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 – February to April 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.

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

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EXECUTIVE SUMMARY

Introduction

1. This is the 2nd 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 February 2017 and April 2017.

2. During the reporting quarter, the following works contracts were undertaken within Kai Tak 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.

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	
February 2017					
Air Quality	0	0	0	0	N/A
Noise	2	0	2	0	Refer to Appendix L
Groundwater Quality	1	6	0	0	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	N/A	N/A	N/A	N/A	N/A
Cultural Heritage	N/A	N/A	N/A	N/A	N/A
Landfill Gas	0	0	0	0	N/A
March 2017					
Air Quality	0	0	0	0	N/A
Noise	2	1	1	0	Refer to Appendix L
Groundwater Quality	1	10	0	0	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	N/A	N/A	N/A	N/A	N/A
Landfill Gas	0	0	0	0	N/A
April 2017					
Air Quality	0	0	0	0	N/A
Noise	0	0	0	0	Refer to Appendix L
Groundwater Quality	1	7	0	0	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	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			
Environmental complaint received	11	Air quality and Construction noise nuisance	Investigation completed	Closed	---
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
February 2017	Sunny and Rainy
March 2017	Rainy and Cloudy
April 2017	Sunny 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.

February 2017

3.4 All 24-hour TSP monitoring was conducted as scheduled in the reporting month, except at Station AM4(A) – Cha Kwo Ling Public Cargo Working Area Administrative Office on 27 January and 1 February 2017 were cancelled due to power supply failure. The monitoring were re-scheduled to 2 and 3 February 2017 respectively. No Action/Limit Level exceedance was recorded.

March 2017

3.5 All 24-hour TSP monitoring was conducted as scheduled in the reporting month, except at Station AM4(A) – Cha Kwo Ling Public Cargo Working Area Administrative Office on 6 and 28 March 2017 were cancelled due to power supply failure. The monitoring were re-scheduled to 7 and 29 March 2017 respectively. No Action/Limit Level exceedance was recorded.

April 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

February 2017

3.8 All construction noise was conducted as scheduled in the reporting month. Two (2) Action Level exceedance on 9 and 13 February 2017 was recorded due to the documented complaints received from monitoring station in the reporting month. No Limit Level exceedance was recorded.

March 2017

3.9 All construction noise monitoring was conducted as scheduled in the reporting month. Two (2) Action Level exceedance on 8 and 13 March 2017 was recorded due to the

documented complaints received from monitoring station in the reporting month. One non-Project related Limit Level exceedance was recorded.

April 2017

3.10 All construction noise monitoring was conducted as scheduled in the reporting month. No Action/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. Three (3) Action Level Exceedance and Twenty-three (23) Limit Level exceedance was recorded. According to the information provided by the Contractor, no tunnel boring or tunnel construction works were carried out in both Lam Tin side and Tseung Kwan O side in the reporting quarter. The exceedance are considered to be non-Project related. The graphical presentations of the groundwater quality monitoring results are shown in **Appendix E**.

3.13 All marine water monitoring was conducted as scheduled in the reporting quarter. No Action/Limit Level exceedance was recorded. The graphical presentations of the marine water quality monitoring results are shown in **Appendix F**.

3.14 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

3.15 Post-translocation coral monitoring survey shall be conducted once every 3 months for a period of 12 months after completion of coral translocation. The 1st post-translocation coral monitoring survey was carried out on 6 March 2017. No action/limit level of mortality was exceeded in the monitoring survey conducted in March 2017. The 2nd post-translocation coral monitoring survey is scheduled in May 2017.

Monitoring on Cultural Heritage

3.16 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 April 2017.

Landscape and Visual Monitoring and Audit

3.17 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

3.18 Monitoring of landfill gases commenced in December 2016 and were carried out by the Contractor 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

3.19 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

3.20 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(1) - Sitting-out Area at Cha Kwo Ling Village	Road Traffic at Cha Kwo Ling Road
AM4(A)(2)(*) - 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

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 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	
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

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.

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

3.3 Four (4) Action Level exceedance was recorded due to the documented complaints received from monitoring station in the reporting quarter. One non-Project related Limit Level exceedance was recorded in the reporting quarter.

Water Quality

4.4 Three (3) Action Level Exceedance and Twenty-three (23) Limit Level exceedance was recorded for groundwater quality monitoring in the reporting quarter.

4.5 No Action/Limit Level exceedance was recorded for marine water quality monitoring in the reporting quarter.

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

Monitoring on Cultural Heritage

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

Landscape and Visual

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

Landfill Gas

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

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

4.10 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

4.11 Eleven (11) cases of environmental complaints on this Project were received in the reporting quarter. The details were attached in the **Appendix L**.

4.12 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 11 cases of environmental complaint 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. According to environmental audits performed, the following recommendations were made:

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.

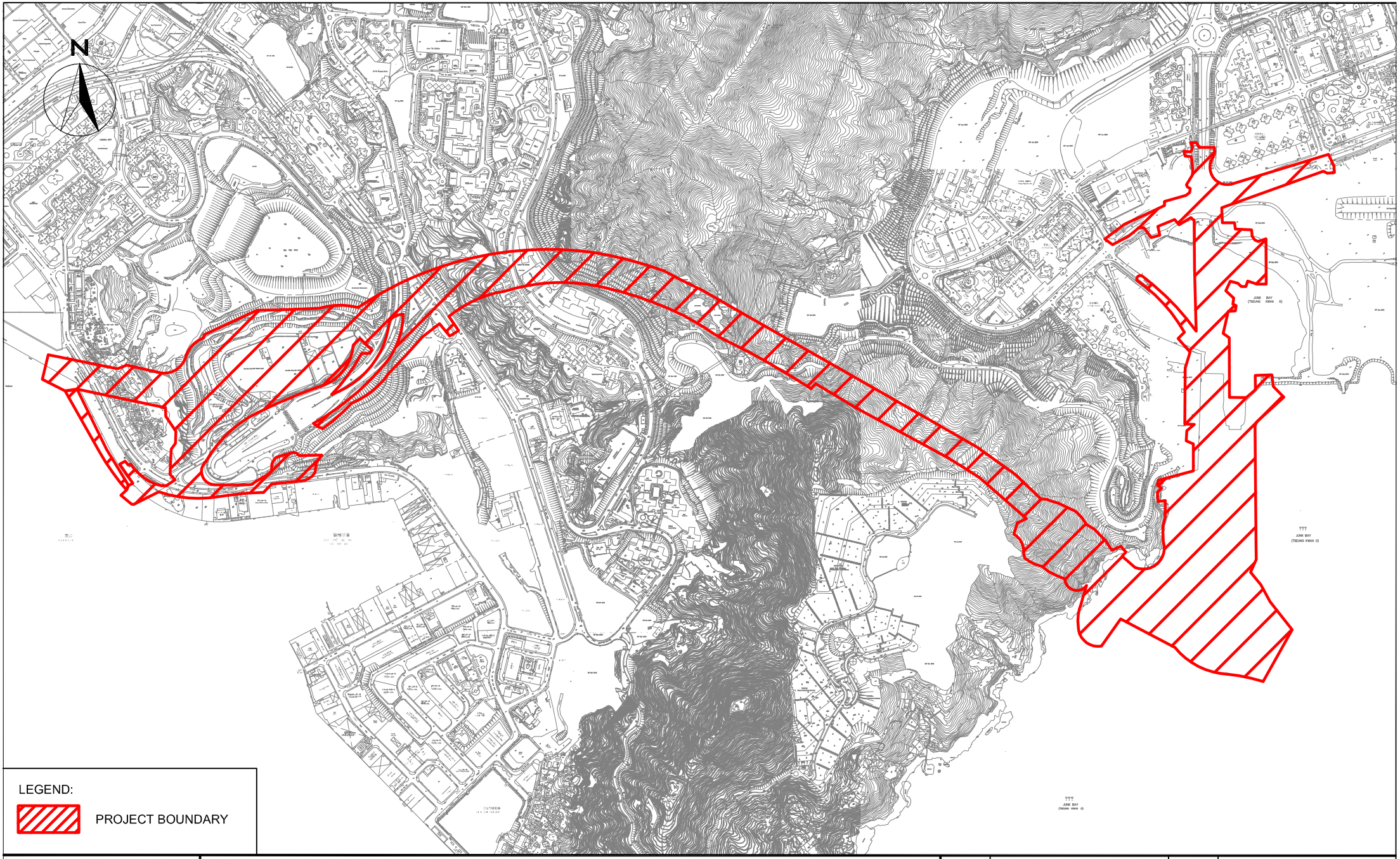
Landscape and Visual

- 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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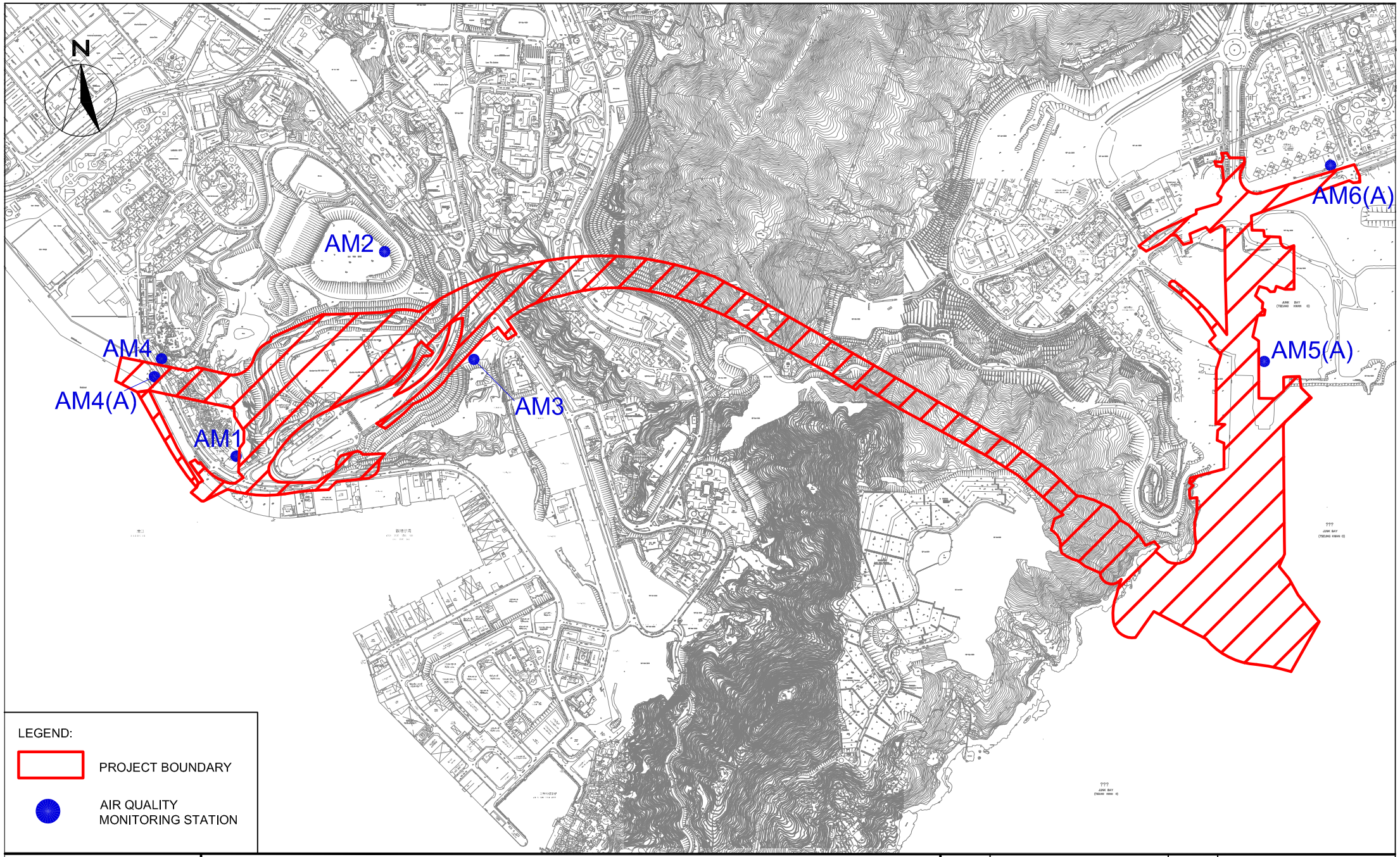

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Air Quality Monitoring Stations

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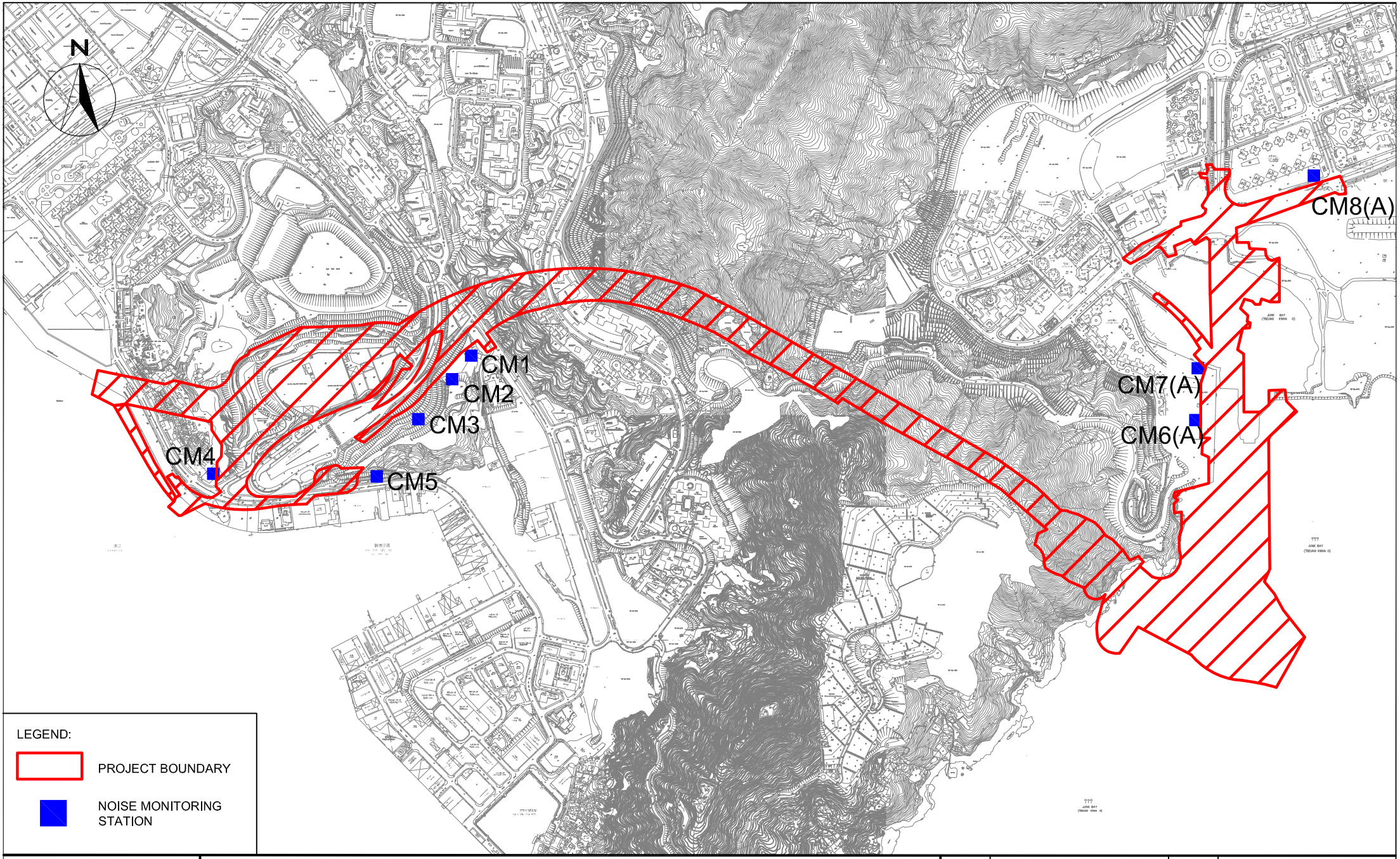

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Noise Monitoring Stations

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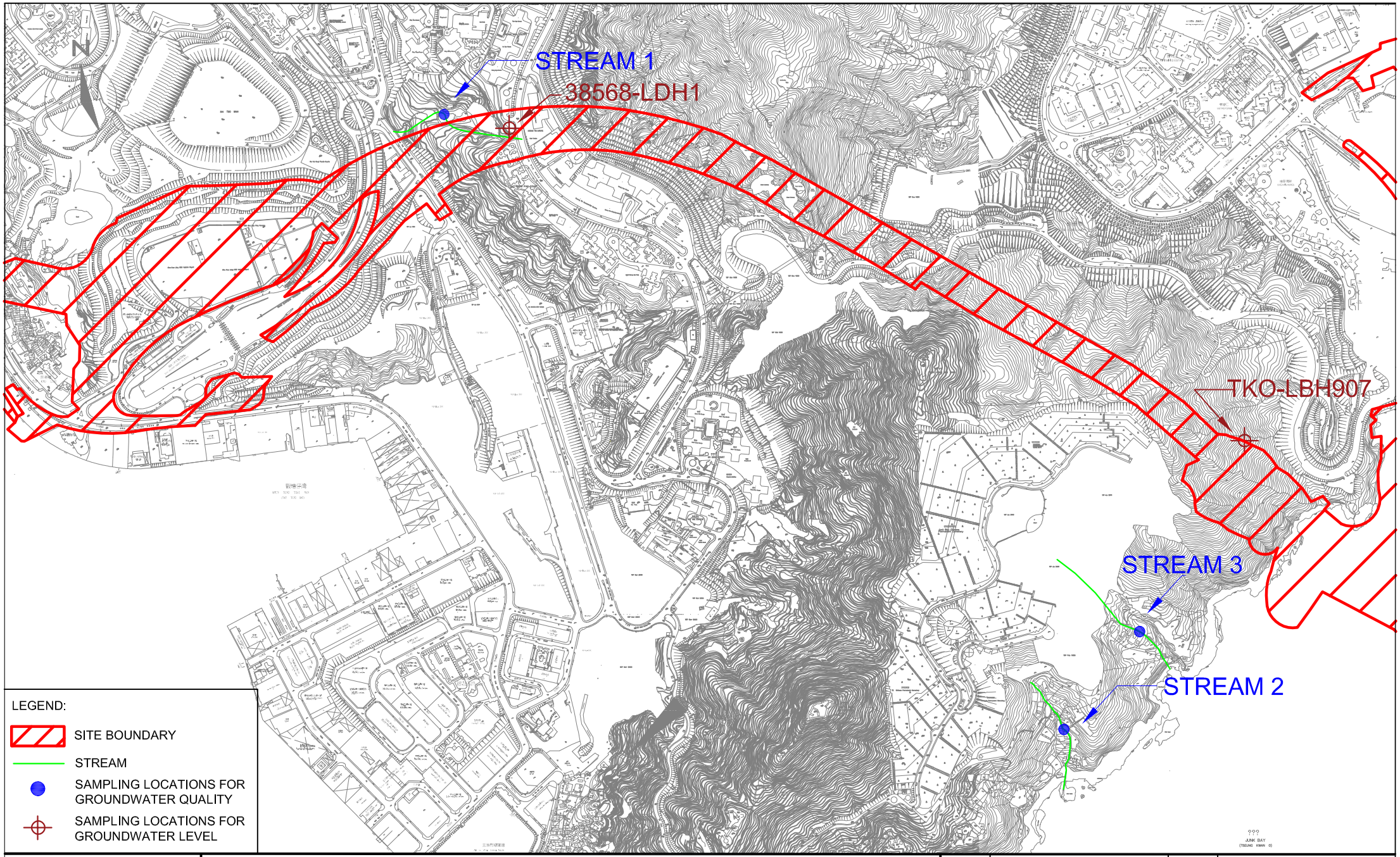

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Agreement No. CE/59/2015 (EP)
Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction
Location of Streams for Groundwater Quality and Groundwater Level Monitoring

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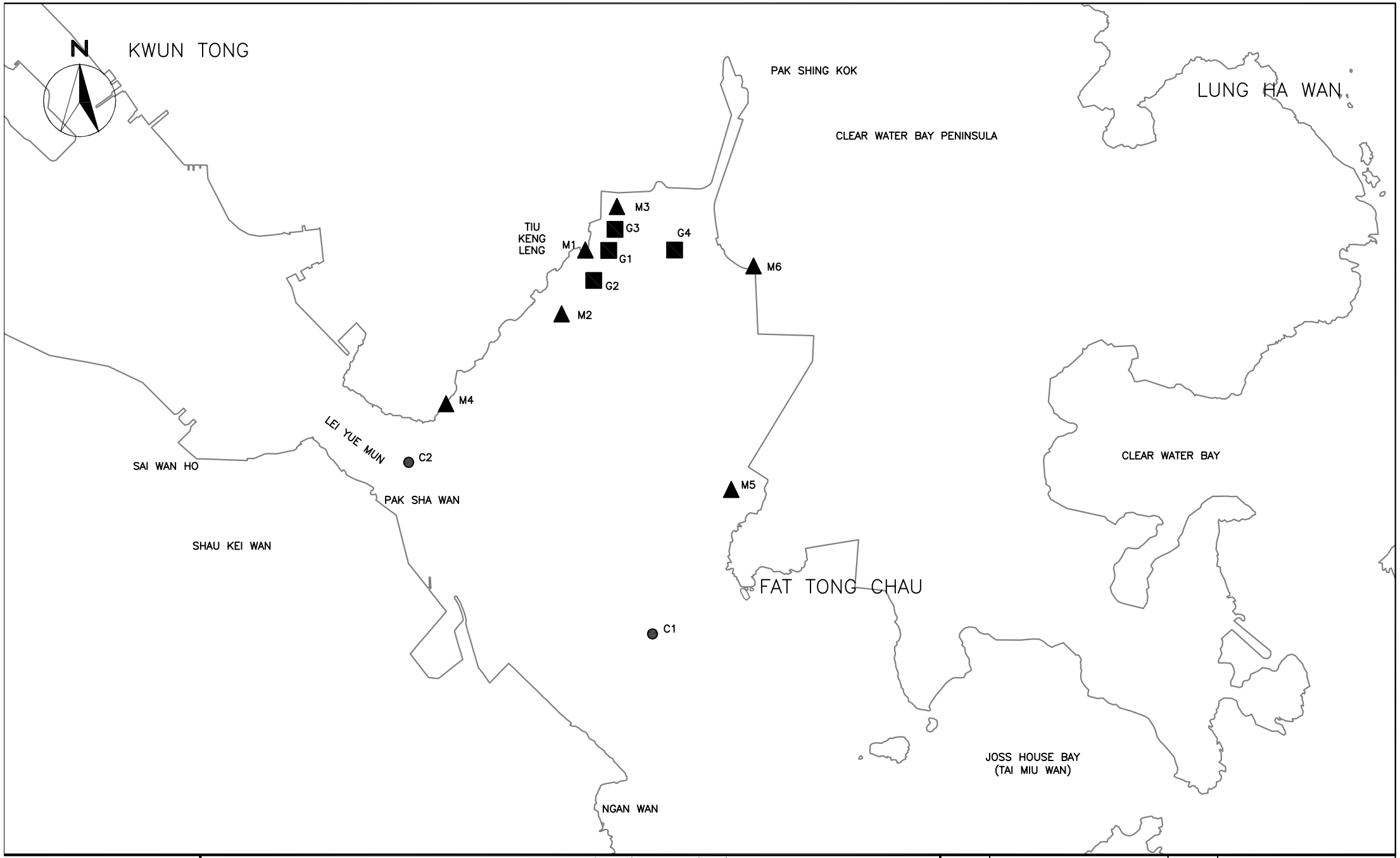
JOB No.	MA16034	FIGURE NO. 4	REV -



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

Locations of Water Quality Monitoring Stations

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PROJECT NO.	MA16034	FIGURE NO.	5
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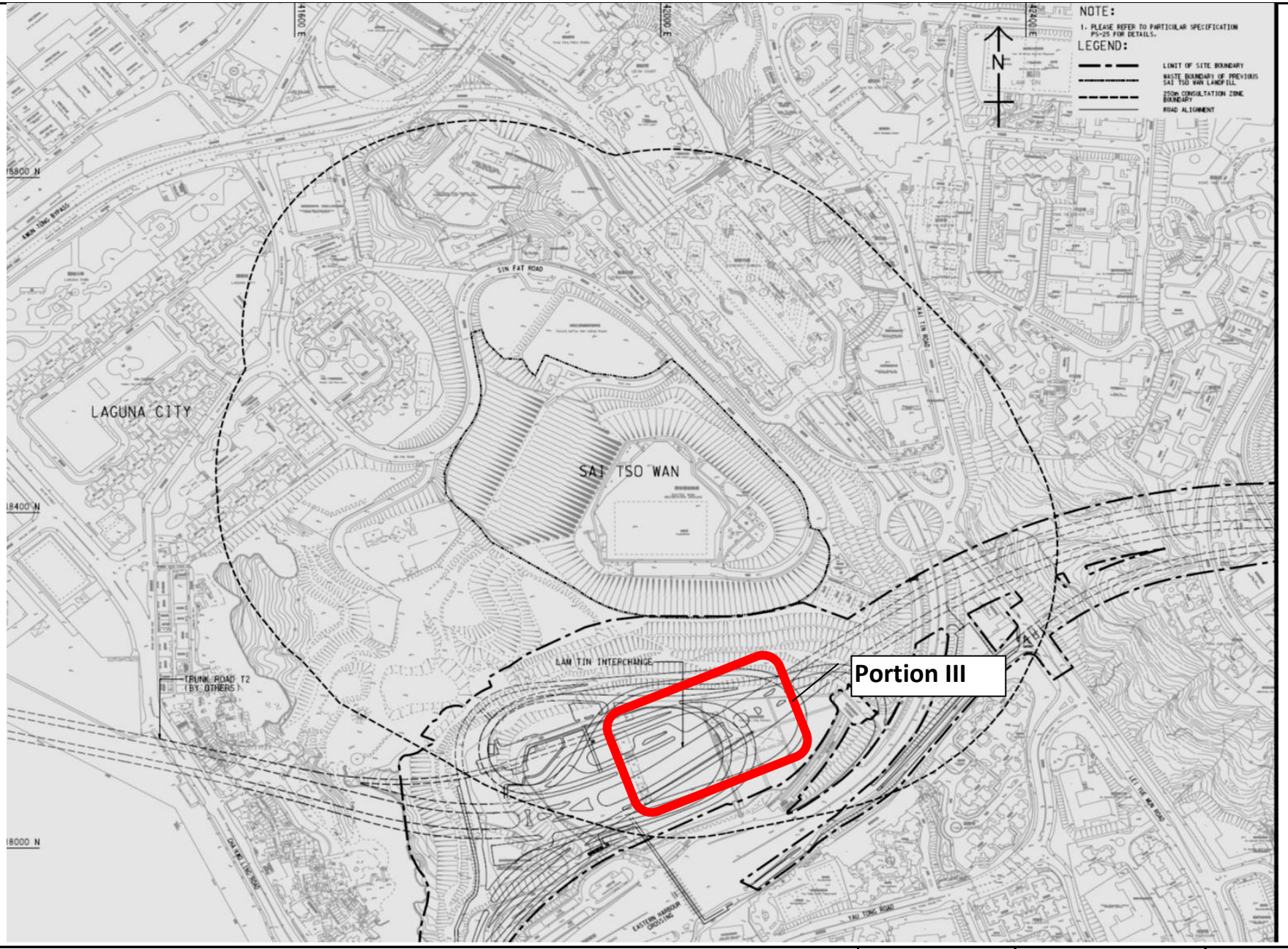

Title	Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Locations of Landfill Gas Monitoring	Scale: N.T.S Date: Dec-16	Project No.: MA16034 Figure: 6

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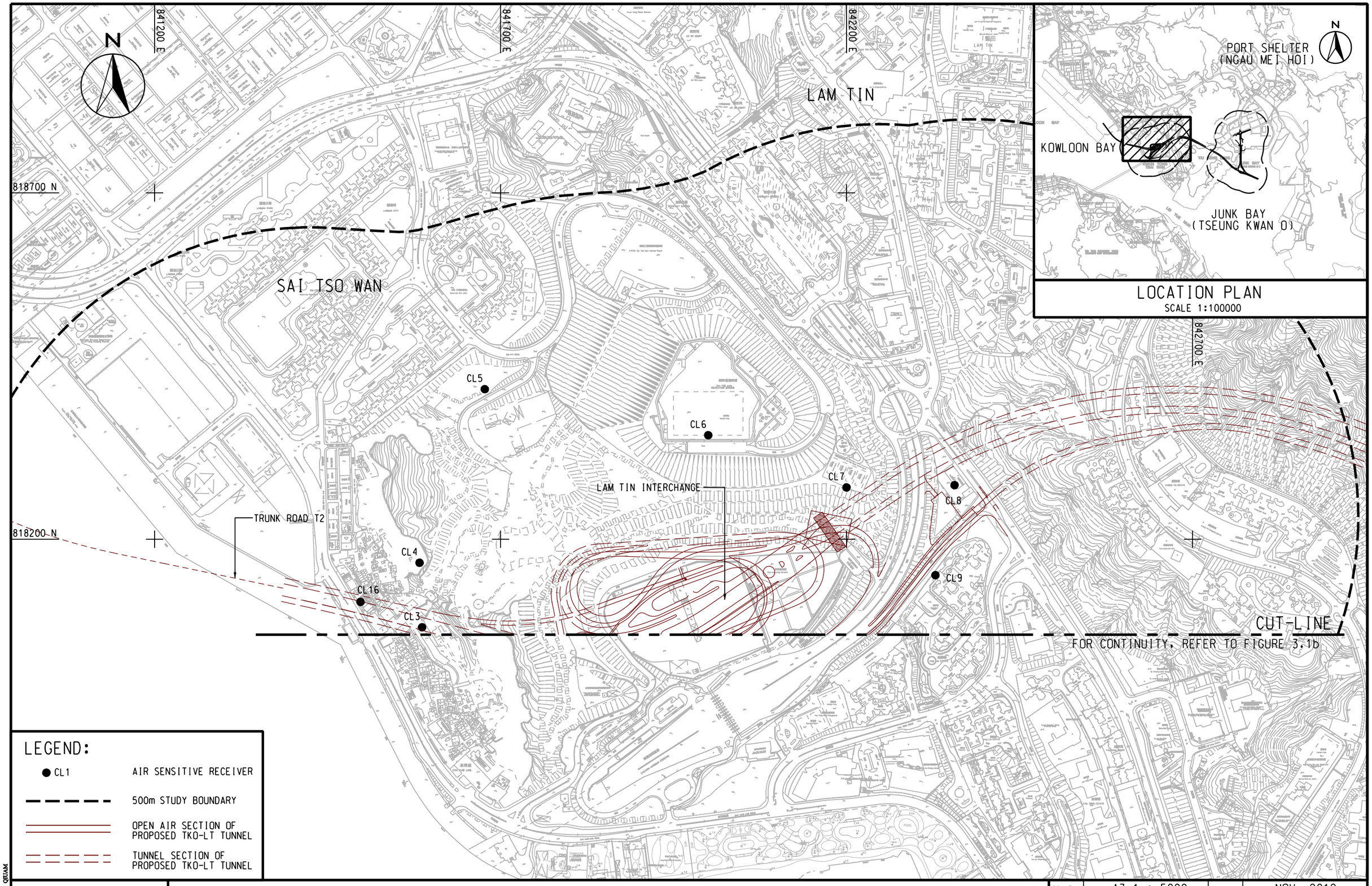

AECOM

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	-

Plot File by : 1/16/2013 QIUAM

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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

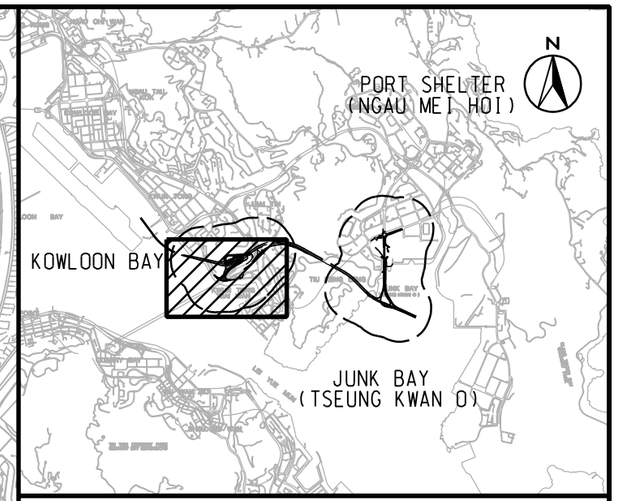
CL12

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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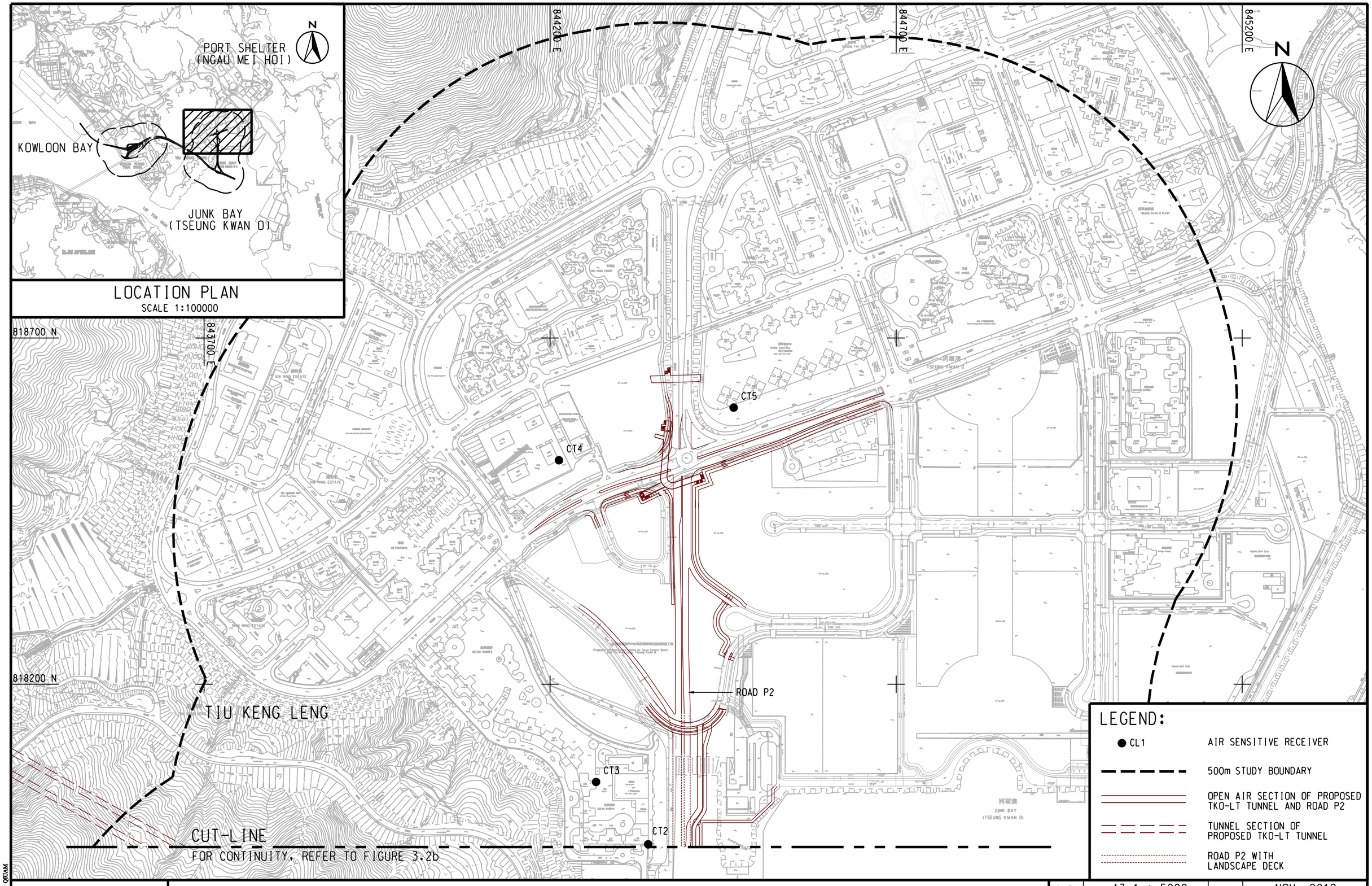

AECOM

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

SCALE	A3 1 : 5000	DATE	NOV. 2012
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		REV	-

Plot File by : 1/16/2013 QUAM

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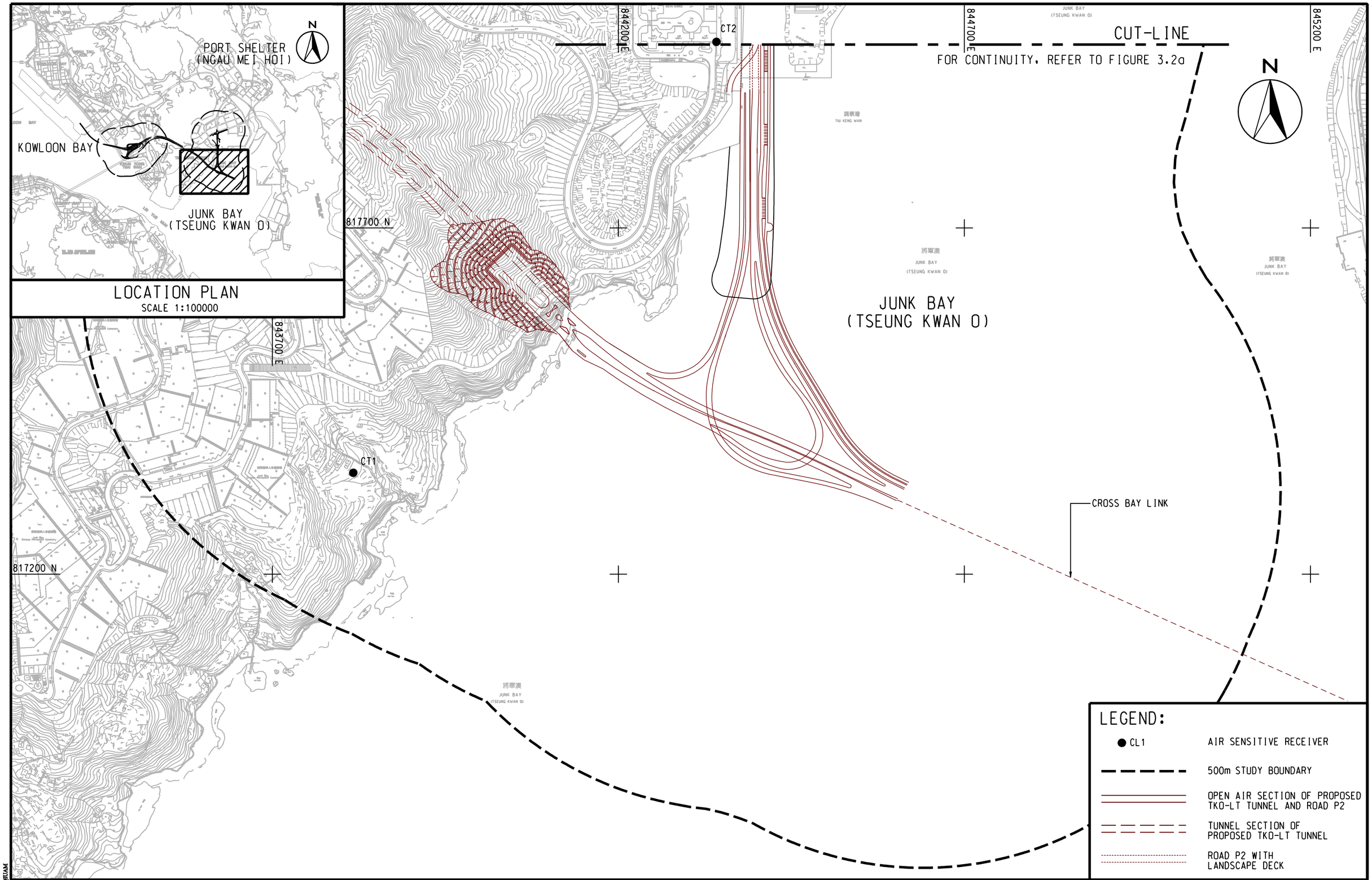

AGREEMENT NO. CE 42/2008 (CE)
TSEUNG KWAN O - LAM TIN TUNNEL AND ASSOCIATED WORKS - INVESTIGATION

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	–

Plot File by : 1/16/2013 QUAM

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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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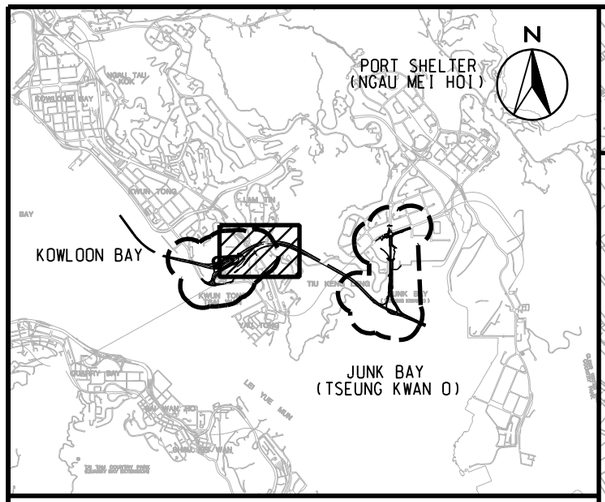

LOCATION PLAN
SCALE 1 : 90000

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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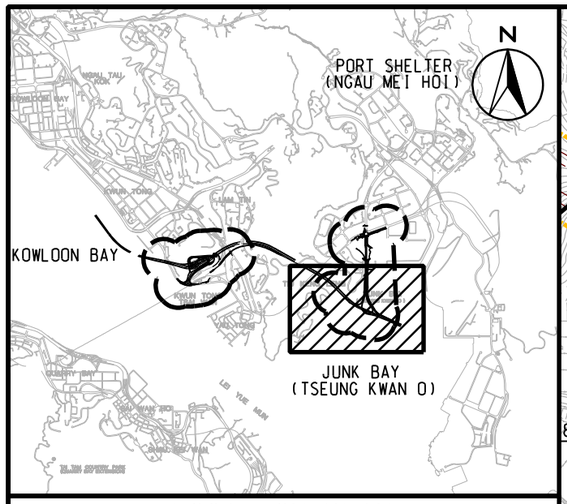

LOCATION PLAN
SCALE 1 : 90000

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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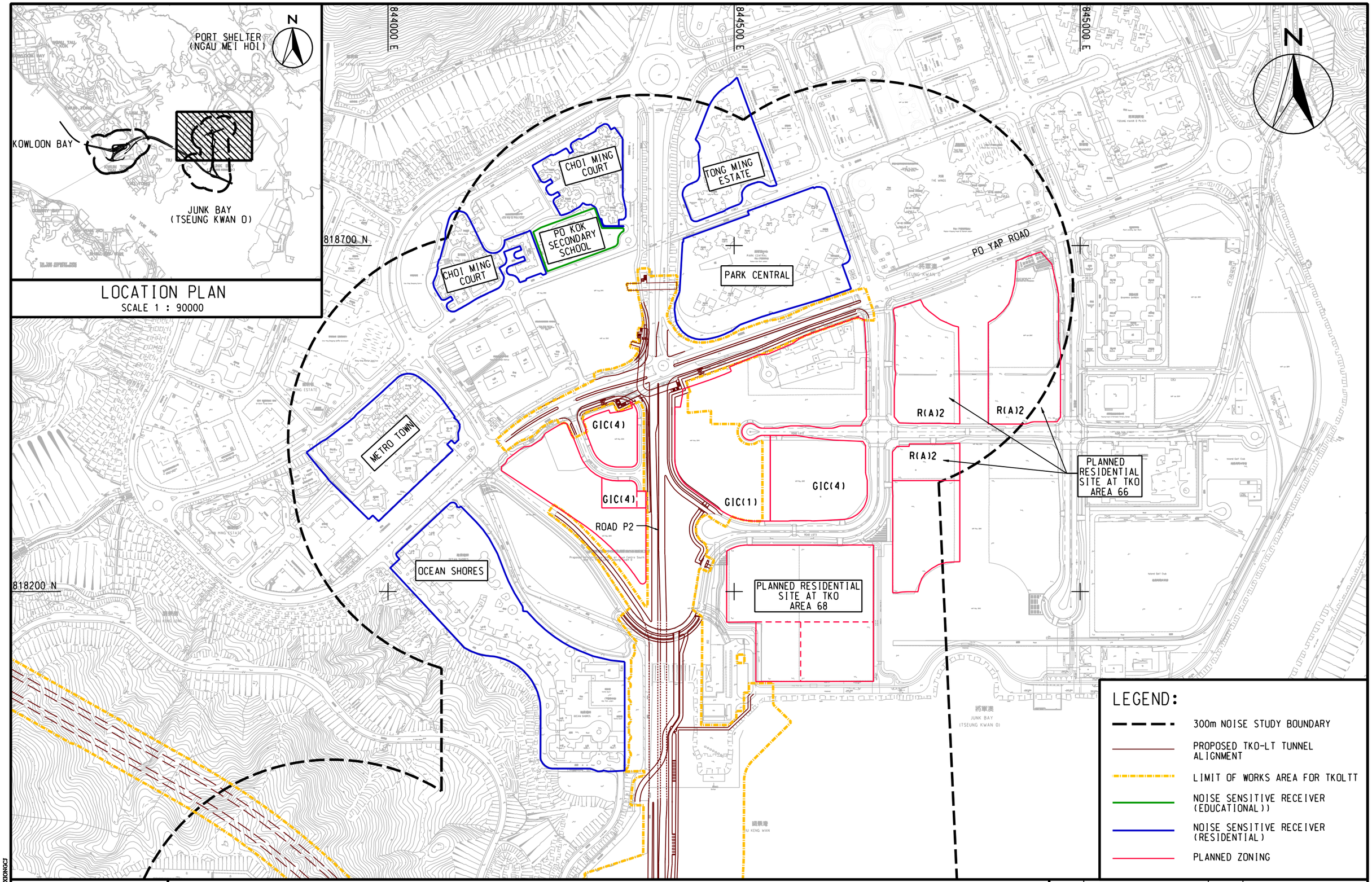

AECOM

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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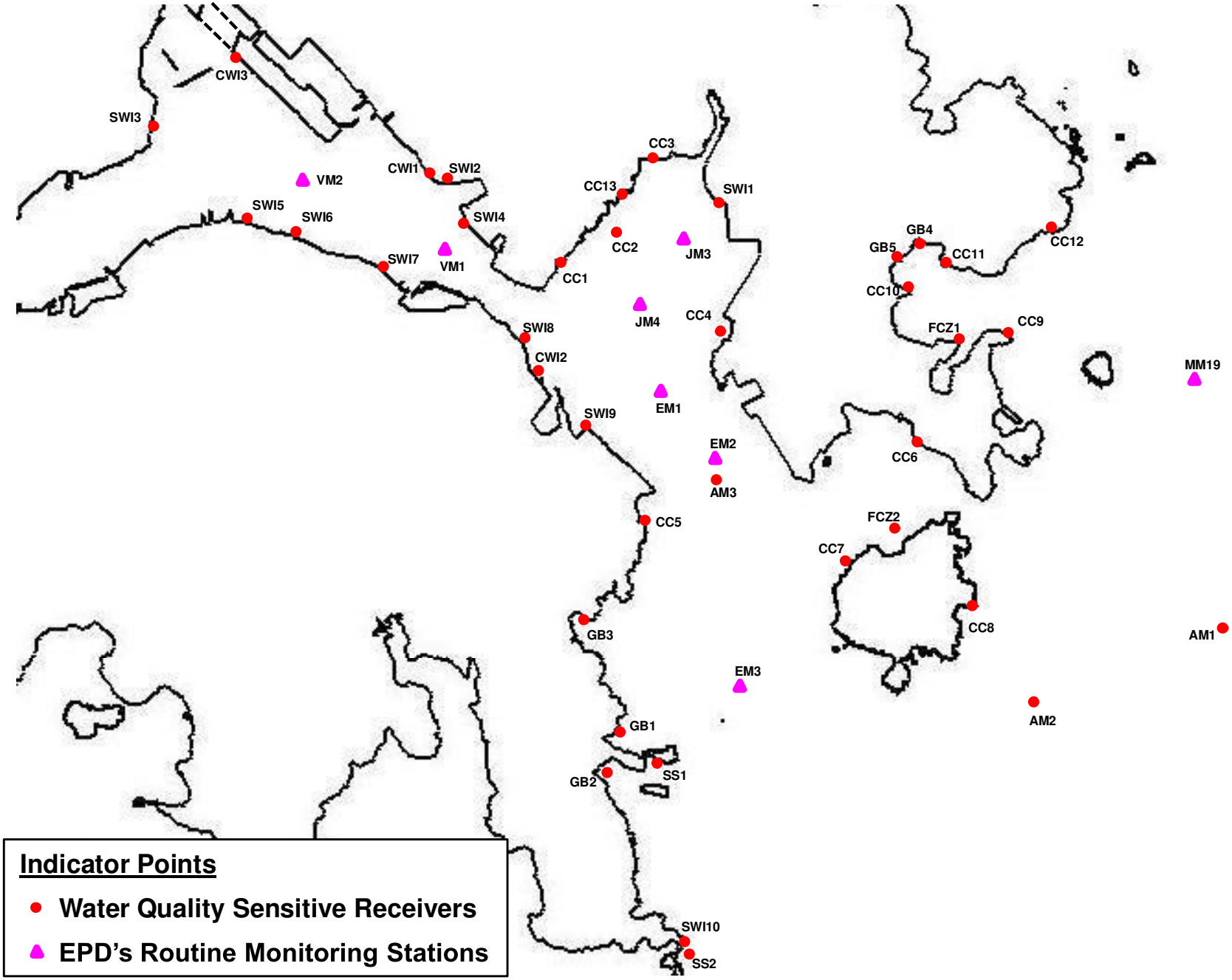

Indicator Points

- 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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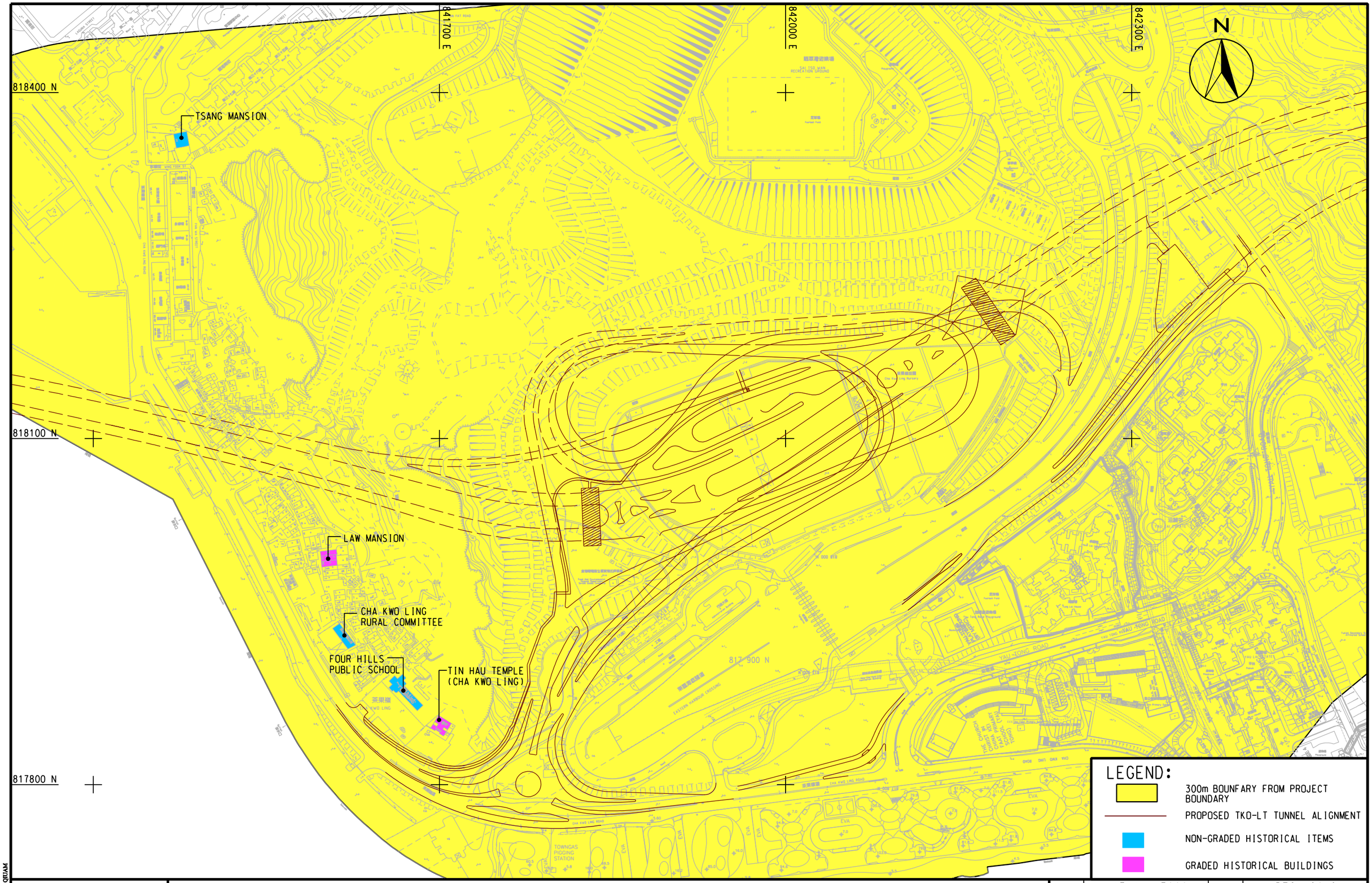

