



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

Construction Phase Quarterly EM&A Report No.6
(1 April to 30 June 2017)

September 2017

20/F AIA Kowloon Tower
Landmark East
100 How Ming Street
Kwun Tong
Kowloon
Hong Kong

T +852 2828 5757
F +852 2827 1823
mottmac.hk

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**This Construction Phase Quarterly EM&A Report No. 6 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:

A handwritten signature in black ink, appearing to read 'Terence Kong', is positioned above a horizontal line.

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

Date 28 September 2017

\
Our Ref : 60440482/C/JCHL170928

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

28 September 2017

Dear Sir,

Contract No. 3102
3RS Independent Environmental Checker Consultancy Services

Quarterly EM&A Report No.6 (For 1 April 2017 to 30 June 2017)

Reference is made to the Environmental Team's submission of Quarterly EM&A Report No.6 (For 1 April 2017 to 30 June 2017) under Condition 15.4 of the Environmental Permit No. EP-489/2014 certified by the ET Leader on 28 September 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 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 6th 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 April 2017 to 30 June 2017.

Key Activities in the Reporting Period

Key activities of the Project carried out in the reporting period included deep cement mixing (DCM) trials and works, laying of geotextile and sand blanket, site office establishment, horizontal directional drilling (HDD) works, and submarine cable diversion associated works.

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. Construction works on Sheung Sha Chau Island was suspended during the ardeid’s breeding season (between April and July). The ecological monitoring is therefore suspended.

Monitoring/ Audit Activities	Number of Sessions
1-hour Total Suspended Particulates (TSP) Air Quality Monitoring	105
Noise Monitoring	65
Water Monitoring	37
Vessel line-transect surveys for Chinese White Dolphin (CWD) monitoring	6
Land-based theodolite tracking survey effort for CWD monitoring	15



Marine Traffic Control Centre (MTCC) in Operation in the Site Office



Photo Shoot for Photo Identification of CWD



Chemical Spill Drill conducted by the Contractor

In total, 2,543 ferry movements between HKIA SkyPier and Zhuhai / Macau were audited in the reporting period. Except one High Speed Ferry (HSF), all HSFs travelled through the Speed Control Zone (SCZ) with average speed within 15 knots, which complied with the Marine Travel Routes and Management Plan for High Speed Ferries of SkyPier (the SkyPier Plan). Nine ferry movements had minor deviations from the diverted route during the reporting period. ET investigated the speeding and deviation cases and all of them are related to public safety / emergency situations. Three meetings were held with ferry operator (FO) representatives in the reporting period to review and discuss the deviation cases as well as to share experience and recommendations to further strengthen the implementation of the SkyPier Plan.

On the implementation of the Marine Travel Routes and Management Plan for Construction and Associated Vessel (MTRMP-CAV), the upgraded Marine Surveillance System (MSS) launched in March 2017 automatically recorded deviation cases such as speeding, entering no entry zone, and not travelling through the designated gates. ET conducted bi-weekly audit of the system to ensure sufficient information has been provided and the contractors complied with the requirements of the MTRMP-CAV. Trainings were provided for the concerned skippers to facilitate them in familiarising with the requirements of the MTRMP-CAV. Deviations including speeding in the works area, entry from non-designated gates and entering no-entry zones were reviewed by ET. All the concerned captains were reminded by the contractor's MTCC representative to comply with the requirements of the MTRMP-CAV. Monthly 3-month rolling vessel plan for construction-related vessels were provided by contractors for checking to ensure the proposed deployment is necessary and minimal.

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, teams of at least two dolphin observers, were deployed at 9 to 13 dolphin observation stations for continuous monitoring of the DEZ by the contractors for DCM and water jetting works for submarine cable diversion 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 or the DEZs in this reporting period. Audits of acoustic decoupling for construction vessels were also carried out by ET.

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

Three Limit Level exceedance cases of 1-hour total suspended particulate (TSP) were recorded in the reporting period, and the corresponding investigations were conducted accordingly. The investigation findings concluded that the exceedances were likely due to the adverse ambient air quality, but not due to the Project.

The water quality monitoring results for total alkalinity obtained during the reporting period did not exceed 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 DO, turbidity, suspended solids (SS), chromium, and nickel, some of the testing results exceeded the relevant Action or Limit Levels in 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 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, 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	✓		Three complaints were received on 24 April, 9 May, and 22 May 2017 respectively.	Complaint investigations were carried out in accordance with the Complaint Management Plan. The investigation details are presented in S3.2.1.
Notification of any summons and status of prosecutions	✓		Summons were received in June 2017 regarding the aviation fuel pipeline diversion works in December 2016.	Judicial process underway.
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 Project works is counted as Breaches of Action or Limit Level.

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 and the contract information was presented in Appendix A of the Construction Phase Monthly EM&A Report No.15.

1.2 Scope of this Report

This is the 6th 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 April 2017 to 30 June 2017.

1.3 Project Organisation

The Project’s organisation structure and the contact details of the key personnel are provided in **Appendix A** 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
Contract 3212 11kV Submarine Cable Diversion	Project Director	Colman Chan	6193 4729
	Environmental Officer	Samantha Kong	3995 8141
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	9724 6254
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

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

Key activities of the Project carried out in the reporting period included DCM trials and works, laying of geotextile and sand blanket, site office establishment, HDD works, and submarine cable diversion associated works.

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 **Table 1.3**. 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.

Parameters	EM&A Requirements	Status
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	Completed in May 2017. Data analysis in-progress.
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		
Pre-construction Egret Survey Plan	Once per month in the breeding season between April and July, prior to the commencement of HDD drilling works.	The revised Egret 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.	Construction works on Sheung Sha Chau Island was suspended during the ardeid's breeding season (between April and July). The ecological monitoring is therefore suspended.
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

Parameters	EM&A Requirements	Status
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) implementation measures	Monitor and check	On-going
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, 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 B**.

2 Environmental Monitoring and Auditing

2.1 Air Quality Monitoring

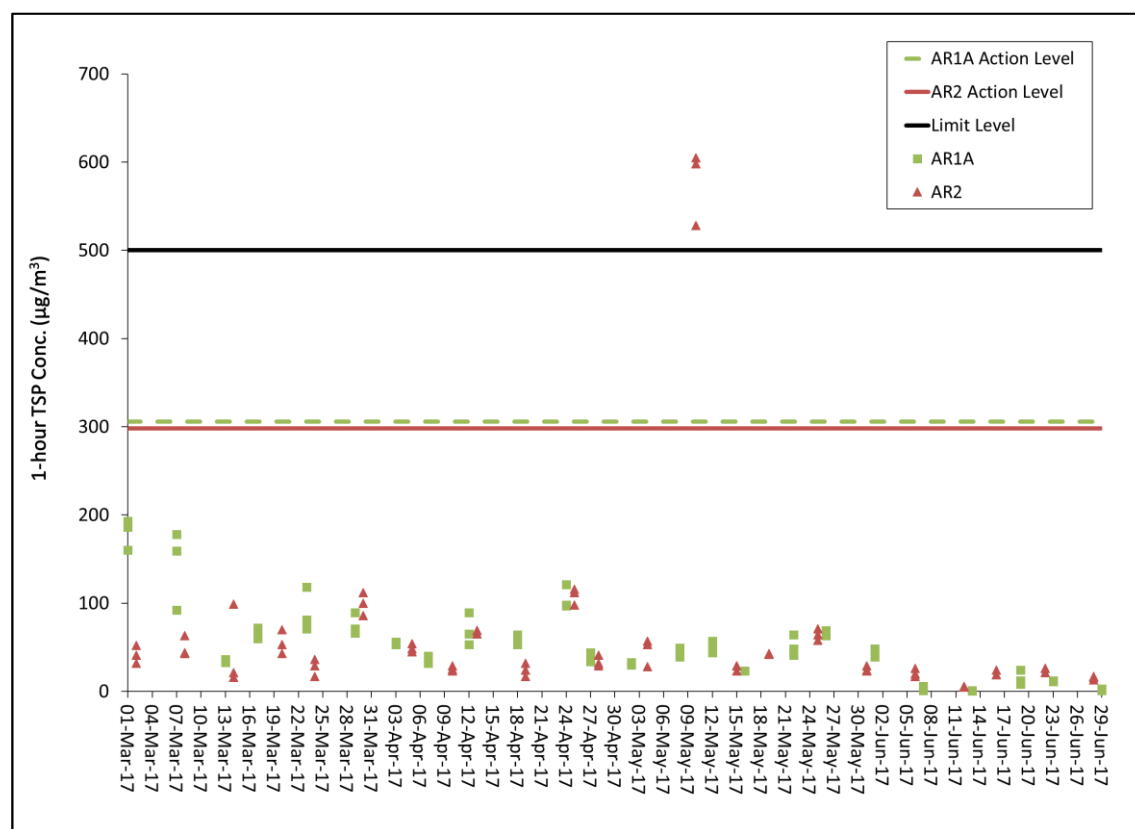
Impact 1-hour Total Suspended Particulates (TSP) monitoring was conducted three times every six days at two representative monitoring stations during the reporting period. The locations of monitoring stations are described in Table 2.1 and presented in **Figure 2.1**. The Action and Limit Levels of the 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 ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
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



Three Limit Level exceedance cases of air quality monitoring were recorded at AR2 on 10 May 2017 in the 1-hour TSP monitoring. Actions were taken accordingly based on the established Event and Action Plan as presented in the Manual. No major construction dust emission source was observed from the field investigation. It was also confirmed with the contractors that no major dusty construction works was undertaken when the exceedances were recorded. Dust suppression measures were properly implemented by relevant contractors during the monitoring period. Investigation found that Hong Kong was being affected by an airstream with high background pollutant concentration and poor atmospheric conditions for pollutant dispersion on the monitoring day, thus the exceedances were likely due to the adverse ambient air quality, but not due to Project activities.

The weather varied from sunny to rainy during the reporting period. Wind direction was mainly south or southwest 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.

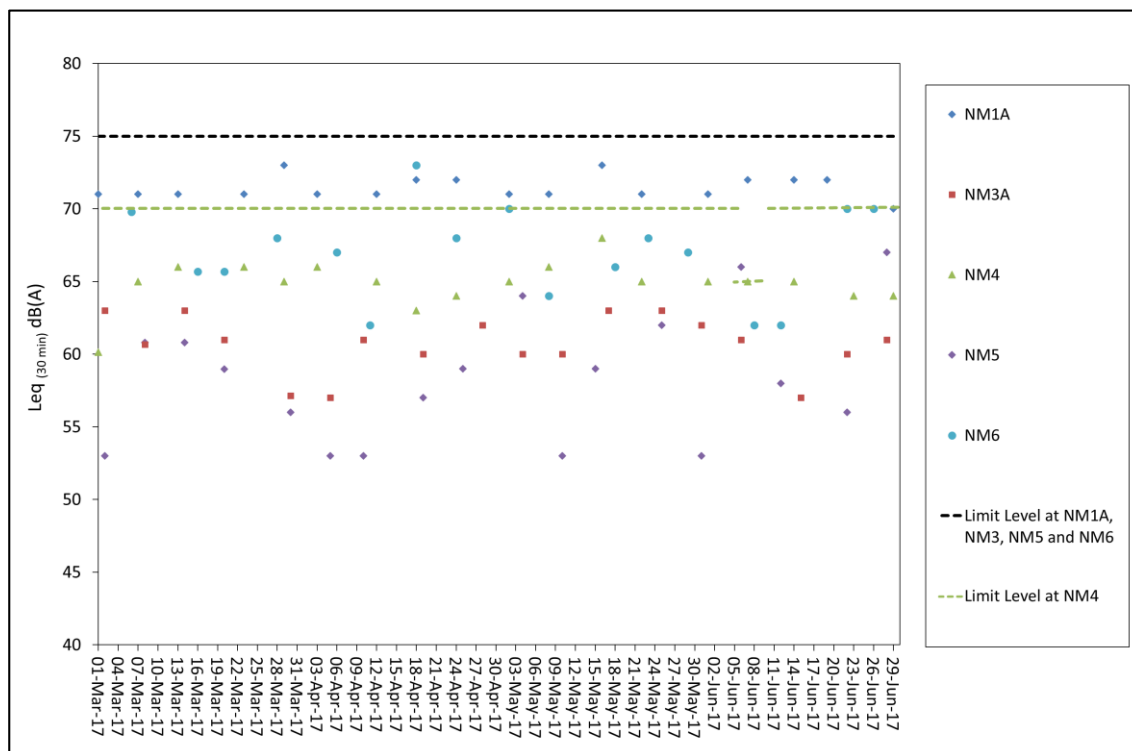
The graphical plot of impact noise quality monitoring results during the reporting period is presented in **Graph 2**.

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⁾ Reduced 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: School examination took place from 5 to 9 June 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 and helicopters at NM3A, school activities at NM4, helicopters 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 23 water quality monitoring stations, comprising 12 impact (IM) stations, one mobile IM station, 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	DO, pH, Temperature, Salinity, Turbidity, SS, Total Alkalinity, Heavy Metals ⁽²⁾
C2	Control	806945	825682	
C3 ⁽³⁾	Control	817803	822109	
IM1	Impact	806458	818351	
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	
IM13	Impact (for submarine 11 kV cable diversion)	Mobile station (500 m envelope of water jetting works)		DO, pH, Temperature, Salinity, Turbidity, SS
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, hence no water quality impact monitoring was conducted at this station. 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 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 IM / 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 and regular DCM water quality monitoring were conducted three days per week, at mid-flood and mid-ebb tides, at the 23 water quality monitoring stations.

As confirmed by Contract 3212, the 11kV submarine cable diversion and associated works were conducted in the period of 1 to 10 April, 14 to 17 April, 8 to 19 May, and 21 to 23 May 2017. The cable diversion and associated works were substantially completed on 23 May 2017. Therefore, general water quality monitoring was conducted at the mobile impact station of IM13 at mid-flood and mid-ebb tides during the construction period and ceased after 23 May 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 IM 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		Surface and Middle	
	4.5 mg/L		4.1 mg/L 5 mg/L for Fish Culture Zone (SR7) only	
	Bottom		Bottom	
	3.4 mg/L		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, IM13, SR3
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, IM13, 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 total alkalinity obtained during the reporting period did not exceed 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 DO, turbidity, suspended solids (SS), chromium, and nickel, some of the testing results exceeded the relevant Action or Limit Levels in the reporting period, and the corresponding investigations were conducted accordingly. The investigation findings concluded that the exceedances were not due to the Project. Summaries of DO, turbidity, SS, chromium, and nickel compliance status are presented in **Table 2.6** to **Table 2.15**.

Findings for DO Exceedances

Table 2.6, **Table 2.7** and **Table 2.8** present a summary of the DO compliance status at IM and SR stations during mid-ebb and mid flood tide for the reporting period.

Table 2.6: Summary of DO (Surface and Middle) Compliance Status (Mid-Ebb Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7
20/06/2017																		
22/06/2017																		
24/06/2017																		
No. of Exceedance	3	1	1	1	1	2	2	1	1	0	2	1	0	3	2	0	0	3

Table 2.7: Summary of DO (Bottom) Compliance Status (Mid-Ebb Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7
20/06/2017																		
22/06/2017																		
No. of Exceedance	0	1	2	0	1	1	0	1	0	2	0	1	0	1	1	0	0	1

Table 2.8: Summary of DO (Surface and Middle) Compliance Status (Mid-Flood Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7
20/06/2017																		
22/06/2017																		
24/06/2017																		
No. of Exceedance	0	1	0	0	0	1	2	3	2	1	2	1	0	3	0	0	0	3

Note: The monitoring results on monitoring dates not presented in the above tables did not exceed their corresponding Action or Limit Levels. Detailed results are presented in **Appendix C**.

Legend:	
	No exceedance of Action 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. 18. All exceedances were found not due to the Project.

The monitoring results, including results from repeat measurements, showed that DO (Surface and Middle) and DO (Bottom) results at the control stations as well as some upstream impact stations were low (and mostly below Action or Limit Level) from 20 to 25 June 2017. This indicates that low DO was occurring over a larger area including areas well outside the influence of the Project's activities, which suggests the likelihood of sources and/or causes originating outside of the Project boundaries. Besides, the DO pattern as shown in **Appendix C** which shows a widespread decline in DO levels across all monitoring stations from 15 June 2017 onwards appears to be a result of the aftermath of a severe weather condition (i.e. Severe Tropical Storm Merbok followed by a period of continuous rainfall) in Hong Kong between 12 and 21 June 2017.

Separately, investigations were carried out and confirmed that both DCM and sand blanket laying activities were operating normally with silt curtains deployed as additional measures. No construction vessel nor silt plume was observed in the vicinity of the monitoring stations when exceedances were recorded.

Combining the monitoring results during ebb and flood tides from 15 June 2017 onwards, as well as the observations during water quality monitoring, it is concluded that the patterns of exceedances indicate a macro-scale event affecting the DO concentration in the north Lantau water, rather than local sources. Therefore, the exceedances were considered not due to the Project.

Findings for Turbidity Exceedances

Table 2.9 presents a summary of the turbidity compliance status at IM and SR stations during mid-ebb tide for the reporting period.

Table 2.9: Summary of Turbidity Compliance Status (Mid-Ebb Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR2	SR3	SR4A	SR5A	SR6	SR7
24/06/2017																		
No. of Exceedance	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

Note: The monitoring results on monitoring dates not presented in the above table did not exceed their corresponding Action or Limit Levels. Detailed results are presented in **Appendix C**.

Legend:	
	No exceedance of Action 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
	Upstream station with respect to the Project during the respective tide based on dominant tidal flow

Investigation was conducted for the exceedance and details of the investigation findings are presented in the Construction Phase Monthly EM&A Report no. 18. The exceedance was found not due to the Project.

The Action Level exceedance occurred at a monitoring station which was located upstream of the Project during ebb tide, which would unlikely be affected by the Project. Therefore, the exceedance was considered not due to the Project.

Findings for SS Exceedances

Table 2.10 and **Table 2.11** present a summary of the SS compliance status at IM and SR stations during mid-ebb and mid-flood tide for the reporting period.

Table 2.10: Summary of SS Compliance Status (Mid-Ebb Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	IM13	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
01/04/2017																				
No. of Exceedance	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

Table 2.11: Summary of SS Compliance Status (Mid-Flood Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	IM13	SR2	SR3	SR4A	SR5A	SR6	SR7	SR8
01/04/2017																				
29/04/2017																				
No. of Exceedance	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0

Note: The monitoring results on monitoring dates not presented in the above table did not exceed their corresponding Action or Limit Levels. Detailed results are presented in **Appendix C**.

Legend:	
	No exceedance of Action 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
	Upstream station with respect to the Project during the respective tide based on dominant tidal flow
	No water quality monitoring conducted at IM13 when Contract 3212 had no water jetting works

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. 16. All exceedances were found not due to the Project.

Some exceedances occurred at monitoring stations which were located upstream of the Project. As such upstream stations would unlikely be affected by the Project, the investigation focused on the exceedances at stations located downstream of the Project and hence might be affected by the Project's activities.

For the exceedance at SR2 on 1 April 2017 during mid-ebb tide, no exceedance was recorded at all downstream IM stations which were located closer to the active works by the Project. Therefore, the exceedance was unlikely to be affected by the Project.

For the exceedance at IM6 on 29 April 2017 during mid-flood tide, it appeared to be an isolated case 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. 16, the exceedance was considered not due to the Project.

Findings for Chromium Exceedances

Table 2.12 and **Table 2.13** present a summary of the chromium compliance status at IM stations during mid-ebb and mid-flood tide for the reporting period.

Table 2.12: Summary of Chromium Compliance Status (Mid-Ebb Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12
04/06/2017												
No. of Exceedance	0	0	0	0	0	0	1	0	0	0	0	0

Table 2.13: Summary of Chromium Compliance Status (Mid-Flood Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12
01/04/2017												
No. of Exceedance	0	0	0	0	0	0	1	0	0	0	0	0

Note: The monitoring results on monitoring dates not presented in the above table did not exceed their corresponding Action or Limit Levels. Detailed results are presented in **Appendix C**.

Legend:	
	No exceedance of Action 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
	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. 16 and 18. All exceedances were found not due to the Project.

For the exceedance at IM7 during mid-ebb tide on 4 June 2017, as the exceedance occurred at a monitoring station located upstream during ebb tide, it was considered not due to the Project.

For the exceedance at IM7 during mid-flood tide on 1 April 2017, it appeared to be an isolated case with no observable temporal and spatial trend to indicate any effect due to Project activities. Furthermore, no exceedance was recorded at other downstream monitoring station located closer

to active DCM works during the same monitoring period. Based on these findings, the exceedance was considered not due to the Project.

Findings for Nickel Exceedances

Table 2.14 and **Table 2.15** presents a summary of the nickel compliance status at IM stations during mid-ebb and mid-flood tide for the reporting period.

Table 2.14: Summary of Nickel Compliance Status (Mid-Ebb Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12
23/05/2017												
No. of Exceedance	0	0	0	0	0	0	0	0	0	1	0	0

Table 2.15: Summary of Nickel Compliance Status (Mid-Flood Tide)

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12
04/04/2017												
08/04/2017												
09/05/2017												
18/05/2017												
25/05/2017												
20/06/2017												
24/06/2017												
No. of Exceedance	0	0	0	0	0	1	3	3	4	2	1	1

Note: The monitoring results on monitoring dates not presented in the above table did not exceed their corresponding Action or Limit Levels. Detailed results are presented in **Appendix C**.

Legend:	
	No exceedance of Action 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. 16, 17, and 18. All exceedances were found not due to the Project.

For the exceedance at IM10 during mid-ebb tide on 23 May 2017, as the exceedance occurred at a monitoring station located upstream during ebb tide, it was considered not due to the Project.

For the exceedance events during mid-flood tide, it was observed that overall these occurred discontinuously (i.e. no repeated exceedances during consecutive monitoring days), while some of the exceedances (those recorded on 4 and 8 April, 18 and 25 May, and 24 June 2017) were also isolated (singular) cases with no observable trend to indicate any effect due to Project activities.

For the exceedances recorded on 9 May and 20 June 2017, it is noted that no SS exceedance was recorded during the same monitoring period. As nickel is a representative heavy metal that indicates the potential for release of contaminants from contaminated mud pits due to the disturbance of marine sediment in contaminated mud pits by DCM activities, the low SS levels indicate that the active DCM works had limited or insignificant effect on downstream water quality. In addition, some of the exceedance events occurred at upstream stations in the reporting period, which might indicate potential nickel source originating from areas outside of the project boundary.

Nevertheless, all exceedances were investigated and taking into account the investigation findings, the details of which are reported in the Construction Phase Monthly EM&A Report nos. 16, 17 and 18, the exceedances were considered not due to the Project.

Conclusions

Based on the findings of the exceedance investigations presented in Construction Phase Monthly EM&A Report no. 16, 17, and 18, it was concluded that the exceedances during this reporting period 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 due to natural fluctuation 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 monitor 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 2.16**.

Table 2.16: 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 and drip trays, and provision of proper storage area for general refuse, chemical and chemical waste. 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 2,203 m³ of excavated materials were produced from the HDD launching site under P560(R) during the reporting period. The generated excavated materials were temporarily stored at the stockpiling area. The excavated material will be reused in the Project.

In addition, metal and paper were recycled during the reporting period. Around 292 tonnes of general refuse was disposed of to the West New Territories (WENT) Landfill by the advance works contract and DCM contracts, 0.08 tonnes and 1,600 litres of chemical waste were collected by licensed chemical waste collector. Around 1,281 m³ of Construction and Demolition (C&D) material generated from the DCM contracts was disposed of as public fill in 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. The locations of CWD monitoring by vessel survey transect conducted from April to June 2017 are shown in **Figure 2.3**, whilst the land-based survey stations are described in **Table 2.17** and depicted in **Figure 2.4**. Location of Passive Acoustic Monitoring is shown in **Figure 2.10**.

Table 2.17: 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 2.18**.

Table 2.18: 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

NEL, NWL, AW, WL and SWL as a Whole

Limit Level	Two consecutive running quarterly (3-month) STG < 1.86 & ANI < 9.35
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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 April to June 2017 to cover all transects in Northeast Lantau (NEL), Northwest Lantau (NWL), Airport West (AW), West Lantau (WL) and Southwest Lantau (SWL) survey area twice per month.

A total of around 1,344 km of survey effort was collected from these surveys, with around 88.6% 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 D**.

CWD Sighting

From April to June 2017, there were total 58 groups of CWDs with 226 individuals sighted (**Table 2.19**). Amongst the sightings of CWDs, 53 groups with 210 individuals were made during on-effort search under favourable weather condition.

When breaking down the sightings by survey areas, 5 sightings with 10 individuals, 30 sightings with 153 individuals and 23 sightings with 63 individuals were recorded in NWL, WL and SWL respectively during the current reporting period. No CWD was sighted in NEL and AW survey areas. Compared to both last quarter (i.e. January to March 2017) and the same quarter in year 2016 (i.e. April to June 2016), there was an observable increase in CWD records in SWL. Table 2.19 below shows the comparison of the numbers of sightings and individuals between the current reporting period, last quarter and the same quarter of year 2016.

Table 2.19: Summary of Number of CWD Sightings and Number of CWD Individuals for Previous Quarters and Current Reporting Period

	Apr to Jun 2016	Jan to Mar 2017	Apr to Jun 2017
NEL	0 (0)	0 (0)	0 (0)
NWL	4 (20)	5 (16)	5 (10)
AW	0 (0)	2 (5)	0 (0)
WL	30 (123)	33 (126)	30 (153)
SWL	12 (42)	14 (38)	23 (63)
Total	46 (185)	54 (185)	58 (226)

Note: Values in () represent number of CWD individuals

Distribution of CWD sightings recorded from April to June 2017 are illustrated in **Figure 2.5**. In NWL, CWD sightings were mainly recorded near the coastal waters northwestern off Lung Kwu Chau and also the waters between Lung Kwu Chau and Black Point (Lan Kok Tsui). In WL survey area, CWD sightings were distributed in coastal waters from Tai O to Fan Lau and also off-shore waters from Tai O to Peaked Hill. In SWL waters, CWDs sighting locations ranged from Fan Lau to Tong Fuk particularly the waters around Fan Lau Tung Wan and also the waters between Soko Islands and Lantau. Details of the sighting data were presented in **Appendix D**.

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 April, May and June 2017 are summarized in **Table 2.20**.

In this reporting period, the monthly encounter rate STG increase from April to June 2017 while the monthly encounter rate ANI increase from April to May 2017 followed by a decline in June 2017. Comparing with the previous reporting period, both the running quarterly STG and ANI increases from 4.02 to 4.45 and from 14.85 to 17.65 respectively.

