MOTT MACDONALD

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

Construction Phase Quarterly EM&A Report No.25 (1 January to 31 March 2022)

June 2022

Airport Authority Hong Kong

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Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

Airport Authority Hong Kong

This Construction Phase Quarterly EM&A Report No. 25 has been reviewed and certified by

the Environmental Team Leader (ETL) in accordance with

Section 15.4 of the Updated EM&A Manual

Certified by: 

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

Date 1 June 2022

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By Email

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

Attn: Mr. Lawrence Tsui, Principal Manager, Environmental Compliance

1 June 2022

Dear Sir,

Contract No. 3102
3RS Independent Environmental Checker Consultancy Services

Quarterly EM&A Report No. 25 (For 1 January 2022 to 31 March 2022)

Reference is made to the Environmental Team's submission of Quarterly EM&A Report No.25 (For 1 January 2022 to 31 March 2022) under section 15.4 of the Updated EM&A Manual, this quarterly EM&A report was certified by the ET leader on 1 June 2022.

We would like to inform you that we have no adverse comment and 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

c.c. Mott MacDonald – Terence Kong (ETL)

Contents

Tables

Figures

Appendices

Abbreviations

3RS	Three-Runway System
AAHK	Airport Authority Hong Kong
AECOM	AECOM Asia Company Limited
AFCD	Agriculture, Fisheries and Conservation Department
AIS	Automatic Information System
ANI	Encounter Rate of Number of Dolphins
APM	Automated People Mover
AW	Airport West
BHS	Baggage Handling System
C&D	Construction and Demolition
CAP	Contamination Assessment Plan
CAR	Contamination Assessment Report
CTCC	Construction Traffic Control Centre
CWD	Chinese White Dolphin
DCM	Deep Cement Mixing
DEZ	Dolphin Exclusion Zone
DO	Dissolved Oxygen
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring & Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
EPSS	Emergency Power Supply Systems
ET	Environmental Team
FCZ	Fish Culture Zone
HKBCF	Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities
HKIA	Hong Kong International Airport
HSF	High Speed Ferry
IEC	Independent Environmental Checker
LKC	Lung Kwu Chau
MMHK	Mott MacDonald Hong Kong Limited
MMWP	Marine Mammal Watching Plan
MSS	Maritime Surveillance System
MTRMP-CAV	Updated Marine Travel Routes and Management Plan for Construction and Associated Vessel
NEL	Northeast Lantau
NWL	Northwest Lantau
PAM	Passive Acoustic Monitoring
SC	Sha Chau
SCZ	Speed Control Zone
SCLKCMP	Sha Chau and Lung Kwu Chau Marine Park
SS	Suspended Solids
STG	Encounter Rate of Number of Dolphin Sightings
SWL	Southwest Lantau
T2	Terminal 2
The Manual	The Updated EM&A Manual

The Project	The Expansion of Hong Kong International Airport into a Three-Runway System
The SkyPier Plan	Marine Travel Routes and Management Plan for High Speed Ferries of SkyPier
TSP	Total Suspended Particulates
WL	West Lantau
WMP	Waste Management Plan

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 (the Manual).

This is the 25th Construction Phase Quarterly EM&A Report for the Project which summarises the monitoring results and audit findings of the EM&A programme during the reporting period from 1 January 2021 to 31 March 2022.

Key Activities in the Reporting Period

The key activities of the Project carried out in the reporting period included reclamation works and land-based works. Works in the reclamation areas included filling, seawall construction and ground improvement works, together with runway, concourse and associated works. Land-based works on existing airport island involved mainly airfield works, Terminal 2 expansion works, modification and tunnel work for Automated People Mover (APM) and Baggage Handling System (BHS), and preparation work for utilities, with activities include road and drainage works, cable ducting, demolition, piling, and excavation works.

EM&A Activities Conducted in the Reporting Period

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

Monitoring Activities	Number of Sessions
1-hour Total Suspended Particulates (TSP) air quality monitoring	96
Noise monitoring	52
Water quality monitoring	39
Vessel line-transect surveys for Chinese White Dolphin (CWD) monitoring	6
Land-based theodolite tracking survey effort for CWD monitoring	6

Environmental auditing works, including weekly site inspections of construction works conducted by the ET and bi-weekly site inspections conducted by the Independent Environmental Checker (IEC), audit of SkyPier High Speed Ferries (HSF), audit of construction and associated vessels, and audit of implementation of Marine Mammal Watching Plan (MMWP) and Dolphin Exclusion Zone (DEZ) Plan, were conducted in the reporting period. Due to the COVID-19 pandemic, remote and physical site inspections of construction works to audit the implementation of proper environmental pollution control and mitigation measures for the Project were conducted by ET and IEC in this reporting period on a weekly and bi-weekly basis, respectively. Based on the information including ET's observations, records of Maritime Surveillance System (MSS), and contractors' site records, it is noted that environmental pollution control and mitigation measures were properly implemented and construction activities of the Project in the reporting period did not introduce adverse impacts to the sensitive receivers.

In accordance with Section 6.2.1.1 of the Manual, the methodology of annual sewage flow monitoring for the existing gravity sewer from the airport discharge manhole to Tung Chung Sewage Pumping Station (TCSPS) should be prepared and submitted to EPD one year before the scheduled commencement of operation of the proposed third runway. As such, the sewage flow monitoring methodology paper was prepared, submitted and subsequently approved by EPD on 21 June 2021. The annual sewage flow monitoring has also been started since June 2021. According to the daily flow monitoring record of Sewage Pumping Station 1 (SPS-1) located at the Airport from January to March 2022 (see **Appendix C**), the daily average flow of 11,765 m^3/day for January 2022, 10,731 m^3/day for February 2022 and 10,610 m^3/day for March 2022 were well below 80% of pipe full flow capacity of 53,395.2 m^3/day as defined in Section 2.6.3 of the approved sewage flow monitoring methodology paper. For the subsequent sets of sewage flow monitoring data for SPS-1, it will be presented in upcoming Quarterly and Annual EM&A Reports.

Snapshots of Good Environmental Practices in the Reporting Period

		
Use of automatic wheel wash system for dust suppression purpose	Provision of regular maintenance for wastewater treatment facility	Provision of tool-box talk for site personnel

Key examples of good site practices implemented in the Project are highlighted as below:

1. Automatic wheel wash system was installed and implemented within the construction site to ensure no earth, mud, debris, and the like is deposited by vehicles to public areas.
2. Regular maintenance for wastewater treatment facility was provided by contractor to ensure its proper and efficient operation in particular during rainstorm.
3. Tool-box talk was provided to workers for proper waste management and marine sediment handling procedures.

Summary Findings of the EM&A Programme

The monitoring works for construction dust, construction noise, water quality, construction waste, landscape & visual, and CWD were conducted during the reporting period in accordance with the Manual.

Monitoring results of construction dust, construction noise and CWD monitoring did not trigger the corresponding Action and Limit Levels in the reporting period.

The water quality monitoring results for all parameters, except suspended solids (SS), obtained during the reporting period were within the corresponding Action and Limit Levels stipulated in the EM&A programme. Relevant investigation and follow-up actions will be conducted according to the EM&A programme if the corresponding Action and Limit Levels are triggered. For SS, some testing results triggered the relevant Action Levels, and the corresponding investigations were conducted accordingly. The investigation findings concluded that the cases were not related to the Project. To conclude, the construction activities in the reporting period did not introduce adverse impact to all water quality sensitive receivers.

For waste management, a complaint regarding general refuse was received in this reporting period. This complaint triggered the relevant Action Level, and the corresponding investigation was subsequently conducted in accordance with the Manual and the Complaint Management Plan of the Project. To conclude, follow-up actions have been made by ET and the related contractor, and the case was considered closed.

The key findings of the EM&A programme during the reporting period are summarised as below:

	Yes	No	Details	Analysis / Recommendation / Remedial Actions
Breach of Limit Level^		√	No breach of Limit Level was recorded.	Nil
Breach of Action Level^	√		For waste management, a complaint regarding general refuse was received in this reporting period. This complaint triggered the relevant Action Level, and the corresponding investigation was subsequently conducted in accordance with the Manual and the Complaint Management Plan of the Project.	Follow-up actions have been made by ET and the related contractor, and the case was considered closed.
Complaints Received	√		A complaint regarding suspected dump truck for garbage disposal that was not properly covered was received on 18 February 2022.	ET requested the relevant contractor to provide information related to the complaint. No item related to the covering of dump trucks was recorded during regular site inspections. During an ad-hoc inspection, some dump trucks were observed not fully covered when leaving the construction site onto RoRo barges in which ET immediately followed up with the contractor. All 3RS contractors were reminded to ensure the proper covering of dump trucks for garbage disposal and avoid potential blowing away of materials during the process. Hence, the case was considered closed.
	√		Two complaints regarding alleged dumping of mud at 3RS construction site area were received on 22 and 24 March 2022.	The complaints were under investigation during the reporting period. Findings would be reported in the next Quarterly EM&A Report.
Notification of any summons and status of prosecutions		√	No notification of summons nor prosecution was received.	Nil
Changes that affect the EM&A	√		Starting from 25 Jan 2022, 6 water quality impact monitoring stations and 3 sensitive receiver stations were terminated, with the impact monitoring stations relocated back to their original locations and minor adjustment for one of the impact monitoring stations.	Nil

Remarks:
^Only triggering of Action or Limit Level found related to Project works is counted as Breach 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[1]. 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 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 summary of construction works programme can be referred to the corresponding Monthly EM&A Reports. Description of relevant contracts in the reporting period was presented in Appendix A of the Construction Phase Monthly EM&A Report No. 71.

1.2 Scope of this Report

This is the 25th Construction Phase Quarterly EM&A Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 1 January 2022 to 31 March 2022.

1.3 Project Organisation

The Project's organisation structure is provided in **Appendix A**. Contact details of the key personnel have been updated and provided in **Table 1.1**.

[1] The Manual is available on the Project's dedicated website (accessible at: http://env.threerunwaysystem.com/en/index.html)

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone
Project Manager's Representative (Airport Authority Hong Kong)	Principal Manager, Environmental Compliance, Sustainability	Lawrence Tsui	2183 2734
Environmental Team (ET) (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Terence Kong	2828 5919
	Deputy Environmental Team Leaders	Heidi Yu	2828 5704
		Ken Wong	2828 5817
Independent Environmental Checker (IEC) (AECOM Asia Company Limited)	Independent Environmental Checker	Jackel Law	3922 9376
	Deputy Independent Environmental Checker	Roy Man	3922 9141

Reclamation Works:

Party	Position	Name	Telephone
Contract 3206 Main Reclamation Works (ZHEC-CCCC-CDC Joint Venture)	Project Manager	Alan Mong	3763 1352
	Environmental Officer	Zhang Bin Wang	3763 1451

Airfield Works:

Party	Position	Name	Telephone
Contract 3301 North Runway Crossover Taxiway (FJT-CHEC-ZHEC Joint Venture)	Deputy Project Director	Kin Hang Chung	9800 0048
	Environmental Officer	Joe Wong	6182 0351
Contract 3302 Eastern Vehicular Tunnel Advance Works (China Road and Bridge Corporation)	Project Manager	Dickey Yau	5699 4503
	Environmental Officer	Dennis Ho	5645 0563
Contract 3303 Third Runway and Associated Works (SAPR Joint Venture)	Project Manager	Andrew Keung	6277 6628
	Environmental Officer	Gabriel Wong	6114 9590
Contract 3305 Airfield Ground Lighting System (ADB Safegate Hong Kong Limited)	Project Manager	Allam Al-Turk	2944 9725
	Environmental Officer	Calvin Sze	9205 9277
Contract 3306 Observation Facility Control System Supporting Interim 2RS and 3RS (Chinney Alliance Engineering Limited)	Project Director	Dennis Yam	9551 9920
	Environmental Officer	Richard Liu	9216 8990
Contract 3307 Fire Training Facility (Paul Y. Construction Company Limited)	Project Manager	Chris Wong	6110 1157
	Environmental Officer	Albert Chan	9700 1083

Party	Position	Name	Telephone
Contract 3308 Foreign Object Debris Detection System (DAS Aviation Services Group)	Project Manager	Jeffrey Yau	9873 7422
Contract 3310 North Runway Modification Works (China State Construction Engineering (Hong Kong) Ltd.)	Project Manager	Kingsley Chiang	9424 8437
	Environmental Officer	Federick Wong	9842 2703

Third Runway Concourse:

Party	Position	Name	Telephone
Contract 3403 New Integrated Airport Centres Building and Civil Works (Sun Fook Kong Construction Limited)	Project Manager	Alice Leung	9220 3162
	Environmental Officer	Ray Cheung	9785 1566
Contract 3404 Integrated Airport Control System (Shun Hing Systems Integration Co., Ltd.)	Project Manager	Andy Ng	9102 2739
	Environmental Officer	Richard Ng	9802 9577
Contract 3405 Third Runway Concourse Foundation and Substructure Works (China Road and Bridge Corporation – Bachy Soletanche Group Limited – LT Sambo Co., Ltd. Joint Venture)	Project Manager	Francis Choi	9423 3469
	Environmental Officer	Jacky Lai	9028 8975
Contract 3408 Third Runway Concourse and Apron Works (Beijing Urban Construction Group Company Limited and Chevalier (Construction) Company Limited Joint Venture)	Assistant Project Manager	Qian Zhang	5377 7976
	Environmental Officer	Malcolm Leung	7073 7559

Terminal 2 (T2) Expansion:

Party	Position	Name	Telephone
Contract 3508 Terminal 2 Expansion Works (Gammon Engineering & Construction Company Limited)	Project Director	Richard Ellis	6201 5637
	Environmental Officer	Fanny Law	6184 4650

Automated People Mover (APM) and Baggage Handling System (BHS):

Party	Position	Name	Telephone
Contract 3601 New Automated People Mover System (TRC Line)	Project Manager	Hongdan Wei	158 6180 9450

Party	Position	Name	Telephone
(CRRC Puzhen Bombardier Transportation Systems Limited and CRRC Nanjing Puzhen Co., Ltd. Joint Venture)	Environmental Officer	P L Wong	9143 2185
Contract 3602 Existing APM System Modification Works (Niigata Transys Co., Ltd.)	Project Manager	Kunihiro Tatecho	9755 0351
	Project Safety Manager	Jack Chow	9880 6338
Contract 3603 3RS Baggage Handling System (VISH Consortium)	Project Manager	K C Ho	9272 9626
	Environmental Officer	Eric Ha	9215 3432

Construction Support (Facilities):

Party	Position	Name	Telephone
Contract 3721 Construction Support Infrastructure Works (China State Construction Engineering (Hong Kong) Ltd.)	Site Agent	Thomas Lui	9011 5340
	Environmental Officer	Gary Yeung	9042 1720
Contract 3723 Eastern Support Area – Construction Support Facilities (Tapbo Construction Company Limited and Konwo Modular House Ltd. Joint Venture.)	Deputy Project Director	Philip Kong	9337 8700
	Environmental Officer	Eddie Suen	6338 8862
Contract 3728 Minor Site Works (Shun Yuen Construction Company Limited)	Contract Manager	C K Liu	9194 8739
	Environmental Officer	Dan Leung	6856 5899
Contract 3733 Emergency Repair Service (Wing Hing Construction Co., Ltd.)	Project Manager	Michael Kan	9206 0550
	SHE Manager	Mike Leung	6625 2550

Airport Support Infrastructure:

Party	Position	Name	Telephone
Contract 3801 APM and BHS Tunnels on Existing Airport Island (China State Construction Engineering (Hong Kong) Ltd.)	Project Manager	Kingsley Chiang	9424 8437
	Environmental Officer	Eunice Kwok	9243 1331
Contract 3802 APM and BHS Tunnels and Related Works (Gammon Construction Limited)	Project Director	John Adams	6111 6989
	Environmental Officer	Phoebe Ng	9869 1105

Construction Support (Services / Licences):

Party	Position	Name	Telephone
Contract 3901A Concrete Batching Facility (K. Wah Concrete Company Limited)	Project Manager	Benedict Wong	9553 2806
	Environmental Officer	C P Fung	9874 2872
Contract 3901B Concrete Batching Facility (Gammon Construction Limited)	Senior Project Manager	Gabriel Chan	2435 3260
	Environmental Officer	Rex Wong	2695 6319

1.4 Contact information for the Project

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

Table 1.2: Contact Information of the Project

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

1.5 Summary of Construction Works

The key activities of the Project carried out in the reporting period included reclamation works and land-based works. Works in the reclamation areas included filling, seawall construction and ground improvement works, together with runway, concourse and associated works. Land-based works on existing airport island involved mainly airfield works, Terminal 2 expansion works, modification and tunnel work for APM and BHS systems, and preparation work for utilities, with activities include road and drainage works, cable ducting, demolition, piling, and excavation works. The locations of the key construction activities are presented in **Figure 1.1**.

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.
Impact Monitoring	At least 3 times every 6 days	On-going

Parameters	EM&A Requirements	Status
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 for reclamation works. General impact water quality monitoring for water jetting works was completed on 23 May 2017.
Initial Intensive Deep Cement Mixing (DCM) Water Quality Monitoring	At least four weeks	The Initial Intensive DCM Monitoring Report was submitted and approved by EPD in accordance with the Detailed Plan on DCM.
Regular DCM Water Quality Monitoring	Three times per week until completion of DCM works.	On-going (starting from 11 Jan 2022)
Sewerage and Sewage Treatment		
Methodology for carrying out annual sewage flow monitoring for concerned gravity sewer	Methodology to be prepared and submitted to EPD one year before the scheduled commencement of operation of the proposed third runway.	The proposed methodology of the annual sewage flow monitoring was approved by EPD. The annual flow monitoring has been started since June 2021.
Details of the routine H_2S monitoring system for the sewerage system of 3RS	Details to be prepared and submitted to EPD at least one year before commencement of the operation of 3RS.	The details of the routine H_2S monitoring system will be prepared and submitted to EPD at least one year before commencement of operation of 3RS.
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.	The Supplementary CAP was submitted and approved by EPD under EP condition 2.20.
Contamination Assessment Report (CAR) for Golf Course	CAR to be submitted for golf course	The CAR for Golf Course was submitted and accepted by EPD.
CAR for Terminal 2 Emergency Power Supply System	CAR to be submitted for Terminal 2 Emergency Power Supply Systems	The CARs for Terminal 2 Emergency Power Supply Systems were submitted and accepted by EPD.
Terrestrial Ecology		
Pre-construction Egretry Survey Plan	Once per month in the breeding season between April and July, prior to the commencement of HDD drilling works.	The Egretry Survey Plan was submitted and approved by EPD under EP Condition 2.14.
Ecological Monitoring	Monthly monitoring during the HDD construction works period from August to March.	The terrestrial ecological monitoring at Sheung Sha Chau was completed in January 2019.
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.

Parameters	EM&A Requirements	Status
Post-translocation Monitoring	As per an enhanced monitoring programme based on the Coral Translocation Plan	The post-translocation monitoring programme according to the Coral Translocation Plan was completed in April 2018.
Chinese White Dolphins (CWD)		
Baseline Monitoring	6 months of baseline surveys before the commencement of land formation related construction works. Vessel line transect surveys: Two full surveys per month; Land-based theodolite tracking surveys: Two days per month at the Sha Chau station and two days per month at the Lung Kwu Chau station; and Passive Acoustic Monitoring (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 line transect surveys: Two full surveys per month; Land-based theodolite tracking surveys: 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		
Landscape and Visual Plan	At least 3 months before the commencement of construction works on the formed land of the Project.	The Landscape & Visual Plan was submitted and approved by EPD under EP Condition 2.18
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 (DEZ) Plan 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
Silt Curtain Deployment Plan implementation measures	Monitor and check	On-going

Parameters	EM&A Requirements	Status
Spill Response Plan 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 in the reporting period, impact monitoring of air quality, noise, water quality, waste management, landscape & visual, and CWD were carried out in the reporting period.

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. Due to the COVID-19 pandemic, remote and physical site inspections of construction works to audit the implementation of proper environmental pollution control and mitigation measures for the Project were conducted by ET and IEC on a weekly and bi-weekly basis, respectively. To promote the environmental awareness and enhance the environmental performance of the contractors, environmental trainings and regular environmental management meetings were conducted during the reporting period which are summarised as below:

- One skipper training provided by ET; and
- Fifty-four environmental management meetings for EM&A review with works contracts.

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**.

2.1.1 Action and Limit Levels

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 provided in **Table 2.1** for reference.

Table 2.1: Impact Air Quality Monitoring Stations

Monitoring Station	Location	Action Level (μg/m^3)	Limit Level (μg/m^3)
AR1A	Man Tung Road Park	306	500
AR2	Village House at Tin Sum	298	

2.1.2 Summary of Monitoring Results

The air quality monitoring results in the reporting period are summarised in **Table 2.2** and the graphical plot is presented in **Appendix C**.

Table 2.2: Percentage of Air Quality Monitoring Results within Action and Limit Levels

	AR1A	AR2
Jan 2022	100%	100%
Feb 2022	100%	100%
Mar 2022	100%	100%
Overall	100%	100%

Note: The percentages are calculated by dividing the number of monitoring results within their corresponding Action and Limit Levels by the total number of monitoring results.

All monitoring results were within their corresponding Action and Limit Levels at all monitoring stations in the reporting period.

General meteorological conditions in the last month of the previous quarter and this reporting period were recorded and summarised in **Table 2.3**.

Table 2.3: General Meteorological Condition during Impact Air Quality Monitoring

	Weather	Dominant Wind Direction
Dec 2021	Sunny to Overcast	Northwest
Jan 2022	Sunny to Overcast	Northeast
Feb 2022	Sunny to Drizzle	Northwest
Mar 2022	Sunny to Drizzle	Northwest or northeast

2.1.3 Conclusion

No dust emission source was observed at the monitoring stations during the monitoring sessions. As the sensitive receivers were far away from the construction activities, with the implementation of dust control measures, there was no adverse impact at the sensitive receivers attributable to the works of the Project.

2.2 Noise Monitoring

Impact noise monitoring was conducted at four representative monitoring stations once per week during 0700 and 1900 in the reporting period. The locations of monitoring stations are described in **Table 2.4** and presented in **Figure 2.1**.

2.2.1 Action and Limit Levels

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 2.4** for reference.

Table 2.4: Impact Noise 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)
NM4	Ching Chung Hau Po Woon Primary School		65dB(A) / 70 dB(A) [(i)]
NM5	Village House in Tin Sum		75 dB(A)
NM6	House No. 1, Sha Lo Wan		75 dB(A)

Note:

[(i)] The Limit Level for NM4 is reduced to 70dB(A) for being an educational institution. During school examination period, the Limit Level is further reduced to 65dB(A).

2.2.2 Summary of Monitoring Results

The noise monitoring results in the reporting period are summarised in **Table 2.5** and the graphical plot is presented in **Appendix C**.

Table 2.5: Percentage of Noise Monitoring Results within Action and Limit Levels

	NM1A	NM4	NM5	NM6
Jan 2022	100%	100%	100%	100%
Feb 2022	100%	100%	100%	100%
Mar 2022	100%	100%	100%	100%
Overall	100%	100%	100%	100%

Note: The percentages are calculated by dividing the number of monitoring results within their corresponding Action and Limit Levels by the total number of monitoring results.

No complaints were received from any sensitive receiver that triggered the Action Level.

General meteorological conditions in the last month of the previous quarter and this reporting period were recorded and summarised in **Table 2.6**.

Table 2.6: General Meteorological Condition during Impact Noise Monitoring

	Weather
Dec 2021	Sunny to Drizzle
Jan 2022	Sunny to Drizzle
Feb 2022	Sunny to Drizzle
Mar 2022	Sunny to Drizzle

2.2.3 Conclusion

Major sources of noise dominating the monitoring stations observed during the construction noise impact monitoring were traffic noise near NM1A and aircraft noise near NM6. As the sensitive receivers were far away from the construction activities, with the implementation of noise control measures, there was no adverse impact at the sensitive receivers attributable to the works of the Project.

2.3 Water Quality Monitoring

During the reporting period, water quality monitoring was conducted three days per week, at mid-flood and mid-ebb tides. Water quality monitoring was undertaken at a total of 23 water quality monitoring stations, comprising 12 impact (IM) stations, 8 sensitive receiver (SR) stations, and 3 control (C) stations in the vicinity of the water quality sensitive receivers around the existing airport island in accordance with the Manual.

In view of the progress of 3RS land formation with majority of seawall completion, reduction of IM and SR stations for impact water quality monitoring was proposed to EPD and the approval was granted on 22 December 2021. The reduction of IM and SR stations was effective from 25 January 2022, in which the remaining IM stations were relocated back to their original locations, with slight modifications to the location of IM2. Therefore, after 25 January 2022, the water quality monitoring was undertaken at a total of 14 IM stations, 5 SR stations and 3 C stations in the vicinity of the water quality sensitive receivers around the existing airport island in accordance with the Manual. With the resumption of DCM works, the regular DCM monitoring was resumed from 11 January 2022 onwards.

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 2.7** describes the details of the monitoring stations. **Figure 2.2a** shows the locations of the monitoring stations before 25 January 2022 (i.e. the date of the reduction of IM and SR stations), and **Figure 2.2b** shows the locations of the remaining monitoring stations on and after 25 January 2022.

Table 2.7: Monitoring Locations and Parameters for Impact Water Quality Monitoring

Monitoring Station	Description	Coordinates				Parameters
		Easting		Northing		
		Before 25 Jan 2022	After 25 Jan 2022	Before 25 Jan 2022	After 25 Jan 2022	
C1	Control Station	804247	804247	815620	815620	General Parameters
C2	Control Station	806945	806945	825682	825682	DO, pH, Temperature, Salinity, Turbidity, SS
C3[3]	Control Station	817803	817803	822109	822109	
IM1[8]	Impact Station	807132	806458	817949	818351	
IM2[8]	Impact Station	806166	806236	818163	819183	
IM3	Impact Station	805594	N/A[7]	818784	N/A[7]	DCM Parameters
IM4	Impact Station	804607	N/A[7]	819725	N/A[7]	

Monitoring Station	Description	Coordinates				Parameters
		Easting		Northing		
		Before 25 Jan 2022	After 25 Jan 2022	Before 25 Jan 2022	After 25 Jan 2022	
IM5	Impact Station	804867	N/A[7]	820735	N/A[7]	Total Alkalinity, Heavy Metals[2]
IM6	Impact Station	805828	N/A[7]	821060	N/A[7]	
IM7[8]	Impact Station	806835	806835	821349	821349	
IM8	Impact Station	808140	N/A[7]	821830	N/A[7]	
IM9	Impact Station	808811	N/A[7]	822094	N/A[7]	
IM10[8]	Impact Station	809794	809838	822385	822240	
IM11[8]	Impact Station	811460	810545	822057	821501	
IM12[8]	Impact Station	812046	811519	821459	821162	
SR1A[1]	Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) Seawater Intake for cooling	812660	812660	819977	819977	General Parameters DO, pH, Temperature, Salinity, Turbidity, SS
SR2	Planned marine park / hard corals at The Brothers / Tai Mo To	814166	814166	821463	821463	General Parameters DO, pH, Temperature, Salinity, Turbidity, SS DCM Parameters Total Alkalinity, Heavy Metals[2][4]
SR3	Sha Chau and Lung Kwu Chau Marine Park / fishing and spawning grounds in North Lantau	807571	807571	822147	822147	General Parameters DO, pH, Temperature, Salinity, Turbidity, SS
SR4A	Sha Lo Wan	807810	807810	817189	817189	
SR5A	San Tau Beach SSSI	810696	N/A[7]	816593	N/A[7]	
SR6A[5]	Tai Ho Bay, Near Tai Ho Stream SSSI	814739	N/A[7]	817963	N/A[7]	
SR7	Ma Wan Fish Culture Zone (FCZ)	823742	N/A[7]	823636	N/A[7]	
SR8[6]	Seawater Intake for cooling at Hong Kong International Airport (East)	811623	811623	820390	820390	

Notes:

(1) With the operation of HKBCF, water quality monitoring at SR1A station was commenced on 25 October 2018. To better reflect the water quality in the immediate vicinity of the intake, the monitoring location of SR1A has been shifted closer to the intake starting from 5 January 2019.

(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 impact/ SR stations during the flood tide. The control reference has been changed from C3 to SR2 from 1 September 2016 onwards.
(4) Total alkalinity and heavy metals results are collected at SR2 as a control station for regular DCM monitoring.
(5) As the access to SR6 was obstructed by the construction activities and temporary structures for Tung Chung New Town Extension, the monitoring location has been relocated to SR6A starting from 8 August 2019.
(6) The monitoring location for SR8 is subject to further changes due to silt curtain arrangements and the progressive relocation of this seawater intake.
(7) In view of the progress of 3RS land formation with majority of seawall completion, these monitoring stations for impact water quality monitoring were terminated from 25 January 2022 onwards.
(8) With the seawall completion and removal of enhanced open sea silt curtains, these monitoring stations were relocated back to their original locations. For IM2, there was minor adjustment of the monitoring location.

2.3.1 Action and Limit Levels

The Action and Limit Levels for general water quality monitoring stipulated in the EM&A programme for triggering the relevant investigation and follow-up procedures under the programme are presented in **Table 2.8**. The control and IM stations during flood tide and ebb tide for general water quality monitoring are presented in **Table 2.9**.

Table 2.8: 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 SR1A & SR8)					
General Water Quality Monitoring	DO in mg/l (Surface, Middle & Bottom)	Surface and Middle 4.5mg/l		Surface and Middle 4.1mg/l 5mg/l for Fish Culture Zone (SR7) only	
		Bottom 3.4mg/l		Bottom 2.7mg/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	
Regular DCM Monitoring	Total Alkalinity in ppm	95		99	
	Representative Heavy Metals for regular DCM monitoring (Chromium) in µg/l	0.2		0.2	
	Representative Heavy Metals for regular DCM monitoring (Nickel) in µg/l	3.2		3.6	
Action and Limit Levels SR1A					
SS (mg/l))		33		42	
Action and Limit Levels SR8					
SS (mg/l)		52		60	

Notes:

1. For DO measurement, Action or Limit Level is triggered when monitoring result is lower than the limits.
2. For parameters other than DO, Action or Limit Level of water quality results is triggered 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 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.
6. In view of the construction programme for marine-based DCM works, regular DCM monitoring was resumed from 11 January 2022 onwards.

Table 2.9: 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[2], IM4[2], IM5[2], IM6[2], IM7, IM8[2], SR3
SR2[1]	IM7, IM8[2], IM9[2], IM10, IM11, IM12, SR1A, SR3, SR4A, SR5A[2], SR6A[2], SR8
Ebb Tide	
C1	SR4A, SR5A[2], SR6A[2]
C2	IM1, IM2, IM3[2], IM4[2], IM5[2], IM6[2], IM7, IM8[2], IM9[2], IM10, IM11, IM12, SR1A, SR2, SR3, SR7[2], SR8

Notes:

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. The general water quality monitoring and regular DCM monitoring at IM3, IM4, IM5, IM6, IM8, IM9, SR5A, SR6A & SR7 were terminated from 25 January 2022 onwards.

2.3.2 Summary of Monitoring Results

The summary or results within their corresponding Action and Limit Levels in the reporting period are presented in **Table 2.10**. The weather and sea conditions in the last month of the previous quarter and this reporting period were recorded and summarised in **Table 2.11**.

Table 2.10: Percentage of Water Quality Monitoring Results within Action and Limit Levels

	General Water Quality Monitoring				Regular DCM Monitoring		
	DO (Surface and Middle)	**DO (Bottom)**	**SS**	**Turbidity**	**Alkalinity**	**Chromium**	**Nickel**
Jan 2022	100% (418/418)	100% (418/418)	98.9% (469/474)	100% (418/418)	100% (192/192)	100% (192/192)	100% (192/192)
Feb 2022	100% (187/187)	100% (187/187)	100% (231/231)	100% (187/187)	100% (132/132)	100% (132/132)	100% (132/132)
Mar 2022	100% (238/238)	100% (238/238)	100% (294/294)	100% (238/238)	100% (168/168)	100% (168/168)	100% (168/168)
Overall	100%	100%	99.5%	100%	100%	100%	100%

Notes:

(1) The percentages are calculated by dividing the number of depth-averaged results complying with their corresponding Action and Limit Levels by the total number of depth-averaged results.

(2) The number in the bracket under the percentage represents the total number of depth-averaged results complying with their corresponding Action and Limit Levels over the total number of depth-averaged results.

Table 2.11: General Weather Condition and Sea Condition during Impact Water Quality Monitoring

	Weather	Sea Condition
Dec 2021	Sunny to Rainy	Calm to Rough
Jan 2022	Sunny to Cloudy	Calm to Rough
Feb 2022	Sunny to Rainy	Calm to Rough
Mar 2022	Sunny to Rainy	Calm to Rough

The monitoring results for all parameters, except suspended solid (SS), obtained during the reporting period were within their corresponding Action and Limit Levels stipulated in the EM&A programme. The detailed monitoring results are presented in **Appendix C**. Relevant investigation and follow-up actions will be conducted according to the EM&A programme if the corresponding Action and Limit Levels are triggered.

For SS, some of the testing results triggered the corresponding Action Levels in the reporting period, and investigations were conducted accordingly. Summaries of results triggering Action Levels for SS are presented in **Table 2.12**.

Details of the investigation findings were presented in Construction Phase Monthly EM&A Report No. 73, which concluded that all results triggering the Action Levels were not related to the Project.

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

	IM1	IM2	IM3	IM4	IM5	IM6	IM7	IM8	IM9	IM10	IM11	IM12	SR1A	SR2	SR3	SR4A	SR5A	SR6A	SR7	SR8
04/01/2022		D	D	D																
08/01/2022	D																			
No. of result triggering Action or Limit Level	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: The monitoring results compiled with their corresponding Action or Limit Levels are presented in **Appendix C**.

Legend:	
	Result within corresponding Action and Limit Levels
	Result triggered the Action Level at monitoring station located upstream of the Project based on dominant tidal flow
D	Result triggered the Action Level at monitoring station located downstream of the Project based on dominant tidal flow
	Upstream station with respect to the Project during the respective tide based on dominant tidal flow
	Downstream station with respect to the Project during the respective tide based on dominant tidal flow

2.3.3 Conclusion

During the reporting period, it is noted that most of the monitoring results were within their corresponding Action and Limit Levels, while some results triggered the corresponding Action Levels, and investigations were conducted accordingly. Based on the findings presented in Construction Phase Monthly EM&A Report No. 73, the cases that triggered the corresponding Action Levels were not related to the Project. Hence, the Project did not introduce adverse impact to all water quality sensitive receivers. All required actions under the Event and Action Plan were followed.

Nevertheless, the non-project related trigger was attended to and initiated corresponding action and measures. As part of the EM&A programme, the construction methods and mitigation measures for water quality will continue to be monitored and opportunities for further enhancement will continue to be explored and implemented where possible, to strive for better protection of water quality and the marine environment.

In the meantime, the contractors were reminded to implement and maintain all mitigation measures during weekly site inspections and regular environmental management meetings. These include maintaining mitigation measures properly for reclamation works including filling, seawall construction and ground improvement works as recommended in the Manual.

2.4 Waste Monitoring

In accordance with the Manual, 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.

2.4.1 Action and Limit Levels

The Action and Limit Levels of the construction waste are provided in **Table 2.13**.

Table 2.13: 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

2.4.2 Summary of Monitoring Results

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

Recommendations made by the ET included provision and maintenance of proper chemical waste storage area, as well as handling, segregation, and regular disposal of general refuse. The contractors had taken actions to implement the recommended measures. Waste management audits were carried out by ET according to the requirement of the Waste Management Plan, Updated EM&A Manual and the implementation schedule of the waste management mitigation measures in **Appendix B**.

Based on updated contractors' information, summary of construction waste generated in the reporting period is presented in **Table 2.14**. ET and IEC have carried out site audits regularly and reviewed the trip ticket system.

The contractors have established the recycling strategy for C&D materials with proper planning and design to maximize recycling and reuse. Dedicated recyclers were employed for different kinds of recyclable materials by the contractors. Dedicated areas for sorting of materials are established on site. Recyclable materials such as steel, reinforcement bar, structural steel, aluminium, copper, other metals, paper, plastics and glass are sorted on-site and transported off-site for recycling during this reporting period.

Table 2.14: Construction Waste Statistics

	C&D[1] Material Stockpiled for Reuse or Recycle (m^3)	C&D Material Reused in the Project (m^3)	C&D Material Reused in other Projects (m^3)	C&D Material Transferred to Public Fill[2] (m^3)	Chemical Waste (kg)	Chemical Waste (l)	General Refuse (tonne)
Jan 2022	53,747	13,880	9,741	6,668	400	1,800	4,274
Feb 2022	32,167	55,997	582	3,219	0	0	2,405
Mar 2022	52,788	4,154	11,193	5,867	0	2,800	1,901
Total	138,702	74,031	21,516	15,754	400	4,600	8,580

Notes:

1. C&D refers to Construction and Demolition.
2. C&D materials not suitable for reuse on-site, including asphalt waste and sediment slurry, were transferred to public fill during the reporting period.

A complaint regarding general refuse was received in this reporting period. This complaint triggered the relevant Action Level, and the corresponding investigation was subsequently conducted in accordance with the Manual and the Complaint Management Plan of the Project. The summary of this complaint and analysis can be found in Section 3.2.1. On the other hand, there were no non-compliance of the WMP, contract-specific WMPs, statutory and contractual requirements that triggered Action and Limit Levels in this reporting period.

There were no non-compliance of the WMP, contract-specific WMPs, statutory and contractual requirements that triggered Action and Limit Levels in the reporting period.

2.4.3 Marine Sediment Management

Marine sediment is managed according to the EIA Report, Updated EM&A Manual and Waste Management Plan of the Project. The sampling process, storage conditions of the excavated marine sediment, treatment process, final backfilling location as well as associated records were inspected and checked by ET and verified by IEC to ensure they were in compliance with the requirements as stipulated in the Waste Management Plan.

Sampling works and treatment works for marine sediment generated from the reclaimed land area was on-going during the reporting period. The details of the marine sediment sampling, treatment and backfilling will be reported in the Annual EM&A Reports.

2.5 Chinese White Dolphin Monitoring

CWD monitoring was conducted by vessel line transect survey at a frequency of two full surveys per month, supplemented by land-based theodolite tracking survey and PAM. The frequency of the land-based theodolite tracking survey 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. The vessel survey transects followed the transect lines proposed in the Manual and are consistent with those used in the Agriculture, Fisheries and Conservation Department (AFCD) long-term CWD monitoring programme. The transect locations of CWD monitoring by vessel line transect survey conducted from January to March 2022 are shown in **Figure 2.3**, whilst the land-based theodolite tracking survey stations are described in **Table 2.15** and depicted in **Figure 2.4**. The location of the PAM device is shown in **Figure 2.10**.

Table 2.15: Land-based Theodolite Tracking 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

2.5.1 Action and Limit Levels

The Action Level and Limit Level 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 Action and Limit Levels for CWD monitoring are shown in **Table 2.16**.

Table 2.16: Derived Values of Action Level and Limit Level for Chinese White Dolphin Monitoring

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

2.5.2 Summary of Monitoring Results

2.5.2.1 Vessel Line Transect Survey

Survey Effort

During the January to March 2022 reporting period, a total of six sets of vessel line transect survey covering all transects in Northeast Lantau (NEL), Northwest Lantau (NWL), Airport West (AW), West Lantau (WL) and Southwest Lantau (SWL) survey areas were conducted at a frequency of twice per month, in each survey area. There were two survey days in February 2022 rescheduled to early March due to the impact of COVID-19 pandemic in the second half of February.

A total of around 1,327 km of survey effort was collected from these surveys, with around 95.2% 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 are presented in **Appendix C**.

CWD Sighting

From January to March 2022, there were a total of 38 sightings of CWD, with 153 dolphins sighted (**Table 2.17**). All these sightings were recorded during on-effort searches under favourable weather condition.

When breaking down the sightings by survey areas, seven sightings with 23 dolphins, one sighting with one dolphin, 26 sightings with 117 dolphins and four sightings with 12 dolphins were recorded in NWL, AW, WL and SWL respectively during the current reporting period. No CWD was sighted in NEL survey area.

Compared with the last quarter (i.e. October to December 2021), both the total number of CWD sightings and total number of the dolphins increased by 31% and 68% respectively. These results reflected increases of the dolphin sightings and the number of dolphins in NWL and WL survey areas. The number of sightings and number of dolphins in SWL slightly decrease from last quarter.

Compared with the same quarter of last year (i.e. January to March 2021), there were decreases in both the total number of sightings and the total number of dolphins by 12% and 2% respectively. The most noticeable decrease was reflected from the NWL survey area.

Table 2.17 below shows the comparison of the numbers of sightings and dolphins amongst the current reporting period, last quarter, and the same quarter of last year.

Table 2.17: Summary of Number of CWD Sightings and Number of Dolphins for the Same Quarter Last Year, Previous Quarter, and Current Reporting Period

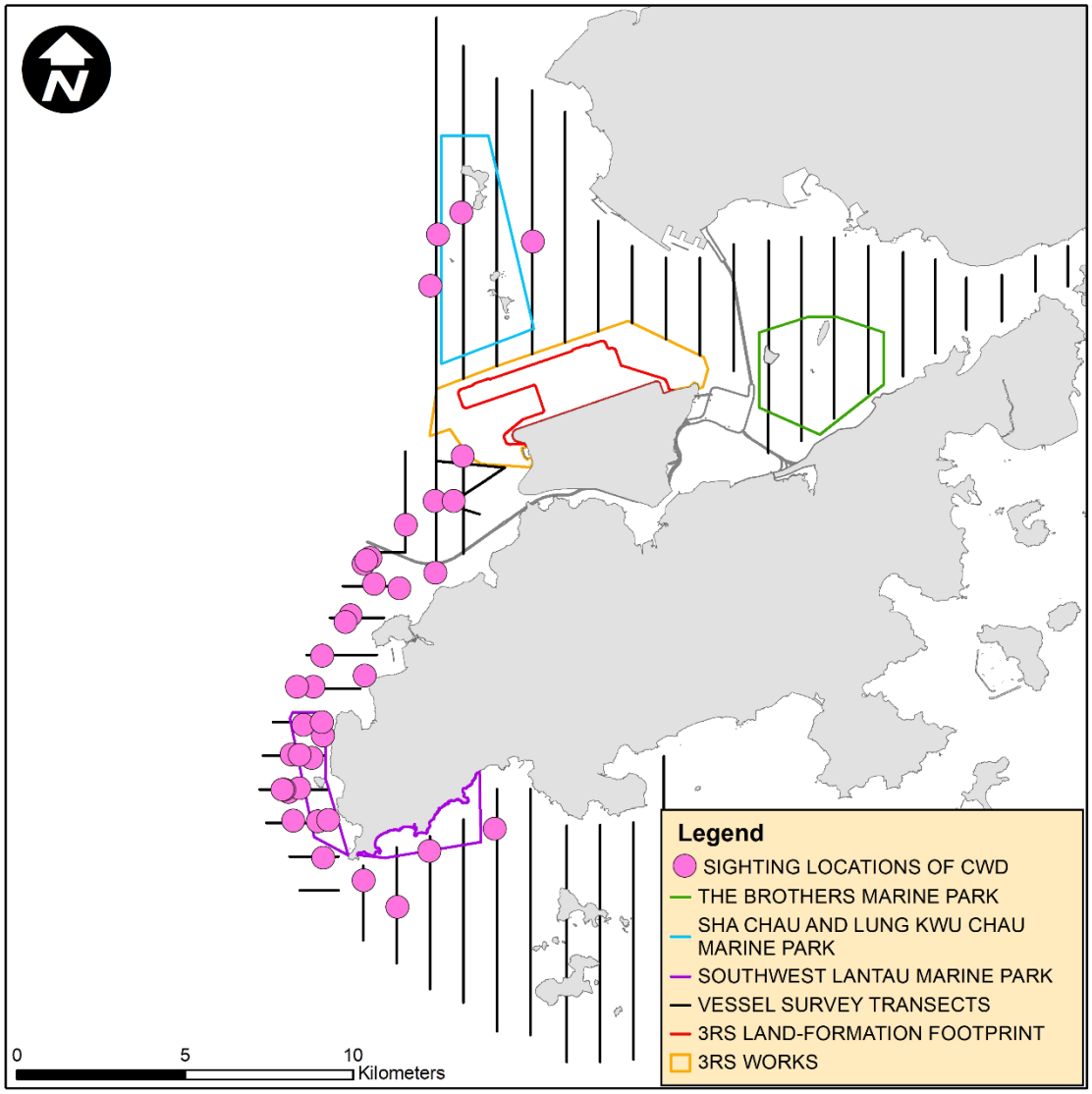
	Same Quarter of Last Year	Previous Reporting Period	Current Reporting Period
	January to March 2021	October to December 2021	January to March 2022
NEL	0 (0)	0 (0)	0 (0)
NWL	14 (65)	1 (1)	7 (23)
AW	0 (0)	0 (0)	1 (1)
WL	23 (82)	22 (70)	26 (117)
SWL	6 (11)	6 (20)	4 (12)
Total	43 (156)	29 (91)	38 (153)

Note: Values in ( ) represent number of dolphins

The distribution of CWD sightings recorded from January to March 2022 is illustrated in **Figure 2.5**. In NWL, there were CWD sightings recorded within and near SCLKCMP, as well as waters to the west of airport area. In WL, CWD sightings were scattered amongst the entire survey area

from North of Tai O to Fan Lau, with relatively more sightings clustered around Peaked Hill. In SWL, CWD sightings were scattered in the northwestern part of the survey area. No CWD sightings were recorded in NEL survey area during the reporting period. Details of the sighting data are presented in **Appendix C**.