AECOM

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

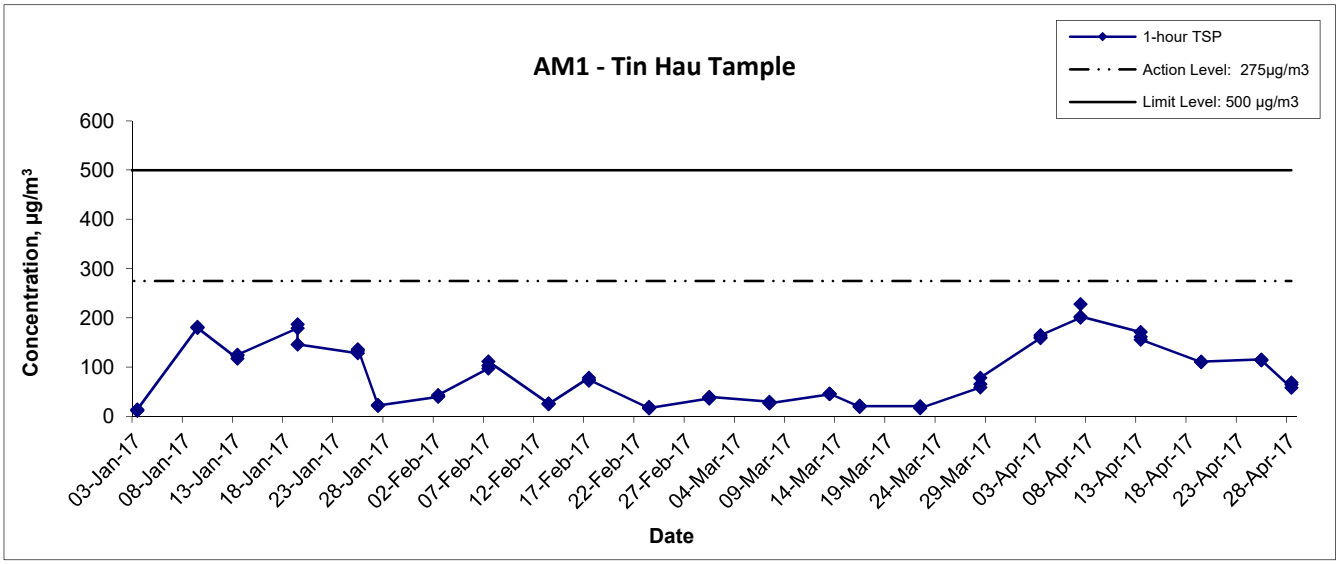
Parameter	Action Level Definition	Limit Level Definition
Mortality	If during Impact Monitoring a 15% increase in the percentage of partial mortality on hard corals occurs at more than 20% of the tagged coral at any one Impact Monitoring Site that is not recorded at the Control Site, then the Action Level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

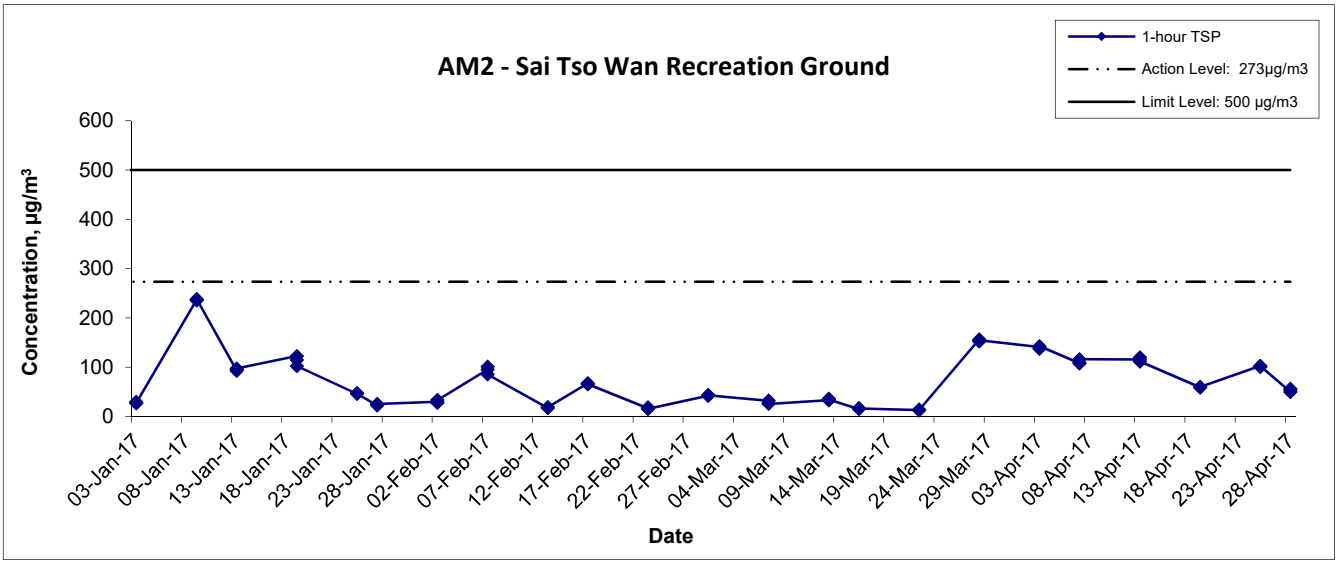
Landfill Gas Monitoring

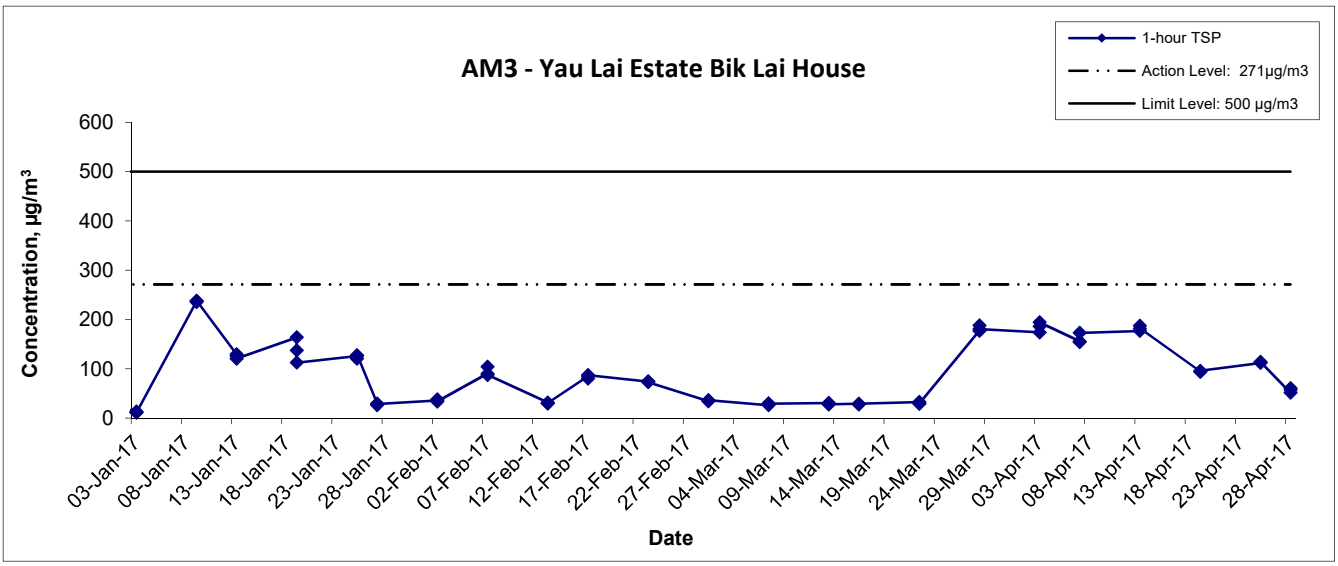
Parameter	Limit Level
Oxygen	<19%
	<18%
Methane	>10% LEL (i.e. > 0.5% by volume)
	>20% LEL (i.e. > 1% by volume)
Carbon Dioxide	>0.5%
	>1.5%

APPENDIX C
GRAPHICAL PRESENTATION OF AIR QUALITY MONITORING RESULTS

1-hr TSP Concentration Levels

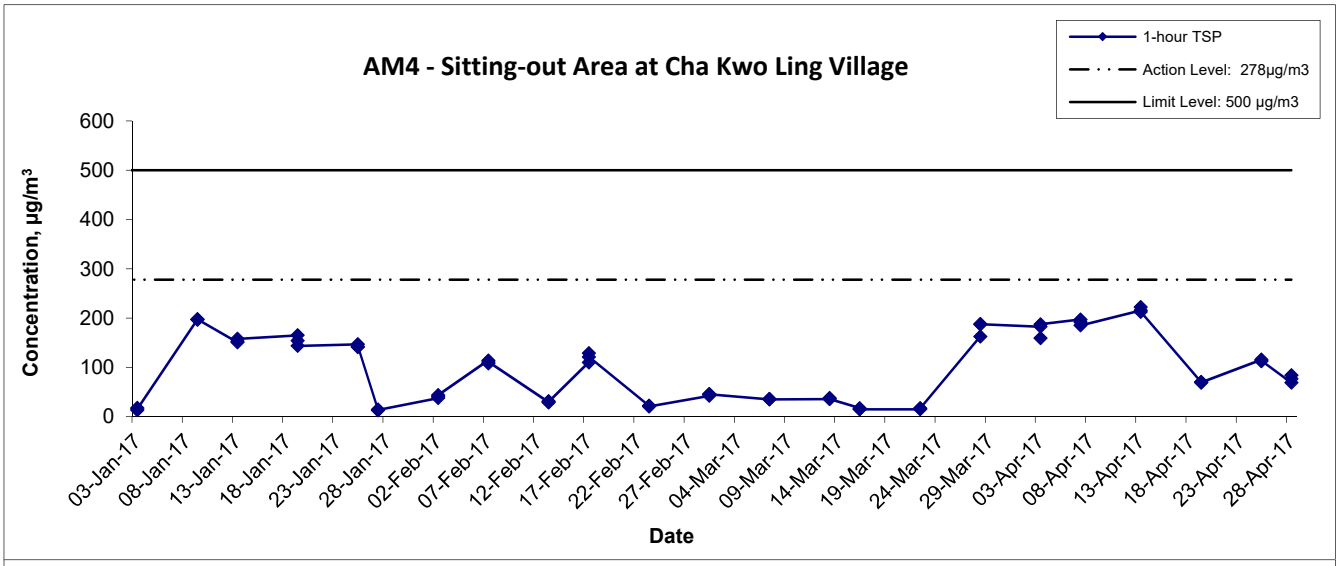


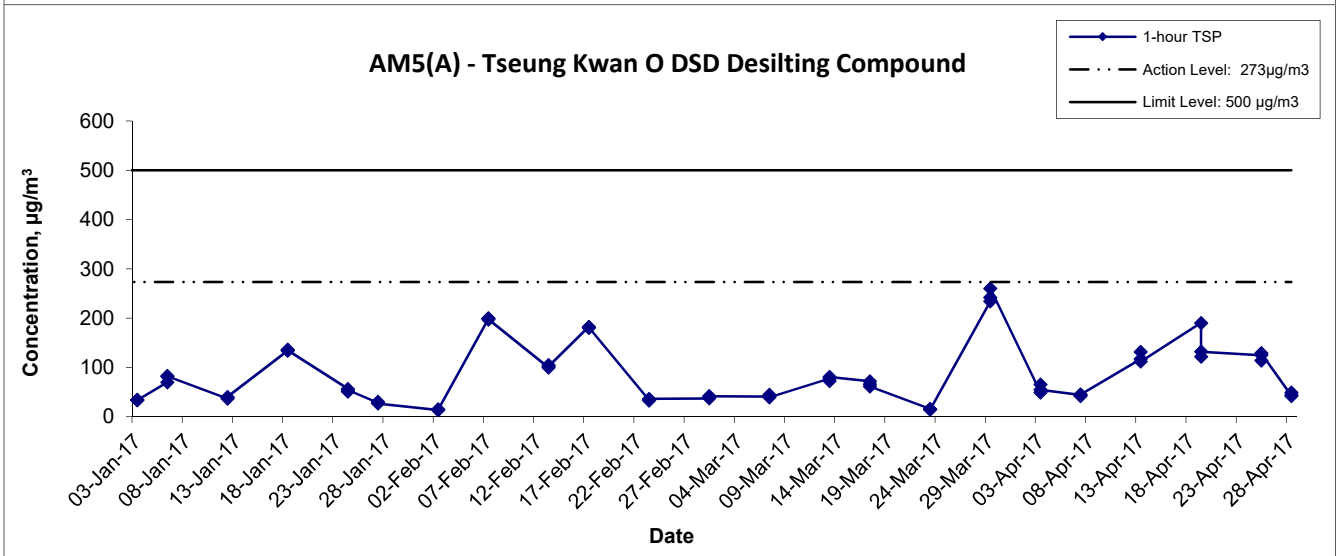


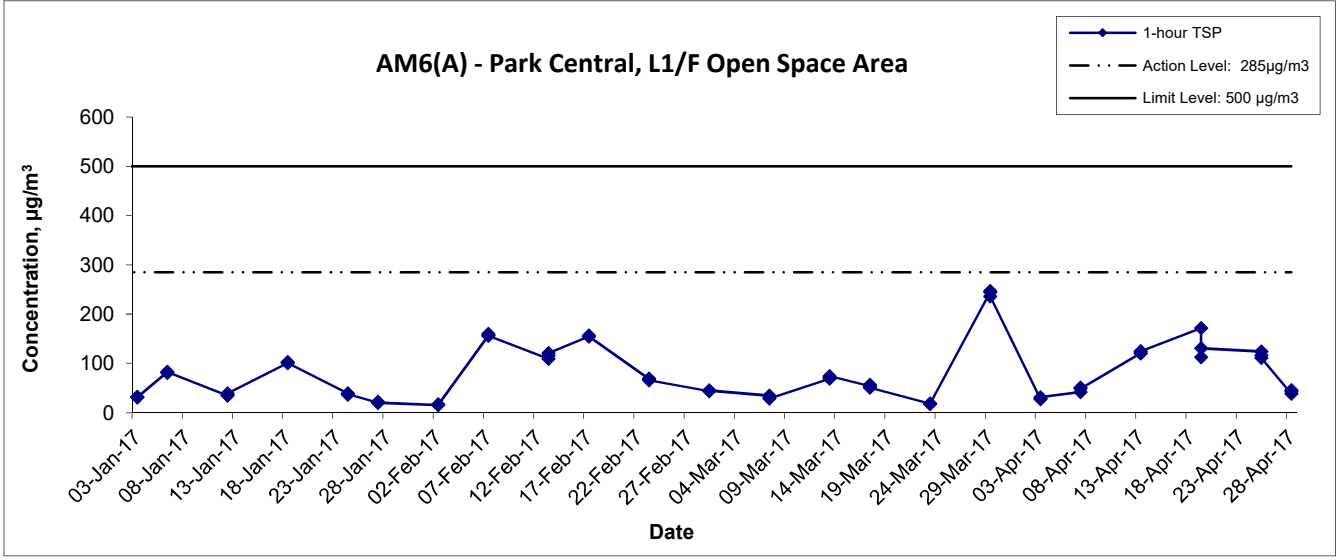


Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Apr 17	Project No.: MA16034 Appendix: E	CINOTECH

1-hr TSP Concentration Levels



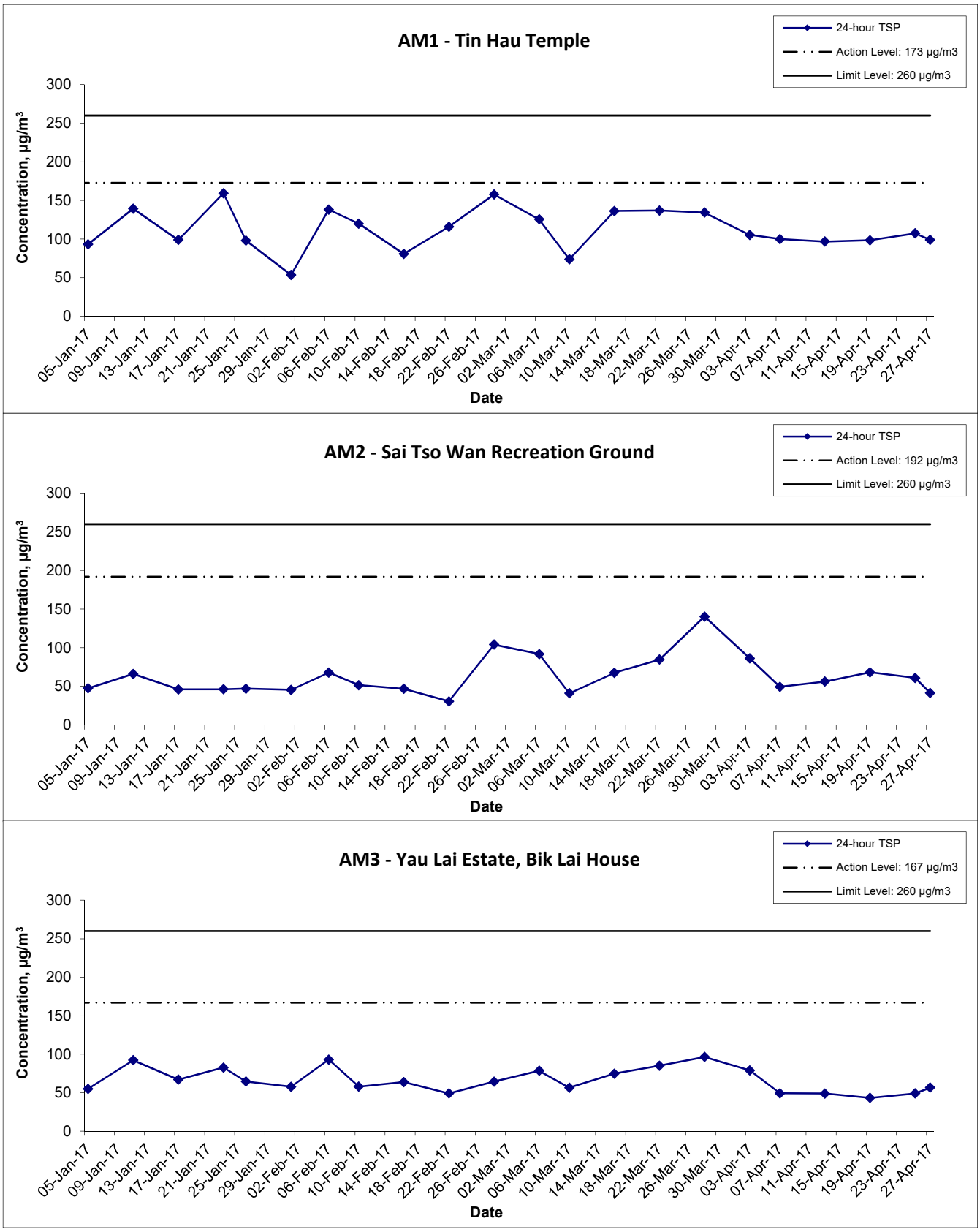




Title		Scale	Project No.
Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results		N.T.S	MA16034
		Date: Apr 17	Appendix: E

CINOTECH

24-hr TSP Concentration Levels



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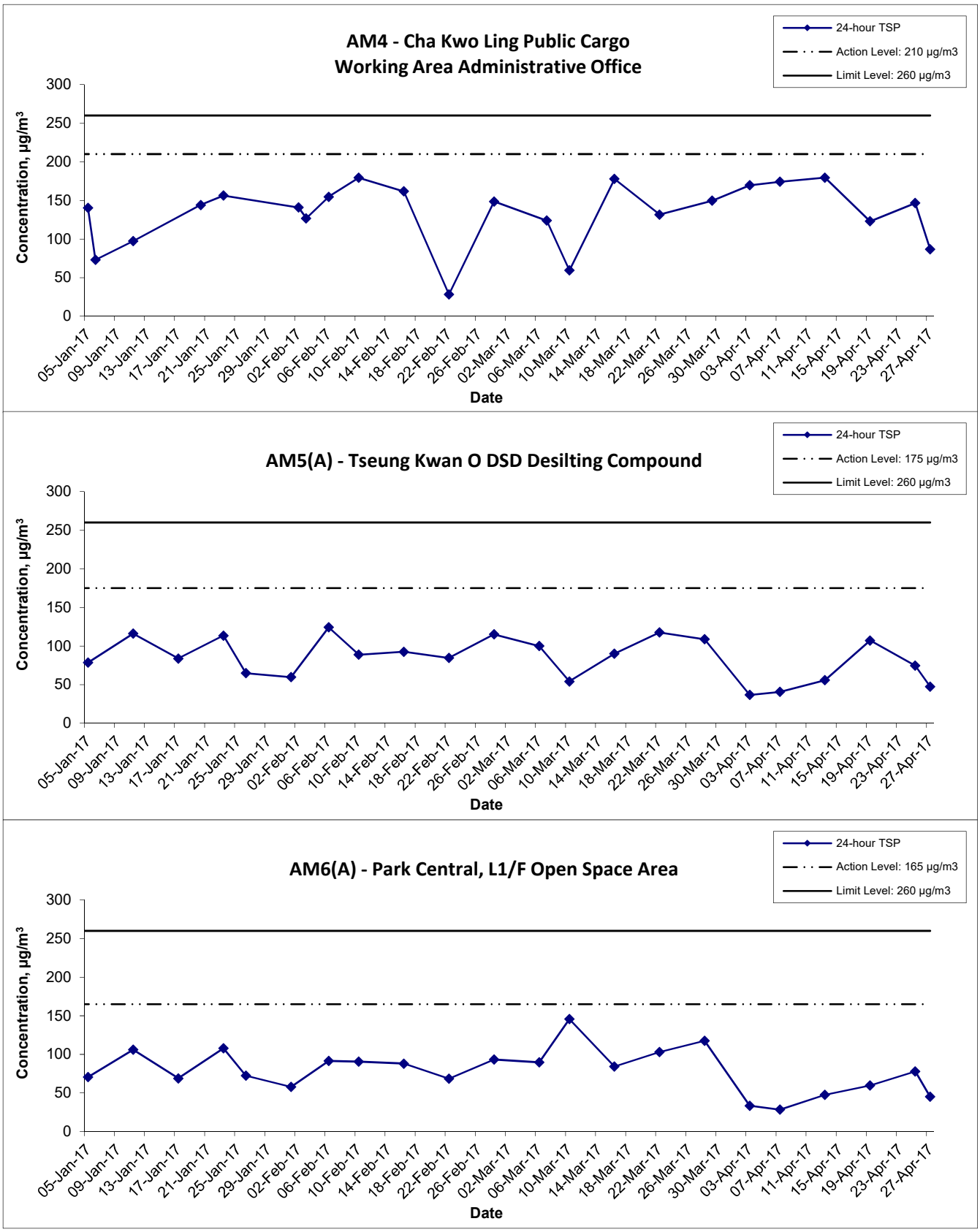
		Date Apr 17	Appendix F	

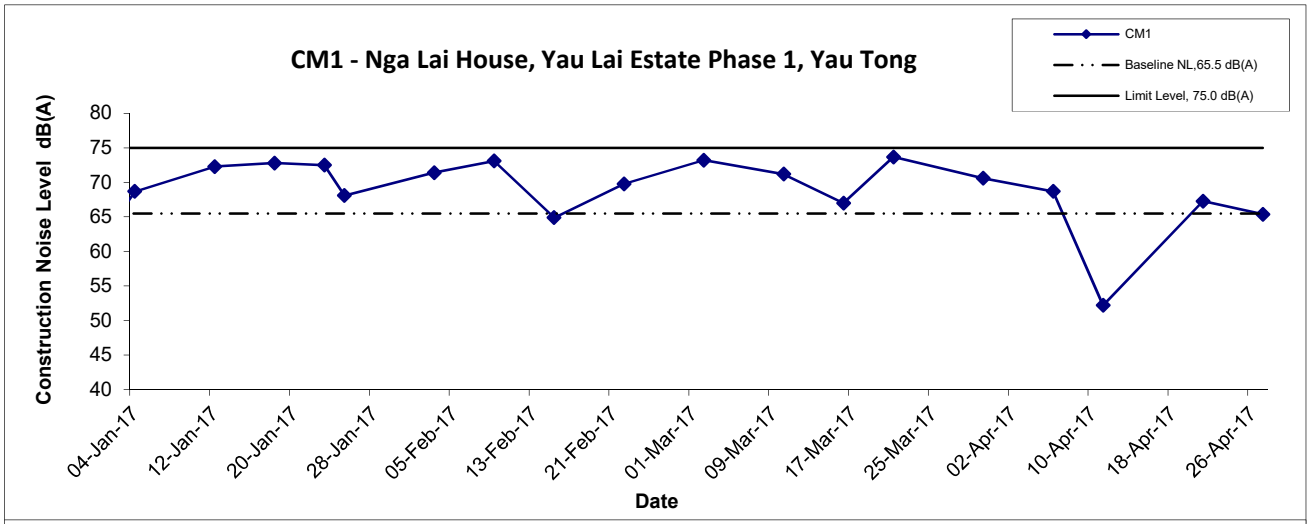
24-hr TSP Concentration Levels

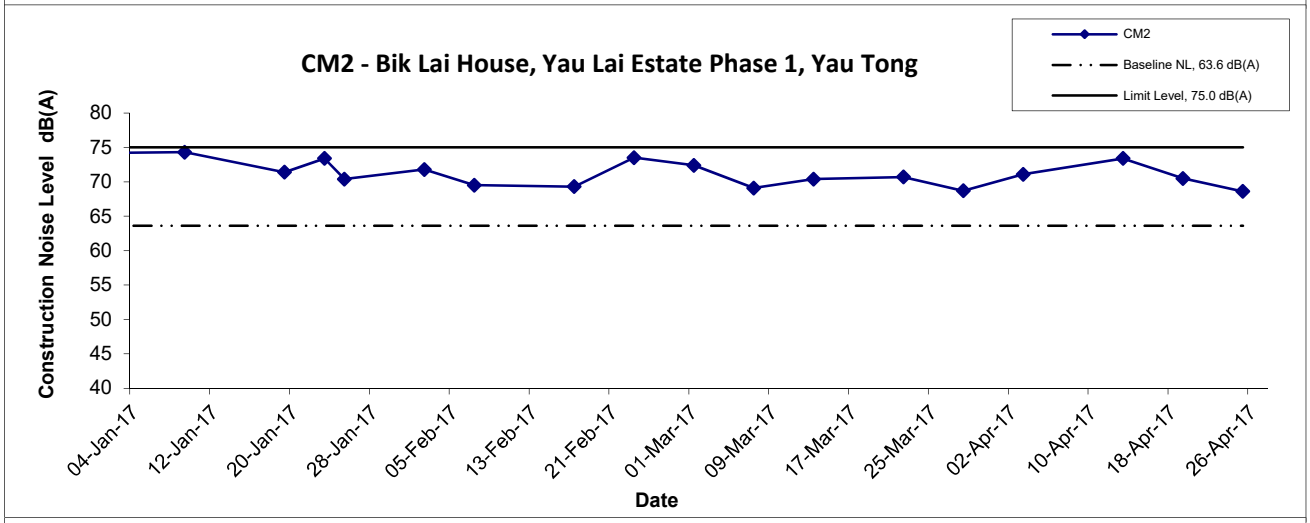


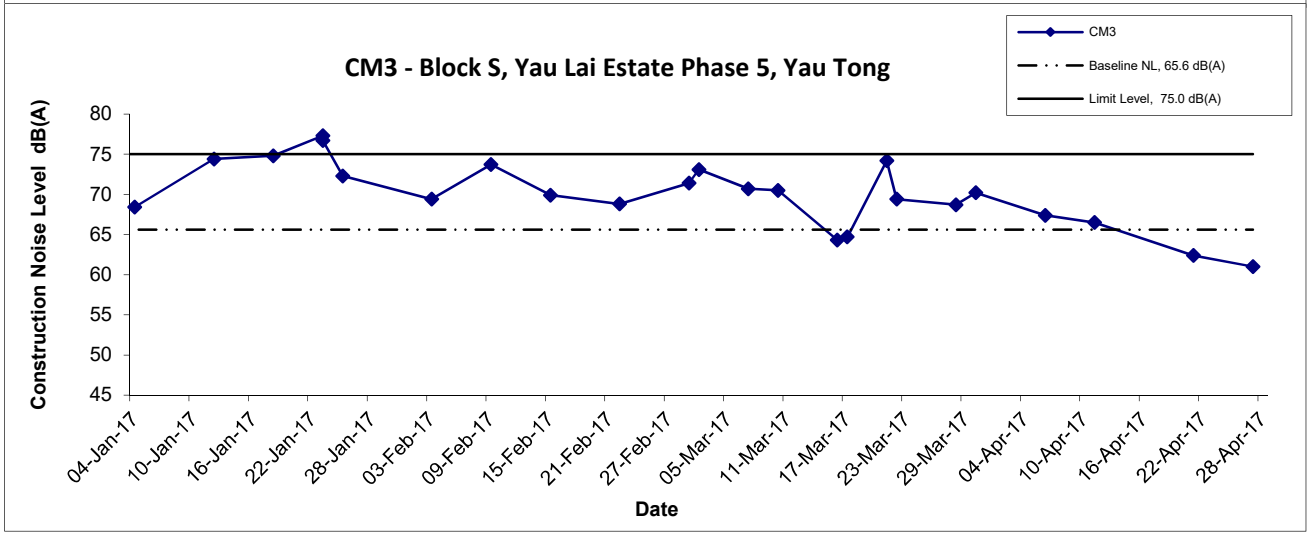
Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Apr 17	Appendix: F	

APPENDIX D
GRAPHICAL PRESENTATION OF NOISE MONITORING RESULTS

Noise Levels

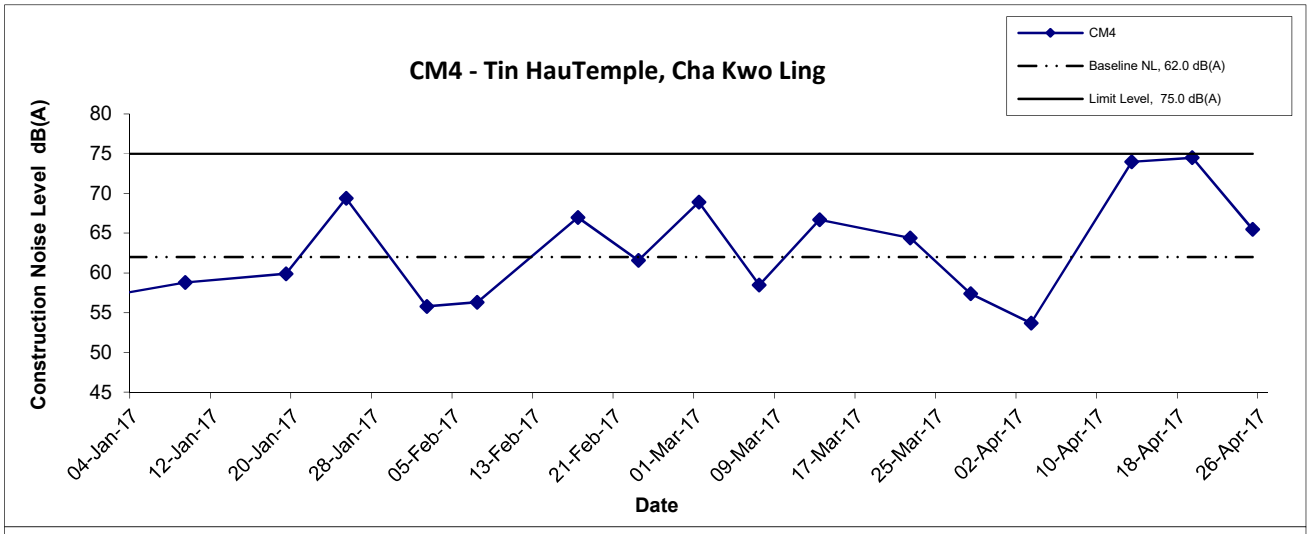


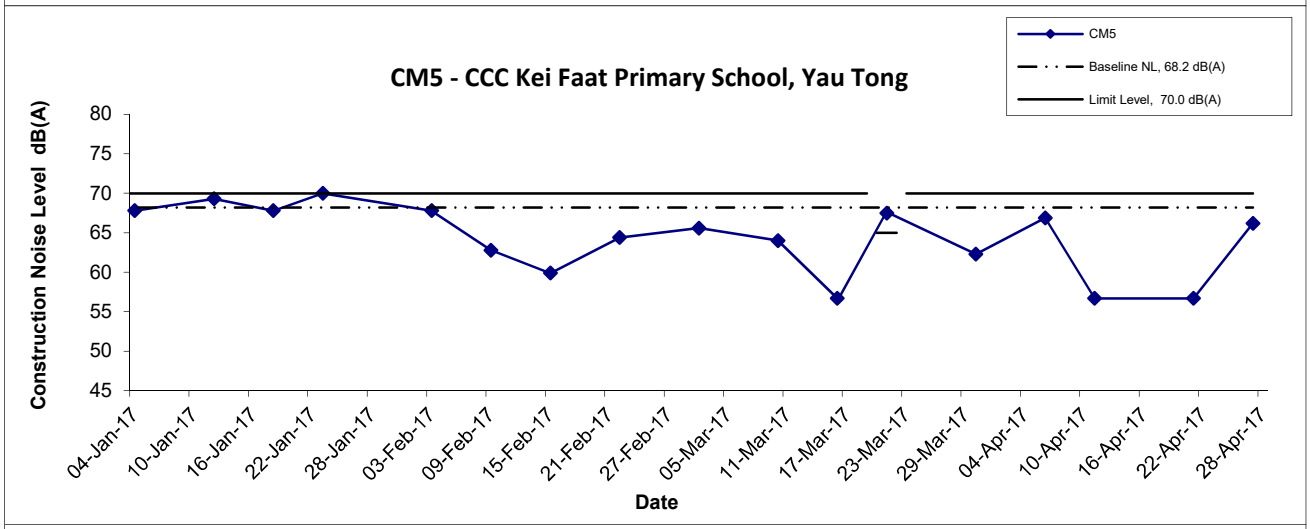


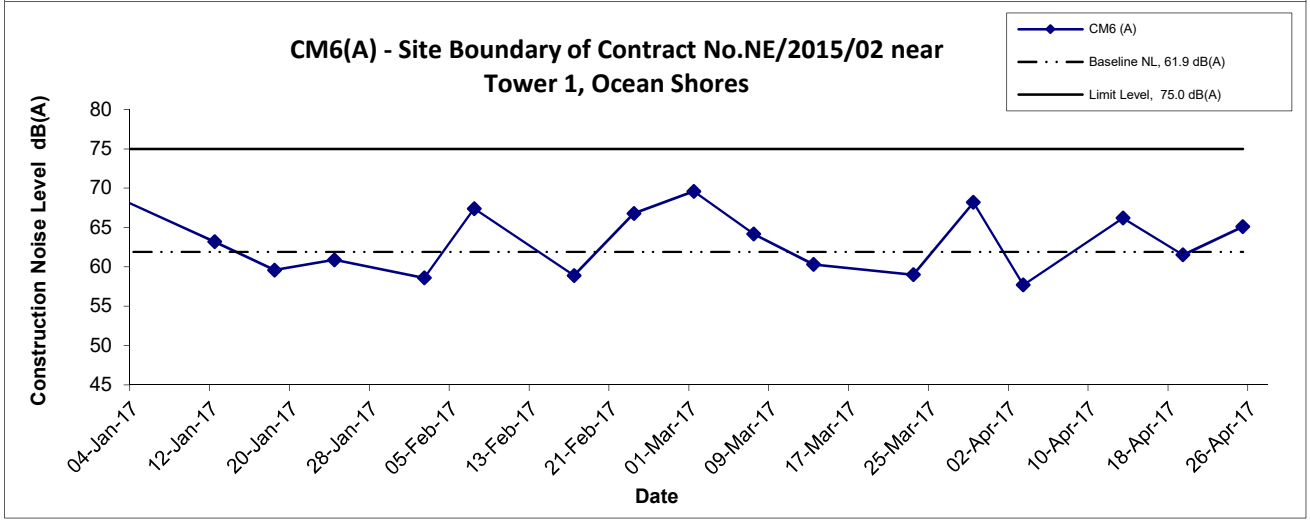


Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Apr 17	Project No. MA16034 Appendix G	CINOTECH

Noise Levels

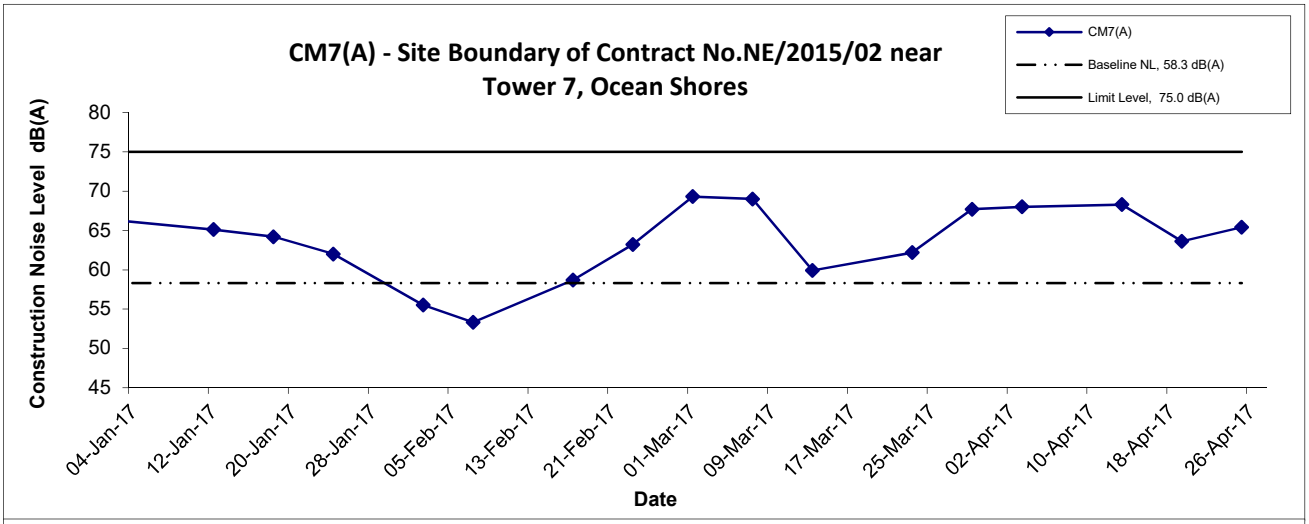


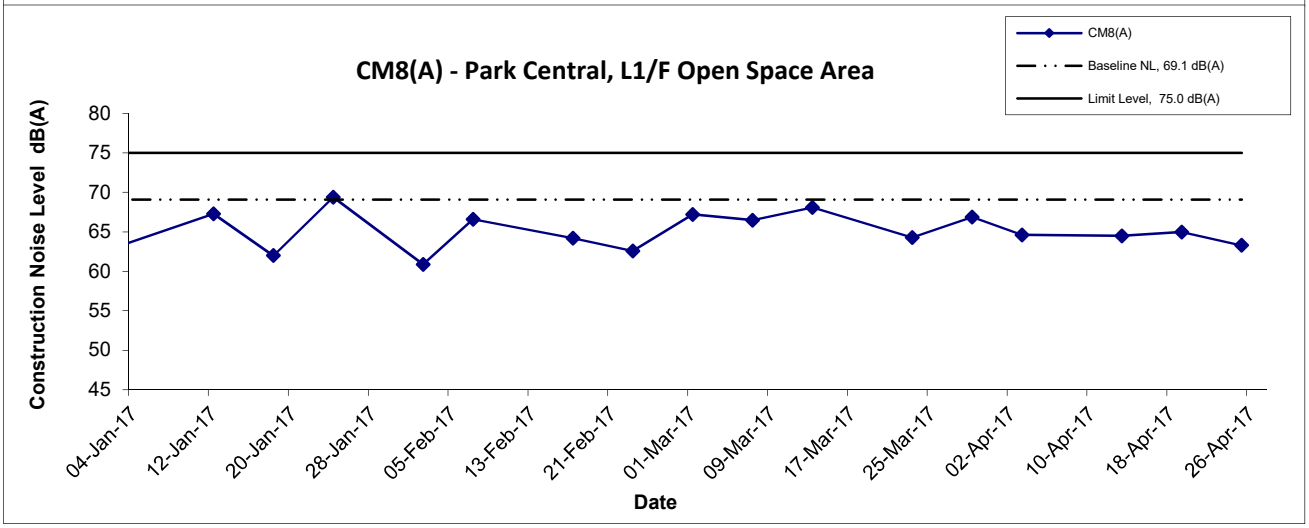




Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Apr 17	Project No. MA16034 Appendix G	CINOTECH

Noise Levels

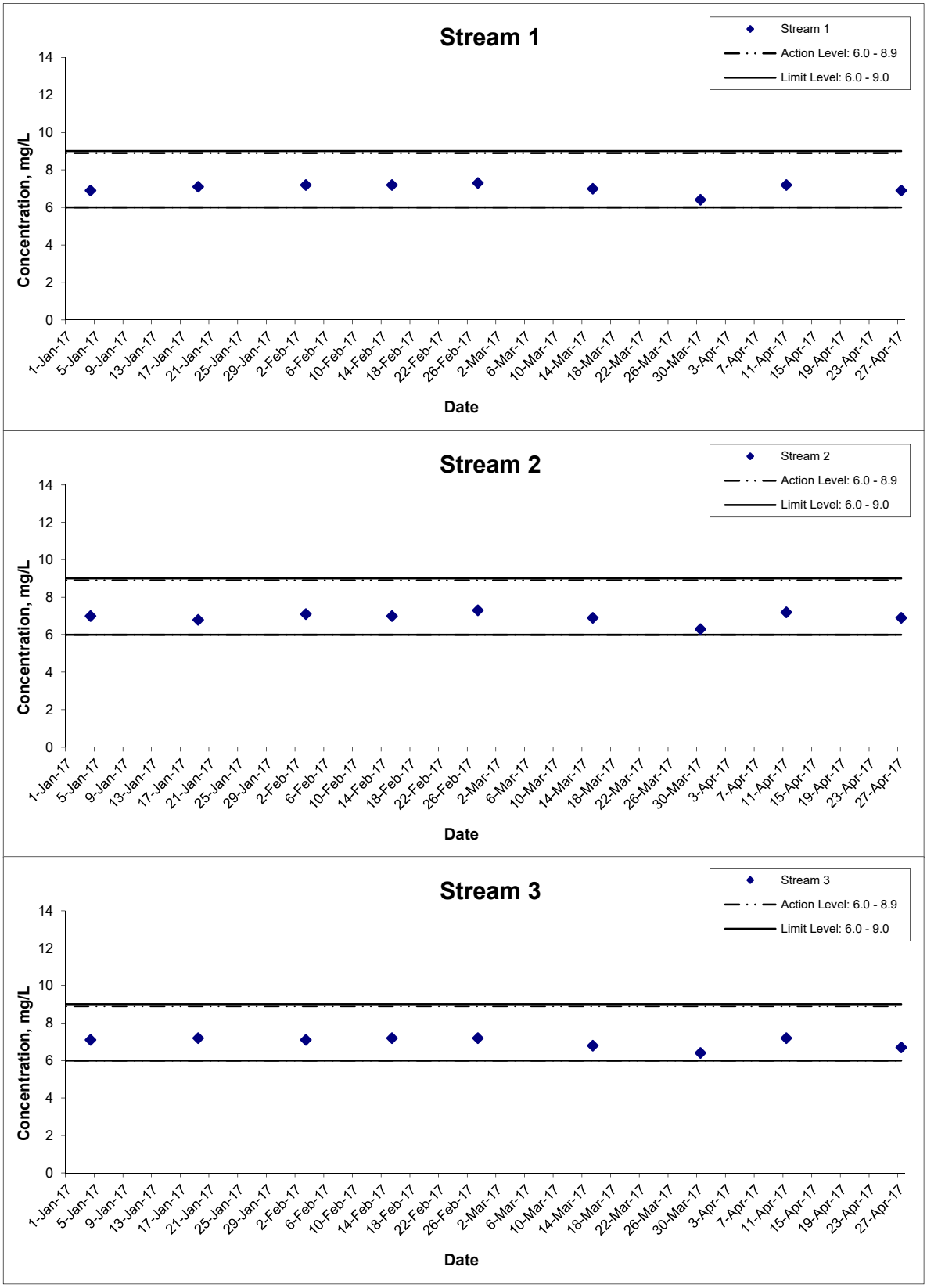




Title: Agreement No. CE/59/2015 (EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel - Design and Construction Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S Date: Apr 17	Project No.: MA16034 Appendix: G	CINOTECH

APPENDIX E
GRAPHICAL PRESENTATION OF GROUNDWATER QUALITY MONITORING RESULTS

pH



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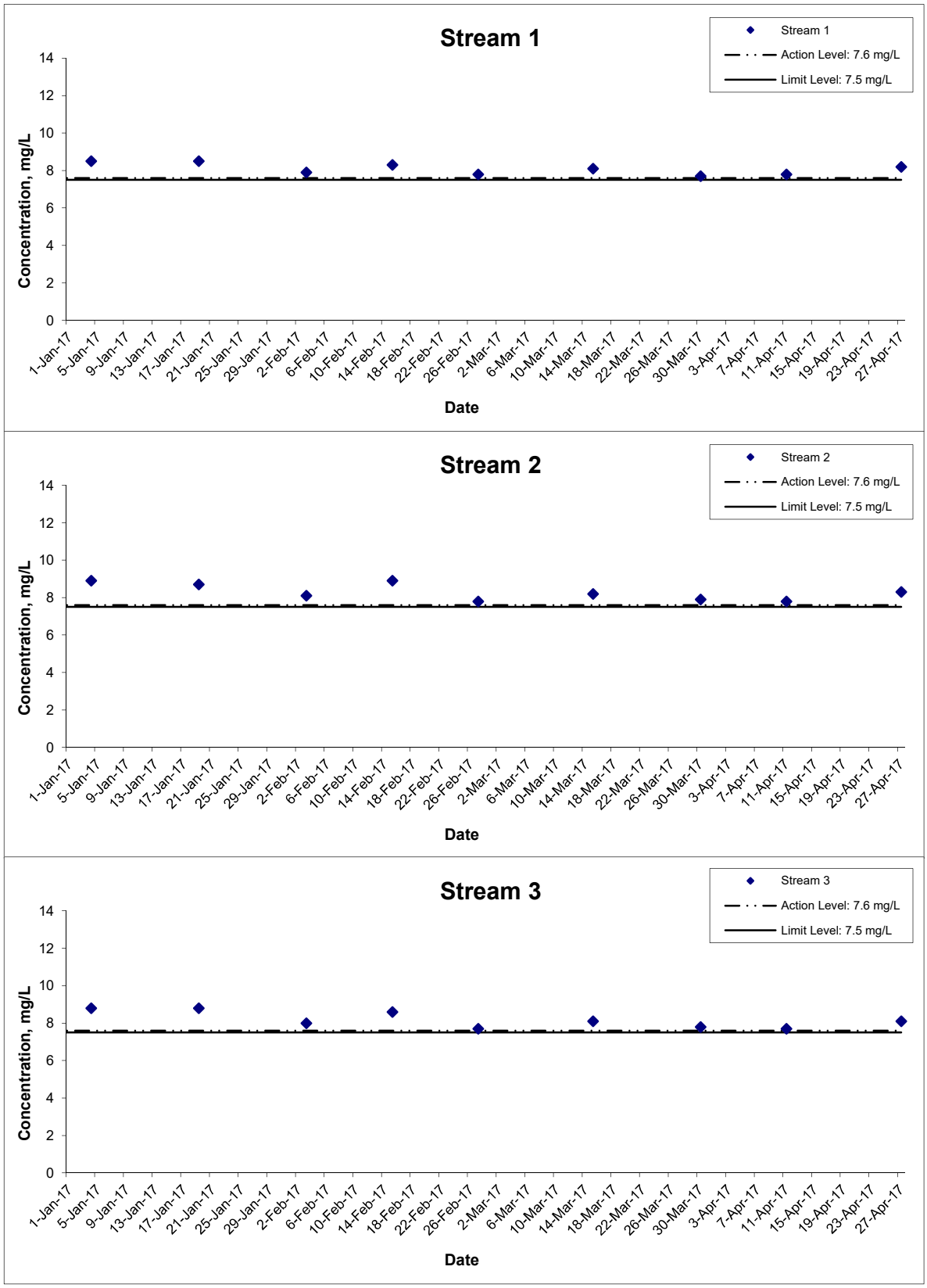
Dissolved Oxygen



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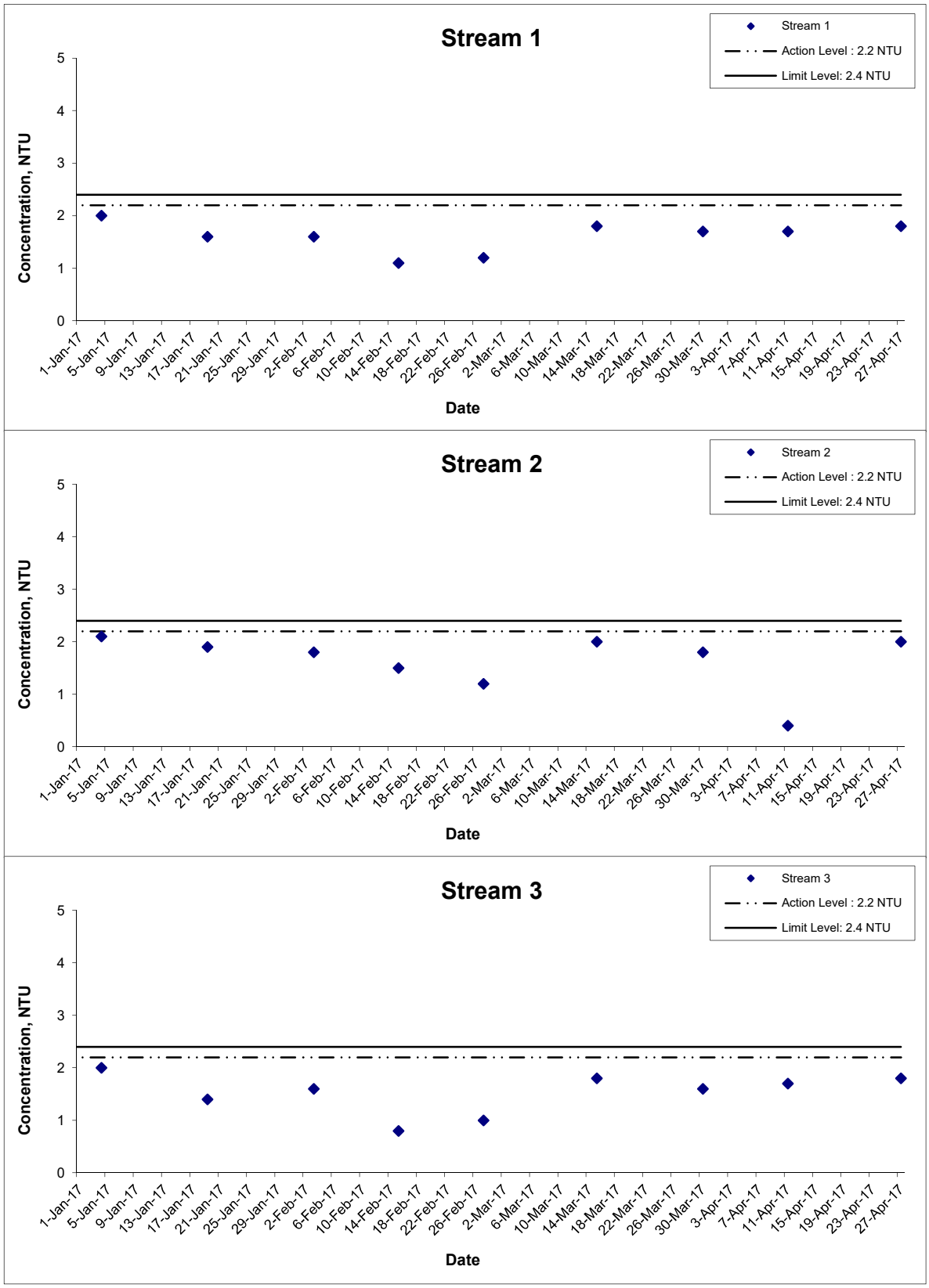
Turbidity



