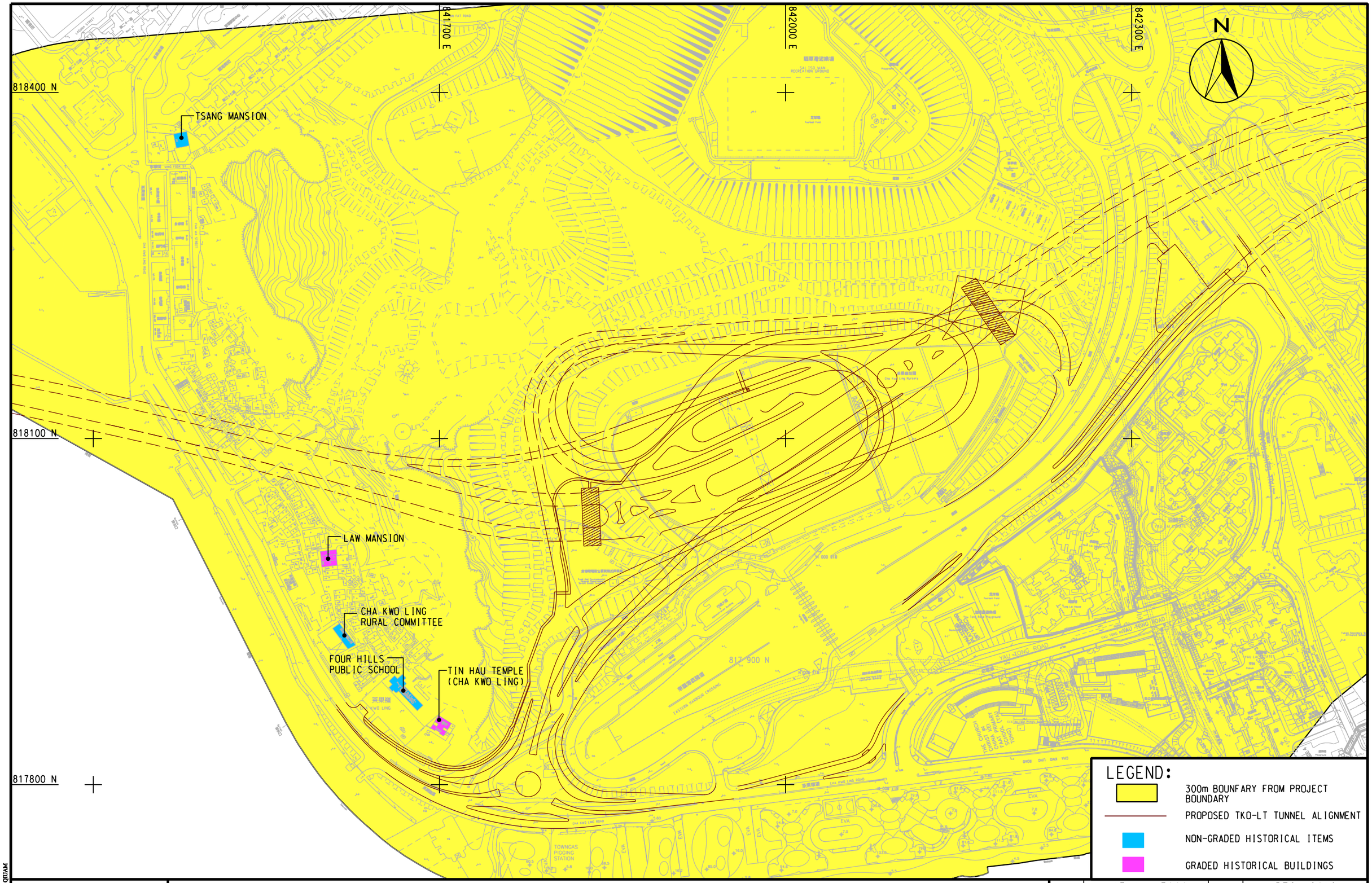

AECOM

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

CULTURAL HERITAGE RESOURCES AT CHA KWO LING

SCALE	A3 1 : 3000	DATE	DEC. 2012
CHECK	--	DRAWN	HLL
JOB No.	60097677	DRAWING No.	FIGURE 9.2
		REV	--

Plot File by : 1/11/2013 QIUAM

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APPENDIX A
MONITORING REQUIREMENTS

Appendix A - Environmental Impact Monitoring Requirements

Table I – Air Quality Monitoring

Type of Monitoring	Parameter	Frequency	Location	Measurement Conditions
Air Quality	1 hour TSP	Three times / 6 days	• AM1 – Tin Hau Temple • AM2 – Sai Tso Wan Recreation Ground • AM3 – Yau Lai Estate Bik Lai House • AM4(1) – Road Traffic at Cha Kwo Ling Road • 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	• AM1 – Ground Level • AM2 – Ground Level • AM3 – Rooftop (41/F) • AM4(1) – Ground Level • AM4(A)(2)(*) – Rooftop (3/F) • AM5(A) (*) – Ground Level • AM6(A) (*) – 1/F
	24 hour TSP	Once / 6 days		

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.

Table II – Noise Monitoring

Type of Monitoring	Parameter	Frequency	Location	Measurement Conditions
Construction Noise	L_{eq}, L_{90} & L_{10} at 30 minute intervals during 0700 to 1900 on normal weekdays	Once per week	• 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	• CM1 – Rooftop (41/F) • CM2 – Rooftop (41/F) • CM3 – Rooftop (40/F) • CM4 – Ground Level • CM5 – Rooftop (6/F) • CM6(A)* – Ground Level • CM7(A)* – Ground Level CM8(A)* – 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.

Table III – Water Quality Monitoring

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

Table IV –Landfill Gas Monitoring

Type of Monitoring	Parameter	Frequency	Location
Landfill Gas	Methane, Carbon dioxide and Oxygen	at least daily before starting the work of the day	• Excavation Locations • Manholes and Chambers • Relocation of monitoring wells • Any other Confined Spaces

Table V –Ecological Monitoring

Type of Monitoring	Parameter	Frequency
Marine Ecology	The presence, survival, health condition and growth of the translocated coral colonies	Once every 3 months after completion for a period of 12 months

APPENDIX B
ACTION AND LIMIT LEVELS

APPENDIX B – Action and Limit Levels

Air Quality

1-hr TSP

Monitoring Stations	Location	Action Level, µg/m³	Limit Level, µg/m³
AM1	Tin Hau Temple	275	500
AM2	Sai Tso Wan Recreation Ground	273	
AM3	Yau Lai Estate Bik Lai House	271	
AM4	Sitting-out Area at Cha Kwo Ling Village	278	
AM5(A)	Tseung Kwan O DSD Desilting Compound	273	
AM6(A)	Park Central, L1/F Open Space Area	285	

24-hr TSP

Monitoring Stations	Location	Action Level, µg/m³	Limit Level, µg/m³
AM1	Tin Hau Temple	173	500
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 from any one of the monitoring stations	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	7.5
pH	6.0 – 8.9	6.0 – 9.0
BOD_5 in mg L^{-1}	2.0	2.0
TOC in mg L^{-1}	4.3	4.9
Total Nitrogen in mg L^{-1}	1.7	1.7
Ammonia-N in mg L^{-1}	0.05	0.06
Total Phosphate in mg L^{-1}	0.05	0.05
SS in mg L^{-1}	5.5	6.2
Turbidity in NTU	2.2	2.4

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

Groundwater Level Monitoring

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

Marine Water Quality

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

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

Ecology

Post-translocation Coral Monitoring

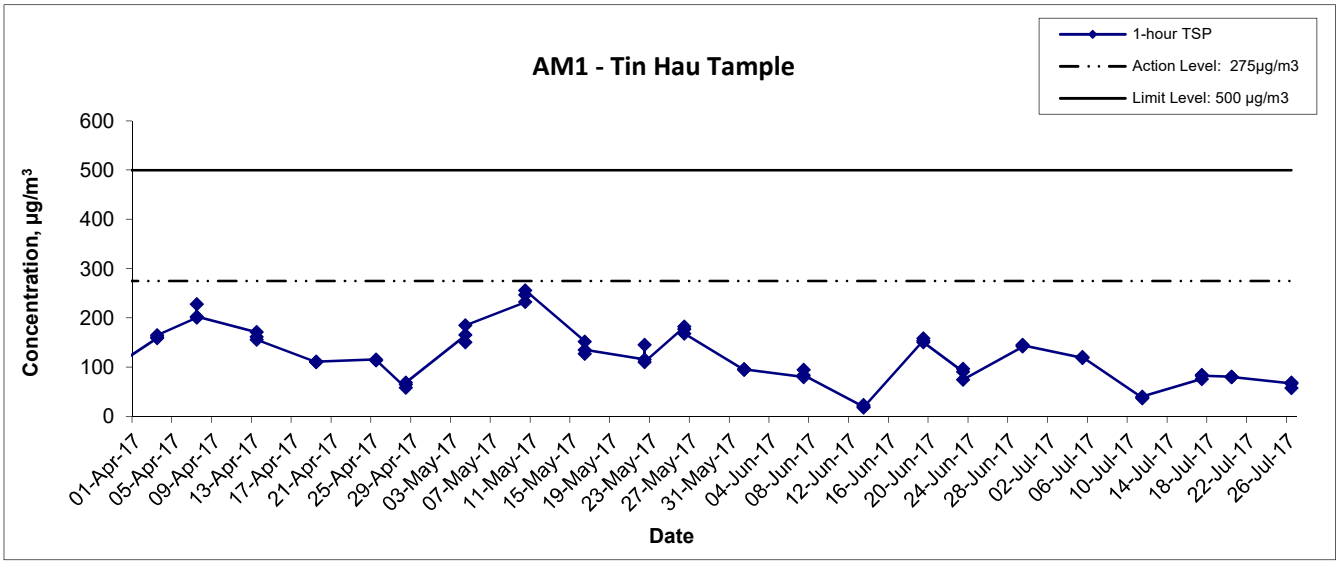
Parameter	Action Level Definition	Limit Level Definition
Mortality	If during Impact Monitoring a 15% increase in the percentage of partial mortality on hard corals occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Action Level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

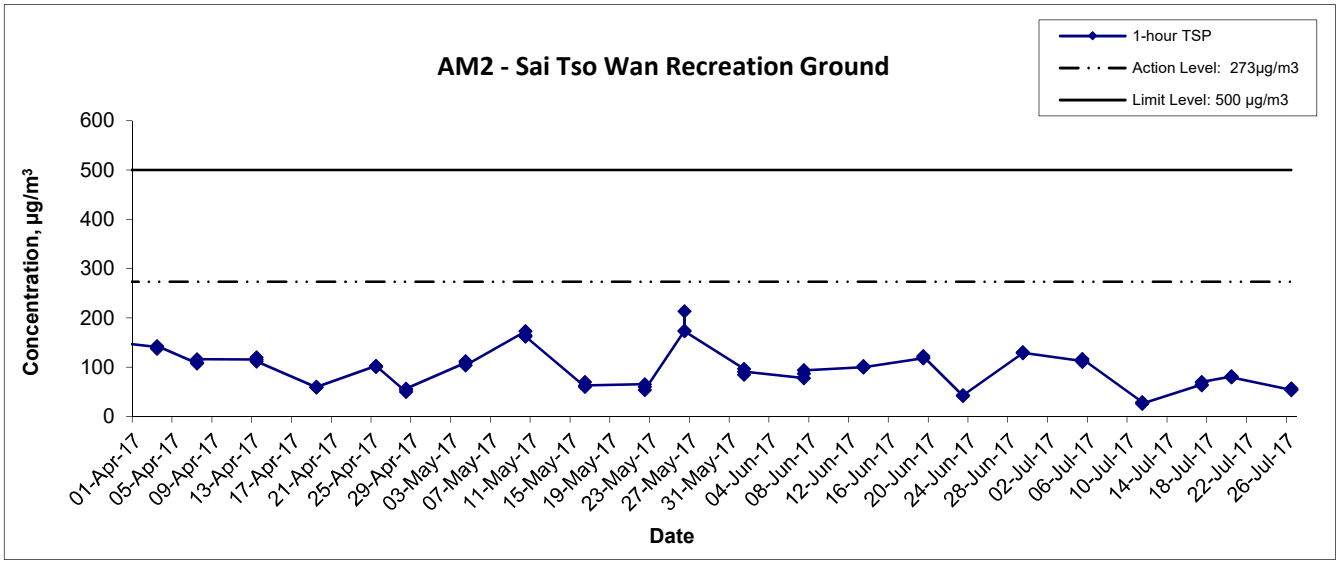
Landfill Gas Monitoring

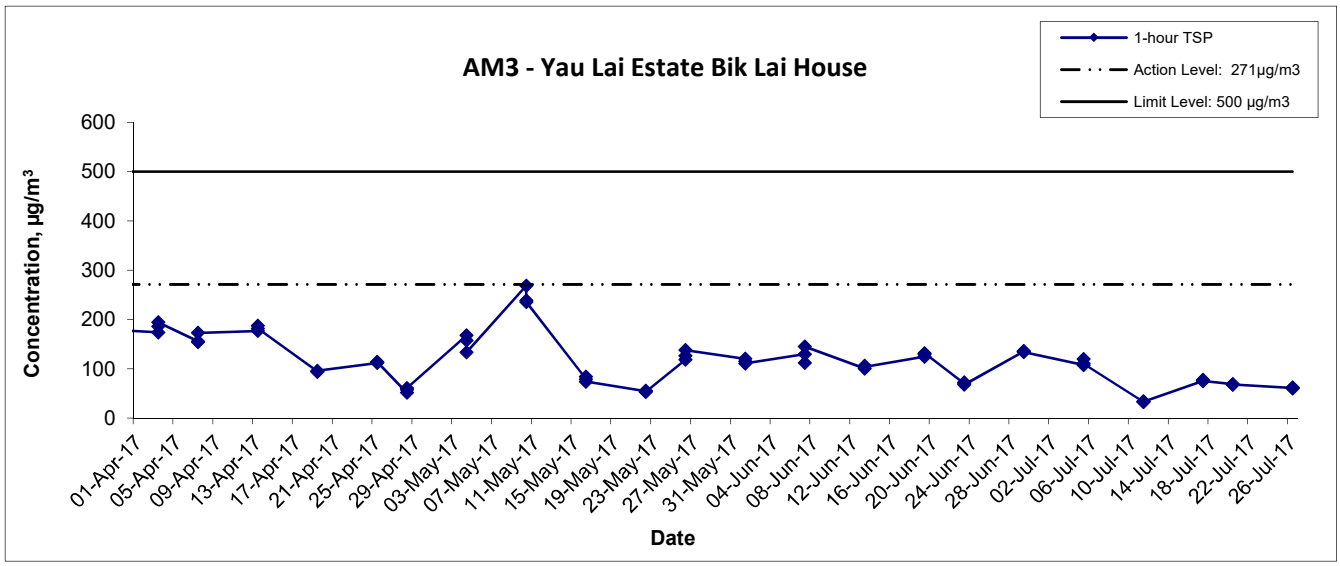
Parameter	Limit Level
Oxygen	<19%
	<18%
Methane	>10% LEL (i.e. > 0.5% by volume)
	>20% LEL (i.e. > 1% by volume)
Carbon Dioxide	>0.5%
	>1.5%

APPENDIX C
GRAPHICAL PRESENTATION OF AIR QUALITY MONITORING RESULTS

1-hr TSP Concentration Levels



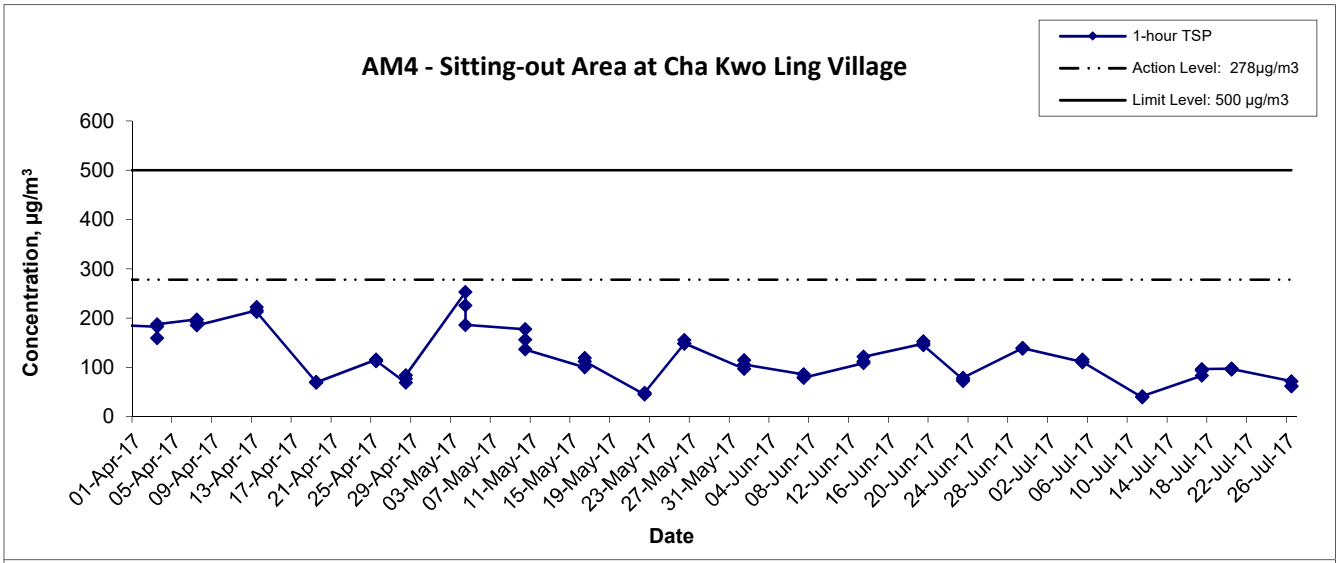


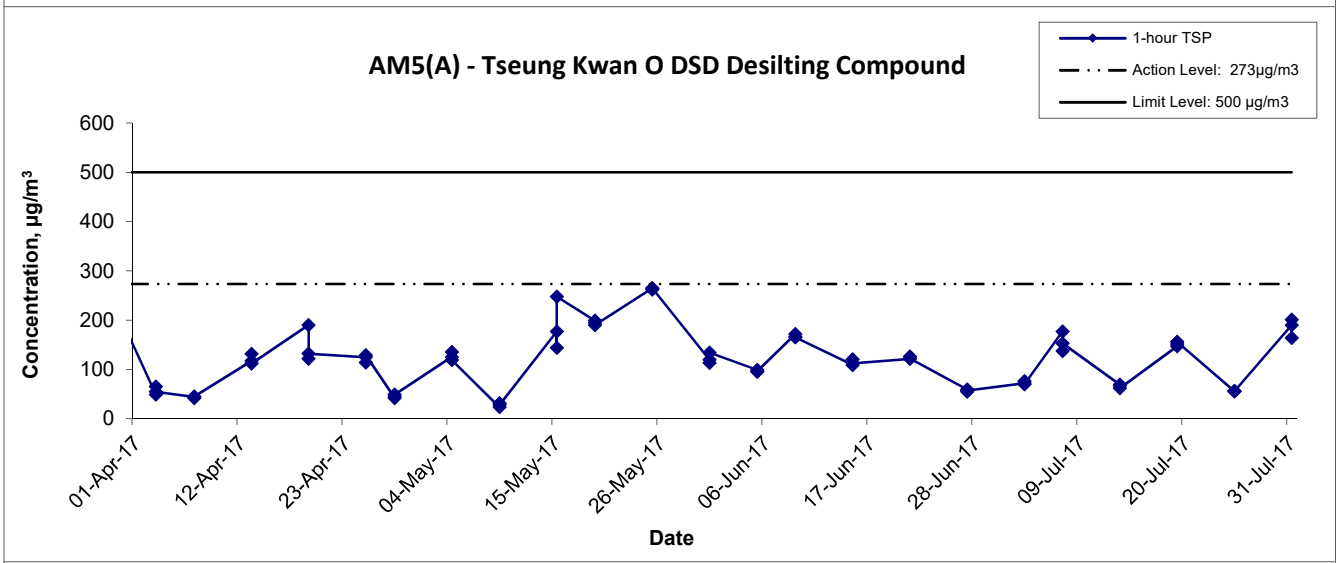


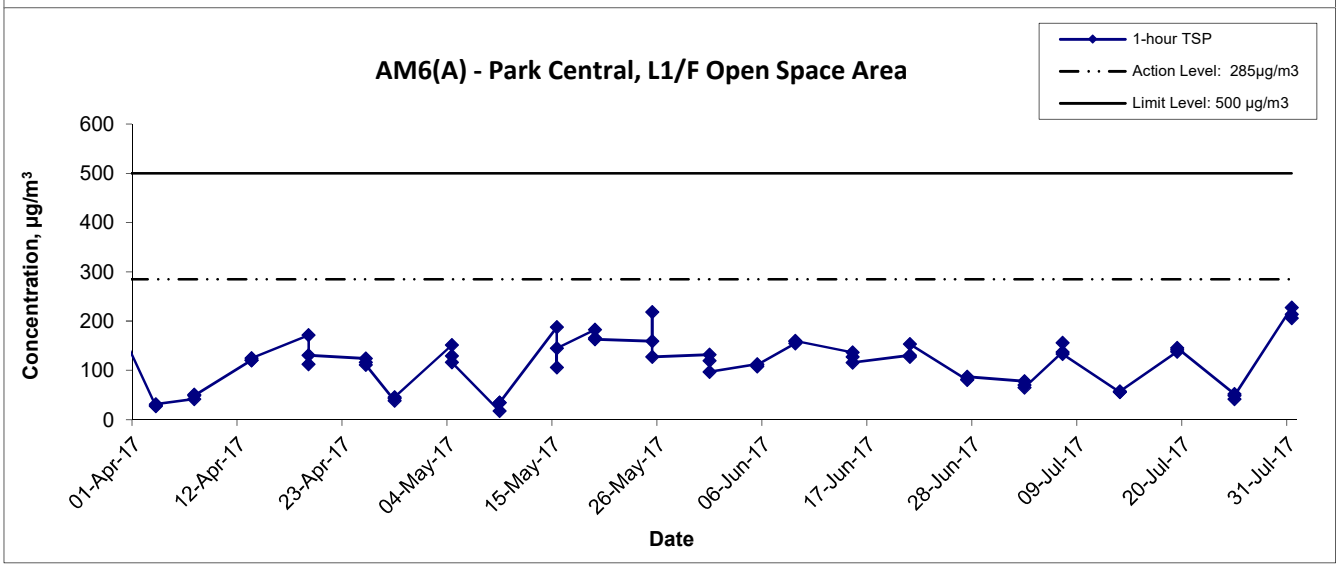
Title		Scale	Project No.
Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results		N.T.S Date Jul 17	MA16034

CINOTECH

1-hr TSP Concentration Levels



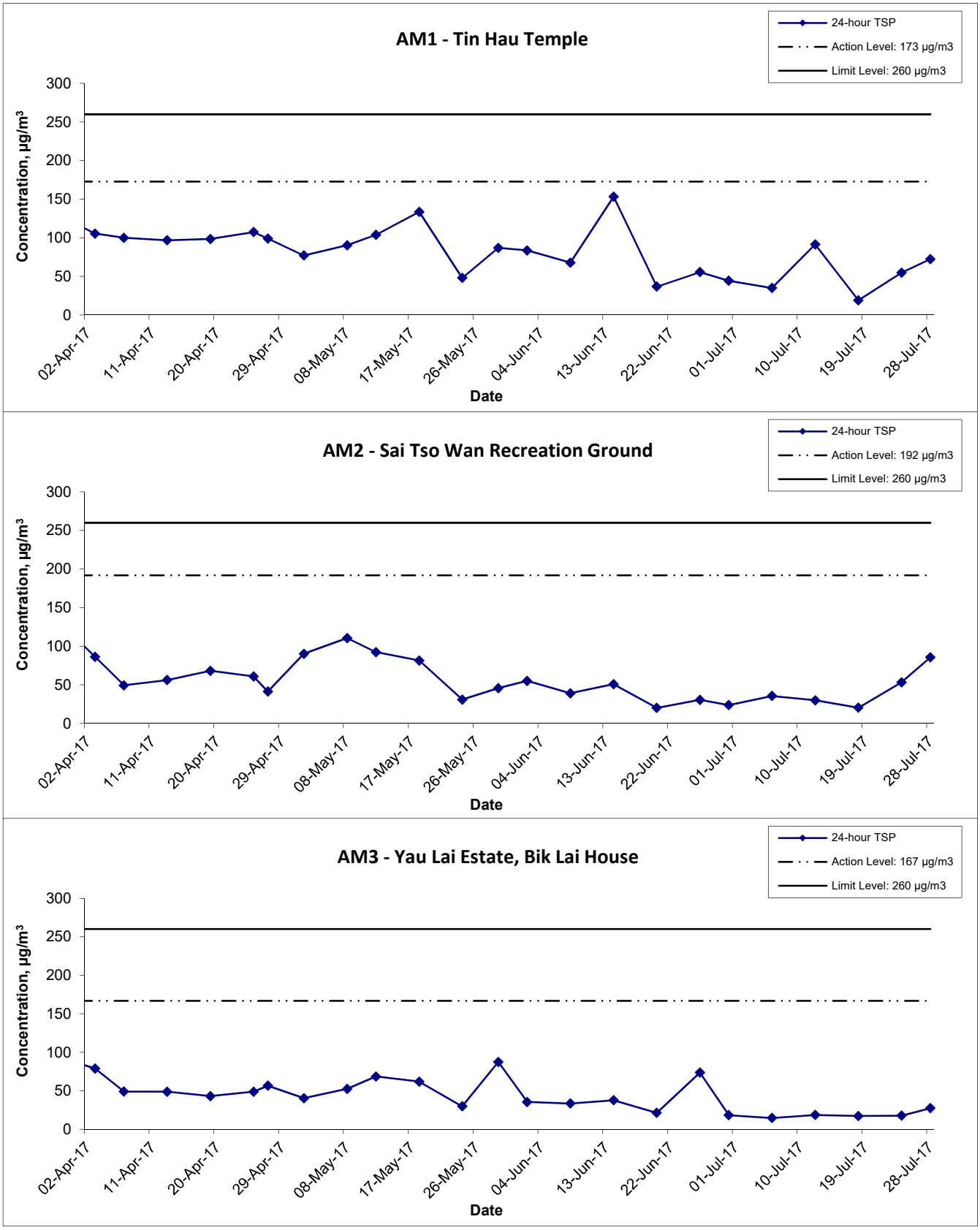




Title		Scale	Project No.
Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results		N.T.S Date Jul 17	MA16034

CINOTECH

24-hr TSP Concentration Levels



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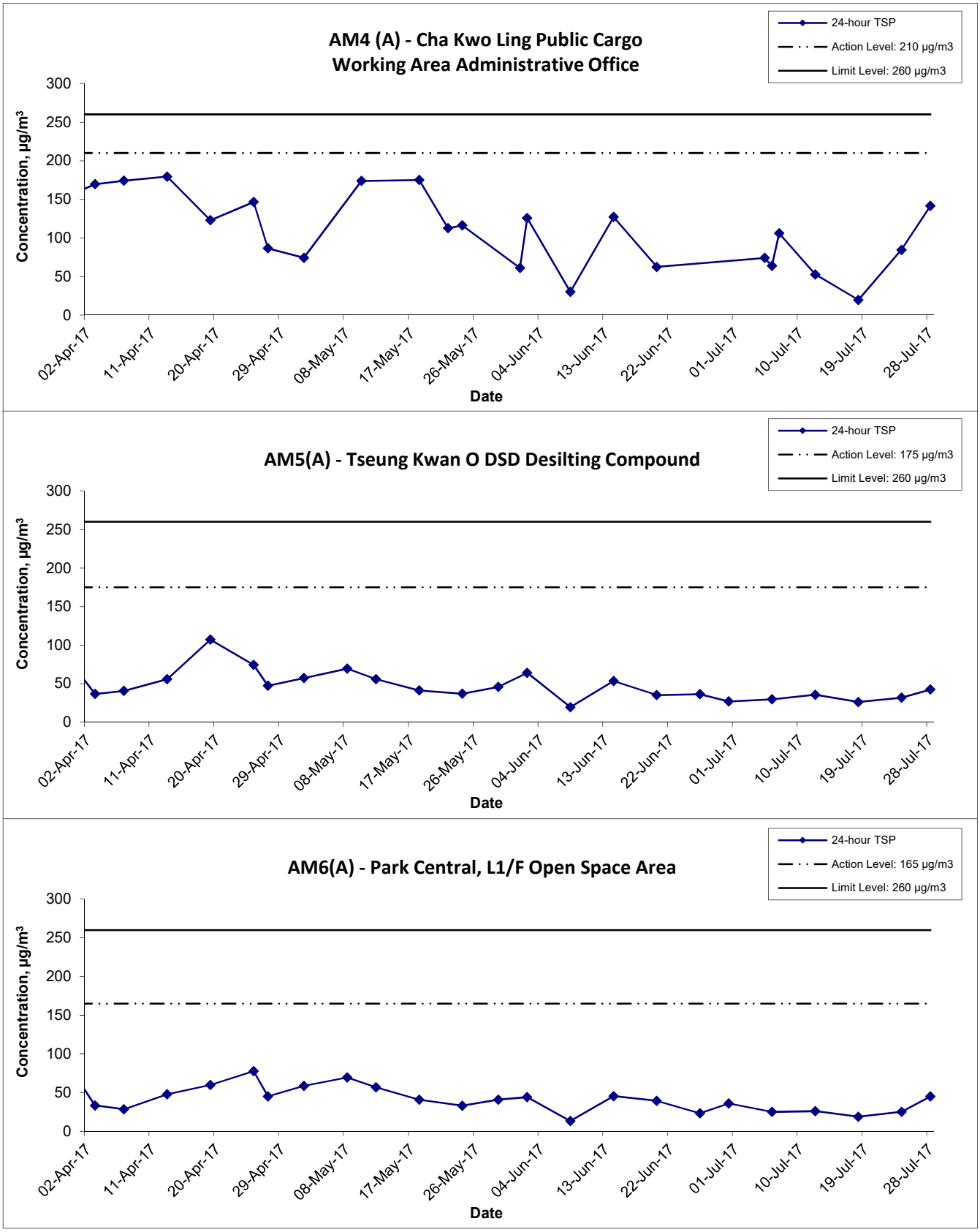
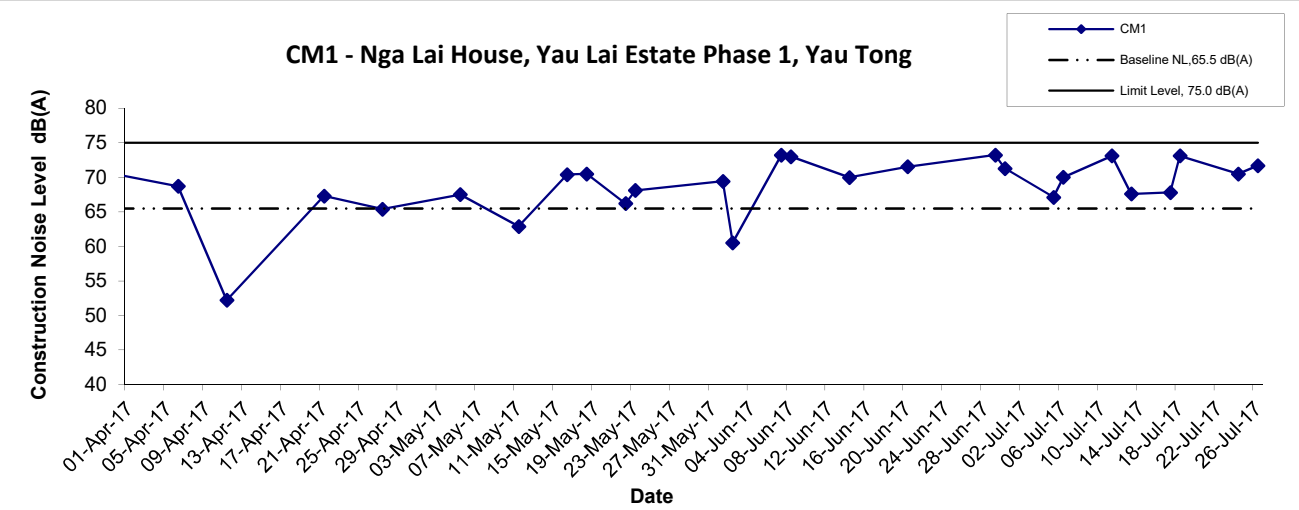
24-hr TSP Concentration Levels

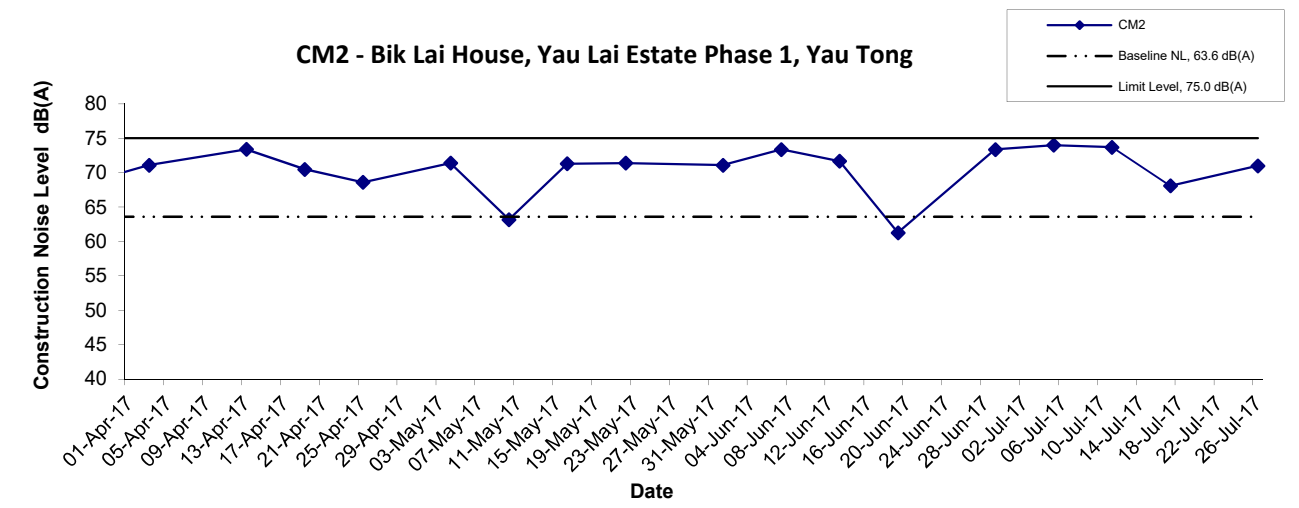


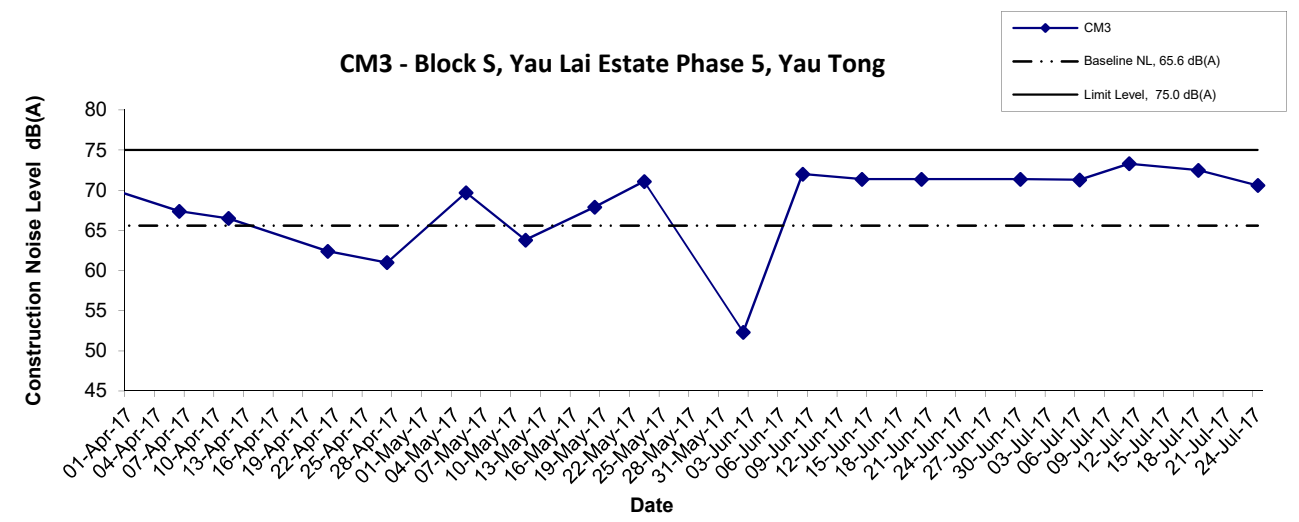
Title		Scale	Project No.	
	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 24-hour TSP Monitoring Results	N.T.S	MA16034	CINOTECH
		Date Jul 17		

APPENDIX D
GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS

Noise Levels

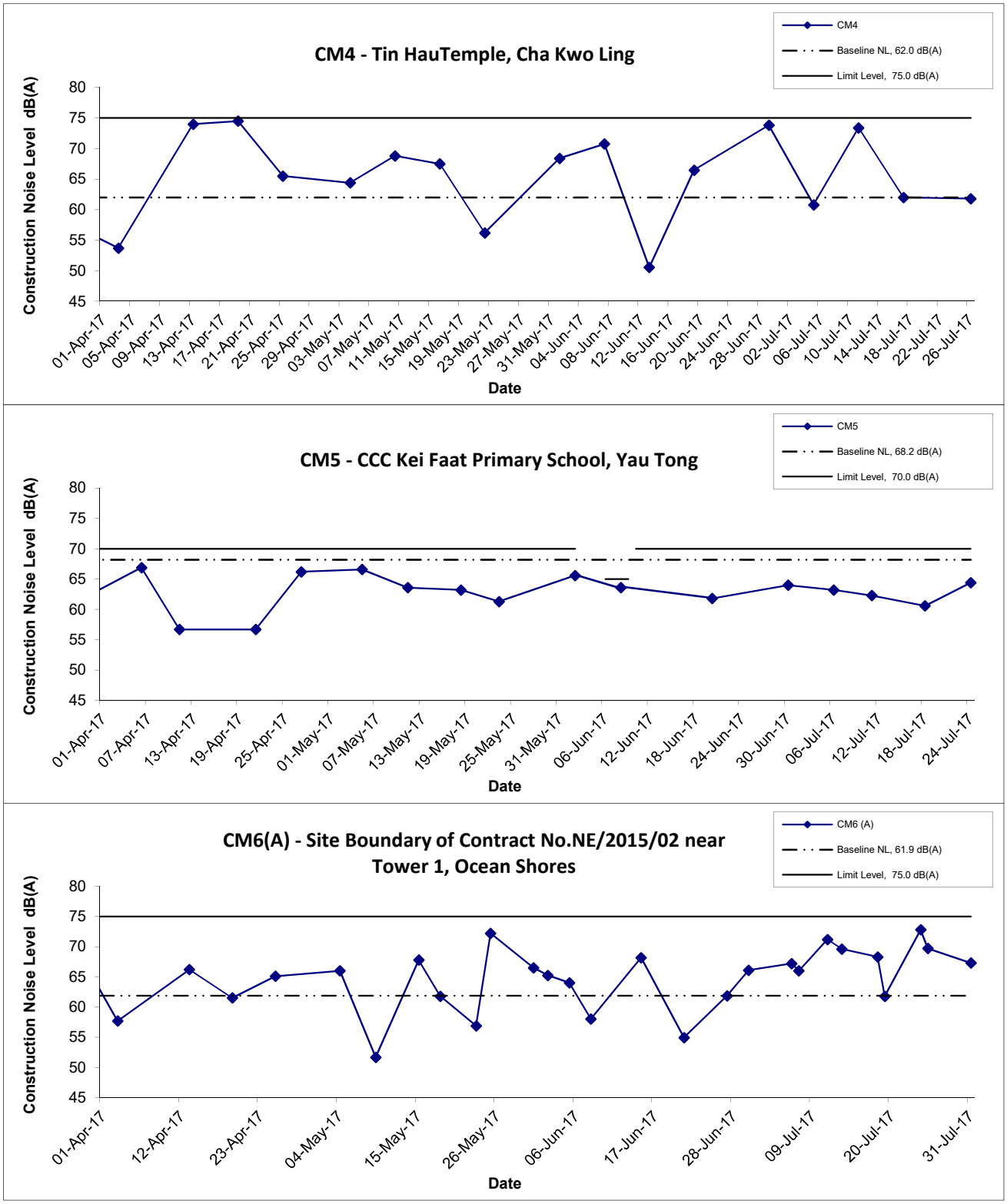






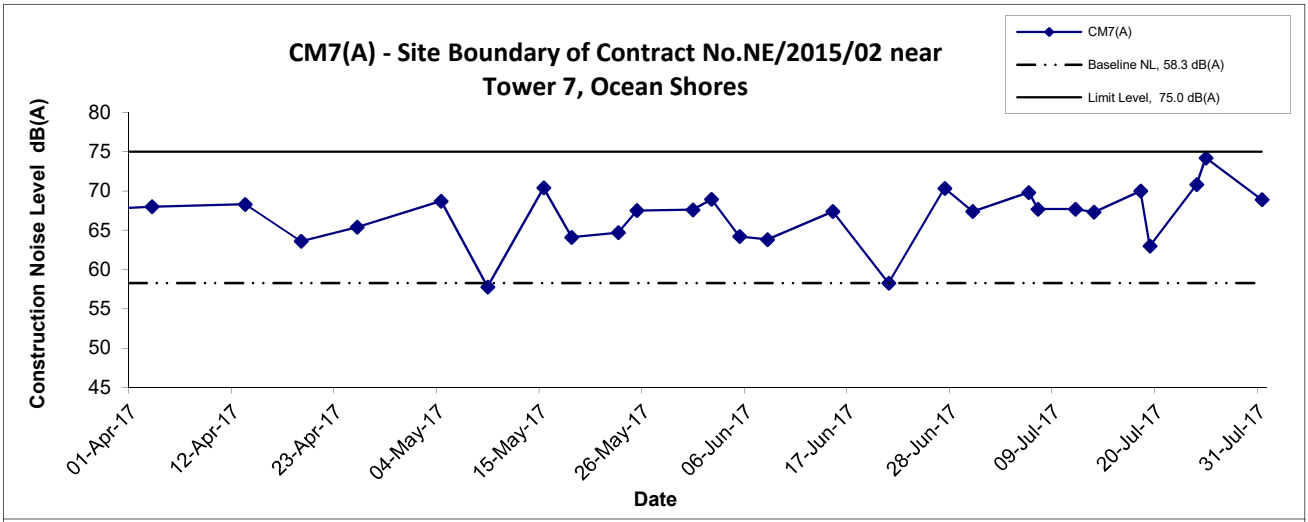
Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S Date Jul 17	Project No. MA16034	CINOTECH

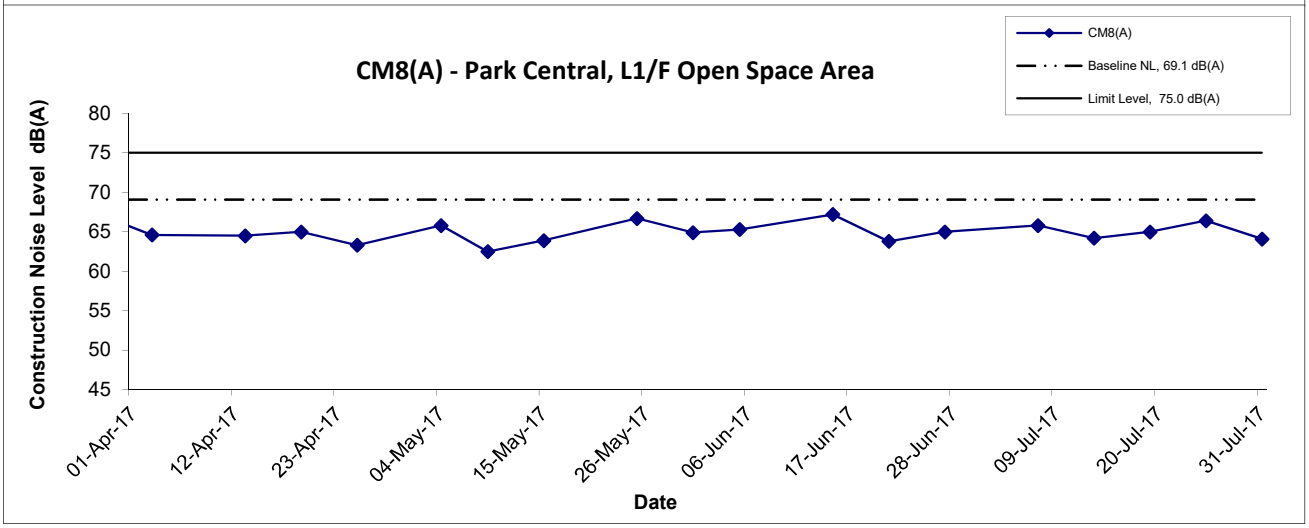
Noise Levels



Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17		

Noise Levels

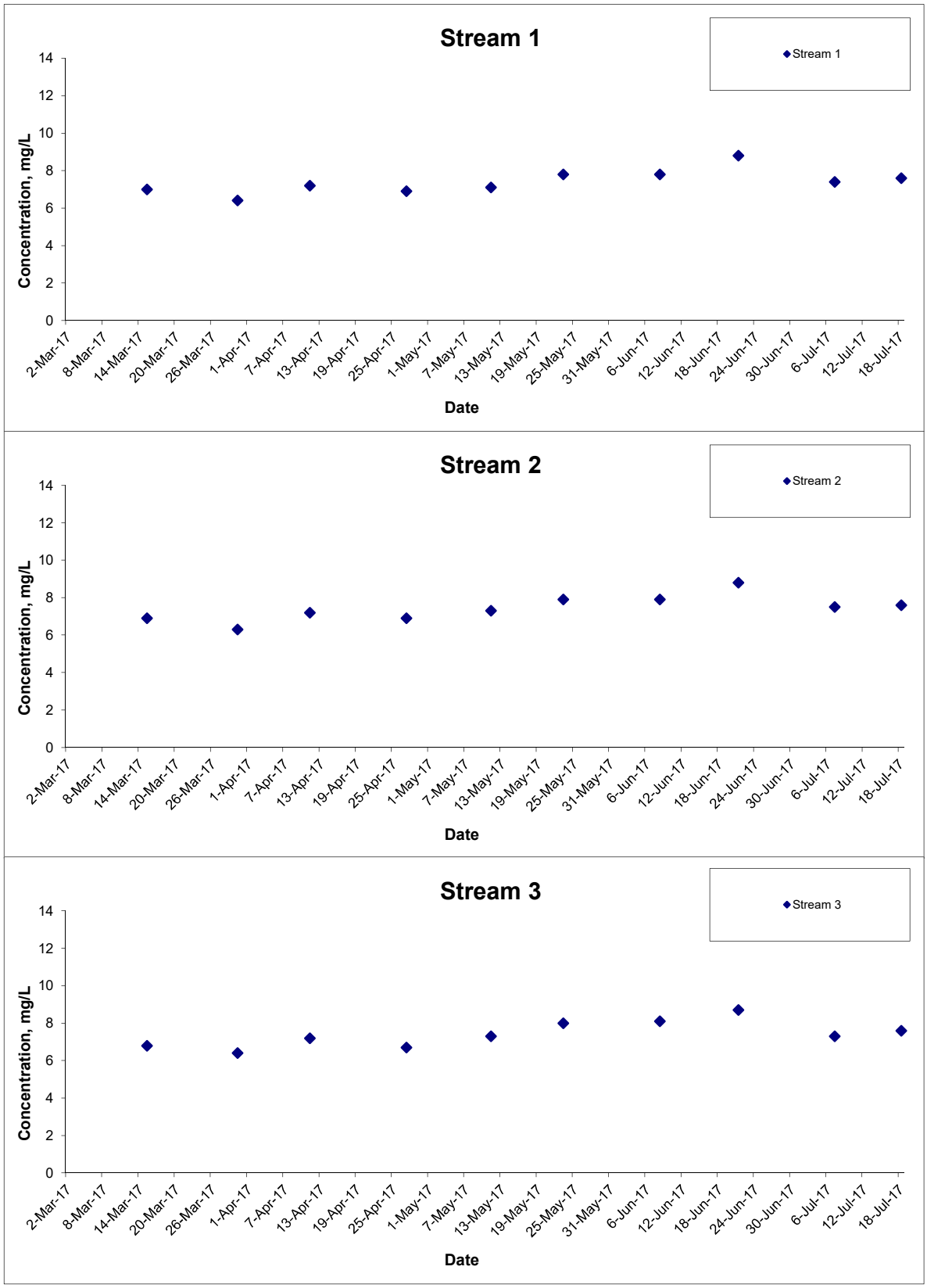




Title		Scale	Project
Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction		N.T.S	No. MA16034
Graphical Presentation of Construction Noise Monitoring Results		Date Jul 17	CINOTECH

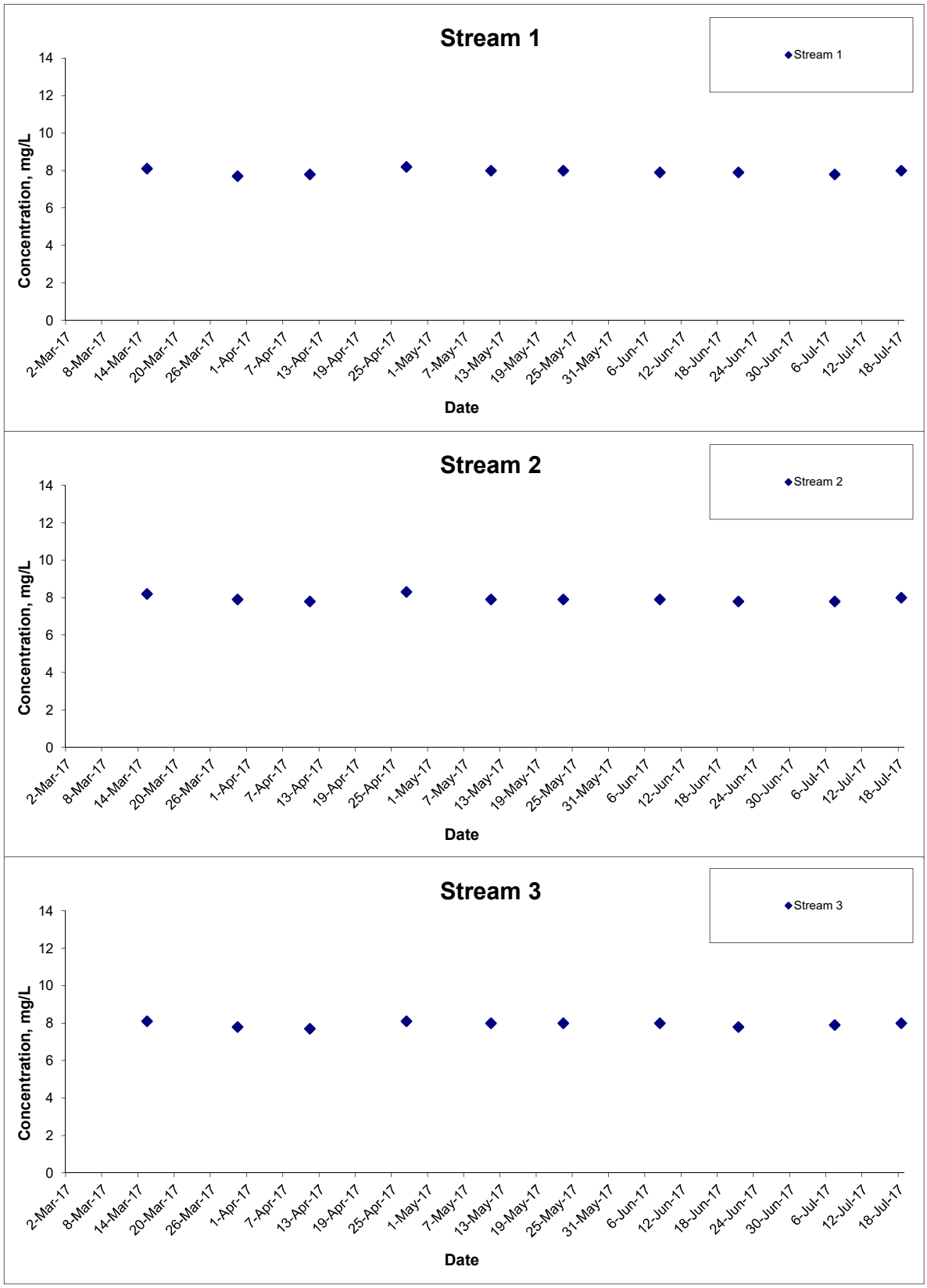
APPENDIX E
GRAPHICAL PRESENTATION OF GROUNDWATER QUALITY MONITORING RESULTS

pH



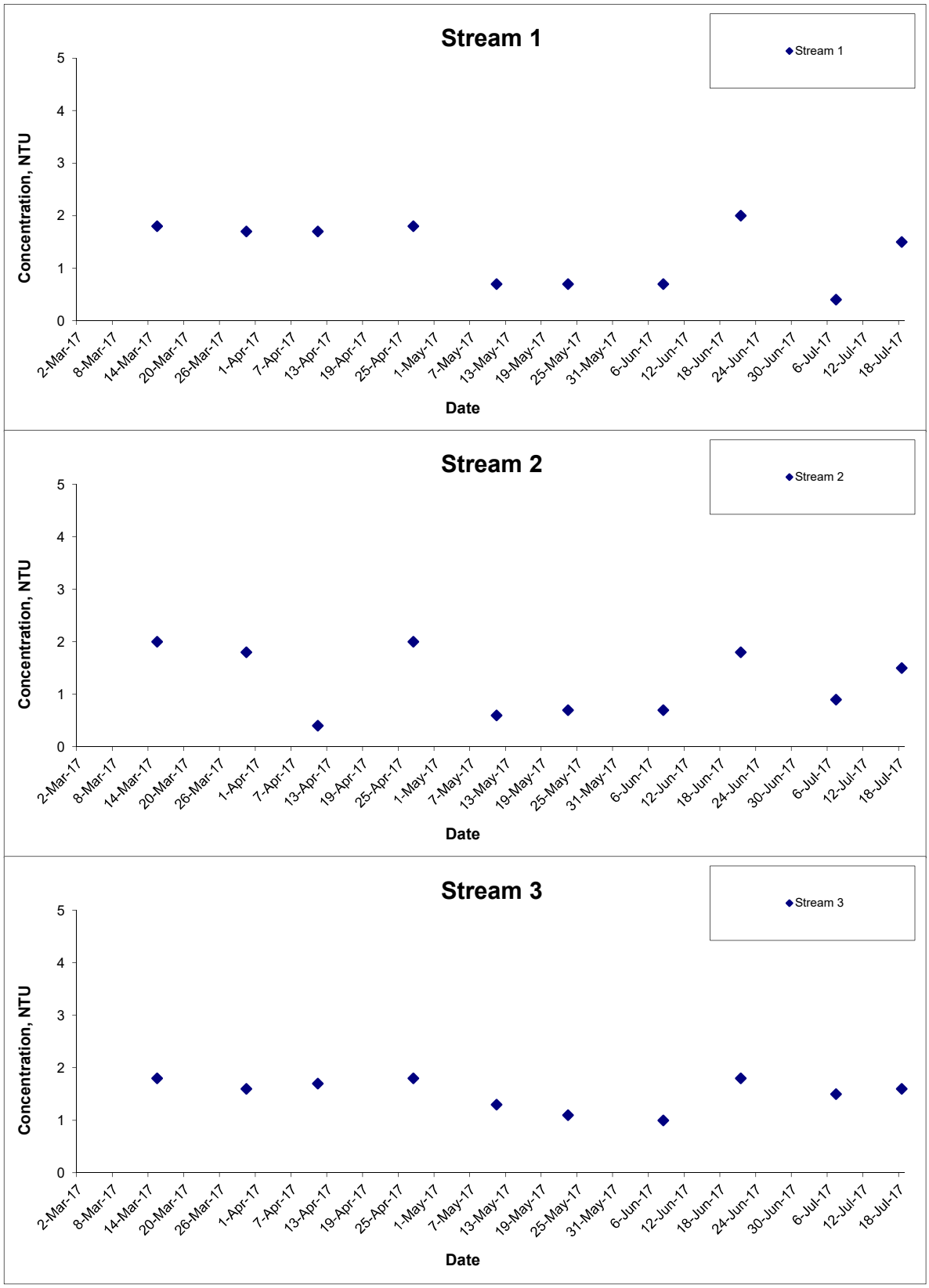
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

Dissolved Oxygen



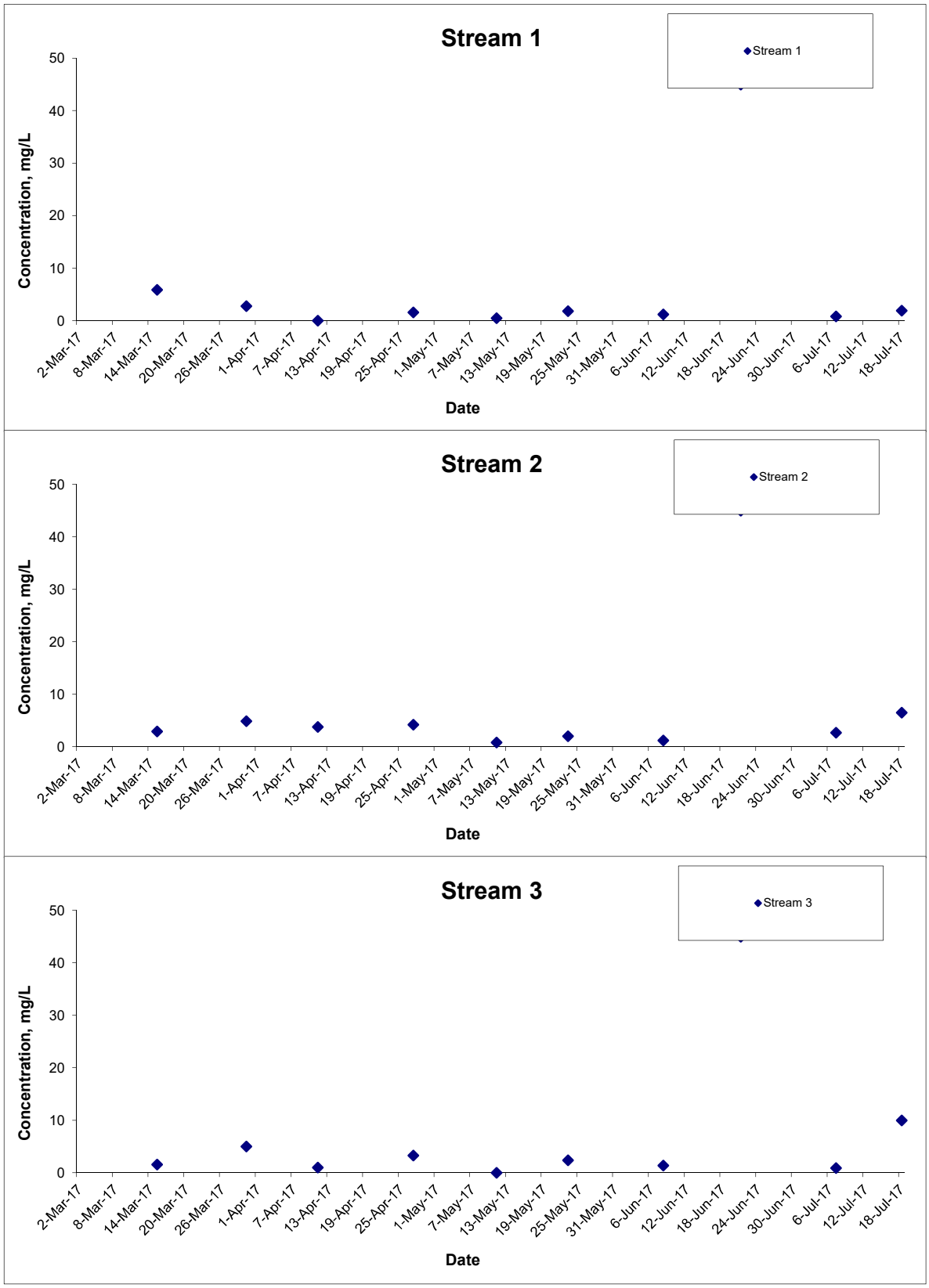
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

