MOTT MACDONALD

Expansion of Hong Kong International Airport into a Three-Runway System

Construction Phase Quarterly EM&A Report No.5 (1 January to 31 March 2017)

June 2017

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This Construction Phase Quarterly EM&A Report No. 5 has been reviewed and certified by

the Environmental Team Leader (ETL) in accordance with

Section 15.4 of the Updated EM&A Manual

Certified by: 

Terence Kong
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date 30 June 2017

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By Email

Airport Authority Hong Kong
HKIA Tower, 1 Sky Plaza Road
Hong Kong International Airport
Lantau, Hong Kong

Attn: Mr. Lawrence Tsui, Principal Manager

30 June 2017

Dear Sir,

Contract No. 3102
3RS Independent Environmental Checker Consultancy Services

Quarterly EM&A Report No.5 (For 1 January 2017 to 31 March 2017)

Reference is made to the Environmental Team's submission of Quarterly EM&A Report No.5 (For 1 January 2017 to 31 March 2017) under Condition 15.4 of the Environmental Permit No. EP-489/2014 certified by the ET Leader on 30 June 2017.

We would like to inform you that we have no adverse comment on the captioned submission. Therefore we write to verify the captioned submission.

Should you have any query, please feel free to contact our Isabella Yeung at 3922 9348 or the undersigned at 3922 9376.

Yours faithfully,
AECOM Asia Co. Ltd.

Jackel Law
Independent Environmental Checker

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Executive Summary

The "Expansion of Hong Kong International Airport into a Three-Runway System" (the Project) serves to meet the future air traffic demands at Hong Kong International Airport (HKIA). On 7 November 2014, the Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-185/2014) for the Project was approved and an Environmental Permit (EP) (Permit No.: EP-489/2014) was issued for the construction and operation of the Project.

Airport Authority Hong Kong (AAHK) commissioned Mott MacDonald Hong Kong Limited (MMHK) to undertake the role of Environmental Team (ET) for carrying out the Environmental Monitoring & Audit (EM&A) works during the construction phase of the Project in accordance with the Updated EM&A Manual.

This is the 5th Construction Phase Quarterly EM&A Report for the Project which summarizes the monitoring results and audit findings of the EM&A programme during the reporting period from 1 January 2017 to 31 March 2017.

Key Activities in the Reporting Period

Key activities of the Project carried out in the reporting period were related to the following contracts:

Advanced Works:

Contract P560 (R) Aviation Fuel Pipeline Diversion Works

- Horizontal Directional Drilling (HDD) works;
- Pipeline supporting works; and
- Stockpiling of excavated materials from HDD operation.

DCM Works:

Contracts 3201 to 3205 Deep Cement Mixing (DCM) Works

- Coring works;
- Site office establishment;
- Laying of geotextile and sand blanket; and
- DCM trials and works.

Reclamation Works:

Contract 3206 Main Reclamation Works

- Site office establishment; and
- Laying of geotextile and sand blanket.

EM&A Activities Conducted in the Reporting Period

The EM&A programme was undertaken in accordance with the Updated EM&A Manual of the Project. A summary of the monitoring and audit activities during this reporting period is presented as below:

Monitoring/ Audit Activities	Number of Sessions
1-hour Total Suspended Particulates (TSP) Air Quality Monitoring	99
Noise Monitoring	65
Water Monitoring	38
Ecological Monitoring	3
Vessel line-transect surveys for Chinese White Dolphin (CWD) monitoring	6
Land-based theodolite tracking survey effort for CWD monitoring	15
Coral Post-translocation Monitoring	3

Ecological Monitoring

Toolbox Talk Training to Site Staff by Contractor

Meeting with SkyPier Ferry Operator Representatives

In total, 2,511 ferry movements between HKIA SkyPier and Zhuhai / Macau were audited in the reporting period. All High Speed Ferries (HSFs) travelled through the Speed Control Zone (SCZ) with average speeds within 15 knots, which complied with the Marine Travel Routes and Management Plan for High Speed Ferries of SkyPier (the SkyPier Plan). Four ferry movements had minor deviations from the diverted route during the reporting period and all of them were related to public safety / emergency situations.

During the reporting period, ET conducted weekly audit of relevant information to ensure the contractors complied with the requirements of the Marine Travel Routes and Management Plan for Construction and Associated Vessel (MTRMP-CAV). A total of 13 skipper training workshops were held by ET during the reporting period with concerned captains of construction vessels associated with 3RS contracts. Another 8 skipper training workshops were held by contractors' Environmental Officers (EO) and competency tests were conducted subsequently with the trained captains by ET. The upgraded Maritime Surveillance System (MSS) was launched in March 2017. The MSS automatically recorded deviation cases such as speeding, entering no entry zone, and not traveling through the designated gates. These recorded cases were cross checked with construction and associated vessel records provided by the contractors to ensure the MSS recorded all deviation cases accurately.

On the implementation of Marine Mammal Watching Plan (MMWP), silt curtains were in place by the contractors for sand blanket laying works and dolphin observers were deployed in accordance with the plan. On the implementation of Dolphin Exclusion Zone (DEZ) Plan, dolphin observers were deployed by the contractors for continuous monitoring of the DEZ for DCM works in accordance with the DEZ Plan. Trainings for the proposed dolphin observers were provided by the ET prior to the aforementioned works, with the training records kept by the ET. From the contractors' MMWP observation records and DEZ monitoring records, no dolphin or other marine mammals were observed within or around the silt curtains, whilst there was one record of dolphin sighting within the DEZ of DCM works in this reporting quarter. Audits of acoustic decoupling for construction vessels were also carried out by the ET.

In accordance with the Coral Translocation Plan, translocation of 384 gorgonian coral colonies from the donor site along the existing northern seawall of the airport island to the recipient site at Yam Tsai Wan was completed in January 2017. A total of 85 translocated coral colonies and 20 indigenous colonies as control corals were selected and tagged for post-translocation monitoring. The monitoring was conducted as per an enhanced monitoring programme based on the Coral Translocation Plan. Three rounds of monitoring were conducted and completed in January, February and March 2017 respectively. No exceedances of the Action or Limit levels in percentage of partial mortality of the translocated coral colonies were recorded during the reporting period.

Review of Environmental Quality Performance Limits (Action and Limit levels)

For water quality, the monitoring results for dissolved oxygen (DO), total alkalinity, and chromium obtained during the reporting period complied with their corresponding Action and Limit Levels stipulated in the EM&A programme for triggering the relevant investigation and follow-up procedures under the programme if being exceeded. For turbidity, suspended solids (SS) and nickel, some of the testing results exceeded the relevant Action or Limit Levels during the reporting period, and the corresponding investigations were conducted accordingly. The investigation findings concluded that the exceedances were not due to the Project.

No breach of Action or Limit Levels in relation to construction dust, noise, waste and CWD monitoring was recorded during the reporting period.

Implementation Status and Review of Environmental Mitigation Measures

Weekly site audits were carried out during the reporting period to confirm the implementation measures undertaken by the contractors. Environmental issues related to construction activities, including construction dust, construction noise, construction waste, terrestrial ecology and CWD were monitored and/or reviewed.

Recommended environmental mitigation measures, as included in the EM&A programme, were implemented properly during the reporting period. The EM&A programme effectively monitored the construction activities and ensured proper implementation of the mitigation measures.

Summary Findings of the EM&A Programme

The following table summarizes the key findings of the EM&A programme during the reporting period:

	Yes	No	Details	Analysis / Recommendation / Remedial Actions
Breaches of Limit Level^		✓	No project-related limit level exceedance was recorded.	Nil
Breaches of Action Level^		✓	No project-related action level exceedance was recorded.	Nil
Complaints Received	✓		A complaint of night time work and construction wastewater at Sheung Sha Chau was received on 19 Jan 2017.	Complaint investigation was carried out in accordance with the Complaint Management Plan. The investigation details are presented in S3.2.1.

	Yes	No	Details	Analysis / Recommendation / Remedial Actions
Notification of any summons and status of prosecutions		✓	Neither notifications of summons nor prosecution were received.	Nil
Changes that affect the EM&A		✓	There was no change to the construction works that may affect the EM&A	Nil

Remarks: ^ Only exceedance of Action or Limit Level related to the Project will be highlighted.

1 Introduction

1.1 Background

On 7 November 2014, the Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-185/2014) for the "Expansion of Hong Kong International Airport into a Three-Runway System" (the Project) was approved and an Environmental Permit (EP) (Permit No.: EP-489/2014) was issued for the construction and operation of the Project.

Airport Authority Hong Kong (AAHK) commissioned Mott MacDonald Hong Kong Limited (MMHK) to undertake the role of Environmental Team (ET) for carrying out the Environmental Monitoring & Audit (EM&A) works during the construction phase of the Project in accordance with the Updated EM&A Manual (the Manual) submitted under EP Condition 3.1. The Manual is available on the Project's dedicated website (accessible at: http://env.threerunwaysystem.com/en/index.html). AECOM Asia Company Limited (AECOM) was employed by AAHK as the Independent Environmental Checker (IEC) for the Project.

The Project covers the expansion of the existing airport into a three-runway system (3RS) with key project components comprising land formation of about 650 ha and all associated facilities and infrastructure including taxiways, aprons, aircraft stands, a passenger concourse, an expanded Terminal 2, all related airside and landside works and associated ancillary and supporting facilities. The existing submarine aviation fuel pipelines and submarine power cables also require diversion as part of the works.

Construction of the Project is to proceed in the general order of diversion of the submarine aviation fuel pipelines, diversion of the submarine power cables, land formation, and construction of infrastructure, followed by construction of superstructures.

The updated overall phasing programme of all construction works was presented in Appendix A of the Construction Phase Monthly EM&A Report No. 7. Contract information is presented in **Appendix A**.

1.2 Scope of this Report

This is the 5th Construction Phase Quarterly EM&A Report for the Project which summarizes the key findings of the EM&A programme during the reporting period from 1 January 2017 to 31 March 2017.

1.3 Project Organisation

The Project's organisation structure and the contact details of the key personnel are provided in **Appendix B** and **Table 1.1** respectively.

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone
Project Manager's Representative (Airport Authority Hong Kong)	Principal Manager, Environment	Lawrence Tsui	2183 2734
Environmental Team (ET)	Environmental Team Leader	Terence Kong	2828 5919

Party	Position	Name	Telephone
(Mott MacDonald Hong Kong Limited)			
	Deputy Environmental Team Leader	Heidi Yu	2828 5704
	Deputy Environmental Team Leader	Keith Chau	2972 1721
Independent Environmental Checker (IEC) (AECOM Asia Company Limited)	Independent Environmental Checker	Jackel Law	3922 9376
	Deputy Independent Environmental Checker	Joanne Tsoi	3922 9423
Advanced Works:			
Contract P560(R) Aviation Fuel Pipeline Diversion Works (Langfang Huayuan Mechanical and Electrical Engineering Co., Ltd.)	Project Manager	Wei Shih	2117 0566
	Environmental Officer	Lyn Lau	5172 6543
DCM Works:			
Contract 3201 DCM (Package 1) (Penta-Ocean-China State-Dong-Ah Joint Venture)	Project Director	Tsugunari Suzuki	9178 9689
	Environmental Officer	Sze Ming Chan	9384 5494
Contract 3202 DCM (Package 2) (Samsung-BuildKing Joint Venture)	Project Manager	Ilkwon Nam	9643 3117
	Environmental Officer	Dickson Mak	9525 8408
Contract 3203 DCM (Package 3) (Sambo E&C Co., Ltd.)	Project Manager	Seong Jae Park	9683 8693
	Environmental Officer	Calvin Leung	9203 5820
Contract 3204 DCM (Package 4) (CRBC-SAMBO Joint Venture)	Project Manager	Kyung-Sik Yoo	9683 8697
	Environmental Officer	Kanny Cho	9019 1962
Contract 3205 DCM (Package 5)	Deputy Project Director	Min Park	9683 0765

Party	Position	Name	Telephone
(Bachy Soletanche - Sambo Joint Venture)			
	Environmental Officer	Margaret Chung	9130 3696
Reclamation Works:			
Contract 3206 (ZHEC-CCCC-CDC Joint Venture)	Project Manager	Kim Chuan Lim	3693 2288
	Environmental Officer	Kwai Fung Wong	3693 2252
Other Works:			
Contract 3213 CLP Cable Diversion Enabling Works (Wing Hing Construction Company)	Project Manager	Michael Kan	9206 0550
	Environmental Officer	Ivy Tam	2151 2090

1.4 Contact information for the Project

The contact information for the Project is provided in **Table 1.2**. The public can contact us through the following channels if they have any queries and comments on the environmental monitoring data and project related information.

Table 1.2: Contact Information of the Project

Channels	Contact Information
Hotline	3908 0354
Email	env@3rsproject.com
Fax	3747 6050
Postal Address	Airport Authority Hong Kong HKIA Tower 1 Sky Plaza Road Hong Kong International Airport Lantau Hong Kong Attn: Environmental Team Leader Mr Terence Kong c/o Mr Lawrence Tsui (TRD)

1.5 Summary of Construction Works

The key activities of the Project carried out during the reporting period included five DCM contracts, an advanced works contract, and a reclamation contract. The DCM contracts involved coring works, site office establishment, laying of geotextile and sand blanket, and DCM trials and works; the advanced works contract involved HDD works, pipeline supporting works, and stockpiling of excavated materials from HDD operation; and the reclamation contract involved site office establishment, and laying of geotextile and sand blanket.

The locations of the works areas are presented in **Figure 1.1** to **Figure 1.2.** Some site investigation works were carried out during the reporting period.

1.6 Summary of EM&A Programme Requirements

The status for all environmental aspects is presented in **Appendix A**. The EM&A requirements remained unchanged during the reporting period.

Table 1.3: Summary of Status for All Environmental Aspects under the Updated EM&A Manual

Parameters	EM&A Requirements	Status
Air Quality		
Baseline Monitoring	At least 14 consecutive days before commencement of construction work	The baseline air quality monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.
Impact Monitoring	At least 3 times every 6 days	On-going
Noise		
Baseline Monitoring	Daily for a period of at least two weeks prior to the commencement of construction works	The baseline noise monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.
Impact Monitoring	Weekly	On-going
Water Quality		
General Baseline Water Quality Monitoring for reclamation, water jetting and field joint works	Three days per week, at mid-flood and mid-ebb tides, for at least four weeks prior to the commencement of marine works.	The baseline water quality monitoring result has been reported in Baseline Water Quality Monitoring Report and submitted to EPD under EP Condition 3.4.
General Impact Water Quality Monitoring for reclamation, water jetting and field joint works	Three days per week, at mid-flood and mid-ebb tides.	On-going
Initial Intensive Deep Cement Mixing (DCM) Water Quality Monitoring	At least four weeks	Initially started in late March 2017. Due to the changes in DCM works areas, the monitoring programme is subject to review.
Regular DCM Water Quality Monitoring	Three times per week until completion of DCM works.	On-going
Waste Management		
Waste Monitoring	At least weekly	On-going
Land Contamination		
Supplementary Contamination Assessment Plan (CAP)	At least 3 months before commencement of any soil remediation works.	To be submitted with the relevant construction works.
Contamination Assessment Report (CAR) for Golf Course	CAR to be submitted for golf course first; programme for submission of supplementary CAR at the other areas to be agreed.	The CAR for Golf Course was submitted to EPD.
Terrestrial Ecology		

Parameters	EM&A Requirements	Status
Pre-construction Egretry Survey Plan	Once per month in the breeding season between April and July, prior to the commencement of HDD drilling works.	The revised Egretry Survey Plan was submitted and approved by EPD under EP Condition 2.14.
Ecological Monitoring	Monthly monitoring during the HDD construction works period from August to March.	On-going
Marine Ecology		
Pre-Construction Phase Coral Dive Survey	Prior to marine construction works	The Coral Translocation Plan was submitted and approved by EPD under EP Condition 2.12.
Coral Translocation	-	The coral translocation was completed on 5 January 2017.
Post-translocation Monitoring	As per an enhanced monitoring programme based on the Coral Translocation Plan	On-going
Chinese White Dolphins (CWD)		
Baseline Monitoring	6 months of baseline surveys before the commencement of land formation related construction works. Vessel surveys: Two full surveys per month; Land-based theodolite tracking: Two days per month at the Sha Chau station and two days per month at the Lung Kwu Chau Station; and PAM: For the whole duration of baseline period.	Baseline CWD results were reported in the CWD Baseline Monitoring Report and submitted to EPD in accordance with EP Condition 3.4.
Impact Monitoring	Vessel surveys: Two full surveys per month; Land-based theodolite tracking: One day per month at the Sha Chau station and one day per month at the Lung Kwu Chau Station; and PAM: For the whole duration for land formation related construction works.	On-going
Landscape and Visual		
Baseline Monitoring	One-off survey within the Project site boundary prior to commencement of any construction works	The baseline landscape & visual monitoring result has been reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.4.
Impact Monitoring	Weekly	On-going
Environmental Auditing		
Regular site inspection	Weekly	On-going
Marine Mammal Watching Plan (MMWP) implementation measures	Monitor and check	On-going
Dolphin Exclusion Zone Plan (DEZP) implementation measures	Monitor and check	On-going
SkyPier High Speed Ferries (HSF)	Monitor and check	On-going

Parameters	EM&A Requirements	Status
implementation measures		
Construction and Associated Vessels Implementation measures	Monitor and check	On-going
Complaint Hotline and Email channel	Construction phase	On-going
Environmental Log Book	Construction phase	On-going

Taking into account the construction works during the reporting period, impact monitoring of air quality, noise, water quality, waste management, ecology, and CWD were carried out in the reporting period. Upon completion of coral translocation in January 2017, a summary of the ensuing post-translocation monitoring is reported quarterly.

The EM&A programme also involved weekly site inspections and related auditing conducted by ET for the checking of implementation of required environmental mitigation measures recommended in the approved EIA Report. In order to enhance environmental awareness and closely monitor the environmental performance of the contractors, environmental briefings and regular environmental management meetings were conducted.

The EM&A programme has been following the recommendations presented in the approved EIA Report and the Manual. A summary of implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix C**.

2 Environmental Monitoring and Auditing

2.1 Air Quality Monitoring

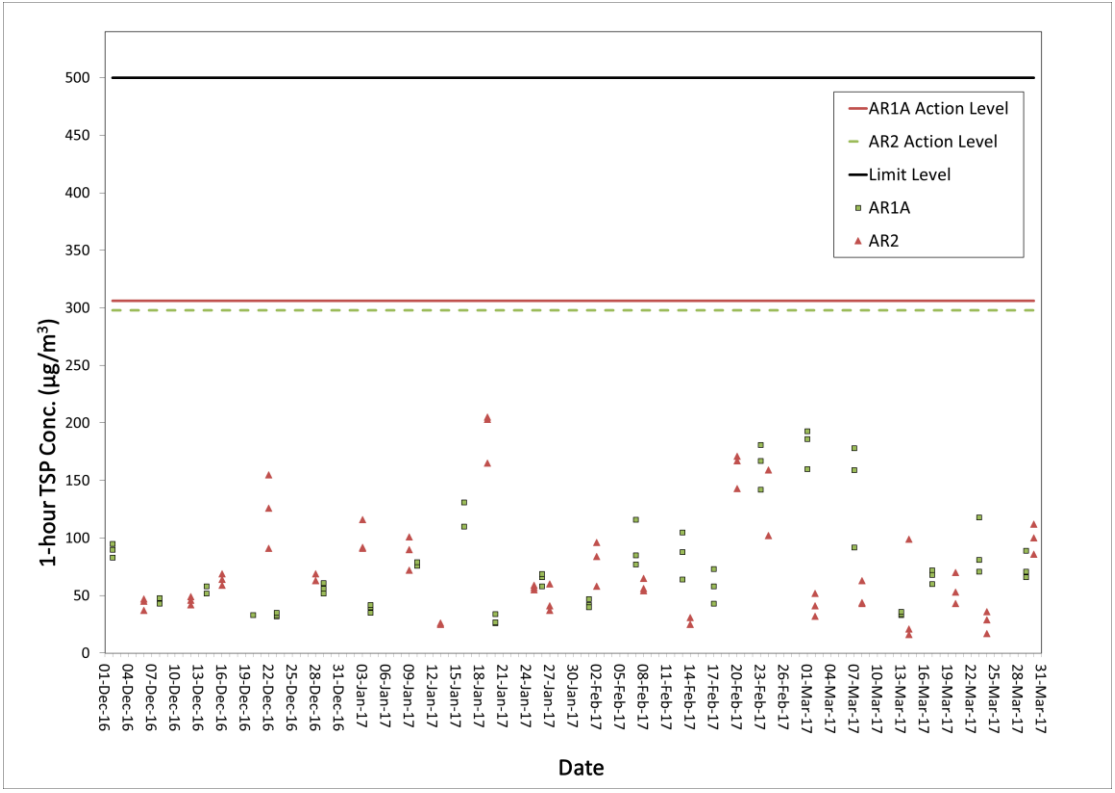
Impact 1-hour Total Suspended Particulates (TSP) monitoring was conducted three times every six days at two representative monitoring stations during the reporting period. The locations of monitoring stations are described in **Table 2.1** and presented in **Figure 2.1**. The Action and Limit Levels of the air quality monitoring stipulated in the EM&A programme for triggering the relevant investigation and follow-up procedures under the programme are also provided in **Table 2.1** for reference.

Table 2.1: Impact Air Quality Monitoring Stations

Monitoring Station	Location	Action Level (μg/m³)	Limit Level (μg/m³)
AR1A	Man Tung Road Park	306	500
AR2	Village House at Tin Sum	298	

The graphical plot of impact air quality monitoring results during the reporting period is presented in **Graph 1**.

Graph 1: Graphical Plot of 1-hour TSP concentration at AR1A and AR2 during the Reporting Period



No exceedance of the Action and Limit Level was recorded at AR1 and AR2 in the reporting period.

The weather varied from sunny to rainy during the reporting period. Wind direction was mainly north or east in the reporting period.

The key activities of the Project carried out in the reporting period are summarised in **Section 1.5**. Those works were not likely to cause adverse dust pollution.

The active construction site is around 3 km away from the nearest air sensitive receiver in Tung Chung. The major dust sources during the reporting period were observed to be local air pollution and nearby traffic emissions. It is considered that the monitoring work in the reporting period was effective and there was no adverse impact attributable to the works of the Project.

2.2 Noise Monitoring

Impact noise monitoring was conducted at five representative monitoring stations once per week during 0700 and 1900 during the reporting period. The locations of monitoring stations are described in **Table 2.2** and presented in **Figure 2.1**. The Action and Limit Levels of the noise monitoring stipulated in the EM&A programme for triggering the relevant investigation and follow-up procedures under the programme are provided in **Table 2.2** for reference.

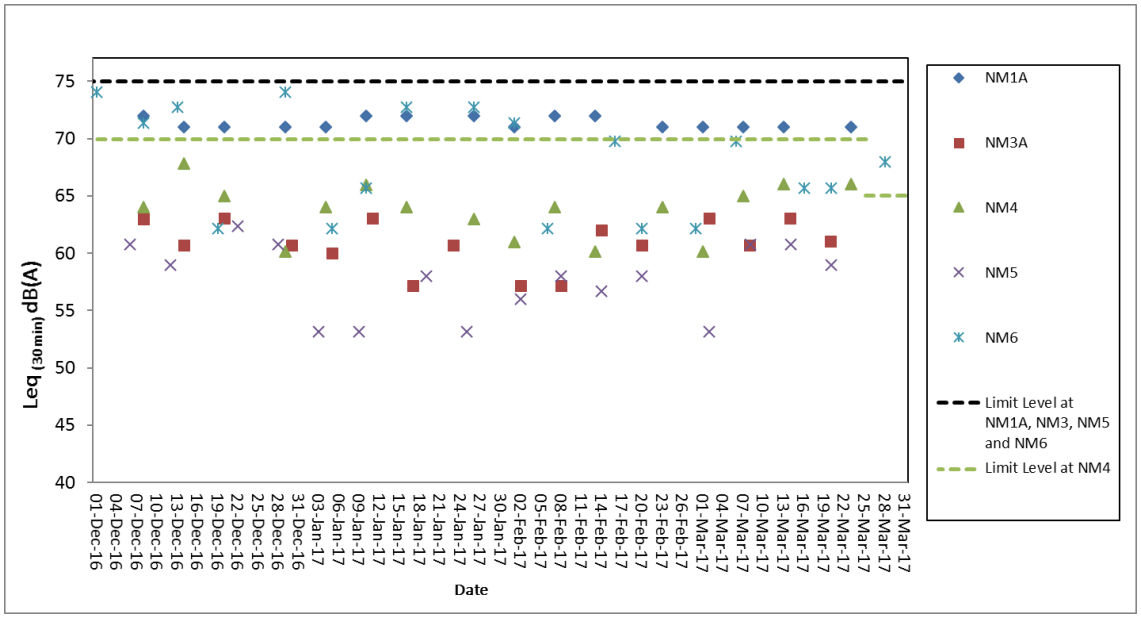
The graphical plot of impact noise quality monitoring results during the reporting period is presented in **Graph 2**.

Table 2.2: Impact Noise Quality Monitoring Stations

Monitoring Station	Location	Action Level	Limit Level
NM1A	Man Tung Road Park	When one documented complaint is received from any one of the sensitive receivers	75 dB(A)
NM3A	Site Office		75 dB(A)
NM4[(i)]	Ching Chung Hau Po Woon Primary School		65dB(A) / 70 dB(A)
NM5	Village House in Tin Sum		75 dB(A)
NM6	House No. 1, Sha Lo Wan		75 dB(A)

Note: [(i)] Reduce to 70dB(A) for school and 65dB(A) during school examination periods.

Graph 2: Graphical Plot of Leq $_{(30min)}$ at NM1A, NM3A, NM4, NM5 and NM6 during the Reporting Period



Note: The examination period for NM4 was from 27 March 2017 to 31 March 2017 in the reporting period.

No exceedance of the Action and Limit Level was recorded at all monitoring stations in the reporting period.

The key activities of the Project carried out in the reporting period are summarised in **Section 1.5**. Those works were not likely to cause adverse noise impact.

The active construction work is around 900 m away from the nearest noise sensitive receivers in the villages in North Lantau. The major noise sources during the reporting period were observed to be road traffic at NM1A, aircrafts at NM3A, school activities at NM4, aircrafts, helicopters, and dog barking at NM5, and aircrafts, helicopters, and marine vessels at NM6. It is considered that the monitoring work in the reporting period was effective and there was no adverse impact attributable to the works of the Project.

2.3 Water Quality Monitoring

During the reporting period, water quality monitoring was conducted at a total of 22 water quality monitoring stations, comprising 12 impact (IM) stations, seven sensitive receiver (SR) stations, and three control stations in the vicinity of the water quality sensitive receivers around the airport island in accordance with the Manual. The purpose of water quality monitoring at the IM stations is to promptly capture any potential water quality impacts from the Project before the impacts could become apparent at sensitive receivers (represented by the SR stations). **Table 2.3** describes the details of the monitoring stations. **Figure 2.2** shows the locations of the monitoring stations.

Table 2.3: Monitoring Locations and Parameters for Impact Water Quality Monitoring

Monitoring Stations	Description	Coordinates		Parameters
		Easting	Northing	
C1	Control	804247	815620	
C2	Control	806945	825682	

Monitoring Stations	Description	Coordinates		Parameters
		Easting	Northing	
C3[3]	Control	817803	822109	
IM1	Impact	806458	818351	DO, pH, Temperature, Salinity, Turbidity, SS, Total Alkalinity, Heavy Metals[2]
IM2	Impact	806193	818852	
IM3	Impact	806019	819411	
IM4	Impact	805039	819570	
IM5	Impact	804924	820564	
IM6	Impact	805828	821060	
IM7	Impact	806835	821349	
IM8	Impact	807838	821695	
IM9	Impact	808811	822094	
IM10	Impact	809838	822240	
IM11	Impact	810545	821501	
IM12	Impact	811519	821162	
SR1[1]	Future Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) Seawater Intake for cooling	812586	820069	DO, pH, Temperature, Salinity, Turbidity, SS
SR2[3]	Planned marine park / hard corals at The Brothers / Tai Mo To	814166	821463	
SR3	Sha Chau and Lung Kwu Chau Marine Park / fishing and spawning grounds in North Lantau	807571	822147	
SR4A	Sha Lo Wan	807810	817189	
SR5A	San Tau Beach SSSI	810696	816593	
SR6	Tai Ho Bay, Near Tai Ho Stream SSSI	814663	817899	
SR7	Ma Wan Fish Culture Zone (FCZ)	823742	823636	
SR8	Seawater Intake for cooling at Hong Kong International Airport (East)	811593	820417	

Notes:

(1) The seawater intakes of SR1 for the future HKBCF are not yet in operation, the future permanent location for SR1 during impact monitoring is subject to finalisation after the HKBCF seawater intake is commissioned.

(2) Details of selection criteria for the two heavy metals for early regular DCM monitoring refer to the Detailed Plan on Deep Cement Mixing available on the dedicated 3RS website http://env.threerunwaysystem.com/en/ep-submissions.html). DCM specific water quality monitoring parameters (total alkalinity and heavy metals) were only conducted at C1 to C3, SR2, and IM1 to IM12.

(3) According to the baseline water quality monitoring report, C3 station is not adequately representative as a control station of impact/ SR stations during the flood tide. The control reference has been changed from C3 to SR2 from 1 September 2016 onwards.

2.3.1 Monitoring Schedule

During the reporting period, general water quality monitoring was conducted three days per week, at mid-flood and mid-ebb tides, at the 22 water quality monitoring stations.

Early regular DCM water quality monitoring was conducted three days per week, at mid-flood and mid-ebb tides, at the 22 water quality monitoring stations from 1 January 2017 to 21 March 2017

during the reporting period. It was suspended after 21 March 2017 because initial intensive DCM monitoring was tentatively started in late March 2017.

2.3.2 Action and Limit Levels for Water Quality Monitoring

The Action and Limit Levels for general water quality monitoring and regular DCM monitoring stipulated in the EM&A programme for triggering the relevant investigation and follow-up procedures under the programme are presented in **Table 2.4**. The control and impact stations during flood tide and ebb tide for general water quality monitoring and regular DCM monitoring are presented in **Table 2.5**.

Table 2.4: Action and Limit Levels for General Water Quality Monitoring and Regular DCM Monitoring

Parameters	Action Level (AL)		Limit Level (LL)	
Action and Limit Levels for general water quality monitoring and regular DCM monitoring (excluding SR1& SR8)				
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 4.5 mg/L		Surface and Middle 4.1 mg/L 5 mg/L for Fish Culture Zone (SR7) only	
	Bottom 3.4 mg/L		Bottom 2.7 mg/L	
Suspended Solids (SS) in mg/L	23	or 120% of upstream control station at the same tide of the same day, whichever is higher	37	or 130% of upstream control station at the same tide of the same day, whichever is higher
Turbidity in NTU	22.6		36.1	
Total Alkalinity in ppm	95		99	
Representative Heavy Metals for early regular DCM monitoring (Chromium)	0.2		0.2	
Representative Heavy Metals for early regular DCM monitoring (Nickel)	3.2		3.6	
Action and Limit Levels SR1				
SS (mg/l)	To be determined prior to its commissioning		To be determined prior to its commissioning	
Action and Limit Levels SR8				
SS (mg/l)	52		60	

Notes:

1. For DO measurement, non-compliance occurs when monitoring result is lower than the limits.
2. For parameters other than DO, non-compliance of water quality results when monitoring results is higher than the limits.
3. Depth-averaged results are used unless specified otherwise.
4. Details of selection criteria for the two heavy metals for early regular DCM monitoring refer to the Detailed Plan on Deep Cement Mixing available on the dedicated 3RS website http://env.threerunwaysystem.com/en/ep-submissions.html)
5. The action and limit levels for the two representative heavy metals chosen will be the same as that for the intensive DCM monitoring.

Table 2.5: The Control and Impact Stations during Flood Tide and Ebb Tide for General Water Quality Monitoring and Regular DCM Monitoring

Control Station	Impact Stations
Flood Tide	
C1	IM1, IM2, IM3, IM4, IM5, IM6, IM7, IM8, SR3

Control Station	Impact Stations
SR2^1	IM7, IM8, IM9, IM10, IM11, IM12, SR1A, SR3, SR4A, SR5A, SR6, SR8
Ebb Tide	
C1	SR4A, SR5A, SR6
C2	IM1, IM2, IM3, IM4, IM5, IM6, IM7, IM8, IM9, IM10, IM11, IM12, SR1A, SR2, SR3, SR7, SR8

^1 As per findings of Baseline Water Quality Monitoring Report, the control reference has been changed from C3 to SR2 from 1 Sep 2016 onwards.

2.3.3 Summary of Monitoring Results

The monitoring results for DO, total alkalinity, and chromium obtained during the reporting period were in compliance with their corresponding Action and/or Limit Levels stipulated in the EM&A programme for triggering the relevant investigation and follow-up procedures under the programme if being exceeded. For turbidity, SS and nickel, some of the testing results exceeded the relevant Action and Limit Levels, and the corresponding investigations were conducted accordingly. The investigation findings concluded that all exceedances were not due to the Project. Summaries of turbidity, SS, and nickel compliance status are presented in **Table 2.6 to 2.10**.

Findings for Turbidity Exceedances

Table 2.6 and **Table 2.7** presents a summary of the turbidity compliance status at IM and SR stations during mid-ebb and mid-flood tide for the reporting quarter.

Table 2.6: Summary of Turbidity Compliance Status at IM and SR Stations (Mid-Ebb Tide)

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
31/01/2017																			
02/02/2017																			
14/02/2017																			
No. of Turbidity Exceedances	0	0	0	0	1	1	1	2	2	2	1	0	0	2	0	0	0	0	0

Table 2.7: Summary of Turbidity Compliance Status at IM and SR Stations (Mid-Flood Tide)

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
02/02/2017																			
11/02/2017																			
14/02/2017																			
16/02/2017																			
02/03/2017																			
No. of Turbidity Exceedances	0	0	0	1	2	0	1	0	0	2	1	1	0	0	0	0	1	0	0

Note: The monitoring dates that are not presented in the above tables were in full compliance with their corresponding Action and Limit Levels. Detailed results are presented in **Appendix D**.

Legend:

- No exceedance of Action Level and Limit Level
- Exceedance of Action Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
- Exceedance of Action Level recorded at monitoring station located upstream of the Project based on dominant tidal flow
- Exceedance of Limit Level recorded at monitoring station located downstream of the Project based on dominant tidal flow

Exceedance of Limit Level recorded at monitoring station located upstream of the Project based on dominant tidal flow
Upstream station with respect to the Project during the respective tide based on dominant tidal flow

Investigations were conducted for each of the exceedances and details of the investigation findings are presented in the Construction Phase Monthly EM&A Report no. 13, 14, and 15. All exceedances were found to be not due to the Project.

IM Stations

Some of the turbidity exceedances at downstream IM stations occurred with nearby upstream IM stations during the same monitoring period. Based on the investigation findings and given that the upstream stations would unlikely be affected by the Project, these exceedances were possibly due to natural fluctuation of the corresponding areas. Other turbidity exceedances that occurred in this reporting period appeared to be isolated cases with neither temporal nor spatial trend to indicate any effect due to Project activities. Taking into account the investigation findings which showed no construction vessel, DCM work, nor silt plume in the vicinity, the exceedances were considered to be not due to the Project.

SR Stations

The turbidity exceedances at SR stations in the reporting period occurred only when the respective SR stations were located upstream of the Project. As these upstream stations were unlikely affected by the Project, the exceedances were considered to be not due to the Project.

Findings for SS Exceedances

Table 2.8 and **Table 2.9** presents a summary of the SS compliance status at IM and SR stations during mid-ebb and mid-flood tide for the reporting quarter.

Table 2.8: Summary of SS Compliance Status at IM and SR Stations (Mid-Ebb Tide)

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
14/01/2017																			
17/01/2017																			
31/01/2017																			
02/02/2017																			
11/02/2017																			
14/02/2017																			
02/03/2017																			
15/03/2017																			
No. of SS Exceedances	0	1	1	0	1	5	5	2	2	0	1	0	0	1	1	0	0	0	0

Table 2.9: Summary of SS Compliance Status at IM and SR Stations (Mid-Flood Tide)

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
03/01/2017																			
12/01/2017																			
17/01/2017																			
19/01/2017																			
24/01/2017																			
02/02/2017																			

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
11/02/2017																			
14/02/2017																			
16/02/2017																			
21/02/2017																			
02/03/2017																			
11/03/2017																			
15/03/2017																			
28/03/2017																			
No. of SS Exceedances	1	4	3	2	1	2	0	0	0	2	1	1	0	0	1	1	7	0	0

Note: The monitoring dates that are not presented in the above tables were in full compliance with their corresponding Action and Limit Levels. Detailed results are presented in **Appendix D**.

Legend:

- No exceedance of Action Level and Limit Level
- Exceedance of Action Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
- Exceedance of Action Level recorded at monitoring station located upstream of the Project based on dominant tidal flow
- Exceedance of Limit Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
- Exceedance of Limit Level recorded at monitoring station located upstream of the Project based on dominant tidal flow
- Upstream station with respect to the Project during the respective tide based on dominant tidal flow

Investigations were conducted for each of the exceedances and details of the investigation findings are presented in the Construction Phase Monthly EM&A Report no. 13, 14, and 15. All exceedances were found to be not due to the Project.

IM Stations

Overall, it was observed that the SS exceedances during this reporting period occurred frequently at those IM stations which are located upstream of the 3RS Project. Such exceedances at upstream stations would unlikely be affected by the Project.

Separately, on most dates with exceedances at downstream IM stations, it was observed that exceedances occurred at both upstream and downstream stations on the same monitoring day. Such concurrent (upstream and downstream) exceedances observed at these IM stations on the same monitoring day suggest that there might be other sources of SS that were not related to the Project. Other SS exceedances at downstream IM stations appeared to be isolated cases with neither temporal nor spatial trend to indicate any effect due to Project activities. Taking into account the investigation findings, the details of which are reported in the Construction Phase Monthly EM&A Report no. 13, 14, and 15, the exceedances were considered to be not due to the Project.

SR Stations

Most of the SS exceedances occurred when the respective SR stations were located upstream of the Project. As these upstream stations were unlikely affected by the Project, the exceedances were considered to be not due to the Project.

For the SS exceedance at SR4A during mid-ebb tide, no temporal trend can be observed to indicate any effect due to Project activities. Besides, no similar exceedance at IM stations located between the Project and SR4A was observed in the same monitoring period. It is also noted that similarly high SS levels were observed at the SR station during baseline monitoring, which

suggests that such SS elevations are not uncommon under ambient condition due to natural fluctuation.

Findings for Nickel Exceedances

Table 2.10 and **Table 2.11** presents a summary of the nickel compliance status at IM stations during mid-flood tide for the reporting quarter.

Table 2.10: Summary of Nickel Compliance Status at IM Stations (Mid-Ebb Tide)

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12
21/01/2017												
No. of nickel Exceedances	0	0	0	0	1	0	0	0	0	0	0	0

Table 2.11: Summary of Nickel Compliance Status at IM Stations (Mid-Flood Tide)

Date	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12
07/01/2017												
21/03/2017												
No. of nickel Exceedances	0	0	0	0	0	0	0	2	0	0	0	0

Note: The monitoring dates that are not presented in the above table were in full compliance with their corresponding Action and Limit Levels. Detailed results are presented in **Appendix D**.

Legend:

- No exceedance of Action Level and Limit Level
- Exceedance of Action Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
- Exceedance of Action Level recorded at monitoring station located upstream of the Project based on dominant tidal flow
- Exceedance of Limit Level recorded at monitoring station located downstream of the Project based on dominant tidal flow
- Exceedance of Limit Level recorded at monitoring station located upstream of the Project based on dominant tidal flow
- Upstream station with respect to the Project during the respective tide based on dominant tidal flow

Investigations were conducted for each of the exceedances and details of the investigation findings are presented in the Construction Phase Monthly EM&A Report no. 13 and 15. All exceedances were found to be not due to the Project.

IM Stations

For the nickel exceedance at IM5 during mid-ebb tide, the exceedance occurred when IM5 was located upstream of the Project. As the upstream station was unlikely affected by the Project, the exceedance was considered to be not due to the Project.

For the nickel exceedances at IM8 during mid-flood tide, the exceedances appeared to be isolated cases with no observable temporal and spatial trend to indicate any effect due to Project activities. Furthermore, based on investigation findings, no exceedance was recorded at other downstream IM stations that were similarly close, if not closer to the active DCM works during the same monitoring period. Therefore, the exceedances were considered to be not due to the Project.

Conclusions

Based on the findings of the exceedance investigations presented in Construction Phase Monthly EM&A Report no. 13, 14 and 15, it was concluded that the exceedances during this reporting quarter were not due to the Project. Hence no SR stations were adversely affected by the Project. All required actions under the Event and Action Plan had been followed. Exceedances appeared to be due to natural fluctuation (such as naturally higher baseline SS levels at individual SR stations) or other sources not related to the Project.

Nevertheless, recognising that the IM stations represent a 'first line of defence', the non-project related exceedances identified at IM stations have been attended to as triggers of precautionary measures. As part of the EM&A programme, the construction methods and mitigation measures for water quality will continue to be monitored and opportunities for further enhancement will continue to be explored and implemented where possible, to strive for better protection of water quality and the marine environment.

In the meantime, the contractors were reminded to implement and maintain all mitigation measures during weekly site inspection. These include maintaining the silt curtain for sand blanket laying properly and maintaining the levels of materials on barges to avoid overflow as recommended in the Manual.

2.4 Waste Monitoring

In accordance with the Manual, the waste generated from construction activities was audited once per week to determine if wastes were being managed in accordance with the Waste Management Plan (WMP) prepared for the Project, contract-specific WMP, and any statutory and contractual requirements. All aspects of waste management including waste generation, storage, transportation and disposal were assessed during the audits. The Action and Limit Levels of the construction waste are provided in **Table 2.12**.

Table 2.12: Action and Limit Levels for Construction Waste

Monitoring Stations	Action Level	Limit Level
Construction Area	When one valid documented complaint is received	Non-compliance of the WMP, contract-specific WMPs, any statutory and contractual requirements

Weekly waste monitoring of the Project construction works was carried out by the ET to check and monitor the implementation of proper waste management practices during the construction phase during the reporting period.

Recommendations were provided during monitoring, including provision and maintenance of spill kits, provision of chemical waste storage area for chemical waste, and proper storage of construction material. In addition, relevant contractors were reminded to provide recycling bins for the segregation of recyclables from general refuse. The contractors had taken actions to implement the recommended measures.