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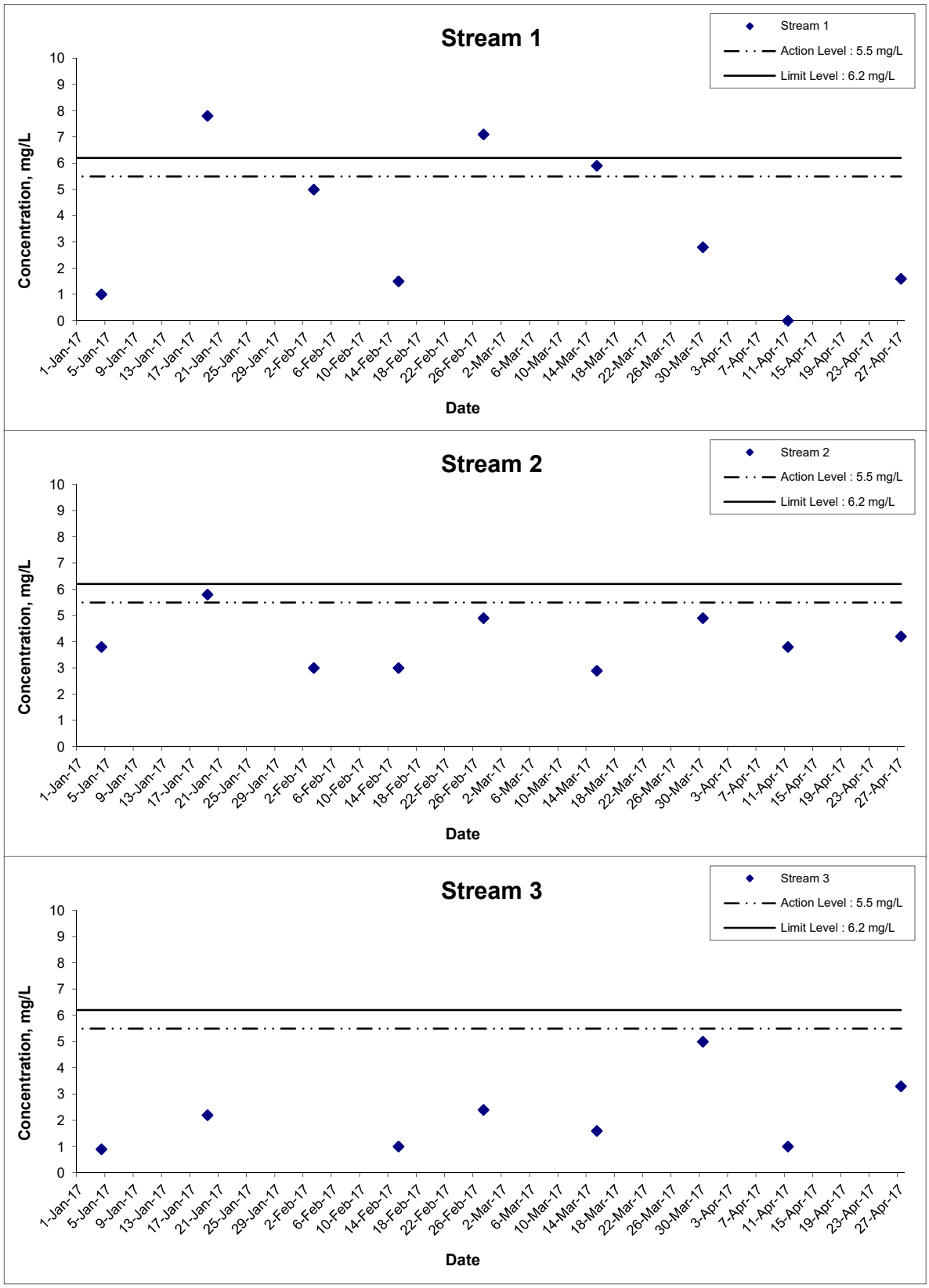
Suspended Solids



Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
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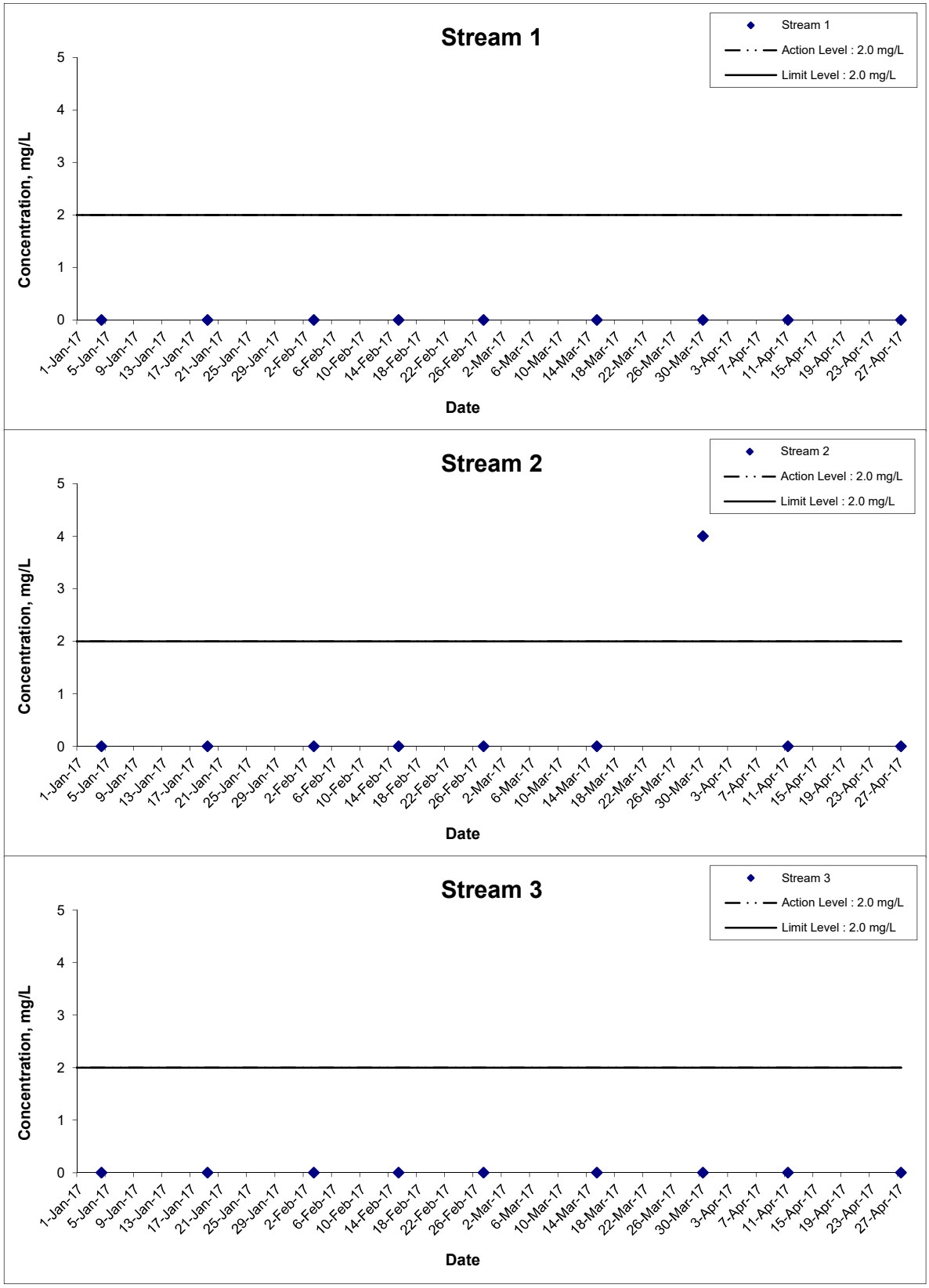
5-day Biochemical Oxygen Demand (BOD_5)



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

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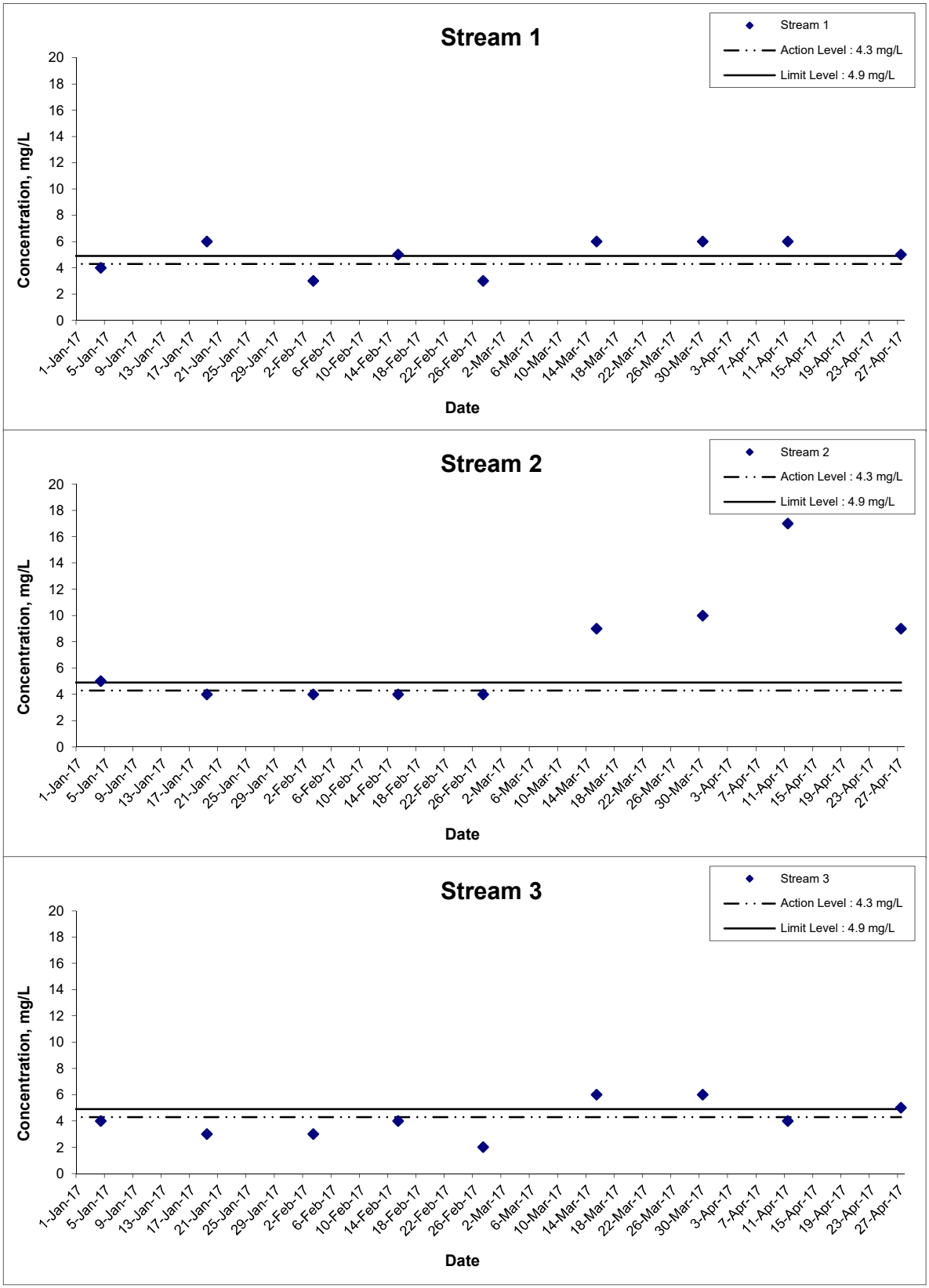
Total Organic Carbon (TOC)



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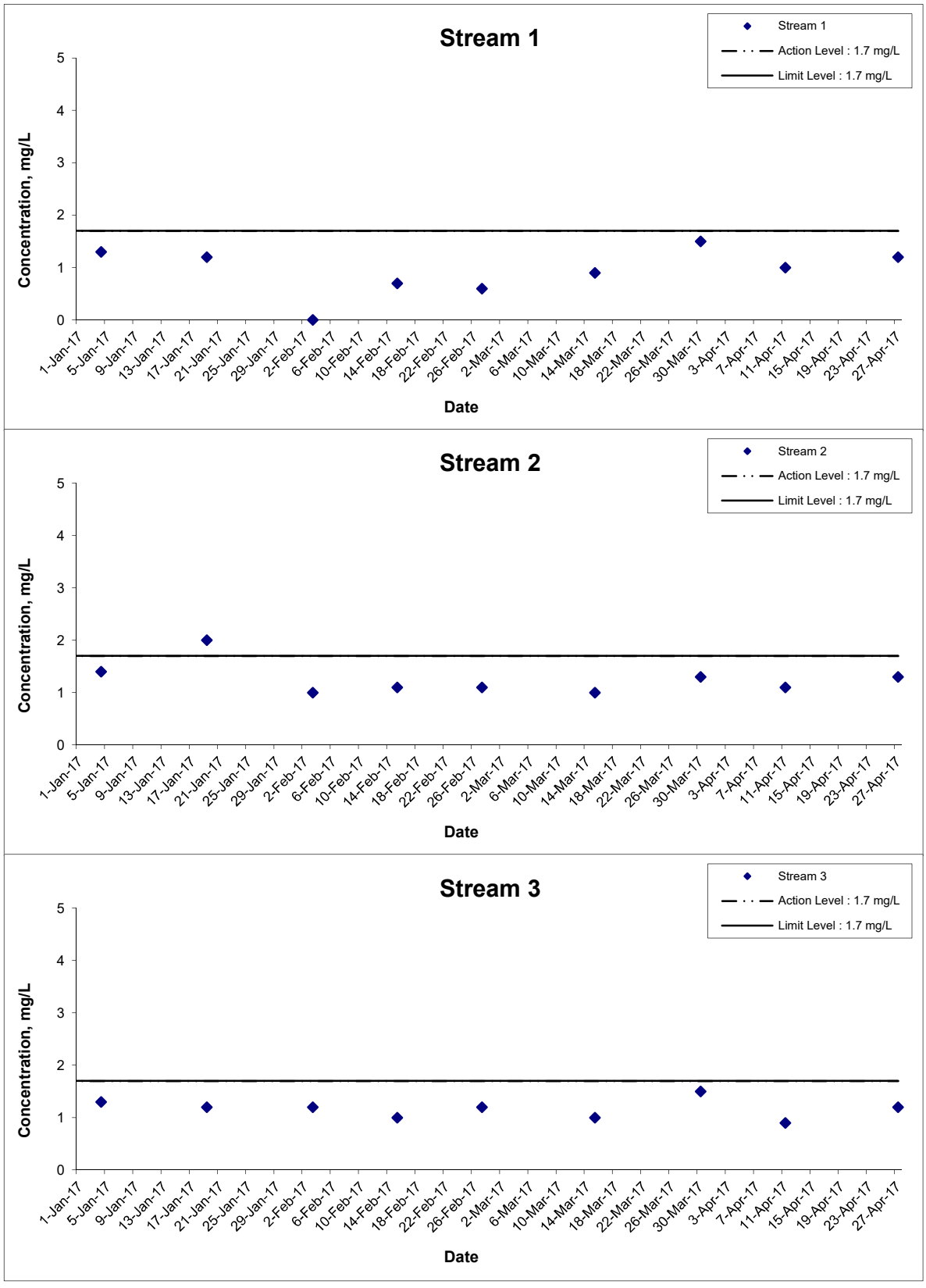
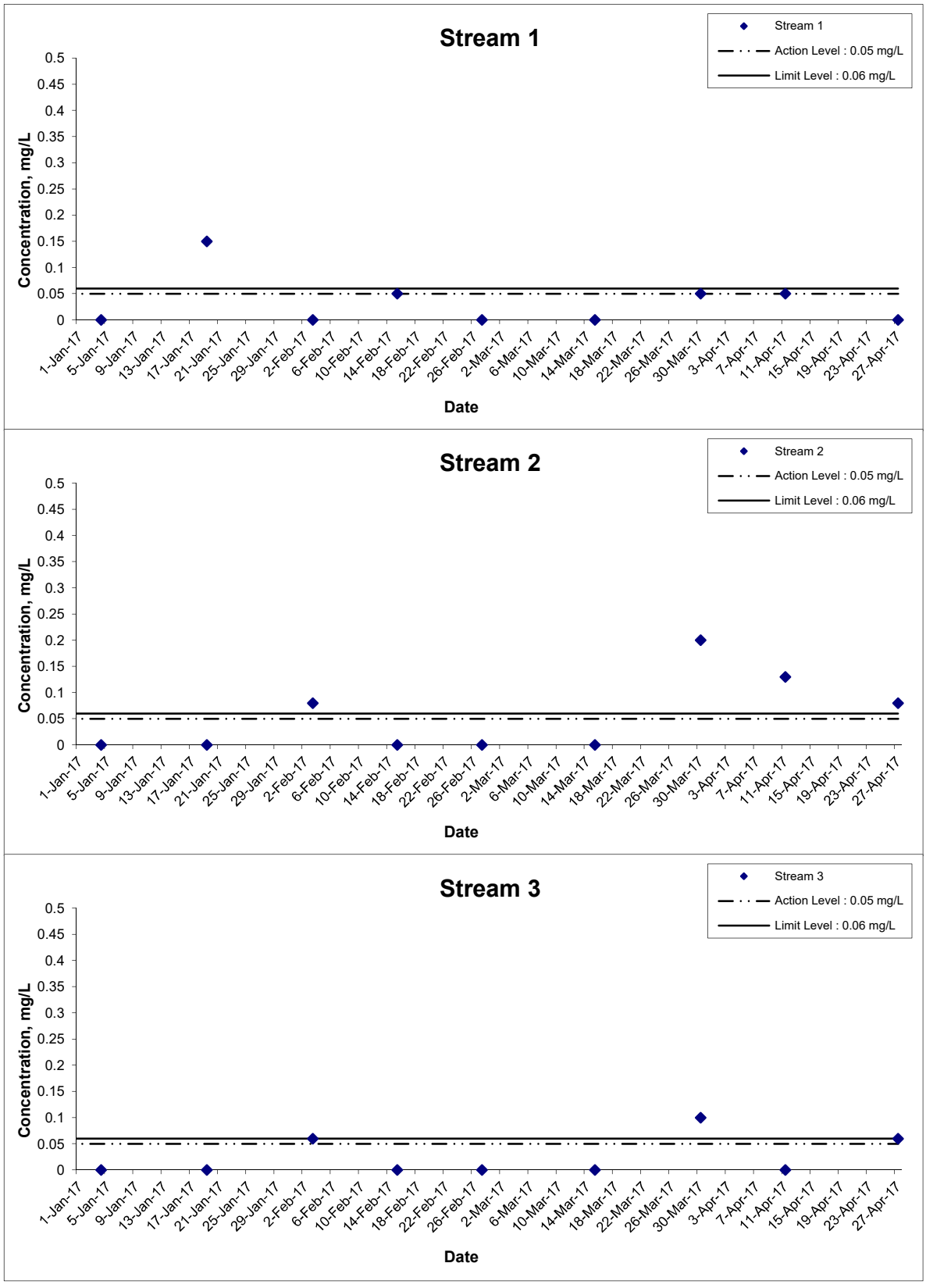
Total Nitrogen



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

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

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
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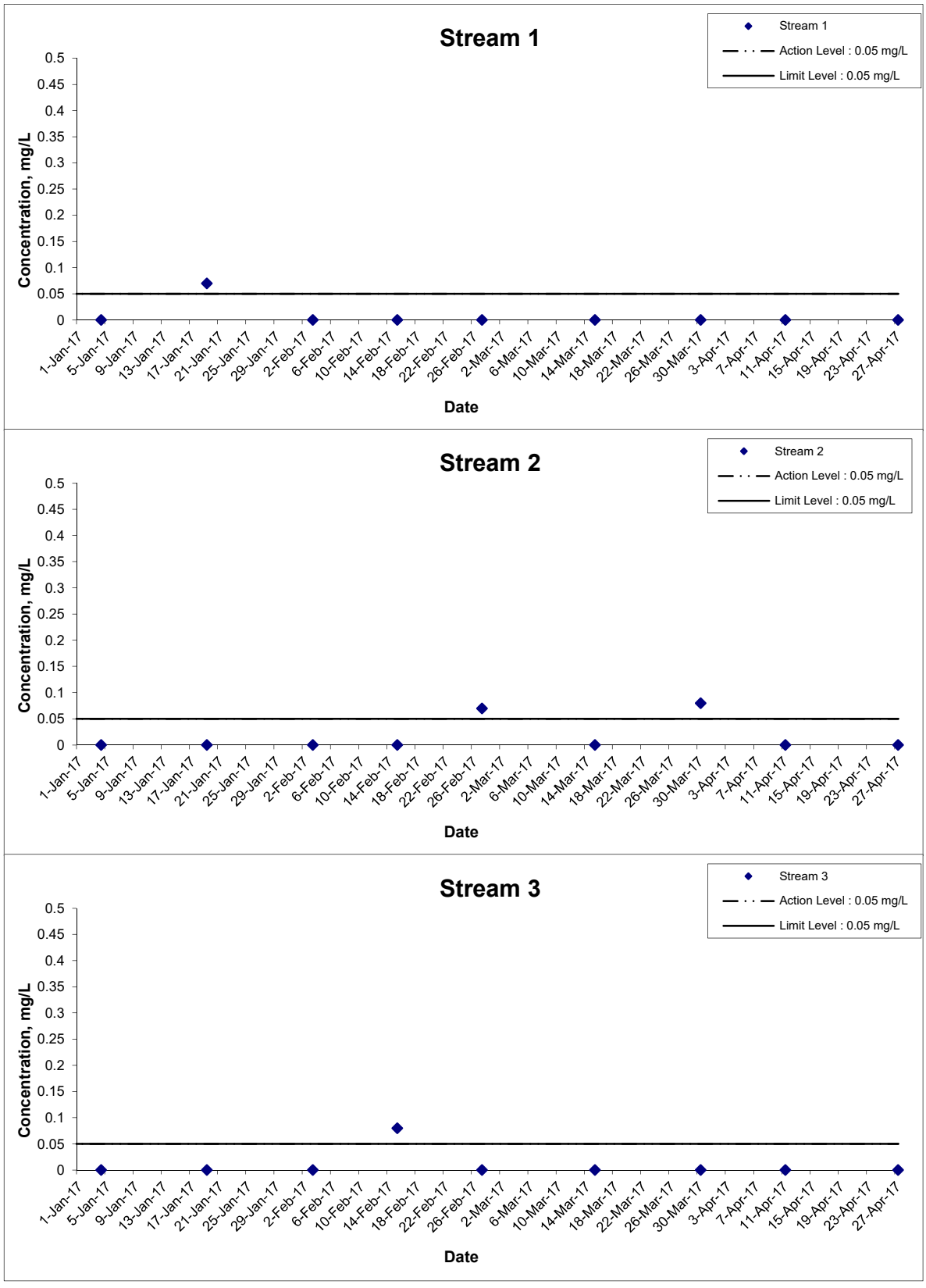
Total Phosphate



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

Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Groundwater Quality Monitoring Result	Scale: N.T.S	Project No.: MA16034	CINOTECH
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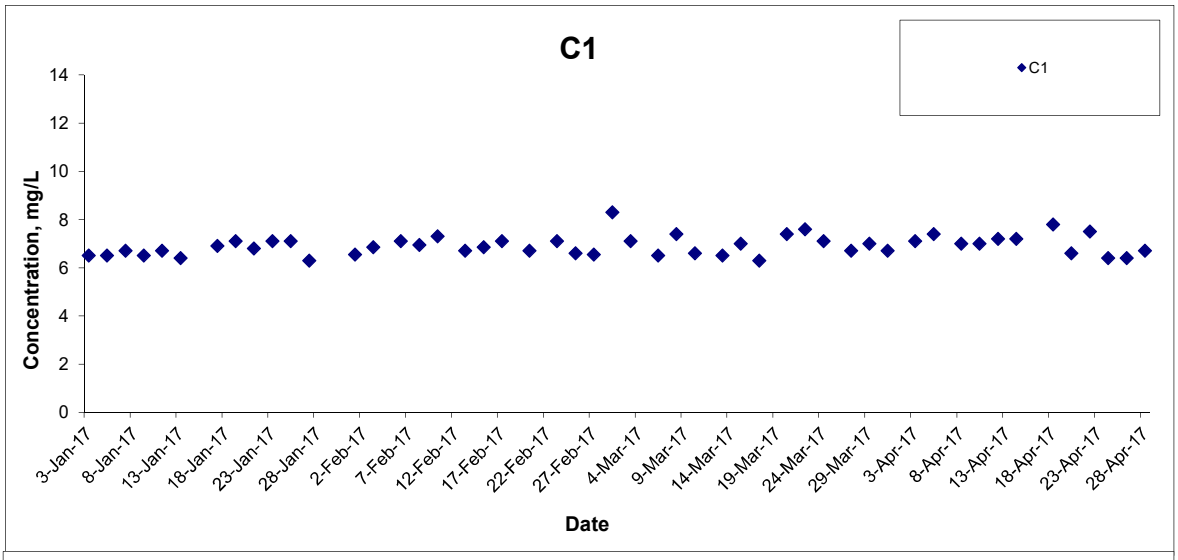
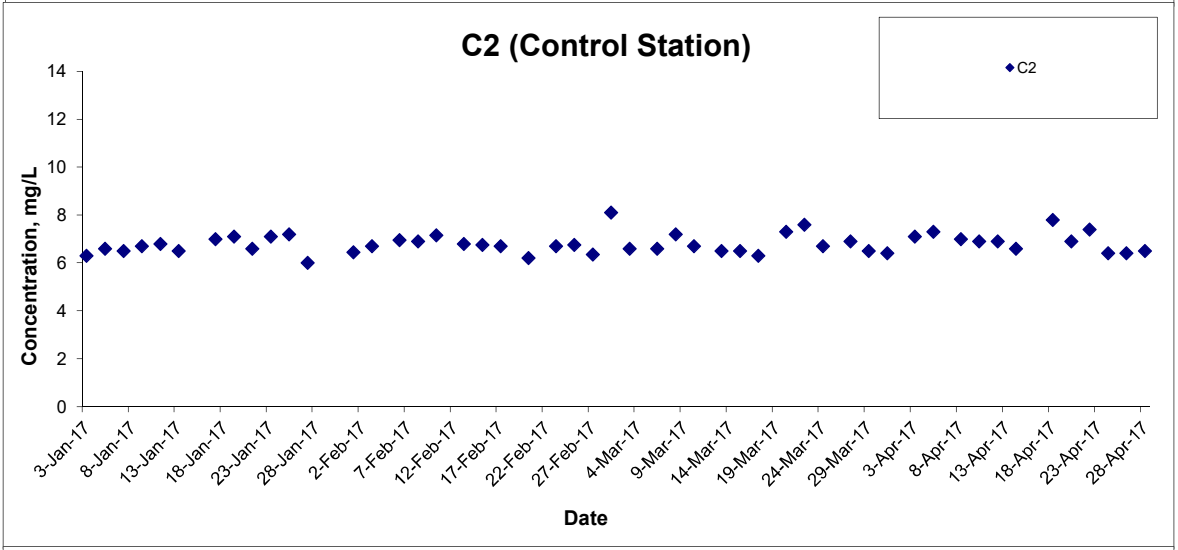
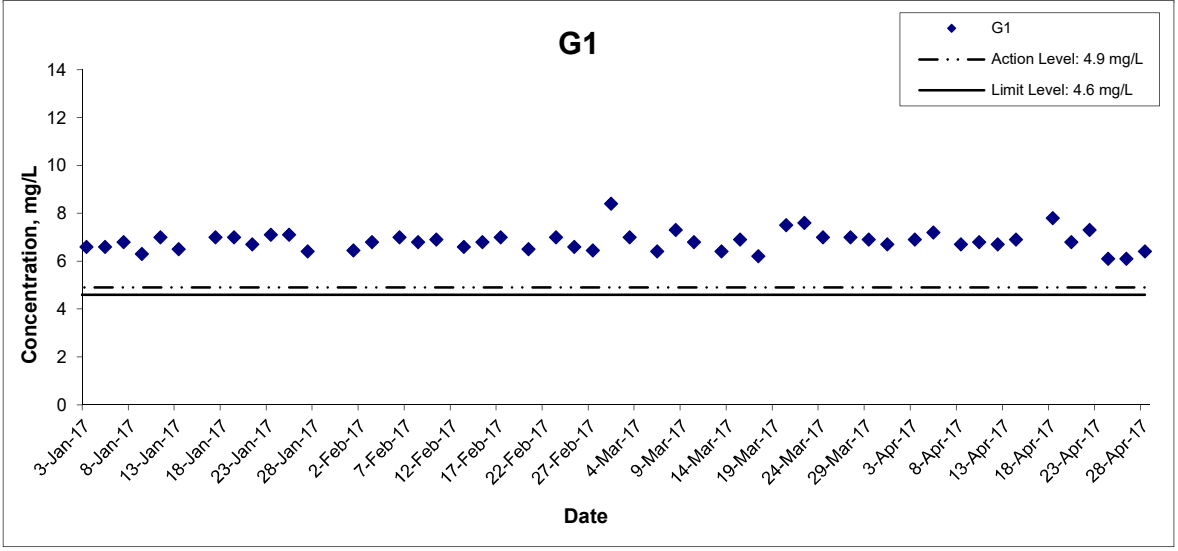
APPENDIX F
GRAPHICAL PRESENTATION OF MARINE WATER QUALITY MONITORING RESULTS

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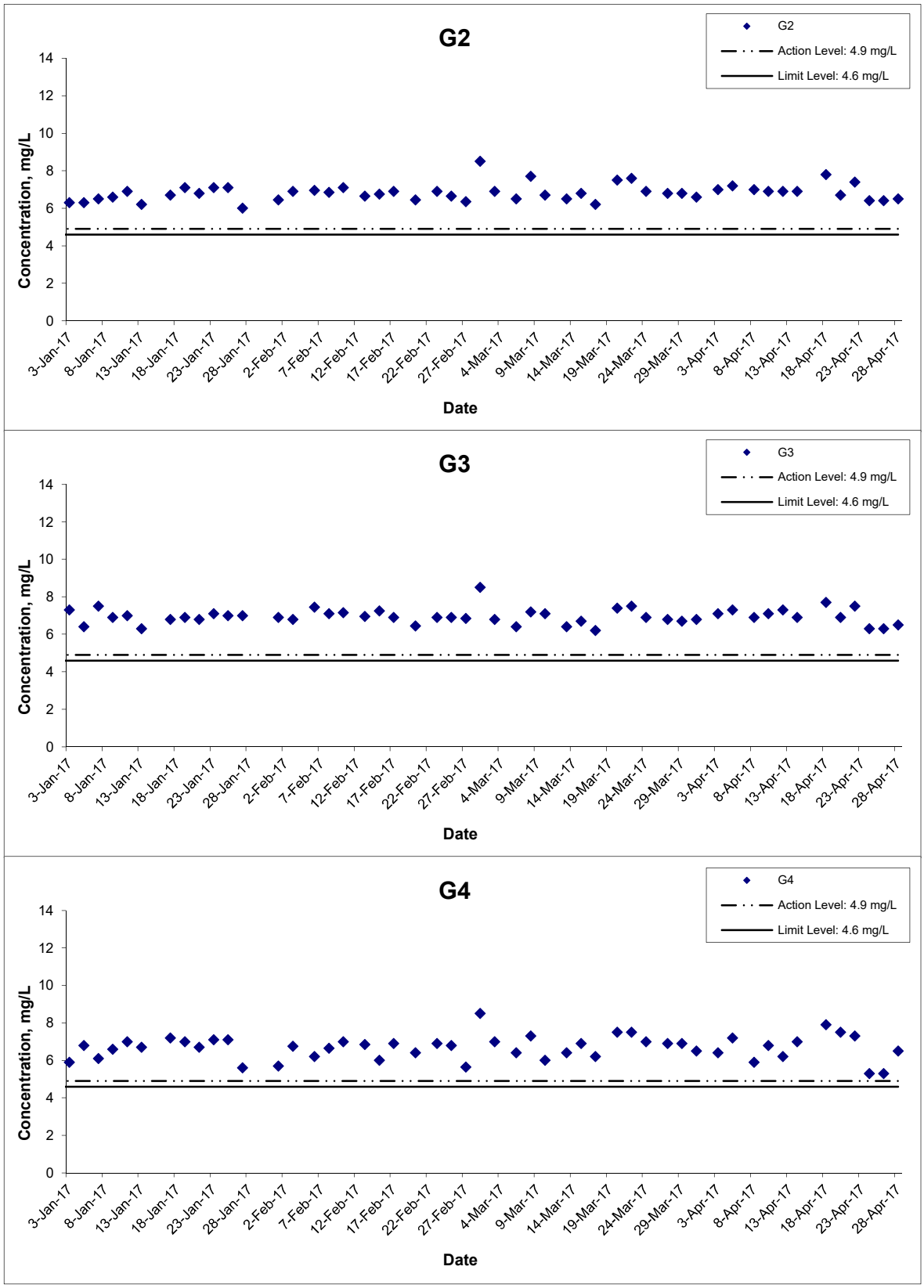
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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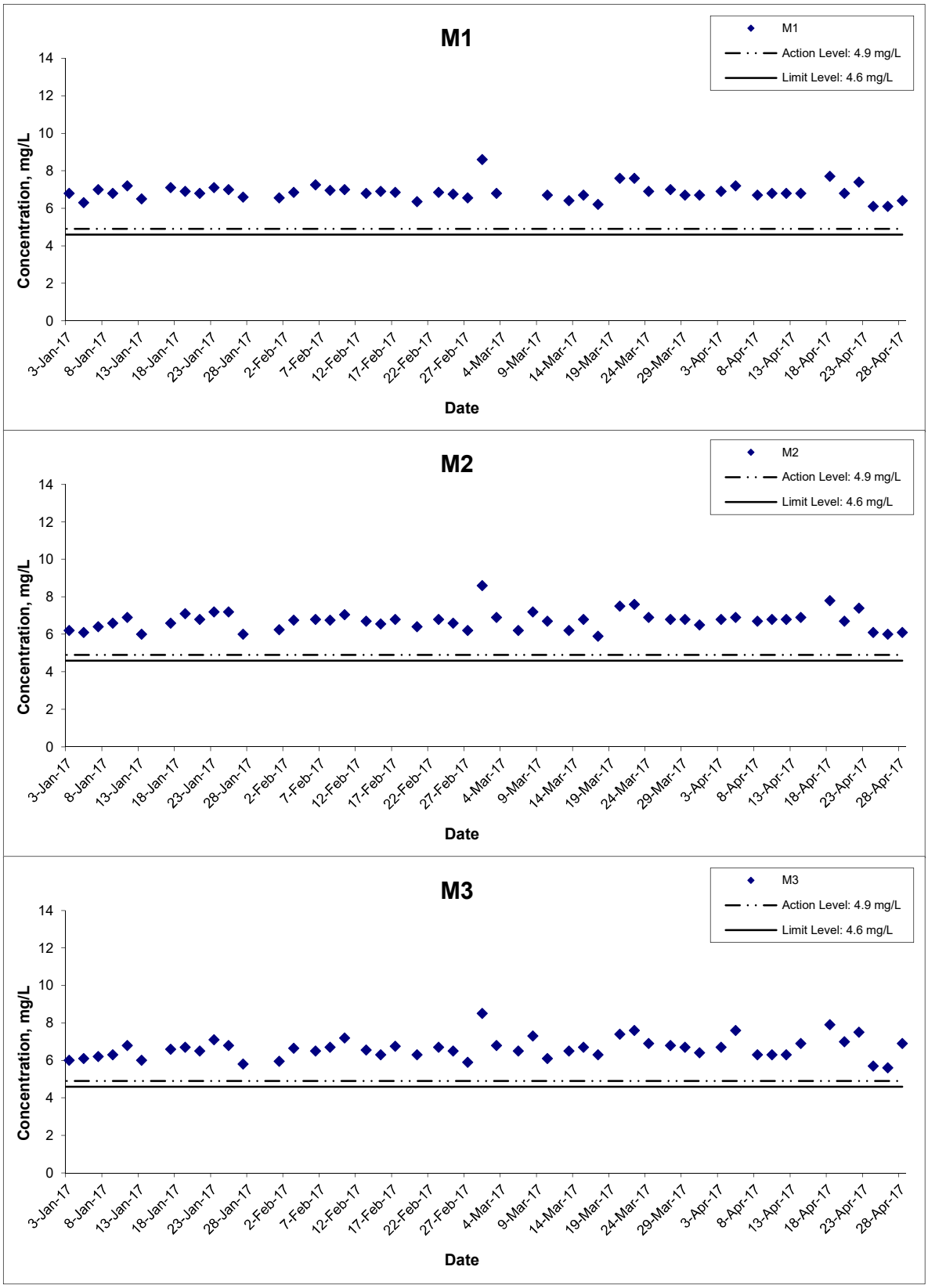
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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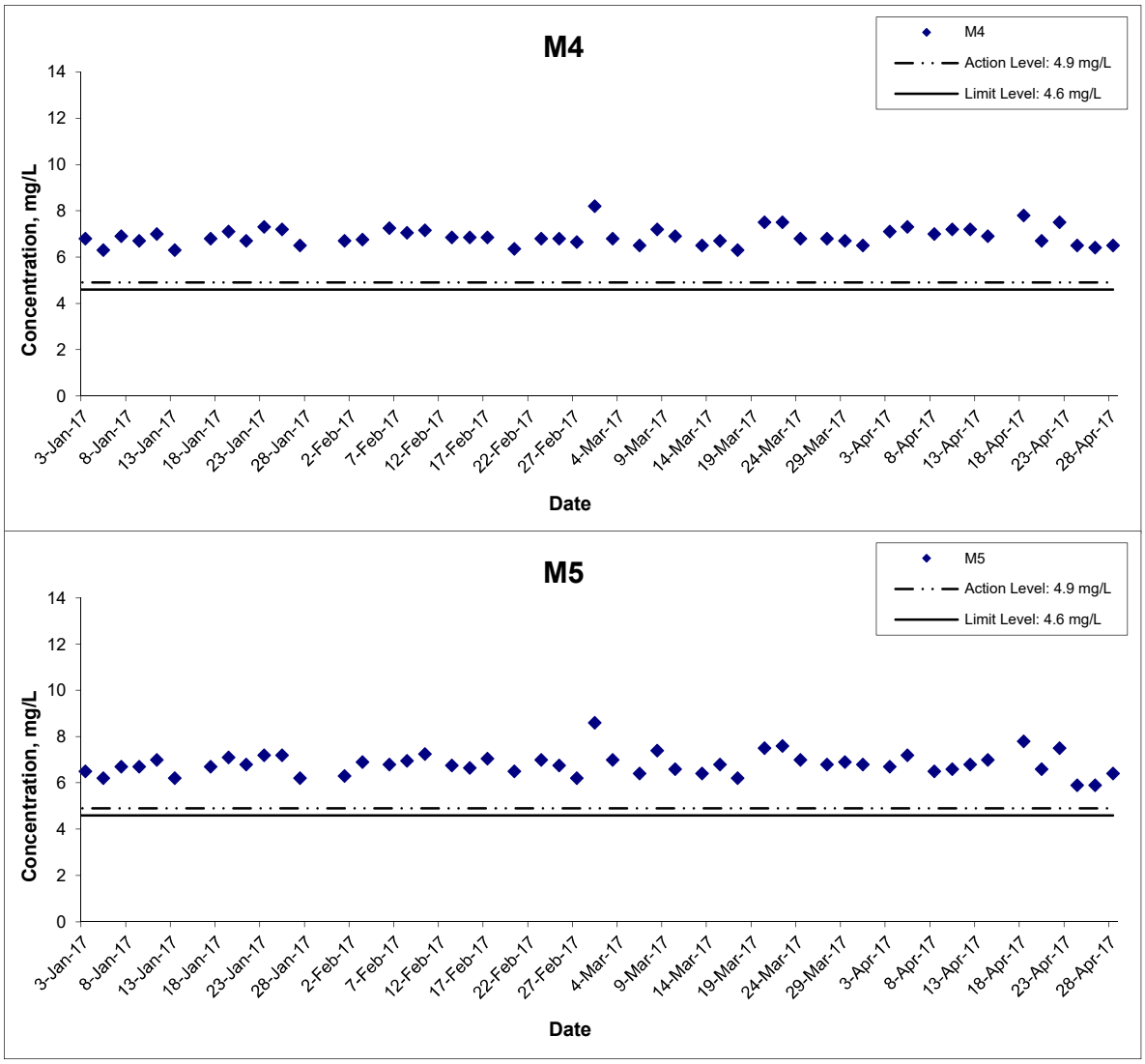
Dissolved Oxygen (Depth-averaged) at Mid-Ebb Tide



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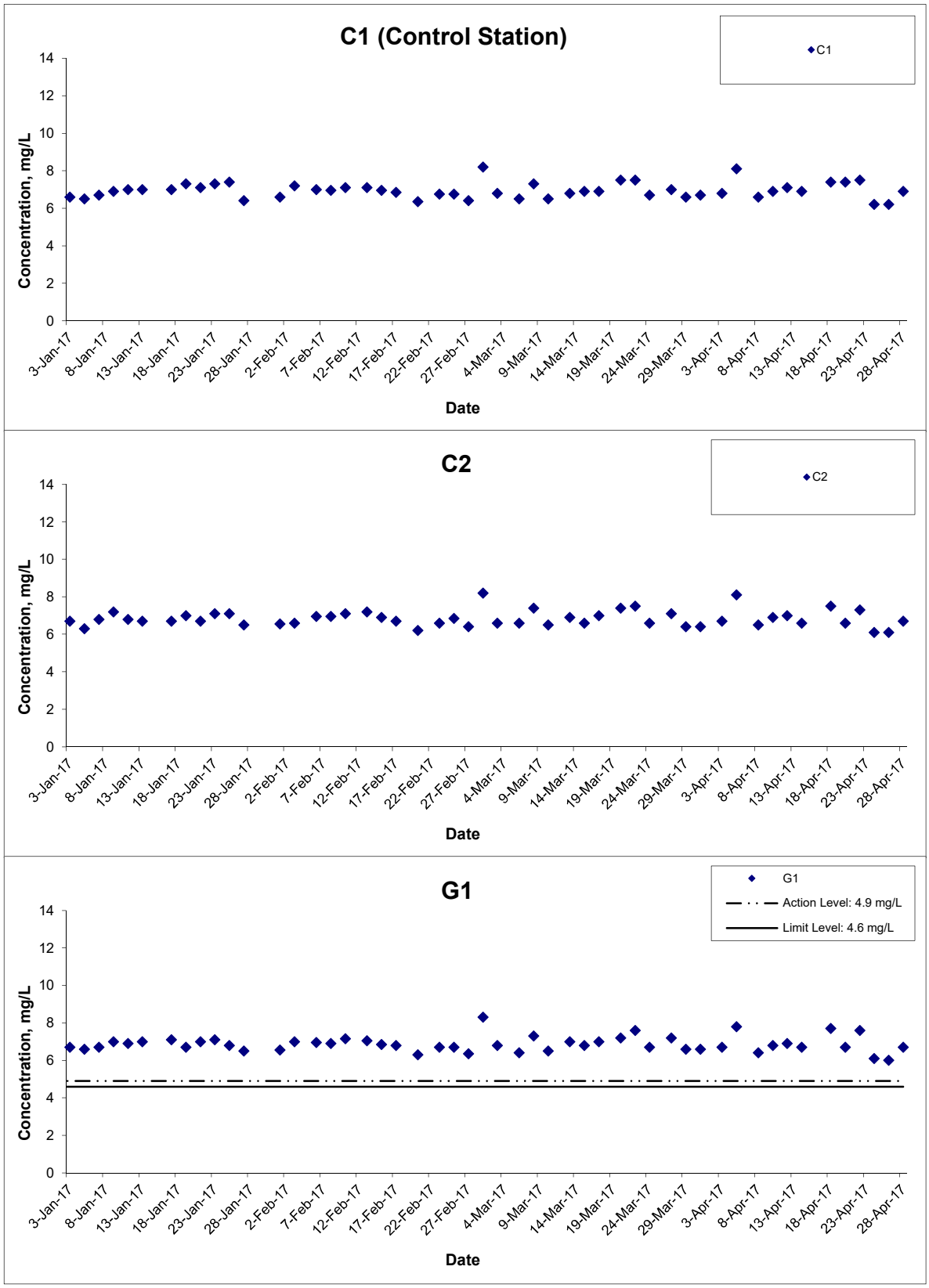
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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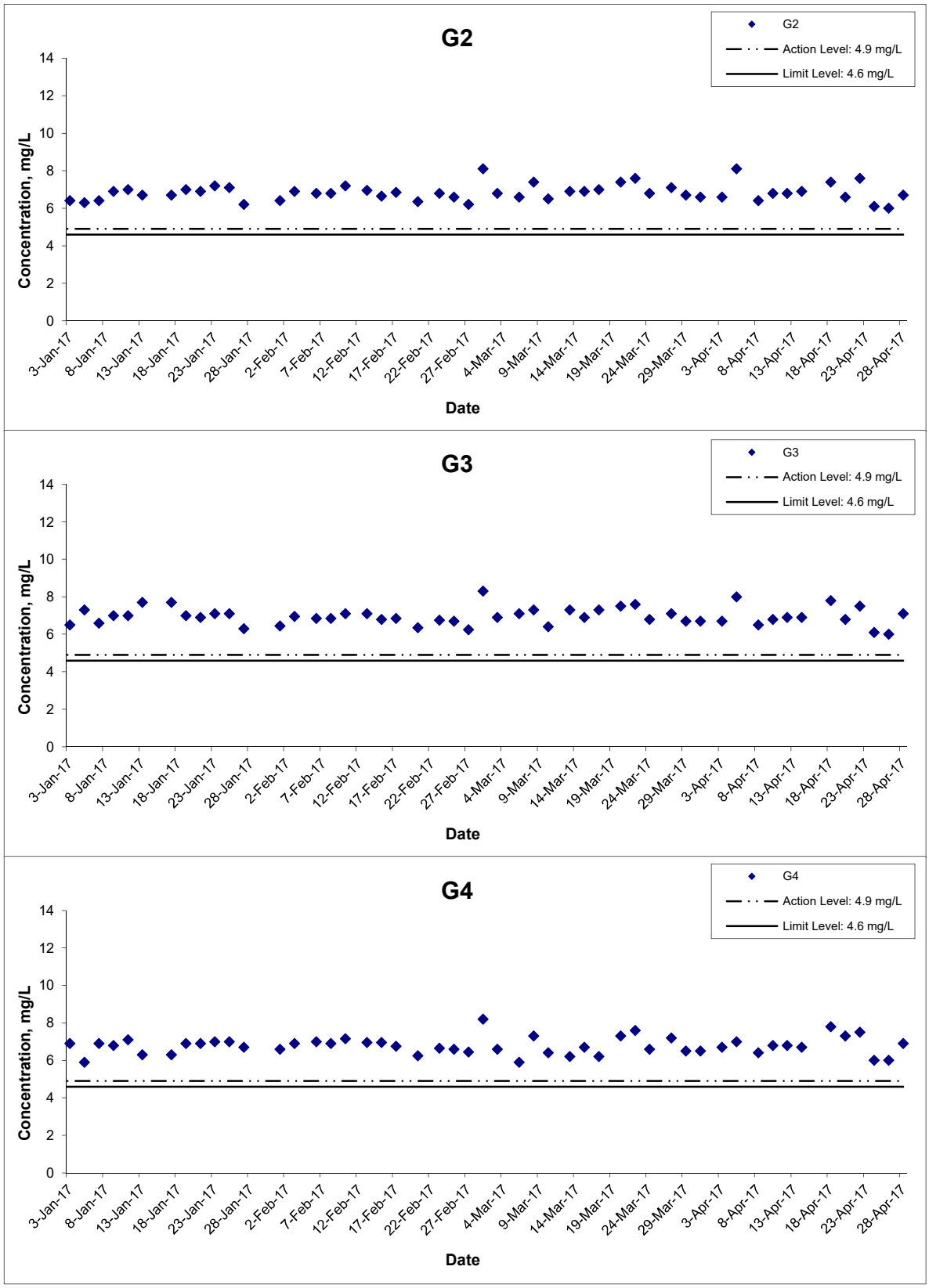
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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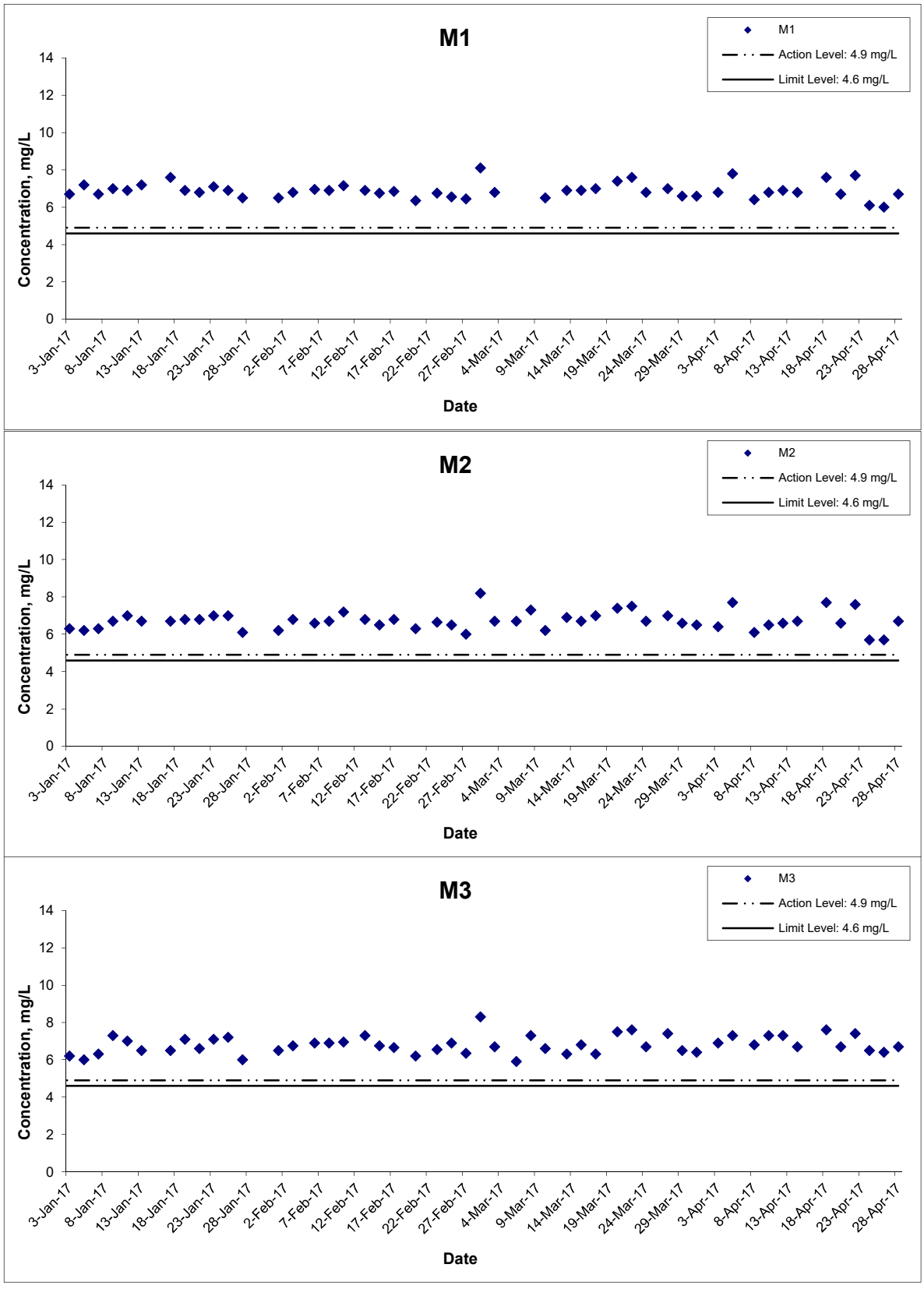
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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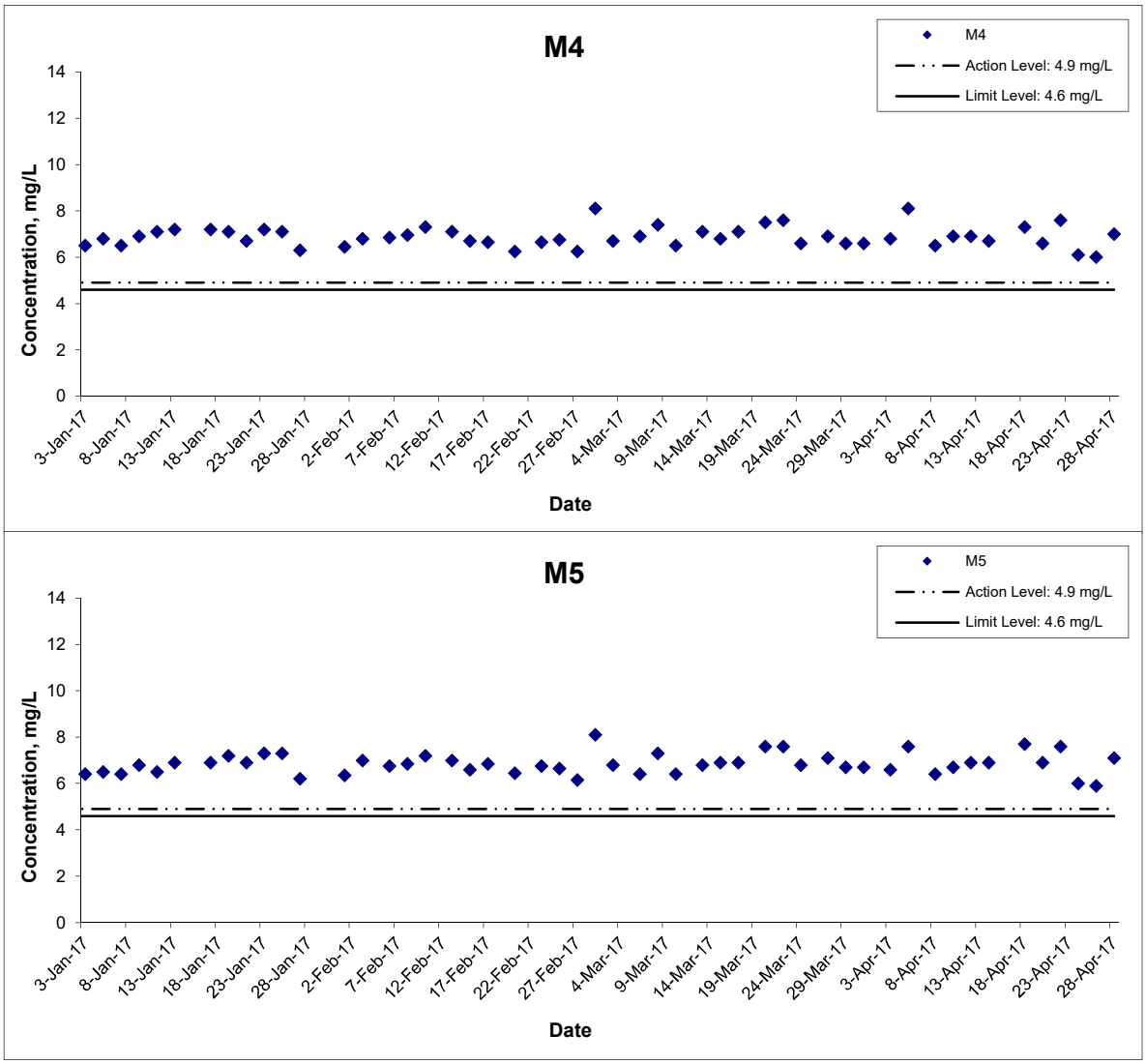
Dissolved Oxygen (Depth-averaged) at Mid-Flood Tide