Figure 2.5: Sightings Distribution of Chinese White Dolphins from January to March 2022



Remarks: (1) Please note that there are 38 pink circles on the map indicating the sighting locations of CWD. Some of them were very close to each other and therefore appear overlapped on this sighting distribution map. (2) Marine park excludes land area and the landward boundary generally follows the high water mark along the coastline.

Encounter Rate

The dolphin encounter rates for the number of on-effort dolphin sightings per 100 km survey effort (STG) and for the total on-effort number of dolphins per 100 km survey effort (ANI) in the whole survey area (i.e. NEL, NWL, AW, WL and SWL) for January, February and March 2022 are summarised in **Table 2.18.**

In this reporting period, both the monthly STG and ANI decreased from January to February 2022 (STG: from 5.28 to 1.69; ANI: from 20.18 to 5.32), but followed by a slight rebound in March 2022

(STG: from 1.69 to 2.08; ANI: from 5.32 to 10.86), causing a similar course in running quarterly STG and ANI. No Action Level for CWD monitoring was triggered during the reporting period.

Compared with the previous reporting period (i.e. October to December 2021), both the running quarterly STG and ANI increased from December 2021 to March 2022 (STG: from 2.46 to 3.01; ANI from 8.11 to 12.12). While comparing with the same quarter of last year (i.e. January to March 2021), both the running quarterly STG and ANI slightly decreased, from 3.45 to 3.01 and from 12.69 to 12.12 respectively. Encounter rates for these periods are summarised in **Table 2.18** and graphical presentation is provided in **Appendix C**.

Table 2.18: Summary of Monthly and Running Quarterly STG and ANI of Chinese White Dolphin for the Same Quarter Last Year, Previous Quarter, and Current Reporting Period

	Same Quarter of Last Year			Previous Reporting Period			Current Reporting Period		
	Jan 21	Feb 21	Mar 21	Oct 21	Nov 21	Dec 21	Jan 22	Feb 22	Mar 22
Monthly STG	4.19	4.17	1.97	3.71	2.16	1.59	5.28	1.69	2.08
Monthly ANI	17.44	15.93	4.42	11.42	8.63	4.51	20.18	5.32	10.86
Running Quarterly STG	3.82	4.12	3.45	2.77	3.15	2.46	3.09	2.90	3.01
Running Quarterly ANI	11.87	13.76	12.69	9.05	10.84	8.11	11.43	10.19	12.12

Note: For detailed calculations of encounter rates STG and ANI for the current reporting period, please refer to the Construction Phase Monthly EM&A Report Nos. 73, 74, and 75.

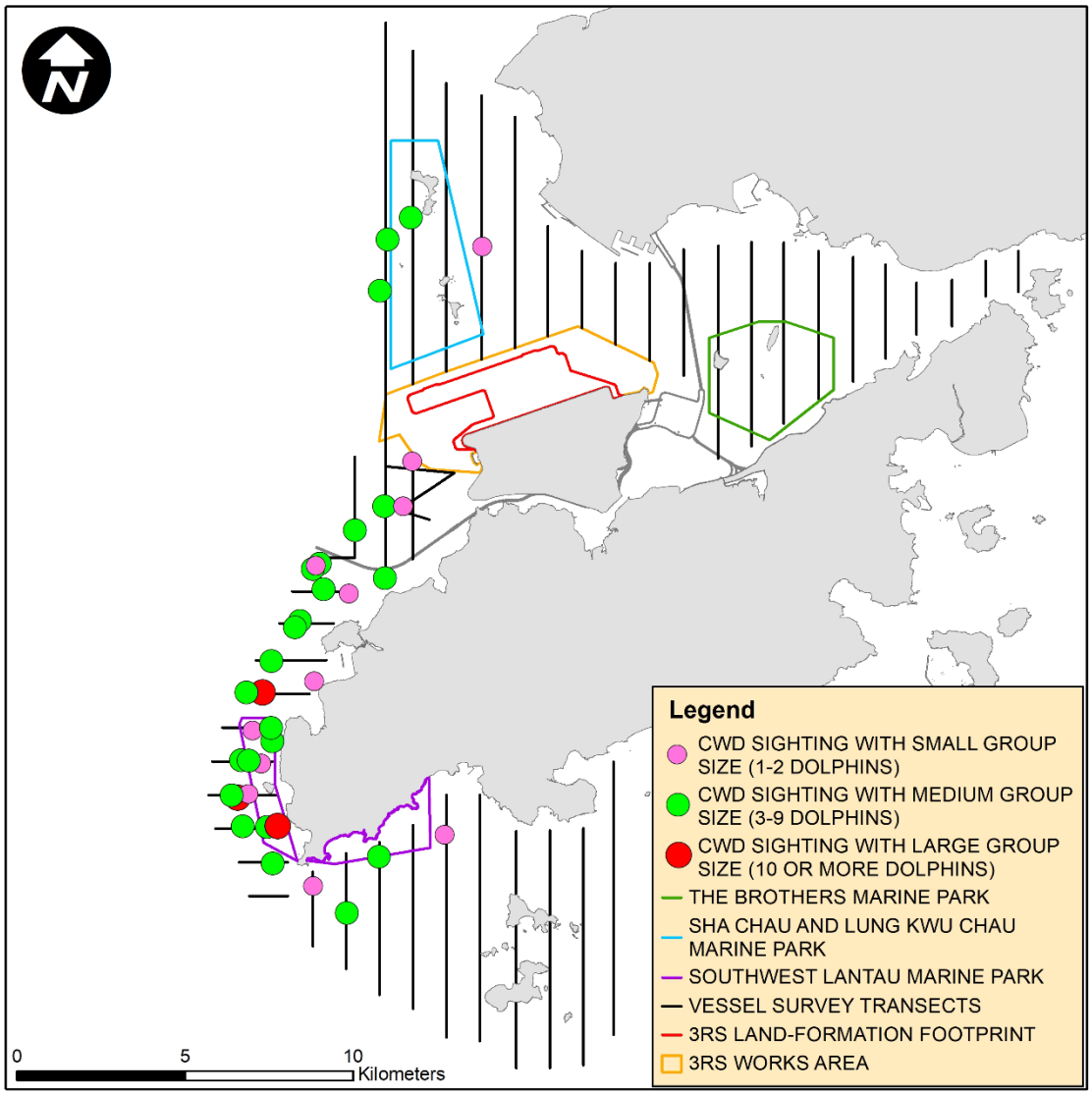
Group Size

Between January and March 2022, the group size of CWD sightings ranged from 1 to 13 dolphins. The average group size of CWD was 4.03 dolphins per group, which is larger than that of the last quarter (3.14 dolphins per group). The average group size of CWD in this reporting quarter is also slightly larger than that of the same quarter of last year (3.67 dolphins per group).

In this reporting quarter, more than half of the CWD sightings are with medium group size (i.e. 3-9 dolphins), while the numbers of CWD sightings with small group size (i.e. 1-2 dolphins) was lower. There were three CWD sighting with large group size (i.e. 10 or more dolphins) recorded in this reporting period.

There are no observable differences in the distribution pattern between small-sized and medium-sized dolphin groups in WL and SWL as they all scattered amongst survey areas. In NWL, medium-sized dolphin groups appeared to distribute closer to the Hong Kong boundary. The three large-sized dolphin groups recorded in this reporting period were all encountered in WL survey area. Sighting locations of CWD groups with different group sizes are depicted in **Figure 2.6**.

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



Remarks: (1) Please note that there are 38 circles on the map indicating the sighting locations of CWD. Some of them were very close to each other and therefore appear overlapped on this sighting distribution map. (2) Marine park excludes land area and the landward boundary generally follows the high water mark along the coastline.

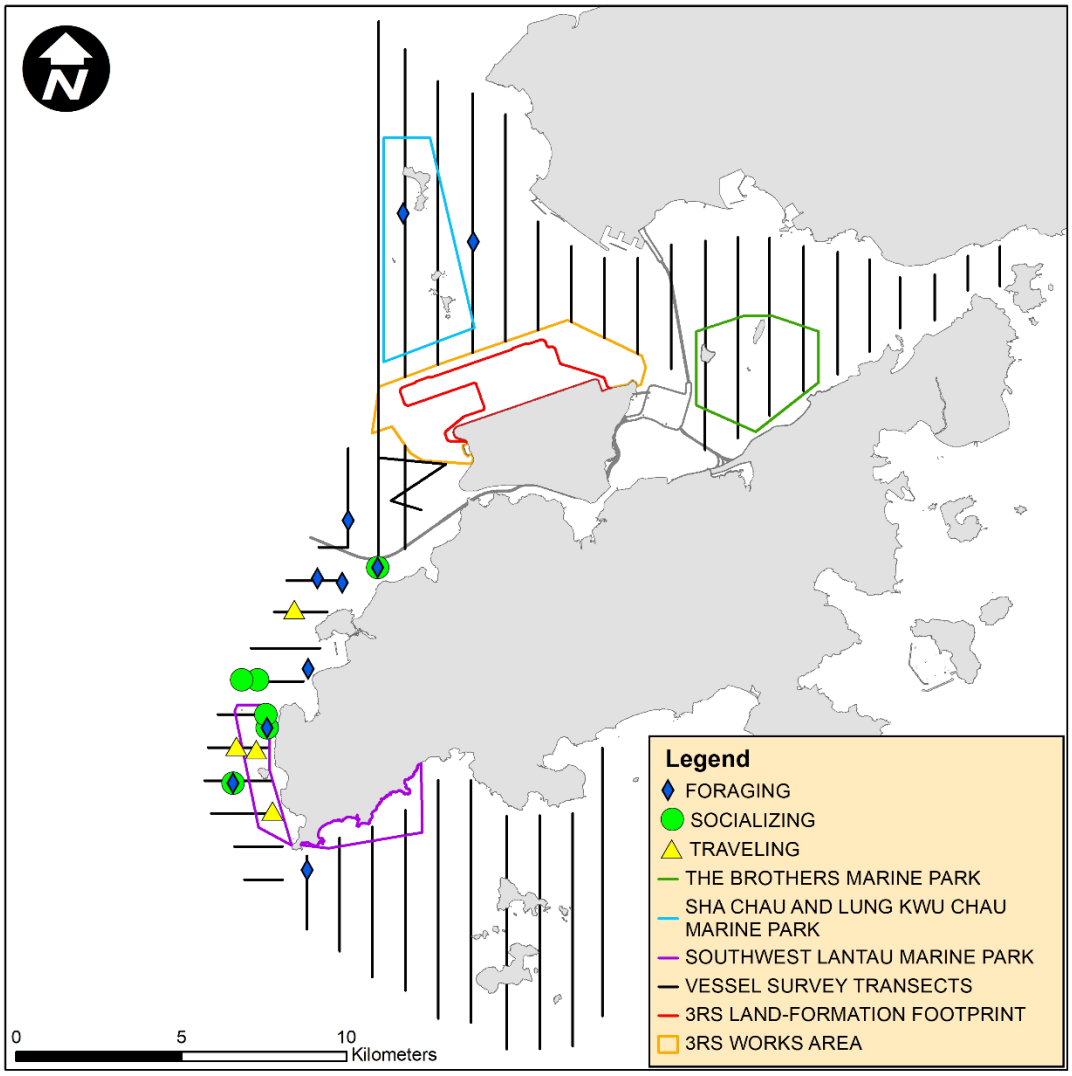
Activities and Association with Fishing Boats

From January to March 2022, ten sightings of CWD were recorded with feeding activities. Amongst them, five sightings were observed associated with operating gillnetter in NWL and WL survey areas.

The number of sightings with feeding recorded in the current reporting period is lower than that in the previous reporting period (i.e. 14 sightings involved feeding activities between October and December 2021). The number of CWD sightings with feeding activities in this reporting period is higher than that in the same quarter of last year (i.e. seven sightings between January and March 2021).

The sighting locations of CWDs engaged in different behaviours during the current reporting period are illustrated in **Figure 2.7**.

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



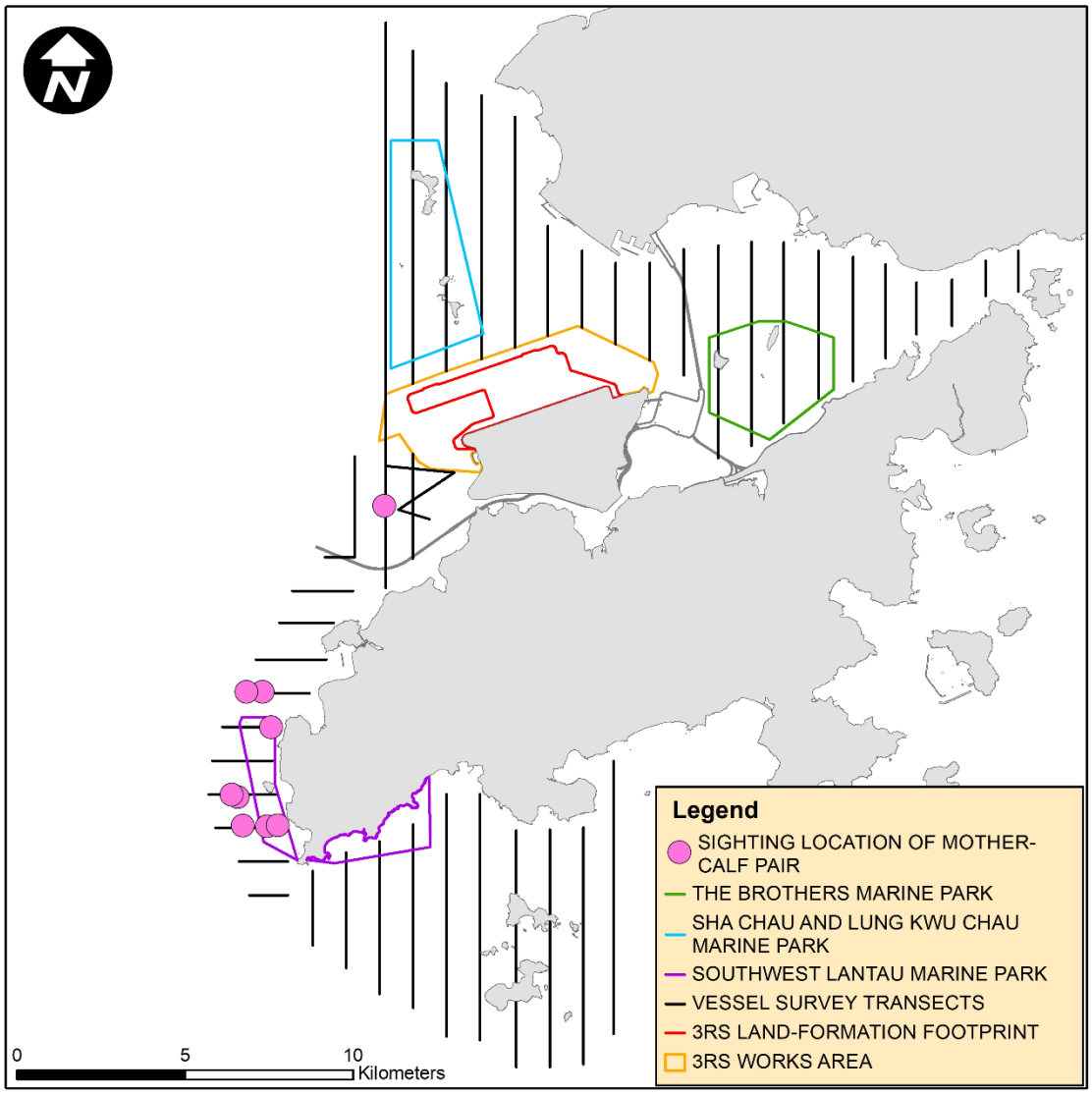
Remarks: Marine park excludes land area and the landward boundary generally follows the high water mark along the coastline.

Mother-calf Pairs

From January to March 2022, nine sightings of CWD were recorded with the presence of mother-and-unspotted juvenile pairs and/or mother-and-unspotted calf pairs observed, which is slightly higher than that recorded in the previous reporting quarter (i.e. six sightings between October and December 2021). The number of CWD sightings with the presence of mother-calf pairs is similar to that recorded in the same quarter of last year (i.e. ten sightings between January and March 2021). These nine sightings were recorded in WL and NWL survey areas.

The locations of CWD sightings with the presence of mother-calf pairs are shown in **Figure 2.8**.

Figure 2.8: Sighting Locations of Mother-calf Pairs



Remarks: (1) Please note that there are nine circles on the map indicating the sighting locations of Mother-Calf pair. (2) Marine park excludes land area and the landward boundary generally follows the high water mark along the coastline.

Photo Identification

Between January and March 2022, a total number of 51 different CWD individuals were identified altogether for 89 times. Re-sighting information of CWD individuals provides an initial idea of their range use and apparent connection between different areas of Lantau waters. Amongst these 51 different CWD individuals, twenty-one animals (i.e. SLMM007, SLMM010, SLMM012, SLMM029, SLMM037, SLMM044, SLMM052, SLMM055, SLMM073, WLMM001, WLMM003, WLMM027, WLMM065, WLMM067, WLMM073, WLMM079, WLMM109, WLMM114, WLMM118, WLMM150 and WLMM174) were sighted for more than once.

Seven individuals including SLMM007, SLMM037, WLMM001, WLMM027, WLMM065, WLMM067 and WLMM114 were re-sighted in different survey areas during this reporting period. The most frequently re-sighted individuals in this reporting quarter is SLMM007 which was successfully identified five times. The number of CWD individuals re-sighted more than once and the number of CWD individuals showing cross-area movement in the current reporting period are

both higher than those of the previous reporting quarter from October to December 2021 (eight and five individuals respectively).

A summary of photo identification works is presented in **Table 2.19**. Representative photos of the 51 identified individuals and figures depicting the sighting locations of the aforementioned eight re-sighted individuals recorded in this reporting period are presented in **Appendix C**.

Table 2.19: Summary of Photo Identification

Individual ID	Date of sighting	Sighting Group No.	Area
NLMM013	15-Feb-22	1	NWL
NLMM016	3-Jan-22	3	NWL
NLMM028	15-Feb-22	1	NWL
NLMM063	3-Jan-22	3	NWL
NLMM082	3-Jan-22	2	NWL
NLMM083	3-Jan-22	2	NWL
NLMM084	8-Mar-22	1	NWL
SLMM002	11-Mar-22	2	WL
SLMM003	11-Mar-22	2	WL
SLMM007	5-Jan-22	10	WL
		13	WL
	10-Jan-22	3	WL
	19-Jan-22	2	SWL
	10-Feb-22	1	WL
SLMM010	10-Jan-22	3	WL
	11-Mar-22	2	WL
	15-Mar-22	2	WL
SLMM012	5-Jan-22	13	WL
	11-Mar-22	2	WL
	15-Mar-22	5	WL
SLMM025	15-Mar-22	5	WL
SLMM027	15-Mar-22	3	WL
SLMM029	10-Jan-22	3	WL
	15-Mar-22	2	WL
SLMM030	5-Jan-22	1	AW
SLMM037	5-Jan-22	13	WL
	13-Jan-22	3	SWL
	11-Mar-22	2	WL
SLMM044	5-Jan-22	8	WL
		13	WL
	15-Mar-22	3	WL
SLMM049	5-Jan-22	13	WL
SLMM052	5-Jan-22	10	WL
	15-Mar-22	1	WL
SLMM055	5-Jan-22	2	WL
		5	WL
SLMM060	14-Mar-22	6	SWL
SLMM064	19-Jan-22	2	SWL
SLMM073	5-Jan-22	10	WL
		13	WL
	10-Jan-22	3	WL
	10-Feb-22	1	WL
WLMM001	5-Jan-22	10	WL
		13	WL
	13-Jan-22	3	SWL
	15-Mar-22	5	WL
WLMM003	5-Jan-22	7	WL
		8	WL
		13	WL
WLMM019	15-Feb-22	1	NWL
WLMM027	3-Jan-22	2	NWL
	5-Jan-22	2	WL
WLMM028	10-Feb-22	1	WL
WLMM056	11-Mar-22	2	WL
WLMM063	11-Mar-22	2	WL
WLMM065	3-Jan-22	3	NWL
	5-Jan-22	5	WL
		6	WL
WLMM067	5-Jan-22	11	WL
	19-Jan-22	2	SWL
	15-Mar-22	1	WL
		3	WL
WLMM071	8-Mar-22	1	NWL
WLMM073	5-Jan-22	7	WL
	15-Mar-22	3	WL
WLMM079	10-Jan-22	2	WL
	15-Mar-22	3	WL
WLMM095	5-Jan-22	4	WL
WLMM109	10-Feb-22	1	WL
	11-Mar-22	2	WL
	15-Mar-22	4	WL
WLMM114	13-Jan-22	3	SWL
	10-Feb-22	1	WL
	11-Mar-22	2	WL
WLMM118	5-Jan-22	7	WL
		13	WL
WLMM131	3-Jan-22	2	NWL
WLMM141	10-Jan-22	3	WL
WLMM149	8-Mar-22	1	NWL
WLMM150	15-Mar-22	1	WL
		3	WL
WLMM152	10-Feb-22	1	WL
WLMM165	5-Jan-22	2	WL
WLMM168	8-Mar-22	1	NWL
WLMM171	5-Jan-22	13	WL
WLMM172	11-Mar-22	1	WL
WLMM173	11-Mar-22	2	WL
WLMM174	11-Mar-22	2	WL
	15-Mar-22	4	WL

2.5.2.2 Land-based Theodolite Tracking Survey

Survey Effort

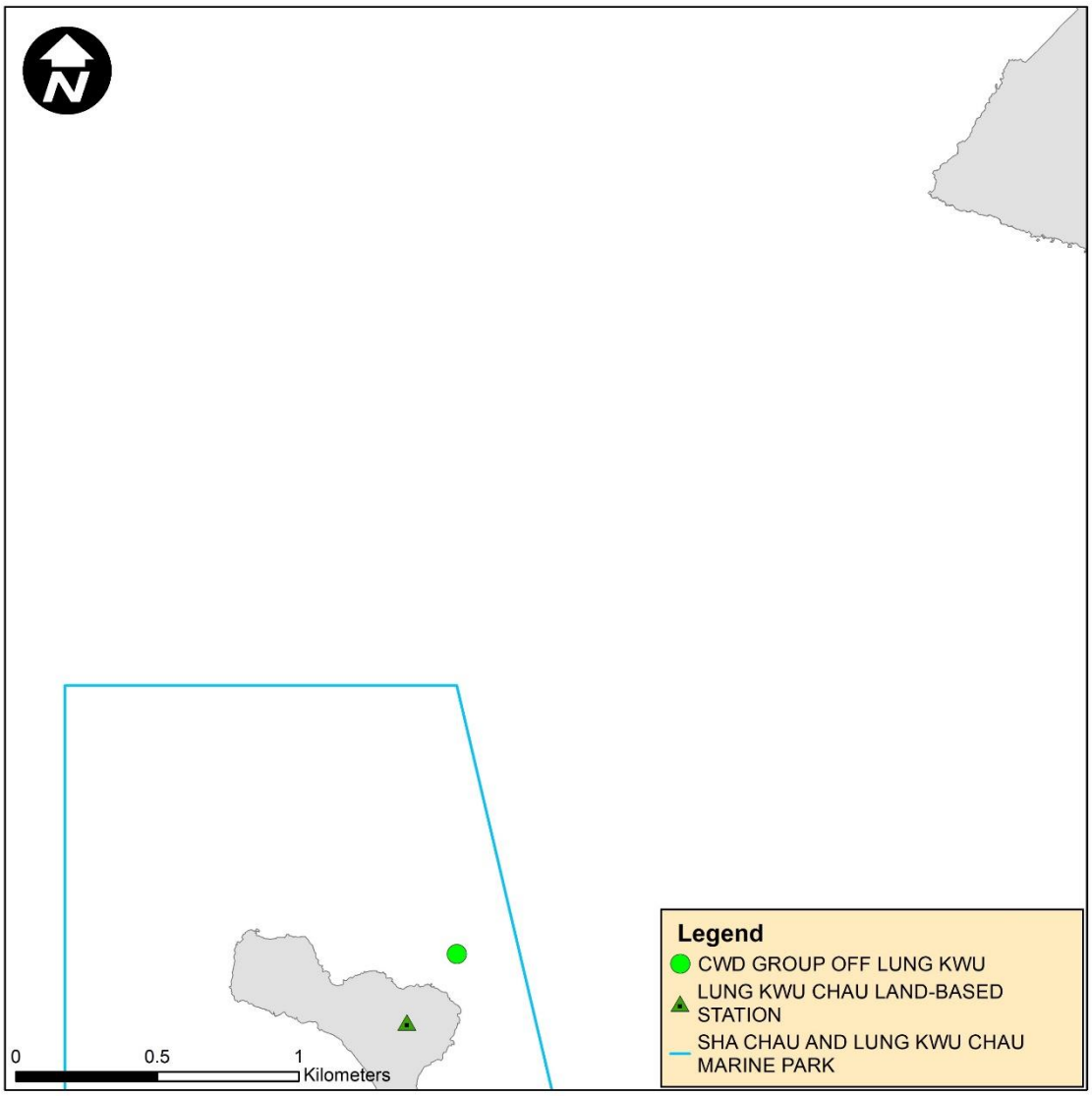
Between January and March 2022, a total of six days of land-based theodolite tracking survey effort were completed, including three days on Lung Kwu Chau and three days on Sha Chau. In total, one CWD group were tracked from the Lung Kwu Chau station while no CWD groups were tracked from the Sha Chau station, with an overall 0.03 CWD groups sighted per survey hour.

Information on survey effort and CWD groups sighted during land-based theodolite tracking surveys are presented in **Table 2.20**. Details on the survey effort and CWD groups tracked are presented in **Appendix C**. The first sighting locations of CWD groups tracked between January and March 2022 are shown in **Figure 2.9**.

Table 2.20: Summary of Survey Effort and CWD Group of Land-based Theodolite Tracking Survey

Land-based Station	# of Survey Sessions	Survey Effort (hh:mm)	# CWD Groups Sighted	CWD Group Sighting per Survey Hour
January 2022				
Lung Kwu Chau	1	06:00	0	0
Sha Chau	1	06:00	0	0
TOTAL	**2**	**12:00**	**0**	**0**
February 2022				
Lung Kwu Chau	1	06:00	0	0
Sha Chau	1	06:00	0	0
TOTAL	**2**	**12:00**	**0**	**0**
March 2022				
Lung Kwu Chau	1	06:00	1	0.17
Sha Chau	1	06:00	0	0
TOTAL	**2**	**12:00**	**1**	**0.08**
OVERALL	**6**	**36:00**	**1**	**0.03**

Figure 2.9: Plots of First Sightings of All CWD Groups from Land-based Stations



Remark: Marine park excludes land area and the landward boundary generally follows the high water mark along the coastline.

2.5.2.3 Progress Update on PAM

PAM device has been deployed and positioned to the south of Sha Chau island inside the SCLKCMP (**Figure 2.10**), supplement the detection of CWD presence in the south Sha Chau area that are not recorded visually by the land-based theodolite tracking survey and to coincide the theodolite data when there is sighting from the land-based station at Sha Chau. Both C-POD and F-POD are considered as effective PAM devices in detecting CWD occurrence, and F-POD was the main PAM device deployed where feasible. In this reporting period, the F-POD has been retrieved on 10 January 2022 and 8 March 2022 for data collection and was subsequently re-deployed. As the period of data collection and analysis takes more than four months, PAM results could not be reported in quarterly intervals but report for supplementing the annual CWD monitoring analysis.

2.5.2.4 Site Audit for CWD-related Mitigation Measures

During the reporting period, teams of at least two dolphin observers were deployed at 1 to 2 dolphin observation stations by the contractors for continuous monitoring of the DEZ for DCM related works (till end of March 2022) and seawall construction works (up to January 2022) 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 704 individuals being trained and the training records were kept by the ET. From the contractors' DEZ monitoring records, no dolphin or other marine mammals were observed within or around the DEZ in this reporting period. The 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 2.7**. Summary of audits of SkyPier HSFs route diversion and speed control and construction vessel management are presented in **Section 2.8** and **Section 2.9** respectively.

2.6 Sewage Flow Monitoring

In accordance with the approved EIA Report (AEIAR-185/2014) for Expansion of Hong Kong International Airport into a Three-Runway System (3RS), the gravity sewer from the airport discharge manhole to TCSPS was recommended to be upgraded by AAHK to cater for the ultimate design sewage flow from the expanded airport. It was recommended in section 6.2.1.1 of the Manual that AAHK should conduct annual monitoring for the sewage flow build-up of the gravity sewer from the airport discharge manhole to TCSPS one year before the scheduled commencement of operation of the proposed third runway. The annual monitoring results shall inform the timing of commencement of the planning of the sewer upgrading works. The sewage flow monitoring methodology paper (the Paper) was prepared, submitted and subsequently approved by EPD on 21 June 2021.

2.6.1 Brief Summary of the Agreed Method

With reference to the Paper, the existing sewer to be monitored is the section between FMH7042035 (reference point A) and FMH7043286 (reference point C). A schematic diagram of the sewage system between reference point A and C is presented in **Figure 2.11**. The locations of these reference points are presented in **Figure 2.12**. To determine if the threshold of 80% of the design capacity is being reached, an approach using the Colebrook-White equation was used.

Two pipe segments between reference points A and C were identified with the lowest flow capacity and therefore selected as the benchmark for comparing the actual sewage flow of the sewers for the flow monitoring:

- Segment 1: for sewage pipelines serving the airport – the critical segment is the 1050mm sewer between manholes FMH7042032 and FMH7042033, where the 80% threshold of full flow capacity is 53,395.2 m^3/day; and
- Segment 2: for the sewage pipelines serving the airport and catchment L4 – the critical segment is the 1050mm sewer between manholes FMH7043288 and FMH7043287, where the of 80% threshold of full flow capacity is 57,628.8 m^3/day.

According to the Paper, segment 1 would reach its 80% full flow capacity before segment 2. Hence, segment 1 was considered the critical segment within the section between reference points A and C, and it was agreed to conduct sewage flow monitoring for segment 1 only. With the daily flow rate of SPS-1, which collects sewage arising from the Airport, is available from AAHK, desk-based flow monitoring would be conducted by comparing the daily average flow rate of SPS-1 (i.e. Q1) against the threshold of 80% of pipe capacity of segment 1 (i.e. 53,395.2 m^3/day) in accordance with the following criteria:

- If Q1 ≤ 53,395.2 m^3/day, planning of sewerage upgrading works can be on hold until results of next annual monitoring; and
- If Q1 > 53,395.2 m^3/day, planning of sewerage upgrading works shall be considered to start and annual monitoring shall be discontinued.

Within the monitoring period, if the daily average flow rate of SPS-1 (i.e. Q1) is higher than the threshold of 53,395.2 m^3/day, planning of sewerage upgrading works shall be considered to start and the annual monitoring shall be discontinued. The above approach was agreed to be adopted as part of annual monitoring for the sewage flow increment of the concerned gravity sewer in 2021 and 2022.

2.6.2 Desk-Based Monitoring Result

To fulfil the requirements as mentioned in previous section, the annual sewage flow monitoring has been started since June 2021. According to the daily flow monitoring record of SPS-1 from January to March 2022 (see **Appendix C**), the daily average flow of 11,765 m^3/day for January 2022, 10,731 m^3/day for February 2022 and 10,610 m^3/day for March 2022 were well below the above-mentioned threshold of 53,395.2 m^3/day. For the subsequent sets of sewage flow monitoring data for SPS-1, it would be presented in upcoming Quarterly and Annual EM&A Reports.

2.7 Environmental Site Inspection

Due to the COVID-19 pandemic, remote and physical site inspections of the construction works to audit the implementation of proper environmental pollution control and mitigation measures for the Project were conducted by ET and IEC on a weekly and bi-weekly basis, respectively. Besides, physical ad-hoc site inspections were also conducted by ET and IEC if environmental problems were identified, or subsequent to receipt of an environmental complaint, or as part of the investigation work. These site inspections provided a direct means to reinforce the specified environmental protection requirements and pollution control measures in construction sites.

During site inspections, environmental situation, status of implementation of pollution control and mitigation measures were observed. Environmental documents and site records, including waste disposal record, maintenance record of environmental equipment, and relevant environmental permit and licences, were also checked on-site. Observations were recorded in the site inspection checklist and passed to the contractor together with the appropriate recommended mitigation measures where necessary in order to advise contractors on environmental improvement, awareness and on-site enhancement measures. The observations were made with reference to the following information during the site inspections:

- The EIA and EM&A requirements;
- Relevant environmental protection laws, guidelines, and practice notes;
- The EP conditions and other submissions under the EP;
- Monitoring results of EM&A programme;
- Works progress and programme;
- Proposal of individual works;
- Contract specifications on environmental protection; and
- Previous site inspection results.

Good site practices were implemented in the project to enhance environmental performance. Key examples implemented in the Project are highlighted as below:

1. Automatic wheel wash system was installed and implemented within the construction site to ensure no earth, mud, debris, and the like is deposited by vehicles to public areas.

2. Regular maintenance for wastewater treatment facility was provided by contractor to ensure its proper and efficient operation in particular during rainstorm.
3. Tool-box talk was provided to workers for proper waste management and marine sediment handling procedures.

		
Use of automatic wheel wash system for dust suppression purpose	Provision of regular maintenance for wastewater treatment facility	Provision of tool-box talk for site personnel

Besides, advice was given when necessary to ensure the construction workforce were familiar with relevant procedures, and to maintain good environmental performance on site. Regular toolbox talks on environmental issues were organised for the construction workforce by the contractors to ensure understanding and proper implementation of environmental protection and pollution control mitigation measures.

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**.

2.7.1 Landscape and Visual Mitigation Measures

Implementation of applicable landscape and visual mitigation measures (reference to the environmental protection measures CM1 – CM10 in **Appendix B**) is monitored regularly in accordance with the Manual. The implementation status of the environmental protection measures is summarised in **Table 2.21**. For trees which were managed under the Project during the reporting period, relevant measures have been implemented by Contracts 3302, 3303, 3508, 3602 and 3801. The total number of retained trees, transplanted trees and to-be-transplanted trees under the management of Project are summarized in **Table 2.22.**

The total number of retained trees of the Project as of March 2022 remained unchanged (i.e. 52) comparing to the previous reporting period. Moreover, the total provisional number of trees under the Project was reduced from 51 to 50 as one tree was found duplicated. Details of the summary of transplanted trees is shown in **Table 2.23**. Photos of the transplanted trees are presented in **Table 2.24**.

Table 2.21: Landscape and Visual – Construction Phase Audit Summary

Landscape and Visual Mitigation Measures during Construction Implementation Status	Implementation Status	Relevant Contract(s) in the Reporting Period
CM1- The construction area and contractor's temporary works areas shall be minimised to avoid impacts on adjacent landscape.	The implementation of mitigation measures were checked by ET during weekly site inspection and clarified by the Contractors during the monthly Environmental Management Meetings. Implementation of the measures CM5, CM6 and CM7 by Contractors was observed.	All works contracts
CM2 – Reduction of construction period to practical minimum.		
CM3 – Phasing of the construction stage to reduce visual impacts during the construction phase.		

Landscape and Visual Mitigation Measures during Construction Implementation Status	Implementation Status	Relevant Contract(s) in the Reporting Period
CM4 – Construction traffic (land and sea) including construction plants, construction vessels and barges shall be kept to a practical minimum.		
CM5 – Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.		
CM6 – Avoidance of excessive height and bulk of site buildings and structures		
CM7 – Control of night-time lighting by hooding all lights and through minimisation of night working periods		
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	Tree Protection Specifications have been provided in the relevant Contract Specifications respectively for implementation by the Contractors under the Project. The Contractors' performance on the implementation of the trees maintenance and protection measures were observed and checked by the ET weekly during construction period.	3302, 3508, 3602, 3801
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	Tree Transplanting Specifications have been provided in the relevant Contract Specifications respectively for implementation by the Contractors under the Project where trees will unavoidably be affected by the construction works. The Contractors were required to submit Method Statements for tree transplanting prior to the transplanting works. Tree inspections were conducted by ET to check the tree transplanting works implemented by the Contractors on site. The Contractors' performance on the implementation of trees maintenance and protection measures on transplanted trees were observed and checked by the ET bi-monthly during the 12-month establishment period after the completion of each batch of transplanting works. Long term management of the transplanted trees were currently monitored by ET annually.	3508, 3801
CM 10 – Land formation works shall be followed with advanced hydroseeding around taxiways and runways as soon as practical	To be implemented around taxiways and runways as soon as practicable.	3303

Table 2.22: Summary of the Number of Retained, Transplanted and To-be-transplanted Trees in the Reporting Period

Existing				
Contract	Retain (nos.)	Transplanted (nos.)		To-be-transplanted (nos.)
		Establishment Period	Maintenance Period	
3302	9	0	0	0
3503	0	0	9	0

Existing				
3508[1]	24	12	0	0
3602	2	0	0	0
3801	17	0	5 [2]	0
Sub-total	52	12	14	0
Provisional				
Contract	**Retain (nos.)**	**Transplanted (nos.)**		**To-be-transplanted (nos.)**
3508[1]	50	0		10
Sub-total	50	0		10
Grand Total	**102**	**26**		**10**

Notes:

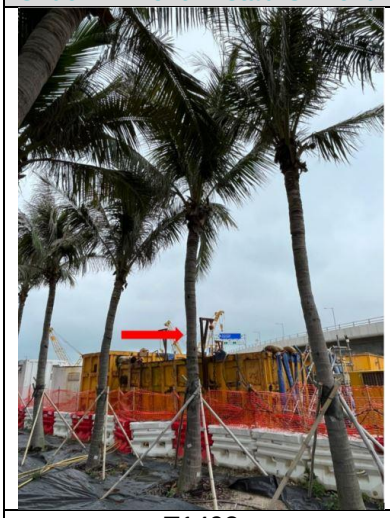
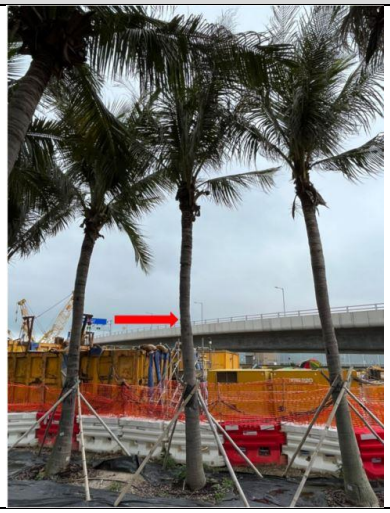
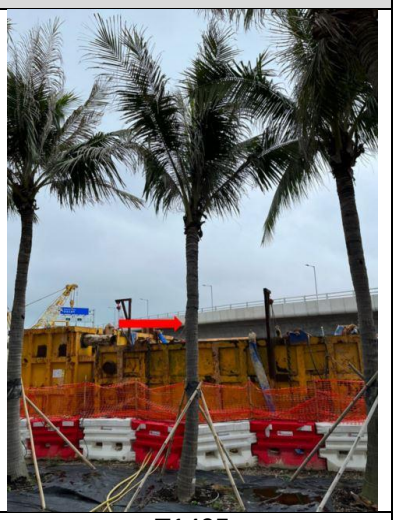
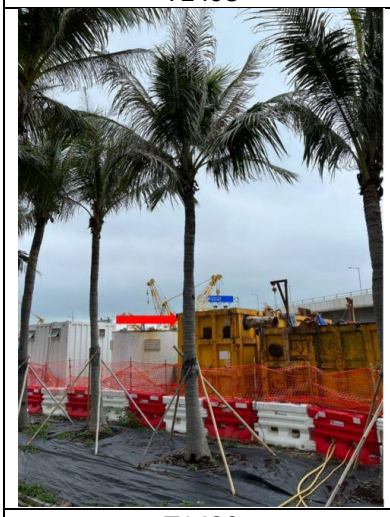
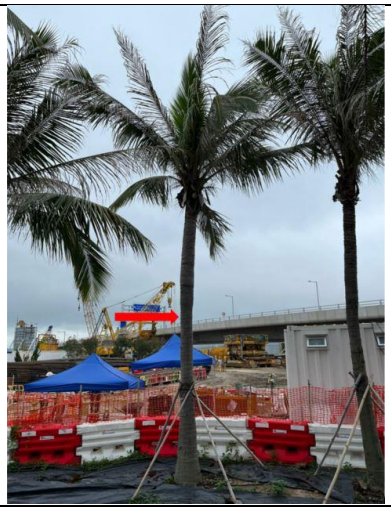
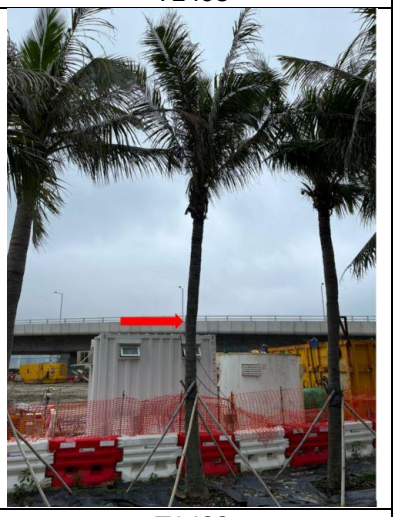
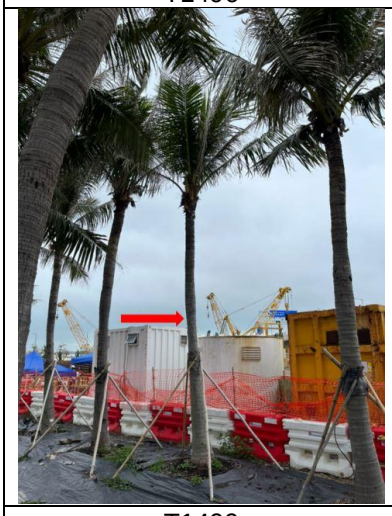
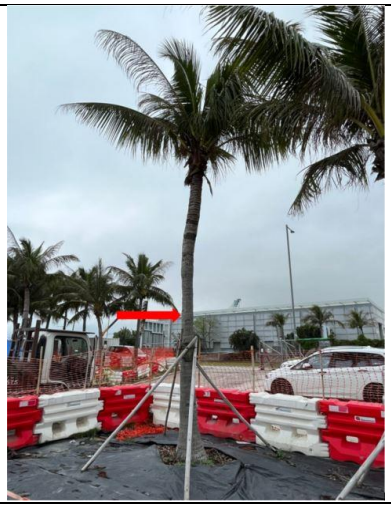
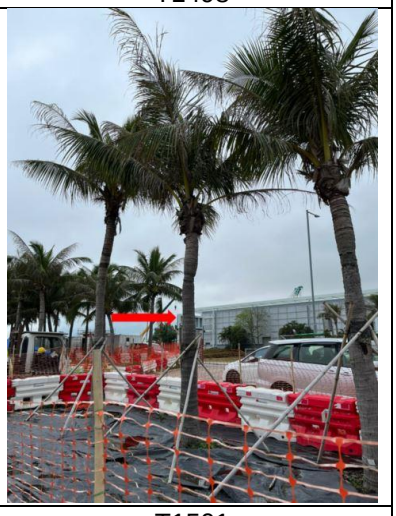
(1) As some of the site areas have been handed over to Contract 3508, existing trees to be managed by Contract 3508 is subject to change after initial tree surveys for each batch of handed over site areas have been conducted by the Contractor.
(2) Three transplanted trees (CT1194, CT1794 and CT1795) were subsequently fell after transplantation. Please refer to **Table 2.23** for details.