Based on the contractor's information, about 1578m^3 of excavated materials were produced from the HDD launching site and Sheung Sha Chau under P560(R) during the reporting period. The generated excavated materials were temporarily stored at storage and stockpiling area. The excavated material will be reused in the Project.

During the reporting period, around 88 tonnes of general refuse was disposed of to the West New Territories (WENT) Landfill by the advance works contract and DCM contracts. Around 927m^3 of Construction and Demolition (C&D) material generated from the DCM contracts was disposed of

as public fill in the reporting period. No chemical waste was disposed off-site during the reporting period.

No exceedance of the Action or Limit Levels was recorded in the reporting period.

2.5 CWD Monitoring

2.5.1 Summary of Monitoring Requirements

CWD monitoring was conducted by vessel line-transect survey at a frequency of two full survey per month, supplemented by land-based theodolite tracking and Passive Acoustic Monitoring (PAM). The frequency of the theodolite tracking during the construction phase was one day per month at both Sha Chau (SC) and Lung Kwu Chau (LKC) stations as stipulated in the Manual requirement. Additional theodolite tracking at SC station and LKC station (in total 2 tracking days and 3 tracking days per month at respective stations) were also conducted on a voluntary basis to collect supplementary information for the project. Monitoring was fully completed in the reporting period. The vessel survey transect lines were in line with those proposed in the Manual, which are consistent with the Agriculture, Fisheries and Conservation Department (AFCD) long-term monitoring programme. For the Northwest Lantau (NWL) area, in the previous reporting quarters the transect lines within the works area could largely followed the waypoints conducted for baseline monitoring. However, there was safety concern on the CWD survey vessel travelling within the 3RS works area in this reporting quarter. Therefore, the transect lines for the NWL area were reviewed in February 2017 to follow the waypoints set for construction phase monitoring as proposed in the Manual to avoid entering 3RS works area, with the total length being shorter than previous quarters. The locations of CWD monitoring by vessel survey transect conducted in January 2017 and February to March 2017 are shown in **Figure 2.3a** and **Figure 2.3b** respectively, whilst the land-based survey stations are described in **Table 2.13** and depicted in **Figure 2.4**. Location of Passive Acoustic Monitoring is shown in **Figure 2.10**.

Table 2.13: Land-based Survey Station Details

Stations	Location	Geographical Coordinates	Station Height (m)	Approximate Tracking Distance (km)
D	Sha Chau (SC)	22° 20' 43.5" N 113° 53' 24.66" E	45.66	2
E	Lung Kwu Chau (LKC)	22° 22' 44.83" N 113° 53' 0.2" E	70.40	3

The Action Level (AL) and Limit Level (LL) for CWD monitoring were formulated by an action response approach using the running quarterly dolphin encounter rates (STG and ANI) derived from baseline monitoring data, as presented in the CWD Baseline Monitoring Report. The derived values of AL and LL for CWD monitoring are shown in **Table 2.14**.

Table 2.14: Derived Values of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

	NEL, NWL, AW, WL and SWL as a Whole
Action Level	Running quarterly STG < 1.86 & ANI < 9.35
Limit Level	Two consecutive running quarterly (3-month) STG < 1.86 & ANI < 9.35

2.5.2 Summary of Monitoring Results

Vessel Line-transect Survey

Survey Effort

During the reporting period, six complete sets of vessel line-transect surveys were conducted from January to March 2017 to cover all transects in Northeast Lantau (NEL), NWL, Airport West (AW), West Lantau (WL) and Southwest Lantau (SWL) survey area twice per month.

A total of around 1,375 km of survey effort was collected from these surveys, with around 83.3% of the total survey effort being conducted under favourable weather condition (i.e. Beaufort Sea State 3 or below with favourable visibility). Details of the survey effort data were presented in **Appendix E**.

CWD Sighting

From January to March 2017, 54 groups of CWDs with 185 individuals were sighted. Amongst the sightings of CWDs, 46 groups with 170 individuals were made during on-effort search under favourable weather condition.

When breaking down the sightings by survey areas, 5 sightings with 16 individuals, 2 sightings with 5 individuals, 33 sightings with 126 individuals and 14 sightings with 38 individuals were recorded in NWL, AW, WL and SWL respectively during the current reporting quarter. No CWD was sighted in NEL survey area. Compared to both last quarter (i.e. October to December 2016) and the same quarter in year 2016 (i.e. January to March 2016), there was a drastic decline of CWD records in NWL, meanwhile a very significant increase in WL. **Table 2.15** below shows the comparison of the numbers of sightings and individuals between the current reporting quarter, last quarter and the same quarter of year 2016.

Table 2.15: Summary of Number of CWD Sightings and Number of CWD Individuals for Previous Quarters and Current Reporting Quarter.

	Jan to Mar 2016	Oct to Dec 2016	Jan to Mar 2017
NEL	0 (0)	0 (0)	0 (0)
NWL	12 (47)	18 (59)	5 (16)
AW	3 (14)	0 (0)	2 (5)
WL	7 (29)	25 (63)	33 (126)
SWL	11 (50)	16 (34)	14 (38)
Total	33 (140)	59 (156)	54 (185)

Note: Values in ( ) represent number of CWD individuals

Distribution of CWD sightings recorded from January to March 2017 during on-effort search under favourable weather condition are illustrated in **Figure 2.5**. CWD sightings were more frequent in WL than in NWL and SWL. In NWL, sightings were mainly recorded around Lung Kwu Chau particularly the western side. Two sightings were recorded in AW survey area with one of them located close to the boundary of 3RS temporary works area. In WL survey area, CWD sightings were quite evenly distributed in both coastal and off-shore waters from the waters north to the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road alignment to Fan Lau, with relatively more sightings recorded between Tai O and Yi O. In SWL waters, CWDs sighting locations ranged from Fan Lau to Cheung Sha with several sightings scattered around Soko Islands. Details of the sighting data were presented in **Appendix E**.

Figure 2.5: Sightings Distribution of Chinese White Dolphins

[Pink circle: Sighting locations of CWD, White line: Vessel survey transects, Blue polygon: Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP), Green polygon: Brothers Marine Park (BMP), Red polygon: 3RS land-formation footprint, Yellow line: 3RS temporary works area boundary]

Encounter Rate

The dolphin encounter rates for the number of dolphin sightings per 100 km survey effort (STG) and for the total number of dolphins per 100 km survey effort (ANI) in the whole survey area (i.e. NEL, NWL, AW, WL and SWL) for January, February and March 2017 are summarized in **Table** 2.16.

In this reporting quarter, both the monthly and running quarterly encounter rates STG and ANI increase from January to February 2017 followed by a decline in March 2017. Comparing with the previous reporting quarter, the running quarterly STG remains at 4.02 while the running quarterly ANI increases from 10.95 to 14.85.

Table 2.16: Summary of Monthly and Running Quarterly STG and ANI of Chinese White Dolphin for Previous and Current Reporting Quarters

	Previous Reporting Quarter			Current Reporting Quarter		
	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17
Monthly STG	4.65	2.54	4.89	4.41	6.08	1.99
Monthly ANI	9.81	7.11	15.96	15.78	21.12	8.97
Running Quarterly STG	3.84	3.55	4.02	3.96	5.04	4.02
Running Quarterly ANI	13.02	10.74	10.95	13.02	17.31	14.85

Notes: For detailed calculations of encounter rates STG and ANI, please refer to the Monthly EM&A Reports No. 13, No. 14 and No. 15.

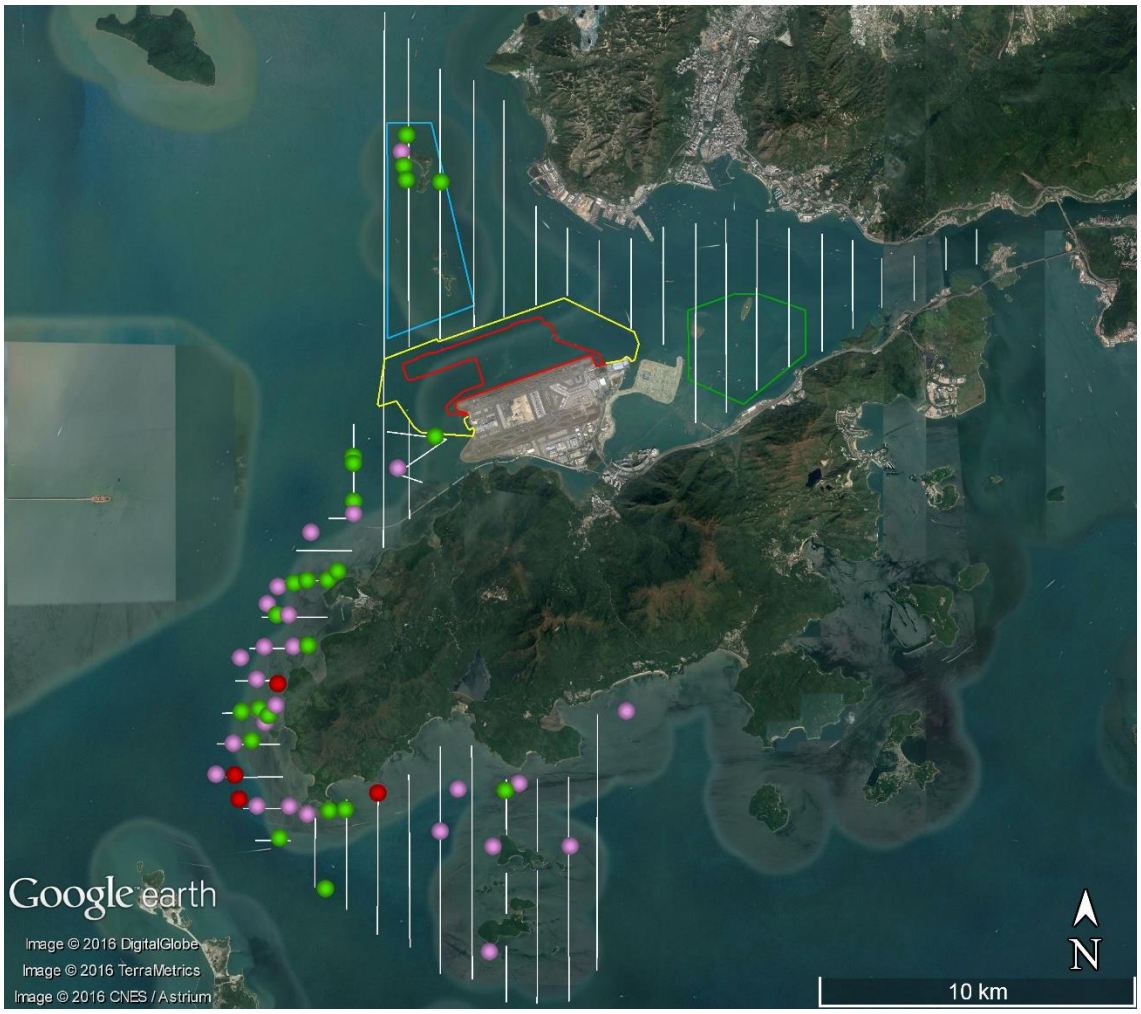
Group Size

Between January and March 2017, the group size of CWDs ranged from 1 to 14 individuals per group. The average group size of CWDs was 3.4 individuals per group while that of last quarter was 2.7. Half of the CWD sightings (i.e. 27 groups) were in small group size (i.e. 1-2 individuals). There were four CWD sightings with large group size (i.e. 10 or above individuals) in this reporting quarter.

In NWL (including AW), CWD sightings with medium group size (i.e. 3-9 individuals) dominated in this reporting quarter. While in WL, CWD groups with small group size were dominant. In SWL, more small-sized CWD groups were recorded. Sighting locations of CWD groups with different group sizes were depicted in **Figure 2.6**.

Figure 2.6: Sighting Locations of Chinese White Dolphins with Different Group Sizes

[Pink circle: Sighting locations of CWD with group size from 1 to 2 individuals, Green circle: Sighting locations of CWD with group size from 3 to 9 individuals, Red circle: Sighting locations of CWD with group size of 10 or above, White line: Vessel survey transects, Blue polygon: Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP), Green polygon: Brothers Marine Park (BMP), Red polygon: 3RS land-formation footprint, Yellow line: 3RS temporary works area boundary]

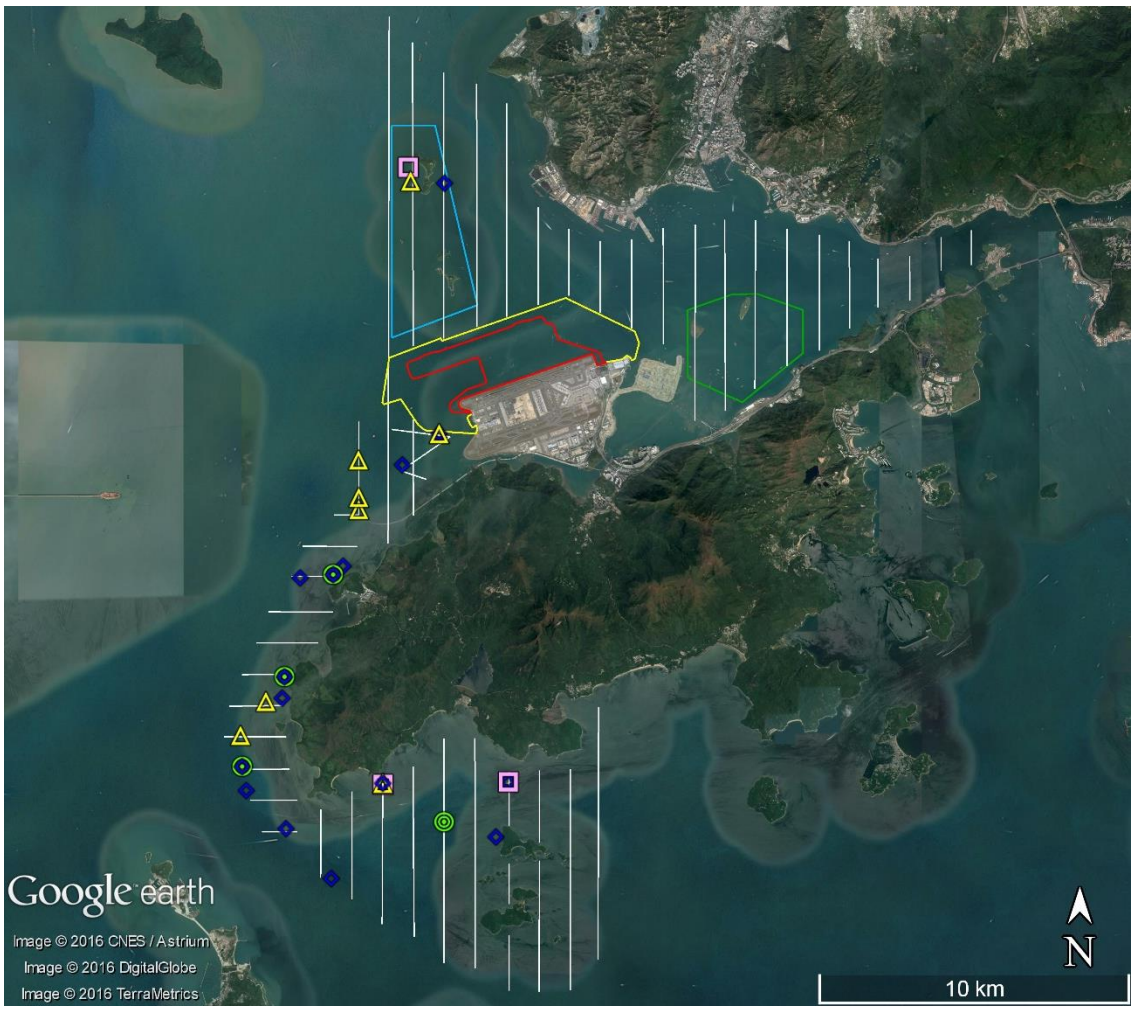


Activities and Association with Fishing Boats

During January to March 2017, 15 groups of CWDs were sighted with feeding activities. Amongst these 15 groups of feeding CWDs, 10 groups were observed in association with operating pair fishing boats including gillnetters, purse seiners and pair trawlers in AW, WL and SWL survey areas. The sighting locations of CWDs engaged in different behaviours during the reporting quarter were illustrated in **Figure 2.7**.

Figure 2.7: Sighting Locations of Chinese White Dolphins Engaged in Different Behaviours

[Indigo rhombus: Foraging, Green circle: Socializing, Pink square: Milling/Resting, Yellow triangle: Travelling, White line: Vessel survey transects, Blue polygon: Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP), Green polygon: Brothers Marine Park (BMP), Red polygon: 3RS land-formation footprint, Yellow line: 3RS temporary works area boundary]



Mother-calf Pairs

From January to March 2017, seven sightings of mother-and-unspotted juvenile pairs were recorded. Amongst these seven sightings, a mother-and-unspotted juvenile pair (WLMM071 and WLMM060) were recorded twice, in AW and WL survey areas. The sighting locations of mother-and-unspotted juvenile pairs were shown in **Figure 2.8**.

Figure 2.8: Sighting Locations of Mother-calf Pairs

[Pink circle: Sighting locations of mother-calf pairs, White line: Vessel survey transects, Blue polygon: Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP), Green polygon: Brothers Marine Park (BMP), Red polygon: 3RS land-formation footprint, Yellow line: 3RS temporary works area boundary]

Note: Only on-effort sightings under Beaufort 3 or below were presented in the figure.

Photo Identification

During January to March 2017, a total number of 48 different CWD individuals sighted altogether 83 times were identified. Re-sighting information of CWD individuals provides an initial idea of their range use and apparent connection between different areas around Lantau. Amongst these 48 different CWD individuals, 22 animals (i.e. NLMM004, NLMM015, NLMM017, NLMM037, SLMM010, SLMM011, SLMM014, SLMM015, SLMM018, SLMM021, SLMM031, SLMM036, SLMM037, SLMM049, SLMM052, WLMM001, WLMM007, WLMM008, WLMM043, WLMM060, WLMM068 and WLMM071) were sighted more than once. Nine individuals including SLMM010, SLMM011, SLMM014, SLMM021, SLMM031, SLMM037, WLMM007, WLMM060 and WLMM071 were re-sighted in different survey areas within this reporting quarter. The number of CWD individuals re-sighted more than once and the number of CWD individuals re-sighted in different survey areas during the current reporting quarter were both higher than those of last quarter (i.e. October to December 2016).

A summary of photo identification works is presented in **Table 2.17**. Representative photos of the 48 identified individuals and figures depicting the sighting locations of the aforementioned 22 re-sighted individuals recorded in this reporting quarter are presented **Appendix E**.

Table 2.17: Summary of Photo Identification

Individual ID	Date of sighting	Sighting Group No.	Area
NLMM004	12/01/2017	1	NWL
	23/03/2017	1	NWL
		2	NWL
NLMM015	05/01/2017	1	WL
	21/03/2017	2	WL
NLMM016	05/01/2017	1	WL
NLMM017	12/01/2017	1	NWL
	23/03/2017	1	NWL
		2	NWL
NLMM019	21/03/2017	2	WL
NLMM020	21/03/2017	2	WL
NLMM037	12/01/2017	1	NWL
	23/03/2017	1	NWL
		2	NWL
SLMM002	05/01/2017	7	WL
SLMM007	05/01/2017	7	WL
	06/02/2017	3	WL
SLMM010	05/01/2017	5	WL
	19/01/2017	6	SWL
	16/02/2017	10	WL
SLMM011	17/02/2017	2	SWL
	21/03/2017	2	WL
		3	WL
SLMM014	05/01/2017	7	WL
	16/02/2017	10	WL
	20/03/2017	1	SWL
		3	SWL
SLMM015	21/03/2017	2	WL
		3	WL
SLMM018	17/02/2017	2	SWL
		3	SWL
SLMM021	19/01/2017	6	SWL
	21/03/2017	2	WL
		3	WL
SLMM022	16/02/2017	10	WL
SLMM025	16/02/2017	11	WL
SLMM028	21/03/2017	1	WL
SLMM030	21/03/2017	1	WL
SLMM031	17/02/2017	2	SWL
		3	SWL
	21/03/2017	2	WL

Individual ID	Date of sighting	Sighting Group No.	Area
SLMM036	05/01/2017	1	WL
	16/02/2017	10	WL
	21/03/2017	2	WL
SLMM037	19/01/2017	6	SWL
	21/03/2017	2	WL
SLMM047	16/02/2017	10	WL
SLMM049	16/02/2017	3	WL
		10	WL
SLMM052	05/01/2017	7	WL
	16/02/2017	10	WL
WLMM001	05/01/2017	6	WL
	19/01/2017	8	WL
WLMM003	16/02/2017	10	WL
WLMM007	13/01/2017	1	SWL
		2	SWL
	16/02/2017	10	WL
WLMM008	21/03/2017	2	WL
		3	WL
WLMM011	21/03/2017	1	WL
WLMM017	16/02/2017	10	WL
WLMM021	06/01/2017	1	SWL
WLMM025	16/02/2017	10	WL
WLMM043	16/02/2017	4	WL
	21/03/2017	1	WL
WLMM056	16/02/2017	10	WL
WLMM060	19/01/2017	3	WL
	16/02/2017	1	AW
WLMM063	19/01/2017	3	WL
WLMM064	05/01/2017	1	WL
WLMM065	05/01/2017	1	WL
WLMM066	05/01/2017	1	WL
WLMM067	05/01/2017	2	WL
WLMM068	05/01/2017	2	WL
	19/01/2017	3	WL
WLMM069	13/01/2017	2	SWL
WLMM070	13/01/2017	2	SWL
WLMM071	19/01/2017	3	WL
	06/02/2017	1	WL
	16/02/2017	1	AW
WLMM072	19/01/2017	3	WL
WLMM073	16/02/2017	10	WL
WLMM074	21/03/2017	3	WL

Land-based Theodolite Tracking

Survey Effort

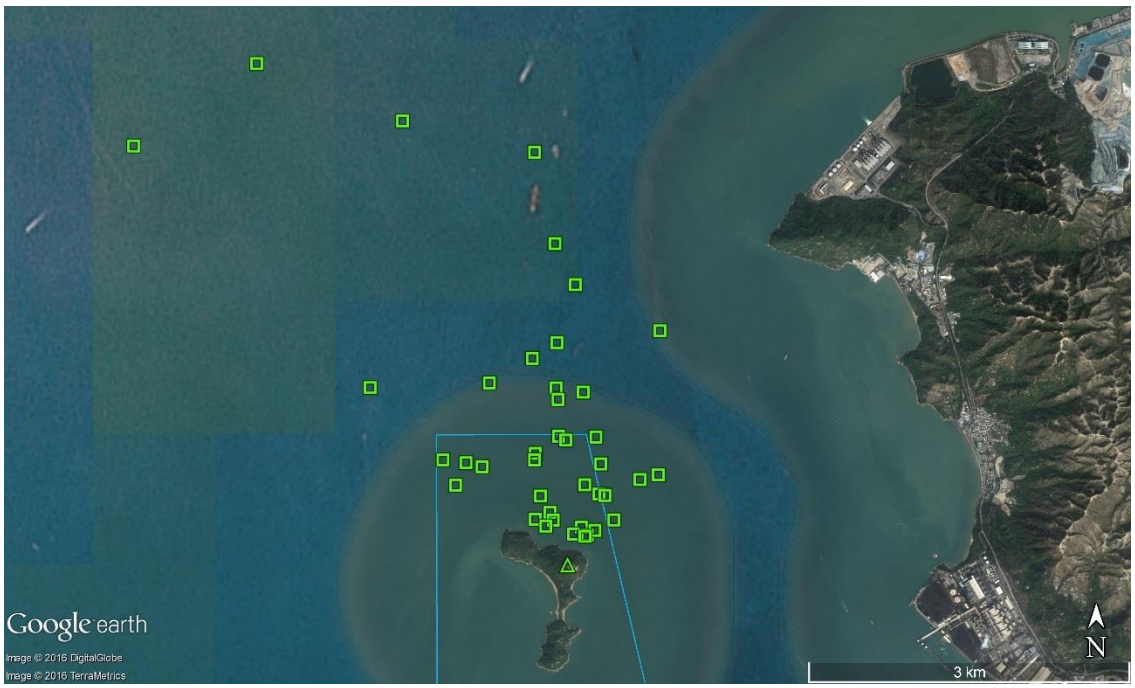
During January to March 2017, a total number of 15 days of land-based theodolite tracking survey effort was completed, including nine days on Lung Kwu Chau and six days on Sha Chau. In total, 40 CWD groups were tracked during the surveys at Lung Kwu Chau station, with overall about 0.4 group of CWD sighted per hour. No CWDs were sighted at Sha Chau station during the current reporting period.

Information on survey effort and CWD groups sighted during these land-based theodolite tracking surveys are presented in **Table 2.18**. Details on the survey effort and CWD groups tracked are presented in **Appendix E**. The first sighting locations of CWD groups tracked during land-based theodolite tracking surveys between January and March 2017 are shown in **Figure 2.9**.

Table 2.18: Summary of Survey Effort and CWD Group of Land-based Theodolite Tracking

Land-based Station	# of Survey Sessions	Survey Effort (hh:mm)	# CWD Groups Sighted	CWD Group Sighting per Survey Hour
January 2017				
Lung Kwu Chau	3	18:00	10	0.56
Sha Chau	2	12:00	0	0
TOTAL	**5**	**30:00**	**10**	**0.33**
February 2017				
Lung Kwu Chau	3	18:15	24	1.32
Sha Chau	2	12:00	0	0
TOTAL	**5**	**30:15**	**24**	**0.79**
March 2017				
Lung Kwu Chau	3	18:00	6	0.33
Sha Chau	2	12:00	0	0
TOTAL	**5**	**30:00**	**6**	**0.20**
OVERALL	**15**	**90:15**	**40**	**0.4**

Figure 2.9: Plots of First Sightings of All CWD Groups from Land-based Stations
[Green triangle: LKC station; Green square: CWD group off LKC; Blue line: SCLKCMP boundary]



Progress Update on Passive Acoustic Monitoring (PAM)

An Ecological Acoustic Recorder (EAR) has been deployed and positioned to the south of Sha Chau Island with 20% duty cycle (**Figure 2.10**) with data from the EAR intended primarily to supplement the data collected from the land-based theodolite station on Sha Chau. The EAR deployment generally lasts around 4-6 weeks followed by a period of data retrieval for subsequent analysis. As the data analysis takes more than two months after retrieval, PAM results are not suitable for reporting in quarterly reports. Detailed analysis of PAM data will be presented in the annual CWD report to coincide and supplement the data collected from the land-based theodolite survey station at Sha Chau.

Site Audit for CWD-related Mitigation Measures

During this reporting quarter, silt curtains were in place by the contractors for sand blanket laying works, in which at least two dolphin observers were deployed by each contractor in accordance with the MMWP. Teams of at least two dolphin observers were deployed by the contractors for continuous monitoring of the DEZ for DCM works in accordance with the DEZ Plan. Trainings for the proposed dolphin observers on the implementation of MMWP and DEZ monitoring were provided by the ET prior to the aforementioned works, with a cumulative total of 252 individuals being trained and the training records kept by the ET. From the contractors' MMWP observation records and DEZ monitoring records, no dolphin or other marine mammals were observed within or around the silt curtains, whilst there was one record of dolphin sighting within the DEZ of DCM works in this reporting quarter. According to contractors' site records, DCM works were suspended in this dolphin sighting event until the DEZ was clear of dolphin for a continuous period of 30 minutes. These contractors' records were also audited by the ET during site inspection.

Audits of acoustic decoupling for construction vessels were carried out during weekly site inspection and summarised in **Section 2.6**. Summary of audits of SkyPier High Speed Ferries

route diversion and speed control and construction vessel management are presented in **Section 2.8** and **Section 2.9** respectively.

2.6 Weekly Environmental Site Inspection

Site inspections of the construction works were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. Bi-weekly site inspections were also conducted by the IEC. Observations have been recorded in the site inspection checklist and passed to the contractor together with the appropriate recommended mitigation measures where necessary.

The key observations from site inspection and associated recommendations were related to:

- proper storage of construction materials;
- improvement of spill preventive and dust suppression measures;
- implementation of preventive measures for runoff and dark smoke emission
- provision of drip trays;
- removal of oil stains at construction sites; and
- separation of recyclables from general refuse.

In addition, recommendations were provided during site inspection on construction vessels, which include:

- display of relevant licenses on barges;
- display of Non-Road Mobile Machinery (NRMM) labels for relevant mechanical equipment;
- provision and maintenance of storage area for inert and non-inert waste, and storage area for chemical waste;
- provision and maintenance of proper spill kits;
- provision of recycling bins for recyclables and suitable enclosed containers for general refuse collection;
- provision of proper acoustic decoupling for noisy equipment;
- proper implementation of wastewater treatment, dust suppression measures, spill and runoff preventive measures, and dark smoke preventive measures;
- proper implementation of DEZ monitoring; and
- installation and proper maintenance of silt curtains.

The daily visual inspection checklists for silt curtains and bi-weekly diver inspection records which were implemented by the contractors in accordance with the Silt Curtain Deployment Plan had been checked during site inspection and reviewed at the end of the reporting period, summarizing that the silt curtains were maintained in the correct positions and intact without obvious defects or damage.

A summary of implementation status of the environmental mitigation measures for the construction phase of the Project during the reporting period is provided in **Appendix C**.

2.7 Ecological Monitoring

In accordance with the Manual, ecological monitoring shall be undertaken monthly at the HDD daylighting location on Sheung Sha Chau Island to identify and evaluate any impacts with appropriate actions taken as required to address and minimise any adverse impact found.

Monthly ecological monitoring was carried out in January, February, and March 2017 on Sheung Sha Chau Island. No encroachment of any works upon the egretry area nor any significant disturbance to the egrets on the island by the works was recorded during ecological monitoring. Sign of early breeding activities by Black-crowned Night Heron and Little Egret were observed in March 2017 on trees located at the previously identified egretry area where it is at the southern side of Sheung Sha Chau Island. At the HDD daylighting location, neither nest nor breeding activity of bird were found during the monthly ecological monitoring and weekly site inspections in the reporting quarter. The site photos and location map regarding the ecological monitoring for the HDD works and egretry area are provided in **Appendix G** for reference. All works on Sheung Sha Chau had been retreated on 31 March 2017. No works will be conducted on Sheung Sha Chau Island during the ardeid's breeding season.

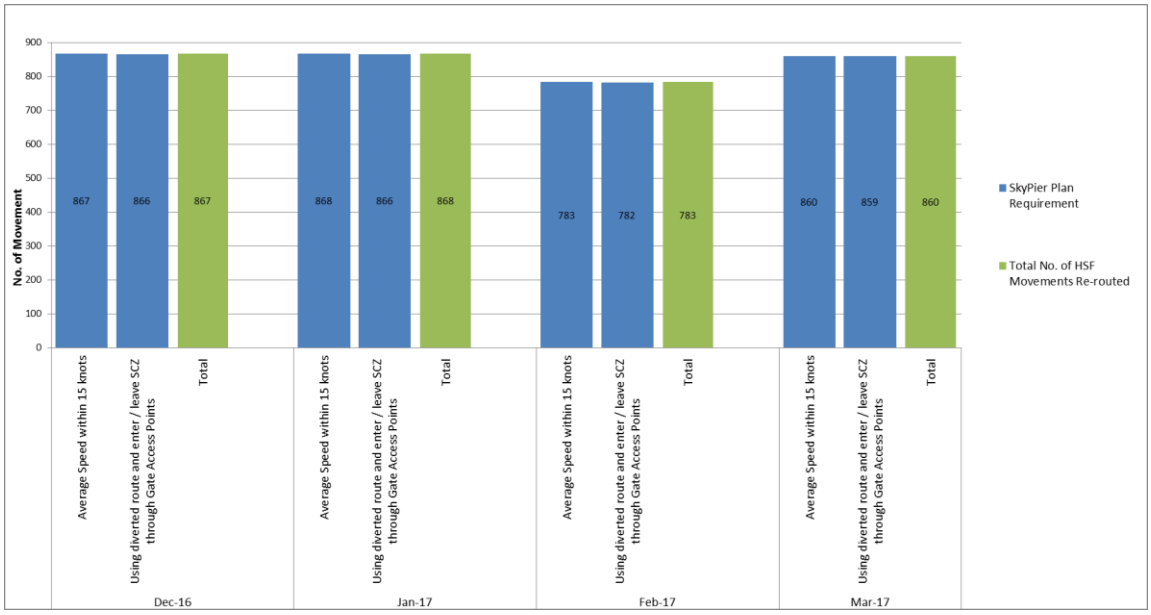
2.8 Audit of the SkyPier Plan

In total, 2,511 ferry movements between HKIA SkyPier and Zhuhai / Macau were audited in the reporting period. The daily movements of all SkyPier HSFs in the reporting period ranged between 83 and 94, which falls within the maximum daily cap number of 125.

All the HSFs had travelled through the SCZ with average speeds within 15 knots (6.1 knots to 14.3 knots), which complied with the SkyPier Plan. Four ferry movements had deviations from the diverted route during the reporting period. Notices were sent to the ferry operators and the cases have been investigated. All the four cases were due to public safety considerations, i.e., giving way to other vessels, and the HSFs had returned to the normal route following the SkyPier Plan as soon as practicable. The summary of the SkyPier Plan monitoring result (December 2016 to March 2017) is presented in **Graph 3**.

Insufficient Automatic Identification System (AIS) data were received from some HSFs during the reporting period. After investigation, it was found that missing of AIS data for the concerned ferries were due to interference effect of AIS signal as reported by the FO after checking the condition of the AIS transponders. Vessel captains were requested to provide the radar track photos which indicated the vessel entered the SCZ though the gate access points and no speeding in the SCZ. Ferry operator's explanation has been accepted.

Graph 3: Summary of SkyPier Plan Monitoring Results (December 2016 to March 2017)



2.9 Audit of Construction and Associated Vessels

The audit of construction and associated vessels in accordance with the MTRMP-CAV has been started in August 2016. ET has conducted weekly audit of relevant information including AIS data, vessel tracks and other relevant records to ensure sufficient information has been provided by the contractors to the Marine Traffic Control Center (MTCC) and the contractors are complied with the requirements of the MTRMP-CAV. The contactors have submitted endorsed 3-month rolling programme for construction vessel activities to MTCC in order to help maintain the number of construction vessels to a practicable minimum. The IEC has also performed audit on the compliance of the requirements as part of the EM&A programme.

Between January and March 2017, deviations including speeding in the works area, entry from non-designated gates, not following the designated route and entering no-entry zones were identified. All the concerned contractors were reminded to comply with the requirements of the MTRMP-CAV during the weekly MTCC audit and such deviations were also reviewed during the Environmental Management Meeting.

The upgraded Maritime Surveillance System (MSS) was launched in March 2017. The MSS automatically recorded deviation cases such as speeding, entering no entry zone, not traveling through the designated gate. ET conducted cross checking with construction and associated vessel records provided by the contractors to ensure the MSS records all deviation cases accurately.

A total of 13 skipper training workshops have been held by ET between January and March 2017 with 168 concerned captains of construction vessels associated with the 3RS Contracts to familiarise them with the predefined routes, general education on local cetaceans, guidelines for avoiding adverse water quality impact, the required environmental practices / measures while operating construction and associated vessels under the Project, and guidelines for operating vessels safely in the presence of CWDs. Another 8 skipper training workshops have been held with 14 concerned captains by contractor's EO and competency test had been conducted subsequently with the trained captains by ET.

2.10 Coral Post-Translocation Monitoring

According to the approved Coral Translocation Plan (CTP), translocation of 384 gorgonian coral colonies from the donor site along the existing northern seawall of the airport island to the recipient site at Yam Tsai Wan was completed in January 2017. 370 and 14 suitable coral colonies were identified and translocated from the north-eastern airport island and during the additional search along the northern seawall respectively. Coral colonies attached on boulders of less than 50cm diameter were considered as suitable for translocation.

Location of Donor Site

The baseline coral dive survey in the CTP identified some coral colonies along the north-eastern side of the artificial seawall on the airport island (i.e. in the vicinity of D6, D7 and D8 in the baseline dive survey) as being suitable for translocation. While the survey locations D6, D7 and D8 followed the same locations as in EIA study, the seawall / rocky shore at the north-eastern tip of the airport island were also re-checked for suitable corals. As coral colonies on small boulder were found in this area, the area around D6, D7 and D8 was identified as donor site.

Additional Search for Suitable Corals Along Northern Seawall

In addition to the donor site along the north-eastern seawall of the airport island, the seawall on the northern side of the airport island was also searched for additional suitable coral colonies so as to translocate as many coral colonies as possible. The additional search area for corals suitable for translocation is shown in **Appendix F**. Fourteen additional coral colonies suitable for translocation were found around the boat launch area and the adjacent outfall in the mid-point of the northern seawall. These coral colonies were translocated immediately after they were located. The location of recipient site is shown in **Appendix F**.

Coral Tagging

According to the CTP, 10% of the translocated coral colonies and indigenous colonies as control corals would be tagged for post-translocation monitoring. To enable comprehensive monitoring of the post-translocated coral species, the sampling size was increased and additional tagging of translocated and control corals was carried out. Therefore, a total of 85 translocated corals and 20 control corals were selected and tagged for subsequent monitoring. The 85 tagged coral colonies constituted over 20% of the total number of translocated coral colonies. The control coral selection criteria were based upon the selected corals having similar size, partial mortality, and health condition to the translocated corals. The tagging work and surveys were carried out in December 2016 and January 2017.

Post-translocation Monitoring

The typical monitoring programme suggested in the CTP was reviewed and it was proposed to enhance the programme by extending the post-translocation monitoring period to 8 rounds of monitoring over 27 months.

In this reporting quarter, three rounds of post-translocation monitoring surveys were conducted:

- First round of survey – completed on 20 and 21 January 2017 (about 15 days after completion of translocation)
- Second round of survey – completed on 4 and 5 February 2017 (about 30 days after completion of translocation)
- Third round of survey – completed on 3 and 4 March 2017 (about two months after completion of translocation)

The results of the above three rounds of post-translocation monitoring are summarized in **Table 2.19**. As can be seen from the table, there were no exceedances of the Action or Limit levels as defined in the approved CTP during the three rounds of monitoring.

Table 2.19: Summary of the Post-Translocation Monitoring Surveys Completed in this Reporting Quarter

	Colony Height (cm)	General Health Conditions[(a)]	% Change in Partial Mortality[(b)]	Exceedance of Action Level[(c)]	Exceedance of Limit Level[(d)]
First Round of Survey					
Control gorgonian corals (tagged)	7-59	3-5	⩽5% change for 10% of the tagged corals	No	No
Translocated gorgonian corals (tagged)	5-44	3-5	⩽10% change for 18.8% of the tagged corals	No	No
Second Round of Survey					
Control gorgonian corals (tagged)	7-59	3-5	⩽5% change for 10% of the tagged corals	No	No
Translocated gorgonian corals (tagged)	5-44	3-5	⩽10% change for 18.8% of the tagged corals	No	No
Third Round of Survey					
Control gorgonian corals (tagged)	7-59	4-5	⩽15% change for 95% of the tagged corals and >15% change for 5% of the tagged corals	No	No
Translocated gorgonian corals (tagged)	5-44	2-4	⩽15% change for 91.8% of the tagged corals; and >15% change for 4.7% of the tagged corals	No	No

Notes:
(a) General health conditions of coral were measured on an ordinal scale of 0 to 5 (0=dead, 5=very healthy).
(b) The percentage change in partial mortality of the tagged translocated and control corals are both determined by comparing the partial mortality recorded during each post-translocation monitoring with reference to the partial mortality observed during the baseline conditions, as represented by the tagged coral survey results.
(c) As defined in the approved CTP, the Action Level is exceeded if during monitoring a 15% increase in the percentage of partial mortality occurs at more than 20% of the translocated coral colonies that is not recorded on the original (control) corals at the recipient site.
(d) As defined in the approved CTP, the Limit Level is exceeded if during monitoring a 25% increase in the percentage of partial mortality occurs at more than 20% of the translocated coral colonies that is not recorded on the original (control) corals at the recipient site.
(e) No sediment was detected on all colonies during all three rounds of survey.
(f) The remaining tagged corals were normal without mortality.

2.11 Review of the Key Assumptions Adopted in the EIA Report

With reference to Appendix E of the Manual, it is noted that the key assumptions adopted in approved EIA report for the construction phase are still valid and no major changes are involved. The environmental mitigation measures recommended in the approved EIA Report remain applicable and shall be implemented in undertaking construction works for the Project.

3 Report on Non-compliance, Complaints, Notifications of Summons and Prosecutions

3.1 Compliance with Other Statutory Environmental Requirements

During the reporting period, environmental related licenses and permits required for the construction activities were checked. No non-compliance with environmental statutory requirements was recorded.

3.2 Analysis and Interpretation of Complaints, Notification of Summons and Status of Prosecutions

3.2.1 Complaints

An environmental complaint was received on 29 December 2016 regarding night time work at Sheung Sha Chau. An investigation was conducted by the ET in accordance with the Manual and the Complaint Management Plan (CMP) of the Project at the time of preparation of previous quarterly EM&A Report (for October – December 2016). The complaint investigation was completed in January 2017 and reported in the monthly EM&A Report for January 2017. The contractor of Contract P560(R) Aviation Fuel Pipeline Diversion Works reported that emergency rescue works had to be carried out in view of the unexpected ground condition at Sheung Sha Chau. Such emergency rescue works were considered as crucial and vital in order to avoid building up of excessive drilling fluid pressure, which might lead to an uncontrollable spillage outside the contaminant pit, causing significant environmental impact at Sheung Sha Chau. Subsequent to the emergency rescues, the contractor has already taken immediate actions to improve the drilling fluid system as well as strengthen the control and communication measures with all relevant parties. ET will continue to closely monitor the implementation and effectiveness of the remedial measures in preventing reoccurrence of similar events.

Another environmental complaint was received on 19 January 2017 regarding night time work and construction wastewater at Sheung Sha Chau on 12 January 2017. An investigation was conducted by the ET in accordance with the Manual and the CMP of the Project. Based on the investigation results, it was found that there was a small amount (around 5 litres) of drilling fluid which overflown from the containment pit on Sheung Sha Chau on 12 January 2017 due to a malfunctioning level sensor. The contractor had immediately confined and removed the leakage, and replaced the sensor with enhanced detection function. ET will continue to closely monitor the implementation and effectiveness of the preventive measures. According to the site records provided by the contractor, no night time works were carried out at Sheung Sha Chau by the contractor on 12 January 2017. It is concluded that the alleged night-time work carried out at Sheung Sha Chau on 12 January 2017 is not justified.

3.2.2 Notifications of Summons or Status of Prosecution

During the reporting period, neither notifications of summons nor prosecution were received.