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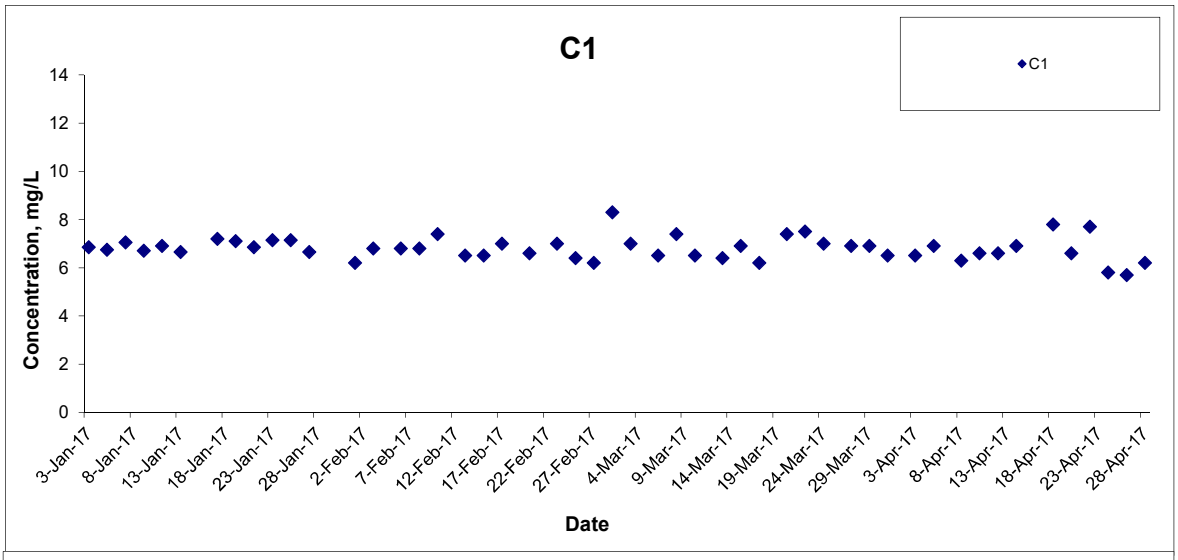
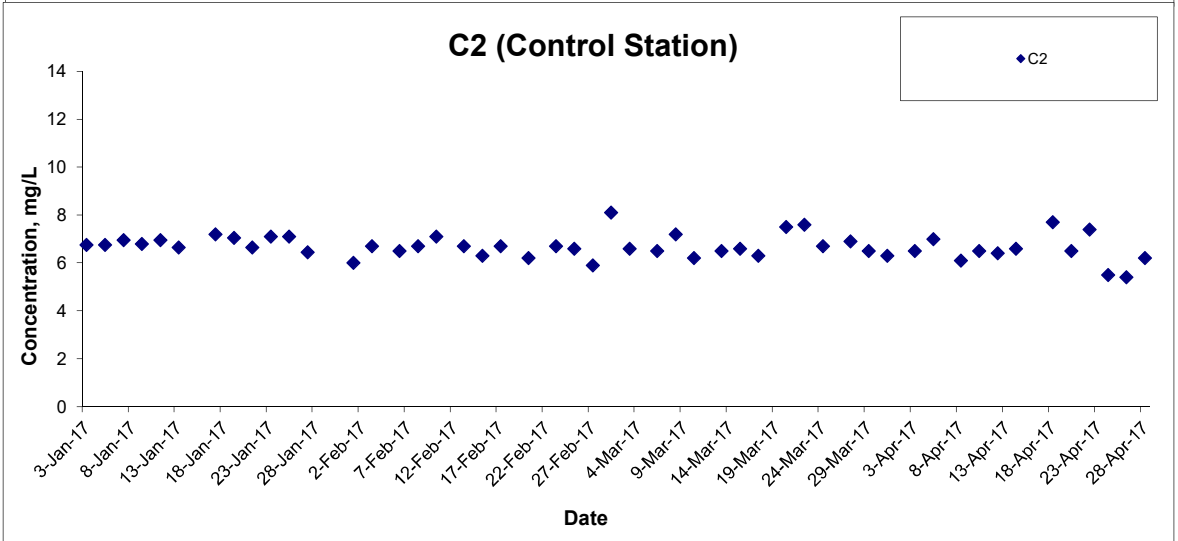
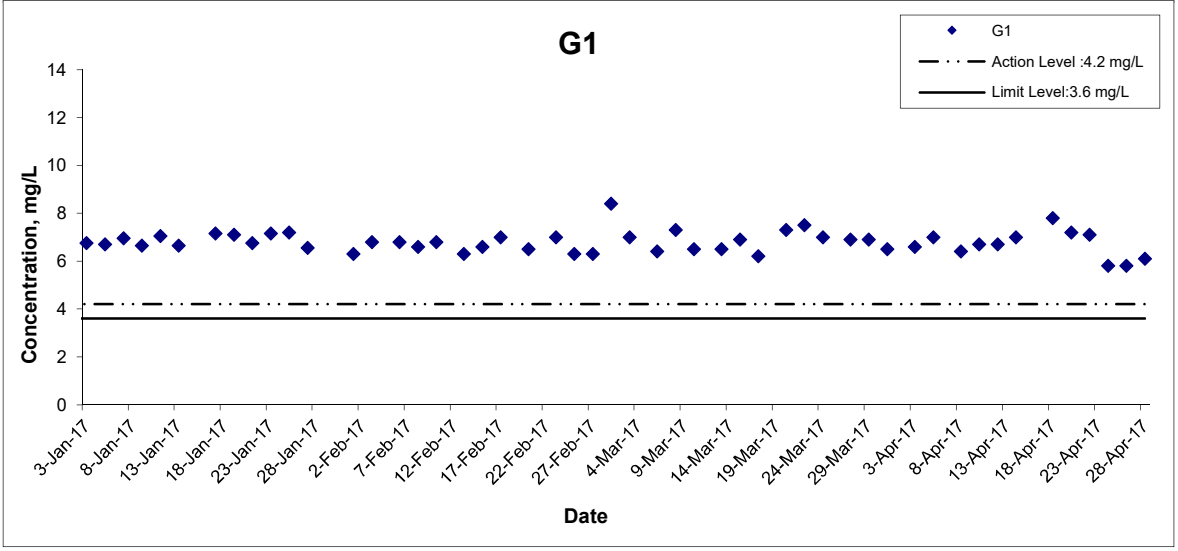
Dissolved Oxygen (Bottom) at Mid-Ebb Tide







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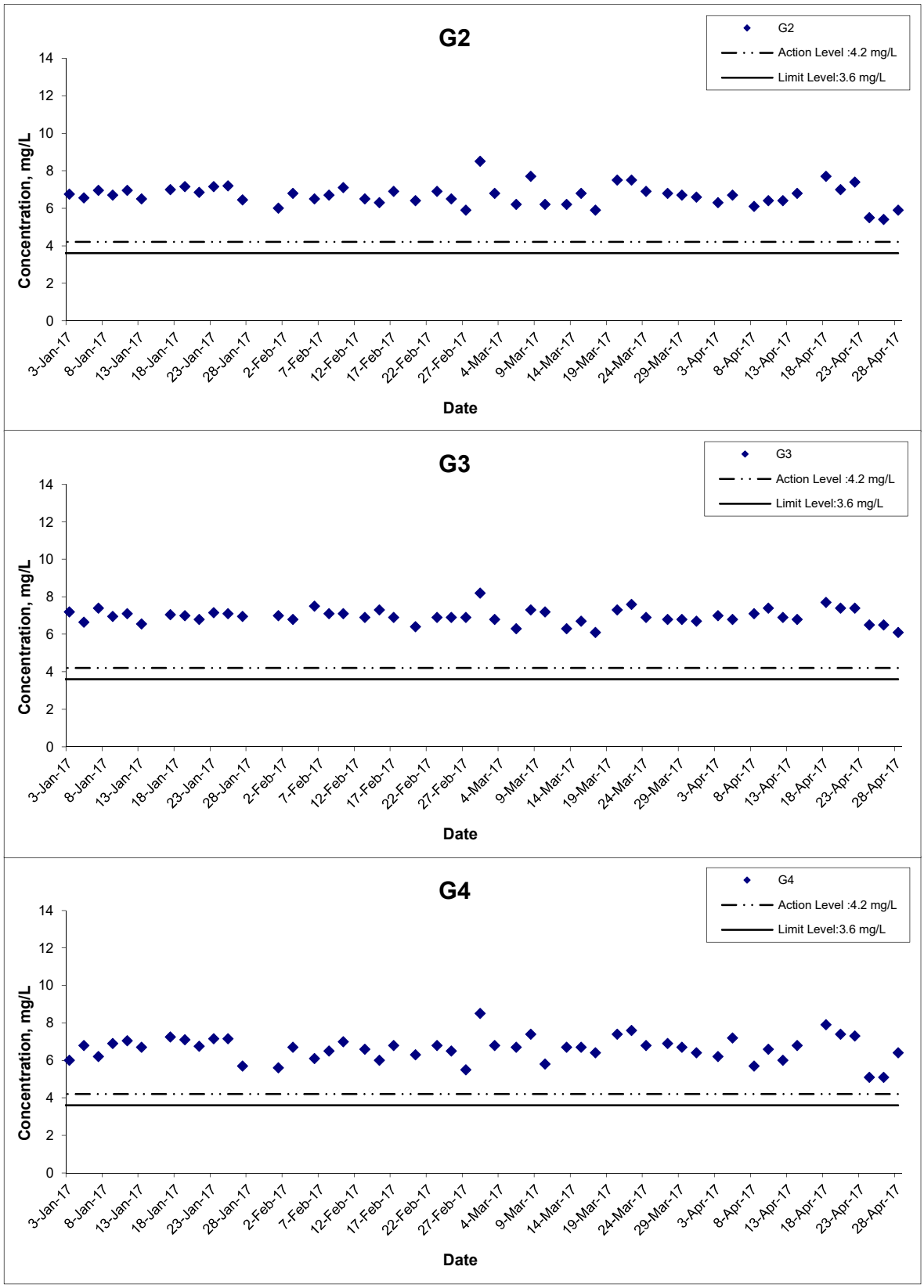
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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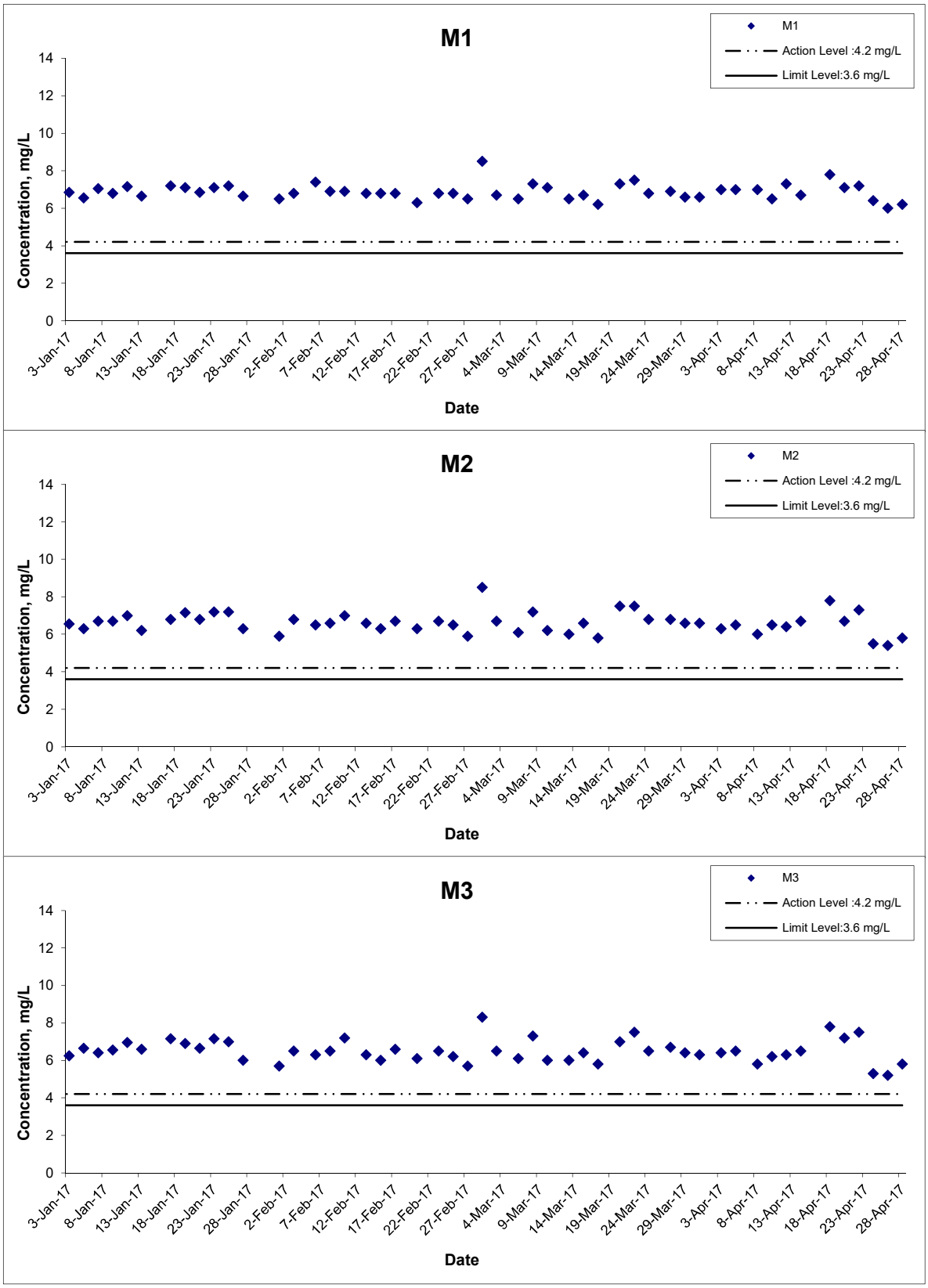
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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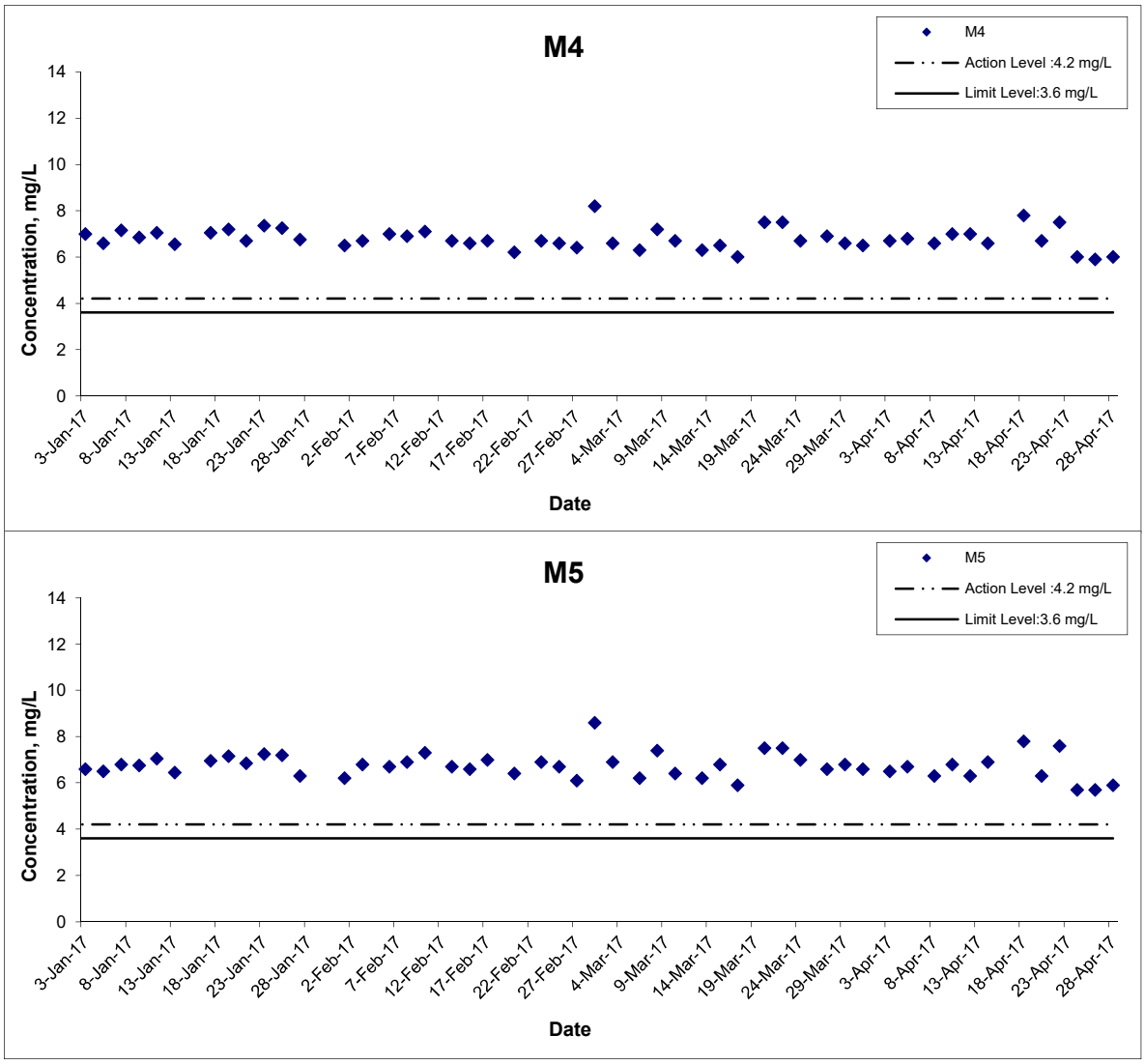
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



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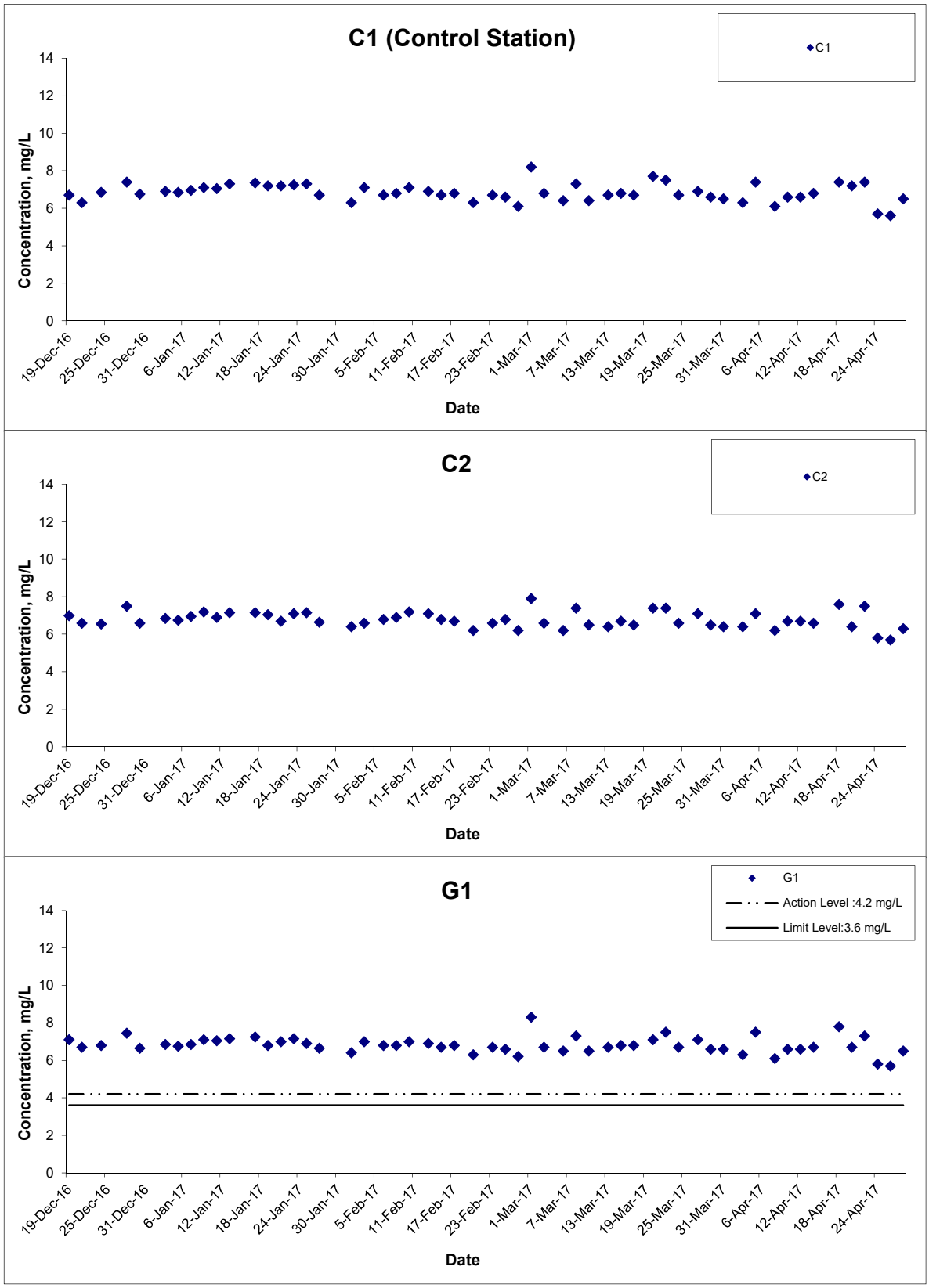
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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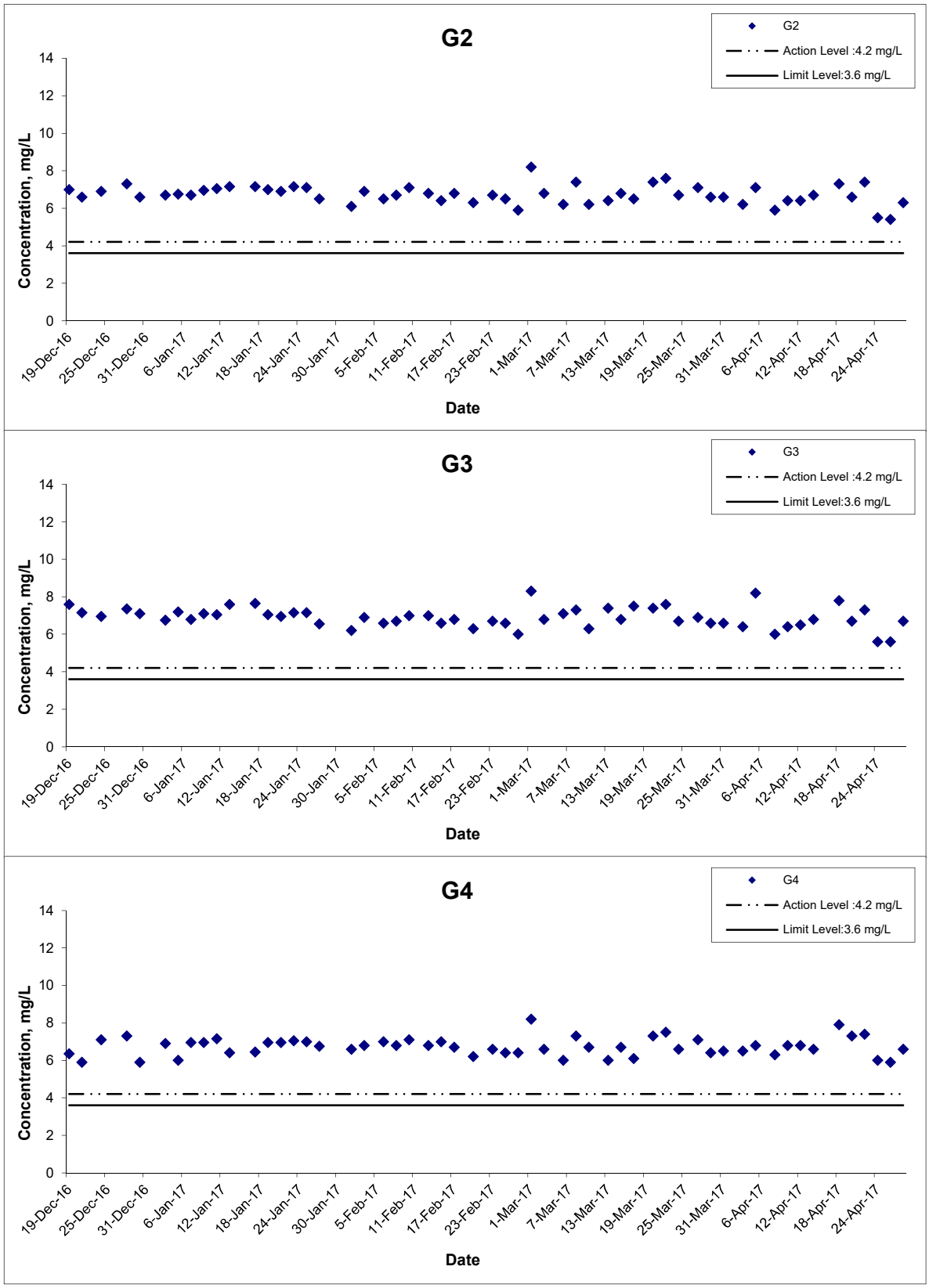
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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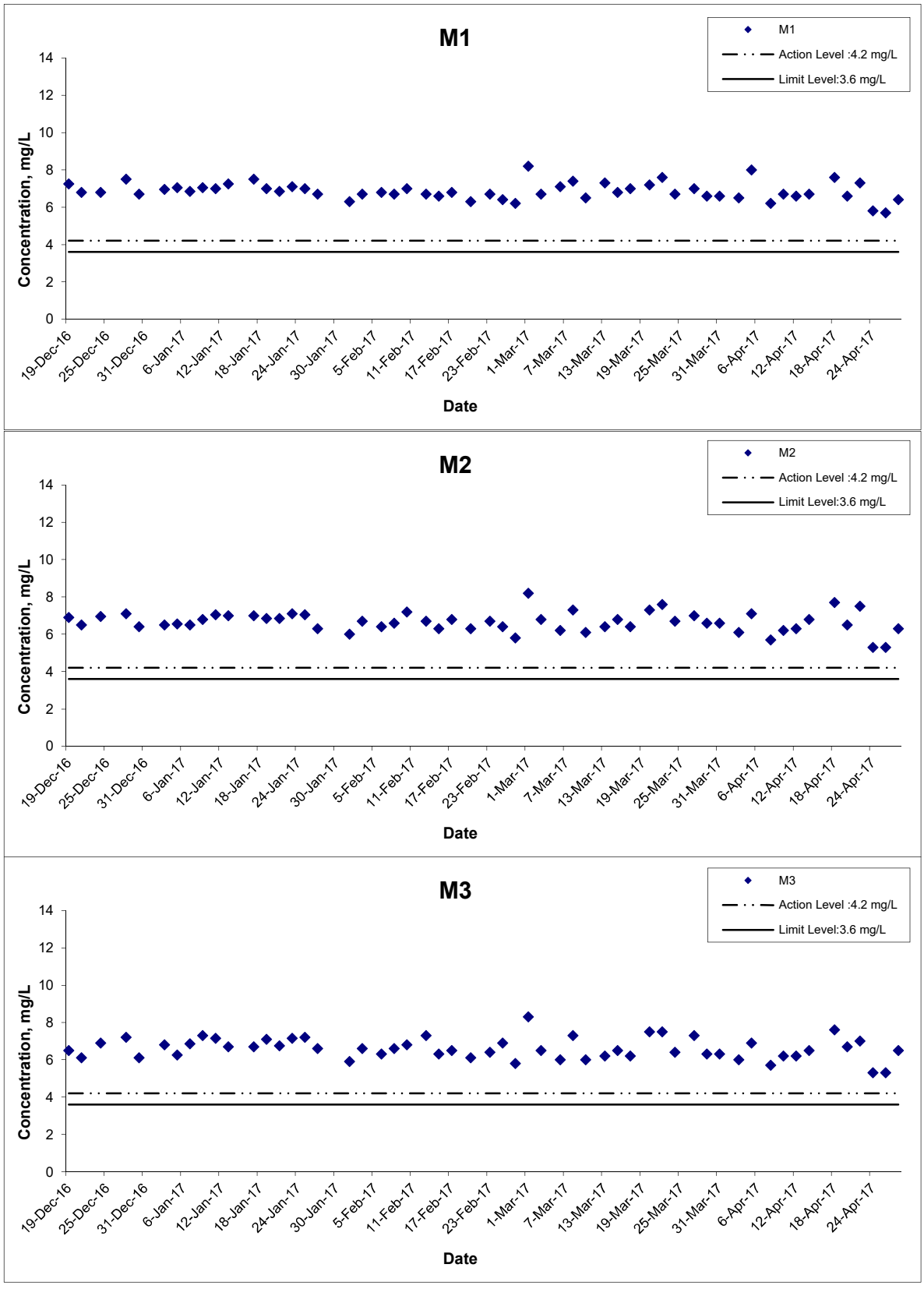
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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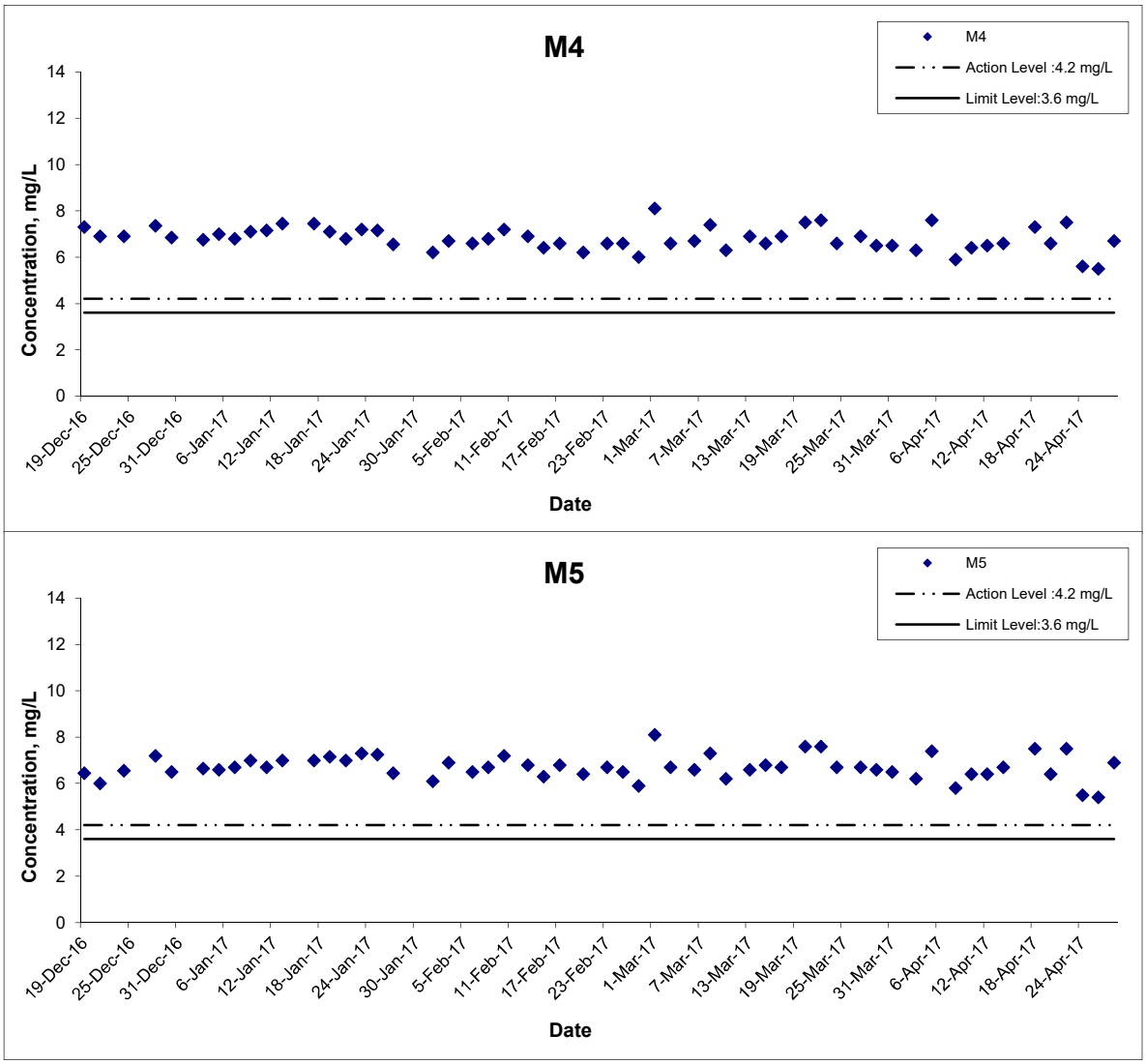
Dissolved Oxygen (Bottom) at Mid-Flood Tide



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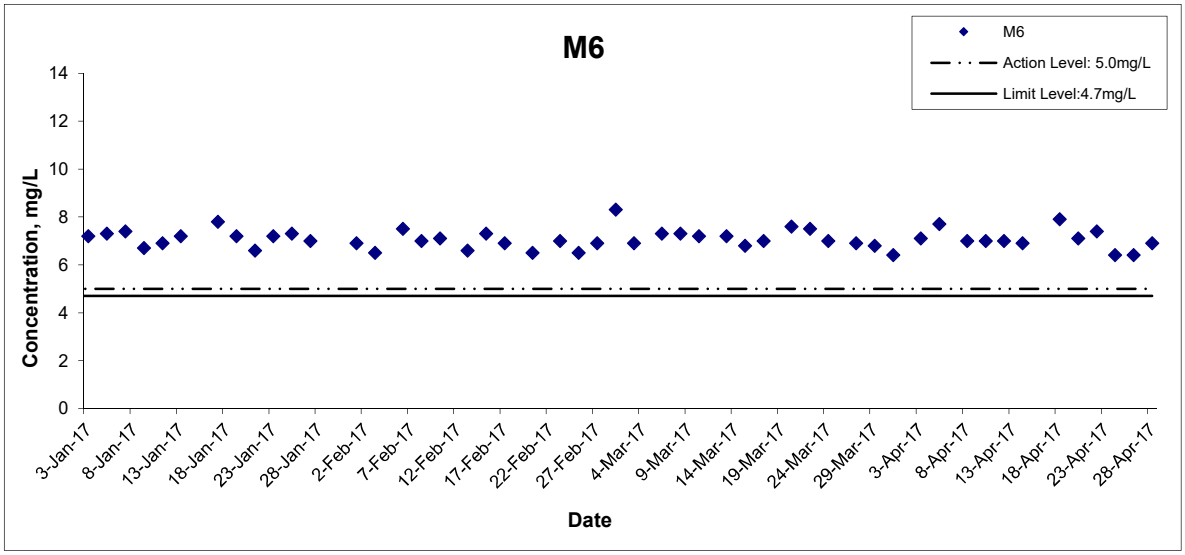
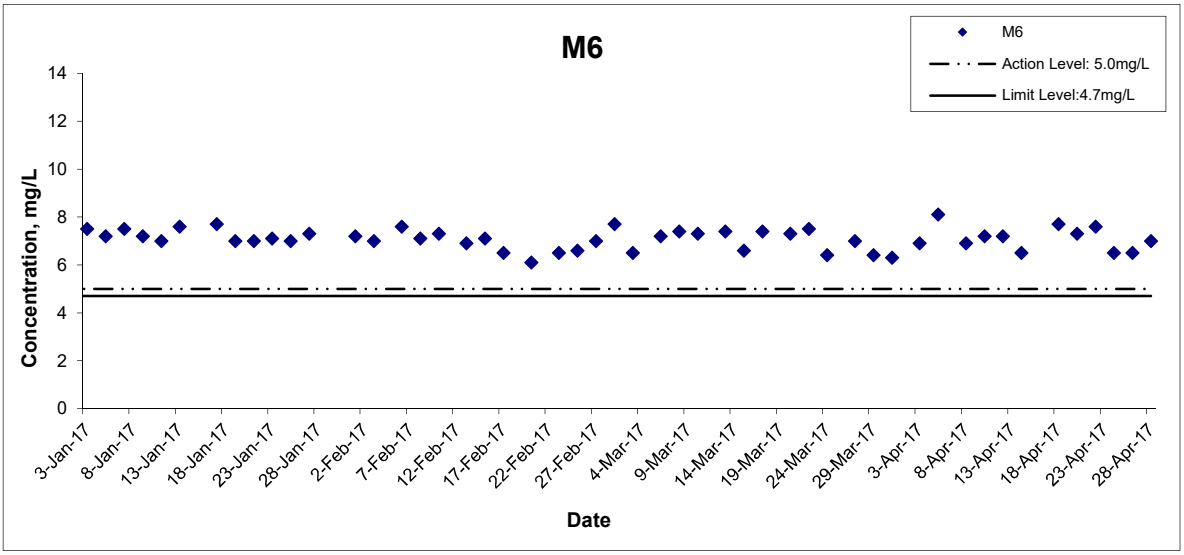
Dissolved Oxygen (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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: Apr 17	Project No.: MA16034 Appendix: I	CINOTECH

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



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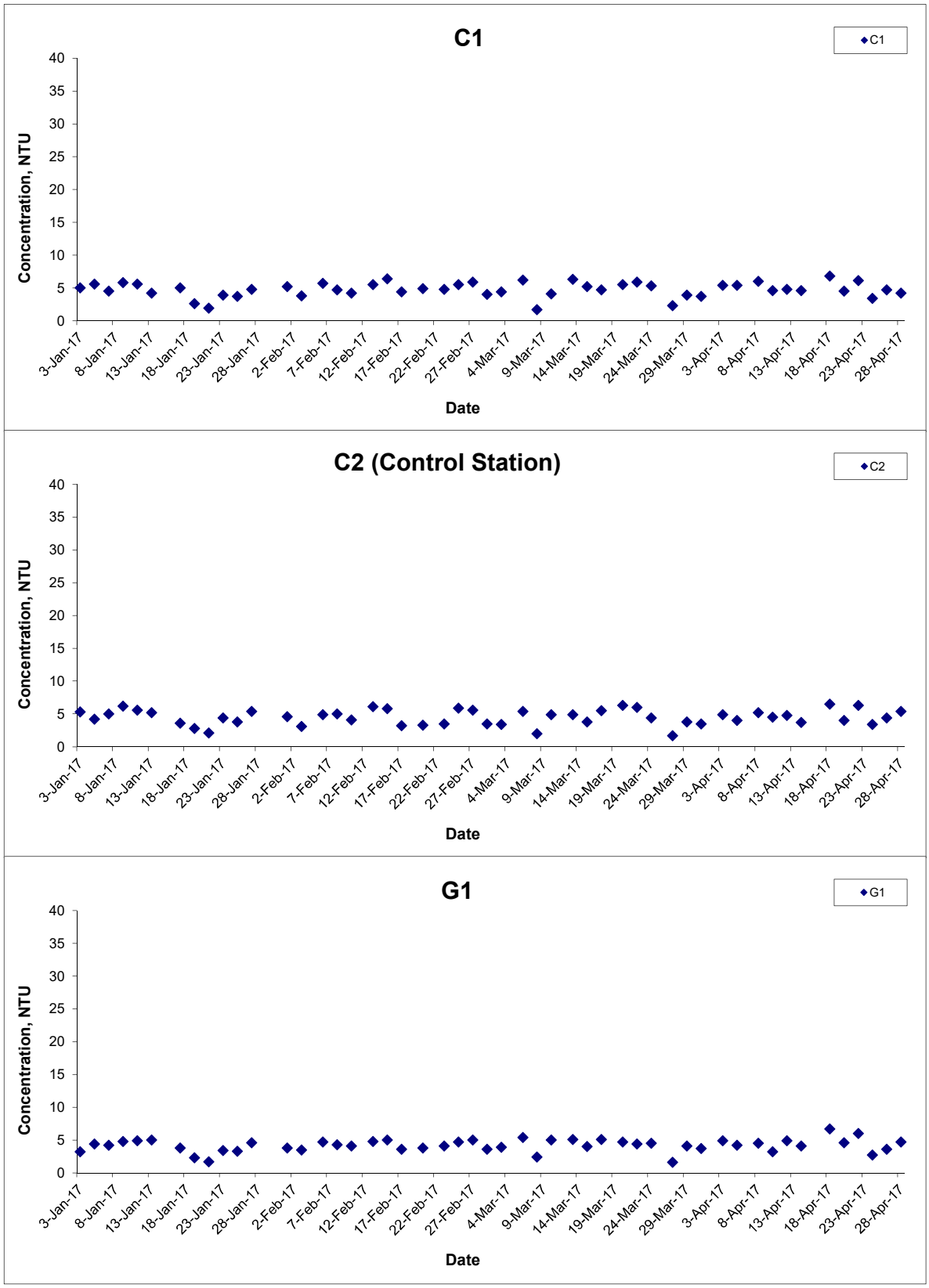
Turbidity (Depth-averaged) at Mid-Ebb Tide



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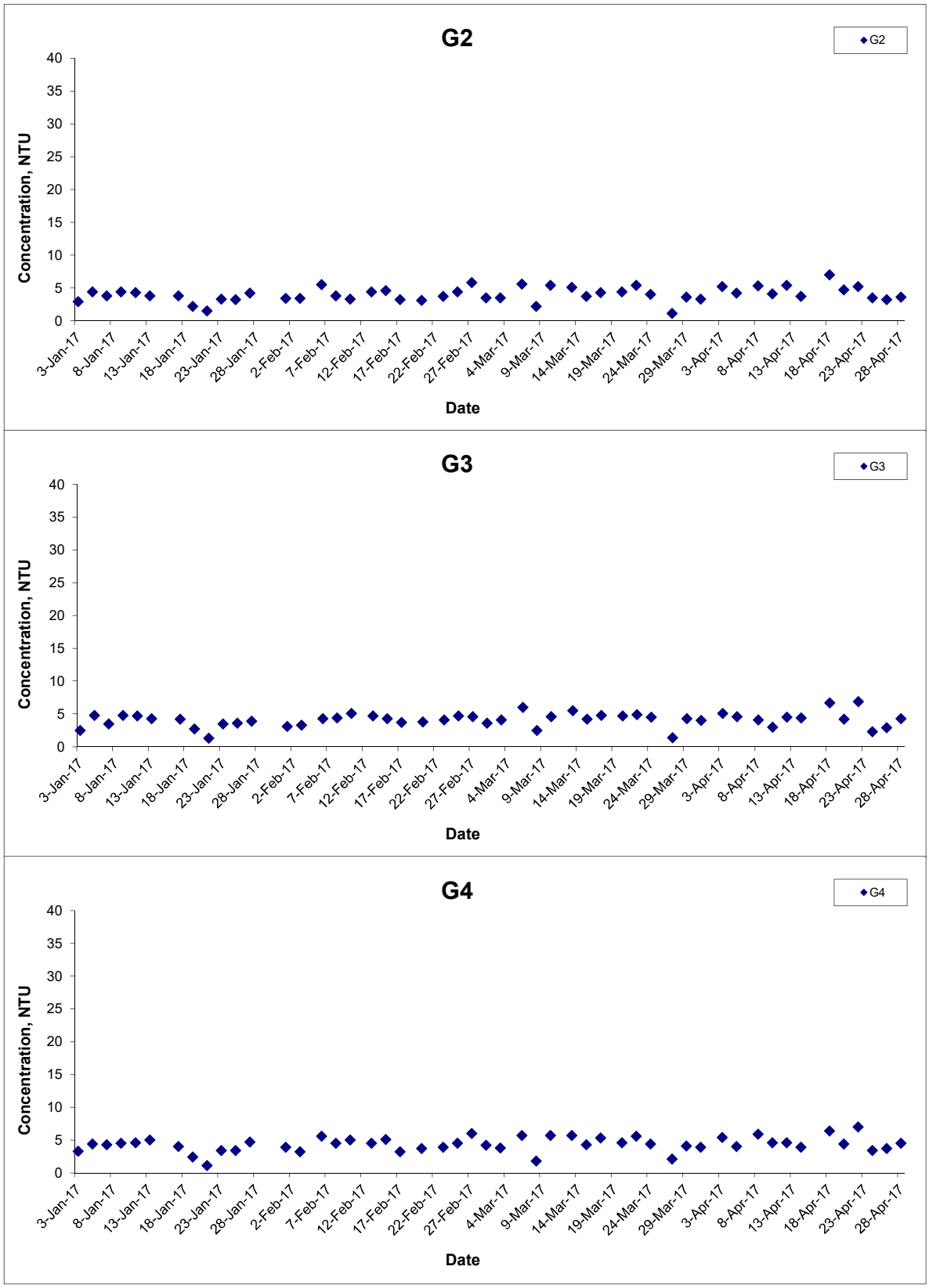
Turbidity (Depth-averaged) at Mid-Ebb Tide



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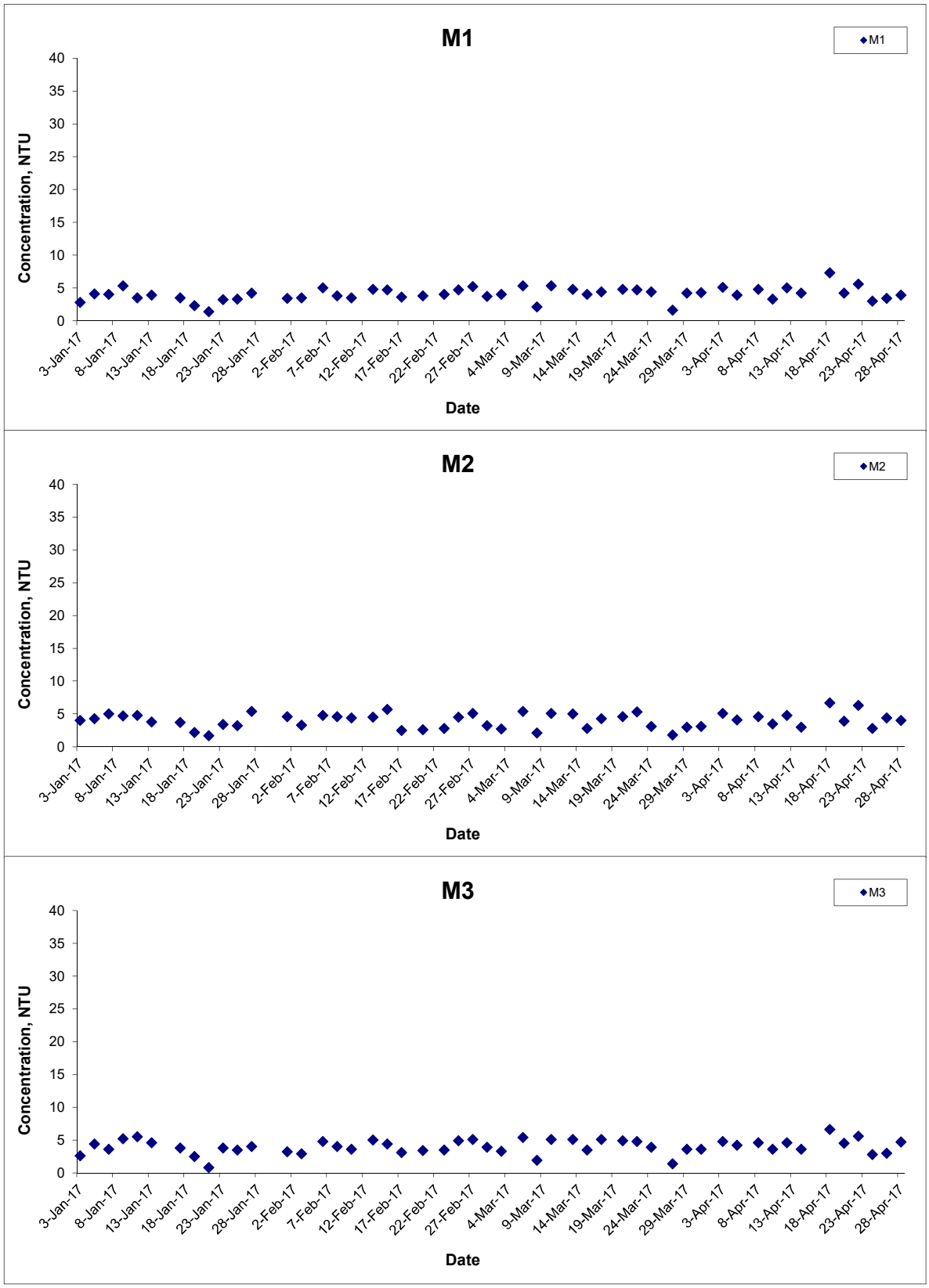
Turbidity (Depth-averaged) at Mid-Ebb Tide