Table 2.20: Summary of Monthly and Running Quarterly STG and ANI of Chinese White Dolphin for Previous and Current Reporting Periods

	Previous Reporting Period			Current Reporting Period		
	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17
Monthly STG	4.41	6.08	1.99	2.96	4.21	6.30
Monthly ANI	15.78	21.12	8.97	8.88	25.49	18.64
Running Quarterly STG	3.96	5.04	4.02	3.49	3.06	4.45
Running Quarterly ANI	13.02	17.31	14.85	12.33	14.46	17.65

Notes: For detailed calculations of encounter rates STG and ANI, please refer to the Monthly EM&A Reports No. 16, No. 17 and No. 18.

Group Size

Between April and June 2017, the group size of CWDs ranged from 1 to 13 individuals per group. The average group size of CWDs was 3.9 individuals per group while that of last quarter was 3.4. Half of the CWD sightings (i.e. 29 groups) were in medium group size (i.e. 3-9 individuals). There were three CWD sightings with large group size (i.e. 10 or above individuals) in this reporting period and they were recorded in WL.

In NWL, CWD sightings with small group size (i.e. 1-2 individuals) dominated in this reporting period. While in WL, CWD groups with medium 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 April to June 2017, 21 groups of CWDs were sighted with feeding activities. Amongst these 21 groups of feeding CWDs, only one group was observed in association with operating fishing boat (purse seiner) in SWL. The sighting locations of CWDs engaged in different behaviours during the reporting period 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 April to June 2017, 15 sightings of CWDs were recorded with the presence of mother-and-calf, mother-and-unspotted juvenile and/or mother-and-spotted juvenile pairs. Most of these mother-calf pairs were sighted in WL. The record in NWL was the mother-and-spotted juvenile pair (NLMM006 and NLMM013). This pair has not been re-sighted since December 2016 and was sighted again in June 2017. The sighting locations of mother-calf 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]



Photo Identification

During April to June 2017, a total number of 67 different CWD individuals were identified altogether 101 times. Re-sighting information of CWD individuals provides an initial idea of their range use and apparent connection between different areas around Lantau. Amongst these 67 different CWD individuals, 24 animals (i.e. NLMM004, NLMM016, SLMM011, SLMM014, SLMM022, SLMM023, SLMM027, SLMM028, SLMM052, WLMM004, WLMM007, WLMM008, WLMM009, WLMM030, WLMM043, WLMM060, WLMM068, WLMM071, WLMM076, WLMM078, WLMM079, WLMM082, WLMM084 and WLMM086) were sighted more than once. Nine individuals including NLMM016, SLMM011, SLMM027, SLMM052, WLMM004, WLMM008, WLMM009, WLMM076 and WLMM078 were re-sighted in different survey areas within this reporting period. NLMM016 has cross-area movement in NWL and WL while others have cross-area movement in WL and SWL. The number of CWD individuals re-sighted more than once was slightly higher than last quarter (i.e. January to March 2017) while the number of CWD individuals re-sighted in different survey areas during the current reporting period remain unchanged compared with last quarter.

A summary of photo identification works is presented in **Table 2.21**. Representative photos of the 67 identified individuals and figures depicting the sighting locations of the aforementioned 24 re-sighted individuals recorded in this reporting period are presented **Appendix D**.

Table 2.21: Summary of Photo Identification

Individual ID	Date of sighting	Sighting Group No.	Area	Individual ID	Date of sighting	Sighting Group No.	Area
NLMM001	11-May-17	3	WL	WLMM009	09-Jun-17	4	SWL
NLMM004	05-Apr-17	1	NWL		28-Jun-17	8	WL
		2	NWL	WLMM018	11-May-17	8	WL
NLMM006	08-Jun-17	1	NWL	WLMM027	22-Jun-17	4	SWL
NLMM013	08-Jun-17	1	NWL	WLMM030	18-Apr-17	2	WL
NLMM016	05-Apr-17	1	NWL			3	WL
		2	NWL	WLMM040	09-Jun-17	1	WL
	18-Apr-17	1	WL	WLMM042	11-May-17	3	WL
NLMM023	11-May-17	1	WL	WLMM043	05-May-17	1	WL
SLMM007	11-May-17	9	WL		09-Jun-17	1	WL
SLMM010	11-May-17	10	SWL	WLMM052	28-Jun-17	2	WL
SLMM011	11-May-17	11	SWL	WLMM060	18-Apr-17	2	WL
	28-Jun-17	5	WL			3	WL
SLMM014	22-Jun-17	2	SWL	WLMM063	07-Jun-17	2	SWL
		3	SWL	WLMM064	26-Apr-17	3	SWL
		6	SWL	WLMM068	18-Apr-17	2	WL
		7	SWL			3	WL
SLMM015	04-May-17	1	SWL	WLMM070	11-May-17	11	SWL
SLMM021	26-Apr-17	1	SWL	WLMM071	18-Apr-17	2	WL
SLMM022	05-May-17	4	WL			3	WL
		5	WL	WLMM072	18-Apr-17	2	WL
SLMM023	05-May-17	4	WL	WLMM073	11-May-17	8	WL
		5	WL	WLMM075	18-Apr-17	2	WL
	11-May-17	3	WL	WLMM076	05-May-17	1	WL
		8	WL		22-Jun-17	1	SWL
SLMM027	11-May-17	3	WL	WLMM077	05-May-17	1	WL
		8	WL	WLMM078	05-May-17	1	WL
	07-Jun-17	2	SWL		22-Jun-17	1	SWL
SLMM028	18-Apr-17	5	WL	WLMM079	05-May-17	4	WL
	05-May-17	5	WL			5	WL
SLMM031	07-Jun-17	1	SWL	WLMM080	11-May-17	2	WL
SLMM036	07-Jun-17	3	SWL	WLMM081	11-May-17	2	WL
SLMM040	22-Jun-17	1	SWL	WLMM082	11-May-17	2	WL
SLMM047	11-May-17	8	WL			4	WL
SLMM052	05-May-17	4	WL	WLMM083	11-May-17	2	WL
		5	WL	WLMM084	11-May-17	3	WL
	11-May-17	10	SWL			7	WL
	07-Jun-17	2	SWL	WLMM085	11-May-17	4	WL
SLMM054	18-Apr-17	7	SWL	WLMM086	11-May-17	5	WL
SLMM055	26-Apr-17	4	SWL		09-Jun-17	1	WL
SLMM056	11-May-17	11	SWL			3	WL
SLMM057	22-Jun-17	1	SWL	WLMM087	11-May-17	5	WL
SLMM058	22-Jun-17	5	SWL	WLMM088	11-May-17	8	WL
WLMM004	05-May-17	4	WL	WLMM089	11-May-17	8	WL
		5	WL	WLMM090	09-Jun-17	1	WL
	07-Jun-17	2	SWL	WLMM091	28-Jun-17	3	WL

Individual ID	Date of sighting	Sighting Group No.	Area	Individual ID	Date of sighting	Sighting Group No.	Area
WLMM007	05-May-17	1	WL	WLMM092	28-Jun-17	3	WL
	11-May-17	6	WL	WLMM093	28-Jun-17	6	WL
WLMM008	11-May-17	7	WL	WLMM094	28-Jun-17	6	WL
	22-Jun-17	1	SWL	WLMM095	28-Jun-17	6	WL
				WLMM096	28-Jun-17	8	WL

Land-based Theodolite Tracking

Survey Effort

During April to June 2017, a total of 15 days of land-based theodolite tracking survey effort were completed, including nine days on Lung Kwu Chau and six days on Sha Chau. In total, 17 CWD groups were tracked from the Lung Kwu Chau station, with 0.19 CWD groups sighted per survey effort hour. No CWDs were sighted from the Sha Chau station during the current reporting period.

Information on survey effort and CWD groups sighted during land-based theodolite tracking surveys are presented in **Table 2.22**. Details on the survey effort and CWD groups tracked are presented in **Appendix D**. The first sighting locations of CWD groups tracked between April and June 2017 are shown in **Figure 2.9**.

Table 2.22: 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
April 2017				
Lung Kwu Chau	3	18:00	6	0.33
Sha Chau	2	12:00	0	0
TOTAL	5	30:00	6	0.20
May 2017				
Lung Kwu Chau	3	18:00	2	0.11
Sha Chau	2	12:00	0	0
TOTAL	5	30:00	2	0.07
June 2017				
Lung Kwu Chau	3	18:03	9	0.50
Sha Chau	2	12:00	0	0
TOTAL	5	30:03	9	0.30
OVERALL	15	90:03	17	0.19

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 period, 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 for continuous monitoring of the DEZ by the contractors for DCM and water jetting works for submarine cable diversion 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 408 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 DEZ or silt curtains in this reporting period. 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:

- provision and maintenance of drip trays, spill kits, and chemical storage area; and
- implementation of dust suppression and noise mitigation measures.

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

- display of relevant permit and licenses on barges;
- display of Non-Road Mobile Machinery (NRMM) labels for relevant mechanical equipment;
- provision and maintenance of storage area for general refuse, chemicals, and chemical waste;
- segregation of recyclables from general refuse;
- proper implementation of acoustic decoupling measures, wastewater treatment, DEZ monitoring, dust suppressing measures, spill and runoff preventive measures, and dark smoke preventive measures; and
- proper installation and 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 B**.

2.7 Ecological Monitoring

No works were conducted on Sheung Sha Chau Island during the ardeid's breeding season in the reporting period in accordance with the Updated EM&A Manual. No ecological monitoring was conducted during the reporting period.

2.8 Audit of the SkyPier Plan

In total, 2,543 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 56 and 97, which falls within the maximum daily cap number of 125.

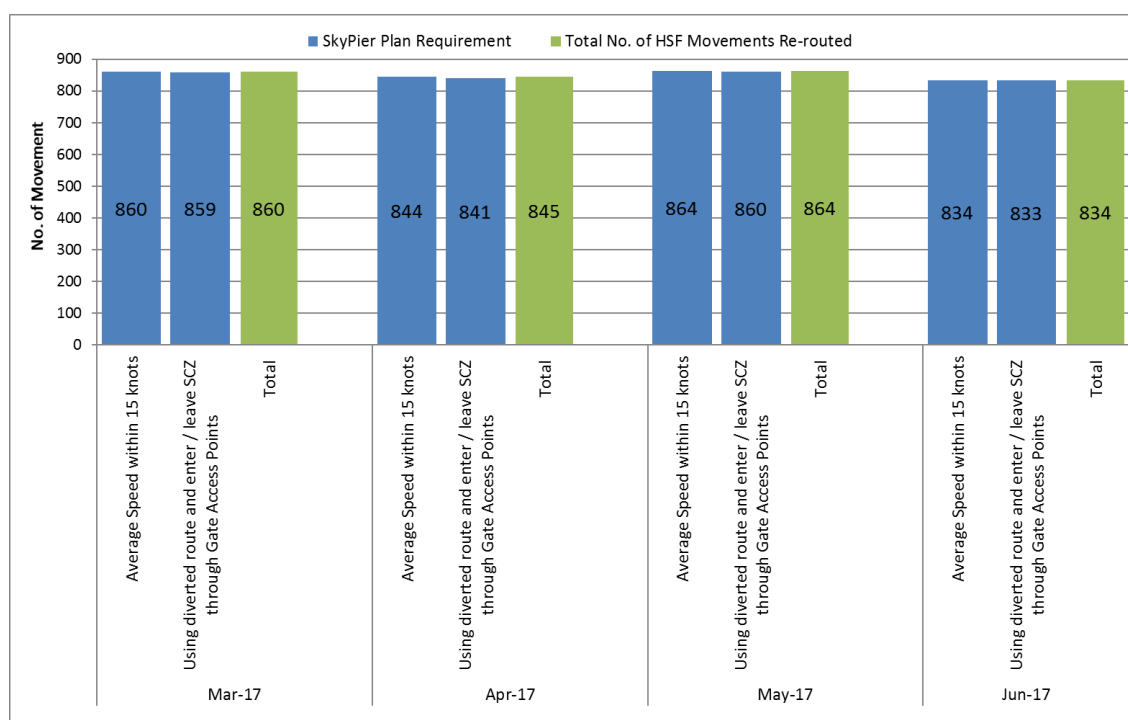
Except one HSF, all HSFs travelled through the SCZ with average speed within 15 knots (7.8 knots to 14.3 knots), which complied with the SkyPier Plan. Nine ferry movements had minor deviations from the diverted route during the reporting period. Notices of speeding and routing deviation were sent to the FOs and the cases have been investigated. The speeding case and all the deviation cases from the diverted route were due to public safety considerations or emergency situations, 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 (March 2017 to June 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.

Three meetings were held with FO representatives in June 2017 to review and discuss the deviation cases happened in the past few months as well as to share experience and recommendations to further strengthen the implementation of SkyPier Plan.

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



2.9 Audit of Construction and Associated Vessels

On the implementation of the Marine Travel Routes and Management Plan for Construction and Associated Vessel (MTRMP-CAV), the upgraded Marine Surveillance System (MSS) automatically recorded deviation cases such as speeding, entering no entry zone, and not traveling through the designated gate. ET conducted bi-weekly audit of relevant information including AIS data, vessel tracks and other relevant records to ensure sufficient information has been provided by the system and the contractors complied with the requirements of the MTRMP-CAV. The contractors have submitted endorsed 3-month rolling vessel plan for construction vessel activities to AAHK 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 April and June 2017, deviations including speeding in the works area, entry from non-designated gates and entering no-entry zones were identified. All the concerned captains were reminded by the contractor's MTCC representative to comply with the requirements of the MTRMP-CAV.

A total of 11 skipper training workshops have been held by ET between April and June 2017 with 91 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 18 skipper training workshops have been held with 32 concerned captains by contractor's Environmental Officer (EO) and competency test had been conducted subsequently with the trained captains by ET.

2.10 Coral Post-Translocation Monitoring

In accordance with the approved Coral Translocation Plan (CTP), gorgonian corals suitable for translocation were translocated to the recipient site at Yam Tsai Wan, which was completed in January 2017. Since then the post-translocation monitoring program has been commenced according to the CTP. Details of the coral translocation works and the results of the first three rounds of post-translocation monitoring conducted in the period from January to March 2017 are presented in the Quarterly EM&A Report No. 5.

Monitoring Results

According to the CTP, the fourth round of post-translocation monitoring was conducted on 5 and 6 April 2017 (about three months after completion of translocation). The results of the fourth round of post-translocation monitoring are summarized in **Table 2.23**. It was found in the fourth round of monitoring that a significant increase in partial mortality (PM) was recorded in both the translocated corals (tagged) and the control corals (tagged), as well as deterioration in health conditions. However, as the changes in PM were found at both translocated and control corals (tagged), the action/ limit levels as defined in the CTP were not triggered.

Nonetheless, the CTP stipulates that if observations of any die-off / abnormal conditions of the translocated corals are made during post-translocation monitoring, the ET shall inform AAHK, IEC and AFCD and liaise with AFCD to investigate any mitigation measures needed. The ET is also required to identify the source of the impact causing die-off / abnormal conditions of the translocated corals and if it is related to the Project. To this end, the ET has been investigating the significant change in PM identified from the monitoring in April 2017 and has had a meeting with AFCD and EPD in June 2017 to discuss the issue and the planned follow-up actions.

The investigation works completed or currently undertaken by the ET include:

- Ad-hoc initial check of the coral conditions;
- Ad-hoc monitoring of all translocated (tagged and untagged) and control corals;
- Ad-hoc dive check of natural corals in Yam Tsai Wan, Sham Shui Kok and Tai Mo To;
- Ad-hoc water quality monitoring;
- Review of weather conditions, red tide, water quality monitoring data;
- Substrate check and review of sediment deposition;
- Review of other projects and their translocated corals; and
- Consultation with coral experts on the potential cause(s) of the significant change in PM.

Based on preliminary findings, the condition of corals in May and June are not worsening compared to those in April. As the investigation works are still underway, details of the

investigation results together with the ad-hoc monitoring results will be presented in the next Quarterly EM&A Report.

Table 2.23: Summary of the Post-Translocation Monitoring Surveys Completed in this Reporting Period

	Colony Height (cm)	General Health Conditions ^(a)	% Change in Partial Mortality ^{(b) (c)}	Exceedance of Action Level ^(d)	Exceedance of Limit Level ^(e)
Fourth Round of Survey in April 2017					
Control gorgonian corals (tagged)	7-59	0-3 (Average: 1.9)	≤25% change for 5% of the tagged corals and >25% change for 95% of the tagged corals (Average PM: 73%)	No	No
Translocated gorgonian corals (tagged)	5-44	1-4 (Average: 2.0)	≤25% change for 4.7% of the tagged corals and >25% change for 94.1% of the tagged corals (Average PM: 73%)		

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) Coral showing no change in partial mortality is not presented in this account.
- (d) 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.
- (e) 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.

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 environment-related complaint was received on 24 April 2017 regarding dolphin watching arrangement for implementation of Dolphin Exclusion Zone (DEZ) in area of Contract 3204 for the period since early March 2017. Investigation was conducted by the ET in accordance with the Manual and the Complaint Management Plan (CMP) of the Project. The ET's review of checking records indicated that the DEZ monitoring arrangements of Contract 3204 for March and April 2017 were reviewed by the ET and IEC, based on the requirements of the DEZ Plan and prior to the Contractor's implementations and noted the arrangements had followed the DEZ Plan. Furthermore, the implementation of DEZ was checked by the ET on-site during the regular and ad-hoc site inspections for Contract 3204 and noted the site practices had followed the proposed DEZ monitoring arrangements and in line with the DEZ Plan. Based on the investigation results, it is concluded that the 3204 Contractor deployed sufficient dolphin watching arrangements for implementation of DEZ during March and April 2017 and had followed the DEZ Plan. The complaint case was considered unfounded. Regular monitoring and mitigation measures continue.

Another environment-related complaint was received on 9 May 2017 regarding the intermittent release of exhaust air emissions from marine construction vessels of the Project. Investigation was conducted by the ET in accordance with the Manual and the CMP of the Project. The anonymous complainant did not provide any information on the case (e.g. date/time) or any details of the mentioned vessel types. There were no observations of dark smoke during ET's site inspection in May 2017. ET will continue the regular auditing, which involves weekly and ad-hoc site inspections to, among other matters, check for any dark smoke emission from construction vessels, and to inspect vessels' maintenance records. In case where dark smoke emission from a construction vessel is observed, the ET will require the concerned contractor to take immediate action to rectify the situation.

Lastly, an environment-related complaint was received on 22 May 2017 regarding alleged cement discharges from a construction vessel during reclamation activities of the Project. Investigation was conducted by the ET in accordance with the Manual and the CMP of the Project. The anonymous complainant did not provide any information on the case (e.g. date/time of the observation) or any details of the vessel (e.g. name, description or characteristics of the vessel, etc.). The ET recognized the concerned vessel as a DCM barge. Review of the water quality monitoring results in April and May 2017 indicated that there were no exceedances of Action or Limit levels for total alkalinity in those two months, hence no indications suggesting significant discharge of cement into the marine environment. Also, there were no discharge out of the site boundary of the Project observed during the water quality monitoring events. Nevertheless, the ET has reminded and reiterated to the DCM contractors to ensure proper implementation of the

relevant precautionary/ mitigation measures including the deployment of primary silt curtains installed on their DCM barges and maintaining good housekeeping to avoid spillage/leakage of untreated wastewater/materials into the surrounding marine environment. The ET observed that the relevant precautionary/ mitigation measures had been carried out by the DCM contractors. The ET continues to monitor the implementation and effectiveness of the relevant precautionary/ mitigation measures during the regular and ad-hoc site inspections.

3.2.2 Notifications of Summons or Status of Prosecution

Summons were received in June 2017 alleging use of powered mechanical equipment outside the permitted hours for the aviation fuel pipeline diversion works in December 2016.

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 Period	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	3	1	0
From 28 December 2015 to end of the reporting period	0	5	1	0

4 Conclusion and Recommendation

In this quarterly period from 1 April 2017 to 30 June 2017, the EM&A programme has been implemented as planned, including 105 sets of air quality measurements, 65 sets of construction noise measurements, 37 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, as well as environmental site inspections and waste monitoring for the Project's construction works.

Key activities of the Project carried out in the reporting period included DCM trials and works, laying of geotextile and sand blanket, site office establishment, HDD works, and submarine cable diversion associated works.

Three Limit Level exceedance cases of 1-hour TSP were recorded in the reporting period, and the corresponding investigations were conducted accordingly. The investigation findings concluded that the exceedances were likely due to the adverse ambient air quality, but not due to the Project.

For water quality, the water quality monitoring results for total alkalinity obtained during the reporting period did not exceed 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 DO, turbidity, SS chromium, and nickel, some of the testing results exceeded the relevant Action or Limit Levels in 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 the Action or Limit Levels in relation to the construction 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.

In total, 2,543 ferry movements between HKIA SkyPier and Zhuhai / Macau were audited in the reporting period. Except one HSF, all HSFs travelled through the SCZ with average speed within 15 knots, which complied with the SkyPier Plan, except one HSF. Nine ferry movements had minor deviations from the diverted route during the reporting period. ET investigated the speeding and deviation cases and all of them are related to public safety / emergency situations.

Between April and June 2017, ET has conducted bi-weekly audit of the MSS to ensure the system records all deviation cases accurately and the contractors fully complied with the requirements of the MTRMP-CAV. A total of 11 skipper training workshops have been held by ET between April to June 2017 with concerned captains of construction vessels associated with 3RS contracts. Another 18 skipper training workshops have been held by contractors' EO and competency test had been conducted subsequently with the trained captains by ET.

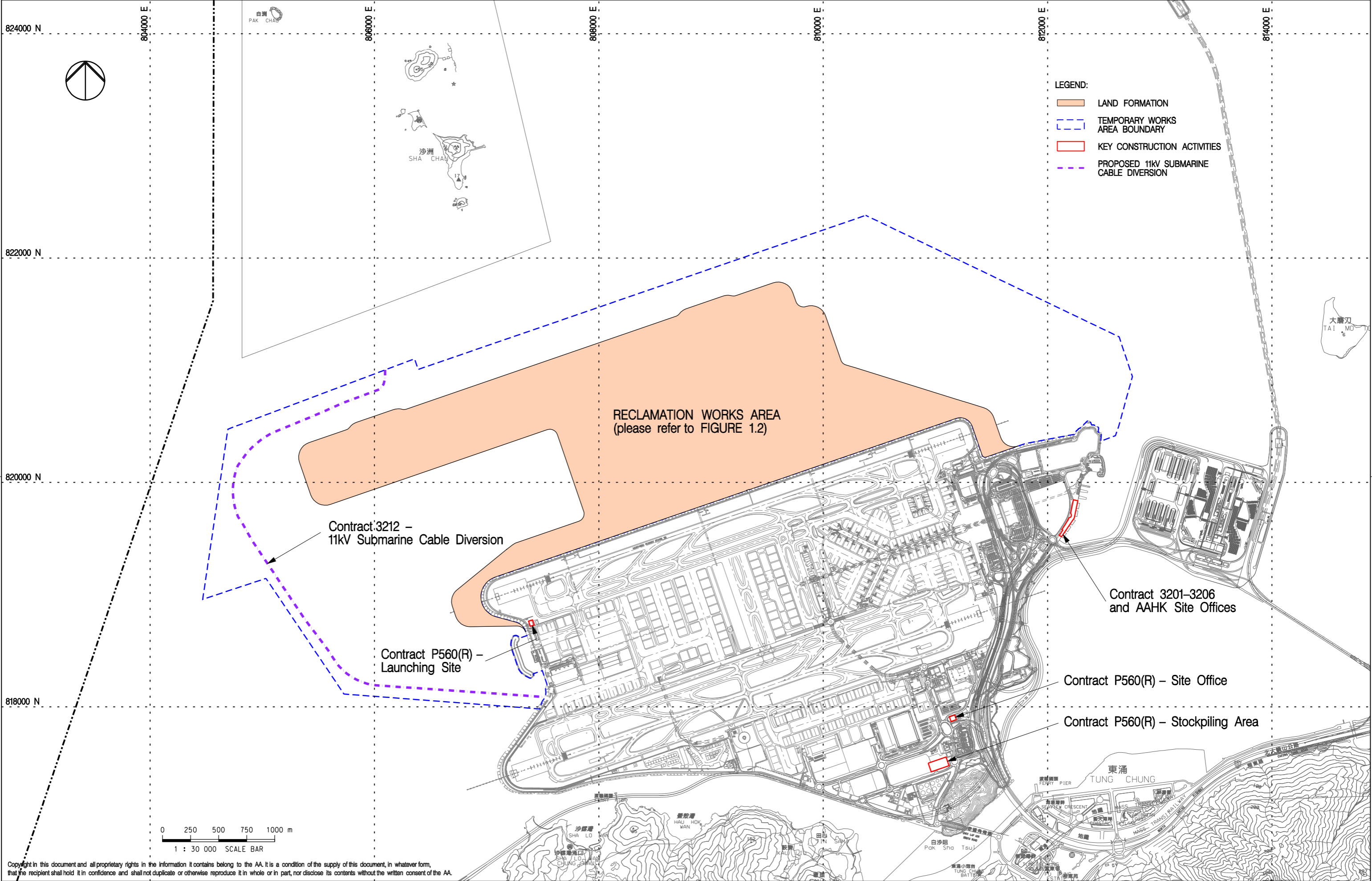
On the implementation of MMWP, silt curtains were in place by the contractors for laying of sand blanket and dolphin observers were deployed in accordance with the plan. On the implementation of DEZ Plan, dolphin observers were deployed for continuous monitoring of the DEZ by the contractors for DCM and water jetting works for submarine cable diversion 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 in this reporting period.

Subsequent to completion of the coral translocation works according to the approved CTP, a summary of the ensuing post-translocation monitoring is reported quarterly.