Turbidity



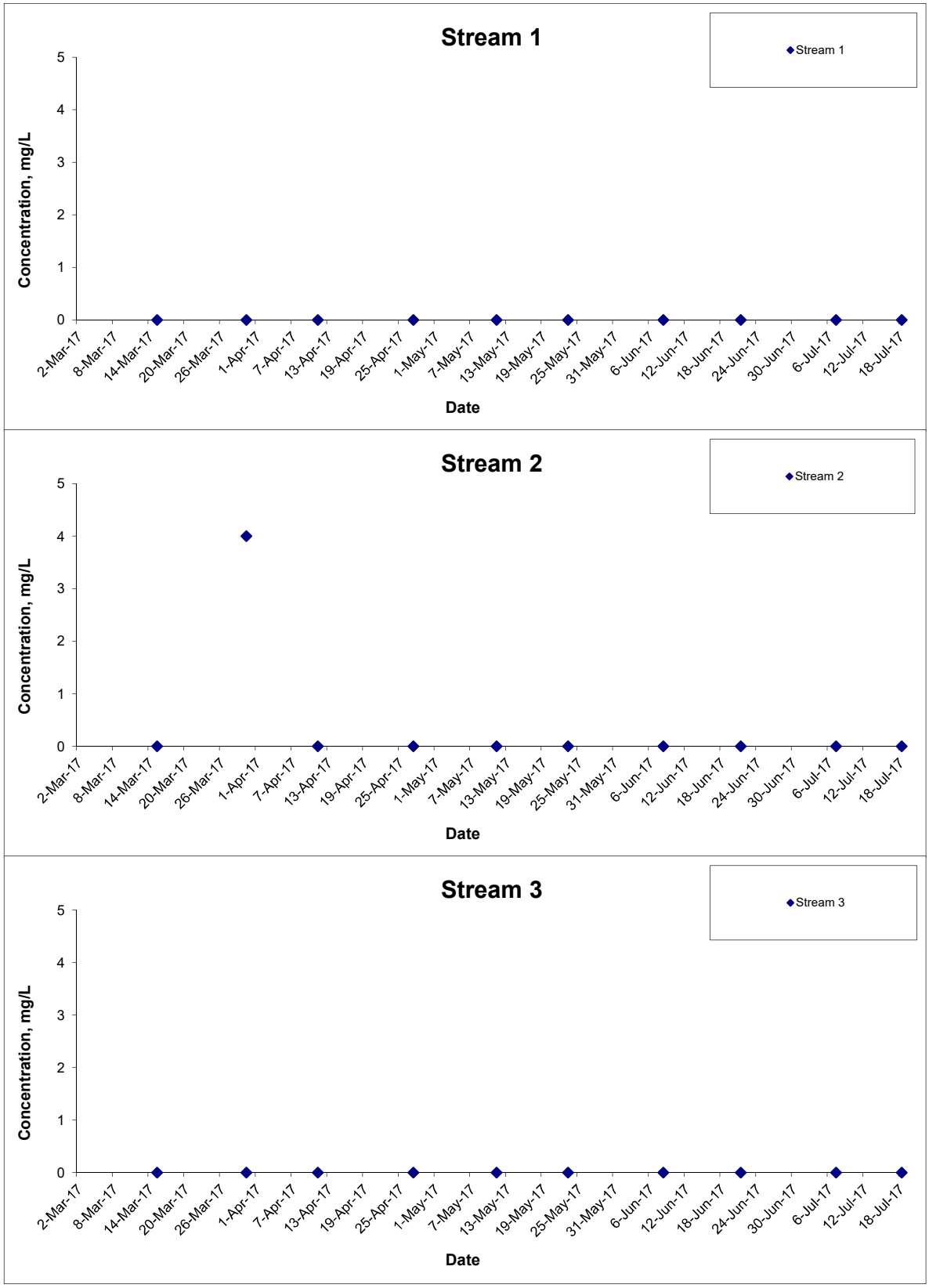
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

Suspended Solids



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

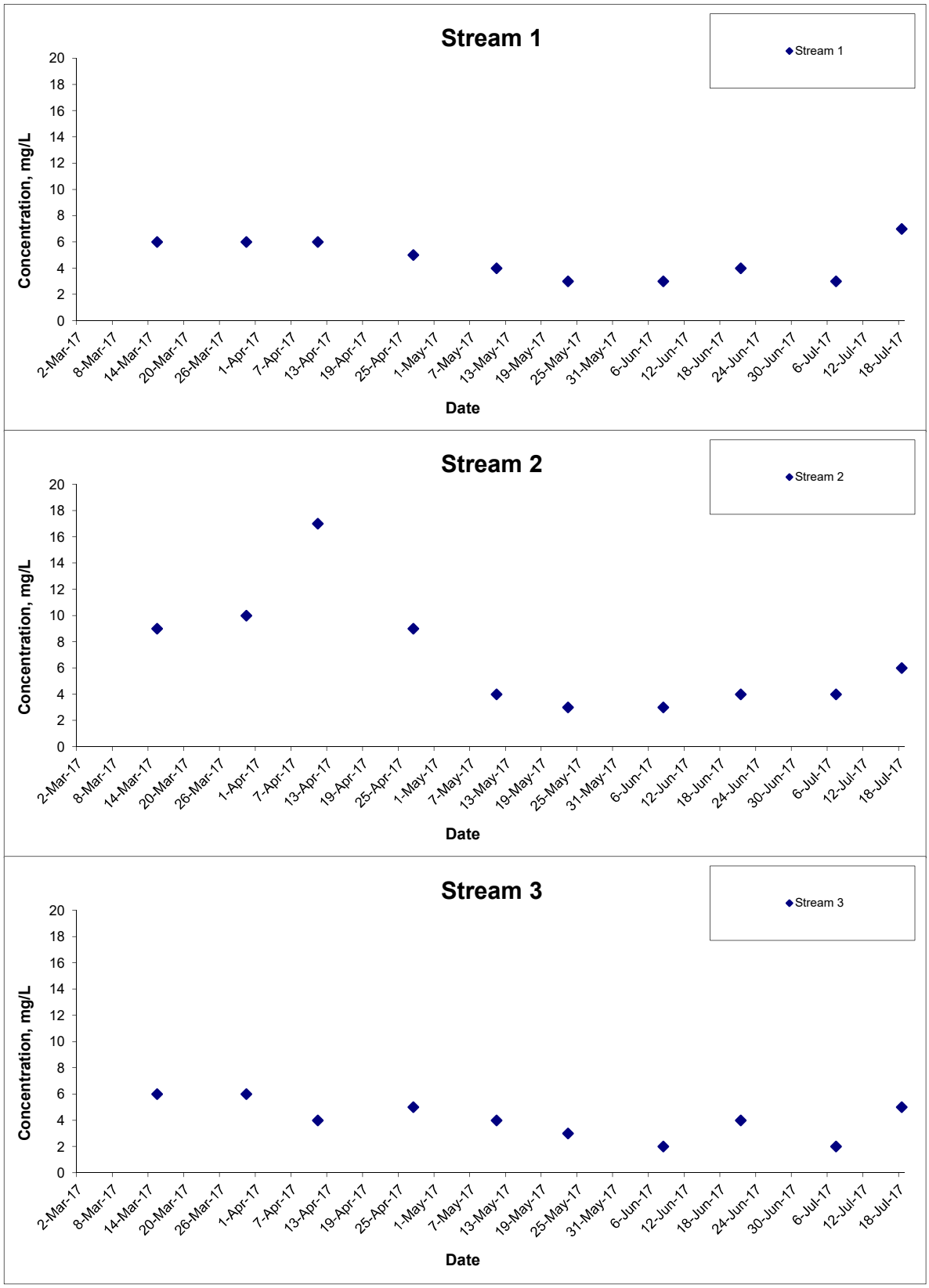
5-day Biochemical Oxygen Demand (BOD_5)



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

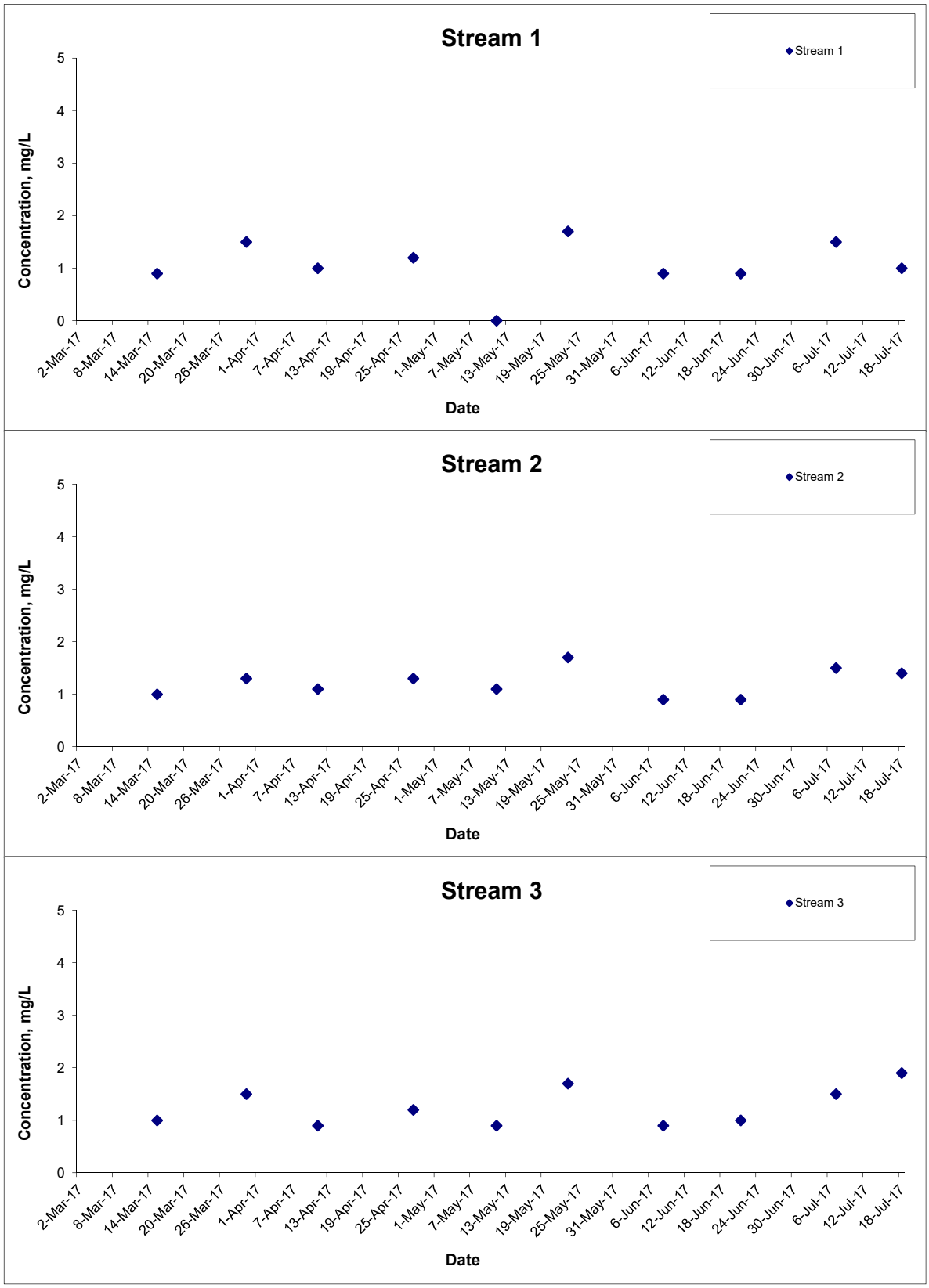
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

Total Organic Carbon (TOC)



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

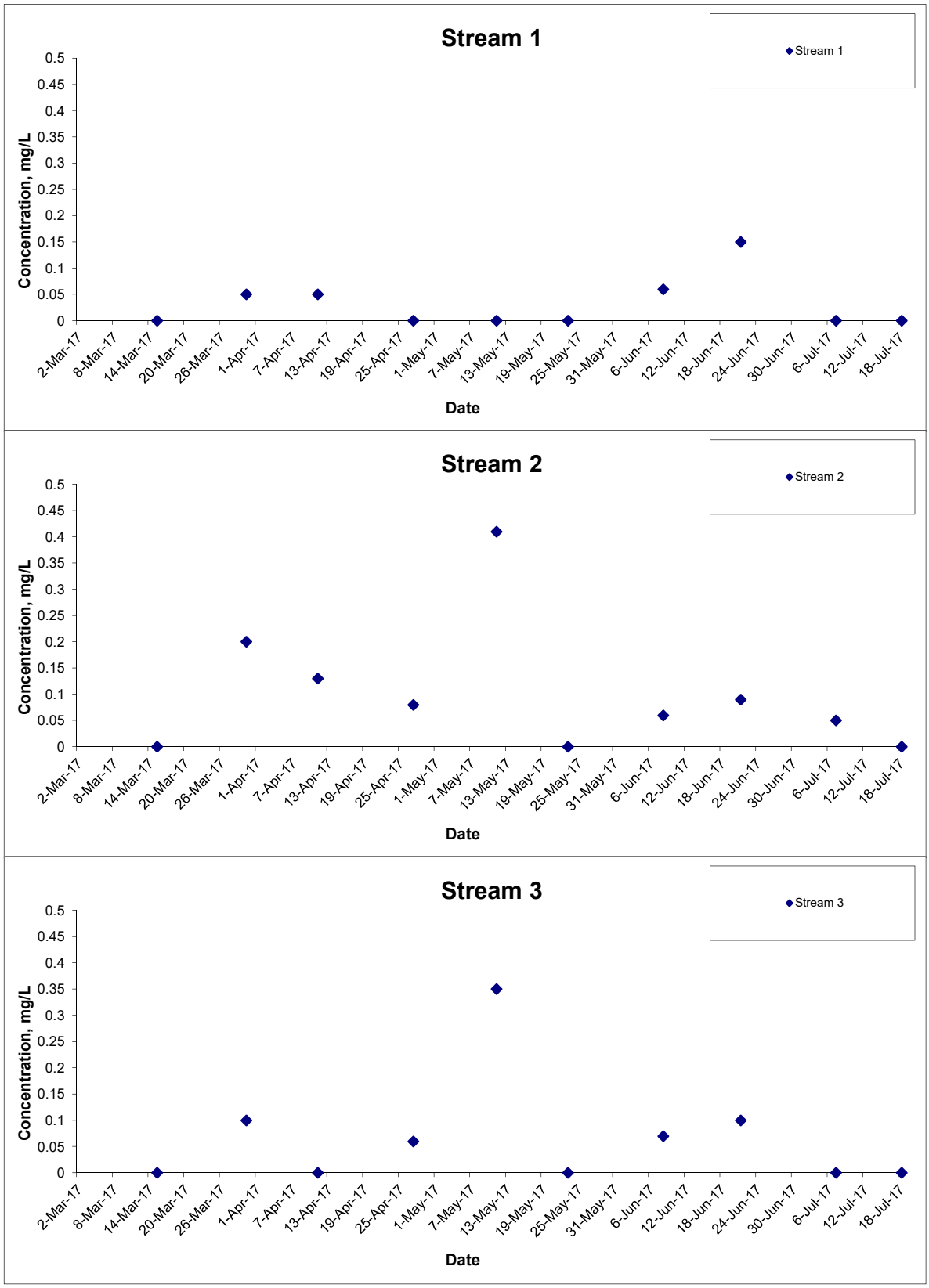
Total Nitrogen



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

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17		

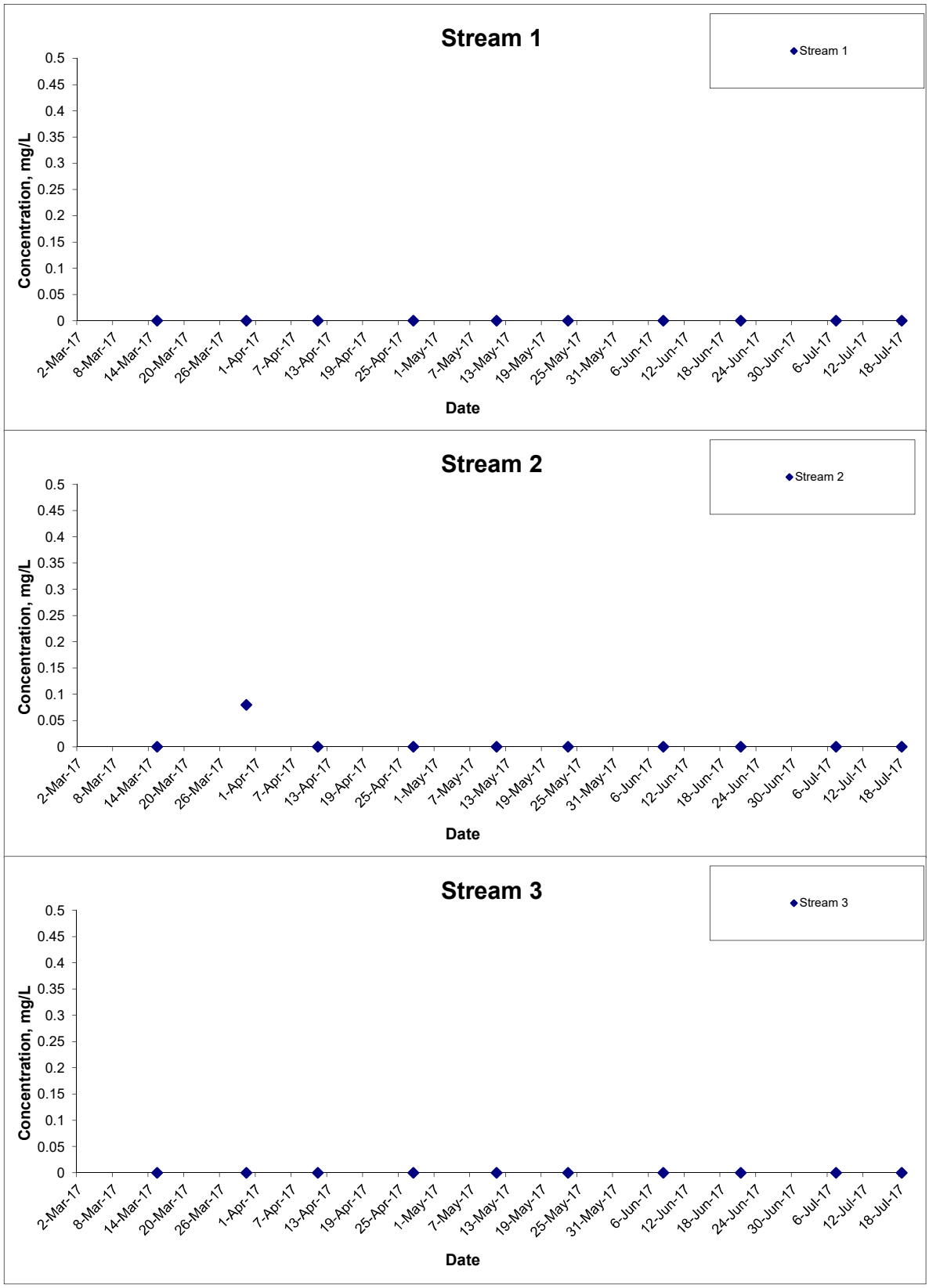
Ammonia-Nitrogen



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

Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17		

Total Phosphate

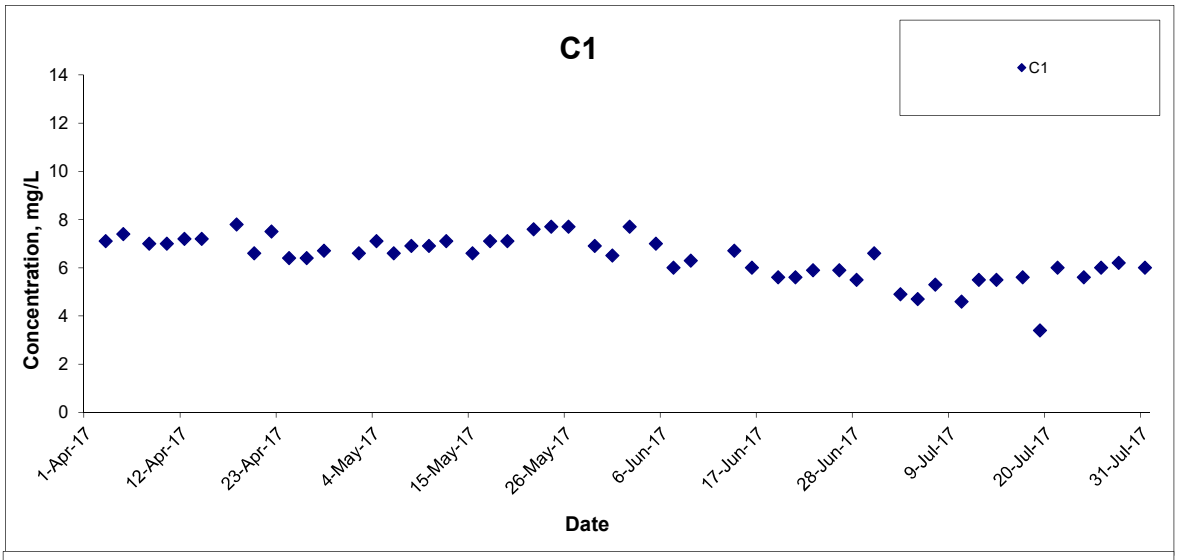


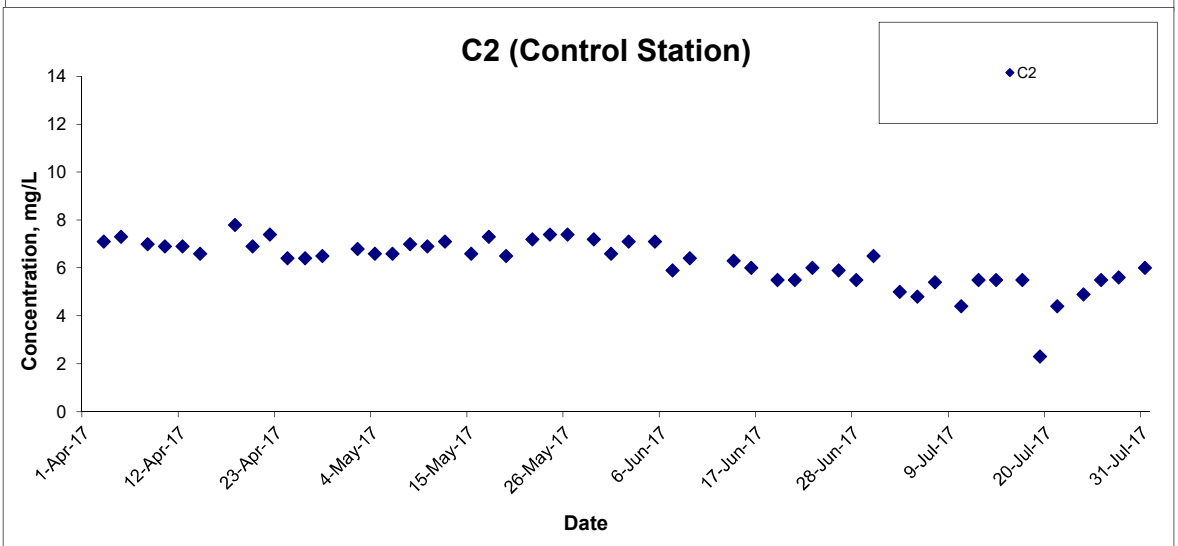
Remarks: The graphical point at zero concentration is presented as <0.05 mg/L

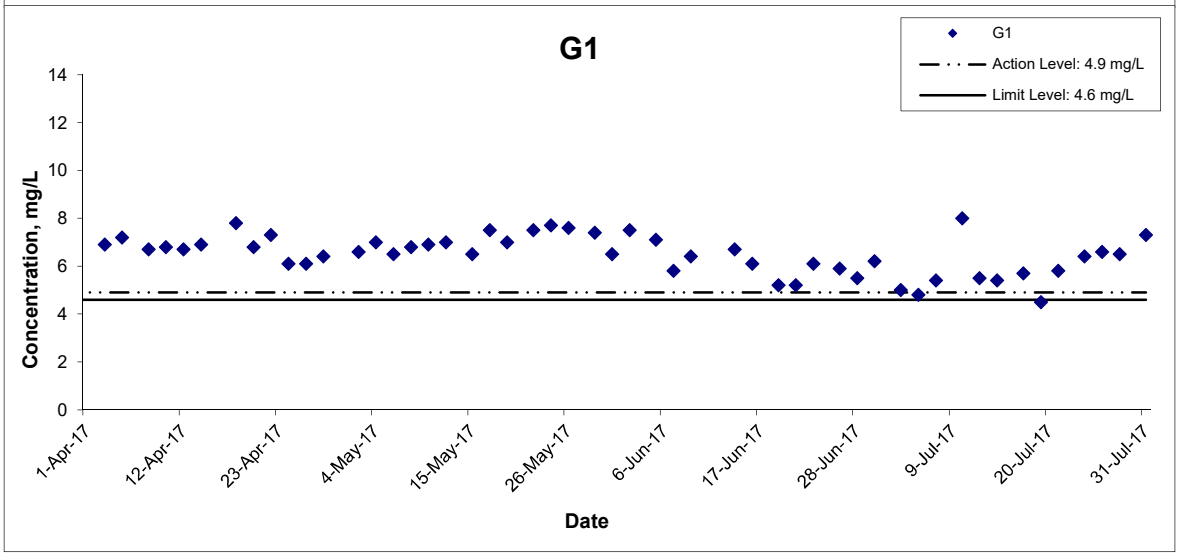
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S Date: Jul 17	Project No.: MA16034	CINOTECH

APPENDIX F
GRAPHICAL PRESENTATION OF MARINE WATER QUALITY MONITORING RESULTS

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

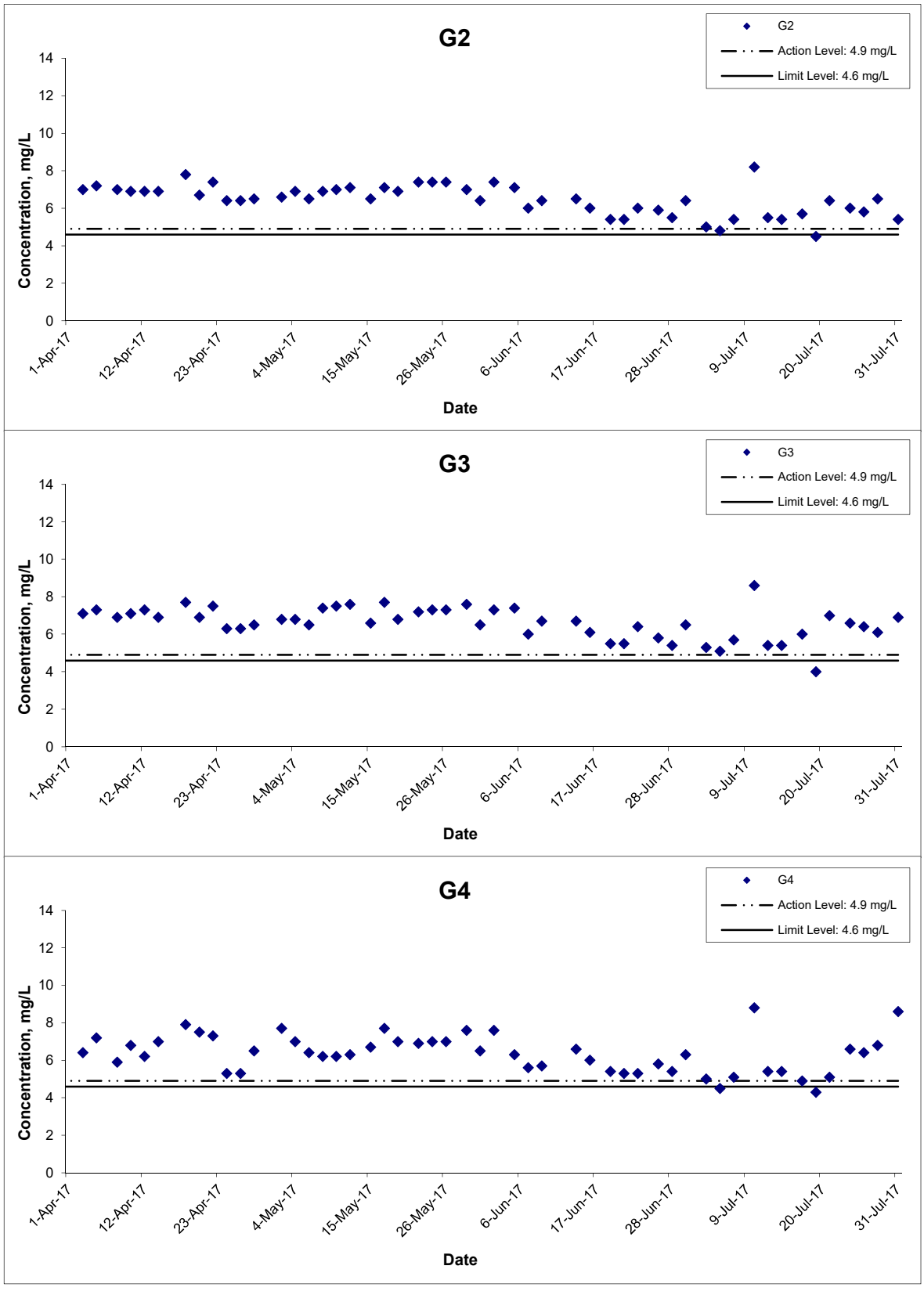






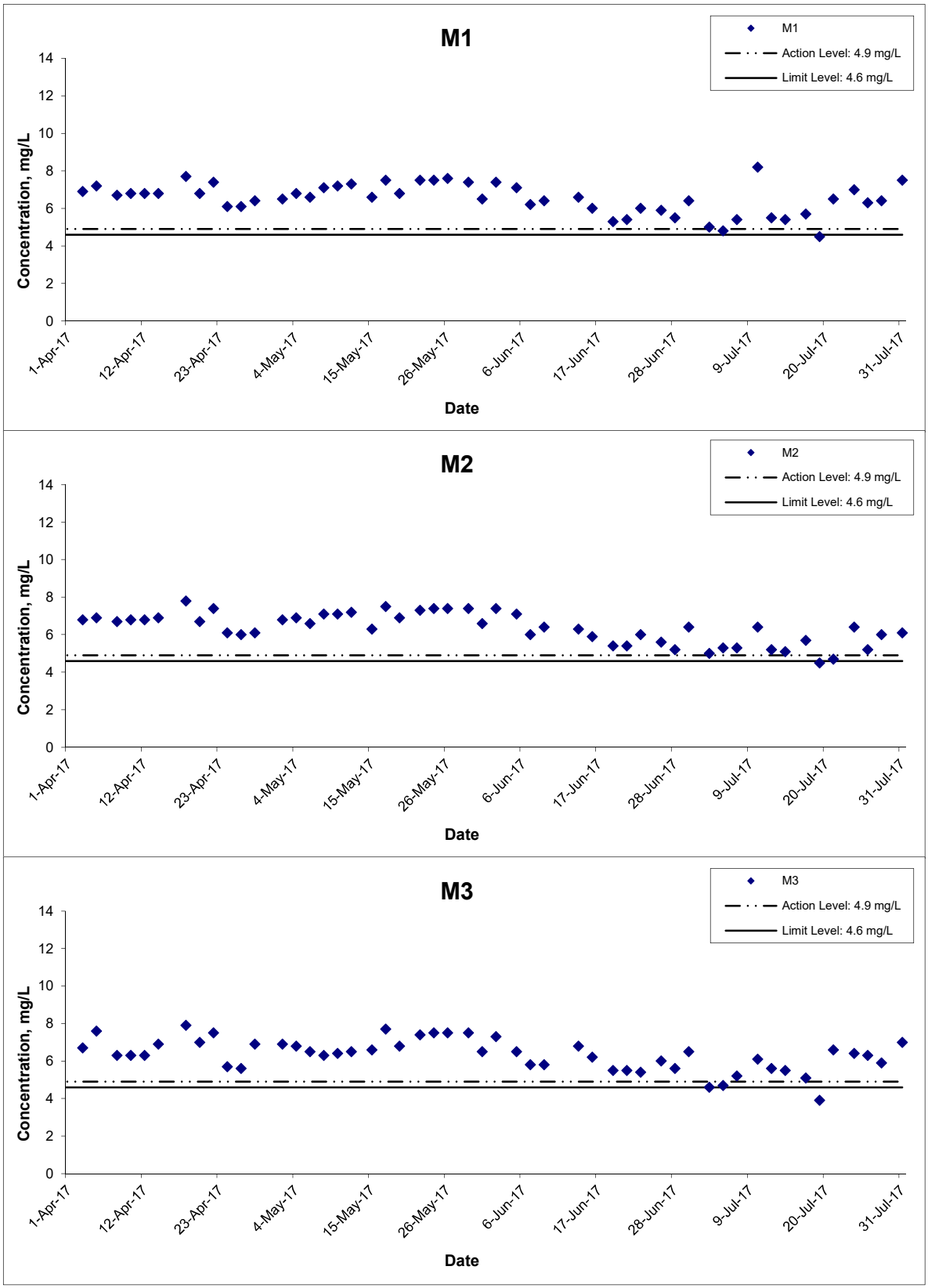
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



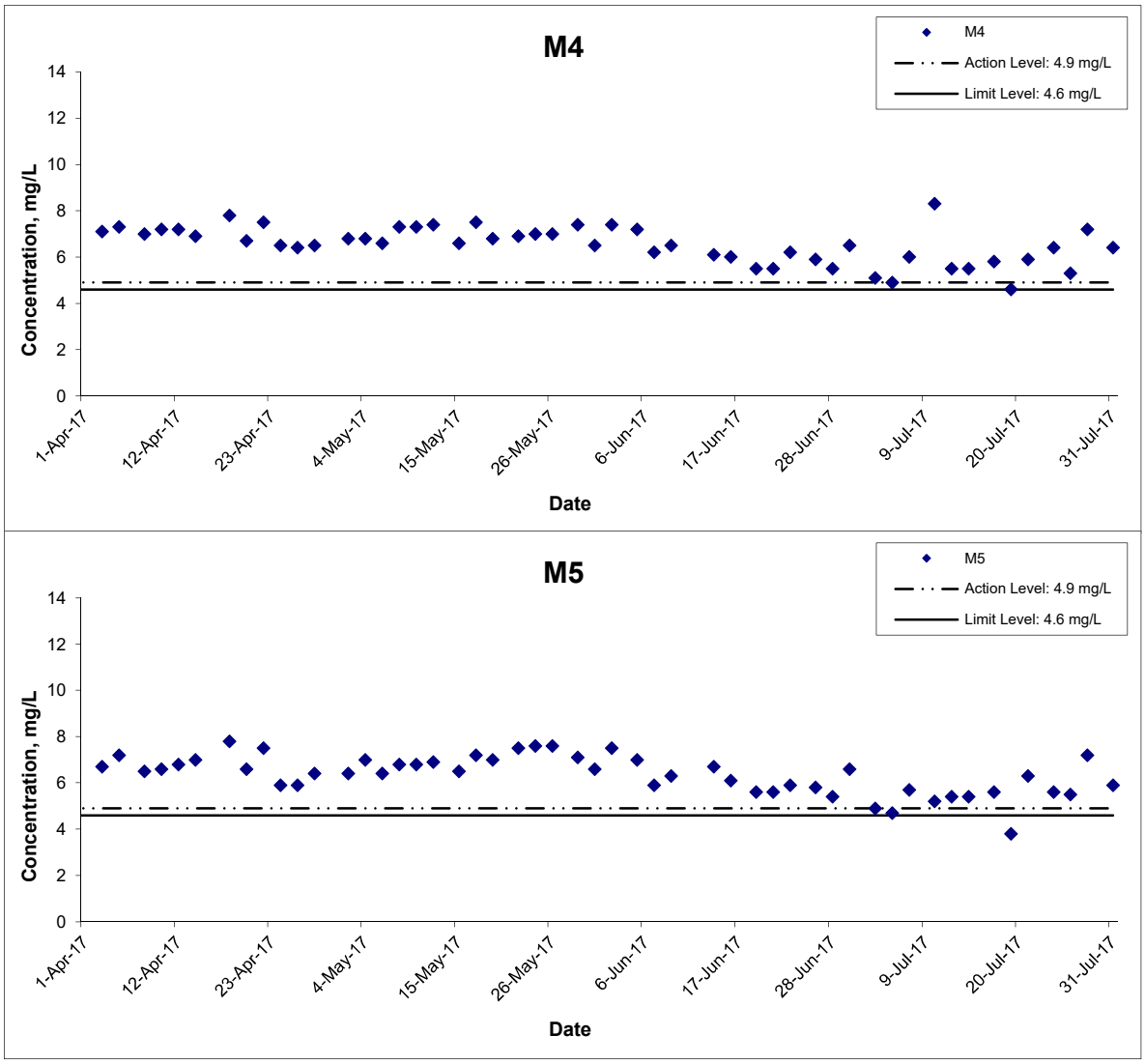
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



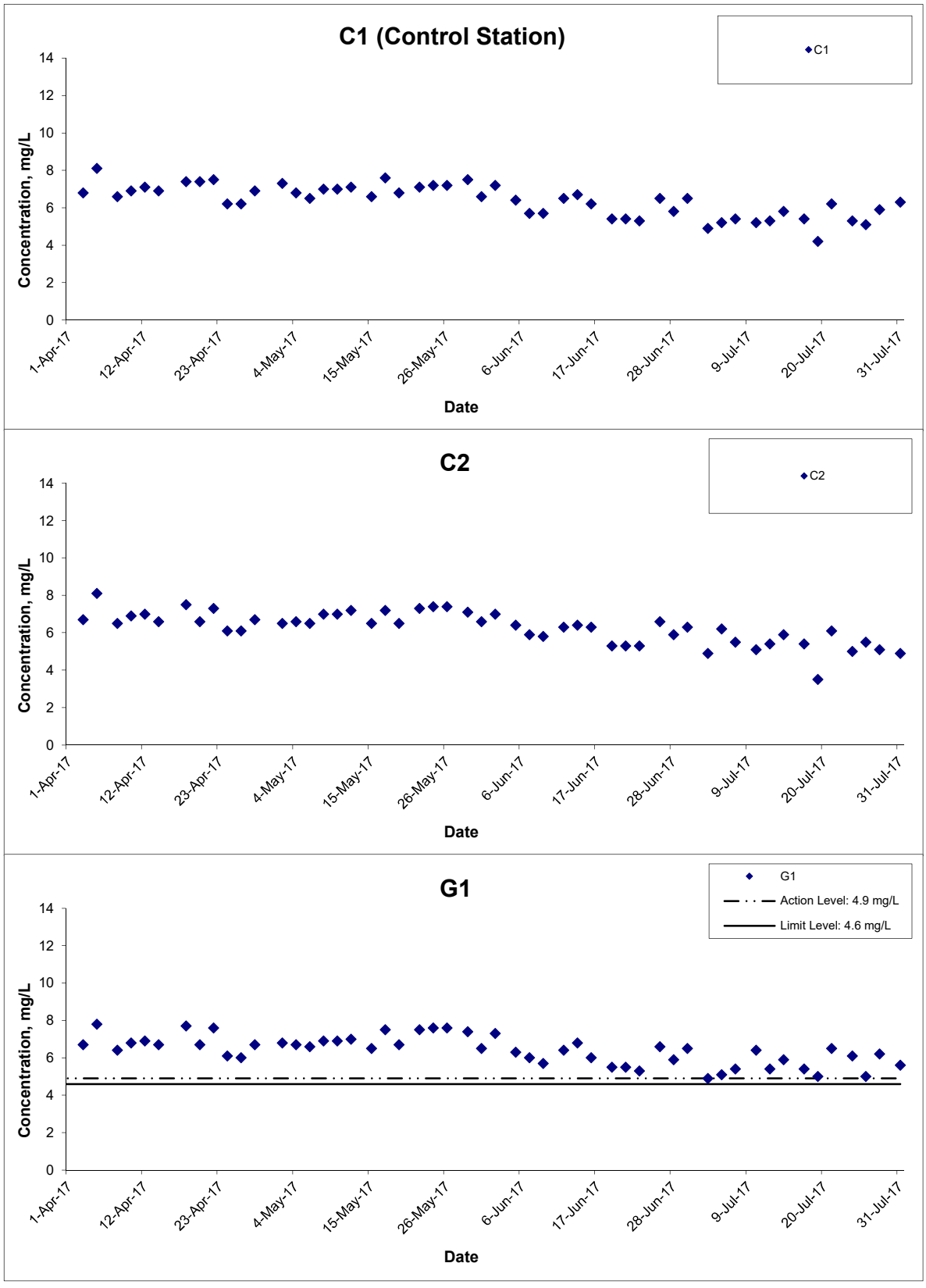
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



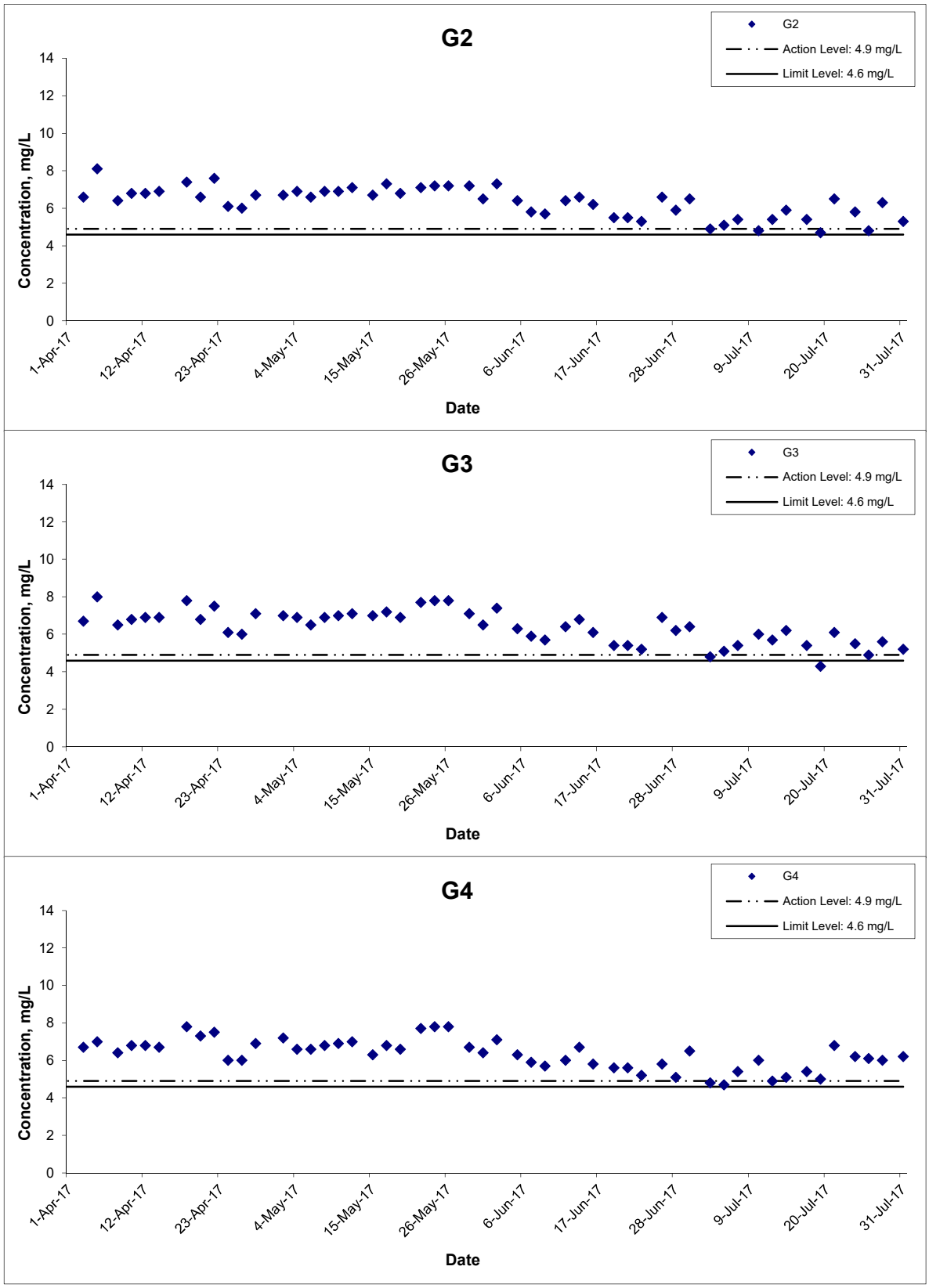
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17	Appendix I	

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



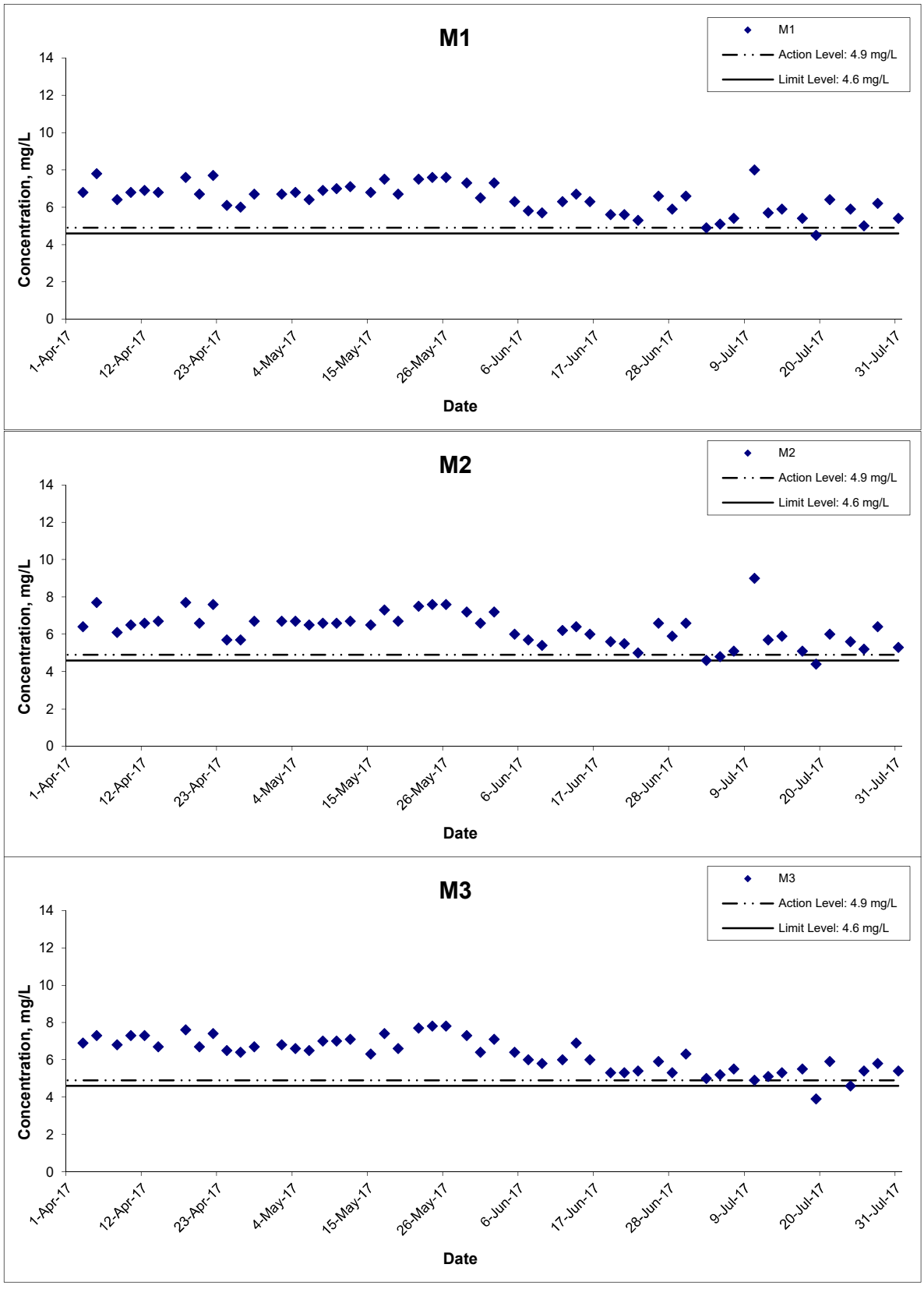
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



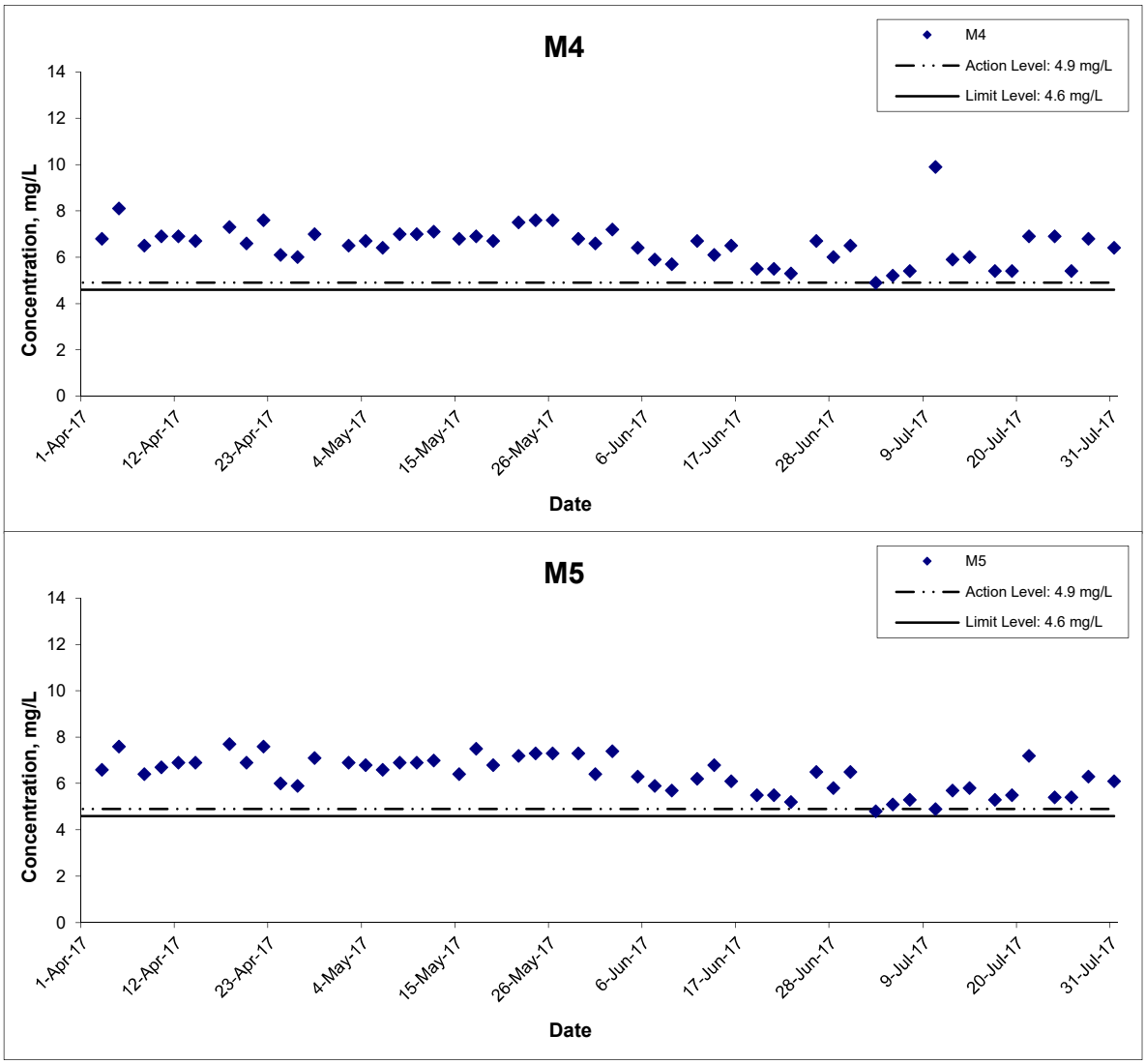
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

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



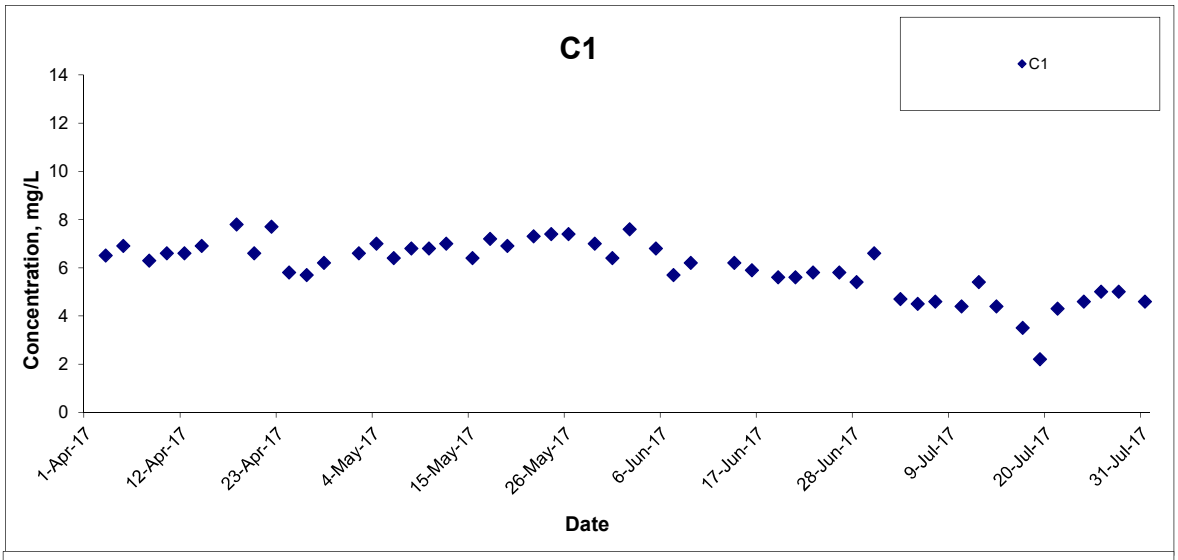
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17	Appendix I	

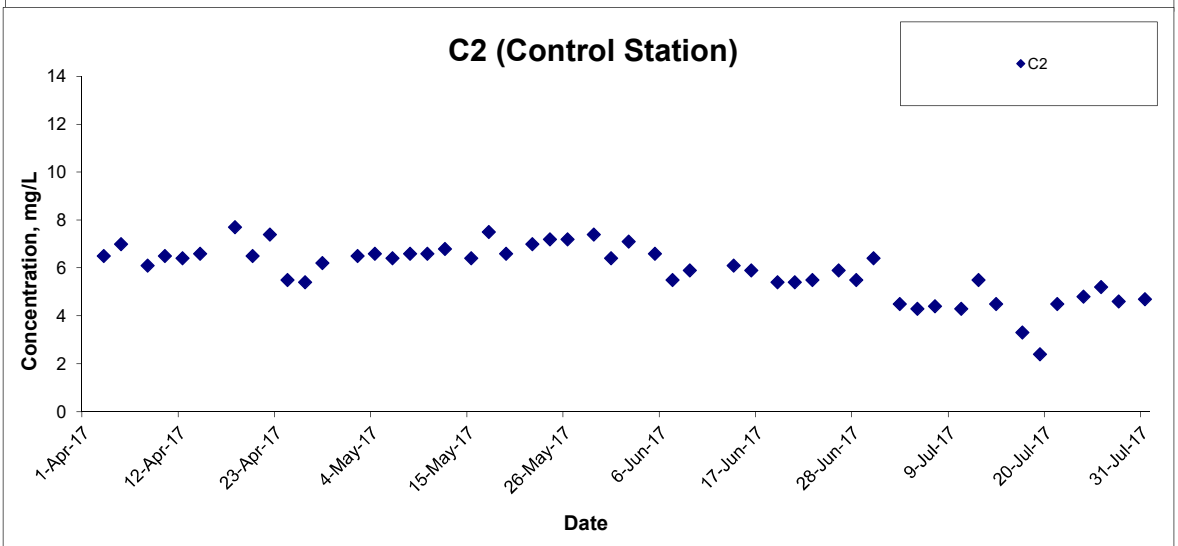
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide