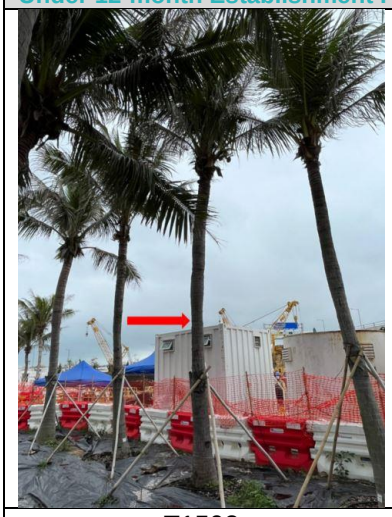
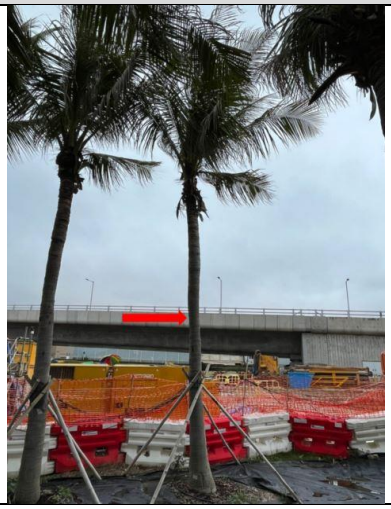
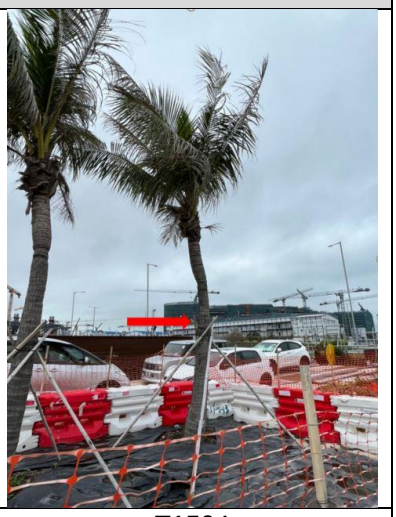
Table 2.23: Summary of the Transplanted Trees Updated in the Reporting Period

Tree ID	Transplant Date	Management Stage	Management Agency	Remarks
CT276	3 May 2018	Long Term Management period Jun 2019 – May 2028	Southern Landside Petrol Filling Station	Establishment Period was completed. Next inspection will be conducted in February 2023. Photos of the last inspection in February 2022 were shown in **Table 2.24**.
CT1253	4 May 2018	Long Term Management period Jun 2019 – May 2028	Southern Landside Petrol Filling Station	
T835	22 Jan 2020	Long Term Management period Feb 2021 – Jan 2030	AAHK	Establishment Period was completed. Next inspection will be conducted in February 2023. Photos of the last inspection in February 2022 were shown in **Table 2.24**.
T836	13 Dec 2019	Long Term Management period Feb 2021 – Jan 2030	AAHK	
T838	22 Jan 2020	Long Term Management period Feb 2021 – Jan 2030	AAHK	
T812	21 Dec 2020	Long Term Management period Jan 2022 – Dec 2031	AAHK	Establishment Period was completed. Next inspection will be conducted in December 2022. Photos of the last inspection in December 2021 can be referred to Table 7.7 of the Construction Phase Monthly EM&A Report No.72.
T814	20 Dec 2020	Long Term Management period Jan 2022 – Dec 2031	AAHK	
T815	15 Dec 2020	Long Term Management period Jan 2022 – Dec 2031	AAHK	
T829	18 Dec 2020	Long Term Management period Jan 2022 – Dec 2031	AAHK	
T830	14 Dec 2020	Long Term Management period Jan 2022 – Dec 2031	AAHK	
T831	19 Dec 2020	Long Term Management period Jan 2022 – Dec 2031	AAHK	
T1493	6 Jul 2021	Establishment period 7 Jul 2021 – Jul 2022	Contract 3508	Next inspection will be conducted in May 2022. Photos of the last inspection in March 2022 were shown in **Table 2.24**.
T1494	6 Jul 2021	Establishment period 7 Jul 2021 – Jul 2022	Contract 3508	
T1495	10 Jul 2021	Establishment period 11 Jul 2021 – Jul 2022	Contract 3508	
T1496	5 Jul 2021	Establishment period 6 Jul 2021 – Jul 2022	Contract 3508	

Tree ID	Transplant Date	Management Stage	Management Agency	Remarks
T1497	5 Jul 2021	Establishment period 6 Jul 2021 – Jul 2022	Contract 3508	
T1498	29 Jun 2021	Establishment period 30 Jun 2021 – Jul 2022	Contract 3508	
T1499	29 Jun 2021	Establishment period 30 Jun 2021 – Jul 2022	Contract 3508	
T1500	30 Jun 2021	Establishment period 1 Jul 2021 – Jul 2022	Contract 3508	
T1501	30 Jun 2021	Establishment period 1 Jul 2021 – Jul 2022	Contract 3508	
T1502	5 Jul 2021	Establishment period 6 Jul 2021 – Jul 2022	Contract 3508	
T1503	6 Jul 2021	Establishment period 7 Jul 2021 – Jul 2022	Contract 3508	
T1504	24 Jun 2021	Establishment period 25 Jun 2021 – Jul 2022	Contract 3508	
CT1194	4 May 2018	Long Term Management period Jun 2019 – May 2028	Southern Landside Petrol Filling Station	Uprooted and collapsed due to Typhoon Higos on 18 August 2020. Tree removal was conducted as recommended by tree specialist of the contractor of Southern Landside Petrol Filing Station.
CT1794	3 May 2018	Long Term Management period Jun 2019 – May 2028	AsiaWorld-Expo	The tree within the land parcel was acquired by the government for construction of emergency hospital to handle COVID19 pandemic at AsiaWorld-Expo. The tree was felled in late 2020.
CT1795	3 May 2018	Long Term Management period Jun 2019 – May 2028	AsiaWorld-Expo	The tree within the land parcel was acquired by the government for construction of emergency hospital to handle COVID19 pandemic at AsiaWorld-Expo. The tree was felled in late 2020.

Table 2.24: Photos of the Existing Transplanted Trees Inspected in the Reporting Period

Under 12-month Establishment Period:		
		
T1493	T1494	T1495
		
T1496	T1497	T1498
		
T1499	T1500	T1501

Under 12-month Establishment Period:		
		
T1502	T1503	T1504
Under 10-year Long-term Management:		
		
CT276	CT1253	T835
		
T836	T838	

2.7.2 Land Contamination Assessment

The Supplementary CAP was submitted to EPD pursuant to EP Condition 2.20. The CARs for Golf Course and T2 Emergency Power Supply Systems (EPSS) were submitted to EPD in accordance with EP Condition 1.9 and the Supplementary CAP in which no land contamination

issues were identified. EPD has issued no further comment for aforesaid CARs. No leakage was found after the removal of underground fuel pipelines and all required additional photos have been submitted to EPD.

According to the approved supplementary CAP, there are 3 remaining locations where site re-appraisal / additional site investigation are proposed. Based on the latest construction information, which has been presented in Appendix A Implementation Schedule of the approved CARs for T2 EPSS, there is no development programme for these locations at this stage. As such, the status of site re-appraisal/ additional site investigation will be further updated upon latest development programme is available.

2.8 Audit of SkyPier High Speed Ferries

The Marine Travel Routes and Management Plan for High Speed Ferries of SkyPier (the SkyPier Plan) was submitted to the Advisory Council on the Environment for comment and subsequently submitted to and approved by EPD in November 2015 under EP Condition 2.10. The approved SkyPier Plan is available on the dedicated website of the Project. In the SkyPier Plan, AAHK has committed to implement the mitigation measure of requiring HSFs of SkyPier travelling between HKIA and Zhuhai / Macau to start diverting the route with associated speed control across the area, i.e. Speed Control Zone (SCZ), with high CWD abundance. The route diversion and speed restriction at the SCZ have been implemented since 28 December 2015.

Due to the COVID-19 pandemic, all SkyPier HSF services to/from Zhuhai and Macau have been suspended from 25 March 2020 until further notice. Limited HSF services from other destination, which does not require the use of the diverted route, were provided starting from 28 October 2020.

No ferry movement between HKIA SkyPier to/from Zhuhai and Macau was recorded in the reporting period. The daily movements of all SkyPier HSFs in the reporting period, including those not using the diverted route, ranged between 2 and 4, which fell within the maximum daily cap number of 125.

As updated by CLP Power, the construction works of the Hong Kong Offshore LNG Terminal Project may affect the route diversion operation of the SkyPier HSFs from Q1 to Q2 2022. The captains were informed on the issue and ET will continue to closely monitor the implementation of the SkyPier Plan in the period.

2.9 Audit of Construction and Associated Vessels

On the implementation of the updated Marine Travel Routes and Management Plan for Construction and Associated Vessels (MTRMP-CAV), the Maritime Surveillance System (MSS) automatically recorded deviation cases such as speeding, entering no entry zone, and not traveling through the designated gates. ET conducted bi-weekly audit of relevant information including AIS data, vessel tracks and other relevant records to ensure sufficient information were provided by the system and the contractors complied with the requirements of the MTRMP-CAV. The contactors submitted 3-month rolling vessel plans for construction vessel activities to AAHK in order to help maintain the number of construction vessels to a practicable minimum. The IEC also performed audit on the compliance of the requirements as part of the EM&A programme.

During the reporting period, deviations including speeding within the works area, entry from non-designated gates, and entering no-entry zones were identified. After investigation by the contractor's Construction Traffic Control Centre (CTCC) representatives, all the concerned captains were reminded to comply with the requirements of the MTRMP-CAV.

Based on updated record, only one skipper training workshop was held by ET during the reporting period and a concerned captain of construction vessels associated with the 3RS contracts was trained to familiarise him 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 9 skipper training workshops were held with 9 captains by contractors' Environmental Officers and competency tests were conducted subsequently with the trained captains by ET.

2.10 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

Three environmental complaints were received during the reporting period. All were attended to and investigations were conducted by the ET in accordance with the Manual and the Complaint Management Plan. A summary of the complaints and analyses is presented in **Table 3.1.**

Table 3.1: Summary of Environmental Complaints

Date of Complaint Received	Details	Analysis/ Remedial Actions	Status
18 February 2022	A complaint regarding suspected dump truck for garbage disposal that was not properly covered was received.	A complaint regarding suspected dump truck for garbage disposal that was not properly covered and leaving the 3RS construction site area to landfill was received on 18 February 2022. The case was investigated by ET in accordance with the Manual and the Complaint Management Plan of the Project. The ET identified a related contractor and requested them to provide information. According to the reply, the contractor reported they had dump trucks for the disposal of garbage going to landfill by marine route during the period of investigation, stating their dump trucks were covered entirely and checked by site supervisors before leaving the construction site and that refresher trainings on the proper covering of dump trucks were provided to their dump truck drivers, site foremen and frontline workers. Based on the ET's weekly site inspections, no item related to the covering of dump trucks was recorded. Having said that, during an ad-hoc inspection by EPD, ET, IEC, and AAHK, some dump trucks were observed not fully covered when leaving the construction site onto RoRo barges. To follow up, ET reminded the related contractor to ensure their garbage is placed properly inside the skip of dump trucks and not to overfill the skips. The related contractor conducted their own checking of each dump truck to ensure all dump trucks were covered properly. ET would continue to monitor contractor's performance and reminded all 3RS contractors to ensure the proper covering of dump trucks for garbage disposal and avoid the potential blowing away of waste materials from their dump trucks. Hence, the case was considered closed.	Closed
22 and 24 March 2022	Two complaints regarding alleged dumping of mud at 3RS construction site area were received.	The complaints were under investigation during the reporting period. Findings would be reported in the next Quarterly EM&A Report.	

3.2.2 Notifications of Summons or Status of Prosecution

Neither notification of summons nor prosecution was received during the reporting period.

3.3 Cumulative Statistics

Cumulative statistics on valid exceedance, non-compliance, complaints, notifications of summons and status of prosecutions are summarised in **Table 3.2** and **Table 3.3**.

Table 3.2: 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 Level	0	0
	Limit Level	0	0
Noise	Action Level	0	0
	Limit Level	0	0
Waste	Action Level	1	1
	Limit Level	0	0
Water	Action Level	0	0
	Limit Level	0	0
CWD	Action Level	0	0
	Limit Level	0	0

Remark: Non-project related triggers of Action or Limit Level are not shown in this table.

Table 3.3: 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	0	0
From 28 December 2015 to end of the reporting period	0	50	2	2

4 Conclusion and Recommendation

In the first quarter of 2022, the EM&A programme has been implemented as planned, including 96 sets of air quality measurements, 52 sets of construction noise measurements, 39 sets of water quality measurements, 6 complete sets of vessel line transect surveys and 6 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.

The key activities of the Project carried out in the reporting period included reclamation works and land-based works. Works in the reclamation areas included filling, seawall construction and ground improvement works, together with runway, concourse and associated works. Land-based works on existing airport island mainly involved airfield works, Terminal 2 expansion works, modification and tunnel work for APM and BHS, and preparation work for utilities, with activities include road and drainage works, cable ducting, demolition, piling, and excavation works.

Monitoring results of construction dust, construction noise, and CWD monitoring did not trigger the corresponding Action and Limit Levels during the reporting period.

For waste management, a complaint regarding to general refuse was received in this reporting period. This complaint triggered the relevant Action Level, and the corresponding investigation was subsequently conducted in accordance with the Manual and the Complaint Management Plan of the Project. To conclude, follow-up actions have been made by ET and the related contractor and the case was considered closed.

For water quality, the water quality monitoring results for all parameters, except SS, obtained during the reporting period were within the corresponding Action and Limit Levels stipulated in the EM&A programme. Relevant investigation and follow-up actions will be conducted according to the EM&A programme if the corresponding Action and Limit Levels are triggered. For SS, some testing results triggered the relevant Action Levels, and the corresponding investigations were conducted accordingly. The investigation findings concluded that the cases were not related to the Project. In summary, the construction activities undertaken during the reporting period did not introduce adverse impact to all water quality sensitive receivers.

Due to the COVID-19 pandemic, remote and physical site inspections of the construction works to audit the implementation of proper environmental pollution control and mitigation measures for the Project were conducted by ET and IEC on a weekly and bi-weekly basis, respectively. Site inspection findings were recorded in the site inspection checklists and provided to the contractors to follow up.

No HSF movement between HKIA SkyPier to/from Zhuhai and Macau was recorded during the reporting period. Therefore, no deviation was recorded in the HSF monitoring during the reporting period.

During the reporting period, ET conducted bi-weekly audit of the MSS to ensure the system recorded all deviation cases accurately and the contractors fully complied with the requirements of the MTRMP-CAV. Only one skipper training workshop was held by ET and 9 skipper training workshops were held by contractors' Environmental Officers during the reporting period and competency tests were conducted subsequently with the trained skippers by ET.

On the implementation of MMWP and DEZ Plan, dolphin observers were deployed by the contractors in accordance with the plans. No dolphin or other marine mammals were observed within or around the DEZ in this reporting period. Audits of contractors' implementation and

records, and also acoustic decoupling for construction vessels were carried out by the ET during site inspection.

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

Figures

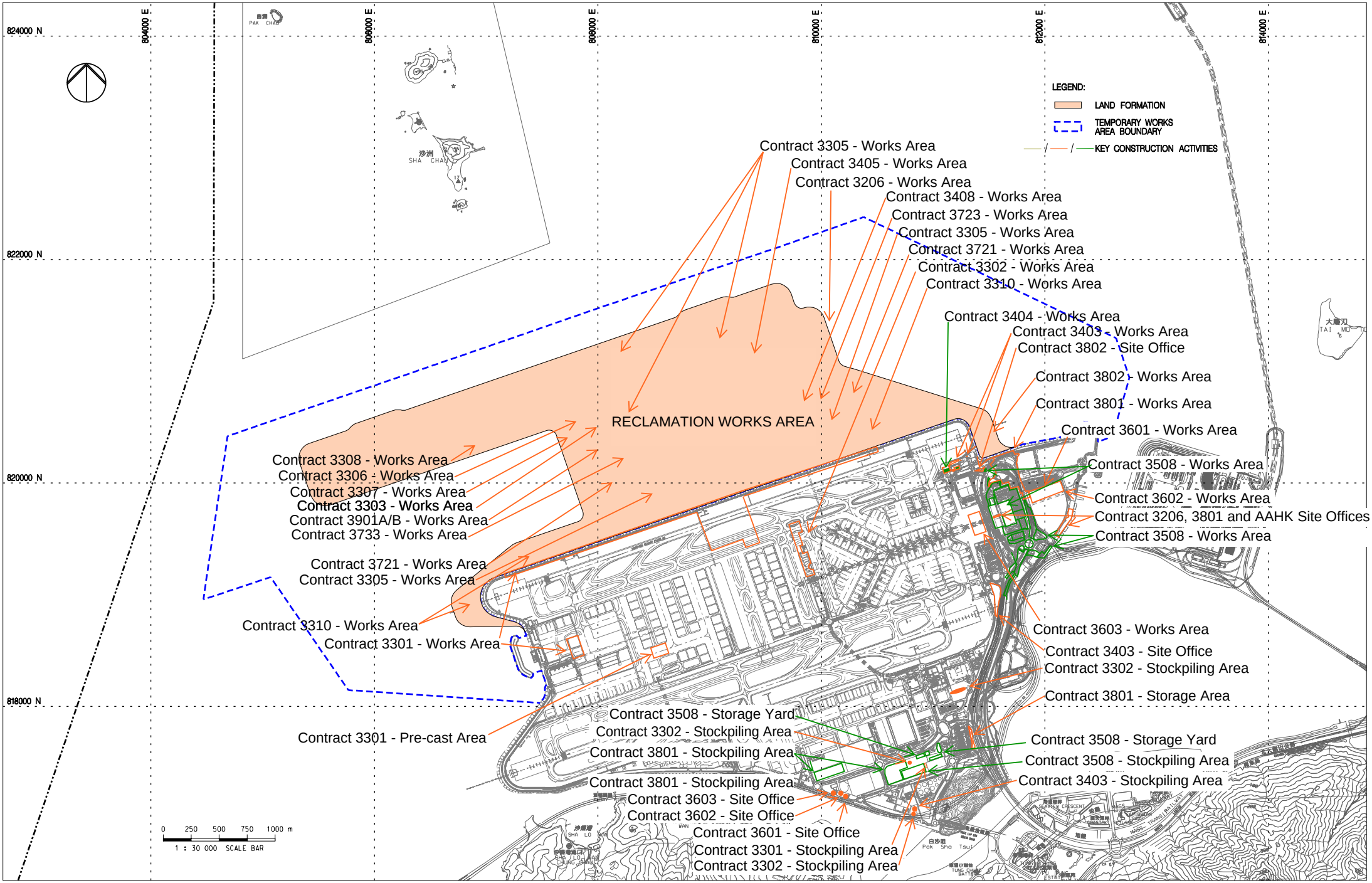
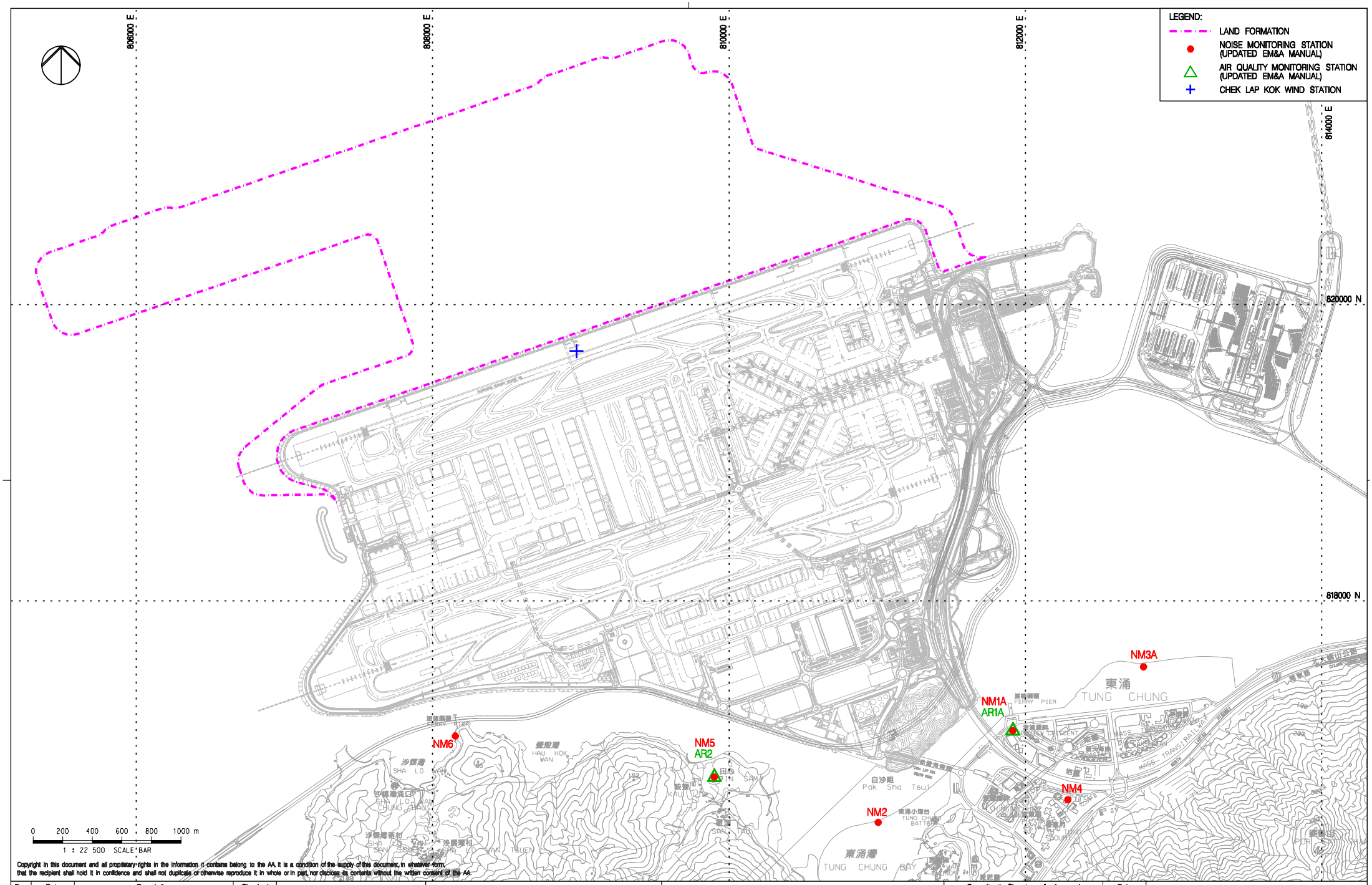


FIGURE 1.1 LOCATIONS OF KEY CONSTRUCTION ACTIVITIES

Note: The locations are for indicative purpose. The actual construction work locations are in accordnace with the construction work programme.



Rev.	Date	Description	Checked
A	06JAN16	FIRST ISSUE	RO
B	29JAN16	GENERAL REVISION	RO
C	11FEB16	GENERAL REVISION	RO
D	29OCT18	GENERAL REVISION	SH

香港國際機場 HONG KONG INTERNATIONAL AIRPORT

MOTT MACDONALD

Title

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

Consultant's Signatures for Approval		Date
Design	TK	29OCT18
Checkers	TK	29OCT18
Approver	EC	29OCT18

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

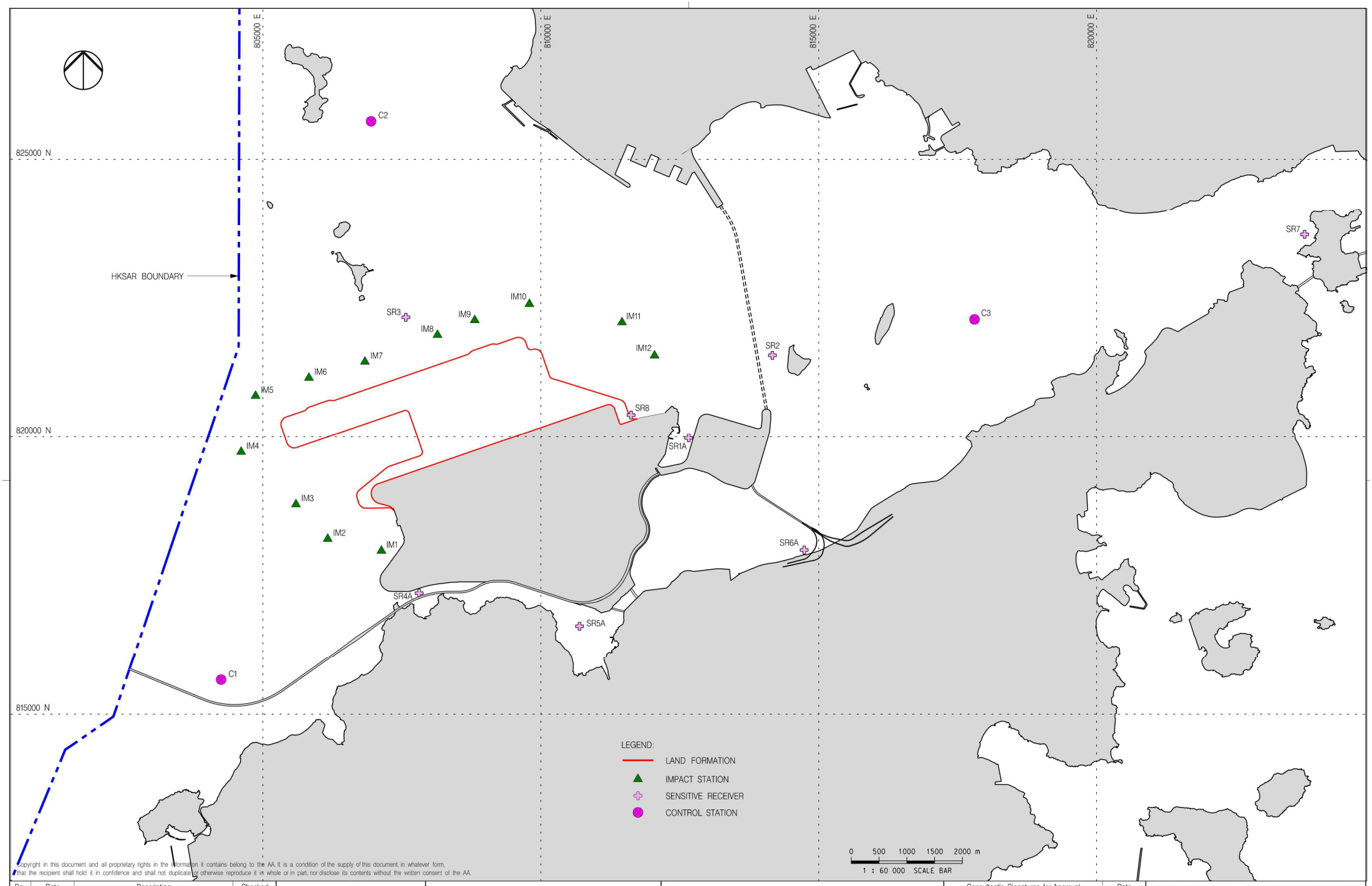
Drawing No.

FIGURE 2.1

Scale at A3 1 : 22500

Rev. D

Filename: J:\355482\REPORT\ENV\EMA\181029\FIG 2.1.dgn



Rev.	Date	Description	Checked
A	21AUG19	FIRST ISSUE	VL

香港國際機場 HONG KONG INTERNATIONAL AIRPORT

Airport Authority HKIA Tower, 1 Sky Plaza Road, Hong Kong, International Airport, Lantau, Hong Kong
Tel: (852) 2188 7111 Fax: (852) 2824 0711

MOTT MACDONALD

Title

WATER QUALITY MONITORING STATIONS
(before 25 January 2022)

Consultant's Signatures for Approval		Date
Design	DC	21AUG19
Checkers	DC / TK	21AUG19
Approver	EC	21AUG19

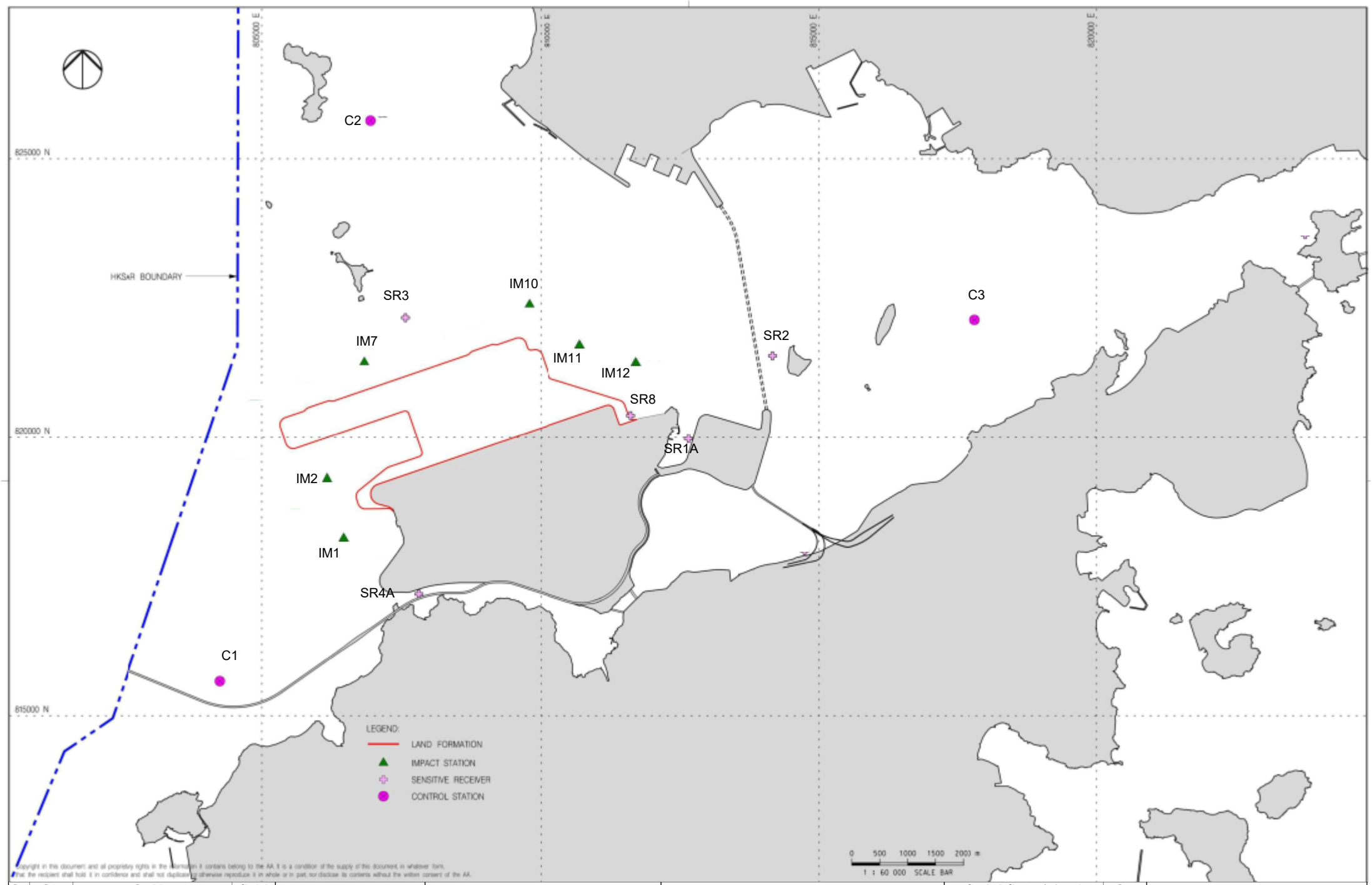
EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.
FIGURE 2.2a

Scale at A3
1 : 60000

Rev. A

Filename: J:\355482\REPORT\ENV\EMA\190821\FIG 4.1.dgn



Rev.	Date	Description	Checked
A	21AUG19	FIRST ISSUE	VL

香港國際機場 HONG KONG INTERNATIONAL AIRPORT

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

Title

WATER QUALITY MONITORING STATIONS
(on and after 25 January 2022)

Consultant's Signatures for Approval		Date
Design	DC	21AUG19
Checkers	DC / TK	21AUG19
Approver	EC	21AUG19

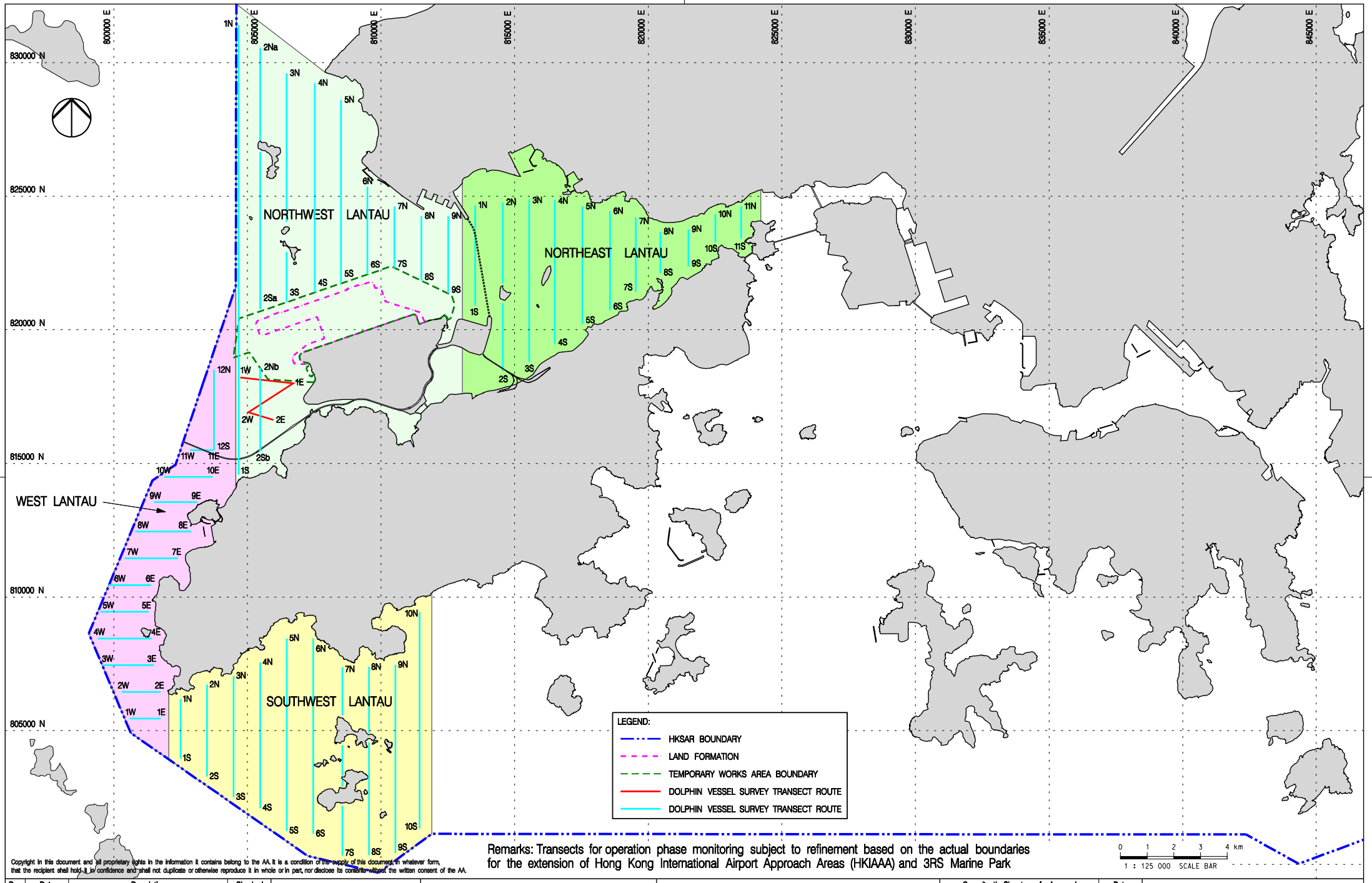
EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No.
FIGURE 2.2b

Scale at A3
1 : 60000

Rev. A

Filename: J:\355482\REPORT\ENV\EMA\190821\FIG 4.1.dgn



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
B	27JUL16	GENERAL REVISION	JT
C	06FEB17	GENERAL REVISION	JT
D	01MAR17	GENERAL REVISION	JT
E	29OCT18	GENERAL REVISION	SH
F	04APR19	GENERAL REVISION	SH

香港國際機場 HONG KONG INTERNATIONAL AIRPORT

MOTT MACDONALD

Title

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

Consultant's Signatures for Approval		Date
Design	JC	04APR19
Checkers	JC / TK	04APR19
Approver	EC	04APR19

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

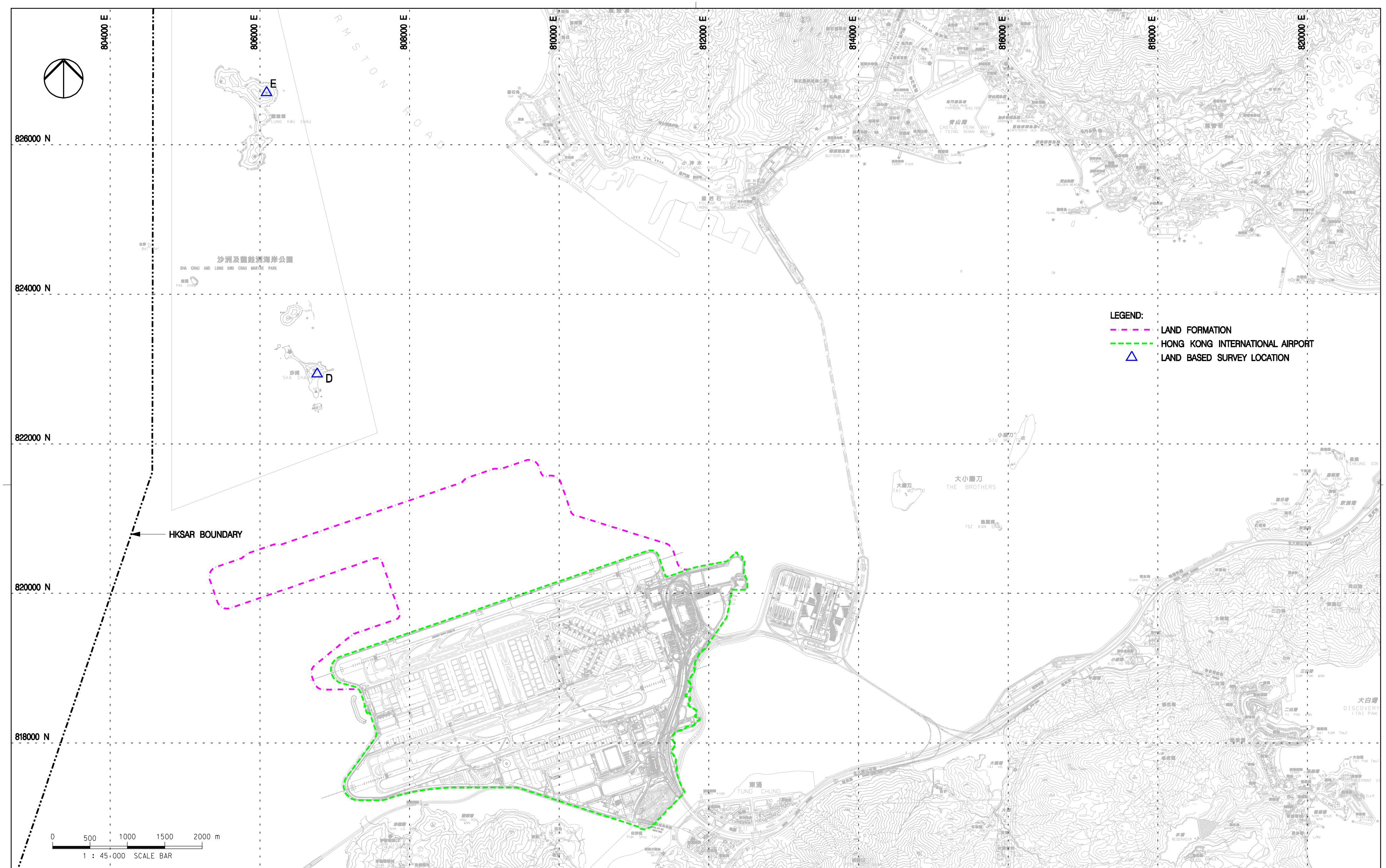
Drawing No.