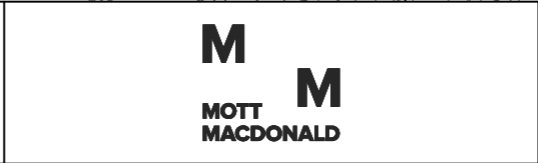
The recommended environmental mitigation measures, as included in the EM&A programme, have been effectively implemented during the reporting period. Also, the EM&A programme implemented by the ET has effectively monitored the construction activities and ensure the proper implementation of mitigation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

Figures



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Rev.	Date	Description	Checked
A	31AUG15	FIRST ISSUE	DC
B	11MAY17	GENERAL REVISION	RO



Title
LOCATIONS OF KEY CONSTRUCTION ACTIVITIES IN THIS REPORTING PERIOD

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

Date
11MAY17
11MAY17
11MAY17

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
Drawing No.	Scale at A3 1 : 30000
FIGURE 1.1	Rev. B

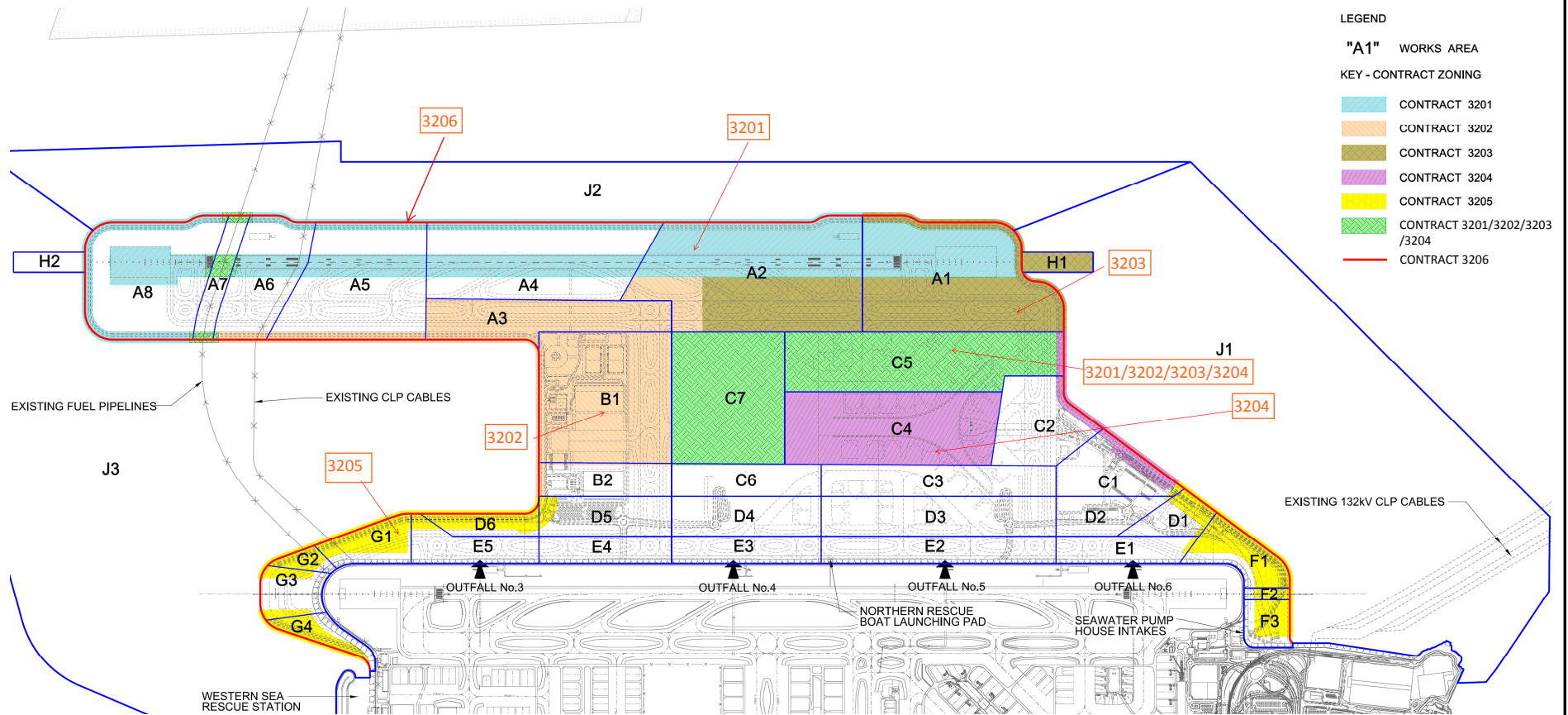
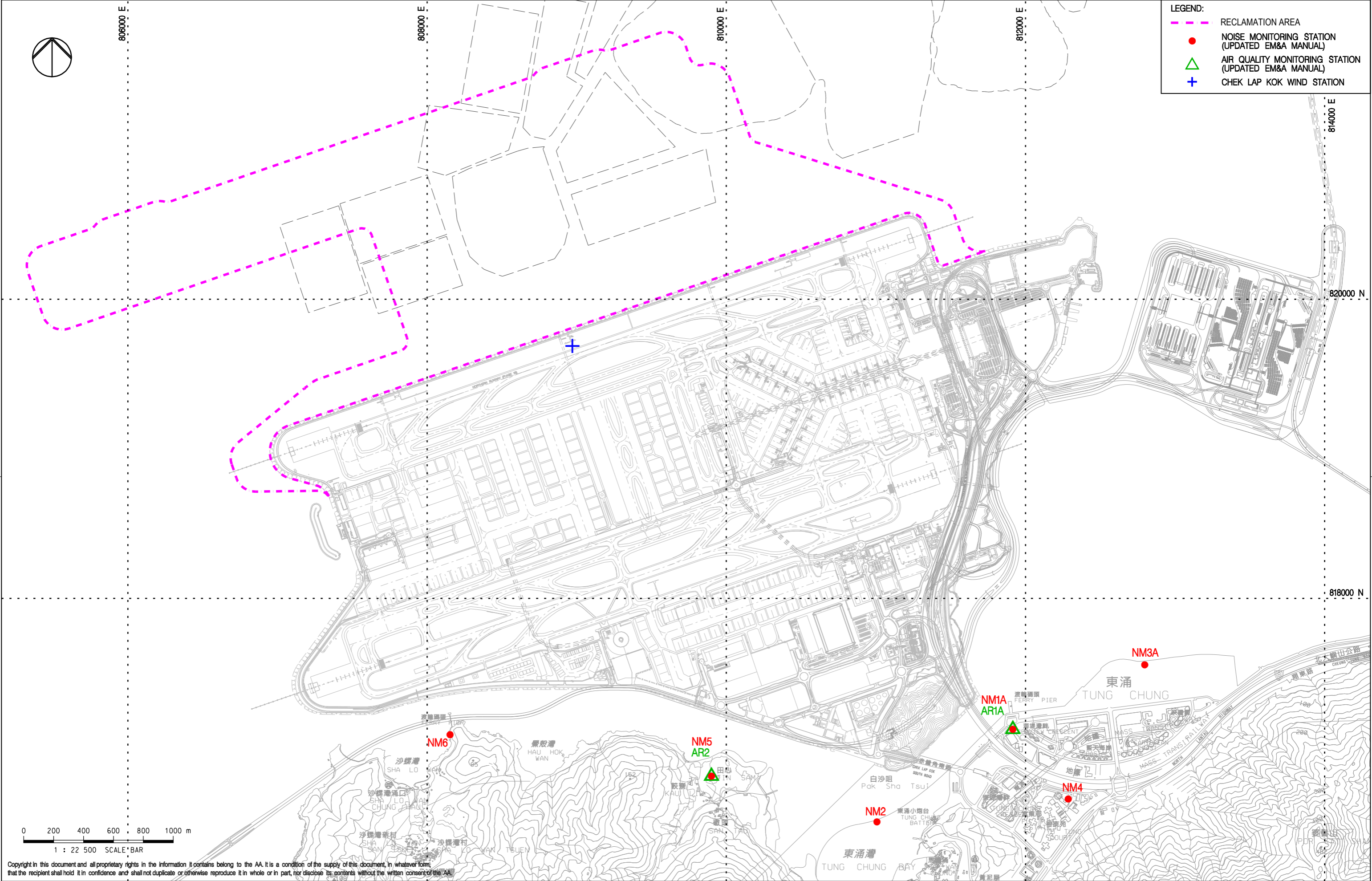


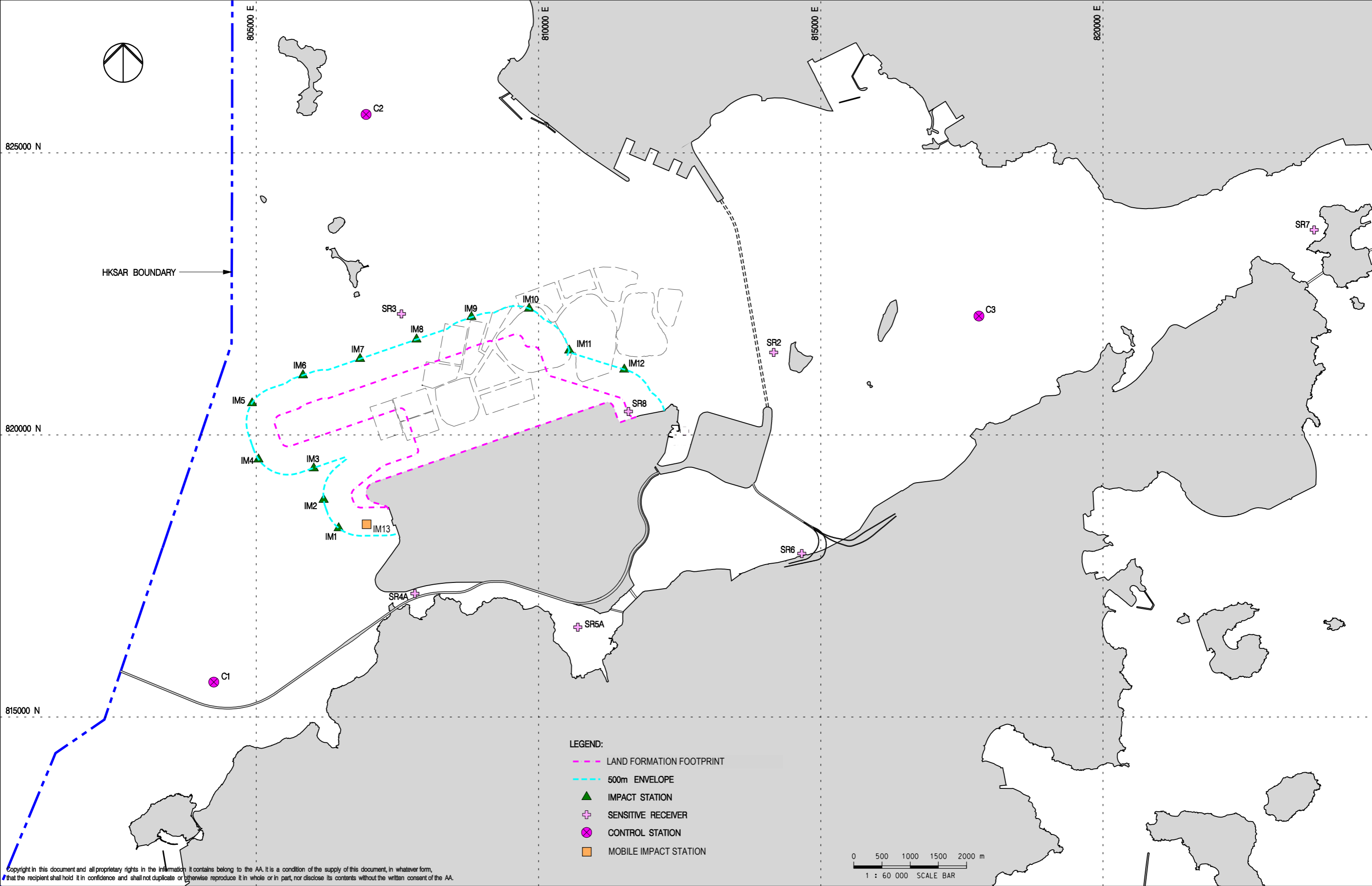


FIGURE 1.2- LOCATIONS OF RECLAMATION WORKS AREA



Rev.		Date	Description	Checked	 <div><div>香港國際機場</div><div>HONG KONG INTERNATIONAL AIRPORT</div><div>Airport Authority HQA Tower, 1 Sky Plaza Road, Hong Kong International Airport, Lantau, Hong Kong Tel : (852) 2389 7711 Fax : (852) 2384 0717</div></div>	 <div><div>Mott MacDonald</div><div></div></div>	Title		Consultant's Signatures for Approval		Date	EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
A	06JAN16	FIRST ISSUE	RO	Design			AM	11FEB16	<div>Drawing No.</div> <div>FIGURE 2.1</div> <div>Scale at A3 1 : 22500</div> <div>Rev. C</div>				
B	29JAN16	GENERAL REVISION	RO	Checkers			AM / TK	11FEB16					
C	11FEB16	GENERAL REVISION	RO	Approver			EC	11FEB16					



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A	02DEC15	FIRST ISSUE	DC
B	04MAY16	GENERAL REVISION	RO
C	06JUN16	GENERAL REVISION	LC

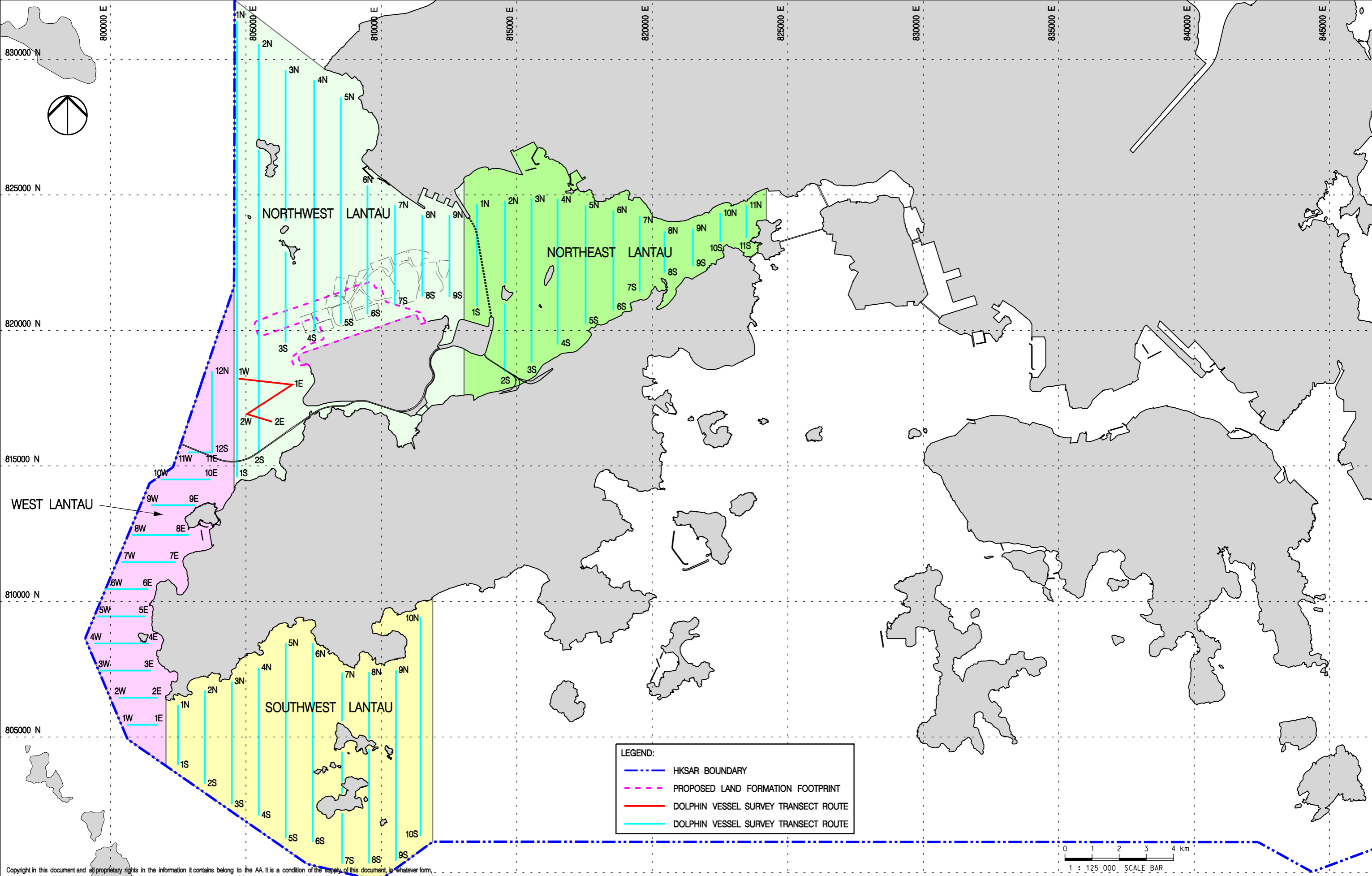


Title
WATER QUALITY MONITORING STATIONS

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

Date
06JUN16
06JUN16
06JUN16

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
Drawing No.	
FIGURE 2.2	
Scale at A3	1 : 60000
Rev.	C



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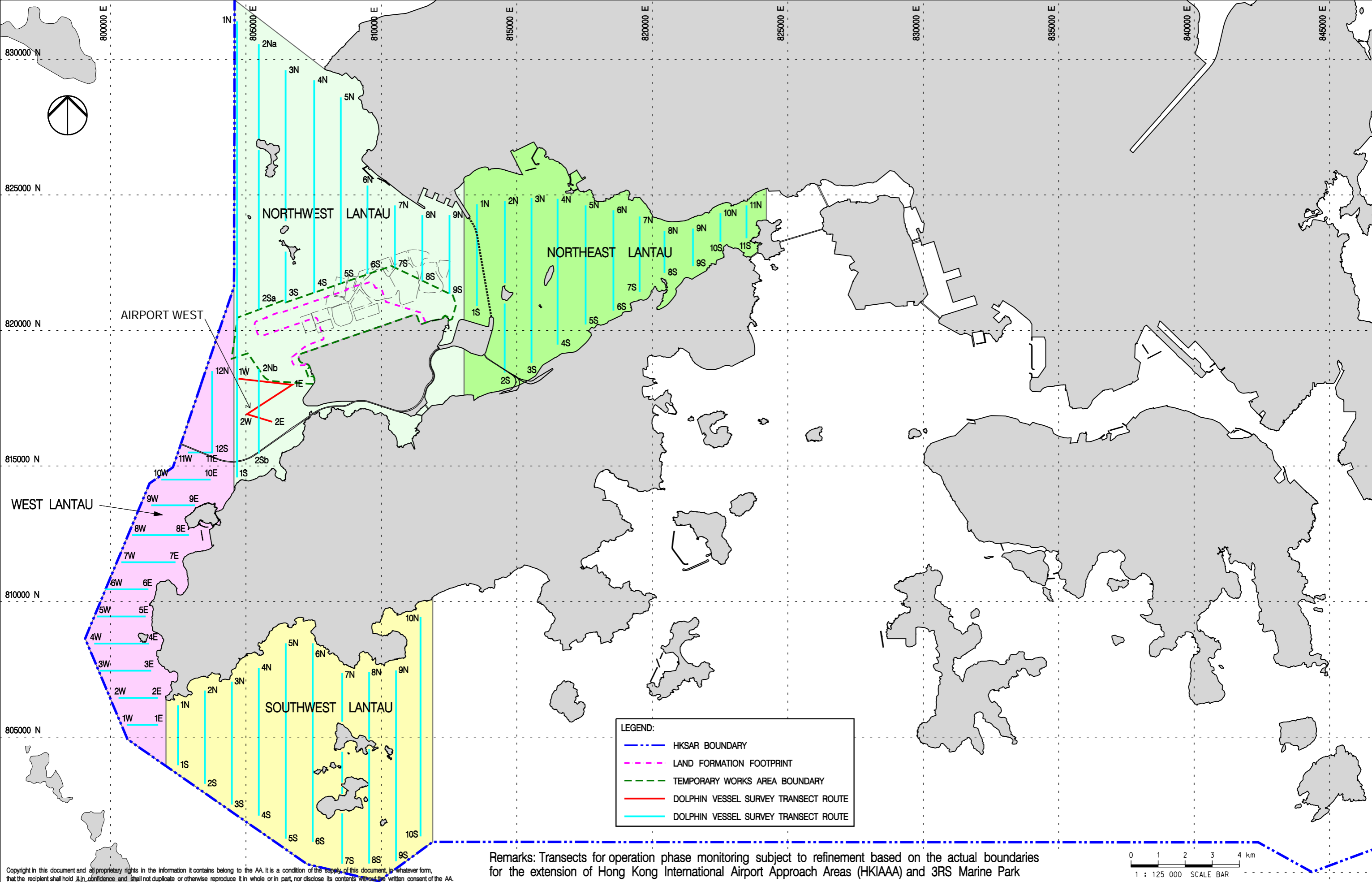
Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	JC



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

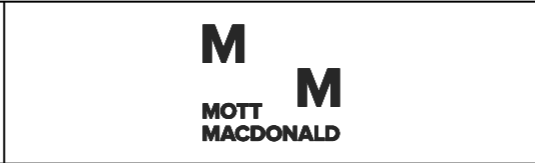
EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
Drawing No.	Scale at A3 1 : 125000
FIGURE 2.3a	
Rev.	A



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Remarks: Transects for operation phase monitoring subject to refinement based on the actual boundaries for the extension of Hong Kong International Airport Approach Areas (HKIAAA) and 3RS Marine Park

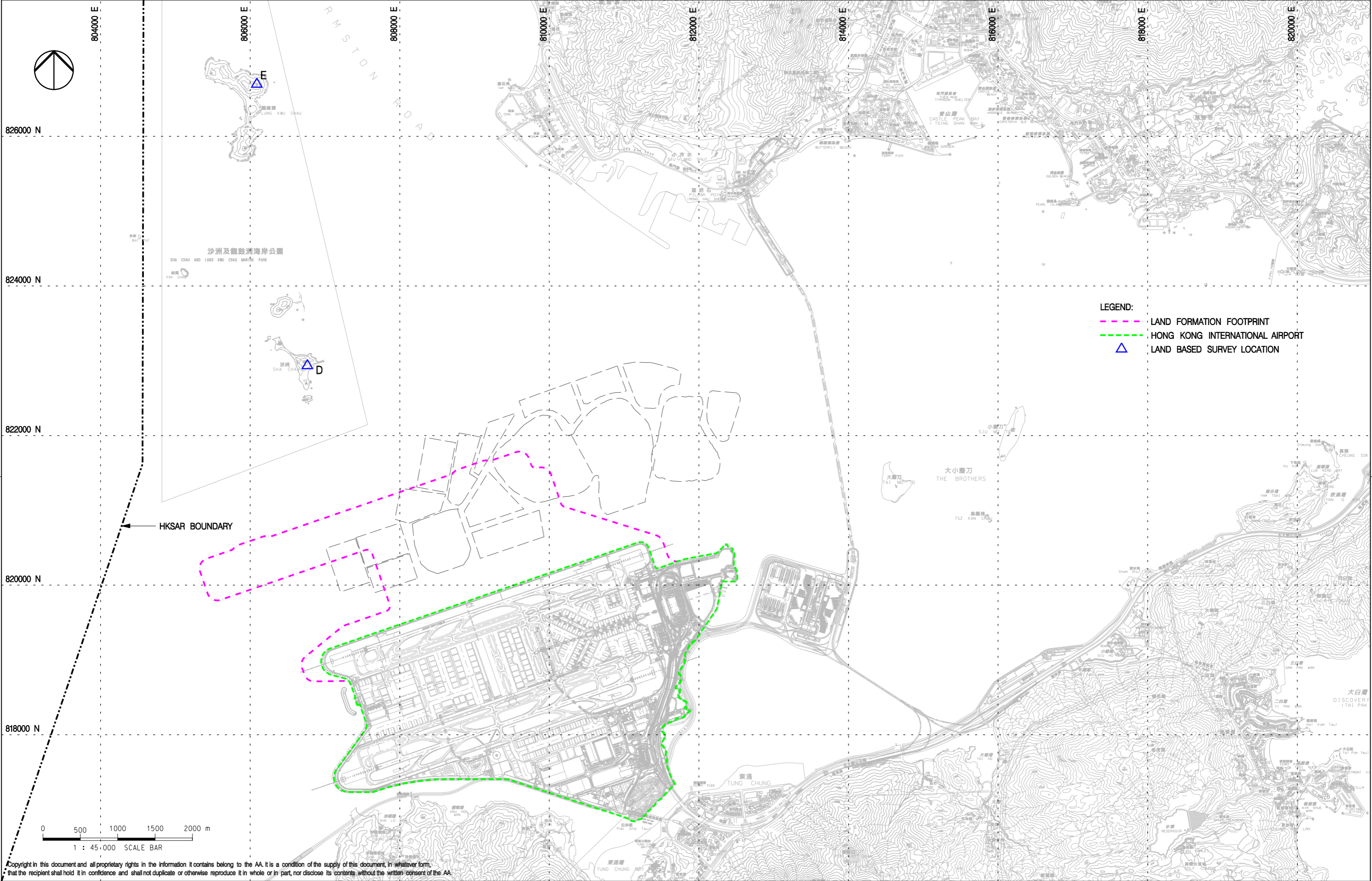
Rev.	Date	Description	Checked
A	02DEC15	FIRST ISSUE	JC
B	27JUL16	GENERAL REVISION	JT
C	06FEB17	GENERAL REVISION	JT
D	01MAR17	GENERAL REVISION	JT



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

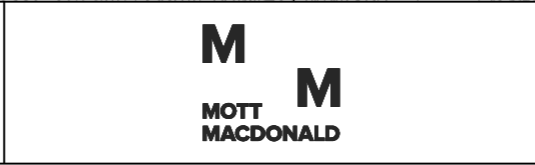
Consultant's Signatures for Approval		Date
Design	JC	01MAR17
Checkers	JC / TK	01MAR17
Approver	EC	01MAR17

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
Drawing No.	Scale at A3 1 : 125000
FIGURE 2.3b	
Rev.	D