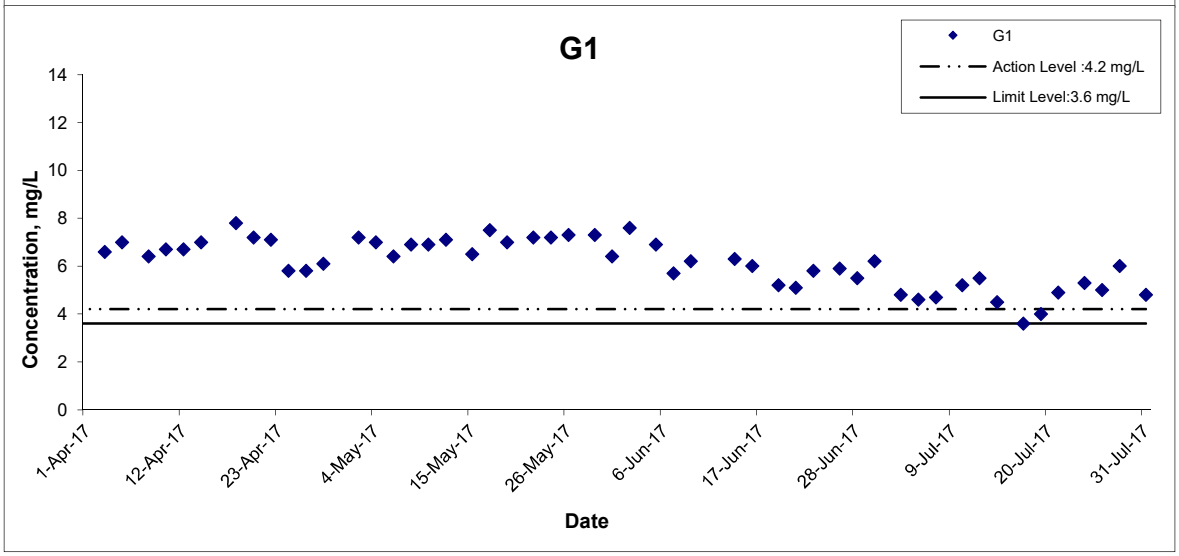


Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: I	CINOTECH

Dissolved Oxygen (Bottom) at Mid-Ebb Tide

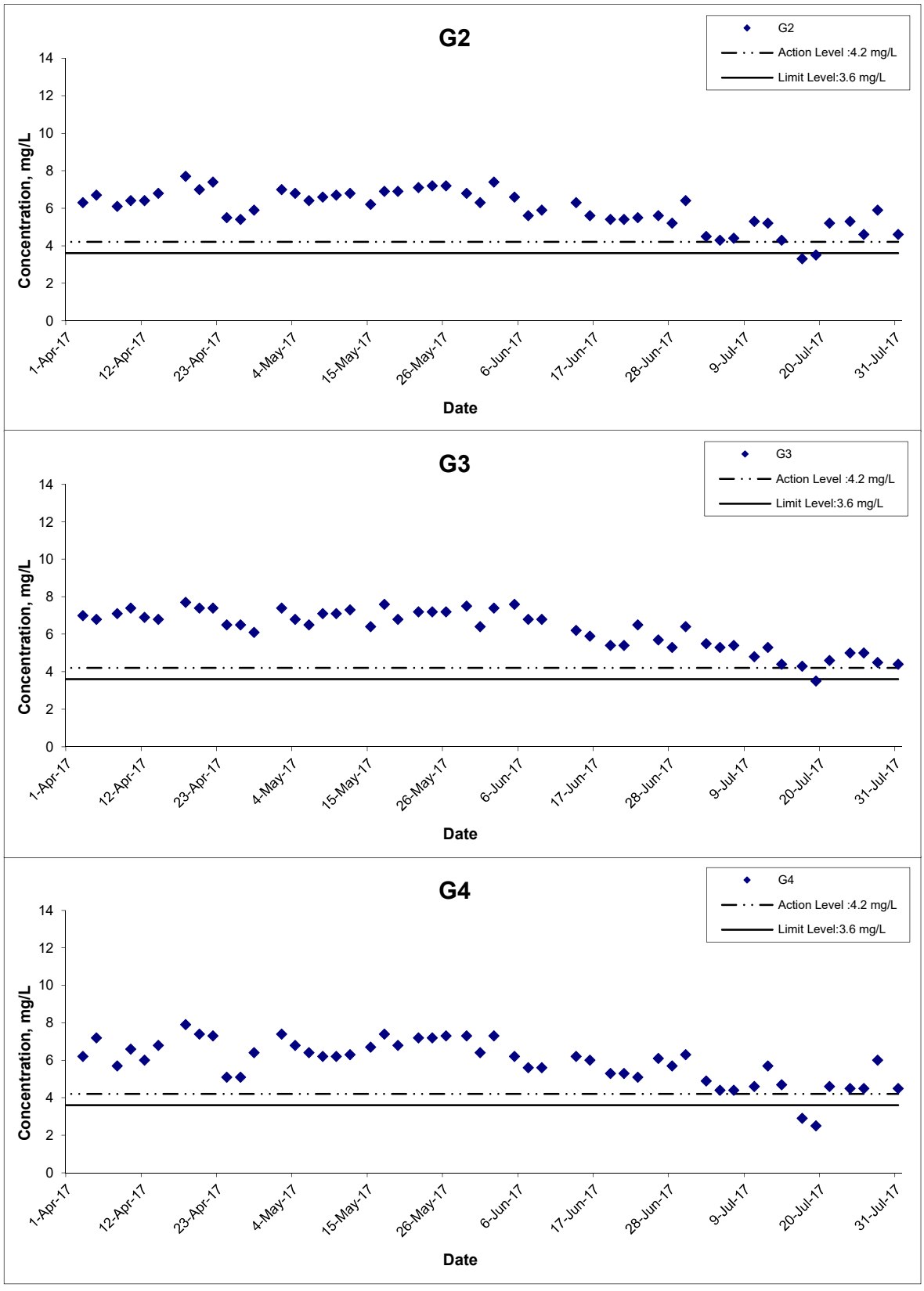






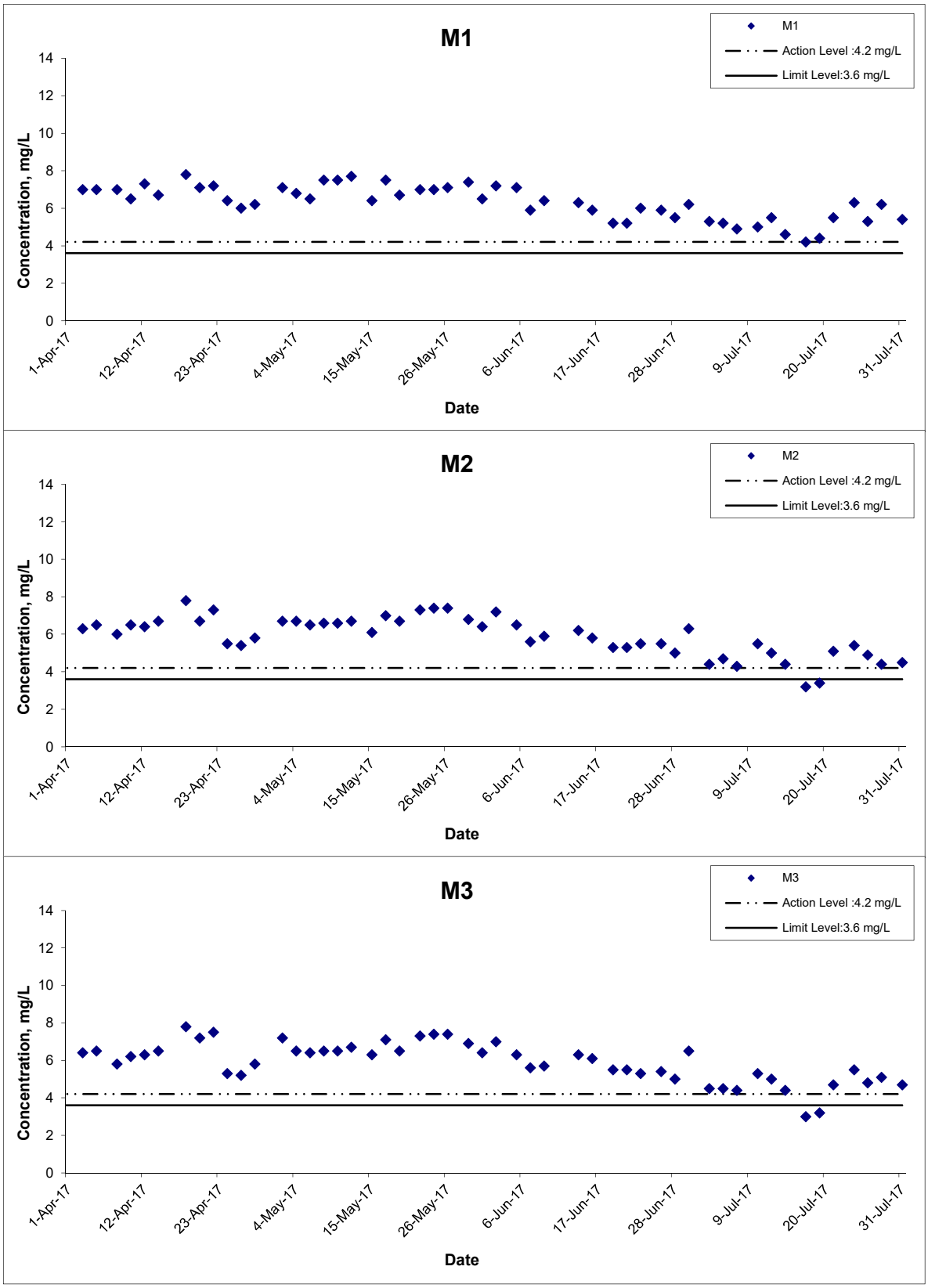
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



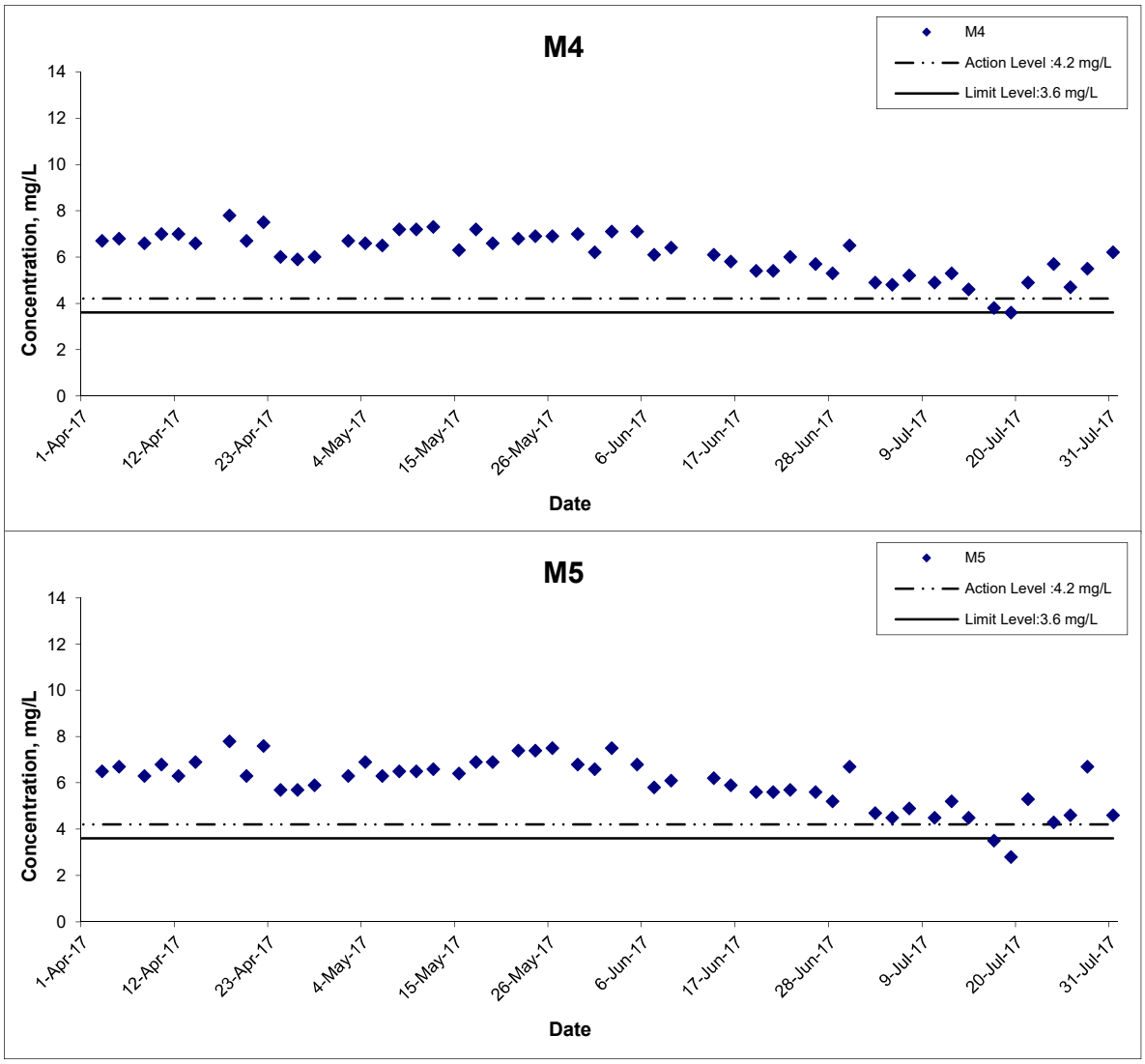
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



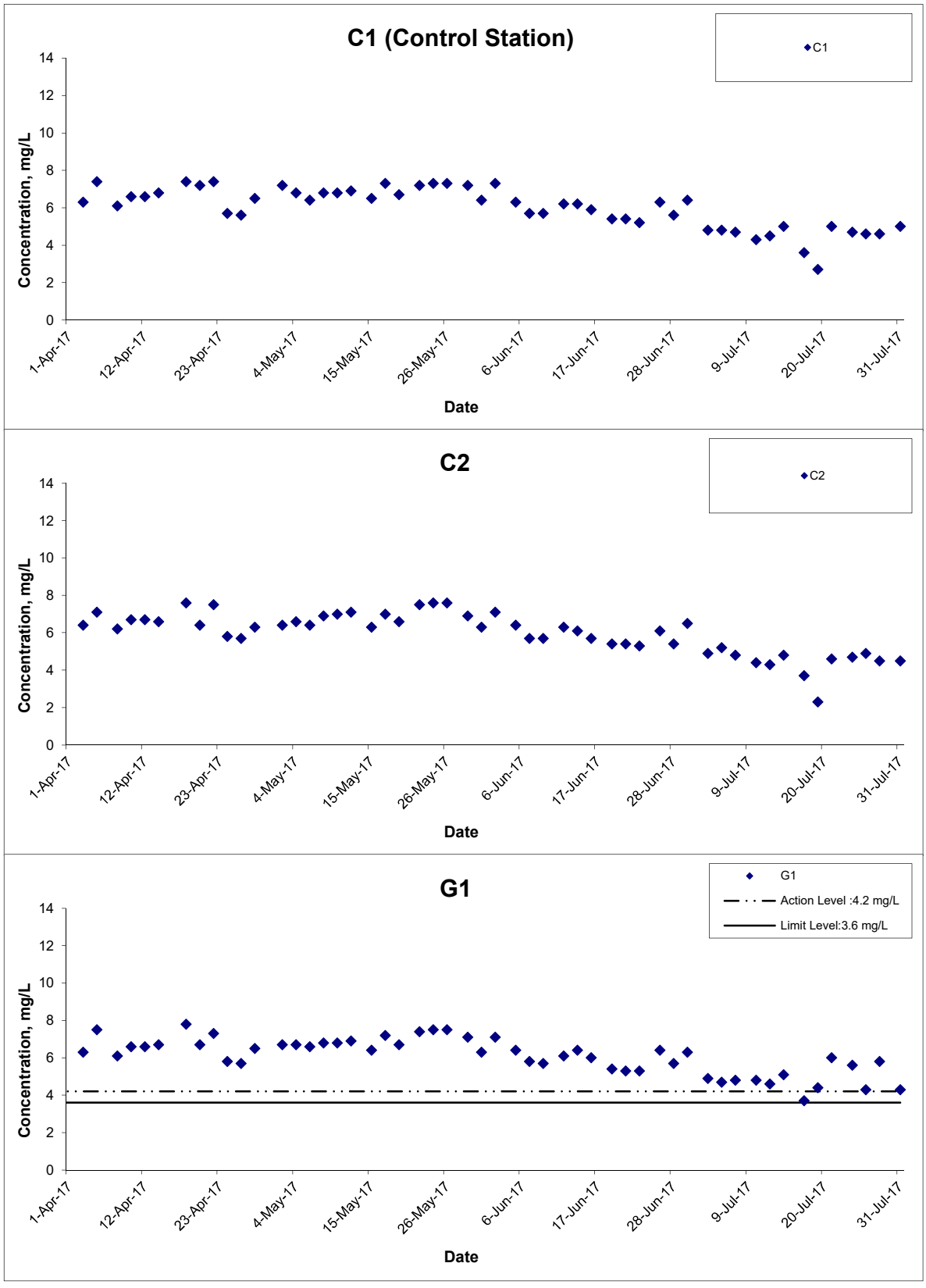
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17	Appendix I	

Dissolved Oxygen (Bottom) at Mid-Ebb Tide



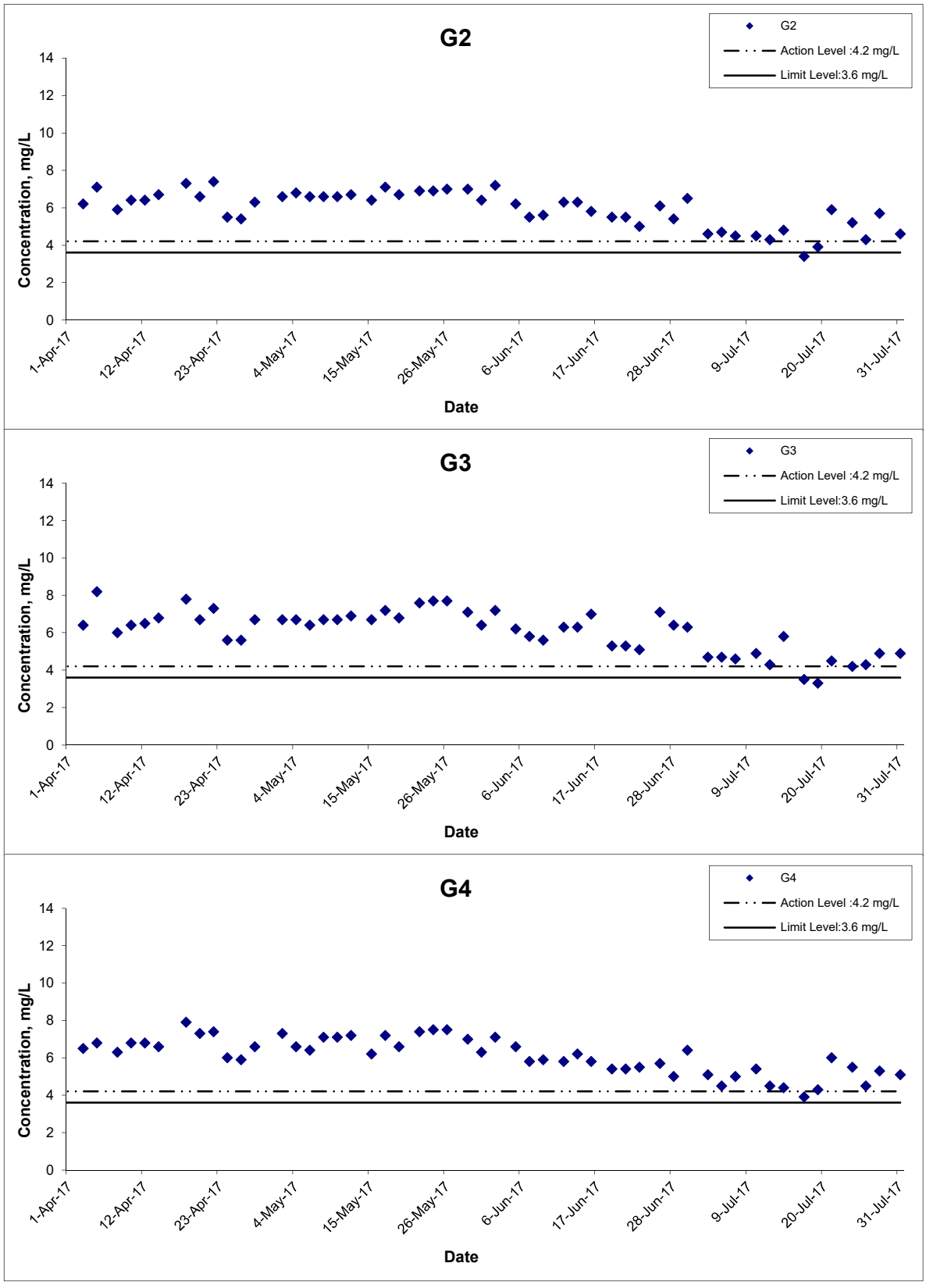
Title		Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction		N.T.S	MA16034
Graphical Presentation of Water Quality Monitoring Results		Date: Jul 17	Appendix: I

Dissolved Oxygen (Bottom) at Mid-Flood Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17	Appendix I	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



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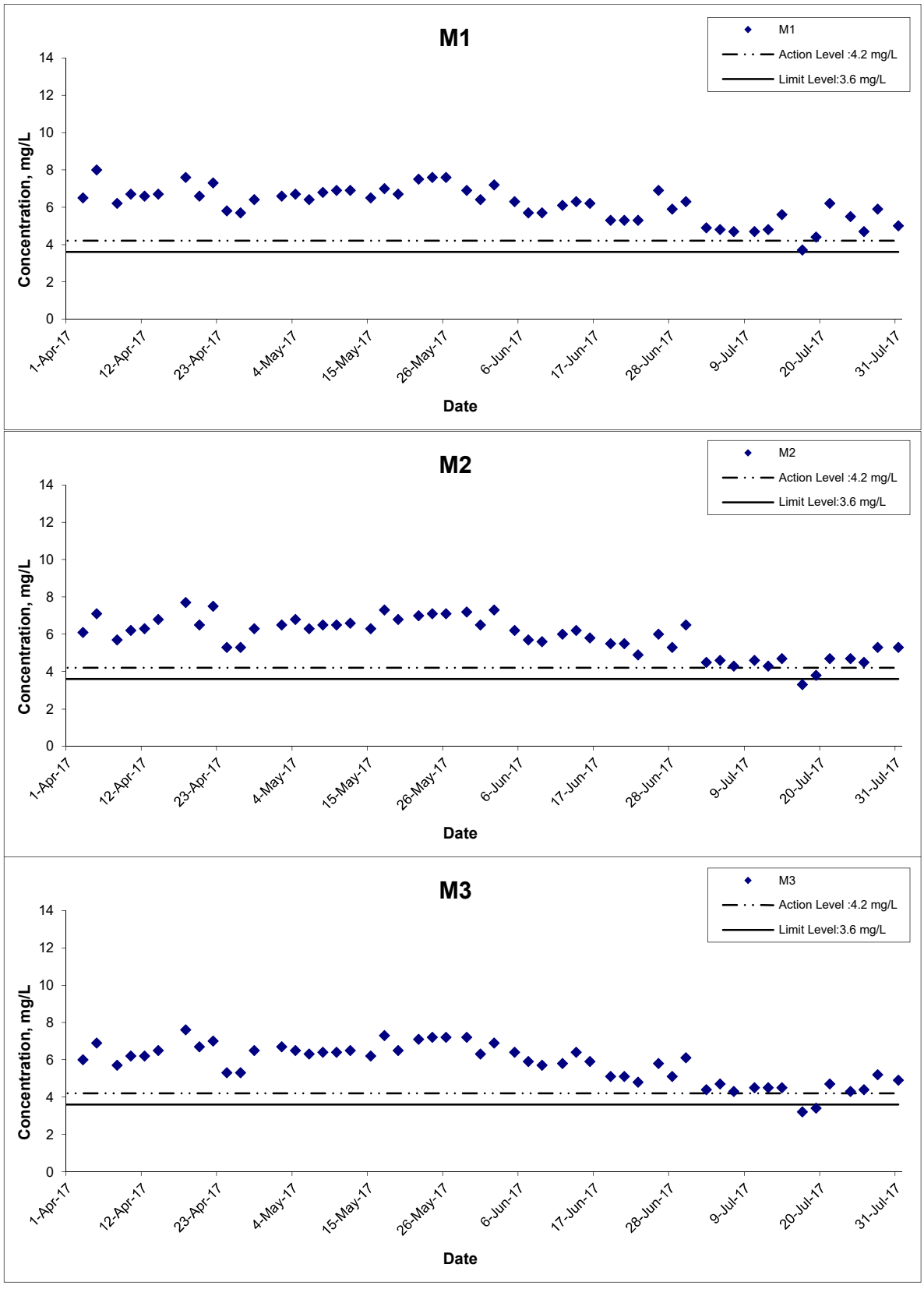
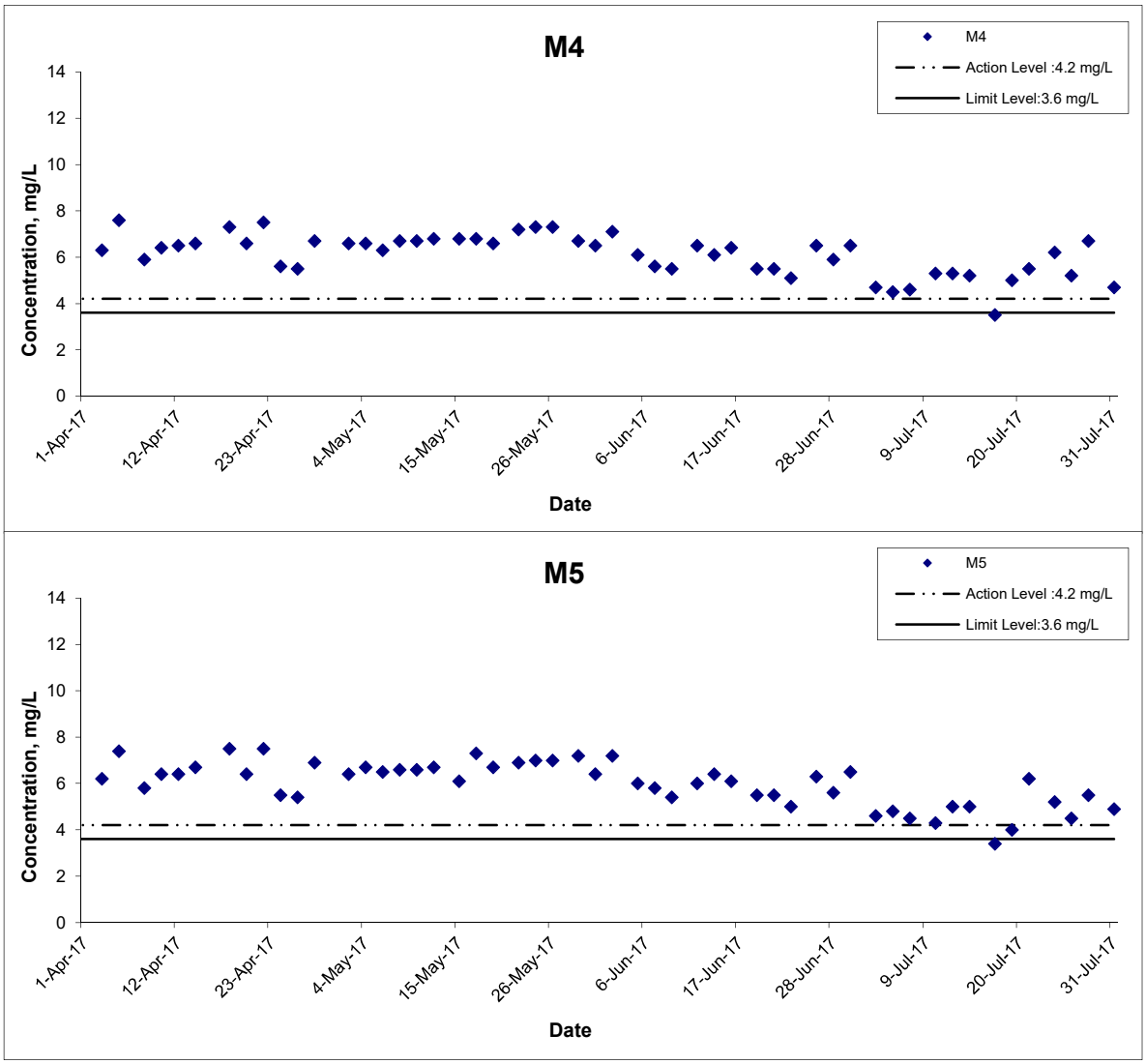
	Date: Jul 17	Appendix: I	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



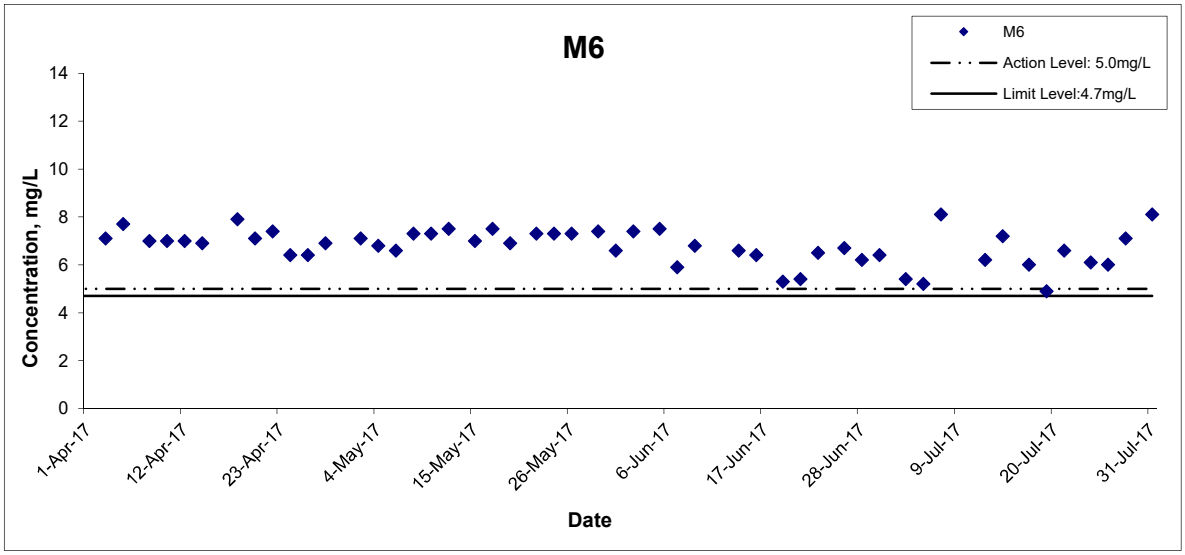
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

Dissolved Oxygen (Bottom) at Mid-Flood Tide



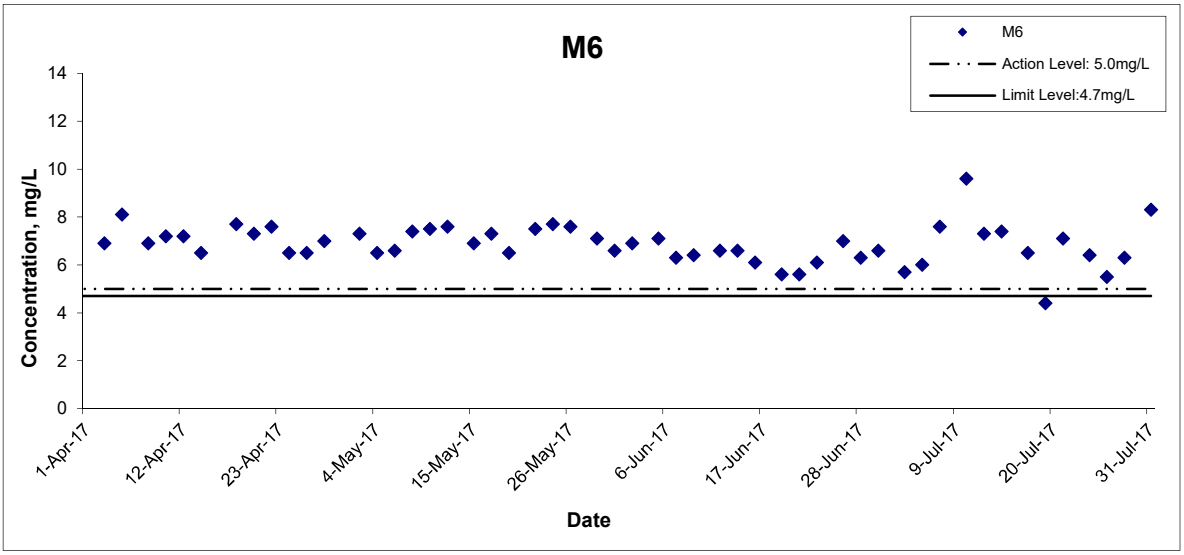
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



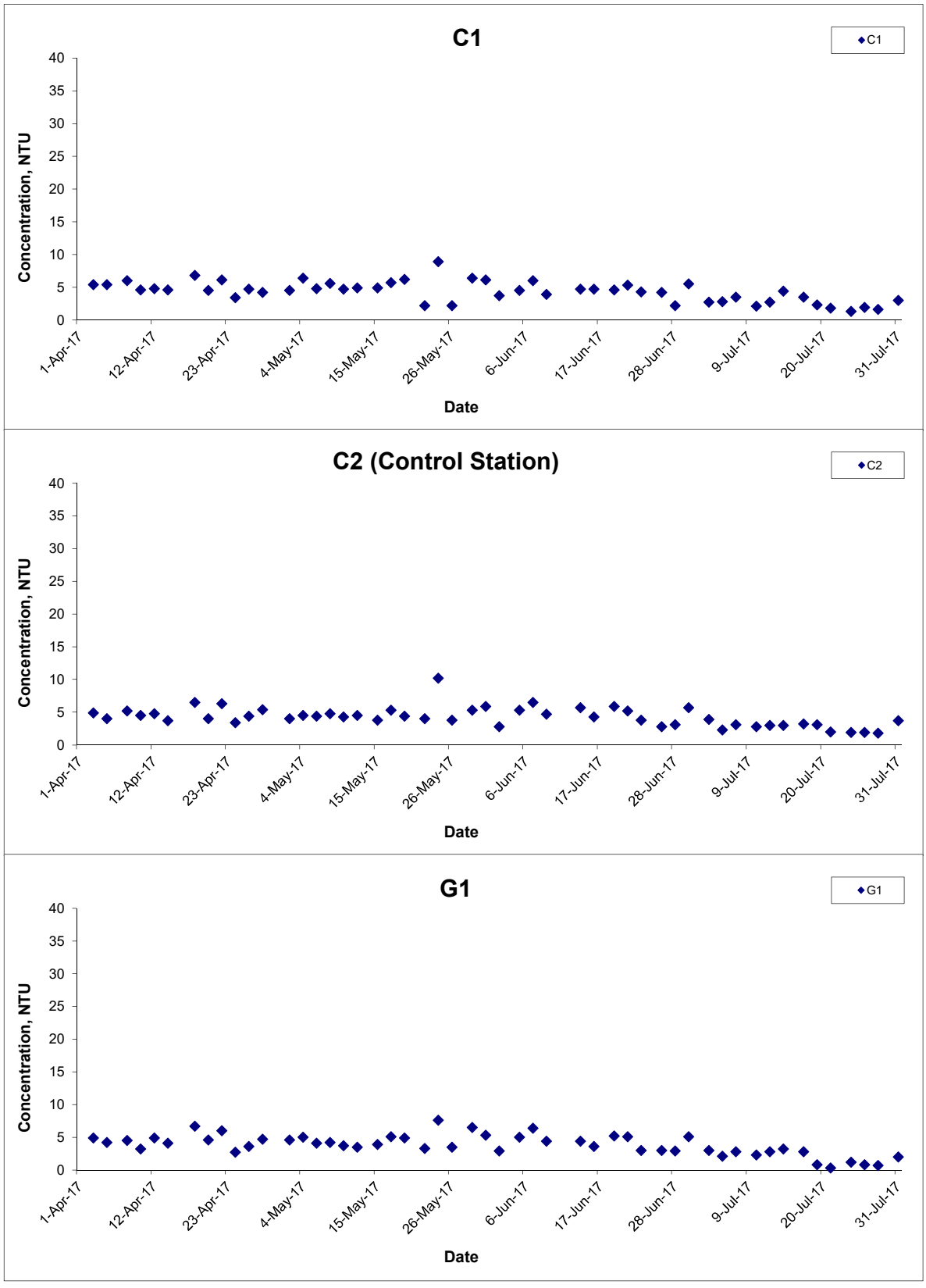
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jul 17	Project No. MA16034 Appendix I	CINOTECH

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



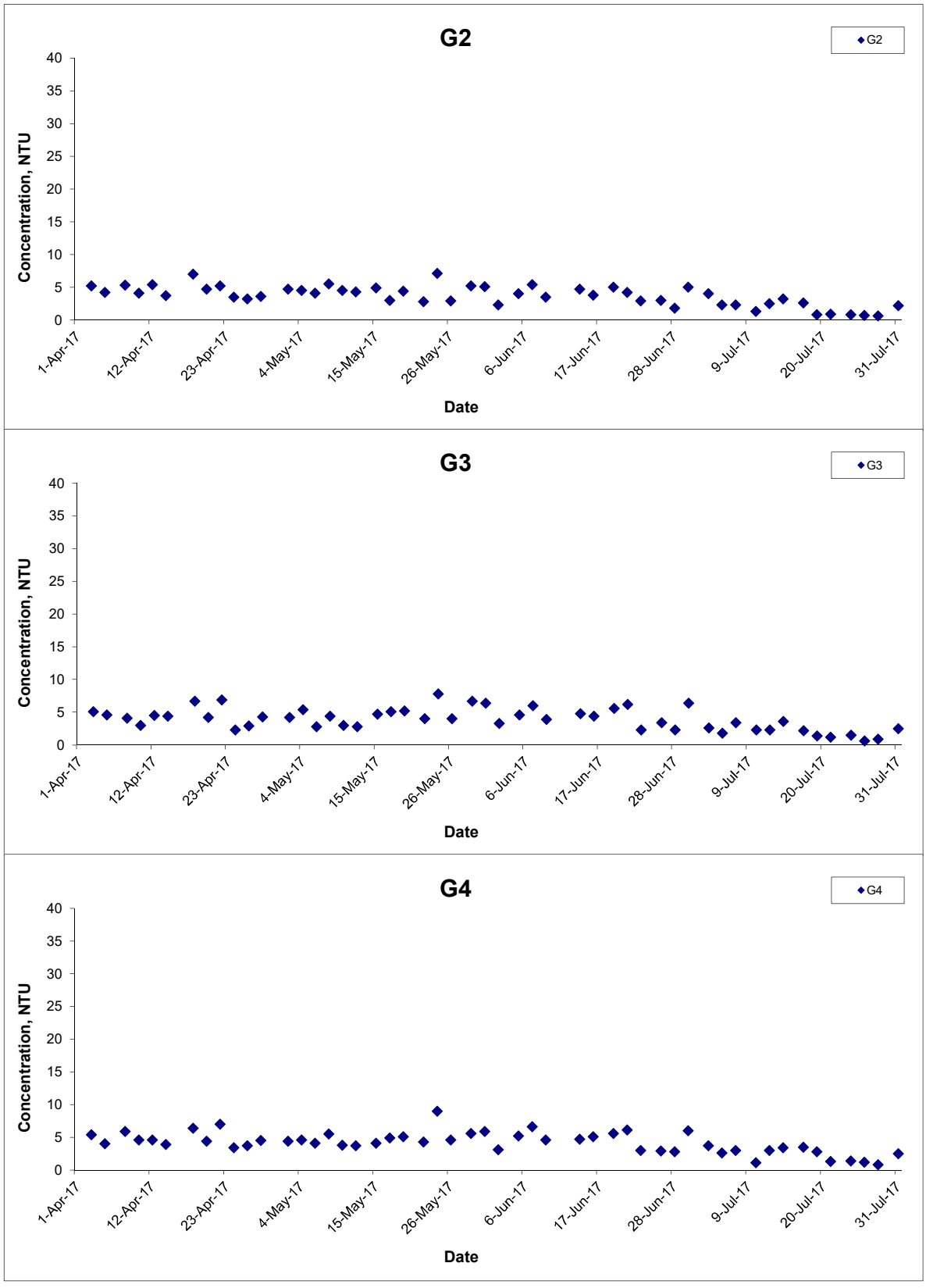
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: I	CINOTECH

Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Ebb Tide



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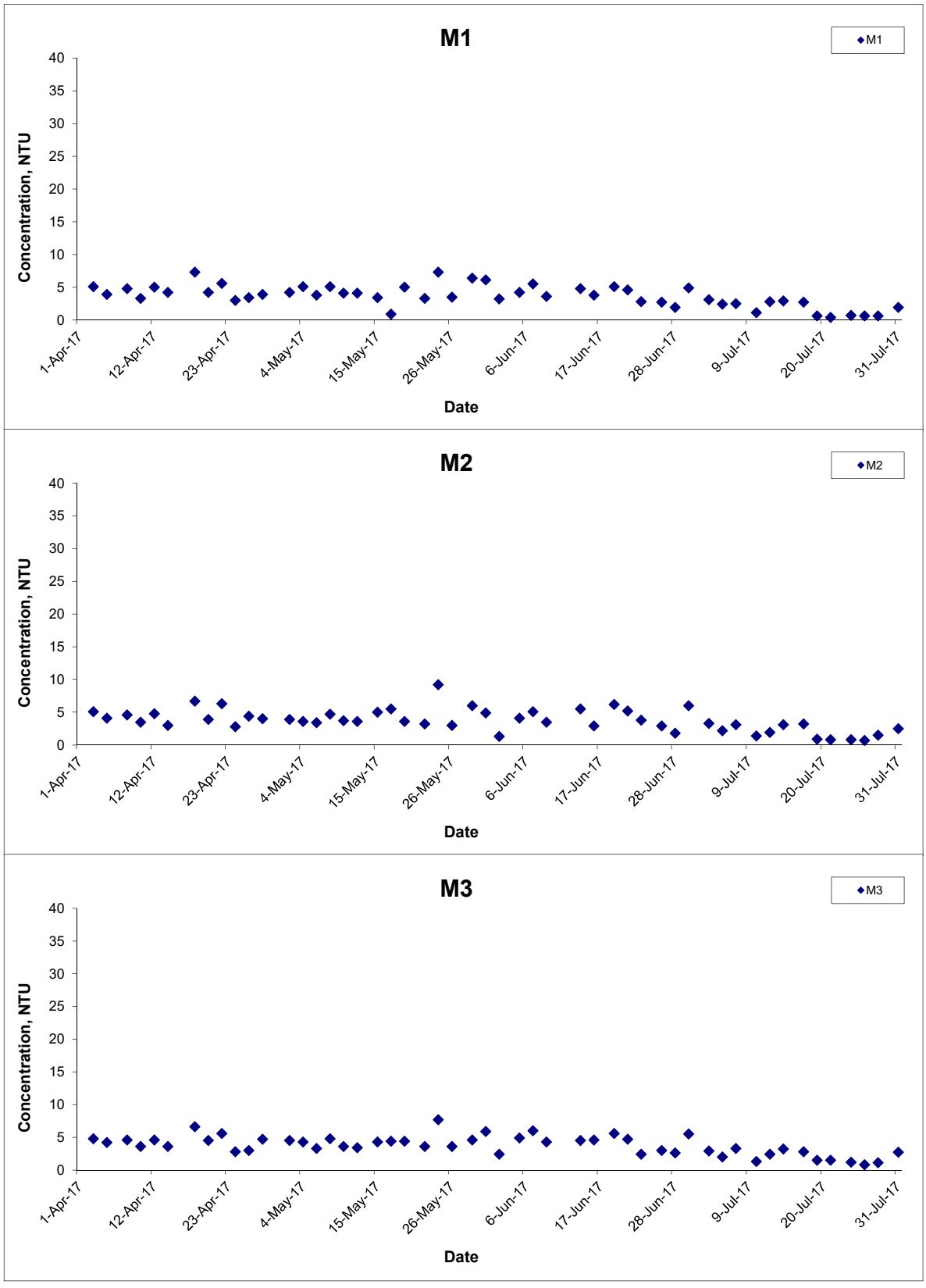
	Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Ebb Tide



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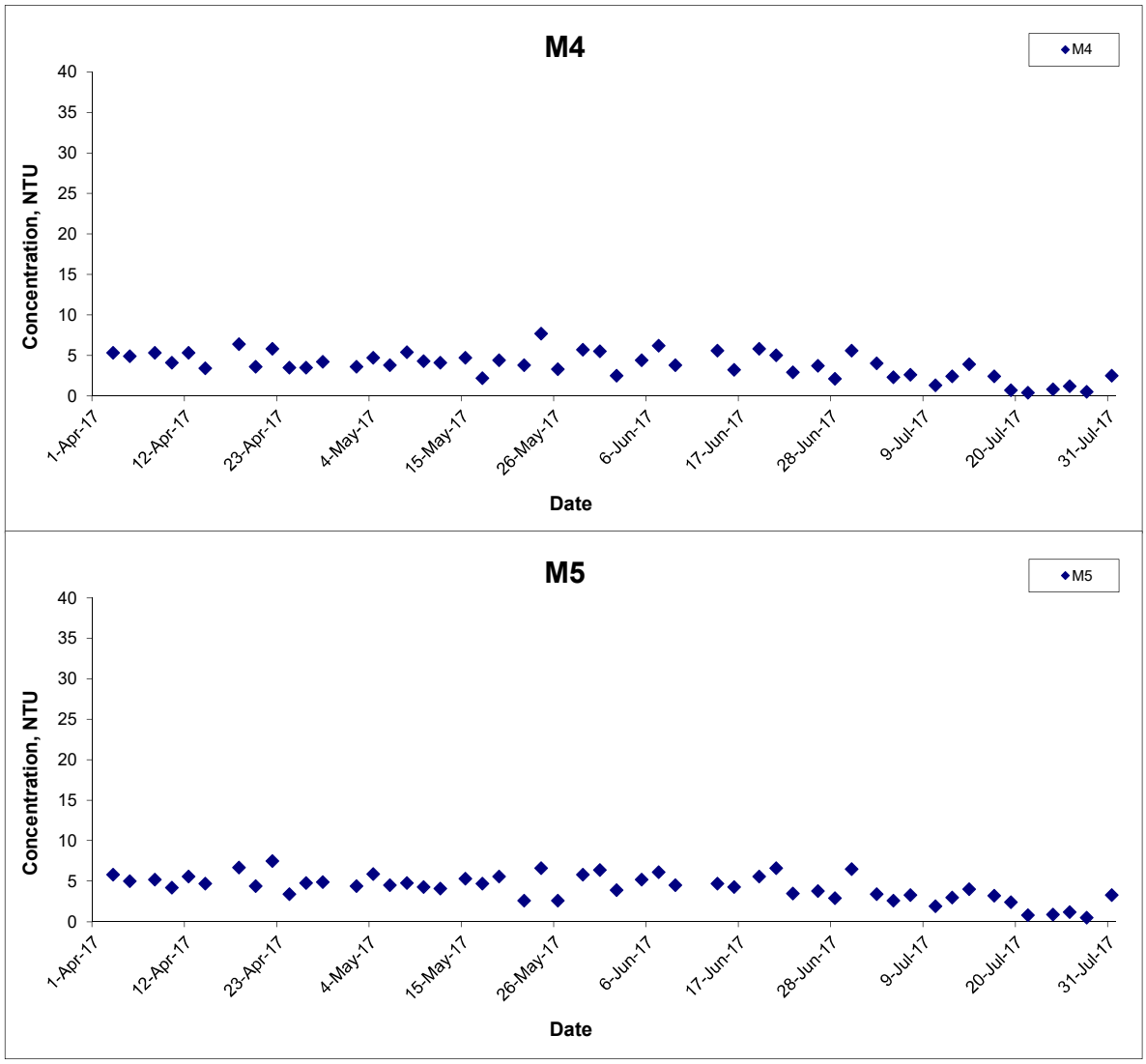
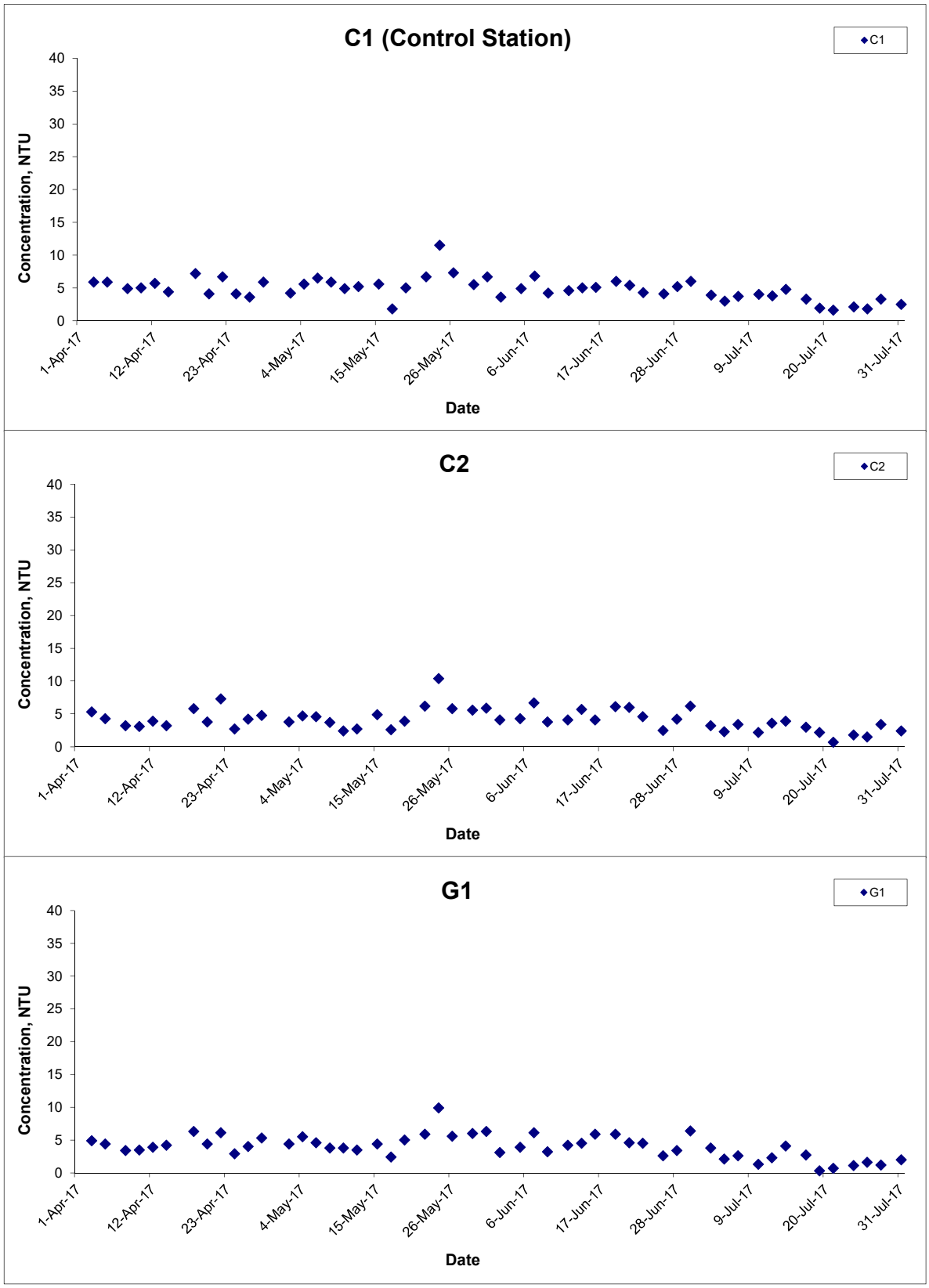
	Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Ebb Tide



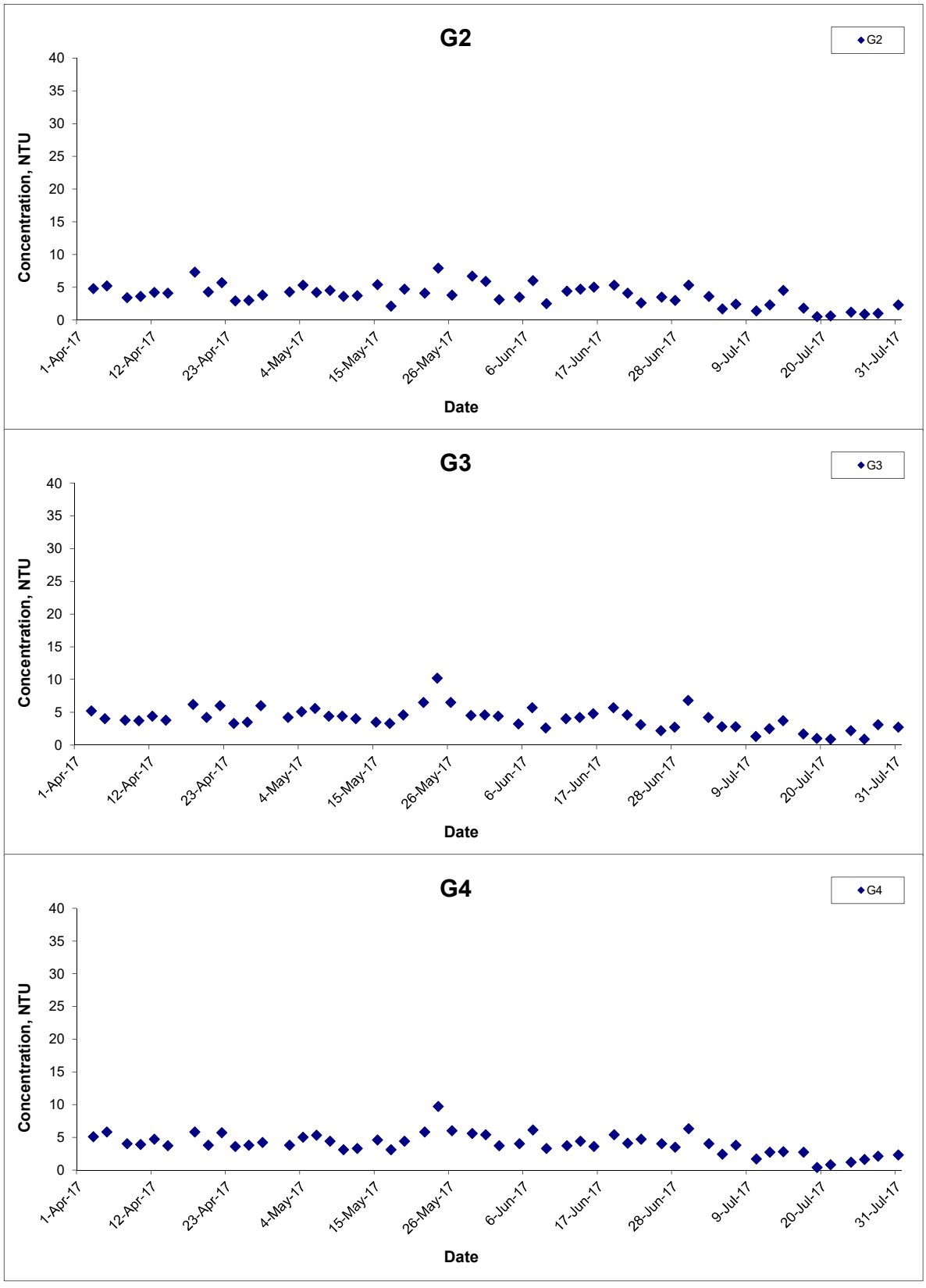
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Flood Tide



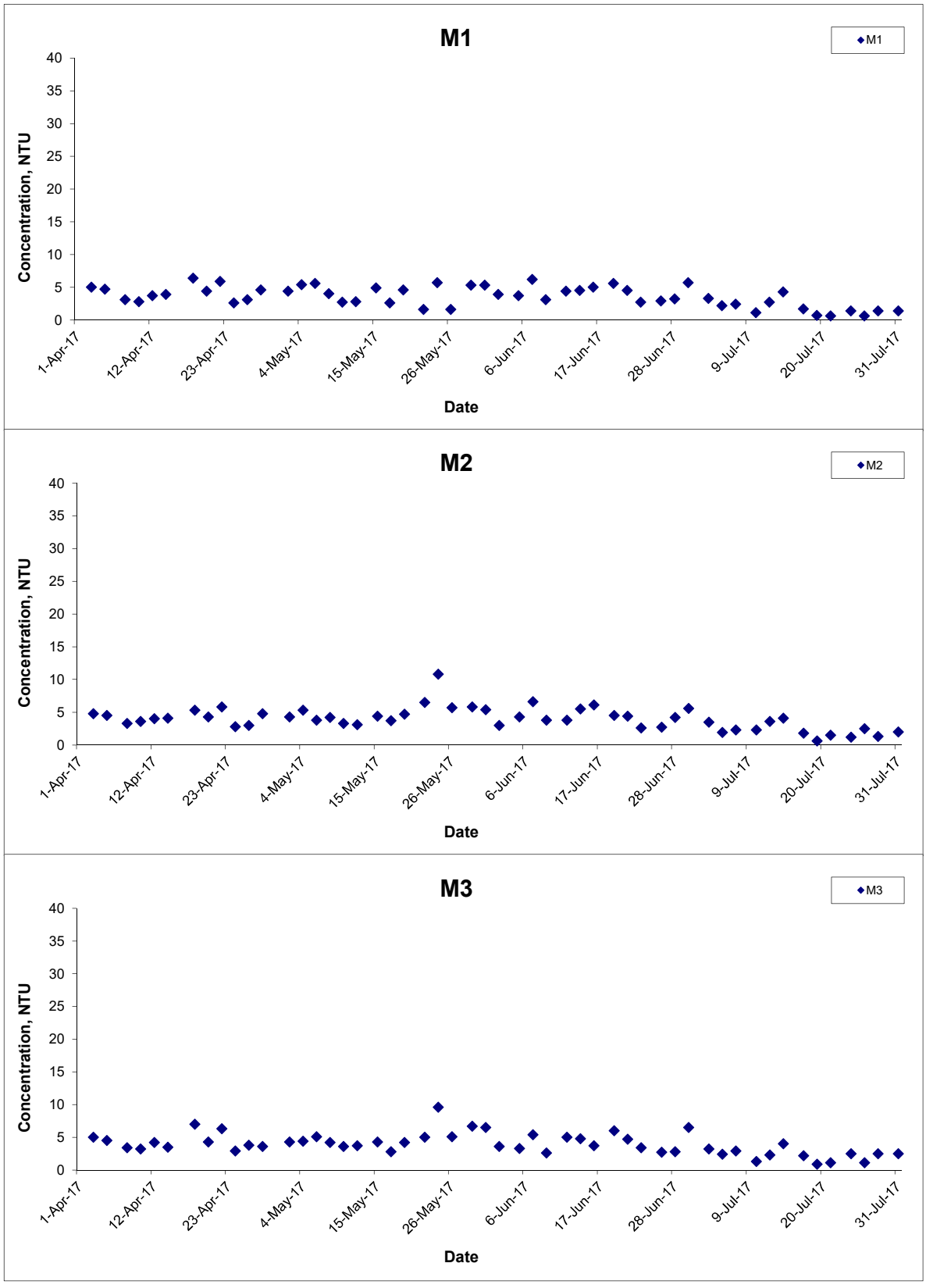
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Flood Tide