FIGURE 2.3

Scale at A3 1 : 125000

Rev. F

Filename: J:\355482\REPORT\ENV\EMA\190404\FIG 6.1.dgn



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A	02DEC15	FIRST ISSUE	JC
B	06FEB17	GENERAL REVISION	JC
C	29OCT18	GENERAL REVISION	SH

香港國際機場 HONG KONG INTERNATIONAL AIRPORT
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MOTT MACDONALD

Title

LAND BASED DOLPHIN MONITORING IN BASELINE AND CONSTRUCTION PHASES

Consultant's Signatures for Approval		Date
Design	JC	29OCT18
Checkers	JC / TK	29OCT18
Approver	EC	29OCT18

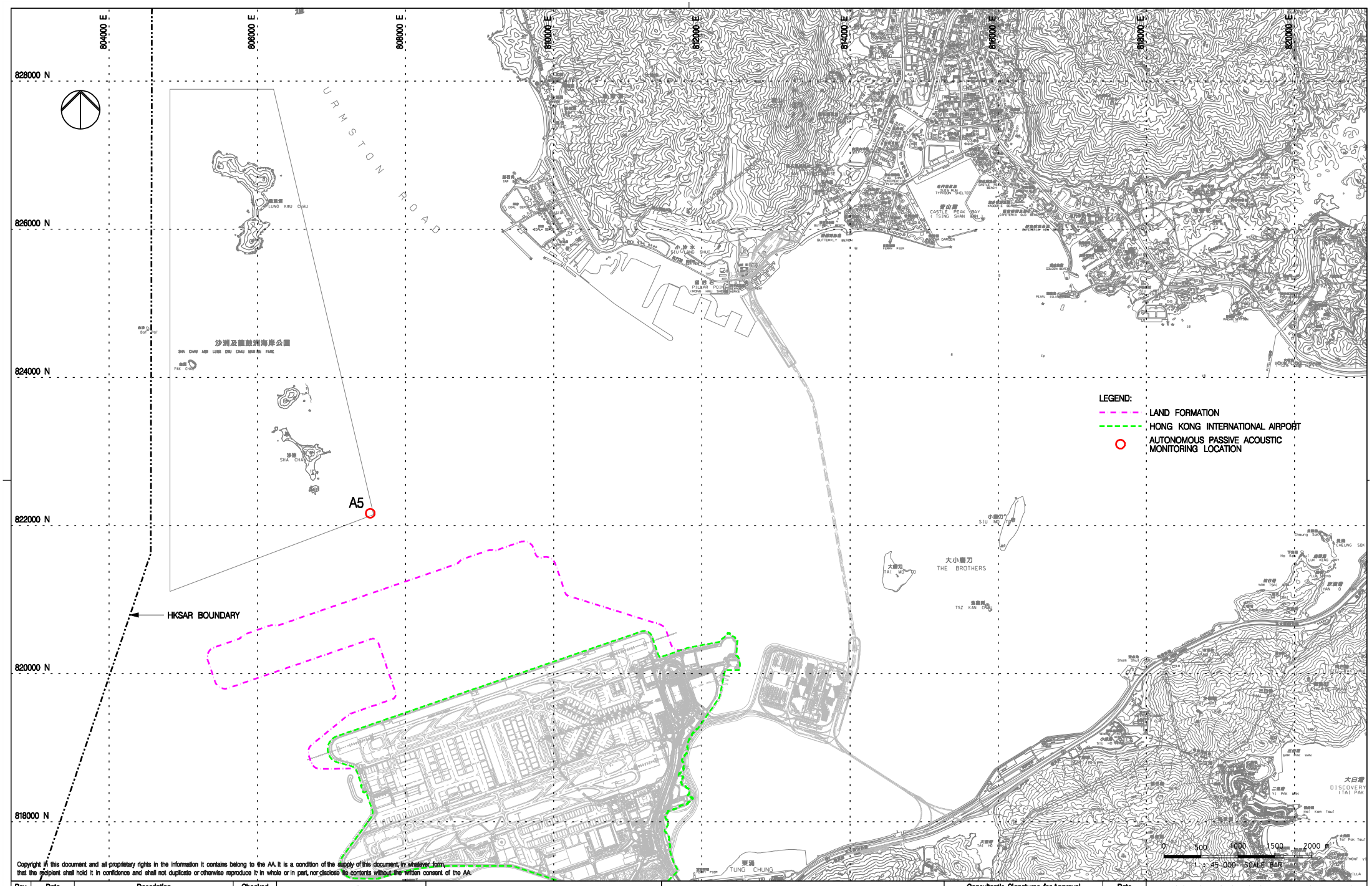
EXPANSION OF HONG KONG INTERNATIONAL AIRPORT INTO A THREE-RUNWAY SYSTEM

Drawing No. FIGURE 2.4

Scale at A3 1 : 45000

Rev. C

Filename: J:\355482\REPORT\ENV\EMA\181029\FIG 2.5.dgn



Rev.	Date	Description	Checked
A	29AUG17	FIRST ISSUE	JT
B	10OCT17	GENERAL REVISION	PL
C	29OCT18	GENERAL REVISION	SH

香港國際機場 HONG KONG INTERNATIONAL AIRPORT

MOTT MACDONALD

Title

LOCATION FOR AUTONOMOUS PASSIVE ACOUSTIC MONITORING

Consultant's Signatures for Approval		Date
Design	JC	29OCT18
Checkers	JC / TK	29OCT18
Approver	EC	29OCT18

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

Drawing No.

FIGURE 2.10

Scale at A3 1 : 45000

Rev. C

Filename: J:\355482\REPORT\ENV\EMA\181029\FIG 2.11.dgn

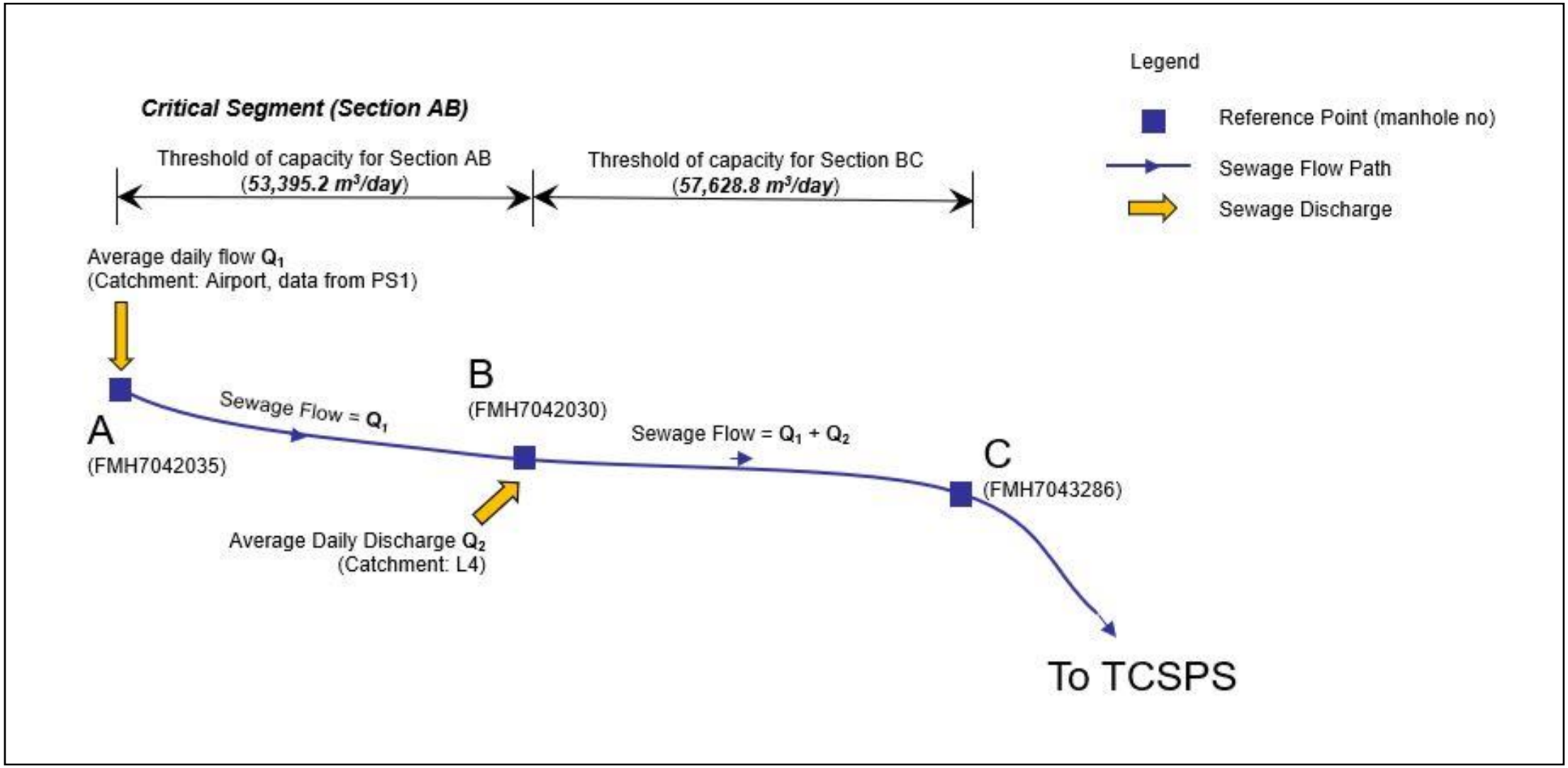
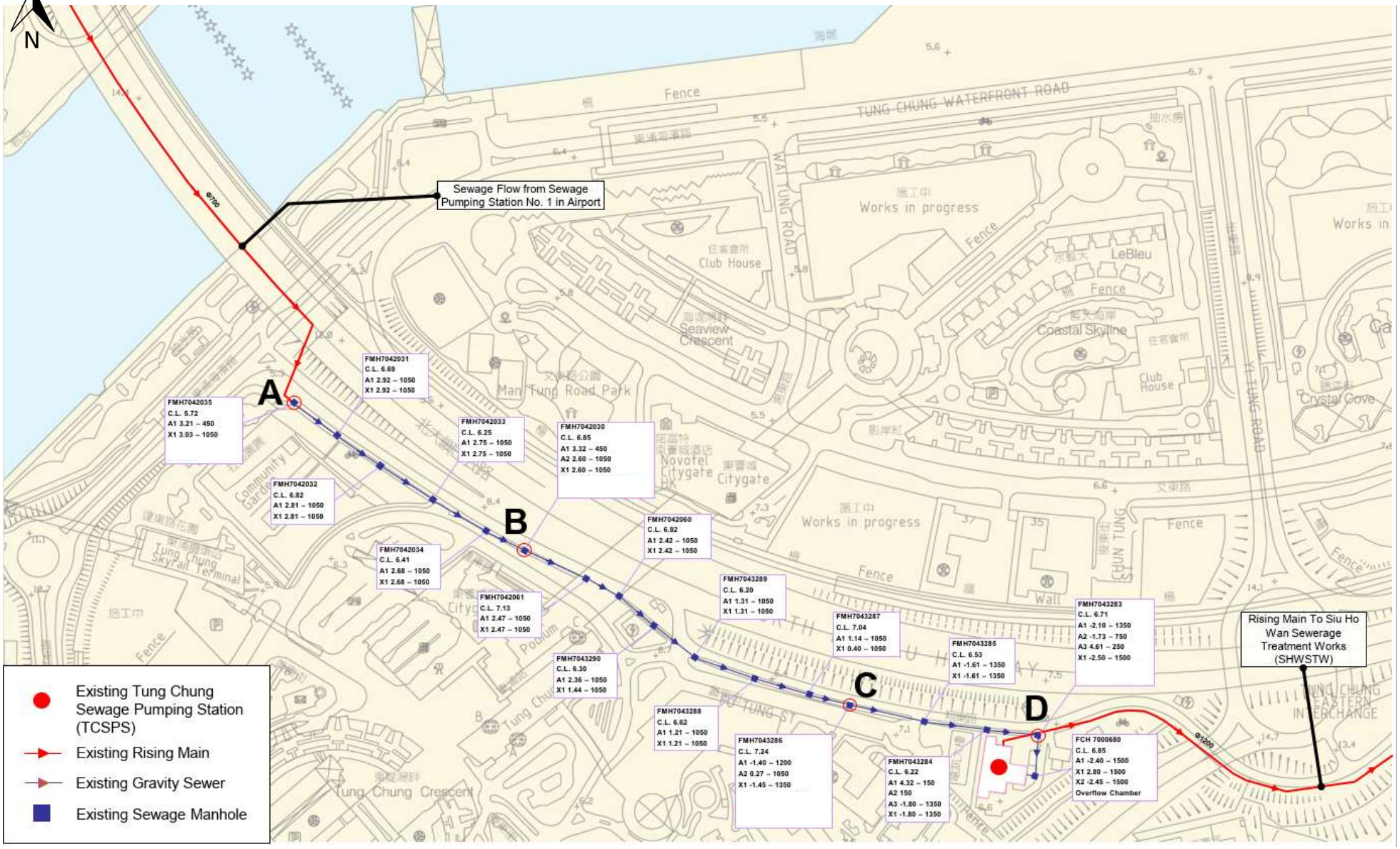
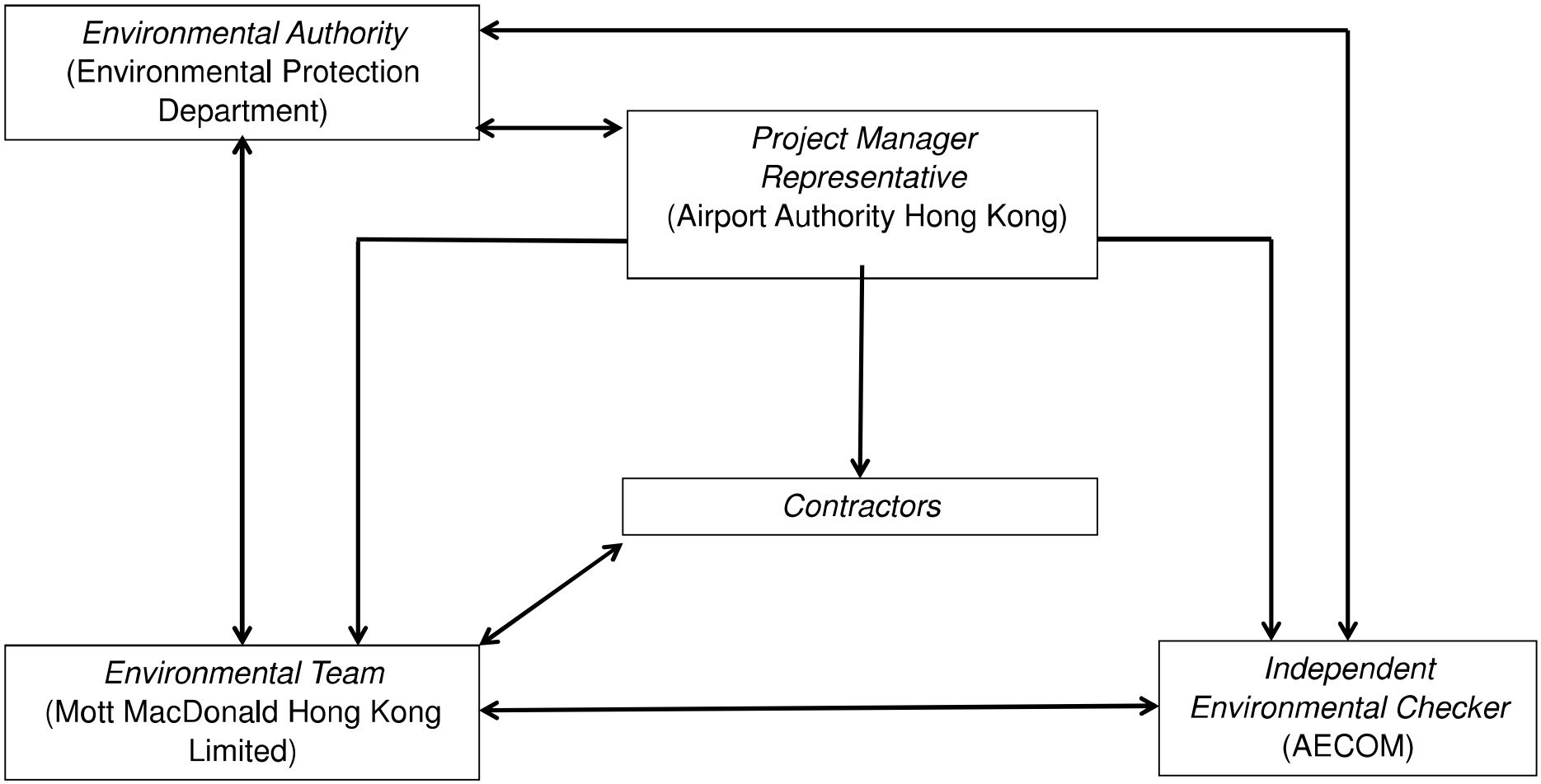


FIGURE 2.11 SCHEMATIC DIAGRAM FOR SEWERAGE SYSTEM FLOW MONITORING



Project	**Hong Kong International Airport Contract 3101 - 3RS Environmental Team Consultancy Services - Proposal for Additional Services on Development of Method for Annual Sewage Flow Monitoring for the Existing Gravity Sewer**	MOTT MACDONALD
Title	**Sewerage System Collecting Sewage from Airport**	FIGURE 2.12
Date Nov 2020	**Scale** N.T.S.	**File**

Appendix A. Project Organization Chart


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

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

Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase

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

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

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ The loading, unloading, handling, transfer or storage of cement, pulverised fuel ash (PFA) and/or other equally dusty materials shall be carried in a totally enclosed system acceptable to EPD. All dust-laden air or waste gas generated by the process operations shall be properly extracted and vented to fabric filtering system to meet the required emission limit; ▪ Cement, PFA and/or other equally dusty materials shall be stored in storage silo fitted with audible high-level alarms to warn of over-filling. The high-level alarm indicators shall be interlocked with the material filling line such that in the event of the silo approaching an overfilling condition, an audible alarm will operate, and after 1 minute or less the material filling line will be closed; ▪ Vents of all silos shall be fitted with fabric filtering system to meet the required emission limit; ▪ Vents of cement/PFA weighing scale shall be fitted with fabric filtering system to meet the required emission limit; and ▪ Seating of pressure relief valves of all silos shall be checked, and the valves re-seated if necessary, before each delivery.		
			Other raw materials ▪ The loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rock, sand, stone aggregate, shall be carried out in such a manner to prevent or minimize dust emissions; ▪ The materials shall be adequately wetted prior to and during the loading, unloading and handling operations. Manual or automatic water spraying system shall be provided at all unloading areas, stockpiles 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	I

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

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

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Appropriate control measures shall be adopted in order to meet the required bitumen emission limit as well as the ambient odour level (2 odour units).		
			Material transportation ▪ The loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rocks, sands, stone aggregates, reject fines, shall be carried out in such a manner as to minimize dust emissions; ▪ Roadways from the entrance of the plant to the product loading points and/or any other working areas where there are regular movements of vehicles shall be paved or hard surfaced; and ▪ Haul roads inside the Works shall be adequately wetted with water and/or chemical suppressants by water trucks or water sprayers.	Within Concrete Batching Plant / Duration of the construction phase	I
			Control of emissions from bitumen decanting ▪ The heating temperature of the particular bitumen type and grade shall not exceed the corresponding temperature limit of the same type listed in Appendix 1 of the Guidance Note; ▪ Tamper-free high temperature cut-off device shall be provided to shut off the fuel supply or electricity in case the upper limit for bitumen temperature is reached; ▪ Proper chimney for the discharge of bitumen fumes shall be provided at high level; ▪ The emission of bitumen fumes shall not exceed the required emission limit; and ▪ The air-to-fuel ratio shall be properly controlled to allow complete combustion of the fuel. The fuel burners, if any, shall be maintained properly and free from carbon deposits in the burner nozzles.	Within Concrete Batching Plant / Duration of the construction phase	I
			Liquid fuel ▪ The receipt, handling and storage of liquid fuel shall be carried out so as to prevent the release of emissions of organic vapours and/or other noxious and offensive emissions to the air.	Within Concrete Batching Plant / Duration of the construction phase	I
			Housekeeping ▪ A high standard of housekeeping shall be maintained. Waste material, spillage and scattered piles gathered beneath belt conveyors, inside and around enclosures shall be cleared frequently. The minimum clearing frequency is on a weekly basis.	Within Concrete Batching Plant / Duration of the construction phase	I
5.2.6.7	2.1	-	**Best Practices for Rock Crushing Plants** The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plant) BPM 11/1 (95) as well as in the future Specified Process licence should be adopted. These include: Crushers	Within Concrete Batching Plant / Duration of the construction phase	N/A as there was no rock crushing plant at this stage

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ The outlet of all primary crushers, and both inlet and outlet of all secondary and tertiary crushers, if not installed inside a reasonably dust tight housing, shall be enclosed and ducted to a dust extraction and collection system such as a fabric filter; ▪ The inlet hopper of the primary crushers shall be enclosed on top and 3 sides to contain the emissions during dumping of rocks from trucks. The rock while still on the trucks shall be wetted before dumping; ▪ Water sprayers shall be installed and operated in strategic locations at the feeding inlet of crushers; and ▪ Crusher enclosures shall be rigid and be fitted with self-closing doors and close-fitting entrances and exits. Where conveyors pass through the crusher enclosures, flexible covers shall be installed at entries and exits of the conveyors to the enclosure.		
			Vibratory screens and grizzlies ▪ All vibratory screens shall be totally enclosed in a housing. Screenhouses shall be rigid and reasonably dust tight with self-closing doors or close-fitted entrances and exits for access. Where conveyors pass through the screenhouse, flexible covers shall be installed at entries and exits of the conveyors to the housing. Where containment of dust within the screenhouse structure is not successful then a dust extraction and collection system shall be provided; and ▪ All grizzlies shall be enclosed on top and 3 sides and sufficient water sprayers shall be installed at their feeding and outlet areas.	Within Concrete Batching Plant / Duration of the construction phase	N/A as there was no rock crushing plant at this stage
			Belt conveyors ▪ Except for those conveyors which are placed within a totally enclosed structure such as a screenhouse or those erected at the ground level, all conveyors shall be totally enclosed with windshield on top and 2 sides; ▪ Effective belt scraper such as the pre-cleaner blades made by hard wearing materials and provided with pneumatic tensioner, or equivalent device, shall be installed at the head pulley of designated conveyor as required to dislodge fine dust particles that may adhere to the belt surface and to reduce carry-back of fine materials on the return belt. Bottom plates shall also be provided for the conveyor unless it has been demonstrated that the corresponding belt scraper is effective and well maintained to prevent falling material from the return belt; and Except for those transfer points which are placed within a totally enclosed structure such as a screenhouse, all transfer points to and from conveyors shall be enclosed. Where containment of dust within the enclosure is not successful, then water sprayers shall be provided. Openings for any enclosed structure for the passage of conveyors shall be fitted with flexible seals.	Within Concrete Batching Plant / Duration of the construction phase	N/A as there was no rock crushing plant at this stage
			Storage piles and bins ▪ Where practicable, free falling transfer points from conveyors to stockpiles shall be fitted with flexible curtains or be enclosed with chutes designed to minimize the drop height. Water sprays shall also be used where required.	Within Concrete Batching Plant / Duration of the construction phase	N/A as there was no rock crushing plant at this stage

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ 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; and ▪ Scattered piles gathered beneath belt conveyors, inside and around enclosures shall be cleared regularly.		
			Rock drilling equipment ▪ Appropriate dust control equipment such as a dust extraction and collection system shall be used during rock drilling activities.	Within Concrete Batching Plant / Duration of the construction phase	N/A as there was no rock crushing plant at this stage
			Hazard to Human Life – Construction Phase		
Table 6.40	3.2	-	▪ Precautionary measures should be established to request barges to move away during typhoons.	Construction Site / Construction Period	I
Table 6.40	3.2	-	▪ An appropriate marine traffic management system should be established to minimize risk of ship collision.	Construction Site / Construction Period	I
Table 6.40	3.2	-	▪ Location of all existing hydrant networks should be clearly identified prior to any construction works.	Construction Site / Construction Period	I
			Noise Impact – Construction Phase		
7.5.6	4.3	-	**Good Site Practice** Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during each phase of construction: ▪ only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works; ▪ machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum; ▪ 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.	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?^
7.5.6	4.3	-	**Adoption of QPME** ▪ QPME should be adopted as far as applicable.	Within the Project site / During construction phase / Prior to commencement of operation	I
7.5.6	4.3	-	**Use of Movable Noise Barriers** ▪ Movable noise barriers should be placed along the active works area and mobile plants to block the direct line of sight between PME and the NSRs.	Within the Project site / During construction phase / Prior to commencement of operation	I
7.5.6	4.3	-	**Use of Noise Enclosure/ Acoustic Shed** ▪ Noise enclosure or acoustic shed should be used to cover stationary PME such as air compressor and generator.	Within the Project site / During construction phase / Prior to commencement of operation	I
			Water Quality Impact – Construction Phase		
8.8.1.2 and 8.8.1.3	5.1	2.26	**Marine Construction Activities** <u>General Measures to be Applied to All Works Areas</u> ▪ Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; ▪ Use of Lean Material Overboard (LMOB) systems shall be prohibited; ▪ Excess materials shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessels are moved; ▪ Plants should not be operated with leaking pipes and any pipe leakages shall be repaired quickly; ▪ Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; ▪ All vessels shall be sized such that adequate clearance is maintained between vessels and the seabed 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 wastewater meets the WPCO/TM requirements before discharge. No direct discharge of contaminated water is permitted.	Within construction site / Duration of the construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Specific Measures to be Applied to All Works Areas ▪ 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 – For marine filling C – Completed in Nov 2020 for sand blanket
			▪ 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;		C – Completed in May 2018
			▪ 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		I (The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ The Silt Curtain Deployment Plan shall be implemented.		I
			Specific Measures to be Applied to Land Formation Activities prior to Commencement of Marine Filling Works ▪ 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	N/A (The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ Double layer silt curtains to enclose WSRs C7a and silt screens installed at the intake points for both WSR C7a and C8 prior to commencement of construction; and		I – For C7a C – Completed in Dec 2021 for C8 *(The requirement of silt curtain / screen has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ The silt curtains and silt screens should be regularly checked and maintained.		I

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 during Marine Filling Works</u> ▪ Double layer 'Type II' or 'Type III' silt curtains to be applied around the eastern openings between partially completed seawalls prior to commencement of marine filling activities. The silt curtains shall be configured to minimise SS release during ebb tides;	Within construction site / Duration of the construction phase	I *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ Double layer silt curtains to be applied at the south-western opening prior to commencement of marine filling activities;		N/A (The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ Double layer silt curtain to enclose WSR C7a and silt screens installed at the intake points for both WSR C7a and C8 prior to commencement of marine filling activities; and		I – For C7a C – Completed in Dec 2021 for C8 (The requirement of silt curtain / screen has been modified. The details can be referred to Silt Curtain Deployment Plan)
			▪ The silt curtains and silt screens should be regularly checked and maintained.		I
			<u>Specific Measures to be Applied to the Field Joint Excavation Works for the Submarine Cable Diversion</u> ▪ 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 at 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 – the field joint excavation works for the submarine cable diversion will no longer be conducted anymore
8.8.1.4	5.1	-	**Modification of the Existing Seawall** ▪ Silt curtains shall be deployed around the seawall modification activities to completely enclose the active works areas, and care should be taken to avoid splashing of rockfill / rock armour into the surrounding marine environment. For the connecting sections with the existing outfalls, works for these connection areas should be undertaken during the dry season in order that individual drainage culvert cells may be isolated for interconnection works.	At the existing northern seawall / Duration of the construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
8.8.1.5	5.1	-	**Construction of New Stormwater Outfalls and Modifications to Existing Outfalls** ▪ During operation of the temporary drainage channel, runoff control measures such as bunding or silt fence shall be provided on both sides of the channel to prevent accumulation and release of SS via the temporary channel. Measures should also be taken to minimise the ingress of site drainage into the culvert excavations.	Within construction site / Duration of the construction phase	I
8.8.1.6 8.8.1.7	5.1	2.27	**Piling Activities for Construction of New Runway Approach Lights and HKIAAA Marker Beacons** Silt curtains shall be deployed around the piling activities to completely enclose the piling works and care should be taken to avoid spillage of excavated materials into the surrounding marine environment.	Within construction site / Duration of the construction phase	C – For approach lights N/A for marker beacons as HKIAAA Marker Beacons would be replaced by buoys
			<u>For construction of the eastern approach lights at the CMPs</u> ▪ 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.		C – Completed in Oct 2021
8.8.1.8	5.1	-	**Construction of Site Runoff and Drainage** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended:	Within construction site / Duration of the construction phase	
			▪ 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 sandbag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the Contractors prior to the commencement of construction (for works areas located on the existing Airport island) or as soon as the new land is completed (for works areas located on the new landform);		I
			▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM-DSS standards under the WPCO. The design of efficient silt removal facilities should make reference to the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractors prior to the commencement of construction;		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly;		I
			▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities;		I
			▪ In the event that contaminated groundwater is identified at excavation areas, this should be treated on-site using a suitable wastewater treatment process. The effluent should be treated according to the requirements of the TM-DSS standards under the WPCO prior to discharge to foul sewers or collected for proper disposal off-site. No direct discharge of contaminated groundwater is permitted; and		I
			▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exits. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. All washwater should be treated according to the requirements of the TM-DSS standards under the WPCO prior to discharge.		I
			▪ Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the construction materials, soil, silt or debris from washing away into the drainage system;		I
			▪ Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and to prevent stormwater runoff being directed into foul sewers; and		I
			▪ Precautionary measures should be taken at any time of the year when rainstorms are likely. Actions to be taken when a rainstorm is imminent or forecasted are summarized in Appendix A2 of ProPECC Note PN 1/94. This includes actions to be taken during and/or after rainstorms. Particular attention should be paid to the control of silty surface runoff during storm events.		I
8.8.1.9	5.1	-	**Sewage Effluent from Construction Workforce** ▪ Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	Within construction site / During construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
8.8.1.10 8.8.1.11	5.1		**General Construction Activities** ▪ Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby storm water drain. Stockpiles of cement and other construction materials should be kept covered when not being used; and ▪ 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.	Within construction site / During construction phase	I
8.8.1.12 8.8.1.13	5.1	2.28	**Drilling Activities for the Submarine Aviation Fuel Pipelines** To prevent potential water quality impacts at Sha Chau, the following measures shall be applied: ▪ A 'zero-discharge' policy shall be applied for all activities to be conducted at Sha Chau; ▪ No bulk storage of chemicals shall be permitted; and ▪ A containment pit shall be constructed around the drill holes. This containment pit shall be lined with impermeable lining and bunded on the outside to prevent inflow from off-site areas.	Within construction site / During construction phase	C – Completed in Jan 2019
			At the airport island side of the drilling works, the following measures shall be applied for treatment of wastewater: ▪ During pipe cleaning, appropriate desilting or sedimentation device should be provided on site for treatment before discharge. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge; and ▪ Drilling fluid used in drilling activities should be reconditioned and reused as far as possible. Temporary enclosed storage locations should be provided on-site for any unused chemicals that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	Within construction site / During construction phase	C – Completed in Jan 2019
			Waste Management Implication – Construction Phase		
10.5.1.1	7.1	-	Opportunities to minimise waste generation and maximise the reuse of waste materials generated by the project have been incorporated where possible into the planning, design and construction stages, and the following measures have been recommended: ▪ The relevant construction methods (particularly for the tunnel works) and construction programme have been carefully planned and developed to minimise the extent of excavation and to maximise the on-site reuse of inert C&D materials generated by the project as far as practicable. Temporary stockpiling areas will also be provided to facilitate on-site reuse of inert C&D materials;	Project Site Area / During design and construction phase	I
			▪ Priority should be given to collect and reuse suitable inert C&D materials generated from other concurrent projects and the Government's PFRF as fill materials for the proposed land formation works;		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Only non-dredged ground improvement methods should be adopted in order to completely avoid the need for dredging and disposal of marine sediment for the proposed land formation work;		I
			▪ Excavation work for constructing the APM tunnels, BHS tunnels and airside tunnels will not be down to the CMPs beneath the fill materials in order to avoid excavating any sediments; and		I
			▪ 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.		I
10.5.1.1	7.1	-	The following good site practices should be performed during the construction activities include: ▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; ▪ Training of site personnel in proper waste management and chemical waste handling procedures; ▪ Provision of sufficient waste disposal points and regular collection for disposal; ▪ Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks by tarpaulin/ similar material or by transporting wastes in enclosed containers. The cover should be extended over the edges of the sides and tailboards; ▪ Stockpiles of C&D materials should be kept wet or covered by impervious sheets to avoid wind-blown dust; ▪ All dusty materials including C&D materials should be sprayed with water immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling at the barging points/ stockpile areas; ▪ C&D materials to be delivered to and from the project site by barges or by trucks should be kept wet or covered to avoid wind-blown dust; ▪ The speed of the trucks including dump trucks carrying C&D or waste materials within the site should be controlled to about 10 km/hour in order to reduce the adverse dust impact and secure the safe movement around the site; and ▪ To avoid or minimise dust emission during transport of C&D or waste materials within the site, each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials. Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.	Project Site Area / Construction Phase	I
10.5.1.3	7.1	-	The following practices should be performed to achieve waste reduction include: ▪ Use of steel or aluminium formworks and falseworks for temporary works as far as practicable;	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?^
			▪ 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; ▪ Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force; ▪ Any unused chemicals or those with remaining functional capacity should be collected for reused as far as practicable; ▪ Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and ▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.		
10.5.1.5	7.1		Inert and non-inert C&D materials should be handled and stored separately to avoid mixing the two types of materials.	Project Site Area / Construction Phase	I
10.5.1.5	7.1	-	Any recyclable materials should be segregated from the non-inert C&D materials for collection by reputable licensed recyclers whereas the non-recyclable waste materials should be disposed of at the designated landfill site by a reputable licensed waste collector.	Project Site Area / Construction Phase	I
10.5.1.6	7.1	-	A trip-ticket system promulgated shall be developed in order to monitor the off-site delivery of surplus inert C&D materials that could not be reused on-site for the proposed land formation work at the PFRF and to control fly tipping.	Project Site Area / Construction Phase	I
10.5.1.6	7.1	2.32	The Contractor should prepare and implement a Waste Management Plan detailing various waste arising and waste management practices.	Construction Phase	I
10.5.1.16	7.1	-	The following mitigation measures are recommended during excavation and treatment of the sediments:	Project Site Area / Construction Phase	I
			▪ On-site remediation should be carried out in an enclosed area in order to minimise odour/dust emissions;		I
			▪ 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;		I
			▪ All practical measures, including but not limited to speed control for vehicles, should be taken to minimise dust emission;		I
			▪ Good housekeeping should be maintained at all times at the sediment treatment facility and storage area;		I
			▪ Treated and untreated sediment should be clearly separated and stored separately; and		I
			▪ 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.		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
10.5.1.18	7.1	-	The marine sediments to be removed from the cable field joint area would be disposed of at the designated disposal sites to be allocated by the MFC. The following mitigation measures should be strictly followed to minimise potential impacts on water quality during transportation of the sediments requiring Type 1 disposal: ▪ Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material; ▪ Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by EPD; and ▪ Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation.	Project Site Area / Construction Phase	N/A – the field joint excavation works for the submarine cable diversion will no longer be conducted anymore
10.5.1.19	7.1	-	Contractor should register with the EPD as a chemical waste producer and to follow the relevant guidelines. The following measures should be implemented: ▪ Good quality containers compatible with the chemical wastes should be used; ▪ Incompatible chemicals should be stored separately; ▪ Appropriate labels must be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc.; and ▪ The contractor will use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Project Site Area / Construction Phase	I
10.5.1.20	7.1	-	General refuse should be stored in enclosed bins or compaction units separated from inert C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site for disposal at designated landfill sites. An enclosed and covered area should be provided to reduce the occurrence of 'windblown' light material.	Project Site Area / Construction Phase	I
10.5.1.21	7.1	-	The construction contractors will be required to regularly check and clean any refuse trapped or accumulated along the newly constructed seawall. Such refuse will then be stored and disposed of together with the general refuse.	Project Site Area / Construction Phase	I
			Land Contamination – Construction Phase		
11.10.1.2 to 11.10.1.3	8.1	2.32	For areas inaccessible during site reconnaissance survey ▪ Further site reconnaissance would be conducted once the areas are accessible in order to identify any land contamination concern for the areas.	Project Site Area inaccessible during site reconnaissance / Prior to Construction Phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ 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.		C – Completed in Jan 2018
			▪ 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.		I *(CAR for golf course and Terminal 2 emergency power supply system nos.1, 2, 3, 4 and 5 were submitted to EPD)
			▪ 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 as no remediation was required.
11.8.1.2	8.1	-	If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any): ▪ To minimize the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed; ▪ Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when working directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site; ▪ Stockpiling of contaminated excavated materials on site should be avoided as far as possible; ▪ The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; ▪ Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; ▪ Truck bodies and tailgates should be sealed to prevent any discharge; ▪ Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly tipping; ▪ Speed control for trucks carrying contaminated materials should be exercised. 8km/h is the recommended speed limit; ▪ Strictly observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and ▪ Maintain records of waste generation and disposal quantities and disposal arrangements.	Project Site Area / Construction Phase	N/A as no contaminated soil was found.

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			Terrestrial Ecological – Construction Phase		
12.10.1.1	9.2	2.14	**Pre-construction Egretry Survey** ▪ Conduct ecological survey for Sha Chau egretry to update the latest boundary of the egretry.	Breeding season (April - July) prior to commencement of HDD drilling works at HKIA	C – Completed in Jan 2019
12.7.2.3 and 12.7.2.6	9.1	2.30	**Avoidance and Minimisation of Direct Impact to Egretry** ▪ The daylighting location will avoid direct encroachment to the Sheung Sha Chau egretry. The daylighting location and mooring of flat top barge, if required, will be kept away from the egretry; ▪ In any event, controls such as demarcation of construction site boundary and confining the lighting within the site will be practised to minimise disturbance to off-site habitat at Sheung Sha Chau Island; and ▪ The containment pit at the daylighting location shall be covered or camouflaged.	During construction phase at Sheung Sha Chau Island	C – Completed in Jan 2019
12.7.2.5	9.1	2.30	**Preservation of Nesting Vegetation** ▪ The proposed daylighting location and the arrangement of connecting pipeline will avoid the need of tree cutting, therefore the trees that are used by ardeids for nesting will be preserved.	During construction phase at Sheung Sha Chau Island	C – Completed in Jan 2019
12.7.2.4 and 12.7.2.6	9.1	2.30	**Timing the Pipe Connection Works outside Ardeid's Breeding Season** ▪ All HDD and related construction works on Sheung Sha Chau Island will be scheduled outside the ardeids' breeding season (between April and July). No night-time construction work will be allowed on Sheung Sha Chau Island during all seasons.	During construction phase at Sheung Sha Chau Island	C – Completed in Jan 2019
12.10.1.1	9.3	-	**Ecological Monitoring** ▪ During the HDD construction works period from August to March, ecological monitoring will be undertaken monthly at the HDD daylighting location on Sheung Sha Chau Island to identify and evaluate any impacts with appropriate actions taken as required to address and minimise any adverse impact found.	at Sheung Sha Chau Island	C – Completed in Jan 2019
			Marine Ecological Impact – Pre-construction Phase		
13.11.4.1	10.2.2	-	▪ Pre-construction phase Coral Dive Survey.	HKIAAA artificial seawall	C – Completed in Jan 2016
			Marine Ecological Impact – Construction Phase		
13.11.1.3 to 13.11.1.6	-	-	**Minimisation of Land Formation Area** ▪ Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for marine resources, especially the CWD population.	Land formation footprint / during detailed design phase to completion of construction	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
13.11.1.7 to 13.11.1.10	-	2.31	**Use of Construction Methods with Minimal Risk/Disturbance** ▪ Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF;	During construction phase at marine works area	C – Completed in Jan 2019 for diversion of aviation fuel pipeline
			▪ Use of Deep Cement Mixing (DCM) method instead of conventional seabed dredging for the land formation works to reduce the risk of negative impacts through the elevation of suspended solids and contaminants on CWDs, fisheries and the marine environment;		I
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway;		C – Completed in Oct 2021 for new approach lights
			▪ Avoid bored piling during CWD peak calving season (Mar to Jun);		N/A for marker beacons as HKIAAA Marker Beacons would be replaced by buoys
			▪ Prohibition of underwater percussive piling; and		I
			▪ Use of horizontal directional drilling (HDD) method and water jetting methods for placement of submarine cables and pipelines to minimise the disturbance to the CWDs and other marine ecological resources.		C – Completed in Jan 2019 for HDD works
13.11.2.1 to 13.11.2.7	-	-	**Mitigation for Indirect Disturbance due to Deterioration of Water Quality** ▪ Water quality mitigation measures during construction phases include consideration of alternative construction methods, deployment of silt curtain and good site practices;	All works area during the construction phase	I
			▪ Alternative construction methods including use of non-dredge methods for ground improvement (e.g. Deep Cement Mixing (DCM), prefabricated vertical drains (PVD), sand compaction piles, steel cells, stone columns and vertical sand drains);		I
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and		C – Completed in Oct 2021 for new approach lights
			▪ 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.		C – Completed in Jan 2019 for HDD works
13.11.1.12	-	-	**Strict Enforcement of No-Dumping Policy**	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?^
			▪ A policy prohibiting dumping of wastes, chemicals, oil, trash, plastic, or any other substance that would potentially be harmful to dolphins and/or their habitat in the work area; ▪ Mandatory educational programme of the no-dumpling policy be made available to all construction site personnel for all project-related works; ▪ Fines for infractions should be implemented; and ▪ Unscheduled, on-site audits shall be implemented.		
13.11.1.13	-	-	**Good Construction Site Practices** ▪ Regular inspection of the integrity and effectiveness of all silt curtains and monitoring of effluents to ensure that any discharge meets effluent discharge guidelines; ▪ Keep the number of working or stationary vessels present on-site to the minimum anytime; and ▪ Unscheduled, on-site audits for all good site practice restrictions should be conducted, and fines or penalties sufficient to be an effective deterrent need to be levied against violators.	All works area during the construction phase	I
13.11.1.3 to 13.11.1.6	-	-	**Minimisation of Land Formation Area** ▪ Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for marine resources, especially the CWD population.	Land formation footprint / during detailed design phase to completion of construction	I
13.11.5.4 to 13.11.5.13	10.3.1	-	**SkyPier High Speed Ferries' Speed Restrictions and Route Diversions** ▪ SkyPier HSFs operating to / from Zhuhai and Macau would divert north of SCLKC Marine Park with a 15 knot speed limit to apply for the part-journeys that cross high CWD abundance grid squares as indicatively shown in **Drawing No. MCL/P132/EIA/13-023** of the EIA Report. Both the alignment of the northerly route and the portion of routings to be subject to the speed limit of 15 knots shall be finalised prior to commencement of construction based on the future review of up-to-date CWD abundance and EM&A data and taking reference to changes in total SkyPier HSF numbers; and ▪ A maximum of 10 knots will be enforced through the designated SCLKC Marine Park area at all times.	Area between the footprint and SCLKC Marine Park during construction phase	I
			Other mitigation measures ▪ The ET will audit various parameters including actual daily numbers of HSFs, compliance with the 15-knot speed limit in the speed control zone and diversion compliance for SkyPier HSFs operating to / from Zhuhai and Macau; and ▪ The effectiveness of the CWD mitigation measures after implementation of initial six month SkyPier HSF diversion and speed restriction will be reviewed.	Area between the footprint and SCLKC Marine Park during construction phase	I C – Completed in Sep 2016
13.11.5.14 to 13.11.5.18	10.3.1	2.31	**Dolphin Exclusion Zone** ▪ Establishment of a 24 hr Dolphin Exclusion Zone (DEZ) with a 250 m radius around the land formation works areas;	Marine waters around land formation works area during construction phase	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ A DEZ would also be implemented during ground improvement works (e.g. DCM), water jetting works for submarine cables diversion, open trench dredging at the field joint locations and seawall construction; and		I
			▪ A DEZ would also be implemented during bored piling work but as a precautionary measure only.		C – Completed in Oct 2021 for the bored piling work of New approach lights
13.11.5.19	10.4	2.31	**Acoustic Decoupling of Construction Equipment** ▪ Air compressors and other noisy equipment that must be mounted on steel barges should be acoustically-decoupled to the greatest extent feasible, for instance by using rubber or air-filled tyres; and ▪ Specific acoustic decoupling measures shall be specified during the detailed design of the project for use during the land formation works.	Around coastal works area during construction phase	I
13.11.5.20	10.6.1	2.29	**Spill Response Plan** ▪ An oil and hazardous chemical spill response plan is proposed to be established during the construction phase as a precautionary measure so that appropriate actions to prevent or reduce risks to CWDs can be undertaken in the event of an accidental spillage.	Construction phase	I
13.11.5.21 to 13.11.5.23	10.6.1	-	**Construction Vessel Speed Limits and Skipper Training** ▪ A speed limit of 10 knots should be strictly observed for construction vessels at areas with the highest CWD densities (as currently indicated by the 1x1km grid squares in Figure 6 of Appendix 13.2 of EIA report). ▪ Vessels traversing through the work areas should be required to use predefined and regular routes (which would presumably become known to resident dolphins) to reduce disturbance to cetaceans due to vessel movements. Specific marine routes shall be specified by the Contractor prior to construction commencing.	All areas north and west of Lantau Island during construction phase	I
			Fisheries Impact – Construction Phase		
14.9.1.2 to 14.9.1.5	-		**Minimisation of Land Formation Area** ▪ Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for fisheries resources.	Land formation footprint / during detailed design phase to completion of construction	I
14.9.1.6	-	-	**Use of Construction Methods with Minimal Risk/Disturbance** ▪ Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF;	During construction phase at marine works area	C – Completed in Jan 2019 for diversion of aviation fuel pipeline

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Use of Deep Cement Mixing (DCM) method instead of conventional seabed dredging for the land formation works to reduce the risk of negative impacts through the elevation of suspended solids and contaminants on fisheries and the marine environment;		I
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and		C – Completed in Oct 2021 for new approach lights N/A for marker beacons as HKIAAA Marker Beacons would be replaced by buoys
			▪ 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.		C – Completed in Jan 2019 for HDD works
14.9.1.11	-		**Strict Enforcement of No-Dumping Policy** ▪ A policy prohibiting dumping of wastes, chemicals, oil, trash, plastic, or any other substance that would potentially be harmful to dolphins and/or their habitat in the work area; ▪ Mandatory educational programme of the no-dumpling policy be made available to all construction site personnel for all project-related works; ▪ Fines for infractions should be implemented; and ▪ Unscheduled, on-site audits shall be implemented.	All works area during the construction phase	I
14.9.1.12	-		**Good Construction Site Practices** ▪ Regular inspection of the integrity and effectiveness of all silt curtains and monitoring of effluents to ensure that any discharge meets effluent discharge guidelines; ▪ Keep the number of working or stationary vessels present on-site to the minimum anytime; and ▪ 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
14.9.1.13 to 14.9.1.18	-		**Mitigation for Indirect Disturbance due to Deterioration of Water Quality** ▪ Water quality mitigation measures during construction phases include consideration of alternative construction methods, deployment of silt curtain and good site practices;	All works area during the construction phase	I
			▪ Alternative construction methods including use of non-dredge methods for ground improvement (e.g. Deep Cement Mixing (DCM), prefabricated vertical drains (PVD), sand compaction piles, steel cells, stone columns and vertical sand drains);		I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
			▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and		C – Completed in Oct 2021 for new approach lights N/A for marker beacons as HKIAAA Marker Beacons would be replaced by buoys
			▪ 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.		C – Completed on Jan 2019 for HDD work
			Landscape and Visual Impact – Construction Phase		
Table 15.6	12.3	-	**CM1 -** The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM2 -** Reduction of construction period to practical minimum.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM3 -** Phasing of the construction stage to reduce visual impacts during the construction phase.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM4 -** Construction traffic (land and sea) including construction plants, construction vessels and barges should be kept to a practical minimum.	All works areas for duration of works; Upon handover and completion of works.	I
Table 15.6	12.3	-	**CM5 -** Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.	All works areas for duration of works; Upon handover and completion of works. – may be disassembled in phases.	I

EIA Ref.	EM&A Ref.	EP Condition	Environmental Protection Measures	Location / Duration of measures Timing of completion of measures	Mitigation Measures Implemented?^
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.	I
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.	I
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.	I
			Cultural Heritage Impact – Construction Phase		
			Not applicable to the construction stage of this project.		
			Health Impact – Aircraft Emissions		
			Not applicable to the construction stage of this project.		