3.3 Cumulative Statistics

Cumulative statistics on exceedance, non-compliance, complaints, notifications of summons and status of prosecutions are summarized in **Table 3.1** and **Table 3.2**.

Table 3.1: Statistics for Valid Exceedances for the Environmental Monitoring

		Total No. Recorded in the Reporting Quarter	Total No. Recorded since the Project Commenced
1-hr TSP	Action	0	0
	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Waste	Action	0	0
	Limit	0	0
Water	Action	0	0
	Limit	0	0
CWD	Action	0	0
	Limit	0	0

Remark: Exceedances, which are not project related, are not shown in this table.

Table 3.2: Statistics for Non-compliance, Complaints, Notifications of Summons and Prosecution

Reporting Period	Cumulative Statistics			
	Non-compliance	Complaints	Notifications of Summons	Prosecutions
This reporting period	0	1	0	0
From 28 December 2015 to end of the reporting period	0	2	0	0

4 Conclusion and Recommendation

In this quarterly period from 1 January 2017 to 31 March 2017, the EM&A programme has been implemented as planned, including 99 sets of air quality measurements, 65 sets of construction noise measurements, 38 sets of water quality measurements, 6 complete sets of vessel line-transect surveys and 15 days of land-based theodolite tracking survey effort for CWD monitoring, three ecological monitoring on Sheung Sha Chau Island, as well as environmental site inspections and waste monitoring for the Project's construction works.

The key activities of the Project carried out in the reporting period included five DCM contracts, an advanced works contract, and a reclamation contract. The DCM contracts involved coring works, site office establishment, laying of geotextile and sand blanket, and DCM trials and works; the advanced works contract involved HDD works, pipeline supporting works, and stockpiling of excavated materials from HDD operation; and the reclamation contract involved site office establishment, and laying of geotextile and sand blanket.

For water quality, the monitoring results for DO, total alkalinity, and chromium obtained during the reporting period were in compliance with their corresponding Action and/or Limit Levels stipulated in the EM&A programme for triggering the relevant investigation anf follow-up procedures under the programme if being exceeded. For turbidity, SS and Nickel, some of the testing results exceeded the relevant Action and Limit Levels, and the corresponding investigations were conducted accordingly. The investigation findings concluded that all the exceedances were not due to the Project.

No breach of the Action or Limit Levels in relation to the construction dust, noise, waste and CWD monitoring were recorded during the reporting period. All site observations made by the ET were recorded in the site inspection checklists and passed to the contractor together with the recommended follow-up actions. No encroachment of any works upon the egretry area nor any significant disturbance to the egrets on the island by the works was recorded during monthly ecological monitoring.

In total, 2,511 ferry movements between HKIA SkyPier and Zhuhai / Macau were audited in the reporting period. All the HSFs had travelled through the SCZ with average speeds within 15 knots, which complied with the SkyPier Plan. Four ferry movements had minor deviations from the diverted route during the reporting period and all of them are related to public safety / emergency situations.

Between January and March 2017, ET has conducted weekly audit of relevant information to ensure the contractors are fully complied with the requirements of the MTRMP-CAV. A total of 13 skipper training workshops have been held by ET between January to March 2017 with concerned captains of construction vessels associated with 3RS contracts. Another 8 skipper training workshops have been held by contractors' EO and competency test had been conducted subsequently with the trained captains by ET. The upgraded MSS was launched in March 2017. The MSS automatically recorded deviation cases such as speeding, entering no entry zone, not traveling through the designated gate. ET conducted cross checking with construction and associated vessel records provided by the contractors to ensure the MSS records all deviation cases accurately.

On the implementation of MMWP, silt curtains were in place by the contractors for sand blanket laying works and dolphin observers were deployed in accordance with the plan. On the implementation of DEZ Plan, dolphin observers were deployed by the contractors for continuous

monitoring of the DEZ for DCM works in accordance with the DEZ Plan. Trainings for the proposed dolphin observers were provided by the ET prior to the aforementioned works, with the training records kept by the ET. From the contractors' MMWP observation records and DEZ monitoring records, no dolphin or other marine mammals were observed within or around the silt curtains, whilst there was one record of dolphin sighting within the DEZ of DCM works in this reporting quarter.

Translocation of 384 gorgonian coral colonies from the donor site along the existing northern seawall of the airport island to the recipient site at Yam Tsai Wan was completed in January 2017. A total of 85 translocated coral colonies and 20 indigenous colonies as control corals were selected and tagged for post-translocation monitoring. Upon completion of coral translocation, a summary of the ensuing post-translocation monitoring is reported quarterly.

The recommended environmental mitigation measures, as included in the EM&A programme, have been effectively implemented during the reporting period. Also, the EM&A programme implemented by the ET has effectively monitored the construction activities and ensure the proper implementation of mitigation measures.

Figures

824000 N
822000 N
820000 N
818000 N
804000 E
806000 E
808000 E
810000 E
812000 E
814000 E

Contract P560 (R)-
Daylighting Location

RECLAMATION WORKS AREA
(please refer to Figure 1.2)

Contract P560 (R)-
Launching Site

Contract 3201- 3206
and AAHK Site
Offices

Contract P560 (R)- Site Office

Contract P560 (R)- Stockpiling Area

LEGEND:

- LAND FORMATION
- TEMPORARY WORKS AREA BOUNDARY
- KEY CONSTRUCTION ACTIVITIES

0 250 500 750 1000 m
1 : 30 000 SCALE BAR

Rev.	Date	Description	Checked
A	31AUG15	FIRST ISSUE	DC

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Mott MacDonald

Title

LOCATIONS OF KEY CONSTRUCTION ACTIVITIES IN THIS REPORTING PERIOD

Consultant's Signatures for Approval		Date
Design	DC	31AUG15
Checkers	DC	31AUG15
Design Supervisor	EC	31AUG15
Authorised Representative	JFP	31AUG15

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No. FIGURE 1.1

Scale at A3 1 : 30000

Rev. A

Filename: J:\355482\REPORT\ENV\CWSLP\FIG 1.dgn

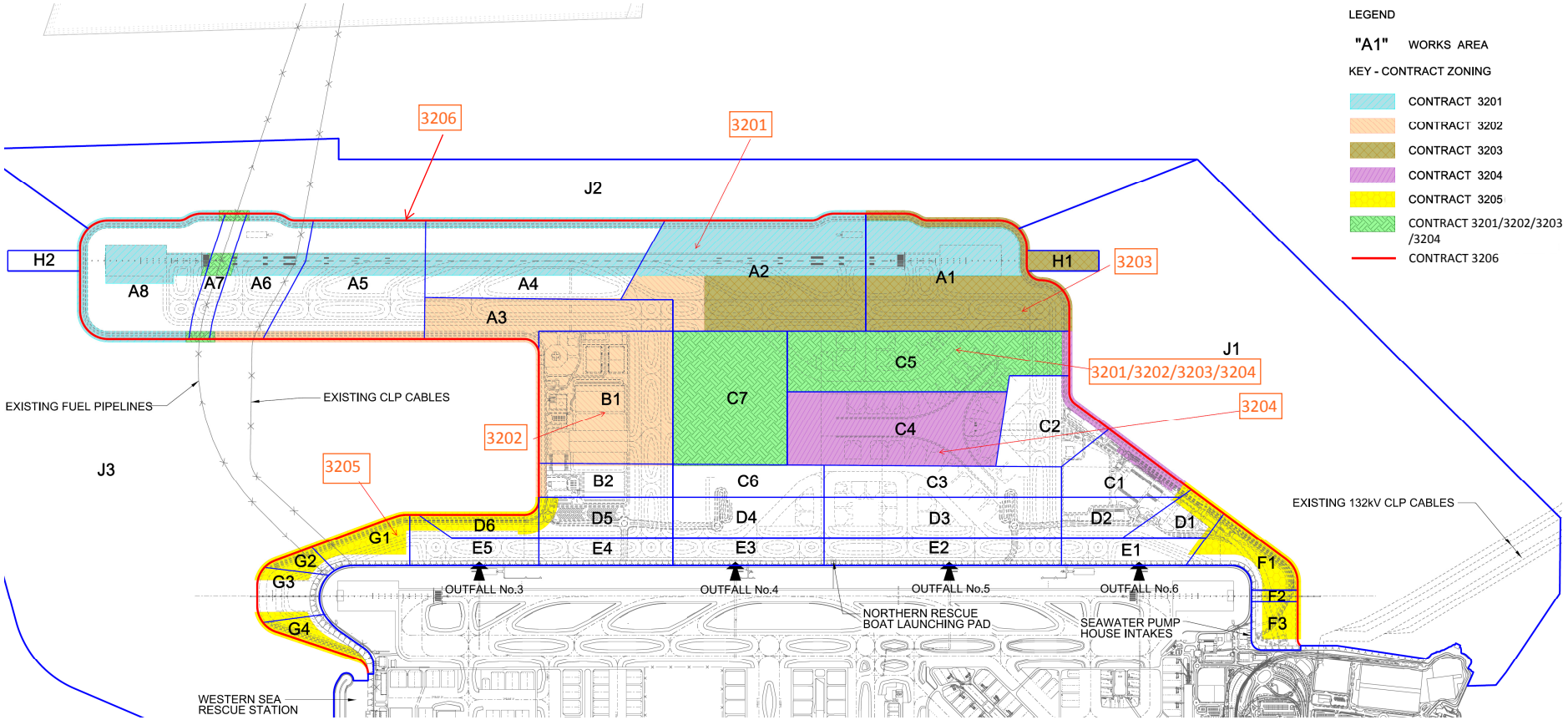

FIGURE 1.2- LOCATIONS OF RECLAMATION WORKS AREA

LEGEND:

- RECLAMATION AREA
- NOISE MONITORING STATION (UPDATED EM&A MANUAL)
- AIR QUALITY MONITORING STATION (UPDATED EM&A MANUAL)
- CHEK LAP KOK WIND STATION

806000 E
808000 E
810000 E
812000 E
814000 E
820000 N
818000 N

NM1A AR1A
NM2
NM3A
NM4
NM5 AR2
NM6

0 200 400 600 800 1000 m
1 : 22 500 SCALE BAR

Rev.	Date	Description	Checked
A	06JAN16	FIRST ISSUE	RO
B	29JAN16	GENERAL REVISION	RO
C	11FEB16	GENERAL REVISION	RO

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Title

LOCATIONS OF AIR AND NOISE MONITORING STATIONS AND CHEK LAP KOK WIND STATION

Consultant's Signatures for Approval		Date
Design	AM	11FEB16
Checkers	AM / TK	11FEB16
Approver	EC	11FEB16

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.

FIGURE 2.1

Scale at A3 1 : 22500

Rev. C

Filename: J:\355482\REPORT\ENV\EMA\160211\FIG 2.1.dgn

805000 E
810000 E
815000 E
820000 E
825000 N
820000 N
815000 N
HKSAR BOUNDARY
C2
C3
C1
SR2
SR3
SR4A
SR5A
SR6
SR7
SR8
IM1
IM2
IM3
IM4
IM5
IM6
IM7
IM8
IM9
IM10
IM11
IM12

LEGEND:

- LAND FORMATION FOOTPRINT
- 500m ENVELOPE
- IMPACT STATION
- SENSITIVE RECEIVER
- CONTROL STATION

0 500 1000 1500 2000 m
1 : 60 000 SCALE BAR

Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	DC
B	04MAY16	GENERAL REVISION	RO
C	06JUN16	GENERAL REVISION	LC

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Title

WATER QUALITY MONITORING STATIONS

Consultant's Signatures for Approval		Date
Design	DC	06JUN16
Checkers	DC / TK	06JUN16
Approver	EC	06JUN16

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.

FIGURE 2.2

Scale at A3 1 : 60000

Rev. C

Filename: J:\355482\REPORT\ENV\EMA\160606\MCL-P132-EMA-5-002.dgn

800000 E
805000 E
810000 E
815000 E
820000 E
825000 E
830000 E
835000 E
840000 E
845000 E
830000 N
825000 N
820000 N
815000 N
810000 N
805000 N

NORTHWEST LANTAU

NORTHEAST LANTAU

SOUTHWEST LANTAU

WEST LANTAU

LEGEND:
- HKSAR BOUNDARY
- PROPOSED LAND FORMATION FOOTPRINT
- DOLPHIN VESSEL SURVEY TRANSECT ROUTE
- DOLPHIN VESSEL SURVEY TRANSECT ROUTE

0 1 2 3 4 km
1 : 125 000 SCALE BAR

Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	JC

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Title

VESSEL BASED DOLPHIN MONITORING TRANSECTS IN BASELINE MONITORING

Consultant's Signatures for Approval		Date
Design	JC	02DEC15
Checkers	JC / TK	02DEC15
Approver	EC	02DEC15

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

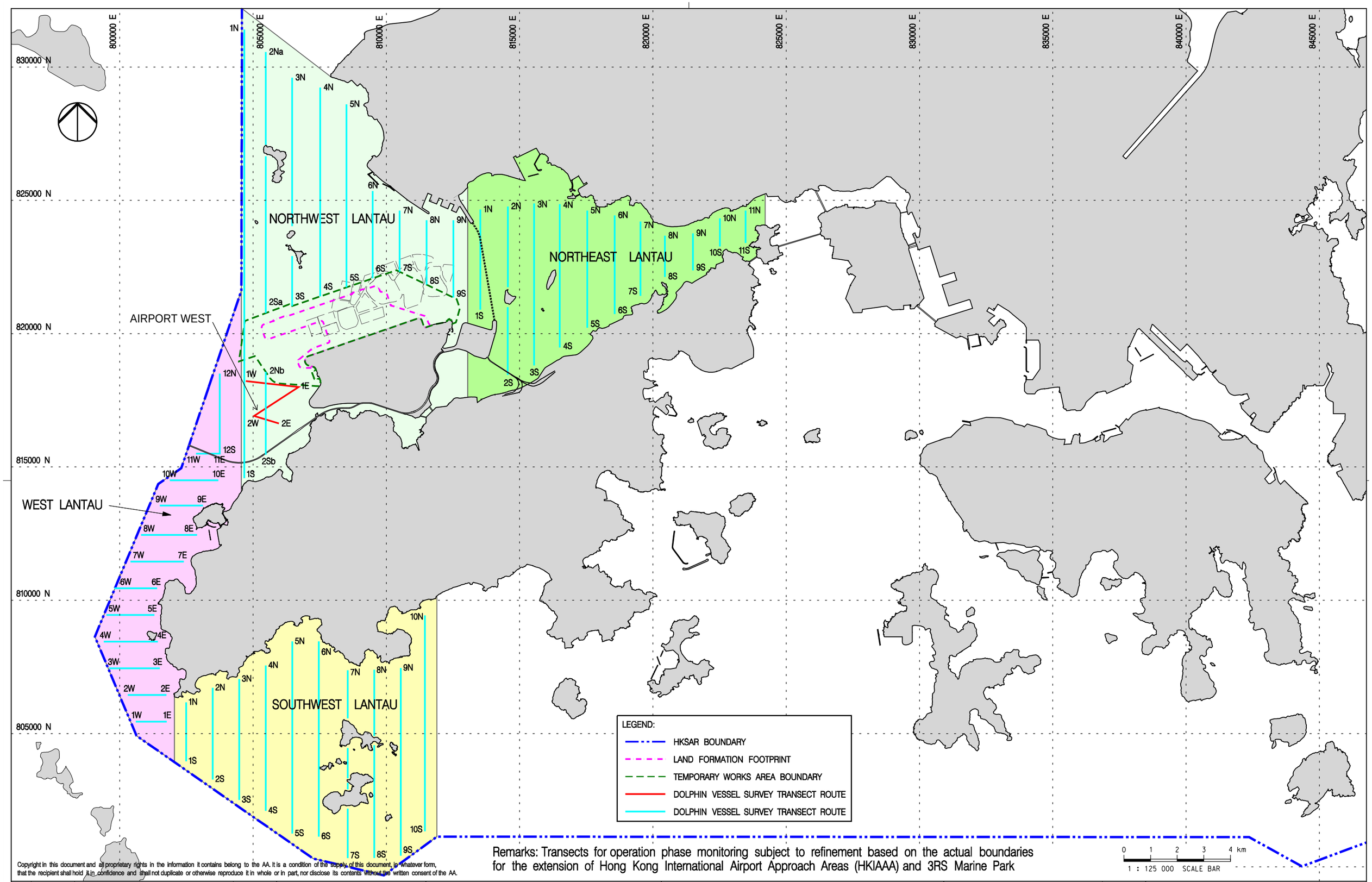
Drawing No.

FIGURE 2.3a

Scale at A3 1 : 125000

Rev. A

Filename: J:\355482\REPORT\ENV\EMA\151202\MCL-P132-EMA-10-002.dgn



Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	JC
B	27JUL16	GENERAL REVISION	JT
C	06FEB17	GENERAL REVISION	JT
D	01MAR17	GENERAL REVISION	JT

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MOTT MACDONALD

Title

VESSEL BASED DOLPHIN MONITORING TRANSECTS IN CONSTRUCTION, POST-CONSTRUCTION AND OPERATION PHASES

Consultant's Signatures for Approval		Date
Design	JC	01MAR17
Checkers	JC / TK	01MAR17
Approver	EC	01MAR17

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No. FIGURE 2.3b

Scale at A3 1 : 125000

Rev. D

Filename: J:\355482\REPORT\ENV\EMA\170301\MCL-P132-EMA-10-003.dgn

804000 E
806000 E
808000 E
810000 E
812000 E
814000 E
816000 E
818000 E
820000 N
822000 N
824000 N
826000 N

E
D

RAMSTON ROAD

沙洲及龍鼓洲海岸公園
SHA CHAU AND LUNG KWU CHAU MARINE PARK

HKSAR BOUNDARY

LEGEND:
- LAND FORMATION FOOTPRINT
- HONG KONG INTERNATIONAL AIRPORT
- LAND BASED SURVEY LOCATION

0 500 1000 1500 2000 m
1 : 45,000 SCALE BAR

Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	JC
B	06FEB17	GENERAL REVISION	JC

香港國際機場 HONG KONG INTERNATIONAL AIRPORT
Airport Authority HKIA Tower, 1 Sky Plaza Road, Hong Kong International Airport, Lantau, Hong Kong
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MOTT MACDONALD

Title

LAND BASED DOLPHIN MONITORING IN BASELINE AND CONSTRUCTION PHASES

Consultant's Signatures for Approval		Date
Design	JC	06FEB17
Checkers	JC / TK	06FEB17
Approver	EC	06FEB17

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.

FIGURE 2.4

Scale at A3 1 : 45000

Rev. B

Filename: J:\355482\REPORT\ENV\EMA\170206\MCL-P132-EMA-10-004.dgn

804000 E
806000 E
808000 E
810000 E
812000 E
814000 E
816000 E
818000 E
820000 E
828000 N
826000 N
824000 N
822000 N
820000 N
818000 N

URMSTON ROAD

龍鼓洲
LUNG KWU CHAU

沙洲及龍鼓洲海岸公園
SHA CHAU AND LUNG KWU CHAU MARINE PARK

沙洲
SHA CHAU

A5

HKSAR BOUNDARY

CASTLE PEAK BAY
TSING SHAN WAN

小冷水
SIU LANG SHUI

PILLAR POINT
MONG HAU

BUTTERFLY BEACH

GOLDEN BEACH

PEARL ISLAND

小磨刀
SIU MO TO

大磨刀
TAI MO TO

大小磨刀
THE BROTHERS

TSZ KAN CHAU

東涌
TUNG CHUNG

大白灣
DISCOVERY BAY (TAI PAK)

LEGEND:

- LAND FORMATION FOOTPRINT
- HONG KONG INTERNATIONAL AIRPORT
- AUTONOMOUS PASSIVE ACOUSTIC MONITORING LOCATION

0 500 1000 1500 2000 m
1 : 45 000 SCALE BAR

Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	JC
B	06FEB17	GENERAL REVISION	JC

香港國際機場 HONG KONG INTERNATIONAL AIRPORT
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Title

LOCATIONS FOR AUTONOMOUS PASSIVE ACOUSTIC MONITORING IN BASELINE AND CONSTRUCTION PHASES

Consultant's Signatures for Approval		Date
Design	JC	06FEB17
Checkers	JC / TK	06FEB17
Approver	EC	06FEB17

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.

FIGURE 2.10

Scale at A3
1 : 45000

Rev. B

Filename: J:\355482\REPORT\ENV\EMA\170206\MCL-P132-EMA-10-005.dgn

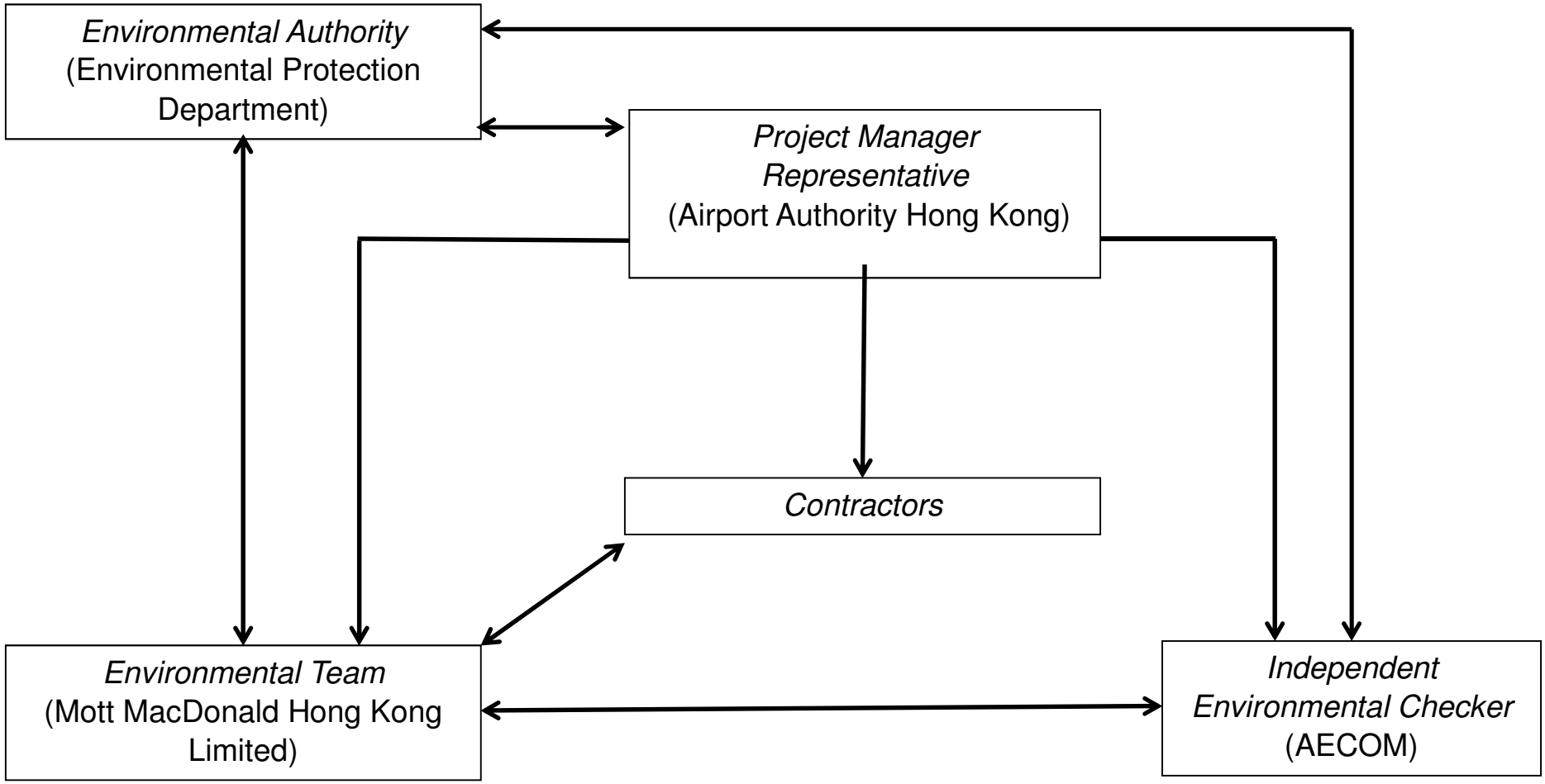
Appendix A. Contract Description

Contract Description

Contract No.	Contract Title	Contractor	Key Construction Activities
P560 (R)	Aviation Fuel Pipeline Diversion Works	Langfang Huayuan Mechanical and Electrical Engineering Co., Ltd.	Diversion of the existing submarine aviation fuel pipelines will use a horizontal directional drilling (HDD) method forming two rock drill holes by drilling through bedrock from a launching site located at the west of the airport island to a daylighting point adjacent to the offshore receiving platform at Sha Chau. Two new pipelines will be installed through the drilled tunnels. The total length is approximately 5 km. Drilling works will proceed from the HDD launching site at the airport island.
3201	Deep Cement Mixing (Package 1)	Penta-Ocean-China State-Dong-Ah Joint Venture	The works covered by the Contract 3201, 3202, 3203 and 3204 comprise ground improvement of seabed using Deep Cement Mixing (DCM) method, the major construction activities including without limitation the following • Geophysical surveys; • Supply and placing of geotextile and sand blanket under seawalls; • Supply, maintenance, installation and removal of silt curtain systems; • Preliminary construction trails; • Supply and installation of DCM clusters within the works areas; and • Coring, sampling and testing of DCM treated soils and reporting works.
3202	Deep Cement Mixing (Package 2)	Samsung-BuildKing Joint Venture	
3203	Deep Cement Mixing (Package 3)	Sambo E&C Co.,Ltd	
3204	Deep Cement Mixing (Package 4)	CRBC-SAMBO Joint Venture	
3205	Deep Cement Mixing (Package 5)	Bachy Soletanche- Sambo Joint Venture	The works covered by the Contract 3205 comprise ground improvement of seabed using Deep Cement Mixing (DCM) method within or outside their contract boundary as outlined on the low headroom DCM zoning plan, the major construction activities including without limitation the following • Geophysical surveys; • Supply and placing of geotextile and sand blanket under seawalls; • Supply, maintenance, installation and removal of silt curtain systems; • Preliminary construction trails; • Supply and installation of DCM clusters within the works areas; and • Coring, sampling and testing of DCM treated soils and reporting works.

3206	Reclamation Contract	ZHEC-CCCC-CDC Joint Venture	The works covered by the Contract 3206 comprise the formation of approximately 650 hectares of land north of the existing airport island for the project, the major construction activities including without limitation the following • Site clearance and demolition; • Geotechnical and ground improvement works; • Seawall construction; • Marine and land filling works; and • Civil works.
3213	CLP Cable Diversion Enabling Works	Wing Hing Construction Company	CLP cable diversion enabling works of Sha Chau South, Sheung Sha Chau and Lung Kwu Chau at Hong Kong International Airport Landside. The major construction activities including without limitation the following: • Geotechnical instrumentation and monitoring of the Works; • Temporary removal of armour rock and underlayers of existing seawall and subsequent reinstatement to its original condition; • Construction of the concrete cable trough embedded at about 3m below the surface of the existing seawall; and • Supply, installation, maintenance, and subsequent removal of temporary generator sets for temporary power supply with associated fuel supply and pump system located at Sheung Sha Chau, Sha Chau South and Lung Kwu Chau Islands.

Appendix B. Project Organization Chart


Environmental Authority
(Environmental Protection Department)
Project Manager Representative
(Airport Authority Hong Kong)
Contractors
Environmental Team
(Mott MacDonald Hong Kong Limited)
Independent Environmental Checker
(AECOM)

Appendix C. Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase

Appendix C Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Air Quality Impact – Construction Phase		
5.2.6.2	2.1	-	**Dust Control Measures** ▪ Water spraying for 12 times a day or once every two hours for 24-hour working at all active works area.	Within construction site / Duration of the construction phase	I
5.2.6.3	2.1	-	▪ Covering of at least 80% of the stockpiling area by impervious sheets. Water spraying of all dusty materials immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling.	Within construction site / Duration of the construction phase	I
5.2.6.4	2.1	-	Dust control practices as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted. These practices include: Good Site Management ▪ Good site management is important to help reducing potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning.	Within construction site / Duration of the construction phase	I
			Disturbed Parts of the Roads ▪ Each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or ▪ Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.	Within construction site / Duration of the construction phase	I
			Exposed Earth ▪ Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies.	Within construction site / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Loading, Unloading or Transfer of Dusty Materials ▪ All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.	Within construction site / Duration of the construction phase	I
			Debris Handling ▪ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides; and ▪ Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.	Within construction site / Duration of the construction phase	I
			Transport of Dusty Materials ▪ Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards.	Within construction site / Duration of the construction phase	I
			Wheel washing ▪ Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.	Within construction site / Duration of the construction phase	I
			Use of vehicles ▪ The speed of the trucks within the site should be controlled to about 10km/hour in order to reduce adverse dust impacts and secure the safe movement around the site; ▪ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels; and ▪ Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	Within construction site / Duration of the construction phase	I
			Site hoarding ▪ Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit.	Within construction site / Duration of the construction phase	I
5.2.6.5	2.1	-	**Best Practices for Concrete Batching Plant** The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2 as well as in the future Specified Process licence should be adopted. The best practices are recommended to be applied to both the land based and floating concrete batching plants. Best practices include: Cement and other dusty materials	Within Concrete Batching Plant / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ The loading, unloading, handling, transfer or storage of cement, pulverised fuel ash (PFA) and/or other equally dusty materials shall be carried in a totally enclosed system acceptable to EPD. All dust-laden air or waste gas generated by the process operations shall be properly extracted and vented to fabric filtering system to meet the required emission limit; ▪ Cement, PFA and/or other equally dusty materials shall be stored in storage silo fitted with audible high level alarms to warn of over-filling. The high-level alarm indicators shall be interlocked with the material filling line such that in the event of the silo approaching an overfilling condition, an audible alarm will operate, and after 1 minute or less the material filling line will be closed; ▪ Vents of all silos shall be fitted with fabric filtering system to meet the required emission limit; ▪ Vents of cement/PFA weighing scale shall be fitted with fabric filtering system to meet the required emission limit; and ▪ Seating of pressure relief valves of all silos shall be checked, and the valves re-seated if necessary, before each delivery.		
			Other raw materials ▪ The loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rock, sand, stone aggregate, shall be carried out in such a manner to prevent or minimize dust emissions; ▪ The materials shall be adequately wetted prior to and during the loading, unloading and handling operations. Manual or automatic water spraying system shall be provided at all unloading areas, stock piles and material discharge points; ▪ All receiving hoppers for unloading relevant materials shall be enclosed on three sides up to 3 m above the unloading point. In no case shall these hoppers be used as the material storage devices; ▪ The belt conveyor for handling materials shall be enclosed on top and two sides with a metal board at the bottom to eliminate any dust emission due to wind-whipping effect. Other type of enclosure will also be accepted by EPD if it can be demonstrated that the proposed enclosure can achieve same performance; ▪ All conveyor transfer points shall be totally enclosed. Openings for the passage of conveyors shall be fitted with adequate flexible seals; ▪ Scrapers shall be provided at the turning points of all conveyors to remove dust adhered to the belt surface; ▪ Conveyors discharged to stockpiles of relevant materials shall be arranged to minimize free fall as far as practicable. All free falling transfer points from conveyors to stockpiles shall be enclosed with chute(s) and water sprayed; ▪ Aggregates with a nominal size less than or equal to 5 mm should be stored in totally enclosed structure such as storage bin and should not be handled in open area. Where there is sufficient buffer area surrounding the concrete batching plant, ground stockpiling may be used;	Within Concrete Batching Plant / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ The stockpile shall be enclosed at least on top and three sides and with flexible curtain to cover the entrance side; ▪ Aggregates with a nominal size greater than 5 mm should preferably be stored in a totally enclosed structure. If open stockpiling is used, the stockpile shall be enclosed on three sides with the enclosure wall sufficiently higher than the top of the stockpile to prevent wind whipping; and ▪ The opening between the storage bin and weighing scale of the materials shall be fully enclosed.		
			Loading of materials for batching ▪ Concrete truck shall be loaded in such a way as to minimise airborne dust emissions. The following control measures shall be implemented: (a) Pre-mixing the materials in a totally enclosed concrete mixer before loading the materials into the concrete truck is recommended. All dust-laden air generated by the pre-mixing process as well as the loading process shall be totally vented to fabric filtering system to meet the required emission limit; and (b) If truck mixing batching or other types of batching method is used, effective dust control measures acceptable to EPD shall be adopted. The dust control measures must have been demonstrated to EPD that they are capable to collect and vent all dust-laden air generated by the material loading/mixing to dust arrestment plant to meet the required emission limit. ▪ The loading bay shall be totally enclosed during the loading process.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Vehicles ▪ All practicable measures shall be taken to prevent or minimize the dust emission caused by vehicle movement; and ▪ All access and route roads within the premises shall be paved and adequately wetted.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Housekeeping ▪ A high standard of housekeeping shall be maintained. All spillages or deposits of materials on ground, support structures or roofs shall be cleaned up promptly by a cleaning method acceptable to EPD. Any dumping of materials at open area shall be prohibited.	Within Concrete Batching Plant / Duration of the construction phase	N/A
5.2.6.6	2.1	-	**Best Practices for Asphaltic Concrete Plant** The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Tar and Bitumen Works (Asphaltic Concrete Plant) BPM 15 (94) as well as in the future Specified Process licence should be adopted. These include: Design of Chimney ▪ The chimney shall not be less than 3 metres plus the building height or 8 metres above ground level, whichever is the greater; ▪ The efflux velocity of gases from the main chimney shall not be less than 12 m/s at full load condition;	Within Concrete Batching Plant / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ The flue gas exit temperature shall not be less than the acid dew point; and ▪ Release of the chimney shall be directed vertically upwards and not be restricted or deflected.		
			Cold feed side ▪ The aggregates with a nominal size less than or equal to 5 mm shall be stored in totally enclosed structure such as storage bin and shall not be handled in open area; ▪ Where there is sufficient buffer area surrounding the plant, ground stockpiling may be used. The stockpile shall be enclosed at least on top and three sides and with flexible curtain to cover the entrance side. If these aggregates are stored above the feeding hopper, they shall be enclosed at least on top and three sides and be wetted on the surface to prevent wind-whipping; ▪ The aggregates with a nominal size greater than 5 mm should preferably be stored in totally enclosed structure. Aggregates stockpile that is above the feeding hopper shall be enclosed at least on top and three sides. If open stockpiling is used, the stockpiles shall be enclosed on three sides with the enclosure wall sufficiently higher than the top of the stockpile to prevent wind whipping; ▪ Belt conveyors shall be enclosed on top and two sides and provided with a metal board at the bottom to eliminate any dust emission due to the wind-whipping effect. Other type of enclosure will also be accepted by EPD if it can be demonstrated that the proposed enclosure can be achieve the same performance; ▪ Scrapers shall be provided at the turning points of all belt conveyors inside the chute of the transfer points to remove dust adhered to the belt surface; ▪ All conveyor transfer points shall be totally enclosed. Openings for the passages of conveyors shall be fitted with adequate flexible seals; and ▪ All materials returned from dust collection system shall be transferred in enclosed system and shall be stored inside bins or enclosures.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Hot feed side ▪ The inlet and outlet of the rotary dryer shall be enclosed and ducted to a dust extraction and collection system such as a fabric filter. The particulate and gaseous concentration at the exhaust outlet of the dust collector shall not exceed the required limiting values; ▪ The bucket elevator shall be totally enclosed and the air be extracted and ducted to a dust collection system to meet the required particulates limiting value; ▪ All vibratory screens shall be totally enclosed and dust tight with close-fitted access inspection opening. Gaskets shall be installed to seal off any cracks and edges of any inspection openings; ▪ Chutes for carrying hot material shall be rigid and preferably fitted with abrasion resistant plate inside. They shall be inspected daily for leakages;	Within Concrete Batching Plant / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ All hot bins shall be totally enclosed and dust tight with close-fitted access inspection opening. Gaskets shall be installed to seal off any cracks and edges of any inspection openings. The air shall be extracted and ducted to a dust collection system to meet the required particulates limiting value; and ▪ Appropriate control measures shall be adopted in order to meet the required bitumen emission limit as well as the ambient odour level (2 odour units).		
			Material transportation ▪ The loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rocks, sands, stone aggregates, reject fines, shall be carried out in such a manner as to minimize dust emissions; ▪ Roadways from the entrance of the plant to the product loading points and/or any other working areas where there are regular movements of vehicles shall be paved or hard surfaced; and ▪ Haul roads inside the Works shall be adequately wetted with water and/or chemical suppressants by water trucks or water sprayers.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Control of emissions from bitumen decanting ▪ The heating temperature of the particular bitumen type and grade shall not exceed the corresponding temperature limit of the same type listed in Appendix 1 of the Guidance Note; ▪ Tamper-free high temperature cut-off device shall be provided to shut off the fuel supply or electricity in case the upper limit for bitumen temperature is reached; ▪ Proper chimney for the discharge of bitumen fumes shall be provided at high level; ▪ The emission of bitumen fumes shall not exceed the required emission limit; and The air-to-fuel ratio shall be properly controlled to allow complete combustion of the fuel. The fuel burners, if any, shall be maintained properly and free from carbon deposits in the burner nozzles.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Liquid fuel ▪ The receipt, handling and storage of liquid fuel shall be carried out so as to prevent the release of emissions of organic vapours and/or other noxious and offensive emissions to the air.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Housekeeping ▪ A high standard of housekeeping shall be maintained. Waste material, spillage and scattered piles gathered beneath belt conveyors, inside and around enclosures shall be cleared frequently. The minimum clearing frequency is on a weekly basis.	Within Concrete Batching Plant / Duration of the construction phase	N/A
5.2.6.7	2.1	-	**Best Practices for Rock Crushing Plants** The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plant) BPM 11/1 (95) as well as in the future Specified Process licence should be adopted. These include:	Within Concrete Batching Plant / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Crushers ▪ The outlet of all primary crushers, and both inlet and outlet of all secondary and tertiary crushers, if not installed inside a reasonably dust tight housing, shall be enclosed and ducted to a dust extraction and collection system such as a fabric filter; ▪ The inlet hopper of the primary crushers shall be enclosed on top and 3 sides to contain the emissions during dumping of rocks from trucks. The rock while still on the trucks shall be wetted before dumping; ▪ Water sprayers shall be installed and operated in strategic locations at the feeding inlet of crushers; and ▪ Crusher enclosures shall be rigid and be fitted with self-closing doors and close-fitting entrances and exits. Where conveyors pass through the crusher enclosures, flexible covers shall be installed at entries and exits of the conveyors to the enclosure.		
			Vibratory screens and grizzlies ▪ All vibratory screens shall be totally enclosed in a housing. Screenhouses shall be rigid and reasonably dust tight with self-closing doors or close-fitted entrances and exits for access. Where conveyors pass through the screenhouse, flexible covers shall be installed at entries and exits of the conveyors to the housing. Where containment of dust within the screenhouse structure is not successful then a dust extraction and collection system shall be provided; and ▪ All grizzlies shall be enclosed on top and 3 sides and sufficient water sprayers shall be installed at their feeding and outlet areas.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Belt conveyors ▪ Except for those conveyors which are placed within a totally enclosed structure such as a screenhouse or those erected at the ground level, all conveyors shall be totally enclosed with windshield on top and 2 sides; ▪ Effective belt scraper such as the pre-cleaner blades made by hard wearing materials and provided with pneumatic tensioner, or equivalent device, shall be installed at the head pulley of designated conveyor as required to dislodge fine dust particles that may adhere to the belt surface and to reduce carry-back of fine materials on the return belt. Bottom plates shall also be provided for the conveyor unless it has been demonstrated that the corresponding belt scraper is effective and well maintained to prevent falling material from the return belt; and ▪ Except for those transfer points which are placed within a totally enclosed structure such as a screenhouse, all transfer points to and from conveyors shall be enclosed. Where containment of dust within the enclosure is not successful, then water sprayers shall be provided. Openings for any enclosed structure for the passage of conveyors shall be fitted with flexible seals.	Within Concrete Batching Plant / Duration of the construction phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Storage piles and bins ▪ Where practicable, free falling transfer points from conveyors to stockpiles shall be fitted with flexible curtains or be enclosed with chutes designed to minimize the drop height. Water sprays shall also be used where required. ▪ The surface of all surge piles and stockpiles of blasted rocks or aggregates shall be kept sufficiently wet by water spraying wherever practicable; ▪ All open stockpiles for aggregates of size in excess of 5 mm shall be kept sufficiently wet by water spraying where practicable; or ▪ The stockpiles of aggregates 5 mm in size or less shall be enclosed on 3 sides or suitably located to minimize wind-whipping. Save for fluctuations in stock or production, the average stockpile shall stay within the enclosure walls and in no case the height of the stockpile shall exceed twice the height of the enclosure walls. ▪ Scattered piles gathered beneath belt conveyors, inside and around enclosures shall be cleared regularly.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Rock drilling equipment ▪ Appropriate dust control equipment such as a dust extraction and collection system shall be used during rock drilling activities.	Within Concrete Batching Plant / Duration of the construction phase	N/A
			Hazard to Human Life – Construction Phase		
Table 6.40	3.2	-	▪ Precautionary measures should be established to request barges to move away during typhoons.	Construction Site / Construction Period	I
Table 6.40	3.2	-	▪ An appropriate marine traffic management system should be established to minimize risk of ship collision.	Construction Site / Construction Period	I
Table 6.40	3.2	-	▪ Location of all existing hydrant networks should be clearly identified prior to any construction works.	Construction Site / Construction Period	N/A
			Noise Impact – Construction Phase		
7.5.6	4.3	-	**Good Site Practice** Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during each phase of construction: ▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works; ▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum;	Within the Project site / During construction phase / Prior to commencement of operation	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs; ▪ mobile plant should be sited as far away from NSRs as possible; and ▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.		
7.5.6	4.3	-	**Adoption of QPME** ▪ QPME should be adopted as far as applicable.	Within the Project site / During construction phase / Prior to commencement of operation	I
7.5.6	4.3	-	**Use of Movable Noise Barriers** ▪ Movable noise barriers should be placed along the active works area and mobile plants to block the direct line of sight between PME and the NSRs.	Within the Project site / During construction phase / Prior to commencement of operation	I
7.5.6	4.3	-	**Use of Noise Enclosure/ Acoustic Shed** ▪ Noise enclosure or acoustic shed should be used to cover stationary PME such as air compressor and generator.	Within the Project site / During construction phase / Prior to commencement of operation	I
			Water Quality Impact – Construction Phase		