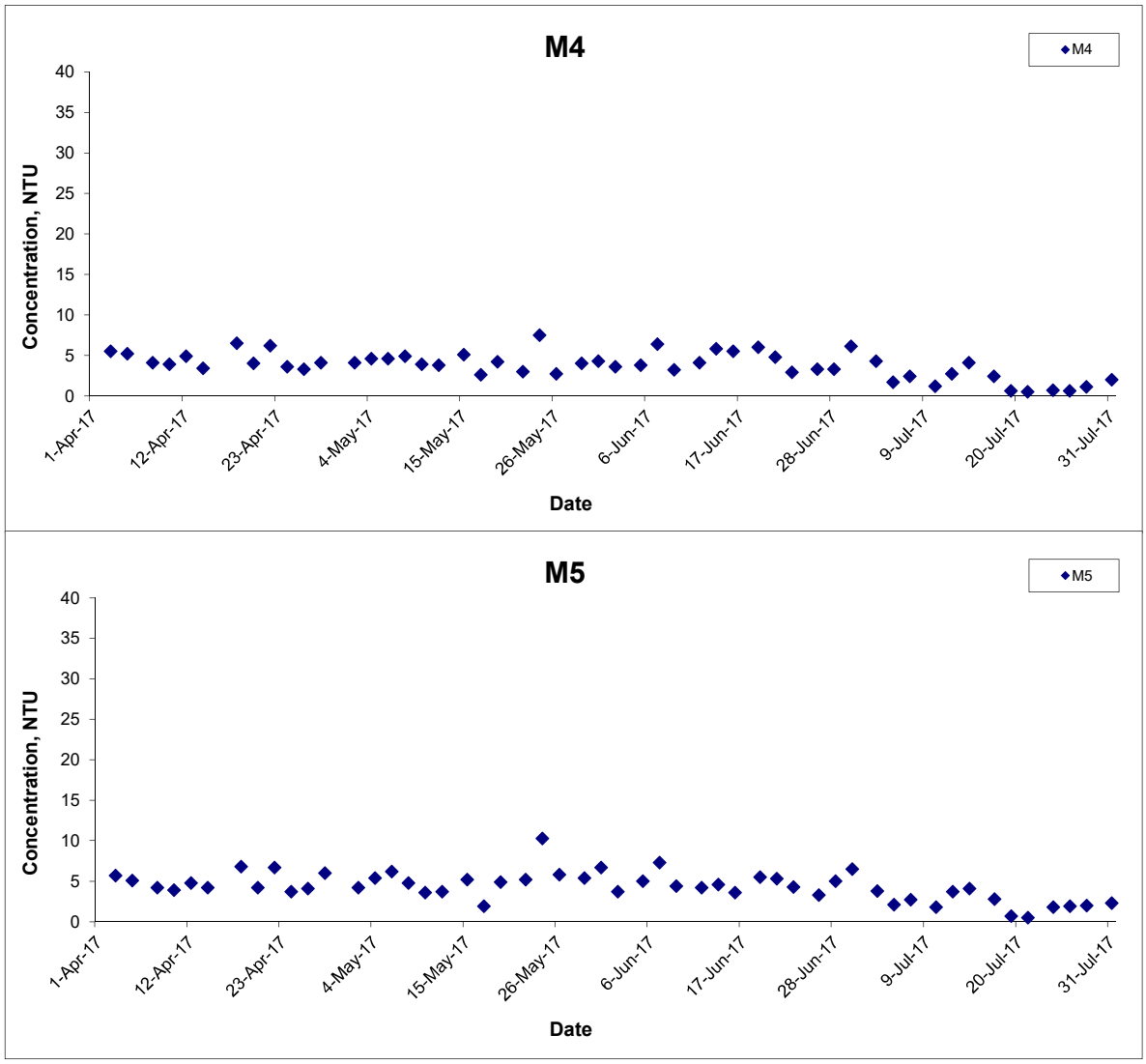
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Flood Tide



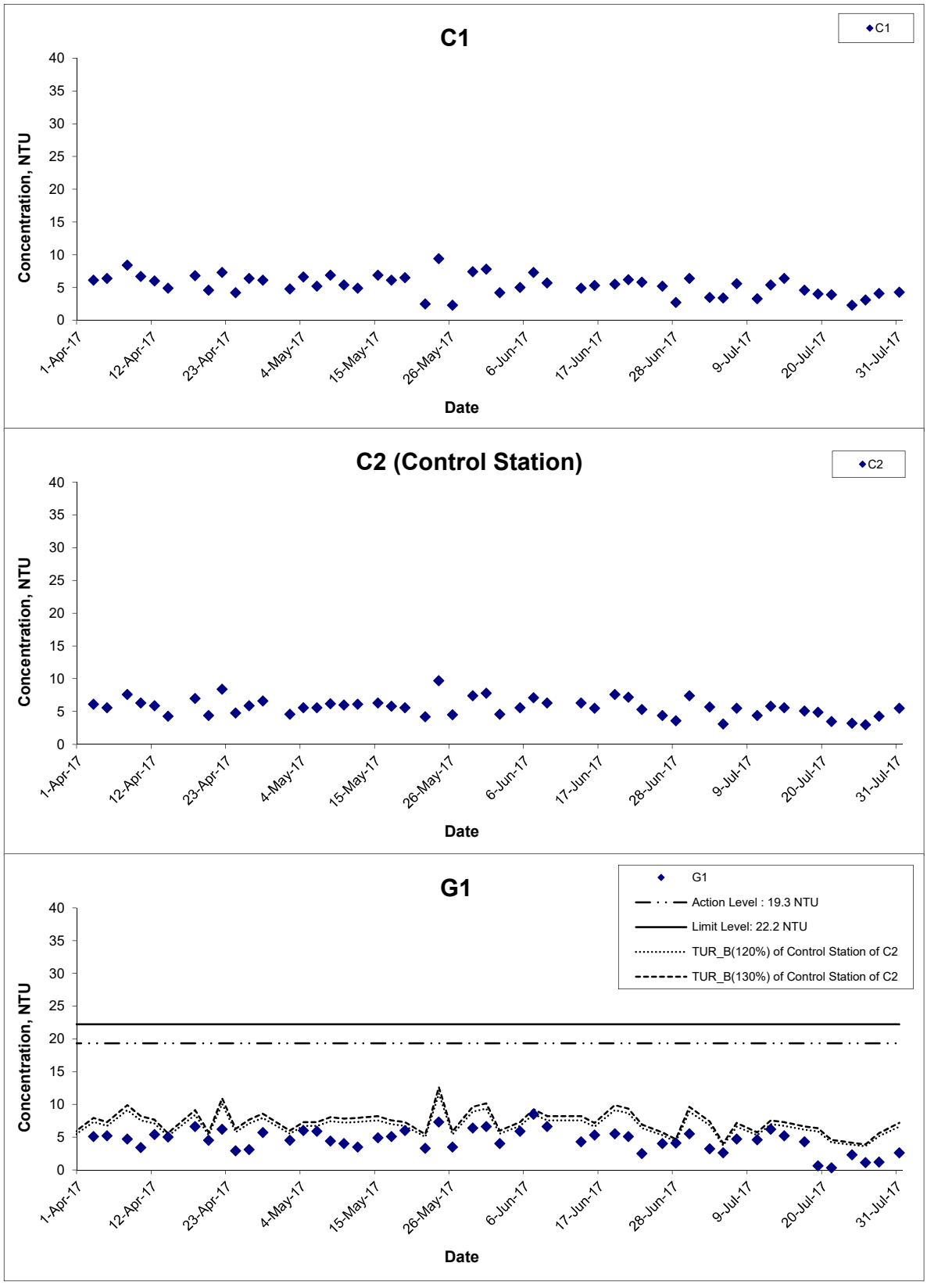
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Turbidity (Depth-averaged) at Mid-Flood Tide



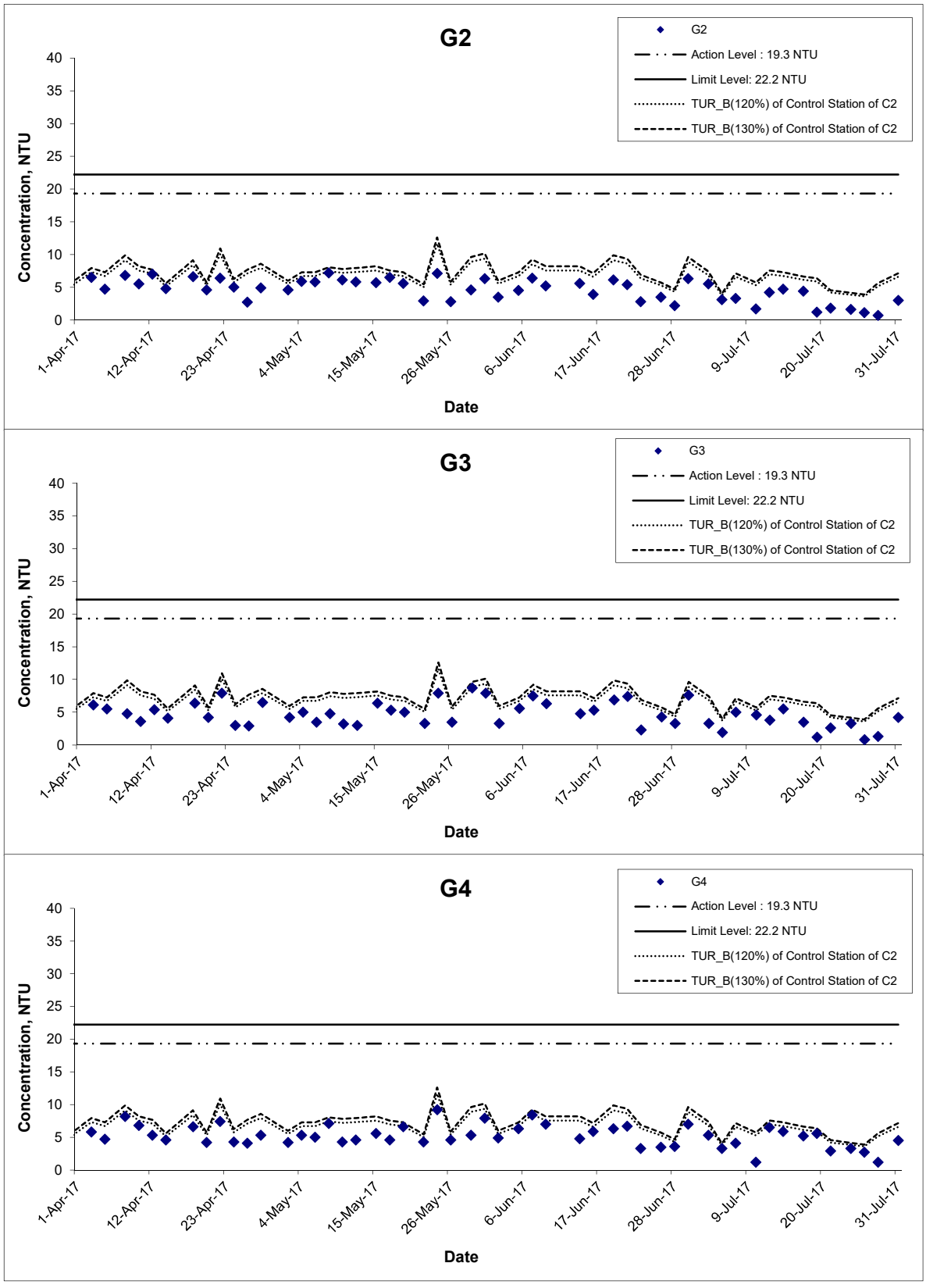
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17	Appendix I	

Turbidity (Bottom) at Mid-Ebb Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

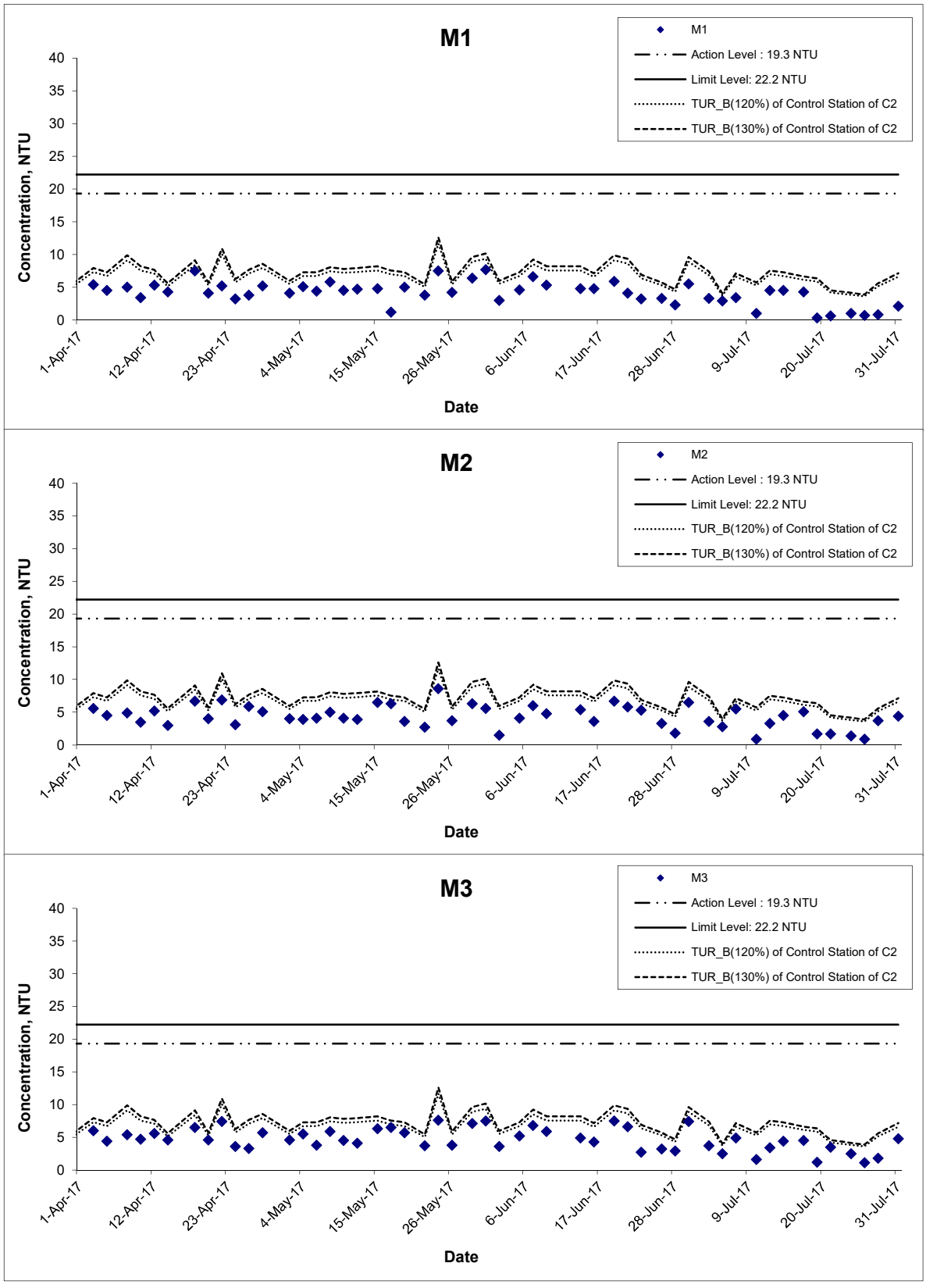
Turbidity (Bottom) at Mid-Ebb Tide



Title	Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	N.T.S	MA16034
	Date: Jul 17	Appendix: I

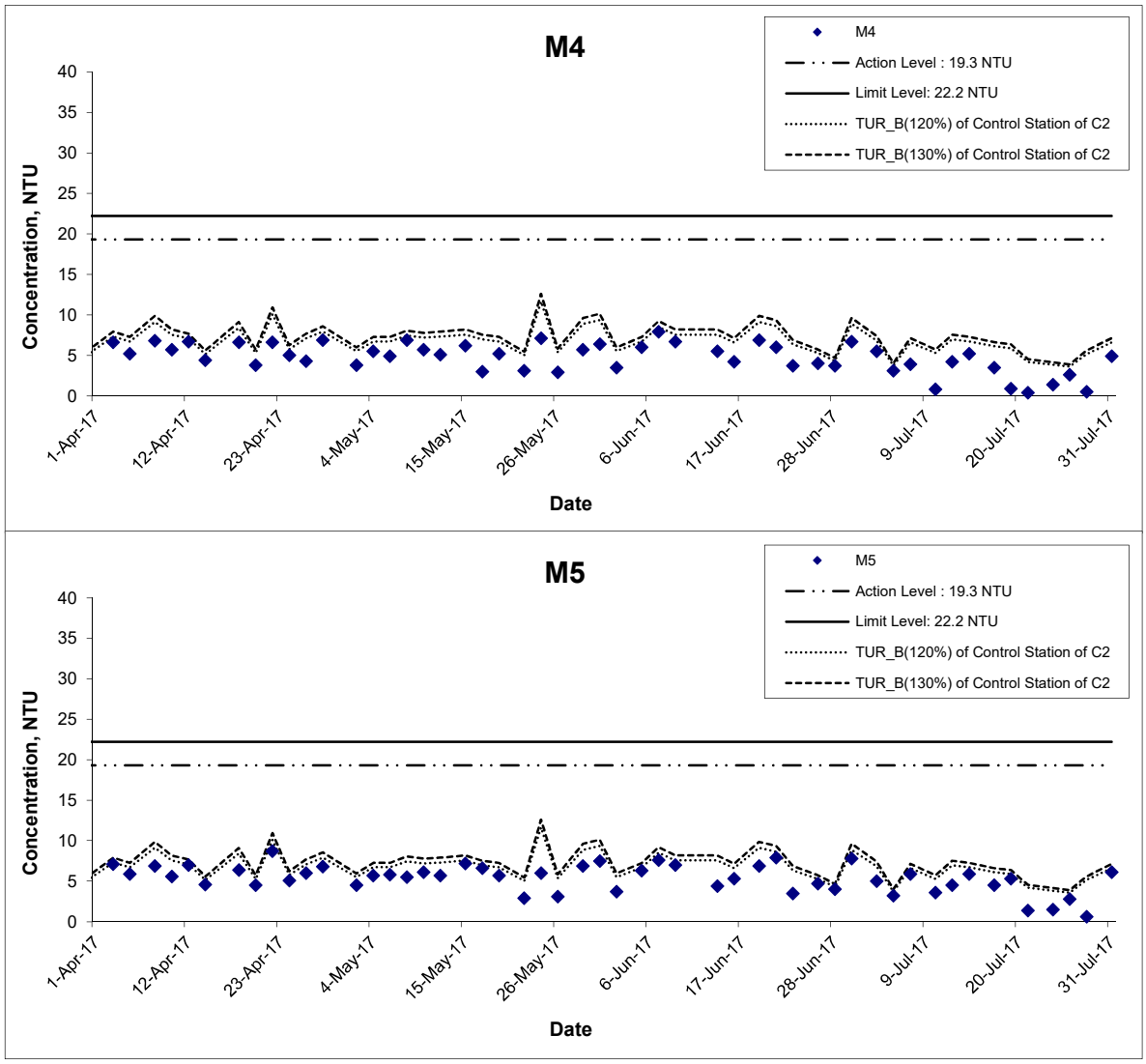
CINOTECH

Turbidity (Bottom) at Mid-Ebb Tide



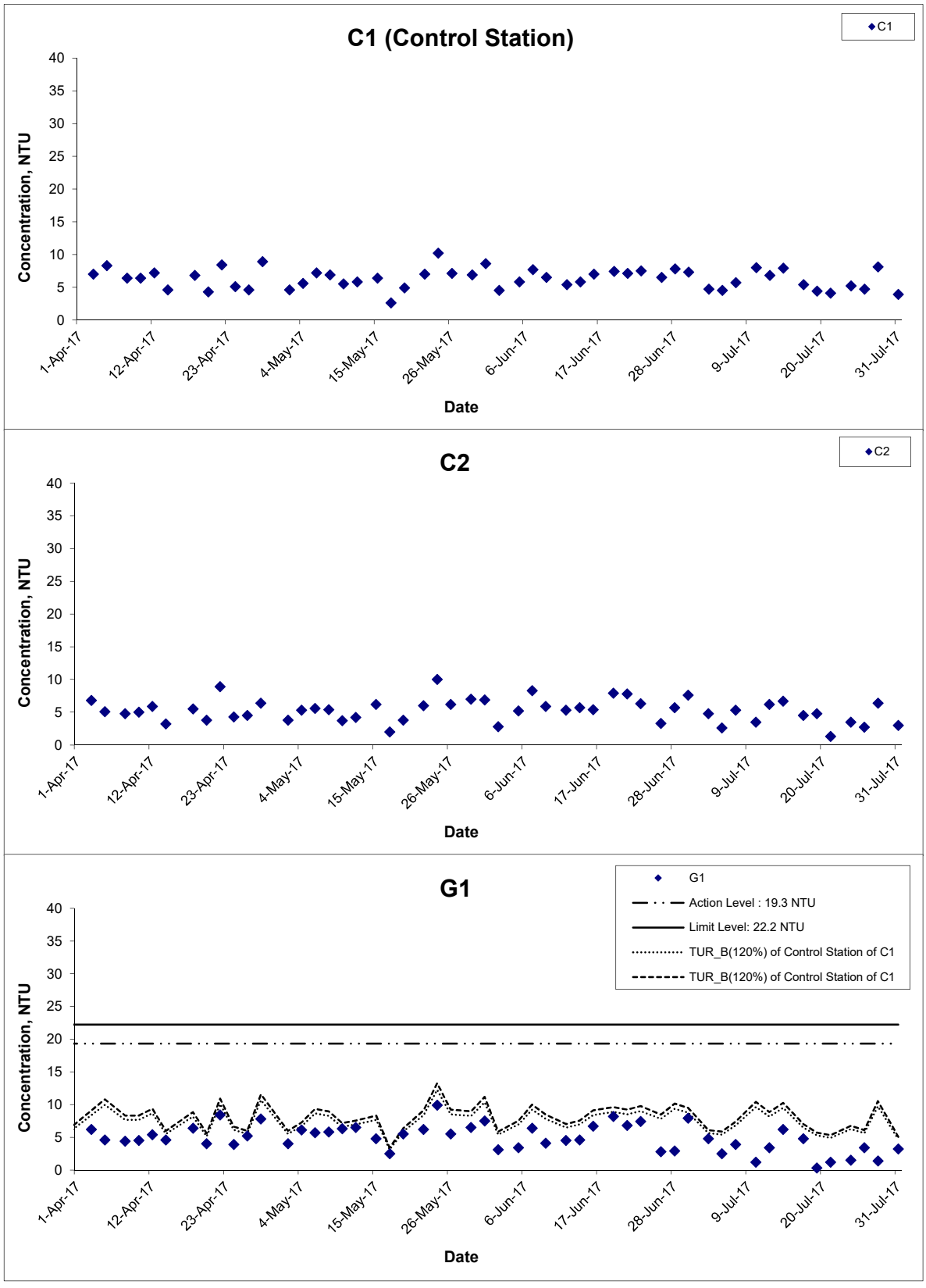
Title		Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction		N.T.S	MA16034
Graphical Presentation of Water Quality Monitoring Results		Date: Jul 17	Appendix: I

Turbidity (Bottom) at Mid-Ebb Tide



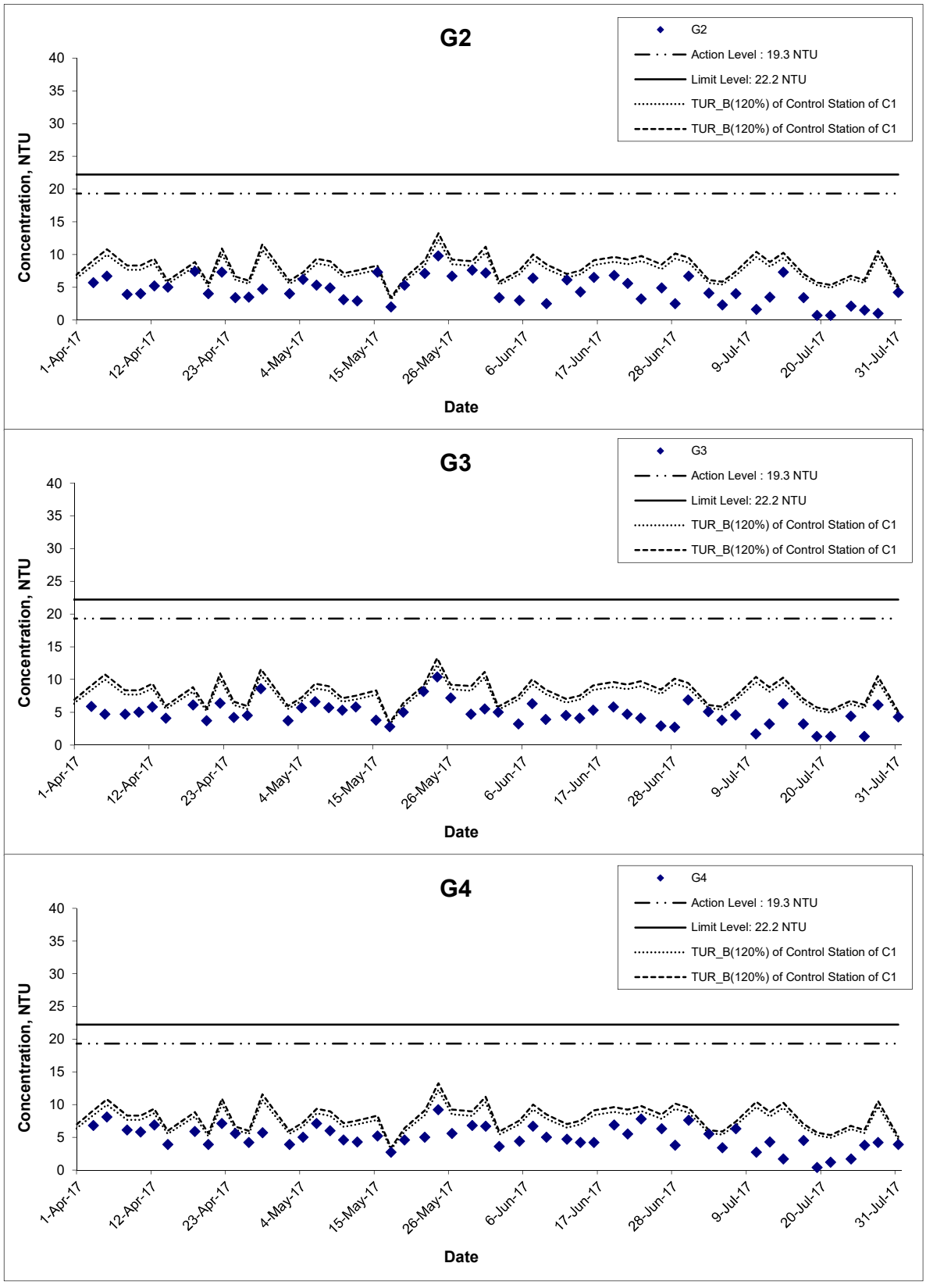
Title		Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction		N.T.S	MA16034
Graphical Presentation of Water Quality Monitoring Results		Date: Jul 17	Appendix: I

Turbidity (Bottom) at Mid-Flood Tide



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Jul 17	Appendix I	

Turbidity (Bottom) at Mid-Flood Tide



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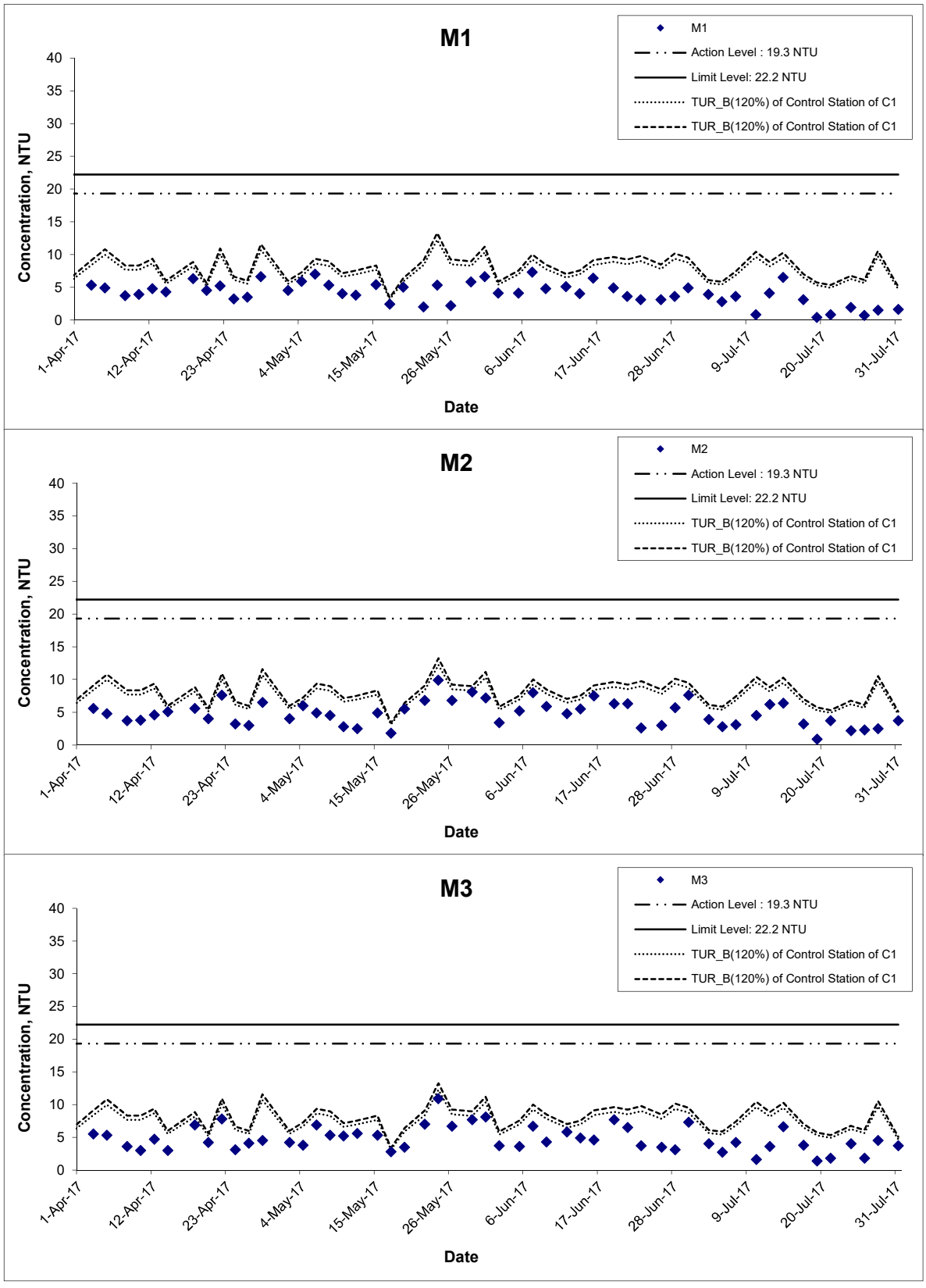
	Date: Jul 17	Appendix: I	

Turbidity (Bottom) at Mid-Flood Tide



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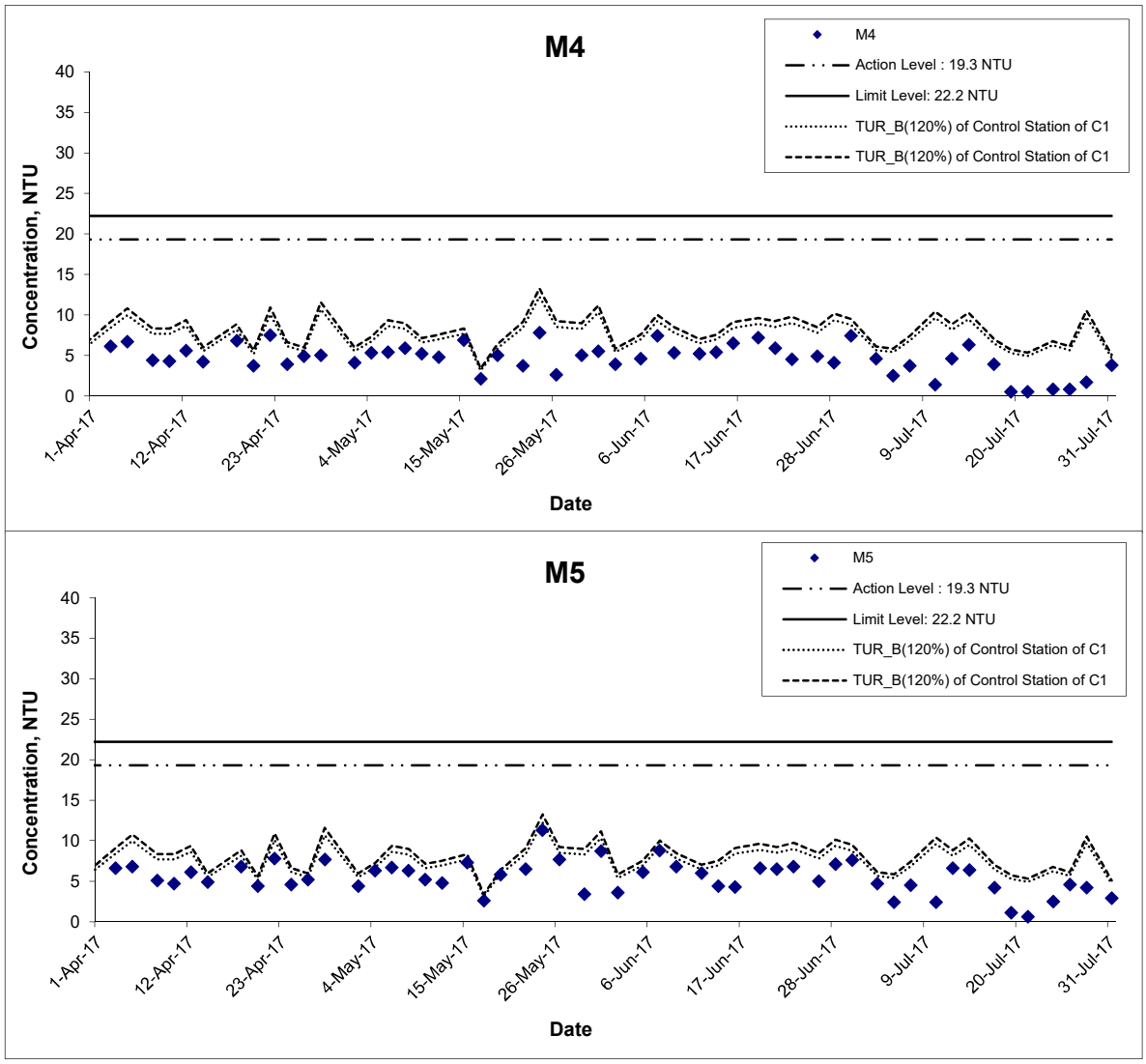
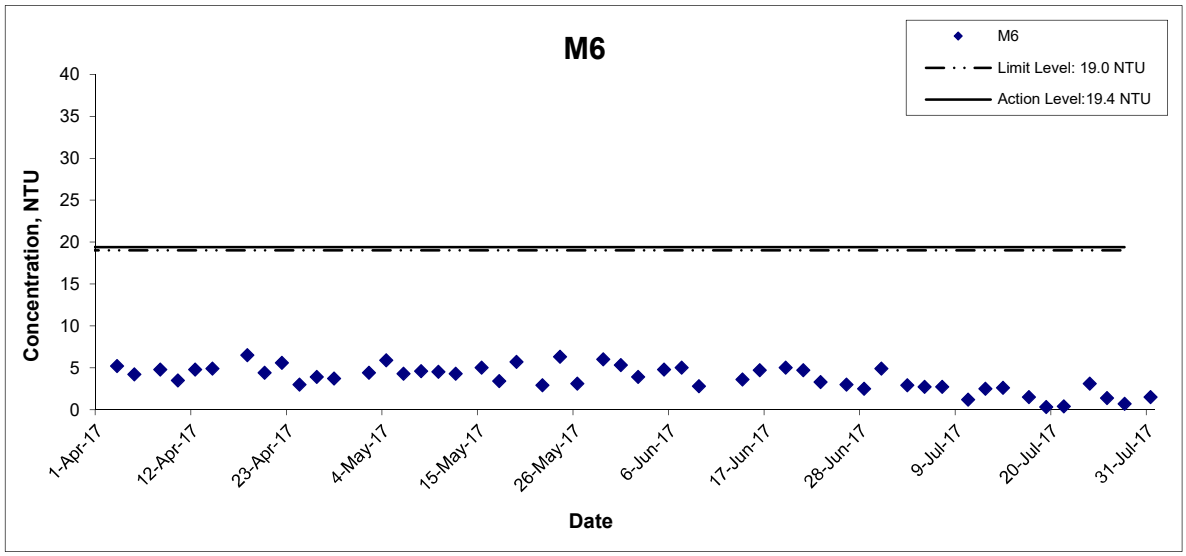
		Date Jul 17	Appendix I	

Turbidity (Bottom) at Mid-Flood Tide



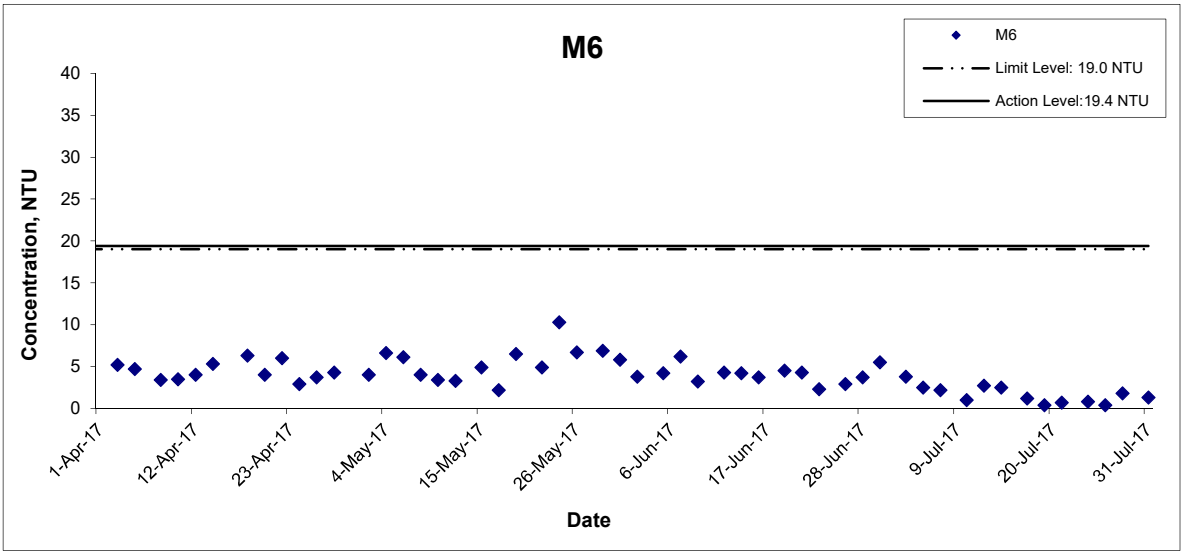
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



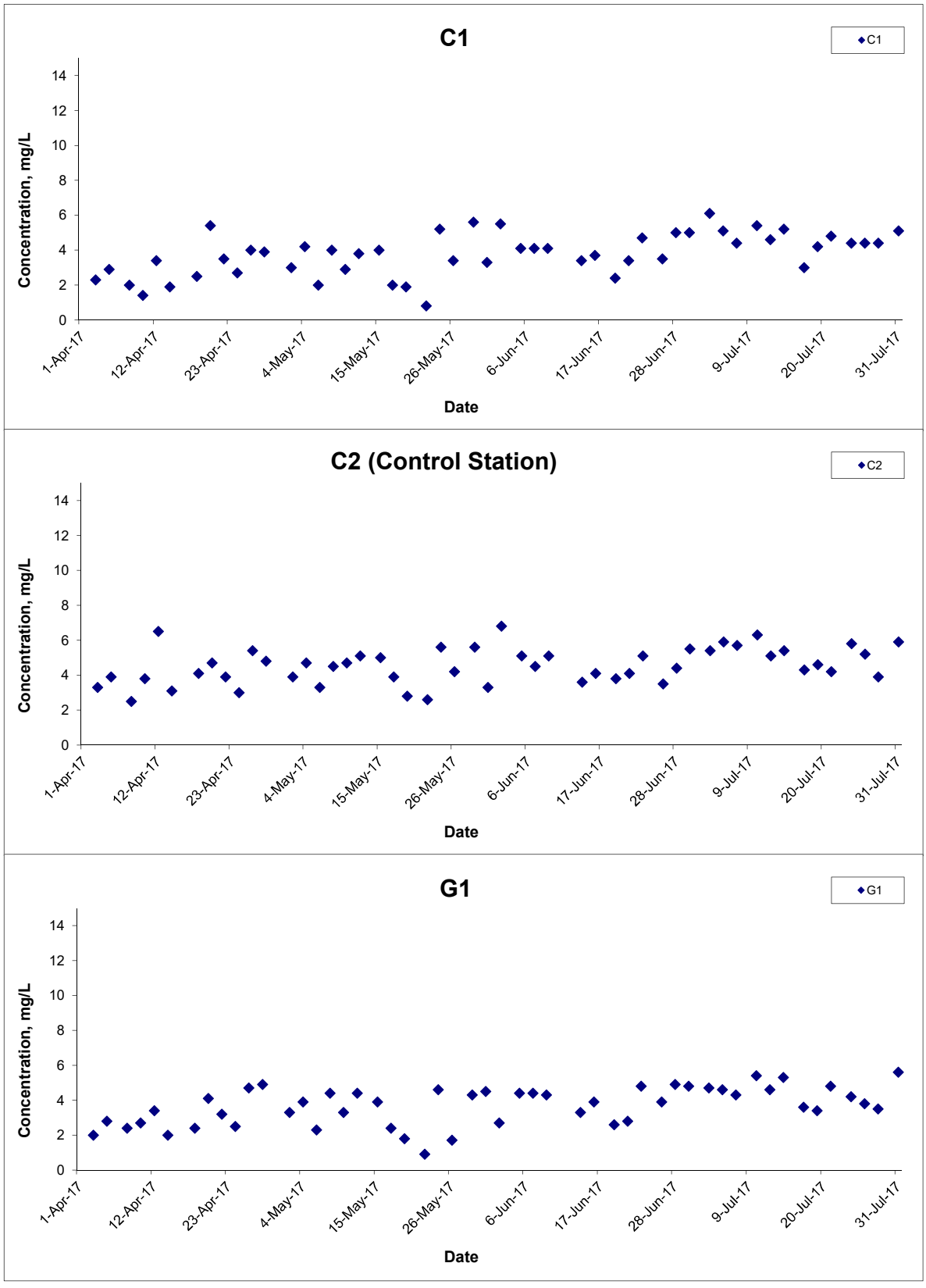
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: I	CINOTECH

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



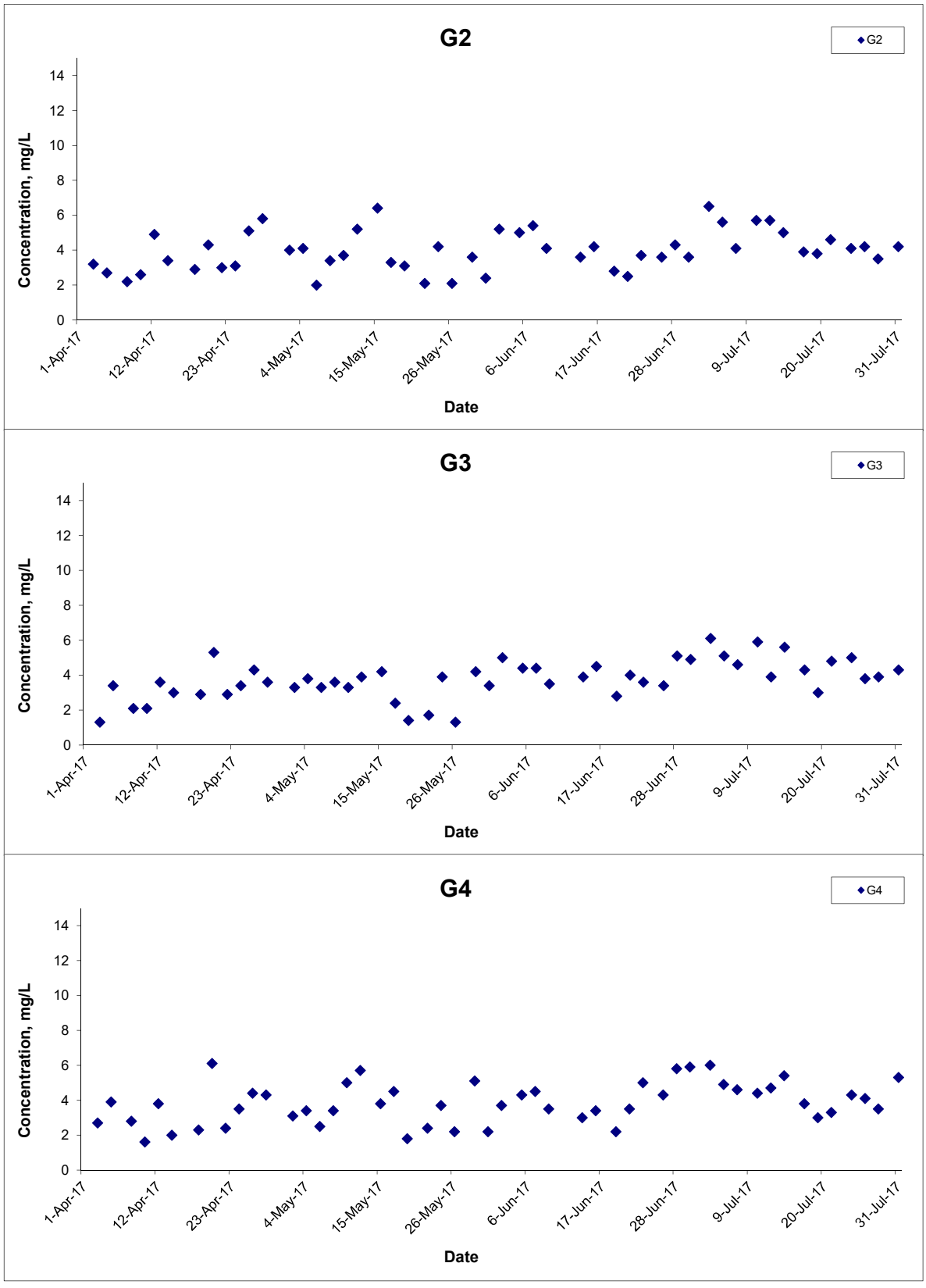
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Jul 17	Project No. MA16034 Appendix I	CINOTECH

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



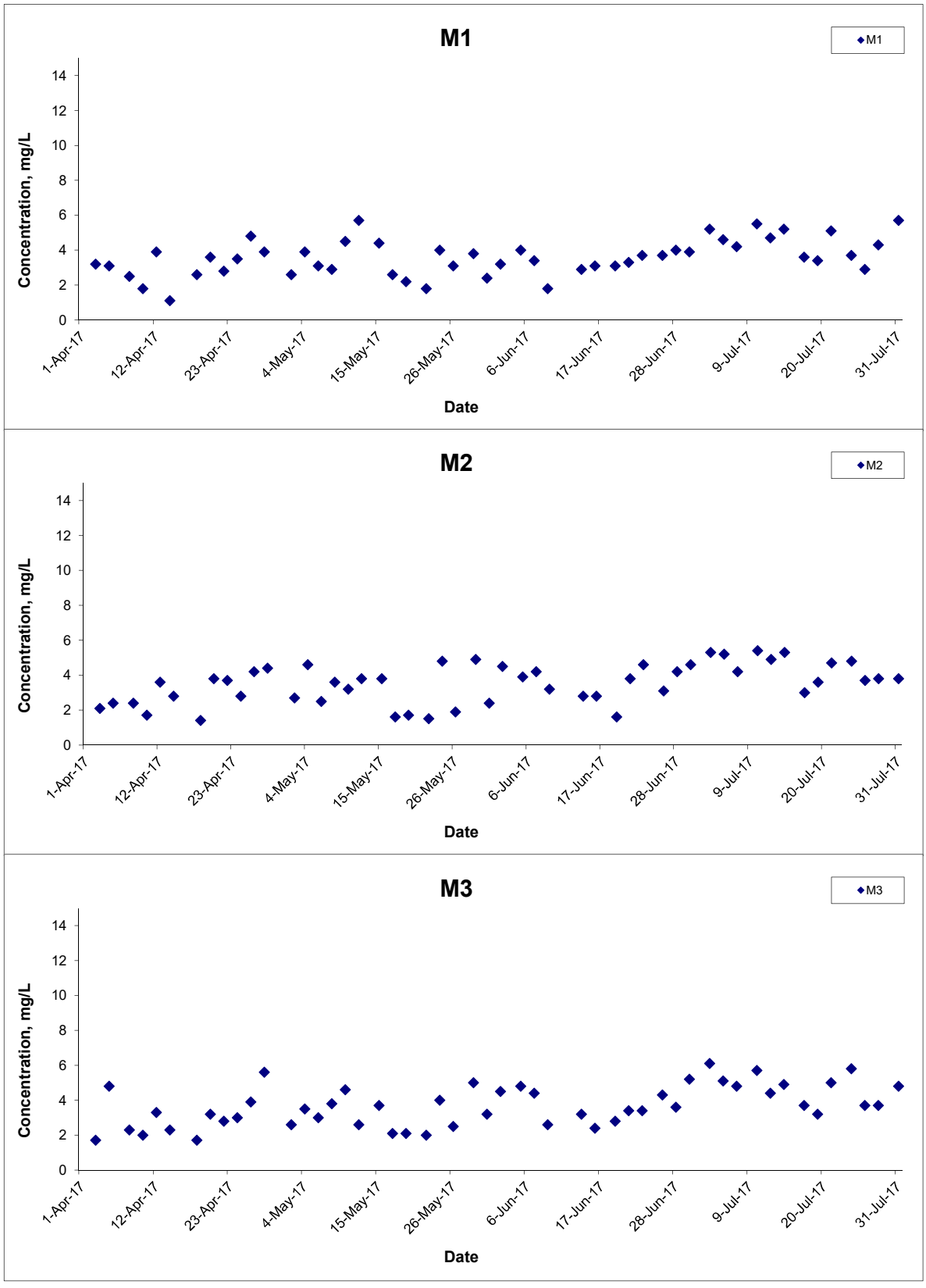
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

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



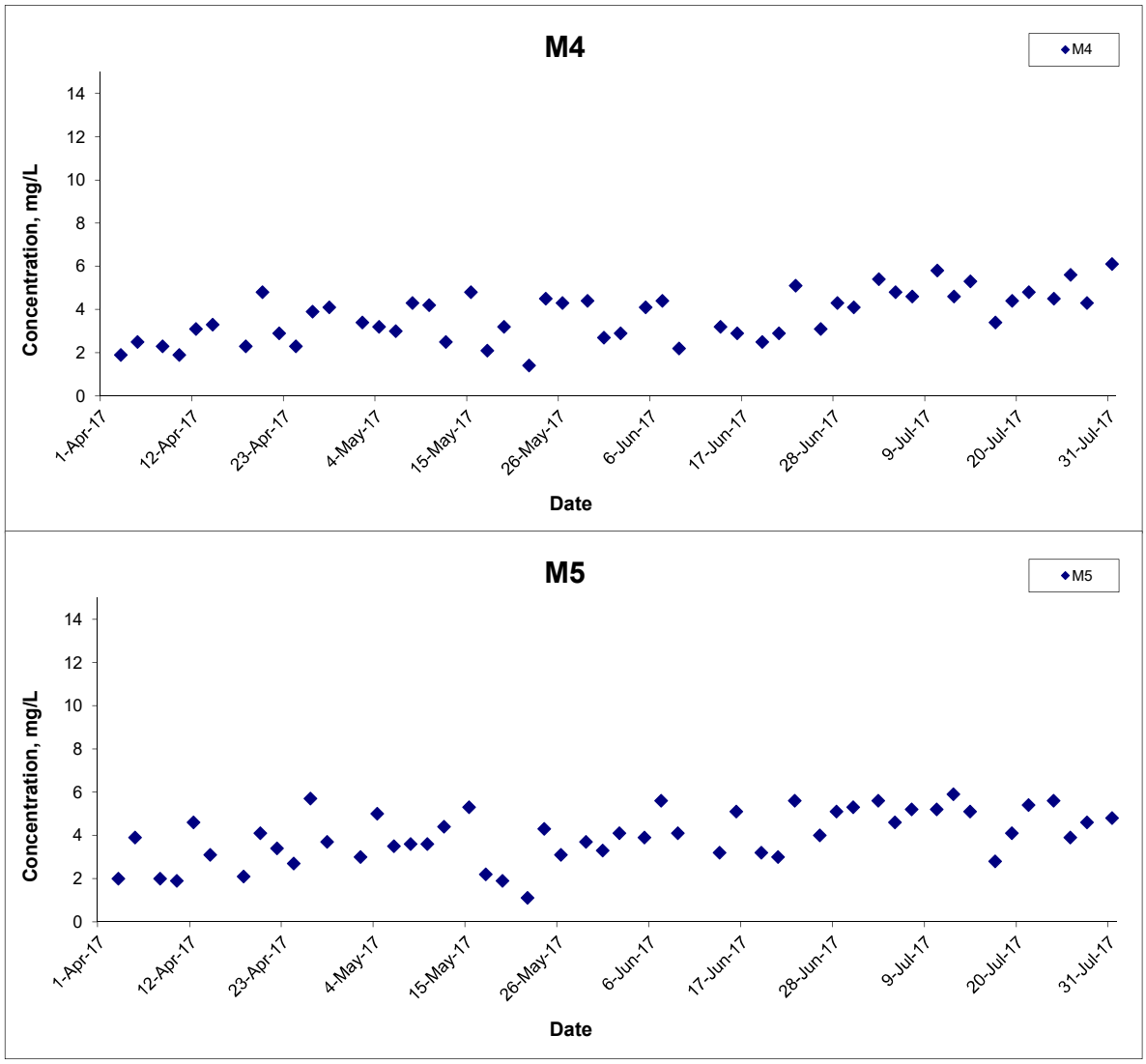
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



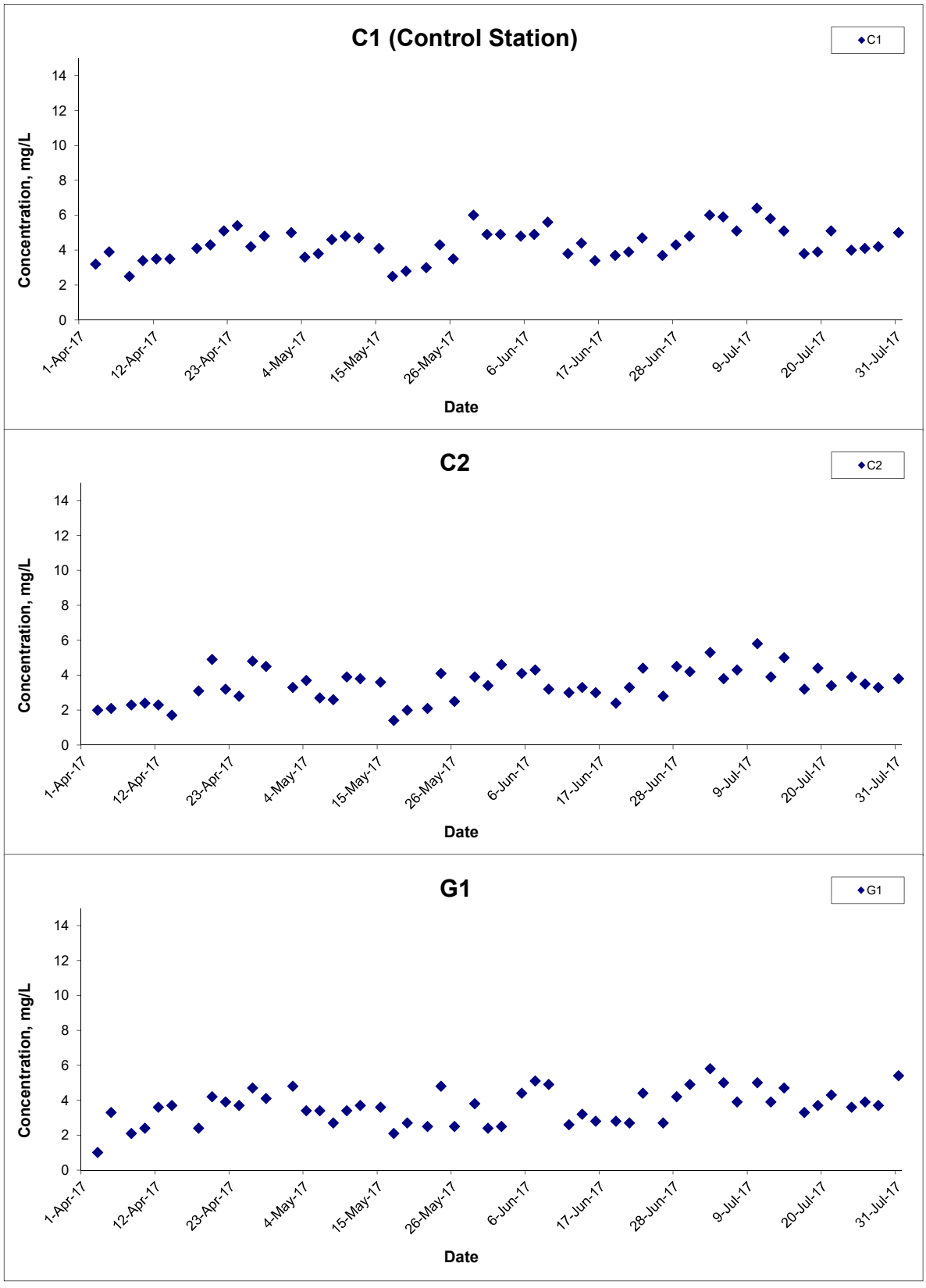
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