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 Noise		
			Not applicable to the construction stage of this project.		

Notes:

" - " For items denoted as " - " provided under the columns of EM&A Ref. or EP Condition, environmental protection measures should be referred to the relevant paragraph(s) / table(s) in the approved EIA Report.

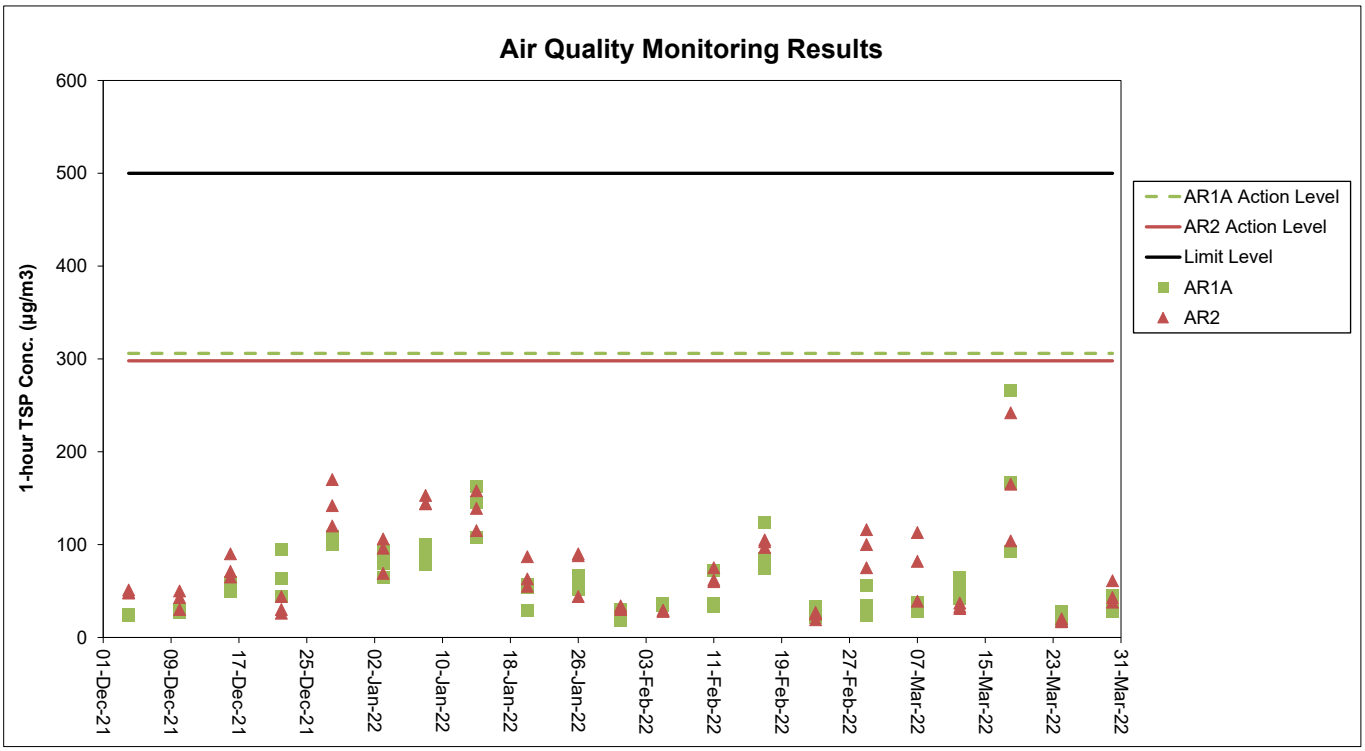
" I " Implemented and on-going where applicable.

" 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. Monitoring Results

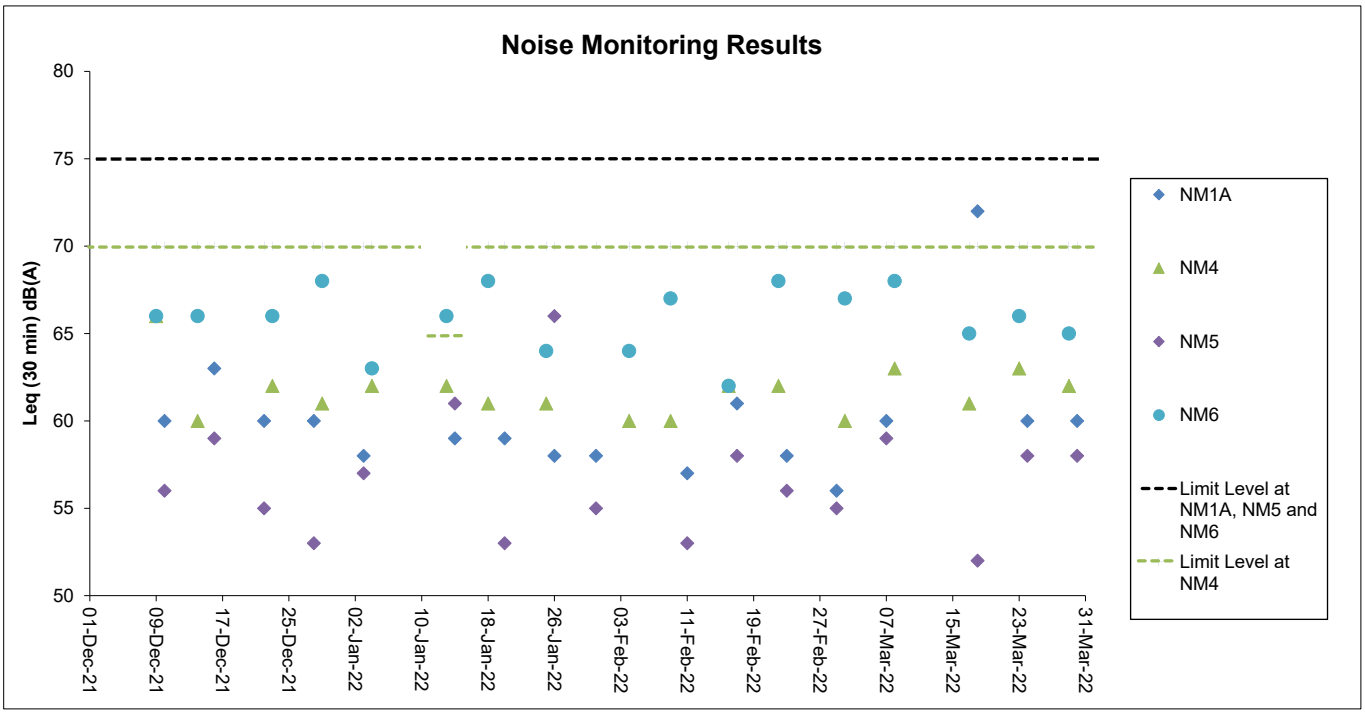
Air Quality Monitoring Results



Notes:

1. The key activities of the Project carried out in the reporting period included reclamation works and land-based works. Works in the reclamation areas included filling, seawall construction and ground improvement works, together with runway, concourse and associated works. Land-based works on existing airport island involved mainly airfield works, Terminal 2 expansion works, modification and tunnel work for Automated People Mover (APM) and Baggage Handling System (BHS), and preparation work for utilities, with activities include road and drainage works, cable ducting, demolition, piling, and excavation works.
2. General weather condition during monitoring ranged from sunny to drizzle. Detailed meteorological conditions can be referred to Table 2.3 of this Report and corresponding Monthly EM&A Reports.
3. QA/ QC requirements as stipulated in the EM&A Manual were carried out during measurement.

Noise Monitoring Results

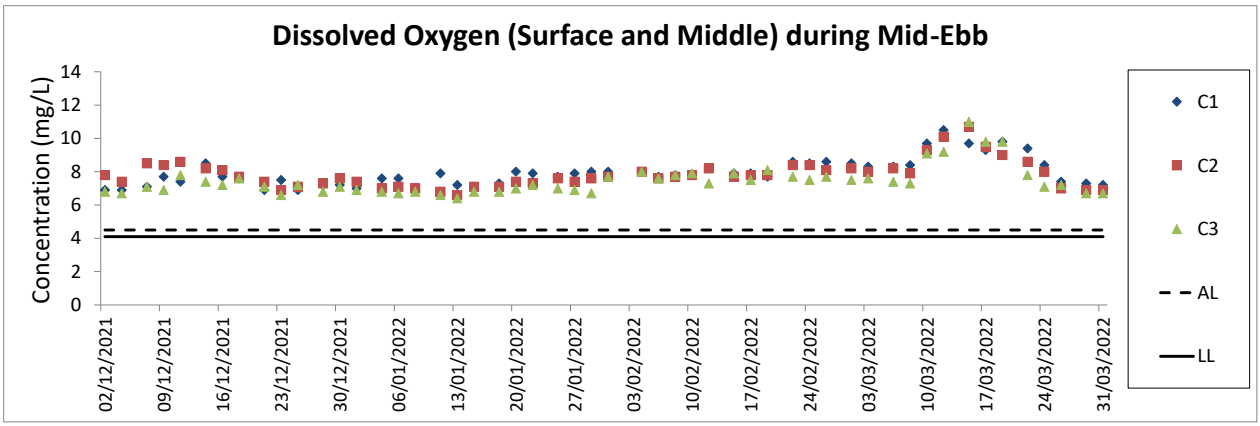


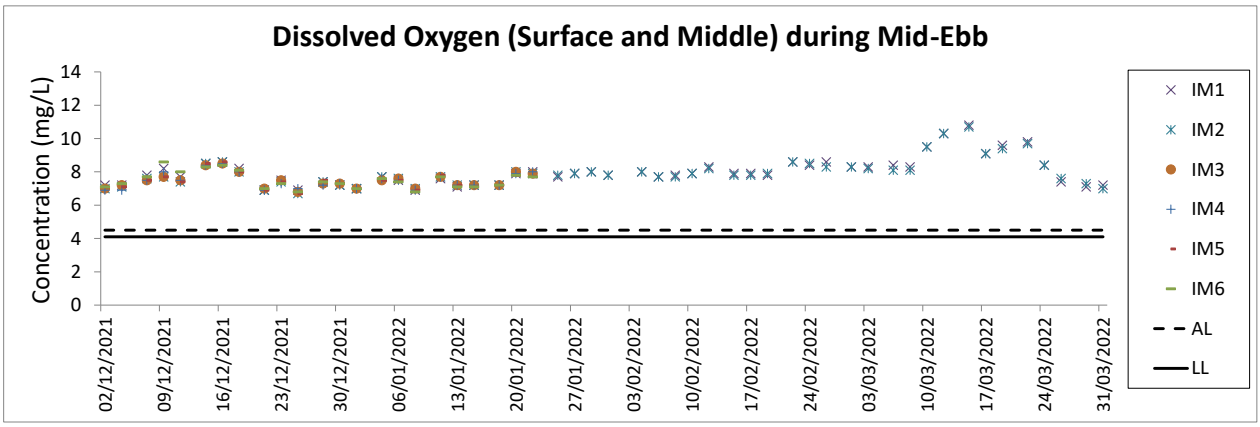
Notes:

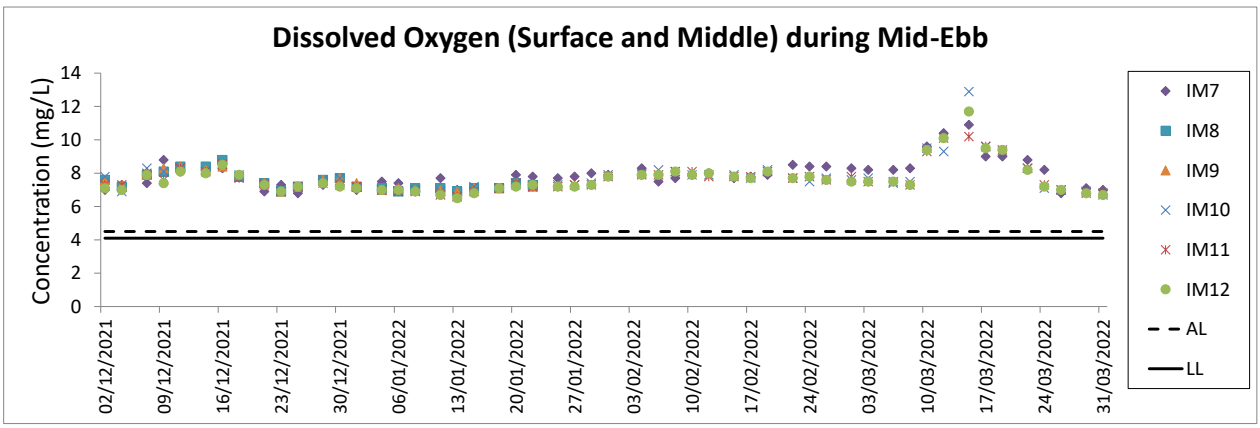
1. The Limit Level is reduced to 70dB(A) for school and 65dB(A) during school examination period at NM4. School examination took place from 10 to 14 January during this reporting period.

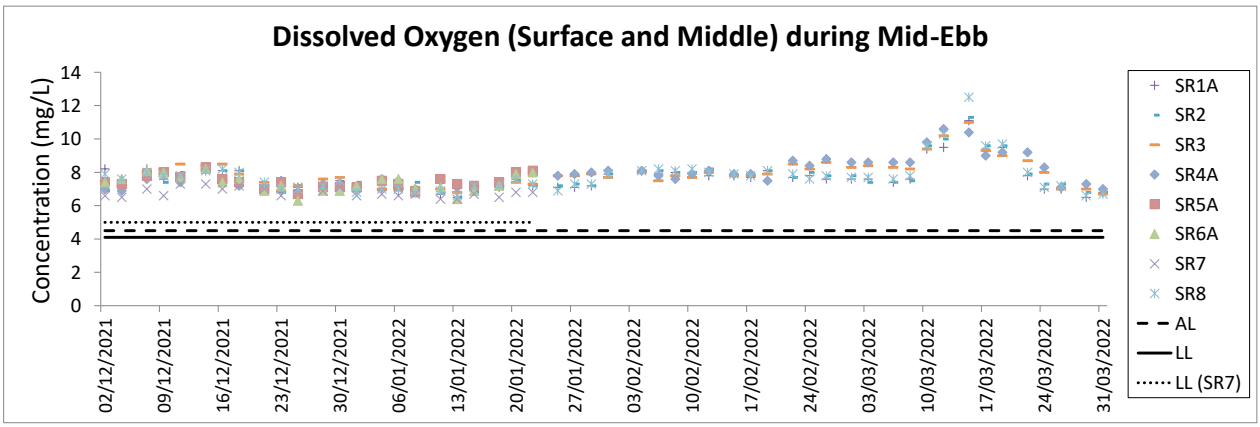
2. The key activities of the Project carried out in the reporting period included reclamation works and land-based works. Works in the reclamation areas included filling, seawall construction and ground improvement works, together with runway, concourse and associated works. Land-based works on existing airport island involved mainly airfield works, Terminal 2 expansion works, modification and tunnel work for Automated People Mover (APM) and Baggage Handling System (BHS), and preparation work for utilities, with activities include road and drainage works, cable ducting, demolition, piling, and excavation works.
3. General weather condition during monitoring ranged from sunny to drizzle. Detailed meteorological conditions can be referred to Table 2.6 of this Report and corresponding Monthly EM&A Reports.
4. QA/ QC requirements as stipulated in the EM&A Manual were carried out during measurement.

Water Quality Monitoring Results



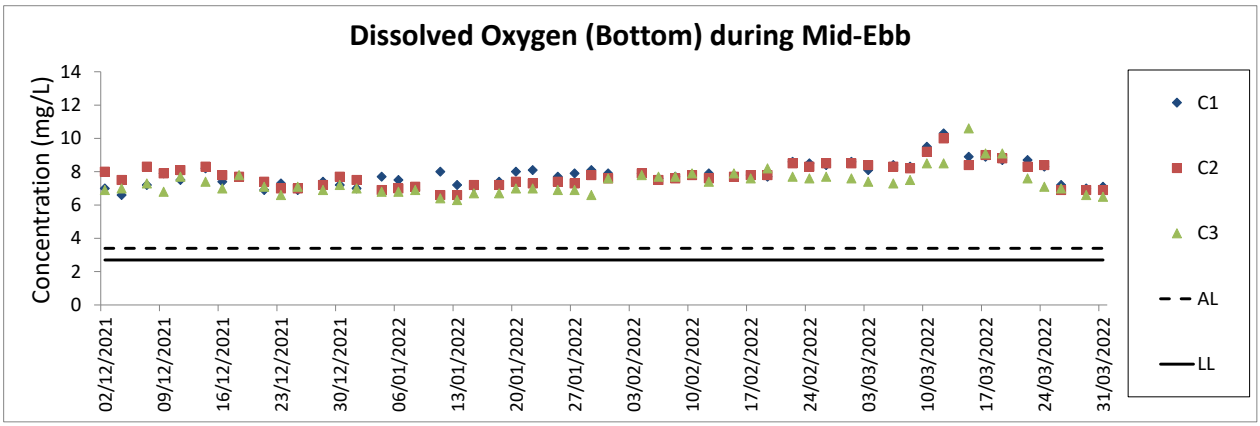


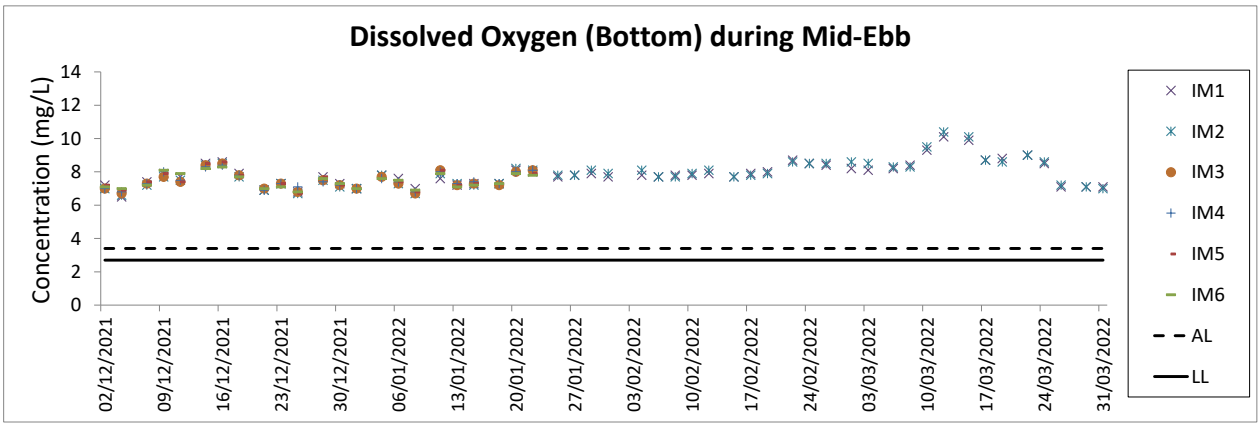


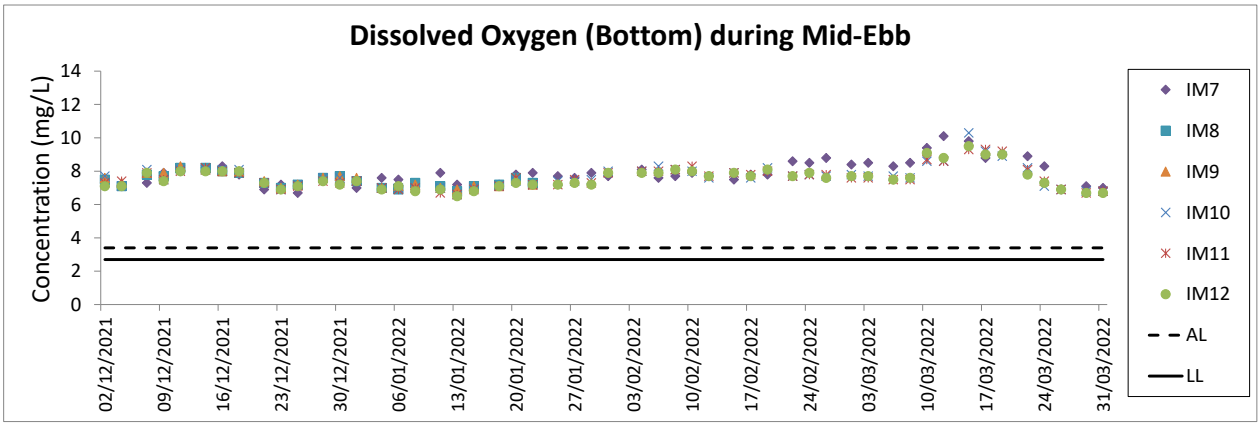


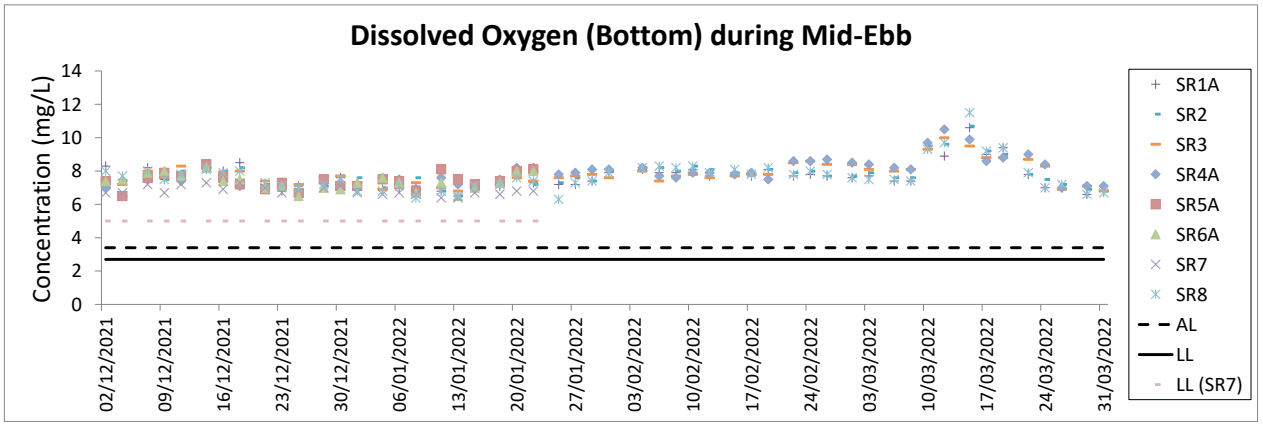
Notes:

1. The key marine works activities of the Project during monitoring included filling, seawall construction and ground improvement works, together with runway, concourse and associated works.
2. General weather condition during monitoring ranged from sunny to rainy, with sea condition ranged from calm to rough. Detailed meteorological conditions can be referred to Table 2.11 of this Report and corresponding Monthly EM&A Reports.
3. QA/ QC requirements as stipulated in the EM&A Manual were carried out during measurement.
4. The general water quality monitoring and regular DCM monitoring at IM3, IM4, IM5, IM6, IM8, IM9, SR5A, SR6A & SR7 were terminated from 25 January 2022 onwards.









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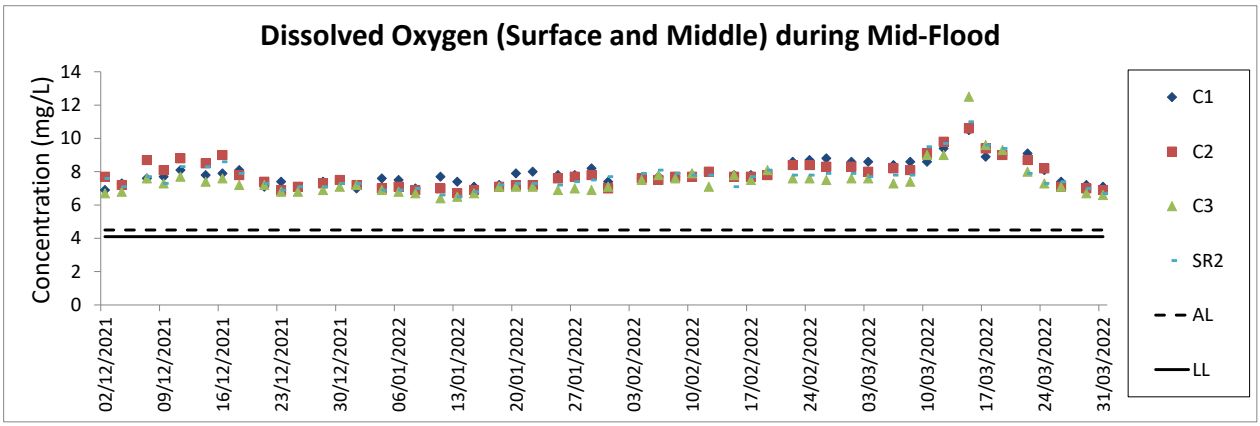

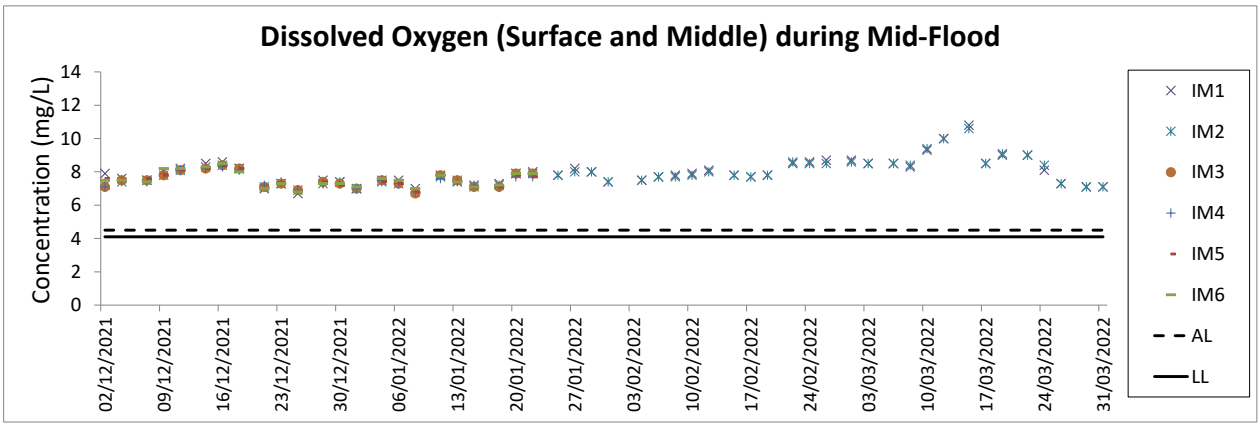

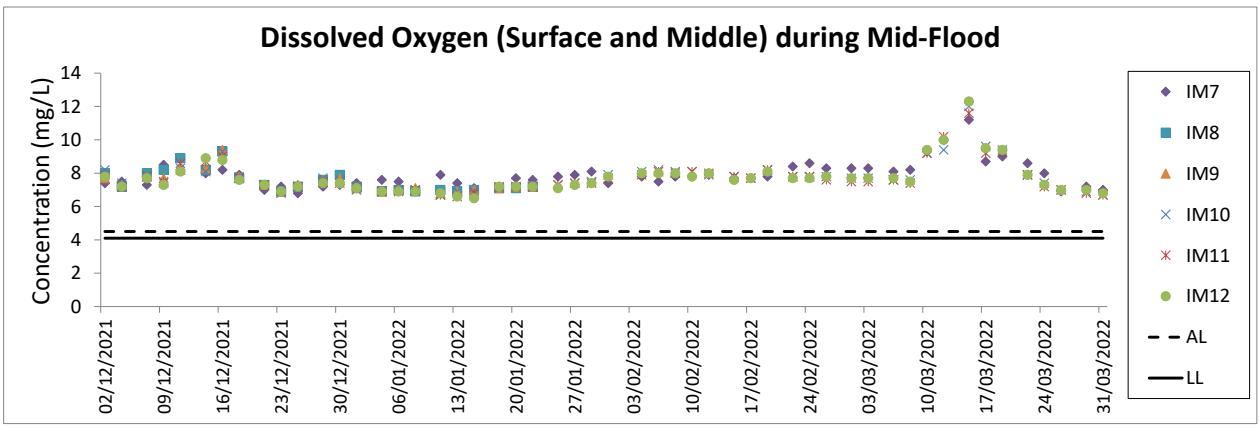

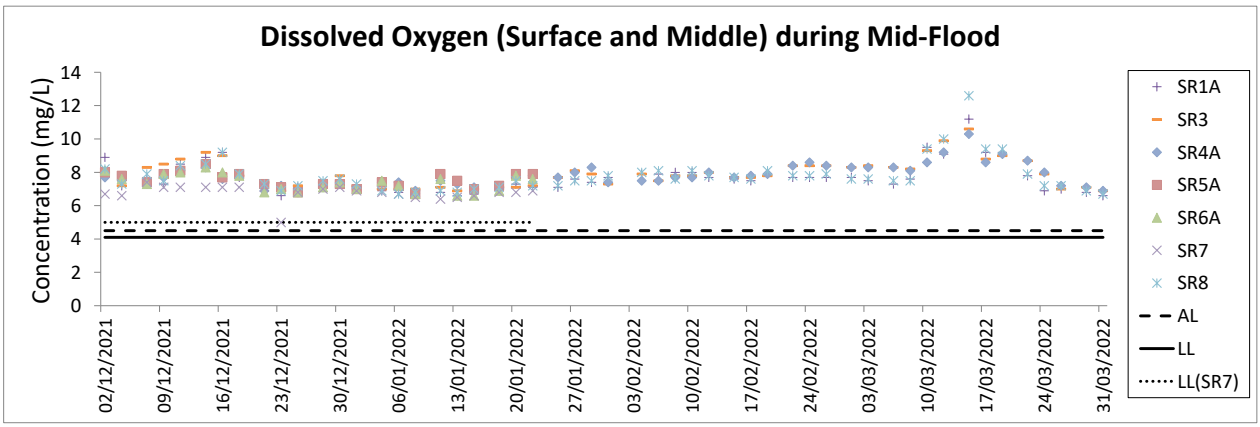

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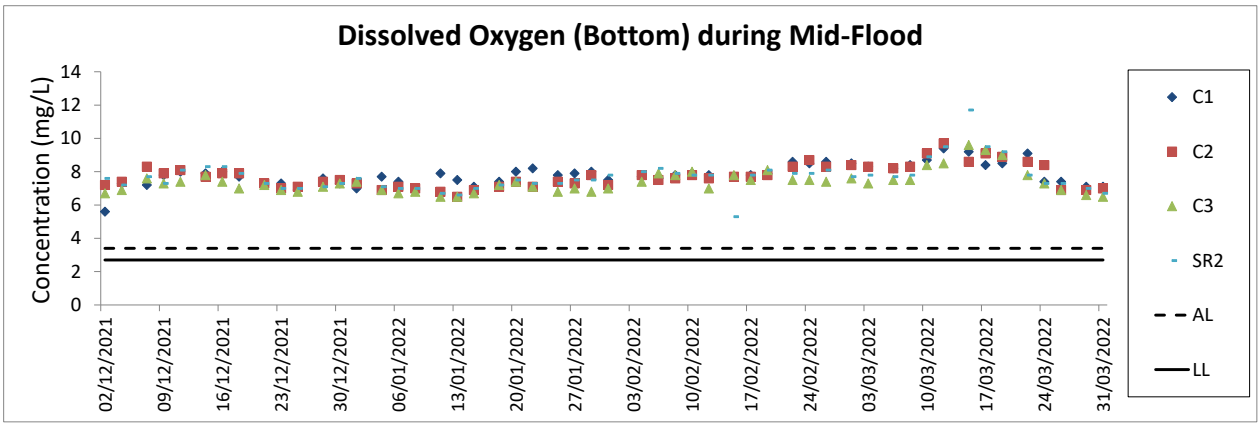

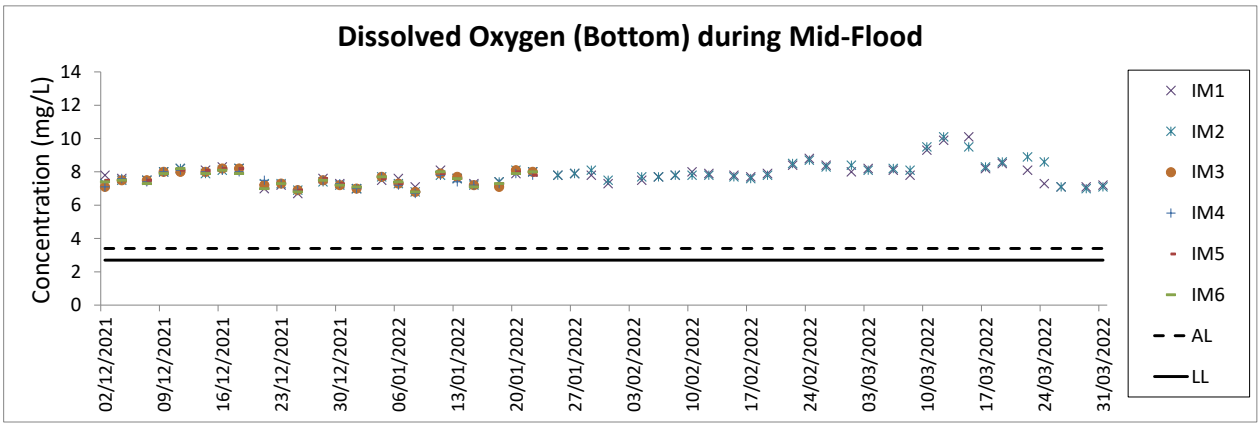

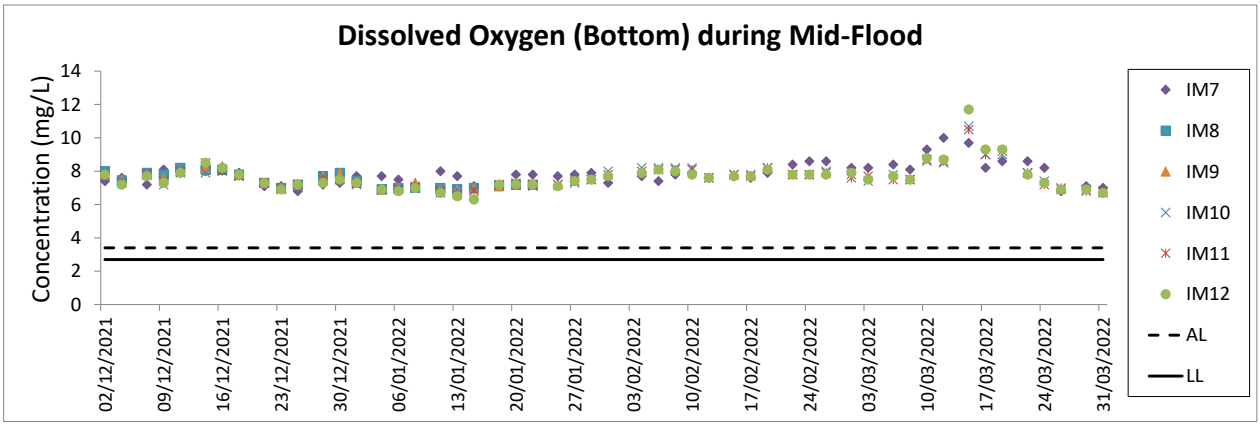

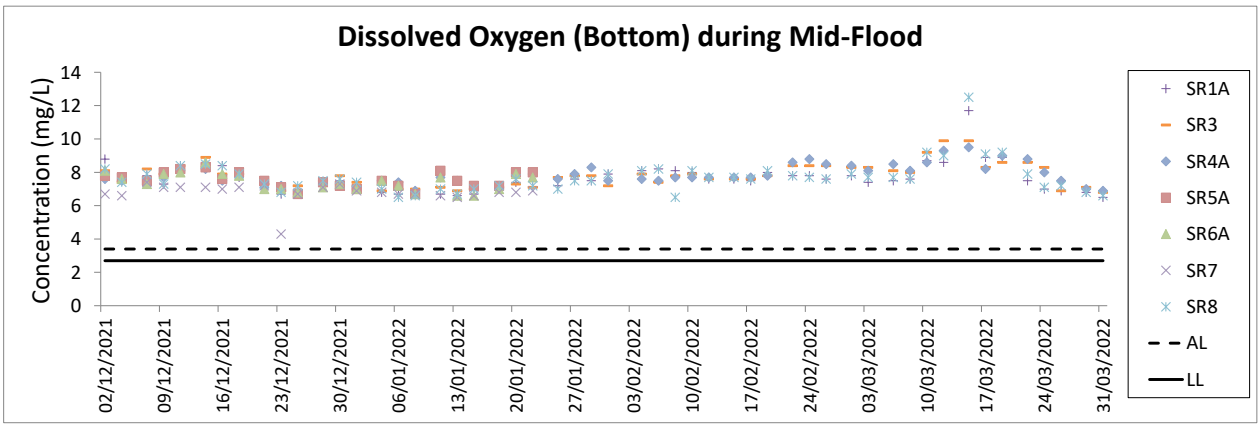

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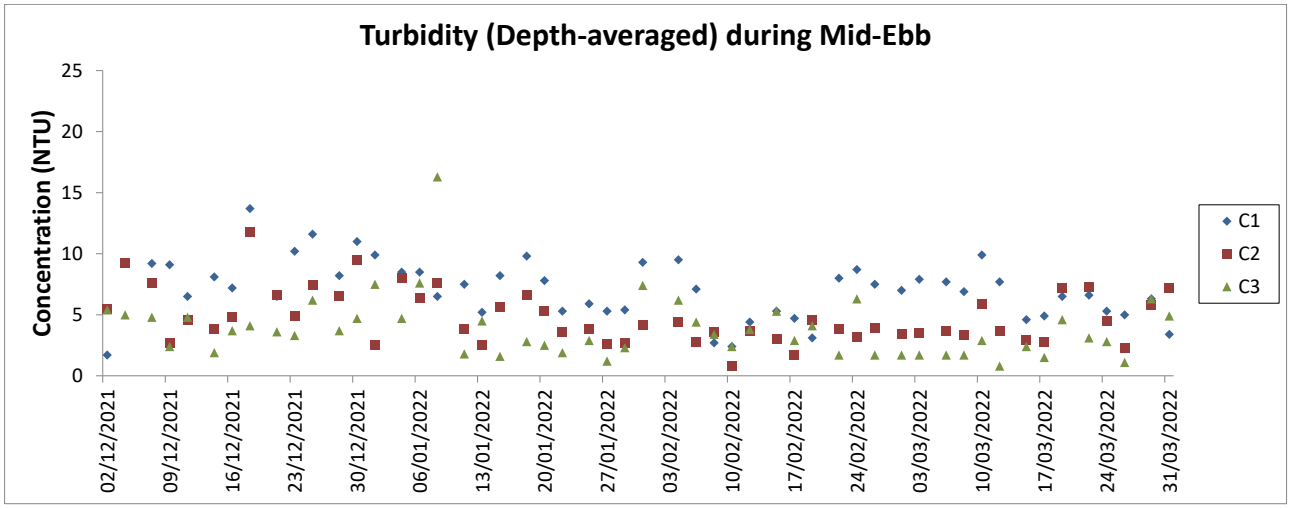