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
8.8.1.2 and 8.8.1.3	5.1	2.26	**Marine Construction Activities** <u>General Measures to be Applied to All Works Areas</u> ▪ Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; ▪ Use of Lean Material Overboard (LMOB) systems shall be prohibited; ▪ Excess materials shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessels are moved; ▪ Plants should not be operated with leaking pipes and any pipe leakages shall be repaired quickly; ▪ Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; ▪ All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; ▪ The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site; and ▪ For ground improvement activities including DCM, the wash water from cleaning of the drilling shaft should be appropriately treated before discharge. The Contractor should ensure the waste water meets the WPCO/TM requirements before discharge. No direct discharge of contaminated water is permitted.	Within construction site / Duration of the construction phase	I
			<u>Specific Measures to be Applied to All Works Areas</u> ▪ The daily maximum production rates shall not exceed those assumed in the water quality assessment in the EIA report; ▪ A maximum of 10 % fines content to be adopted for sand blanket and 20 % fines content for marine filling below +2.5 mPD prior to substantial completion of seawall (until end of Year 2017) shall be specified in the works contract document;	Within construction site / Duration of the construction phase	I
			▪ An advance seawall of at least 200m to be constructed (comprising either rows of contiguous permanent steel cells completed above high tide mark or partially completed seawalls with rock core to high tide mark and filter layer on the inner side) prior to commencement of marine filling activities;		N/A
			▪ Closed grab dredger shall be used to excavate marine sediment; ▪ Silt curtains surrounding the closed grab dredger shall be deployed in accordance with the Silt Curtain Deployment Plan; and		N/A *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ The Silt Curtain Deployment Plan shall be implemented.		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			<u>Specific Measures to be Applied to Land Formation Activities prior to Commencement of Marine Filling Works</u> ▪ Double layer 'Type III' silt curtains to be applied around the active eastern works areas prior to commencement of sand blanket laying activities. The silt curtains shall be configured to minimise SS release during ebb tides. A silt curtain efficiency test shall be conducted to validate the performance of the silt curtains;	Within construction site / Duration of the construction phase	NA *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ Double layer silt curtains to enclose WSRs C7a and silt screens installed at the intake points for both WSR C7a and C8 prior to commencement of construction; and		For C7a, I For C8, N/A *(The requirement of silt curtain / screen has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ The silt curtains and silt screens should be regularly checked and maintained.		I
			<u>Specific Measures to be Applied to Land Formation Activities during Marine Filling Works</u> ▪ Double layer 'Type II' or 'Type III' silt curtains to be applied around the eastern openings between partially completed seawalls prior to commencement of marine filling activities. The silt curtains shall be configured to minimise SS release during ebb tides;	Within construction site / Duration of the construction phase	N/A *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ Double layer silt curtains to be applied at the south-western opening prior to commencement of marine filling activities;		N/A *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ Double layer silt curtain to enclose WSR C7a and silt screens installed at the intake points for both WSR C7a and C8 prior to commencement of marine filling activities; and		N/A *(The requirement of silt curtain / screen has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ The silt curtains and silt screens should be regularly checked and maintained.		N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Specific Measures to be Applied to the Field Joint Excavation Works for the Submarine Cable Diversion ▪ Only closed grabs designed and maintained to avoid spillage shall be used and should seal tightly when operated. Excavated materials shall be disposed at designated marine disposal area in accordance with the Dumping and Sea Ordinance (DASO) permit conditions; and ▪ Silt curtains surrounding the closed grab dredger to be deployed as a precautionary measure.	Within construction site / Duration of the construction phase	N/A
8.8.1.4	5.1	-	**Modification of the Existing Seawall** ▪ Silt curtains shall be deployed around the seawall modification activities to completely enclose the active works areas, and care should be taken to avoid splashing of rockfill / rock armour into the surrounding marine environment. For the connecting sections with the existing outfalls, works for these connection areas should be undertaken during the dry season in order that individual drainage culvert cells may be isolated for interconnection works.	At the existing northern seawall / Duration of the construction phase	N/A
8.8.1.5	5.1	-	**Construction of New Stormwater Outfalls and Modifications to Existing Outfalls** ▪ During operation of the temporary drainage channel, runoff control measures such as bunding or silt fence shall be provided on both sides of the channel to prevent accumulation and release of SS via the temporary channel. Measures should also be taken to minimise the ingress of site drainage into the culvert excavations.	Within construction site / Duration of the construction phase	N/A
8.8.1.6 8.8.1.7	5.1	2.27	**Piling Activities for Construction of New Runway Approach Lights and HKIAAA Marker Beacons** Silt curtains shall be deployed around the piling activities to completely enclose the piling works and care should be taken to avoid spillage of excavated materials into the surrounding marine environment. For construction of the eastern approach lights at the CMPs ▪ Ground improvement via DCM using a close-spaced layout shall be completed prior to commencement of piling works; ▪ Steel casings shall be installed to enclose the excavation area prior to commencement of excavation; ▪ The excavated materials shall be removed using a closed grab within the steel casings; ▪ No discharge of the cement mixed materials into the marine environment will be allowed; and ▪ Excavated materials shall be treated and reused on-site.	Within construction site / Duration of the construction phase	N/A
8.8.1.8	5.1	-	**Construction of Site Runoff and Drainage** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended: ▪ Install perimeter cut-off drains to direct off-site water around the site and implement internal drainage, erosion and sedimentation control facilities. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site	Within construction site / Duration of the construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			drainage system should be undertaken by the Contractors prior to the commencement of construction (for works areas located on the existing Airport island) or as soon as the new land is completed (for works areas located on the new landform);		
			▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM-DSS standards under the WPCO. The design of efficient silt removal facilities should make reference to the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractors prior to the commencement of construction;		I
			▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly;		I
			▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities;		N/A
			▪ In the event that contaminated groundwater is identified at excavation areas, this should be treated on-site using a suitable wastewater treatment process. The effluent should be treated according to the requirements of the TM-DSS standards under the WPCO prior to discharge to foul sewers or collected for proper disposal off-site. No direct discharge of contaminated groundwater is permitted; and		N/A
			▪ 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 sited wheel washing facility should be provided at construction site exits. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash 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. All washwater should be treated according to the requirements of the TM-DSS standards under the WPCO prior to discharge.		I
8.8.1.9	5.1	-	**Sewage Effluent from Construction Workforce** ▪ Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	Within construction site / During construction phase	I
8.8.1.10 8.8.1.11	5.1		**General Construction Activities** ▪ Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby storm water drain. Stockpiles of cement and other construction materials should be kept covered when not being used; and	Within construction site / During construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.		
8.8.1.12 8.8.1.13	5.1	2.28	**Drilling Activities for the Submarine Aviation Fuel Pipelines** To prevent potential water quality impacts at Sha Chau, the following measures shall be applied: ▪ A 'zero-discharge' policy shall be applied for all activities to be conducted at Sha Chau; ▪ No bulk storage of chemicals shall be permitted; and ▪ A containment pit shall be constructed around the drill holes. This containment pit shall be lined with impermeable lining and bunded on the outside to prevent inflow from off-site areas.	Within construction site / During construction phase	I
			At the airport island side of the drilling works, the following measures shall be applied for treatment of wastewater: ▪ During pipe cleaning, appropriate desilting or sedimentation device should be provided on site for treatment before discharge. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge; and ▪ Drilling fluid used in drilling activities should be reconditioned and reused as far as possible. Temporary enclosed storage locations should be provided on-site for any unused chemicals that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	Within construction site / During construction phase	I
			Waste Management Implication – Construction Phase		
10.5.1.1	7.1	-	Opportunities to minimise waste generation and maximise the reuse of waste materials generated by the project have been incorporated where possible into the planning, design and construction stages, and the following measures have been recommended: ▪ The relevant construction methods (particularly for the tunnel works) and construction programme have been carefully planned and developed to minimise the extent of excavation and to maximise the on-site reuse of inert C&D materials generated by the project as far as practicable. Temporary stockpiling areas will also be provided to facilitate on-site reuse of inert C&D materials;	Project Site Area / During design and construction phase	I
			▪ Priority should be given to collect and reuse suitable inert C&D materials generated from other concurrent projects and the Government's PFRF as fill materials for the proposed land formation works;		I
			▪ Only non-dredged ground improvement methods should be adopted in order to completely avoid the need for dredging and disposal of marine sediment for the proposed land formation work;		I
			▪ Excavation work for constructing the APM tunnels, BHS tunnels and airside tunnels will not be down to the CMPs beneath the fill materials in order to avoid excavating any sediments; and		N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ For the marine sediments expected to be excavated from the piling works of TRC, APM & BHS tunnels, airside tunnels and other facilities on the proposed land formation area, piling work of marine sections of the approach lights and HKIAAA beacons, basement works for some of T2 expansion area and excavation works for the proposed APM depot should be treated and reused on-site as backfilling materials, although required treatment level / detail and the specific re-use mode are under development.		N/A
10.5.1.1	7.1	-	The following good site practices should be performed during the construction activities include: ▪ 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 proper waste management and chemical waste handling procedures; ▪ Provision of sufficient waste disposal points and regular collection for disposal; ▪ Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks by tarpaulin/ similar material or by transporting wastes in enclosed containers. The cover should be extended over the edges of the sides and tailboards; ▪ Stockpiles of C&D materials should be kept wet or covered by impervious sheets to avoid wind-blown dust; ▪ All dusty materials including C&D materials should be sprayed with water immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling at the barging points/ stockpile areas; ▪ C&D materials to be delivered to and from the project site by barges or by trucks should be kept wet or covered to avoid wind-blown dust; ▪ The speed of the trucks including dump trucks carrying C&D or waste materials within the site should be controlled to about 10 km/hour in order to reduce the adverse dust impact and secure the safe movement around the site; and ▪ To avoid or minimise dust emission during transport of C&D or waste materials within the site, each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials. Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.	Project Site Area / Construction Phase	I
10.5.1.3	7.1	-	The following practices should be performed to achieve waste reduction include: ▪ Use of steel or aluminium formworks and falseworks for temporary works as far as practicable; ▪ Adoption of repetitive design to allow reuse of formworks as far as practicable; ▪ 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;	Project Site Area / Construction Phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; ▪ Any unused chemicals or those with remaining functional capacity should be collected for reused as far as practicable; ▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and ▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.		
10.5.1.5	7.1		▪ Inert and non-inert C&D materials should be handled and stored separately to avoid mixing the two types of materials.	Project Site Area / Construction Phase	I
10.5.1.5	7.1	-	▪ Any recyclable materials should be segregated from the non-inert C&D materials for collection by reputable licensed recyclers whereas the non-recyclable waste materials should be disposed of at the designated landfill site by a reputable licensed waste collector.	Project Site Area / Construction Phase	I
10.5.1.6	7.1	-	▪ A trip-ticket system promulgated shall be developed in order to monitor the off-site delivery of surplus inert C&D materials that could not be reused on-site for the proposed land formation work at the PFRF and to control fly tipping.	Project Site Area / Construction Phase	I
10.5.1.6	7.1	2.32	▪ The Contractor should prepare and implement a Waste Management Plan detailing various waste arising and waste management practices.	Construction Phase	I
10.5.1.16	7.1	-	The following mitigation measures are recommended during excavation and treatment of the sediments: ▪ On-site remediation should be carried out in an enclosed area in order to minimise odour/dust emissions; ▪ The loading, unloading, handling, transfer or storage of treated and untreated sediment should be carried out in such a manner to prevent or minimise dust emissions; ▪ All practical measures, including but not limited to speed control for vehicles, should be taken to minimise dust emission; ▪ Good housekeeping should be maintained at all times at the sediment treatment facility and storage area; ▪ Treated and untreated sediment should be clearly separated and stored separately; and ▪ Surface runoff from the enclosed area should be properly collected and stored separately, and then properly treated to levels in compliance with the relevant effluent standards as required by the Water Pollution Control Ordinance before final discharge.	Project Site Area / Construction Phase	N/A
10.5.1.18	7.1	-	The marine sediments to be removed from the cable field joint area would be disposed of at the designated disposal sites to be allocated by the MFC. The following mitigation measures should be strictly	Project Site Area / Construction Phase	N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			followed to minimise potential impacts on water quality during transportation of the sediments requiring Type 1 disposal: ▪ Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material; ▪ 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 EPD; and ▪ Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation.		
10.5.1.19	7.1	-	Contractor should register with the EPD as a chemical waste producer and to follow the relevant guidelines. The following measures should be implemented: ▪ Good quality containers compatible with the chemical wastes should be used; ▪ Incompatible chemicals should be stored separately; ▪ Appropriate labels must 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.; and ▪ The contractor will use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Project Site Area / Construction Phase	I
10.5.1.20	7.1	-	▪ General refuse should be stored in enclosed bins or compaction units separated from inert C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site for disposal at designated landfill sites. An enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	Project Site Area / Construction Phase	I
10.5.1.21	7.1	-	▪ The construction contractors will be required to regularly check and clean any refuse trapped or accumulated along the newly constructed seawall. Such refuse will then be stored and disposed of together with the general refuse.	Project Site Area / Construction Phase	N/A
			Land Contamination – Construction Phase		
11.10.1.2 to 11.10.1.3	8.1	2.32	For areas inaccessible during site reconnaissance survey ▪ Further site reconnaissance would be conducted once the areas are accessible in order to identify any land contamination concern for the areas.	Project Site Area inaccessible during site reconnaissance / Prior to Construction Phase	I
			▪ Subject to further site reconnaissance findings, a supplementary Contamination Assessment Plan (CAP) for additional site investigation (SI) (if necessary) may be prepared and submitted to EPD for endorsement prior to the commencement of SI at these areas.		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ After completion of SI, the Contamination Assessment Report (CAR) will be prepared and submitted to EPD for approval prior to start of the proposed construction works at the golf course, the underground and above-ground fuel storage tank areas, emergency power generation units, airside petrol filling station and fuel tank room.		N/A
			▪ Should remediation be required, Remediation Action Plan (RAP) and Remediation Report (RR) will be prepared for EPD's approval prior to commencement of the proposed remediation and any construction works respectively.		N/A
11.8.1.2	8.1	-	If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any): ▪ To minimize the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed; ▪ Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when working directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site; ▪ Stockpiling of contaminated excavated materials on site should be avoided as far as possible; ▪ The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; ▪ Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; ▪ Truck bodies and tailgates should be sealed to prevent any discharge; ▪ Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly tipping; ▪ Speed control for trucks carrying contaminated materials should be exercised. 8km/h is the recommended speed limit; ▪ Strictly observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and ▪ Maintain records of waste generation and disposal quantities and disposal arrangements.	Project Site Area / Construction Phase	N/A
			Terrestrial Ecological – Construction Phase		
12.10.1.1	9.2	2.14	**Pre-construction Egretry Survey** ▪ Conduct ecological survey for Sha Chau egretry to update the latest boundary of the egretry.	Breeding season (April - July) prior to commencement of HDD drilling works at HKIA	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
12.7.2.3 and 12.7.2.6	9.1	2.30	**Avoidance and Minimisation of Direct Impact to Egretry** ▪ The daylighting location will avoid direct encroachment to the Sheung Sha Chau egretry. The daylighting location and mooring of flat top barge, if required, will be kept away from the egretry; ▪ In any event, controls such as demarcation of construction site boundary and confining the lighting within the site will be practised to minimise disturbance to off-site habitat at Sheung Sha Chau Island; and ▪ The containment pit at the daylighting location shall be covered or camouflaged.	During construction phase at Sheung Sha Chau Island	I
12.7.2.5	9.1	2.30	**Preservation of Nesting Vegetation** ▪ The proposed daylighting location and the arrangement of connecting pipeline will avoid the need of tree cutting, therefore the trees that are used by ardeids for nesting will be preserved.	During construction phase at Sheung Sha Chau Island	I
12.7.2.4 and 12.7.2.6	9.1	2.30	**Timing the Pipe Connection Works outside Ardeid's Breeding Season** ▪ All HDD and related construction works on Sheung Sha Chau Island will be scheduled outside the ardeids' breeding season (between April and July). No night-time construction work will be allowed on Sheung Sha Chau Island during all seasons.	During construction phase at Sheung Sha Chau Island	I
12.10.1.1	9.3	-	**Ecological Monitoring** ▪ During the HDD construction works period from August to March, ecological monitoring will be undertaken monthly at the HDD daylighting location on Sheung Sha Chau Island to identify and evaluate any impacts with appropriate actions taken as required to address and minimise any adverse impact found.	at Sheung Sha Chau Island	I
			Marine Ecological Impact – Pre-construction Phase		
13.11.4.1	10.2.2	-	▪ Pre-construction phase Coral Dive Survey.	HKIAAA artificial seawall	I
			Marine Ecological Impact – Construction Phase		
13.11.1.3 to 13.11.1.6	-	-	**Minimisation of Land Formation Area** ▪ Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for marine resources, especially the CWD population.	Land formation footprint / during detailed design phase to completion of construction	I
13.11.1.7 to 13.11.1.10	-	2.31	**Use of Construction Methods with Minimal Risk/Disturbance** ▪ Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF;	During construction phase at marine works area	I
			▪ Use of Deep Cement Mixing (DCM) method instead of conventional seabed dredging for the land formation works to reduce the risk of negative impacts through the elevation of suspended solids and contaminants on CWDs, fisheries and the marine environment;		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway;		N/A
			▪ Avoid bored piling during CWD peak calving season (Mar to Jun);		I
			▪ Prohibition of underwater percussive piling; and		I
			▪ Use of horizontal directional drilling (HDD) method and water jetting methods for placement of submarine cables and pipelines to minimise the disturbance to the CWDs and other marine ecological resources.		I
13.11.2.1 to 13.11.2.7	-	-	**Mitigation for Indirect Disturbance due to Deterioration of Water Quality** ▪ Water quality mitigation measures during construction phases include consideration of alternative construction methods, deployment of silt curtain and good site practices;	All works area during the construction phase	I
			▪ Alternative construction methods including use of non-dredge methods for ground improvement (e.g. Deep Cement Mixing (DCM), prefabricated vertical drains (PVD), sand compaction piles, steel cells, stone columns and vertical sand drains);		I
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and		N/A
			Use of horizontal directional drilling (HDD) method and water jetting methods for placement of undersea cables and pipelines to minimise the disturbance to the CWDs and other marine ecological resources.		I
13.11.1.12	-	-	**Strict Enforcement of No-Dumping Policy** ▪ A policy prohibiting dumping of wastes, chemicals, oil, trash, plastic, or any other substance that would potentially be harmful to dolphins and/or their habitat in the work area; ▪ Mandatory educational programme of the no-dumpling policy be made available to all construction site personnel for all project-related works; ▪ Fines for infractions should be implemented; and ▪ Unscheduled, on-site audits shall be implemented.	All works area during the construction phase	I
13.11.1.13	-	-	**Good Construction Site Practices** ▪ Regular inspection of the integrity and effectiveness of all silt curtains and monitoring of effluents to ensure that any discharge meets effluent discharge guidelines; ▪ Keep the number of working or stationary vessels present on-site to the minimum anytime; and ▪ Unscheduled, on-site audits for all good site practice restrictions should be conducted, and fines or penalties sufficient to be an effective deterrent need to be levied against violators.	All works area during the construction phase	I
13.11.1.3 to 13.11.1.6	-	-	**Minimisation of Land Formation Area** ▪ Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for marine resources, especially the CWD population.	Land formation footprint / during detailed design phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
				to completion of construction	
13.11.5.4 to 13.11.5.13	10.3.1	-	**SkyPier High Speed Ferries' Speed Restrictions and Route Diversions** ▪ SkyPier HSFs operating to / from Zhuhai and Macau would divert north of SCLKC Marine Park with a 15 knot speed limit to apply for the part-journeys that cross high CWD abundance grid squares as indicatively shown in **Drawing No. MCL/P132/EIA/13-023** of the EIA Report. Both the alignment of the northerly route and the portion of routings to be subject to the speed limit of 15 knots shall be finalised prior to commencement of construction based on the future review of up-to-date CWD abundance and EM&A data and taking reference to changes in total SkyPier HSF numbers; and ▪ A maximum of 10 knots will be enforced through the designated SCLKC Marine Park area at all times.	Area between the footprint and SCLKC Marine Park during construction phase	I
			Other mitigation measures ▪ The ET will audit various parameters including actual daily numbers of HSFs, compliance with the 15-knot speed limit in the speed control zone and diversion compliance for SkyPier HSFs operating to / from Zhuhai and Macau; and ▪ The effectiveness of the CWD mitigation measures after implementation of initial six month SkyPier HSF diversion and speed restriction will be reviewed.	Area between the footprint and SCLKC Marine Park during construction phase	I
13.11.5.14 to 13.11.5.18	10.3.1	2.31	**Dolphin Exclusion Zone** ▪ Establishment of a 24 hr Dolphin Exclusion Zone (DEZ) with a 250 m radius around the land formation works areas;	Marine waters around land formation works area during construction phase	I
			▪ A DEZ would also be implemented during ground improvement works (e.g. DCM), water jetting works for submarine cables diversion, open trench dredging at the field joint locations and seawall construction; and		I
			▪ A DEZ would also be implemented during bored piling work but as a precautionary measure only.		N/A
13.11.5.19	10.4	2.31	**Acoustic Decoupling of Construction Equipment** ▪ Air compressors and other noisy equipment that must be mounted on steel barges should be acoustically-decoupled to the greatest extent feasible, for instance by using rubber or air-filled tyres; and ▪ Specific acoustic decoupling measures shall be specified during the detailed design of the project for use during the land formation works.	Around coastal works area during construction phase	I
13.11.5.20	10.6.1	2.29	**Spill Response Plan** ▪ An oil and hazardous chemical spill response plan is proposed to be established during the construction phase as a precautionary measure so that appropriate actions to prevent or reduce risks to CWDs can be undertaken in the event of an accidental spillage.	Construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
13.11.5.21 to 13.11.5.23	10.6.1	-	**Construction Vessel Speed Limits and Skipper Training** ▪ A speed limit of 10 knots should be strictly observed for construction vessels at areas with the highest CWD densities; and ▪ Vessels traversing through the work areas should be required to use predefined and regular routes (which would presumably become known to resident dolphins) to reduce disturbance to cetaceans due to vessel movements. Specific marine routes shall be specified by the Contractor prior to construction commencing.	All areas north and west of Lantau Island during construction phase	I
			Fisheries Impact – Construction Phase		
14.9.1.2 to 14.9.1.5	-		**Minimisation of Land Formation Area** ▪ Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for fisheries resources.	Land formation footprint / during detailed design phase to completion of construction	I
14.9.1.6	-	-	**Use of Construction Methods with Minimal Risk/Disturbance** ▪ Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF;	During construction phase at marine works area	I
			▪ Use of Deep Cement Mixing (DCM) method instead of conventional seabed dredging for the land formation works to reduce the risk of negative impacts through the elevation of suspended solids and contaminants on fisheries and the marine environment;		I
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and		N/A
			▪ Use of horizontal directional drilling (HDD) method and water jetting methods for placement of undersea cables and pipelines to minimise the disturbance to fisheries resources.		I
14.9.1.11	-		**Strict Enforcement of No-Dumping Policy** ▪ A policy prohibiting dumping of wastes, chemicals, oil, trash, plastic, or any other substance that would potentially be harmful to dolphins and/or their habitat in the work area; ▪ Mandatory educational programme of the no-dumpling policy be made available to all construction site personnel for all project-related works; ▪ Fines for infractions should be implemented; and ▪ Unscheduled, on-site audits shall be implemented.	All works area during the construction phase	I
14.9.1.12	-		**Good Construction Site Practices** ▪ Regular inspection of the integrity and effectiveness of all silt curtains and monitoring of effluents to ensure that any discharge meets effluent discharge guidelines; ▪ Keep the number of working or stationary vessels present on-site to the minimum anytime; and	All works area during the construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Unscheduled, on-site audits for all good site practice restrictions should be conducted, and fines or penalties sufficient to be an effective deterrent need to be levied against violators.		
14.9.1.13 to 14.9.1.18	-		**Mitigation for Indirect Disturbance due to Deterioration of Water Quality** ▪ Water quality mitigation measures during construction phases include consideration of alternative construction methods, deployment of silt curtain and good site practices;	All works area during the construction phase	I
			▪ Alternative construction methods including use of non-dredge methods for ground improvement (e.g. Deep Cement Mixing (DCM), prefabricated vertical drains (PVD), sand compaction piles, steel cells, stone columns and vertical sand drains);		I
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and		N/A
			▪ Use of horizontal directional drilling (HDD) method and water jetting methods for placement of undersea cables and pipelines to minimise the disturbance to fisheries resources.		I
			Landscape and Visual Impact – Construction Phase		
Table 15.6	12.3	-	**CM1 -** The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM2 -** Reduction of construction period to practical minimum.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM3 -** Phasing of the construction stage to reduce visual impacts during the construction phase.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM4 -** Construction traffic (land and sea) including construction plants, construction vessels and barges should be kept to a practical minimum.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM5 -** Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.	All works areas for duration of works; Upon handover and completion of works. –	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
				may be disassembled in phases	
Table 15.6	12.3	-	**CM6 -** Avoidance of excessive height and bulk of site buildings and structures.	New passenger concourse, terminal 2 expansion and other proposed airport related buildings and structures under the project; Upon handover and completion of works.	N/A
Table 15.6	12.3	-	**CM7** - Control of night-time lighting by hooding all lights and through minimisation of night working periods.	All works areas for duration of works; Upon handover and completion of works. – may be disassembled in phases	I
Table 15.6	12.3	-	**CM8 -** All existing trees shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, 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.	All existing trees to be retained; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM9 -** Trees unavoidably affected by the works shall be transplanted where practical. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.	All existing trees to be affected by the works; Upon handover and completion of works.	N/A
Table 15.6	12.3	-	**CM10 -** Land formation works shall be followed with advanced hydroseeding around taxiways and runways as soon as practical.	All affected existing grass areas around runways and verges/Duration of works; Upon handover and completion of works.	N/A
			Cultural Heritage Impact – Construction Phase		
			Not applicable.		

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Health Impact – Aircraft Emissions		
			Not applicable.		
			Health Impact – Aircraft Noise		
			Not applicable.		

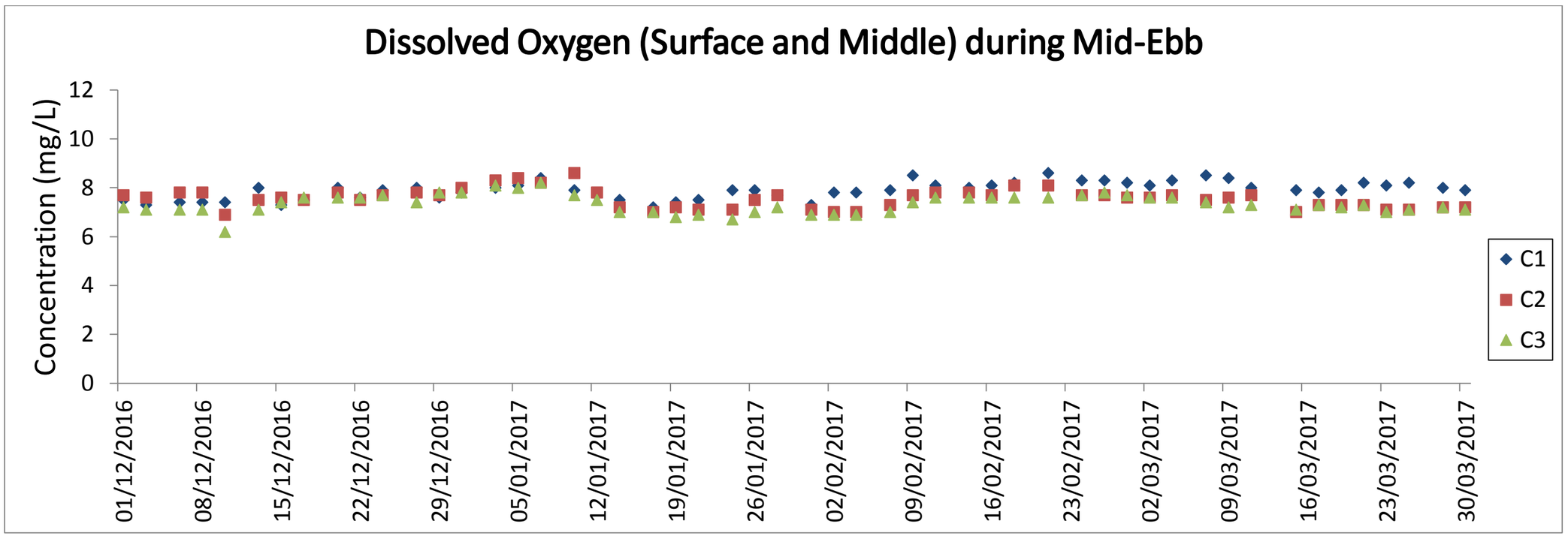
Notes:

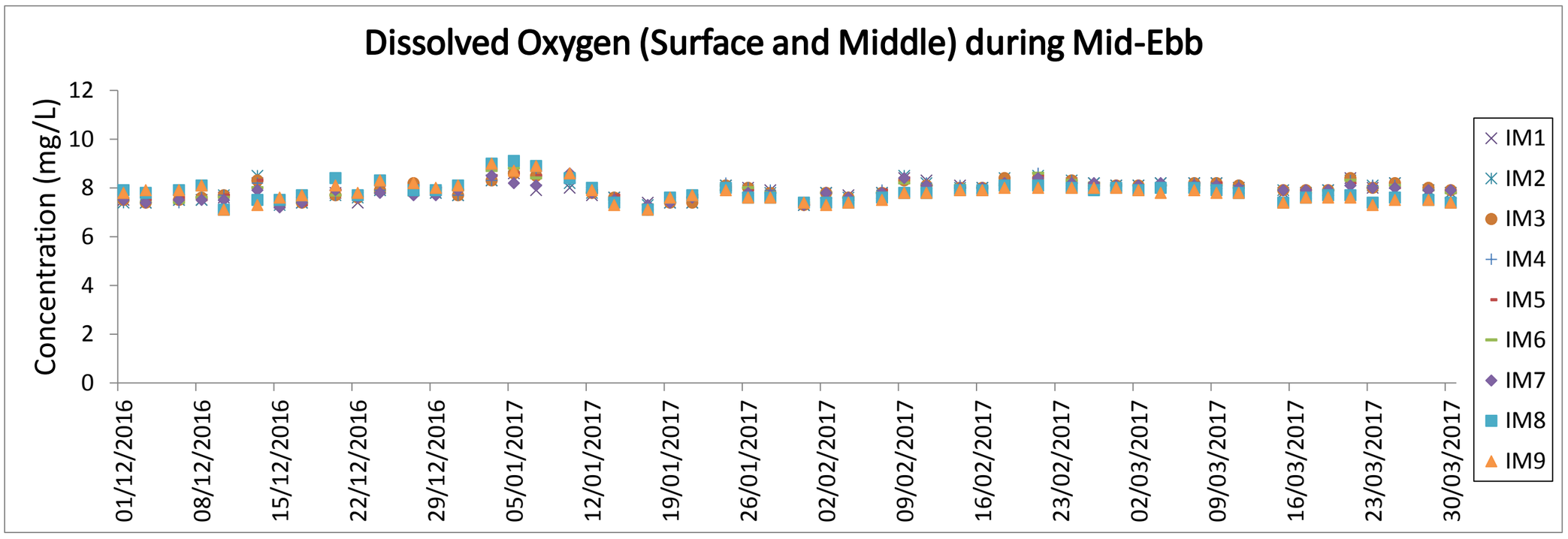
I= implemented where applicable;

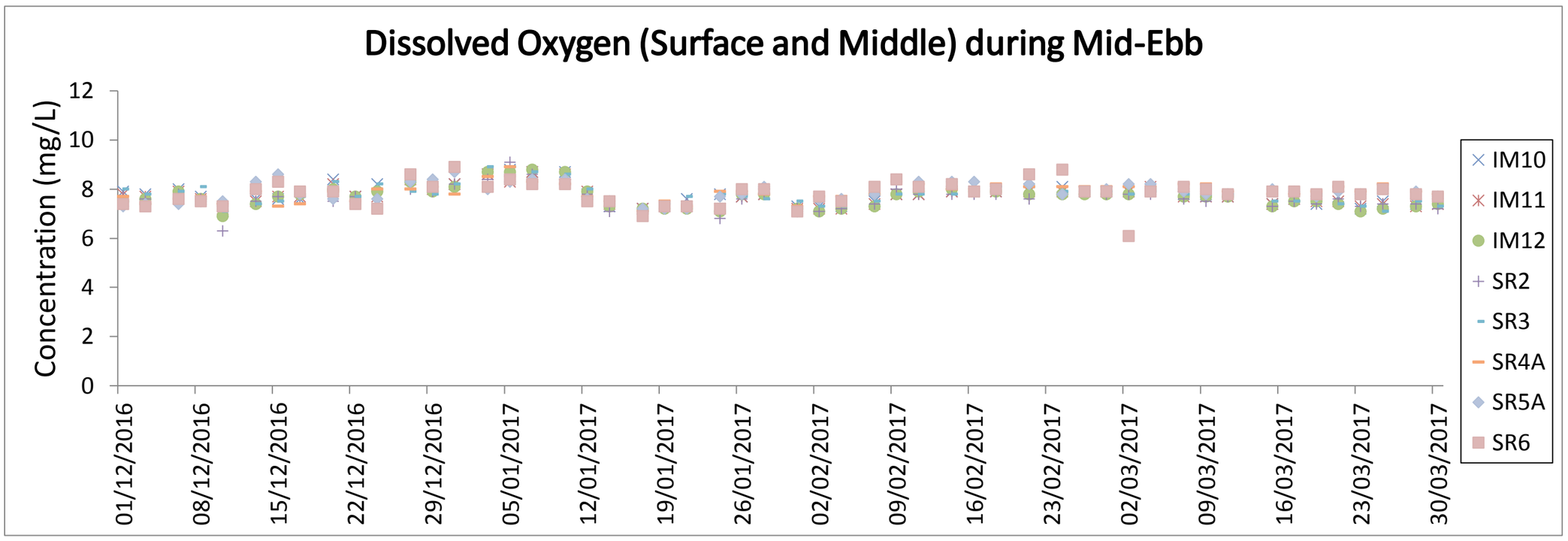
N/A= not applicable to the construction works implemented during the reporting month.

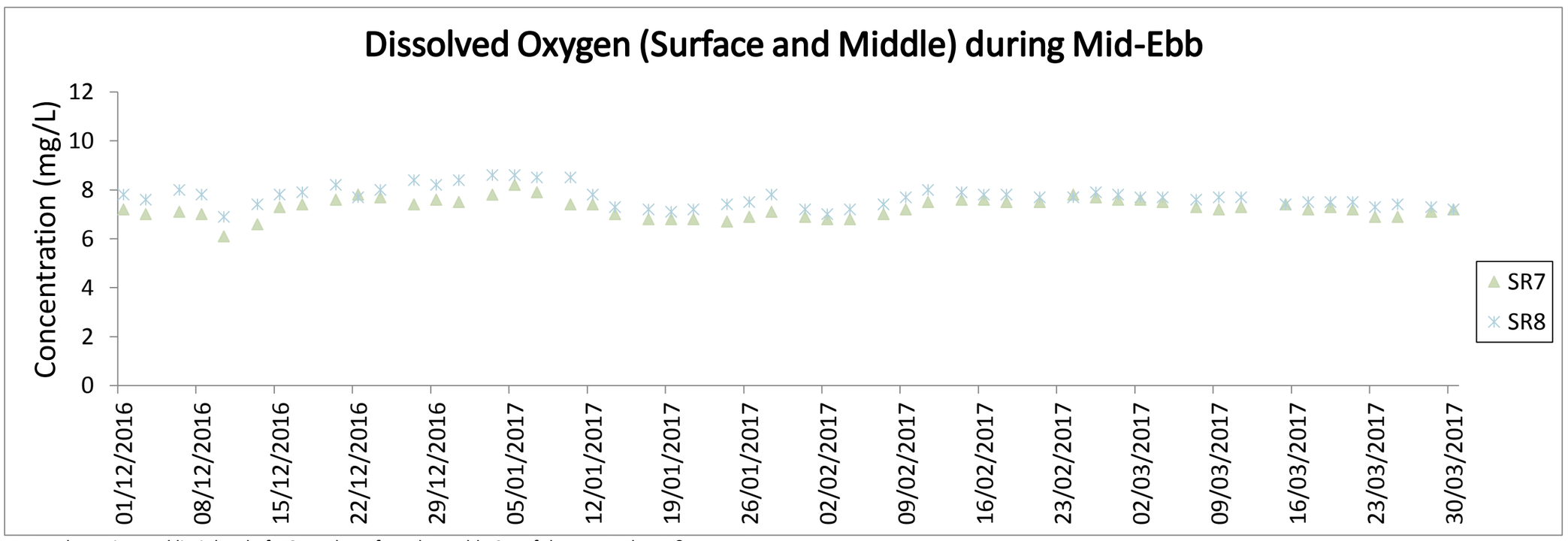
^ Checked by ET during site inspection

Appendix D. Graphical Plots of Water Quality Monitoring Result

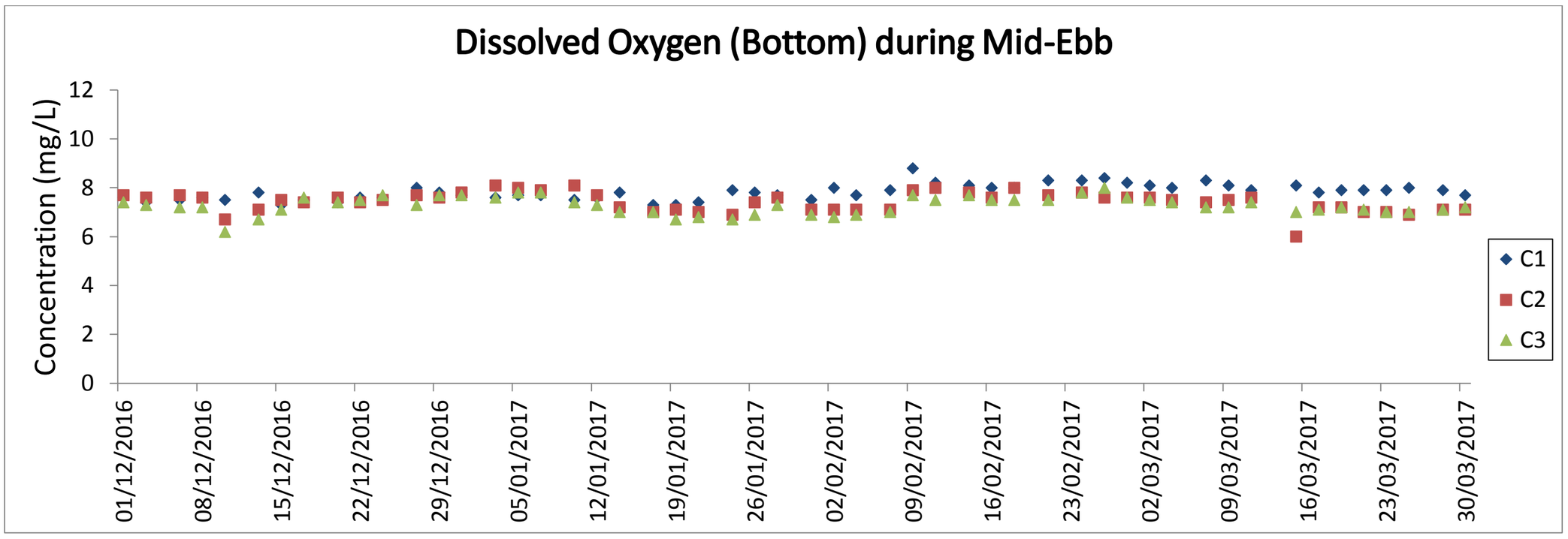


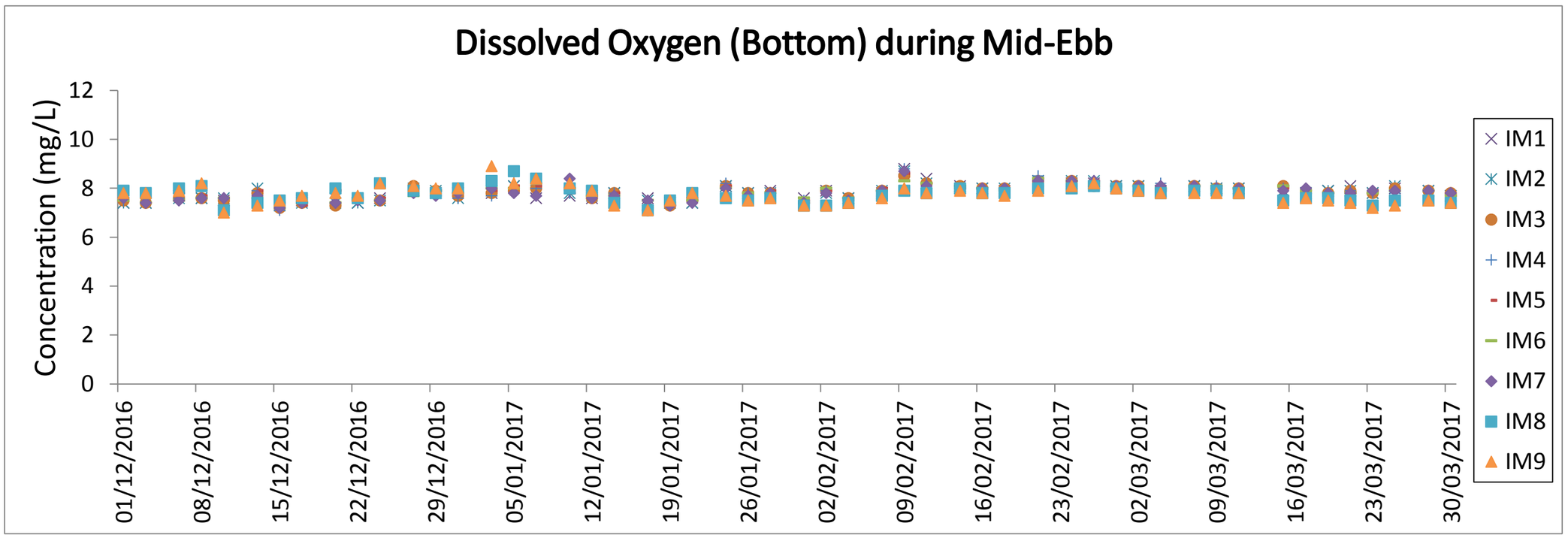


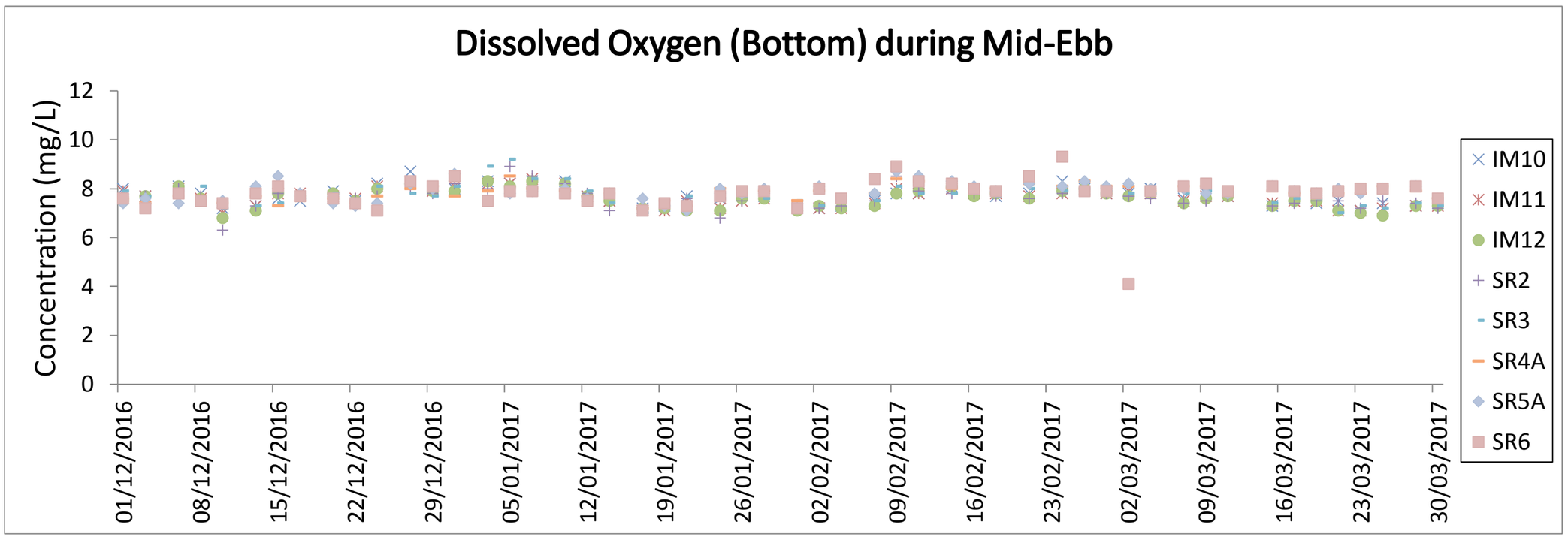


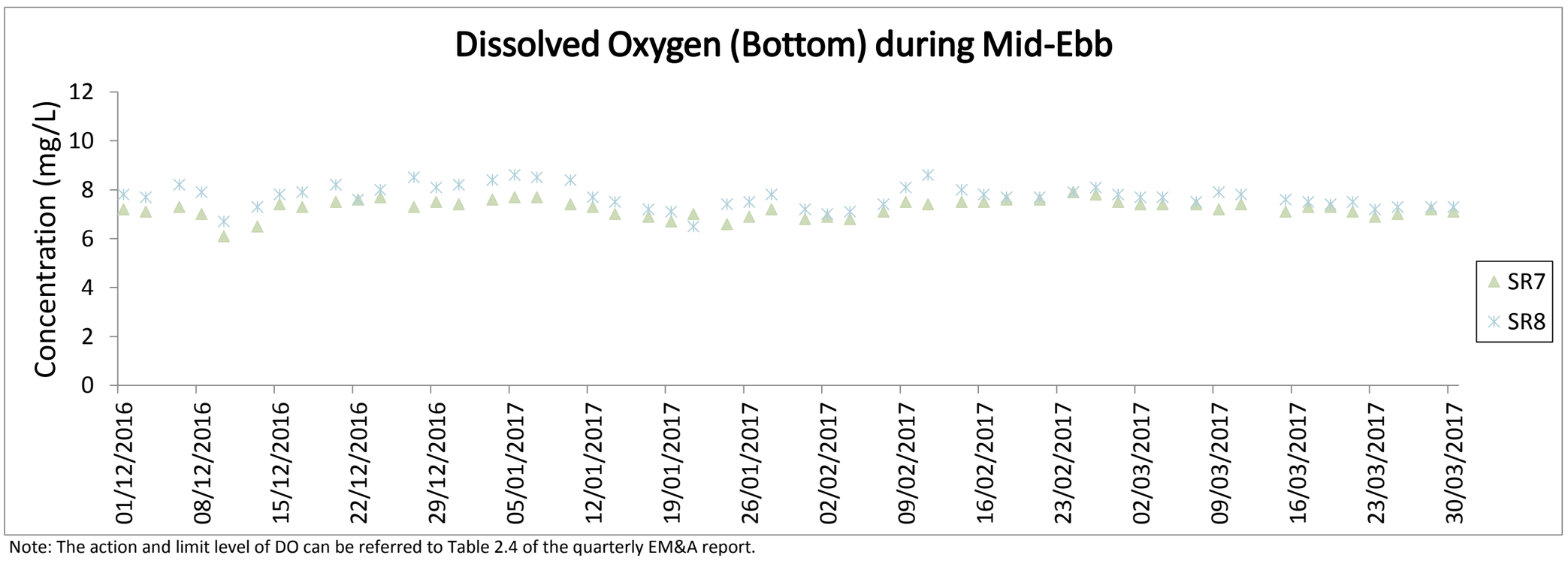


Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.