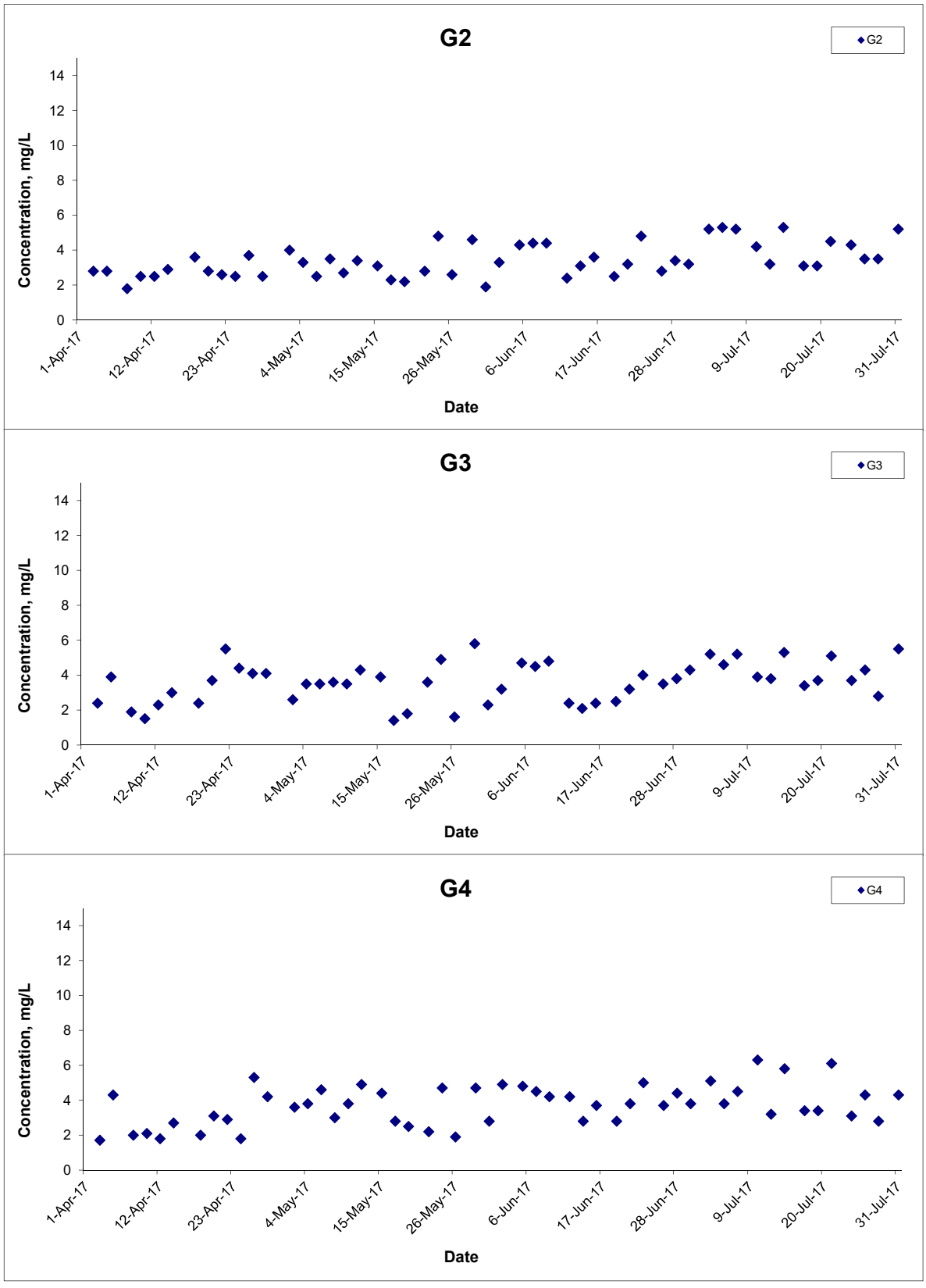
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: I	CINOTECH

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



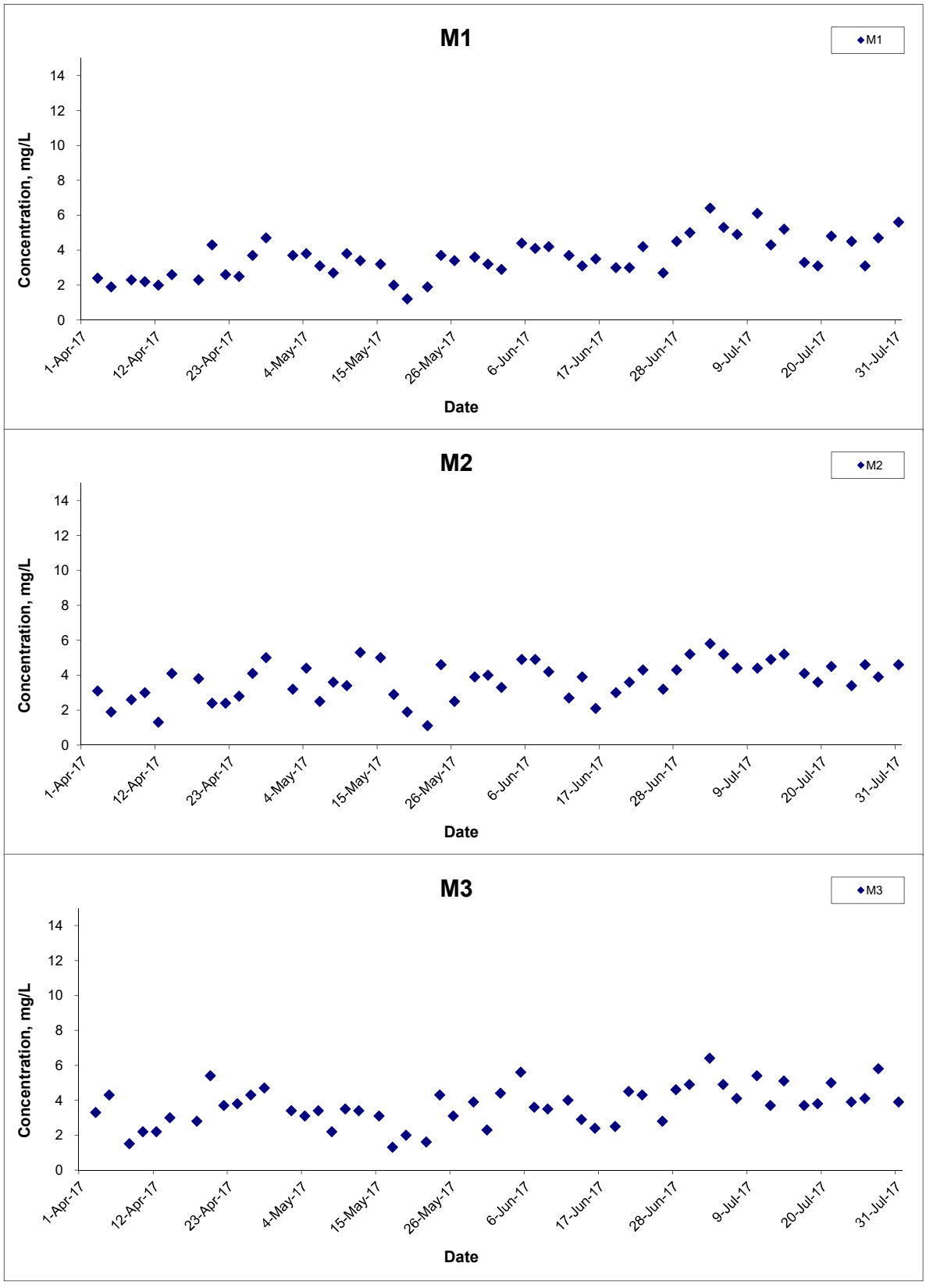
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



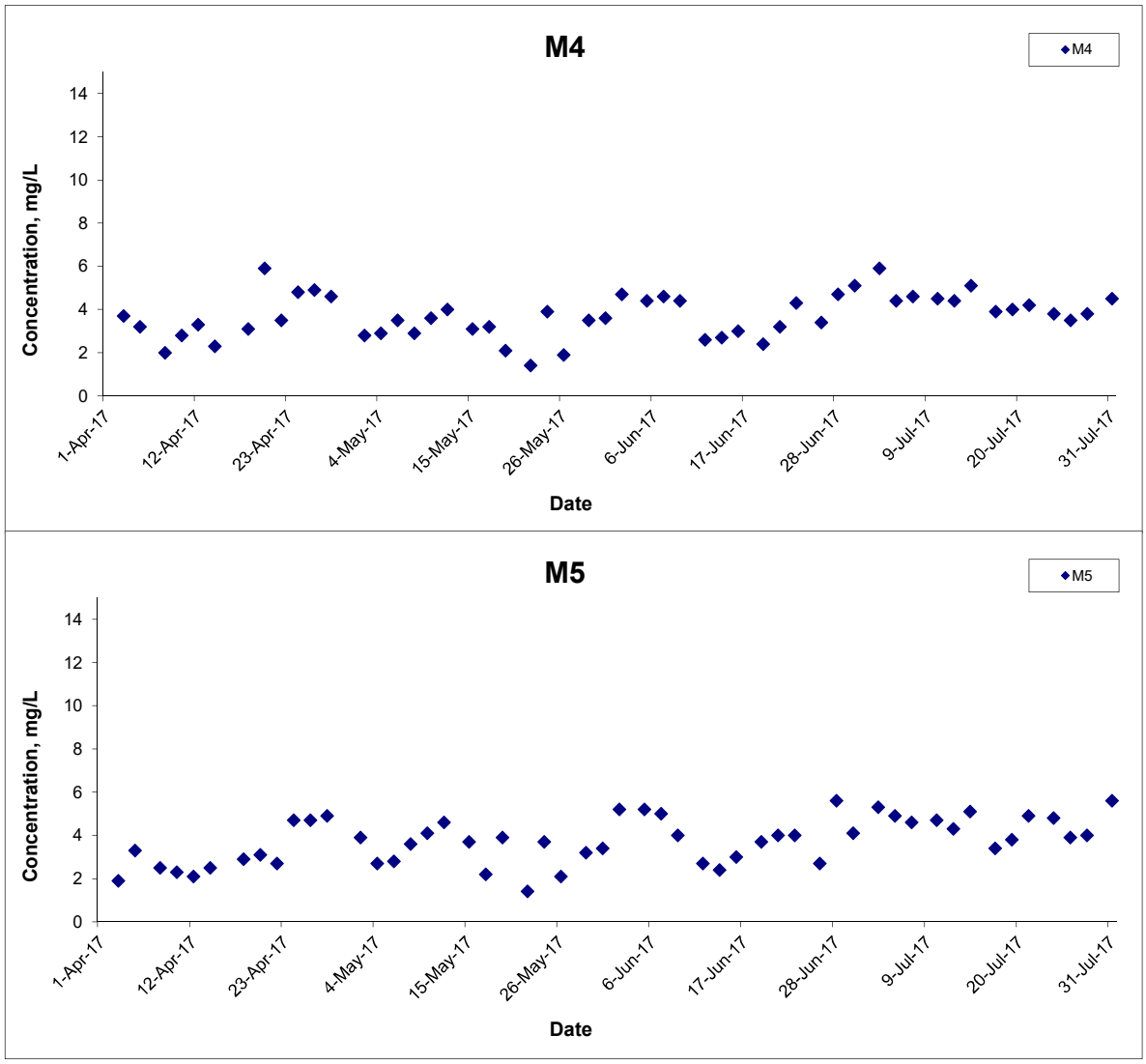
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



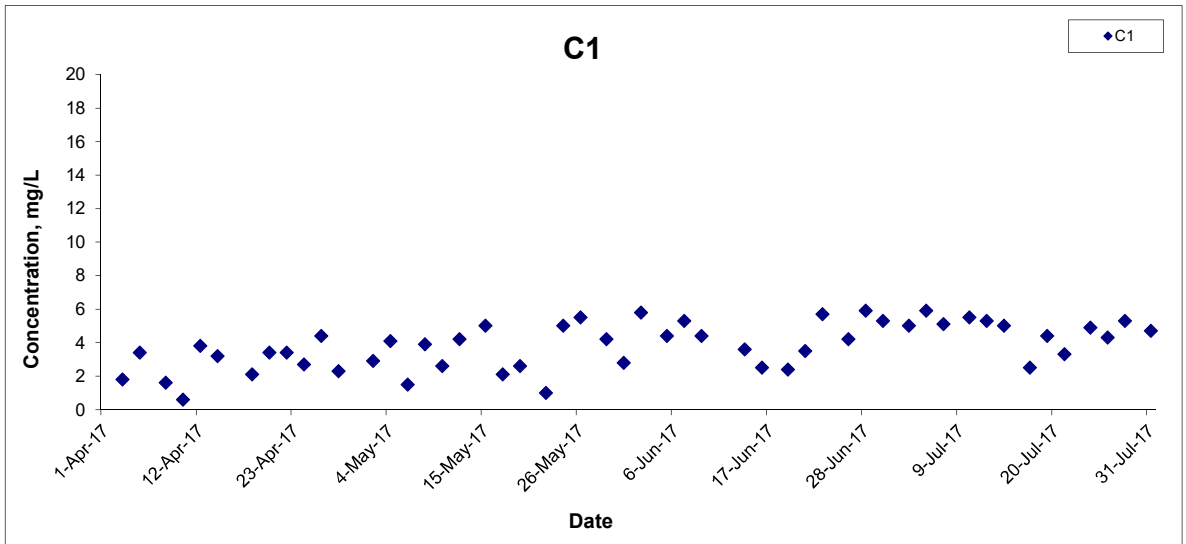
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

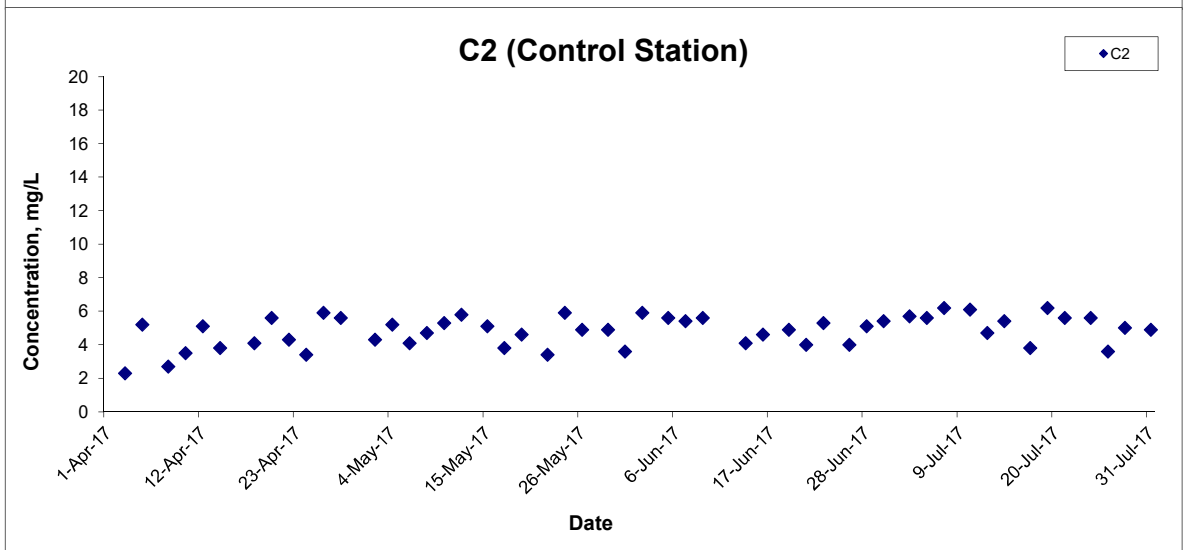
Suspended Solids (Depth-averaged) at Mid-Flood Tide

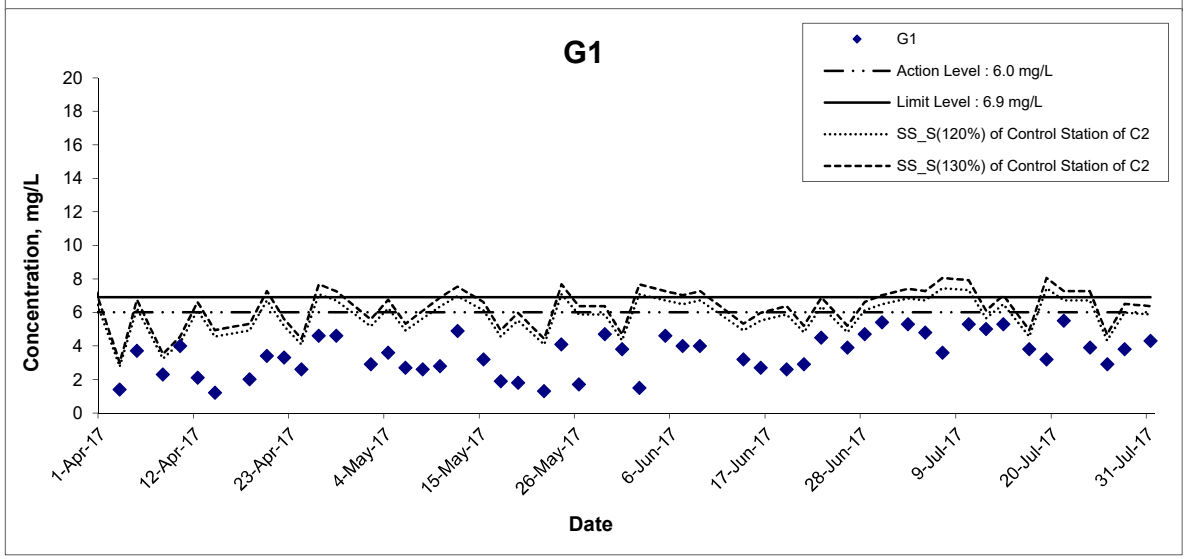


Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
		Date: Jul 17	Appendix: I	

Suspended Solids (Surface) at Mid-Ebb Tide



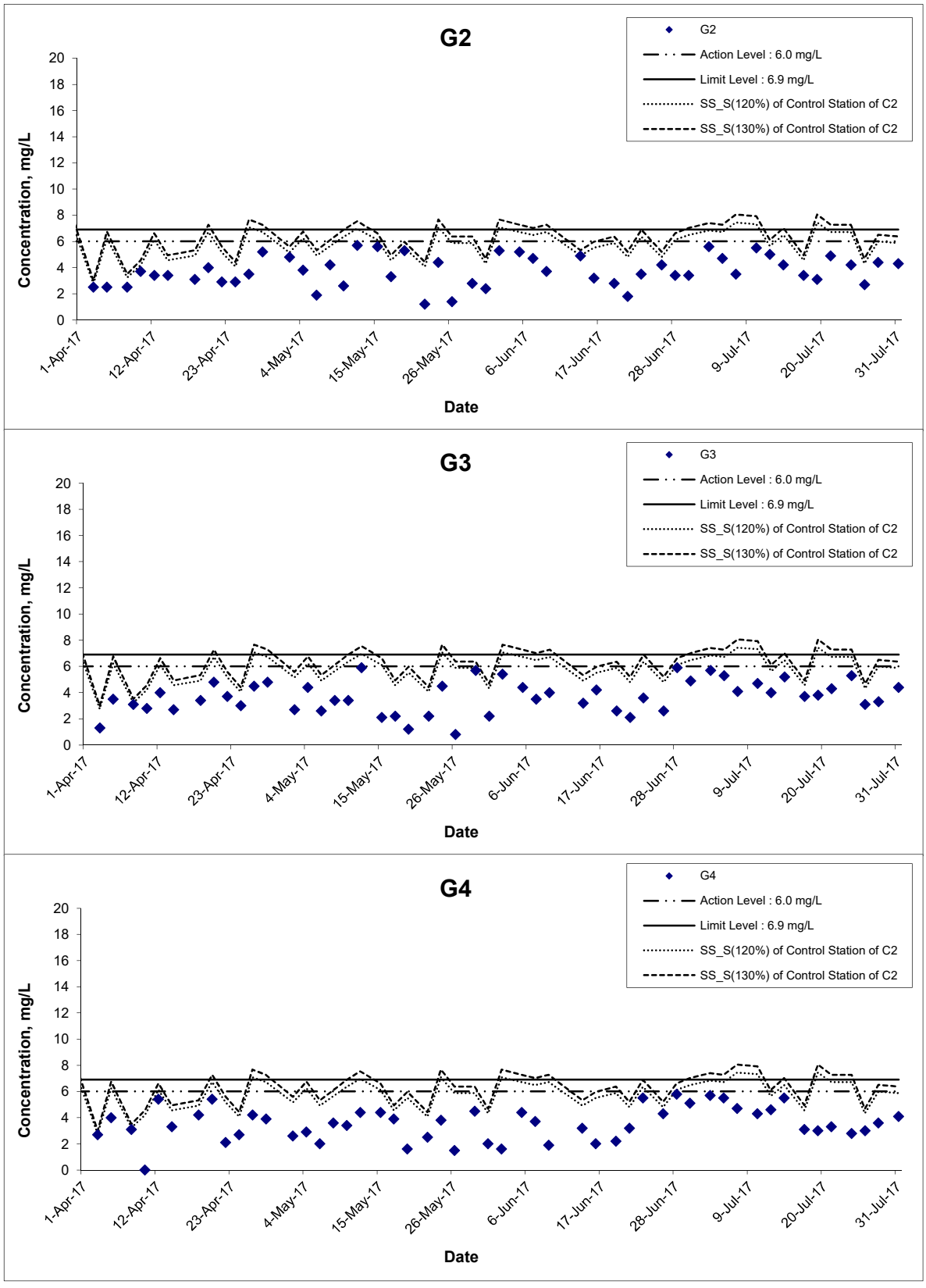




Title	Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	N.T.S	MA16034
	Date: Jul 17	Appendix: I

CINOTECH

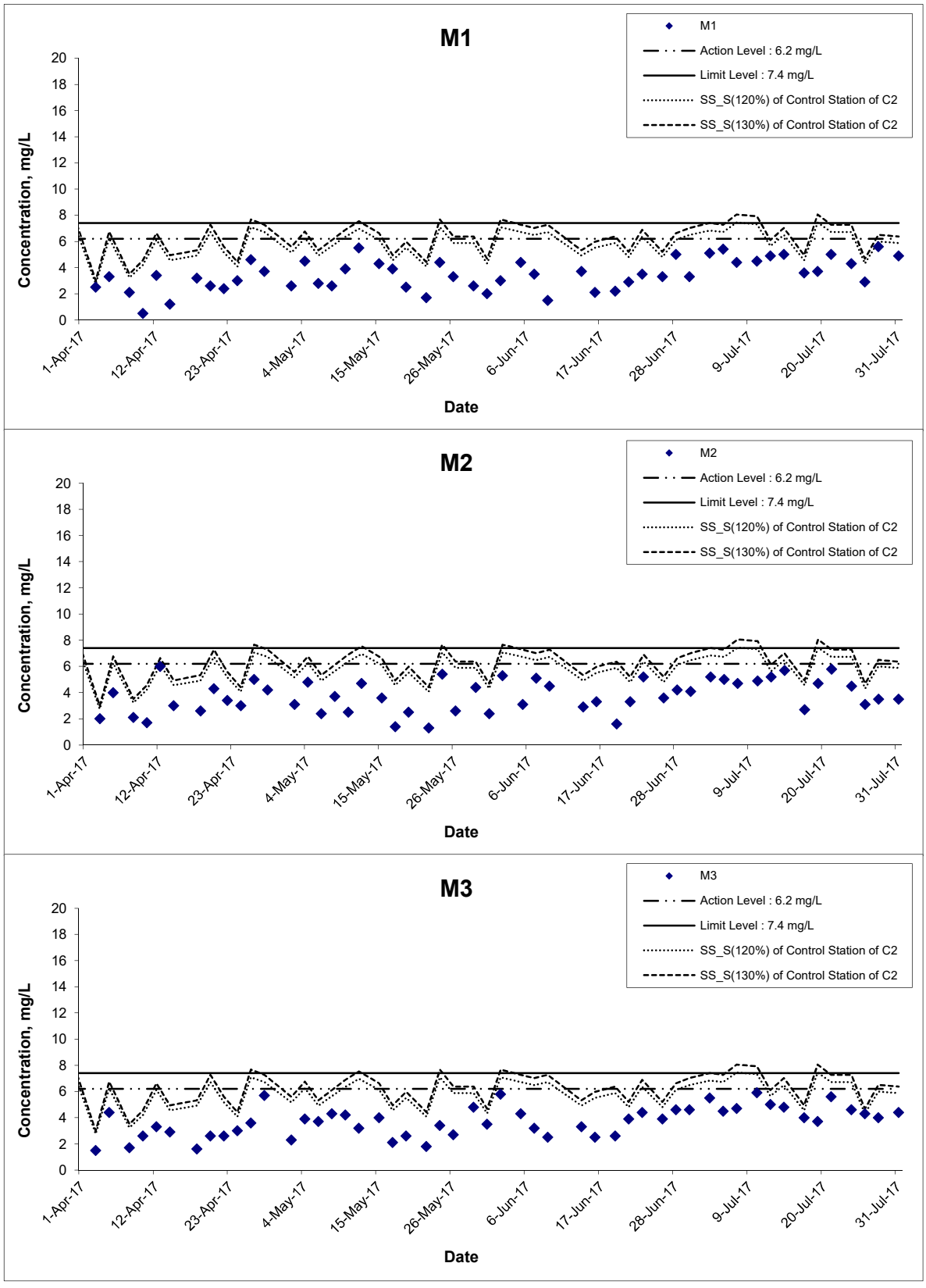
Suspended Solids (Surface) at Mid-Ebb Tide



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

Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

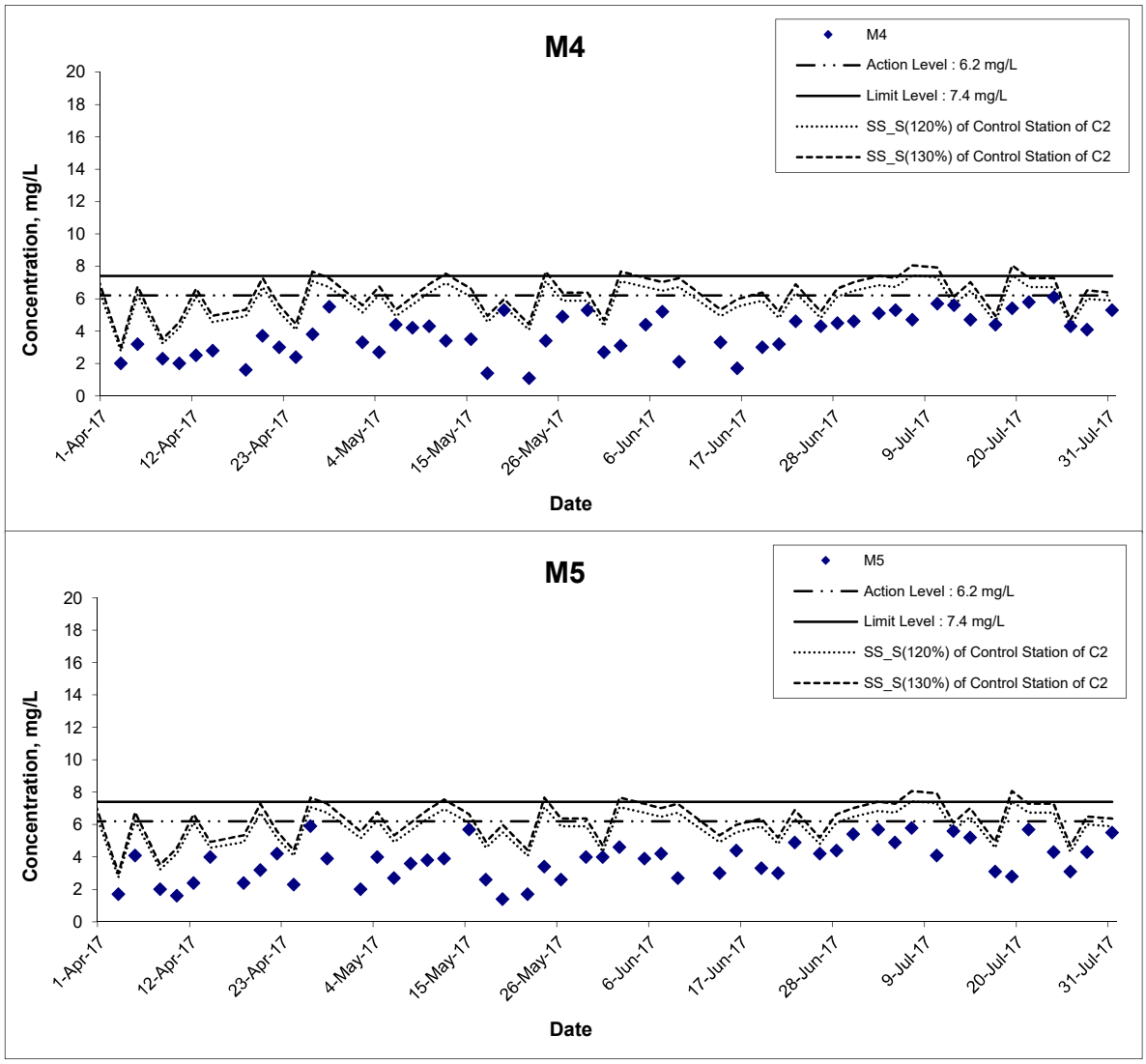
Suspended Solids (Surface) at Mid-Ebb Tide



Title		Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction		N.T.S	MA16034
Graphical Presentation of Water Quality Monitoring Results		Date: Jul 17	Appendix: I

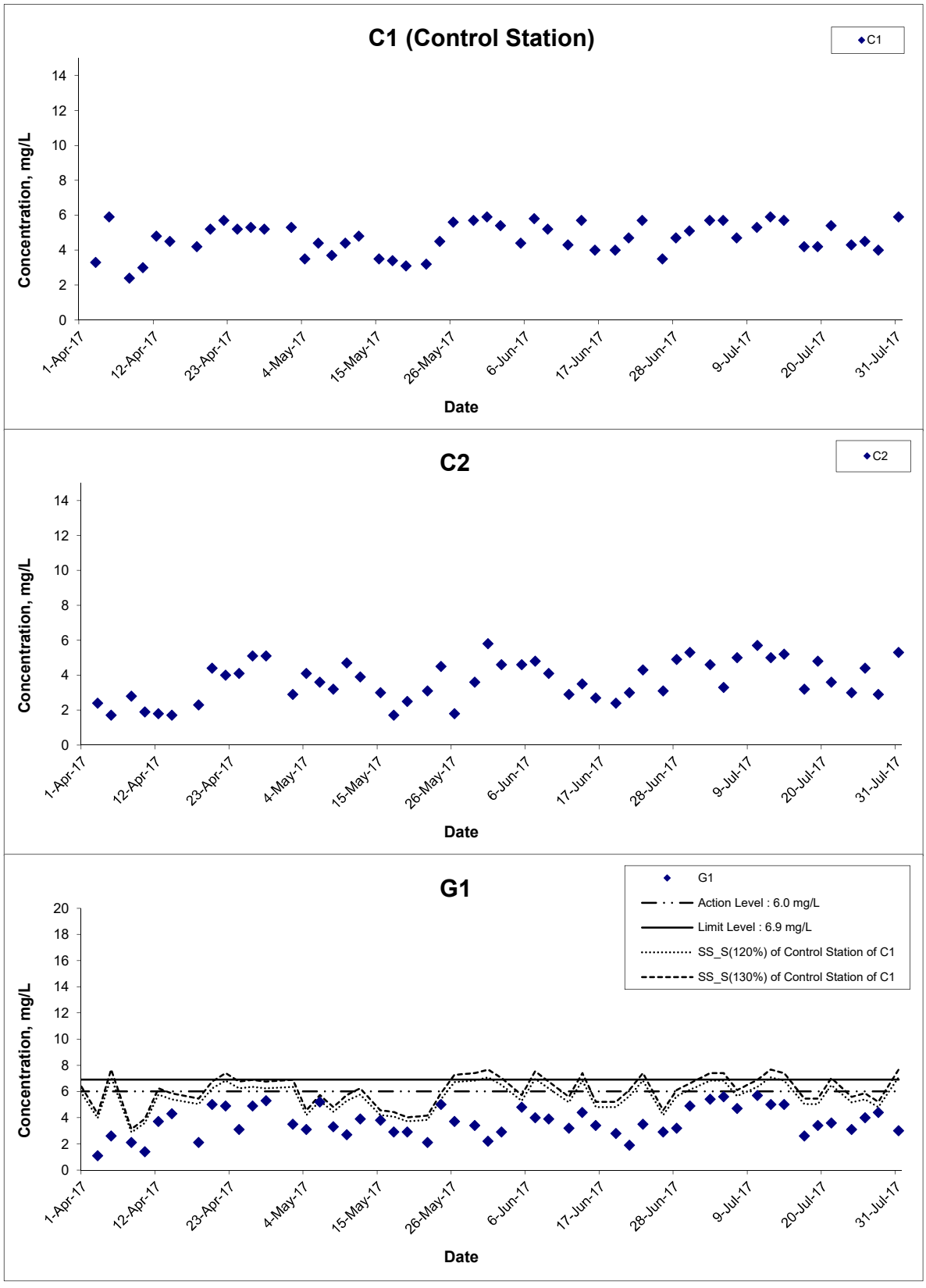
CINOTECH

Suspended Solids (Surface) at Mid-Ebb Tide



Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



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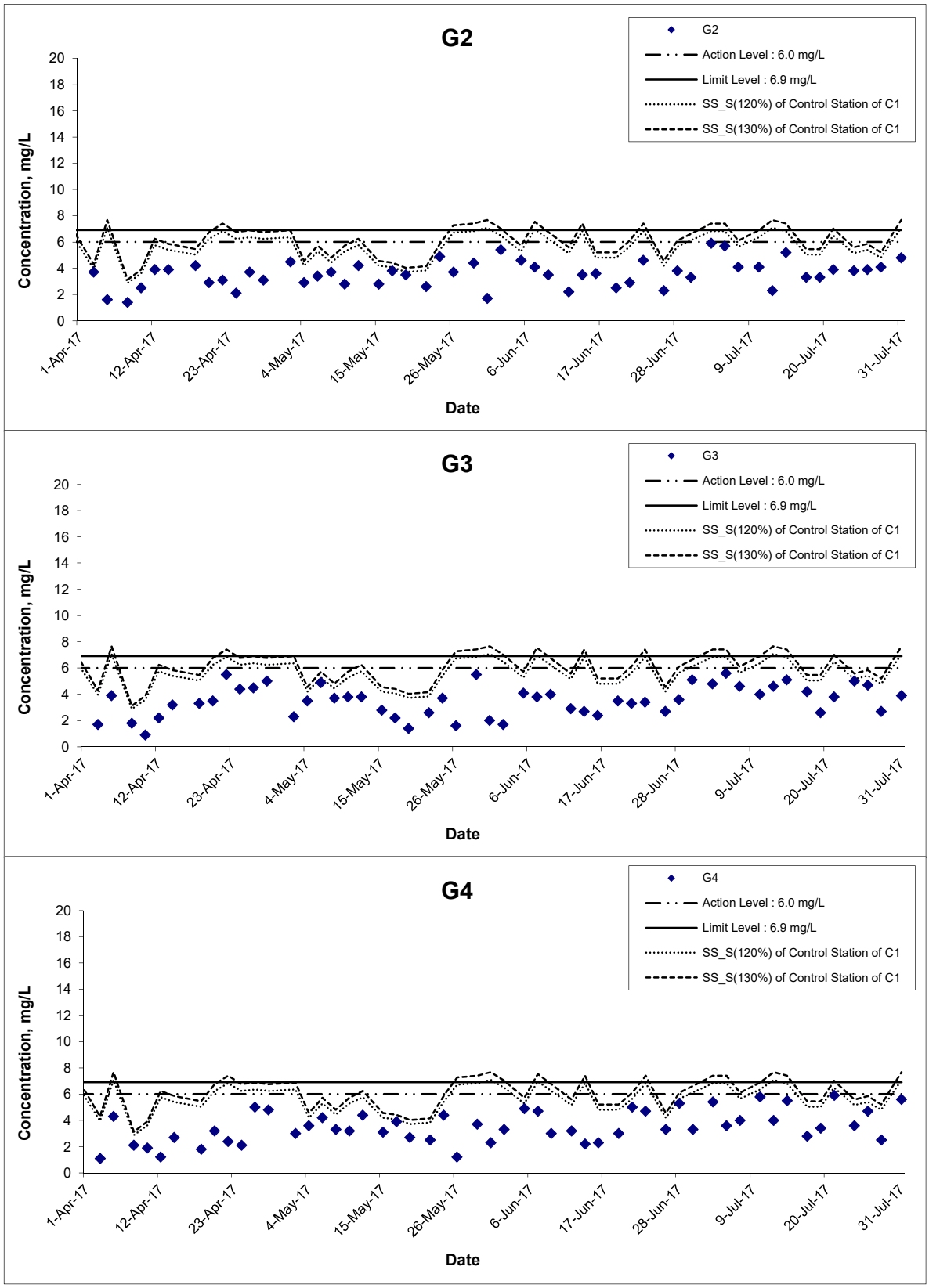
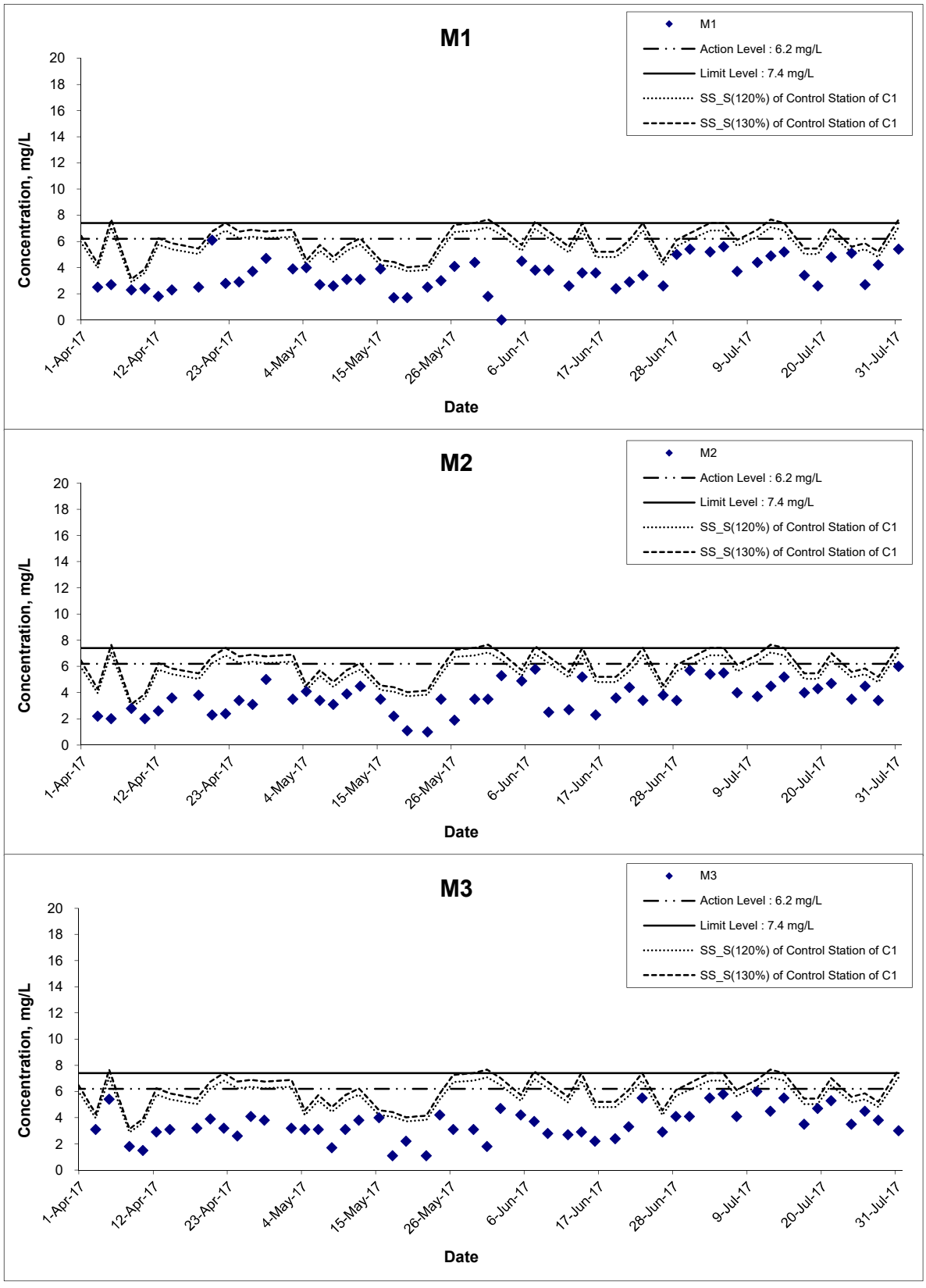
	Date: Jul 17	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



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

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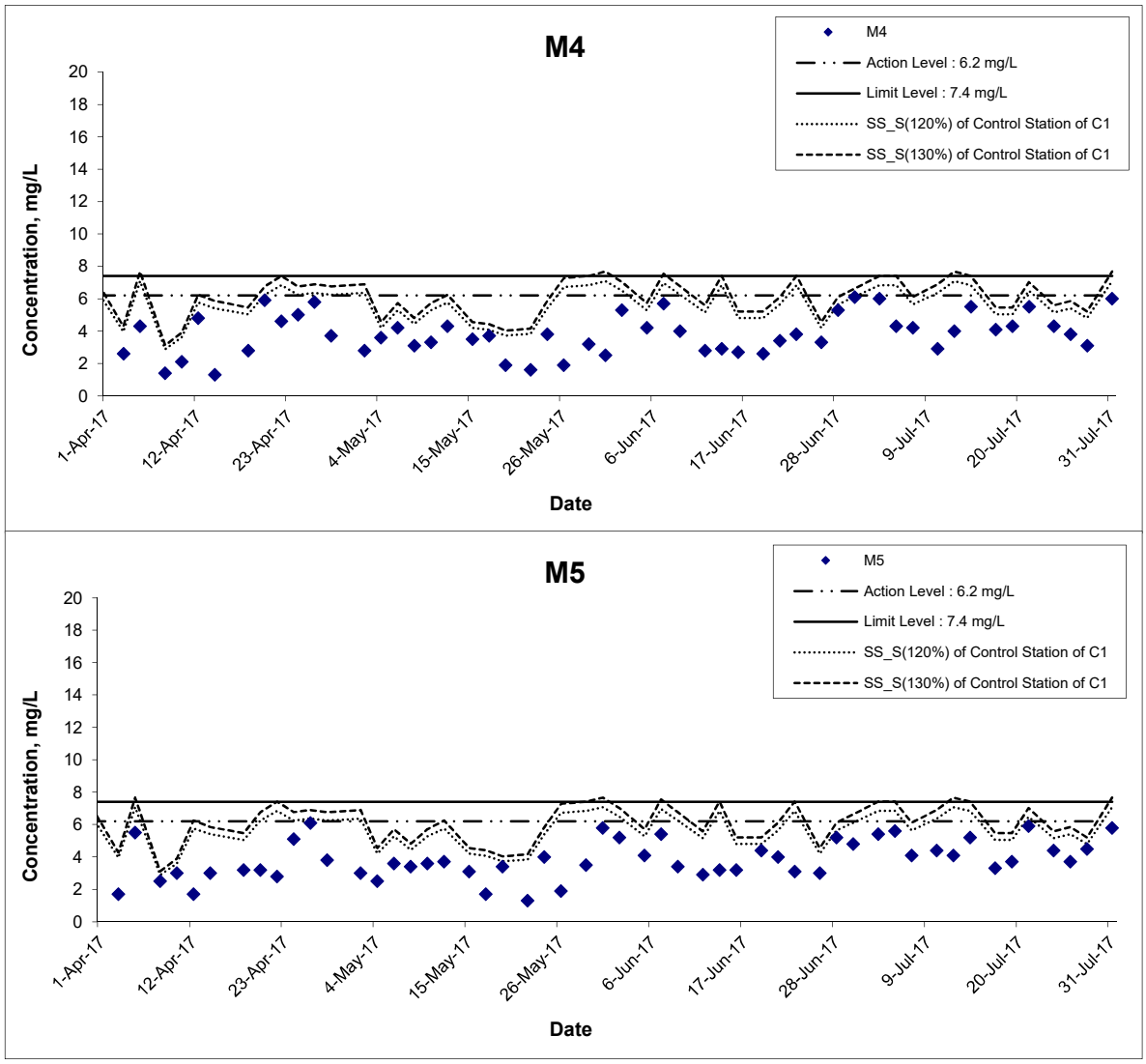
	Date: Jul 17	Appendix: I	

Suspended Solids (Surface) at Mid-Flood Tide



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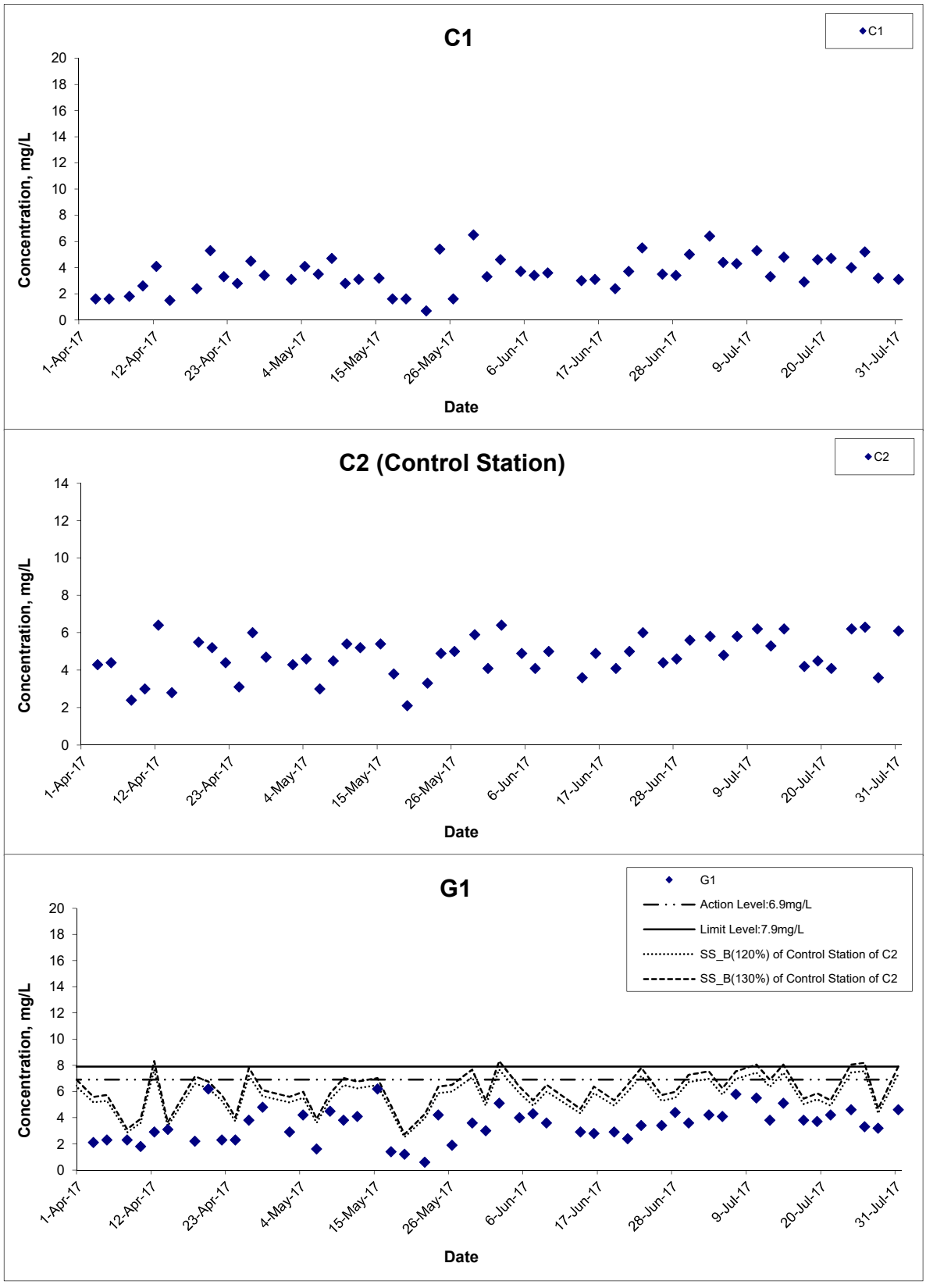
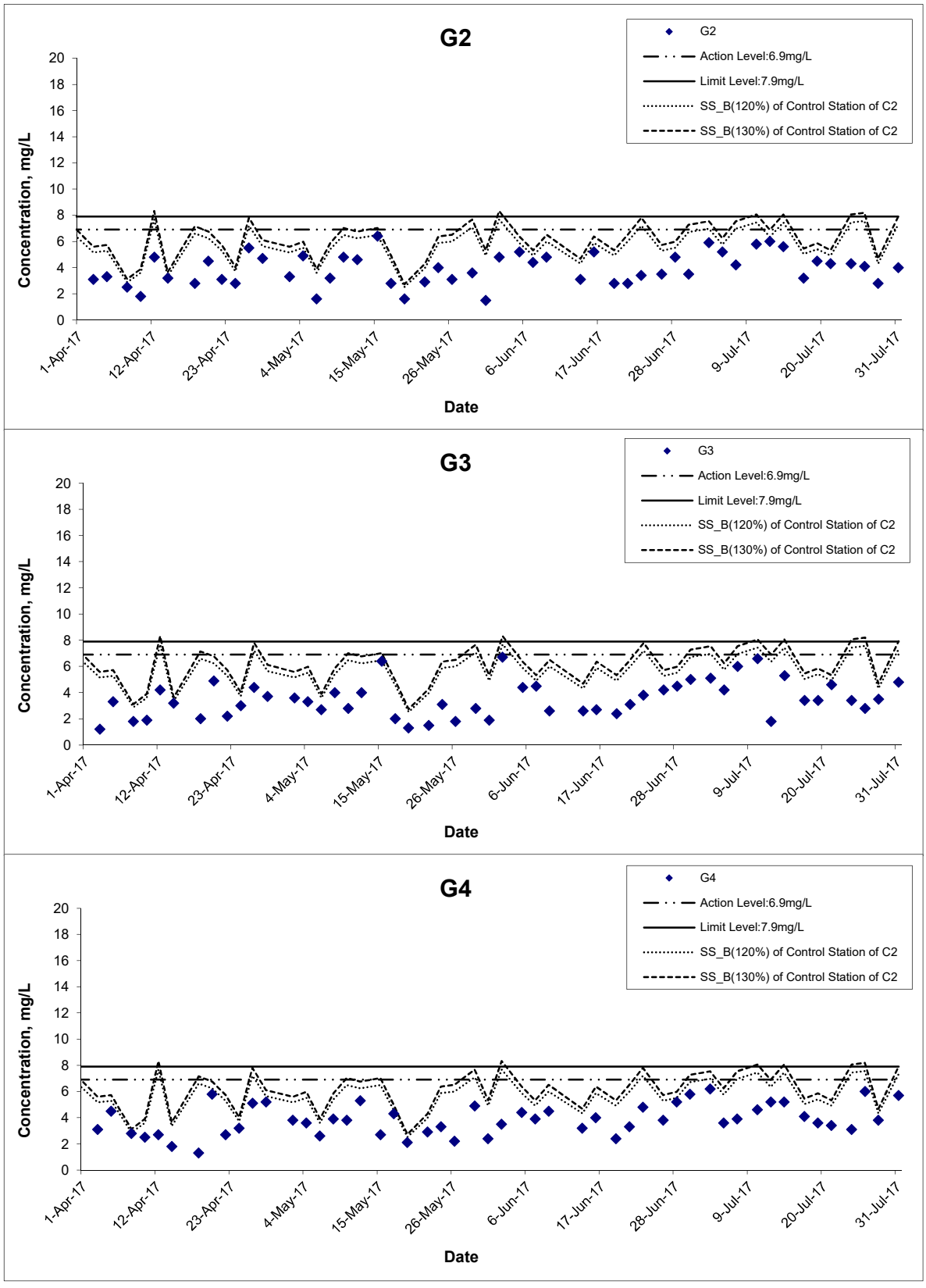
	Date: Jul 17	Appendix: I	

Suspended Solids (Bottom) at Mid-Ebb Tide



Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

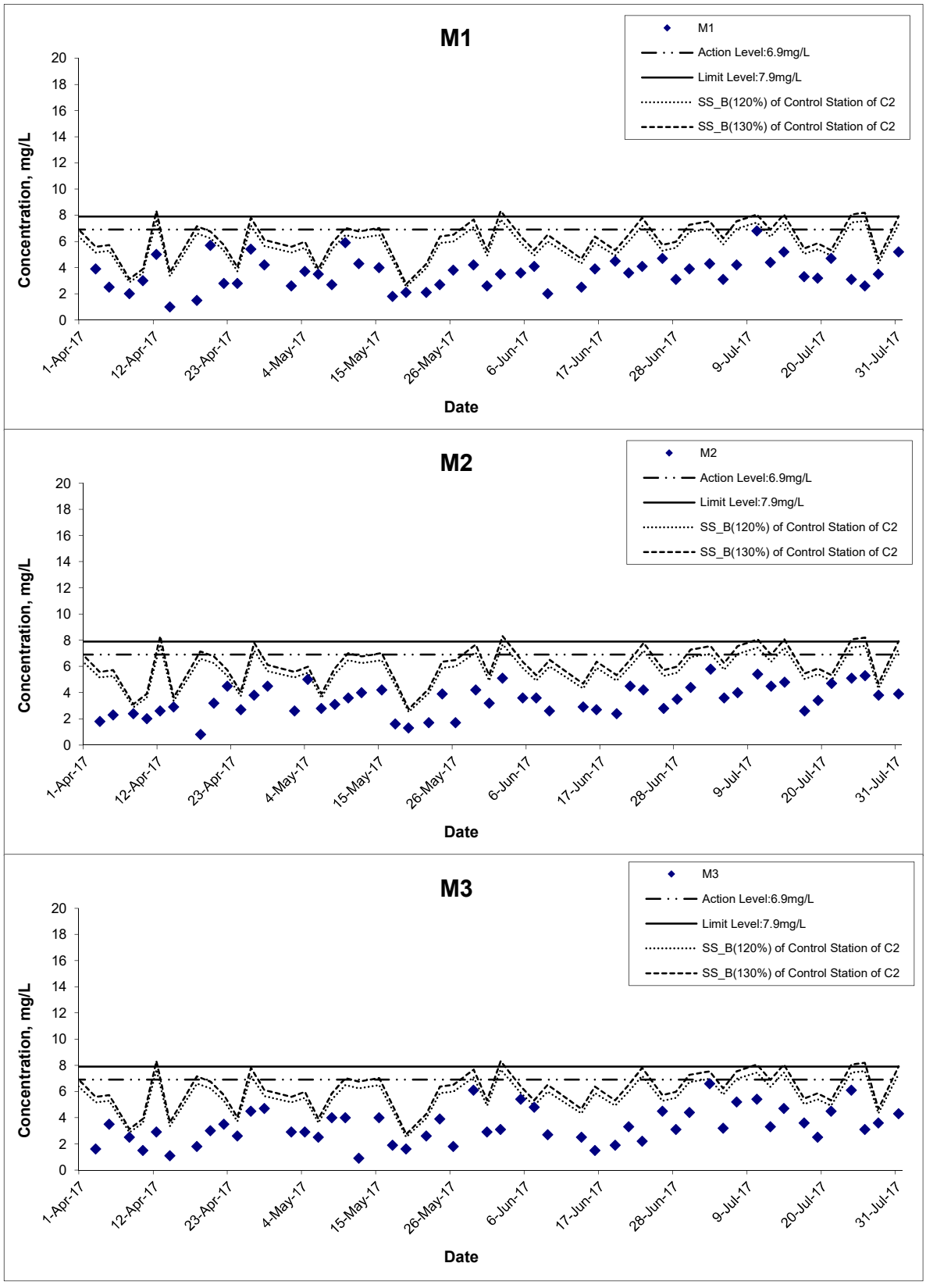
Suspended Solids (Bottom) at Mid-Ebb Tide



Title	Scale	Project No.
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	N.T.S	MA16034
	Date: Jul 17	Appendix: I

CINOTECH

Suspended Solids (Bottom) at Mid-Ebb Tide



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	Date: Jul 17	Appendix: I	

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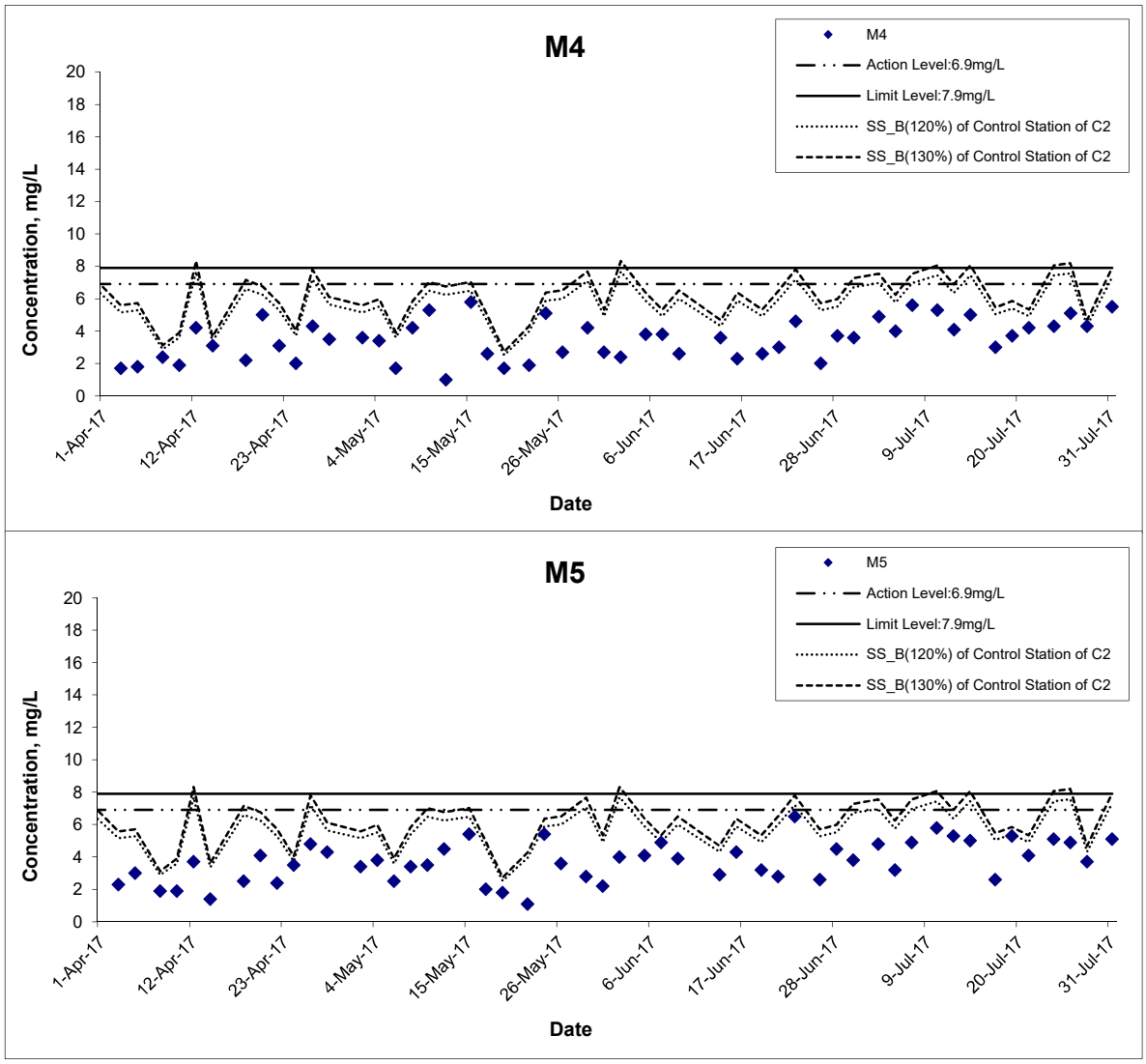