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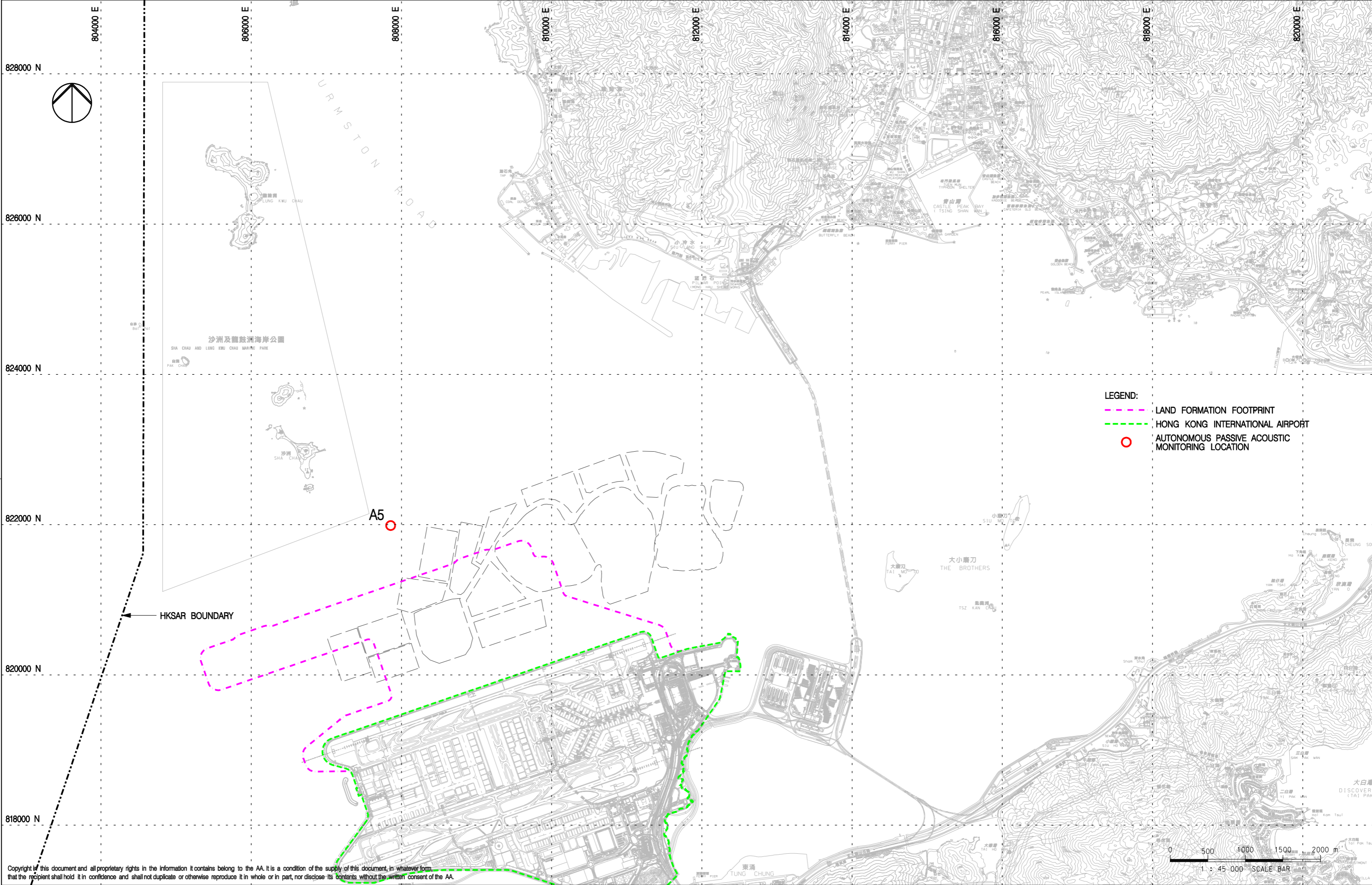


Title
LAND BASED DOLPHIN MONITORING IN BASELINE AND CONSTRUCTION PHASES

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

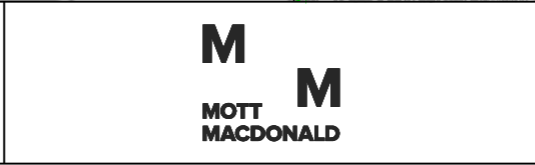
Date
06FEB17
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EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
Drawing No.	Scale at A3 1 : 45000
FIGURE 2.4	Rev. B



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



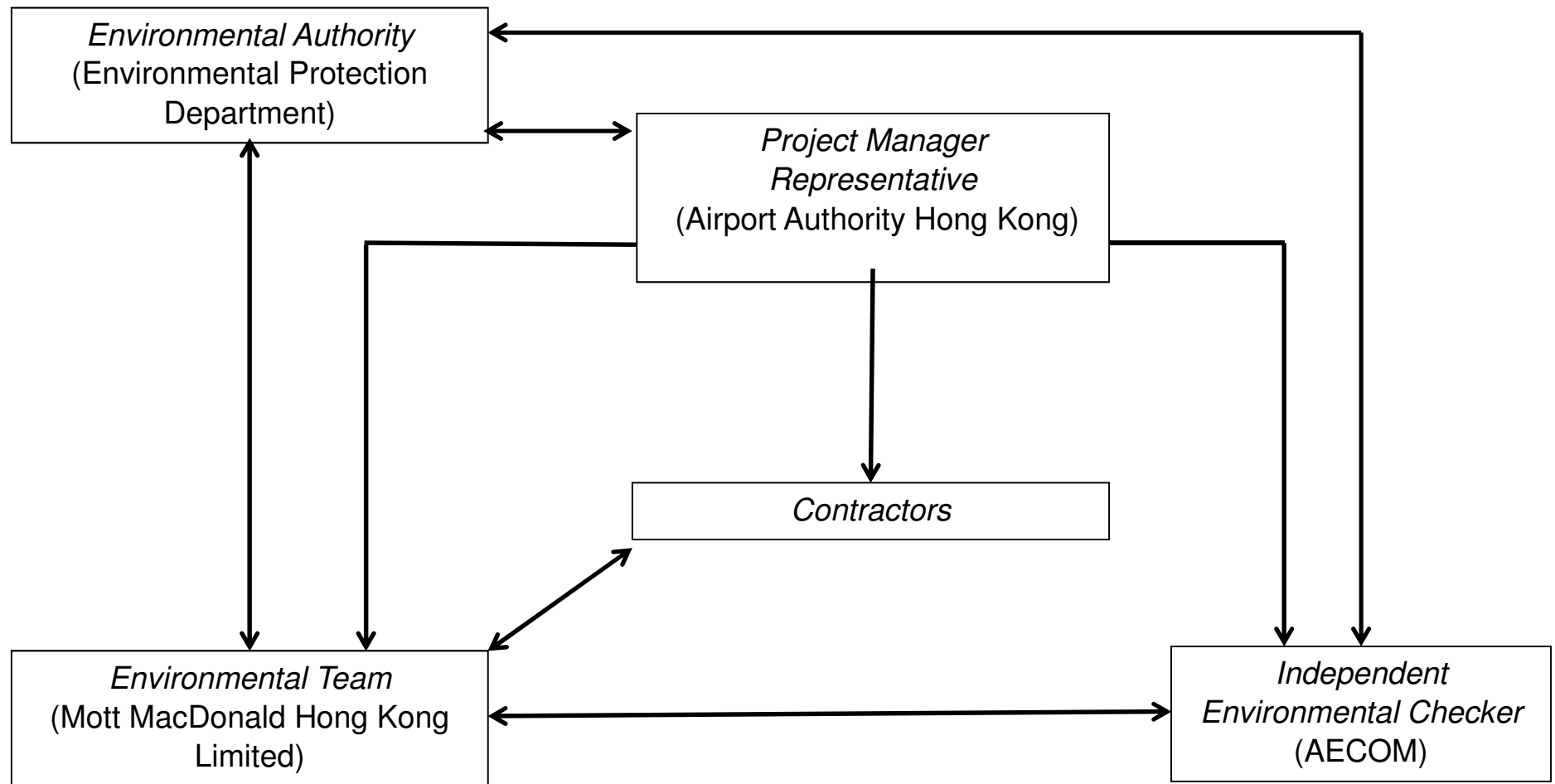
Title
LOCATIONS FOR AUTONOMOUS PASSIVE ACOUSTIC MONITORING IN BASELINE AND CONSTRUCTION PHASES

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

Date
06FEB17
06FEB17
06FEB17

EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM	
Drawing No.	Scale at A3 1 : 45000
FIGURE 2.10	Rev. B

Appendix A. Project Organization Chart



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

Appendix B 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 <ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> 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. 		
			<p>Other raw materials</p> <ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> 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. 		
			<p>Loading of materials for batching</p> <ul style="list-style-type: none"> Concrete truck shall be loaded in such a way as to minimise airborne dust emissions. The following control measures shall be implemented: <ol style="list-style-type: none"> 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 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
			<p>Vehicles</p> <ul style="list-style-type: none"> 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
			<p>Housekeeping</p> <ul style="list-style-type: none"> 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	-	<p>Best Practices for Asphaltic Concrete Plant</p> <p>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:</p> <p>Design of Chimney</p> <ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> 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. 		
			<p>Cold feed side</p> <ul style="list-style-type: none"> 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
			<p>Hot feed side</p> <ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> 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). 		
			<p>Material transportation</p> <ul style="list-style-type: none"> 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
			<p>Control of emissions from bitumen decanting</p> <ul style="list-style-type: none"> 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 <p>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.</p>	Within Concrete Batching Plant / Duration of the construction phase	N/A
			<p>Liquid fuel</p> <ul style="list-style-type: none"> 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
			<p>Housekeeping</p> <ul style="list-style-type: none"> 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	-	<p>Best Practices for Rock Crushing Plants</p> <p>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:</p>	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?^
			<p>Crushers</p> <ul style="list-style-type: none"> ▪ 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. 		
			<p>Vibratory screens and grizzlies</p> <ul style="list-style-type: none"> ▪ 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
			<p>Belt conveyors</p> <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> Precautionary measures should be established to request barges to move away during typhoons. 	Construction Site / Construction Period	I
Table 6.40	3.2	-	<ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ▪ 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> <ul style="list-style-type: none"> ▪ 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> <ul style="list-style-type: none"> ▪ 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
			<ul style="list-style-type: none"> ▪ 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
			<ul style="list-style-type: none"> ▪ 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)
			<ul style="list-style-type: none"> ▪ 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> <ul style="list-style-type: none"> 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)
			<ul style="list-style-type: none"> 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)
			<ul style="list-style-type: none"> 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> <ul style="list-style-type: none"> 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)
			<ul style="list-style-type: none"> 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)
			<ul style="list-style-type: none"> 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)
			<ul style="list-style-type: none"> 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?^
			<u>Specific Measures to be Applied to the Field Joint Excavation Works for the Submarine Cable Diversion</u> <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <p>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.</p> <p><u>For construction of the eastern approach lights at the CMPs</u></p> <ul style="list-style-type: none"> 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 <p>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:</p> <ul style="list-style-type: none"> 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

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EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
8.8.1.12 8.8.1.13	5.1	2.28	<ul style="list-style-type: none"> ▪ 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. <p>Drilling Activities for the Submarine Aviation Fuel Pipelines</p> <p>To prevent potential water quality impacts at Sha Chau, the following measures shall be applied:</p> <ul style="list-style-type: none"> ▪ 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. <p>At the airport island side of the drilling works, the following measures shall be applied for treatment of wastewater:</p> <ul style="list-style-type: none"> ▪ 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	-	<p>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:</p> <ul style="list-style-type: none"> ▪ 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; ▪ 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; ▪ 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; ▪ 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 	Project Site Area / During design and construction phase	I N/A

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			<ul style="list-style-type: none"> 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	-	<p>The following good site practices should be performed during the construction activities include:</p> <ul style="list-style-type: none"> Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; 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	-	<p>The following practices should be performed to achieve waste reduction include:</p> <ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> 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		<ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	-	<p>The following mitigation measures are recommended during excavation and treatment of the sediments:</p> <ul style="list-style-type: none"> 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	-	<p>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</p>	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?^
			<p>followed to minimise potential impacts on water quality during transportation of the sediments requiring Type 1 disposal:</p> <ul style="list-style-type: none"> 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	-	<p>Contractor should register with the EPD as a chemical waste producer and to follow the relevant guidelines. The following measures should be implemented:</p> <ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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	<p>For areas inaccessible during site reconnaissance survey</p> <ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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?^
			<ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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	-	<p>If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any):</p> <ul style="list-style-type: none"> 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	<p>Pre-construction Egret Survey</p> <ul style="list-style-type: none"> Conduct ecological survey for Sha Chau egret to update the latest boundary of the egret. 	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 Egret <ul style="list-style-type: none"> The daylighting location will avoid direct encroachment to the Sheung Sha Chau egret. The daylighting location and mooring of flat top barge, if required, will be kept away from the egret; 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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	-	<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF; 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; 	During construction phase at marine works area	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			<ul style="list-style-type: none"> Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; 		N/A
			<ul style="list-style-type: none"> Avoid bored piling during CWD peak calving season (Mar to Jun); 		I
			<ul style="list-style-type: none"> Prohibition of underwater percussive piling; and 		I
			<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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-dumping 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> 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
			<ul style="list-style-type: none"> Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and 		N/A
			<ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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-dumping 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 <ul style="list-style-type: none"> 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?^
14.9.1.13 to 14.9.1.18	-		▪ 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	
			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;		
			▪ 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);		
			▪ 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.		
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.	
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.	
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.	
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.	
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. –	

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.					

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

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.		

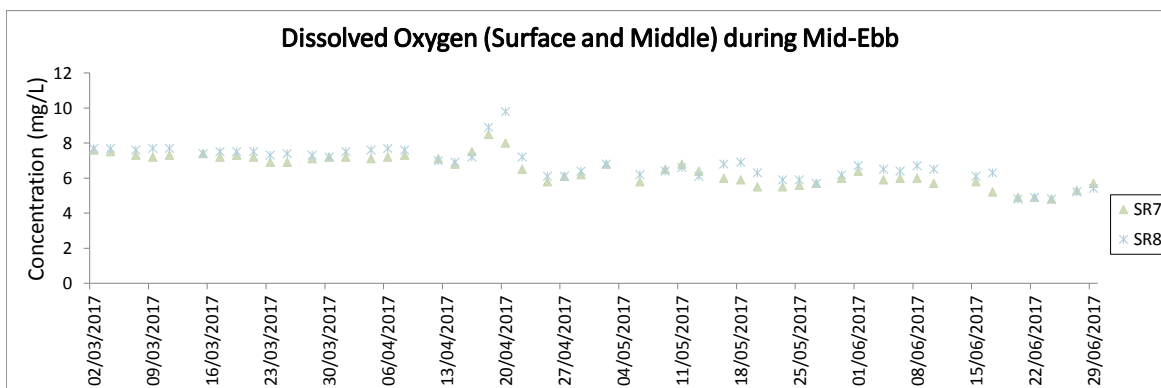
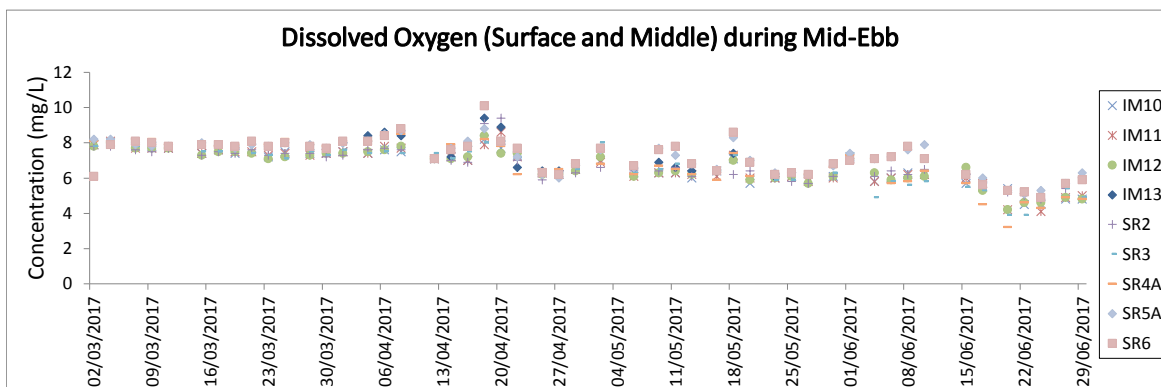
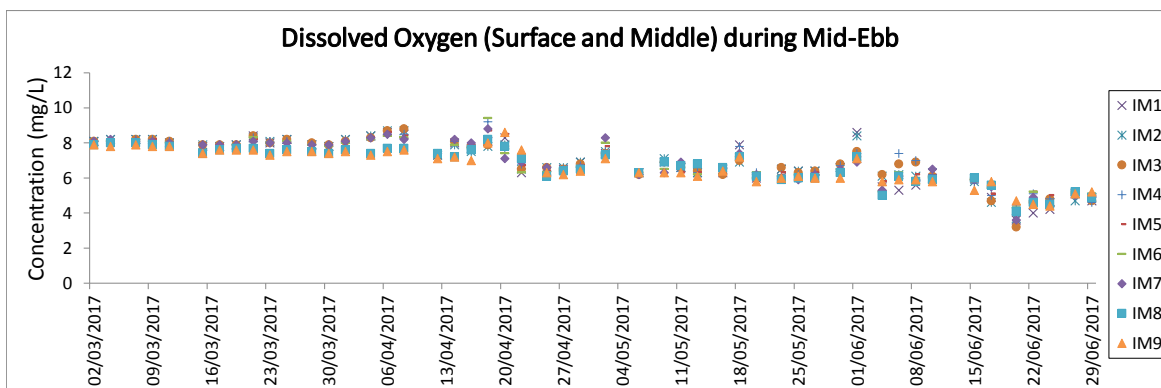
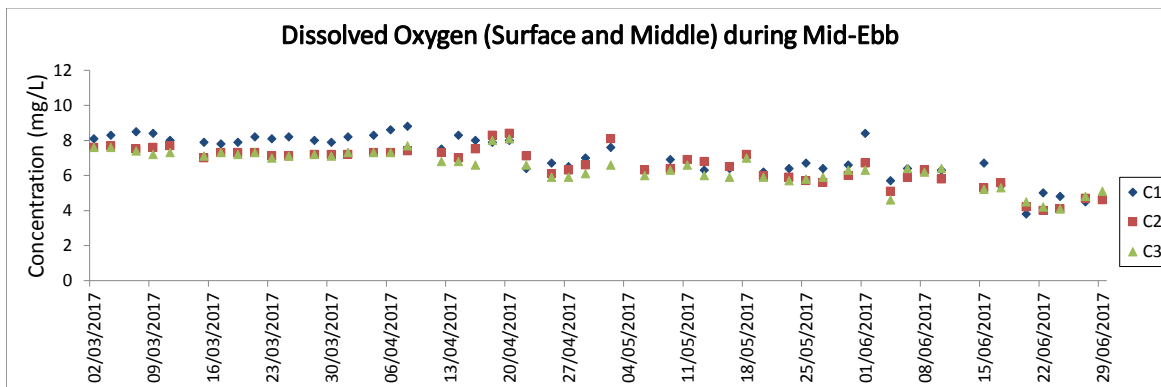
Notes:

I= implemented where applicable;

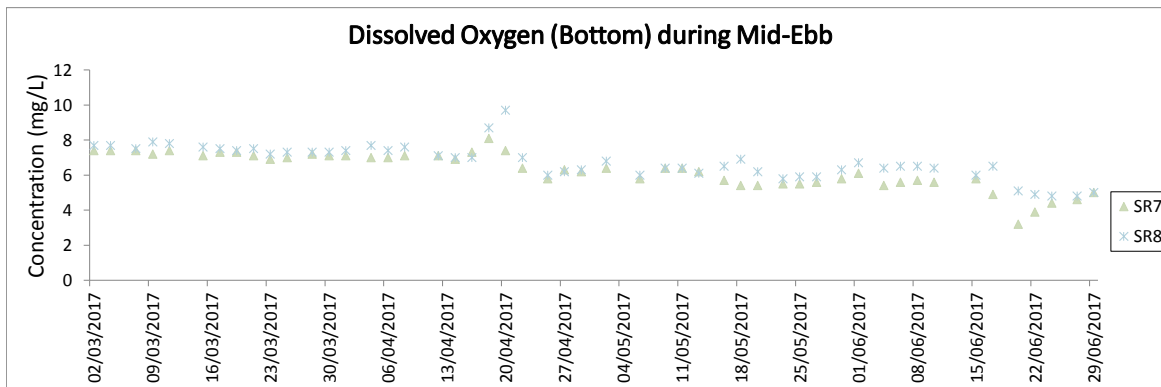
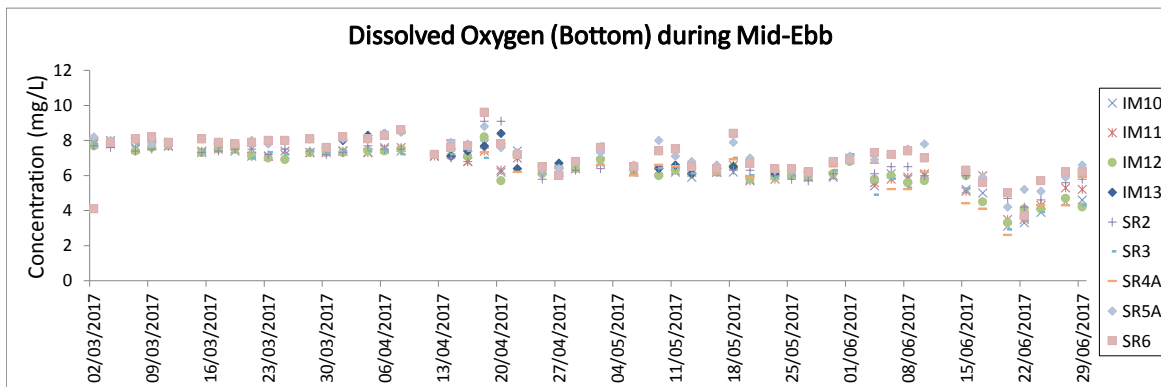
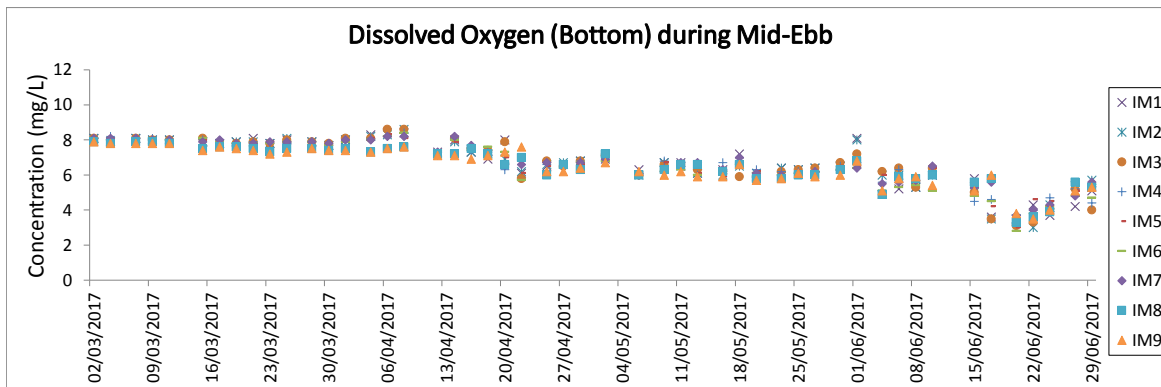
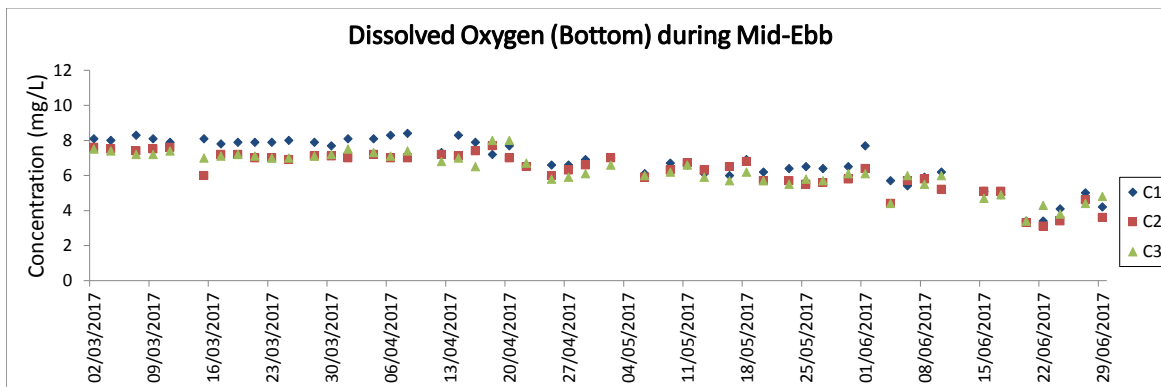
N/A= not applicable to the construction works implemented during the reporting month.

^ Checked by ET through site inspection and record provided by the Contractor.