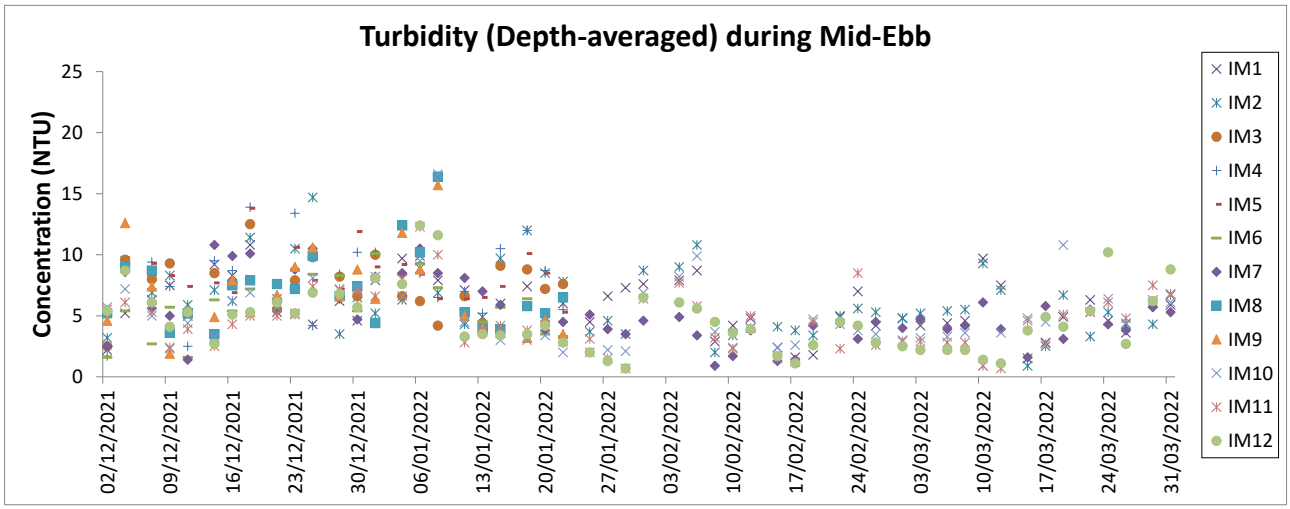

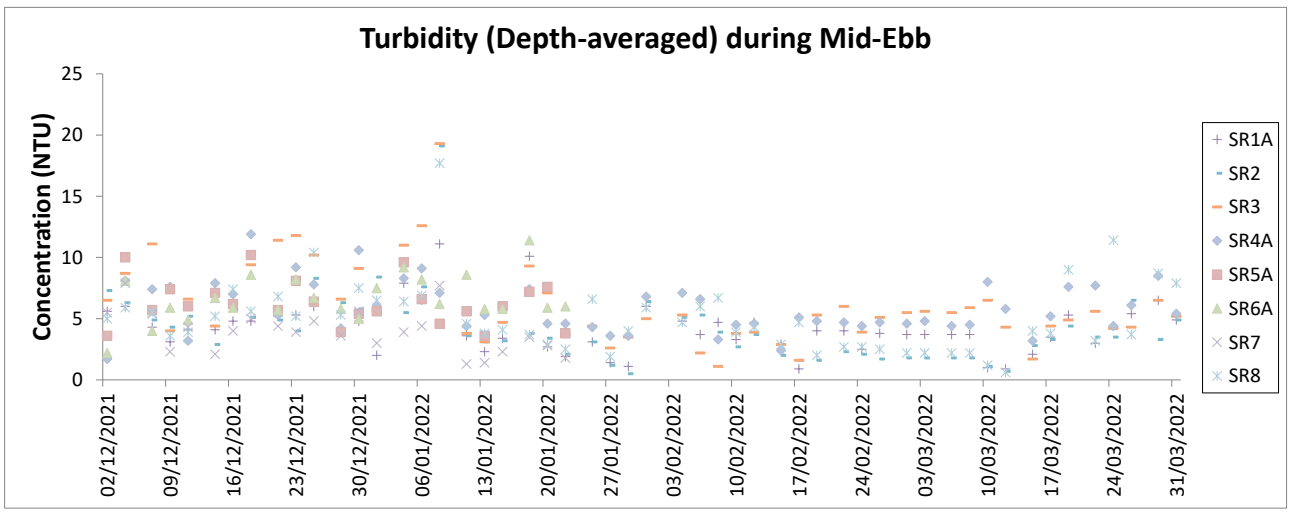

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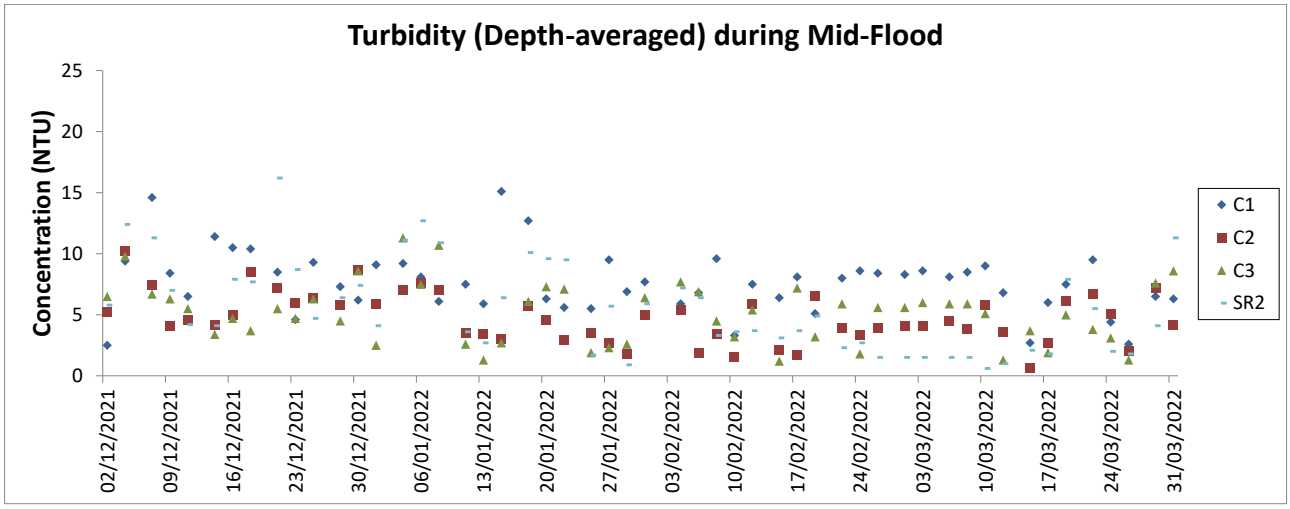

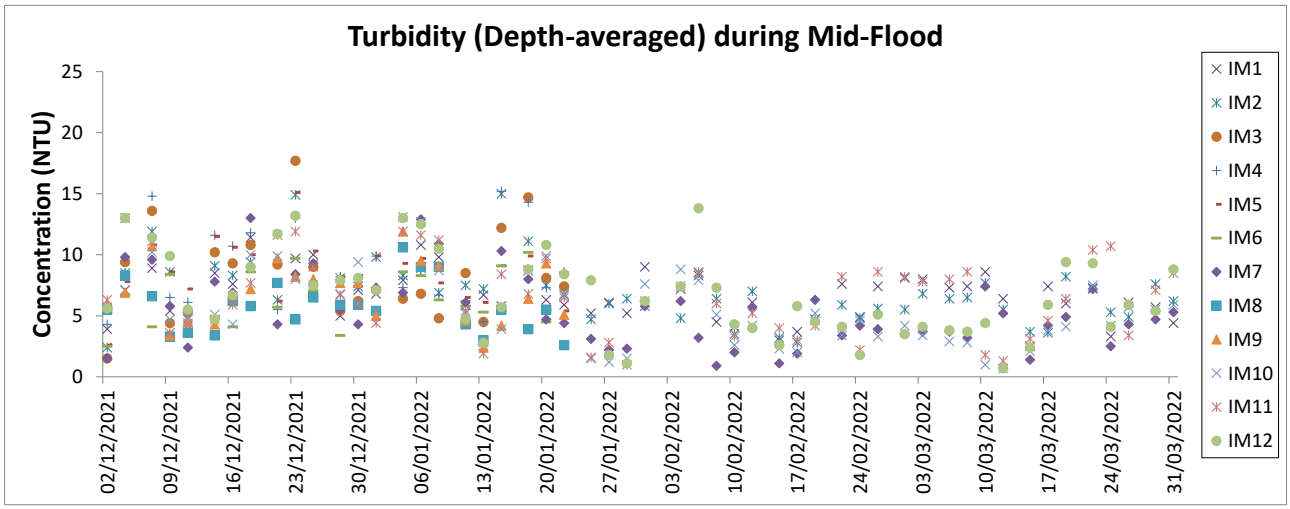

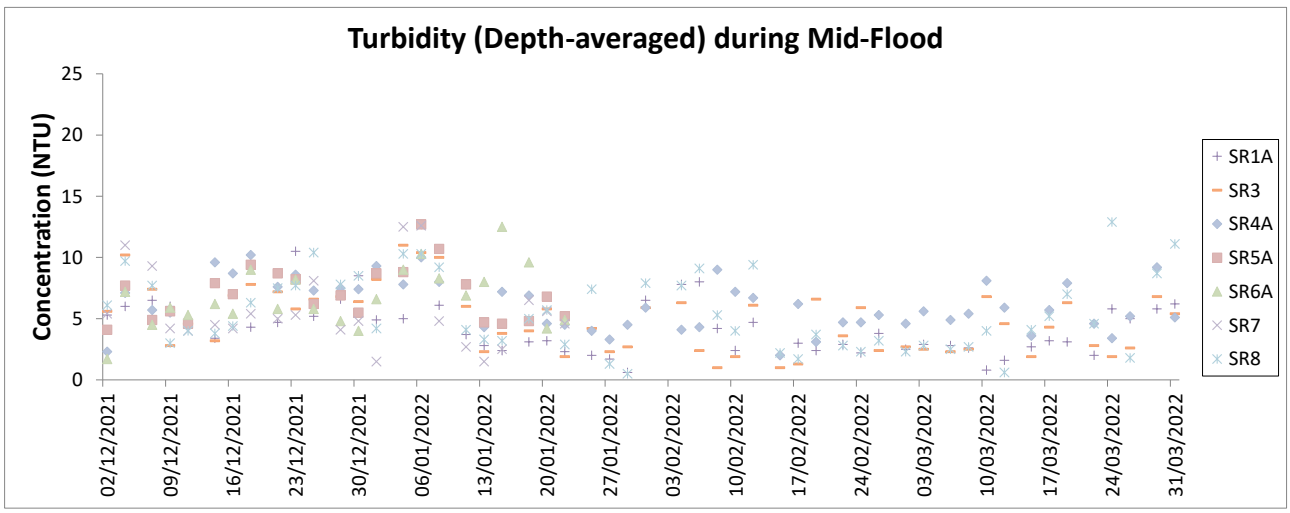

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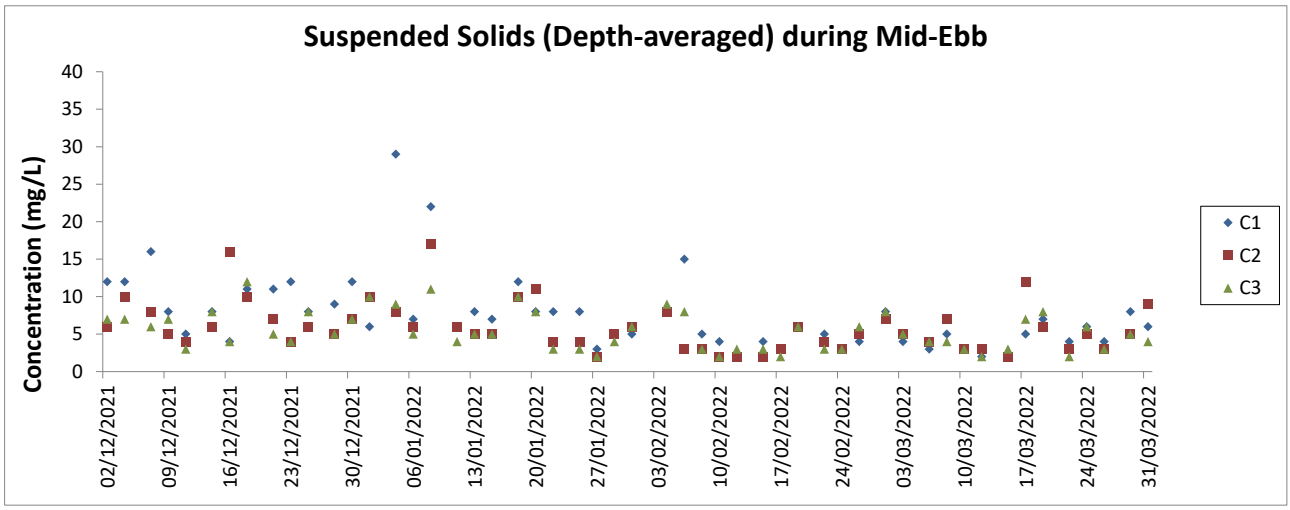

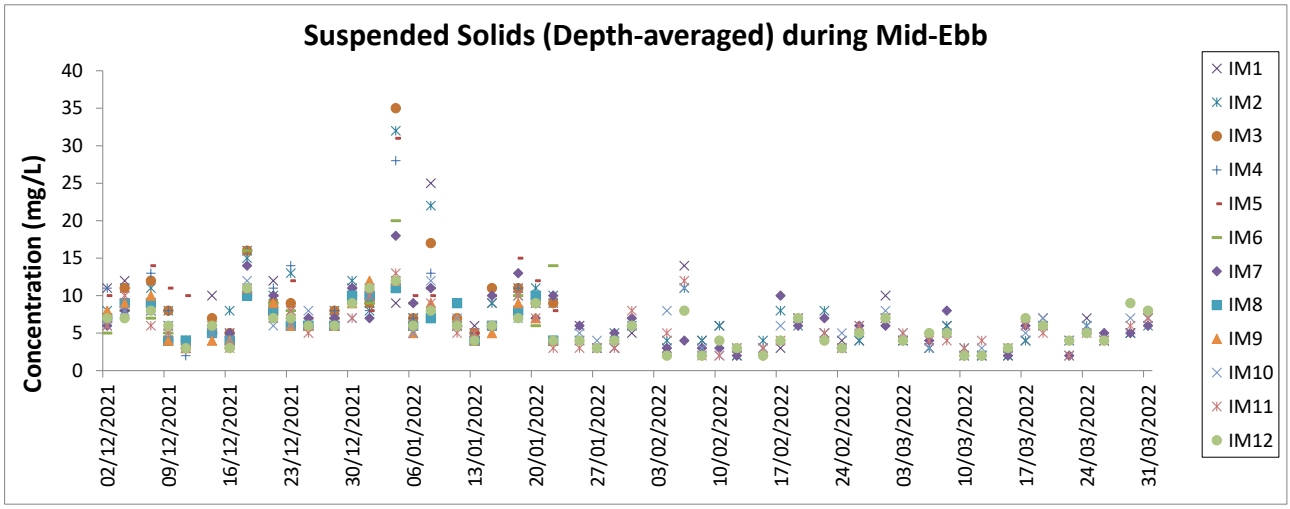

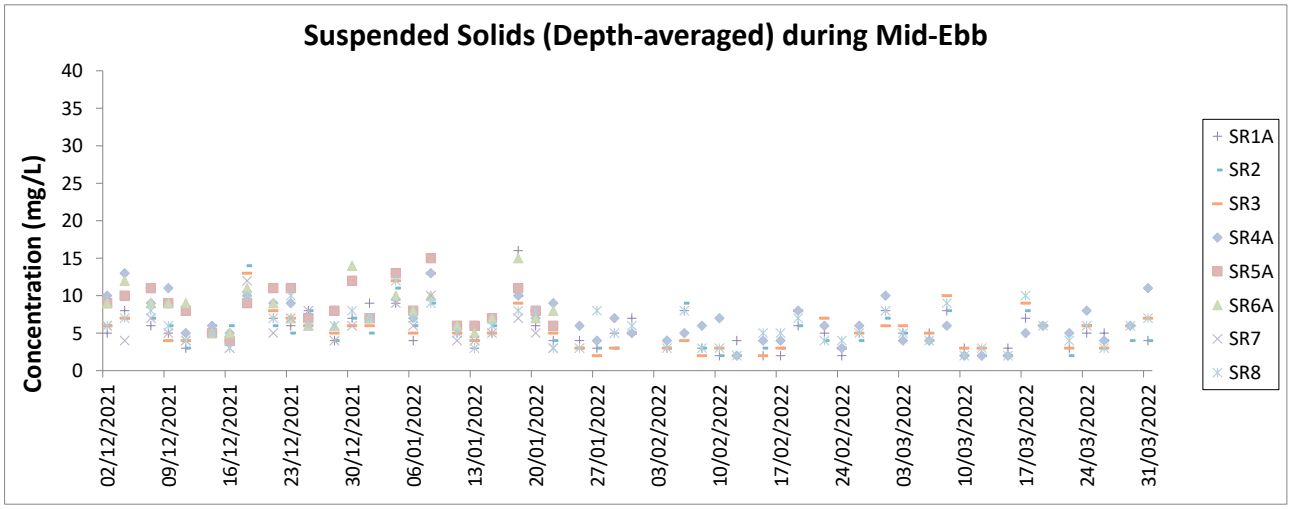

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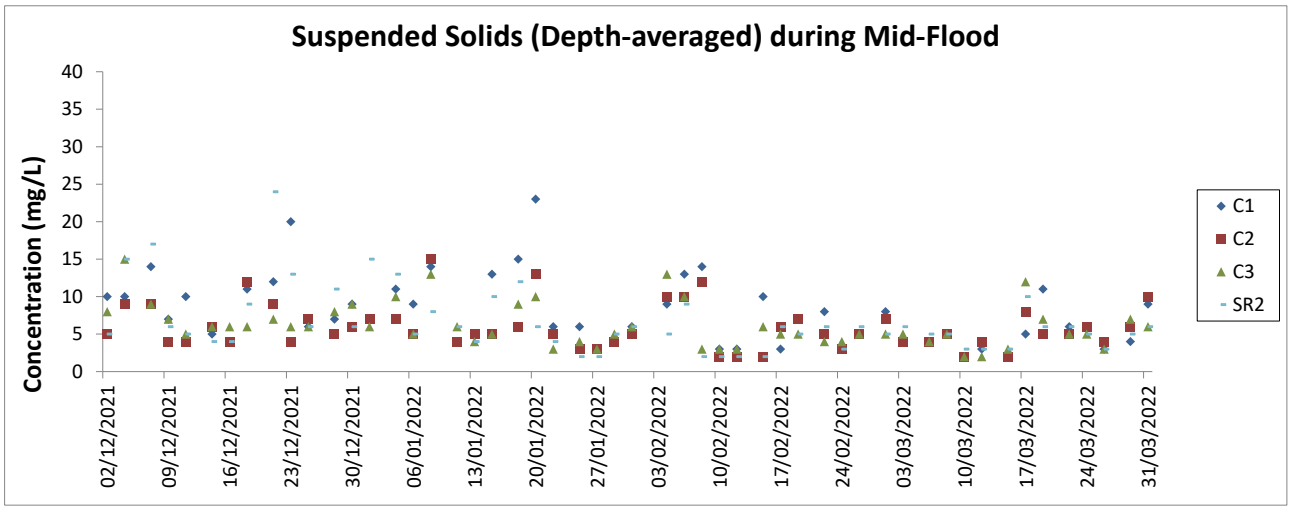

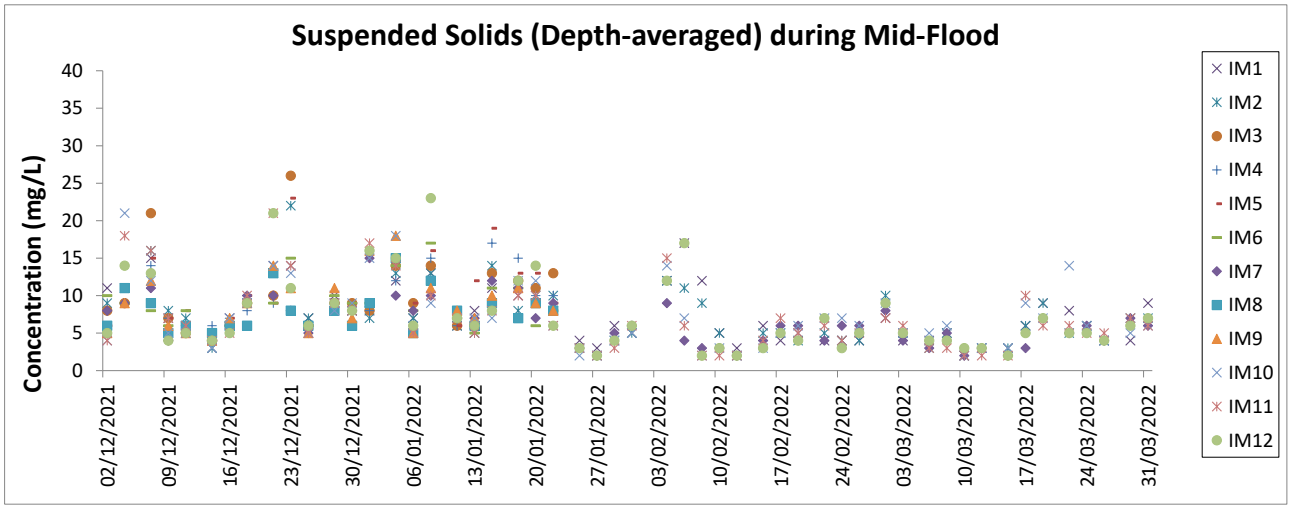

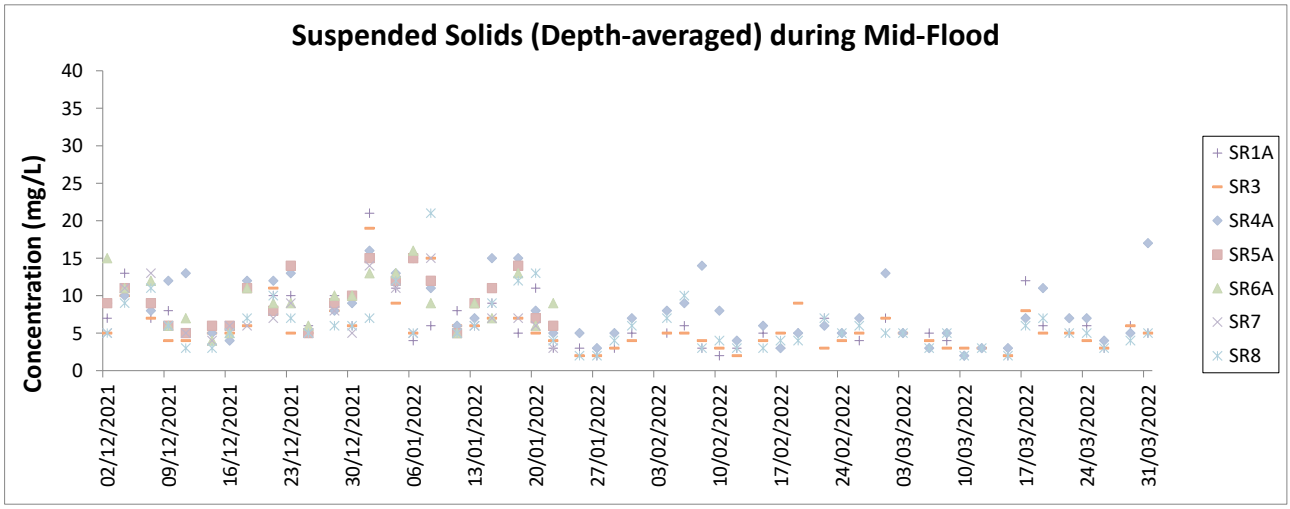

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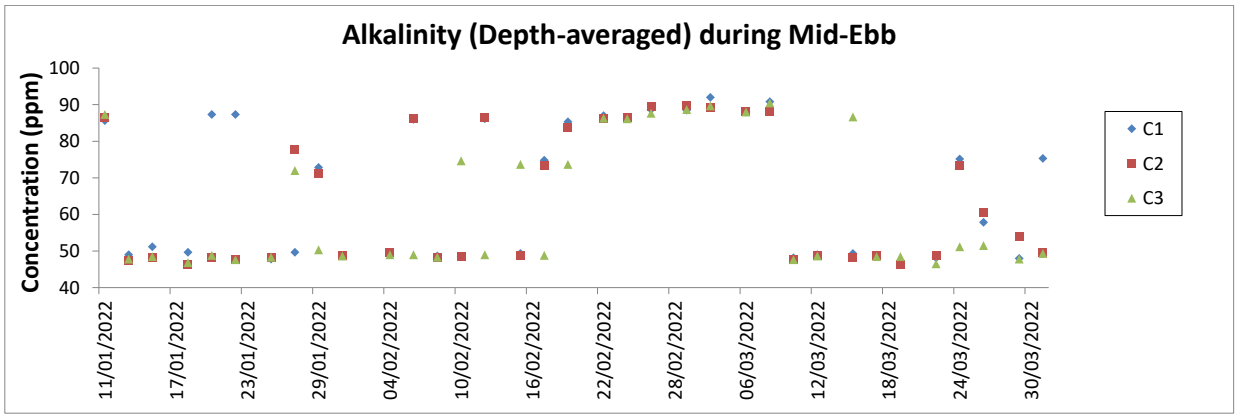

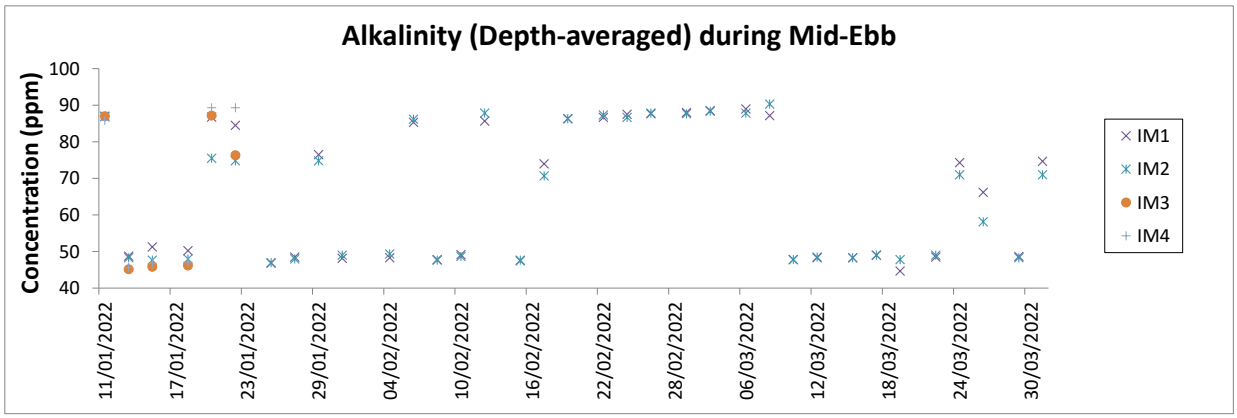

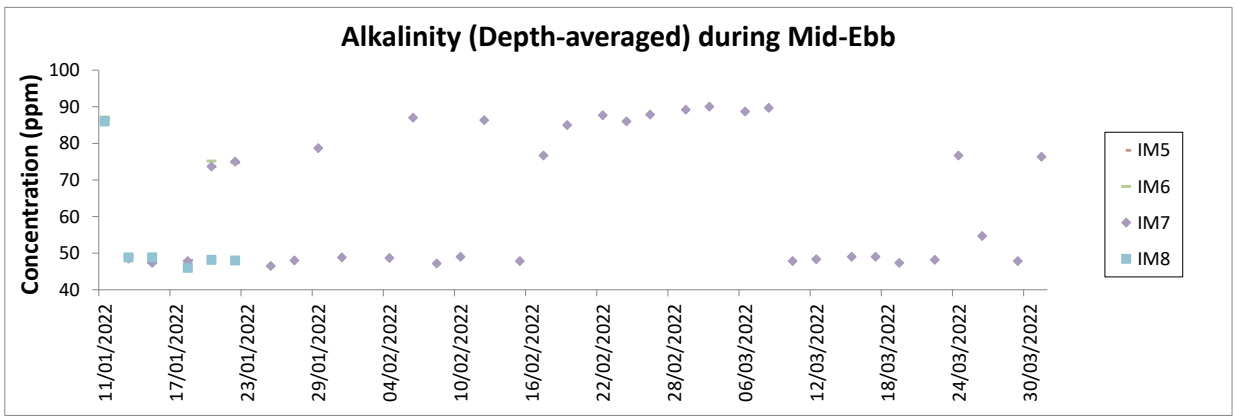

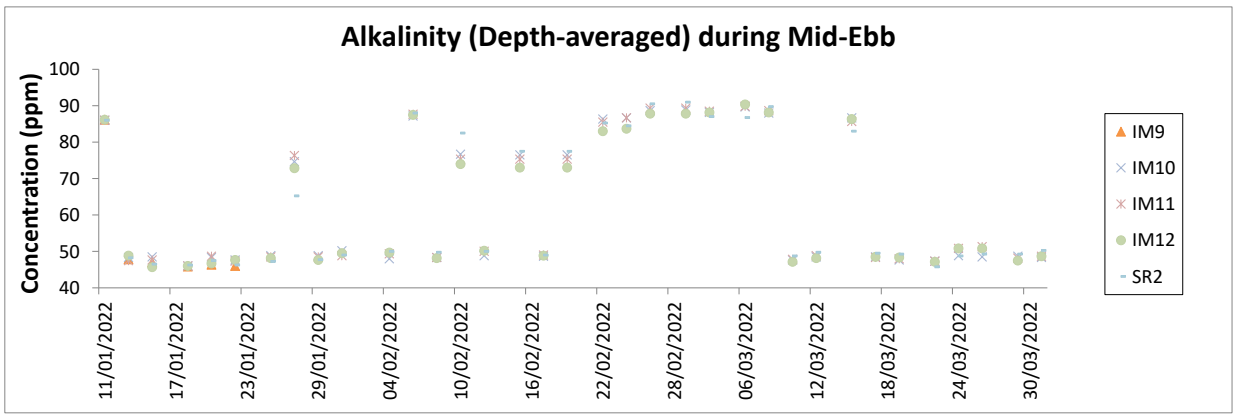

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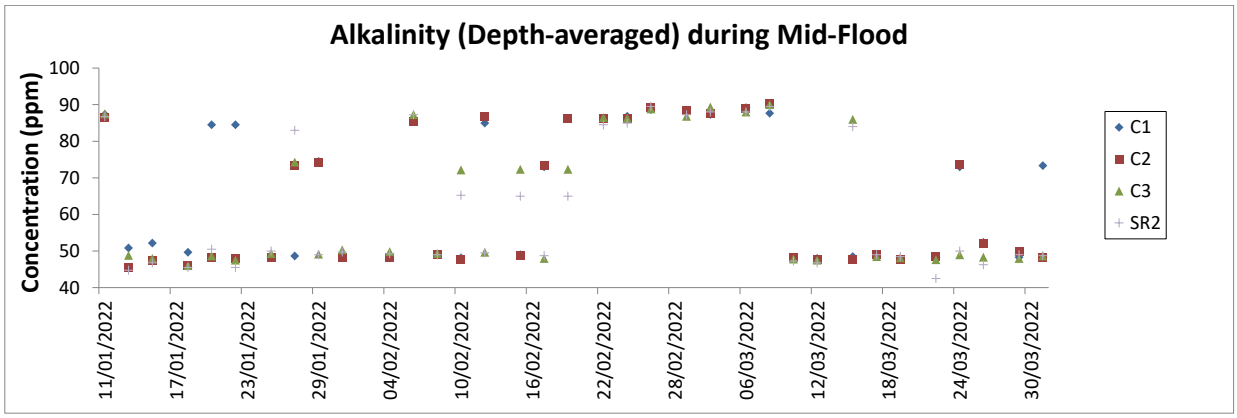

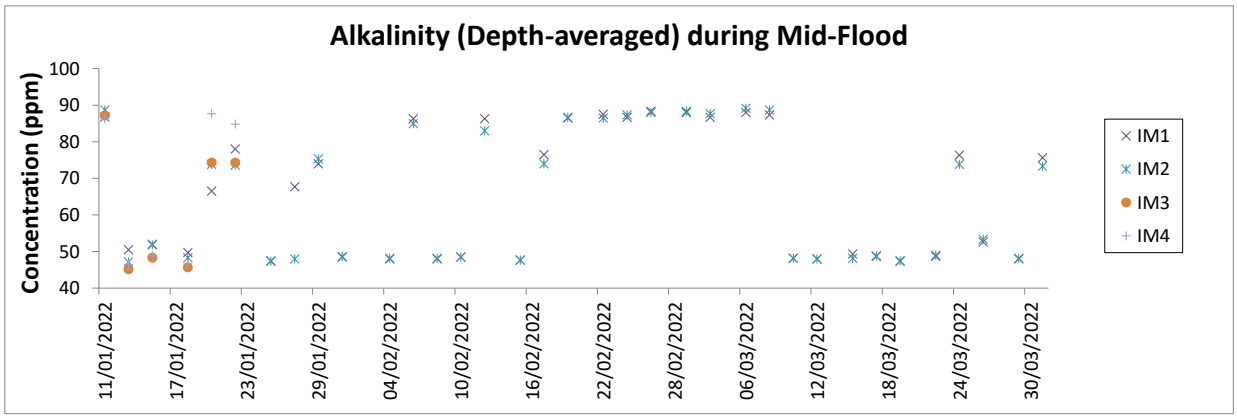

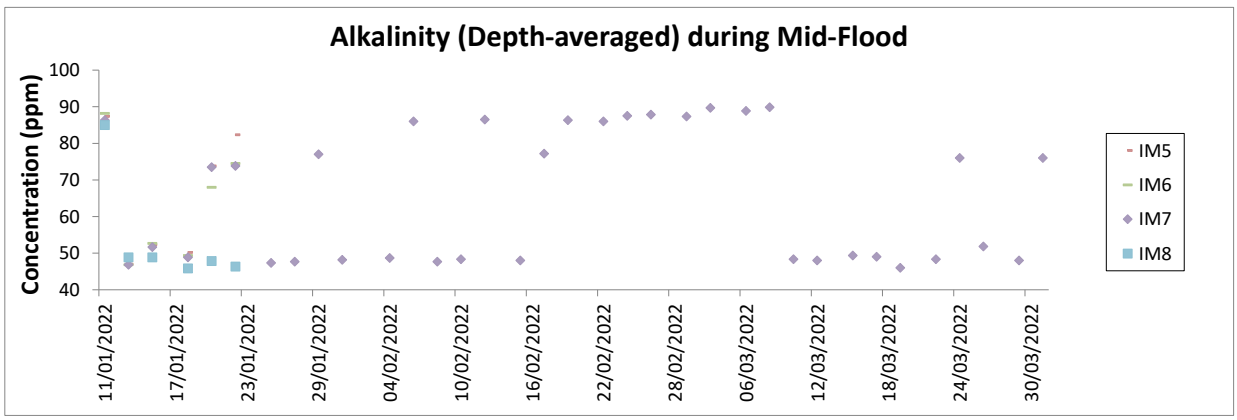

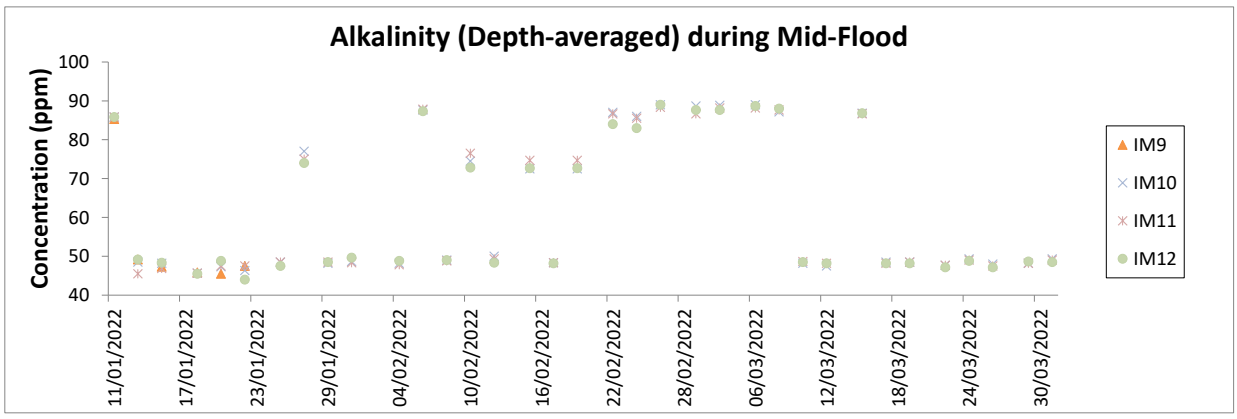

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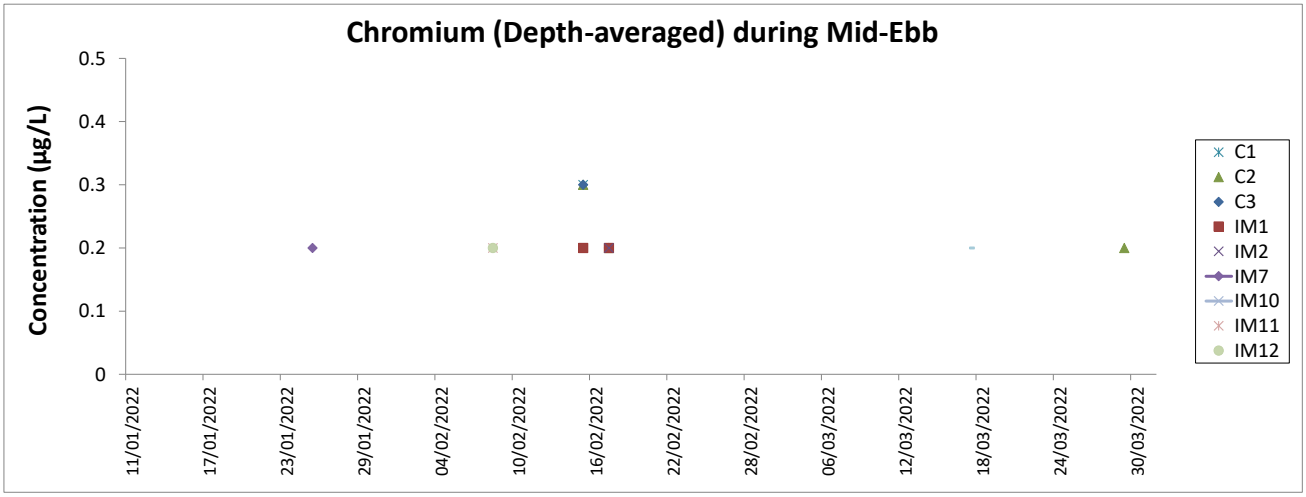

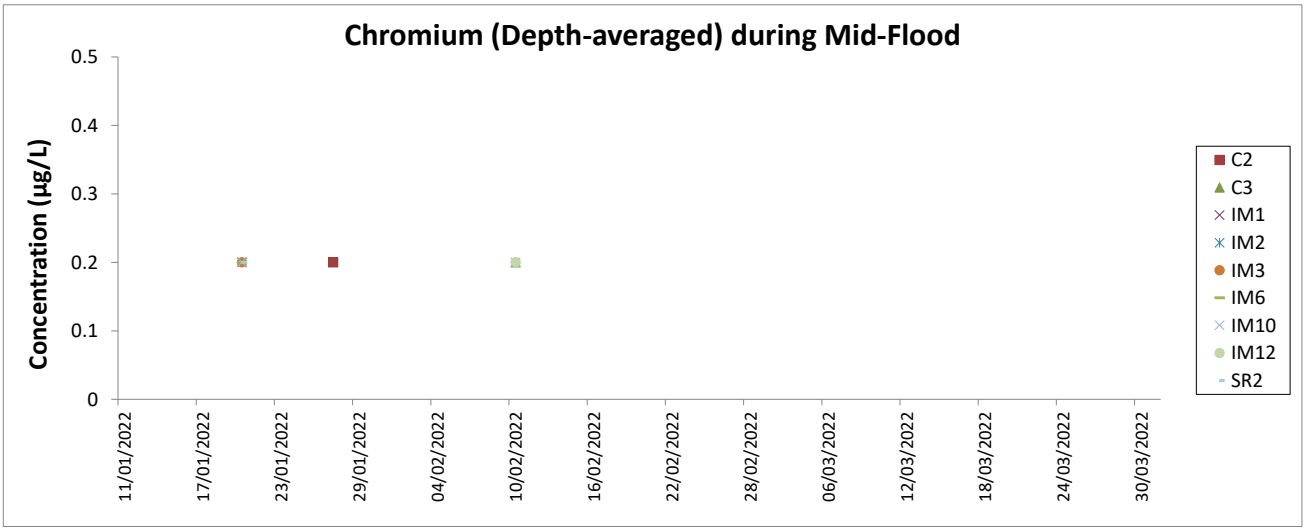

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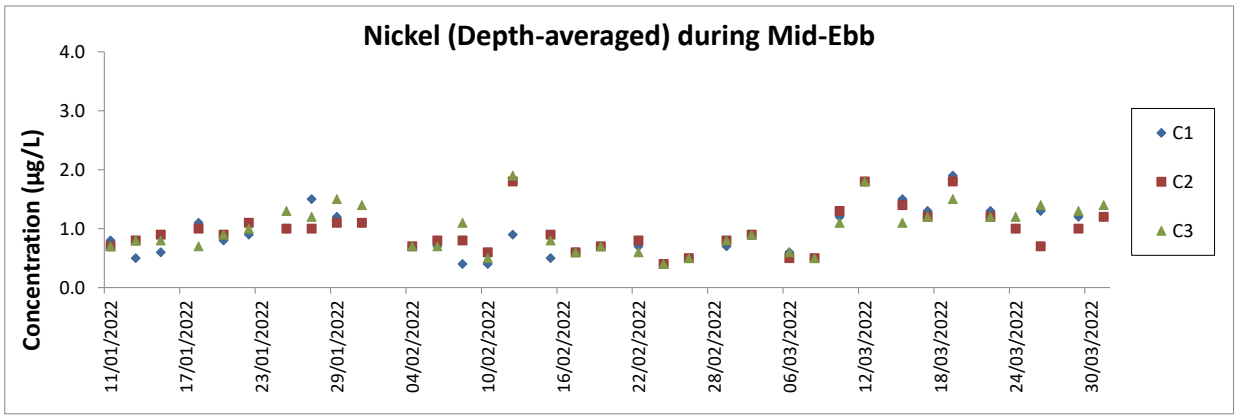