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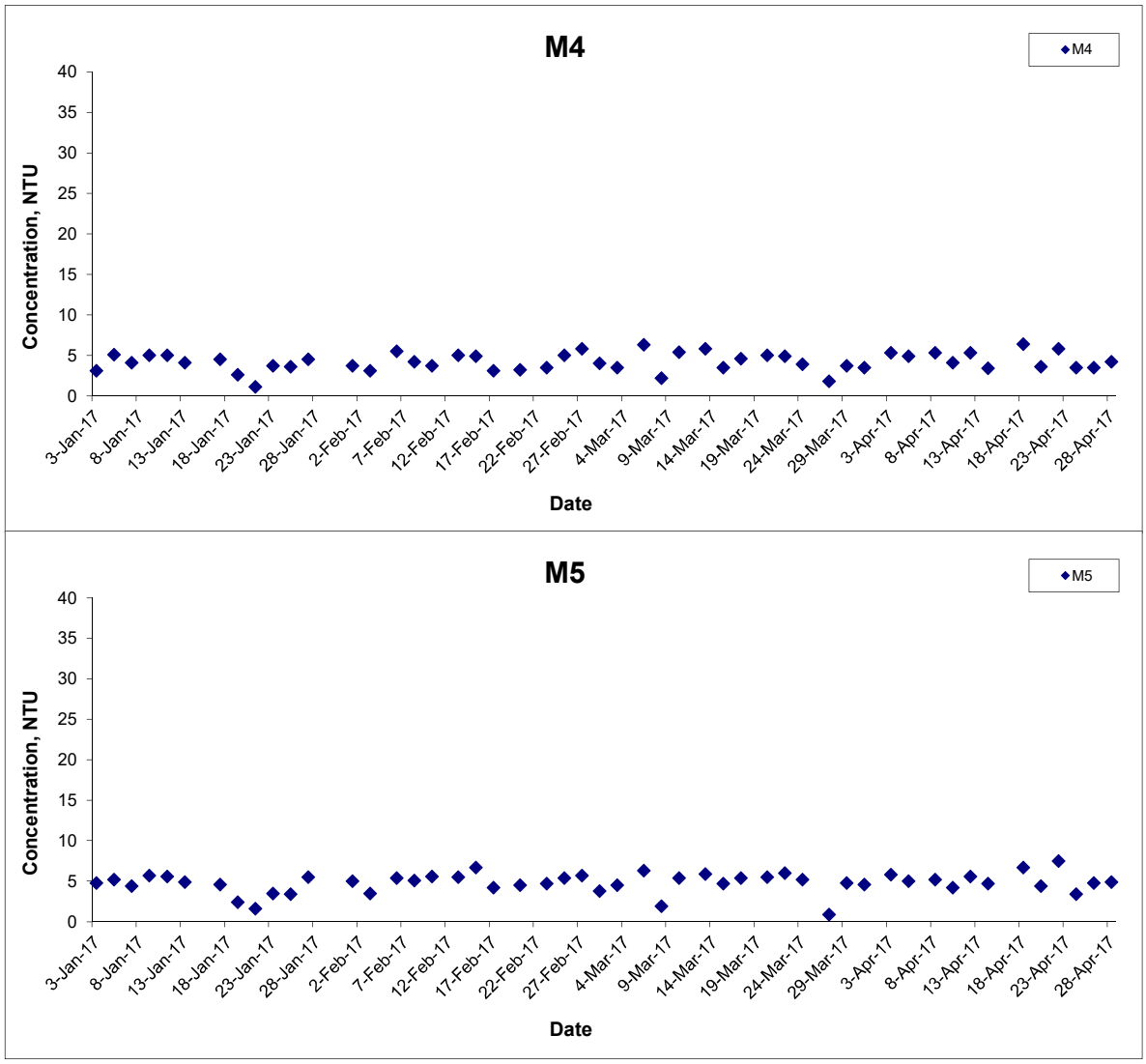
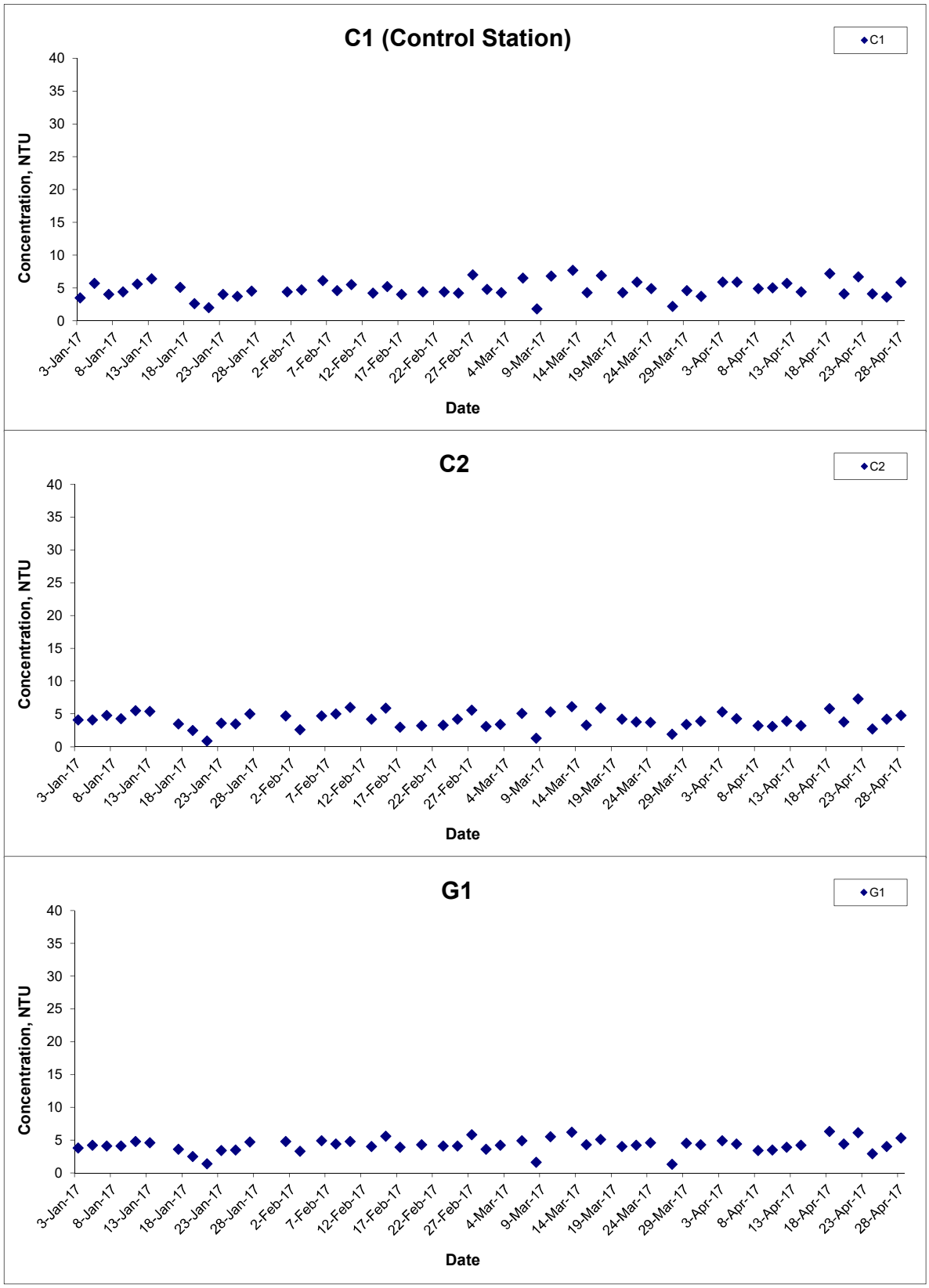
	Date: Apr 17	Appendix: I	

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 Date: Apr 17	Project No.: MA16034 Appendix: I	CINOTECH

Turbidity (Depth-averaged) at Mid-Flood Tide



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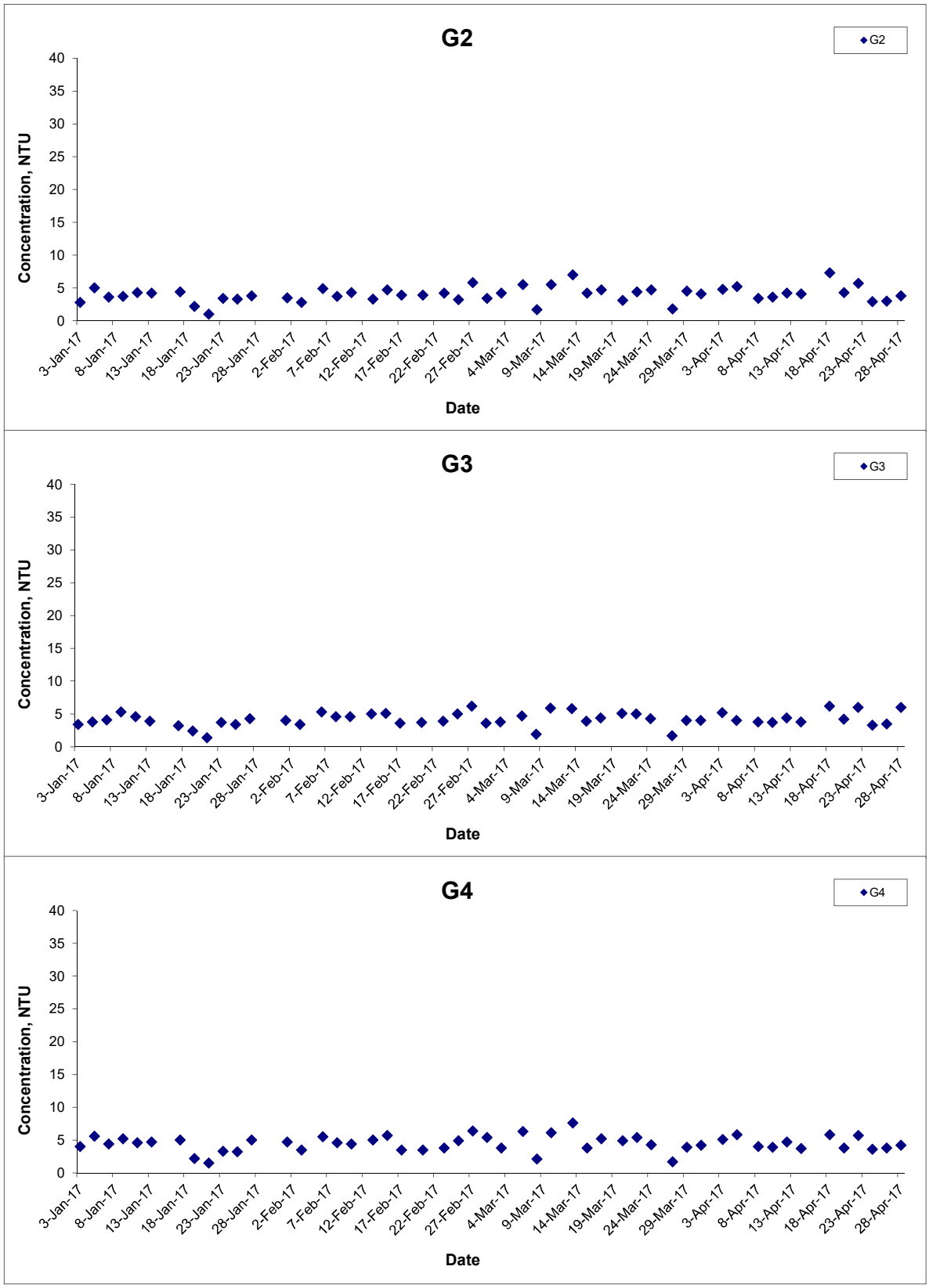
Turbidity (Depth-averaged) at Mid-Flood Tide



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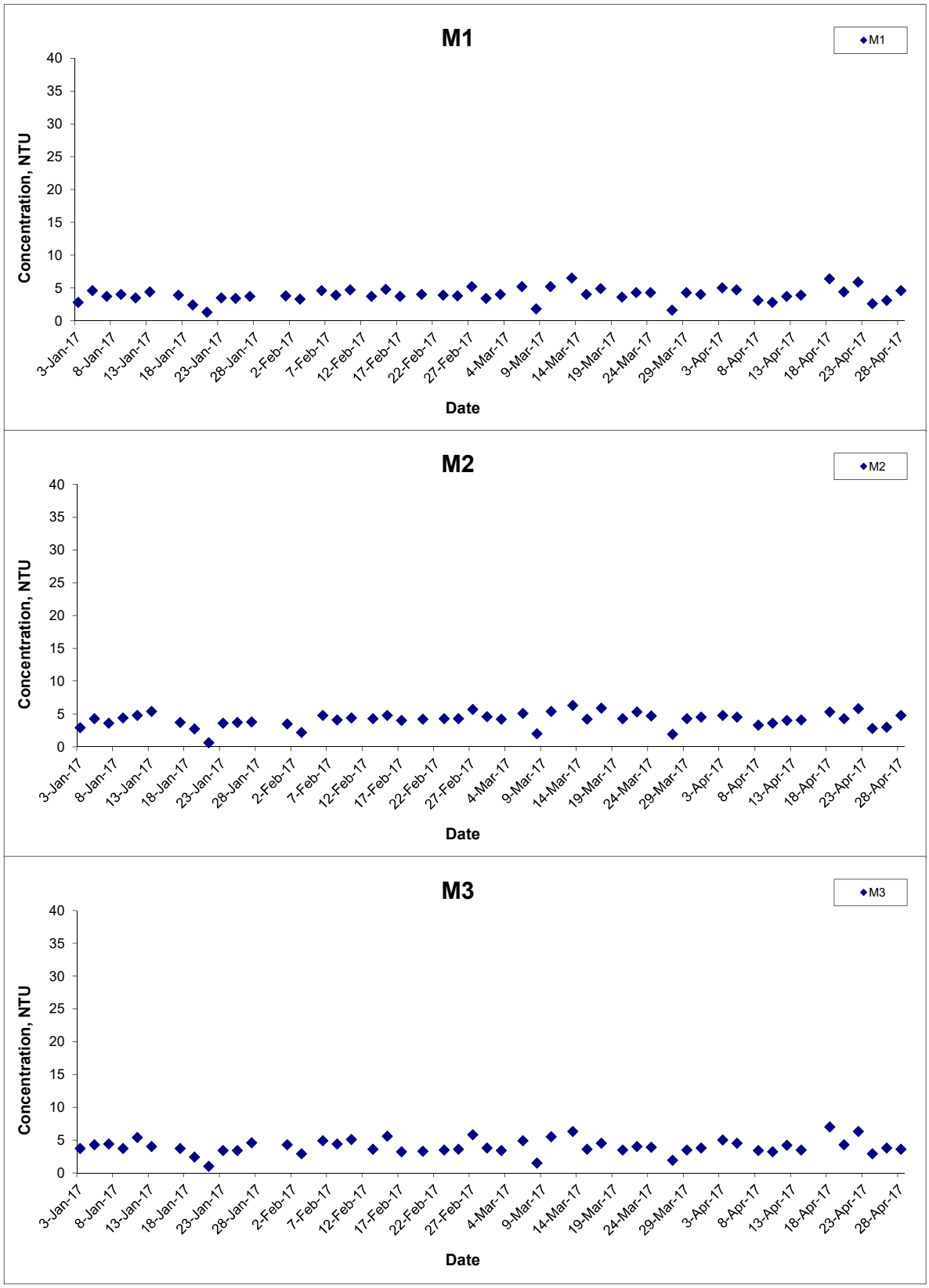
Turbidity (Depth-averaged) at Mid-Flood Tide



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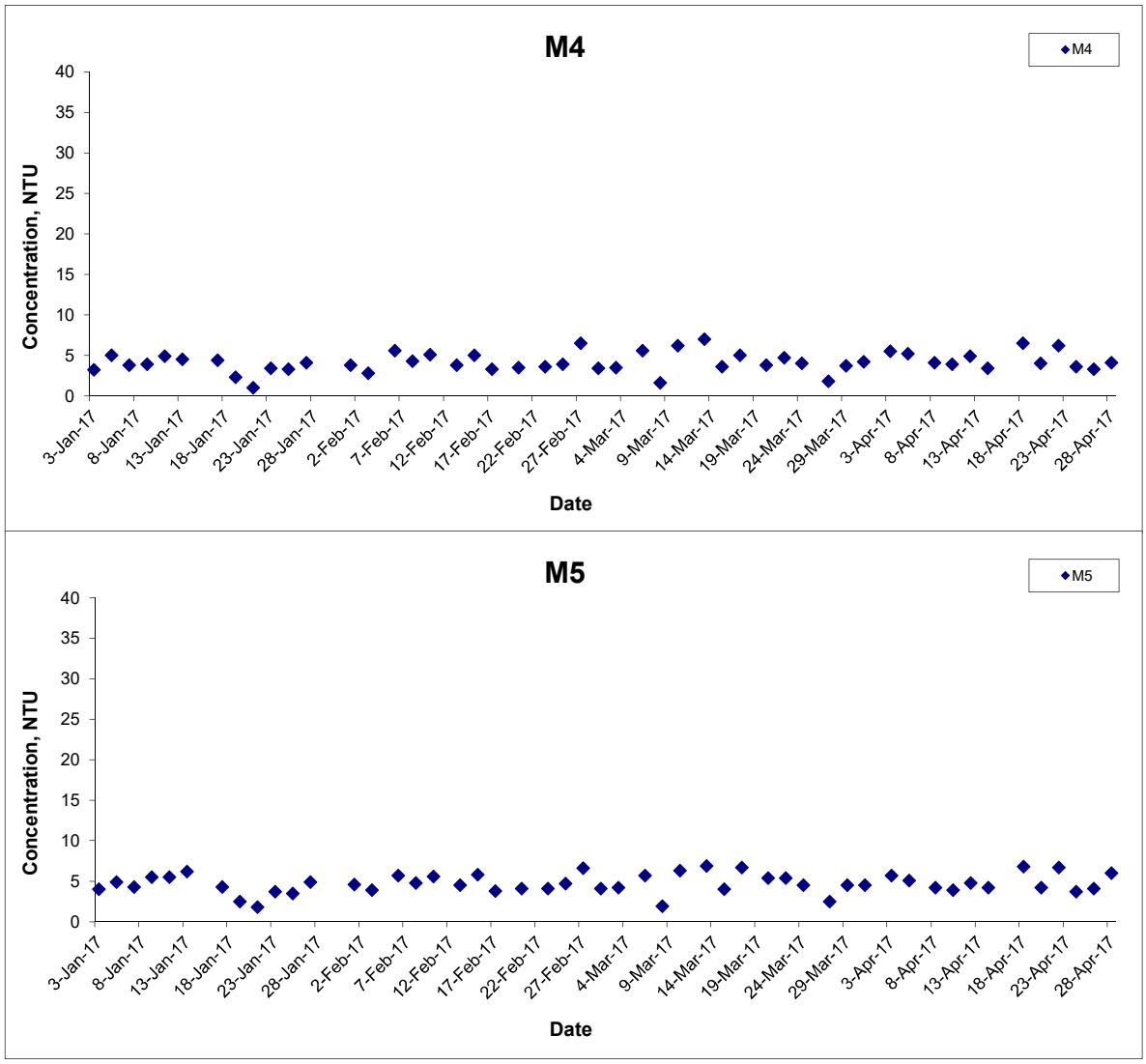
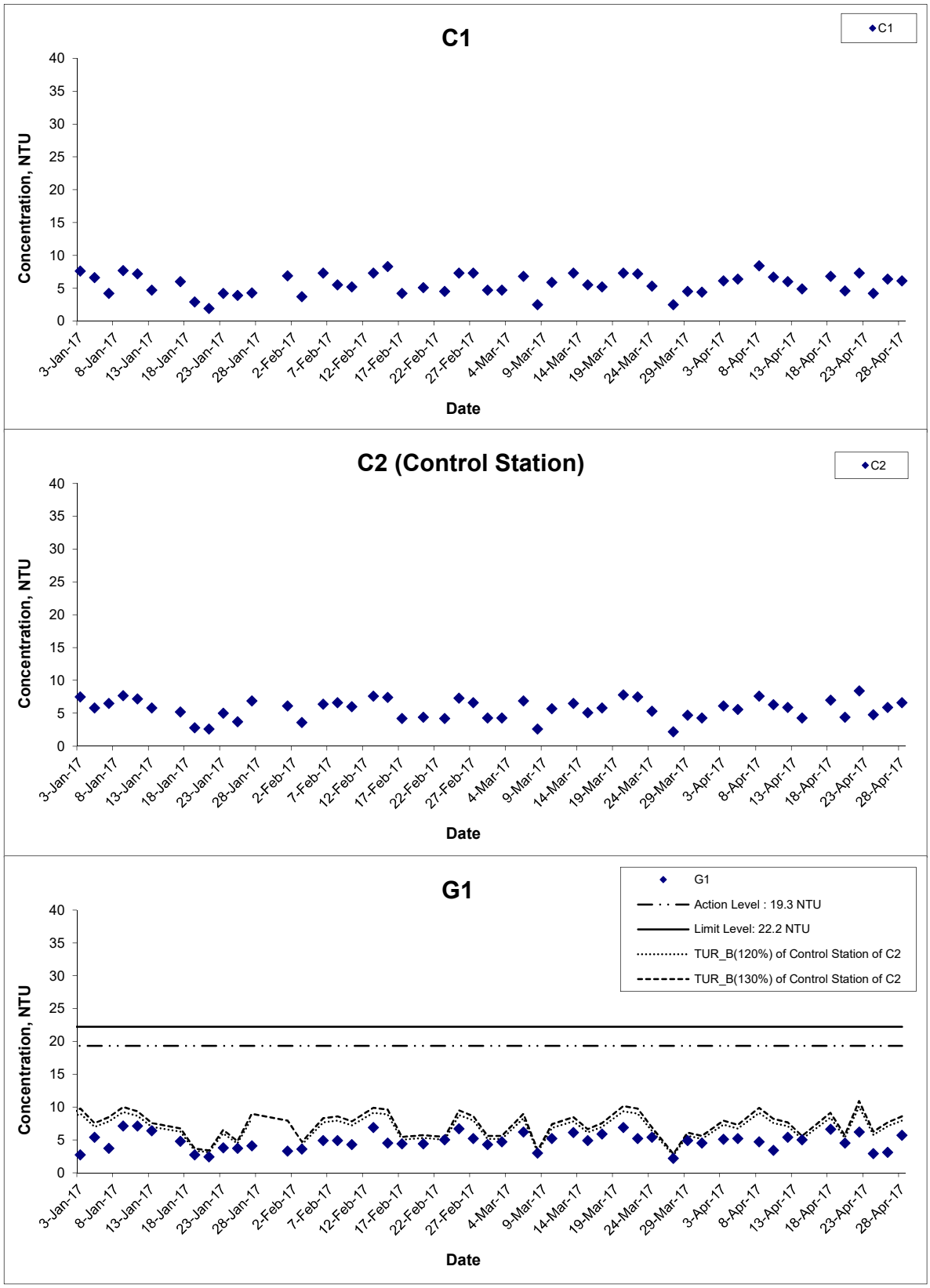
Turbidity (Depth-averaged) at Mid-Flood Tide



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: Apr 17	Project No.: MA16034 Appendix: I	CINOTECH

Turbidity (Bottom) at Mid-Ebb Tide



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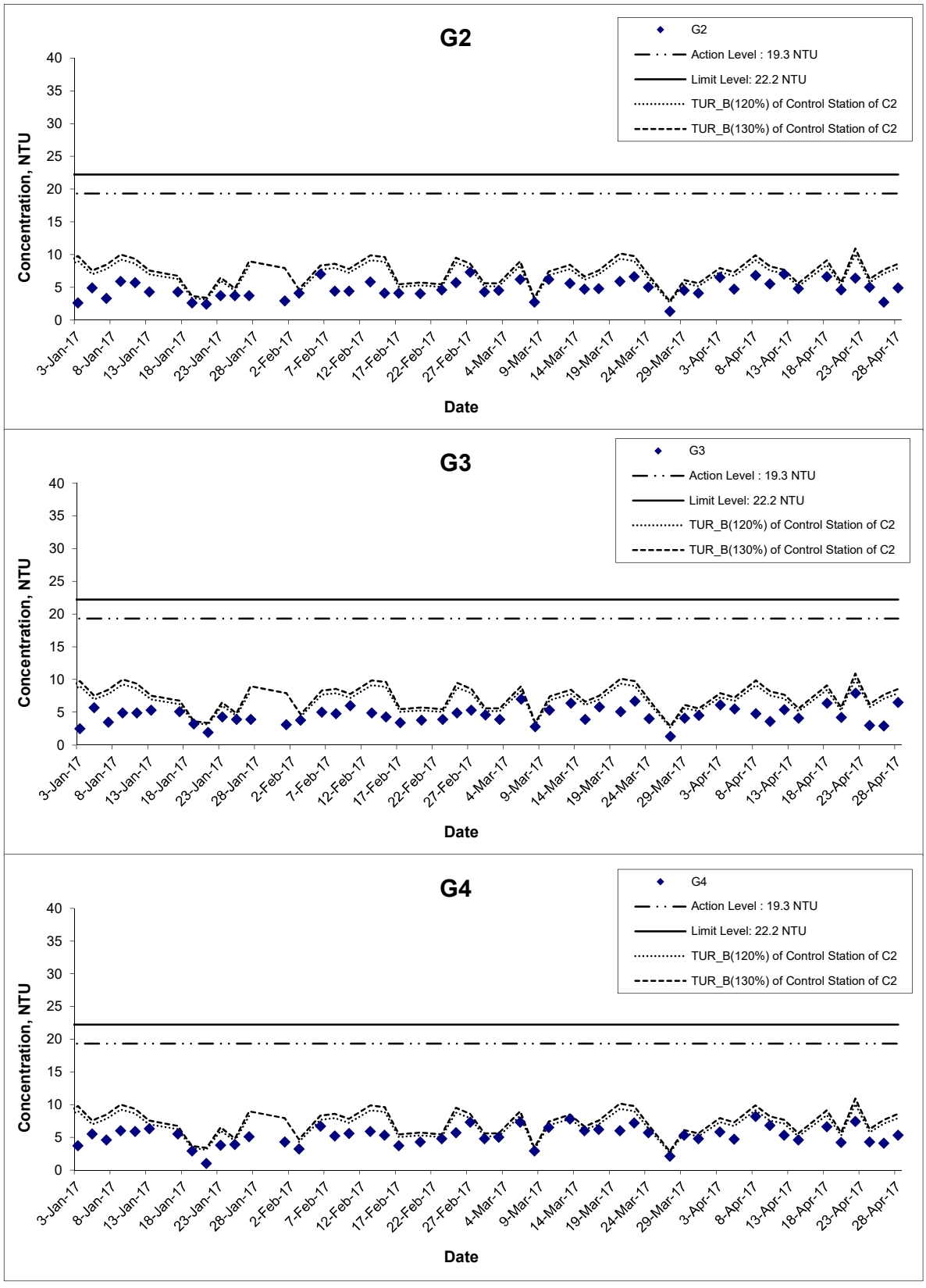
Turbidity (Bottom) at Mid-Ebb Tide



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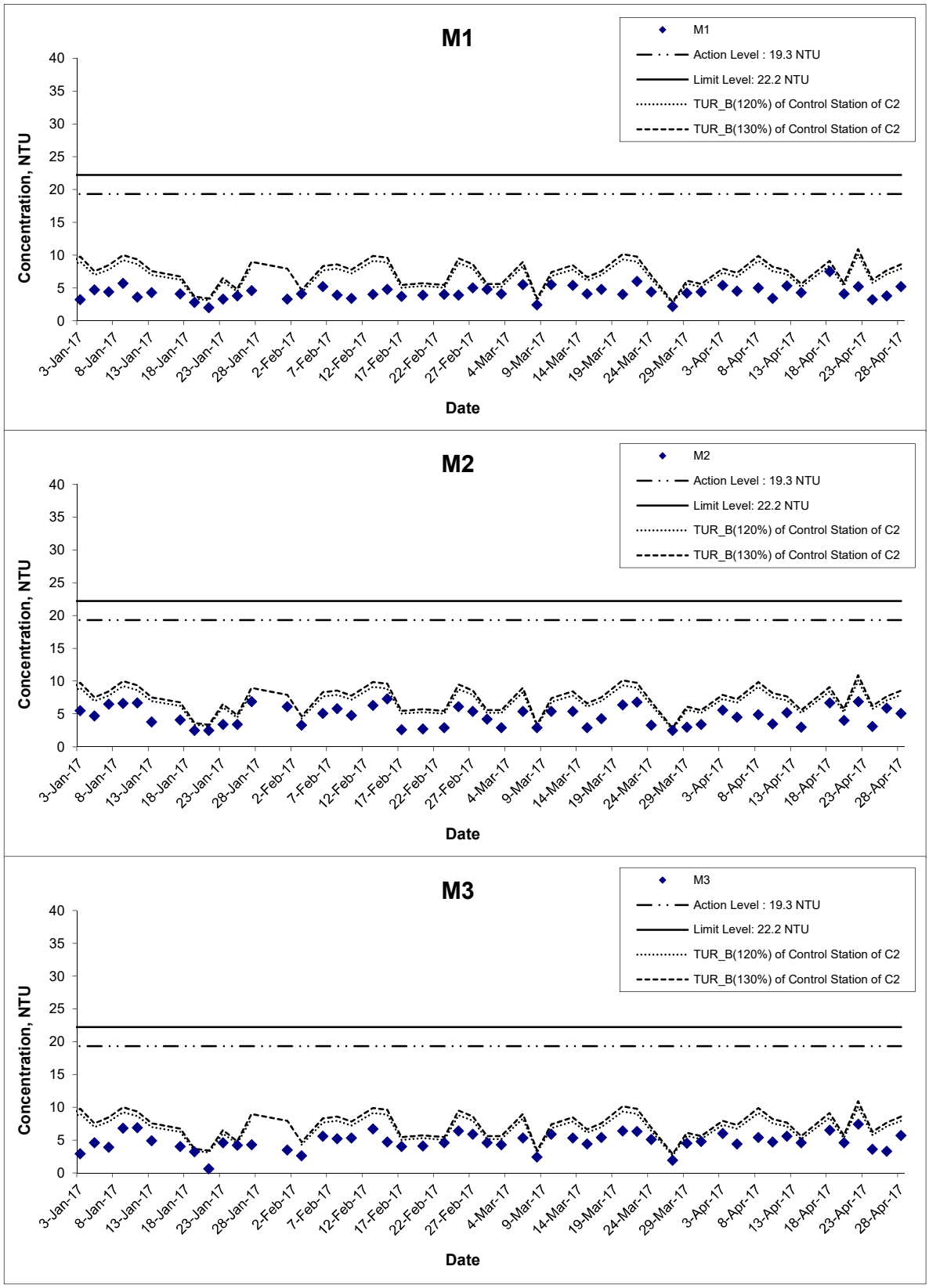
Turbidity (Bottom) at Mid-Ebb Tide



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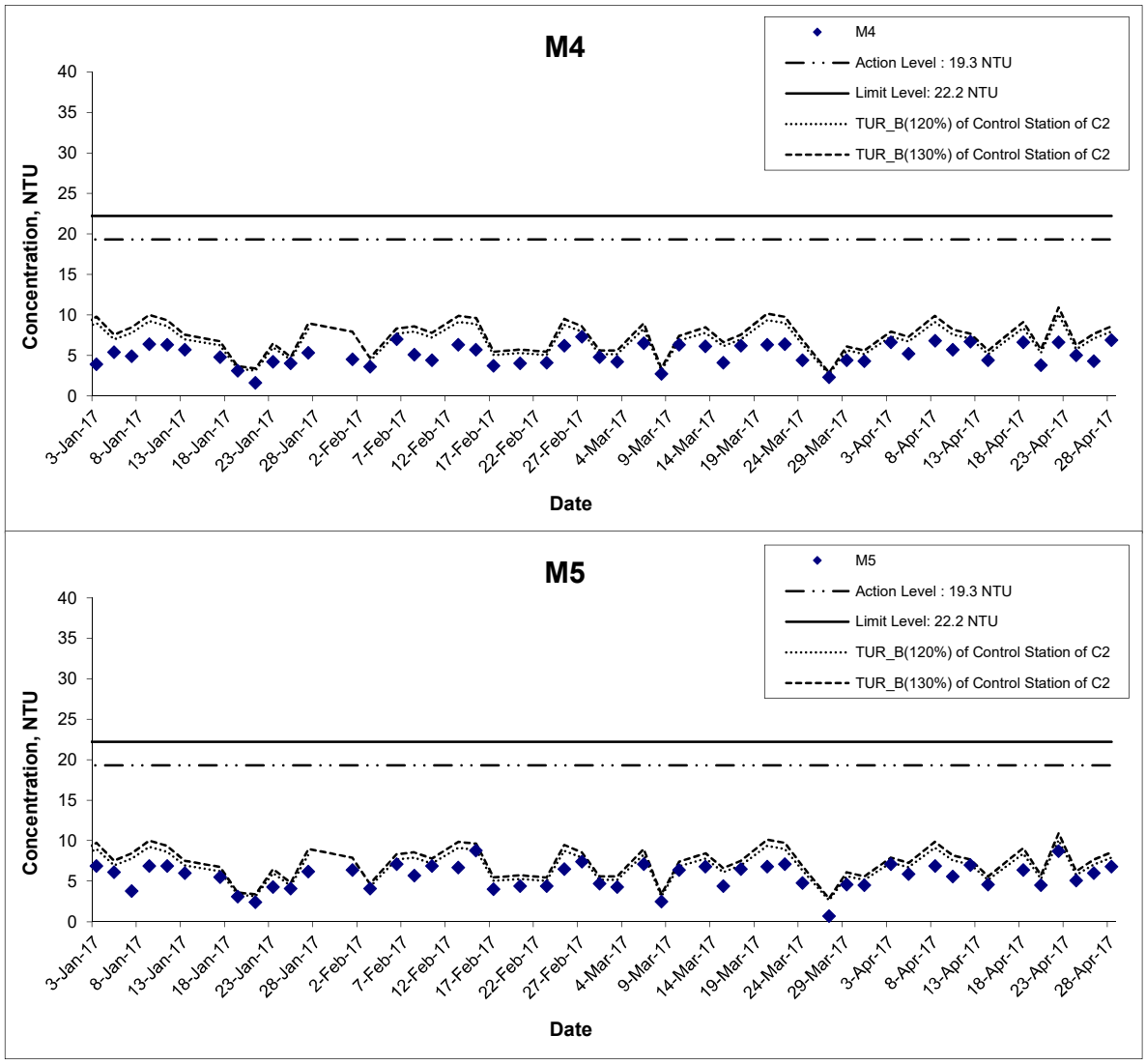
Turbidity (Bottom) at Mid-Ebb Tide



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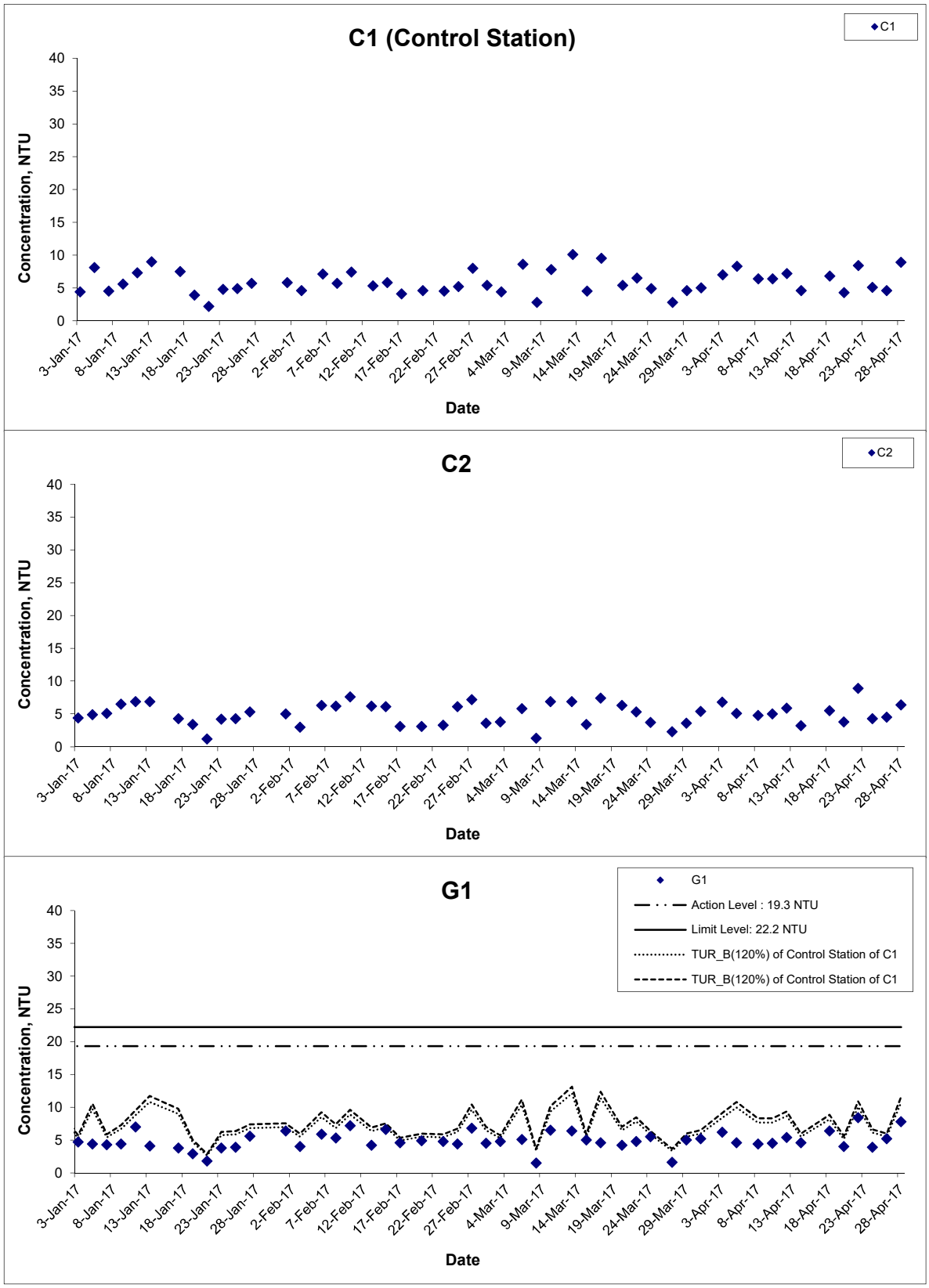
Turbidity (Bottom) at Mid-Flood Tide



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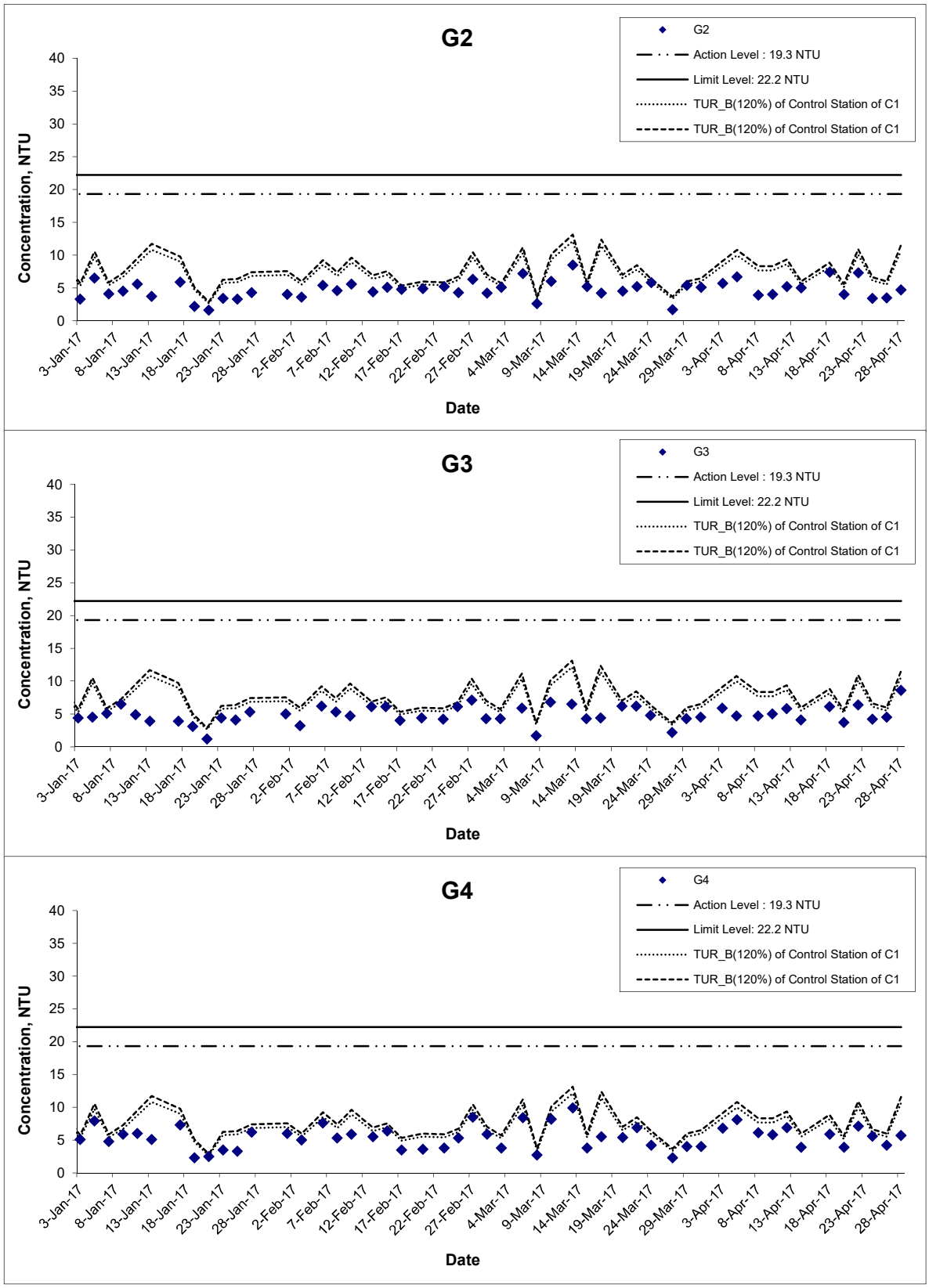
Turbidity (Bottom) at Mid-Flood Tide



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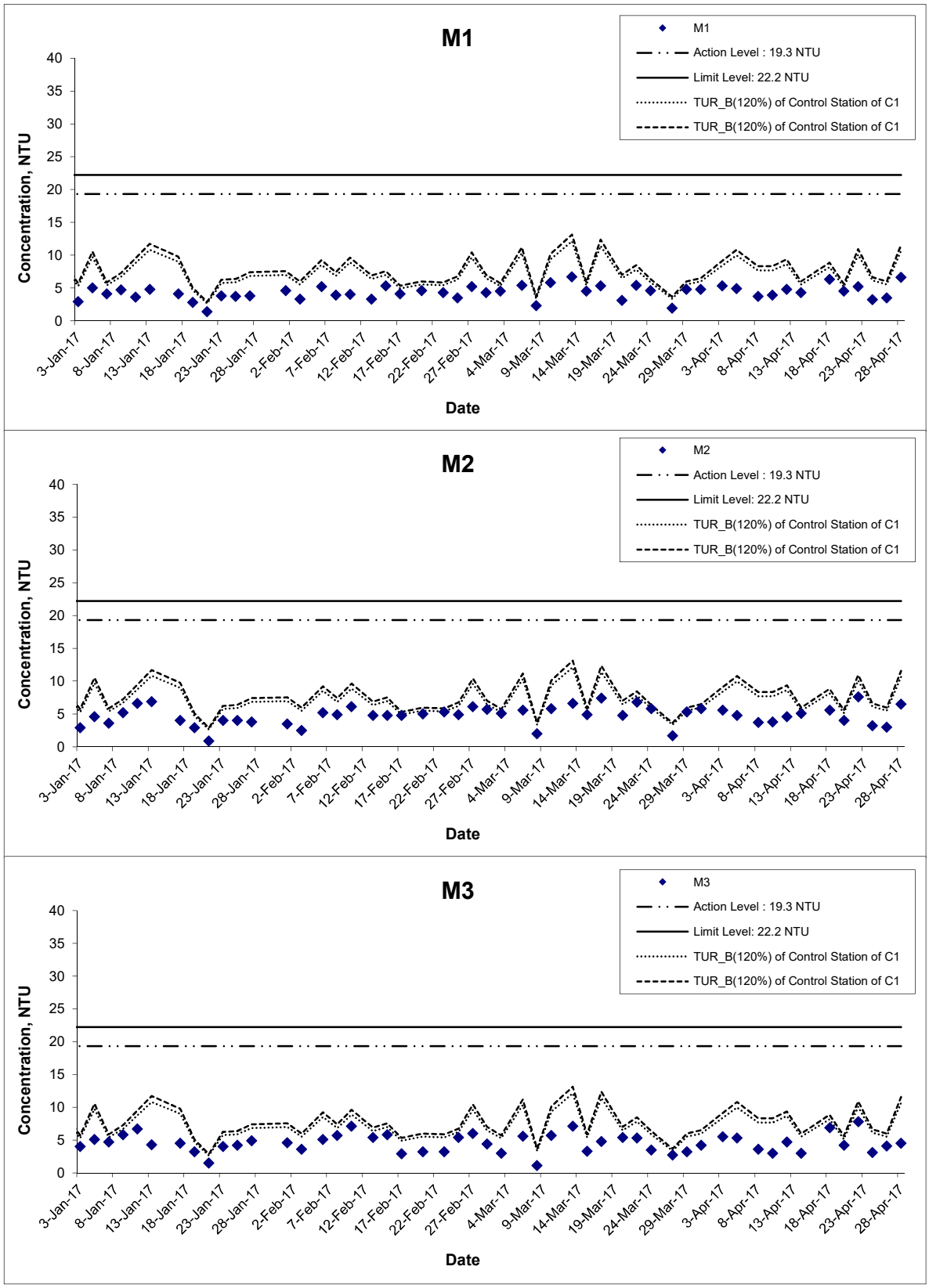
Turbidity (Bottom) at Mid-Flood Tide



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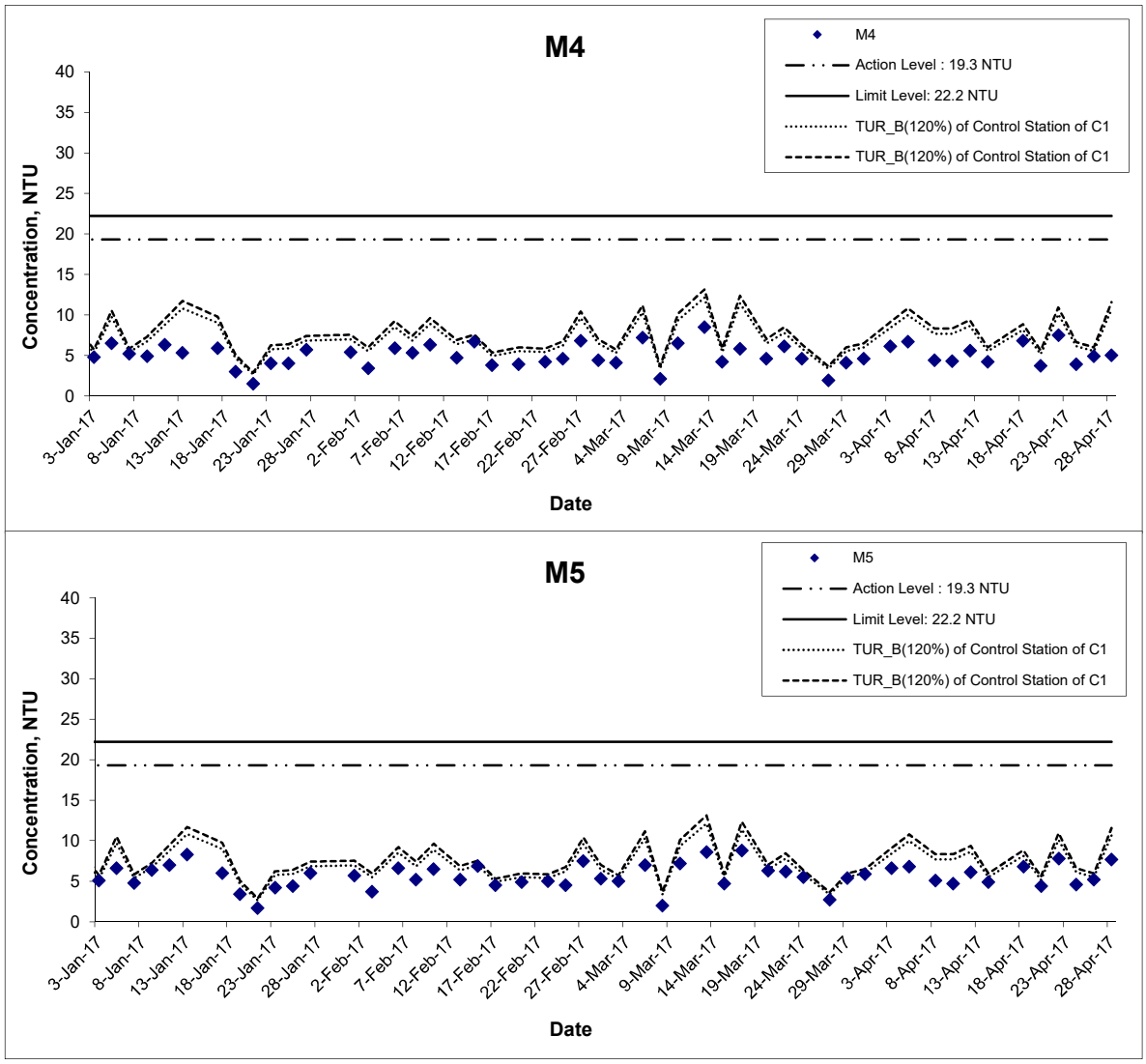
Turbidity (Bottom) at Mid-Flood Tide



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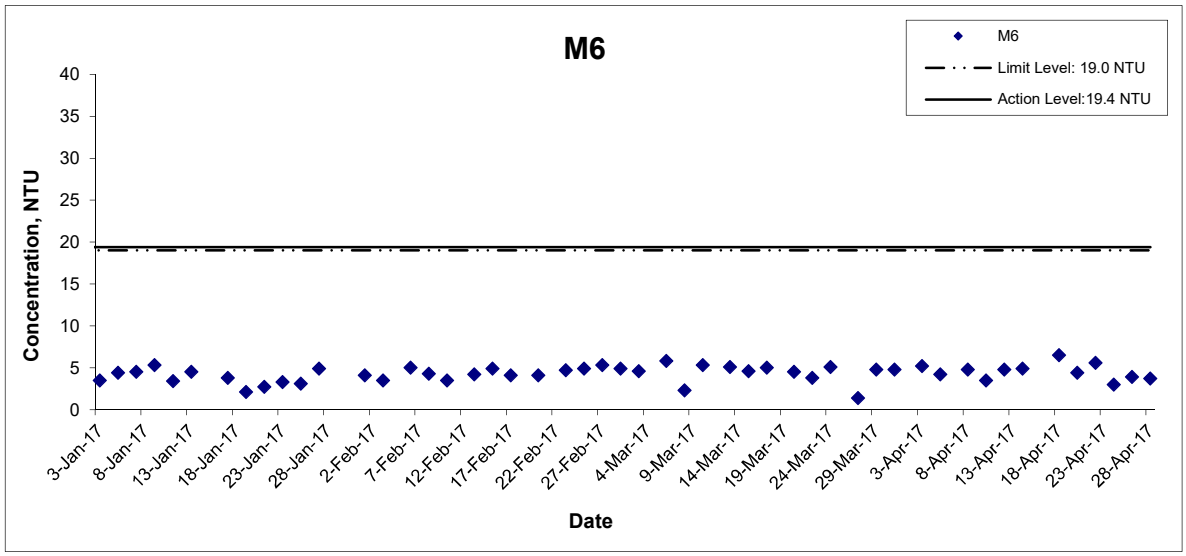
Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Ebb Tide