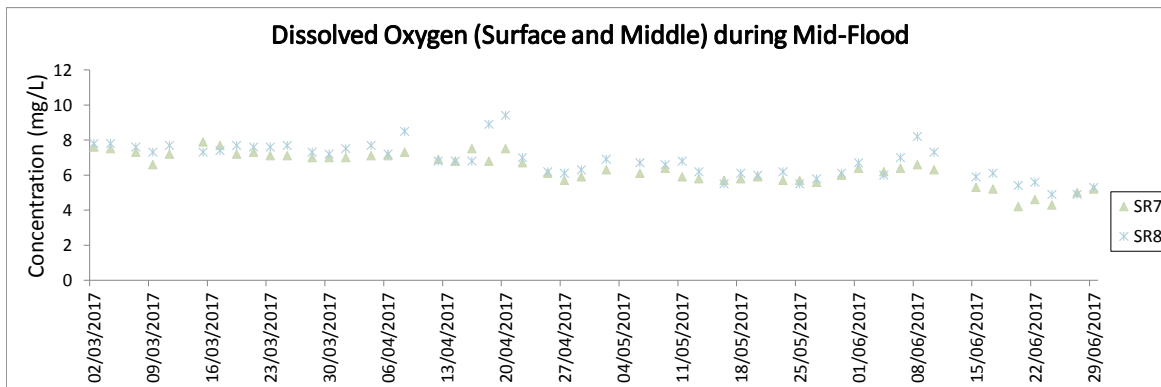
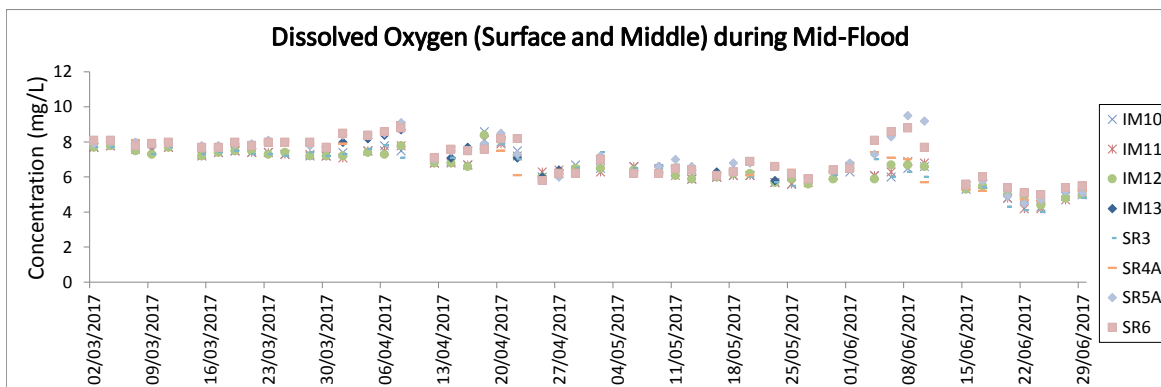
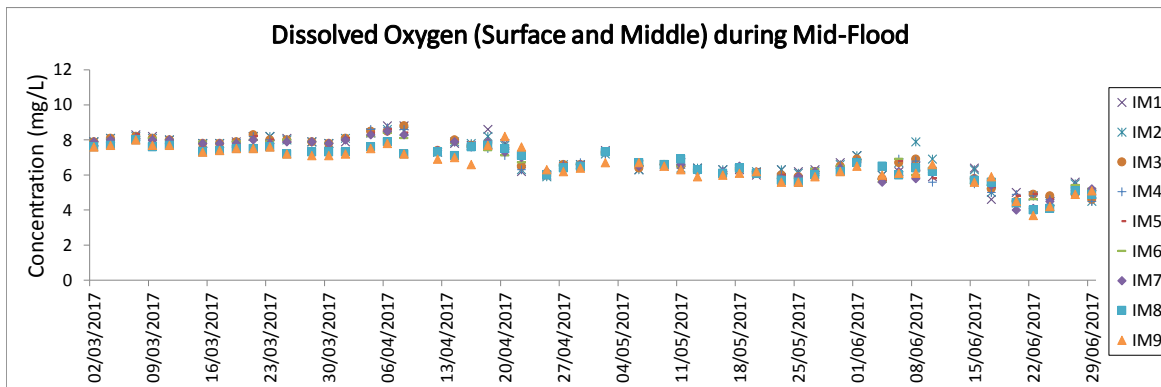
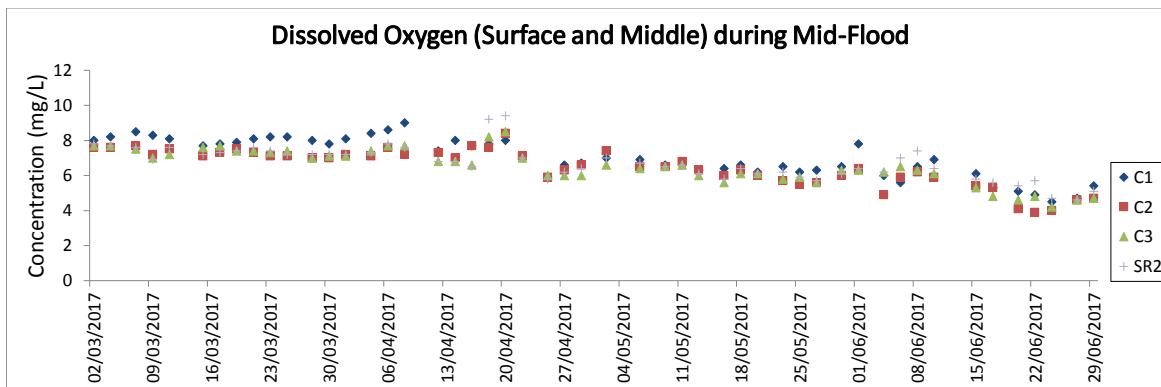
Appendix C. Graphical Plots of Water Quality Monitoring Result



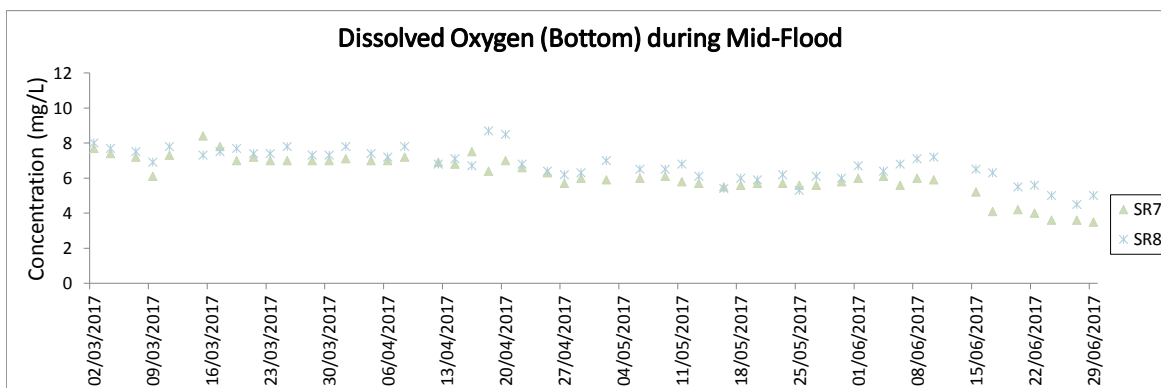
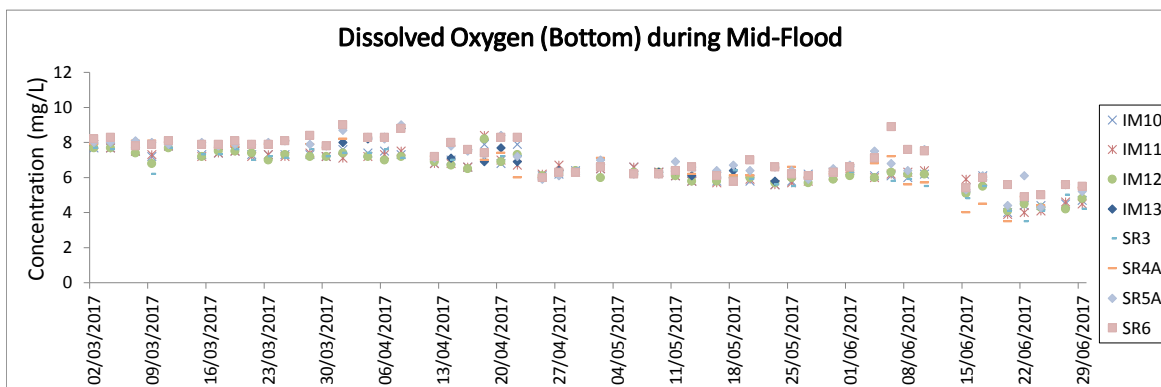
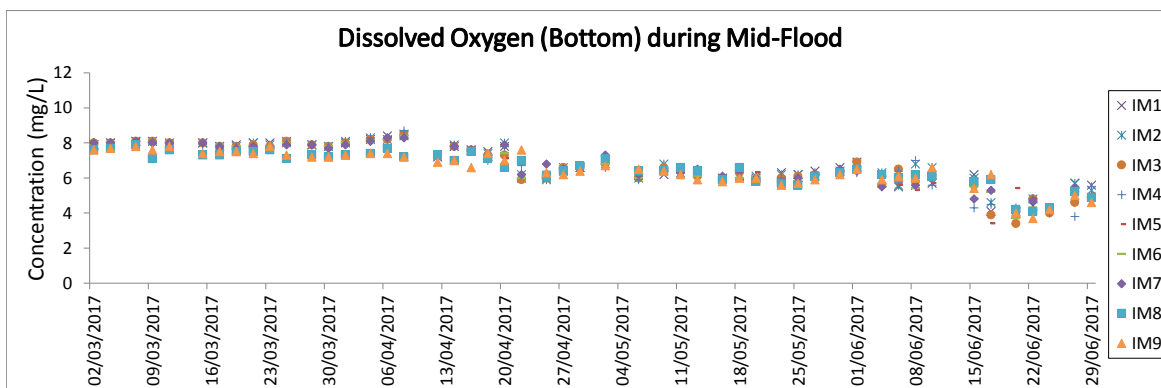
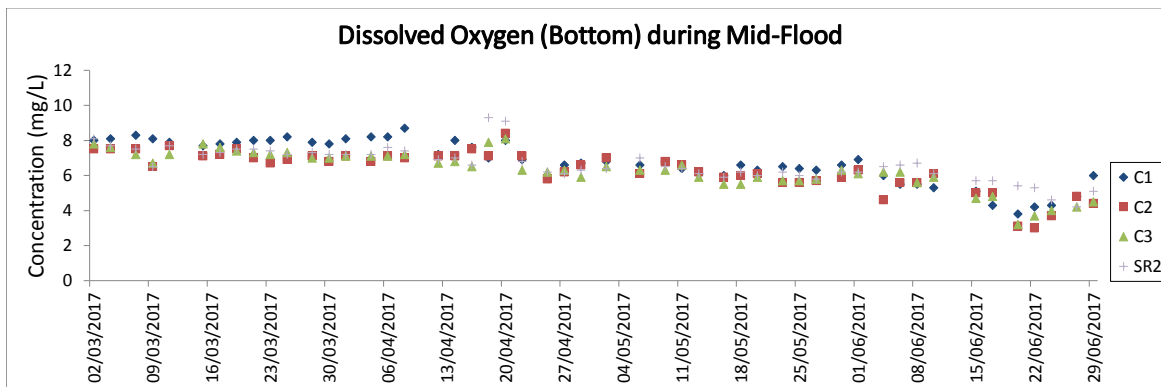
Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.



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

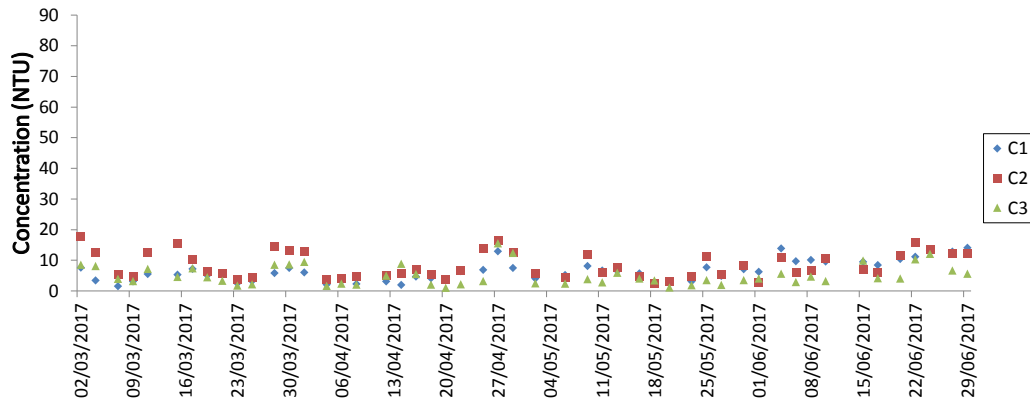


Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.

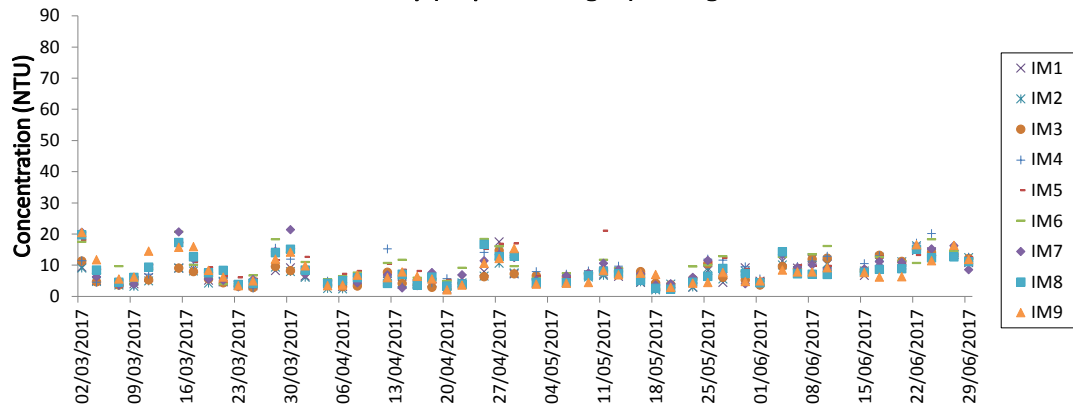


Note: The action and limit level of DO can be referred to Table 2.4 of the quarterly EM&A report.

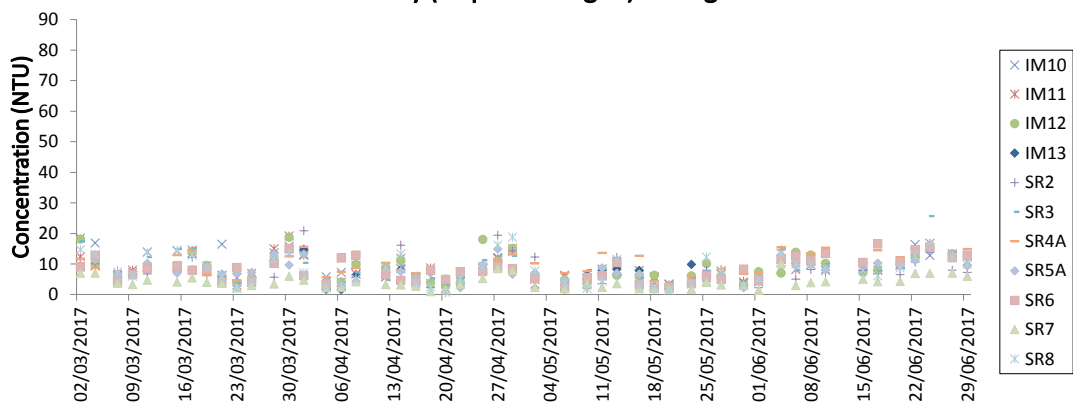
Turbidity (Depth-averaged) during Mid-Ebb



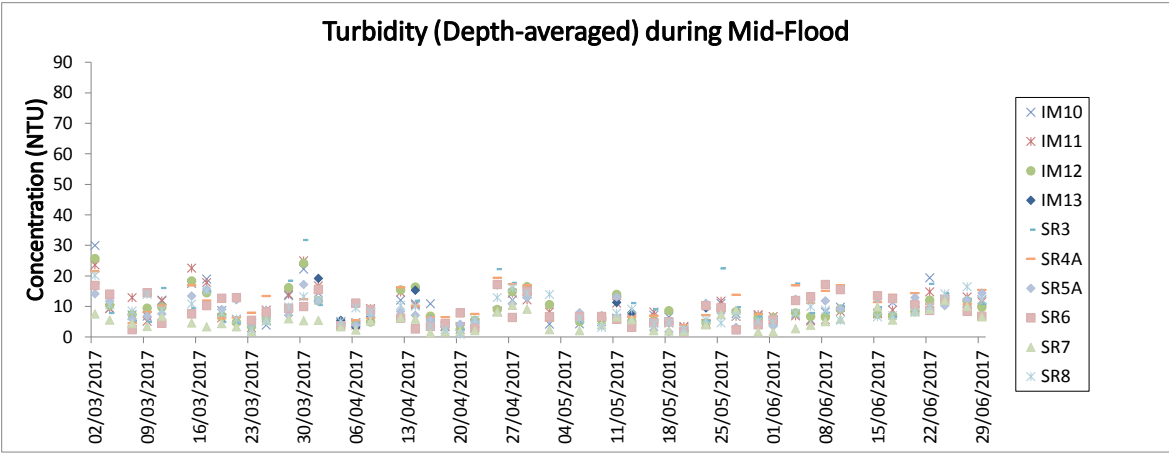
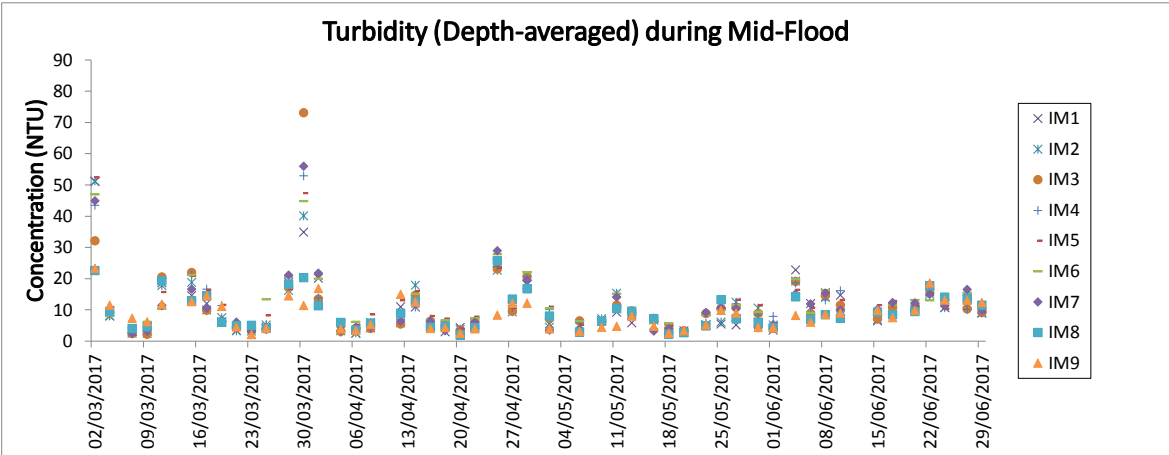
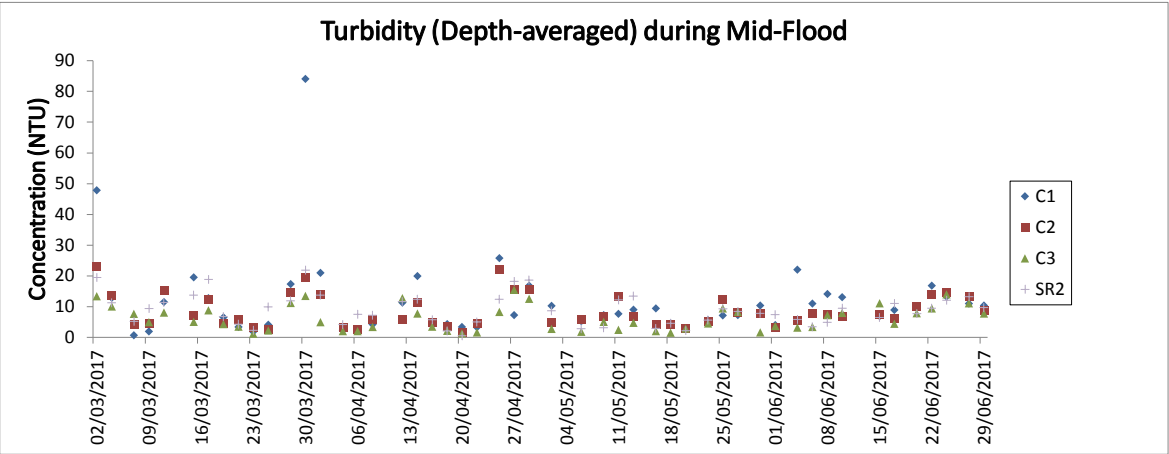
Turbidity (Depth-averaged) during Mid-Ebb



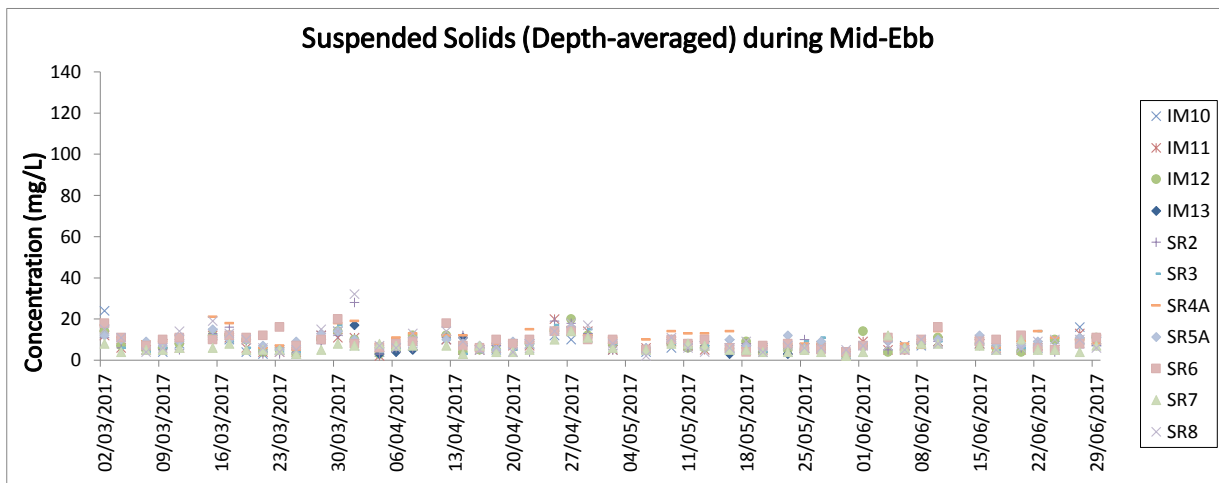
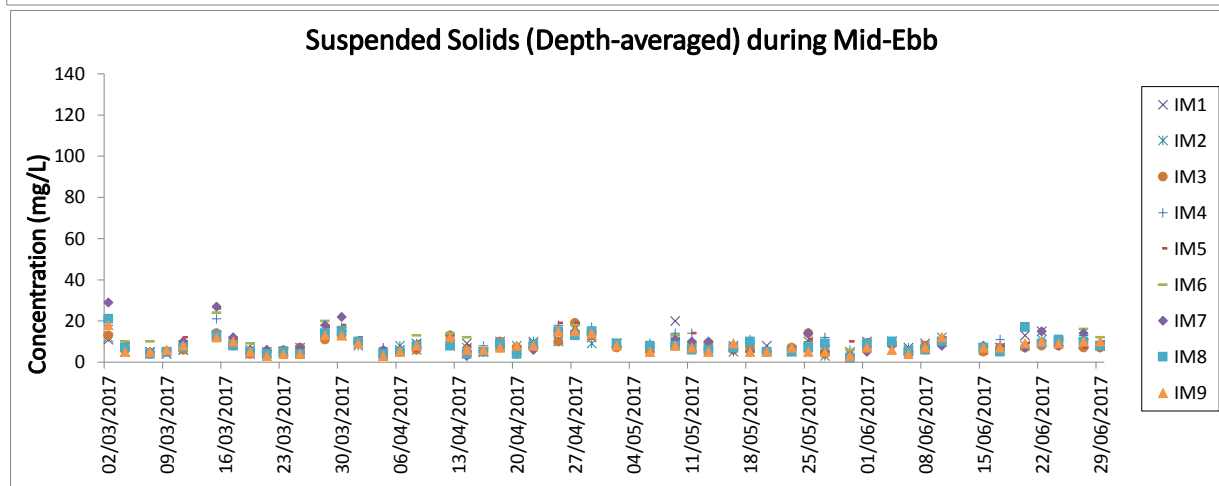
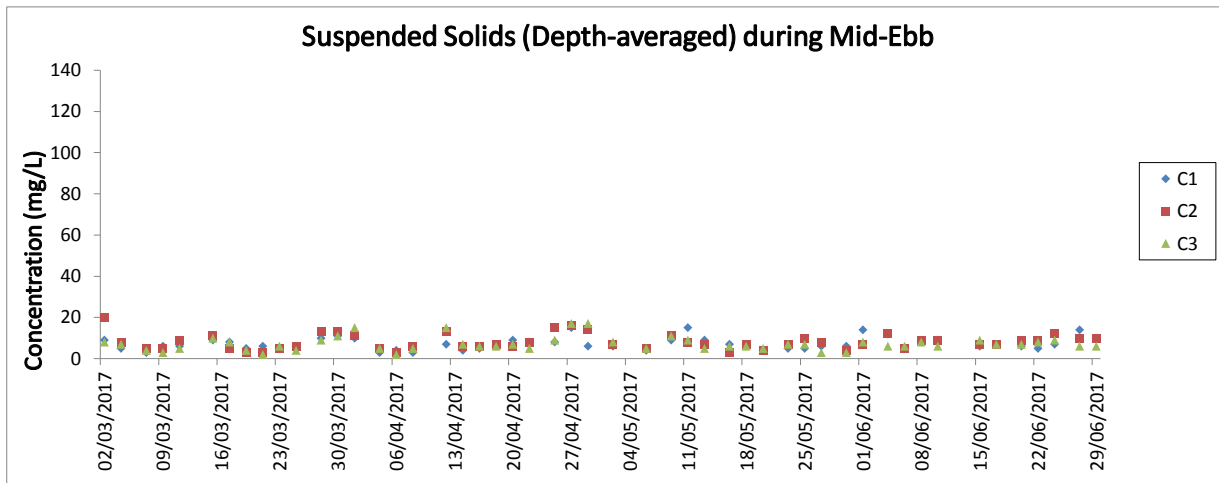
Turbidity (Depth-averaged) during Mid-Ebb



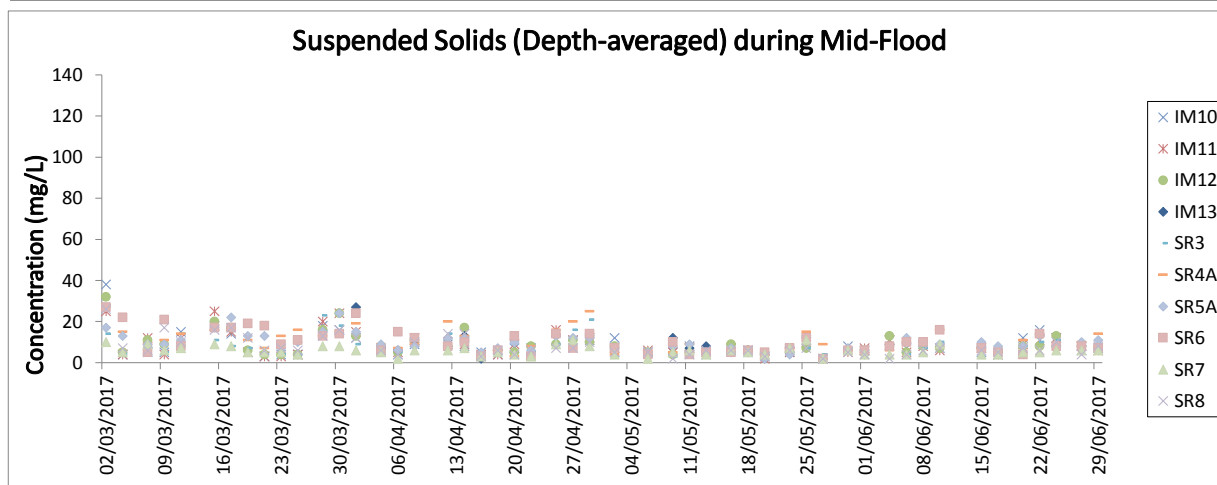
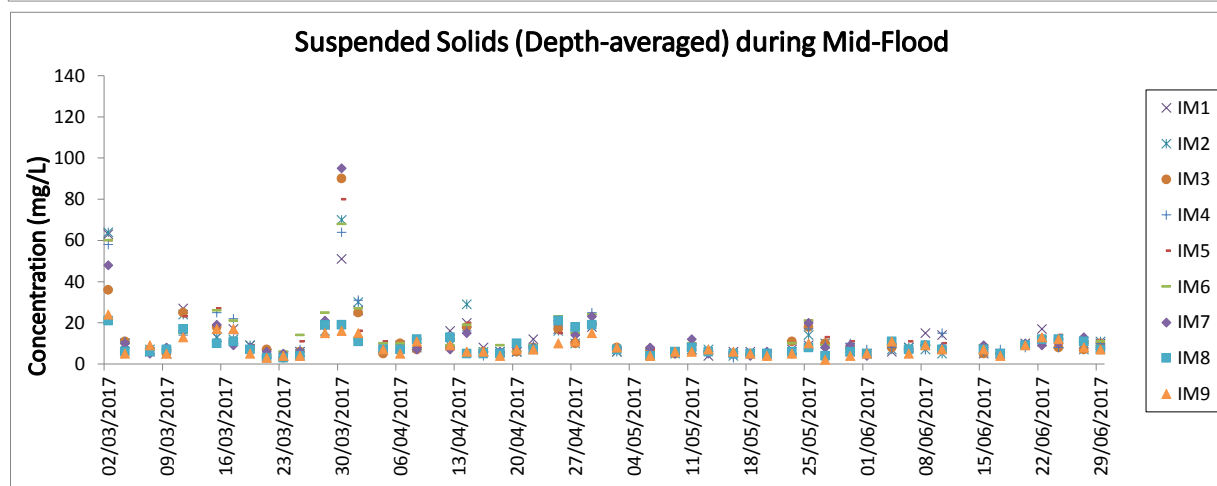
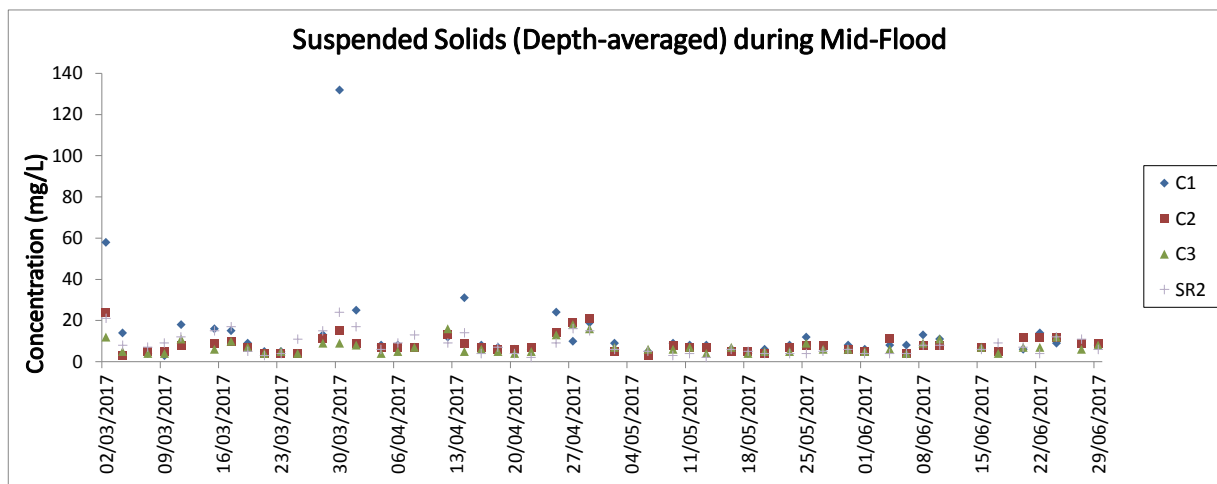
Note: The action and limit level of turbidity can be referred to Table 2.4 of the quarterly EM&A report.