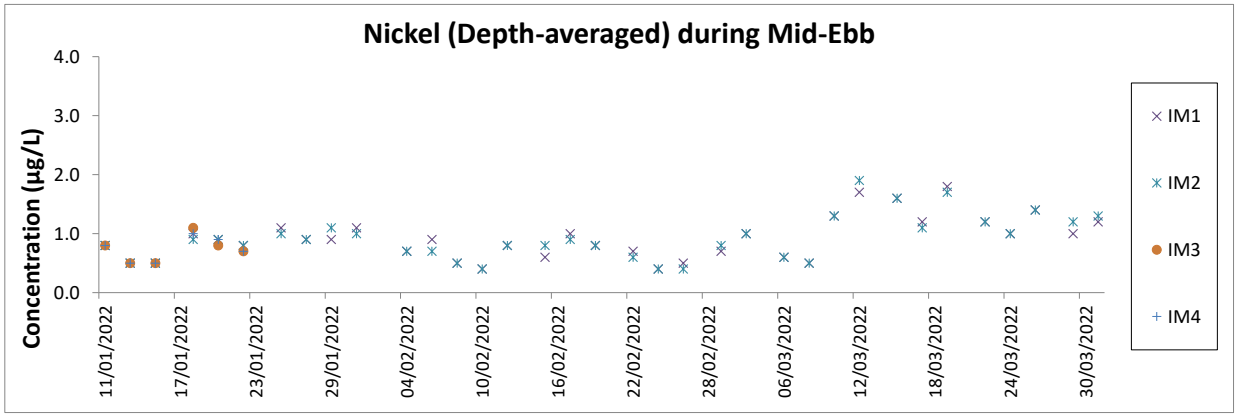

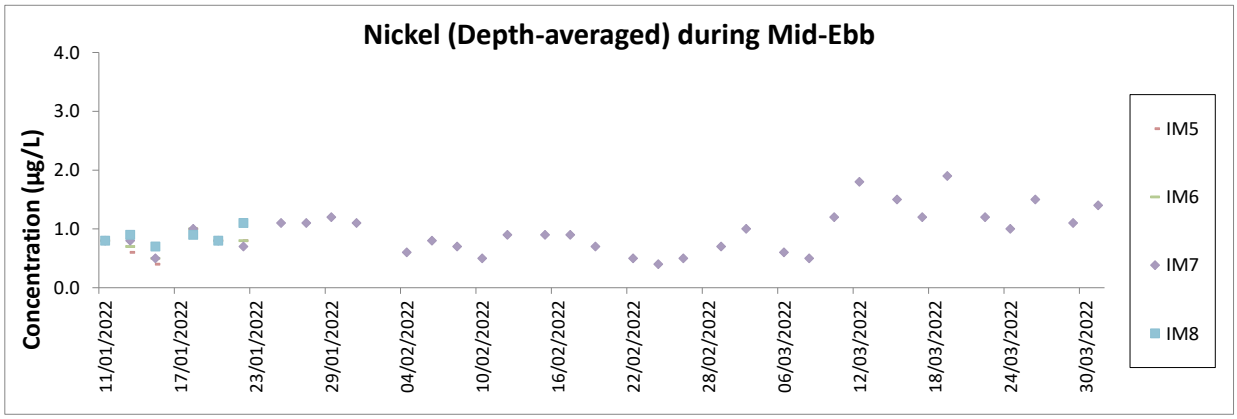

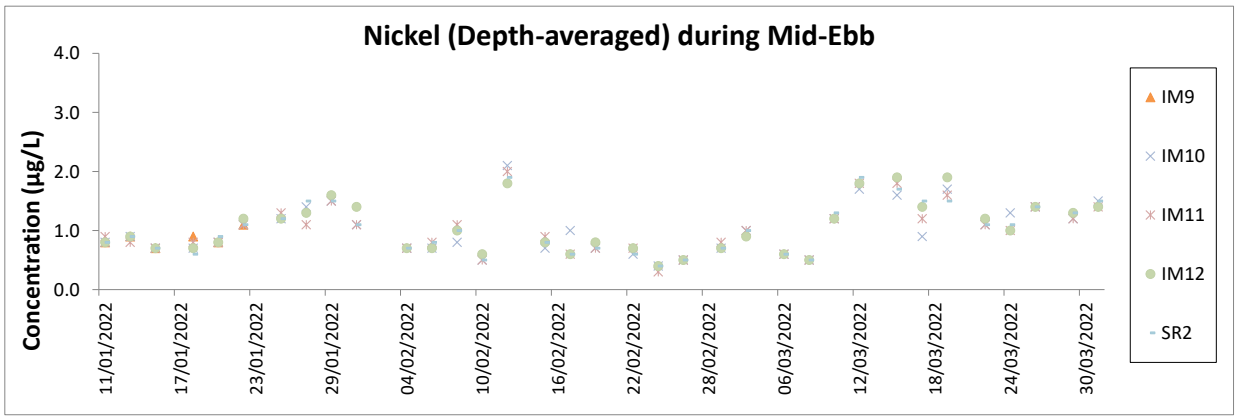

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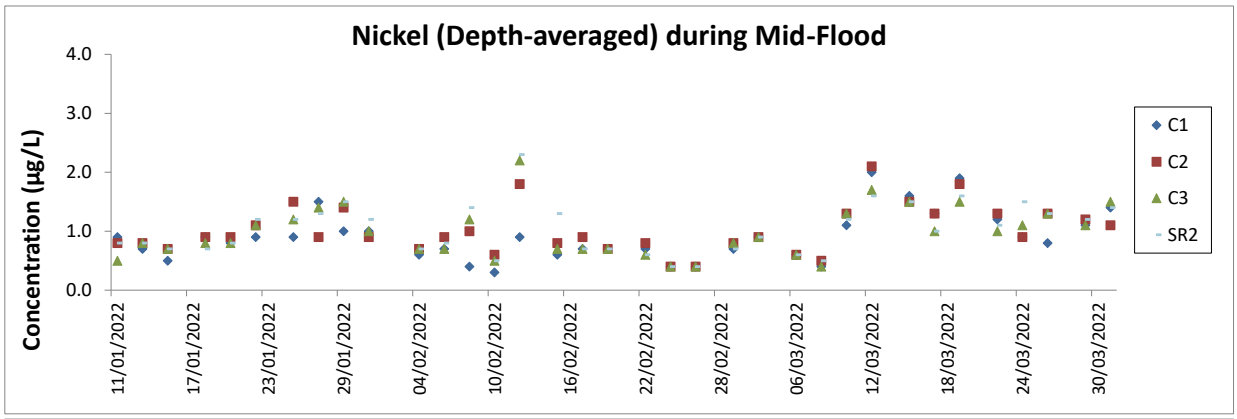

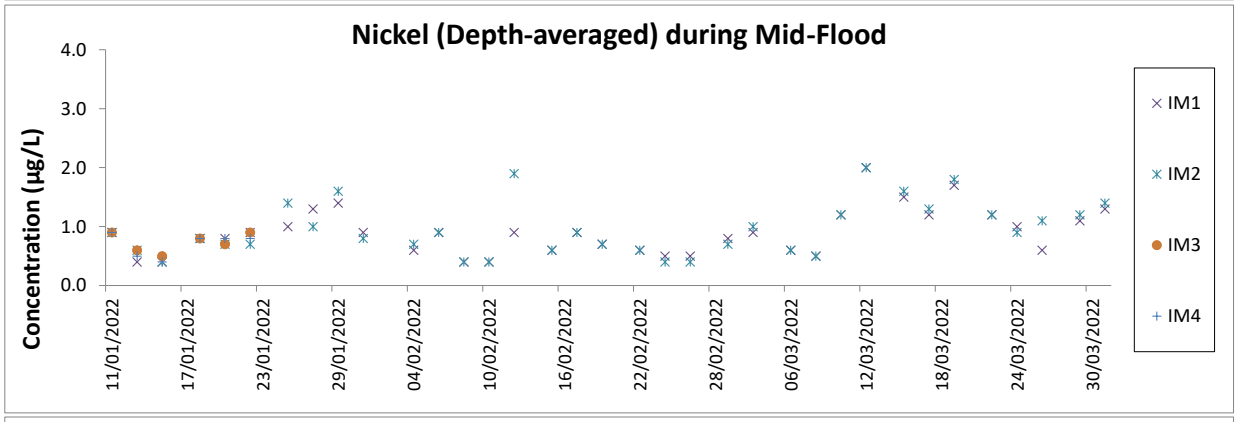

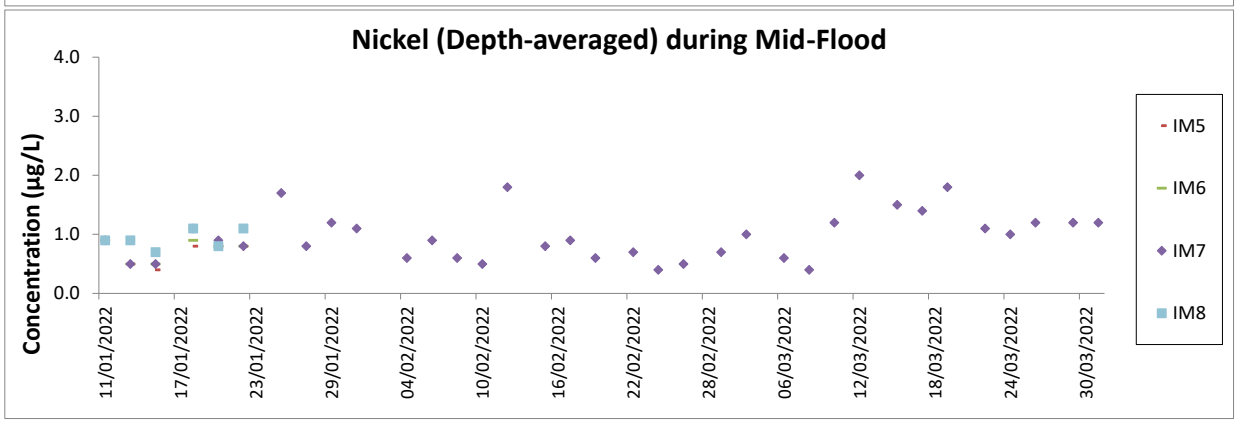

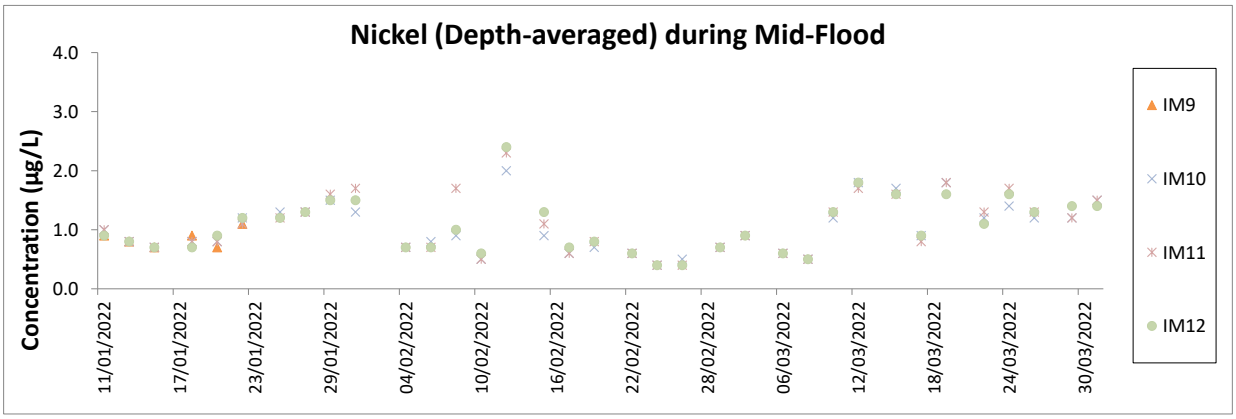

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Chinese White Dolphin Monitoring Results

CWD Small Vessel Line-transect Survey — Survey Effort Data

DATE	AREA	BEAU	KM SEARCHED	SEASON	VESSEL	TYPE	P/S
03-Jan-22	NWL	2	48.340	WINTER	32166	3RS ET	P
03-Jan-22	NWL	3	13.940	WINTER	32166	3RS ET	P
03-Jan-22	NWL	2	11.440	WINTER	32166	3RS ET	S
04-Jan-22	NEL	2	6.300	WINTER	32166	3RS ET	P
04-Jan-22	NEL	3	23.630	WINTER	32166	3RS ET	P
04-Jan-22	NEL	3	7.770	WINTER	32166	3RS ET	S
05-Jan-22	AW	2	0.800	WINTER	32166	3RS ET	P
05-Jan-22	AW	3	1.770	WINTER	32166	3RS ET	P
05-Jan-22	WL	2	10.474	WINTER	32166	3RS ET	P
05-Jan-22	WL	2	5.590	WINTER	32166	3RS ET	S
05-Jan-22	WL	3	0.504	WINTER	32166	3RS ET	S
10-Jan-22	AW	2	4.820	WINTER	32166	3RS ET	P
10-Jan-22	WL	2	12.835	WINTER	32166	3RS ET	P
10-Jan-22	WL	3	6.493	WINTER	32166	3RS ET	P
10-Jan-22	WL	2	5.225	WINTER	32166	3RS ET	S
10-Jan-22	WL	3	4.587	WINTER	32166	3RS ET	S
11-Jan-22	NEL	2	7.450	WINTER	32166	3RS ET	P
11-Jan-22	NEL	3	28.850	WINTER	32166	3RS ET	P
11-Jan-22	NEL	2	3.390	WINTER	32166	3RS ET	S
11-Jan-22	NEL	3	5.510	WINTER	32166	3RS ET	S
12-Jan-22	NWL	2	12.600	WINTER	32166	3RS ET	P
12-Jan-22	NWL	3	50.400	WINTER	32166	3RS ET	P
12-Jan-22	NWL	2	3.300	WINTER	32166	3RS ET	S
12-Jan-22	NWL	3	8.600	WINTER	32166	3RS ET	S
13-Jan-22	SWL	2	38.742	WINTER	32166	3RS ET	P
13-Jan-22	SWL	3	14.940	WINTER	32166	3RS ET	P
13-Jan-22	SWL	2	13.268	WINTER	32166	3RS ET	S
13-Jan-22	SWL	3	2.260	WINTER	32166	3RS ET	S
19-Jan-22	SWL	2	26.240	WINTER	32166	3RS ET	P
19-Jan-22	SWL	3	21.930	WINTER	32166	3RS ET	P
19-Jan-22	SWL	2	10.780	WINTER	32166	3RS ET	S
19-Jan-22	SWL	3	3.510	WINTER	32166	3RS ET	S
07-Feb-22	NEL	2	22.800	WINTER	32166	3RS ET	P
07-Feb-22	NEL	3	7.990	WINTER	32166	3RS ET	P
07-Feb-22	NEL	2	7.900	WINTER	32166	3RS ET	S
07-Feb-22	NEL	3	1.000	WINTER	32166	3RS ET	S
08-Feb-22	AW	3	4.930	WINTER	32166	3RS ET	P
08-Feb-22	WL	3	14.850	WINTER	32166	3RS ET	P
08-Feb-22	WL	2	1.220	WINTER	32166	3RS ET	S
08-Feb-22	WL	3	7.030	WINTER	32166	3RS ET	S
09-Feb-22	NWL	3	47.720	WINTER	32166	3RS ET	P
09-Feb-22	NWL	3	11.700	WINTER	32166	3RS ET	S
10-Feb-22	AW	2	4.770	WINTER	32166	3RS ET	P
10-Feb-22	WL	3	19.968	WINTER	32166	3RS ET	P
10-Feb-22	WL	3	9.014	WINTER	32166	3RS ET	S

DATE	AREA	BEAU	KM SEARCHED	SEASON	VESSEL	TYPE	P/S
14-Feb-22	NEL	2	33.240	WINTER	32166	3RS ET	P
14-Feb-22	NEL	3	3.440	WINTER	32166	3RS ET	P
14-Feb-22	NEL	2	9.120	WINTER	32166	3RS ET	S
14-Feb-22	NEL	3	1.200	WINTER	32166	3RS ET	S
15-Feb-22	NWL	2	48.350	WINTER	32166	3RS ET	P
15-Feb-22	NWL	3	14.780	WINTER	32166	3RS ET	P
15-Feb-22	NWL	2	7.770	WINTER	32166	3RS ET	S
15-Feb-22	NWL	3	3.400	WINTER	32166	3RS ET	S
02-Mar-22	SWL	1	19.328	WINTER	32166	3RS ET	P
02-Mar-22	SWL	2	26.443	WINTER	32166	3RS ET	P
02-Mar-22	SWL	3	4.330	WINTER	32166	3RS ET	P
02-Mar-22	SWL	1	5.230	WINTER	32166	3RS ET	S
02-Mar-22	SWL	2	10.819	WINTER	32166	3RS ET	S
02-Mar-22	SWL	3	1.616	WINTER	32166	3RS ET	S
04-Mar-22	SWL	1	3.665	WINTER	32166	3RS ET	P
04-Mar-22	SWL	2	12.934	WINTER	32166	3RS ET	P
04-Mar-22	SWL	3	31.502	WINTER	32166	3RS ET	P
04-Mar-22	SWL	2	3.628	WINTER	32166	3RS ET	S
04-Mar-22	SWL	3	11.733	WINTER	32166	3RS ET	S
07-Mar-22	NEL	2	14.130	SPRING	32166	3RS ET	P
07-Mar-22	NEL	3	19.300	SPRING	32166	3RS ET	P
07-Mar-22	NEL	2	4.270	SPRING	32166	3RS ET	S
07-Mar-22	NEL	3	6.300	SPRING	32166	3RS ET	S
08-Mar-22	NWL	2	32.300	SPRING	32166	3RS ET	P
08-Mar-22	NWL	3	23.320	SPRING	32166	3RS ET	P
08-Mar-22	NWL	2	6.840	SPRING	32166	3RS ET	S
08-Mar-22	NWL	3	3.140	SPRING	32166	3RS ET	S
11-Mar-22	AW	2	1.170	SPRING	32166	3RS ET	P
11-Mar-22	AW	3	3.550	SPRING	32166	3RS ET	P
11-Mar-22	WL	2	14.610	SPRING	32166	3RS ET	P
11-Mar-22	WL	3	3.830	SPRING	32166	3RS ET	P
11-Mar-22	WL	2	9.470	SPRING	32166	3RS ET	S
14-Mar-22	SWL	2	24.960	SPRING	32166	3RS ET	P
14-Mar-22	SWL	3	29.540	SPRING	32166	3RS ET	P
14-Mar-22	SWL	2	4.000	SPRING	32166	3RS ET	S
14-Mar-22	SWL	3	8.950	SPRING	32166	3RS ET	S
15-Mar-22	AW	1	4.900	SPRING	32166	3RS ET	P
15-Mar-22	WL	2	10.915	SPRING	32166	3RS ET	P
15-Mar-22	WL	3	6.986	SPRING	32166	3RS ET	P
15-Mar-22	WL	2	5.325	SPRING	32166	3RS ET	S
15-Mar-22	WL	3	3.640	SPRING	32166	3RS ET	S
16-Mar-22	NEL	2	28.140	SPRING	32166	3RS ET	P
16-Mar-22	NEL	3	8.300	SPRING	32166	3RS ET	P
16-Mar-22	NEL	2	9.000	SPRING	32166	3RS ET	S
16-Mar-22	NEL	3	1.160	SPRING	32166	3RS ET	S
18-Mar-22	SWL	1	6.271	SPRING	32166	3RS ET	P
18-Mar-22	SWL	2	41.900	SPRING	32166	3RS ET	P

DATE	AREA	BEAU	KM SEARCHED	SEASON	VESSEL	TYPE	P/S
18-Mar-22	SWL	3	6.190	SPRING	32166	3RS ET	P
18-Mar-22	SWL	1	0.890	SPRING	32166	3RS ET	S
18-Mar-22	SWL	2	12.000	SPRING	32166	3RS ET	S
18-Mar-22	SWL	3	1.940	SPRING	32166	3RS ET	S
21-Mar-22	NWL	2	18.260	SPRING	32166	3RS ET	P
21-Mar-22	NWL	3	45.540	SPRING	32166	3RS ET	P
21-Mar-22	NWL	2	1.100	SPRING	32166	3RS ET	S
21-Mar-22	NWL	3	10.500	SPRING	32166	3RS ET	S

Notes: The two vessel surveys of February in SWL survey area were rescheduled to early March (i.e.,2 and 4 March 2022) due to unavailability of vessel operators or suitable vessel during the rising impact of COVID-19 pandemic in the second half of February 2022.

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.	P/S
03-Jan-22	1	0959	CWD	3	NWL	3	868	ON	3RS ET	22.3497	113.8684	WINTER	NONE	P
03-Jan-22	2	1039	CWD	5	NWL	2	466	ON	3RS ET	22.2726	113.8700	WINTER	GILLNETTER	P
03-Jan-22	3	1159	CWD	4	NWL	2	130	ON	3RS ET	22.3693	113.8773	WINTER	NONE	P
03-Jan-22	4	1331	CWD	2	NWL	2	563	ON	3RS ET	22.3616	113.8979	WINTER	NONE	P
05-Jan-22	1	0946	CWD	1	AW	3	262	ON	3RS ET	22.2919	113.8752	WINTER	NONE	P
05-Jan-22	2	1024	CWD	5	WL	2	430	ON	3RS ET	22.2854	113.8614	WINTER	GILLNETTER	P
05-Jan-22	3	1048	CWD	3	WL	2	789	ON	3RS ET	22.2764	113.8512	WINTER	NONE	S
05-Jan-22	4	1052	CWD	3	WL	2	173	ON	3RS ET	22.2749	113.8492	WINTER	NONE	S
05-Jan-22	5	1108	CWD	3	WL	2	295	ON	3RS ET	22.2695	113.8523	WINTER	GILLNETTER	P
05-Jan-22	6	1115	CWD	1	WL	2	8	ON	3RS ET	22.2683	113.8597	WINTER	GILLNETTER	S
05-Jan-22	7	1125	CWD	7	WL	2	178	ON	3RS ET	22.2593	113.8440	WINTER	NONE	P
05-Jan-22	8	1143	CWD	3	WL	2	155	ON	3RS ET	22.2502	113.8373	WINTER	NONE	P
05-Jan-22	9	1159	CWD	1	WL	2	304	ON	3RS ET	22.2448	113.8497	WINTER	GILLNETTER	S
05-Jan-22	10	1233	CWD	4	WL	2	74	ON	3RS ET	22.2323	113.8373	WINTER	NONE	P
05-Jan-22	11	1253	CWD	3	WL	2	215	ON	3RS ET	22.2236	113.8309	WINTER	NONE	P
05-Jan-22	12	1313	CWD	1	WL	2	240	ON	3RS ET	22.2142	113.8264	WINTER	NONE	P
05-Jan-22	13	1328	CWD	11	WL	2	598	ON	3RS ET	22.2060	113.8393	WINTER	NONE	S
10-Jan-22	1	1017	CWD	1	WL	2	63	ON	3RS ET	22.2759	113.8501	WINTER	NONE	S
10-Jan-22	2	1140	CWD	5	WL	3	331	ON	3RS ET	22.2142	113.8259	WINTER	NONE	P
10-Jan-22	3	1211	CWD	8	WL	3	103	ON	3RS ET	22.2059	113.8291	WINTER	NONE	P
13-Jan-22	1	1152	FP	1	SWL	2	40	ON	3RS ET	22.1586	113.9179	WINTER	NONE	P
13-Jan-22	2	1314	FP	3	SWL	2	261	ON	3RS ET	22.1492	113.8923	WINTER	NONE	S
13-Jan-22	3	1433	CWD	5	SWL	2	366	ON	3RS ET	22.1978	113.8685	WINTER	NONE	P
19-Jan-22	1	1337	FP	2	SWL	3	43	ON	3RS ET	22.1859	113.8977	WINTER	NONE	P
19-Jan-22	2	1453	CWD	5	SWL	3	38	ON	3RS ET	22.1827	113.8592	WINTER	NONE	P
10-Feb-22	1	1102	CWD	9	WL	3	185	ON	3RS ET	22.2418	113.8301	WINTER	NONE	P
10-Feb-22	2	1119	CWD	1	WL	3	61	ON	3RS ET	22.2316	113.8319	WINTER	NONE	P
10-Feb-22	3	1134	CWD	4	WL	3	78	ON	3RS ET	22.2236	113.8286	WINTER	NONE	P
10-Feb-22	4	1157	CWD	2	WL	3	43	ON	3RS ET	22.2146	113.8308	WINTER	NONE	P
15-Feb-22	1	0950	CWD	3	NWL	2	97	ON	3RS ET	22.3634	113.8706	WINTER	NONE	P
15-Feb-22	2	1054	CWD	2	NWL	2	50	ON	3RS ET	22.3039	113.8778	WINTER	NONE	P

DATE	STG #	TIME	CWD/FP	GP SZ	AREA	BEAU	PSD	EFFORT	TYPE	DEC LAT	DEC LON	SEASON	BOAT ASSOC.	P/S
02-Mar-22	1	1023	FP	6	SWL	1	400	ON	3RS ET	22.2167	113.9352	WINTER	NONE	P
02-Mar-22	2	1034	FP	3	SWL	1	88	ON	3RS ET	22.1947	113.9360	WINTER	NONE	P
02-Mar-22	3	1040	FP	2	SWL	1	50	ON	3RS ET	22.1843	113.9360	WINTER	NONE	P
02-Mar-22	4	1112	FP	3	SWL	1	474	ON	3RS ET	22.1693	113.9277	WINTER	NONE	P
02-Mar-22	5	1132	FP	5	SWL	1	44	ON	3RS ET	22.2034	113.9187	WINTER	NONE	S
02-Mar-22	6	1154	FP	1	SWL	2	80	ON	3RS ET	22.1584	113.9175	WINTER	NONE	P
02-Mar-22	7	1204	FP	1	SWL	2	20	ON	3RS ET	22.1413	113.9154	WINTER	NONE	S
02-Mar-22	8	1213	FP	2	SWL	2	62	ON	3RS ET	22.1522	113.9082	WINTER	NONE	P
02-Mar-22	9	1217	FP	2	SWL	2	6	ON	3RS ET	22.1543	113.9050	WINTER	NONE	S
02-Mar-22	10	1310	FP	4	SWL	1	152	ON	3RS ET	22.1701	113.8969	WINTER	NONE	P
02-Mar-22	11	1316	FP	3	SWL	2	306	ON	3RS ET	22.1590	113.8973	WINTER	NONE	P
02-Mar-22	12	1318	FP	6	SWL	2	61	ON	3RS ET	22.1573	113.8974	WINTER	NONE	P
02-Mar-22	13	1328	FP	2	SWL	2	39	ON	3RS ET	22.1495	113.8906	WINTER	NONE	S
02-Mar-22	14	1335	FP	7	SWL	2	69	ON	3RS ET	22.1588	113.8882	WINTER	NONE	P
02-Mar-22	15	1346	FP	1	SWL	1	43	ON	3RS ET	22.1646	113.8883	WINTER	NONE	P
02-Mar-22	16	1427	FP	1	SWL	2	453	ON	3RS ET	22.1757	113.8791	WINTER	NONE	P
02-Mar-22	17	1429	FP	1	SWL	2	10	ON	3RS ET	22.1729	113.8786	WINTER	NONE	P
02-Mar-22	18	1434	FP	4	SWL	2	34	ON	3RS ET	22.1668	113.8789	WINTER	NONE	P
04-Mar-22	1	1025	FP	2	SWL	1	156	ON	3RS ET	22.2173	113.9361	WINTER	NONE	P
04-Mar-22	2	1028	FP	5	SWL	1	45	ON	3RS ET	22.2140	113.9361	WINTER	NONE	P
04-Mar-22	3	1035	FP	1	SWL	1	11	ON	3RS ET	22.2073	113.9362	WINTER	NONE	P
04-Mar-22	4	1042	FP	2	SWL	2	264	ON	3RS ET	22.1863	113.9362	WINTER	NONE	P
04-Mar-22	5	1215	FP	5	SWL	3	6	ON	3RS ET	22.1522	113.9075	WINTER	NONE	P
04-Mar-22	6	1229	FP	4	SWL	3	104	ON	3RS ET	22.1561	113.8999	WINTER	NONE	S
04-Mar-22	7	1329	FP	1	SWL	3	21	ON	3RS ET	22.1568	113.8976	WINTER	NONE	P
04-Mar-22	8	1405	FP	1	SWL	2	73	ON	3RS ET	22.2085	113.8882	WINTER	NONE	P
04-Mar-22	9	1411	FP	3	SWL	2	80	ON	3RS ET	22.2114	113.8837	WINTER	NONE	S
04-Mar-22	10	1415	FP	2	SWL	2	102	ON	3RS ET	22.2081	113.8794	WINTER	NONE	S
04-Mar-22	11	1530	CWD	1	SWL	2	262	ON	3RS ET	22.1899	113.8495	WINTER	NONE	P
08-Mar-22	1	1029	CWD	4	NWL	3	58	ON	3RS ET	22.2918	113.8698	SPRING	NONE	P
11-Mar-22	1	1033	CWD	5	WL	2	202	ON	3RS ET	22.2610	113.8455	SPRING	NONE	P
11-Mar-22	2	1106	CWD	13	WL	2	794	ON	3RS ET	22.2418	113.8348	SPRING	NONE	P
14-Mar-22	1	1035	FP	3	SWL	2	19	ON	3RS ET	22.2002	113.9361	SPRING	NONE	P

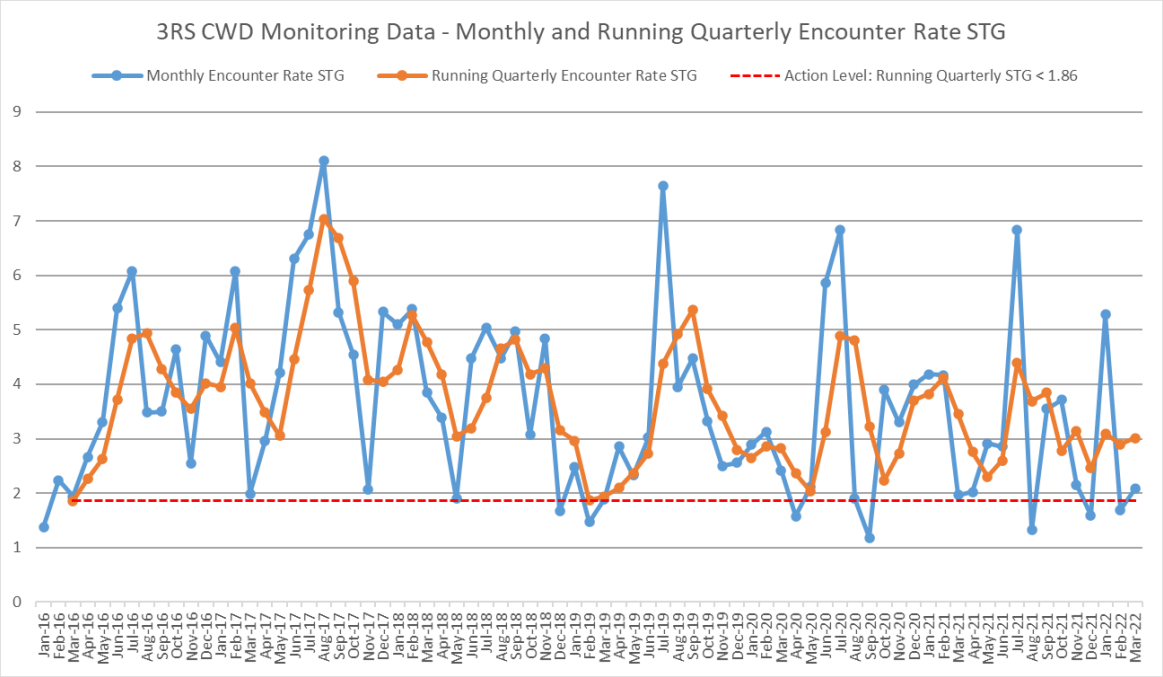
DATE	STG #	TIME	CWD/FP	GP SZ	AREA	BEAU	PSD	EFFORT	TYPE	DEC LAT	DEC LON	SEASON	BOAT ASSOC.	P/S
14-Mar-22	2	1049	FP	5	SWL	2	128	ON	3RS ET	22.1731	113.9361	SPRING	NONE	P
14-Mar-22	3	1051	FP	3	SWL	2	447	ON	3RS ET	22.1716	113.9362	SPRING	NONE	P
14-Mar-22	4	1200	FP	2	SWL	2	99	ON	3RS ET	22.1569	113.9182	SPRING	NONE	P
14-Mar-22	5	1329	FP	2	SWL	3	474	ON	3RS ET	22.1609	113.8875	SPRING	NONE	P
14-Mar-22	6	1350	CWD	1	SWL	2	831	ON	3RS ET	22.2038	113.8873	SPRING	NONE	P
15-Mar-22	1	1112	CWD	5	WL	3	64	ON	3RS ET	22.2287	113.8376	SPRING	NONE	S
15-Mar-22	2	1128	CWD	2	WL	3	147	ON	3RS ET	22.2227	113.8344	SPRING	NONE	P
15-Mar-22	3	1145	CWD	11	WL	2	127	ON	3RS ET	22.2136	113.8277	SPRING	NONE	P
15-Mar-22	4	1221	CWD	3	WL	2	710	ON	3RS ET	22.2057	113.8362	SPRING	NONE	P
15-Mar-22	5	1248	CWD	3	WL	2	223	ON	3RS ET	22.1959	113.8378	SPRING	NONE	P
18-Mar-22	1	1037	FP	1	SWL	1	98	ON	3RS ET	22.2218	113.9362	SPRING	NONE	P
18-Mar-22	2	1054	FP	4	SWL	1	161	ON	3RS ET	22.1877	113.9367	SPRING	NONE	P
18-Mar-22	3	1101	FP	7	SWL	1	55	ON	3RS ET	22.1779	113.9365	SPRING	NONE	P
18-Mar-22	4	1107	FP	2	SWL	1	134	ON	3RS ET	22.1752	113.9369	SPRING	NONE	P
18-Mar-22	5	1152	FP	3	SWL	3	153	ON	3RS ET	22.1987	113.9275	SPRING	NONE	P
18-Mar-22	6	1236	FP	5	SWL	2	133	ON	3RS ET	22.1488	113.9084	SPRING	NONE	P
18-Mar-22	7	1245	FP	6	SWL	2	5	ON	3RS ET	22.1531	113.9089	SPRING	NONE	P
18-Mar-22	8	1344	FP	8	SWL	1	75	ON	3RS ET	22.2021	113.8975	SPRING	NONE	P
18-Mar-22	9	1355	FP	4	SWL	1	191	ON	3RS ET	22.1928	113.8965	SPRING	NONE	P
18-Mar-22	10	1429	FP	4	SWL	2	6	ON	3RS ET	22.1602	113.8880	SPRING	NONE	P
18-Mar-22	11	1436	FP	1	SWL	2	222	ON	3RS ET	22.1650	113.8882	SPRING	NONE	P
18-Mar-22	12	1439	FP	3	SWL	2	182	ON	3RS ET	22.1664	113.8885	SPRING	NONE	P
18-Mar-22	13	1446	FP	3	SWL	2	8	ON	3RS ET	22.1732	113.8877	SPRING	NONE	P
18-Mar-22	14	1454	FP	1	SWL	2	204	ON	3RS ET	22.1839	113.8878	SPRING	NONE	P
18-Mar-22	15	1512	FP	3	SWL	1	6	ON	3RS ET	22.2086	113.8800	SPRING	NONE	S
18-Mar-22	16	1541	FP	1	SWL	2	71	ON	3RS ET	22.1577	113.8783	SPRING	NONE	P
18-Mar-22	17	1545	FP	1	SWL	2	39	ON	3RS ET	22.1585	113.8754	SPRING	NONE	S
18-Mar-22	18	1556	FP	1	SWL	2	46	ON	3RS ET	22.1719	113.8684	SPRING	NONE	P

Abbreviations: STG# = Sighting Number; GP SZ = 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

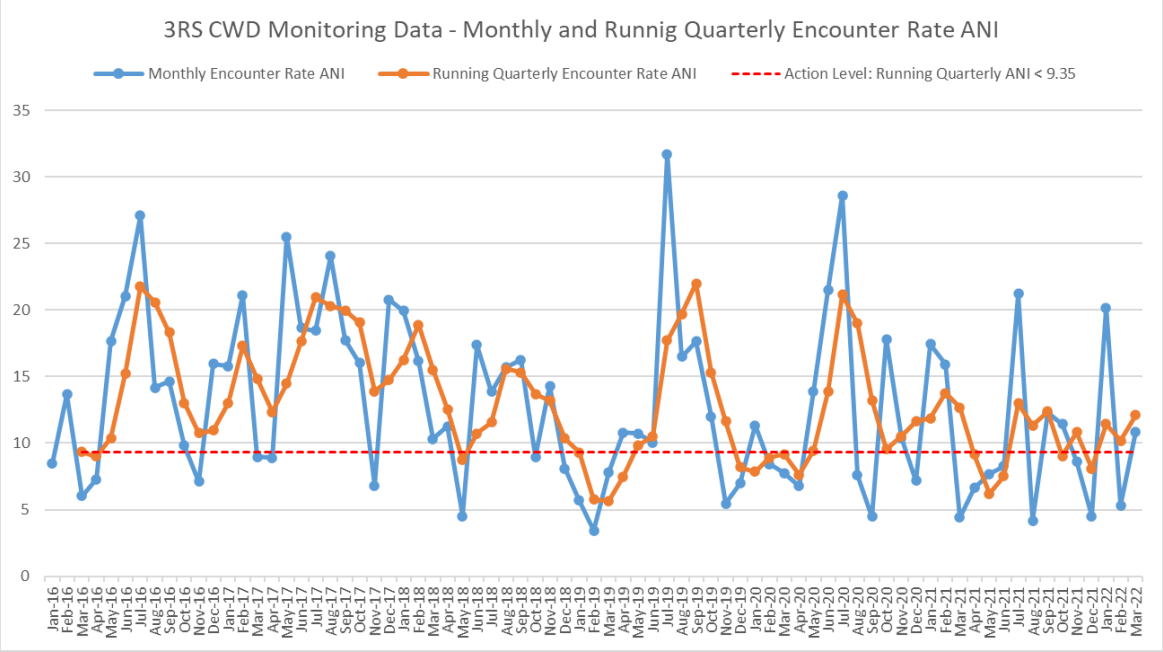
Sighting data of finless porpoise (FP) are presented for reference only. No relevant figure or text will be mentioned in the quarterly EM&A report. All FP sightings are excluded in calculation.

Graphical Presentation of Monthly and Running Quarterly Encounter Rates for the entire monitoring period

Encounter Rate STG:



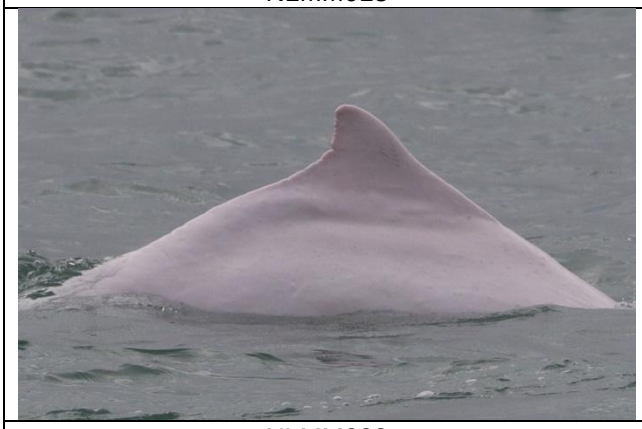
Encounter Rate ANI:



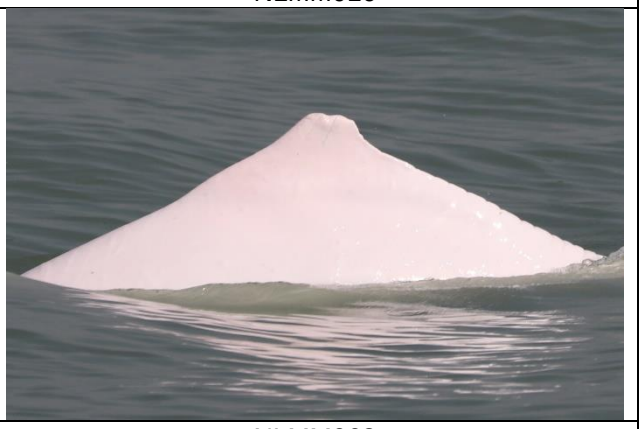
CWD Small Vessel Line-transect Survey **Photo Identification**