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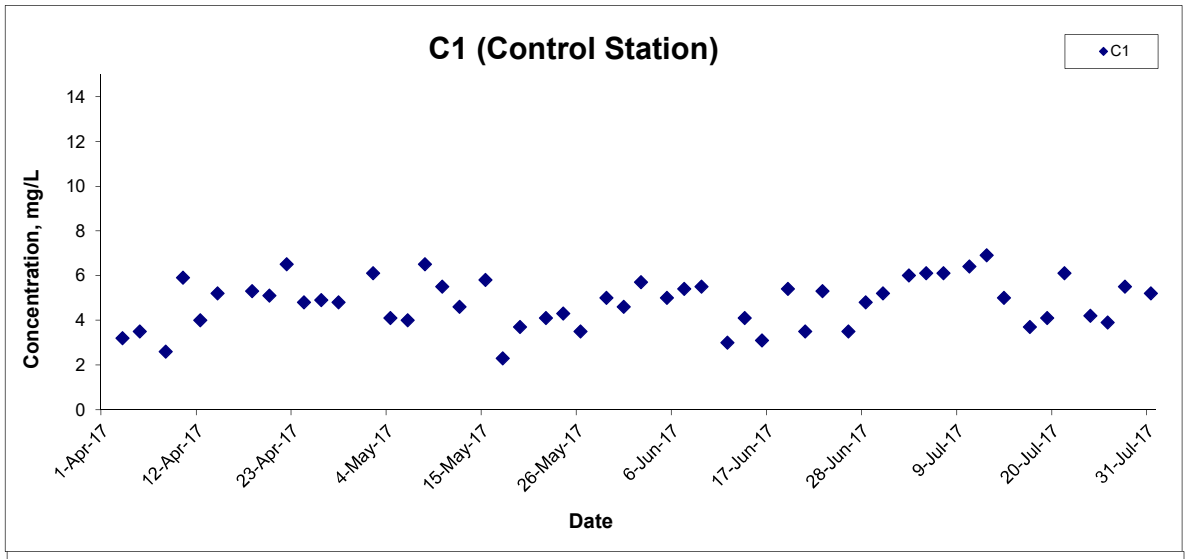
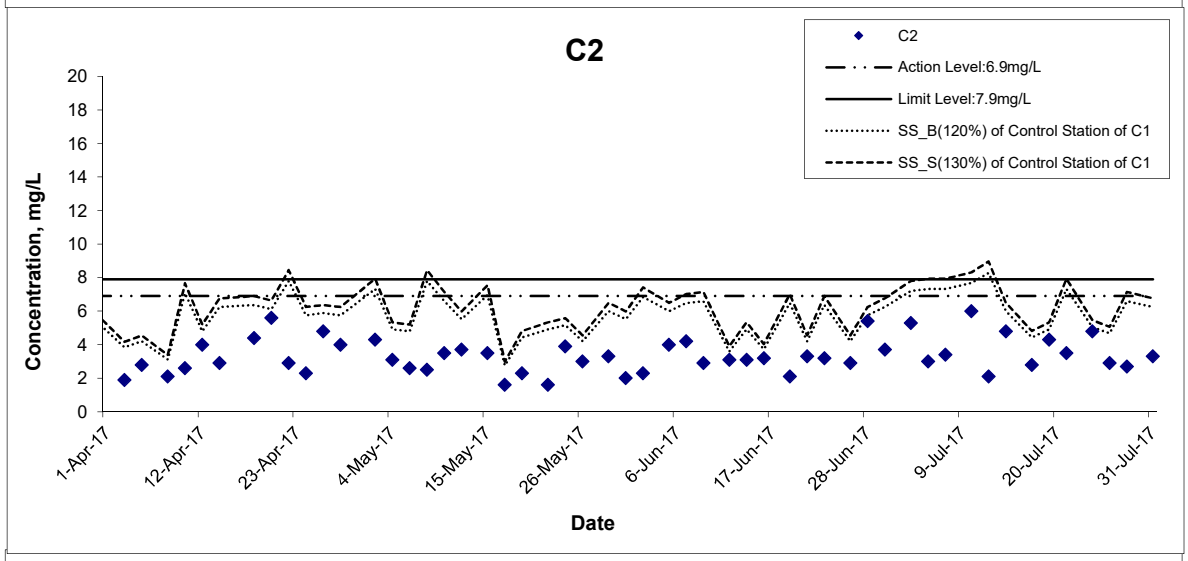
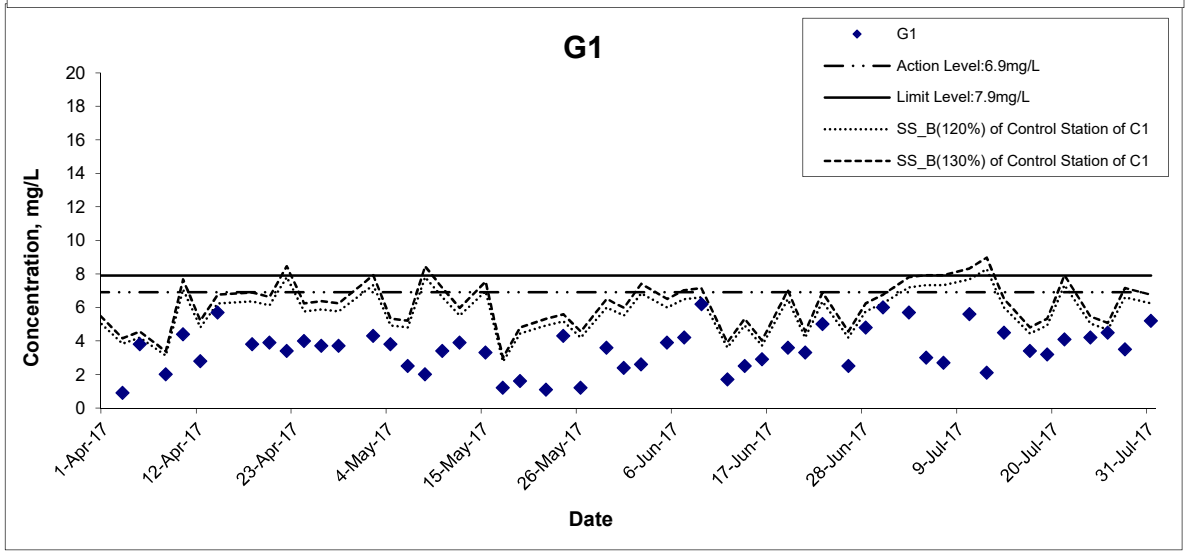
	Date: Jul 17	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide

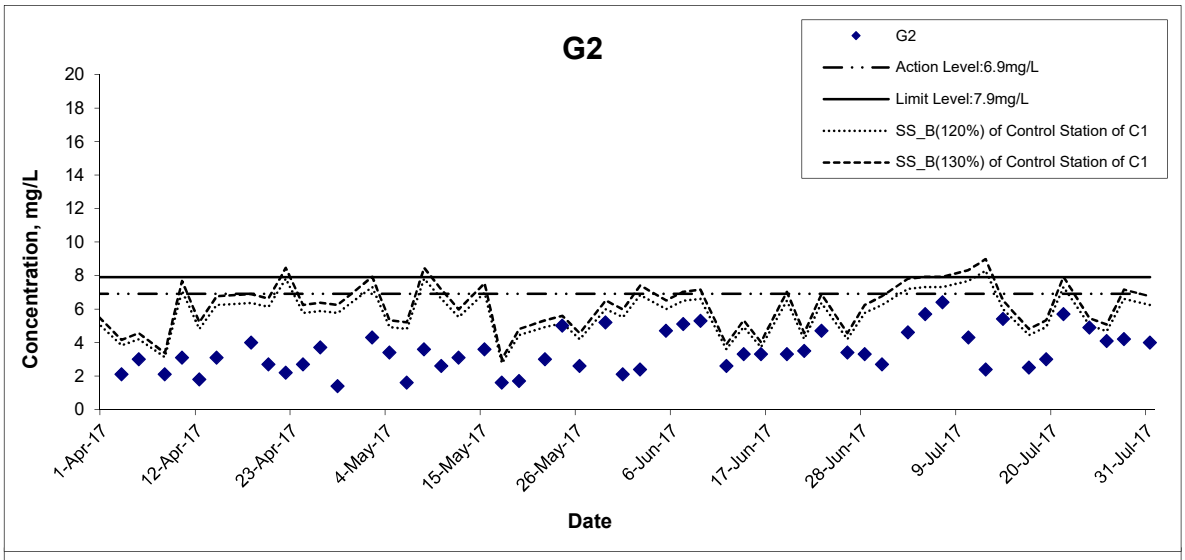


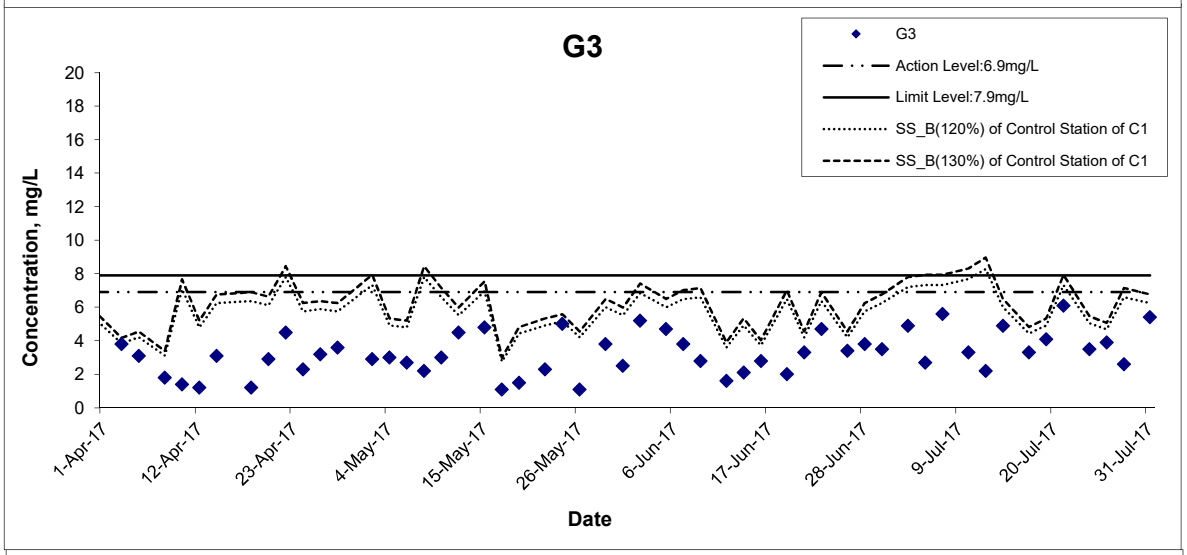


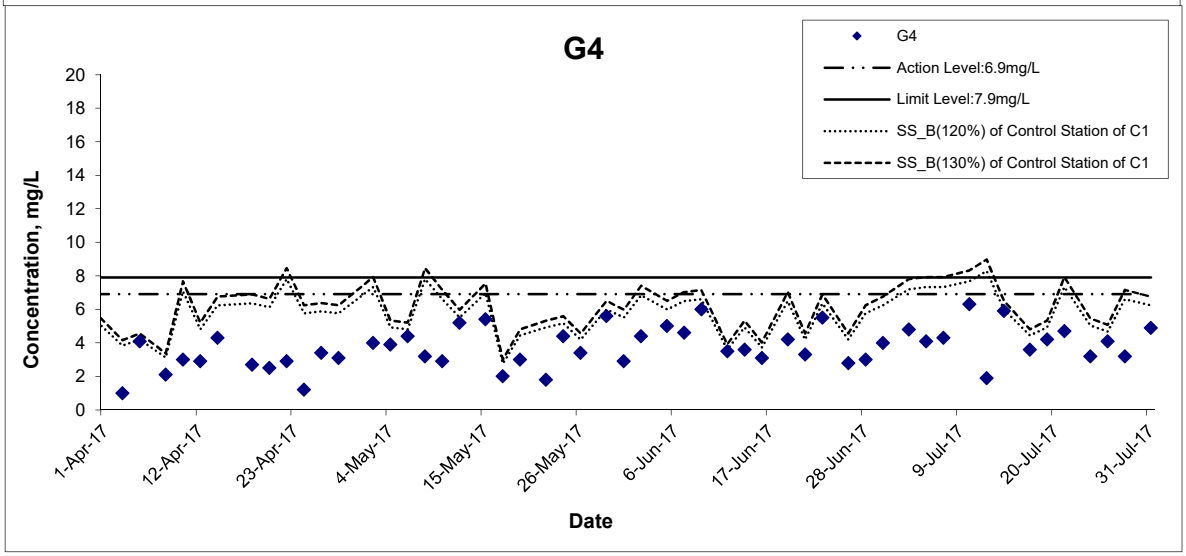


Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide

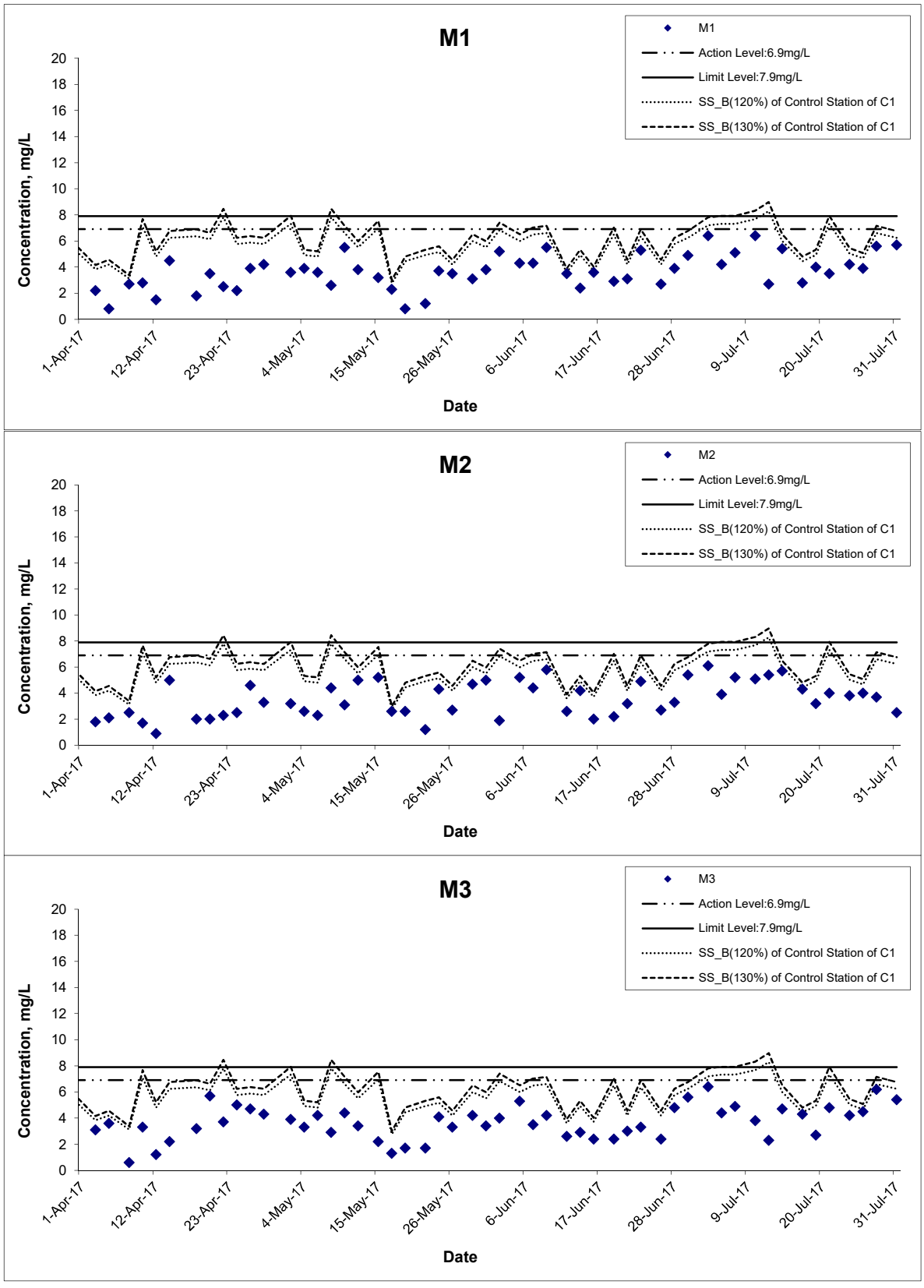






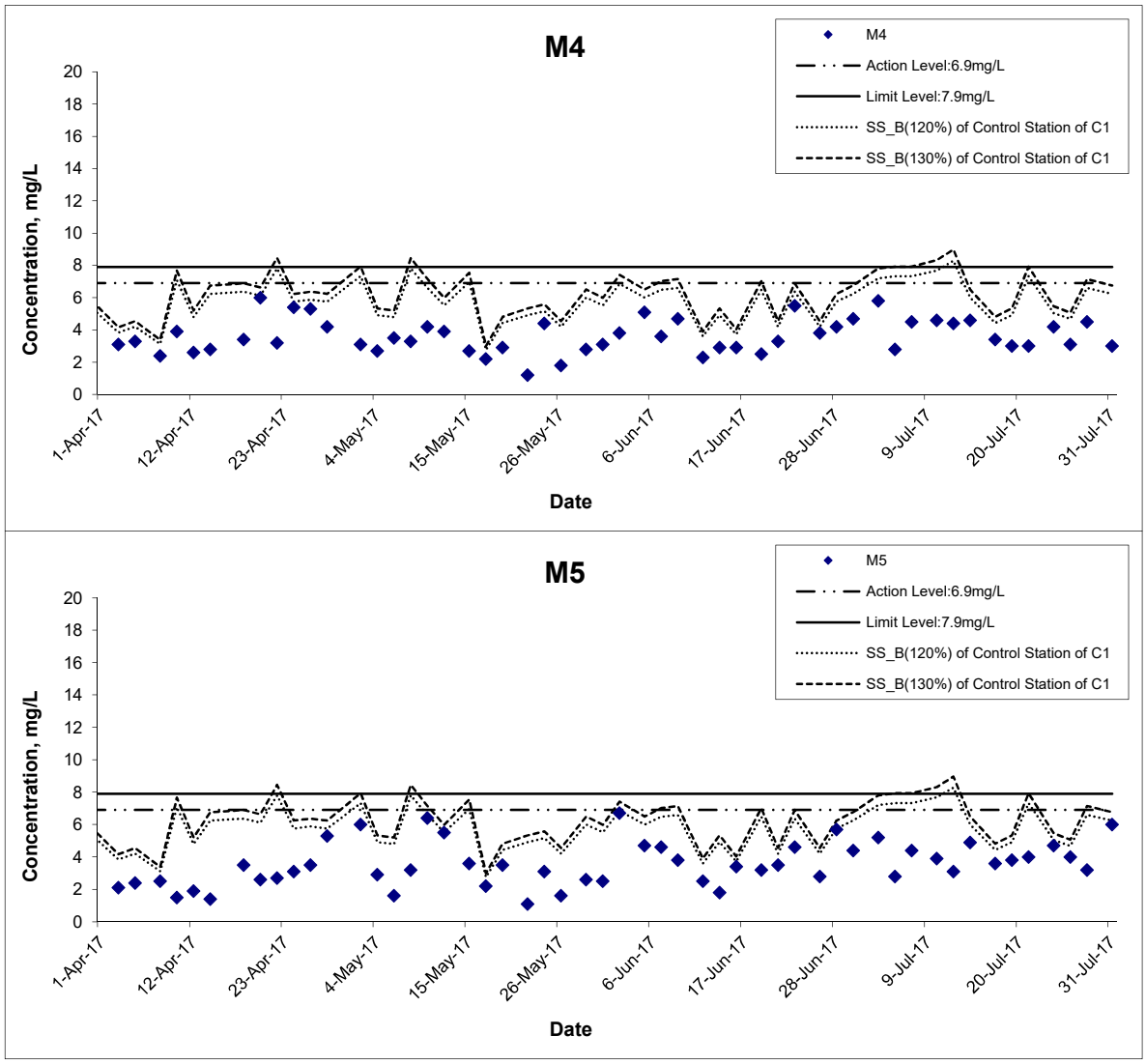
Title	Scale	Project No.	
Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	N.T.S	MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide



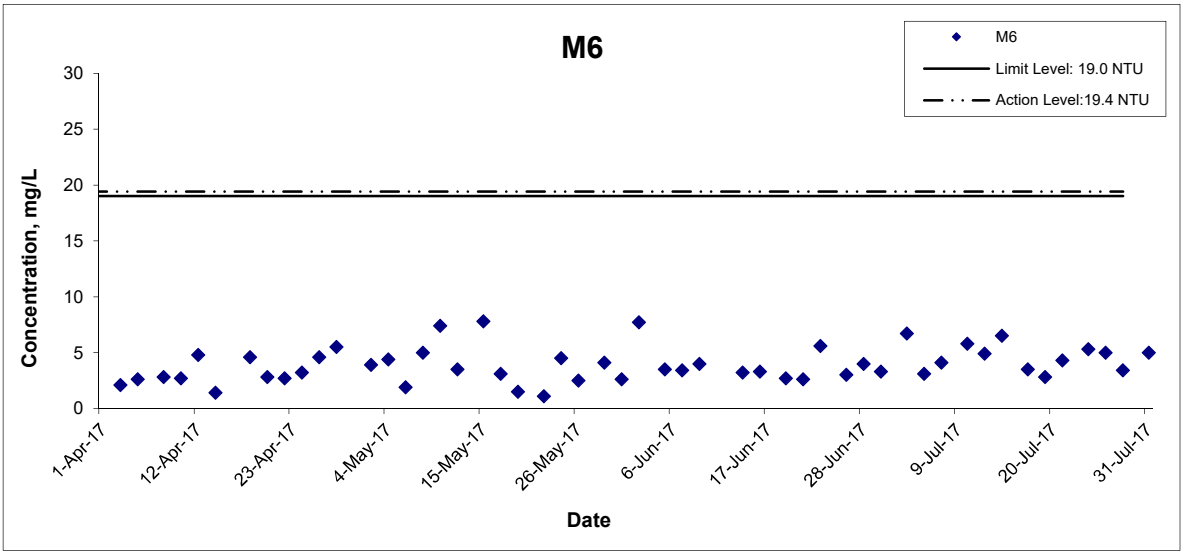
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide



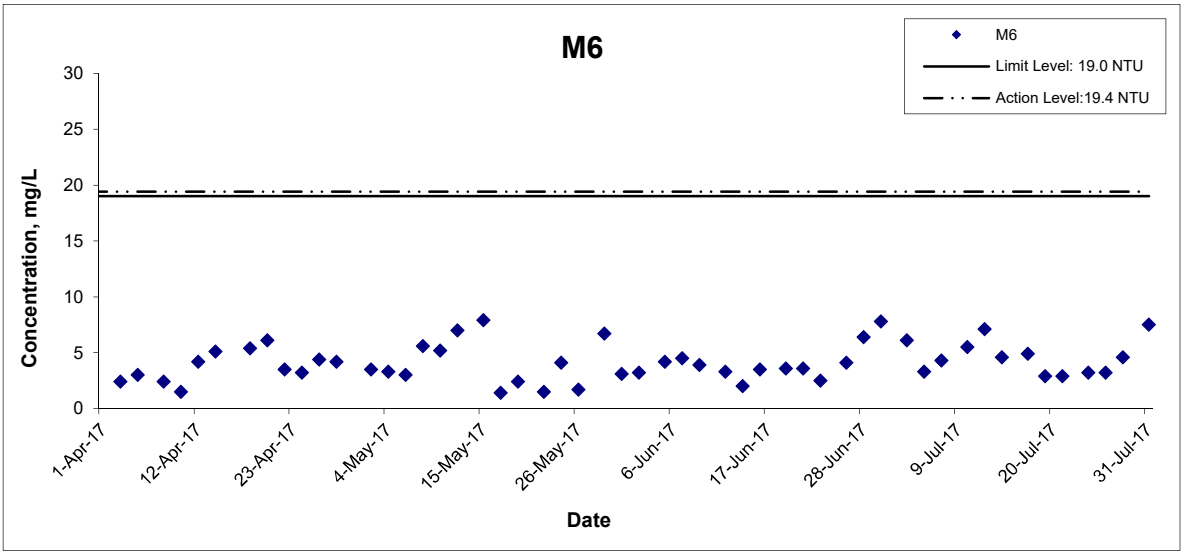
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Jul 17	Appendix: I	

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



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: I	CINOTECH

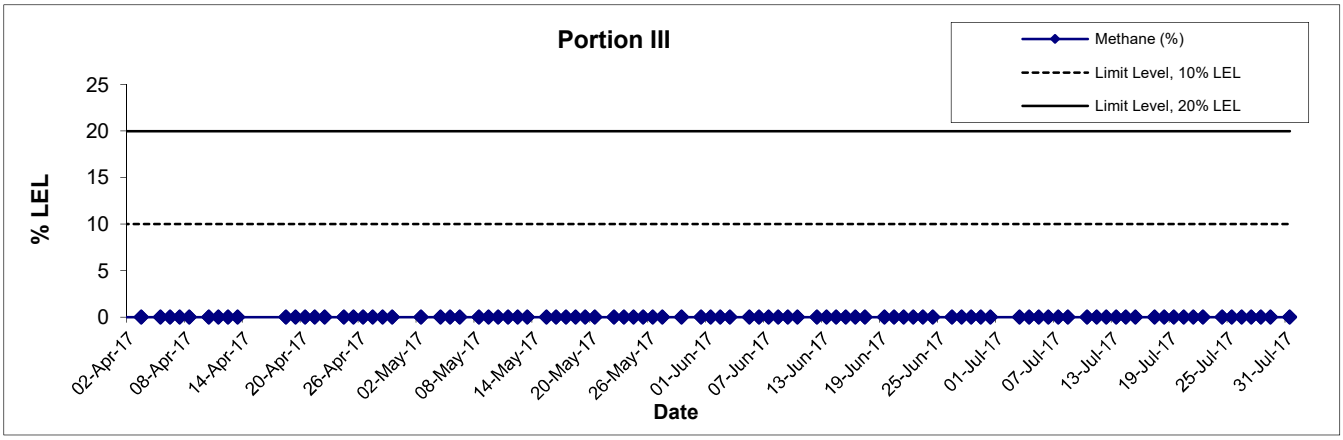
Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



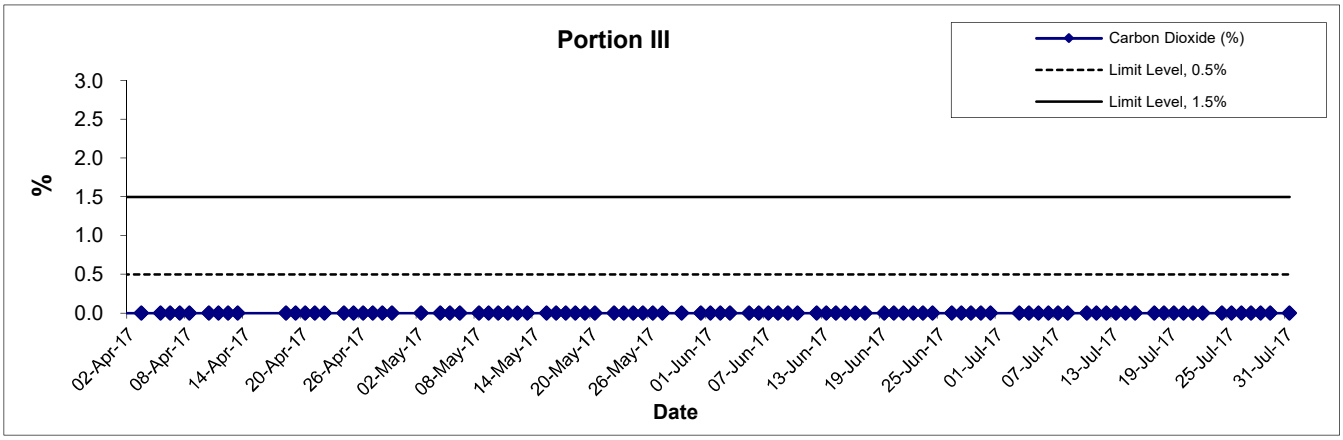
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: I	CINOTECH

APPENDIX G
GRAPHICAL PRESENTATION OF LANDFILL GAS MONITORING RESULTS

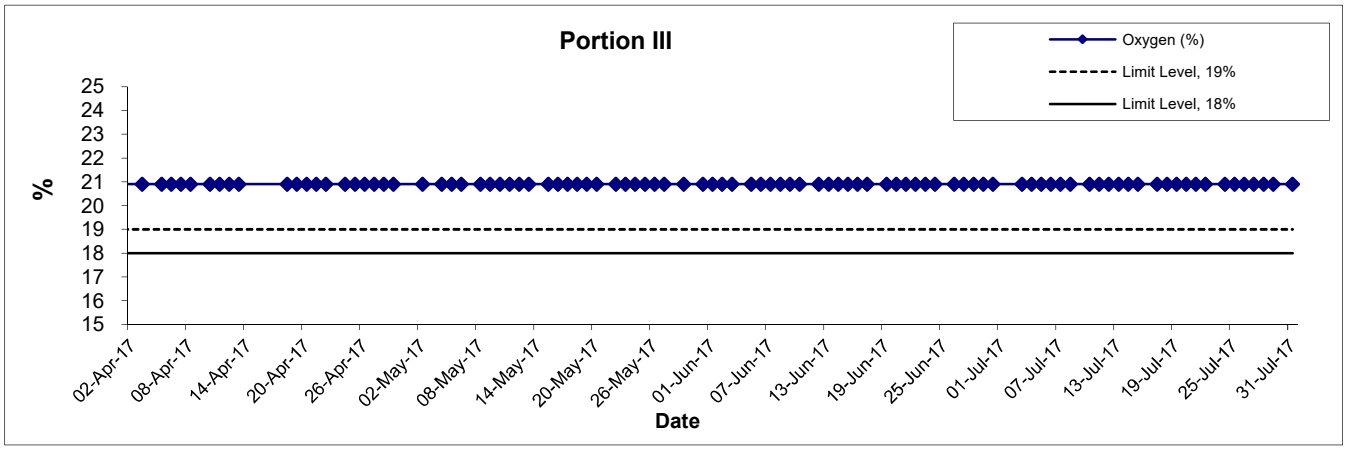
Methane



Carbon Dioxide



Oxygen



Title: Agreement No. CE 59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel – Design and Construction Graphical Presentation of Landfill Gas Measurement	Scale: N.T.S Date: Jul 17	Project No.: MA16034 Appendix: R	CINOTECH

APPENDIX H
SITE AUDIT SUMMARY

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/01 – (May)

Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
To set up proper drainage system in CKL site Portion 3.	15 Mar 2017	✗	Item remarked on 22 Mar 2017
	22 Mar 2017	✗	Item remarked on 12 Apr 2017
	12 Apr 2017	✗	Item remarked on 19 Apr 2017
	19 Apr 2017	✓	Improved/rectified on 31 May 2017
Muddy water observed without proper containment in TKO. The Contractor is reminded to provide bunds or containment pit to prevent muddy water flow out of site.	26 Apr 2017	✓	Improved/rectified on 02 May 2017
Stagnant water should be cleared at TKO site.	2 May 2017	✓	Improved/rectified on 10 May 2017
To repair silt curtain for marine works in TKO to ensure that geotextile is extended to seabed.	10 May 2017	✗	Item remarked on 17 May 2017
	17 May 2017	✗	Item remarked on 24 May 2017
	24 May 2017	✓	Improved/rectified on 31 May 2017
To repair the holes at bottom of compartment of sedimentation tank in TKO.	17 May 2017	✗	Item remarked on 24 May 2017
	24 May 2017	✓	Improved/rectified on 31 May 2017
To remove the mud accumulated in U-channel near discharge point in TKO.	17 May 2017	✓	Improved/rectified on 24 May 2017
Noise			
Noise mitigation measure are not observed for drill rig in Portion 3. The Contractor is reminded to provide temporary noise barrier according to the updated NMP.	2 May 2017	✗	Item remarked on 10 May 2017
	10 May 2017	✓	Improved/rectified on 17 May 2017
To provide adequate noise barrier to drilling works and to repair the existing noise barrier to avoid gaps in Portion 4c.	10 May 2017	✓	Improved/rectified on 17 May 2017
To repair the gaps of temporary noise barrier for drill rig in Portion 3	17 May 2017	✓	Improved/rectified on 24 May 2017
To repair the temporary noise enclosure for breaker in Portion 3	17 May 2017	✓	Improved/rectified on 24 May 2017
Landscape and Visual			
To properly set-up tree protection area in Portion 3.	12 Apr 2017	✗	Item remarked on 19 Apr 2017
	19 Apr 2017	✓	Improved/rectified on 02 May 2017
Air Quality			
Grouting equipment in TKO observed without proper enclosure. The Contractor is reminded to provide top and 3-side enclosure.	26 Apr 2017	✓	Improved/rectified on 02 May 2017
To provide adequate water spray to drilling works in Portion 4c to avoid dust generation.	10 May 2017	✓	Improved/rectified on 17 May 2017
To cover stockpile of sand in TKO to avoid dust generation.	10 May 2017	✓	Improved/rectified on 17 May 2017
Dry unpaved area was observed. Contractor was advised to provide spraying regularly	31 May 2017	✓	Improved/rectified on 07 June 2017
Waste / Chemical Management			
To remove oil stain mixed with muddy water in CKL site.	26 Apr 2017	✓	Improved/rectified on 02 May 2017

Appendix H - Site Audit Summary (May - July 2017)

Items	Date	Status*	Follow up Action
Oil containers should be provided with drip tray. (Barging Point)	31 May 2017	✔	Improved/rectified on 07 June 2017
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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/01 – (June)

Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
Muddy water observed flow out of TKO site after Red Rainstorm Signal. The Contractor is reminded to remove muddy seawater and properly treat by wastewater treatment system.	14 June 2017	✗	Item remarked on 21 June 2017
	21 June 2017	✓	Improved/rectified on 28 June 2017
Silt Curtain is observed not in function in TKO site. The Contractor is reminded to repair the silt curtain and ensure that the geotextile is extended to seabed.	14 June 2017	✓	Improved/rectified on 21 June 2017
To remove the mud and sediment accumulated in sedimentation tank in TKO site.	14 June 2017	✓	Improved/rectified on 21 June 2017
Treated water is not clear enough and the contractor was reminded to provide proper wastewater treatment for site water in CKL site.	21 June 2017	✓	Improved/rectified on 28 June 2017
To maintain the manhole near the entrance and avoid any untreated sewage diverted into public drains or outside the site area in CKL.	28 June 2017	✓	Improved/rectified on 05 July 2017
Noise			
To repair the noise barrier near the tunnel portal in CKL site.	14 June 2017	✗	Item remarked on 21 June 2017
	21 June 2017	✓	Improved/rectified on 28 June 2017
Landscape and Visual			
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Air Quality			
To provide a proper enclosure before start of soil nail works in TKO to avoid dust generation. To clear the sand and dust accumulated at the temporary public road near Tin Hau Temple.	07 June 2017	✓	Improved/rectified on 21 June 2017
To clear the sand and dust accumulated at the temporary public road near Tin Hau Temple.	07 June 2017	✓	Improved/rectified on 14 June 2017
Waste / Chemical Management			
To provide drip tray to chemical containers near the temporary steel bridge in Cha Kwo Ling.	07 June 2017	✓	Improved/rectified on 14 June 2017
To clear the oil stain on paved ground in CKL site.	14 June 2017	✓	Improved/rectified on 21 June 2017
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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/01 – (July)

Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works

Items	Date	Status*	Follow up Action
Water Quality			
General refuse next to silt curtain at TKO site should be properly cleared.	12 July 2017	✕	Item remarked on 19 July 2017
	19 July 2017	✕	Item remarked on 26 July 2017
	26 July 2017	#	Follow up action will be reported in next reporting month
Construction material observed near silt curtain in TKO site. The Contractor is reminded to provide silt curtain in accordance with the silt curtain deployment plan.	19 July 2017	✕	Item remarked on 26 July 2017
	26 July 2017	#	Follow up action will be reported in next reporting month
Noise			
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Landscape and Visual			
To provide proper tree protection zone for retain tree in near Cha Kwo Ling barging point in Portion 1a.	19 July 2017	✓	Improved/rectified on 26 July 2017
Air Quality			
To provide water-spraying regularly to unpaved slope above the BMCPC footpath at TKO site.	5 July 2017	✓	Improved/rectified on 12 July 2017
Top and three side enclosure should be provided to cement grouting machinery for soil nail works in Cha Kwo Ling Portion 2 to avoid dust generation.	19 July 2017	✓	Improved/rectified on 26 July 2017
To provide water spray to loading and unloading works in Portion 2a.	19 July 2017	✓	Improved/rectified on 26 July 2017
To provide NRMM Label to generator for soil nail works in Cha Kwo Ling Portion 2.	19 July 2017	✓	Improved/rectified on 26 July 2017
Waste / Chemical Management			
To remove oil stain on unpaved ground near soil nail works at BMCPC as chemical waste at TKO site.	5 July 2017	✓	Improved/rectified on 12 July 2017
To place oil container in the drip tray near soil nail works at CKL site.	5 July 2017	✓	Improved/rectified on 12 July 2017
To provide drip tray to chemical container near Cha Kwo Ling barging point in Portion 1a.	19 July 2017	✓	Improved/rectified on 26 July 2017
Drip tray should be provided to chemical containers near temporary steel bridge in Portion 1a to prevent leakage.	26 July 2017	#	Follow up action will be reported in next reporting month
Housekeeping on temporary steel bridge at Portion 1a should be enhanced and accumulation of waste should be avoided.	26 July 2017	#	Follow up action will be reported in next reporting month
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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/02 – (May)

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

Items	Date	Status*	Follow up Action
Water Quality			
To repair the holes near the discharge point in Area A to prevent surface runoff flow into the discharge point.	26 Apr 2017	✗	Item remarked on 04 May 2017
	04 May 2017	✗	Item remarked on 11 May 2017
	11 May 2017	✓	Improved/rectified on 16 May 2017
To replace the broken sand bags near the gullies in Portion 1.	04 May 2017	✗	Item remarked on 11 May 2017
	11 May 2017	✓	Improved/rectified on 16 May 2017
To remove muddy water / sediment accumulated in catchpits / U-channels in Area A.	11 May 2017	✗	Item remarked on 16 May 2017
	16 May 2017	✓	Improved/rectified on 25 May 2017
Silt and sediments observed at footing of hoarding at Portion SR2B. The Contractor is reminded to remove the silt and sediment to avoid wastewater flow out of site.	16 May 2017	✓	Improved/rectified on 25 May 2017
Noise			
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Landscape and Visual			
--	--	--	--
Air Quality			
To cover stockpiles of dusty material in Area A after works	11 May 2017	✓	Improved/rectified on 16 May 2017
Waste / Chemical Management			
To remove construction waste accumulated near site office.	16 May 2017	✓	Improved/rectified on 25 May 2017
Impact on Cultural Heritage			
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Permits / Licenses			
To display valid Environmental Permit and Construction Noise Permit for marine works area.	25 May 2017	✓	Improved/rectified on 01 June 2017

✓ 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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/02 – (June)

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

Items	Date	Status*	Follow up Action
Water Quality			
To cover the gullies in Portion 6 to avoid surface runoff flow out of site.	8 June 2017	✓	Improved/rectified on 13 June 2017
Noise			
Sheetpiling works in Portion 8 observed without noise barrier. The Contractor is reminded to provide noise mitigation measures in accordance with NMP.	22 June 2017	✕	Item remarked on 28 June 2017
	28 June 2017	✕	Item remarked on 06 July 2017
Landscape and Visual			
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Air Quality			
Water spraying should be provided more frequently to unpaved area at Portion 8 to suppress dust generation.	28 June 2017	✓	Improved/rectified on 06 July 2017
Waste / Chemical Management			
To provide drip tray of sufficient capacity for chemical containers in Portion 8.	8 June 2017	✓	Improved/rectified on 13 June 2017
Drip tray should be provided to chemical containers at Portion 8.	28 June 2017	✓	Improved/rectified on 06 July 2017
Impact on Cultural Heritage			
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Permits / Licenses			

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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/02 – (July)

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

Items	Date	Status*	Follow up Action
Water Quality			
To clear the surface water regularly near site entrance of in Portion 5. The contractor was reminded to provide pumps to divert the accumulated surface water.	26 July 2017	#	Follow up action will be reported in next reporting month
Noise			
Noise barrier should be placed for drill rig at Portion 6 and Ocean Shores to minimize the noise nuisance caused to the nearby residents.	6 July 2017	✓	Improved/rectified on 11 July 2017
To provide proper maintenance to the air compressor in Portion 5 near sheet piling works. The door of air compressor was observed broken while operating.	26 July 2017	#	Follow up action will be reported in next reporting month
Landscape and Visual			
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Air Quality			
--	--	--	--
Waste / Chemical Management			
To provide drip tray for the chemical containers in H-beam storage area at Portion 6.	20 July 2017	✓	Improved/rectified on 26 July 2017
To remove general refuse regularly near site entrances of Portion 5 and 6. Waste collection points were observed not enough.	26 July 2017	#	Follow up action will be reported in next reporting month
Impact on Cultural Heritage			
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Permits / Licenses			
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✕ 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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/03 – (May)
Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
Water Quality			
Contractor was reminded to place geotextile materials on all the manholes before commencing any construction works.	31 May 2017	✓	Improved/rectified on 08 June 2017
Noise			
Contractor was advised to place noise emission label on the air compressor.	31 May 2017	✓	Improved/rectified on 08 June 2017
Landscape and Visual			
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Air Quality			
--	--	--	--
Waste / Chemical Management			
Contractor was advised to clean oil stains on the paved road.	31 May 2017	✓	Improved/rectified on 08 June 2017
Contractor was advised to clean all muddy silt in the drip tray.	31 May 2017	✓	Improved/rectified on 08 June 2017
Impact on Cultural Heritage			
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Permits / Licenses			
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✕ 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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/03 – (June)
Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
Water Quality			
To regularly remove sand and mud accumulated in sedimentation tank.	08 June 2017	✕	Item remarked on 12 June 2017
	12 June 2017	✓	Improved/rectified on 22 June 2017
Silt and sediment observed near gullies. The Contractor is reminded to remove the sediment and provide proper bunds to the gullies.	22 June 2017	✓	Improved/rectified on 28 June 2017
Noise			
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Landscape and Visual			
To set up proper tree protection zone and remove the construction material/waste near the retained tree.	08 June 2017	✕	Item remarked on 12 June 2017
	12 June 2017	✕	Item remarked on 22 June 2017
	22 June 2017	✕	Item remarked on 28 June 2017
	28 June 2017	✓	Improved/rectified on 10 August 2017
Air Quality			
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Waste / Chemical Management			
To remove oil stain on paved ground near the drill rig.	08 June 2017	✓	Improved/rectified on 12 June 2017
Remove Silty water in drip tray of generator-set (generator no. GA781) in West Pier to avoid chemical overflow	22 June 2017	✕	Item remarked on 28 June 2017
	28 June 2017	✕	Item remarked on 06 July 2017
Oil stain observed in paved ground. The contractor is reminded to properly remove the oil stain as "chemical waste"	28 June 2017	✔	Improved/rectified on 12 July 2017
Impact on Cultural Heritage			
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Permits / Licenses			
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✕ 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

Appendix H - Site Audit Summary (May - July 2017)

Contract No. NE/2015/03 – (July)
Tseung Kwan O - Lam Tin Tunnel - Northern Footbridge

Items	Date	Status*	Follow up Action
Water Quality			
Clear sand and silt accumulation in U-channel in East Pier	6 July 2017	✓	Improved/rectified on 10 July 2017
Clear litter and fallen leaves near U-channel in East Pier	6 July 2017	✓	Improved/rectified on 10 July 2017
Noise			
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Landscape and Visual			
--	--	--	--
Air Quality			
To cover the bag of cement near Piling Rig in West Pier	10 July 2017	✓	Improved/rectified on 20 July 2017
Waste / Chemical Management			
Remove Silty water in drip tray of generator-set (generator no. GA781) in West Pier to avoid chemical overflow	6 July 2017	✗	Item remarked on 10 July 2017
	10 July 2017	✓	Improved/rectified on 20 July 2017
Oil observed on paved ground near Piling Rig in west pier. The contractor was reminded to keep cleaning up properly and regularly.	20 July 2017	✓	Improved/rectified on 27 July 2017
Impact on Cultural Heritage			
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Permits / Licenses			
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✗ 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

APPENDIX I
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

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

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

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

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
Air Quality Impact							
S3.8.1	Watering eight times a day on active works areas, exposed areas and paved haul roads	To minimize the dust impact	Contractor	All Active Work Sites	Construction phase	APCO	*(1)
S3.8.1	Enclosing the unloading process at barging point by a 3-sided screen with top tipping hall, provision of water spraying and flexible dust curtains	To minimize the dust impact	Contractor	Barging Points	Construction phase	APCO	N/A
S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs. - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	*(1) *(1) *(3)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	applied to aggregate fines.						
	- Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.						*(2)
	- 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.						* (4)
	- 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.						N/A
	- 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.						*(5)
	- Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.						^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
/	Emission from Vehicles and Plants • All vehicles shall be shut down in intermittent use. • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke. • All diesel fuelled construction plant within the works areas shall be powered by ultra low sulphur diesel fuel (ULSD)	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^ ^ ^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	*(6)
Noise Impact (Construction Phase)							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	N/A
Noise Mitigation Plan	Use of Temporary Noise Barriers or Full Enclosure for PME according to the approved Noise Mitigation Plan	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	*(7)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S4.9	Good Site Practice - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program - Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. - Mobile plant, if any, should be sited as far away from NSRs as possible. - Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	*(8) / # (8) ^ ^ ^ ^ ^
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

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling barge trips per day shall be made with a maximum daily rate of 3,000m^3 (i.e. 1,000 m^3 per trip) for the filling operation at the reclamation area for Road P2. All filling works shall be carried out behind the seawall with the use of single silt curtain at the marine access.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.3	Other good site practices should be undertaken during filling operations include: - all marine works should adopt the environmental friendly construction methods as far as practically possible including the use of cofferdams to cover the construction area to separate the construction works from the sea; - floating single silt curtain shall be employed for all marine works; - all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved;	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	^ *(9)/ #(9) ^ ^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	- 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.						^ ^ ^ ^ ^
S5.8.4	Site specific mitigation plan for reclamation areas using public fill materials should be submitted for EPD agreement before commencement of construction phase with due consideration of good site practices.	Control potential impacts from filling activities and marine based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
ERR S5.6.1	To minimize water quality impact arising from the dredging and filling works for Reclamation for Road P2, the following mitigation measures shall be implemented: - Before carrying out any dredging and underwater filling works, a temporary barrier shall first be constructed to a height above the high water mark to completely enclose the works site (without any opening at the barrier wall) - The temporary barrier fully enclosing the dredging and underwater filling works site	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	^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	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. The general of arrangement of silt curtain is shown in Figure 7 of the existing Environmental Permit (No. EP-458/2013/C).						N/A ^
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (10) / #(10)
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	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	* (11) / # (11)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	construction 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.						
S5.8.8	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include: - use of sediment traps; and - adequate maintenance of drainage systems to prevent flooding and overflow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A ^
S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (12)
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	* (13)
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.14	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50m^3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.15	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. Discharge of surface run-	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	*(14)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	runoff and land-based construction					
S5.8.16	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.17	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.18	All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and washwater should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheelwash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.19	Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		based construction					
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.21	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (15)
S5.8.23	Minimum distances of 100m shall be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes during construction and operational phases	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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S5.8.24	Under normal circumstances, groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction, and groundwater seepage pumped out of tunnels or caverns under construction should be discharged into storm drains after the removal of silt in silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.25 - S5.8.27 & Table 5.18	Grouting would be adopted as measure to reduce the groundwater inflow into the tunnel. During the tunnel excavation, the inflow rate of groundwater into the tunnel will be measured during the excavation. The groundwater levels above the tunnel will also be monitored by piezometers. If the inflow rate exceeds the pre-determined groundwater control criteria or the groundwater drawdown exceeds the required limit, pre-excavation grouting will be required to reduce the groundwater inflow. No significant change of groundwater levels would therefore be expected. Any chemicals/ foaming agents which would be entrained to the groundwater should be biodegradable and non-toxic throughout the tunnel construction. Potential groundwater quality impact would be minimal as the used material is non-toxic and biodegradable. No adverse groundwater quality would therefore be expected. Prescriptive measures in the form of an Action Plan with pre-emptive and re-active to preserve the groundwater levels at all times during the tunnel construction are set out in Table 5.18.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, Buildings Ordinance	N/A
S5.8.28	Water used in ground boring and drilling for site investigation or rock / soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phas	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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S5.8.29 - S5.8.31	Wastewater generated from the washing down of mixing trucks and drum mixers and similar equipment should whenever practicable be recycled. The discharge of wastewater should be kept to a minimum. To prevent pollution from wastewater overflow, the pump sump of any water recycling system should be provided with an online standby pump of adequate capacity and with automatic alternating devices. Under normal circumstances, surplus wastewater may be discharged into foul sewers after treatment in silt removal and pH adjustment facilities (to within the pH range of 6 to 10). Disposal of wastewater into storm drains will require more elaborate treatment.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.32	All vehicles and plant should be cleaned before they leave a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable and wash-water should have sand and silt settled out or removed before discharging into storm drains. The section of construction road between the wheel washing bay and the public road should be paved with backfall to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.33	Bentonite slurries used in diaphragm wall and borepile construction should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.34	If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewer, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	Control potential impacts from construction site runoff and land-	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A

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		based construction					
S5.8.35	Water used in water testing to check leakage of structures and pipes should be reused for other purposes as far as practicable. Surplus unpolluted water could be discharged into storm drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.36	Sterilization is commonly accomplished by chlorination. Specific advice from EPD should be sought during the design stage of the works with regard to the disposal of the sterilizing water. The sterilizing water should be reused wherever practicable.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Design Stage and Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.37	Before commencing any demolition works, all sewer and drainage connections should be sealed to prevent building debris, soil, sand etc. from entering public sewers/drains.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.38	Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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S5.8.39	Acidic wastewater generated from acid cleaning, etching, pickling and similar activities should be neutralized to within the pH range of 6 to 10 before discharging into foul sewers. If there is no public foul sewer in the vicinity, the neutralized wastewater should be tinkered off site for disposal into foul sewers or treated to a standard acceptable to storm drains and the receiving waters	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.40	Wastewater collected from canteen kitchens, including that from basins, sinks and floor drains, should be discharged into foul sewer via grease traps capable of providing at least 20 minutes retention during peak flow.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.41	Drainage serving an open oil filling point should be connected to storm drains via a petrol interceptor with peak storm bypass.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.42	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
S5.8.43	Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system.	Control potential impacts from construction site	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	runoff and land-based construction					
S5.8.44	Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	^
S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	*(16)/ #(16)
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	*(17) ^ ^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary	Control potential impacts from	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	and the neighbouring water free from rubbish.	floating refuse and debris					
Ecological Impact							
S6.8.4	***Measures to Minimize Disturbance*** - Use of Quiet Mechanical Plant during the construction phase should be adopted wherever possible. - Hoarding or fencing should be erected around the works area boundaries during the construction phase. The hoarding would screen adjacent habitats from construction phase activities, reduce noise disturbance to these habitats and also to restrict access to habitats adjacent to works areas by site workers; - Regular spraying of haul roads to minimize impacts of dust deposition on adjacent vegetation and habitats during the construction activities	Minimize noise, human and traffic disturbance to terrestrial habitat and wildlife; and reduce dust generation	Design Team / Contractor	Land-based works are	Construction Phase	N/A	^ ^ ^
S6.8.5	***Standard Good Site Practice*** - Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. - Construction activities should be restricted to works areas that should be clearly demarcated. The works areas should be reinstated after completion of the works. - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter the	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^ ^ ^ ^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	nearby watercourses.						
S6.8.6	***Measure to Minimize Groundwater Inflow*** - The drained tunnel construction method with groundwater inflow control measures would generally be adopted. - During the tunnel excavation, pre-excavation grouting could be adopted to reduce the groundwater inflow and ensure that the tunnel would meet the long term water tightness requirements.	Minimize groundwater inflow	Contractor	Tunnel	Construction Phase	N/A	N/A N/A
S6.8.8	***Measure to Minimize Impact on Corals*** <u>Coral translocation</u> - It is recommended to translocate the affected coral colonies, except the locally common *Oulastrea crispata*, within the reclamation area and bridge footprint to the other suitable locations as far as practicable. - The coral translocation should be conducted during the winter months (November-March) in order to avoid disturbance during their spawning period (i.e. July to October). - A detailed coral translocation plan with a description on the methodology for pretranslocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage. - The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^ ^ ^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation. <u>Post translocation Monitoring</u> - A coral monitoring programme is recommended to assess any adverse and unacceptable impacts to the translocated coral communities - Information gathered during each posttranslocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey.						^ ^
S6.8.9 S6.8.10	***Measure to Control Water Quality Impact*** - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area. - Diverting of the site runoff to silt trap facilities before discharging into storm drain; - Proper waste and dumping management; and - Standard good-site practice for land-based construction.	Control water quality impact, especially on suspended solid level; minimize the contamination of wastewater discharge, accidental chemical spillage and construction site runoff to the receiving water bodies	Design Team, contractor	Marine and landbased works area	Construction phase	WQO	N/A ^ ^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S6.8.11	***Compensation for Vegetation Loss*** - Felling of mature trees should be compensated by planting of standard or heavy standard trees within or in vicinity of the affected area as far as practicable. Such compensatory planting for trees should be provided with at least a 1:1 ratio. In addition, vegetation at the temporarily affected area should be reinstated with species similar to the existing condition.	Compensate for the vegetation loss	Design Team, contractor	Land-based works area	Construction phase	N/A	^
Fisheries Impact							
S7.7.3	***Measure to Control Water Quality Impact*** - Deployment of silt curtains around the active stone column installation points, opening of newly installed seawall and marine works area.	Control water quality impact, especially on suspended solid level	Design Team / Contractor	Marine work area	Construction phase	WQO	^
Waste Management (Construction Phase)							
S8.6.3	***Good Site Practices and Waste Reduction Measures*** - Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; - Training of site personnel in site cleanliness, proper waste management and chemical handling procedures; - Provision of sufficient waste disposal points and regular collection of waste; - Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and - Regular cleaning and maintenance programme for drainage systems, sumps and oil	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ * (19) ^ * (10)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	interceptors.						/#(10)
S8.6.4	***Good Site Practices and Waste Reduction Measures (con't)*** - Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; - Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; - Proper storage and site practices to minimize the potential for damage or contamination of construction materials; and - Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste.	To achieve waste reduction	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^ ^
S8.6.5	***Good Site Practices and Waste Reduction Measures (con't)*** The Contractor shall prepare and implement a WMP as part of the EMP in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities. Such a management plan should incorporate site specific factors, such as the designation of areas for segregation and temporary storage of reusable and recyclable materials. The EMP should be submitted to the Engineer for approval. The Contractor should implement the waste management practices in the EMP throughout the construction stage of the Project. The EMP should be reviewed regularly and updated by the Contractor.	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^
S8.6.6	***Good Site Practices and Waste Reduction Measures (con't)*** - C&D materials would be reused in the project and other local concurrent projects as far as possible.	To achieve waste reduction	Contractor	All work sites	Construction Phase	ETWB TCW No. 19/2005	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S8.6.7	***Storage, Collection and Transportation of Waste*** Should any temporary storage or stockpiling of waste is required, recommendations to minimize the impacts include: - Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimizing the potential of pollution; - Maintain and clean storage areas routinely; - Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and - Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential adverse environmental impacts arising from waste storage	Contractor	All work sites	Construction Phase	-	^ ^ ^ ^
S8.6.8	***Storage, Collection and Transportation of Waste (con't)*** - Remove waste in timely manner; - Waste collectors should only collect wastes prescribed by their permits; - Impacts during transportation, such as dust and odour, should be mitigated by the use of covered trucks or in enclosed containers; - Obtain relevant waste disposal permits from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28); - Waste should be disposed of at licensed waste disposal facilities; and - Maintain records of quantities of waste generated, recycled and disposed.	To minimize potential adverse environmental impacts arising from waste collection and disposal	Contractor	All work sites	Construction Phase		* (11) ^ ^ ^ ^ ^
S8.6.9	***Storage, Collection and Transportation of Waste (con't)*** - Implementation of trip ticket system with reference to DEVB TC(W) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials, to monitor disposal of	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.	impacts arising from waste collection and disposal					
S8.6.11 - S8.6.13	***Sorting of C&D Materials*** - Sorting to be performed to recover the inert materials, reusable and recyclable materials before disposal off-site. - Specific areas shall be provided by the Contractors for sorting and to provide temporary storage areas for the sorted materials. - The C&D materials should at least be segregated into inert and non-inert materials, in which the inert portion could be reused and recycled in the reclamation as far as practicable before delivery to PFRFs. While opportunities for reusing the non-inert portion should be investigated before disposal of at designated landfills	To minimize potential adverse environmental	Contractor	All work sites	Construction Phase	DEVB TCW No. 6/2010 ETWB TCW No. 33/2002 ETWB TCW No. 19/2005	^ ^ ^
S8.6.15 – S8.6.16	***Sediments*** - Sediment encountered may be reused as filling material on-site after cement stabilization. Cement-stabilization process is undertaken by mixing sediment and cement and will convert sediment to earth filling material. The treated sediment has to comply with Risk-Based Remediation Goals (RBRGs) before being reused in order not to raise any land contamination issue. The adoption of RBRGs to assess stabilized sediment has been proposed in the current C&DMMP. MFC has no adverse comment on the current C&DMMP. The sediment quality indicates that all sediments comply with most stringent RBRGs except for one sediment sample (TKO-EBH501 3-3.95m) with lead exceeding the RBRG. Except for the sediment sample (TKO-EBH501 3-3.95m), the chemical screening	To ensure the sediment to be disposed of in an authorized and least impacted way	contractor	All works areas with sediments concern	Construction Phase	RBRG	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination. - Despite exceedance of RBRG, onsite reuse of sediment under sample (TKO-EBH501 33.95m) as filling material after cement stabilization is also a suitable treatment. Sediment quality indicates the sediment sample (TKO-EBH501 3-3.95m) exceed RBRG for lead. While cement stabilization will immobilize metal contaminants, it is capable to treat the exceedance on lead. The stabilized material should comply with UTS of Lead and UCS. If the treated material do not comply with UTS or UCS, re-stabilization have to be undertaken to meet compliance of UTS and UCS before reusing the treated sediment as filling material. However, further agreement on final disposal/treatment on sediment under sample (TKO-EBH501 3-3.95m) has to be sought from DEP						N/A
S8.6.17 – S8.6.20	***Sediments (con't)*** - Requirements of the Air Pollution Control (Construction Dust) Regulation, where relevant, shall be adhered to during boring, excavation, transportation and disposal of sediments or cement stabilization of sediment. - A treatment area should be confined for carrying out the cement stabilization mixing and temporary stockpile. The area should be designed to prevent leachate from entering the ground. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring, excavation and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks.	To determine the best handling and treatment of sediment	Contractor	All works areas with sediments concern	Construction Phase		N/A N/A N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						N/A
S8.6.21	***Sediments (con't)*** - Alternatively, excavated sediment can be treated with marine disposal. The basic requirements and procedures for excavated sediment disposal specified under ETWB TC(W) No. 34/2002 shall be followed. MFC is responsible for the provision and management of disposal capacity and facilities for the excavated sediment, while the permit of marine dumping is required under the Dumping at Sea Ordinance and is the responsibility of the DEP.	To ensure the sediment to be disposed of in an authorized and least impacted way	contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.23	***Sediments (con't)*** - For allocation of sediment disposal sites and application of marine dumping permit, separate SSTP has to be submitted to EPD for agreement under DASO. Additional site investigation, based on the SSTP, maybe carried out in order to confirm the disposal arrangements for the proposed sediments removal. A Sediment Quality Report (SQR) shall then be required for EPD agreement under DASO prior to the tendering of the construction contract, discussing in details the site investigation, testing results as well as the delineation of each of the categories of excavated materials and the corresponding types of disposal.	To determine the best handling and disposal option of sediment	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	N/A
S8.6.24 -	***Sediments (con't)***	To ensure handling	Contractor	All works	Construction	ETWB TC(W) No.	