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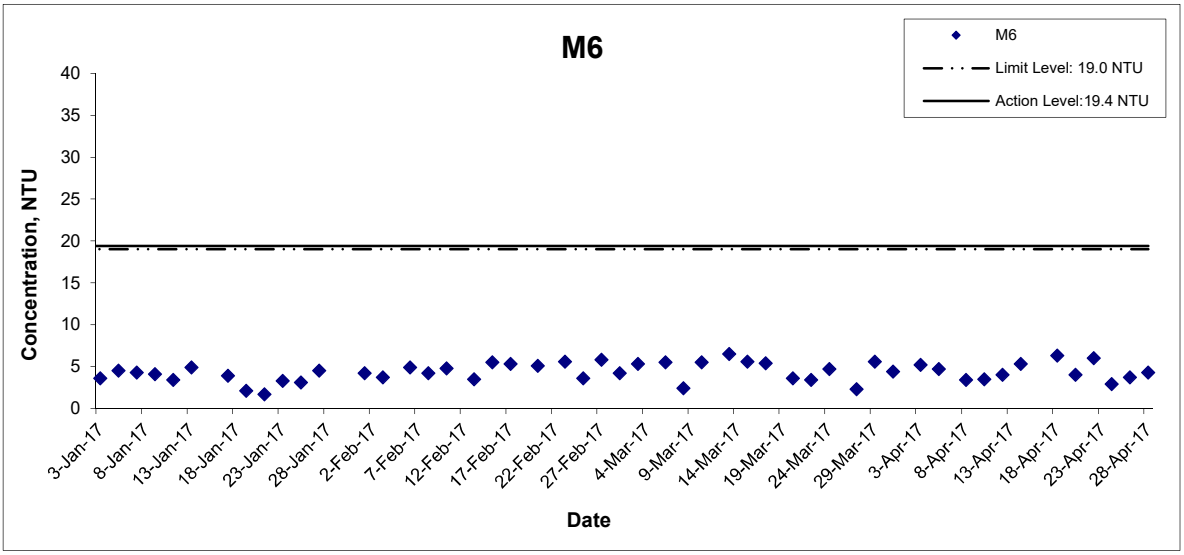
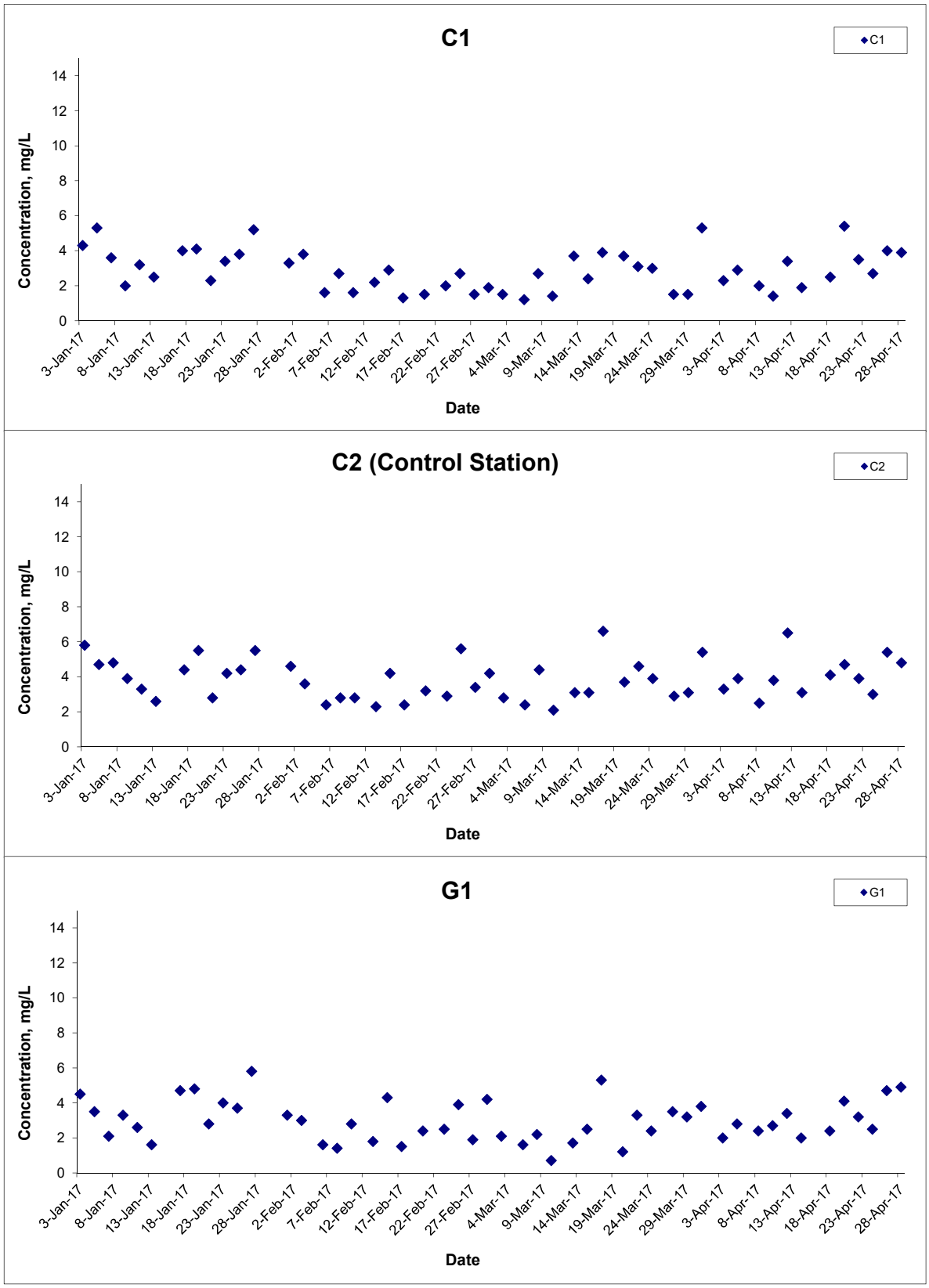
Turbidity (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



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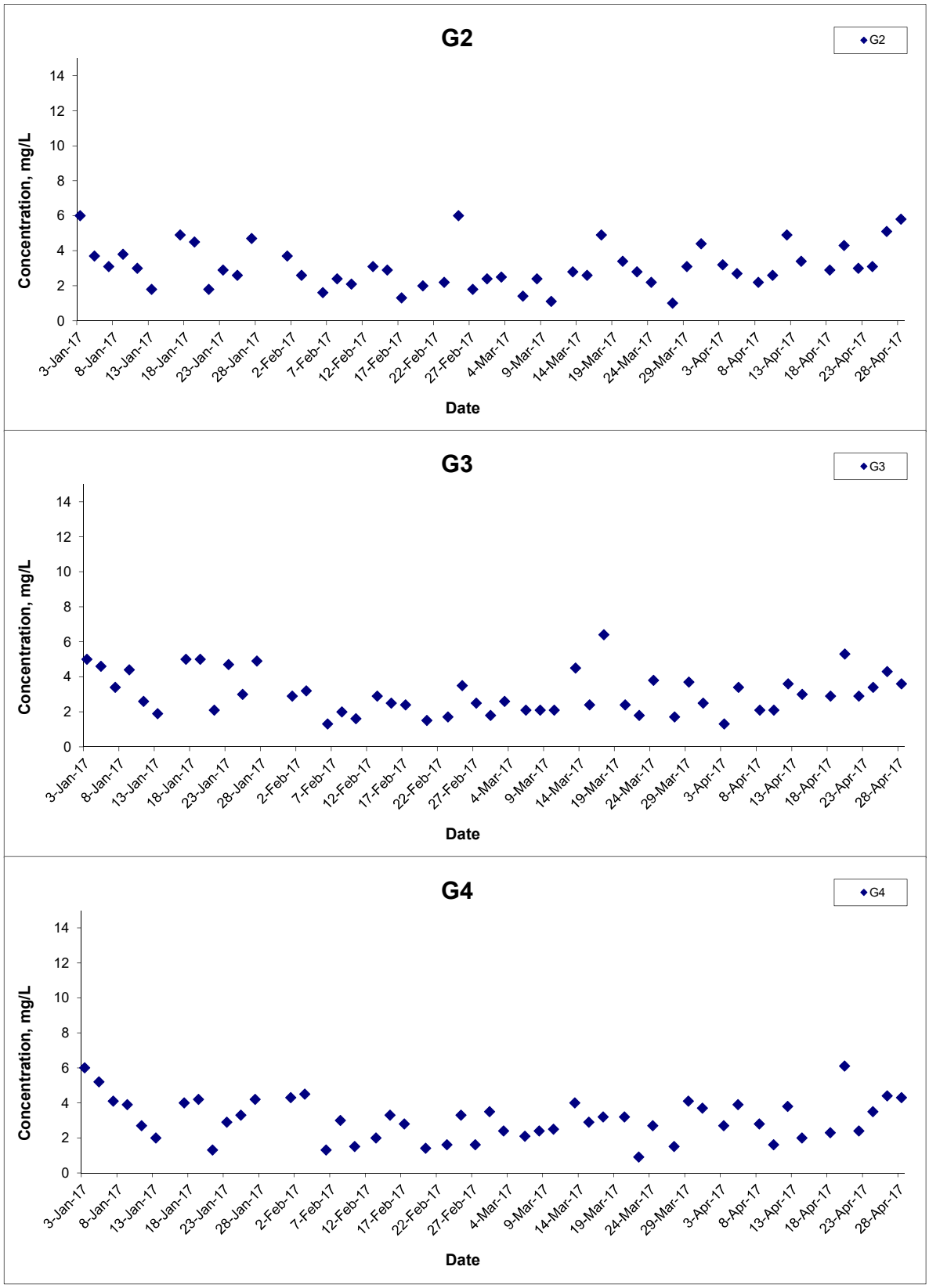
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Title		Scale	Project No.
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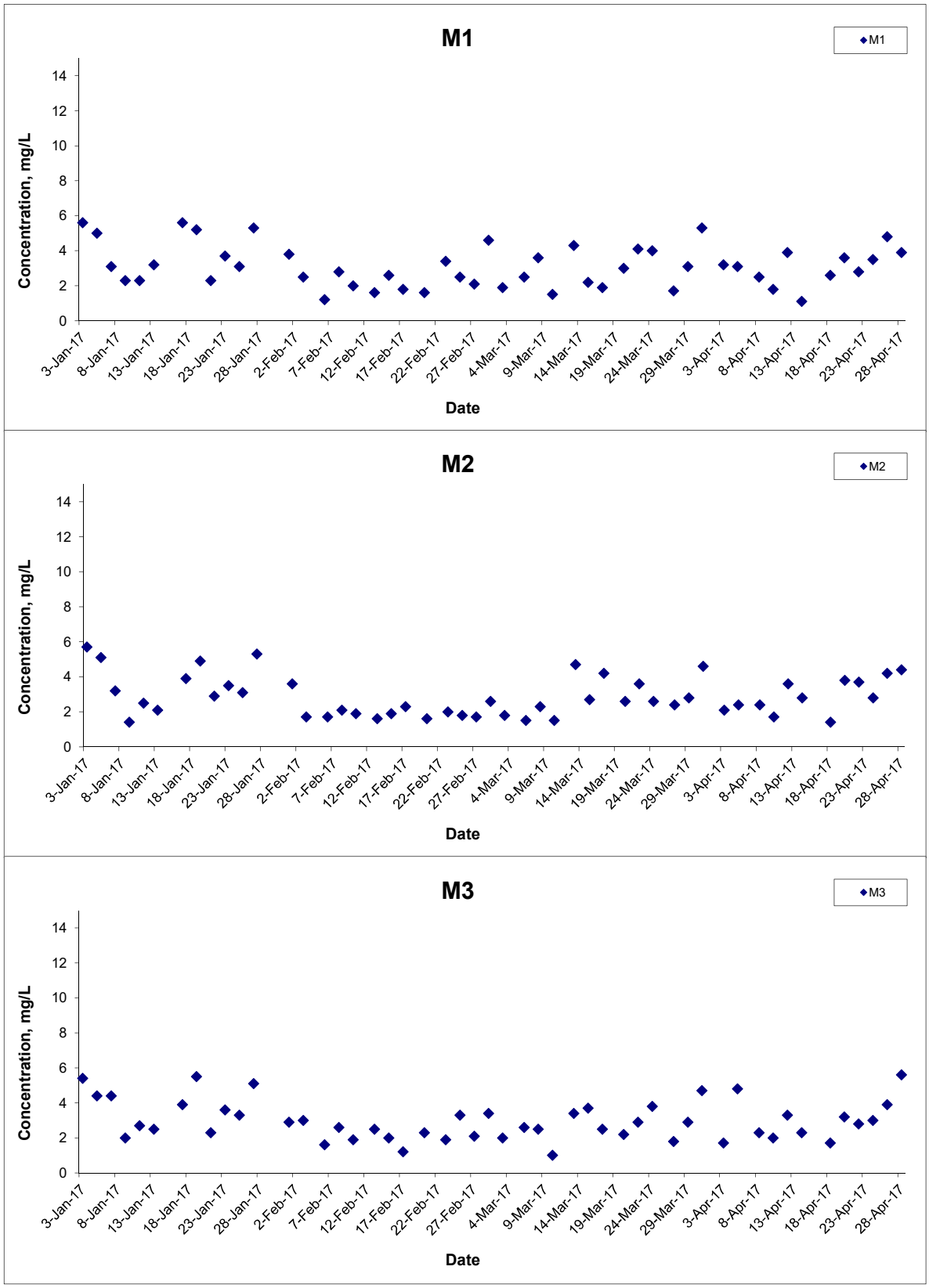
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Title	Scale	Project No.
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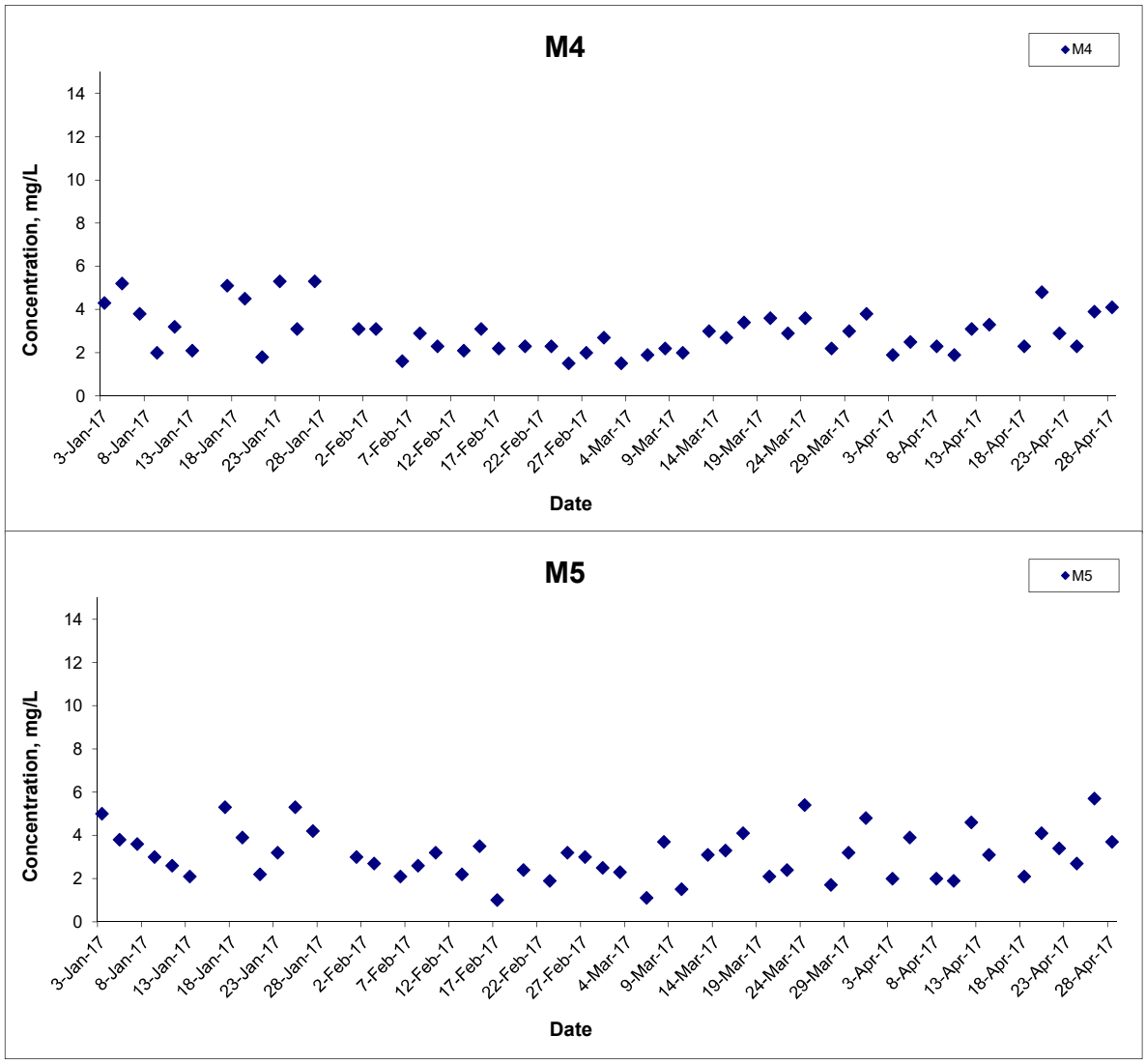
Suspended Solids (Depth-averaged) at Mid-Ebb Tide



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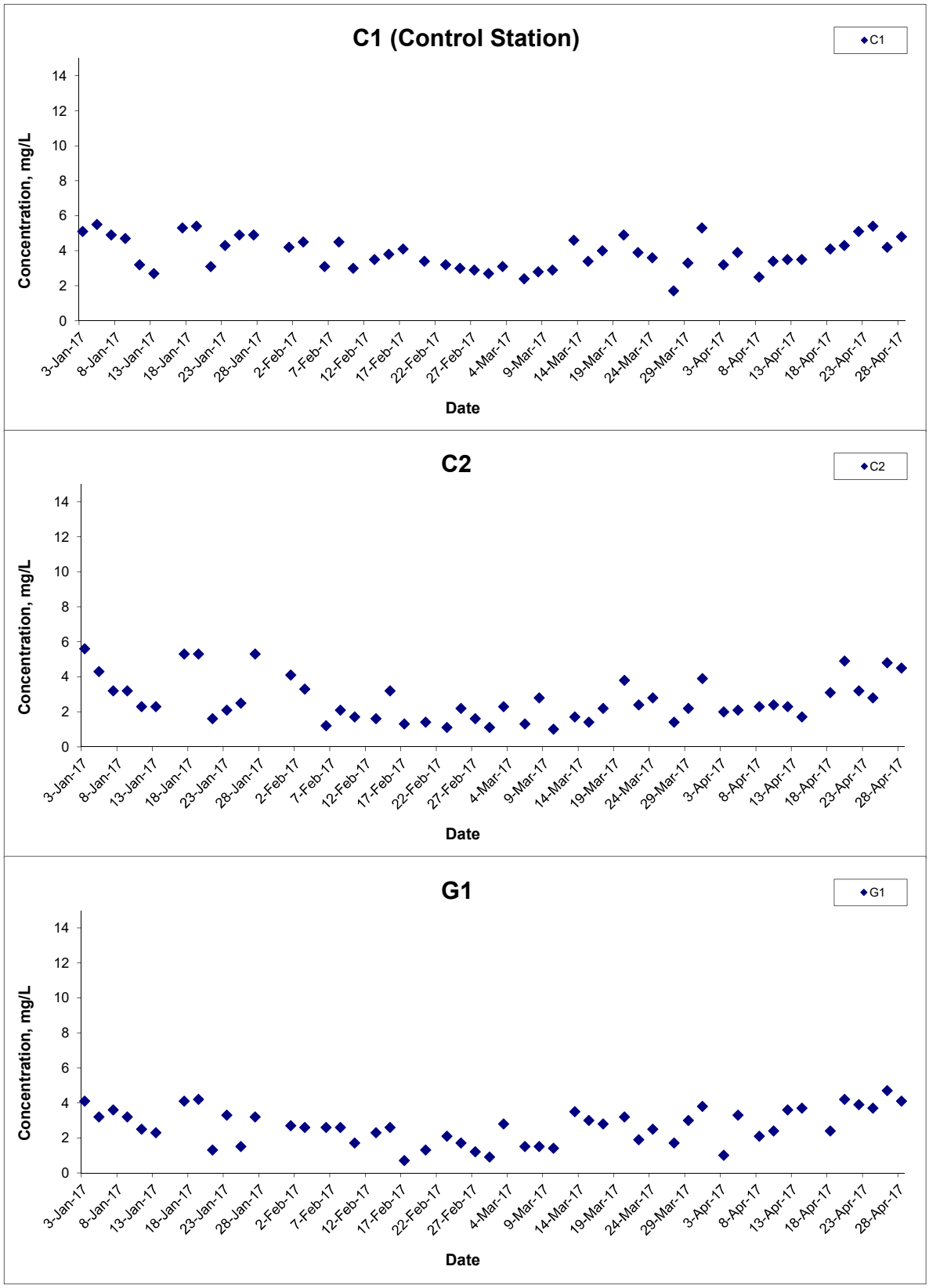
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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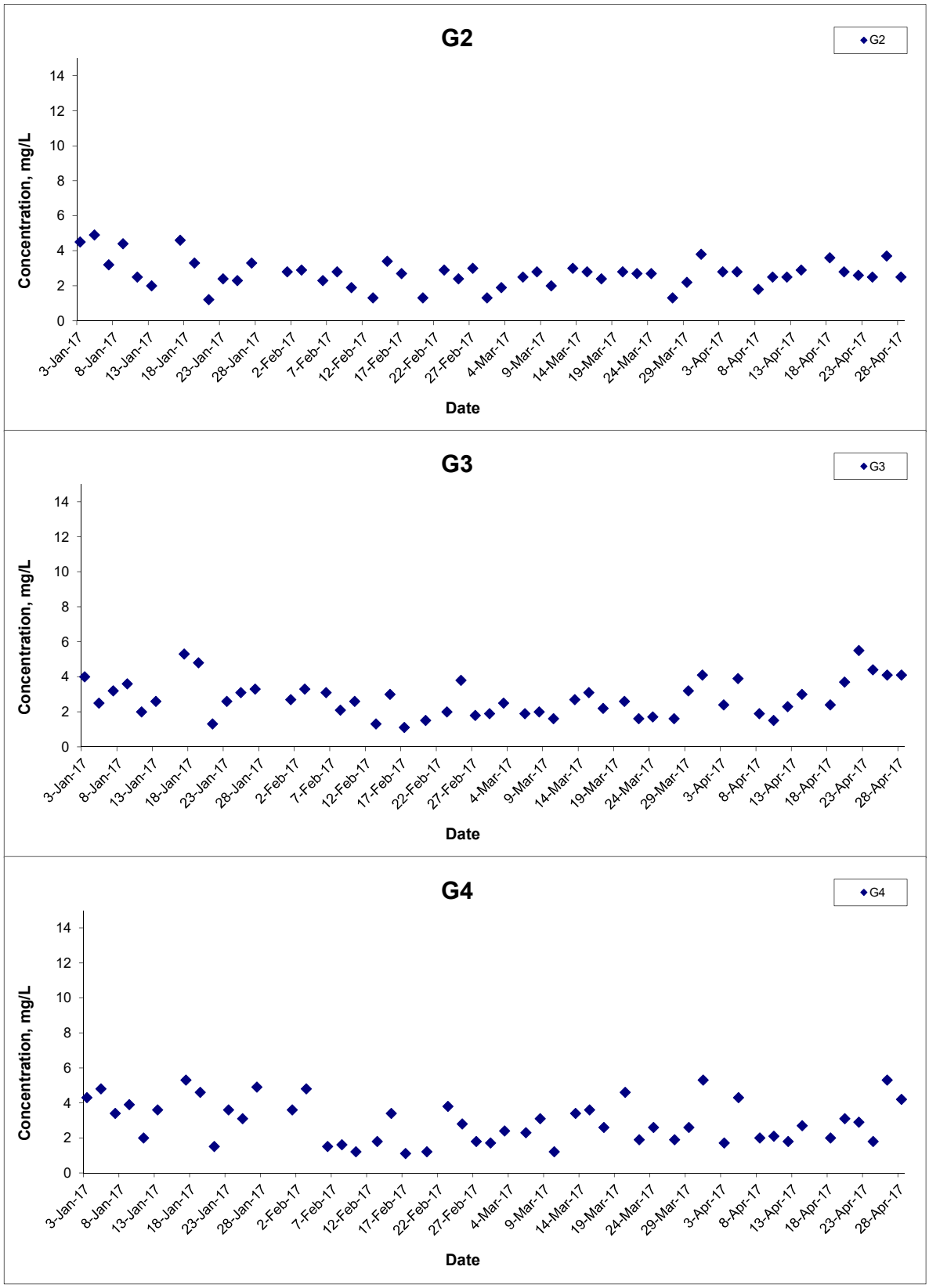
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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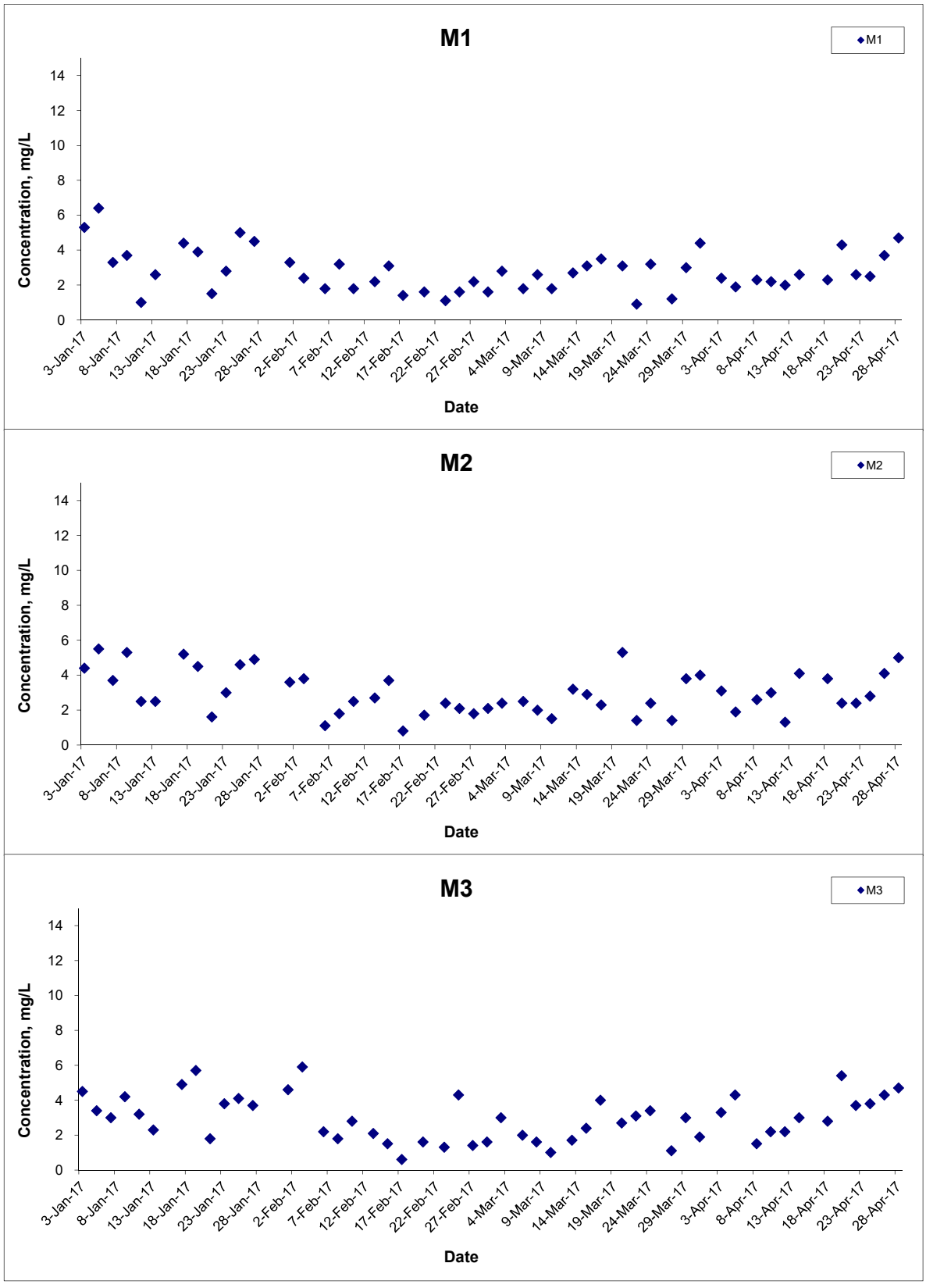
Suspended Solids (Depth-averaged) at Mid-Flood Tide



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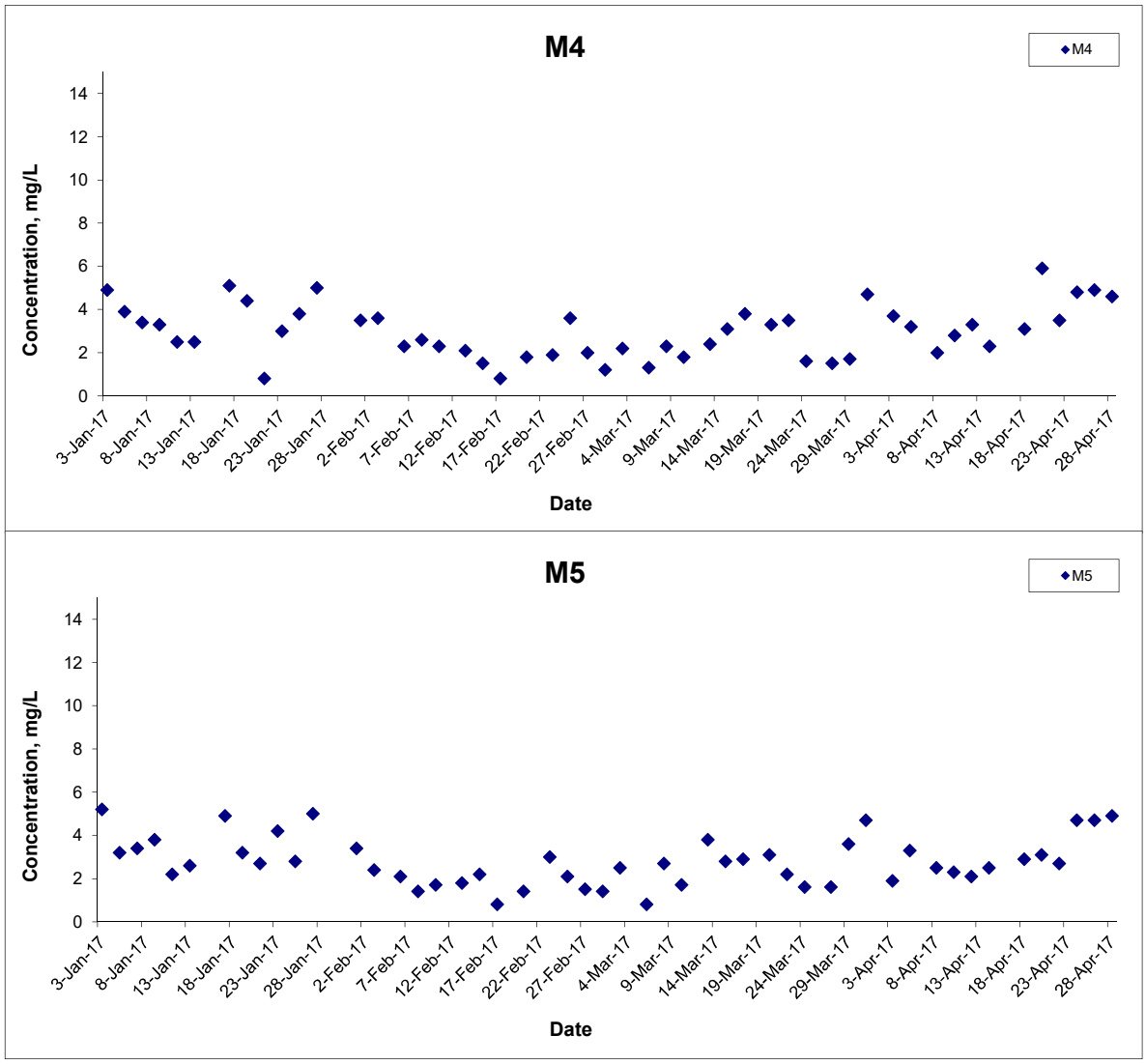
	Date: Apr 17	Appendix: I	

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



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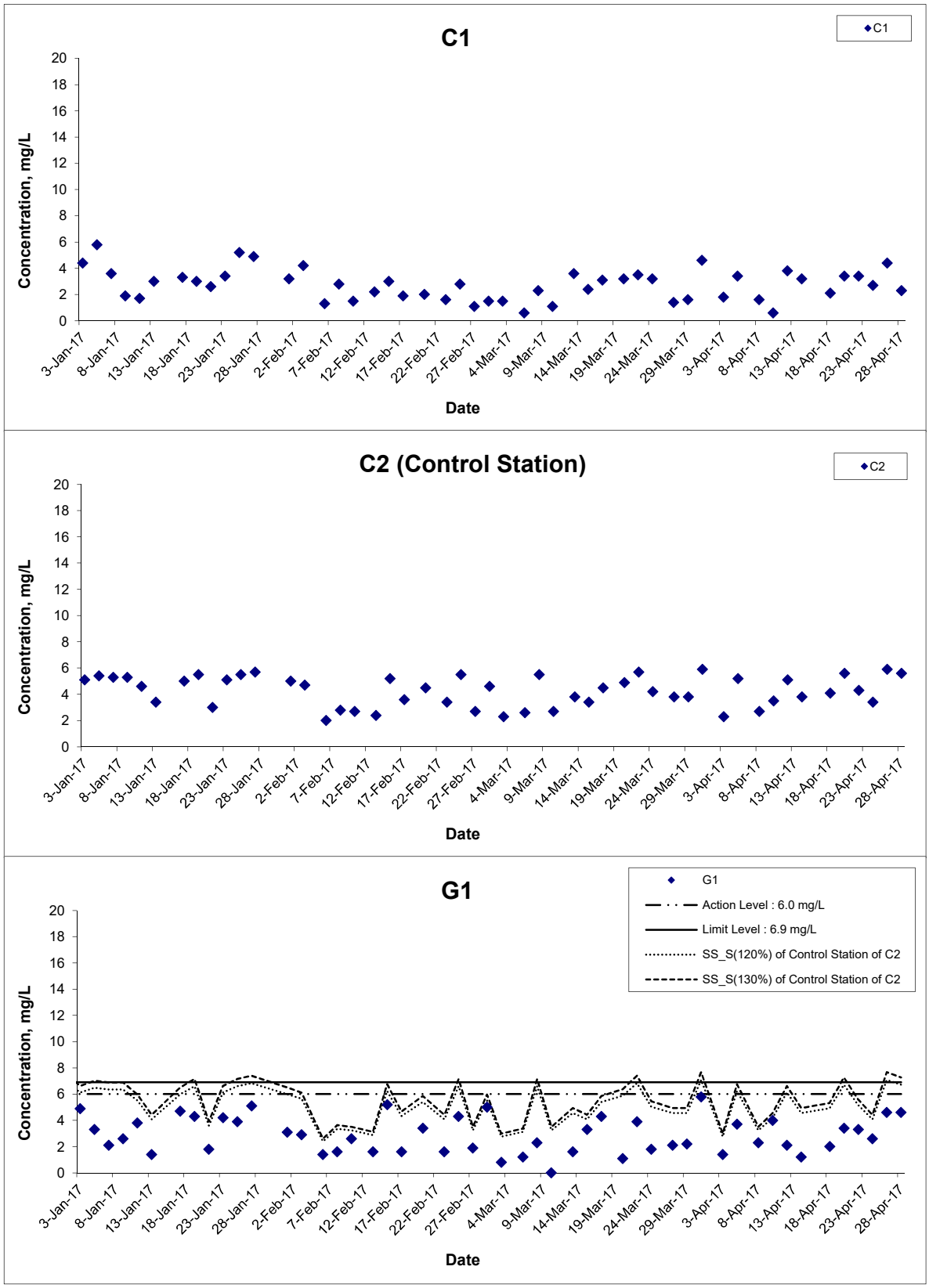
Suspended Solids (Surface) at Mid-Ebb Tide



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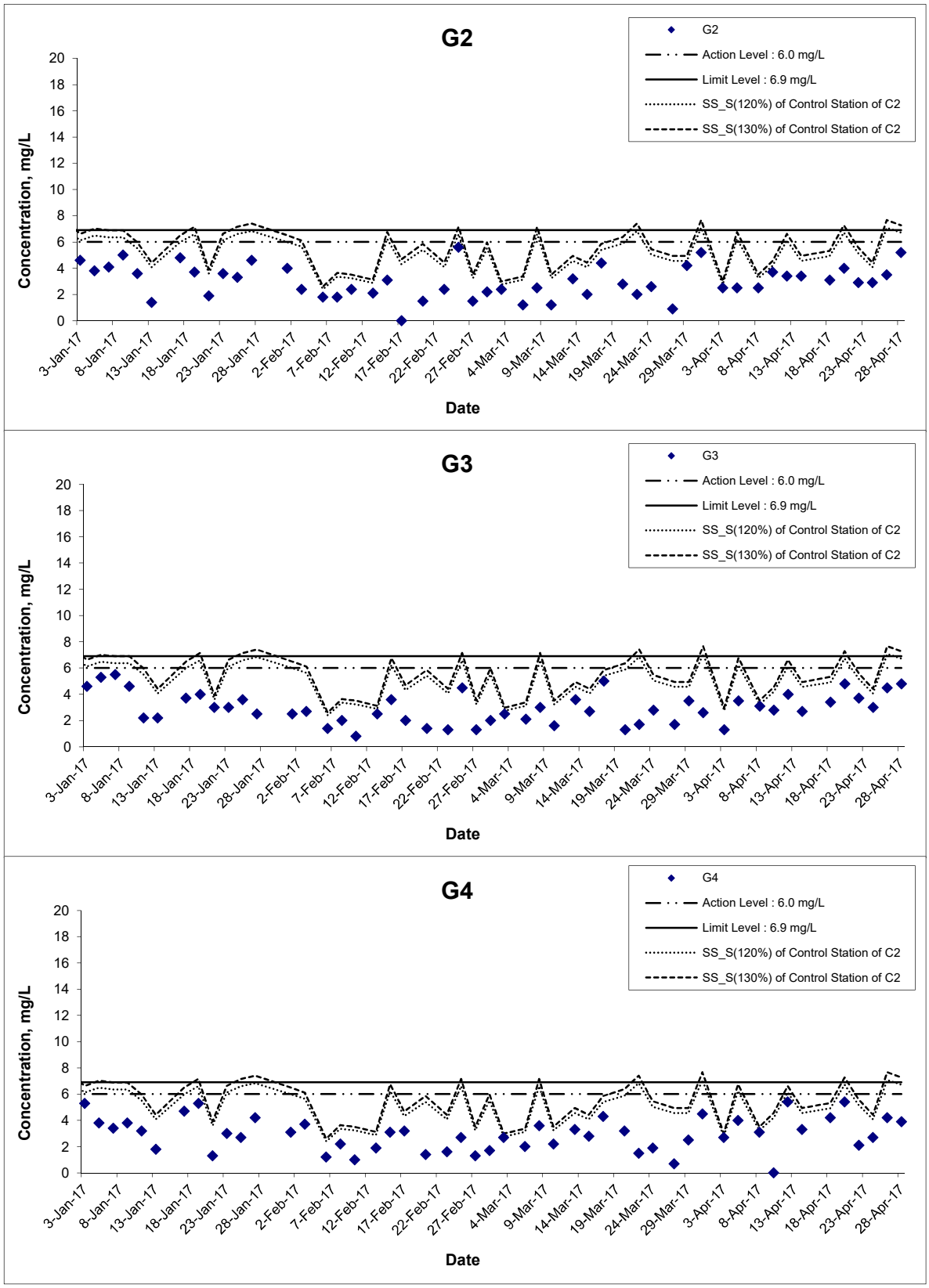
Suspended Solids (Surface) at Mid-Ebb Tide



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

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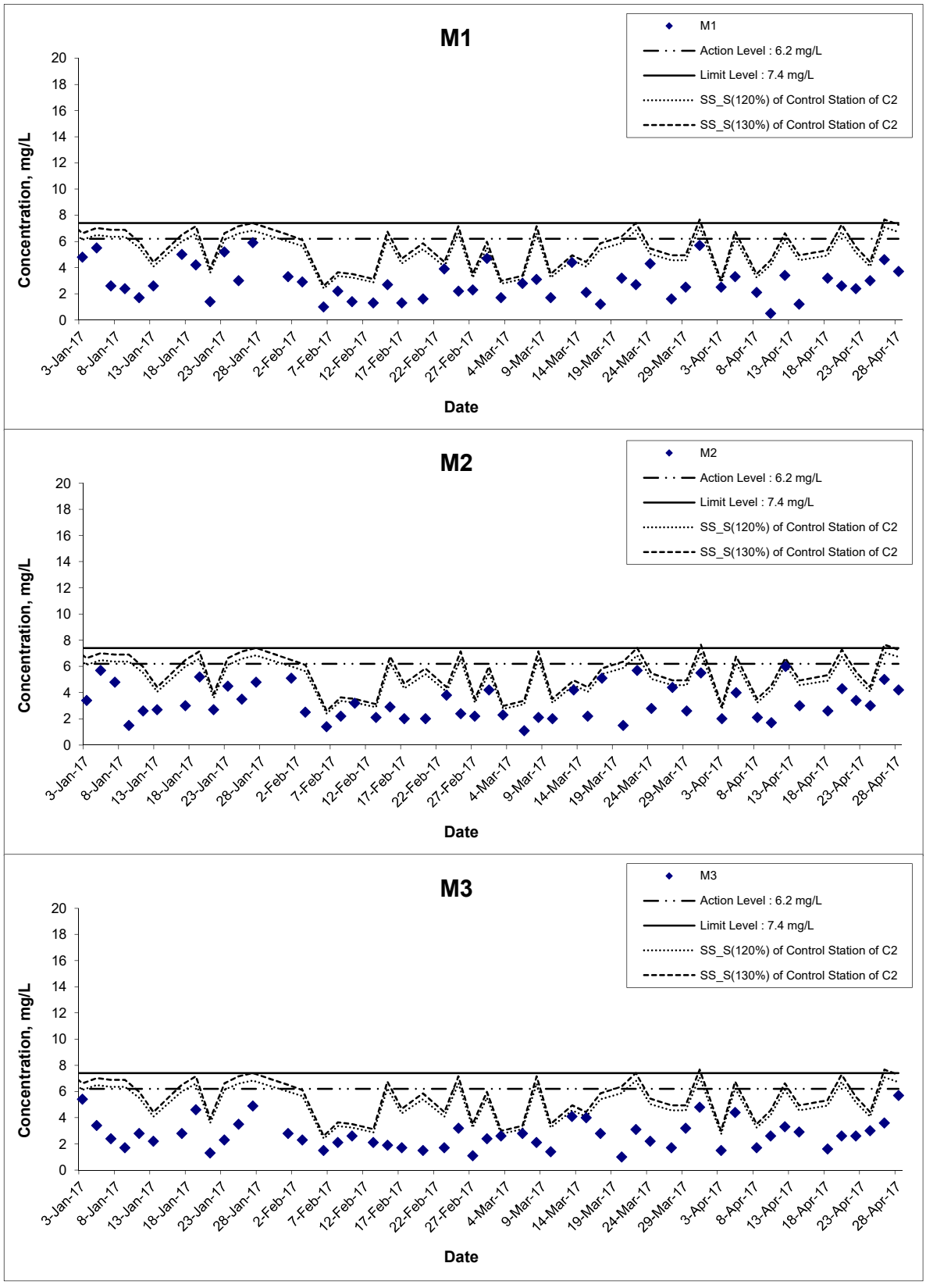
Suspended Solids (Surface) at Mid-Ebb Tide



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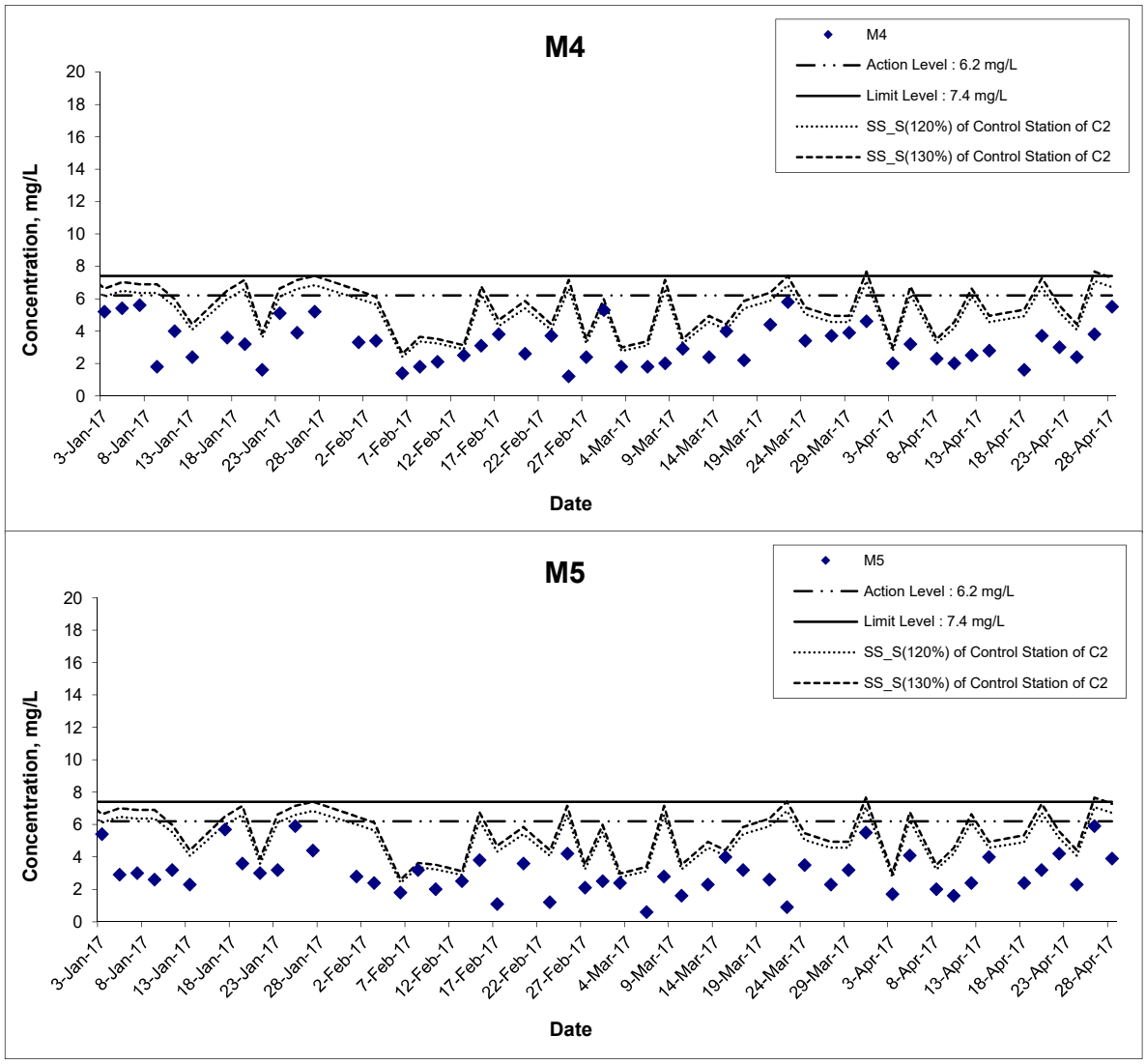
Suspended Solids (Surface) at Mid-Ebb Tide



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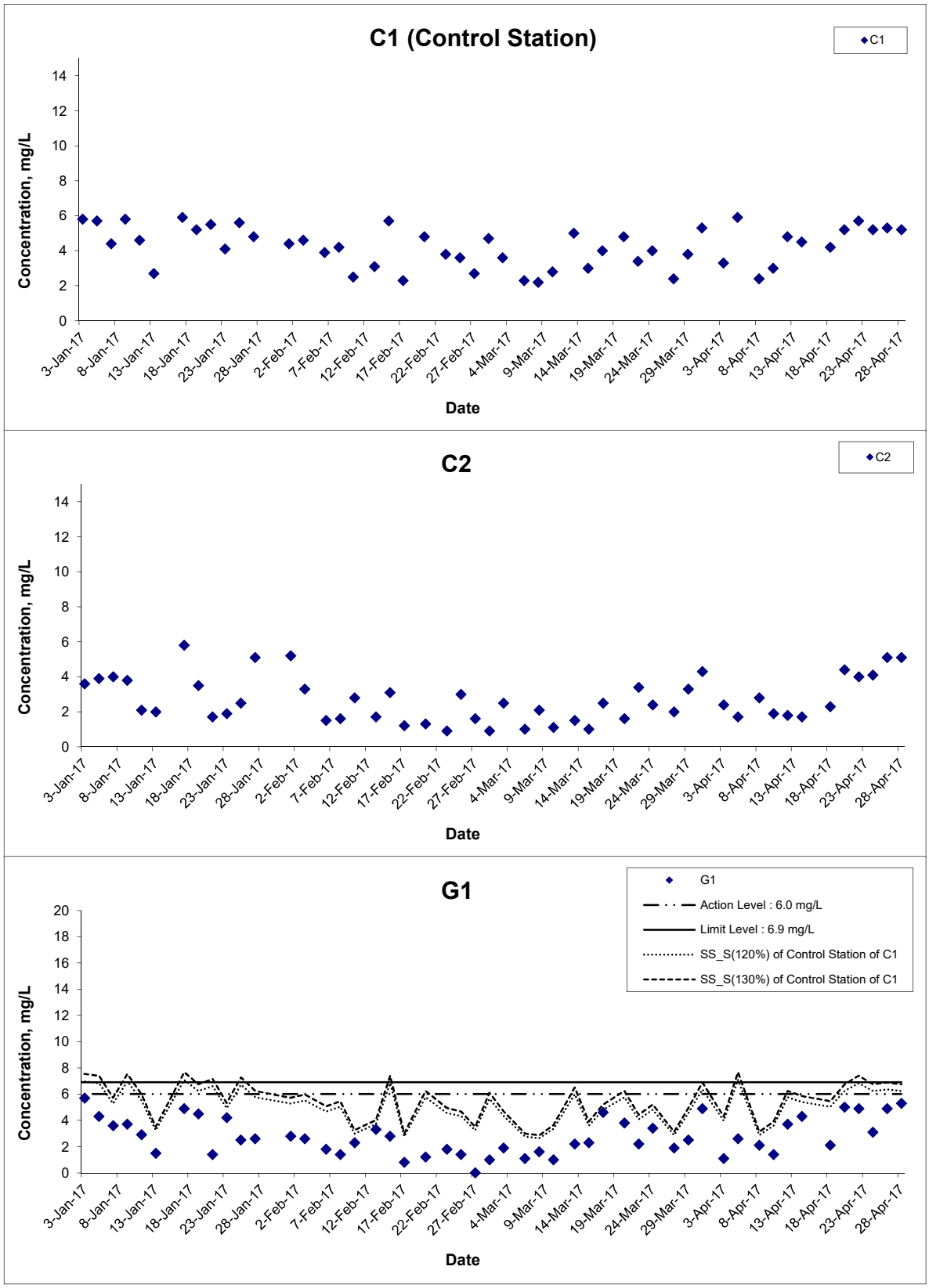
Suspended Solids (Surface) at Mid-Flood Tide



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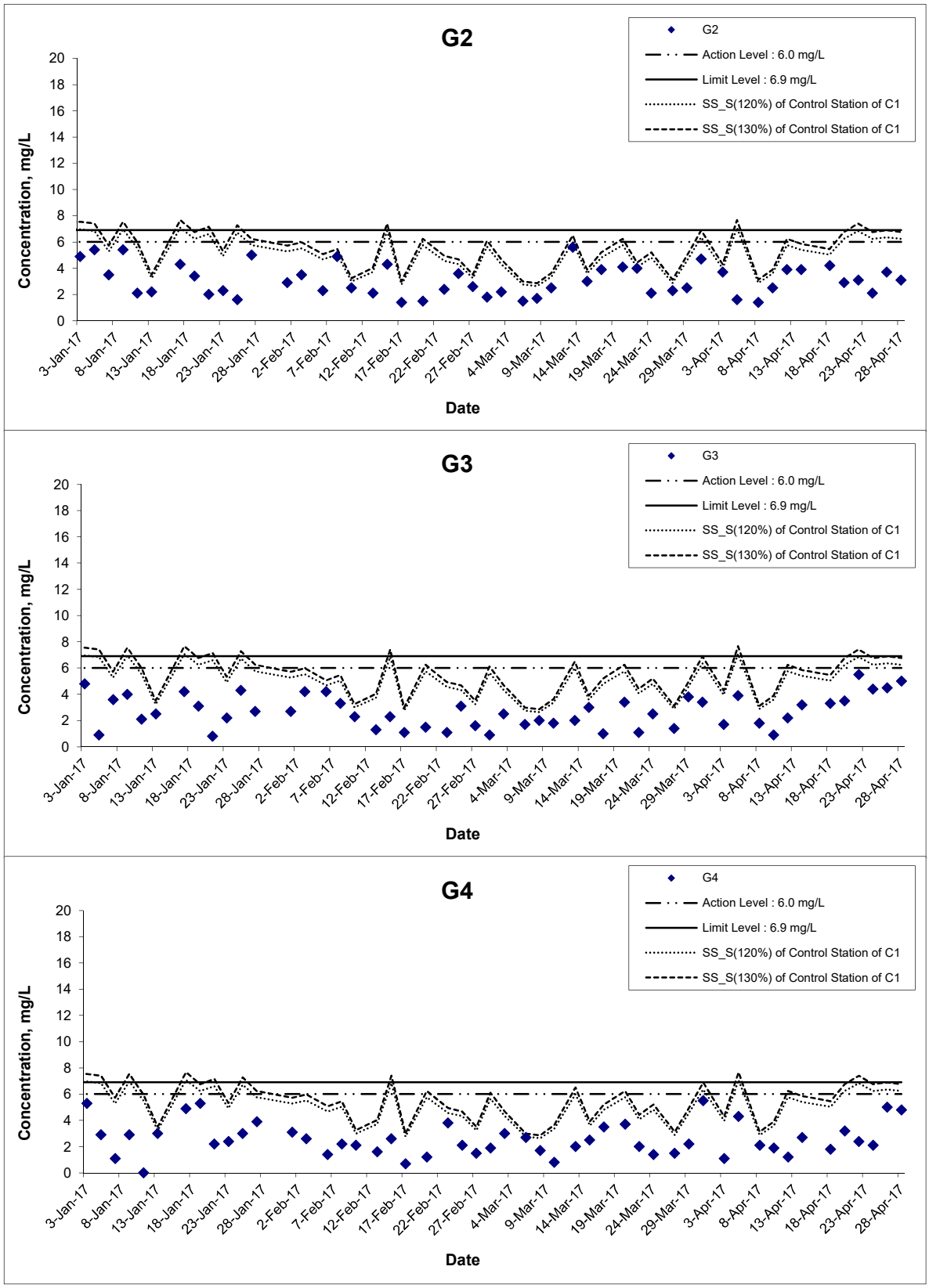
Suspended Solids (Surface) at Mid-Flood Tide