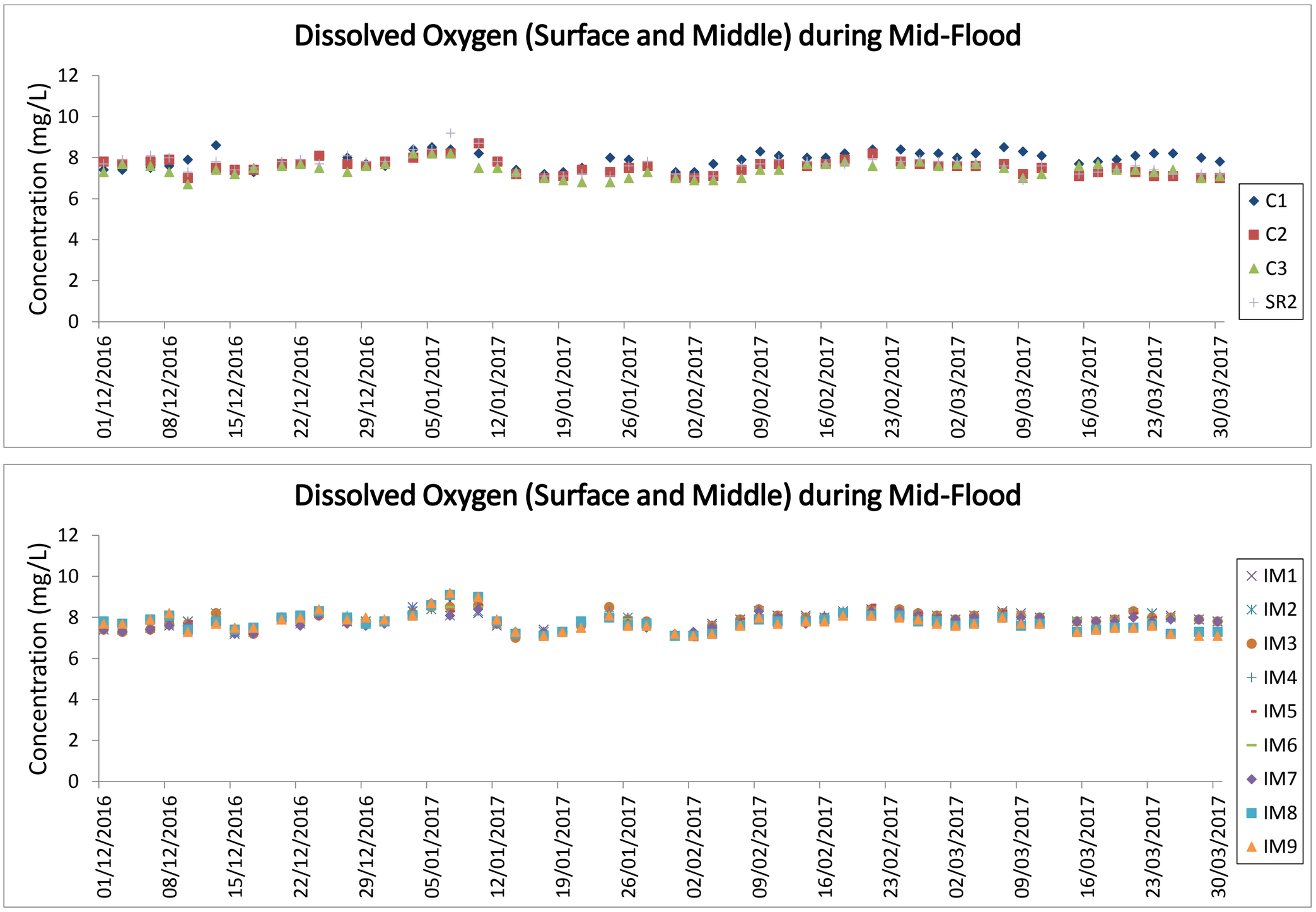


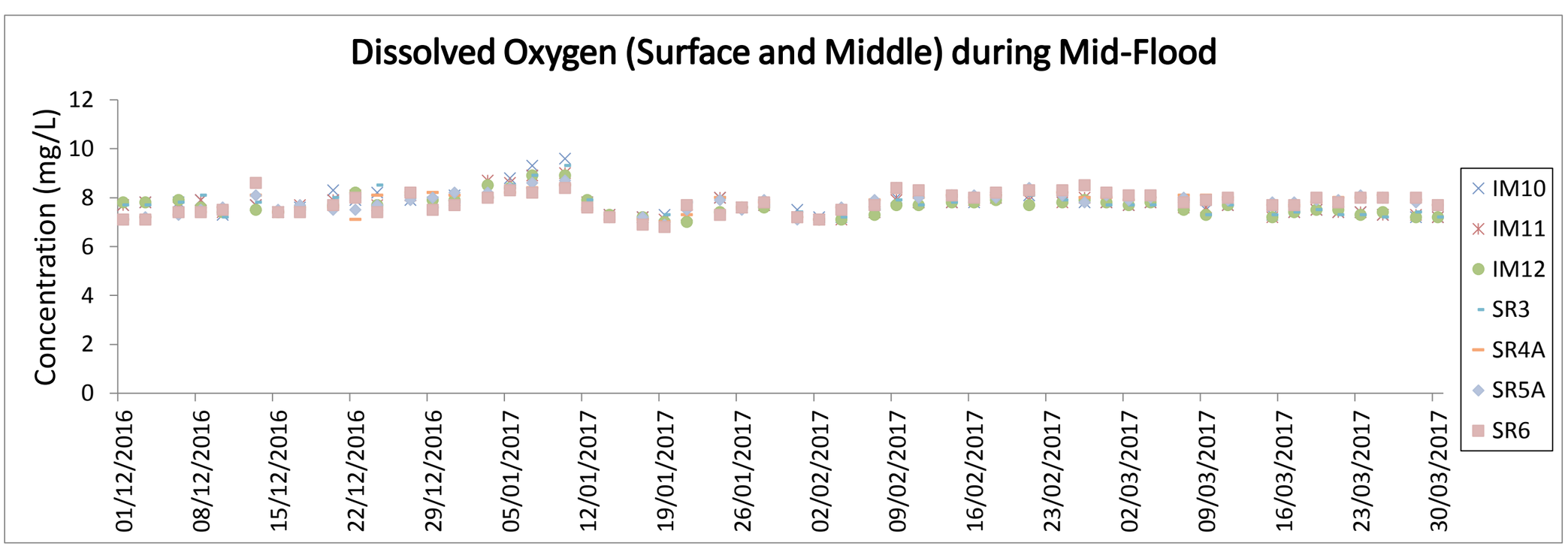


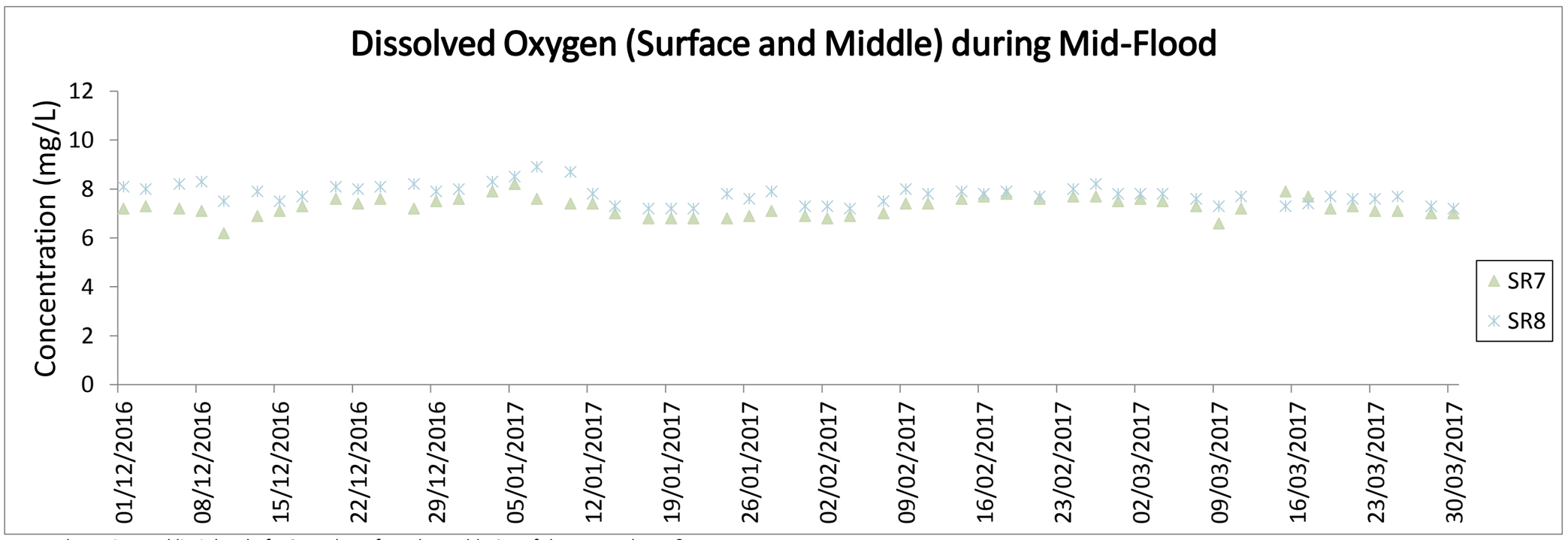




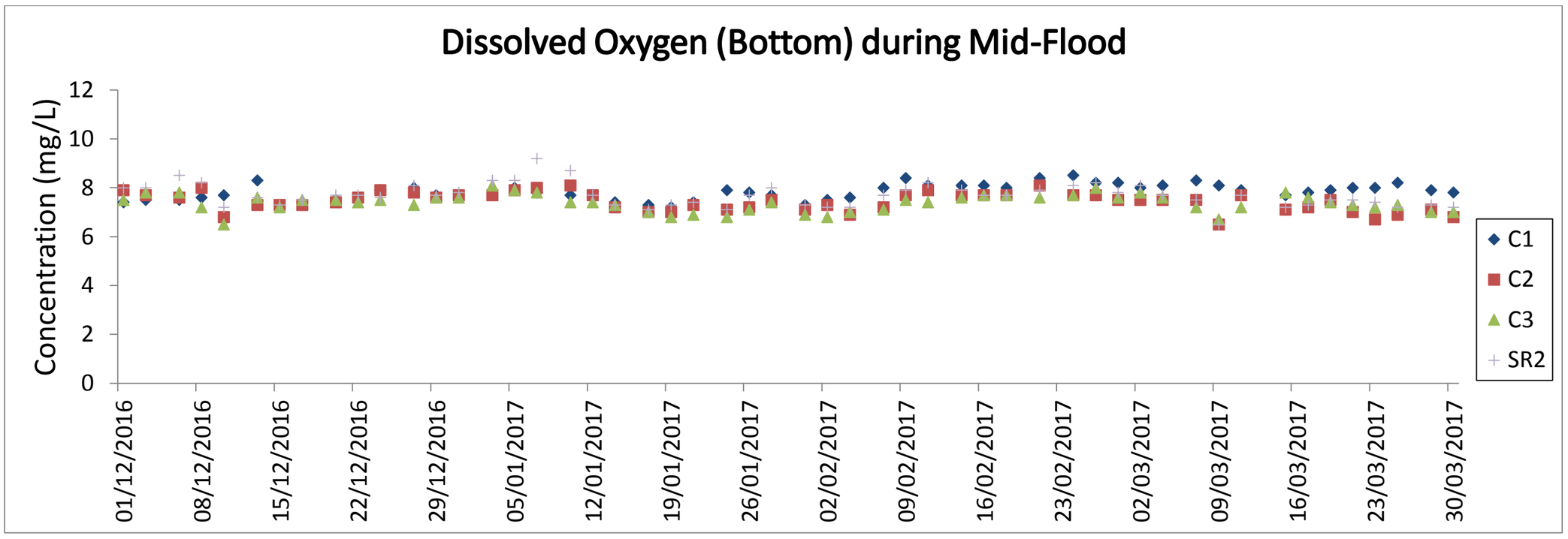
Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.

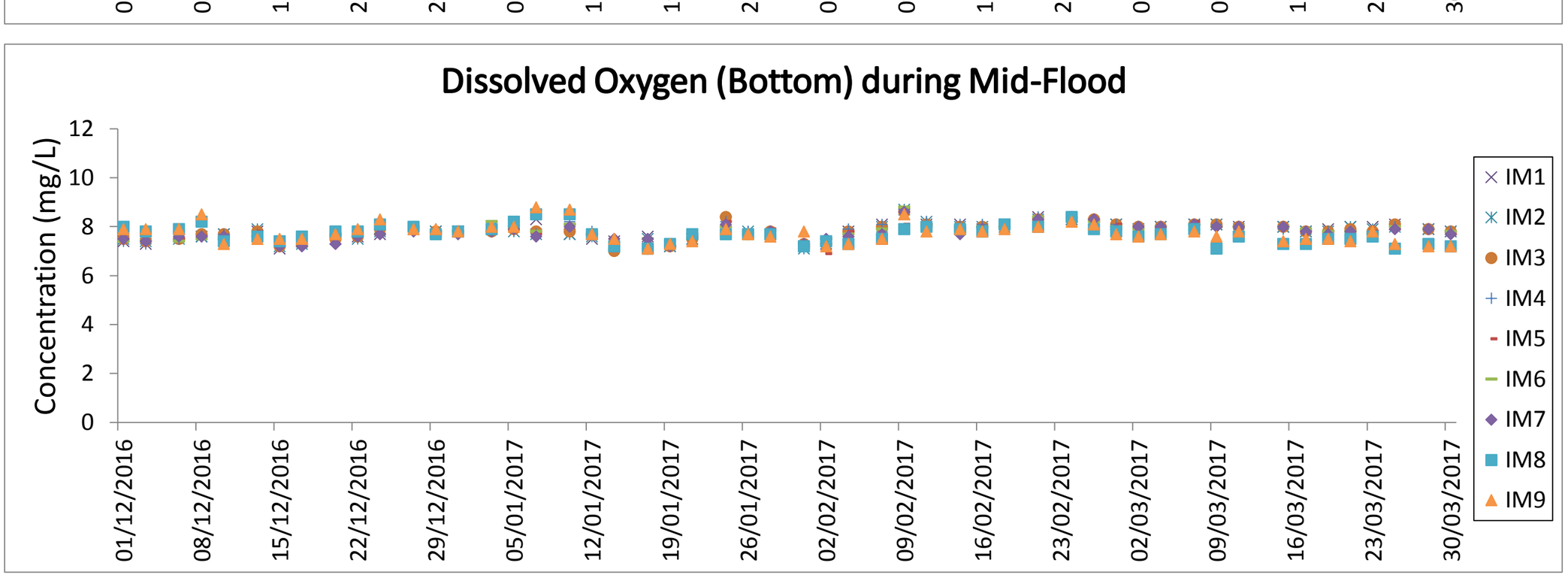


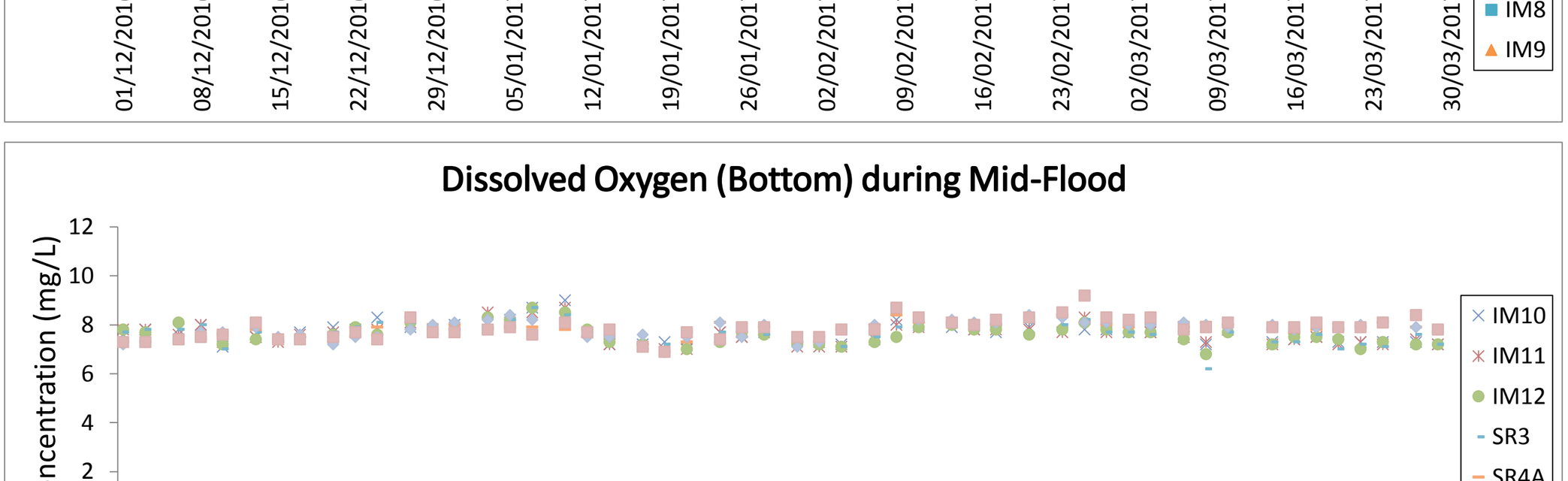




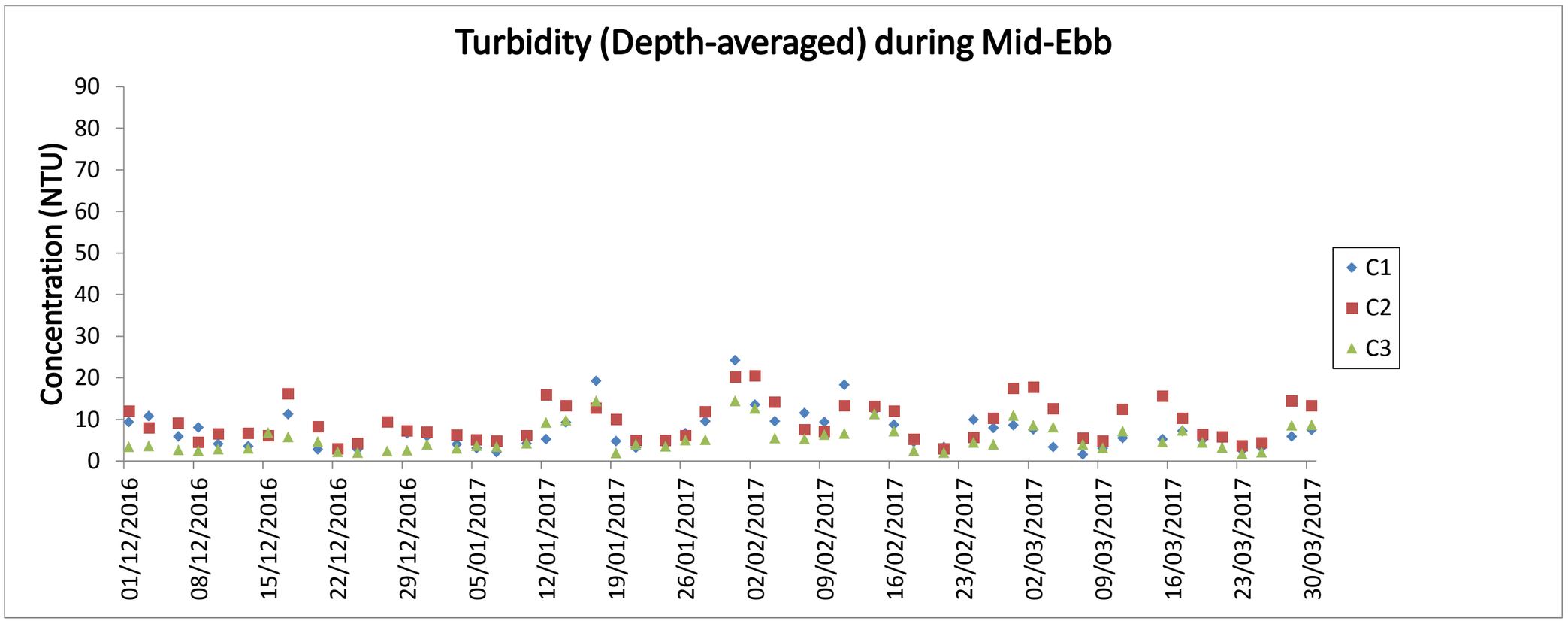
Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.

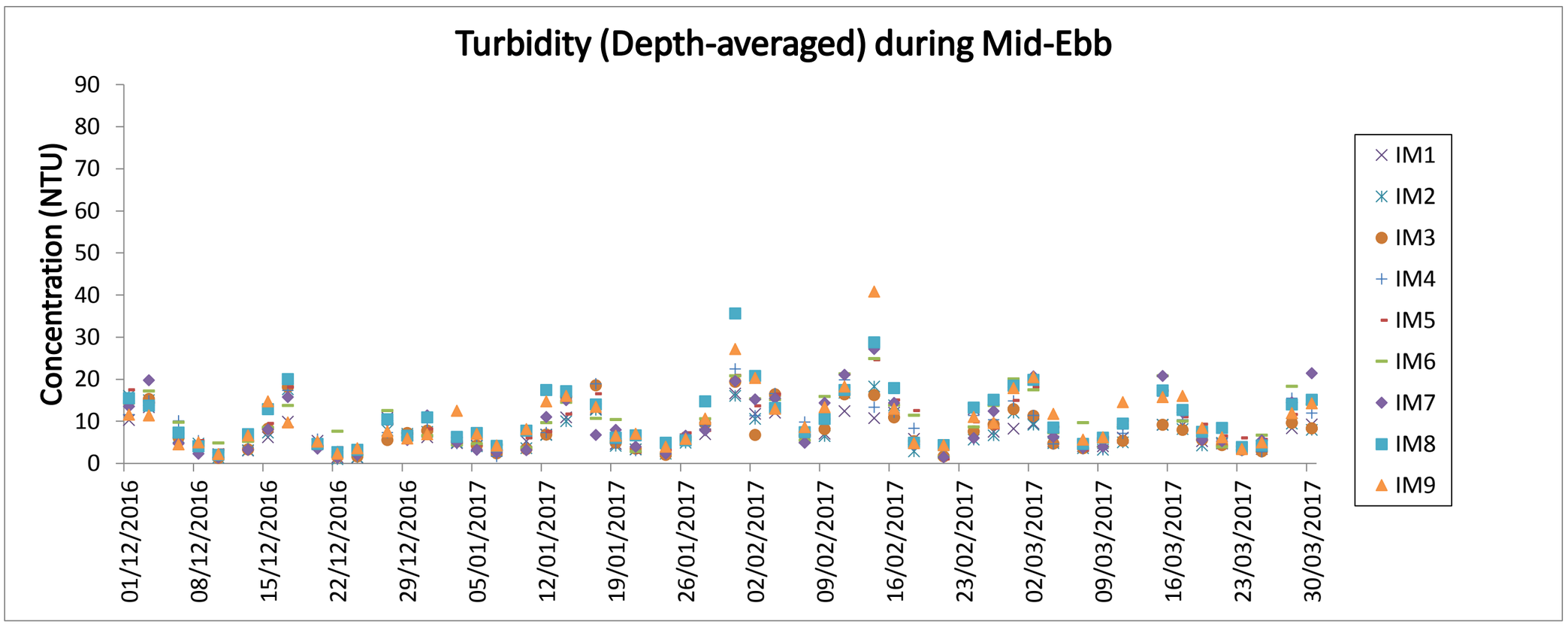


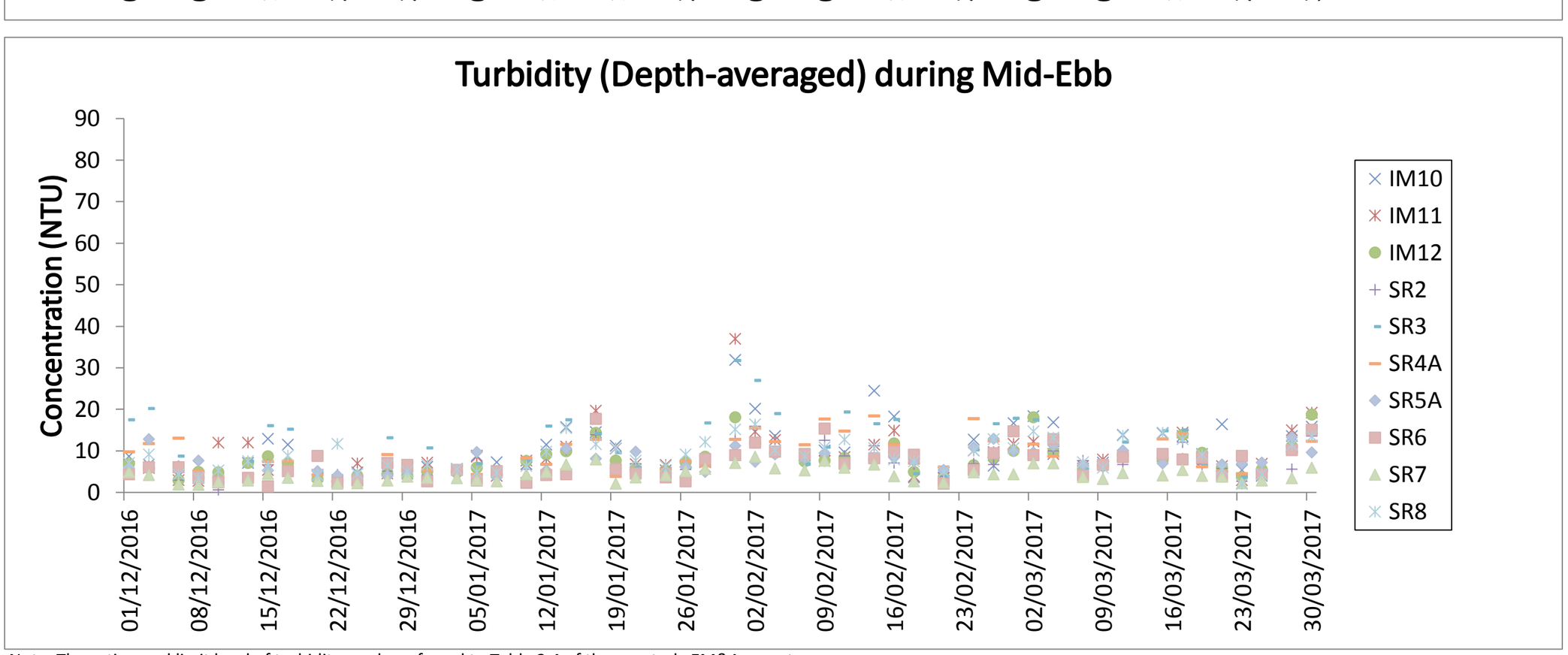




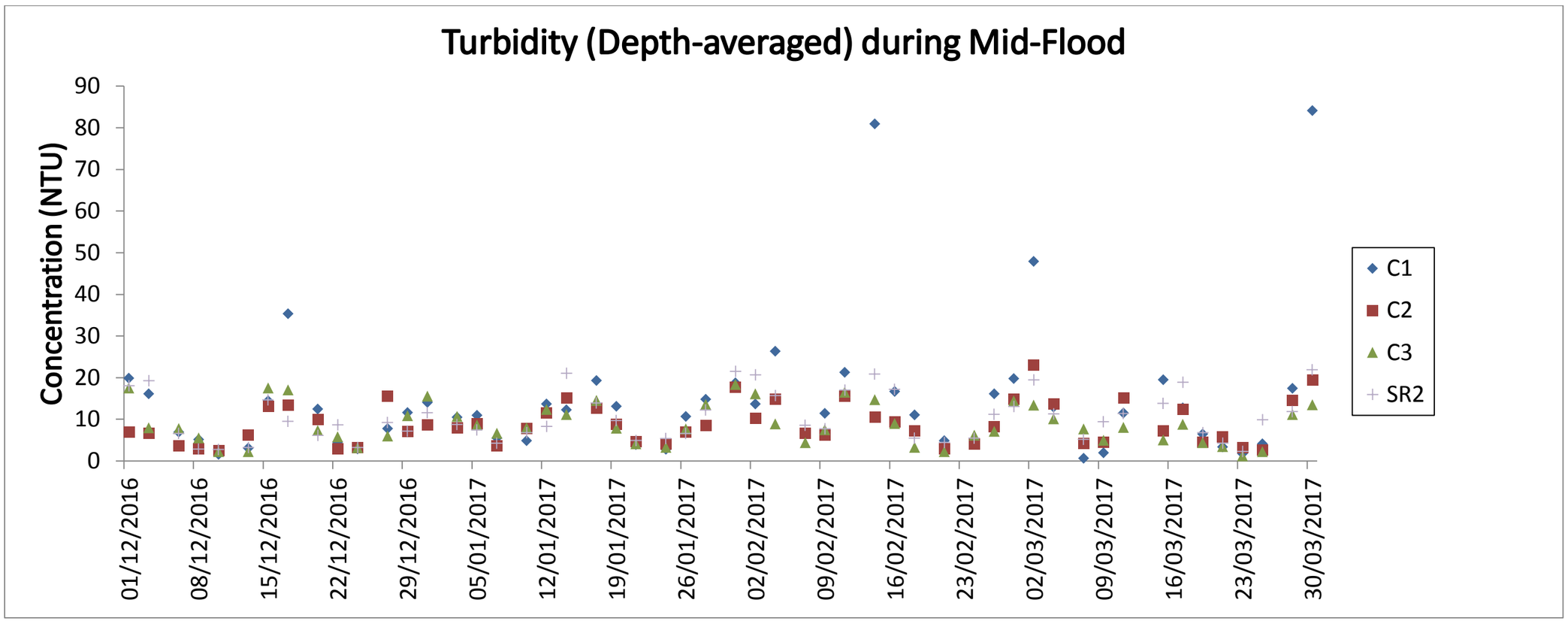
Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.

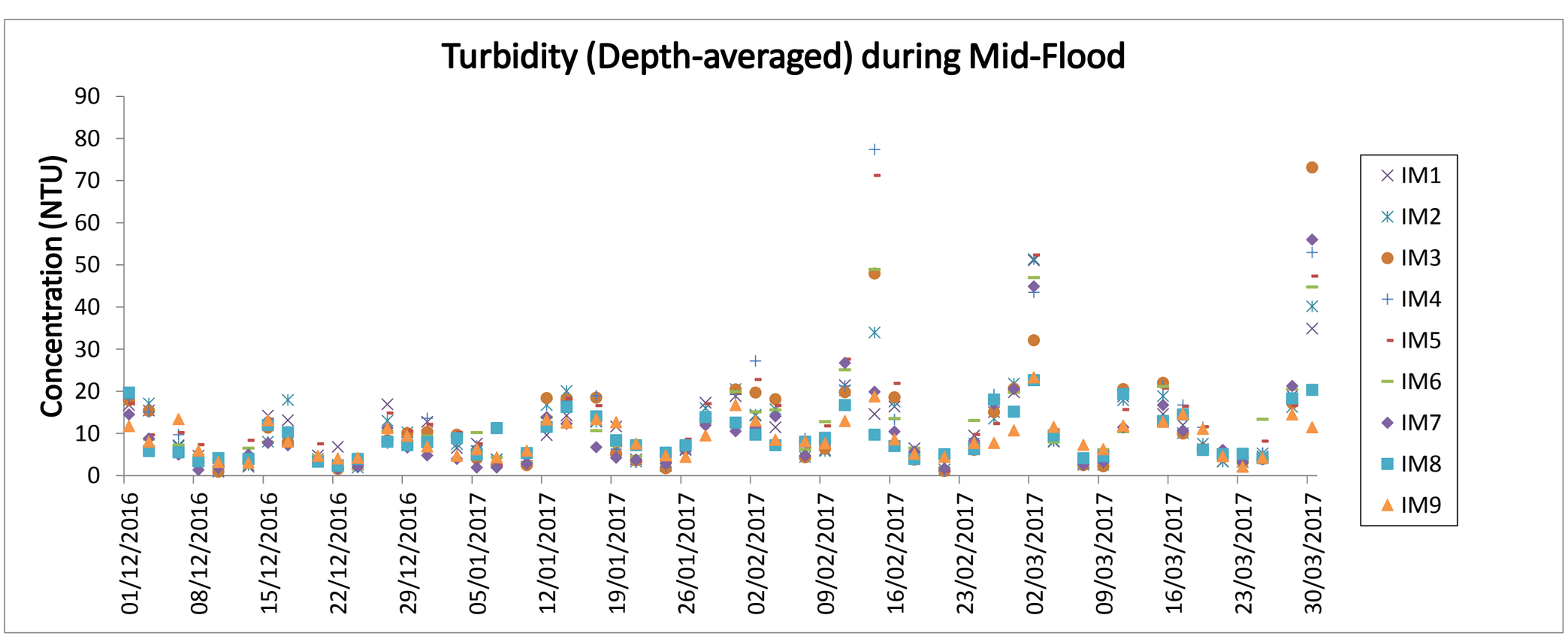


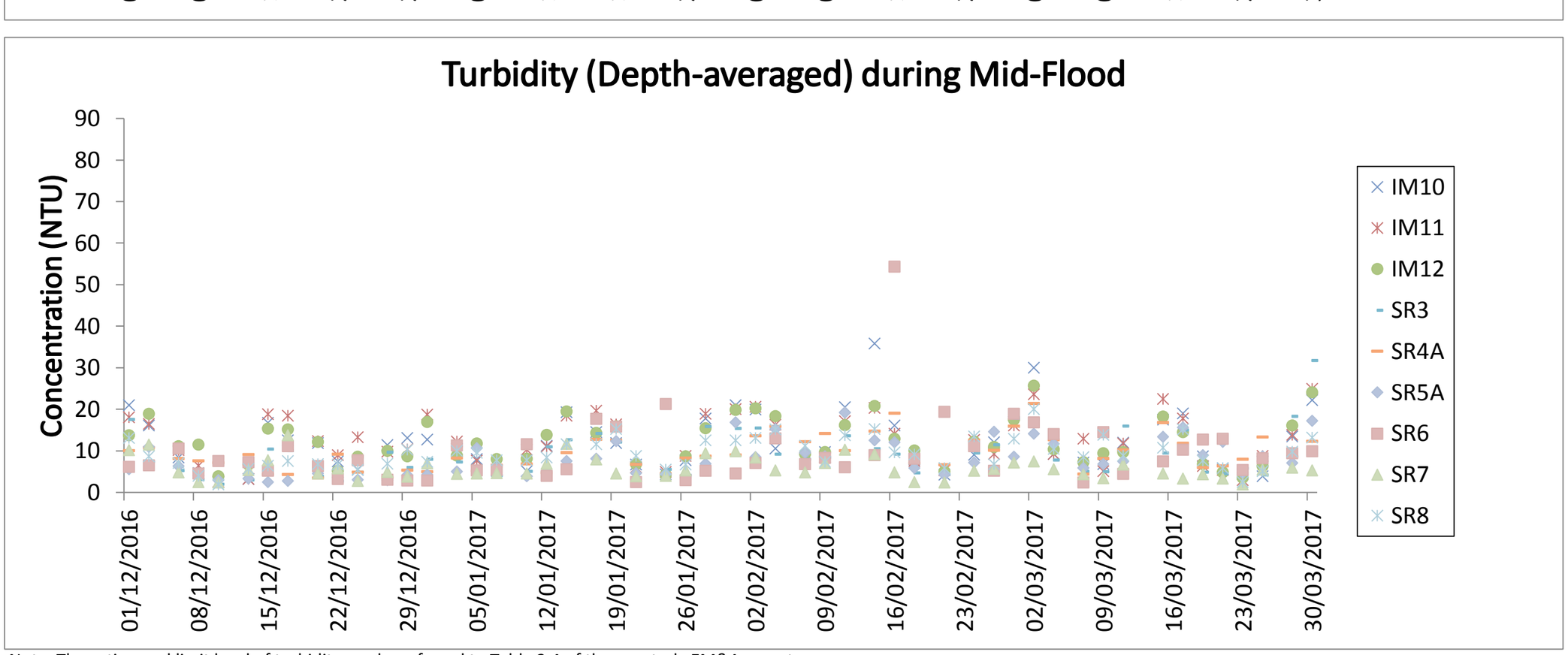




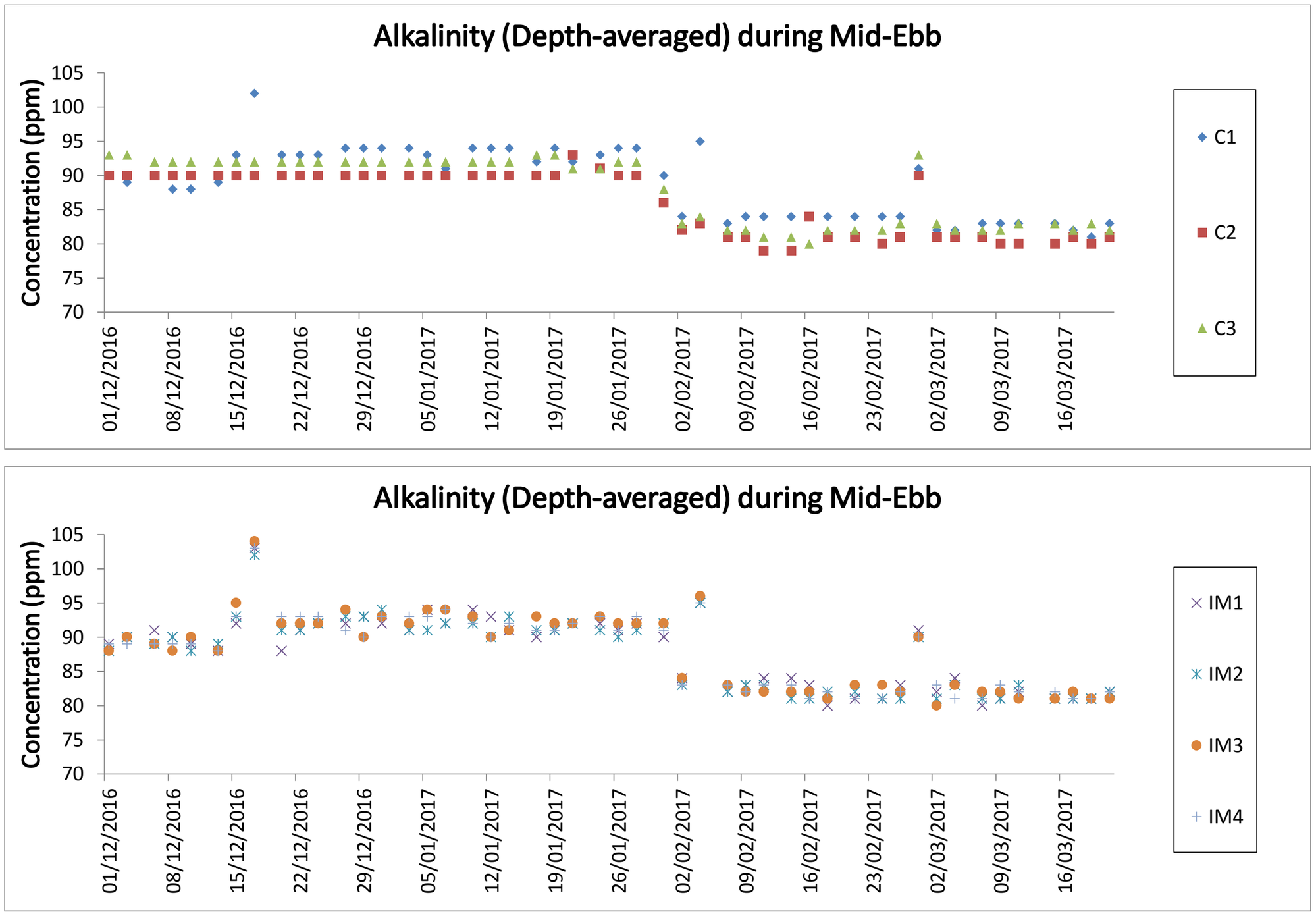
Note: The action and limit level of turbidity can be referred to Table 2.4 of the quarterly EM&A report.