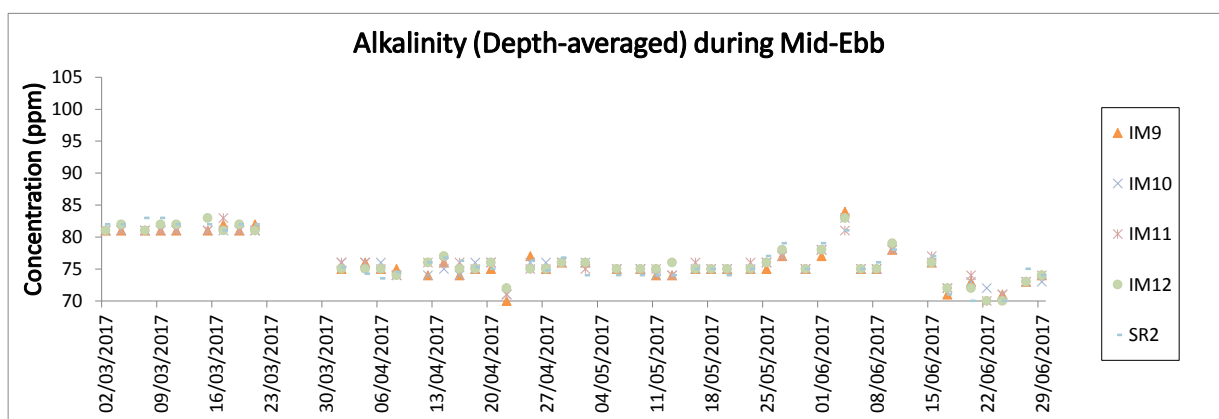
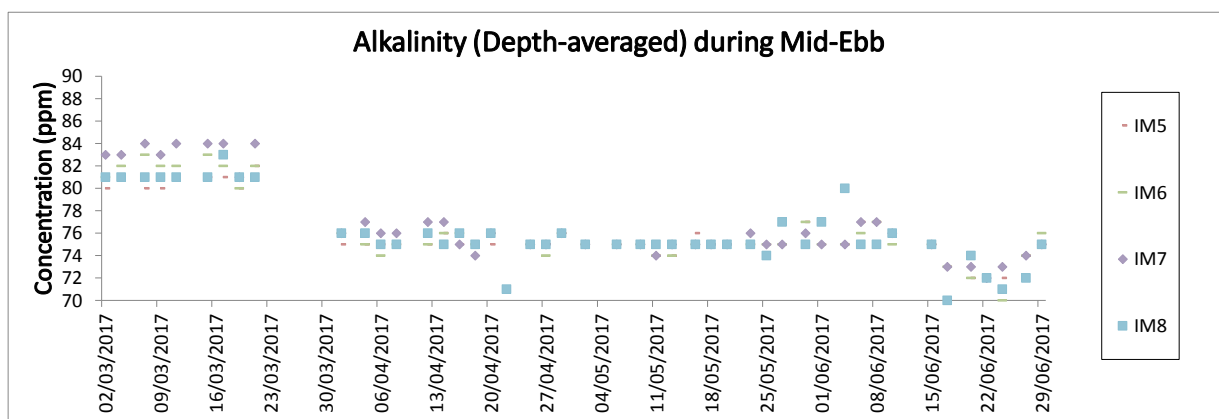
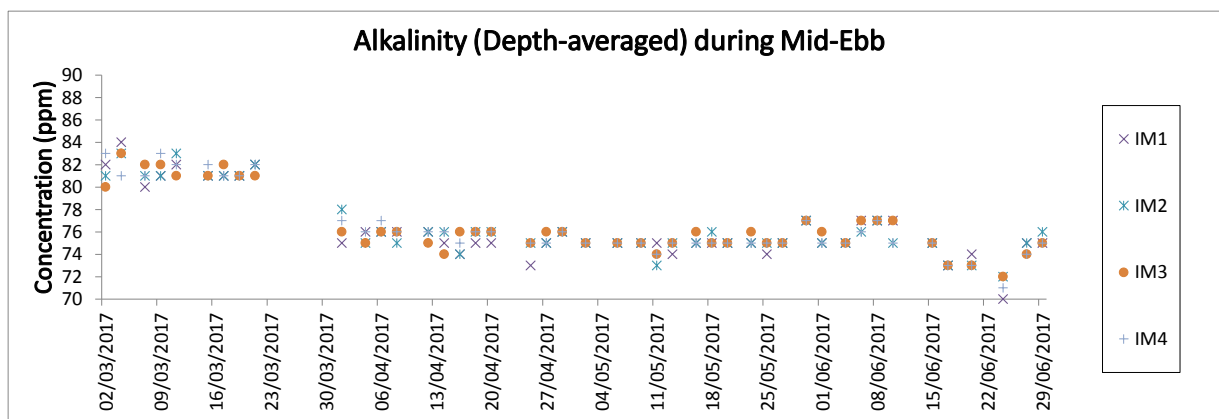
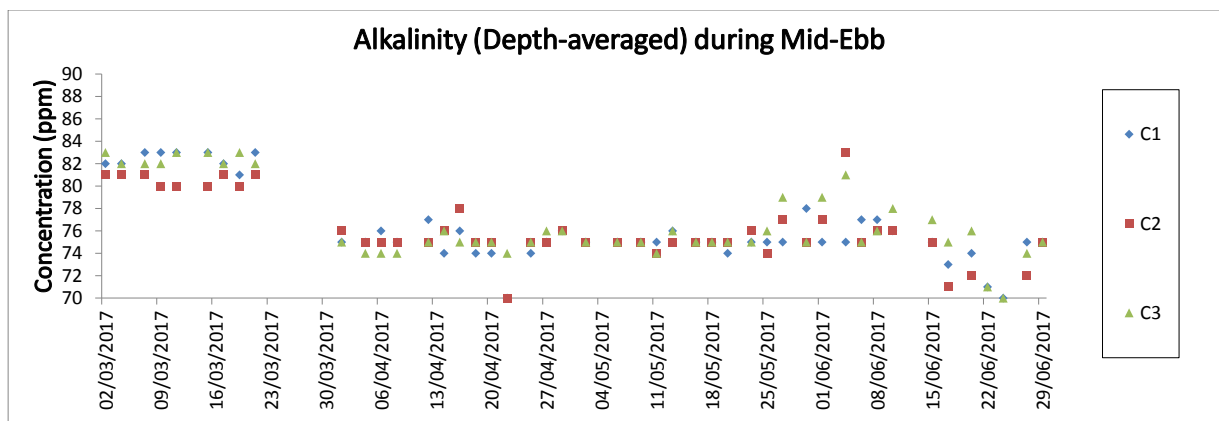
Note: The action and limit level of turbidity can be referred to Table 2.4 of the quarterly EM&A report.



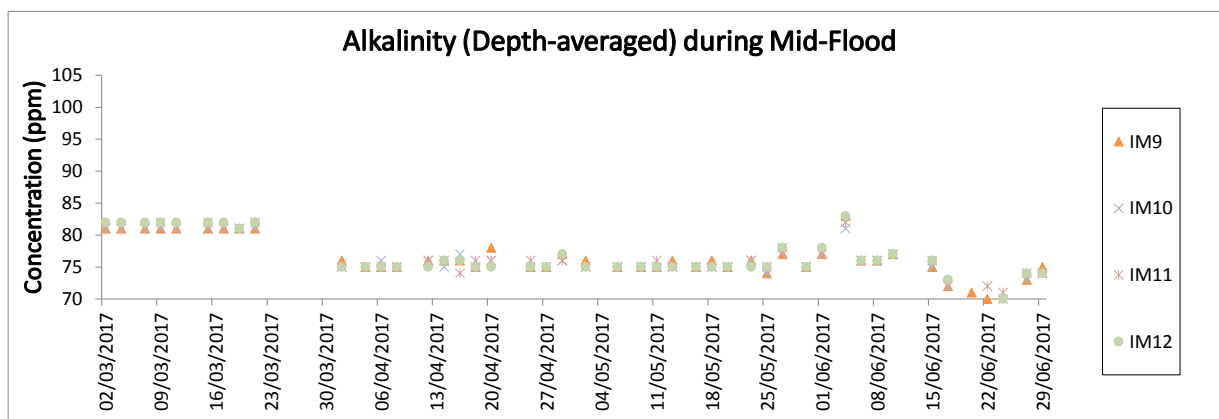
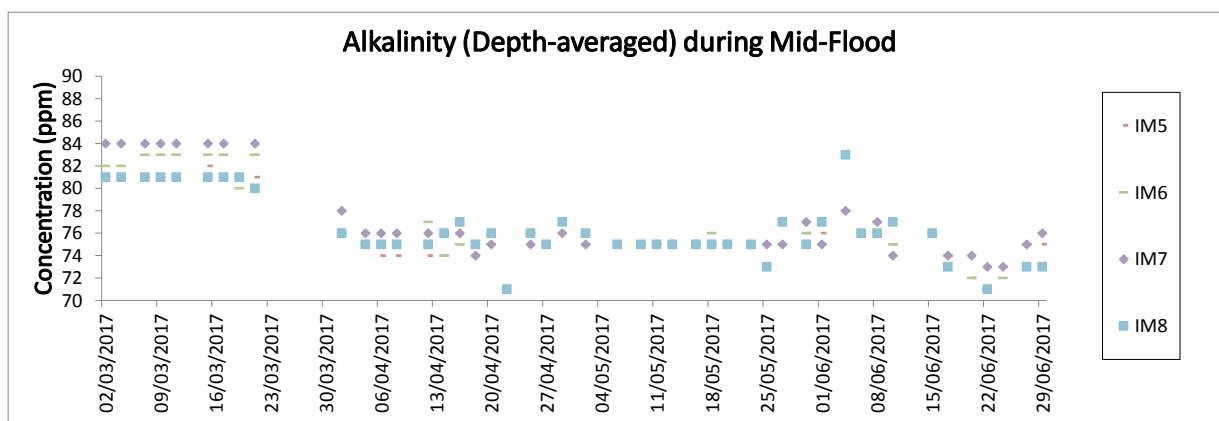
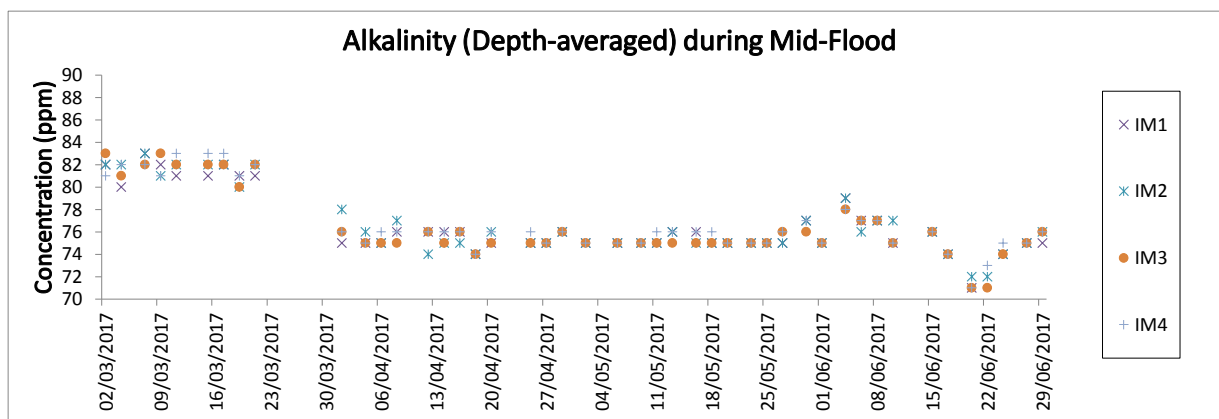
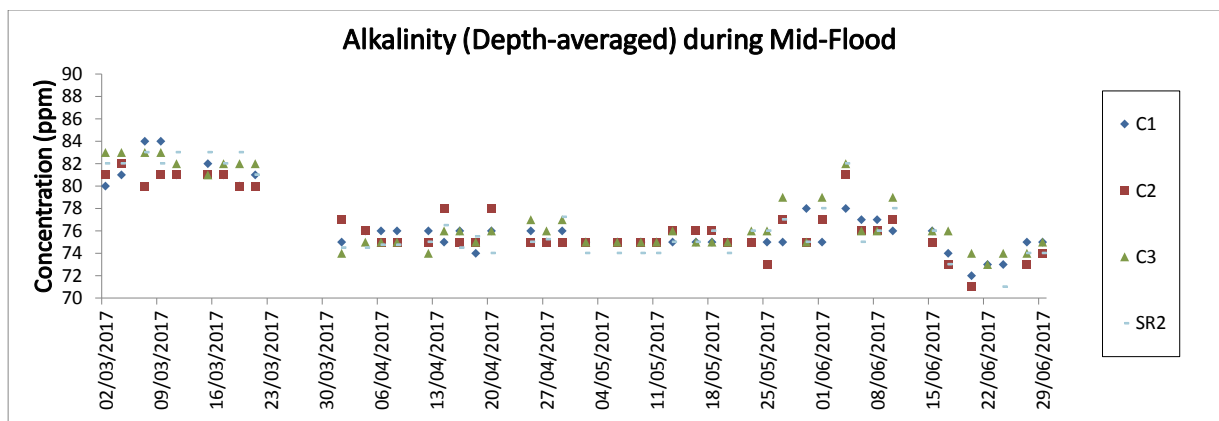
Note: The action and limit level of SS can be referred to Table 2.4 of the quarterly EM&A report.



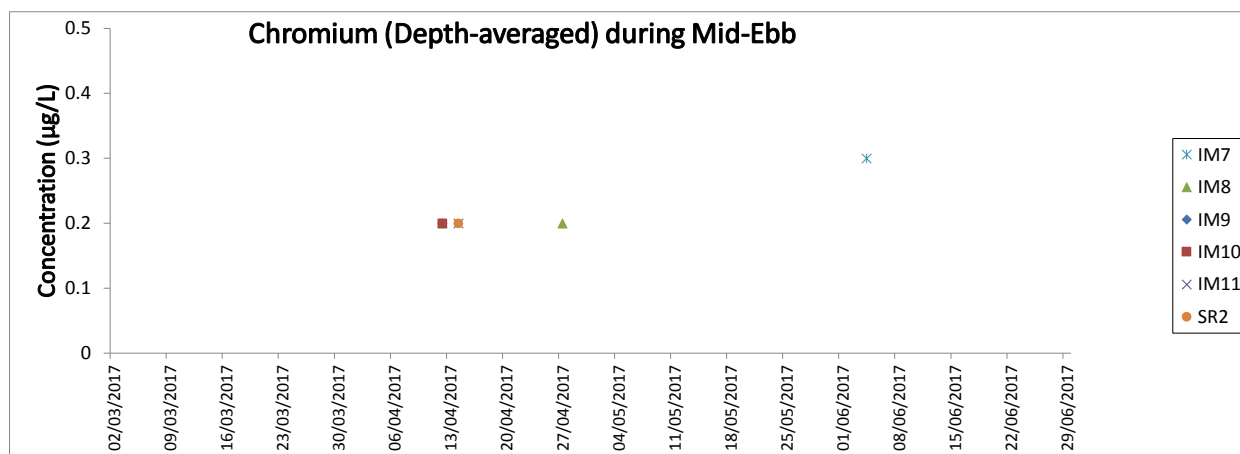
Note: The action and limit level of SS can be referred to Table 2.4 of the quarterly EM&A report.



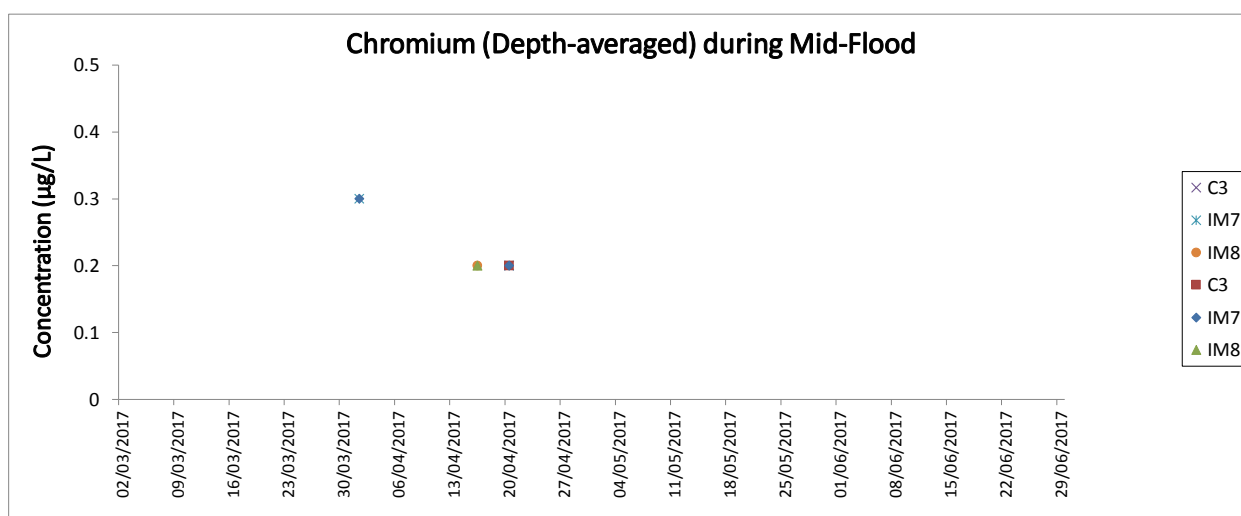
Note: The action and limit level of alkalinity can be referred to Table 2.4 of the quarterly EM&A report.



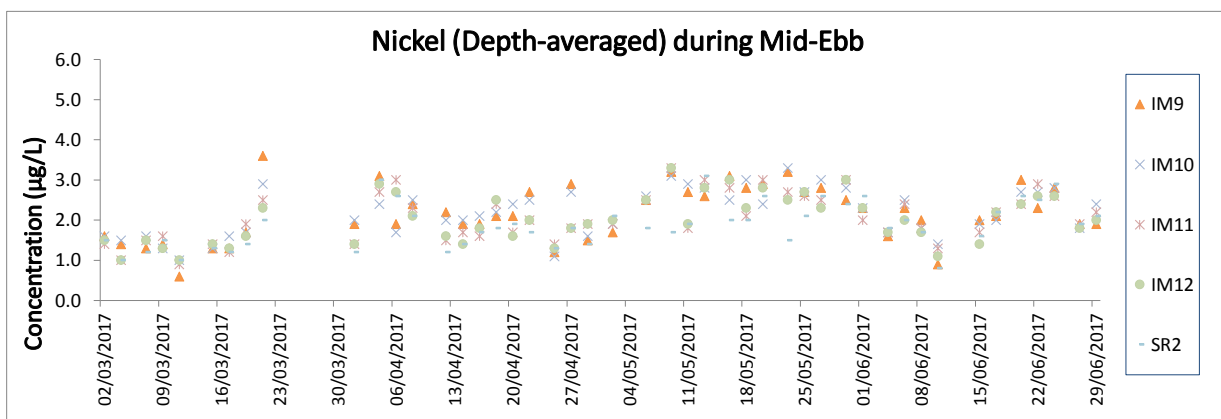
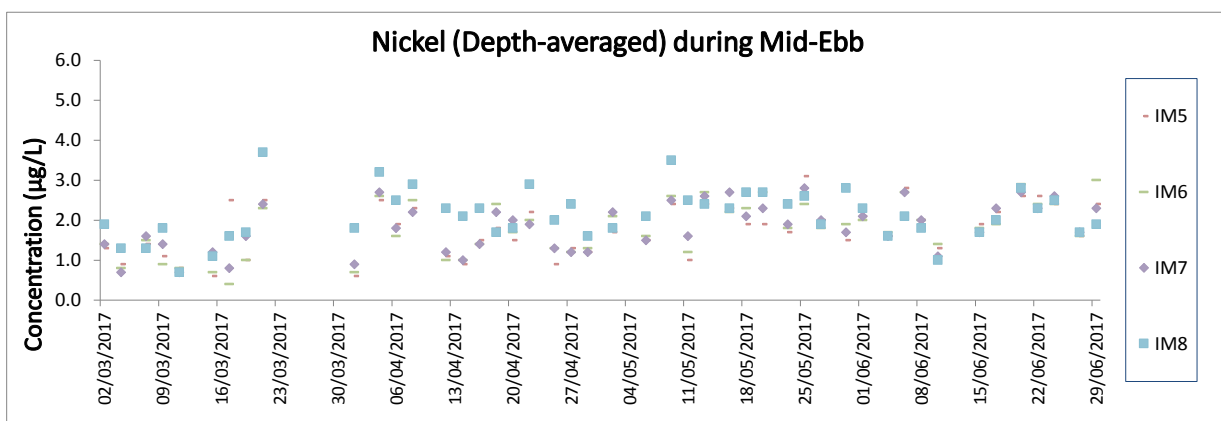
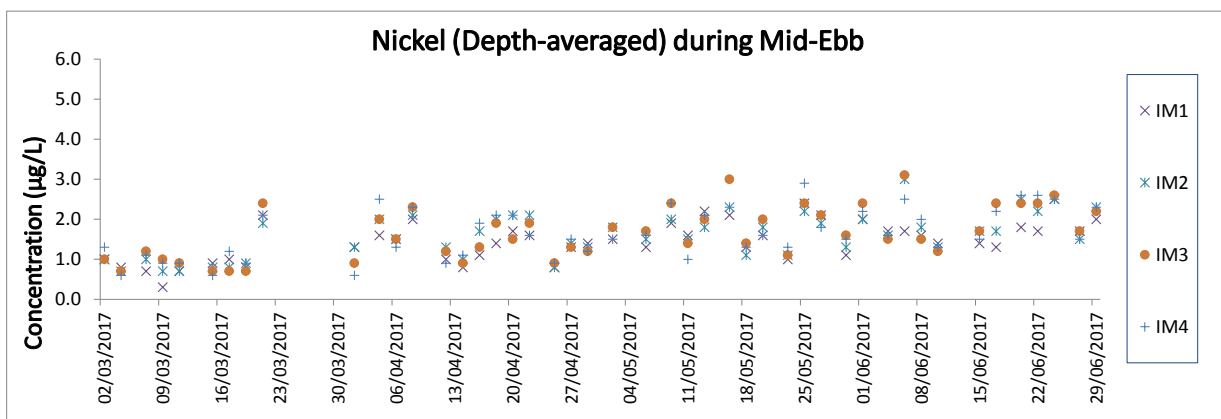
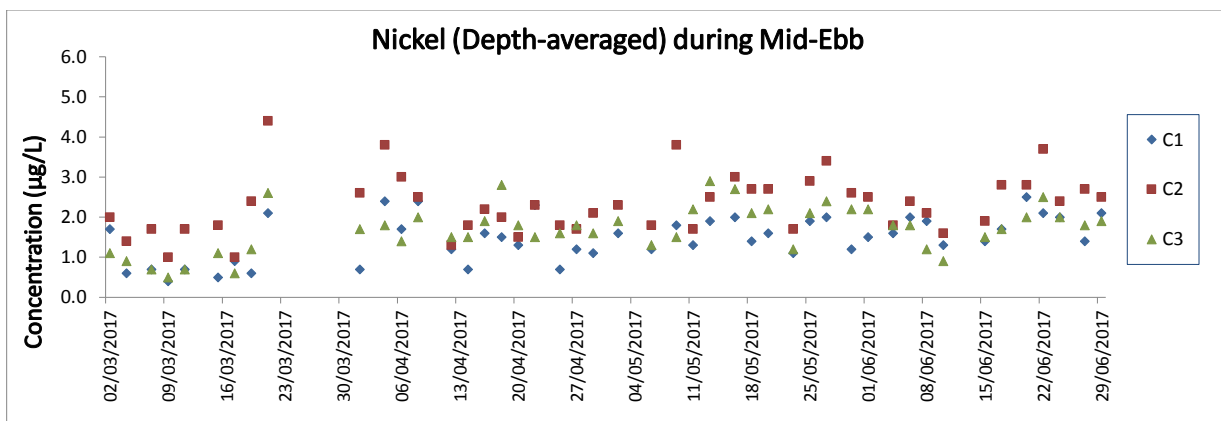
Note: The action and limit level of alkalinity can be referred to Table 2.4 of the quarterly EM&A report.