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
S8.6.28	- The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excaveted sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002. - Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring and transportation of the sediment, the excavated sediments should be kept wet during excavation/boring and should be properly covered when placed on barges. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. - The barge transporting the sediments to the designated disposal sites should be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.	of sediments are in accordance to statutory requirements		areas with sediments concern	Phase	34/2002 & Dumping at Sea Ordinance	N/A N/A N/A N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	- In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. - Another possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal.						N/A N/A
S8.6.26	***Chemical Wastes.*** - If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To ensure proper management of chemical waste	Contractor	All works sites	Construction Phase	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes Waste Disposal (Chemical Waste) (General) Regulation	^
S8.6.27	***General Refuse***	To ensure proper	Contractor	All works sites	Construction	Public Health and	#(18)

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	- General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	management of general refuse			Phase	Municipal Services Ordinance (Cap. 132)	
Impact on Cultural Heritage (Construction Phase)							
S9.6.4	Dust and visual impacts - Temporarily fenced off buffer zone with allowance for public access (minimum 1 m) should be provided; - The open yard in front of the temple should be kept as usual for annual Tin Hau festival; - Monitoring of vibration impacts should be conducted when the construction works are less than 100m from the temple.	To prevent dust and visual impacts	Contractors	Work areas	Construction Phase	EIAO; GCHIA; AMO	^ ^ ^
S9.6.4	Indirect vibration impact - Vibration level is suggest to be controlled within a peak particle velocity (ppv) limit of 5mm/s measured inside the historical buildings; - Monitoring of vibration should be carried out during construction phase. - Tilting and settlement monitoring should will be applied on the Cha Kwo Ling Tin Hau Temple as well. - A proposal with details for the mitigation measures and monitoring of impacts on built heritage shall be submitted to AMO for comments before commencement of work.	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA; AMO.	^ ^ ^ ^
Landscape and Visual Impact (Construction Phase)							
Table 10.8.1	CM1 - Construction area and contractor's temporary works areas to be minimised to avoid impacts on adjacent landscape.	Avoid impact on adjacent landscape areas	CEDD (via Contractor)	General	Construction planning and during	N/A	^

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					construction period		
Table 10.8.1	CM2 - Reduction of construction period to practical minimum.	Minimise duration of impact	CEDD (via Contractor)	N/A	Construction planning	N/A	^
Table 10.8.1	CM3 - Topsoil, where the soil material meets acceptable criteria and where practical, to be stripped and stored for re-use in the construction of the soft landscape works. The Contract Specification shall include storage and reuse of topsoil as appropriate.	To allow re-use of topsoil	CEDD (via Contractor)	General	Site clearance	As per the Particular Specification	^
Table 10.8.1	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	To minimize tree loss	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance and throughout construction period	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	* (20)
Table 10.8.1	CM5 - Trees unavoidably affected by the works shall be transplanted where practicable. Where possible, trees should be transplanted direct to permanent locations rather than temporary holding nurseries. A detailed tree transplanting specification shall be provided in the Contract Specification and sufficient time for preparation shall be allowed in the construction programme.	To maximize preservation of existing trees	CEDD (via Contractor)	As per approved Tree Removal Application(s)	Site clearance	ETWB TC 3/2006 and as per tree protection measures in Particular Specification	^
Table 10.8.1	CM6 - Advance screen planting of fast growing tree and shrub species to noise barriers and hoardings. Trees shall be capable of reaching a height >10m within 10 years.	To maximize screening of the works	CEDD (via Contractor)	At Lam Tin Interchange and edge of Road P2	Beginning of construction period	N/A	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
				landscape deck, TKO			
Table 10.8.1	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	As per Particular Specification	N/A
Table 10.8.1	CM8 - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	To reduce visual intrusion	CEDD (via Contractor)	General	Throughout construction period	N/A	^
Table 10.8.1	CM9 - Screening of works areas with hoardings with appropriate colours compatible with the surrounding area	Reduction of visual intrusion	CEDD (via Contractor)	Project site Boundary	Excretion of site hoarding	N/A	^
Table 10.8.1	CM10 - Avoidance of excessive height and bulk of site buildings and structure	Reduction of visual intrusion and integration with environment	CEDD (via Contractor)	Built structures	Design and construction stage	N/A	^
Table 10.8.1	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodie	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A	^
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline characte	Minimise loss of Junk Bay and integration with	CEDD (via Contractor)	Temporary reclamation for barging	Construction planning and reclamation	N/A	N/A

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
		existing coastlin		points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2	stages		
Landfill Gas Hazard (Design and Construction Phase)							
S11.5.9	A Safety Officer, trained in the use of gas detection equipment and landfill gas-related hazards, should be present on site throughout the groundworks phase. The Safety Officer should be provided with an intrinsically safe portable instrument, which is appropriately calibrated and able to measure the following gases in the ranges indicated below: Methane 0-100% LEL and 0100% v/v Carbon dioxide 0-100% Oxygen 0-21%	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	^
S11.5.10 S11.5.25	***Safety Measures*** - For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards.	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour	^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	- An excavation procedure or code of practice to minimize landfill gas related risk should be devised and carried out. - No worker should be allowed to work alone at any time in or near to any excavation. At least one other worker should be available to assist with a rescue if needed. - Smoking, naked flames and all other sources of ignition should be prohibited within 15m of any excavation or ground-level confined space. "No smoking" and "No naked flame" notices should be posted prominently on the construction site and, if necessary, special areas should be designed for smoking. - Welding, flame-cutting or other hot works should be confined to open areas at least 15m from any trench or excavation. - Welding, flame-cutting or other hot works may only be carried out in trenches or confined spaces when controlled by a "permit to work" procedure, properly authorized by the Safety Officer (or, in the case of small developments, other appropriately qualified person). - The permit to work procedure should set down clearly the requirements for continuous monitoring for methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person, in attendance outside the 'confined area', who should be responsible for reviewing the gas measurements as they are made, and who should have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise should be permitted to carry out hot works in confined areas.			Zone		Department's Code of Practice for Safety and Health at Work in Confined Space	^ ^ ^ ^ ^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	- Where there are any temporary site offices, or any other buildings located within the Sai Tso Wan Landfill Consultation Zone which have enclosed spaces with the capacity to accumulate landfill gas, then they should either be located in an area which has been proven to be free of landfill gas (by survey using portable gas detectors); or be raised clear of the ground by a minimum of 500mm. This aims to create a clear void under the structure which is ventilated by natural air movement such that emission of gas from the ground are mixed and diluted by air.						^
	- Any electrical equipment, such as motors and extension cords, should be intrinsically safe. During piping assembly or conduiting construction, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed to prevent the migration of gases through the pipeline/conduit. All piping /conduiting should be capped at the end of each working day.						^
	- During construction, adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus (BA) sets should be made available on site.						^
	- Fire drills should be organized at not less than six monthly intervals.						^
	- The contractor should formulate a health and safety policy, standards and instructions for site personnel to follow.						^
	- All personnel who work on the site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices (in Chinese and English) should be posted at prominent position around the site warning danger of the potential hazards.						^
	- Service runs within the Consultation Zone should be designated as “special routes”; utilities companies should be informed of this and precautionary measures should be						^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	implemented. Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces such as manholes and service chambers, and that appropriate monitoring procedures are in place to prevent hazards due to asphyxiating atmospheres in confined spaces. Detailed guidance on entry into confined spaces is given in Code of Practice on Safety and Health at Work in Confined Spaces (Labour Department, Hong Kong). - Periodically during ground-works construction within the 250m Consultation Zone, the works area should be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment. The monitoring frequency and areas to be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriately qualified person.						^
S11.5.26 - S11.5.31	***Monitoring*** ● Routine monitoring should be carried out in all excavations, manholes, chambers, relocation of monitoring wells and any other confined spaces that may have been created. All measurements in excavations should be made with the extended monitoring tube located not more than 10 mm from the exposed ground surface. Monitoring should be performed properly to make sure that the area is free of landfill gas before any man enters into the area. ● For excavations **deeper than 1m**, measurements should be carried out: - at the ground surface before excavation commences;- - immediately before any worker enters the excavation; - at the beginning of each working day for the entire period the excavation remains open; and	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	^ ^

EIA Ref.	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Status
	- periodically throughout the working day whilst workers are in the excavation. ● For excavations **between 300mm and 1m deep**, measurements should be carried out: - directly after the excavation has been completed; and - periodically whilst the excavation remains open. ● For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person. ● Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person. ● The exact frequency of monitoring should be determined prior to the commencement of works, but should be at least once per day, and be carried out by a suitably qualified or qualified person before starting the work of the day. Measurements shall be recorded and kept as a record of safe working conditions with copies of the site diary and submitted to the Engineer for approval. The Contractor may elect to carry out monitoring via an automated monitoring system.						^ ^ ^ ^
S11.5.32	The hazards from landfill gas during the construction stage within the Sai Tso Wan Landfill Consultation Zone should be minimized by suitable precautionary measures recommended in Chapter 8 of the Landfill Gas Hazard Assessment Guidance Note.	construction stage within the Sai Tso Wan Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note	N/A

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

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

Key: * Observation/reminder was made during site audit but improved/rectified by the contractor.

\# Observation/reminder was made during site audit but not yet improved/rectified by the contractor.

X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
Air Quality Impact					
* (1)	S3.8.1 S3.8.7	Watering eight times a day on active works areas, exposed areas and paved haul roads Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs.	NE/2015/01	Construction of Emergency Egress Point	To provide adequate water spray to drilling works in Portion 4c to avoid dust generation.
			NE/2015/01	Construction of TKO Portal	Water spraying should be provided more frequently to unpaved area above EMCPC footpath at TKO site to suppress dust generation
			NE/2015/01	Construction of TKO Portal	To provide water spray to loading and unloading works in Portion 2a for dust suppression.
			NE/2015/01	Construction of Lam Tin Interchange	Dry unpaved area was observed. Contractor was advised to provide spraying regularly.
			NE/2015/02	Construction of Road P2	Water spraying should be provided more frequently to unpaved area at portion 8 to suppress dust generation
			NE/2015/01	Construction of TKO Portal	Water spraying should be provided more frequently to unpaved area above EMCPC footpath at TKO site to suppress dust generation
			NE/2015/01	Construction of	To provide water spray to loading and unloading works in

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
				TKO Portal	Portion 2a for dust suppression.
* (2)	S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.	NE/2015/01	Site Formation of TKO Portal	To cover stockpile of sand in TKO to avoid dust generation.
			NE/2015/02	Construction of Road P2	To cover stockpiles of dusty material in Area A after works.
* (3)	S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.	NE/2015/01	Construction of TKO Portal	To provide a proper enclosure before start of soil nail works in TKO to avoid dust generation. To clear the sand and dust accumulated at the temporary public road near Tin Hau Temple
			NE/2015/01	Construction of Cha Kwo Ling Barging Point	Top and three side enclosure should be provided to cement grouting machinery for soil nail works in Cha Kwo Ling Portion 2 to avoid dust generation.
* (4)	3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site.	NE/2015/01	Construction of Lam Tin Interchange	To clear the sand and dust accumulated at the temporary public road near Tin Hau Temple
* (5)	S3.8.7	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	NE/2015/03	Construction of Northern Footbridge	To cover the bag of cement near Piling Rig in West Pier to avoide dust generation.
* (6)	/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	NE/2015/01	Construction of Cha Kwo Ling Barging Point	To provide NRMM Label to generatior for soil nail works in Cha Kwo Ling Portion 2 to Reduce air pollution emission from construction vehicles and plants.
Noise Impact (Construction Phase)					

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
* (7)	Noise Mitigation Plan	Use of Temporary Noise Barriers or Full Enclosure for PME according to the approved Noise Mitigation Plan	NE/2015/01	Construction of Lam Tin Interchange	Mitigation measure for noise emission of the drill rig at CKL site should be applied where necessary.
			NE/2015/01	Construction of Emergency Egress Point	To provide adequate noise barrier to drilling works and to repair the existing noise barrier to avoid gaps in Portion 4c.
			NE/2015/01	Construction of Lam Tin Interchange	To repair the gaps of temporary noise barrier for drill rig in Portion 3.
			NE/2015/01	Construction of Lam Tin Interchange	To repair the temporary noise enclosure for breaker in Portion 3.
			NE/2015/02	Construction of Road P2	Sheetpiling works in portion 8 observed without noise barrier. The Contractor is reminded to provide noise mitigation measure in accordance with NMP
			NE/2015/01	Construction of Emergency Egress Point	To repair the noise barrier near the tunnel portal in CKL site
			NE/2015/02	Construction of Road P2	Noise barrier should be placed for drill rig at Portion 6 and Ocean Shores to minimize the noise nuisance caused to the nearby resident.
* (8)	S4.9	Good Site Practice - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program	NE/2015/03	Construction of Northern Footbridge	Contractor was advised to place noise emission label on the air compressor
# (8)			NE/2015/02	Construction of Road P2	To provide proper maintenance to the air compressor in Portion 5 near sheetpiling works. The door of air compressor was observed broken while operating.
Water Quality Impact (Construction Phase)					

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
* (9)	S5.8.3	Other good site practices should be undertaken during filling operations include: - floating single silt curtain shall be employed for all marine works;	NE/2015/01	Construction of TKO Portal	To repair silt curtain for marine works in TKO to ensure that geotextile is extended to seabed.
					To repair the silt curtain in TKO that geotextile should be extended to seabed.
					Muddy water observed near marine works in Tseung Kwan O. The Contractor is reminded to regularly maintain silt curtain on-site and ensure that geotextile is extended to seabed.
			NE/2015/01	Construction of TKO Portal	Silt Curtain is observed not in function in TKO site. The Contractor is reminded to repair the silt curtain and ensure that the geotextile is extended to seabed.
# (9)			NE/2015/01	Construction of TKO Portal	Construction material observed near silt curtain in TKO site. The Contractor is reminded to provide silt tain in accordance with the silt curtain deployment plan.
* (10)	S5.8.5 / S8.6.3	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. ***Good Site Practices and Waste Reduction Measures*** - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors	NE/2015/01	Construction of TKO Portal	To set up proper drainage system in CKL
			NE/2015/01	Construction of Lam Tin Interchange	To remove the mud accumulated in U-channel near discharge point in TKO.
			NE/2015/02	Construction of Road P2	To repair the holes near the discharge point in Area A to prevent surface runoff flow into the discharge point.
			NE/2015/02	Construction of Road P2	To remove muddy water / sediment accumulated in catchpits / U-channels in Area A.
			NE/2015/01	Construction of TKO Portal	Treated water is not clear enough and the contractor was reminded to provide proper wastewater treatment for site water in CKL site
# (10)			NE/2015/02	Construction of TKO Portal	To clear the surface water regularly near site entrance in Portion 5. The contractor was reminded to provide pumps

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
					to divert the accumulated surface water.
* (11)	S5.8.7	Construction site runoff and drainage should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). Good housekeeping and stormwater best management practices, as detailed in below, should be implemented to ensure that all construction runoff complies with WPCO standards and no unacceptable impact on the WSRs arises due to construction of the TKO-LT Tunnel. All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the corresponding WCZ under the TM-DSS.	NE/2015/01	Site Formation of TKO Portal	Muddy water observed flow out of TKO site after Red Rainstorm Signal. The Contractor is reminded to remove muddy seawater and properly treat by wastewater treatment system.
			NE/2015/03	Construction of Northern Footbridge	Clear sand and silt accumulation in U-Channel in East Pier.
			NE/2015/03	Construction of Northern Footbridge	Clear litter and fallen leaves near U-Channel in East Pier.
# (11)			NE/2015/01	Construction of TKO Portal	General refuse next to silt curtain at TKO site should be properly cleared.
* (12)	S5.8.9	Construction site should be provided with adequately designed perimeter channel and pretreatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.	NE/2015/01	Site Formation of TKO Portal	Stagnant water should be cleared at TKO site.
			NE/2015/02	Construction of Road P2	Silt and sediments observed at footing of hoarding at Portion SR2B. The Contractor is reminded to remove the silt and sediment to avoid wastewater flow out of site.
* (13)	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.	NE/2015/01	Site Formation of TKO Portal	Overflow of muddy water observed from sedimentation tank in Tseung Kwan O under Red Rainstorm Warning Signal. The Contractor is reminded to ensure that the tank is of adequate capacity for wastewater treatment

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
* (14)	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.	NE/2015/02	Construction of Road P2	To replace the broken sand bags near the gullies in Portion 1.
			NE/2015/03	Construction of Northern Footbridge	Contractor was reminded to place geotextile materials on all the manholes before commencing any construction works.
			NE/2015/02	Construction of Road P2	To cover the gullies to avoid surface runoff flow out of site.
			NE/2015/03	Construction of Northern Footbridge	Silt and sediment observed near gullies. The Contractor is reminded to remove the sediment and provide proper bunds to the gullies.
			NE/2015/01	Construction of Cha Kwo Ling Barging Point	To maintain the manhole near the entrance and avoid any untreated sewage diverted into public drains or outside the site area in CKL
			NE/2015/01	Construction of TKO Portal	To maintain the manhole near Cha Kwo Ling site entrance and avoid any untreated sewage diverted into public drains or outside the site area.
* (15)	S5.8.22	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters.	NE/2015/01	Construction of Cha Kwo Ling Barging Point	Oil containers should be provided with drip tray.
			NE/2015/03	Construction of Northern Footbridge	Contractor was advised to clean all muddy silt in the drip tray.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
			NE/2015/01	Site Formation of TKO Portal	To remove the mud and sediment accumulated in sedimentation tank in TKO site.
			NE/2015/03	Construction of Northern Footbridge	To regularly remove sand and mud accumulated in sedimentation tank.
* (16)	S5.8.45	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	NE/2015/01	Construction of Cha Kwo Ling Barging Point	To provide drip tray to chemical containers near the temporary steel bridge in Cha Kwo Ling
			NE/2015/02	Construction of Road P2	Drip tray should be provided to chemical containers at Portion 8.
			NE/2015/03	Construction of Northern Footbridge	Remove stagnant water drip tray to prevent chemical overflow.
			NE/2015/01	Construction of Cha Kwo Ling Barging Point	To place oil container in the drip tray near soil nail works at CKL site and provide drip tray to chemical container near Cha Kwo Ling barging point in Portion 1a.
			NE/2015/02	Construction of Road P2	To provide drip tray for the chemical containers in H-beam storage area at Portion 6.
			NE/2015/03	Construction of Northern Footbridge	Remove Silty water in drip tray of generator-set (Generator no. GA781) in West Pier to avoid chemical overflow
# (16)			NE/2015/01	Construction of TKO Portal	Drip tray should be provided to chemical containers near temporary steel bridge in Portion 1a to prevent leakage.
* (17)	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	NE/2015/03	Construction of Northern Footbridge	Contractor was advised to clean oil stains on the paved road.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
		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;	NE/2015/01	Construction of Lam Tin Interchange	To clear the oil stain on paved ground in CKL site
			NE/2015/03	Construction of Northern Footbridge	To remove oil stain on paved ground near the drill rig.
			NE/2015/01	Construction of Lam Tin Interchange	To remove oil stain on unpaved ground near soil nail works at BMCPC as chemical waste at TKO site.
			NE/2015/03	Construction of Northern Footbridge	Oil observed on paved ground near Piling Rig in west pier. The contractor was reminded to keep cleaning up properly and regularly.
#(18)	S8.6.27	***General Refuse*** General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	NE/2015/01	Construction of TKO Portal	Housekeeping on temporary steel bridge at Portion 1a should be enhanced and accumulation of waste should be avoided.
			NE/2015/02	Construction of Road P2	To remove general refuse regularly near site entrances of Portion 5 and 6. Waste Ccollection points were observed not enough.
Waste Management (Construction Phase)					
* (19)	S8.6.3 / S 8.6.8	***Good Site Practices and Waste Reduction Measures*** - Provision of sufficient waste disposal points and regular collection of waste; ***Storage, Collection and Transportation of Waste (con't)*** Remove waste in timely manner;	NE/2015/02	Construction of Road P2	To remove construction waste accumulated near site office.
Landscape and Visual Impact (Construction Phase)					
* (20)	Table	CM4 - Existing trees at boundary of site and retained trees within site boundary to	NE/2015/01	Construction of	To properly set-up tree protection area in Portion 3.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Work Sites	Details of Observation/Reminder
	10.8.1	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).		Lam Tin Interchange	
			NE/2015/03	Construction of Northern Footbridge	To set up proper tree protection zone and remove the construction material/waste near the retained tree
			NE/2015/01	Construction of TKO Portal	To provide proper tree protection zone for retain tree in near Cha Kwo Ling barging point in Portion 1a.

APPENDIX J
WASTE GENERATED QUANTITY

Name of Department: Civil Engineering Development Department

Contract No.: NE/2015/01

Leighton - China State Joint Venture

Monthly Summary Waste Flow Table for 2017

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	40.484	1.350	22.688	5.063	12.733	0.000	0.000	0.257	0.000	0.000	0.292
February	23.357	5.159	12.911	3.874	6.572	0.000	0.000	0.000	0.000	1.000	0.488
March	20.078	2.885	6.359	11.713	2.006	0.000	0.000	0.120	0.000	0.000	0.284
April	13.516	0.070	4.862	7.751	0.903	0.000	0.000	0.151	0.000	0.000	0.396
May	49.156	0.380	12.420	36.168	0.568	0.000	0.000	0.000	0.000	0.000	0.189
June	37.960	2.949	17.914	19.409	0.637	0.000	0.000	0.114	0.000	0.000	0.138
Sub-total	184.551	12.793	77.154	83.978	23.419	0.000	0.000	0.642	0.000	1.000	1.787
July	33.640	2.302	4.851	28.223	0.566	0.000	0.000	0.000	0.000	0.000	0.166
August											
September											
October											
November											
December											
Total	218.191	15.095	82.005	112.201	23.985	0.000	0.000	0.642	0.000	1.000	1.953

Total inert C&D waste generated = c+d+e

Total inert C&D waste recycled = c+d

% of recycled inert C&D waste = Total C&D waste recycled / Total C&D waste generated

Contract No. NE/2015/02

Monthly Summary Waste Flow Table for 2017 Year

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity [in '000m^3]	Hard Rock and [in '000m^3]	Reused in the [in '000m^3]	Reused in other [in '000m^3]	Disposal as [in '000m^3]	Imported Fill [in '000m^3]	Metals [in '000kg]	Paper / [in '000kg]	Plastics [in '000kg]	Chemical Waste [in '000kg]	Other, e.g. [in '000m^3]
Jan	1.02115	0.00000	0.00000	0.00000	1.02115	0.00000	0.00000	0.00000	0.00000	0.00000	0.02306
Feb	1.04554	0.00000	0.00000	0.00000	1.04554	0.00000	0.00000	0.00000	0.00000	0.00000	0.01994
Mar	0.03860	0.00000	0.00000	0.00000	0.03860	0.00000	0.00000	0.00000	0.00000	0.00000	0.03012
Apr	0.02184	0.00000	0.00000	0.00000	0.02184	0.00000	0.00000	0.00000	0.00000	0.00000	0.18326
May	0.05099	0.00000	0.00000	0.75824	0.05099	0.00000	0.00000	0.00000	0.00000	0.00000	0.11508
June	16.75097	0.00000	0.00000	0.93488	5.96179	0.00000	9.82000	0.00000	0.00000	0.00000	0.03430
SUB-TOTAL	18.92908	0.00000	0.00000	1.69312	8.13990	0.00000	9.82000	0.00000	0.00000	0.00000	0.40576
Jul	6.00593	0.00000	0.00000	0.00000	5.97521	0.00000	0.00000	0.00000	0.00000	0.00000	0.03072
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	24.93501	0.00000	0.00000	1.69312	14.11511	0.00000	9.82000	0.00000	0.00000	0.00000	0.43648

Note: Conversion to 1000m^3 for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m^3 for Inert C&D is weight in 1000kg multiply by 0.0005

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Name of Department : CEDD

Contract No. : NE/2015/03

Monthly Summary Waste Flow Table for 2017 (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)
Jan	0	0	0	0	0	0	0	0	0	0	0
Feb	0.001982	0	0	0	0	0	0	0	0	0	0.001982
Mar	0.00146	0	0	0	0.00146	0	0	0	0	0	0
Apr	0.008668	0	0	0	0.0075	0	0	0	0	0	0.001168
May	0.01052	0	0	0	0	0	0	0	0	0	0.01052
June	.00596	0	0	0	0	0	0	0	0	0	0.00596
Sub-total	0.046428	0	0	0	0.00896	0	0	0	0	0	0.01963
July	0.01207	0	0	0	0.01207	0	0	0	0	0	0
Aug											
Sept											
Oct											
Nov											
Dec											
Total	0.058498	0	0	0	0.02103	0	0	0	0	0	0.01963

Notes: (1) The performance targets are given in PS Clause 6.14.
(2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.
(4) The *Contractor* shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the *works*, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the *works* is equal to or exceeding 50,000 m^3.

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: May 2017 – July 2017

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

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise
(Sixteen (16) Action Level exceedance was recorded due to the documented complaints received from monitoring station in the reporting month. Please refer to the complaint log in Appendix L.)

(C) Exceedance Report for Water Quality
(Sixteen (16) Action and Twenty (20) Limit Level exceedance in water quality monitoring but considered to be due to other external factors. Refer to next page for detail.)

(D) Exceedance Report for Ecology
(NIL in the reporting quarter)

(E) Exceedance Report for Cultural Heritage
(NIL in the reporting quarter)

(F) Exceedance Report for Landfill Gas
(NIL in the reporting quarter)

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

Date of Water Quality Monitoring: 17 July 2017

Part A – Exceedance Summary Tables

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

Station(s)	Tide	Baseline Action Level	Baseline Limit Level	Baseline Action Level	Baseline Limit Level	Baseline Action Level	Baseline Limit Level	Dissolved Oxygen (mg/L)			Justification*	Validity (Yes/No)
		Surface and Middle		Intake Level		Bottom		Surface and Middle	Intake Level	Bottom		
G1	Mid-ebb	4.9	4.6	5.0	4.7	4.2	3.6	-	-	***3.6***	(1), (2), (4), (5)	No
G2								-	-	***3.3***	(1), (2), (4), (5)	No
G4								-	-	***2.9***	(1), (4), (5)	No
M2								-	-	***3.2***	(1), (4), (5)	No
M3								-	-	***3.0***	(1), (4), (5)	No
M4								-	-	***3.8***	(1), (2), (4), (5)	No
M5								-	-	***3.5***	(1), (2), (4), (5)	No
G1	Mid-flood							-	-	***3.7***	(1), (2), (4), (5)	No
G2								-	-	***3.4***	(1), (4), (5)	No
G3								-	-	***3.5***	(1), (4), (5)	No
G4								-	-	***3.9***	(1), (2), (4), (5)	No
M1								-	-	***3.7***	(1), (2), (4), (5)	No
M2								-	-	***3.3***	(1), (4), (5)	No
M3								-	-	***3.2***	(1), (3), (4), (5)	No
M4								-	-	***3.5***	(1), (4), (5)	No
M5								-	-	***3.4***	(1), (4), (5)	No

Note: For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
Intake Level: approximately mid-depth level
Bold Italic means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

*Remarks (1) – No major marine construction activity was conducted (Please refer to Part B) and No pollution discharge from construction activity was observed.
(2) – Monitoring results were higher than that at the Control Station. (Please refer to Table II)
(3) – The exceeded results were within the ranges of baseline monitoring results. (Please refer to Table III)
(4) – The exceeded results were within the ranges of monitoring results under Marine Water Quality Monitoring Programme of EPD. (Please refer to Appendix A)
(5) – Other(s): Please specify – Heavy Rainfall and Thunderstorm were recorded before and during monitoring. Increased surface runoff and bed erosion near monitoring stations and subsequent high concentrations of suspended organic material in water column causing reduction in DO levels. Adverse water quality at Control Stations was observed. (see below the Daily Rainfall Distribution extracted from HKO) (Please refer to Appendix B)

Table II: Results at Control Stations for Reference – Dissolved Oxygen (DO)

Station	Tide	Measured Value (mg/L)	Remarks (based on tidal current information)
		Bottom	
C1	Mid-flood	3.6	Control Station for Mid-flood tide
C2	Mid-ebb	3.3	Control Station for Mid-ebb tide

Table III – Ranges of Baseline Water Quality Monitoring Results (August 2016) for Dissolved Oxygen (mg/L)

Station(s)	Mid-ebb		Mid-flood	
	Surface and Middle	Bottom	Surface and Middle	Bottom
G1	5.4 – 7.1	4.5 – 6.8	5.0 – 7.5	4.0 – 6.9
G2	5.3 – 7.1	4.6 – 6.5	4.8 – 7.4	3.8 – 6.5
G3	5.4 – 7.1	4.6 – 6.6	4.7 – 7.7	4.1 – 7.5
G4	5.4 – 7.1	4.1 – 7.0	4.7 – 7.2	4.1 – 6.1
M1	5.5 – 7.3	4.4 – 6.8	4.6 – 7.8	4.0 – 7.1
M2	5.1 – 6.8	4.0 – 6.4	4.8 – 7.1	3.4 – 6.5
M3	5.5 – 7.5	4.3 – 6.4	4.6 – 7.7	2.8 – 6.3
M4	5.2 – 7.1	4.8 – 6.6	4.6 – 7.5	4.2 – 7.0
M5	5.3 – 7.0	3.6 – 6.5	4.8 – 6.9	4.4 – 6.7
M6	Intake Level: 4.6 – 6.9		Intake Level: 4.3 – 7.4	

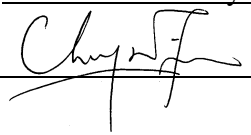
Part B – Summary of marine works activities under this Project:

Contract No.	Marine Works Activities (17 July 2017)
NE/2015/01	No marine works activities. Tidying of C&D material/wastes was carried out on Marine Platform.
NE/2015/02	Lifting of rock fill material from Type 2 cofferdam (in the form of steel water tanks) to derrick barge. No dredging works were carried out.

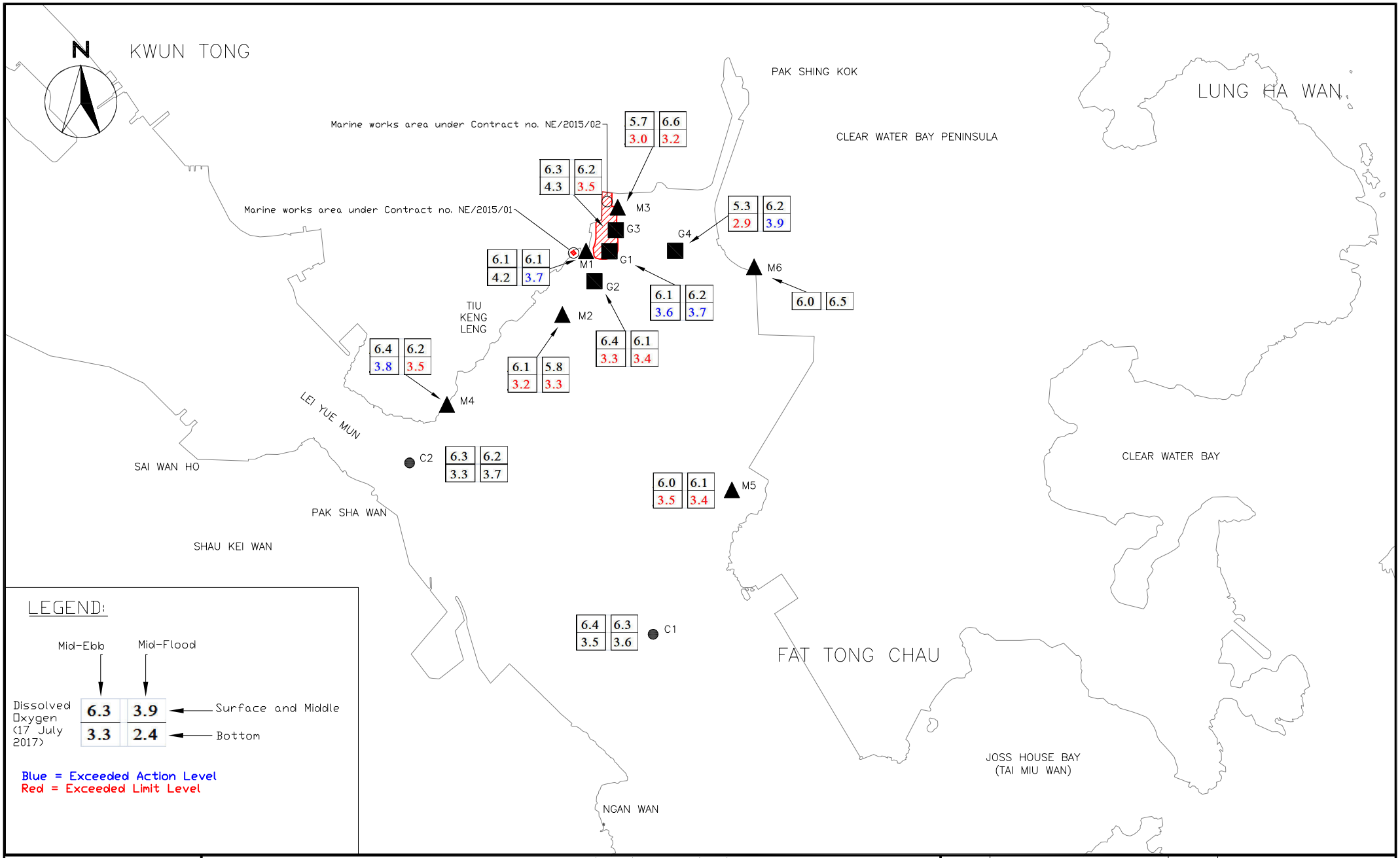
Part C – Conclusion: No direct evidence that the exceedances were due to the Contract. Also, there is no monitoring exceedance in turbidity and suspended solids. Therefore the exceedances are considered due to the other external factors (such as adverse weather) rather than the contract works.

Part D – Recommendation: As the exceedances were not related to the contract works, no further action is required.

Reviewed by: Dr. Priscilla Choy Title: Environmental Team Leader

Signature:  Date: 20 July 2017

LOCATION PLAN



CINOTECH
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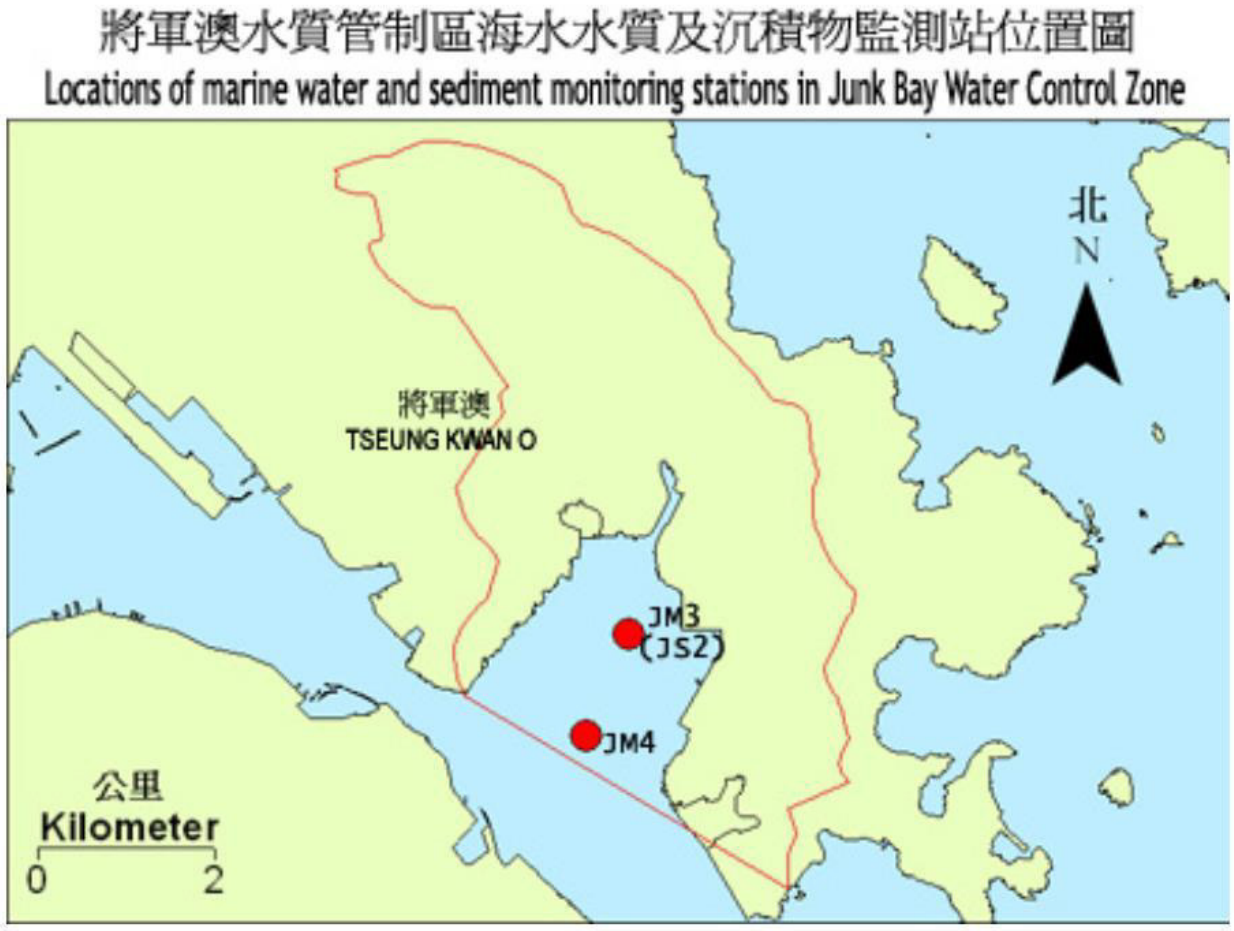
Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction
Locations of Water Quality Monitoring Stations (17 July 2017)

SCALE	N.T.S	DATE	JUL 2017
CHECK	JF	DRAWN	VW
PROJECT NO.	MA16034	FIGURE NO. 5	REV –

APPENDIX A
MARINE WATER QUALITY
MONITORING PROGRAMME OF EPD

Ranges of Dissolved Oxygen (mg/L) Monitoring Results under Marine Water Quality Monitoring Programme of EPD (every July of 2011 – 2015)

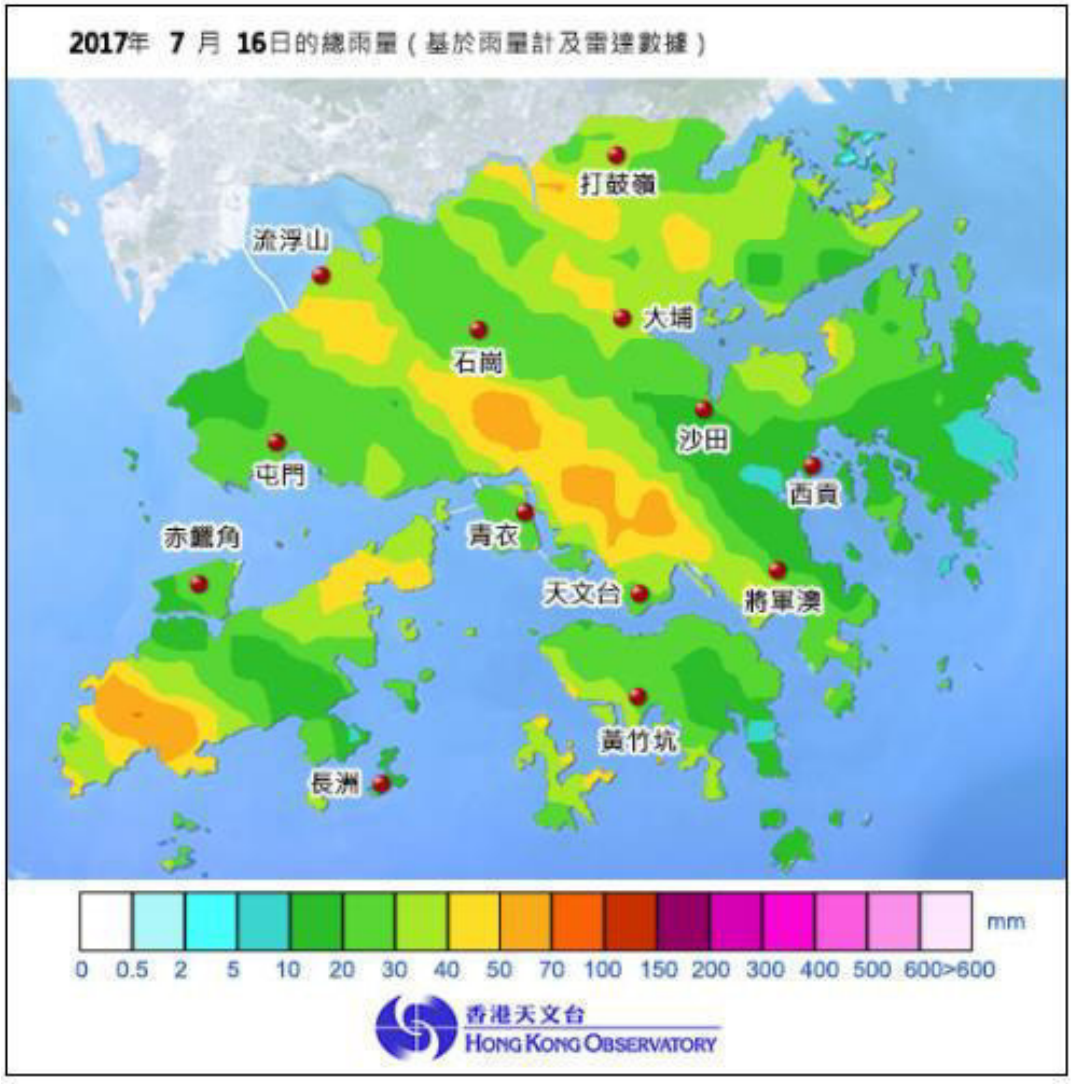


Station	Surface and Middle	Middle	Bottom
JM3 (JS2)	4.7 – 8.5	4.1 – 8.3	2.7 – 6.4
JM4	5.4 – 7.5	2.9 – 6.7	2.7 – 5.1

APPENDIX B
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 Limit Exceedances

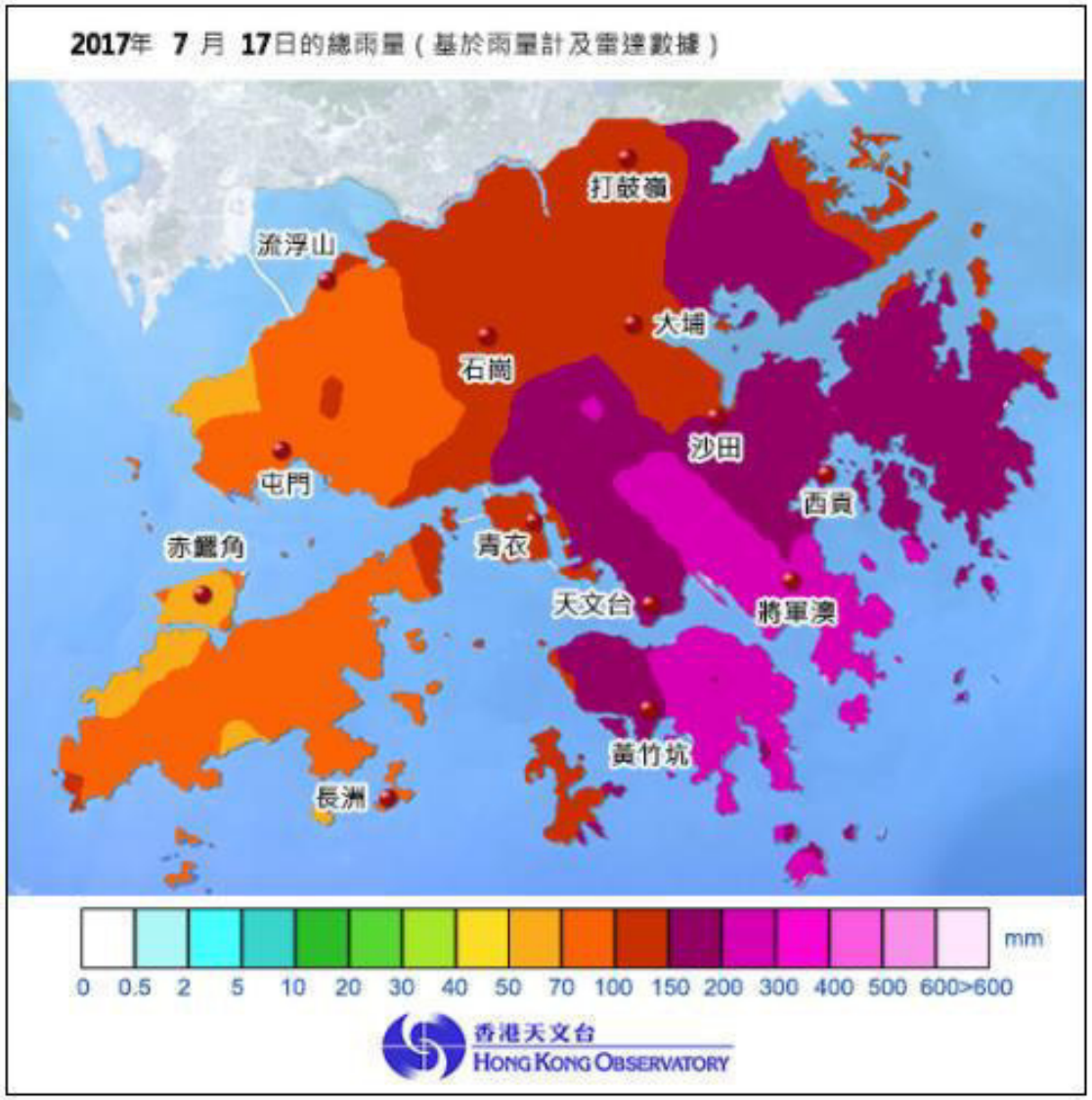
Daily Rainfall Distribution:



Rainfall recorded in Sai Kung region on **16 July 2017**			
Time	Rainfall (mm)	Amber Rainstorm Warning Signal	Thunderstorm Warning
23:45-00:45	-		
00:45-01:45	-		✔
01:45-02:45	0-2mm		✔
02:45-03:45	-		✔
03:45-04:45	0-1mm		✔
04:45-05:45	-		✔
05:45-06:45	0-2mm		✔
06:45-07:45	0-2mm		✔
07:45-08:45	0-7mm		✔
08:45-09:45	-		✔
09:45-10:45	0-13mm		✔
10:45-11:45	0-6mm		✔
11:45-12:45	0-1mm		✔
12:45-13:45	0-5mm		✔
13:45-14:45	0-12mm		✔
14:45-15:45	-		✔
15:45-16:45	-		✔
16:45-17:45	-		✔
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)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel
Design and Construction - Investigation Report for Environmental Quality Limit Exceedances

Daily Rainfall Distribution:



	Rainfall recorded in Sai Kung region on **17 July 2017**			
Time	Rainfall (mm)	Amber Rainstorm Warning Signal	Red Rainstorm Warning Signal	Thunderstorm warning
23:45-00:45	0-6mm			✔
00:45-01:45	-			✔
01:45-02:45	0-1mm			
02:45-03:45	-			
03:45-04:45	-			✔
04:45-05:45	0-3mm			✔
05:45-06:45	0-1mm			✔
06:45-07:45	0-9mm			✔
07:45-08:45	1-7mm			✔
08:45-09:45	0-1mm			✔
09:45-10:45	1-11mm			✔
10:45-11:45	0-9mm			✔
11:45-12:45	-			✔
12:45-13:45	1-7mm			✔
13:45-14:45	5-21mm			✔
14:45-15:45	15-54mm	✔		✔
15:45-16:45	18-50mm	✔		✔
16:45-17:45	6-11mm	✔		✔
17:45-18:45	20-30mm	✔		✔
18:45-19:45	6-20mm	✔		✔
19:45-20:45	12-57mm	✔		✔
20:45-21:45	2-13mm		✔	✔
21:45-22:45	3-22mm		✔	✔
22:45-23:45	-	✔		✔

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

Date of Water Quality Monitoring: 19 July 2017

Part A – Exceedance Summary Tables

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

Station(s)	Tide	Baseline Action Level	Baseline Limit Level	Baseline Action Level	Baseline Limit Level	Baseline Action Level	Baseline Limit Level	Dissolved Oxygen (mg/L)			Justification*	Validity (Yes/No)
		Surface and Middle		Intake Level		Bottom		Surface and Middle	Intake Level	Bottom		
G1	Mid-ebb	4.9	4.6	5.0	4.7	4.2	3.6	-	-	***4.0***	(1), (2), (4), (5)	No
G2								-	-	***3.5***	(1), (2), (4), (5)	No
G3								***4.8***	-	***3.5***	(1), (2), (4), (5)	No
G4								-	-	***2.5***	(1), (2), (4), (5)	No
M2								-	-	***3.4***	(1), (2), (4), (5)	No
M3								***4.7***	-	***3.2***	(1), (2), (4), (5)	No
M4								***4.8***	-	***3.6***	(1), (2), (4), (5)	No
M5								***4.4***	-	***2.8***	(1), (2), (5)	No
M6								-	***4.9***	-	(1), (2), (3), (4), (5)	No
G2	Mid-flood							-	-	***3.9***	(1), (2), (3), (4), (5)	No
G3								-	-	***3.3***	(1), (2), (4), (5)	No
M1								***4.8***	-	-	(1), (3), (4), (5)	No
M2								-	-	***3.8***	(1), (2), (3), (4), (5)	No
M3								-	-	***3.4***	(1), (2), (3), (4), (5)	No
M5								-	-	***4.0***	(1), (2), (4), (5)	No
M6								-	***4.9***	-	(1), (2), (3), (4), (5)	No

Note: For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
Intake Level: approximately mid-depth level
Bold Italic means Action Level exceedance
Bold Italic with underline means Limit Level exceedance

*Remarks (1) – No major marine construction activity was conducted (Please refer to Part B) and No pollution discharge from construction activity was observed.
(2) – Monitoring results were higher than that at the Control Station. (Please refer to Table II)
(3) – The exceeded results were within the ranges of baseline monitoring results. (Please refer to Table III)
(4) – The exceeded results were within the ranges of monitoring results under Marine Water Quality Monitoring Programme of EPD. (Please refer to Appendix A)
(5) – Other(s): Please specify – Heavy Rainfall and Thunderstorm were recorded before and during monitoring. Increased surface runoff and bed erosion near monitoring stations and subsequent high concentrations of suspended organic material in water column causing reduction in DO levels. Adverse water quality at Control Stations was observed. (see below the Daily Rainfall Distribution extracted from HKO) (Please refer to Appendix B)

Table II: Results at Control Stations for Reference – Dissolved Oxygen (DO)

Station	Tide	Measured Value (mg/L)			Remarks (based on tidal current information)
		Surface and Middle	Mid-depth	Bottom	
C1	Mid-flood	5.7	4.2	2.7	Control Station for Mid-flood tide
C2	Mid-ebb	3.9	2.3	2.4	Control Station for Mid-ebb tide

Table III – Ranges of Baseline Water Quality Monitoring Results (August 2016) for Dissolved Oxygen (mg/L)

Station(s)	Mid-ebb		Mid-flood	
	Surface and Middle	Bottom	Surface and Middle	Bottom
G1	5.4 – 7.1	4.5 – 6.8	5.0 – 7.5	4.0 – 6.9
G2	5.3 – 7.1	4.6 – 6.5	4.8 – 7.4	3.8 – 6.5
G3	5.4 – 7.1	4.6 – 6.6	4.7 – 7.7	4.1 – 7.5
G4	5.4 – 7.1	4.1 – 7.0	4.7 – 7.2	4.1 – 6.1
M1	5.5 – 7.3	4.4 – 6.8	4.6 – 7.8	4.0 – 7.1
M2	5.1 – 6.8	4.0 – 6.4	4.8 – 7.1	3.4 – 6.5
M3	5.5 – 7.5	4.3 – 6.4	4.6 – 7.7	2.8 – 6.3
M4	5.2 – 7.1	4.8 – 6.6	4.6 – 7.5	4.2 – 7.0
M5	5.3 – 7.0	3.6 – 6.5	4.8 – 6.9	4.4 – 6.7
M6	Intake Level: 4.6 – 6.9		Intake Level: 4.3 – 7.4	

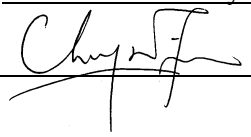
Part B – Summary of marine works activities under this Project:

Contract No.	Marine Works Activities (19 July 2017)
NE/2015/01	No marine works activities. Tidying of C&D material/wastes was carried out on Marine Platform.
NE/2015/02	Lifting of rock fill material from Type 2 cofferdam (in the form of steel water tanks) to derrick barge. No dredging works were carried out.

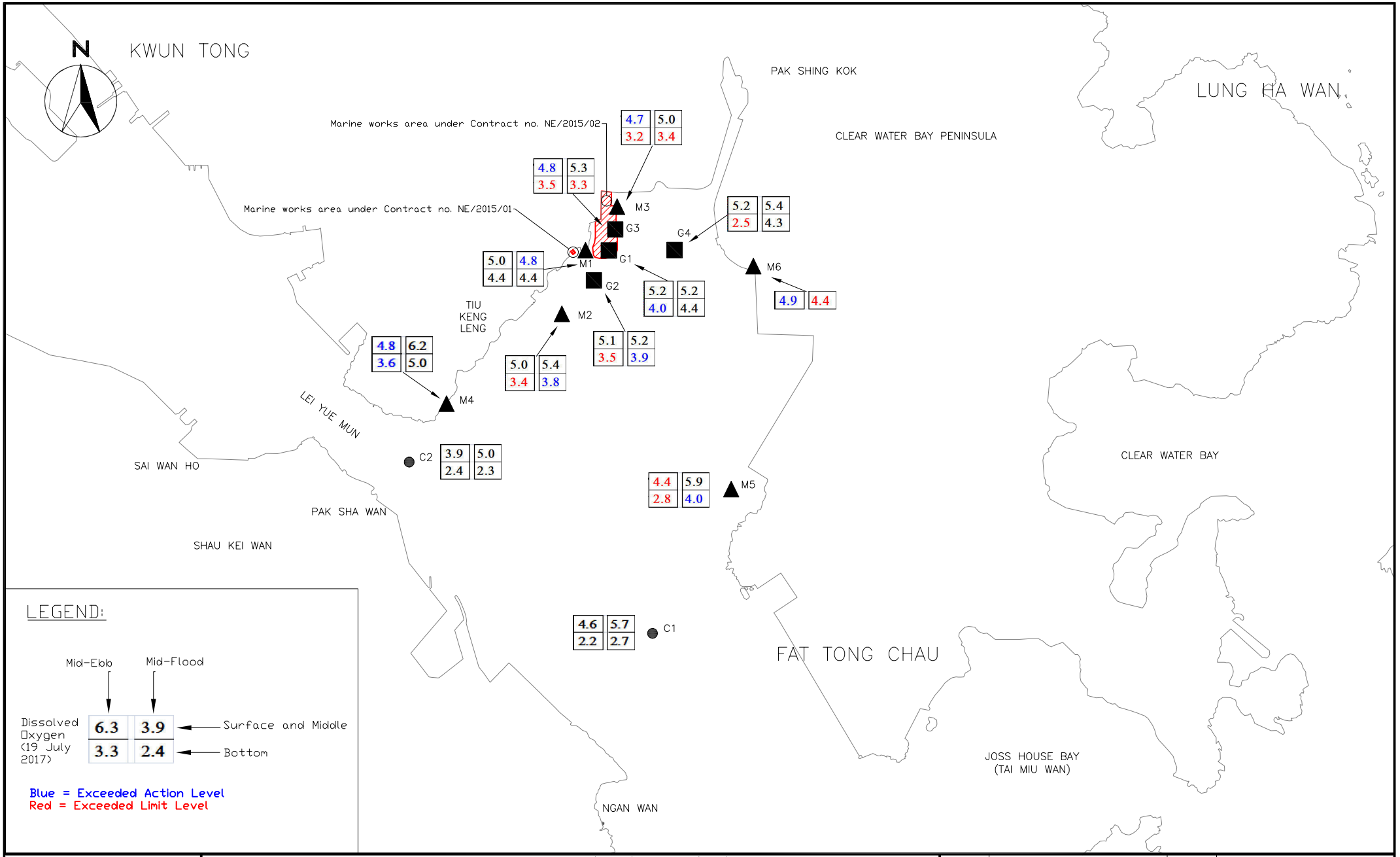
Part C – Conclusion: No direct evidence that the exceedances were due to the Contract. Also, there is no monitoring exceedance in turbidity and suspended solids. Therefore the exceedances are considered due to the other external factors (such as adverse weather) rather than the contract works.

Part D – Recommendation: As the exceedances were not related to the contract works, no further action is required.