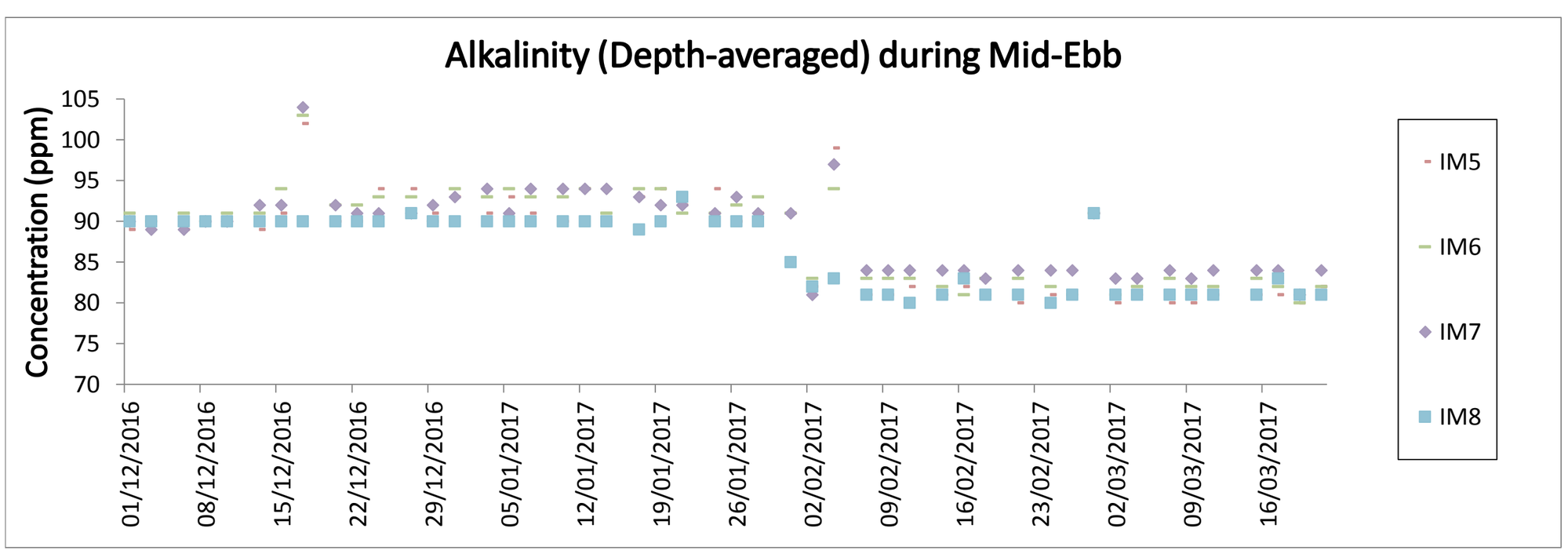


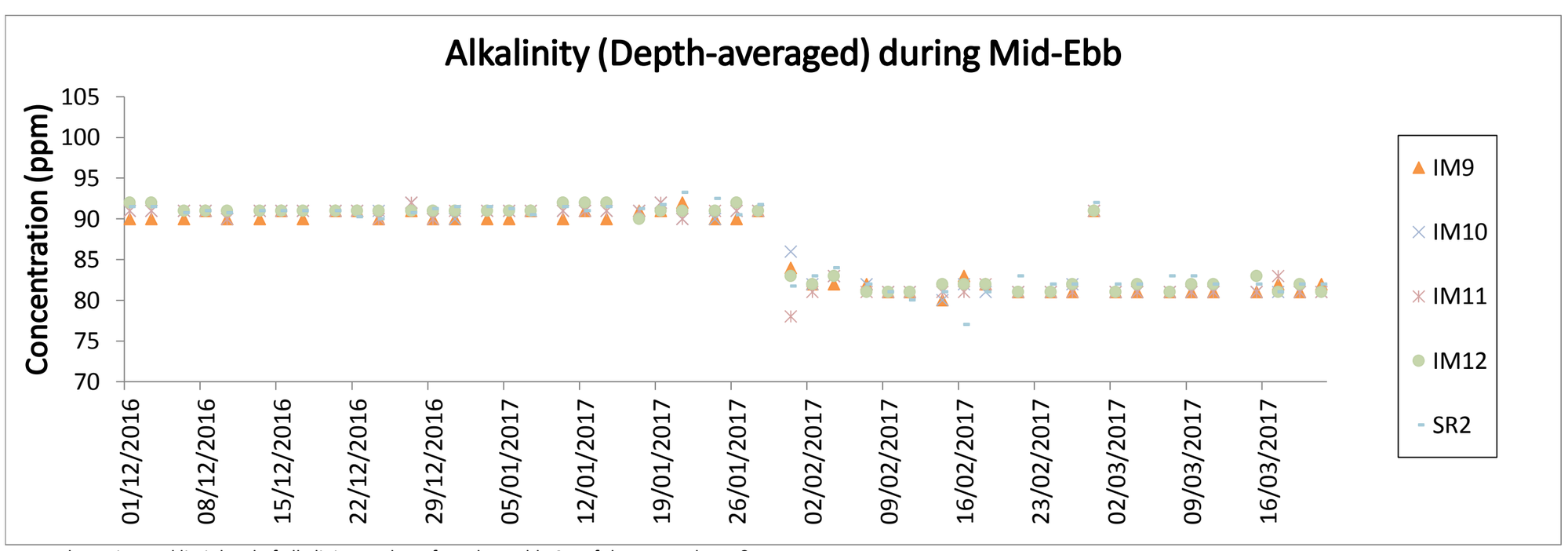




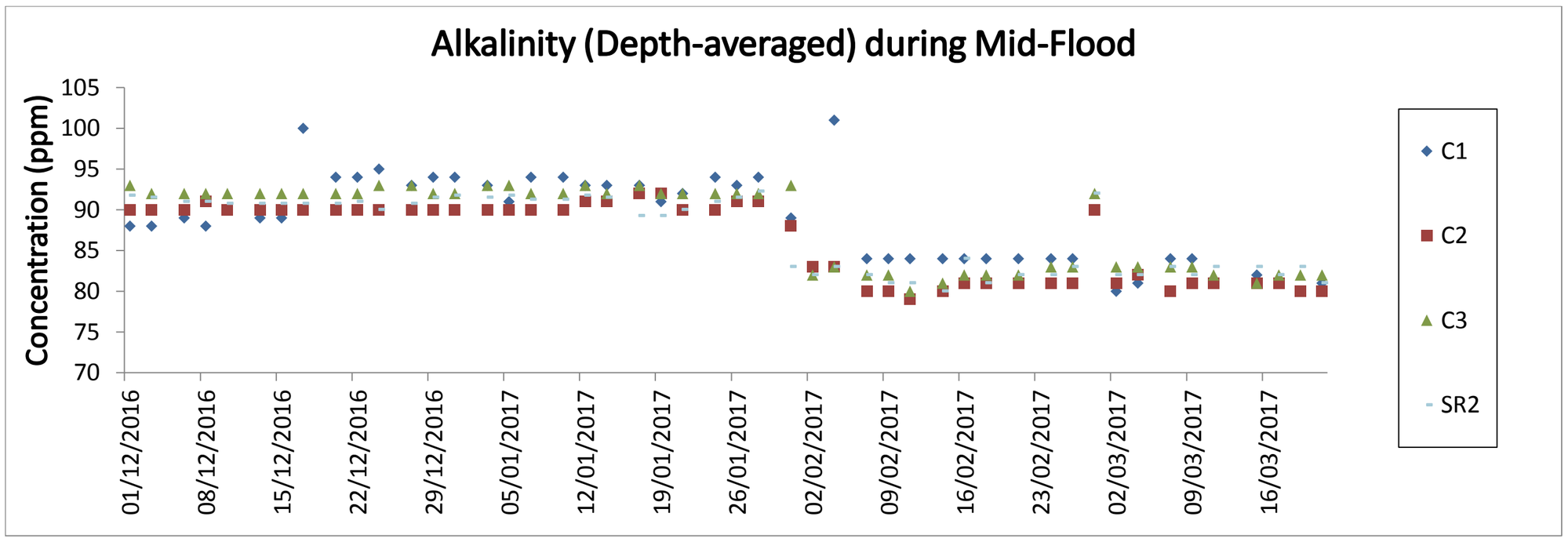
Note: The action and limit level of turbidity can be referred to Table 2.4 of the quarterly EM&A report.

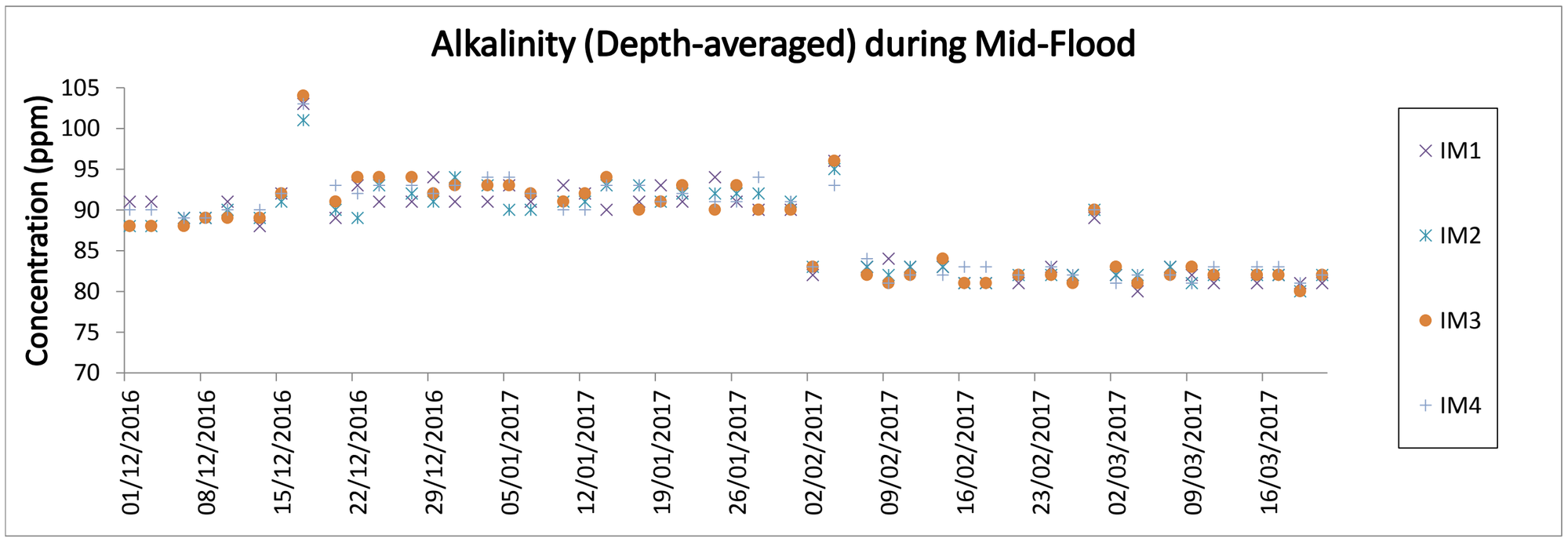


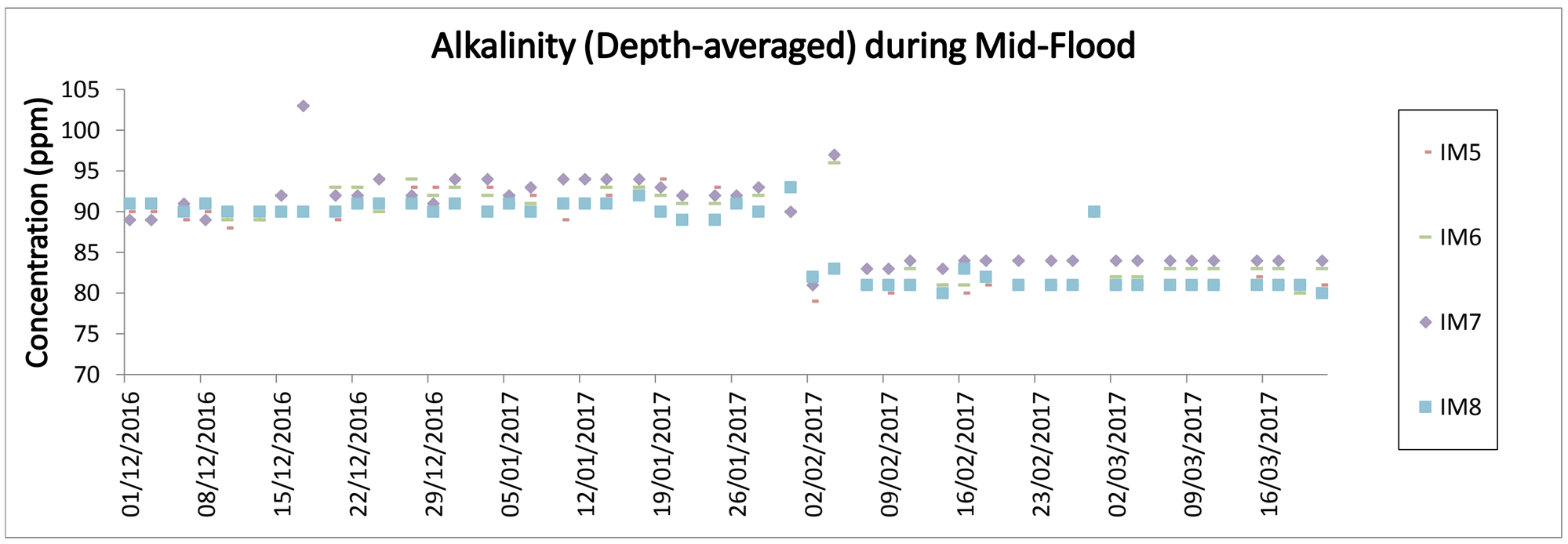


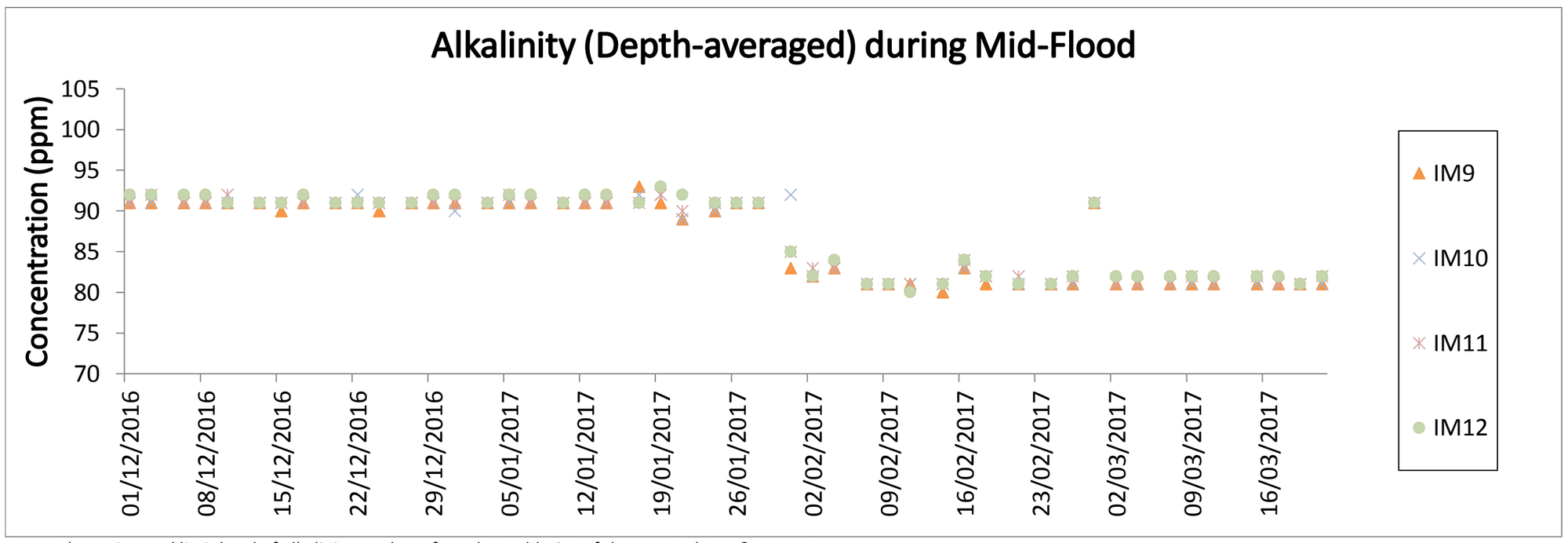


Note: The action and limit level of alkalinity can be referred to Table 2.4 of the quarterly EM&A report.

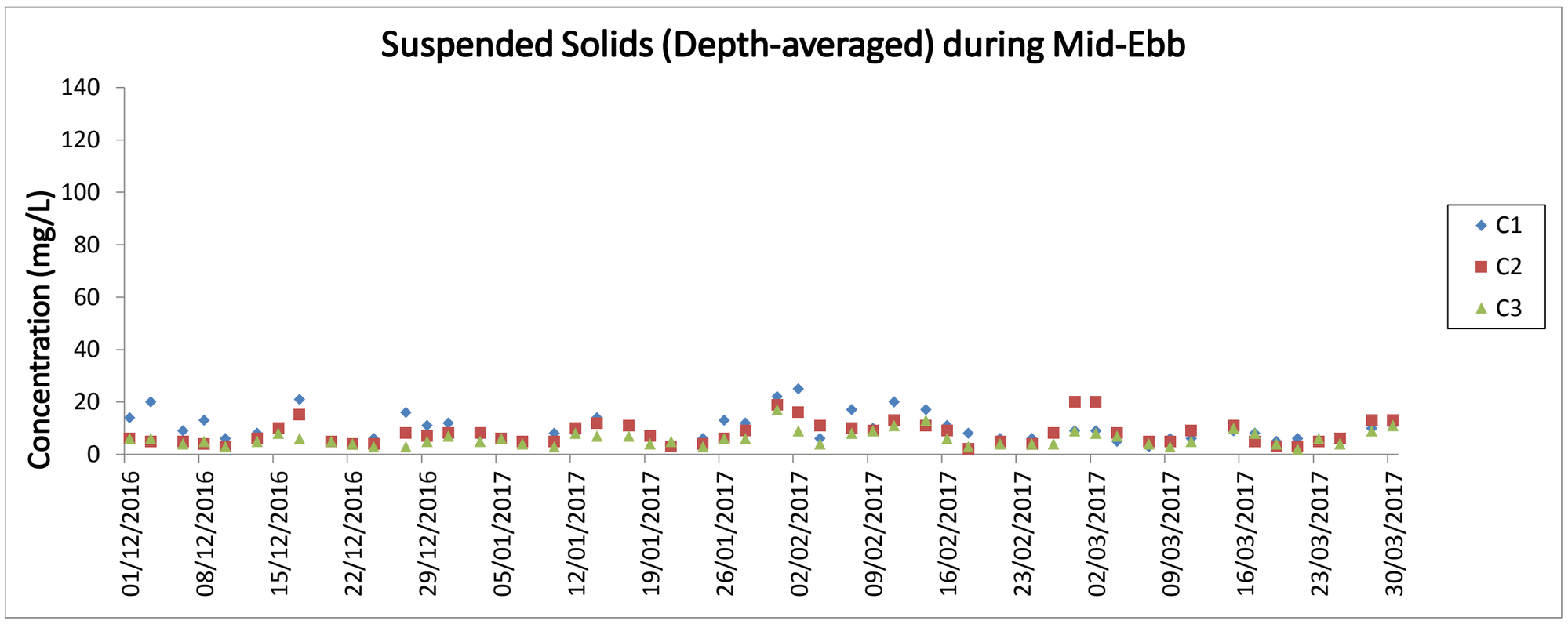


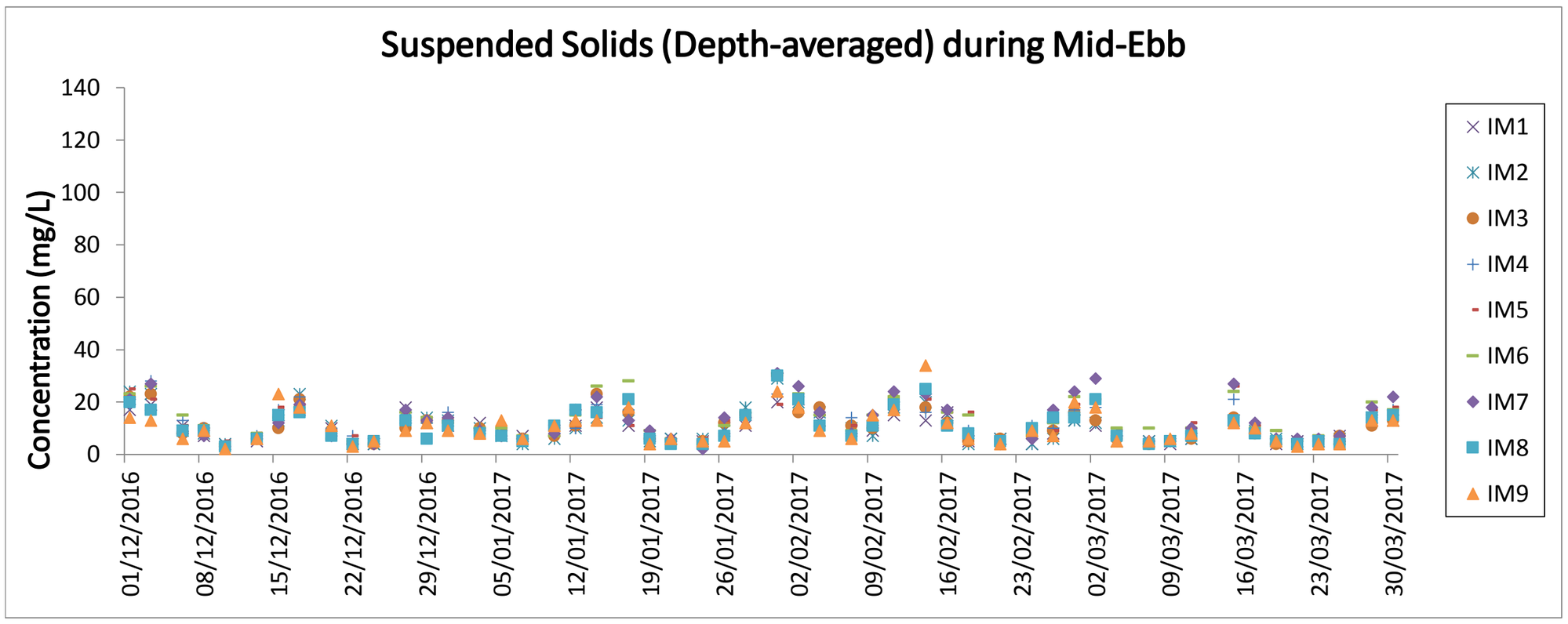


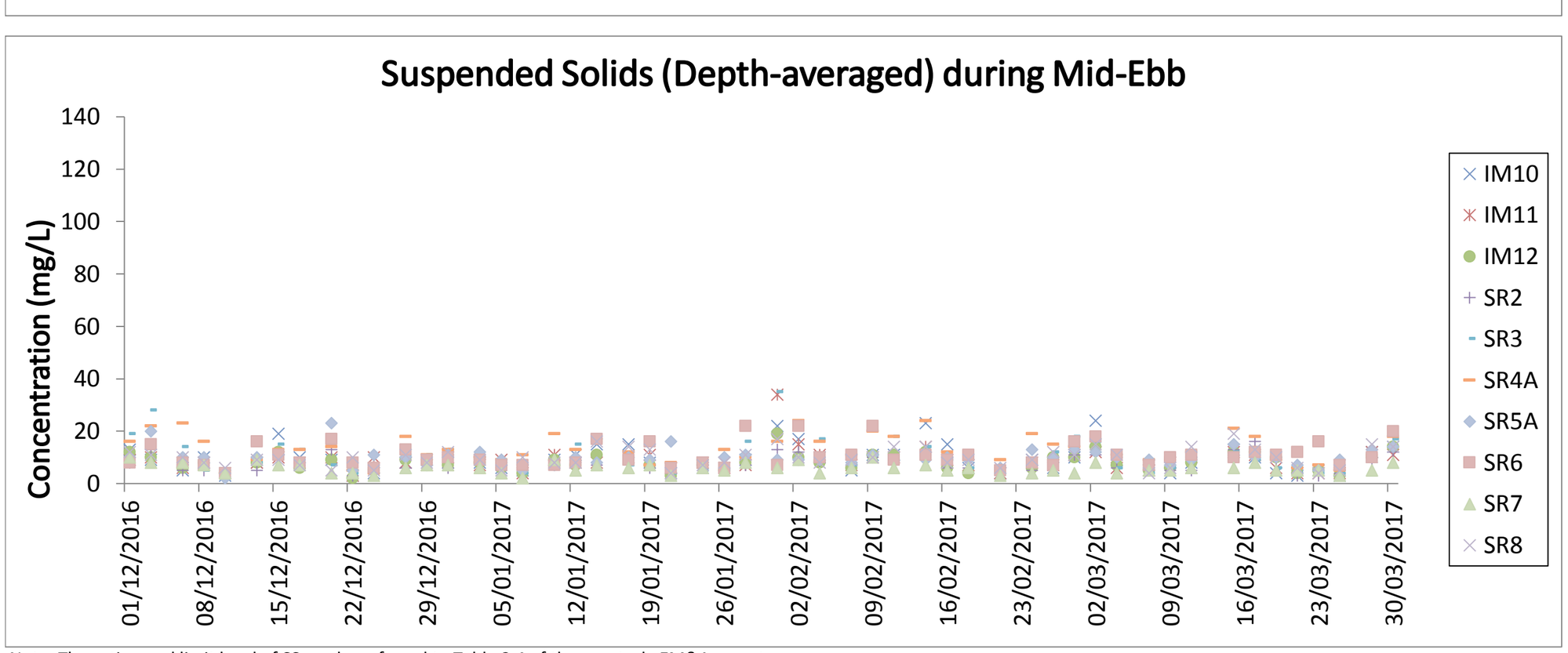




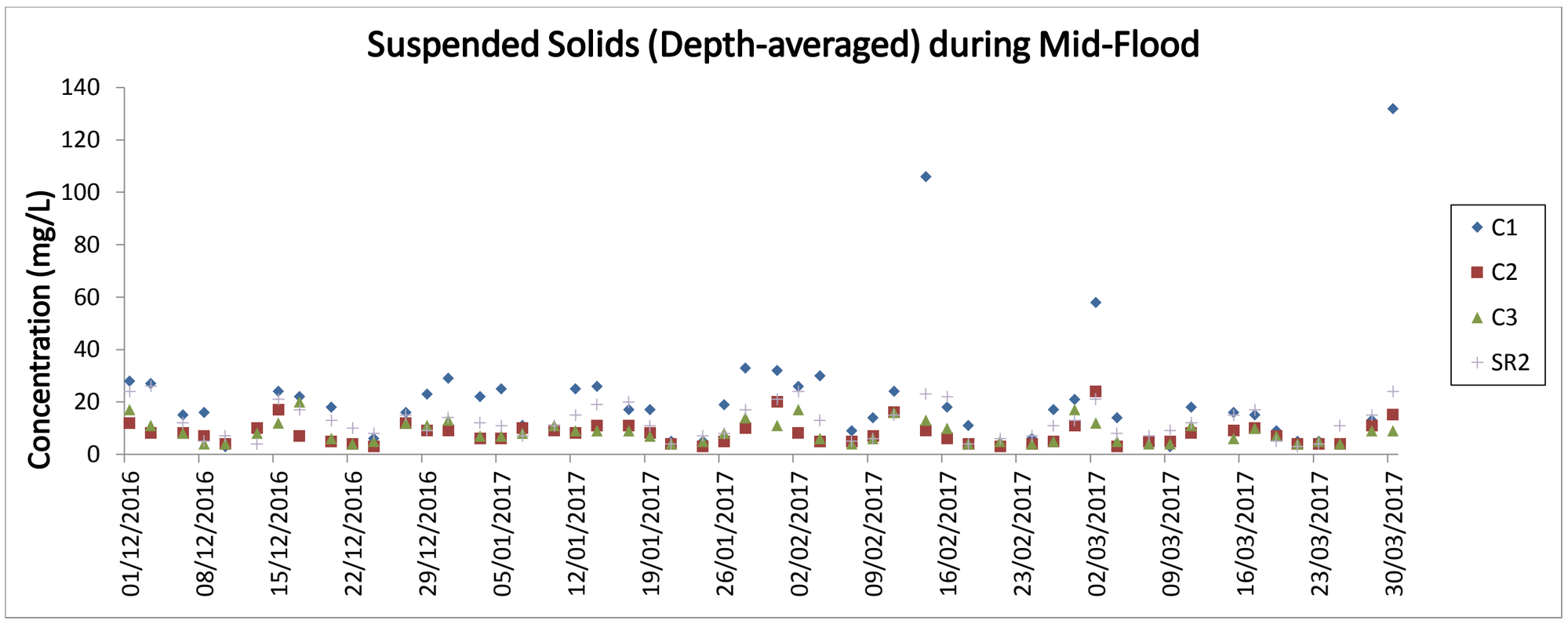
Note: The action and limit level of alkalinity can be referred to Table 2.4 of the quarterly EM&A report.

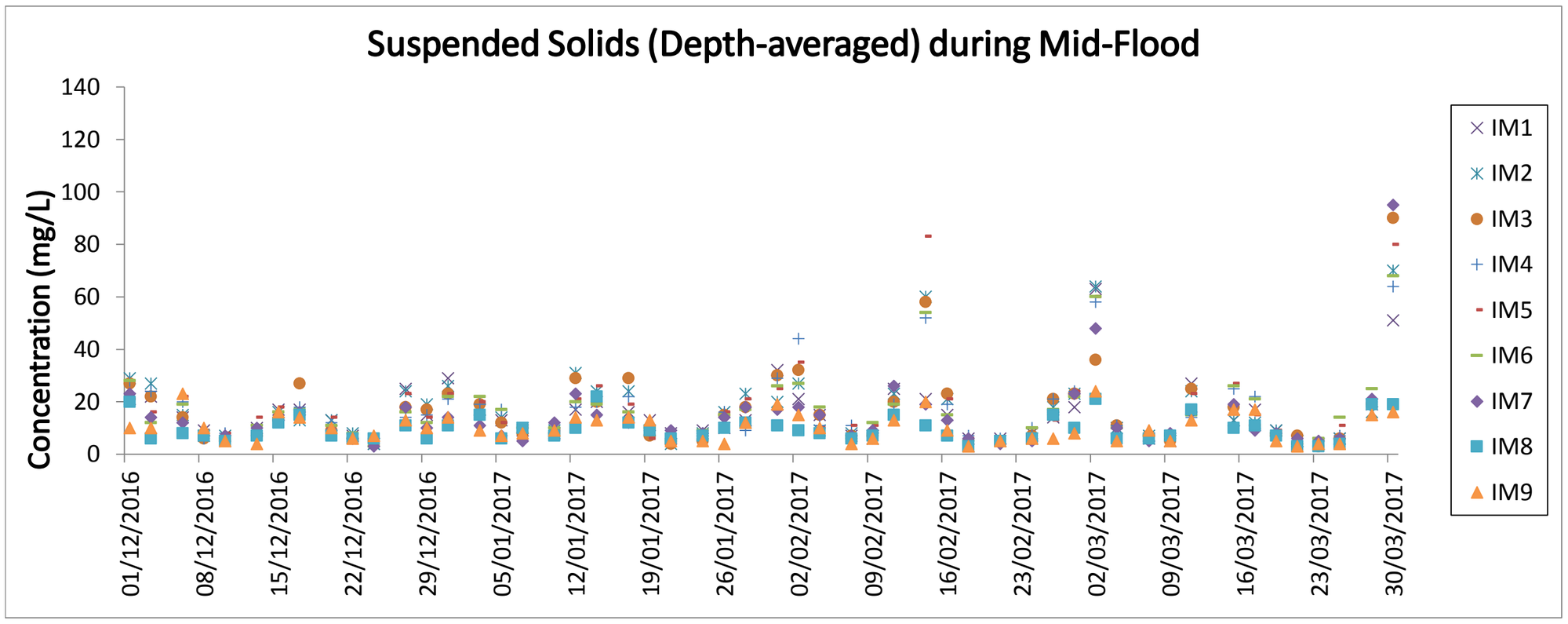


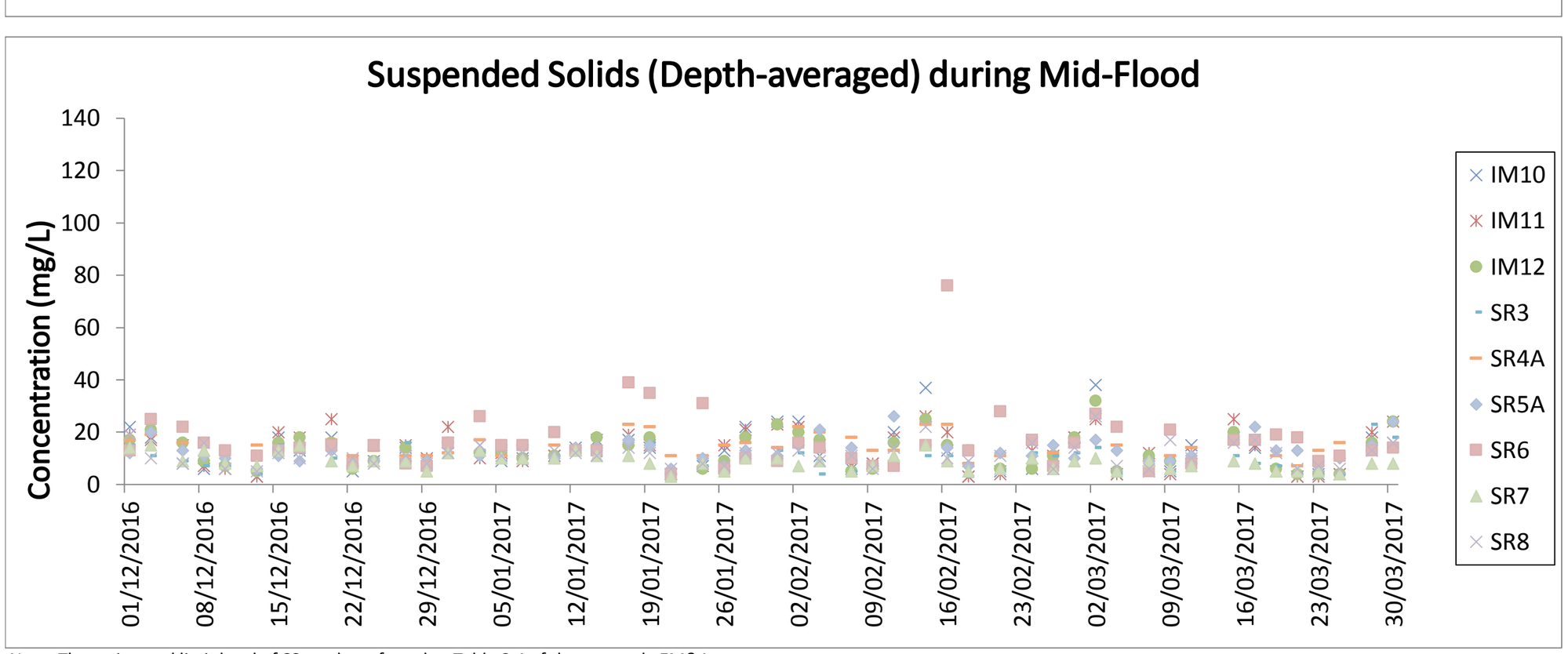




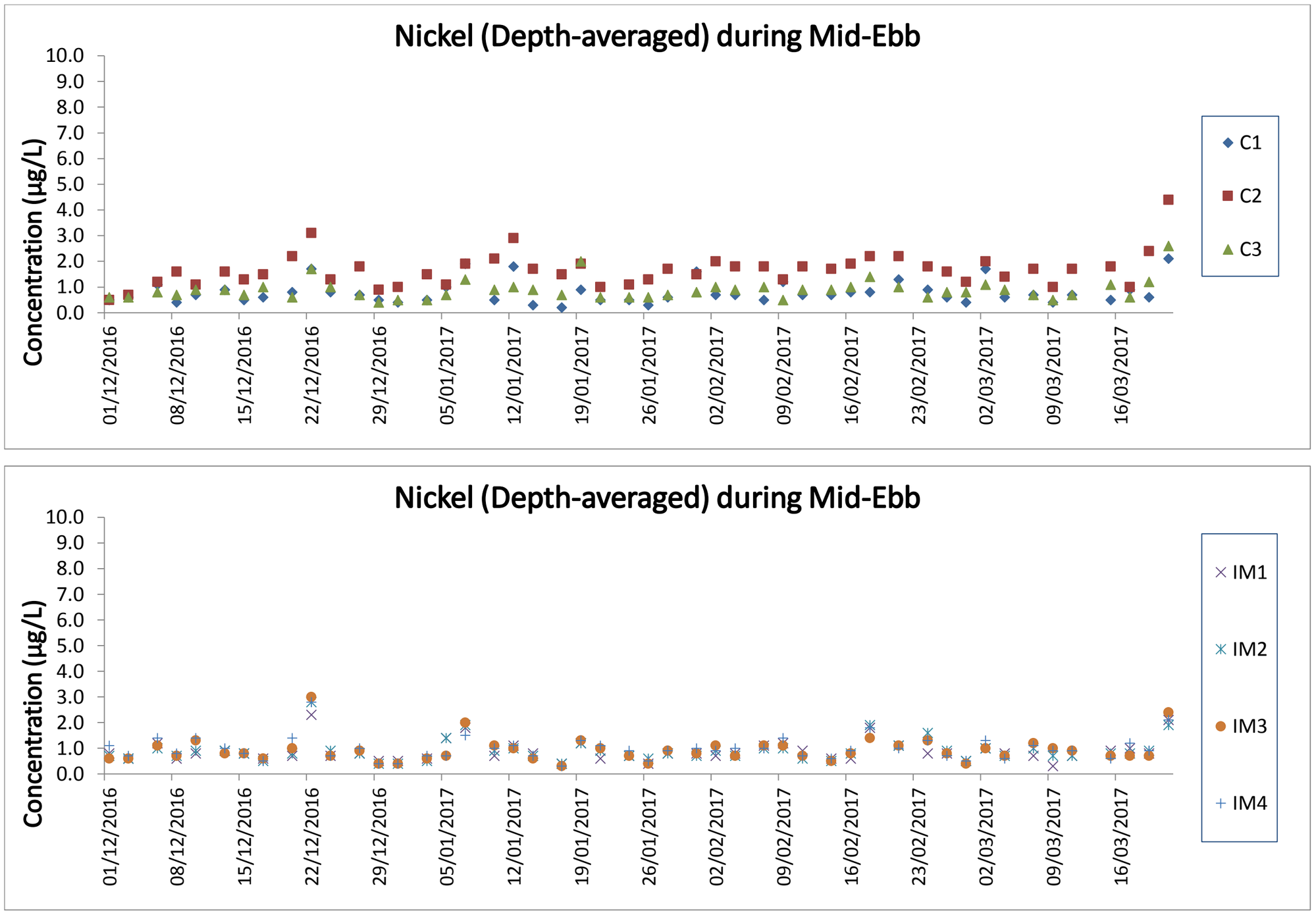
Note: The action and limit level of SS can be referred to Table 2.4 of the quarterly EM&A report.