NLMM013

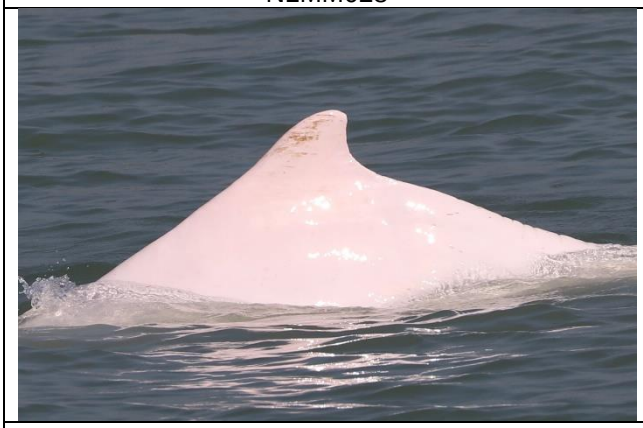
NLMM016



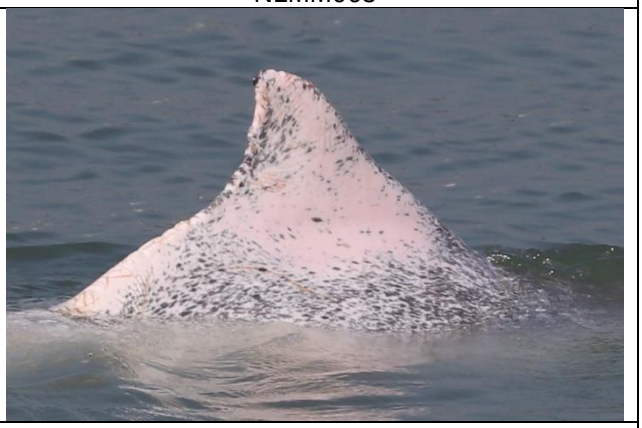
NLMM028



NLMM063

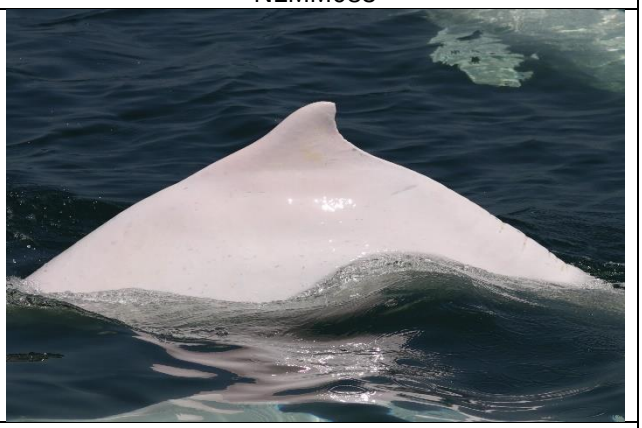


NLMM082

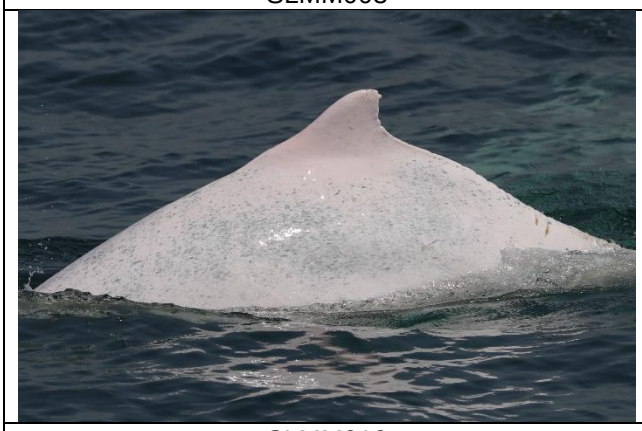


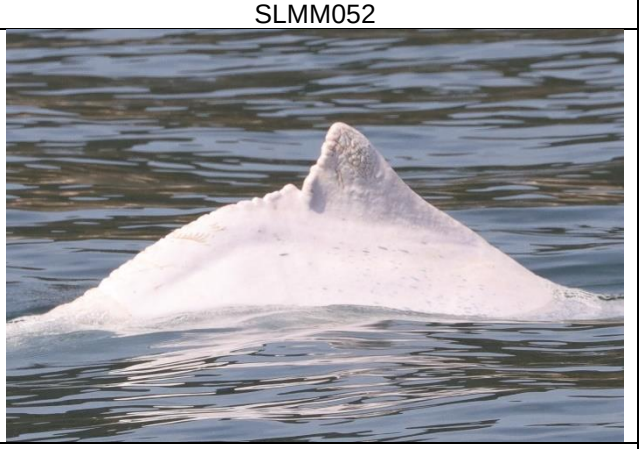
NLMM083

NLMM084



SLMM002

	
SLMM003	SLMM007
	
SLMM010	SLMM012
	
SLMM025	SLMM027
	
SLMM029	SLMM030

	
SLMM037	SLMM044
	
SLMM049	SLMM052
	
SLMM055	SLMM060
	
SLMM064	SLMM073

	
WLMM001	WLMM003
	
WLMM019	WLMM027
	
WLMM028	WLM0M56
	
WLMM063	WLMM065

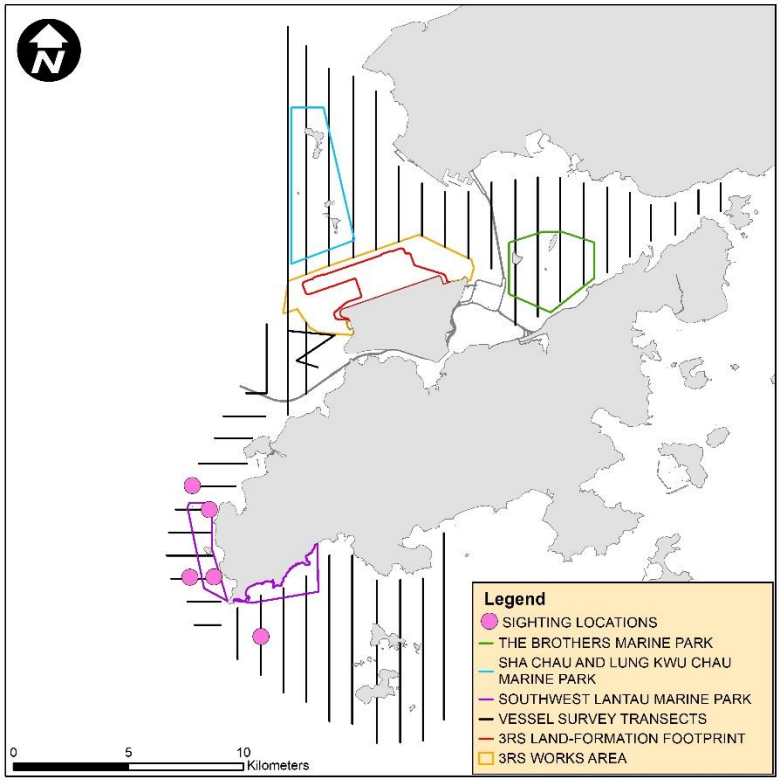
	
WLMM067	WLMM071
	
WLMM073	WLMM079
	
WLMM095	WLMM109
	
WLMM114	WLMM118

	
WLMM131	WLMM141
	
WLMM149	WLMM150
	
WLMM152	WLMM165
	
WLMM168	WLMM171

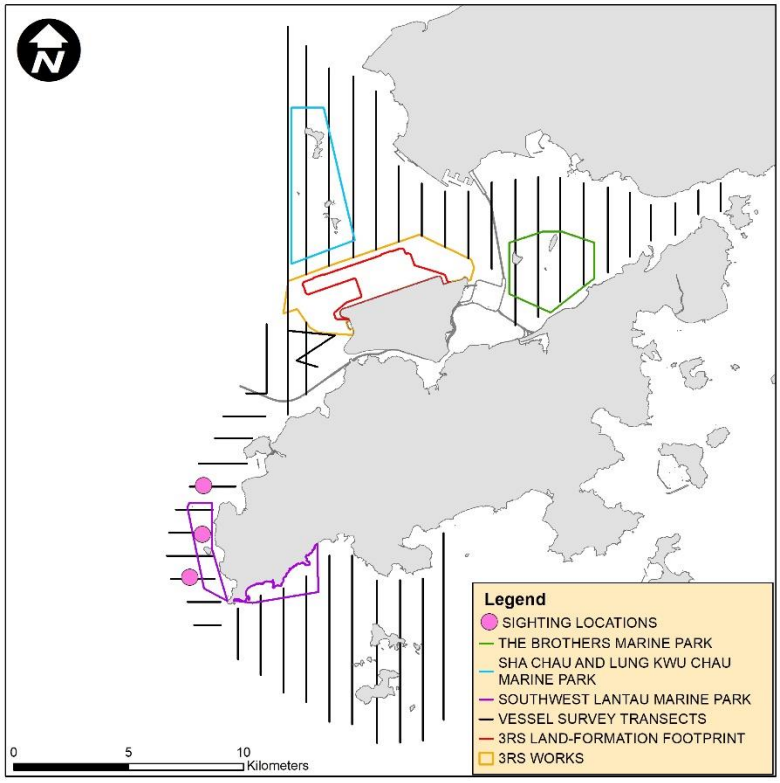
	
WLMM172	WLMM173
	
WLMM174	

Photo Identification – Re-sighting Locations

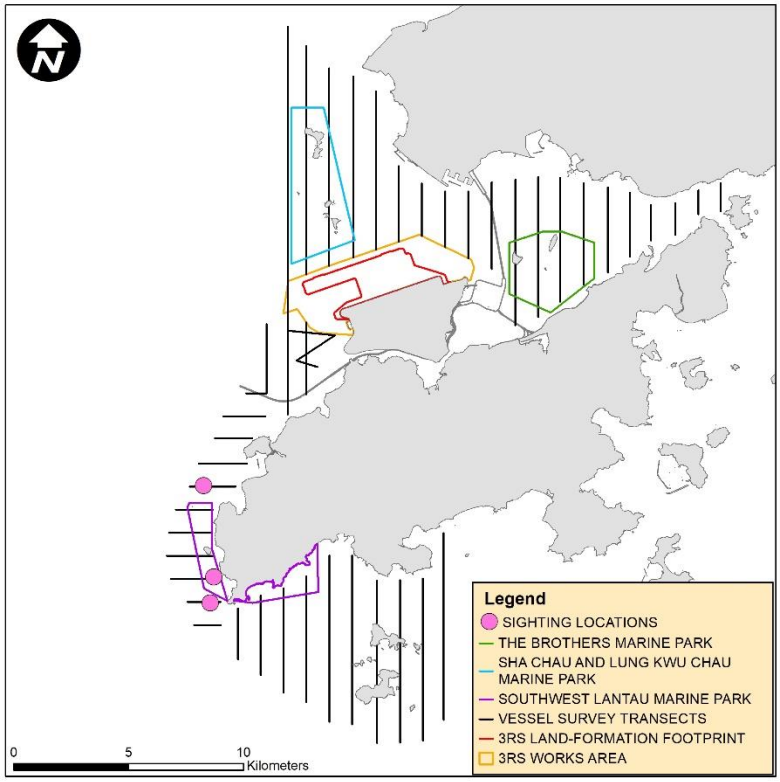
SLMM007



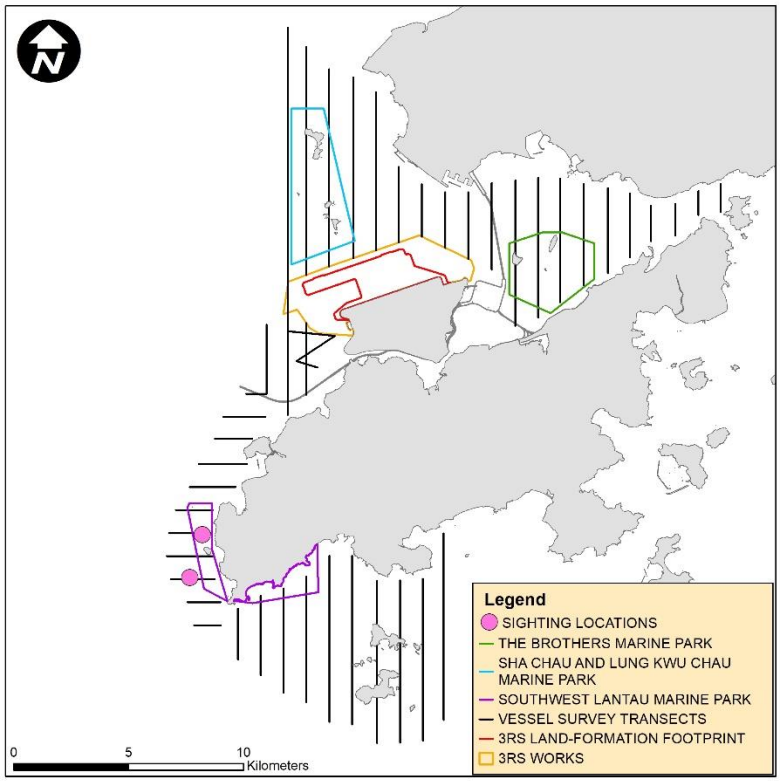
SLMM010



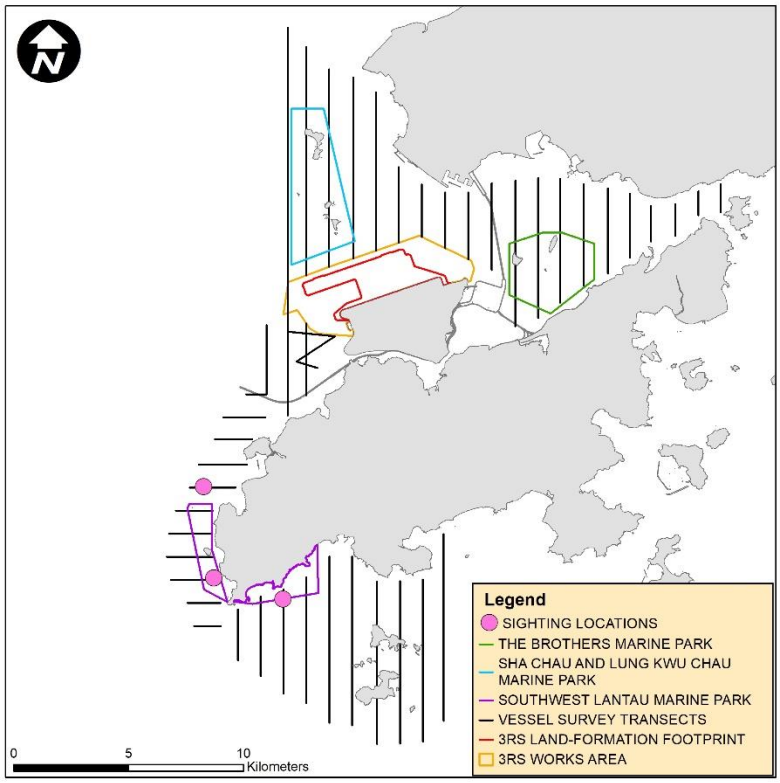
SLMM012



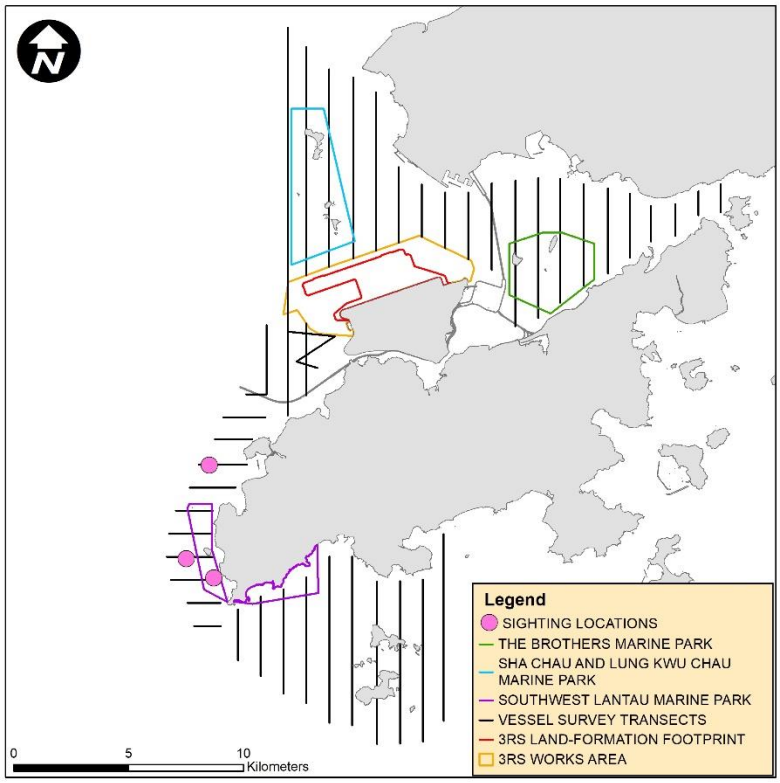
SLMM029



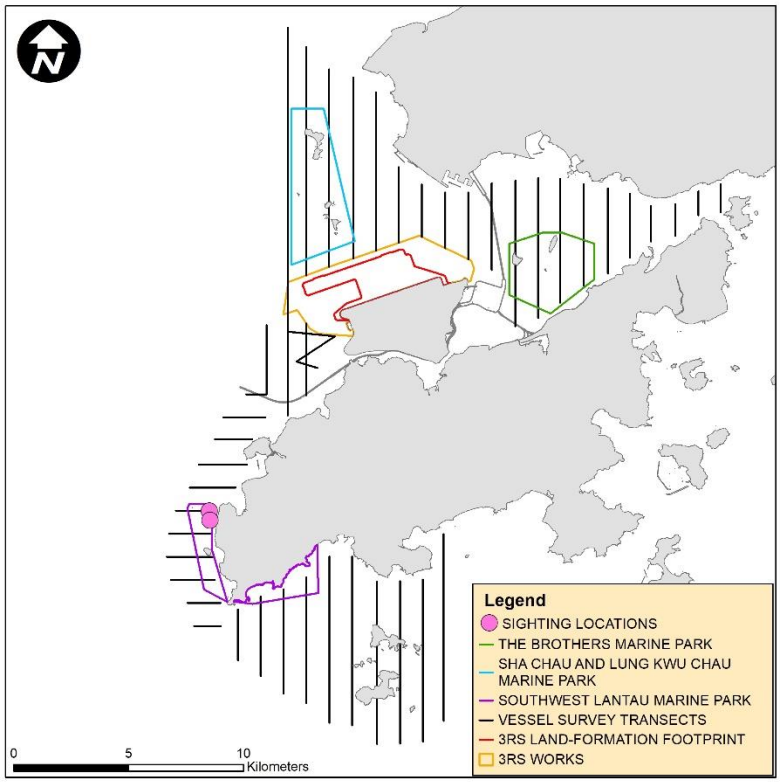
SLMM037



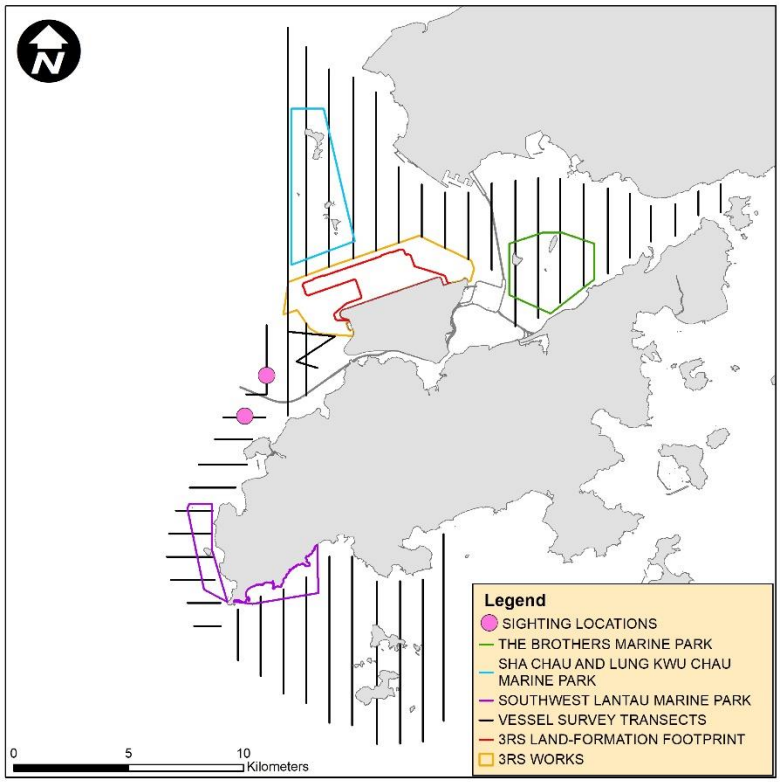
SLMM044



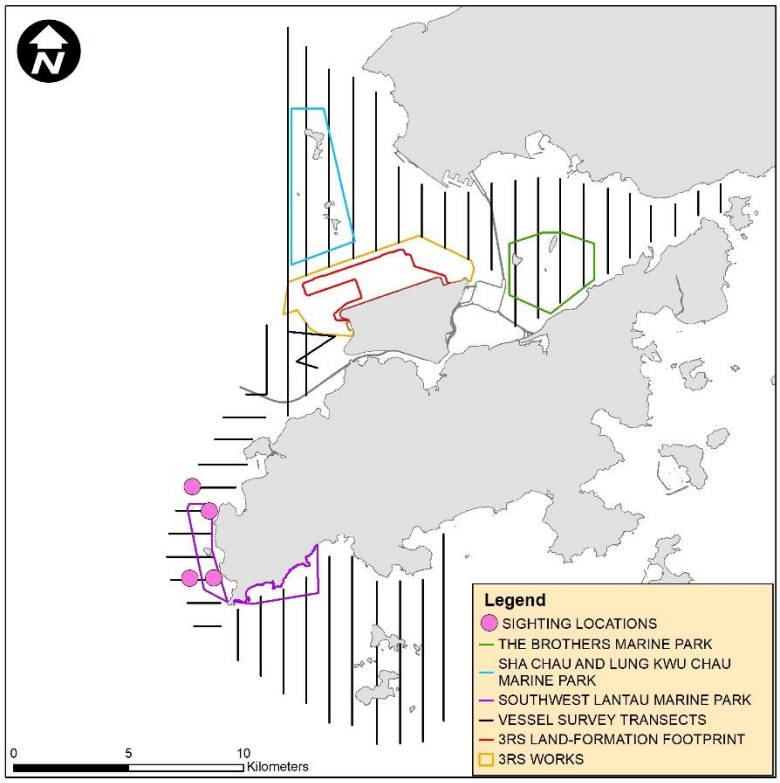
SLMM052



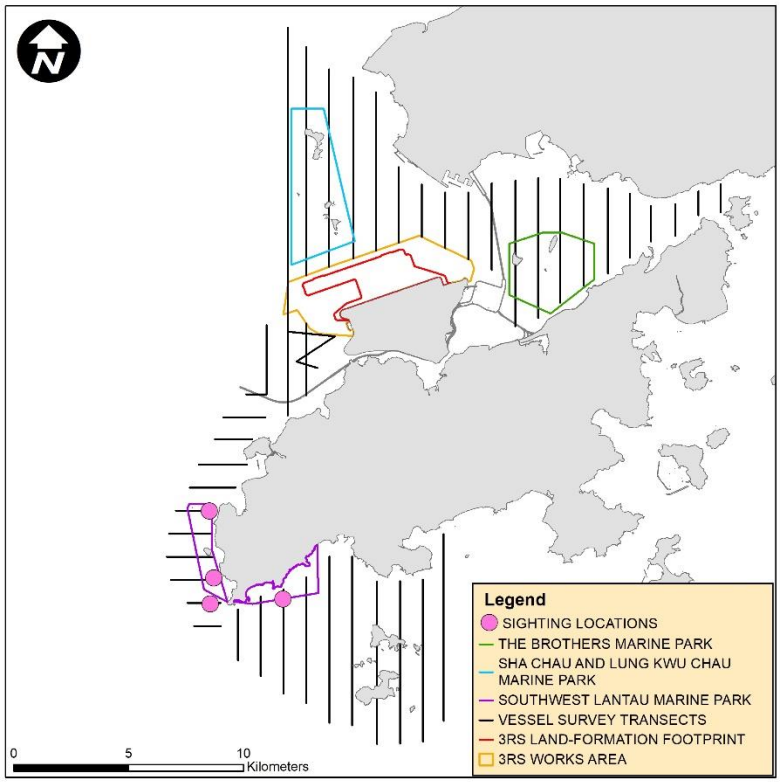
SLMM055



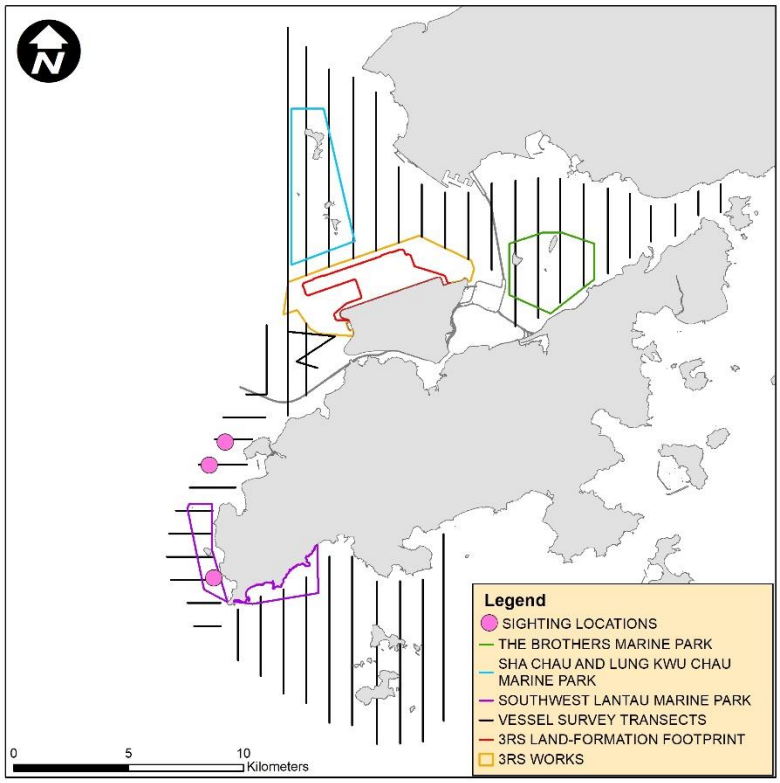
SLMM073



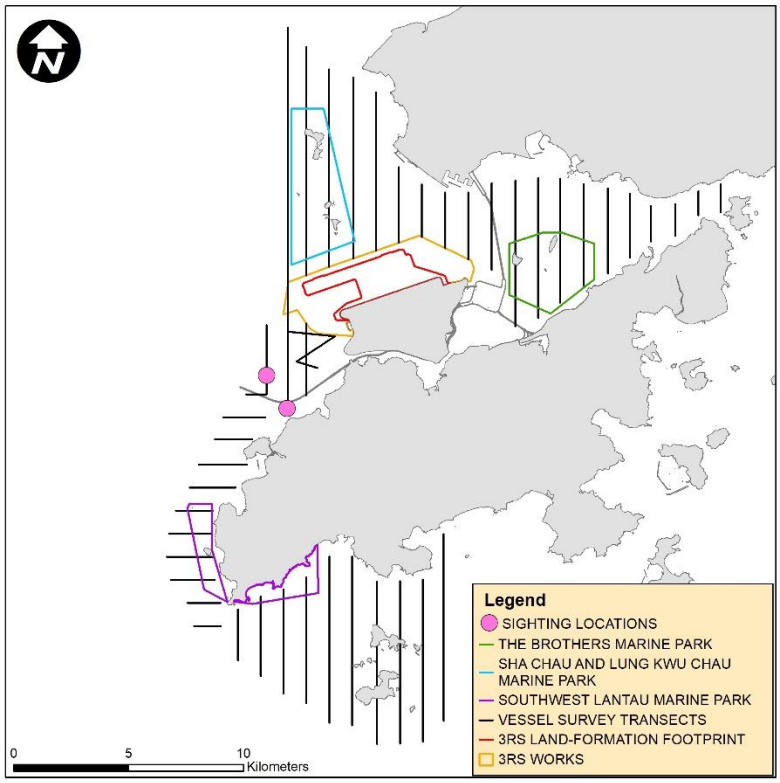
WLMM001



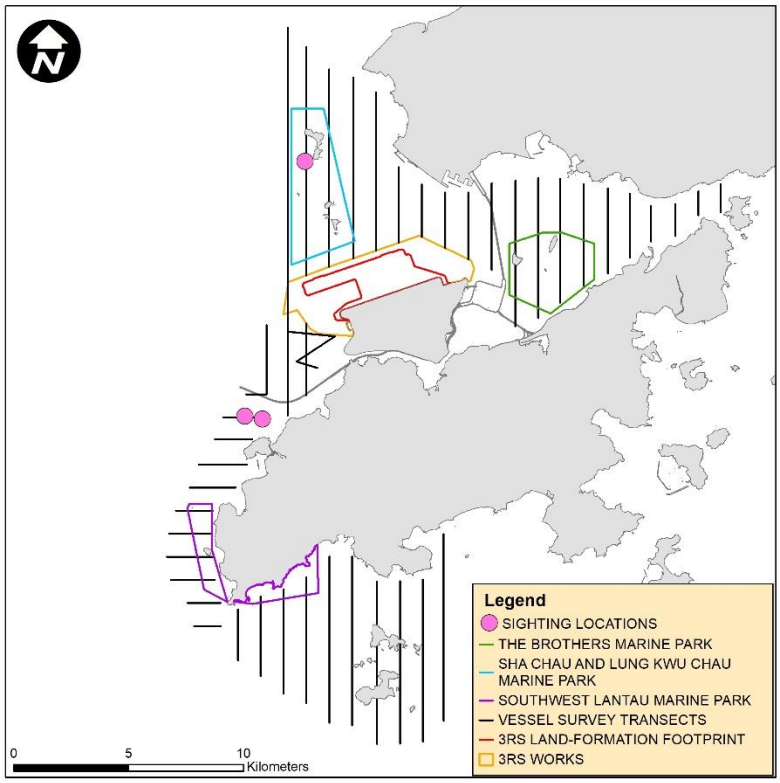
WLMM003



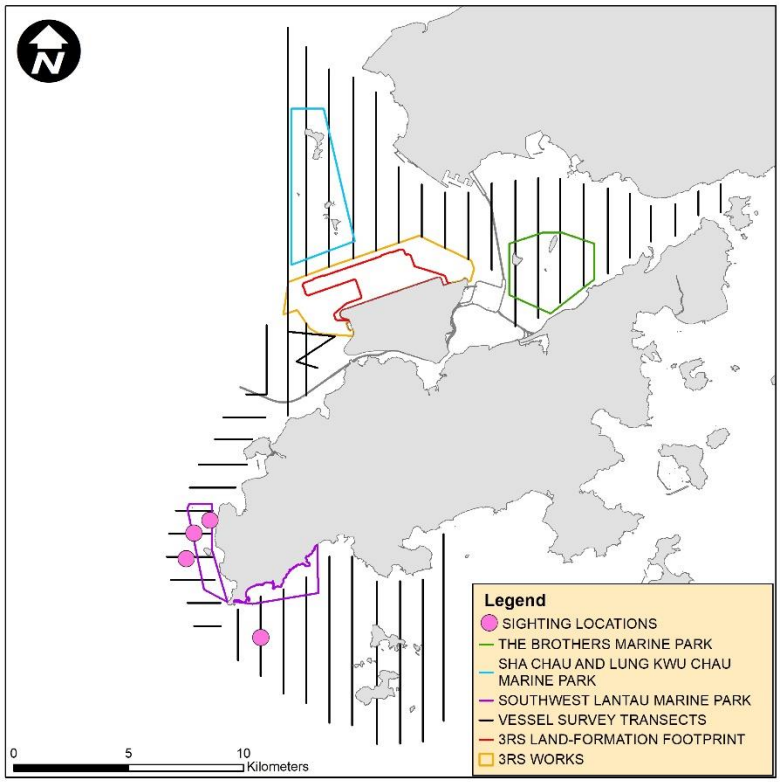
WLMM027



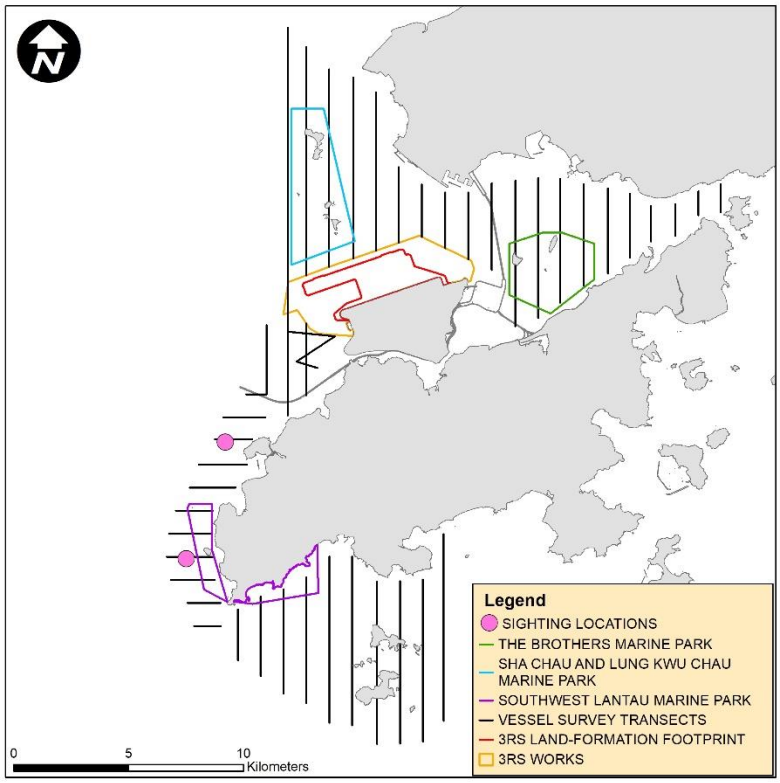
WLMM065



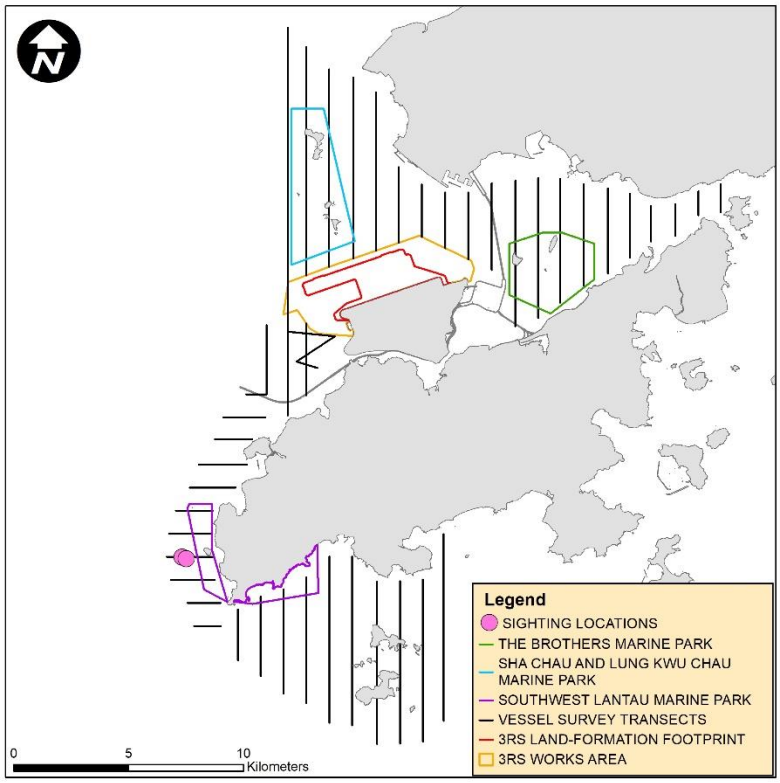
WLMM067



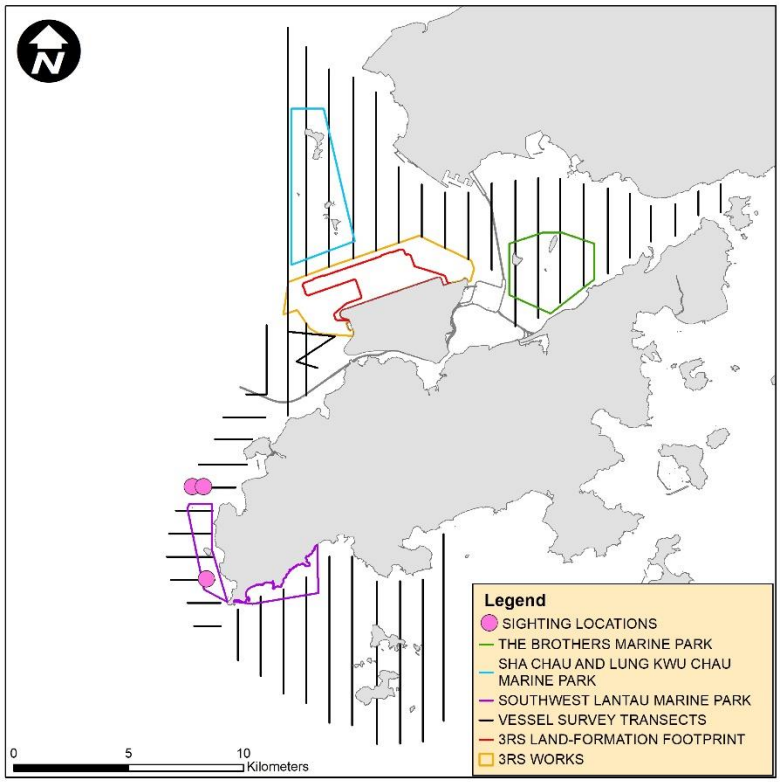
WLMM073



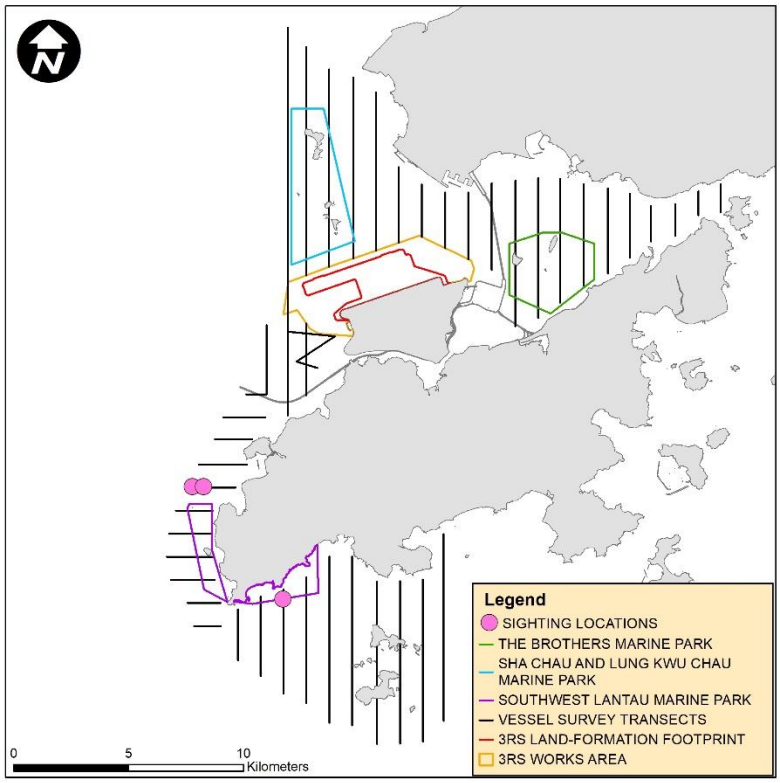
WLMM079



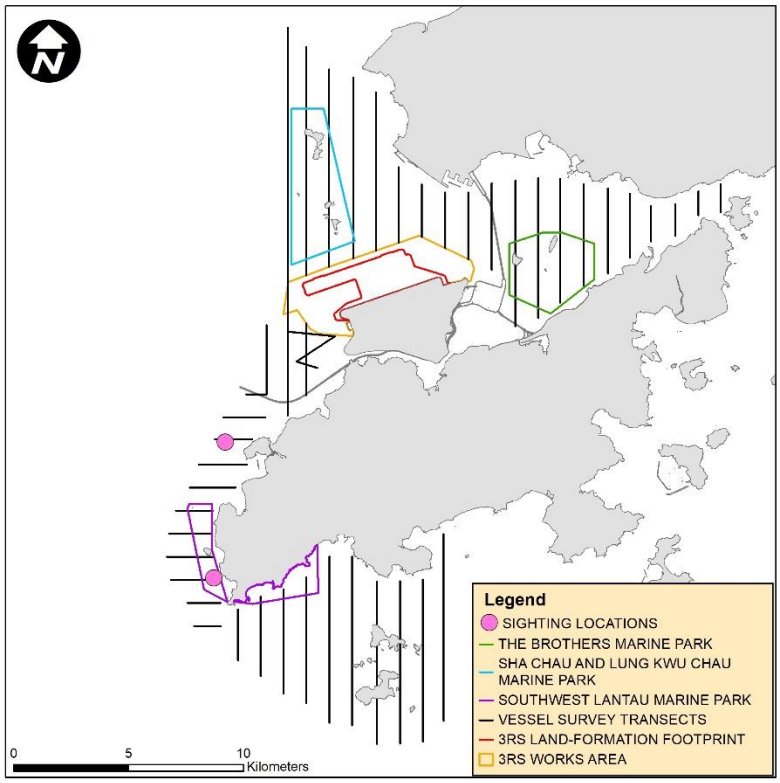
WLMM109



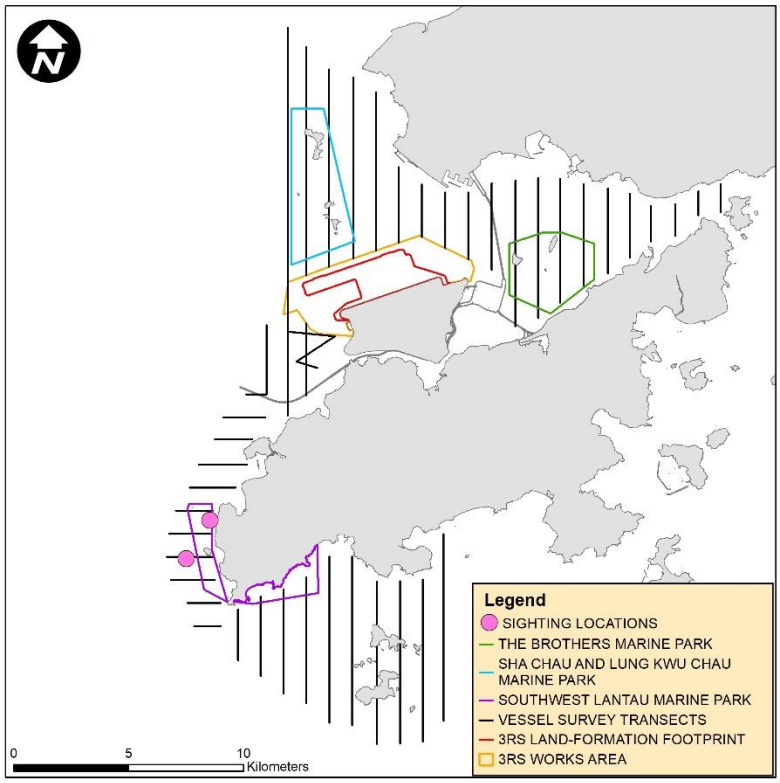
WLMM114



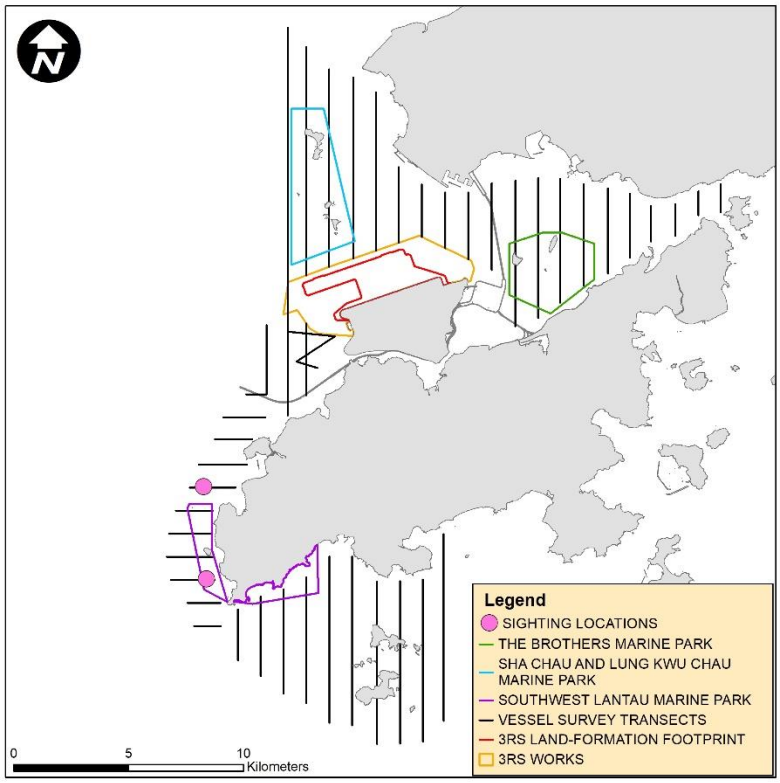
WLMM118



WLMM150



WLMM174


Legend
SIGHTING LOCATIONS
THE BROTHERS MARINE PARK
SHA CHAU AND LUNG KWU CHAU MARINE PARK
SOUTHWEST LANTAU MARINE PARK
VESSEL SURVEY TRANSECTS
3RS LAND-FORMATION FOOTPRINT
3RS WORKS
0
5
10
Kilometers

CWD Land-based Theodolite Tracking

CWD Groups by Survey Date

Date	Station	Start Time	End Time	Duration	Beaufort	Visibility	No. of Focal Follow	Dolphin
17/Jan/22	Sha Chau	10:42	16:42	6:00	2	3	0	-
24/Jan/22	Lung Kwu Chau	9:28	15:28	6:00	2	3-4	0	-
11/Feb/22	Lung Kwu Chau	8:51	14:51	6:00	2	3-4	1	1
16/Feb/22	Sha Chau	10:35	16:35	6:00	2-4	2	0	-
18/Mar/22	Lung Kwu Chau	09:11	14:11	06:00	2	4	0	-
31/Mar/22	Sha Chau	10:50	16:50	06:00	2	2	0	-

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

Daily Flow Monitoring Record of Sewage Pumping Station 1 (SPS1)

Daily Flow Monitoring Record of Sewage Pumping Station 1 (SPS1)

Date	Daily Flow at SPS1 (in m^3/day)
01-Jan-22	12,804
02-Jan-22	13,703
03-Jan-22	13,141
04-Jan-22	13,591
05-Jan-22	13,254
06-Jan-22	12,692
07-Jan-22	15,949
08-Jan-22	10,558
09-Jan-22	11,681
10-Jan-22	11,007
11-Jan-22	10,895
12-Jan-22	10,783
13-Jan-22	10,670
14-Jan-22	10,895
15-Jan-22	11,681
16-Jan-22	12,243
17-Jan-22	10,670
18-Jan-22	10,783
19-Jan-22	13,366
20-Jan-22	12,131
21-Jan-22	11,794
22-Jan-22	13,591
23-Jan-22	10,446
24-Jan-22	12,917
25-Jan-22	10,109
26-Jan-22	11,007
27-Jan-22	10,221
28-Jan-22	10,670
29-Jan-22	10,221
30-Jan-22	10,783
31-Jan-22	10,446
Jan - 22 Daily Avg	**11,765**

Daily Flow Monitoring Record of Sewage Pumping Station 1 (SPS1)

Date	Daily Flow at SPS1 (in m^3/day)
01-Feb-22	11,569
02-Feb-22	12,468
03-Feb-22	11,569
04-Feb-22	11,457
05-Feb-22	10,109
06-Feb-22	9,772
07-Feb-22	9,547
08-Feb-22	11,569
09-Feb-22	10,895
10-Feb-22	9,996
11-Feb-22	7,862
12-Feb-22	9,098
13-Feb-22	8,087
14-Feb-22	9,210
15-Feb-22	10,783
16-Feb-22	10,783
17-Feb-22	11,794
18-Feb-22	9,547
19-Feb-22	10,109
20-Feb-22	13,029
21-Feb-22	11,794
22-Feb-22	15,051
23-Feb-22	11,232
24-Feb-22	11,569
25-Feb-22	10,783
26-Feb-22	10,783
27-Feb-22	10,783
28-Feb-22	9,210
Feb - 22 Daily Avg	**10,731**

Daily Flow Monitoring Record of Sewage Pumping Station 1 (SPS1)

Date	Daily Flow at SPS1 (in m^3/day)
01-Mar-22	13,960
02-Mar-22	9,660
03-Mar-22	9,210
04-Mar-22	11,794
05-Mar-22	10,109
06-Mar-22	9,996
07-Mar-22	7,525
08-Mar-22	8,199
09-Mar-22	11,344
10-Mar-22	9,323
11-Mar-22	10,221
12-Mar-22	9,210
13-Mar-22	10,109
14-Mar-22	9,435
15-Mar-22	11,457
16-Mar-22	11,569
17-Mar-22	10,446
18-Mar-22	9,996
19-Mar-22	10,221
20-Mar-22	10,783
21-Mar-22	10,558
22-Mar-22	9,547
23-Mar-22	10,558
24-Mar-22	11,007
25-Mar-22	12,580
26-Mar-22	12,355
27-Mar-22	11,457
28-Mar-22	10,783
29-Mar-22	12,243
30-Mar-22	11,681
31-Mar-22	11,569
Mar - 22 Daily Avg	**10,610**

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