Reviewed by: Dr. Priscilla Choy Title: Environmental Team Leader

Signature:  Date: 20 July 2017

LOCATION PLAN



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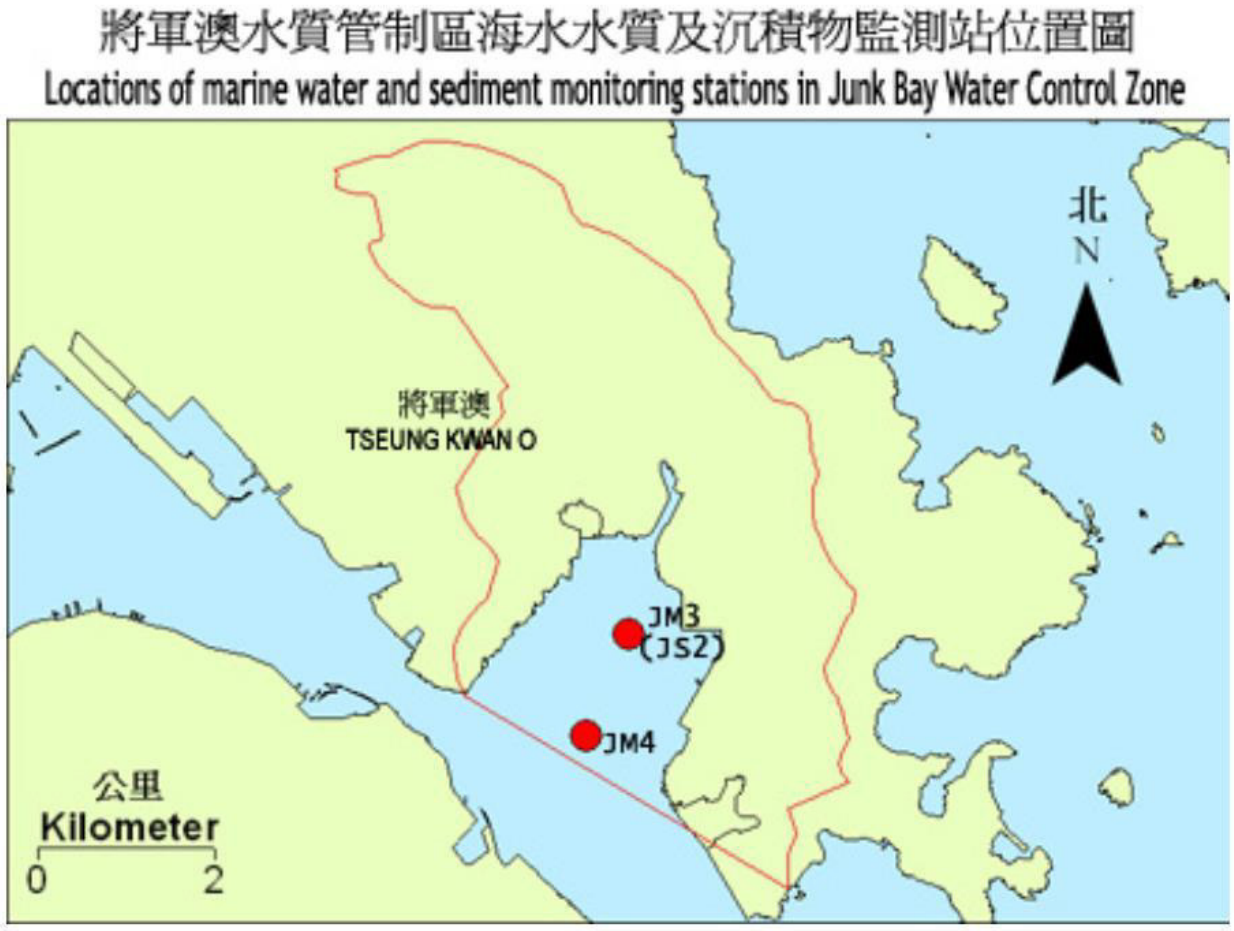
Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O – Lam Tin Tunnel – Design and Construction
Locations of Water Quality Monitoring Stations (19 July 2017)

SCALE	N.T.S	DATE	JUL 2017
CHECK	JF	DRAWN	VW
PROJECT NO.	MA16034	FIGURE NO. 5	REV –

APPENDIX A
MARINE WATER QUALITY
MONITORING PROGRAMME OF EPD

Ranges of Dissolved Oxygen (mg/L) Monitoring Results under Marine Water Quality Monitoring Programme of EPD (every July of 2011 – 2015)

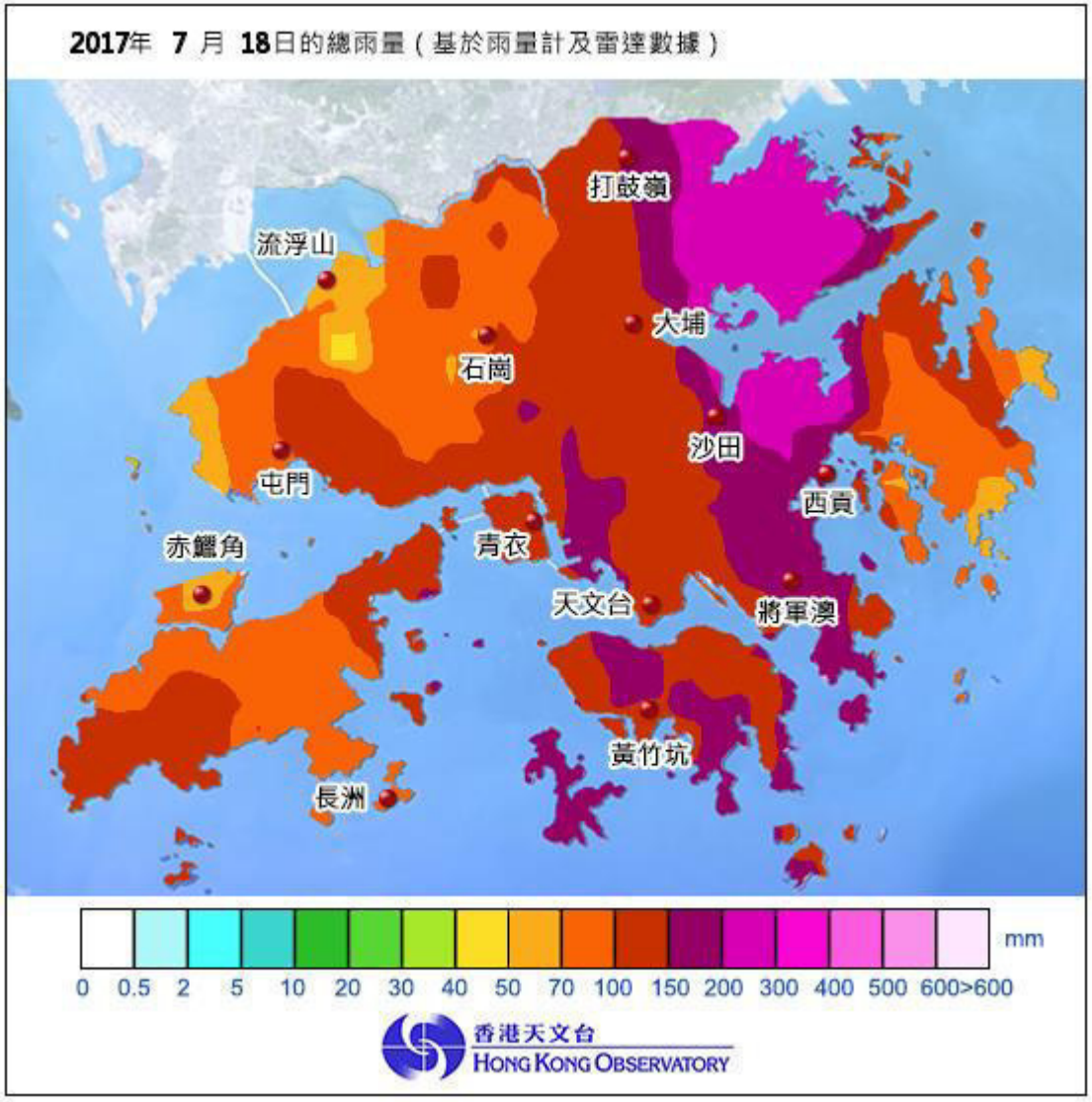


Station	Surface and Middle	Middle	Bottom
JM3 (JS2)	4.7 – 8.5	4.1 – 8.3	2.7 – 6.4
JM4	5.4 – 7.5	2.9 – 6.7	2.7 – 5.1

APPENDIX B
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 Limit Exceedances

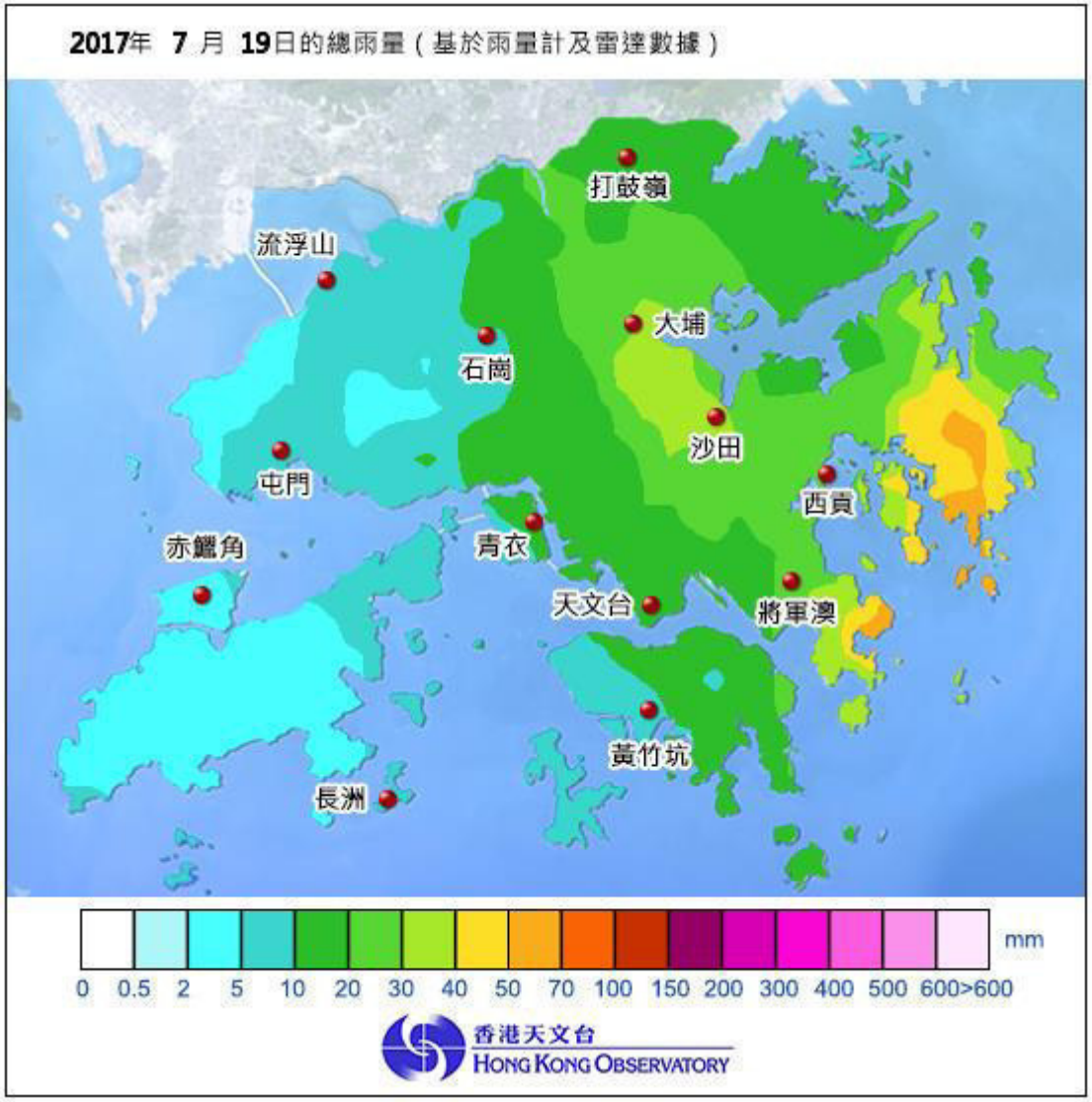
Daily Rainfall Distribution:



Rainfall recorded in Sai Kung region on **18 July 2017**			
Time	Rainfall (mm)	Amber Rainstorm Warning Signal	Thunderstorm Warning
23:45-00:45	0-5mm		✔
00:45-01:45	0-1mm		✔
01:45-02:45	0-6mm		✔
02:45-03:45	-		
03:45-04:45	-		
04:45-05:45	0-2mm		
05:45-06:45	0-6mm		✔
06:45-07:45	8-34mm		✔
07:45-08:45	0-64mm		✔
08:45-09:45	0-35mm	✔	✔
09:45-10:45	3-21mm	✔	✔
10:45-11:45	0-5mm	✔	✔
11:45-12:45	-		✔
12:45-13:45	-		
13:45-14:45	-		✔
14:45-15:45	-		✔
15:45-16:45	-	✔	✔
16:45-17:45	0-36mm		
17:45-18:45	9-40mm	✔	✔
18:45-19:45	6-27mm	✔	✔
19:45-20:45	2-5mm	✔	✔
20:45-21:45	1-2mm		✔
21:45-22:45	0-1mm		✔
22:45-23:45	0-3mm	✔	✔

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

Daily Rainfall Distribution:



Rainfall recorded in Sai Kung region on **19 July 2017**

Time	Rainfall (mm)	Amber Rainstorm Warning Signal	Thunderstorm warning
23:45-00:45	9-41mm	✔	✔
00:45-01:45	3-25mm	✔	✔
01:45-02:45	1-2mm		✔
02:45-03:45	-		
03:45-04:45	-		
04:45-05:45	-		
05:45-06:45	-		
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	-		
16:45-17:45	-		
17:45-18:45	-		
18:45-19:45	-		
19:45-20:45	-		
20:45-21:45	-		
21:45-22:45	-		
22:45-23:45	-		

APPENDIX L
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Appendix L - Cumulative Log for Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log for Tseung Kwan O - Lam Tin Tunnel

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
1	7th December 2016	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Air Quality & Noise	The complainant complained about the construction noise and dust near Yau Lai Estate. (EPD Reference No.: K15/RE/00032001-16)	Y	According to information provided by the Contractor, powered Mechanical Equipment being operated for construction of Lam Tin Interchange on 7 and 9 December 2016 include breaker, dump truck, backhoes, drilling rig and small bulldozer. They were operated on and off with some idling time. It is considered that noise nuisance during the time of complaint was mainly due to high noise level emission during the use of breaker for rock breaking. The Contractors had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual to reduce construction dust and noise nuisance to the vicinity. According to the regular air quality monitoring conducted at Air Quality Monitoring Stations AM3, no Action or Limit Level Exceedance was recorded from 6 – 14 December 2016. Similarly, no Limit Level Exceedance was recorded at Noise Monitoring Station CM1, Station CM2 and Station CM3 from 6 – 16 December 2016. With the implementation of environmental mitigation measures by Contractor on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project.	Closed
2	9th December 2016	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Block A Nga Lai House	Noise	The complainant complained about the construction noise near Yau Lai Estate. (EPD Reference No.: K15/RE/00032317-16)	Y		Closed
3	9th December 2016	Not Specified / Construction of Road P2	Sai Kung District Council Member Mr. Chan Kai Wai	Air Quality & Noise	The complainant complained about the noise nuisance during transportation of construction materials on haul road and dust generation during construction activities.	Y	No construction activities were carried out for both construction of Road P2 and TKO portal during night time or at about 7am. Therefore, no construction noise nuisance were generated during night-time or at about 7am under this Project and it is considered that these noise nuisance is not project- related. The Contractors of this Project had implemented environmental mitigation measures for air quality, noise and visual impact (night-time lighting) in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual.	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
4	20th December 2016	Not Specified / Construction of Road P2	Resident of Ocean Shore	Noise	The complainant complained about the lighting and noise nuisance on construction vessels moored near Ocean Shores during night time.	Y	The Contractors had taken the initiative to provide additional noise mitigation measures to works since the complaints were received including: - Temporary noise barrier had been installed to reduce noise nuisance from piling works in construction of Road P2 Provision of noise enclosure to cover generators for reducing its noise nuisance in TKO portal; and - Provision of portable noise enclosures at breakers and generators to reduce noise emission from works in TKO portal According to the regular air quality and noise monitoring for this Project, no Action or Limit Level Exceedance was recorded in December 2016. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project. According to the ET's ad-hoc site inspection during night-time, no unacceptable noise nuisance from this Project was heard. No strong light emission from all the construction vessels near Ocean Shores was observed yet minimum lighting for marine safety purpose was observed from the construction vessel and anchors.	Closed
5	22nd December 2016	21 Dec 2016 at night / Construction of TKO portal	Resident of Block 3, Ocean Shores	Noise	The complainant concerned the noise generated by the construction works at hillside near Block 3 of Ocean Shores in daytime.	Y		Closed
6	22nd December 2016	Not specified / Construction of TKO portal	Public	Noise	The complainant complained about the noise generated by the construction works at hillside in daytime.	Y		Closed
7	22nd December 2016	Not specified / Construction of Road P2	Resident from Ocean Shore	Noise	The complainant complained about the noise nuisance of broadcast on construction vessel near Ocean Shores at 7am and the noise generated by the construction works outside Tseung Kwan O Chinese Permanent Cemetery.	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
8	22nd December 2016	Not specified / Construction of Road P2 and TKO portal	Resident from Ocean Shore	Noise	The complainant complained about the noise nuisance generated by construction works of Tseung Kwan O portal in daytime and noise nuisance of "loud speaker" on construction vessel near Ocean Shores.	Y		Closed
9	16th December 2016	Not Specified / near Ocean Shores	DC member	Noise & (Light)	The complainant complained that they noticed about 2 work vessels were being used at 00:00-01:00 and also moored there overnight which caused light pollution and affecting the residents.	Y	According to the findings of investigation, minimum lighting on the construction vessel was required for guard watching the works site. Adverse night-time light and noise nuisance from the marine works area near Ocean Shores as alleged by the complainant are considered not caused by this Project. The Contractor had continuously implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual. To avoid strong light emission towards the sensitive receivers, night-time lighting is properly controlled by hooding all lights (except necessary lighting for safety purpose and guard watching); According to the ET's ad-hoc site inspection during night-time, no unacceptable noise nuisance from this Project was heard. No strong light emission from all the construction vessels near Ocean Shores was observed yet minimum lighting for marine safety and guard watching purpose was observed from the construction vessel and anchors. The Contractor was recommended to continuously implement the following visual impact mitigation measures: • necessary lighting on construction vessels should be oriented as much as possible such that direct strong lighting towards the sensitive receivers is avoided. • Strong lighting that may be in intermittent use should be shut down between works periods	Closed
10	17th January 2017	5 January 2017 / near Ocean Shores	DC member	Noise & (Light)	The complainant complained that marine vessels were used at about 22:00 and around 01:00 on 5 Jan 2017, again causing noise and light nuisance to the residents.	Y		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
11	23rd December 2016	Not Specified / near Cha Kwo Ling Tsuen	Cha Kwo Ling Tsuen	Water	The complainant complaint about the Soil/muddy water from construction site near Cha Kwo Ling Tsuen. (EPD Reference No.: K15/RE/00033951-16)	N	No construction works were being carried out on 23rd December 2016 at Portion WA1, which is the site portion near Cha Kwo Ling Tsuen. Despite, it was recorded that some muddy water was flowing from the Contractor's wheel washing facility to the gullies within the site boundary. For complaint of muddy water on 23rd December 2016, the Contractor has fixed the clear water hose for wheel washing on 24th December 2016 early morning. During the recent weekly site inspections to Site Portion WA1, no muddy water was observed leaked out of the Site Boundary.	Closed
12	29th December 2016	23rd December 2016 / near Cha Kwo Ling Tsuen	Cha Kwo Ling Tsuen	Water	The complainant complaint that some muddy water flowing from the wheel washing facility to the gullies within the site boundary.	N		Closed
13	6th January 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Block A Nga Lai House	Noise	The complainant complained about the noise nuisance during rock breaking at the Eastern Harbour Crossing (EHC) portal and lack of noise mitigation measures during the construction works.	Y	After investigation, it was found out that necessary rock breaking works by hydraulic or pneumatic breakers was conducted during excavation for tunnel adit at Lam Tin Interchange. Noise nuisance from the works area is considered due to the high noise level emission during use of hydraulic or pneumatic breakers. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: <u>Air Quality</u> Use of frequent watering during construction of Lam Tin Interchange, including watering of eight times a day on active work area, exposed area and paved haul roads to mitigate air quality impacts to the nearby Air Sensitive Receivers (ASRs) <u>Noise</u> ● Provision of portable noise enclosures to head of breakers to reduce noise emission during rock breaking works in Lam Tin	Closed
14	6th January 2017	Not Specified / Cha Kwo Ling Road	Resident of Yau Lai Estate	Noise	The complainant complained about the noise nuisance generated by the excavation works at Cha Kwo Ling Road on 6 January 2017 just after 7 a.m.	Y		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
15	6th January 2017	Not Specified / Construction site near Yau Lai Estate	Resident of Yau Lai Estate Bik Lai House	Air Quality & Noise	The complainant complained about the noise nuisance during the construction works near Yau Lai Estate at 7:15am. He requested to erect noise barriers and set up water spraying system to minimize the noise and air nuisances to the nearby residents.	Y	Interchange; ● Provision of portable noise enclosures to reduce noise nuisance from drilling works and generator in Lam Tin Interchange; and ● Use of Quiet PME on-site including generator and hydraulic excavator. The Contractor has taken the initiative to implement additional noise mitigation measures in order to further minimize noise nuisance to the nearby sensitive receivers, including the followings: ● Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange; ● Commencement time of daily construction works for construction of Lam Tin Interchange has been postponed from 7am to 8am each day. According to the regular air quality and noise monitoring for this Project, no Action or Limit Level Exceedance was recorded from 16 December 2016 to 19 January 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project. Nevertheless, the Contractor was recommended to continue to properly implement and strictly follow the air quality and noise mitigation measures as recommended in the Environmental Monitoring & Audit Manual and approved Noise Mitigation Plan to minimize environmental impact on the construction site.	Closed
16	6th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Cheuk Lai House	Noise	The complainant complained the construction noise generated from this Project (EPD Reference No.: K15/RE/00000564-17)	Y		Closed
17	6th January 2017	Not Specified / Construction site near Yau Lai Estate	Resident of Yau Lai Estate Bik Lai House	Noise	The Yau Lai Estate Property Services Management Office mentioned that one of the resident of Yau Lai Estate had complained to Hong Kong Housing Authority (HKHA) about the noise generated by the construction works.	Y		Closed
18	10th January 2017	Not Specified	Anonymous	Noise	The complainant complained the construction noise generated from this Project (EPD Reference	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
					No.: K15/RE/00000967-17)			
19	12th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the noise generated from rock breaking at Lam Tin Interchange. He requested concrete actions to improve the situation.	Y		Closed
20	12th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the noise generated from rock breaking at Lam Tin Interchange.	Y		Closed
21	13th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning.	Y		Closed
22	13th January 2017	Not Specified / Construction Works near Eastern Habour Crossing tunnel portal	Anonymous	Noise	The complainant complained about the noise generated by the construction works near the toll plaza of the Eastern Harbour Crossing (EHC). The complainant complained again on 24 Jan 2017 and mentioned the noise problem still affected the daily life of residents	Y		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
23	16th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	Noise	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning.	Y		Closed
24	17th January 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the construction noise generated at Lam Tin Interchange.	Y		Closed
25	26th January 2017	Not Specified / Construction Works near Eastern Habour Crossing tunnel portal	黃國健議員及何啟明議員	Noise	LC members referred complaints about the noise generated by the construction works near the EHC tunnel portal. They mentioned that the noise generated by the construction works had greatly affected the daily life of nearby residents, especially occupants of Block 5 of Yau Lai Estate and those who lived at the upper floors.	Y	After investigation, it was found out that necessary rock breaking works by hydraulic or pneumatic breakers was conducted during excavation for tunnel adit at Lam Tin Interchange. Noise nuisance from the works area is considered due to the high noise level emission during use of hydraulic or pneumatic breakers. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual. The Contractor has taken the initiative to implement additional noise mitigation measures in order to further minimize noise nuisance to the nearby sensitive receivers, including the followings: ➢ Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange; ➢ Commencement time of daily construction works for construction of Lam Tin Interchange has been postponed from 7am to 8am each day.	Closed
26	27th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	Noise	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning. (EPD Ref No. K15/RE/00002945-17)	Y	According to information provided by the Contractor, powered Mechanical Equipment being operated on site during the time of complaint include breaker, dump truck, backhoes, drilling rig, mobile crane and small bulldozer. They were operated on and off with some idling time. It is considered that noise nuisance during the time of complaint was mainly due to high noise level emission during the use of breaker for rock breaking.	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
27	9th February 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yat Lai House, Yau Lai Estate	Noise	The complainant complained about the noise nuisance during the construction works of Lam Tin Interchange at 8:10am. (EPD Reference No.: K15/RE/00003855-17)	Y	In addition to the the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual, the Contractor has implemented the following additional noise mitigation measures since late including: ● Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange; ● Sound absorptive materials with 50mm thickness were hanged on rock mountain wall as well as temporary noise barrier containers; and ● Adoption of alternative rock breaking method such as partial rock breaking by rock splitter. In addition, the Contractor has taken the initiative to explore measures to further reduce construction noise nuisance such as: ● Installation of cantilever barrier on top of the containers; ● Installation of tuned mass dampers on breaker head; and ● Use of acoustic mat cover and a retractable noise barrier where feasible. According to the regular noise monitoring no Limit Level Exceedance was recorded at Noise Monitoring Station CM1, Station CM2 and Station CM3 from 2 – 15 February 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project.	Closed
28	13th February 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yat Lai House, Yau Lai Estate	Noise	The complainant complained about the noise nuisance during the construction works of Lam tin Interchange.	Y		Closed
29	23rd February 2017	18 Feb 2017 / Slope Works at Lei Yue Mun Road	Anonymous	Air Quality	The complainant complained about the dust generated by the slope works opposite to Lam Tin Ambulance Deport on 18 February 2017 afternoon. He mentioned that the dust greatly affected	N	The major source of construction dust nuisance was construction of a temporary storage area. As per investigation, the Contractor has provided environmental mitigation measures to prevent dust generation for the slope works. Water spray was prepared and provided next to the works for dust suppression during the use of handheld breaker.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
					the pedestrian.			
30	23rd February 2017	Not Specified / BMCPC Footpath	Sai Kung District Council Member Mr. Chan Kai Wai	(Safety)	Mr. Chan complained that some of the excavated materials fell from the dump trucks on the BMCPC footpath affecting the safety of pedestrian and hikers.	N	The major source of construction dust nuisance was formation of temporary site haul road. As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Water truck was provided for dust suppression at least 8 times per day along the footpath within our site boundary; ➢ Wheel washing were provided for all dump trucks once loaded; ➢ All the dump trucks were covered properly with a mechanical cover once loaded. ➢ The dump trucks were loaded in a specific area (off the footpath) near the formation works area.	Closed
31	2nd March 2017	Not Specified / Construction Works near BMCPC Footpath	A resident of Ocean Shores	Air Quality	The complainant complained about the dust generated by the construction works near the existing BMCPC footpath	N		Closed
32	8th March 2017	7 Mar 2017 / Slope works near Sin Fat Road Tennis Court	Public	Air Quality & Noise	The complainant complained the dust and noise generated by the slope works near Sin Fat Road Tennis Court	Y	The major source of construction dust and noise nuisance was shotcreting of slope surface, and drilling for soil nail. As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Tarpaulin sheets were provided along the slope adjacent to the tennis court during shotcreting; ➢ After the complaint was received, the dust screen for tennis court has been enhanced immediately with additional tarpaulin along the fencing of tennis court; ➢ Additional acoustic sheets were also provided to minimize construction noise nuisance to users of the tennis courts; ➢ At the location of shotcreting / drilling of slope works, additional tarpaulin sheet was placed at source to minimize dust generation due to the works	Closed
33	10th March 2017	4 Mar 2017 / Slope works near Sin Fat Road Tennis Court	Anonymous	Air Quality	The complainant complained the dust generated by the slope works near Sin Fat Road Tennis Court.	N		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
34	13th March 2017	27 Feb – 12 Mar 2017 / Barging point in front of Ocean Shore	Public	Noise	The complainant complained about noise from the loading / unloading activities at the barging point in front of Ocean Shore for material delivery to the LT-TKO Tunnel work site during 3:00 am and 4:00am over the past 2 weeks.	Y	According to information provided by the Contractors, no works, including any loading / unloading works, was carried out during the restricted hours at site area near Ocean Shores in early March 2017. The complaint is concluded to be non-Project related. The Engineer and the Environmental Team have reminded the contractor(s) not to carry out any works, especially loading/unloading activities near the Ocean Shores during restricted hours to minimize noise nuisance to the nearby residents.	Closed
35	21st March 2017	Not Specified / Construction Works near Cha Kwo Ling Village	茶果嶺鄉民聯誼會書記鍾先生	Water & Waste/Chemical Management	The complainant stated that villagers concerned about the waste water produced by car washing in construction site will flow into the sea/ existing drainage system directly and requested the contractors to improve the situation.	N	In accordance with the information provided by the Contractor of the Project, vehicle wheel washing near Cha Kwo Ling Village was carried out site access of Portion 1 and Portion WAII. At Portion 1, a 'WetSep' wastewater treatment system was installed to treat wastewater from vehicle washing washing. For Portion WAII, surface runoff collection system is also installed near the site access. Also, concrete sand bag bunds are provided near seafront of Portion WAII to prevent wastewater flowing into the sea. Despite, the Contractor was reminded to fully implement the relevant water quality mitigation measures according to the EM&A Manual on site. The Contractor was also recommended to provide training for all workers again to increase awareness of their environmental responsibilities and properly collect and treat all wastewater generated due to construction works.	Closed
36	25th March 2017	Not Specified / Construction Works of TKO Portal	Public	Air Quality	The complainant complaint about the construction dust impact due to marine works and construction of tunnel of this Project.	N	The major source of construction dust and noise nuisance was site formation works for TKO Portal and marine works for construction of temporary barging facilities As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Provision of frequent watering including watering of eight times a day on active work area, exposed area and paved haul roads; ➢ Installation of automatic sprinklers for water spray to minimize dust generation;	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
							➢ Shotcreting or hydroseeding to surface of TKO Portal site formation; ➢ Provision of wheel washing to vehicles out of site; ➢ Covering of dusty slope surface by impervious material such tarpaulin sheets. During the weekly site inspections by the Environmental Team (ET), no deficiencies about exhaust gas or black smoke generation was observed from the Powered Mechanical Equipment (PME) on site of construction of TKO Portal. Air quality impact due to exhaust gas or black smoke emission from PME is considered insignificant from the Project.	
37	6th April 2017	1 Apr 2017 / Slope works near Sin Fat Road Tennis Court	Public	Air Quality	The complainant complained the smell and dust generated by the slope works near Sin Fat Road Tennis Court on 1 April 2017. He suspected that the shotcrete may contain toxic substances and may affect the health.	N	See Investigation / Mitigation Action for Complaint No. 32 and 33.	Closed
38	4th May 2017	Not Specified / Construction site near Nga Lai House, Yau Lai Estate	Kwun Tong District Council Member Mr. Lai Shu Ho	Noise	The complainant complained about construction noise nuisance near Nga Lai House, Yau Lai Estate and lack of noise mitigation measures during construction works.	Y	According to information provided by the Contractor, necessary rock breaking work was carried out in May 2017 by excavator-mounted breakers and drill rig at Portion IVC, which is in close vicinity of the complainant. Also, 2 nos. of excavator / drill rig were operated in May 2017 for excavation and drilling and rock hill. Noise nuisance concerned by the complainant is considered due to the high noise level emission during use of these Powered Mechanical Equipment (PME). The Contractors had implemented environmental mitigation measures on site according to the EM&A Manual to reduce air quality impact and noise nuisance to the vicinity. Weekly Environmental Site Inspection has been on-going in May 2017. Recommendations was made on site by the Engineer and the ET to increase the effectiveness of the noise mitigation measures.	Closed
39	8th May 2017	Not Specified / Construction site near Yau Lai Estate	Kwun Tong District Council Member Mr. Lai Shu Ho	Air Quality & Noise	The complainant complained about construction noise nuisance and air pollution generated by this Project.	Y		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
							According to the regular air quality monitoring conducted at Air Quality Monitoring Stations AM3, no Action or Limit Level Exceedance was recorded from 4, 10 and 16 May 2017. Similarly, no Limit Level Exceedance was recorded in May 2017 at Noise Monitoring Station CM1 and CM2. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse air quality and noise impact was brought to the nearby sensitive receivers by the works of this Project.	
40	9th May 2017	Not Specified / Construction of Road P2 near Ocean Shores	Public	Noise	The complainant complained about noise and environmental nuisance resulting from the piling works.	Y	Major construction activities near Ocean Shores in early May included sheetpiling works and pre-boring works for construction of Road P2. Powered Mechanical Equipments (PME) operated included drilling rigs and piling rigs (vibration hammer), which are considered to be the source of noise nuisance resulting from piling work. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual and the approved Noise Mitigation Plan. Movable temporary noise barrier is erected on ground in vicinity of the piling areas to reduce noise emission during piling works. Acoustic material are also hanged on the piling rigs to shield noise from the Powered Mechanical Equipment (PME) to nearby noise sensitive receivers. According to the regular noise monitoring conducted at Noise Monitoring Stations CM6(A) and CM7(A), no Limit Level Exceedance was recorded from 1- 14 May 2017. With the implementation of environmental mitigation measures by Contractors on site, it is considered that no adverse noise impact was brought to the nearby sensitive receivers by the works of this Project.	Closed
41	10th May 2017	Not Specified / Construction of Road P2 near Ocean Shores	Public	Noise	The complainant complained about noise nuisance from the use of the generators until midnight.	Y	During evening time, two generators were operated between 7pm - 11pm for site office use only. No generators were used until midnight according to the Contractor. Additional temporary noise barrier is installed by the Contractor to screen noise due to use of generators during evening time	Closed
42	10th May 2017	Not Specified / Slope works near Sin Fat Road Tennis	Public	Air Quality	The complainant complained about the generation of construction dust	N	See Investigation / Mitigation Action for Complaint No. 32 and 33.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		Court			from this Project			
43	15th May 2017	Not Specified / Construction site at Lei Yue Mun Road	Kwun Tong District Council Member Mr. Lai Shu Ho	Noise	The complainant complained about construction noise nuisance during construction works at work site at Lei Yue Mun Road.	Y	See Investigation / Mitigation Action for Complaint No. 38 and 39.	Closed
44	16th May 2017	Not Specified / Construction site near Nga Lai House, Yau Lai Estate	Public	Noise	The complainant complained about construction noise nuisance during construction works at work site near Nga Lai House, Yau Lai Estate from 8 am to 7 pm.	Y	See Investigation / Mitigation Action for Complaint No. 38 and 39.	Closed
45	17th May 2017	3rd May 2017 / Marine Works Area in TKO Side	Public	Noise	The complainant complained about the noisy ongoing construction works on a public holiday.	Y	No marine works was carried out under Contract No. NE/2015/01 on public holidays on 30 April, 1 May and 3 May 2017. While marine construction works was carried out on public holiday under Contract No. NE/2015/02 on 3 May 2017 between 9am to 5pm. One derrick barge was operated for the marine works during this period.no violation of CNP (No. GW-RE0317-17) conditions is observed during the time of complaint. The Engineer and the Environmental Team have reminded the contractor(s) to minimize construction works during public holidays or restricted hours to minimize noise nuisance to the nearby residents.	Closed
46	25th May 2017	Not Specified / Construction site near Tin Hau Temple	茶果嶺鄉民聯誼會主席羅悅屏	Noise	The complainant complaint about the noisy rock breaking works near Tin Hau Temple and poor efficiency of vehicle wheel washing on site.	Y	According to information provided by the Contractor of the Project, excavation and rock breaking by 1 no. of excavator/excavator-mounted breaker was carried out intermittently during daytime of the time of complaint near Tin Hau Temple. The tip of the breaker is wrapped with acoustic blanket and followed by erection of noise barrier. A wheel washing bay had been installed at the site entrance on Cha Kwo Ling Road to construction of Lam Tin Interchange. A 'WetSep' wastewater treatment system was installed to treat wastewater from vehicle washing washing.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
							The Contractor was reminded to fully implement on site the relevant noise and water quality mitigation measures according to the EM&A Manual and the approved Noise Mitigation Plan.	
47	27th May 2017	Not Specified / Construction site at Lei Yue Mun Road	Public	Noise	The complainant complained about construction noise nuisance during construction works at work site at Lei Yue Mun Road.	Y	See Investigation / Mitigation Action for Complaint No. 38 and 39.	Closed
48	1st June 2017	Not Specified / Construction site near Yung Lai House, Yau Lai Estate	Public	Noise	The complainant complained about construction dust and noise nuisance during construction works at work site near Yung Lai House, Yau Lai Estate (EPD Reference No.: K15/RE/00016902-17)	Y	According to the information provided by the Contractor, the major construction activities performed in June and mid-July included excavation and drilling in Portion IVC near Lei Yue Mun Road, excavation and rock breaking at Lam Tin Interchange and rock breaking next to Yau Tong Site Office. The Contractor had implemented environmental mitigation measures in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual as below: <u>Air Quality:</u> • Water spraying was provided during breaking works at Portion IVC, slope G of Lam Tin Interchange and works area near Yau Tong Site Office to minimize dust generation due to the works. <u>Noise:</u> • Operating PMEs at Portion IVC, slope G of Lam Tin Interchange and works area near Yau Tong Site Office were on and off with idling time. • Excavator-mounted breakers were mounted with acoustic sheets. • Noise barriers were erected during the breaking works at Portion IV, slope G of Lam Tin Interchange and works area near Yau Tong Site Office to minimize construction noise nuisance. With the implementation of environmental mitigation measures by Contractors on site, it is considered that air quality and noise nuisance by the works has been brought to a minimum level.	Closed
49	7th June 2017	7th June 2017 / Construction site near Sin Fat Road	Correspondent of Sin Fat Road Tennis Courts	Air Quality	The complainant complained about construction dust nuisance near the	N	In accordance with the information provided by the Contractor of the Project, the major construction activities at the location of complaints were shotcreting of slope surface and drilling for soil nail near Sin Fat Road Tennis Court.	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
		Tennis Courts			tennis courts.		The Contractor immediately stopped the shotcreting works adjacent to the tennis courts upon the complaint, and re-schedule the works such that the shotcreting works near the tennis court are performed only when the tennis courts are not in use. The Contractor also cleared the dust brought by the construction in the tennis courts on the same day of the complaint. the Contractor was reminded to fully implement the relevant air quality mitigation measures according to the EM&A Manual on site.	
50	8th June 2017	30th May 2017 / marine works area inside the cofferdam installed under the Project	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained about marine construction work being carried out on 30 May 2017 (a public holiday) within the reclamation area near Ocean Shore under this Project (EPD Reference No.: N08/RE/019540-17)	Y	According to information provided by the Contractor and confirmation by the Engineer, no marine construction activities were conducted on public holiday on 30th May 2017 within the cofferdams installed in the reclamation area under this Project. The complaint on 30th May 2017 therefore considered to be non-Project related.	Closed
51	15th June 2017	Not Specified / Construction site near Nga Lai House, Yau Lai Estate	Public	Air Quality & Noise	The complainant complained about construction dust and noise nuisance during construction works at work site near Nga Lai House, Yau Lai Estate. (EPD Reference No.: K15/RE/00018656-17)	Y	See Investigation / Mitigation Action for Complaint No. 48.	Closed
52	21st June 2017	Not Specified / Construction site near Yau Lai Estate	Public	Noise	The complainant complained about construction noise nuisance from work site near Yau Lai	Y	See Investigation / Mitigation Action for Complaint No. 48.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
					Estate.			
53	24th June 2017	24th June 2017 / land-based works area near Ocean Shores	Resident of Ocean Shores	Noise	The complainant complained about construction noise nuisance from land-based works area near Ocean Shores	Y	According to the information provided by the Contractor, the major construction activities during the time of complaint includes breaking of hard material. Upon received of the complaint, the Contractor has taken the initiative to minimize construction noise nuisance by erecting temporary noise barrier during rock breaking works. Nonetheless, the Contractor was recommended to implement and strictly follow the noise mitigation measures as recommended in the EM&A Manual and Noise Mitigation Plan in order to reduce construction noise impact on site.	Closed
54	26th June 2017	26th June 2017 / marine works area near Ocean Shores	Public	Waste/ Chemical Management	The complainant complained about oil spill on sea near marine works site near Ocean Shores	N	According to the information provided by the Contractor, marine works were conducted on 26 June 2017, including lifting operation for the concrete block from water gate to derrick barge. 3 derrick barges and 3 sampan were in operation for the marine works. According to records of the Contractor, no report of oil spill from the derrick barges was received from the site foremen. Oil spillage was not found in the afternoon on 26 June 2017. Therefore, the complaint is considered to be non-Project related.	Closed
55	27th June 2017	25th June 2017/ marine works area near Ocean Shores	Sai Kung District Council Member Mr. Chan Kai Wai	Noise	The complainant complained about marine construction work being carried out on public holidays within the marine works area near Ocean Shore under this Project	Y	Minor marine construction activities was conducted on public holiday 25th June 2017 within the reclamation area under this Project. Removal of damaged parts of steel cofferdam, which are damaged under adverse weather conditions in June 2017, was carried out by ONE number of derrick barge. Such operation is not considered to emit high level of noise. No violation of Construction Noise Permits (CNP) conditions is observed during the time of complaint. The Engineer and the Environmental Team reminded the Contractor(s) not to conduct any works near Ocean Shores during public holidays (including Sundays) to avoid noise nuisance to the nearby residents. Also, no use of PME will be allowed for general holidays (including Sundays) at marine works area under this Contract according to the latest CNP granted to the Contractor.	Closed
56	6th July 2017	Not Specified / Construction	Resident of Yat Lai House,	Noise	The complainant complained about	Y	See Investigation / Mitigation Action for Complaint No. 48.	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Nature	Details of Complaint	Noise Action Level Exceedance (Y/N)	Investigation/ Mitigation Action	File Closed
		site near Yau Lai Site Office	Yau Lai Estate		construction noise nuisance from work site near Yau Tong Site Office.			
57	14th July 2017	Not Specified / Construction sites near Cha Kwo Ling Road	Kwun Tong District Council Member Mr. Mok Kin Shing	Air Quality	The complainant complained about construction dust nuisance due to works and vehicles on Cha Kwo Ling Road	N	Under Investigation	On-going
58	18th July 2017	Not Specified / Construction sites near Yau Lai Estate	Yau Lai Estate Property Services Management Office	Noise	The complainant complained about construction noise nuisance from work site near Yau Lai Estate.	Y	See Investigation / Mitigation Action for Complaint No. 48.	Closed

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
Total	**58**	**0**	**0**

Cumulative Log for Notifications of Summons

Contract No. NE/2015/01

Contract No,	Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
NE/2015/01	--	--	--	--	--	--
NE/2015/02	--	--	--	--	--	--
NE/2015/03	--	--	--	--	--	--

Cumulative Log for Successful Prosecutions

Contract No,	Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
NE/2015/01	--	--	--	--	--	--
NE/2015/02	--	--	--	--	--	--
NE/2015/03	--	--	--	--	--	--

APPENDIX M
SUMMARY TABLE FOR MAJOR SITE ACTIVITIES UNDERTAKEN IN THE REPORTING QUARTER

Appendix M - Summary Table for Major Site Activities undertaken in the Reporting Quarter

Contract	Site Area	Site Activities		
		May 2017	**June 2017**	**July 2017**
NE/2015/01 – Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works	Lam Tin Interchange	1. Excavation for Tunnel Adit 2. Haul Road Construction 3. EHC2 U-Trough 4. Site Formation – Area 1G1, Area 2, Area 3, Area 4 5. Temp Steel Bridge across Cha Kwo Ling Road & Barging Facility 6. Pipe Pile wall – Area 2A 7. Ground Investigation	1. Haul Road Construction 2. EHC2 U-Trough 3. Site Formation – Area 1G1, Area 2, Area 3, Area 4 4. Temp Steel Bridge across Cha Kwo Ling Road & Barging Facility 5. Pipe Pile wall – Area 2A 6. Ground Investigation	1. Haul Road Construction 2. EHC2 U-Trough 3. Site Formation – Area 1G1, Area 1G2, Area 2, Area 3, Area 4 & Area 5 4. Temp Steel Bridge across Cha Kwo Ling Road & Barging Facility 5. Pipe Pile wall – Area 2A 6. Ground Investigation
	Main Tunnel	1. Tunnel Team Mobilisation Works	1. Tunnel Team Mobilisation Works 2. Construction of Tunnel Adit 3. Main Tunnel Excavation	1. Construction of Tunnel Adit
	TKO Interchange	1) Haul Road Construction, Site Formation and Slope Works 2) Temporary Barging Facilities & Temporary Works 3) Temporary Cut Slope For BMCPC	1. Haul Road Construction, Site Formation and Slope Works 2. Temporary Barging Facilities & Temporary Works 3. Temporary Cut Slope For BMCPC	1. Haul Road Construction, Site Formation and Slope Works 2. Temporary Barging Facilities & Temporary Works 3. Temporary Cut Slope For BMCPC
NE/2015/02 – Tseung Kwan O – Lam Tin Tunnel – Road P2 and Associated Works	General	1) Site Clearance 2) Hoarding Erection 3) Pre-bored and Sheet Piling Works for Construction of	1. Site Clearance 2. Hoarding Erection 3. Advance Works for Construction of Steel	1. Site Clearance 2. Hoarding Erection 3. Advance Works for Construction of Steel

		Temporary Cofferdam 4) Installation of Temporary Steel Cofferdam 5) Installation of Double Water Gate 6) Construction of Retaining Wall 7) E&M Works of DSD transformation room	Cofferdam for Road P2 and Road SR2 4. Installation and rectification of Temporary Steel Cofferdam and Double Water Gate 5. Construction of Retaining Wall 6. E&M Works of DSD transformation room 7. Site Clearance at Portion IV 8. Ground Investigation at Portion VI	Cofferdam for Road P2 and Road SR2 4. Installation and rectification of Temporary Steel Cofferdam and Double Water Gate 5. Dredging and Reclamation works 6. Construction of Retaining Wall 7. E&M Works of DSD transformation room 8. Site Clearance at Portion IV 9. Ground Investigation at Portion VI
NE/2015/03 – Tsueng Kwan O – Lam Tin Tunnel – Northern Footbridge	General	1. Excavating channel for piling works 2. UU Diversion 3. Soldier Pier 4. East Pier Trial Pit	1. Erection of Site Hoarding 2. Tree Felling and Protection 3. Disposal of Unsuitable Materials Off Site 4. Pre Drilling Work 5. Underground Utility Diversion 6. Soldier Pier 7. Foundation Pile	1. Construction of Lagging Wall 2. Soldier Pier 3. Foundation Pile

APPENDIX N
EVENT AND ACTION PLANS

Event and Action Plan for Air Quality (Dust)

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	8. If exceedance stops, cease additional monitoring.			
Limit level being exceeded by one sampling	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform Contractor ,IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within three working days of notification; 3. Implement the agreed proposals;

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	3. Supervise the implementation of remedial measures.	4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.			

Event and Action Plan for Marine Water Quality

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action level being exceeded by one sampling day at water sensitive receiver(s)	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate; • If exceedance is found to be caused by the reclamation activities, repeat *in-situ* measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • If exceedance occurs at WSD salt water intake, inform WSD; • Discuss mitigation measures with IEC and Contractor; • Repeat measurement on next day of exceedance.	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal.	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice; • Check all plant and equipment; • Amend working methods if appropriate; • Discuss with ET and IEC and propose mitigation measures to IEC and ER; • Implement the agree mitigation measures.
Action level being exceeded by two or more consecutive	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures;	• Discuss with IEC on the proposed mitigation measures; • Make agreement on the mitigation proposal;	• Inform the Engineer and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
sampling days at water sensitive receiver(s)	• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IEC and contractor; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC and Contractor; • Ensure mitigation measures are implemented; • Prepare to increase the monitoring frequency to daily; • If exceedance occurs at WSD salt water intake, inform WSD; • Repeat measurement on next day of exceedance.	• Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly; • Assess the effectiveness of the implemented mitigation measures.	• Assess the effectiveness of the implemented mitigation measures.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; • Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day at water sensitive receiver(s)	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IEC, ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
	• If exceedance is found to be caused by the reclamation activities, repeat *in-situ* measurement to confirm findings; • Inform IEC, contractor, AFCD and EPD • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IEC, ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level; • If exceedance occurs at WSD salt water intake, inform WSD.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IEC and ER and submit proposal of mitigation measures to IEC and ER within 3 working days of notification; • Implement the agreed mitigation measures.
Limit level being exceeded by two or more consecutive sampling days at	• Identify the source(s) of impact by comparing the results with those collected at the control stations as appropriate;	• Discuss with ET and Contractor on the mitigation measures; • Review proposal on mitigation measures submitted by Contractor and advise the ER accordingly;	• Discuss with IC(E), ET and Contractor on the proposed mitigation measures; • Request Contractor to critically review the working methods;	• Inform the ER and confirm notification of the non-compliance in writing; • Rectify unacceptable practice;

Event	Action			
	ET	**IEC**	**ER**	**CONTRACTOR**
water sensitive receiver(s)	• If exceedance is found to be caused by the reclamation activities, repeat in-situ measurement to confirm findings; • Inform IC(E), AFCD, contractor and EPD; • Check monitoring data, all plant, equipment and Contractor's working methods; • Discuss mitigation measures with IC(E), ER and Contractor; • Ensure mitigation measures are implemented; • Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days; • If exceedance occurs at WSD salt water intake, inform WSD.	• Assess the effectiveness of the implemented mitigation measures.	• Make agreement on the mitigation measures to be implemented; • Assess the effectiveness of the implemented mitigation measures; • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.	• Check all plant and equipment and consider changes of working methods; • Discuss with ET, IC(E) and ER and submit proposal of mitigation measures to IC(E) and ER within 3 working days of notification; • Implement the agreed mitigation measures; • As directed by the Engineer, to slow down or to stop all or part of the construction activities.

Limit Levels and Action Plan for Landfill Gas

Parameter	Limit Level	Action
Oxygen	<19%	• Ventilate to restore oxygen to >19%
	<18%	• Stop works • Evacuate personnel/prohibit entry • Increase ventilation to restore oxygen to >19%
Methane	>10% LEL (i.e. > 0.5% by volume)	• Prohibit hot works • Ventilate to restore methane to <10% LEL
	>20% LEL (i.e. > 1% by volume)	• Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore methane to <10% LEL
Carbon Dioxide	>0.5%	• Ventilate to restore carbon dioxide to < 0.5%
	>1.5%	• Stop works • Evacuate personnel / prohibit entry • Increase ventilation to restore carbon dioxide to < 0.5%

Event and Action Plan for Coral Post-Translocation Monitoring

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level Exceedance	1. Check monitoring data; 2. Inform the IEC, ER and Contractor of the findings; 3. Increase the monitoring to at least once a month to confirm findings; 4. Propose mitigation measures for consideration	1.Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.
Limit Level Exceedance	Undertake Steps 1-4 as in the Action Level Exceedance. If further exceedance of Limit Level, suspend construction works until an effective solution is identified.	1.Discuss monitoring with the ET and the Contractor; 2. Review proposals for additional Monitoring and any other measures submitted by the Contractor and advise the ER accordingly.	1. Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; 2. Make agreement on the measures to be implemented.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER; 3. Implement the agreed measures.

APPENDIX O
ECOLOGICAL MONITORING

App O – Ecological Monitoring

Reporting Period: May 2017 – July 2017

(A) Exceedance Report for Ecological Monitoring

The 2nd post-translocation coral monitoring survey was carried out on 12 May 2017. No action/limit level of mortality was exceeded in the monitoring survey conducted in May 2017. The 3rd post-translocation coral monitoring survey is scheduled in August 2017.

2nd post-translocation coral monitoring survey

Original Corals under Contract No. NE/2015/01

Code	Coral Species	Size (max. diameter, cm)	Sedimentation, % (thickness, mm)			Bleaching, %			Mortality, %		
			Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)
C01	*Gonipopra stutchburyi*	19	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C02	*Cyphastrea serailia*	26	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C03.	*Gonipopra stutchburyi*	16	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C04	*Cyphastrea serailia*	41	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C05	*Cyphastrea serailia*	29	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C06	*Cyphastrea serailia*	35	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C07	*Cyphastrea serailia*	23	<1	<1 (1)	5 (1) ▲	<1	<1	<1	<1	<1	<1
C08	*Turbinaria peltata*	12	<1	<1 (1)	<1 (1)	<1	<1	<1	<1	<1	<1
C09	*Psammocora superficialis*	48	<1	4 (1) ▲	5 (1) ▲	<1	<1	<1	<1	<1	<1
C10	*Psammocora superficialis*	32	<1	<1 (1)	5 (1) ▲	<1	<1	<1	<1	<1	<1

Note: "▲" and "▼" indicate increased and decreased in percentage, respectively, when compared with the baseline data.

Table 6.2b Translocated Corals under Contract No. NE/2015/01.

Code	Coral Species	Size (max. diameter or length, cm)	Sedimentation, % (thickness, mm)			Bleaching, %			Mortality, %		
			Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)
01	*Turbinaria peltata*	7	<1	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1
02	*Cyphastrea serailia*	13	<1	<1 (<1)	<1 (<1)	<1	<1	<1	35	40 ▲	40 ▲*
03	*Gonipopra stutchburyi*	14	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
04	*Gonipopra stutchburyi*	12	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
05	*Gonipopra stutchburyi*	17	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
06	*Gonipopra stutchburyi*	15	<1	<1 (<1)	10 (<1) ▲	<1	<1	<1	<1	<1	<1
07	*Gonipopra stutchburyi*	6	<1	5 (<1) ▲	<1 (<1)	<1	<1	<1	<1	<1	<1
08	*Dendronephthya* sp.	10	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
09	*Menella* sp.	13	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
10	*Echinogorgia* sp.	19	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
11	*Echinomuricea* sp.	23	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
12	*Menella* sp.	14	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	50 ▲	50 ▲*
13	*Menella* sp.	20	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
14	*Psammocora superficialis*	16	<1	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1

Note: "▲" and "▼" indicate increased and decreased in percentage, respectively, when compared with the baseline data.

Remarks (*)

It is considered that increased mortality of the two coral colonies (02 and 12) was due to their adaptability to changes in ambient physical conditions (e.g. water current) after coral translocation, and/or direct disturbance caused by coral translocation. High percentage change in mortality was not observed in other tagged or translocated corals, indicating such mortality was not commonly occurred in the tagged or translocated corals, and not due to any nearby construction works.

Original Corals under Contract No. NE/2015/02.

Code	Coral Species	Size (max. diameter, cm)	Sedimentation, % (thickness, mm)			Bleaching, %			Mortality, %		
			Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May 17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May 17)
SWJB-1	*Plesiastrea versipora*	28	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
SWJB-2	*Plesiastrea versipora*	20	<1 (<1)	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1
SWJB-3	*Porites* sp.	73	<1 (<1)	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1
SWJB-4	*Dipsastraea speciosa* *	16	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
SWJB-5	*Favites pentagona*	17	<1 (<1)	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1
SWJB-6	*Plesiastrea versipora*	35	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
SWJB-7	*Plesiastrea versipora*	19	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
SWJB-8	*Favites flexuosa*	25	<1 (<1)	4 (<1) ▲	<1 (<1)	<1	<1	<1	<1	<1	<1
SWJB-9.	*Porites* sp.	16	<1 (<1)	<1 (<1)	10 (<1) ▲	<1	<1	<1	<1	<1	<1
SWJB-10	*Favites chinesis*	61	<1 (<1)	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1

Note: "▲" and "▼" indicate increased and decreased in percentage, respectively, when compared with the baseline data.

* Former name: *Favia speciosa*

Translocated Corals under Contract No. NE/2015/02

Code	Coral Species	Size (max. diameter or length, cm)	Sedimentation, % (thickness, mm)			Bleaching, %			Mortality, %		
			Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May 17)
TKW-T1	*Favites flexuosa*	20	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T2	*Gonipopra stutchburyi*	15	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T3.	*Porites* sp.	12	<1 (<1)	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1
TKW-T4.	*Porites* sp.	55	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	5	5	5
TKW-T5.	*Porites* sp.	14	<1 (<1)	<1 (<1)	<1 (<1)	5	5	5	<1	<1	<1
TKW-T6	*Gonipopra stutchburyi*	10	<1 (<1)	4 (<1) ▲	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T7	*Gonipopra stutchburyi*	15	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T8	*Gonipopra stutchburyi*	6	<1 (<1)	4 (<1) ▲	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T9	*Gonipopra stutchburyi*	17	<1 (<1)	5 (<1) ▲	5 (<1) ▲	<1	<1	<1	<1	<1	<1
TKW-T10	*Gonipopra stutchburyi*	14	<1 (<1)	10 (<1) ▲	10 (<1)▲	<1	<1	<1	<1	<1	<1
TKW-T11	*Coscinarea sp.*	20	<1 (<1)	<1 (<1)	10 (<1)▲	<1	<1	<1	<1	<1	<1
TKW-T12	*Plesiastrea versipora*	20	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	5	5	5

Code	Coral Species	Size (max. diameter or length, cm)	Sedimentation, % (thickness, mm)			Bleaching, %			Mortality, %		
			Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)	Baseline (Nov16)	1st (06Mar17)	2nd (12May17)
TKW-T13	*Gonipopra stutchburyi*	16	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T14	*Favites magnistellata* *	11	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T15	*Porites* sp.	21	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	5	5	5
TKW-T16	*Astrea curta* #	10	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T17	*Porites* sp.	35	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T18	*Platygyra acuta*	15	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T19	*Favites flexuosa*	20	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T20	*Gonipopra stutchburyi*	10	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T21	*Favites magnistellata* *	12	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T22	*Turbinaria peltata*	27	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	5	5	5
TKW-T23	*Porites* sp.	14	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	10	10	10
TKW-T24	*Gonipopra stutchburyi*	20	<1 (<1)	<1 (<1)	5 (<1) ▲	<1	<1	<1	<1	<1	<1
TKW-T25	*Plesiastrea versipora*	14	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T26.	*Gonipopra stutchburyi*	6	<1 (<1)	<1 (<1)	<1 (<1)	10	10	5 ▼(^)	<1	<1	<1
TKW-T27	*Plesiastrea versipora*	18	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	<1	<1	<1
TKW-T28	*Porites* sp.	20	<1 (<1)	<1 (<1)	<1 (<1)	20	<1 ▼	<1 ▼(^)	<1	<1	<1
TKW-T29	*Astrea curta* #	13	<1 (<1)	<1 (<1)	<1 (<1)	<1	<1	<1	10	10	10

Note: "▲" and "▼" indicate increased and decreased in percentage, respectively, when compared with the baseline data.

* Former name: *Montastrea magnistellata*

\# Former name: *Montastrea curt*

^ Decreased percentage in level of bleaching was recorded in the translocated coral colony TWK-T26 (*Gonipopra stutchburyi*) and TKW-T28 (Porites sp.). The level of bleaching recorded in this monitoring (<1%) was less than that recorded in baseline survey in November 2016 (20%). Such recovery from bleaching is not uncommon to occur in Porites species, as Porites species and *Gonipopra stutchburyi* are regarded as a long-lived species and survive under stressful Hong Kong marine environment.