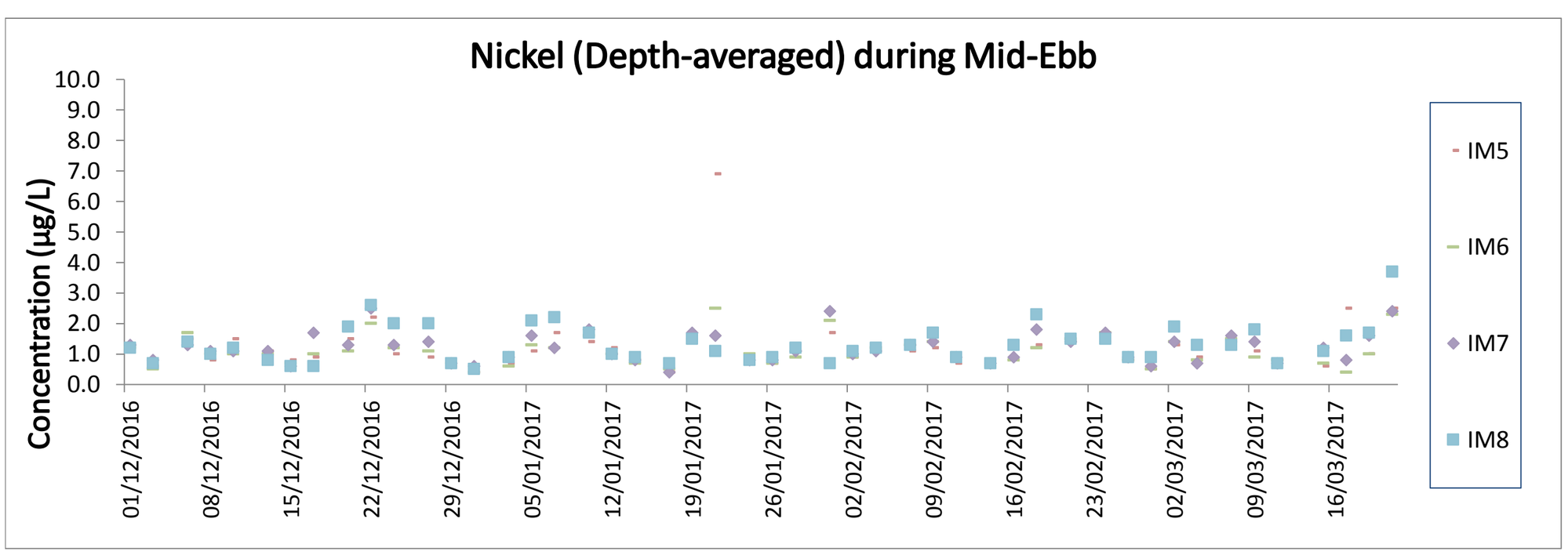


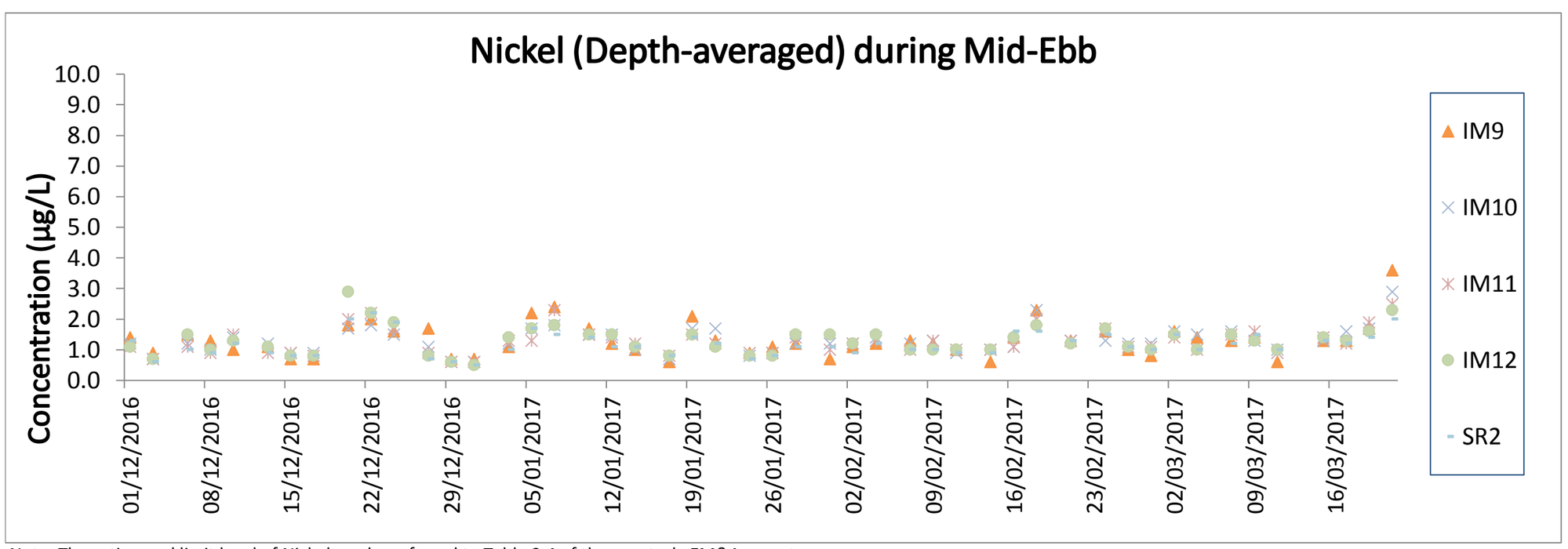




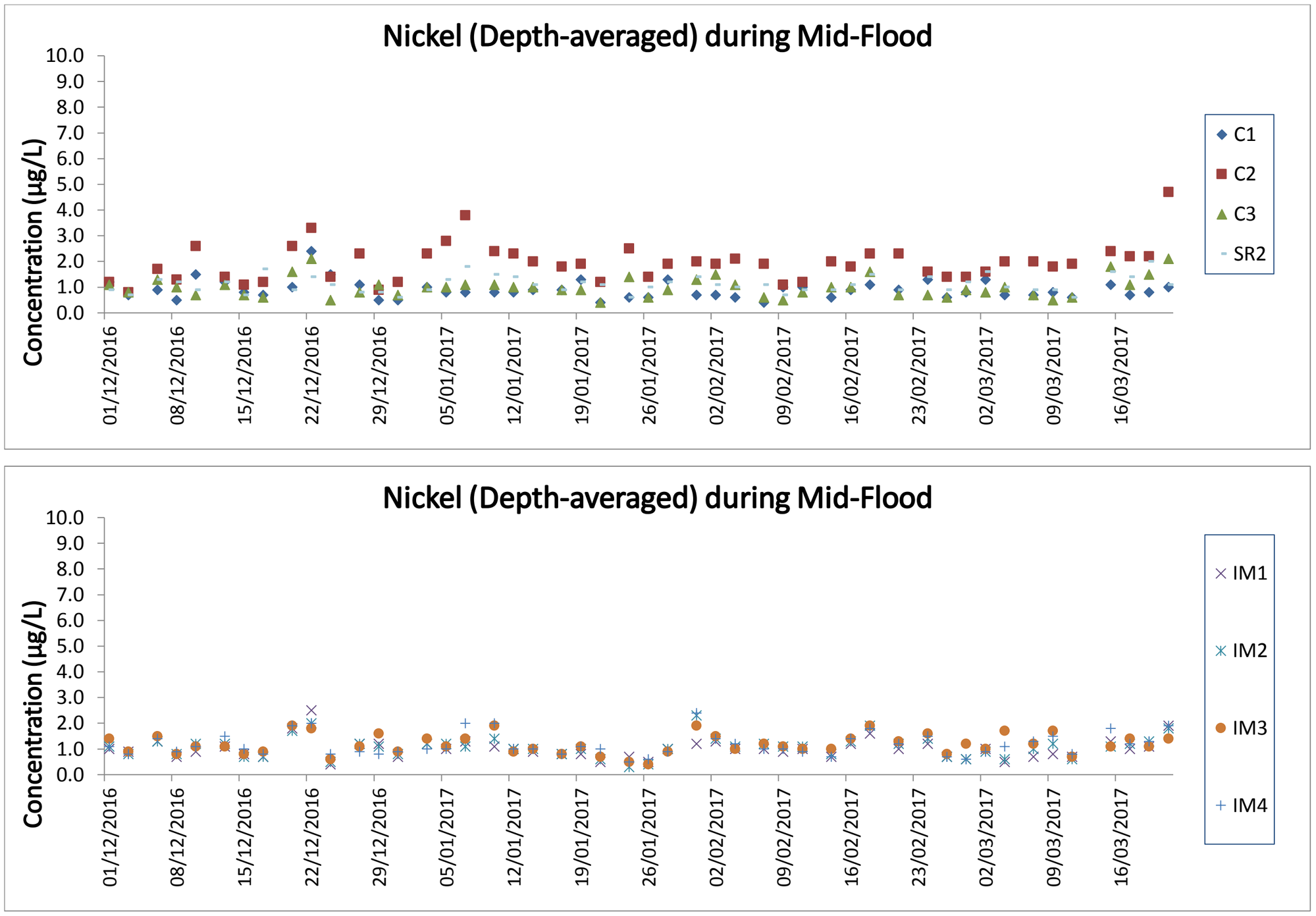
Note: The action and limit level of SS can be referred to Table 2.4 of the quarterly EM&A report.

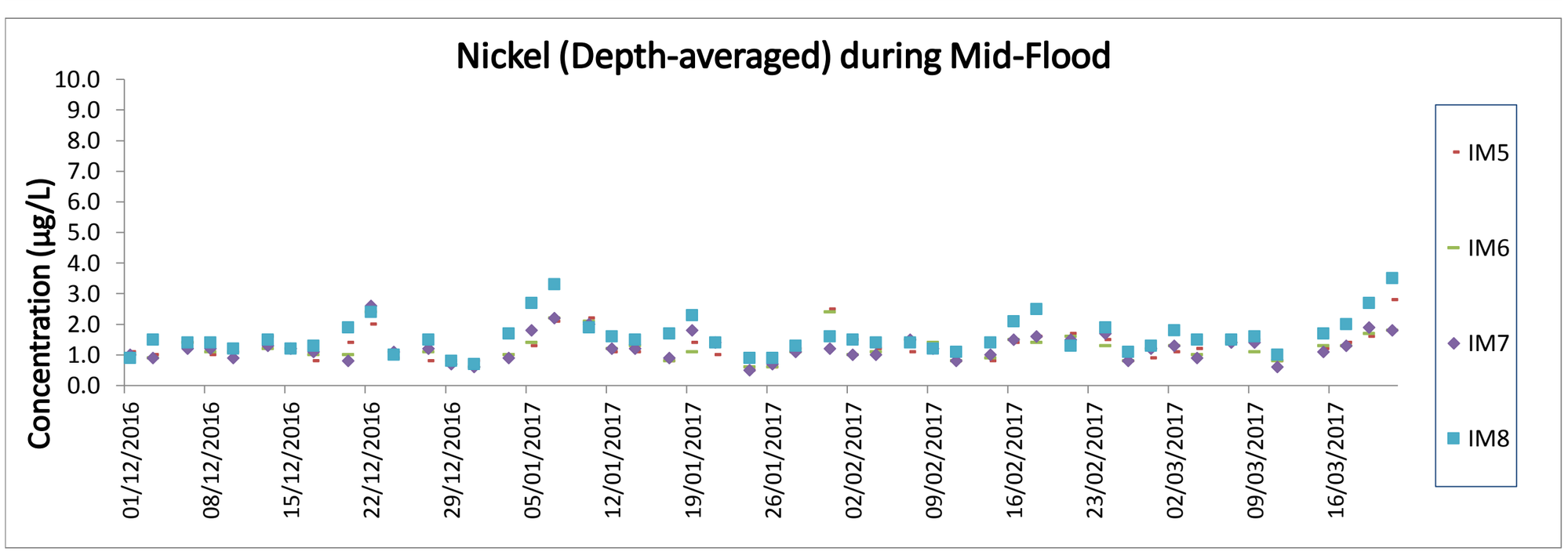


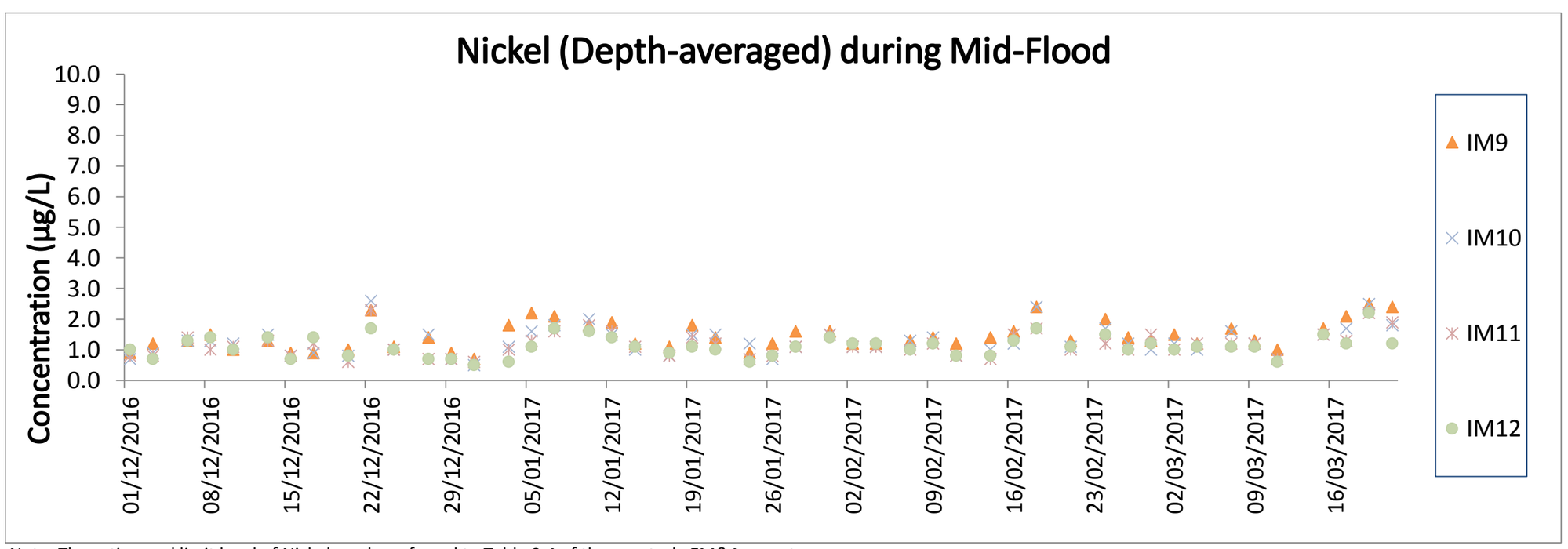




Note: The action and limit level of Nickel can be referred to Table 2.4 of the quarterly EM&A report.
Note: The action and limit level of Chromium can be referred to Table 2.4 of the quarterly EM&A report.
The monitoring results of Chromium at all monitoring stations during mid-flood and mid-ebb tides were below the reporting limit 0.2 µg/L







Note: The action and limit level of Nickel can be referred to Table 2.4 of the quarterly EM&A report.
Note: The action and limit level of Chromium can be referred to Table 2.4 of the quarterly EM&A report.
The monitoring results of Chromium at all monitoring stations during mid-flood and mid-ebb tides were below the reporting limit 0.2 µg/L

Appendix E. Summary of Chinese White Dolphin Monitoring Results

CWD Small Vessel Line-transect Survey — Survey Effort Data

DATE	AREA	BEAU	KM SEARCHED	SEASON	VESSEL	TYPE
05-Jan-17	AW	2	4.86	WINTER	32166	3RS ET
05-Jan-17	WL	1	12.53	WINTER	32166	3RS ET
05-Jan-17	WL	2	14.38	WINTER	32166	3RS ET
05-Jan-17	SWL	2	6.01	WINTER	32166	3RS ET
06-Jan-17	SWL	1	1.30	WINTER	32166	3RS ET
06-Jan-17	SWL	2	61.20	WINTER	32166	3RS ET
06-Jan-17	SWL	3	1.80	WINTER	32166	3RS ET
09-Jan-17	NWL	1	6.90	WINTER	32166	3RS ET
09-Jan-17	NWL	2	60.46	WINTER	32166	3RS ET
09-Jan-17	NWL	3	15.64	WINTER	32166	3RS ET
10-Jan-17	NEL	2	2.10	WINTER	32166	3RS ET
10-Jan-17	NEL	3	29.22	WINTER	32166	3RS ET
10-Jan-17	NEL	4	16.68	WINTER	32166	3RS ET
12-Jan-17	NWL	2	20.09	WINTER	32166	3RS ET
12-Jan-17	NWL	3	61.01	WINTER	32166	3RS ET
12-Jan-17	NWL	4	0.70	WINTER	32166	3RS ET
13-Jan-17	SWL	2	27.52	WINTER	32166	3RS ET
13-Jan-17	SWL	3	28.90	WINTER	32166	3RS ET
13-Jan-17	SWL	4	5.33	WINTER	32166	3RS ET
19-Jan-17	AW	1	4.59	WINTER	32166	3RS ET
19-Jan-17	WL	2	7.20	WINTER	32166	3RS ET
19-Jan-17	WL	3	14.13	WINTER	32166	3RS ET
19-Jan-17	WL	4	11.03	WINTER	32166	3RS ET
19-Jan-17	SWL	3	5.88	WINTER	32166	3RS ET
19-Jan-17	SWL	4	1.00	WINTER	32166	3RS ET
20-Jan-17	NEL	2	23.30	WINTER	32166	3RS ET
20-Jan-17	NEL	3	22.00	WINTER	32166	3RS ET
20-Jan-17	NEL	4	1.60	WINTER	32166	3RS ET
06-Feb-17	AW	2	2.94	WINTER	32166	3RS ET
06-Feb-17	AW	3	1.93	WINTER	32166	3RS ET
06-Feb-17	WL	2	17.00	WINTER	32166	3RS ET
06-Feb-17	WL	3	9.79	WINTER	32166	3RS ET
06-Feb-17	WL	4	3.53	WINTER	32166	3RS ET
06-Feb-17	SWL	4	2.54	WINTER	32166	3RS ET
06-Feb-17	SWL	5	4.35	WINTER	32166	3RS ET
07-Feb-17	NEL	2	5.80	WINTER	32166	3RS ET
07-Feb-17	NEL	3	25.76	WINTER	32166	3RS ET
07-Feb-17	NEL	4	11.47	WINTER	32166	3RS ET
07-Feb-17	NEL	5	4.27	WINTER	32166	3RS ET
09-Feb-17	SWL	2	0.90	WINTER	32166	3RS ET
09-Feb-17	SWL	3	14.17	WINTER	32166	3RS ET
09-Feb-17	SWL	4	15.23	WINTER	32166	3RS ET
09-Feb-17	SWL	5	32.40	WINTER	32166	3RS ET
10-Feb-17	NEL	1	3.30	WINTER	32166	3RS ET
10-Feb-17	NEL	2	8.03	WINTER	32166	3RS ET
10-Feb-17	NEL	3	34.17	WINTER	32166	3RS ET
10-Feb-17	NEL	4	2.00	WINTER	32166	3RS ET

DATE	AREA	BEAU	KM SEARCHED	SEASON	VESSEL	TYPE
16-Feb-17	AW	1	4.73	WINTER	32166	3RS ET
16-Feb-17	WL	1	18.36	WINTER	32166	3RS ET
16-Feb-17	WL	2	3.10	WINTER	32166	3RS ET
16-Feb-17	WL	3	6.07	WINTER	32166	3RS ET
17-Feb-17	SWL	1	37.70	WINTER	32166	3RS ET
17-Feb-17	SWL	2	29.26	WINTER	32166	3RS ET
20-Feb-17	NWL	1	27.20	WINTER	32166	3RS ET
20-Feb-17	NWL	2	48.10	WINTER	32166	3RS ET
21-Feb-17	NWL	3	14.17	WINTER	32166	3RS ET
21-Feb-17	NWL	4	38.72	WINTER	32166	3RS ET
21-Feb-17	NWL	5	21.81	WINTER	32166	3RS ET
06-Mar-17	NWL	1	5.00	SPRING	32166	3RS ET
06-Mar-17	NWL	2	17.10	SPRING	32166	3RS ET
06-Mar-17	NWL	3	50.10	SPRING	32166	3RS ET
06-Mar-17	NWL	4	3.70	SPRING	32166	3RS ET
10-Mar-17	NEL	1	1.00	SPRING	32166	3RS ET
10-Mar-17	NEL	2	11.75	SPRING	32166	3RS ET
10-Mar-17	NEL	3	34.25	SPRING	32166	3RS ET
13-Mar-17	AW	2	4.72	SPRING	32166	3RS ET
13-Mar-17	WL	2	12.18	SPRING	32166	3RS ET
13-Mar-17	WL	3	20.82	SPRING	32166	3RS ET
13-Mar-17	SWL	2	12.50	SPRING	32166	3RS ET
14-Mar-17	SWL	3	22.60	SPRING	32166	3RS ET
14-Mar-17	SWL	4	18.78	SPRING	32166	3RS ET
14-Mar-17	SWL	5	16.02	SPRING	32166	3RS ET
20-Mar-17	SWL	2	36.22	SPRING	32166	3RS ET
20-Mar-17	SWL	3	26.04	SPRING	32166	3RS ET
21-Mar-17	AW	1	4.85	SPRING	32166	3RS ET
21-Mar-17	WL	1	9.95	SPRING	32166	3RS ET
21-Mar-17	WL	2	19.08	SPRING	32166	3RS ET
21-Mar-17	WL	3	2.33	SPRING	32166	3RS ET
21-Mar-17	SWL	2	0.38	SPRING	32166	3RS ET
21-Mar-17	SWL	3	6.43	SPRING	32166	3RS ET
23-Mar-17	NWL	1	32.61	SPRING	32166	3RS ET
23-Mar-17	NWL	2	43.77	SPRING	32166	3RS ET
24-Mar-17	NEL	3	27.72	SPRING	32166	3RS ET
24-Mar-17	NEL	4	18.88	SPRING	32166	3RS ET

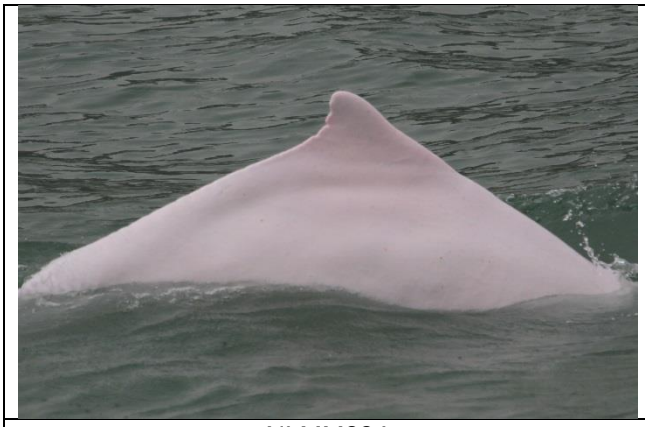
CWD Small Vessel Line-transect Survey — Sighting Data

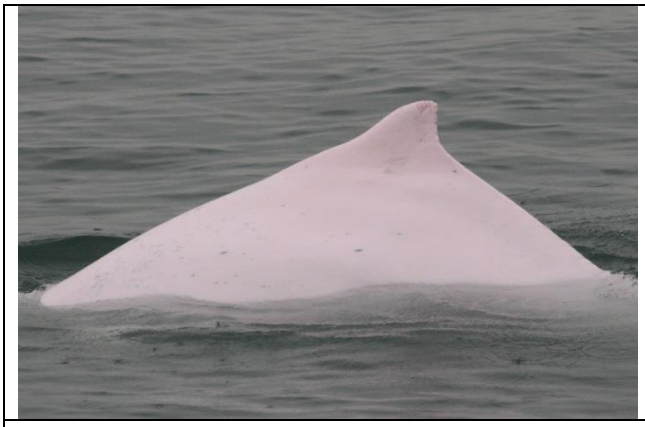
DATE	STG #	TIME	CWD/FP	GP SZ	AREA	BEAU	PSD	EFFORT	TYPE	DEC LAT	DEC LON	SEASON	BOAT ASSOC.
05-Jan-17	1	1010	CWD	9	WL	2	822	ON	3RS ET	22.2934	113.8612	WINTER	NONE
05-Jan-17	2	1051	CWD	2	WL	2	1361	ON	3RS ET	22.2738	113.8482	WINTER	NONE
05-Jan-17	3	1118	CWD	2	WL	2	118	ON	3RS ET	22.2584	113.8381	WINTER	NONE
05-Jan-17	4	1150	CWD	1	WL	2	65	ON	3RS ET	22.2413	113.8339	WINTER	NONE
05-Jan-17	5	1208	CWD	1	WL	2	86	ON	3RS ET	22.2321	113.8316	WINTER	NONE
05-Jan-17	6	1223	CWD	1	WL	1	115	ON	3RS ET	22.2248	113.8374	WINTER	NONE
05-Jan-17	7	1315	CWD	11	WL	1	84	ON	3RS ET	22.2049	113.8249	WINTER	PAIR TRAWLER
05-Jan-17	8	1347	CWD	1	WL	1	49	ON	3RS ET	22.1961	113.8317	WINTER	NONE
05-Jan-17	9	1356	CWD	1	WL	1	59	ON	3RS ET	22.1960	113.8416	WINTER	NONE
05-Jan-17	10	1436	CWD	5	SWL	2	190	ON	3RS ET	22.1726	113.8527	WINTER	PAIR TRAWLER
06-Jan-17	1	1006	CWD	2	SWL	2	N/A	OFF	3RS ET	22.1938	113.8471	WINTER	NONE
06-Jan-17	2	1453	CWD	1	SWL	1	N/A	OFF	3RS ET	22.2230	113.9451	WINTER	NONE
12-Jan-17	1	1121	CWD	5	NWL	2	260	ON	3RS ET	22.3739	113.8775	WINTER	NONE
13-Jan-17	1	1016	CWD	3	SWL	3	N/A	OFF	3RS ET	22.1948	113.8538	WINTER	NONE
13-Jan-17	2	1036	CWD	11	SWL	3	435	ON	3RS ET	22.1998	113.8688	WINTER	NONE
13-Jan-17	3	1334	CWD	2	SWL	2	41	ON	3RS ET	22.1547	113.9030	WINTER	NONE
13-Jan-17	4	1434	CWD	1	SWL	3	44	ON	3RS ET	22.1847	113.9278	WINTER	NONE
19-Jan-17	1	0926	CWD	3	AW	1	23	ON	3RS ET	22.3010	113.8864	WINTER	NONE
19-Jan-17	2	1022	CWD	1	WL	3	383	ON	3RS ET	22.2791	113.8613	WINTER	NONE
19-Jan-17	3	1107	CWD	6	WL	2	690	ON	3RS ET	22.2594	113.8430	WINTER	GILLNET
19-Jan-17	4	1131	CWD	1	WL	3	950	ON	3RS ET	22.2504	113.8413	WINTER	NONE
19-Jan-17	5	1217	CWD	2	WL	3	N/A	OFF	3RS ET	22.2234	113.8320	WINTER	NONE
19-Jan-17	6	1403	CWD	4	SWL	3	69	ON	3RS ET	22.1951	113.8587	WINTER	NONE
19-Jan-17	7	1436	CWD	2	WL	3	N/A	OFF	3RS ET	22.2198	113.8341	WINTER	NONE
19-Jan-17	8	1439	CWD	3	WL	3	N/A	OFF	3RS ET	22.2218	113.8351	WINTER	NONE
06-Feb-17	1	1013	CWD	3	WL	3	854	ON	3RS ET	22.2826	113.8613	WINTER	NONE
06-Feb-17	2	1140	CWD	3	WL	2	243	ON	3RS ET	22.2237	113.8323	WINTER	NONE
06-Feb-17	3	1218	CWD	3	WL	3	23	ON	3RS ET	22.2147	113.8300	WINTER	NONE
16-Feb-17	1	0957	CWD	2	AW	1	16	ON	3RS ET	22.2920	113.8749	WINTER	GILLNET
16-Feb-17	2	1037	CWD	5	WL	1	220	ON	3RS ET	22.2953	113.8612	WINTER	NONE
16-Feb-17	3	1121	CWD	4	WL	1	58	ON	3RS ET	22.2628	113.8564	WINTER	NONE

DATE	STG #	TIME	CWD/FP	GP SZ	AREA	BEAU	PSD	EFFORT	TYPE	DEC LAT	DEC LON	SEASON	BOAT ASSOC.
16-Feb-17	4	1147	CWD	3	WL	1	244	ON	3RS ET	22.2602	113.8470	WINTER	NONE
16-Feb-17	5	1206	CWD	2	WL	1	53	ON	3RS ET	22.2535	113.8348	WINTER	NONE
16-Feb-17	6	1215	CWD	3	WL	1	20	ON	3RS ET	22.2504	113.8378	WINTER	NONE
16-Feb-17	7	1231	CWD	7	WL	1	173	ON	3RS ET	22.2418	113.8473	WINTER	NONE
16-Feb-17	8	1304	CWD	2	WL	1	19	ON	3RS ET	22.2414	113.8428	WINTER	NONE
16-Feb-17	9	1315	CWD	2	WL	1	31	ON	3RS ET	22.2382	113.8266	WINTER	NONE
16-Feb-17	10	1333	CWD	14	WL	1	226	ON	3RS ET	22.2308	113.8381	WINTER	PURSE SEINE
16-Feb-17	11	1420	CWD	2	WL	2	452	ON	3RS ET	22.2139	113.8244	WINTER	NONE
16-Feb-17	12	1449	CWD	1	WL	2	29	ON	3RS ET	22.2051	113.8191	WINTER	NONE
17-Feb-17	1	1048	FP	2	SWL	2	174	ON	3RS ET	22.1586	113.9356	WINTER	NONE
17-Feb-17	2	1238	CWD	3	SWL	1	1380	ON	3RS ET	22.2005	113.9079	WINTER	PURSE SEINE
17-Feb-17	3	1349	CWD	2	SWL	1	50	ON	3RS ET	22.1889	113.8879	WINTER	NONE
17-Feb-17	4	1551	CWD	1	SWL	1	N/A	OFF	3RS ET	22.2009	113.8934	WINTER	NONE
17-Feb-17	5	1559	CWD	1	SWL	1	N/A	OFF	3RS ET	22.2025	113.9121	WINTER	NONE
20-Feb-17	1	1137	CWD	1	NWL	2	259	ON	3RS ET	22.3819	113.8760	WINTER	NONE
21-Feb-17	1	1137	CWD	4	NWL	3	64	ON	3RS ET	22.3866	113.8776	WINTER	NONE
13-Mar-17	1	1130	CWD	4	WL	2	374	ON	3RS ET	22.2229	113.8269	SPRING	NONE
14-Mar-17	1	1045	FP	1	SWL	4	N/A	OFF	3RS ET	22.1827	113.9356	SPRING	NONE
14-Mar-17	2	1214	FP	1	SWL	5	N/A	ON	3RS ET	22.1461	113.9081	SPRING	NONE
20-Mar-17	1	1025	CWD	1	SWL	2	209	ON	3RS ET	22.2001	113.8688	SPRING	GILLNET
20-Mar-17	2	1211	FP	1	SWL	2	100	ON	3RS ET	22.1622	113.8978	SPRING	NONE
20-Mar-17	3	1257	CWD	1	SWL	2	36	ON	3RS ET	22.1846	113.9041	SPRING	NONE
20-Mar-17	4	1432	FP	3	SWL	3	108	ON	3RS ET	22.1470	113.9278	SPRING	NONE
20-Mar-17	5	1439	FP	2	SWL	3	63	ON	3RS ET	22.1472	113.9326	SPRING	NONE
20-Mar-17	6	1457	FP	2	SWL	3	24	ON	3RS ET	22.1816	113.9359	SPRING	NONE
21-Mar-17	1	1025	CWD	4	WL	1	202	ON	3RS ET	22.2603	113.8533	SPRING	PURSE SEINE
21-Mar-17	2	1214	CWD	13	WL	3	397	ON	3RS ET	22.1980	113.8262	SPRING	PURSE SEINE
21-Mar-17	3	1242	CWD	7	WL	2	1163	ON	3RS ET	22.1870	113.8386	SPRING	PURSE SEINE
23-Mar-17	1	1128	CWD	3	NWL	1	123	ON	3RS ET	22.3779	113.8767	SPRING	NONE
23-Mar-17	2	1222	CWD	3	NWL	1	19	ON	3RS ET	22.3733	113.8881	SPRING	NONE

Abbreviations: STG# = Sighting Number; GP SZ = Dolphin Group Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance (in metres); N/A = Not Applicable; DEC LAT = Latitude (WGS84 in Decimal), DEC LON = Longitude (WGS84 in Decimal); BOAT ASSOC. = Fishing Boat Association

CWD Small Vessel Line-transect Survey **Photo Identification**

	
NLMM004	NLMM015
	
NLMM016	NLMM017
	
NLMM019	NLMM020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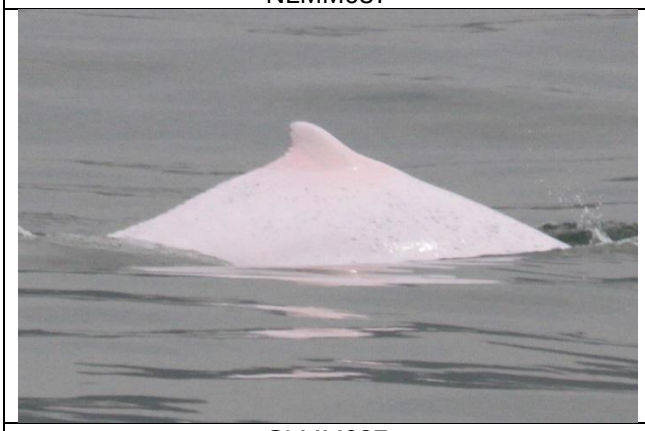	
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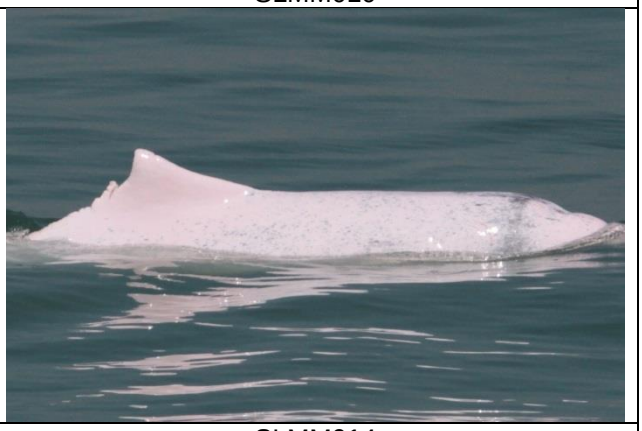
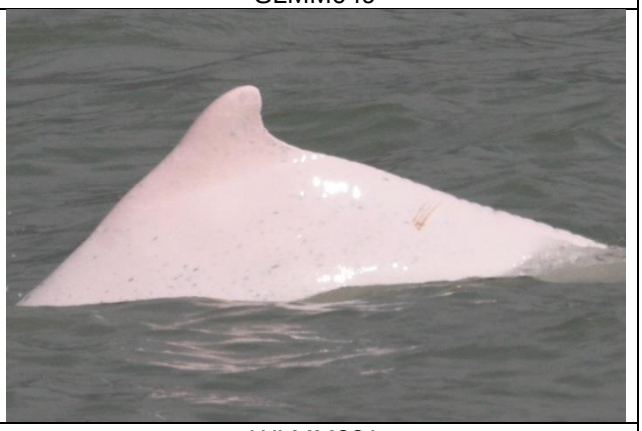
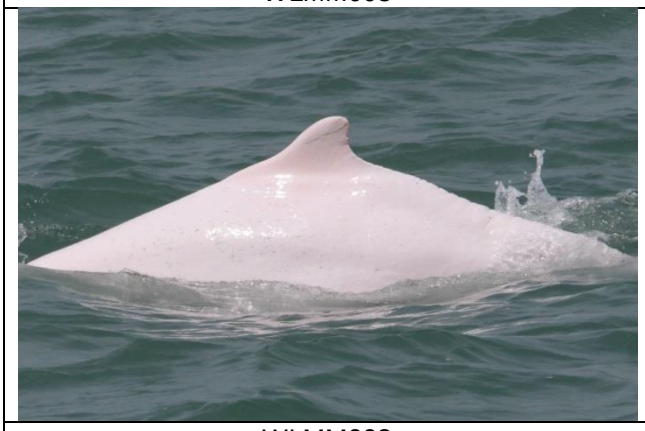
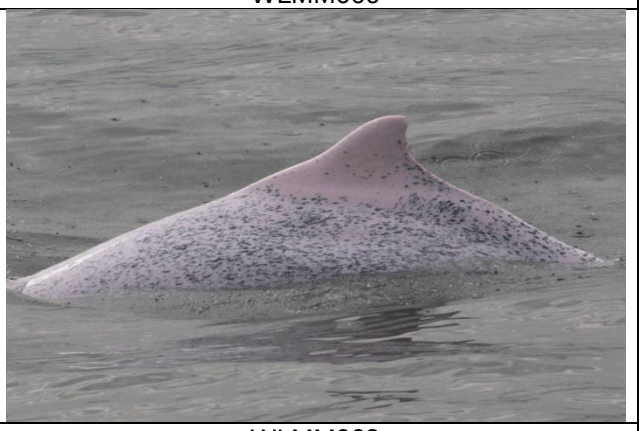
	
SLMM011	SLMM014
	
SLMM015	SLMM018

	
SLMM021	SLMM022
	
SLMM025	SLMM028
	
SLMM030	SLMM031
	
SLMM036	SLMM037

	
SLMM047	SLMM049
	
SLMM052	WLMM001
	
WLMM003	WLMM007
	
WLMM008	WLMM011

	
WLMM017	WLMM021
	
WLMM025	WLMM043
	
WLMM056	WLMM060
	
WLMM063	WLMM064

	
WLMM065	WLMM066
	
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	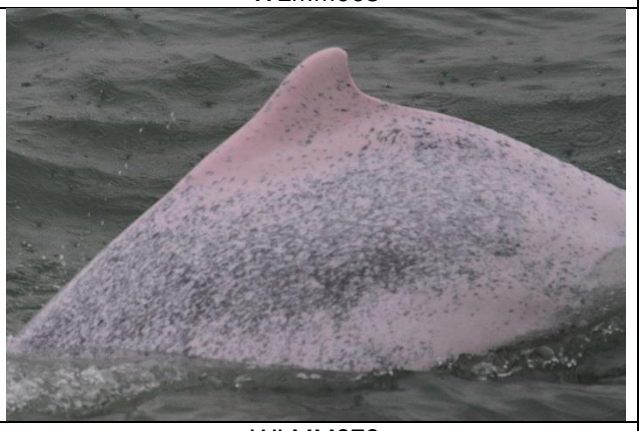
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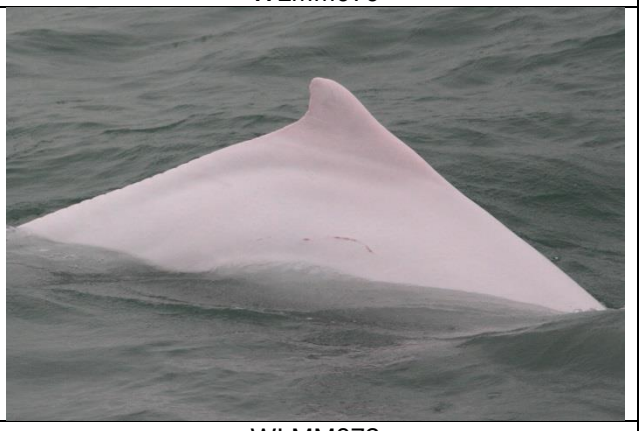
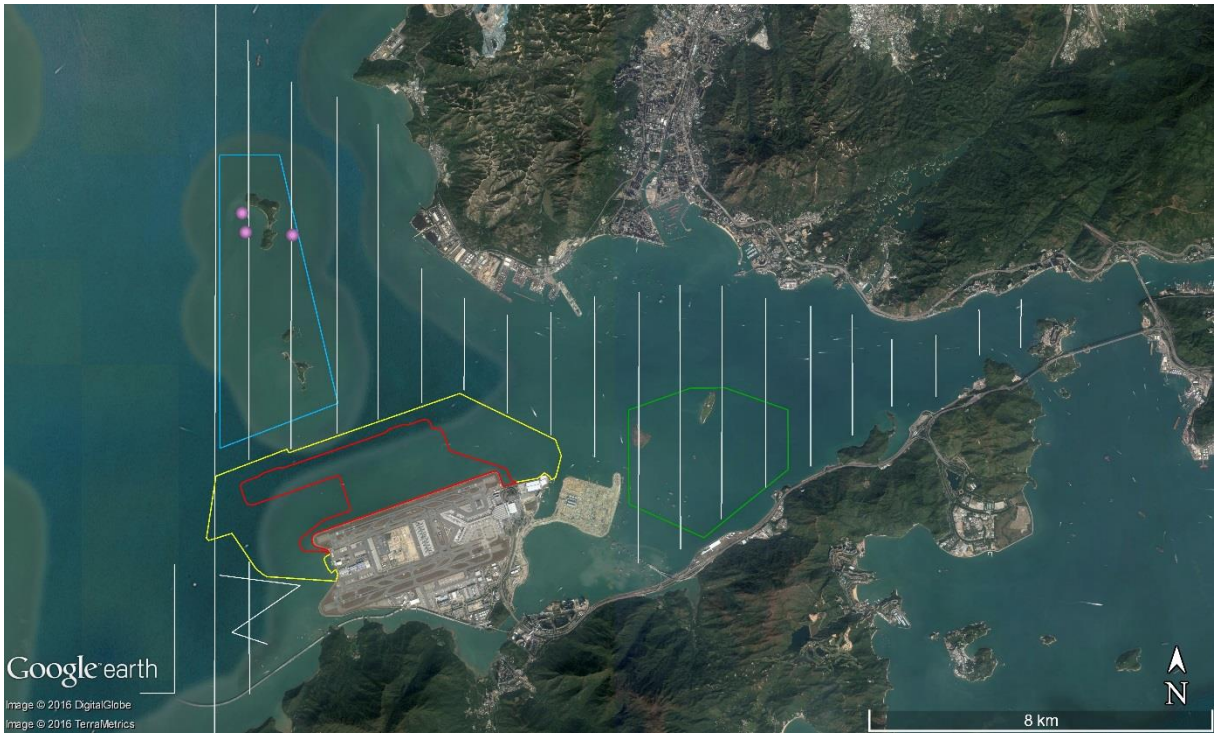
	