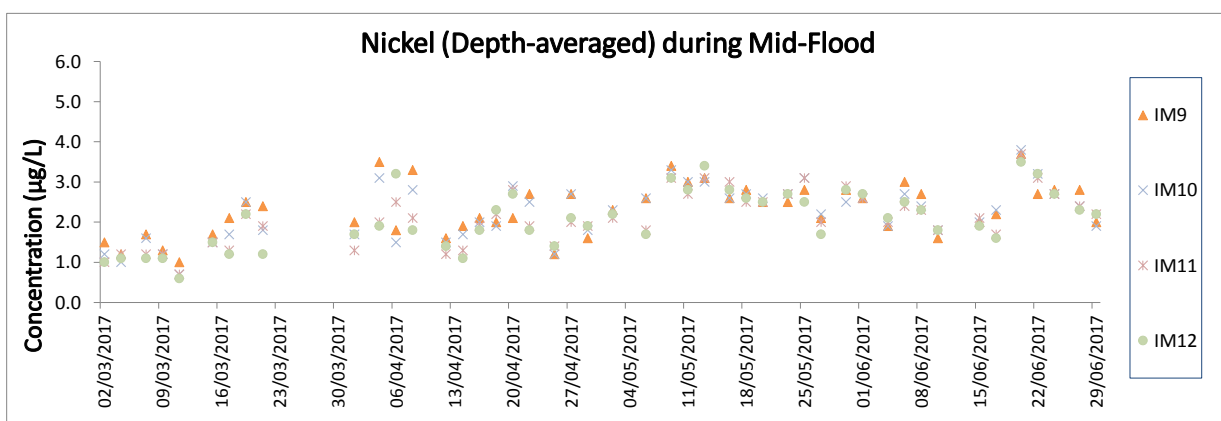
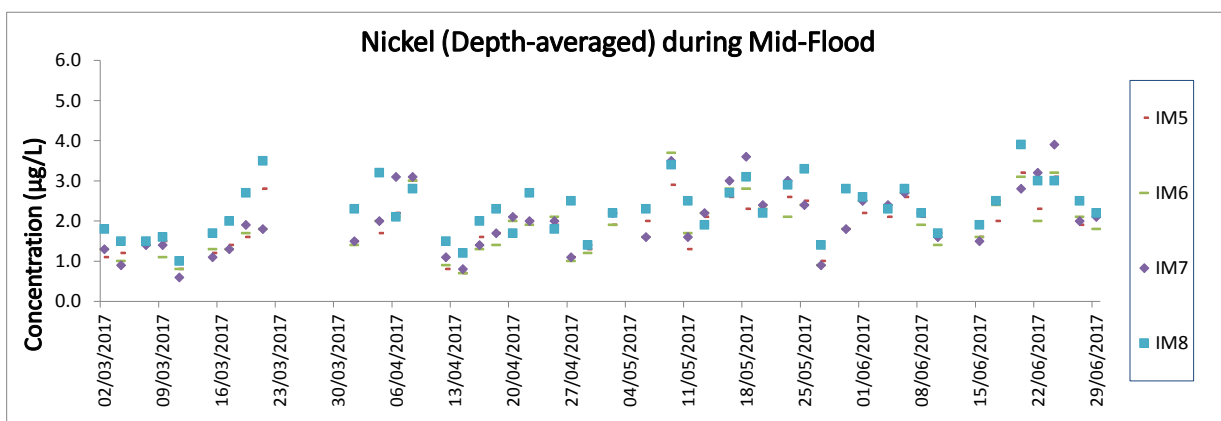
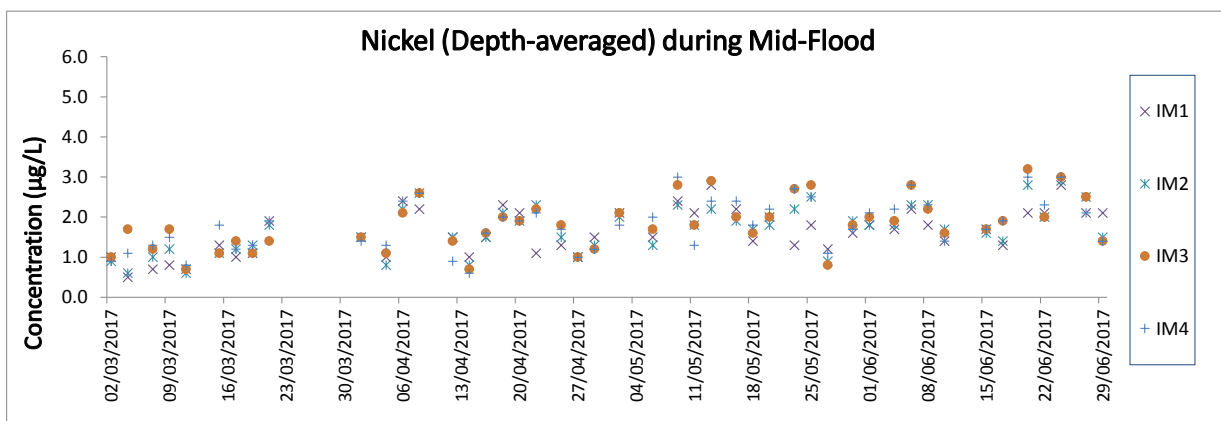
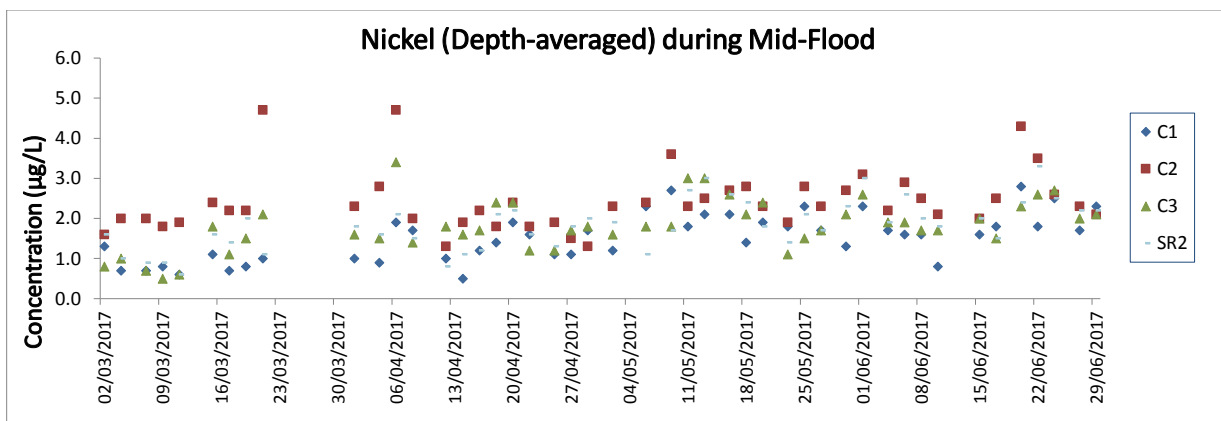
Note: The action and limit level of Chromium can be referred to Table 2.4 of the quarterly EM&A report.
The monitoring results of Chromium at all other monitoring stations during mid-flood and mid-ebb tides were below the reporting limit <0.2 µg/L



Note: The action and limit level of Chromium can be referred to Table 2.4 of the quarterly EM&A report.
The monitoring results of Chromium at all other 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 Nickel can be referred to Table 2.4 of the quarterly EM&A report.

Appendix D. 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-Apr-17	NWL	1	3.000	SPRING	32166	3RS ET
05-Apr-17	NWL	2	38.728	SPRING	32166	3RS ET
05-Apr-17	NWL	3	32.700	SPRING	32166	3RS ET
10-Apr-17	AW	2	1.920	SPRING	32166	3RS ET
10-Apr-17	AW	3	1.090	SPRING	32166	3RS ET
10-Apr-17	AW	4	1.810	SPRING	32166	3RS ET
10-Apr-17	WL	3	24.720	SPRING	32166	3RS ET
10-Apr-17	WL	4	8.880	SPRING	32166	3RS ET
10-Apr-17	SWL	2	8.940	SPRING	32166	3RS ET
10-Apr-17	SWL	3	3.360	SPRING	32166	3RS ET
11-Apr-17	SWL	1	20.090	SPRING	32166	3RS ET
11-Apr-17	SWL	2	32.090	SPRING	32166	3RS ET
11-Apr-17	SWL	3	4.900	SPRING	32166	3RS ET
12-Apr-17	NEL	1	13.483	SPRING	32166	3RS ET
12-Apr-17	NEL	2	26.217	SPRING	32166	3RS ET
12-Apr-17	NEL	3	7.300	SPRING	32166	3RS ET
18-Apr-17	AW	3	4.870	SPRING	32166	3RS ET
18-Apr-17	WL	2	25.679	SPRING	32166	3RS ET
18-Apr-17	WL	3	4.960	SPRING	32166	3RS ET
18-Apr-17	SWL	1	0.821	SPRING	32166	3RS ET
18-Apr-17	SWL	2	5.049	SPRING	32166	3RS ET
24-Apr-17	NEL	2	26.150	SPRING	32166	3RS ET
24-Apr-17	NEL	3	20.650	SPRING	32166	3RS ET
25-Apr-17	NWL	2	1.100	SPRING	32166	3RS ET
25-Apr-17	NWL	3	35.320	SPRING	32166	3RS ET
25-Apr-17	NWL	4	38.880	SPRING	32166	3RS ET
26-Apr-17	SWL	1	1.400	SPRING	32166	3RS ET
26-Apr-17	SWL	2	40.231	SPRING	32166	3RS ET
26-Apr-17	SWL	3	20.409	SPRING	32166	3RS ET
04-May-17	SWL	1	1.190	SPRING	32166	3RS ET
04-May-17	SWL	2	43.260	SPRING	32166	3RS ET
04-May-17	SWL	3	17.450	SPRING	32166	3RS ET
05-May-17	AW	1	5.010	SPRING	32166	3RS ET
05-May-17	WL	2	24.605	SPRING	32166	3RS ET
05-May-17	WL	3	7.320	SPRING	32166	3RS ET
05-May-17	SWL	1	2.630	SPRING	32166	3RS ET
05-May-17	SWL	2	4.260	SPRING	32166	3RS ET
08-May-17	NWL	3	51.352	SPRING	32166	3RS ET
08-May-17	NWL	4	24.048	SPRING	32166	3RS ET
09-May-17	NEL	2	40.300	SPRING	32166	3RS ET
09-May-17	NEL	3	7.100	SPRING	32166	3RS ET
11-May-17	AW	1	4.590	SPRING	32166	3RS ET
11-May-17	WL	1	13.043	SPRING	32166	3RS ET
11-May-17	WL	2	2.621	SPRING	32166	3RS ET
11-May-17	WL	3	7.059	SPRING	32166	3RS ET
11-May-17	WL	4	5.220	SPRING	32166	3RS ET
11-May-17	SWL	2	0.520	SPRING	32166	3RS ET

DATE	AREA	BEAU	KM SEARCHED	SEASON	VESSEL	TYPE
11-May-17	SWL	3	2.050	SPRING	32166	3RS ET
11-May-17	SWL	4	2.970	SPRING	32166	3RS ET
17-May-17	NWL	1	8.700	SPRING	32166	3RS ET
17-May-17	NWL	2	60.600	SPRING	32166	3RS ET
17-May-17	NWL	3	6.300	SPRING	32166	3RS ET
22-May-17	NEL	2	6.960	SPRING	32166	3RS ET
22-May-17	NEL	3	27.140	SPRING	32166	3RS ET
22-May-17	NEL	4	12.700	SPRING	32166	3RS ET
23-May-17	SWL	2	26.840	SPRING	32166	3RS ET
23-May-17	SWL	3	33.160	SPRING	32166	3RS ET
07-Jun-17	SWL	2	33.230	SUMMER	32166	3RS ET
07-Jun-17	SWL	3	27.200	SUMMER	32166	3RS ET
07-Jun-17	SWL	4	1.900	SUMMER	32166	3RS ET
08-Jun-17	NWL	2	29.074	SUMMER	32166	3RS ET
08-Jun-17	NWL	3	26.566	SUMMER	32166	3RS ET
08-Jun-17	NWL	4	18.660	SUMMER	32166	3RS ET
08-Jun-17	NWL	5	1.100	SUMMER	32166	3RS ET
09-Jun-17	AW	1	1.040	SUMMER	32166	3RS ET
09-Jun-17	AW	2	3.900	SUMMER	32166	3RS ET
09-Jun-17	WL	1	2.850	SUMMER	32166	3RS ET
09-Jun-17	WL	2	5.782	SUMMER	32166	3RS ET
09-Jun-17	WL	3	13.859	SUMMER	32166	3RS ET
09-Jun-17	WL	4	8.589	SUMMER	32166	3RS ET
09-Jun-17	WL	5	0.920	SUMMER	32166	3RS ET
09-Jun-17	SWL	2	0.521	SUMMER	32166	3RS ET
09-Jun-17	SWL	3	1.399	SUMMER	32166	3RS ET
09-Jun-17	SWL	4	4.060	SUMMER	32166	3RS ET
12-Jun-17	NEL	2	1.100	SUMMER	32166	3RS ET
12-Jun-17	NEL	3	28.890	SUMMER	32166	3RS ET
12-Jun-17	NEL	4	7.910	SUMMER	32166	3RS ET
15-Jun-17	NEL	1	4.600	SUMMER	32166	3RS ET
15-Jun-17	NEL	2	37.200	SUMMER	32166	3RS ET
22-Jun-17	SWL	2	25.837	SUMMER	32166	3RS ET
22-Jun-17	SWL	3	29.935	SUMMER	32166	3RS ET
22-Jun-17	SWL	4	2.840	SUMMER	32166	3RS ET
23-Jun-17	NWL	2	37.550	SUMMER	32166	3RS ET
23-Jun-17	NWL	3	31.360	SUMMER	32166	3RS ET
23-Jun-17	NWL	4	4.790	SUMMER	32166	3RS ET
23-Jun-17	NEL	2	4.930	SUMMER	32166	3RS ET
23-Jun-17	NEL	3	2.930	SUMMER	32166	3RS ET
28-Jun-17	AW	2	4.750	SUMMER	32166	3RS ET
28-Jun-17	WL	2	4.697	SUMMER	32166	3RS ET
28-Jun-17	WL	3	16.707	SUMMER	32166	3RS ET
28-Jun-17	WL	4	8.280	SUMMER	32166	3RS ET
28-Jun-17	SWL	3	4.960	SUMMER	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-Apr-17	1	1132	CWD	2	NWL	2	128	ON	3RS ET	22.3787	113.8765	SPRING	NONE
05-Apr-17	2	1147	CWD	3	NWL	2	16	ON	3RS ET	22.3827	113.8768	SPRING	NONE
11-Apr-17	1	1042	FP	1	SWL	1	336	ON	3RS ET	22.1801	113.9363	SPRING	NONE
11-Apr-17	2	1051	FP	6	SWL	1	3	ON	3RS ET	22.1699	113.9359	SPRING	NONE
11-Apr-17	3	1103	FP	5	SWL	1	43	ON	3RS ET	22.1561	113.9358	SPRING	NONE
11-Apr-17	4	1212	FP	5	SWL	2	363	ON	3RS ET	22.1480	113.9180	SPRING	NONE
18-Apr-17	1	1023	CWD	1	WL	3	17	ON	3RS ET	22.2698	113.8441	SPRING	NONE
18-Apr-17	2	1047	CWD	7	WL	2	580	ON	3RS ET	22.2605	113.8488	SPRING	NONE
18-Apr-17	3	1113	CWD	5	WL	2	277	ON	3RS ET	22.2578	113.8378	SPRING	NONE
18-Apr-17	4	1246	CWD	3	WL	2	278	ON	3RS ET	22.1873	113.8417	SPRING	NONE
18-Apr-17	5	1302	CWD	5	WL	2	450	ON	3RS ET	22.1870	113.8378	SPRING	NONE
18-Apr-17	6	1330	CWD	2	SWL	2	40	ON	3RS ET	22.1831	113.8499	SPRING	NONE
18-Apr-17	7	1406	CWD	2	SWL	2	512	ON	3RS ET	22.1925	113.8595	SPRING	NONE
26-Apr-17	1	1022	CWD	1	SWL	2	48	ON	3RS ET	22.2170	113.9356	SPRING	PURSE SEINE
26-Apr-17	2	1224	FP	2	SWL	2	89	ON	3RS ET	22.1526	113.9068	SPRING	NONE
26-Apr-17	3	1441	CWD	3	SWL	3	55	ON	3RS ET	22.1699	113.8684	SPRING	NONE
26-Apr-17	4	1456	CWD	2	SWL	3	755	ON	3RS ET	22.1692	113.8691	SPRING	NONE
04-May-17	1	1423	CWD	2	SWL	1	318	ON	3RS ET	22.2114	113.8839	SPRING	NONE
05-May-17	1	1032	CWD	11	WL	3	143	ON	3RS ET	22.2318	113.8279	SPRING	NONE
05-May-17	2	1121	CWD	3	WL	2	263	ON	3RS ET	22.2231	113.8363	SPRING	NONE
05-May-17	3	1135	CWD	1	WL	2	271	ON	3RS ET	22.2230	113.8263	SPRING	NONE
05-May-17	4	1211	CWD	5	WL	2	343	ON	3RS ET	22.2053	113.8398	SPRING	NONE
05-May-17	5	1305	CWD	7	WL	2	650	ON	3RS ET	22.1966	113.8405	SPRING	NONE
11-May-17	1	1041	CWD	1	WL	1	171	ON	3RS ET	22.2598	113.8467	SPRING	NONE
11-May-17	2	1118	CWD	9	WL	1	800	ON	3RS ET	22.2466	113.8511	SPRING	NONE
11-May-17	3	1148	CWD	13	WL	2	442	ON	3RS ET	22.2414	113.8442	SPRING	NONE
11-May-17	4	1217	CWD	6	WL	2	118	ON	3RS ET	22.2407	113.8333	SPRING	NONE
11-May-17	5	1228	CWD	6	WL	1	79	ON	3RS ET	22.2378	113.8266	SPRING	NONE
11-May-17	6	1236	CWD	7	WL	2	760	ON	3RS ET	22.2316	113.8287	SPRING	NONE
11-May-17	7	1315	CWD	9	WL	3	306	ON	3RS ET	22.2231	113.8195	SPRING	NONE
11-May-17	8	1335	CWD	11	WL	3	26	ON	3RS ET	22.2157	113.8177	SPRING	NONE







DATE	STG #	TIME	CWD/FP	GP SZ	AREA	BEAU	PSD	EFFORT	TYPE	DEC LAT	DEC LON	SEASON	BOAT ASSOC.
11-May-17	9	1432	CWD	6	WL	3	1021	ON	3RS ET	22.1867	113.8433	SPRING	NONE
11-May-17	10	1513	CWD	6	SWL	4	409	ON	3RS ET	22.1827	113.8498	SPRING	NONE
11-May-17	11	1543	CWD	4	SWL	3	354	ON	3RS ET	22.1967	113.8590	SPRING	NONE
23-May-17	1	1115	CWD	2	SWL	3	1472	ON	3RS ET	22.1802	113.9281	SPRING	NONE
23-May-17	2	1459	CWD	2	SWL	2	N/A	OFF	3RS ET	22.2029	113.8976	SPRING	NONE
07-Jun-17	1	1224	CWD	1	SWL	2	N/A	OFF	3RS ET	22.1766	113.9070	SUMMER	NONE
07-Jun-17	2	1249	CWD	6	SWL	2	125	ON	3RS ET	22.2030	113.9079	SUMMER	NONE
07-Jun-17	3	1507	CWD	2	SWL	2	116	ON	3RS ET	22.2007	113.8684	SUMMER	NONE
08-Jun-17	1	1202	CWD	2	NWL	3	362	ON	3RS ET	22.3993	113.8889	SUMMER	NONE
09-Jun-17	1	1106	CWD	5	WL	2	846	ON	3RS ET	22.2413	113.8450	SUMMER	NONE
09-Jun-17	2	1207	CWD	2	WL	4	138	ON	3RS ET	22.2311	113.8382	SUMMER	NONE
09-Jun-17	3	1240	CWD	3	WL	3	44	ON	3RS ET	22.2120	113.8372	SUMMER	NONE
09-Jun-17	4	1358	CWD	5	SWL	3	6	ON	3RS ET	22.1915	113.8592	SUMMER	NONE
22-Jun-17	1	1026	CWD	9	SWL	2	620	ON	3RS ET	22.2094	113.9364	SUMMER	NONE
22-Jun-17	2	1200	CWD	3	SWL	3	11	ON	3RS ET	22.2054	113.9266	SUMMER	NONE
22-Jun-17	3	1212	CWD	1	SWL	3	67	ON	3RS ET	22.2055	113.9258	SUMMER	NONE
22-Jun-17	4	1222	CWD	1	SWL	3	25	ON	3RS ET	22.2053	113.9191	SUMMER	NONE
22-Jun-17	5	1230	CWD	2	SWL	2	64	ON	3RS ET	22.2026	113.9178	SUMMER	NONE
22-Jun-17	6	1248	CWD	1	SWL	2	720	ON	3RS ET	22.1941	113.9184	SUMMER	NONE
22-Jun-17	7	1354	CWD	2	SWL	2	28	ON	3RS ET	22.1916	113.9083	SUMMER	NONE
22-Jun-17	8	1406	CWD	3	SWL	2	5	ON	3RS ET	22.2063	113.9061	SUMMER	NONE
23-Jun-17	1	1001	CWD	1	NWL	2	72	ON	3RS ET	22.3476	113.8690	SUMMER	NONE
23-Jun-17	2	1212	CWD	2	NWL	3	17	ON	3RS ET	22.4073	113.8882	SUMMER	NONE
28-Jun-17	1	1028	CWD	3	WL	3	869	ON	3RS ET	22.2694	113.8568	SUMMER	NONE
28-Jun-17	2	1047	CWD	3	WL	2	65	ON	3RS ET	22.2649	113.8580	SUMMER	NONE
28-Jun-17	3	1119	CWD	5	WL	3	49	ON	3RS ET	22.2480	113.8515	SUMMER	NONE
28-Jun-17	4	1141	CWD	2	WL	3	250	ON	3RS ET	22.2411	113.8454	SUMMER	NONE
28-Jun-17	5	1201	CWD	2	WL	3	4	ON	3RS ET	22.2321	113.8296	SUMMER	NONE
28-Jun-17	6	1214	CWD	5	WL	4	482	ON	3RS ET	22.2232	113.8342	SUMMER	NONE
28-Jun-17	7	1250	CWD	2	WL	3	441	ON	3RS ET	22.2144	113.8268	SUMMER	NONE
28-Jun-17	8	1330	CWD	5	WL	3	224	ON	3RS ET	22.1953	113.8375	SUMMER	NONE
28-Jun-17	9	1428	CWD	1	SWL	3	1164	ON	3RS ET	22.1831	113.8593	SUMMER	NONE

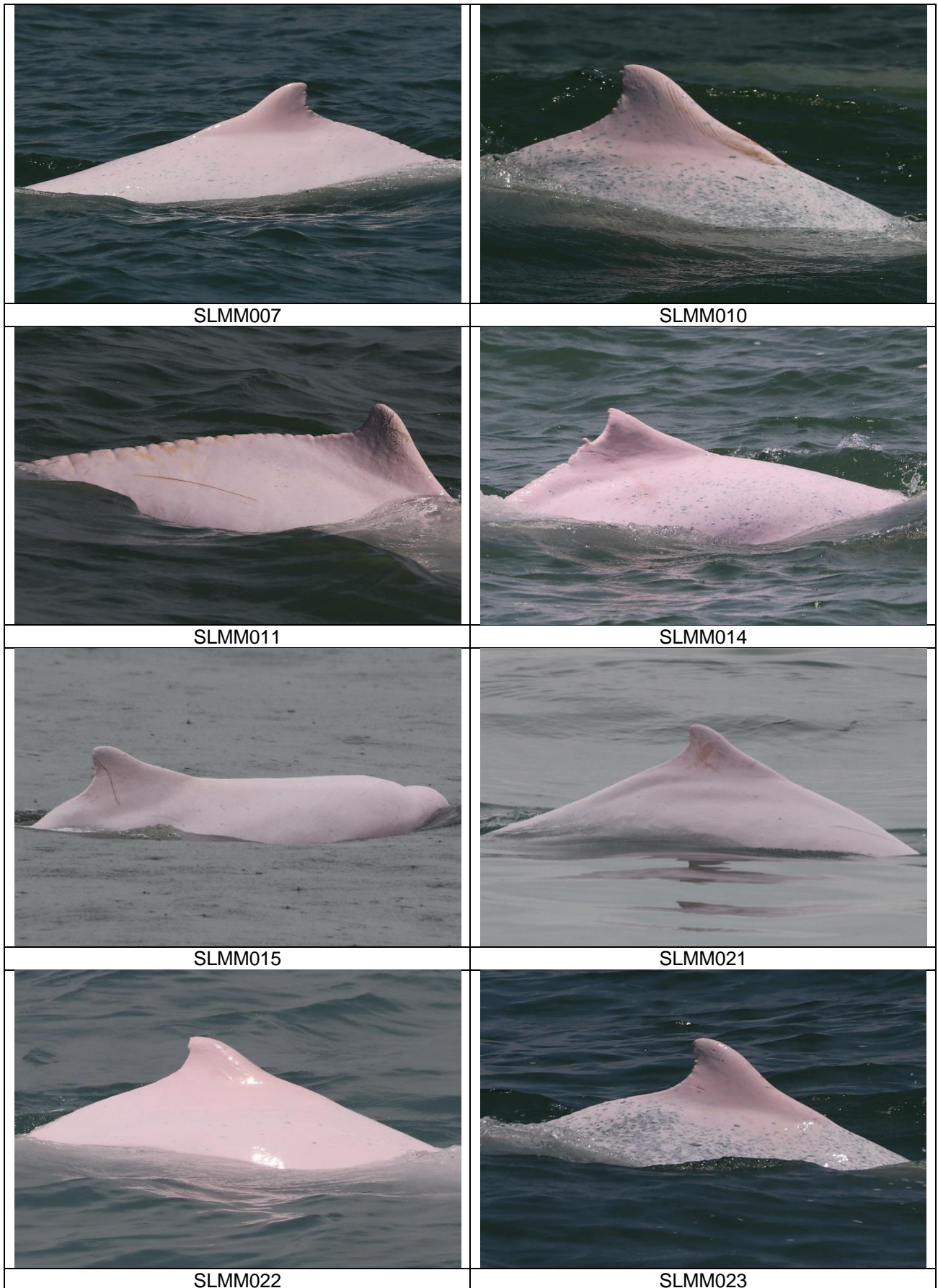
Abbreviations: STG# = Sighting Number; GP SZ = Dolphin Group Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance (in metres); N/A = Not Applicable; DEC LAT = Latitude (WGS84 in Decimal), DEC LON = Longitude (WGS84 in Decimal); BOAT ASSOC. = Fishing Boat Association

Sighting data of finless porpoise (FP) are presented for reference only. No relevant figure or text will be mentioned in the quarterly EM&A report. All FP sightings are excluded in calculation.