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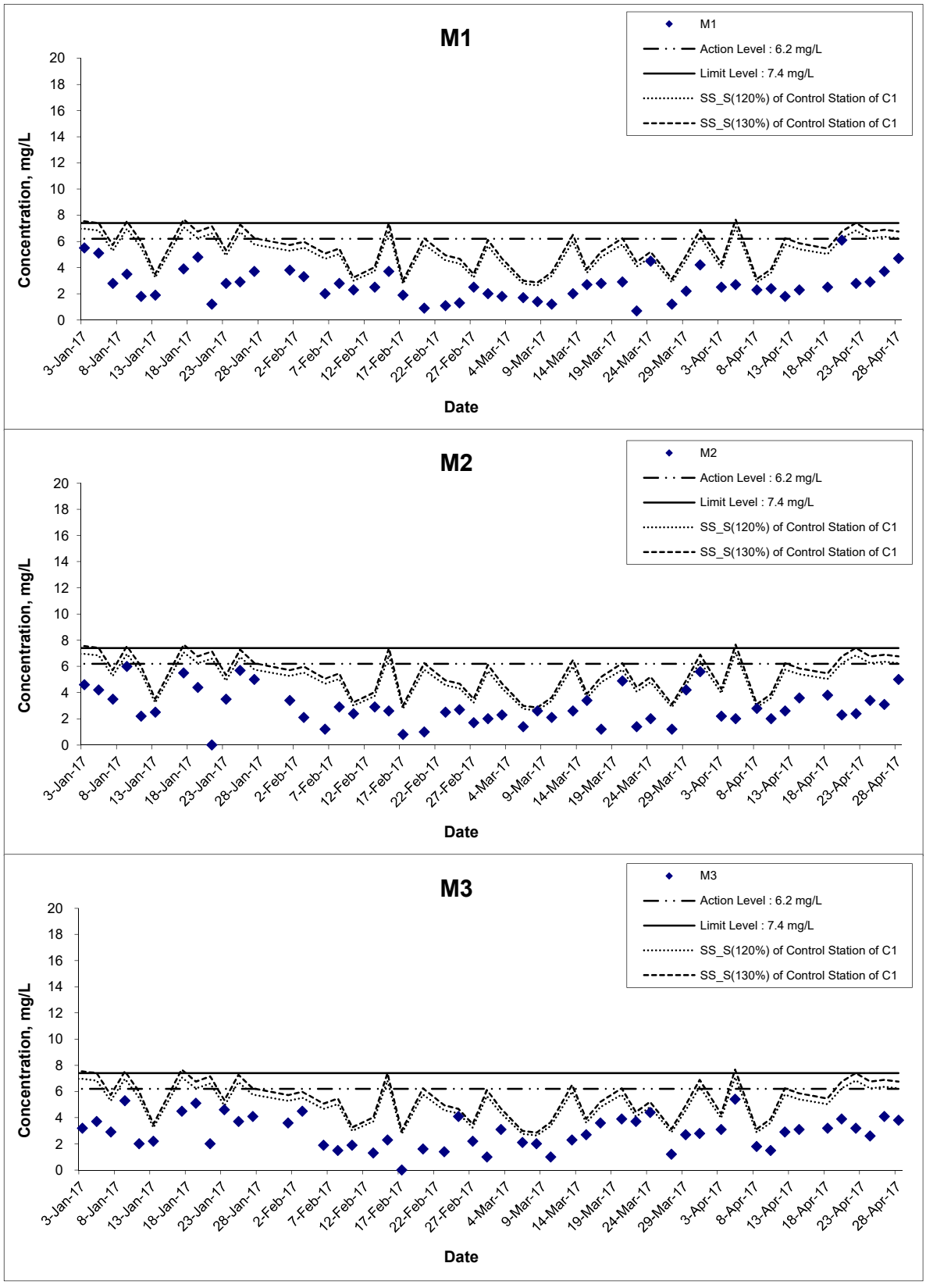
Suspended Solids (Surface) at Mid-Flood Tide



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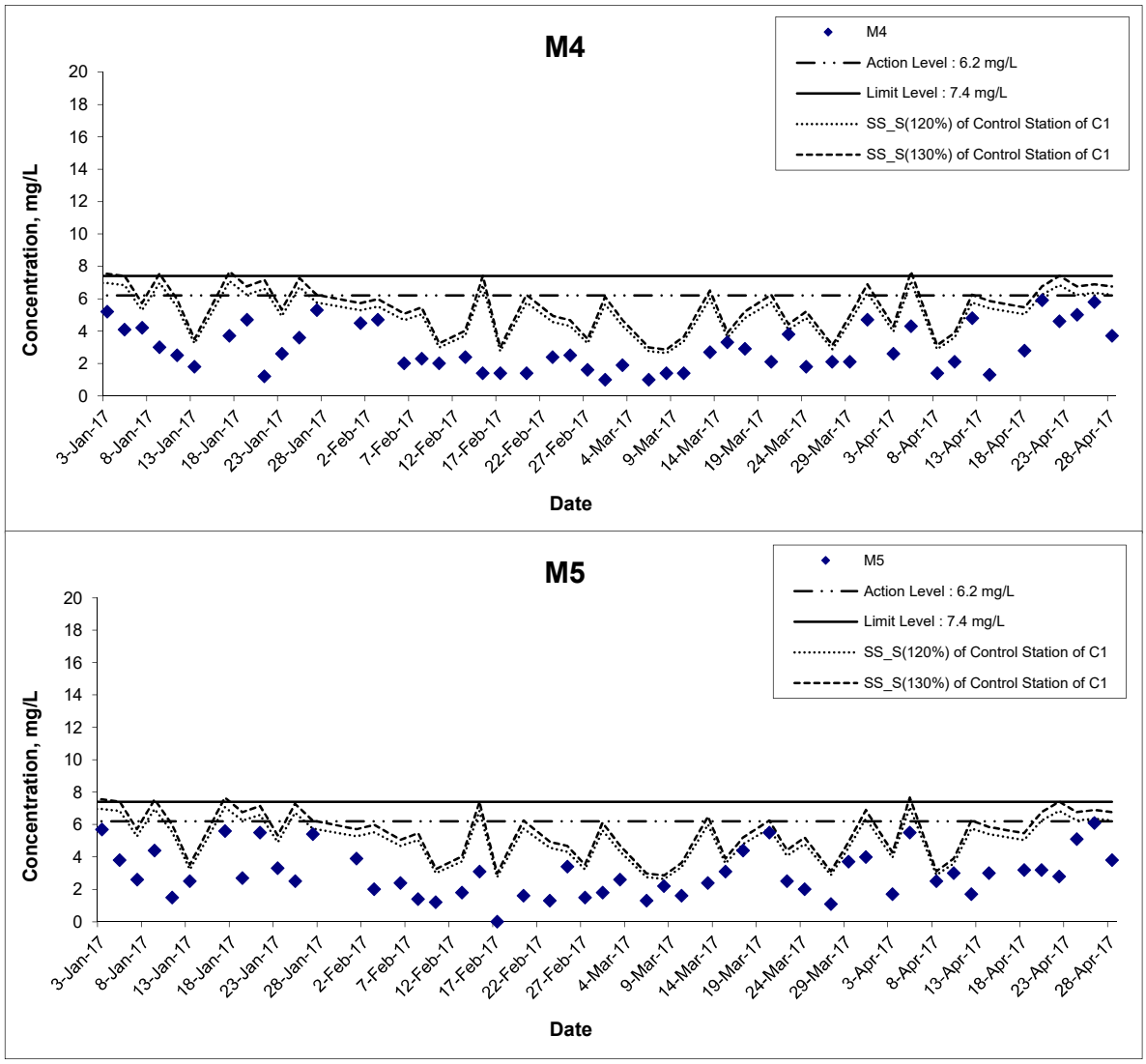
Suspended Solids (Surface) at Mid-Flood Tide



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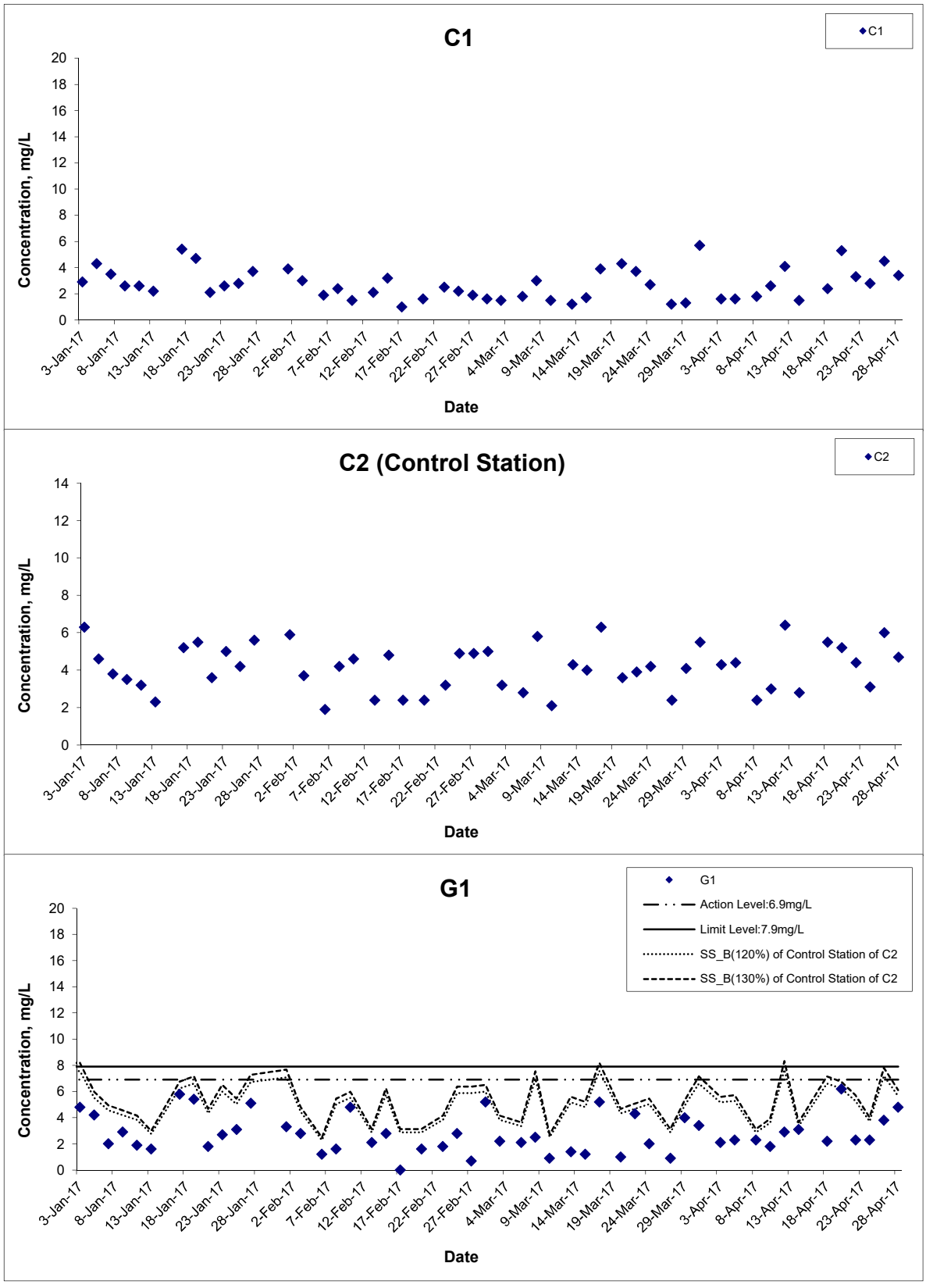
Suspended Solids (Bottom) at Mid-Ebb Tide



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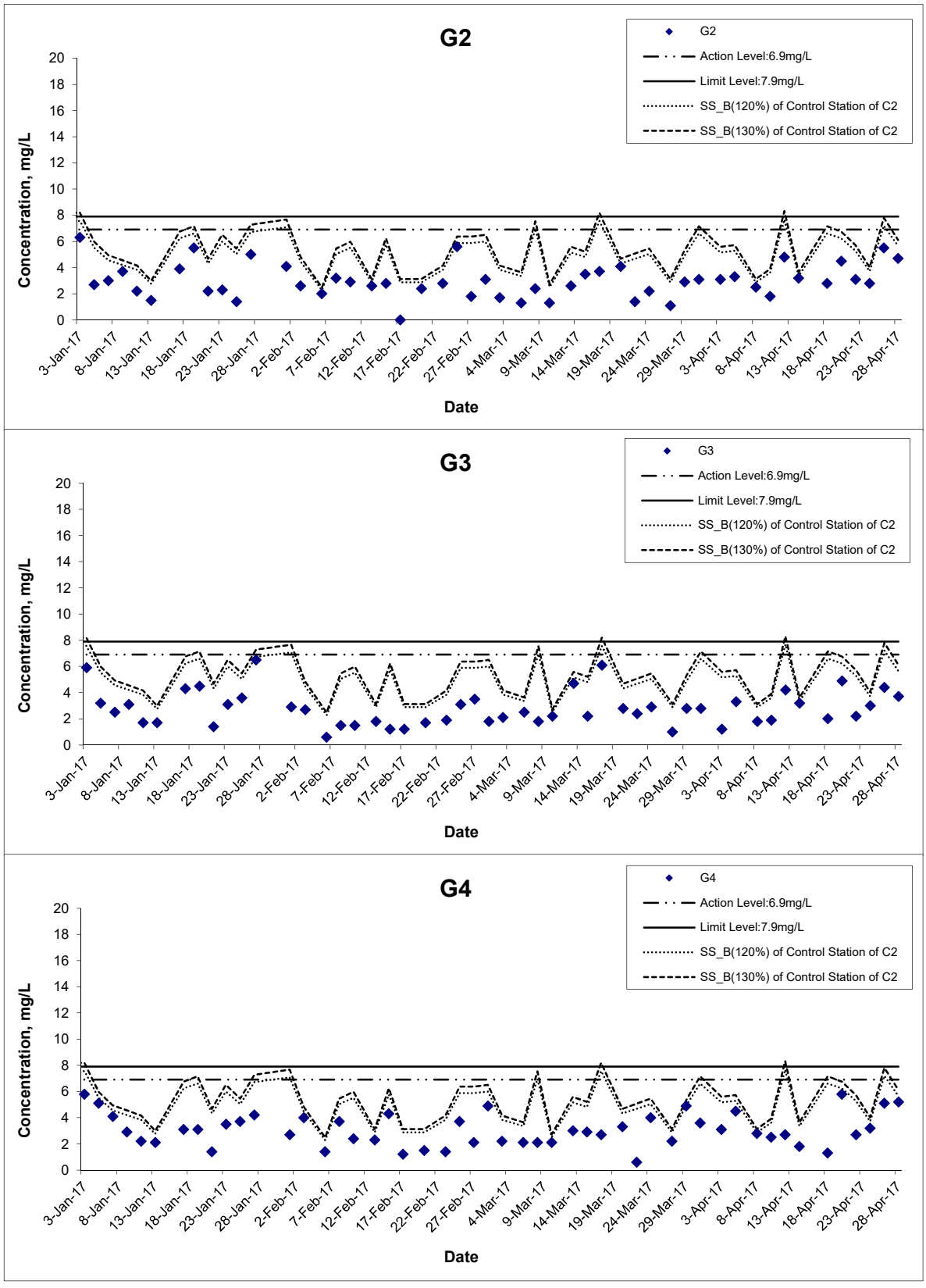
Suspended Solids (Bottom) at Mid-Ebb Tide



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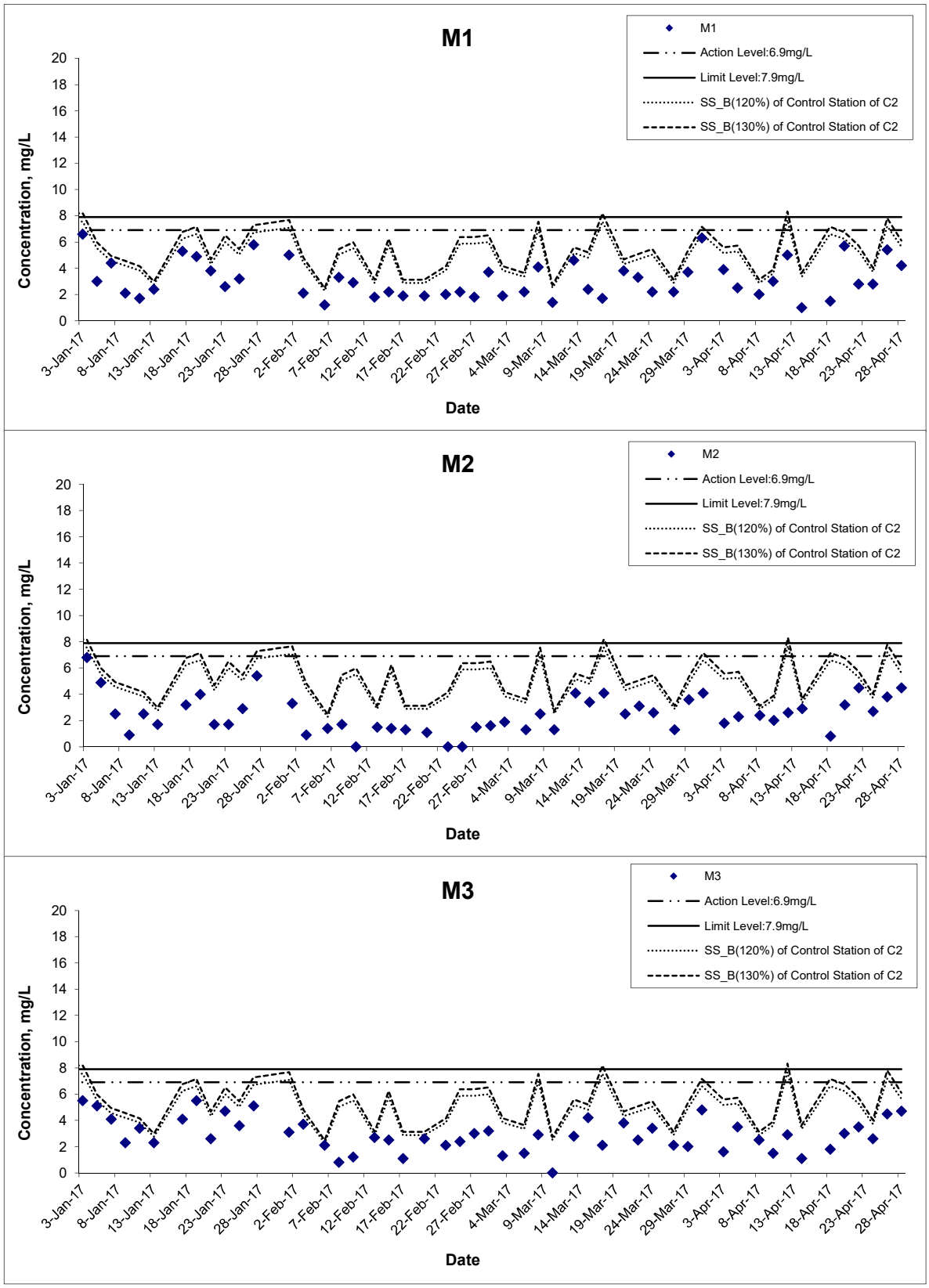
Suspended Solids (Bottom) at Mid-Ebb Tide



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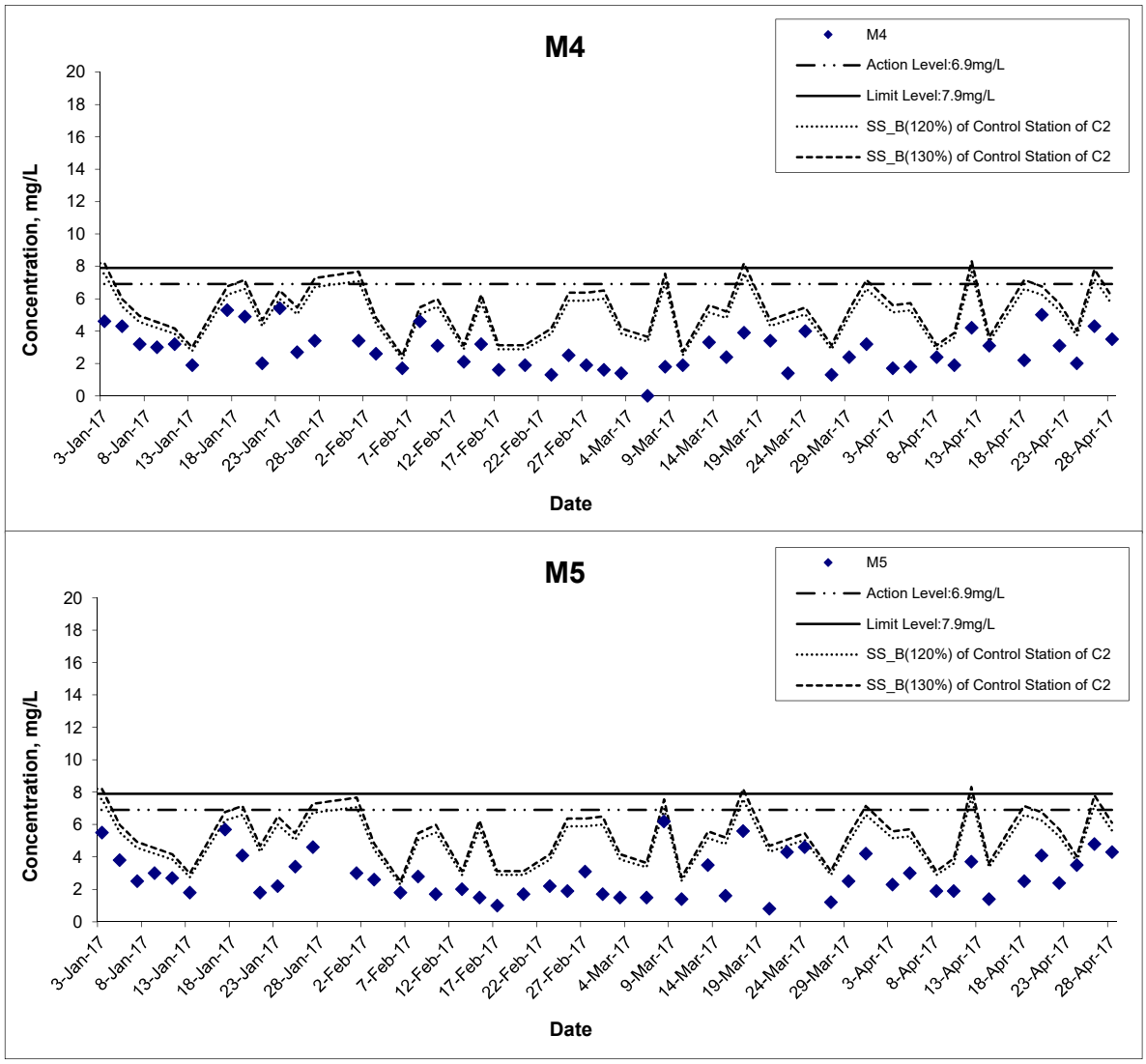
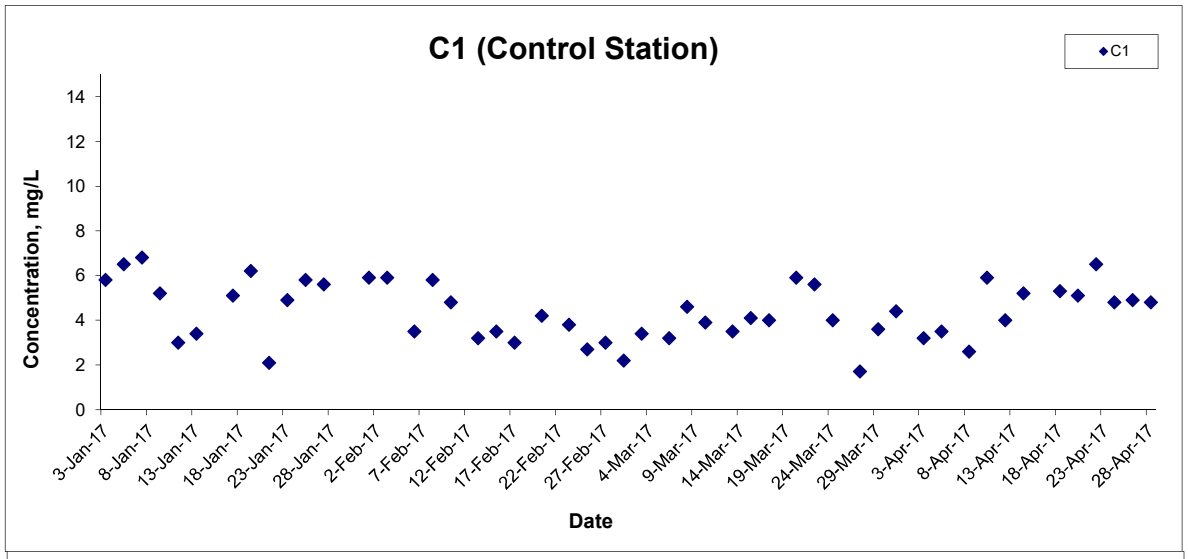
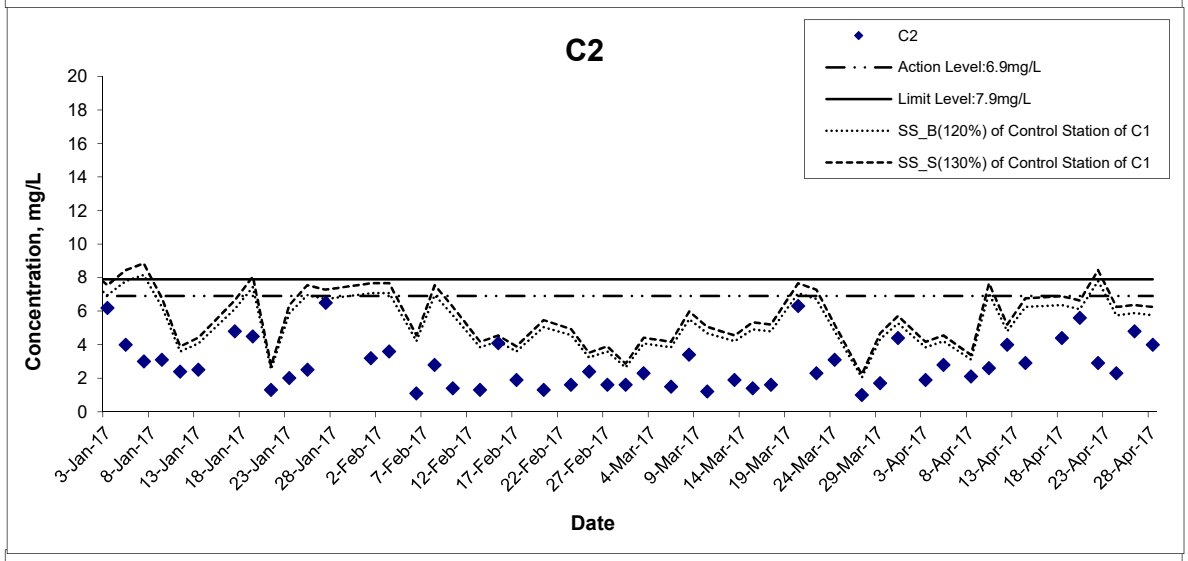
Suspended Solids (Bottom) at Mid-Ebb Tide

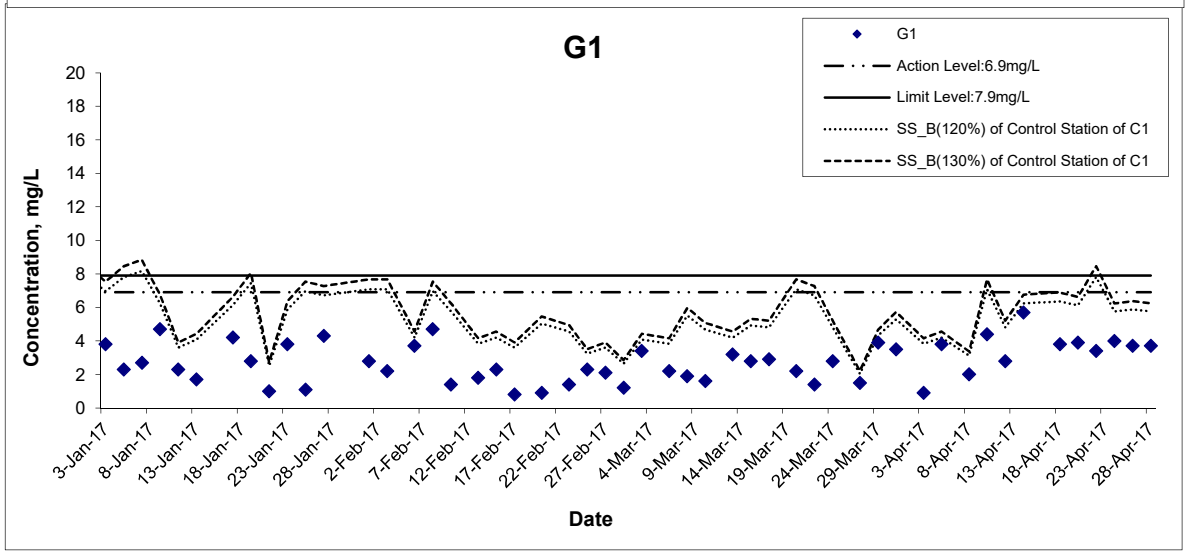


Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Apr 17	Appendix: I	

Suspended Solids (Bottom) at Mid-Flood Tide

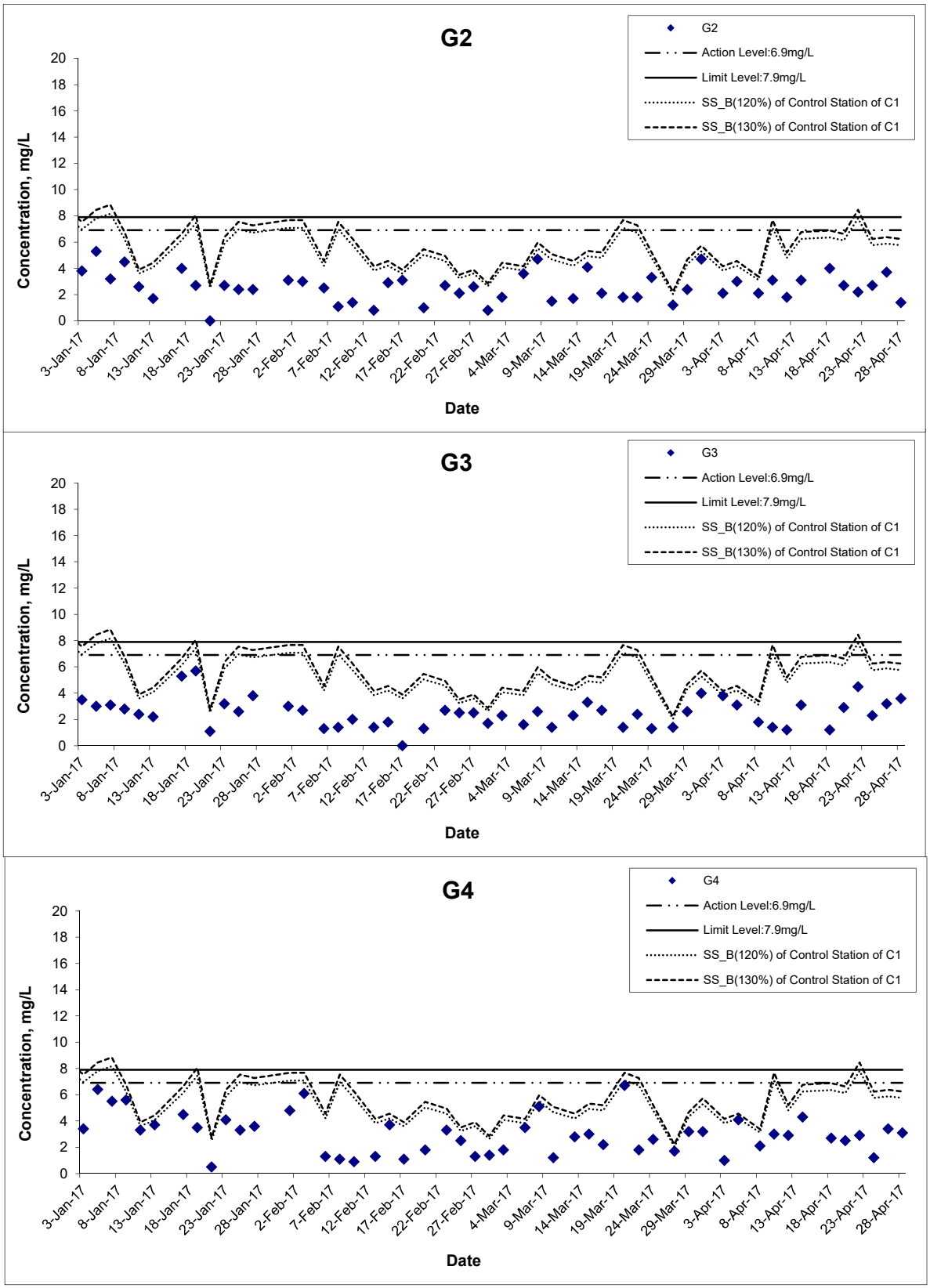






Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Apr 17	Appendix: I	

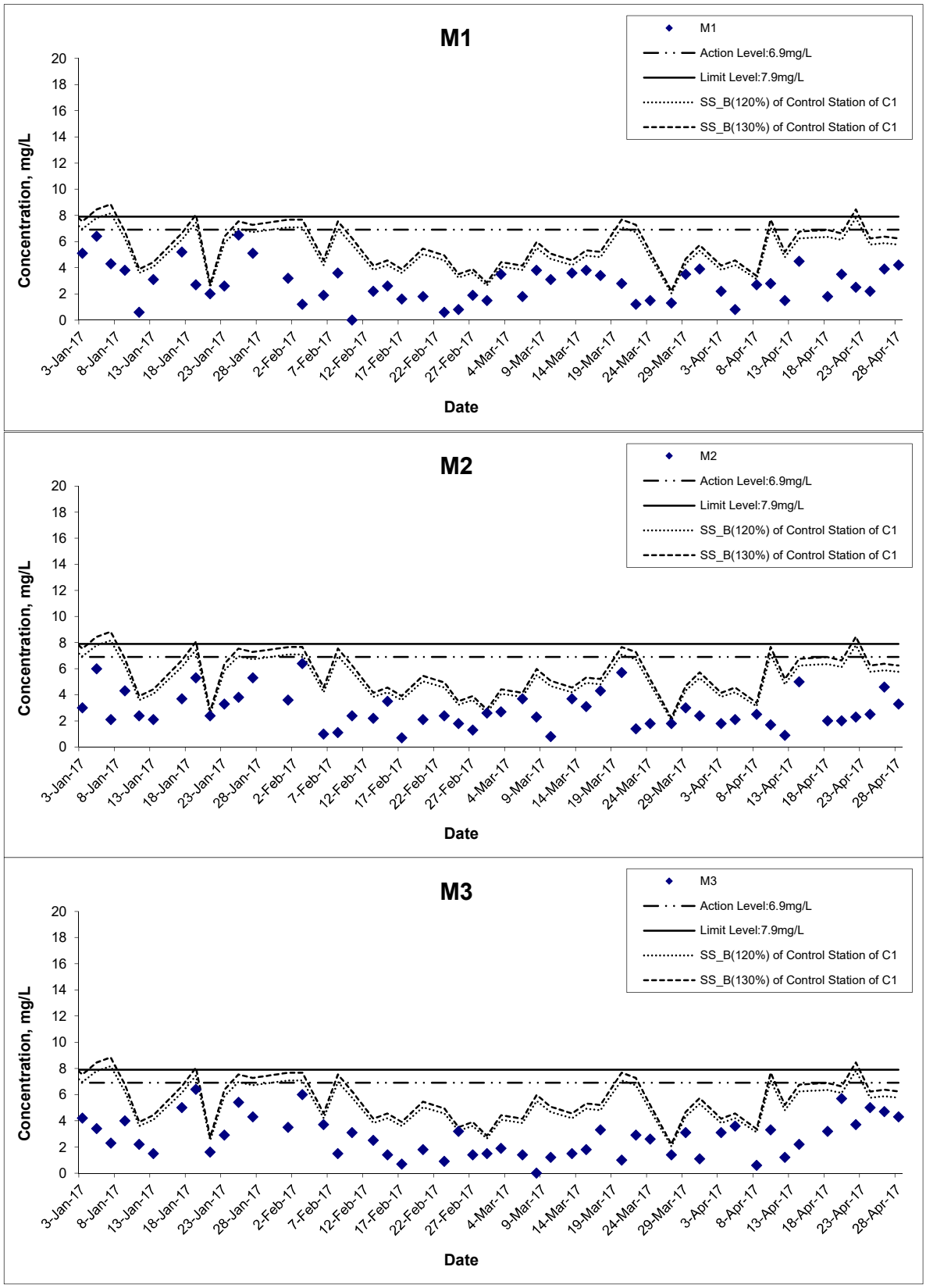
Suspended Solids (Bottom) at Mid-Flood Tide



ReAprks: 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: Apr 17	Appendix: I	

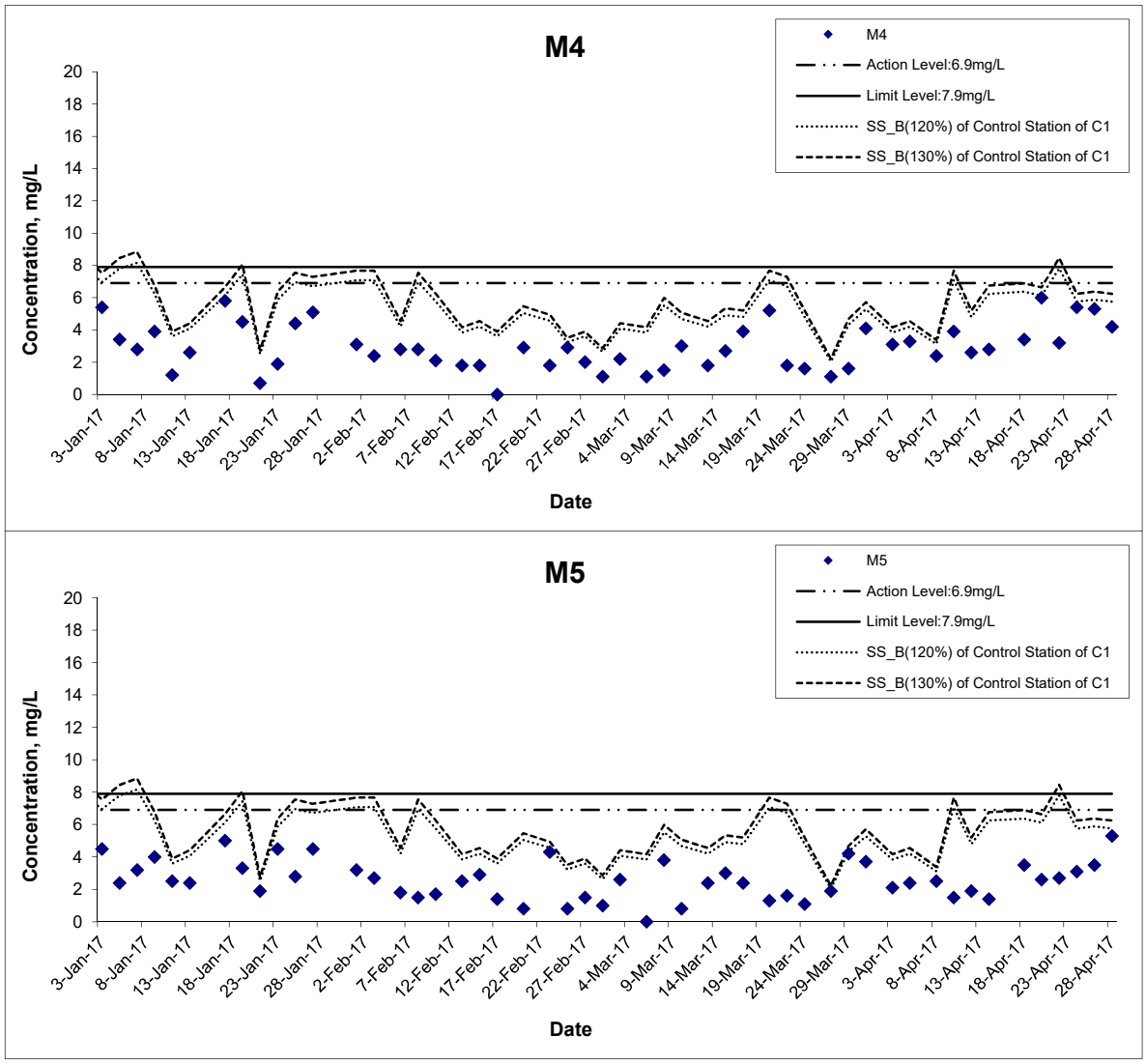
Suspended Solids (Bottom) at Mid-Flood Tide



ReAprks: 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: Apr 17	Appendix: I	

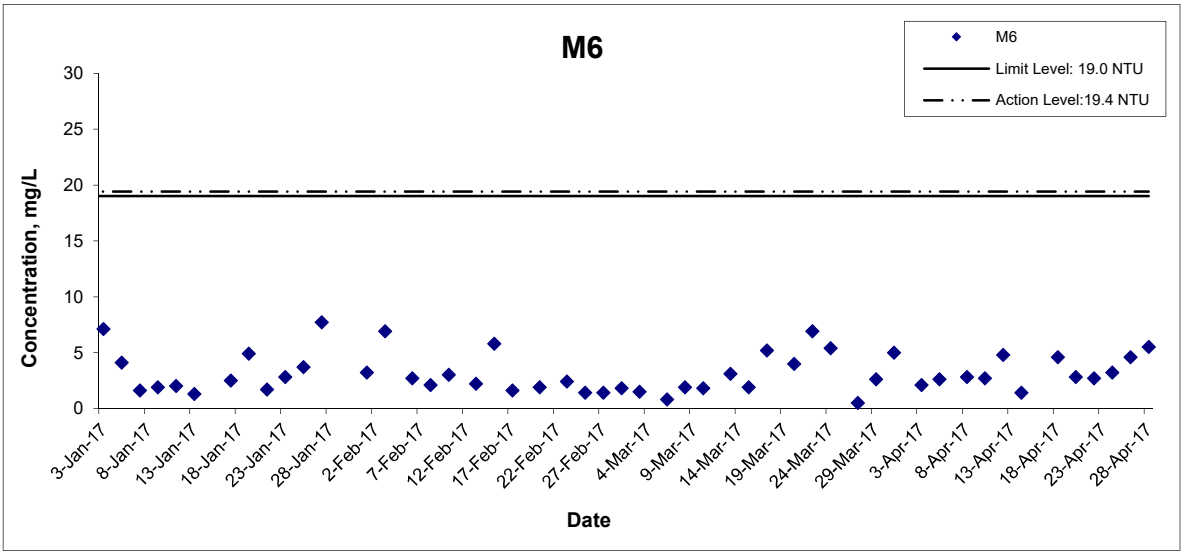
Suspended Solids (Bottom) at Mid-Flood Tide



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

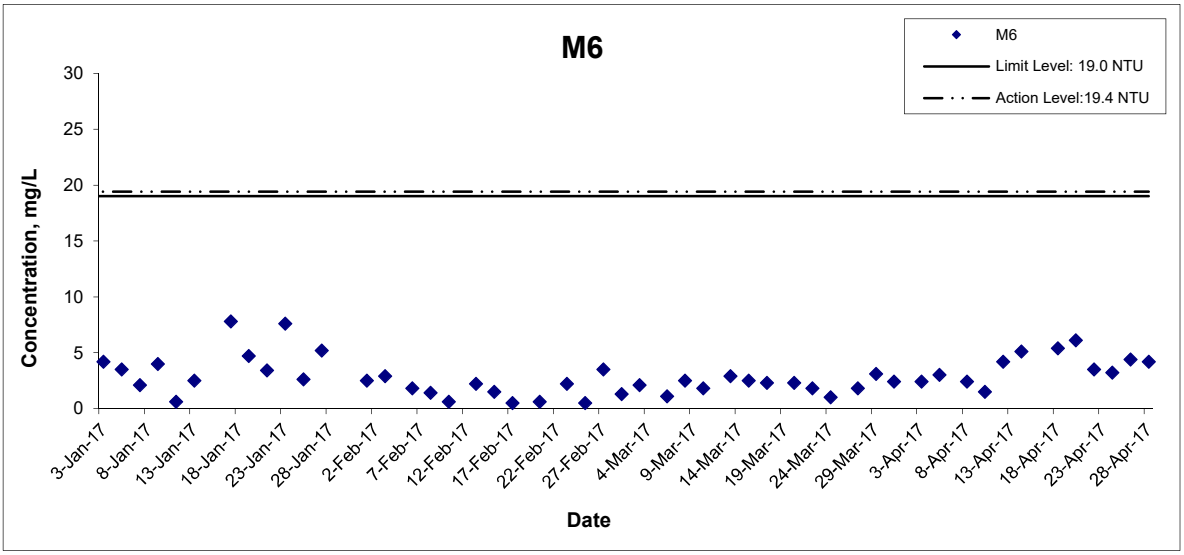
Title: Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: MA16034	CINOTECH
	Date: Apr 17	Appendix: I	

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	Project No. MA16034	CINOTECH
		Date Apr 17	Appendix I	

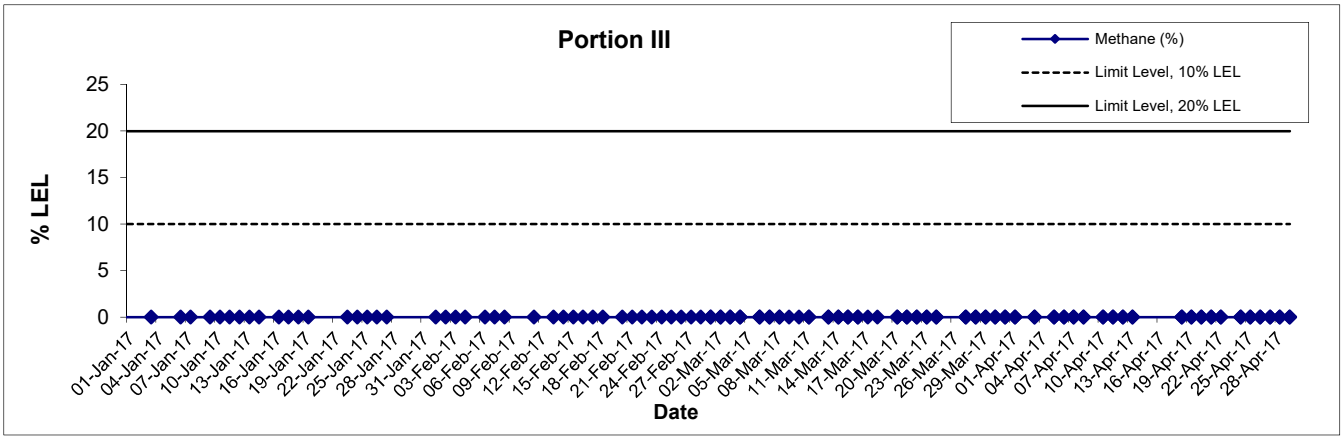
Suspended Solids (Intake Level of WSD Salt Water Intake) at Mid-Flood Tide



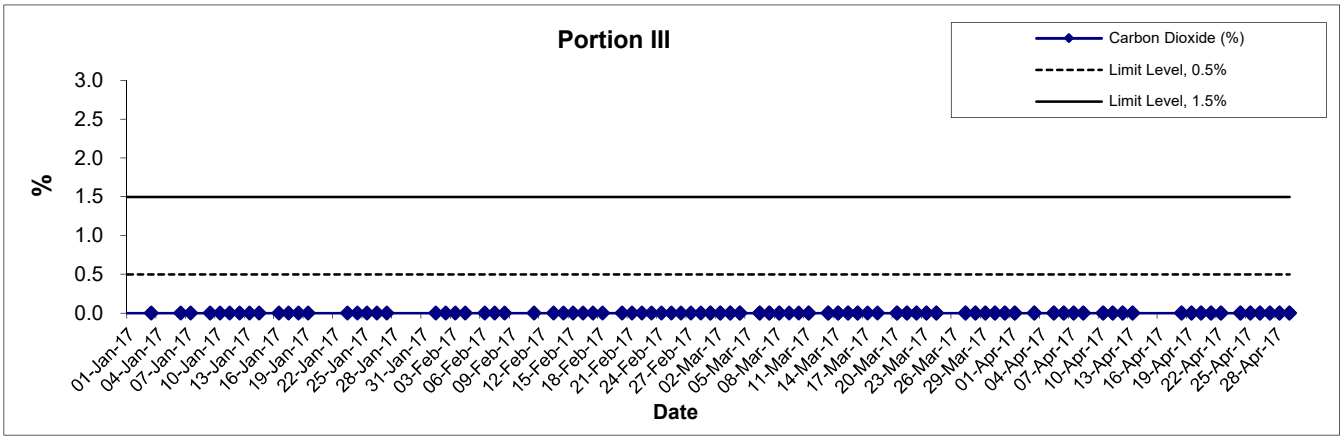
Title	Agreement No. CE 59/2015(EP) Environmental Team for Tseung Kwan O - Lam Tin Tunnel Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. MA16034	CINOTECH
		Date Apr 17	Appendix I	

APPENDIX G
GRAPHICAL PRESENTATION OF LANDFILL GAS MONITORING RESULTS

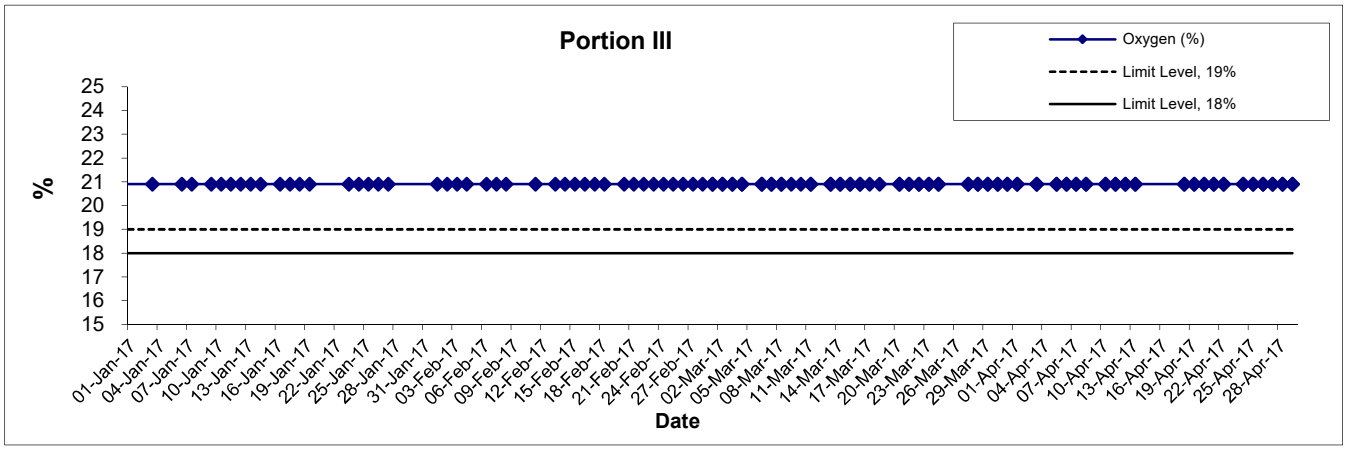
Methane



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: Apr 17	Project No.: MA16034 Appendix: R	CINOTECH

APPENDIX H
SITE AUDIT SUMMARY

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract No. NE/2015/01 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Summary of Observation and Recommendation Made during Site Inspection in February 2017

Parameters	Date	Observations and Recommendations	Follow-up
Contract No. NE/2015/01			
Water Quality	04, 11, 18 and 25 Jan 2017	Reminder: To remove the sand accumulated in catchpit in TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 1 February 2017.
	8 Feb 2017	Reminder: To properly cover the exposed slope by impervious material at slope at TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 15 February 2017.
	22 Feb 2017	Observation: Gaps observed between silt curtain and site boundary in TKO. The Contractor is reminded to provide and repair the silt curtain to fully enclose the site.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 1 March 2017.
	22 Feb 2017	Observation: Silty water observed in the catchpits in TKO. The Contractor is reminded to remove the silt and sediment in catchpits regularly.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	22 Feb 2017	Reminder: To remove the sand material deposited near the seafront at Portion WAI.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
Noise	18, 25 Jan, 1, 8, 15, 22 Feb 2017	Reminder: The contractor is reminded to provide noise mitigation measures (e.g. Temporary noise barrier or Full enclosure) to PME as proposed in the approved NMP in Cha Kwo Ling.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
Landscape and Visual	--	--	--
Air Quality	25 Jan 2017	Observation: Part of open slope at TKO observed dry. The contractor is reminded to provide water spray to prevent dust generation.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 1 February 2017.
	8 Feb 2017	Reminder: To properly cover the exposed slope by impervious material at slope at TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 15 February 2017.
	15 Feb 2017	Reminder: To remove the dusty cement bags after use in TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 February 2017.
	15 Feb 2017	Reminder: To provide enough water spray to slope of excavation area in CKL	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 February 2017.
Waste / Chemical Management	1 Feb 2017	Reminder: To provide drip tray to chemical containers in Portion WAII.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 8 February 2017.
	8 Feb 2017	Reminder: To removed oil stain on paved ground at site Portion WAII.	The deficiency was observed to be improved/rectified by the Contractor during the audit

Parameters	Date	Observations and Recommendations	Follow-up
			session on 15 February 2017.
Permits/ Licenses	--	--	--

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract No. NE/2015/01 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Summary of Observation and Recommendation Made during Site Inspection in March 2017

Parameters	Date	Observations and Recommendations	Follow-up
Contract No. NE/2015/01			
Water Quality	22 Feb 2017	Observation: Gaps observed between silt curtain and site boundary in TKO. The Contractor is reminded to provide and repair the silt curtain to fully enclose the site.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 1 March 2017.
	22 Feb, 1, 8, 15 Mar 2017	Observation: Silty water observed in the catchpits in TKO. The Contractor is reminded to remove the silt and sediment in catchpits regularly.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	22 Feb, 1, 8, 15 Mar 2017	Reminder: To remove the sand material deposited near the seafront at Portion WAI.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	8, 15 Mar 2017	Reminder: Sand and mud is observed accumulated in U-channel of Portion 2 in Cha Kwo Ling site. The construction is reminded to remove the mud regularly and ensure the effectiveness of U-channel.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	8,15 Mar 2017	Reminder: To remove litter and debris from U-channel in TKO site	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	15 Mar 2017	Observation: Sand and mud / litter / C&D waste is observed accumulated in U-channel of Portion 2 and Portion 3. In Cha Kwo Ling site. The contractor is reminded to remove the material remove the material regularly and ensure the effectiveness of U-channel.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	15 Mar 2017	Observation: Silty water accumulated near slope in TKO. The contractor is reminded to remove the silty water to avoid silty water flow out of site.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	15 Mar 2017	Reminder: Dusty material observed deposited near the seafront in Portion WA I. The contractor is reminded to remove the material to avoid mud/sand fall into the sea.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	15, 22 Mar 2017	Observation: To set up proper drainage system in CKL site Portion 3.	Follow up action will be reported in next reporting period
	22, 29 Mar 2017	Observation: Silty water on the sea observed near the marine works area. The contractor is reminded to check the silt curtain deployed and ensure the effectiveness.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
Noise	18, 25 Jan, 1, 8, 15, 22 Feb, 1,8, 15, 22, 29 Mar 2017	Reminder: The contractor is reminded to provide noise mitigation measures (e.g. Temporary noise barrier or Full enclosure) to PME as proposed in the approved NMP in Cha Kwo Ling.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
	1, 8, 15 Mar 2017	Reminder: To repair the gap between the cantilever noise barrier and the container noise barrier.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract No. NE/2015/01 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Parameters	Date	Observations and Recommendations	Follow-up
	15 Mar 2017	Reminder: To repair noise barrier of breaker in CKL site Portion 3.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
Landscape and Visual	--	--	--
Air Quality	15 Mar 2017	Reminder: To repair the gaps and holes of the tarpaulin sheets in Portion 3 to ensure the effectiveness of dust curtain.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	29 Mar 2017	Observation: Dust emission observed at the top of slope of TKO. The contractor is reminded to provide frequent water spray to unpaved works area.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
	29 Mar 2017	Reminder: Clear the used cement bags in TKO slope.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
Waste / Chemical Management	8,15 Mar 2017	Reminder: To remove litter and debris from U-channel in TKO site	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.
	15, 22 Mar 2017	Reminder: To remove the oil stain near the drill rig in TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 29 March 2017.
	29 Mar 2017	Reminder: Provide drip tray to chemical containers at the top of slope of TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
Permits / Licenses	1, 8, 15 Mar 2017	Reminder: To provide and display the Environmental Permit for the marine barge in TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 22 March 2017.