WLMM071	WLMM072

	
WLMM073	WLMM074

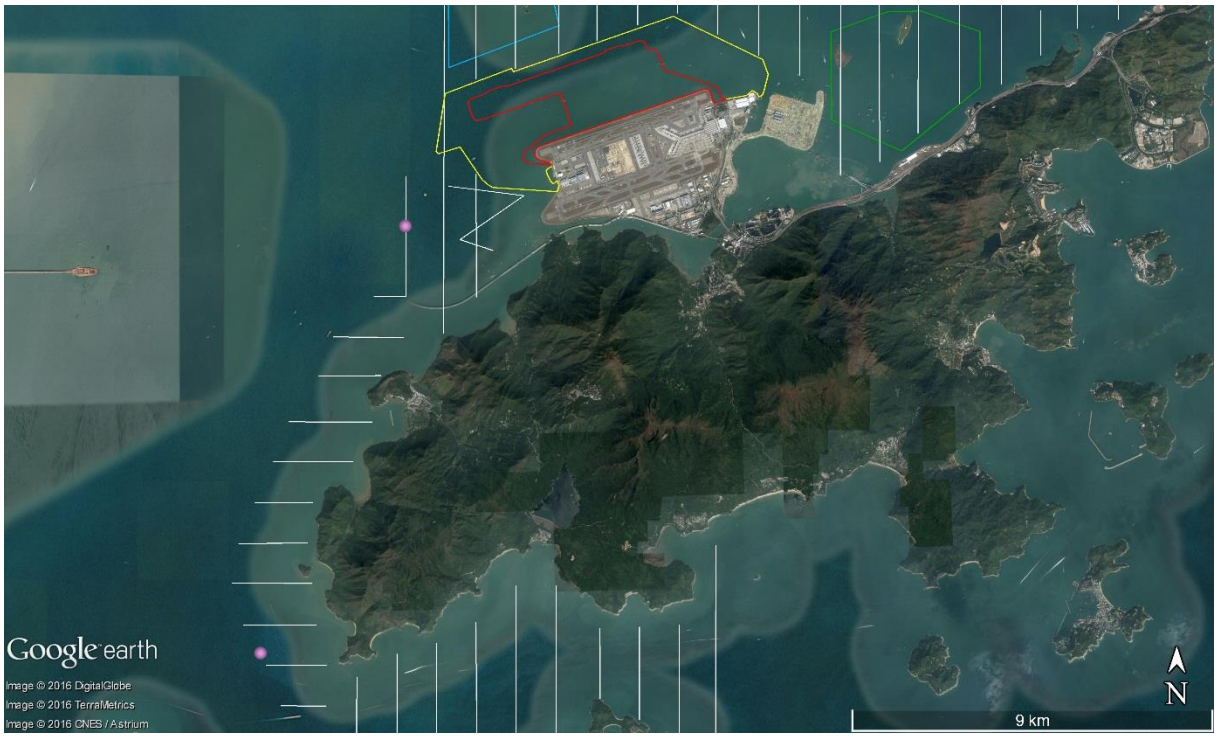
CWD Small Vessel Line-transect Survey **Photo Identification – Re-sighting Locations**

[Pink circle: Sighting locations of individual dolphin, White line: Vessel survey transects, Blue polygon: Sha Chau and Lung Kwu Chau Marine Park (SCLKCMP), Green polygon: Brothers Marine Park (BMP), Red polygon: 3RS land-formation footprint, Yellow line: 3RS temporary works area boundary]

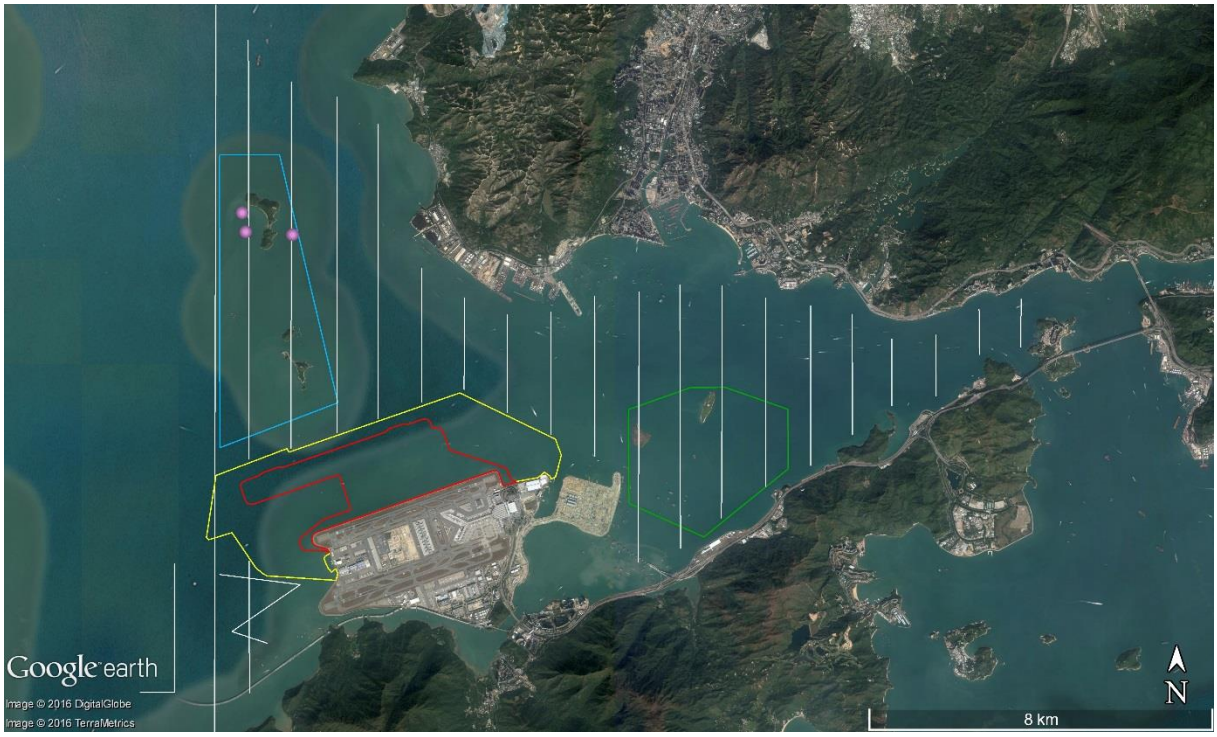
NLMM004



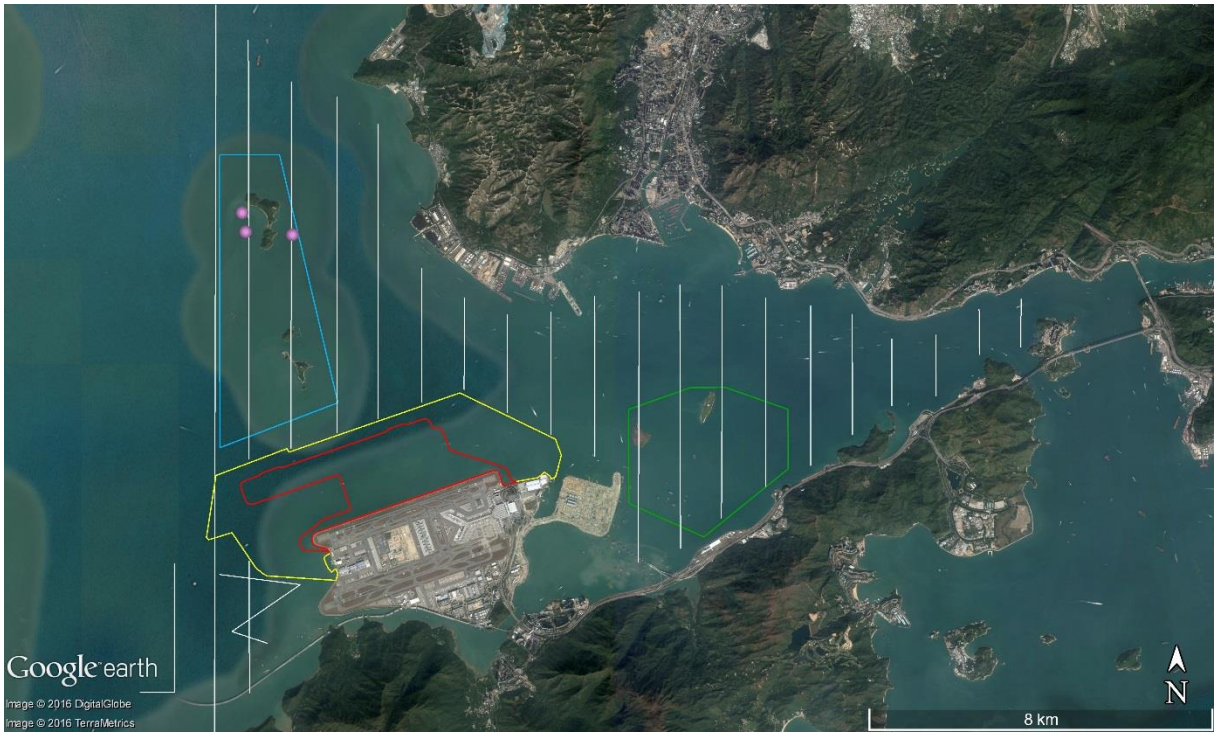
NLMM015



NLMM017

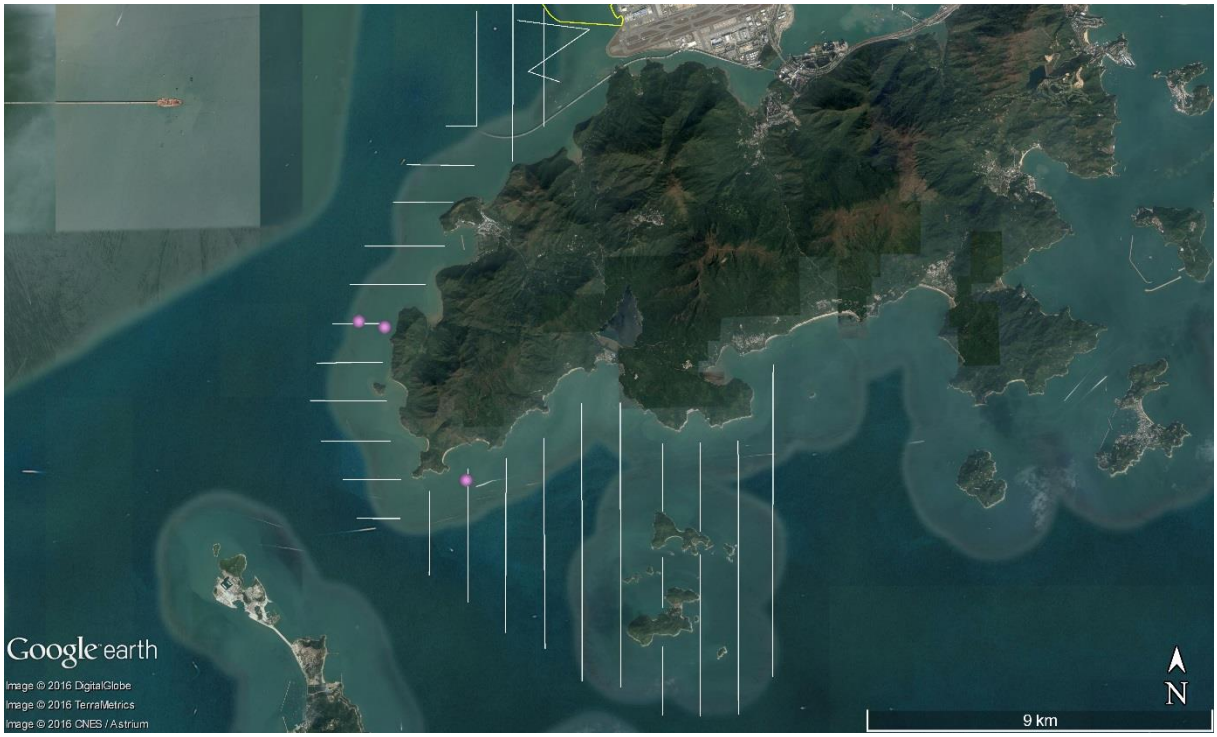


NLMM037



SLMM007

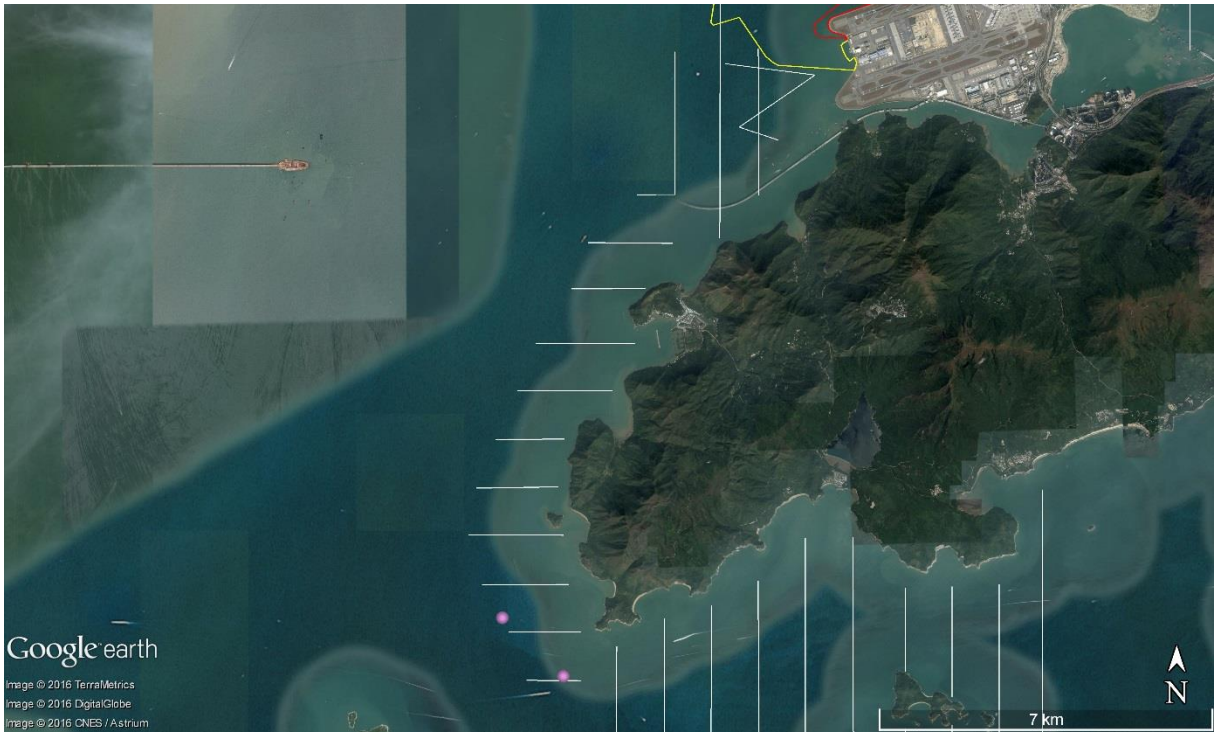
SLMM010



SLMM011

SLMM014

SLMM015



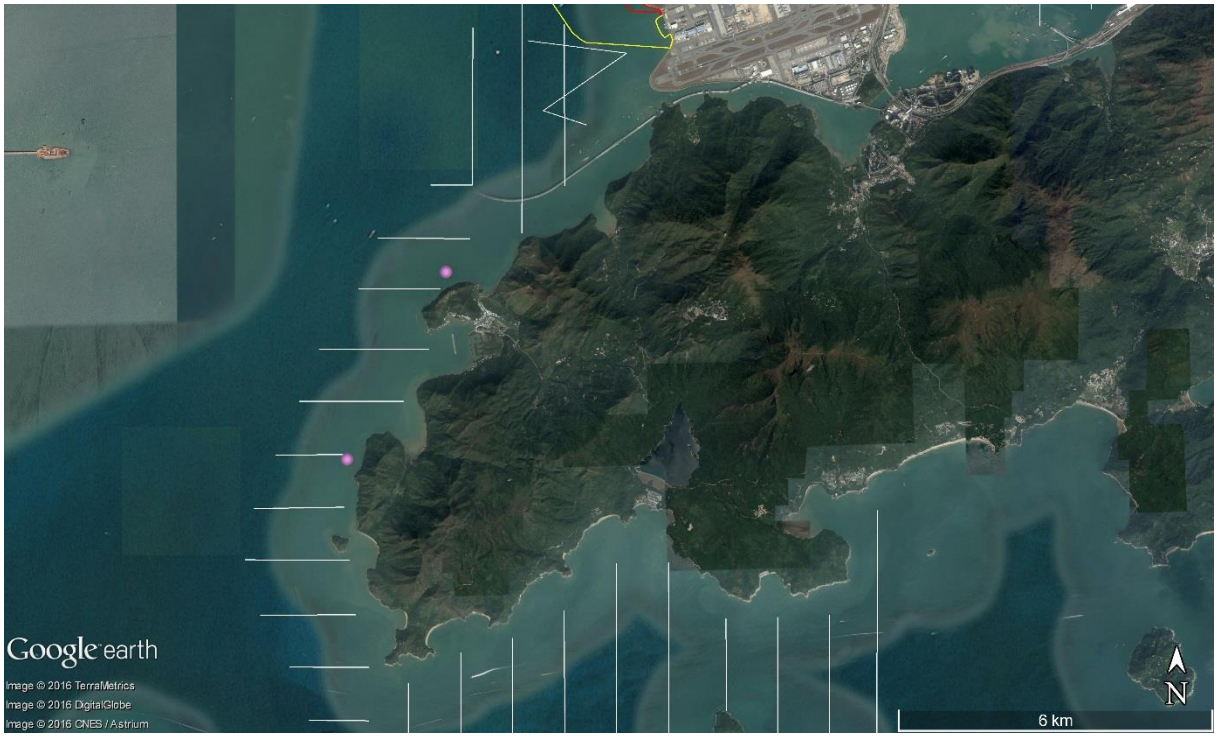
SLMM018

SLMM021

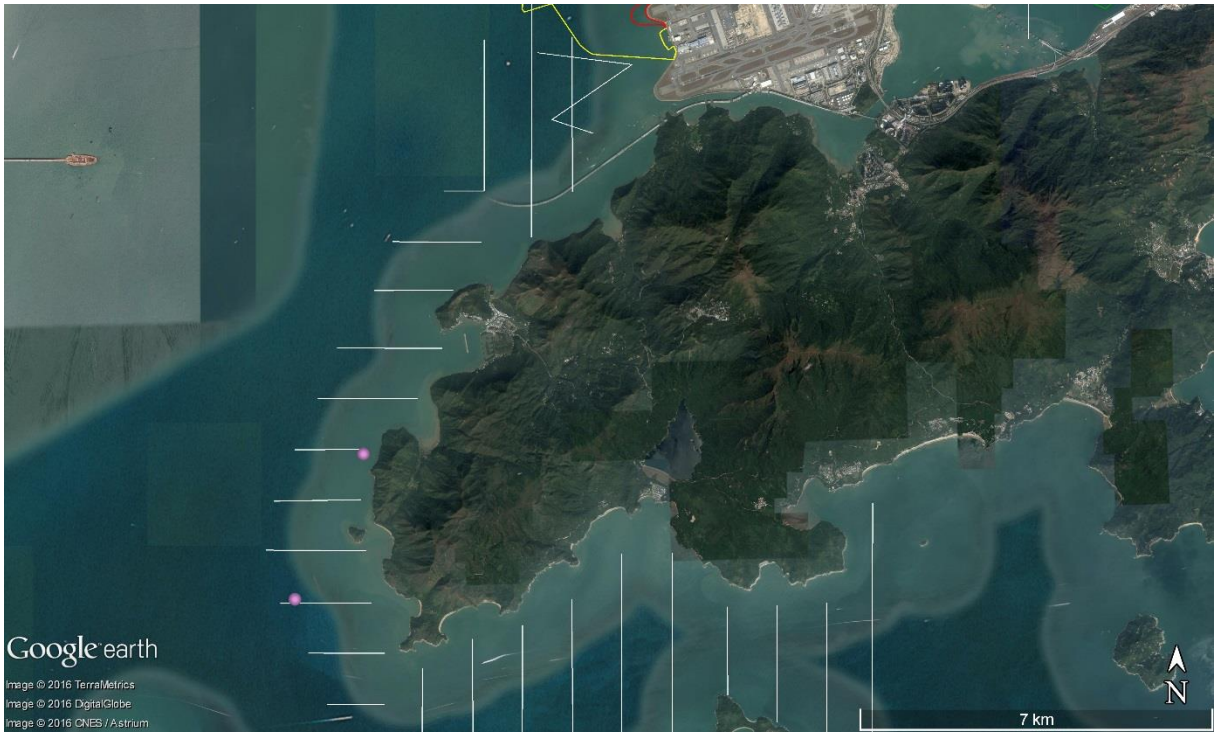
SLMM031

SLMM037

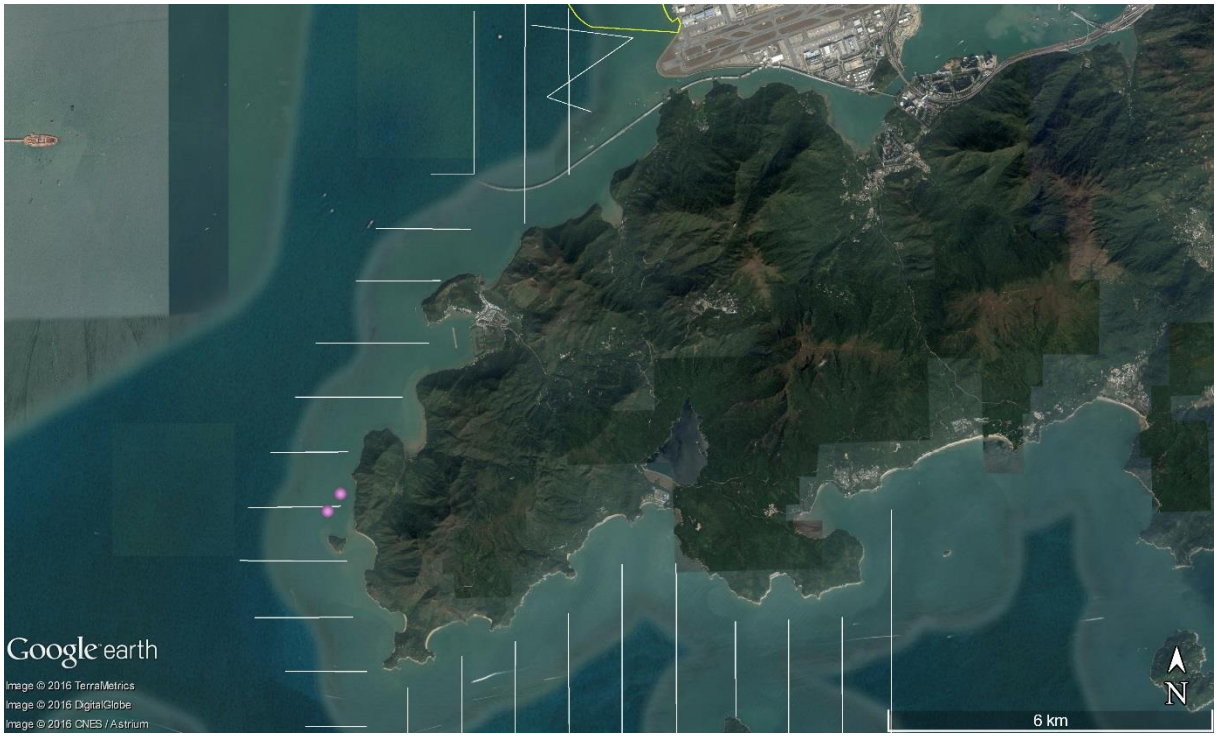
SLMM049



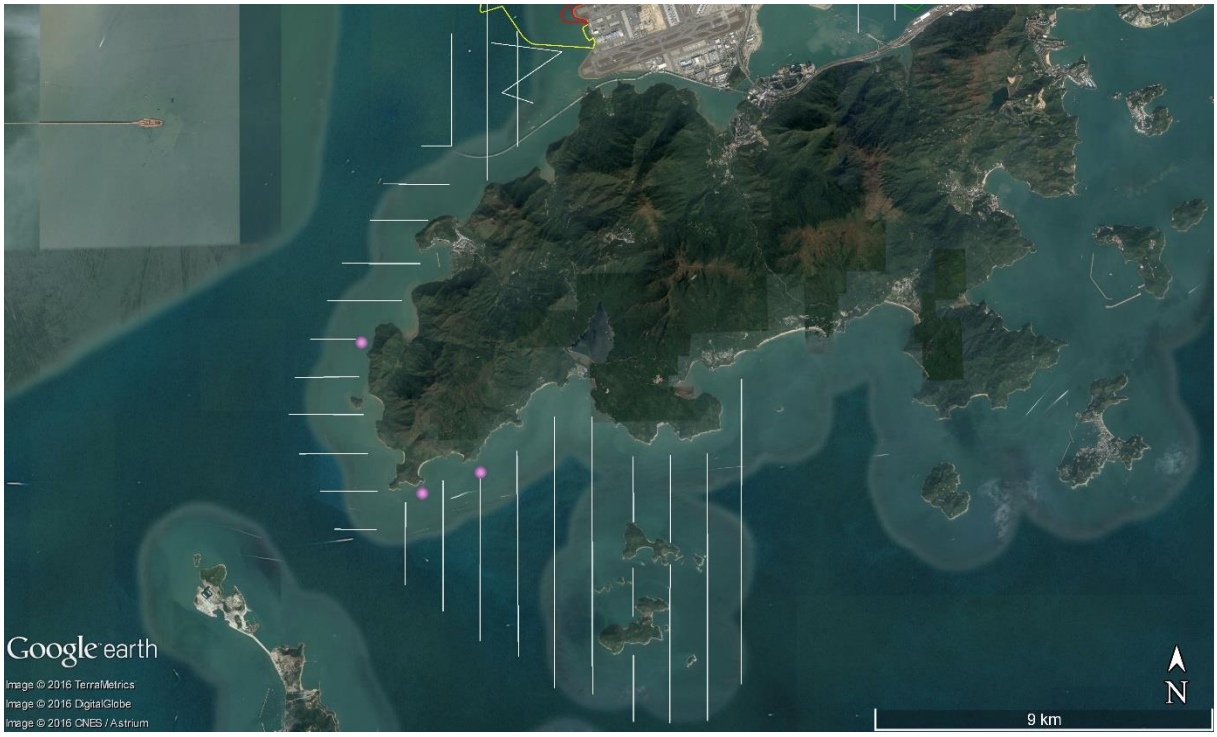
SLMM052



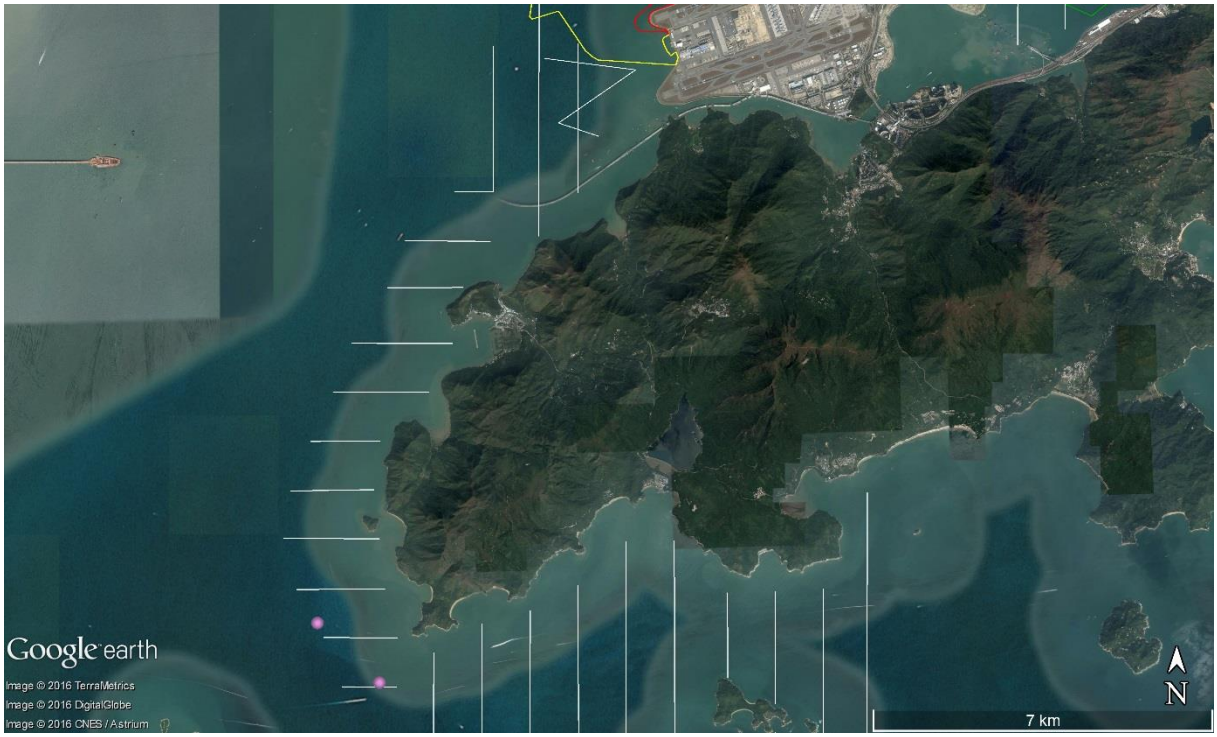
WLMM001



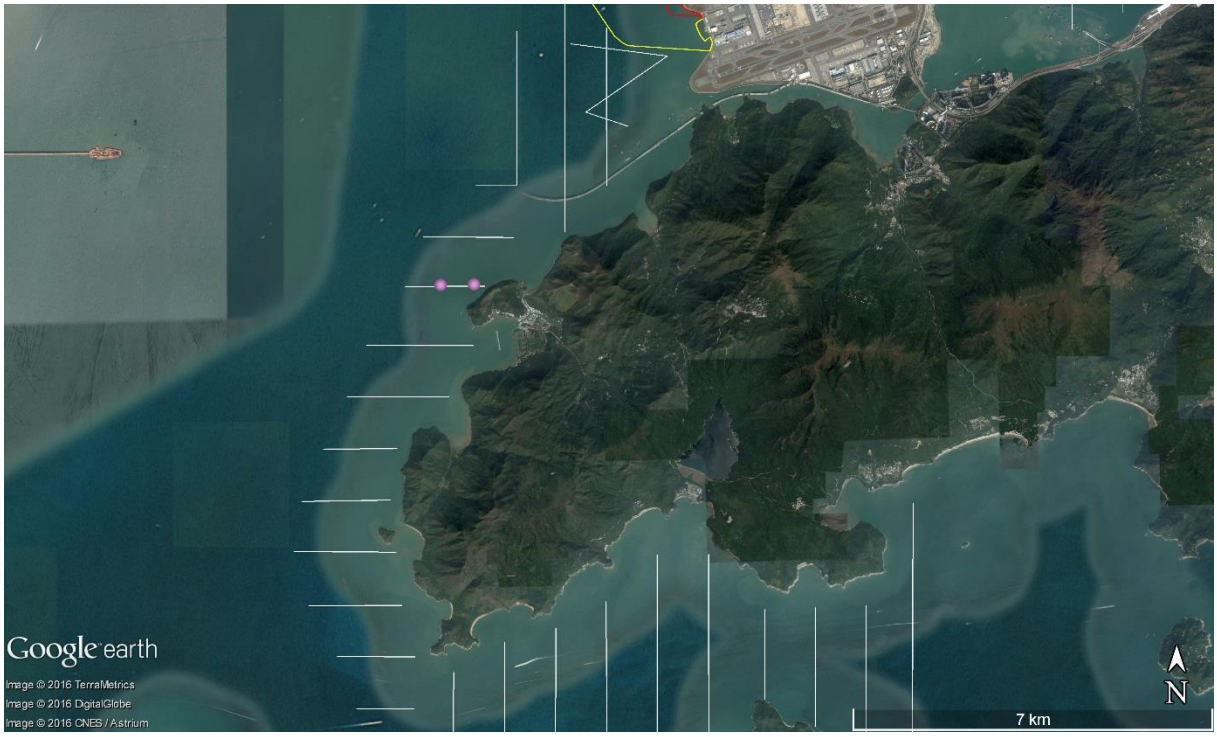
WLMM007



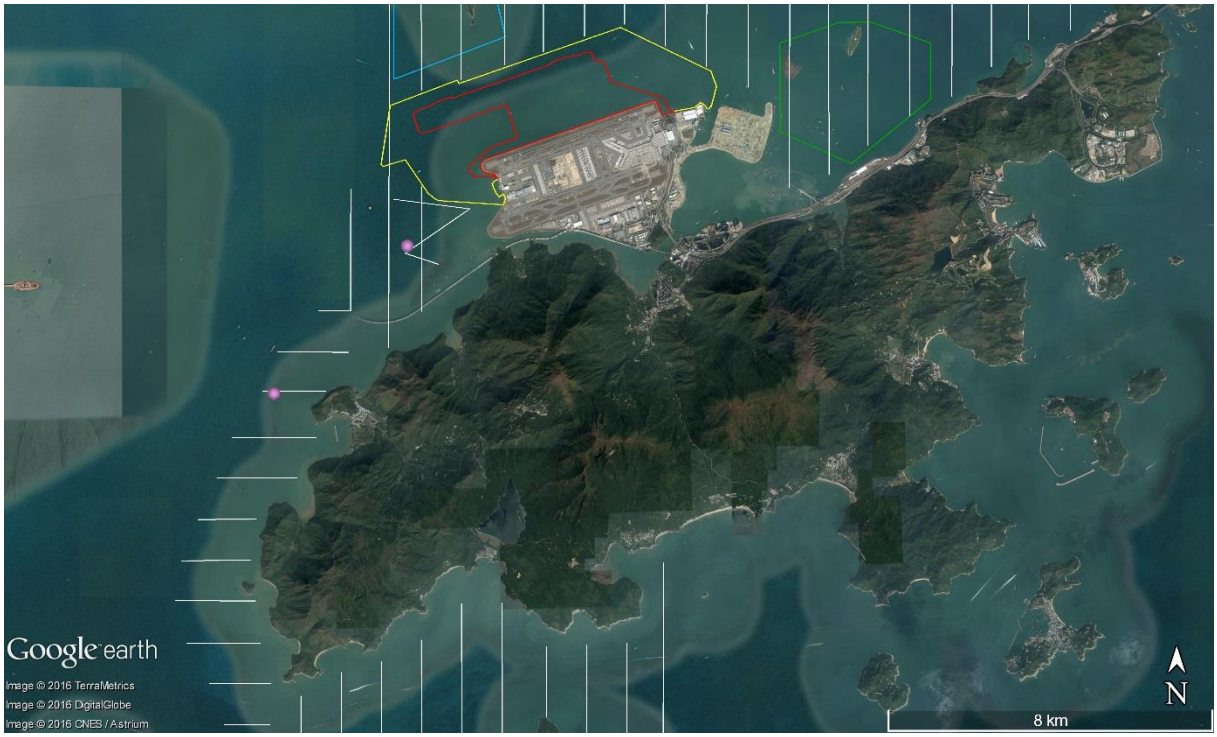
WLMM008



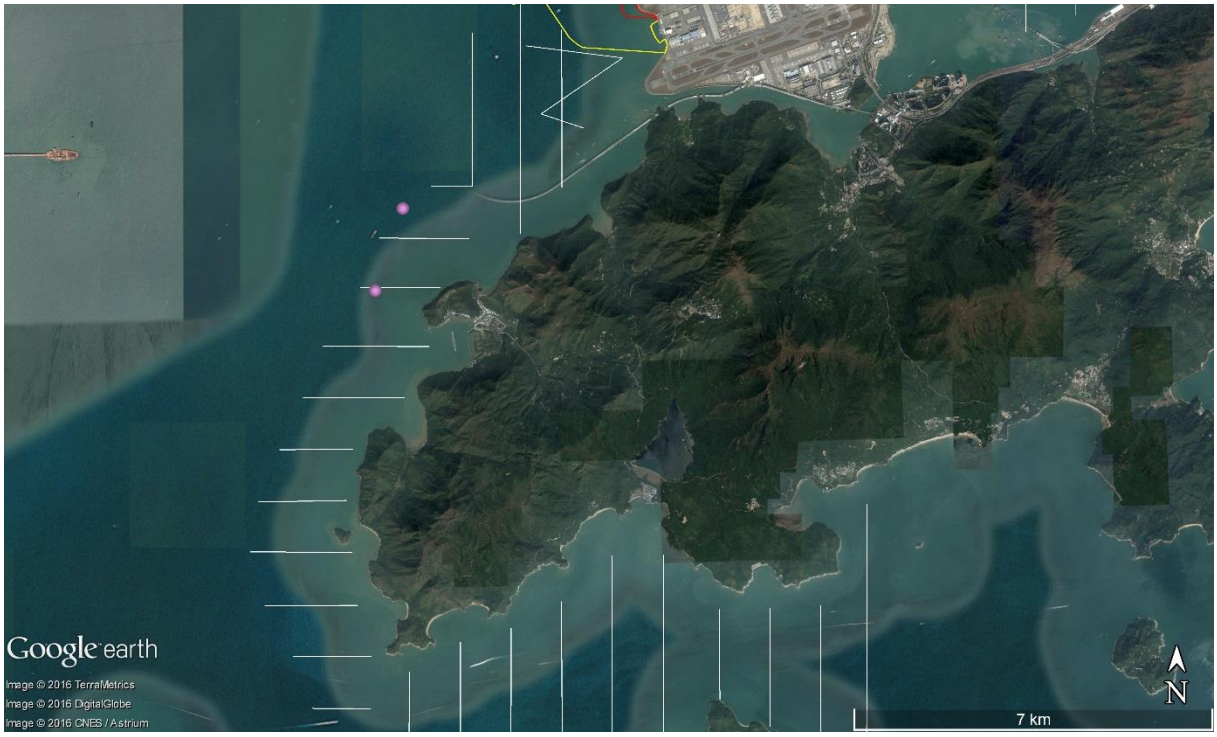
WLMM043



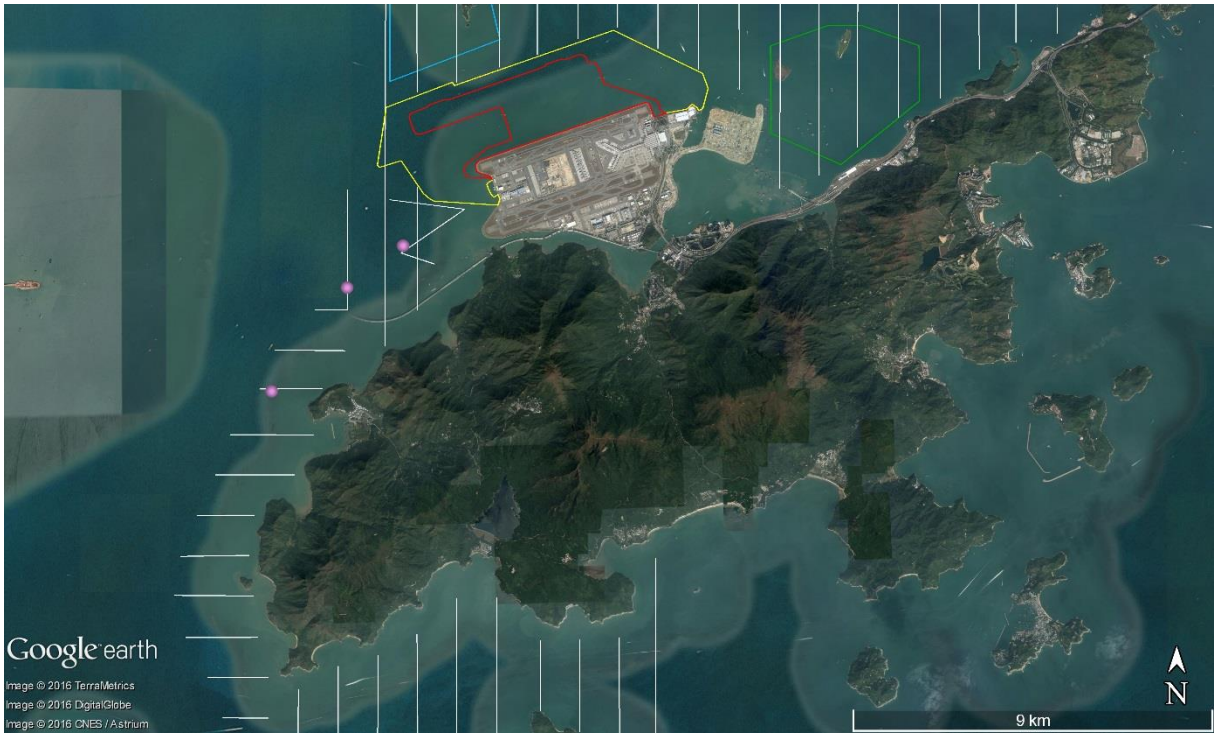
WLMM060



WLMM068



WLMM071



CWD Land-based Theodolite Tracking

CWD Groups by Survey Date

Date	Station	Start	End	Duration	Beaufort	Visibility	No. of Focal Follow	Dolphin Group Size
9-Jan-17	Sha Chau	8:40	14:40	6:00	2	3	0	0
18-Jan-17	Lung Kwu Chau	8:40	14:40	6:00	2-3	3-4	3	1-5
20-Jan-17	Sha Chau	8:45	14:45	6:00	3	2	0	0
24-Jan-17	Lung Kwu Chau	8:33	14:33	6:00	2-3	3	1	4
25-Jan-17	Lung Kwu Chau	8:36	14:36	6:00	2-3	3	6	1-3
14-Feb-17	Sha Chau	8:34	14:34	6:00	2-3	1	0	0
15-Feb-17	Lung Kwu Chau	8:38	14:38	6:00	2-3	2	12	1-4
20-Feb-17	Lung Kwu Chau	8:45	14:45	6:00	1	3-4	0	0
27-Feb-17	Sha Chau	8:45	14:45	6:00	2-4	2	0	0
28-Feb-17	Lung Kwu Chau	8:47	15:02	6:15	1-2	2	12	1-7
20-Mar-17	Lung Kwu Chau	8:50	14:50	6:00	2	3	1	2
21-Mar-17	Lung Kwu Chau	8:47	14:47	6:00	2	3	0	N/A
24-Mar-17	Sha Chau	8:48	14:48	6:00	4	2	0	N/A
28-Mar-17	Lung Kwu Chau	8:41	14:41	6:00	2-3	2	5	1-4
29-Mar-17	Sha Chau	8:38	14:38	6:00	2-4	3	0	N/A

Visibility: 1=Excellent, 2=Good, 3=Fair, 4=Poor

Appendix F. Location Plans for Coral Translocation

Location plan showing the additional search area for corals suitable for translocation

The location of recipient site

Appendix G. Summary of Ecological Monitoring Results

Ecological Monitoring – site photos and location map regarding the monthly ecological monitoring for the egretry area on Sheung Sha Chau and the HDD works

Photo record of View 1

Photo record of View 2