CWD Small Vessel Line-transect Survey

Photo Identification

	
NLMM001	NLMM004
	
NLMM006	NLMM013
	
NLMM016	NLMM023





SLMM027



SLMM028



SLMM031



SLMM036



SLMM040



SLMM047



SLMM052



SLMM054



SLMM055



SLMM056



SLMM057



SLMM058



WLMM004



WLMM007



WLMM008



WLMM009



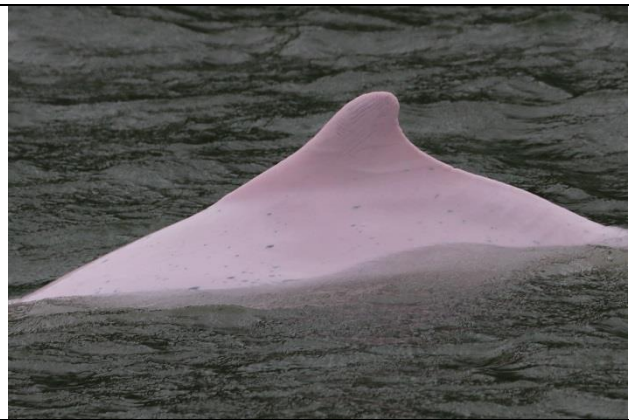
WLMM018



WLMM027



WLMM030



WLMM040



WLMM042











WLMM043



WLMM052



WLMM060

	
<p>WLMM063</p>	<p>WLMM064</p>
	
<p>WLMM068</p>	<p>WLMM070</p>
	
<p>WLMM071</p>	<p>WLMM072</p>
	
<p>WLMM073</p>	<p>WLMM075</p>



WLMM076



WLMM077



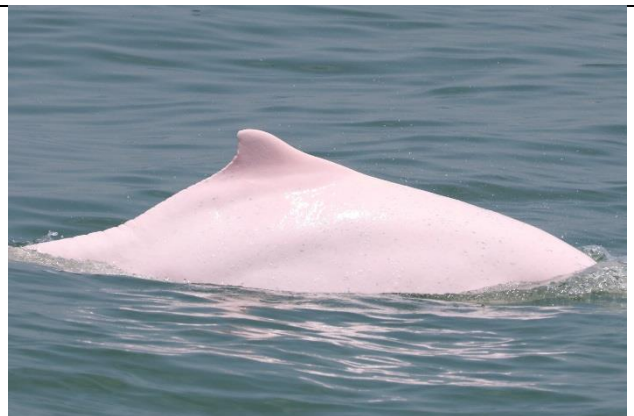
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WLMM079



WLMM080



WLMM081



WLMM082



WLMM083



WLMM084



WLMM085



WLMM086



WLMM087



WLMM088








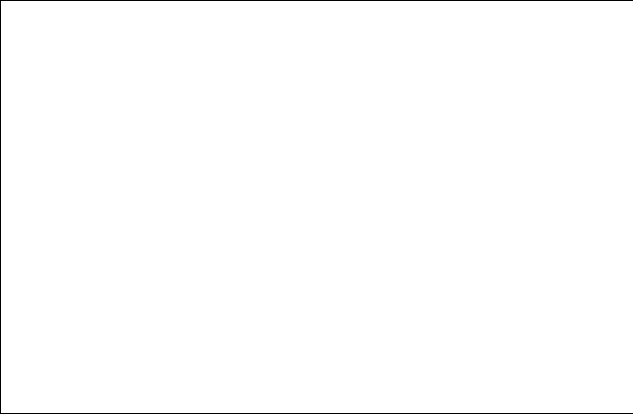
WLMM089



WLMM090



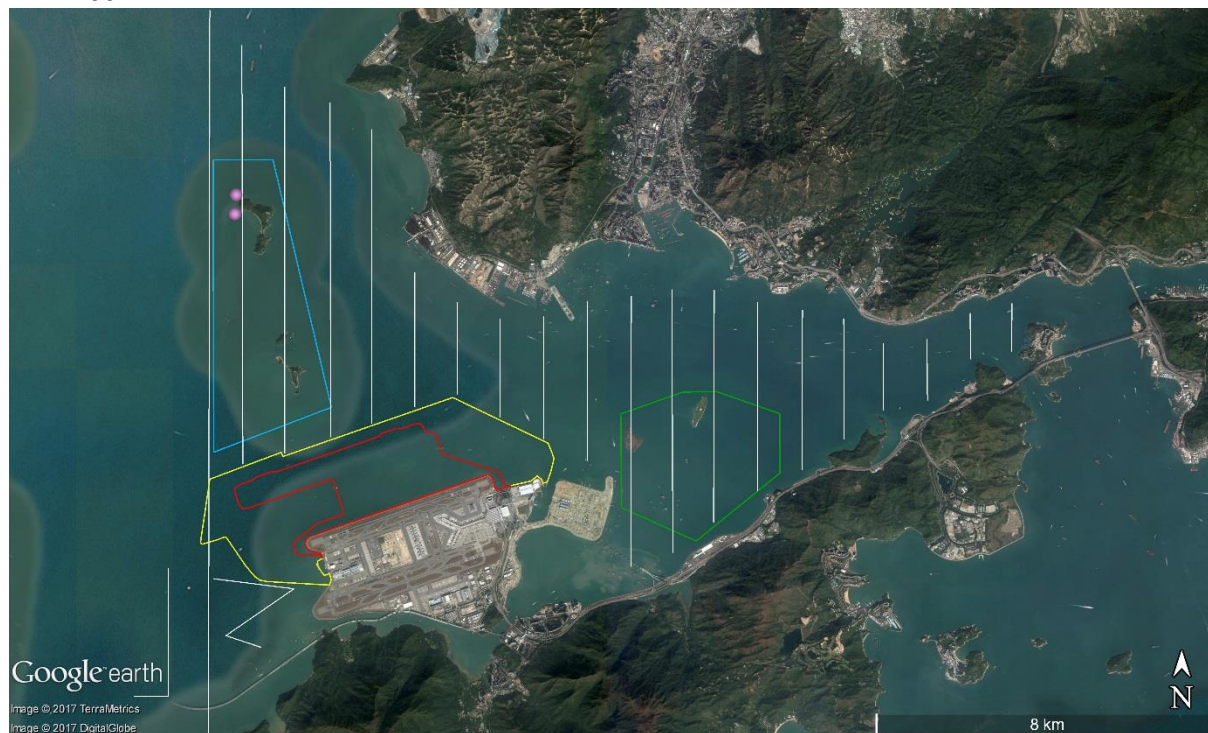
WLMM091

	
<p>WLMM092</p>	<p>WLMM093</p>
	
<p>WLMM094</p>	<p>WLMM095</p>
	
<p>WLMM096</p>	

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



NLMM016



SLMM011



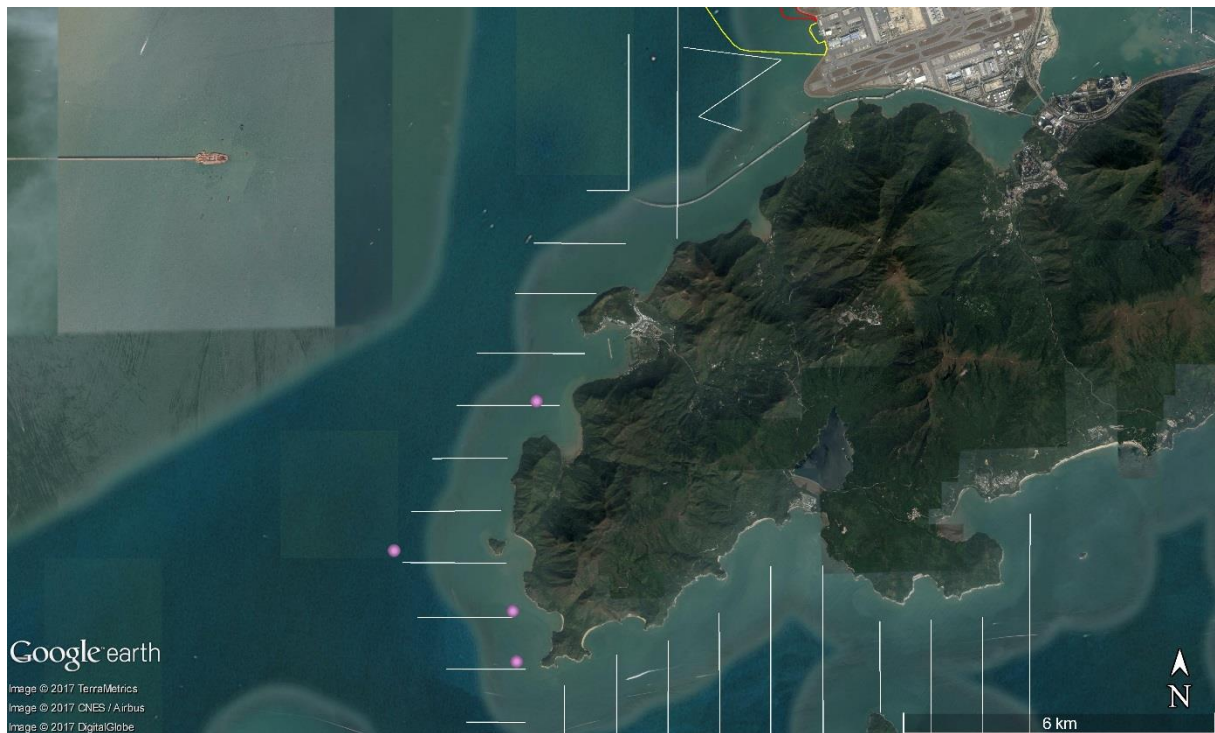
SLMM014



SLMM022



SLMM023



SLMM027



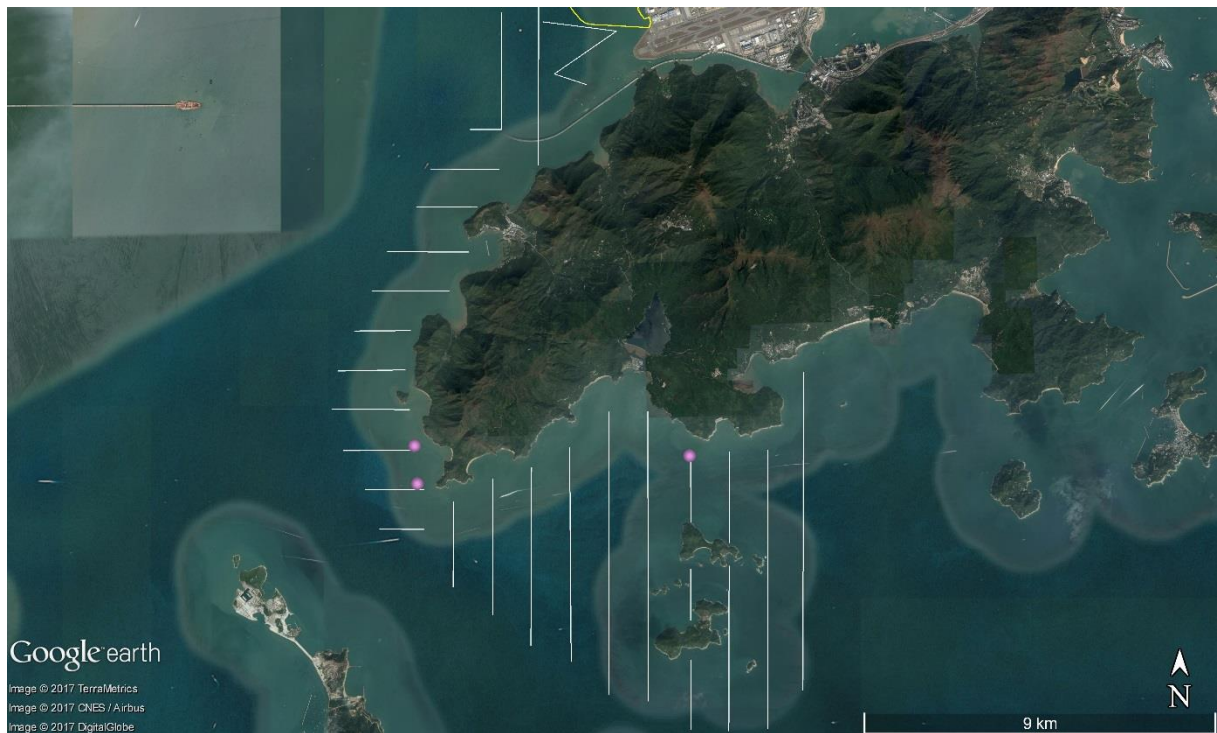
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SLMM052



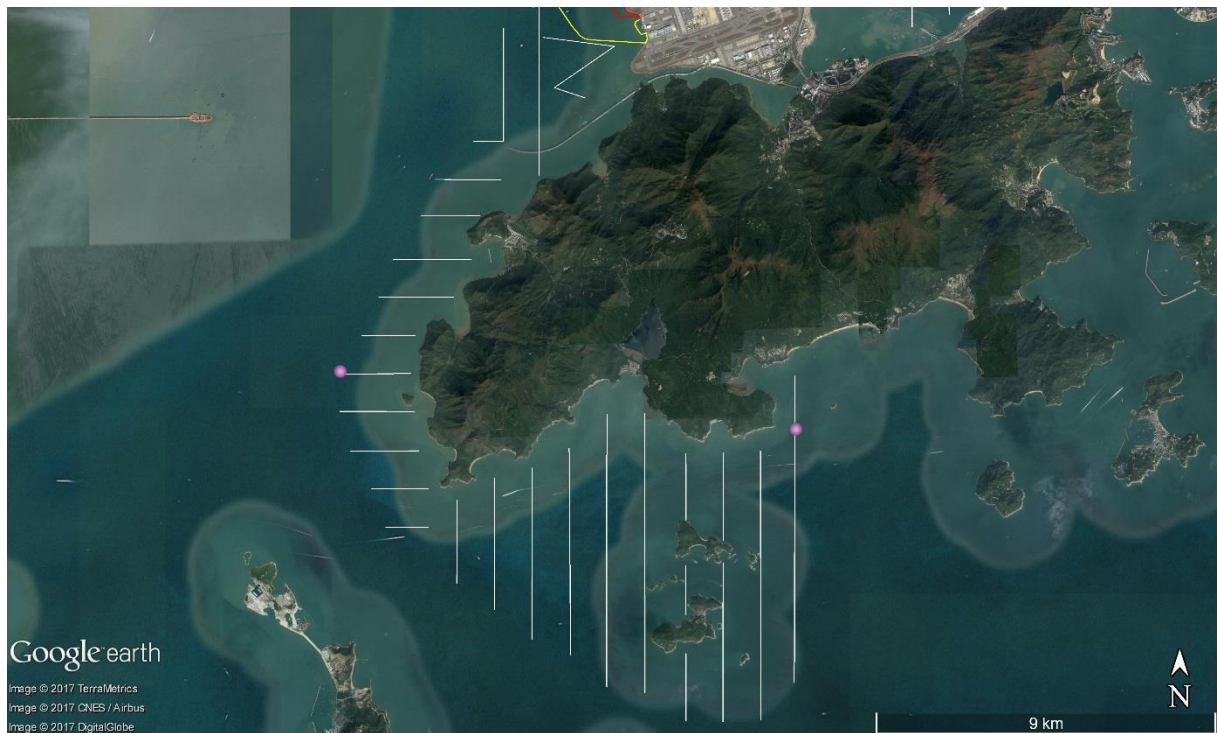
WLMM004



WLMM007



WLMM008



WLMM009



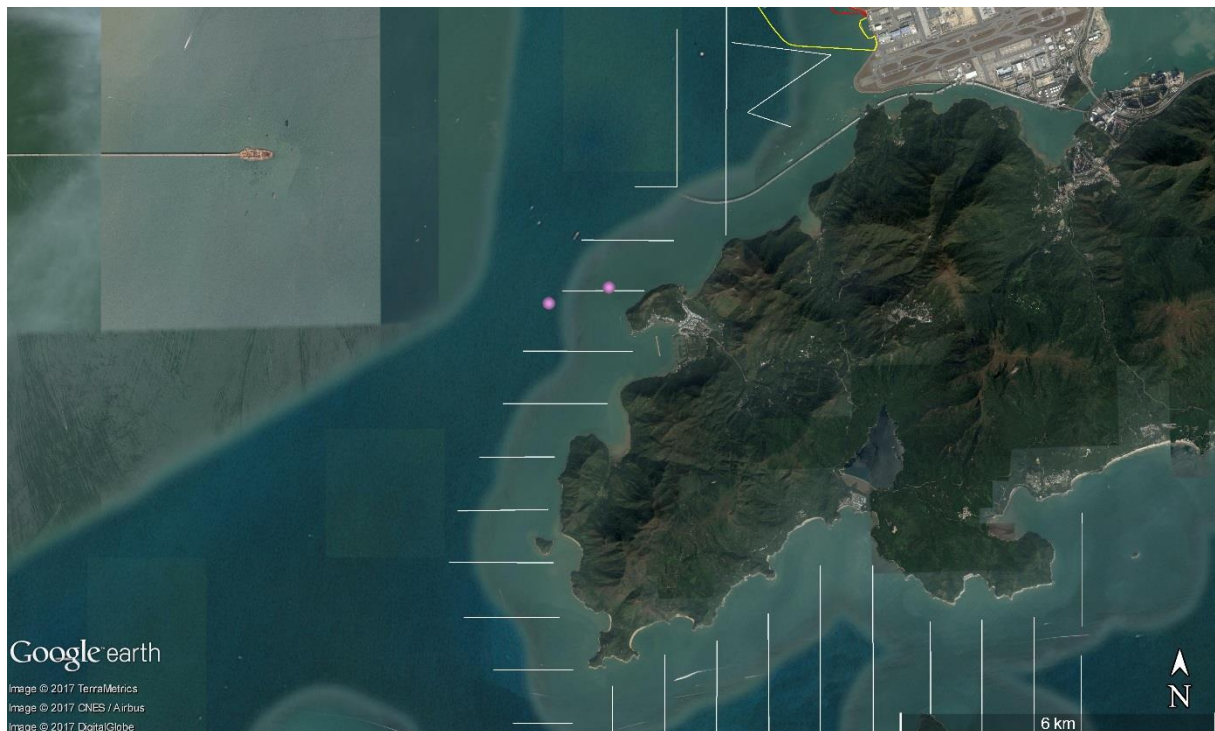
WLMM030



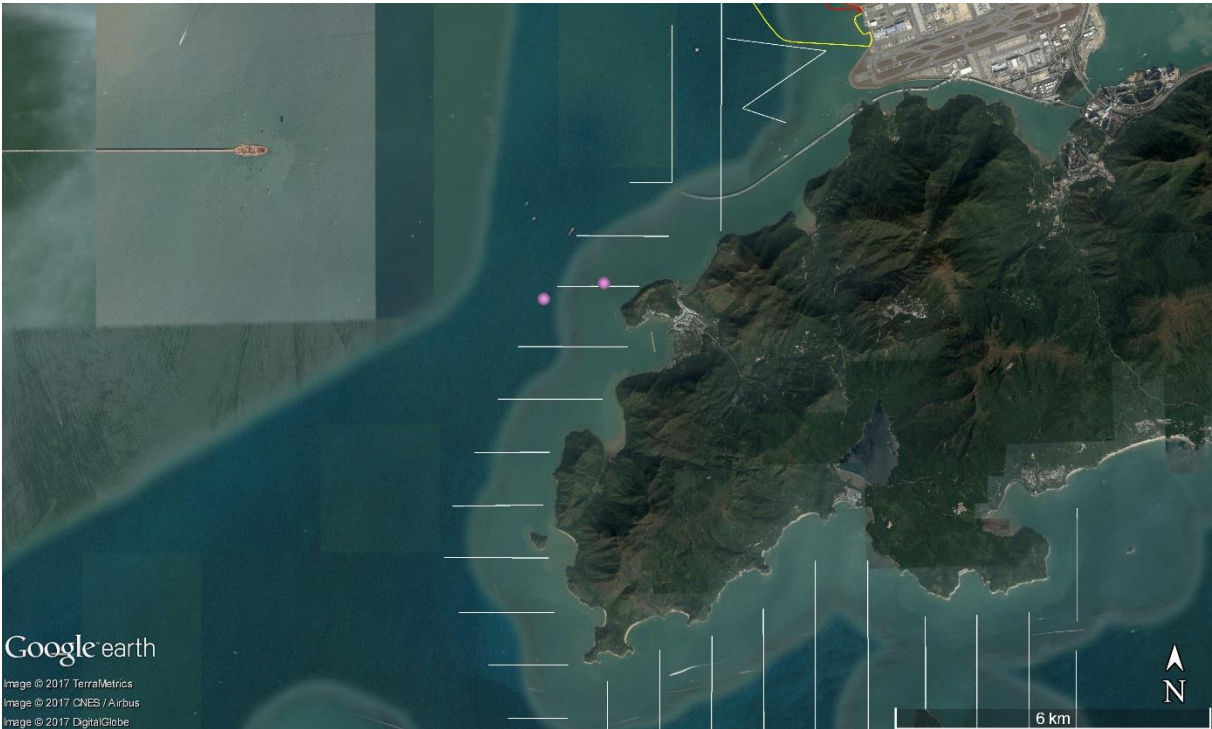
WLMM043



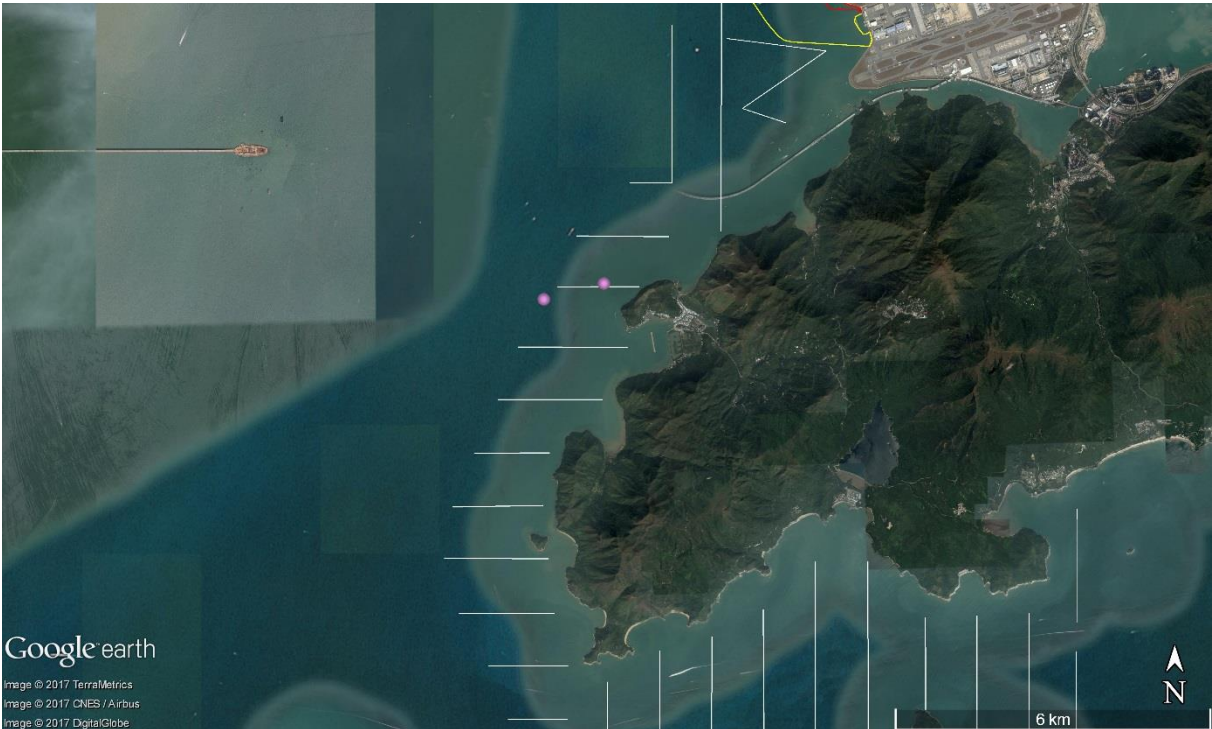
WLMM060



WLMM068



WLMM071



WLMM076



WLMM078



WLMM079



WLMM082



WLMM084



WLMM086



CWD Land-based Theodolite Tracking**CWD Groups by Survey Date**

Date	Station	Start	End	Duration	Beaufort	Visibility	No. of Focal Follow	Dolphin Group Size
6/Apr/17	Sha Chau	8:35	14:35	6:00	2	3	0	N/A
7/Apr/17	Lung Kwu Chau	8:44	14:44	6:00	2	2-3	2	2
20/Apr/17	Lung Kwu Chau	8:50	14:50	6:00	1-2	2-4	4	2-3
25/Apr/17	Lung Kwu Chau	8:49	14:49	6:00	3-4	3-4	0	N/A
27/Apr/17	Sha Chau	8:50	14:50	6:00	2-4	1-4	0	N/A
17/May/17	Sha Chau	8:37	14:37	6:00	2	2	0	N/A
19/May/17	Lung Kwu Chau	8:39	14:39	6:00	1-3	2	0	N/A
22/May/17	Sha Chau	8:35	14:35	6:00	4	2-3	0	N/A
25/May/17	Lung Kwu Chau	8:40	14:40	6:00	3	2-3	1	5
29/May/17	Lung Kwu Chau	8:41	14:41	6:00	2-3	2	1	2
22/Jun/17	Lung Kwu Chau	8:44	14:44	6:00	2-3	2	0	N/A
23/Jun/17	Sha Chau	8:44	14:44	6:00	2-3	1-2	0	N/A
26/Jun/17	Lung Kwu Chau	8:37	14:40	6:03	1-3	2	5	3-5
27/Jun/17	Sha Chau	8:39	14:39	6:00	2-3	1-2	0	N/A
29/Jun/17	Lung Kwu Chau	8:46	14:46	6:00	2-3	1	4	2-5

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