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract No. NE/2015/01 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Summary of Observation and Recommendation Made during Site Inspection in April 2017

Parameters	Date	Observations and Recommendations	Follow-up
Contract No. NE/2015/01			
Water Quality	15, 22 Mar, 12, 19 Apr 2017	Observation: To set up proper drainage system in CKL site Portion 3.	Follow up action will be reported in next reporting period
	22, 29 Mar 2017	Observation: Silty water on the sea observed near the marine works area. The contractor is reminded to check the silt curtain deployed and ensure the effectiveness.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
	12 Apr 2017	Reminder: To cover or seal the gaps of covers of catchpit in Portion 1 to prevent silt water or oil stain flow out of site.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 19 April 2017.
	19 Apr 2017	Observation: To remove the construction waste in U-channel in Portion 3.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 26 April 2017.
	26 Apr 2017	Observation: 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.	Follow up action will be reported in next reporting period
Noise	18, 25 Jan, 1, 8, 15, 22 Feb, 1,8, 15, 22, 29 Mar 2017	Reminder: The contractor is reminded to provide noise mitigation measures (e.g. Temporary noise barrier or Full enclosure) to PME as proposed in the approved NMP in Cha Kwo Ling.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
Landscape and Visual	5 Apr 2017	Reminder: To set-up tree protection zone for retained tree in TKO slope.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 12 April 2017.
	12, 19 Apr 2017	Reminder: To properly set-up tree protection area in Portion 3.	Follow up action will be reported in next reporting period
Air Quality	29 Mar 2017	Observation: Dust emission observed at the top of slope of TKO. The contractor is reminded to provide frequent water spray to unpaved works area.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
	29 Mar 2017	Reminder: Clear the used cement bags in TKO slope.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.
	5 Apr 2017	Reminder: To provide frequent water spray for TKO slope to prevent dust generation.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 12 April 2017.
	26 Apr 2017	Observation: Grouting equipment in TKO observed without proper enclosure. The Contractor is reminded to provide top and 3-side enclosure.	Follow up action will be reported in next reporting period
Waste / Chemical Management	29 Mar 2017	Reminder: Provide drip tray to chemical containers at the top of slope of TKO.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 5 April 2017.

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract No. NE/2015/01 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Parameters	Date	Observations and Recommendations	Follow-up
	12 Apr 2017	Observation: Oil stain observed in unpaved excavation area of Portion 3 and paved ground of Portion 1. The Contractor is reminded to properly remove the oil stain as "chemical waste".	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 19 April 2017.
	12 Apr 2017	Reminder: To provide drip tray to chemical containers in Portion 3.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 19 April 2017.
	26 Apr 2017	Reminder: To remove oil stain mixed with muddy water in CKL site.	Follow up action will be reported in next reporting period
Impact on Cultural Heritage	12, 19 Apr 2017	Reminder: To properly set up fenced-off buffer zone around Tin Hau Temple.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 26 April 2017.
Permits / Licenses	--	--	--

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract NE/2015/02 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Summary of Observation and Recommendation Made during Site Inspection in February 2017

Parameters	Date	Observations and Recommendations	Follow-up
Contract No. NE/2015/02			
Water Quality	26 Jan 2017	Reminder: To provide sand bag bunds near access gate of Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 February 2017.
	2 Feb 2017	Reminder: To prevent silty water flow out of site during wheel washing at Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 9 February 2017.
	9 Feb 2017	Reminder: To repair the site curtain for cofferdam works and prevent any gap between the silt curtain and crane barge.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 14 February 2017.
	14 Feb 2017	Reminder: To provide sand bag bunds to gullies at site access near the site office in Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 23 February 2017.
	23 Feb 2017	Reminder: Accumulated sand in U-channel should be removed more frequently.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	23 Feb 2017	Reminder: Concrete bund should be provided to the footing of hoarding to prevent silt runoff out of the site at Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	23 Feb 2017	Reminder: Muddy water on the ground surface should be directed to the wastewater treatment facilities before discharge.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
Noise	--	--	--
Landscape and Visual	--	--	--
Air Quality	26 Jan 2017	Reminder: To cover stockpile of dusty material by impervious sheets before CNY holidays at Portion 5.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 February 2017.
	14 Feb 2017	Reminder: Provide water spray to dry unpaved area in Area A to avoid dust generation.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 23 February 2017.
	14 Feb 2017	Reminder: To provide NRMM label to crane in Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 23 February 2017.
	23 Feb 2017	Reminder: Stockpile of dusty material should be covered by impervious sheet to prevent dust generation at Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
Waste / Chemical Management	9 Feb 2017	Reminder: To remove the construction material from drip tray and provide a plug for drip tray on derrick lighter for marine GI works.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 14 February 2017.
	23 Feb 2017	Reminder: Accumulated waste should be	The deficiency was observed to

		removed at Portion 8.	be improved/rectified by the Contractor during the audit session on 2 March 2017.
Permits/ Licenses	9 Feb 2017	Reminder: To update the Environmental Permit display on crane barge.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 14 February 2017.

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract NE/2015/02 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Summary of Observation and Recommendation Made during Site Inspection in March 2017

Parameters	Date	Observations and Recommendations	Follow-up
Contract No. NE/2015/02			
Water Quality	23 Feb 2017	Reminder: Accumulated sand in U-channel should be removed more frequently.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	23 Feb 2017	Reminder: Concrete bund should be provided to the footing of hoarding to prevent silt runoff out of the site at Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	23 Feb 2017	Reminder: Muddy water on the ground surface should be directed to the wastewater treatment facilities before discharge.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	2 Mar 2017	Reminder: To remove the muddy water accumulated in the U-channel near site boundary at Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 9 March 2017.
	9 Mar 2017	Reminder: To repair the silt curtain at Chang Sheng 307 that the geotextile should be extended to seabed before start the works.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 14 March 2017.
	14 Mar 2017	Reminder: To properly cover the dusty material stored near gullies near Portion I and remove the sand deposited near the gullies.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 23 March 2017.
Noise	--	--	--
Landscape and Visual	14 Mar 2017	Reminder: To remove the construction material/waste near the tree and set up proper tree protection area in Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 23 March 2017.
Air Quality	23 Feb 2017	Reminder: Stockpile of dusty material should be covered by impervious sheet to prevent dust generation at Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	2 Mar 2017	Reminder: To provide water spray to unpaved area at Portion 8 to avoid dust emission.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 9 March 2017.
	29 Mar 2017	Reminder: To cover the stockpile of dusty material by tarpaulin sheet properly in Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 13 April 2017.
Waste / Chemical Management	23 Feb 2017	Reminder: Accumulated waste should be removed at Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 2 March 2017.
	14 Mar 2017	Reminder: To provide drip trays to chemical containers on unpaved ground in Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 23 March 2017.
	29 Mar 2017	Reminder: To clear the oil stain near the drip tray as “chemical waste” in Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit

			session on 6 April 2017.
Permits / Licenses	--	--	--

Appendix H Summary of Observation and Recommendation Made during Site Inspection

Contract NE/2015/02 Tseung Kwan O–Lam Tin Tunnel–Main Tunnel and Associated Works

Summary of Observation and Recommendation Made during Site Inspection in April 2017

Parameters	Date	Observations and Recommendations	Follow-up
Contract No. NE/2015/02			
Water Quality	6 Apr 2017	Reminder: To remove the accumulated sediments in the U-channels in Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 13 April 2017.
	26 Apr 2017	Reminder: To repair the holes near the discharge point in Area A to prevent surface runoff flow into the discharge point.	Follow up action will be reported in next reporting period
Noise	18 Apr 2017	Reminder: To provide proper acoustic material for enclosing the breaker head at Portion SR2B.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 26 April 2017.
Landscape and Visual	--	--	--
Air Quality	29 Mar, 6 April 2017	Reminder: To cover the stockpile of dusty material by tarpaulin sheet properly in Area A.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 13 April 2017.
	18 Apr 2017	Reminder: To remove the dusty used cement bags at Portion 1.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 26 April 2017.
Waste / Chemical Management	29 Mar 2017	Reminder: To clear the oil stain near the drip tray as “chemical waste” in Portion 8.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 6 April 2017.
	6 Apr 2017	Reminder: To remove the accumulation of C&D waste and general refuse regularly in Portion 8. Empty chemical containers should be separated with other C&D waste and be treated as “chemical waste”.	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 13 April 2017.
	6 Apr 2017	Reminder: To provide drip tray to chemical containers in Portion 8	The deficiency was observed to be improved/rectified by the Contractor during the audit session on 13 April 2017.
Permits / Licenses	--	--	--

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) / * (2)
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 applied to aggregate fines. - Open stockpiles shall be avoided or covered. Where possible, prevent	To minimize the dust impact	Contractor	All Construction Work Sites	Construction phase	APCO and Air Pollution Control (Construction Dust) Regulation	* (1) / * (2) * (1) / * (2) ^ * (3) / * (4)

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
	placing dusty material storage piles near ASRs. - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. - Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading area of barging point, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. - Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit. - Imposition of speed controls for vehicles on site haul roads. - Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. - Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.						/ * (5) * (3) * (5) N/A ^ ^ ^ * (4) ^
/	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	Reduce air pollution emission from construction vehicles	Contractor	All construction sites	Construction stage	• APCO	^ ^

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	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)	and plants					^
/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	• APCO	^
Noise Impact (Construction Phase)							
S4.8	- Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction phase	EIAO-TM, NCO	*(5) / * (6) / * (7) / * (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 - 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	To minimize construction noise impact arising from the Project at the affected NSRs	Project Proponent	Work sites	Construction Period	EIAO-TM, NCO	^ ^ ^ ^ ^

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	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.						^
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work site near school	Construction phase	EIAO-TM, NCO	^
Water Quality Impact (Construction Phase)							
S5.6.24	The dry density of filling material for the TKO-LT Tunnel reclamation should be 1,900kg/m^3, with fine content of 25% or less	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.1	Non-dredged method by constructing steel cellular caisson structure with stone column shall be adopted for construction of seawall foundation. During the stone column installation (also including the installation of steel cellular caisson), silt curtain shall be employed around the active stone column installation points.	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A
S5.8.2	Formation of seawall enclosing the reclamation for Road P2 (notwithstanding an opening of about 50m for marine access) shall be completed prior to the filling activities. The seawall opening of about 50m wide for marine access shall be selected at a location as indicatively shown in Appendix 5.10. No more than 3 filling 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	Control potential impacts from filling activities	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO	N/A

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	curtain at the marine access.						
S5.8.3	Other good site practices should be undertaken during filling operations include: - all marine works should adopt the environmental friendly construction methods as far as practically possible including the use of cofferdams to cover the construction area to separate the construction works from the sea; - floating single silt curtain shall be employed for all marine works; - all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; - all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; - excess material shall be cleaned from the decks and exposed fittings of barges before the vessel is moved; - adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; - loading of barges and hoppers should be controlled to prevent splashing of filling material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation; - any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; - construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping	Control potential impacts from filling activities and marine-based construction	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, Waste Disposal Ordinance (WDO)	^ * (9) ^ ^ ^ ^ * (10) ^ ^ * (11)

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	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 marinebased construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	N/A
S5.8.5	It is important that appropriate measures are implemented to control runoff and drainage and prevent high loading of SS from entering the marine environment. Proper site management is essential to minimise surface water runoff, soil erosion and sewage effluents.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	* (12)
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	* (13) / # (6)
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,	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO, TM-DSS	* (14) / * (7)

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	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.	construction					
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 * (7)
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	* (8)
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.	Control potential impacts from construction site runoff and land-based	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	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.	construction					
S5.8.11	Sedimentation tanks of sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8m^3 capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.12	Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO S5	^
S5.8.13	Measures should be taken to minimize the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	Control potential impacts from construction site runoff and land-based 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	Control potential	CEDD's	Work site	Construction	ProPECC PN 1/94,	* (15) / *

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	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.	impacts from construction site runoff and land-based construction	Contractors		Phase	EIAOTM, WPCO	(9)
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	Control potential	CEDD's	Work site	Construction	ProPECC PN 1/94,	*(11) / (16)

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	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.	impacts from construction site runoff and land-based construction	Contractors		Phase	EIAOTM, WPCO	
S5.8.20	It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There shall be no direct discharge of effluent from the site into the sea.	Control potential impacts from construction site runoff and land-based construction	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^
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	* (11)
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	* (16) / * (10)
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	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, TMDSS	^

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

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	drains via silt removal facilities.	and land-based construction			Phas		
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	Control potential	CEDD's	Work site	Construction	ProPECC PN 1/94,	N/A

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	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.	impacts from construction site runoff and land-based construction	Contractors		Phase	EIAOTM, WPCO	
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	* (17)

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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	Control potential impacts from construction site runoff	CEDD's Contractors	Work site	Construction Phase	ProPECC PN 1/94, EIAOTM, WPCO	^

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	on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	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	* (10) / (19)
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	Control potential impacts from accidental spillage of chemicals	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO, WDO	* (11) / * (17) ^

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	space should be allocated to the storage area.						^
S5.8.47	Collection and removal of floating refuse should be performed at regular intervals on a daily basis. The contractor should be responsible for keeping the water within the site boundary and the neighbouring water free from rubbish.	Control potential impacts from floating refuse and debris	CEDD's Contractors	Work site	Construction Phase	EIAO-TM, WPCO,	^
Ecological Impact							
S6.8.4	***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	Reduce disturbance to surrounding habitats	Contractor	Land-based works are	Construction Phase	N/A	^ ^ * (20)

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
	wastes. The wastes should be properly disposed off-site in a timely manner. - General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. - Open burning on works sites is illegal, and should be strictly prohibited. - Measures should also be put into place so that litter, fuel and solvents do not enter the nearby watercourses.						^ ^ ^
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 pre translocation coral survey, translocation methodology, identification/proposal of coral recipient site, monitoring methodology for posttranslocation should be prepared during the detailed design stage.	Minimize loss of coral	Design team, contractor, project operator	Within reclamation areas and pier footprint	Prior construction	N/A	^ ^ ^

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
	- The coral translocation plan should be subject to approval by relevant authorities (e.g. EPD and AFCD) before commencement of the coral translocation. All the translocation exercises should be conducted by experienced marine ecologist(s) who is/are approved by AFCD prior to commencement of coral translocation. <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 post translocation monitoring survey should include observations on the presence, survival, health condition and growth of the translocated coral colonies. These parameters should then be compared with the baseline results collected from the pre-translocation survey.						^ ^ ^
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 land based 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	^
Fishery 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 interceptors.	To reduce waste management impacts	Contractor	All work sites	Construction Phase	Waste Disposal Ordinance (Cap. 354) Land (Miscellaneous Provisions) Ordinance (Cap. 28)	^ ^ ^ ^ * (7) / (14)
S8.6.4	***Good Site Practices and Waste Reduction Measures (con't)***	To achieve waste	Contractor	All work sites	Construction	Waste Disposal	

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
	- 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.	reduction			Phase	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	-	^ * (12) ^ * (21)
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		* (12) ^ ^ ^ ^ ^
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	To minimize potential adverse environmental impacts arising from	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
	Materials, to monitor disposal of waste and to control fly-tipping at PFRFs or landfills. A recording system for the amount of waste generated, recycled and disposed (including disposal sites) should be proposed.	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	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
	3-3.95m), the chemical screening results do not indicate sediment as contaminated soil. It is anticipated that reuse of sediment except sediment sample (TKO-EBH501 3-3.95m) will not lead to land contamination. - 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	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
	should be kept wet during excavation/boring and should be properly covered when placed on barges/trucks. Loading of the excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water. - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site.						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	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

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
	delineation of each of the categories of excavated materials and the corresponding types of disposal.						
S8.6.24 - S8.6.28	***Sediments (con't)*** - The excavated sediments is expected to be loaded onto the barge and transported to the designated disposal sites allocated by the MFC. The excavated sediment would be disposed of according to its determined disposal options and ETWB TC(W) No. 34/2002. - Stockpiling of contaminated sediments should be avoided as far as possible. If temporary stockpiling of contaminated sediments is necessary, the excavated sediment should be covered by tarpaulin and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiling areas should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO). - In order to minimise the potential odour / dust emissions during boring and transportation of the sediment, the excavated sediments should be kept wet 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	To ensure handling of sediments are in accordance to statutory requirements	Contractor	All works areas with sediments concern	Construction Phase	ETWB TC(W) No. 34/2002 & Dumping at Sea Ordinance	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
	be equipped with tight fitting seals to prevent leakage and should not be filled to a level that would cause overflow of materials or laden water during loading or transportation. In addition, monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP. - In order to minimise the exposure to contaminated materials, workers should, when necessary, wear appropriate personal protective equipments (PPE) when handling contaminated sediments. Adequate washing and cleaning facilities should also be provided on site. - Another possible arrangement for Type 3 disposal is by geosynthetic containment. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal.						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	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	* (22)

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
	securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the Chemical Waste Treatment Centre at Tsing Yi, or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					(Chemical Waste) (General) Regulation	
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.	To ensure proper management of general refuse	Contractor	All works sites	Construction Phase	Public Health and Municipal Services Ordinance (Cap. 132)	^
Impact on Cultural Heritage (Construction Phase)							
S9.6.4	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	*(13) ^ N/A
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;	To prevent indirect vibration impact	Contractors	Work areas	Construction Phase	Vibration Limits on Heritage Buildings by CEDD; GCHIA;	^

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
	- 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.					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 construction period	N/A	^
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	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	# (14) / * (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
	detailed at Tree Removal Application stage).						
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 landscape deck, TKO	Beginning of construction period	N/A	^
Table 10.8.1	CM7 - Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material	To reduce 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	^

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
Table 10.8.1	CM11 - Limitation of run-off into freshwater streams, ponds and sea areas	Avoidance of contamination of water courses and water bodies	CEDD (via Contractor)	TKO reclamation, TKO tunnel portal, Cha Kwo Ling roadworks	Throughout construction period	N/A	^
Table 10.8.1	CM12 - Minimise area of reclamation and design the edges sensitively to tie in with adjacent coastline character	Minimise loss of Junk Bay and integration with existing coastline	CEDD (via Contractor)	Temporary reclamation for barging points at TKO and Lam Tin and permanent reclamation for TKO Interchange slip roads and Road P2	Construction planning and reclamation stages	N/A	N/A
Landfill Gas Hazard (Design and Construction Phase)							
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	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
	Carbon dioxide 0-100% Oxygen 0-21%						
S11.5.10 S11.5.25	***Safety Measures*** - For staff who work in, or have responsibility for "at risk" area, such as all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards. - An excavation procedure or code of practice to minimize landfill gas related risk 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	Protect the workers from landfill gas hazards	Contractor	Project sites within the Sai Tso Wan Landfill Consultation Zone	Construction phase	EPD's Landfill Gas Hazard Assessment Guidance Note Labour Department's Code of Practice for Safety and Health at Work in Confined Space	N/A N/A N/A 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
	continuous monitoring for methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure should also require the presence of an appropriately qualified person, in attendance outside the 'confined area', who should be responsible for reviewing the gas measurements as they are made, and who should have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise should be permitted to carry out hot works in confined areas.						
	- Where there are any temporary site offices, or any other buildings located within the Sai Tso Wan Landfill Consultation Zone which have enclosed spaces with the capacity to accumulate landfill gas, then they should either be located in an 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.						N/A
	- 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.						N/A
	- During construction, adequate fire extinguishing equipment, fire-resistant						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
	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 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.						N/A N/A N/A N/A N/A
S11.5.26	***Monitoring***	Protect the workers	Contractor	Project sites	Construction	EPD's Landfill Gas	

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
- S11.5.31	● 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 - 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	from landfill gas hazards		within the Sai Tso Wan Landfill Consultation Zone	phase	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
	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

Remarks: ^ Compliance of mitigation measure X Non-compliance of mitigation measure

• Non-compliance but rectified by the contractor

* 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.

N/A Not Applicable

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.	Contractor	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	Leighton – China State JV	Construction of Lam Tin Interchange & Site Formation of TKO Portal	Haul road and exposed area at Cha Kwo Ling portion was dry. The contractor is reminded to provide water spray to prevent dust generation. Dust generation observed in rock breaking works in Cha Kwo Ling. The contractor is reminded to provide water spray to minimize dust generation. The contractor is reminded to provide sufficient water spraying to the exposed slope at TKO.
* (2)	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/2015/02	CRBC – Build King JV	Construction of Road P2	Unpaved area is observed dry. The contractor is reminded to provide water spray to avoid dust generation.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
* (3)	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	Leighton – China State JV	Construction of Lam Tin Interchange & Site Formation of TKO Portal	The Contractor is reminded to provide cover by impervious material to exposed slope and dusty stockpile in Cha Kwo Ling and TSeung Kwan O after works.
* (4)	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/2015/02	CRBC – Build King JV	Construction of Road P2	To properly cover the dusty stockpile by tarpaulin sheet.
* (5)	S3.8.7	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/2015/02	CRBC – Build King JV	Construction of Road P2	To clear the tyre mark on paved road near the site entrance.
* (6)	/	Emission from Vehicles and Plants • Only well-maintained plant should be operated on-site and plant should be serviced regularly to avoid emission of black smoke.	NE/2015/02	CRBC – Build King JV	Construction of Road P2	Grey smoke emission observed from excavator. The contractor is reminded to repair and maintain PME on site to avoid smoke emission
* (7)	/	Valid No-road Mobile Machinery (NRMM) labels should be provided to regulated machines	NE/2015/02	CRBC – Build King JV	Construction of Road P2	To properly display NRMM Label to Powered Mechanical Equipment on site
Noise Impact (Construction Phase)						
* (8)	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.	NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange & Site Formation of TKO Portal	To repair the noise enclosure at the breaker in TKO The contractor is reminded to provide additional noise mitigation measures during breaking works at CKL.

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
* (9)	S4.9	Good Site Practice - 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.	NE/2015/02	CRBC – Build King JV	Construction of Road P2	Idling plants should be switched off.
Water Quality Impact (Construction Phase) / Waste Management (Construction Phase)						
* (10)	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	Leighton – China State JV	Construction of Lam Tin Interchange	To provide an earth bund or concrete bund to direct rainwater into U-channel instead of flowing into site area. To provide earth bund or sand bag to open stockpile to avoid muddy runoff from the Stockpile Storage Area in Cha Kwo Ling.
* (11)	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: - adequate maintenance of drainage systems to prevent flooding and overflow.	NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange & Site Formation of TKO Portal	To set up proper site drainage system for future wastewater treatment on site before construction activities. Accumulated sediment and general refuse in the drainage system should be cleared to maintain the discharge water quality
	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.				
	S5.8.21	All temporary and permanent drainage pipes and culverts provided to				

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
		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.				
	S8.6.3	***Good Site Practices and Waste Reduction Measures*** - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.				
*(12)	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: - adequate maintenance of drainage systems to prevent flooding and overflow.	NE/2015/02	CRBC – Build King JV	Construction of Road P2	To remove the sand and construction material/rubbish accumulated in U-channel near site entrance.
* (13)	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.	NE/2015/01	Leighton – China State JV	Site Formation of TKO Portal	Exposed slope should be properly covered by impervious materials in TKO after construction work each day

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
* (14)	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.	NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange	Stockpile should be covered and bunded to avoid generating muddy runoff near the drainage channel (Cha Kwo Ling).
* (15)	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	CRBC – Build King JV	Construction of Road P2	To provide sand bag bunds to gullies to avoid discharge of surface runoff.
* (16)	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.	NE/2015/01	Leighton – China State JV	Site Formation of TKO Portal	To remove the sand accumulated in catchpits.
	S8.6.3	***Good Site Practices and Waste Reduction Measures*** - Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.				
* (17)	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	NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange	The contractor is reminded to provide mitigation measures to intercept and direct muddy water generation to waste water treatment facilities at construction of haul road at Cha Kwo Ling
* (18)	S5.8.9	Construction site should be provided with adequately designed perimeter	NE/2015/02	CRBC – Build	Construction of	To provide bunds at site boundary near public

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
		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.		King JV	Road P2	road and for footing of hoarding .
* (19)	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/2015/02	CRBC – Build King JV	Construction of Road P2	To provide sufficient drip tray to chemical container and PME where appropriate.
			NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange and Site Formation of TKO Portal	To provide plugs to drip trays. To remove the construction material and chemical oil from drip tray and properly store the chemical container at drip tray.
* (20)	S6.8.5	***Standard Good Site Practice*** - Waste skips should be provided to collect general refuse and construction wastes. The wastes should be properly disposed off-site in a timely manner.	NE/2015/02	CRBC – Build King JV	Construction of Road P2	To provide skip or container for the disposal of general refuse
* (21)	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: - Different locations should be designated to stockpile each material to enhance reuse.	NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange	To provide label for waste storage area in Tseung Kwan O.
* (22)	S8.6.26	***Chemical Wastes.***	NE/2015/01	Leighton – China	Construction of	To remove the oil stain on ground and treat

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
		- 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.		State JV	Lam Tin Interchange	properly as chemical waste
			NE/2015/02	CRBC – Build King JV	Construction of Road P2	To remove chemical container from near gullies
Landscape and Visual Impact (Construction Phase)						
* (23)	Table 10.8.1	CM4 - Existing trees at boundary of site and retained trees within site boundary to be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification, under which the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).	NE/2015/01	Leighton – China State JV	Construction of Lam Tin Interchange	To set up proper tree protection zones in Cha Kwo Ling which should enclose the tree crowns.
* (24)	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	NE/2015/02	CRBC – Build King JV	Construction of Road P2	Remove construction material waste from tree protection area

Status / Remark	EIA Ref.	Recommended Mitigation Measures	Contract No.	Contractor	Work Sites	Details of Observation/Reminder
		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).				

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 (see Note 9)	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	0.000	22.688	5.063	12.733	0.000	0.000	0.257	0.000	0.000	0.292
February	23.357	0.000	12.911	3.874	6.572	0.000	0.000	0.000	0.000	1.000	0.488
March	20.078	0.000	6.359	11.713	2.006	0.000	0.000	0.000	0.000	0.000	0.284
April	13.516	0.000	4.862	7.751	0.903	0.000	0.000	0.120	0.000	0.000	0.396
May											
June											
Sub-total	97.435	0.000	46.820	28.401	22.214	0.000	0.000	0.377	0.000	1.000	1.460
July											
August											
September											
October											
November											
December											
Total	97.435	0.000	46.820	28.401	22.214	0.000	0.000	0.377	0.000	1.000	1.460

Total C&D waste generated = a+b+f+g+h+i+j+k

Total C&D waste generated (excluded excavated material) = g+h+i+j+k

Total C&D waste recycled = c+d+g+h+i

% of recycled C&D waste = (Total C&D waste generated - Total C&D waste recycled) / Total C&D waste generated

Monthly Summary Waste Flow Table for 2017 Year

Contract No.: NE/2015/02

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Borken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (See note 3)	Chemical Waste	Other, e.g. general refuse
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
Jan	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											
June											
SUB-TOTAL											
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
TOTAL	2.12712	0.00000	0.00000	0.00000	2.12712	0.00000	0.00000	0.00000	0.00000	0.00000	0.25638

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

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: February 2017 – April 2017

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

(B) Exceedance Report for Construction Noise

Action Level for Construction Noise
(Four (4) 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.)

Limit Level for Construction Noise
One Limit Level Exceedance (65 dB(A) during school examination period on 21st March 2017 at Station CM5 – CCC Kei Faat Primary School, Yau Tong was recorded. Measured noise level [67.5 dB(A)] has not exceeded the baseline noise level [68.2 dB(A)] at station CM5. Therefore, the exceedance is considered as non-Project related and invalid.

(C) Exceedance Report for Water Quality
(Three (3) Action and Twenty-three (23) Limit Level exceedance in groundwater quality monitoring as followed:

Date	Monitoring Location	Monitoring Parameter	Monitoring Results	Action Level	Limit Level
3 Feb 2017	Stream 2	Ammonia-N	0.08 mg NH_3-N/L	0.05	0.06
	Stream 3	Suspended Solids	11 mg/L	5.5	6.2
	Stream 3	Ammonia-N	0.06 mg NH_3-N/L	0.05	0.06
15 Feb 2017	Stream 1	Total Organic Carbon	5 mg-TOC/L	4.3	4.9
	Stream 3	Total Phosphorus	0.08 mg-P/L	0.05	0.05
27 Feb 2017	Stream 1	Suspended Solids	7.1 mg/L	5.5	6.2
	Stream 2	Total Phosphorus	0.07 mg-P/L	0.05	0.05
15 Mar 2017	Stream 1	Suspended Solids	5.9 mg/L	5.5	6.2
	Stream 1	Total Organic Carbon	6 mg-TOC/L	4.3	4.9
	Stream 2	Total Organic Carbon	9 mg-TOC/L	4.3	4.9
	Stream 3	Total Organic Carbon	6 mg-TOC/L	4.3	4.9
30 Mar 2017	Stream 2	BOD_5	4 mg O_2/L	2.0	2.0
	Stream 1	Total Organic Carbon	6 mg-TOC/L	4.3	4.9
	Stream 2	Total Organic Carbon	10 mg-TOC/L	4.3	4.9
	Stream 3	Total Organic Carbon	6 mg-TOC/L	4.3	4.9
	Stream 2	Ammonia-N	0.20 mg NH_3-N/L	0.05	0.06
	Stream 3	Ammonia-N	0.10 mg NH_3-N/L	0.05	0.06

Appendix K – Summary of Exceedance

	Stream 2	Total Phosphorus	0.08 mg-P/L	0.05	0.05
11 Apr 2017	Stream 1	Total Organic Carbon	6 mg-TOC/L	4.3	4.9
	Stream 2	Total Organic Carbon	17 mg-TOC/L	4.3	4.9
	Stream 2	Ammonia-N	0.13 mg NH_3-N/L	0.05	0.06
27 Apr 2017	Stream 1	Total Organic Carbon	5 mg-TOC/L	4.3	4.9
	Stream 2	Total Organic Carbon	9 mg-TOC/L	4.3	4.9
	Stream 2	Ammonia-N	0.08 mg NH_3-N/L	0.05	0.06
	Stream 3	Total Organic Carbon	5 mg-TOC/L	4.3	4.9
	Stream 3	Ammonia-N	0.06 mg NH_3-N/L	0.05	0.06

According to the information provided by the Contractor, no tunnel boring or tunnel construction works were carried out in Tseung Kwan O side from February 2017 to April 2017. Therefore, it is considered that the exceedance is not project-related.)

(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)

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	Details of Complaint	Investigation/ Mitigation Action	File Closed
1	7th December 2016	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	The complainant complained about the construction noise and dust near Yau Lai Estate. (EPD Reference No.: K15/RE/00032001-16)	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	The complainant complained about the construction noise near Yau Lai Estate. (EPD Reference No.: K15/RE/00032317-16)		Closed
3	9th December 2016	Not Specified / Construction of Road P2	Sai Kung District Committee Member Mr. Chan Kai Wai	The complainant complained about the noise nuisance during transportation of construction materials on haul road and dust generation during construction activities.	No construction activities were carried out for both construction of Road P2 and TKO portal during night time or at about 7am. Therefore, no construction noise nuisance were generated during night-time or at about 7am under this Project and it is considered that these noise nuisance is not project- related. The Contractors of this Project had implemented environmental mitigation measures for air quality, noise and visual impact (night-time lighting) in accordance with the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual. The Contractors had taken the initiative to provide additional noise	Closed
4	20th December 2016	Not Specified / Construction of Road P2	Resident of Ocean Shore	The complainant complained about the lighting and noise nuisance on construction vessels moored near Ocean Shores during night time.		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
5	22nd December 2016	21 Dec 2016 at night / Construction of TKO portal	Resident of Block 3, Ocean Shores	The complainant concerned the noise generated by the construction works at hillside near Block 3 of Ocean Shores in daytime.	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
6	22nd December 2016	Not specified / Construction of TKO portal	Public	The complainant complained about the noise generated by the construction works at hillside in daytime.		Closed
7	22nd December 2016	Not specified / Construction of Road P2	Resident from Ocean Shore	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.		Closed
8	22nd December 2016	Not specified / Construction of Road P2 and TKO portal	Resident from Ocean Shore	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.		Closed
9	16th December 2016	Not Specified / near Ocean Shores	DC member	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.	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	Closed
10	17th January 2017	5 January 2017 / near Ocean Shores	DC member	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.		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
					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	
11	23rd December 2016	Not Specified / near Cha Kwo Ling Tsuen	Cha Kwo Ling Tsuen	The complainant complaint about the Soil/muddy water from construction site near Cha Kwo Ling Tsuen. (EPD Reference No.: K15/RE/00033951-16)	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	The complainant complaint that some muddy water flowing from the wheel washing facility to the gullies within the site boundary.		Closed
13	6th January 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Block A Nga Lai House	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.	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 Interchange; ● Provision of portable noise enclosures to reduce noise nuisance from drilling works and generator in Lam Tin Interchange; and	Closed
14	6th January 2017	Not Specified / Cha Kwo Ling Road	Resident of Yau Lai Estate	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.		Closed
15	6th January 2017	Not Specified / Construction site near Yau Lai Estate	Resident of Yau Lai Estate Bik Lai House	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		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
				residents.	● 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.	
16(*)	6th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Cheuk Lai House	The complainant complained the construction noise generated from this Project (EPD Reference No.: K15/RE/00000564-17)		Closed
17	6th January 2017	Not Specified / Construction site near Yau Lai Estate	Resident of Yau Lai Estate Bik Lai House	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.		Closed
18(*)	10th January 2017	Not Specified	Unknown	The complainant complained the construction noise generated from this Project (EPD Reference No.: K15/RE/00000967-17)		Closed
19	12th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	The complainant complained the noise generated from rock breaking at Lam Tin Interchange. He requested concrete actions to improve the situation.		Closed
20	12th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	The complainant complained the noise generated from rock breaking at Lam Tin Interchange.		Closed
21	13th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning.		Closed
22(*)	13th January 2017	Not Specified / Construction Works near Eastern Habour Crossing tunnel	Anonymous	The complainant complained about the noise generated by the construction works near the toll plaza of the Eastern Harbour Crossing (EHC). The		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
		portal		complainant complained again on 24 Jan 2017 and mentioned the noise problem still affected the daily life of residents		
23	16th January 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai Estate	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning.		Closed
24	17th January 2017	Not Specified / construction of Lam Tin Interchange	Resident of Yau Lai Estate Bik Lai House	The complainant complained the construction noise generated at Lam Tin Interchange.		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	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.	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	The complainant complained the construction noise generated at Lam Tin Interchange at 7am in the morning. (EPD Ref No. K15/RE/00002945-17)	According to information provided by the Contractor, powered Mechanical Equipment being operated on site during the time of complaint include breaker, dump truck, backhoes, drilling rig, mobile crane and small bulldozer. They were operated on and off with some idling time. It is considered that noise nuisance during the time of complaint was mainly due to high noise level emission during the use of breaker for rock breaking. In addition to the the "Implementation Schedule of Proposed Mitigation	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
					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.	
27	9th February 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai House, Yau Lai Estate	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)	According to information provided by the Contractor, powered Mechanical Equipment being operated on site during the time of complaint include breaker, dump truck, backhoes, drilling rig, mobile crane and small bulldozer. They were operated on and off with some idling time. It is considered that noise nuisance during the time of complaint was mainly due to high noise level emission during the use of breaker for rock breaking. In addition to the the "Implementation Schedule of Proposed Mitigation Measures" of EM&A Manual, the Contractor has implemented the following additional noise mitigation measures since late including: ● Provision and installation of additional temporary noise barrier during rock breaking works for construction of Lam Tin Interchange;	Closed
28	13th February 2017	Not Specified / Construction of Lam Tin Interchange	Resident of Yau Lai House, Yau Lai Estate	The complainant complained about the noise nuisance during the construction works of Lam Tin Interchange.		Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
					● 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.	
29	23rd February 2017	18 Feb 2017 / Slope Works at Lei Yue Mun Road	Anonymous	The complainant complained about the dust generated by the slope works opposite to Lam Tin Ambulance Deport on 18 February 2017 afternoon. He mentioned that the dust greatly affected the pedestrian.	The major source of construction dust nuisance was construction of a temporary storage area. As per investigation, the Contractor has provided environmental mitigation measures to prevent dust generation for the slope works. Water spray was prepared and provided next to the works for dust suppression during the use of handheld breaker.	Closed
30	23rd February 2017	Not Specified / BMCPC Footpath	陳繼偉議員	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.	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)	Closed

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
					near the formation works area.	
31	2nd March 2017	Not Specified / Construction Works near BMCPC Footpath	A resident of Ocean Shores	The complainant complained about the dust generated by the construction works near the existing BMCPC footpath	The major source of construction dust and noise nuisance was shotcreting of slope surface. 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.	Closed
32	8th March 2017	7 Mar 2017 / Slope works near Sin Fat Road Tennis Court	Public	The complainant complained the dust and noise generated by the slope works near Sin Fat Road Tennis Court		Closed
33	10th March 2017	4 Mar 2017 / Slope works near Sin Fat Road Tennis Court	Anonymous	The complainant complained the dust generated by the slope works near Sin Fat Road Tennis Court.	Under investigation	On-going
34	13th March 2017	27 Feb – 12 Mar 2017 / Barging point in front of Ocean Shore	Public	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.	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	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	Under investigation	On-going

Complaint No.	Received Date	Date/Location of Complaint	Complainant	Details of Complaint	Investigation/ Mitigation Action	File Closed
				improve the situation.		
36	25th March 2017	Not Specified / Construction Works of TKO Portal	Public	The complainant complaint about the construction dust impact due to marine works and construction of tunnel of this Project.	The major source of construction dust and noise nuisance was site formation works for TKO Portal and marine works for construction of temporary barging facilities As per investigation, the following environmental mitigation measures are implemented by the Contractor: ➢ Provision of frequent watering including watering of eight times a day on active work area, exposed area and paved haul roads; ➢ Installation of automatic sprinklers for water spray to minimize dust generation; ➢ Shotcreting or hydroseeding to surface of TKO Portal site formation; ➢ Provision of wheel washing to vehicles out of site; ➢ Covering of dusty slope surface by impervious material such tarpaulin sheets. During the weekly site inspections by the Environmental Team (ET), no deficiencies about exhaust gas or black smoke generation was observed from the Powered Mechanical Equipment (PME) on site of construction of TKO Portal. Air quality impact due to exhaust gas or black smoke emission from PME is considered insignificant from the Project.	Closed
37	6th April 2017	1 Apr 2017 / Slope works near Sin Fat Road Tennis Court	Public	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.	Under investigation	On-going

Cumulative Complaint Log since commencement of Project

Reporting Month	Number of Complaints in Reporting Month	Number of Summons in Reporting Month	Number of Prosecutions in Reporting Month
November 2016	0	0	0
December 2016	11	0	0
January 2017	15	0	0
February 2017	4	0	0
March 2017	6	0	0
April 2017	1	0	0
Total	**37**	**0**	**0**

Cumulative Log for Notifications of Summons

Contract No. NE/2015/01

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

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since project commencement
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Cumulative Log for Successful Prosecutions

Contract No. NE/2015/01

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
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Contract No. NE/2015/02

Log Ref.	Date/Location	Subject	Status	Total no. Received in this reporting month	Total no. Received since the commencement of the project
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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		
		February 2017	**March 2017**	**April 2017**
NE/2015/01 – Tseung Kwan O - Lam Tin Tunnel - Main Tunnel and Associated Works	Lam Tin Interchange	1) Excavation for Tunnel Adit 2) Slope Feature no. 11NE-D/C119 (along Lei Yue Mun Road) 3) EHC2 U-Trough 4) Site Formation – Area 1G1 5) Site Formation – Area 2 6) Site Formation – Area 4 7) Temp Steel Bridge across Cha Kwo Ling Road & Barging Facility 8) Pipe Pile wall – Area 2A 9) Ground Investigation	1. Excavation for Tunnel Adit 2. Slope Feature no. 11NE-D/C119 (along Lei Yue Mun Road) 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. Excavation for Tunnel Adit 2. Slope Feature no. 11NE-D/C119 (along Lei Yue Mun Road) 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
	Main Tunnel	N/A	N/A	1. Tunnel Team Mobilisation Works
	TKO Interchange	1) Haul Road Construction & Site Formation 2) Temporary Barging Facilities 3) BMCPC Bridge Temporary Diversion	1. Haul Road Construction, Site Formation and Slope Works 2. Temporary Barging Facilities 3. BMCPC Bridge Temporary Diversion	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) Installation of Temporary Cofferdam 2) Fabrication of Sheet Pile at	1. Advance Works for Construction of Temporary Cofferdam	1. Advance Works for Construction of Temporary Cofferdam

		Portion VII 3) Installation of silt curtain 4) Construction of Retaining Wall 5) Construction of DSD transformation room 6) Utilities detection and trial pit 7) Assembly of General Site Office 8) Removal of Screen Barrier at access of BMCPC 9) Piling and Sheet Piling Works 10) Pre-boring work 11) Temporary road for diversion of existing traffic at Tong Yin Street 12) Removal of existing concrete blocks at Portion IV 13) Construction of Temporary Transformer Room 14) Site Establishment 15) Tree Transplantation Works	2. Fabrication of Sheet Pile at Portion VII 3. Installation of silt curtain 4. Construction of Retaining Wall 5. Construction of DSD transformation room 6. Assembly of General Site Office 7. Piling and Sheet Piling Works 8. Temporary road for diversion of existing traffic at Tong Yin Street 9. Construction of Temporary Transformer Room 10. Site Establishment	2. Installation of silt curtain 3. Construction of Retaining Wall 4. Construction of DSD transformation room 5. Piling and Sheet Piling Works 6. Site Clearance 7. Hoarding Erection

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: February 2017 – April 2017

(A) Exceedance Report for Ecological Monitoring

The 1st post-translocation coral monitoring survey was carried out on 6 March 2017. No action/limit level of mortality was exceeded in the monitoring survey conducted in March 2017. The 2nd post-translocation coral monitoring survey is scheduled in May 2017.

1st 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)			Baseline (Nov16)	1st (06Mar17)			Baseline (Nov16)	1st (06Mar17)		
C01	*Gonipopra stutchburyi*	19	<1	<1 (1)			<1	<1			<1	<1		
C02	*Cyphastrea serailia*	26	<1	<1 (1)			<1	<1			<1	<1		
C03.	*Gonipopra stutchburyi*	16	<1	<1 (1)			<1	<1			<1	<1		
C04	*Cyphastrea serailia*	41	<1	<1 (1)			<1	<1			<1	<1		
C05	*Cyphastrea serailia*	29	<1	<1 (1)			<1	<1			<1	<1		
C06	*Cyphastrea serailia*	35	<1	<1 (1)			<1	<1			<1	<1		
C07	*Cyphastrea serailia*	23	<1	<1 (1)			<1	<1			<1	<1		
C08	*Turbinaria peltata*	12	<1	<1 (1)			<1	<1			<1	<1		
C09	*Psammocora superficialis*	48	<1	4 (1) ▲			<1	<1			<1	<1		
C10	*Psammocora superficialis*	32	<1	<1 (1)			<1	<1			<1	<1		

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

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)			Baseline (Nov16)	1st (06Mar17)			Baseline (Nov16)	1st (06Mar17)		
01	*Turbinaria peltata*	7	<1	<1 (<1)			<1	<1			<1	<1		
02	*Cyphastrea serailia*	13	<1	<1 (<1)			<1	<1			35	40 ▲*		
03	*Gonipopra stutchburyi*	14	<1	<1 (<1)			<1	<1			<1	<1		
04	*Gonipopra stutchburyi*	12	<1	<1 (<1)			<1	<1			<1	<1		
05	*Gonipopra stutchburyi*	17	<1	<1 (<1)			<1	<1			<1	<1		
06	*Gonipopra stutchburyi*	15	<1	<1 (<1)			<1	<1			<1	<1		
07	*Gonipopra stutchburyi*	6	<1	5 (<1)▲			<1	<1			<1	<1		
08	*Dendronephthya* sp.	10	<1	<1 (<1)			<1	<1			<1	<1		
09	*Menella* sp.	13	<1	<1 (<1)			<1	<1			<1	<1		
10	*Echinogorgia* sp.	19	<1	<1 (<1)			<1	<1			<1	<1		
11	*Echinomuricea* sp.	23	<1	<1 (<1)			<1	<1			<1	<1		
12	*Menella* sp.	14	<1	<1 (<1)			<1	<1			<1	50 ▲*		
13	*Menella* sp.	20	<1	<1 (<1)			<1	<1			<1	<1		
14	*Psammocora superficialis*	16	<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)			Baseline (Nov16)	1st (06Mar17)			Baseline (Nov16)	1st (06Mar17)		
SWJB-1	*Plesiastrea versipora*	28	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-2	*Plesiastrea versipora*	20	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-3.	*Porites* sp.	73	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-4	*Dipsastraea speciosa**	16	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-5	*Favites pentagona*	17	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-6	*Plesiastrea versipora*	35	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-7	*Plesiastrea versipora*	19	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-8	*Favites flexuosa*	25	<1 (<1)	4 (<1)▲			<1	<1			<1	<1		
SWJB-9.	*Porites* sp.	16	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
SWJB-10	*Favites chinesis*	61	<1 (<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)			Baseline (Nov16)	1st (06Mar17)			Baseline (Nov16)	1st (06Mar17)		
TKW-T1	*Favites flexuosa*	20	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T2	*Gonipopra stutchburyi*	15	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T3.	*Porites* sp.	12	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T4.	*Porites* sp.	55	<1 (<1)	<1 (<1)			<1	<1			5	5		
TKW-T5.	*Porites* sp.	14	<1 (<1)	<1 (<1)			5	5			<1	<1		
TKW-T6	*Gonipopra stutchburyi*	10	<1 (<1)	4 (<1)▲			<1	<1			<1	<1		
TKW-T7	*Gonipopra stutchburyi*	15	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T8	*Gonipopra stutchburyi*	6	<1 (<1)	4 (<1)▲			<1	<1			<1	<1		
TKW-T9	*Gonipopra stutchburyi*	17	<1 (<1)	5 (<1)▲			<1	<1			<1	<1		
TKW-T10	*Gonipopra stutchburyi*	14	<1 (<1)	10 (<1) ▲			<1	<1			<1	<1		
TKW-T11	*Coscinarea sp.*	20	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T12	*Plesiastrea versipora*	20	<1 (<1)	<1 (<1)			<1	<1			5	5		
TKW-T13	*Gonipopra stutchburyi*	16	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T14	*Favites magnistellata **	11	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T15	*Porites* sp.	21	<1 (<1)	<1 (<1)			<1	<1			5	5		
TKW-T16	*Astrea curta #*	10	<1 (<1)	<1 (<1)			<1	<1			<1	<1		

TKW-T17	*Porites* sp.	35	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T18	*Platygyra acuta*	15	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T19	*Favites flexuosa*	20	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T20	*Gonipopra stutchburyi*	10	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T21	*Favites magnistellata* *	12	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T22	*Turbinaria peltata*	27	<1 (<1)	<1 (<1)			<1	<1			5	5		
TKW-T23	*Porites* sp.	14	<1 (<1)	<1 (<1)			<1	<1			10	10		
TKW-T24	*Gonipopra stutchburyi*	20	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T25	*Plesiastrea versipora*	14	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T26.	*Gonipopra stutchburyi*	6	<1 (<1)	<1 (<1)			10	10			<1	<1		
TKW-T27	*Plesiastrea versipora*	18	<1 (<1)	<1 (<1)			<1	<1			<1	<1		
TKW-T28	*Porites* sp.	20	<1 (<1)	<1 (<1)			20	<1 ▼(^)			<1	<1		
TKW-T29	*Astrea curta* #	13	<1 (<1)	<1 (<1)			<1	<1			10	10		

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

* Former name: *Montastrea magnistellata*

\# Former name: *Montastrea curta*

^ Decreased percentage in level of bleaching was recorded in the translocated coral colony 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 (Roff et al. 2014), as Porites species is regarded as a long-lived species and survive under stressful Hong Kong marine environment (Goodkin et al. 2011).

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