ANEWR

Highways Department
5th Floor, Ho Man Tin Government Offices
88 Chung Hau Street
Ho Man Tin
Kowloon

Your reference:

Our reference: HKHYD203/50/108492

Date: 22 December 2022

Attention: Mr Eric Wong

BY EMAIL & POST
(email: se4.mwsd@hyd.gov.hk)

Dear Sirs

Agreement No. HMWSD 6/2022 (EP)
Environmental Project Office for the Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road, Hong Kong-Zhuhai-Macao Bridge Hong Kong
Boundary Crossing Facilities & Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2019/01
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary
Quarterly Environmental Monitoring and Audit Report (December 2020 – February 2021)

We refer to the email of 8 December 2022, attaching the Quarterly EM&A Report (December 2020 – February 2021), prepared by the Environmental Team (ET) of the captioned.

We have no comment and hereby verify the report in accordance with Clause 4.4 of the Environmental Permit No. EP-354/2009/D and Clause 5.4 of the Environmental Permit no. EP-353/2009/K.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Macavity Yau on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/YCFM/lsmt

cc Highway Department – Mr Tony Wong (email: e20.mwsd@hyd.gov.hk)
Highway Department – Mr YF Lau (email: pc7.mwsd@hyd.gov.hk)
Fugro Technical Services Limited – Mr Calvin Leung (email: c.leung@fugro.com)

ANewR Consulting Limited
Unit 517, 5/F, Tower A, Regent Centre
63 Wo Yi Hop Road, Kwai Chung, Hong Kong
Tel: (852) 2618 2831 Fax: (852) 3007 8648
Email: info@anewr.com
Web: www.anewr.com

ISO 9001 : 2015
Certificate No.: CC 3988

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Date 23 December 2022
Our Ref. MCL/ED/0504/2022/C

ANewR Consulting Limited
Unit 517, 5/F, Tower A, Regent Centre
63 Wo Yi Hop Road, Kwai Chung, Hong Kong

BY EMAIL

Attn.: Mr. James Choi, Independent Environmental Checker

Dear Sir,

Quarterly EM&A Report for
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works (Contract No. HY/2019/01)

Pursuant to Section 16.4 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities covering the captioned project, we hereby submit the certified Quarterly EM&A Report for December 2020 to February 2021 for your verification.

Thank you for your attention, should there be any comments or queries, please contact our Mr. Cyrus Lai at 3565-4442 or the undersigned at 3565-4441.

Yours faithfully,
for and on behalf of
FUGRO TECHNICAL SERVICES LIMITED

Calvin Leung
Environmental Team Leader

c.c. AECOM Attn: Mr. Jason Yu, Mr. Gordon Kok
ANewR Attn: Mr. Louis Kwan, Mr. Ricky Lau
CHEC Attn: Mr. Marko Chan, Mr. Matthew Wu

Quarterly EM&A Report (December 2020 - February 2021)

0002/20/ED/0354 12 |

Contact No. HY/2019/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Document Control

Document Information

Project Title	Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works (Contract No. HY/2019/01)
Document Title	Quarterly EM&A Report (December 2020 - February 2021)
Fugro Project No.	0002/20
Fugro Document No.	0002/20/ED/0354
Issue Number	12

Client Information

Client	China Harbour Engineering Co., Ltd. - Contract No. HY/2019/01
Client Address	China Harbour Building, 370-4 King's Road, North Point Hong Kong
Client Contact	Matthew Wu

Environmental Team

Initials	Name	Role	Signature
MP	Calvin M.P. Leung	Environmental Team Leader	
CY	Cyrus C.Y. Lai	Senior Environmental Consultant	
KH	Toby K.H. Wan	Assistant Environmental Consultant	

EXECUTIVE SUMMARY

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works" (hereafter referred to as "the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR). Contract No. HY/2019/01 was awarded to China Harbour Engineering Co. Limited and Fugro Technical Services Limited (FTS) was appointed as the Environmental Team (ET) by the Contractor.

Contract No. HY/2019/01 is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 4 December 2019 and the construction site preparation works commenced in early February 2020.

Fugro Technical Services Limited (FTS) has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and is providing environmental team services for the Contract.

This is the 4th Quarterly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 December 2020 to 28 February 2021.

Environmental Monitoring and Audit Progress
The Quarterly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality, noise and the post-construction dolphin monitoring works for the Contract are covered by Contract No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works". The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 as part of EM&A programme if the impact air quality monitoring work is no longer covered by Contract No. HY/2011/03 respectively. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

Breaches of Action and Limit Levels
No Action and Limit Level exceedance was recorded for air quality monitoring in the reporting period. Also, no Action and Limit Level exceedance was recorded for construction noise monitoring in the reporting period.

Complaint Log
No complaints were received in the reporting period.

Notifications of any Summons and Successful Prosecutions
No notifications of summons and prosecutions were received in the reporting period.

Reporting Change

Due to the existing air quality monitoring location AMS7B would be hand over back to Airport Authority for their construction works. A new alternative air quality monitoring location is still under processing. Air quality monitoring location AMS7B was temporary suspended, effective from 10 December 2020.

Contents

Tables

Figures

Appendices

1. INTRODUCTION

1.1 Background

1.1.1 Fugro Technical Services Limited was commissioned by China Harbour Engineering Co. Limited (also referred to as "the Contractor") to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for Contract No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works".

1.1.2 Contract No. HY/2019/01 is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. The general layout of the Project area is shown in **Figure 1.** Commencement of the Contract took place on 4 December 2019 and the construction site preparation works commenced in early February 2020.

1.1.3 This is the 4th Quarterly EM&A report to document the findings of site inspection activities and EM&A programme carried out by the Contractor of Contract No. HY/2019/01 from 1 December 2020 to 28 February 2021 (reporting period) and is submitted to fulfil Condition 5.4 of the EP.

1.2 Project Description

1.2.1 The works to be executed under Contract No. HY/2019/01 include the following major items:

- Landscaping and establishment works;
- Irrigation system and associated drainage pumping system and facilities;
- Erection and installation in the Passenger Clearance Building;
- Public transport interchange (PTI) public toilet, satellite refuse collection point (RCP) and observation guard booths;
- PTI cross boundary shuttle (CBS) / cross boundary coach (CBC) lanes and covered walkway;
- Vehicle clearance plazas (VCP) vehicle kiosks and associate automatic vehicle clearance supporting system (AVCSS).

1.3 Project Organization

1.3.1 The Project Organization structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Senior Resident Engineer	Mr. Jason Yu	3748 8903
	Resident Engineer	Mr. Winston Wong	3748 8918
	Resident Engineer	Mr. Gordon Kok	3748 8967
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3465 2888
	Independent Environmental Checker (IEC) (until 11 April 2021)	Mr. Manson Yeung	9700 6767
	Independent Environmental Checker (IEC) (from 12 April 2021)	Mr. Brian Tam	9700 6767
	Environmental Site Supervisor	Mr. K. C. Chan	3465 2882
Contractor (China Harbour Engineering Co. Ltd)	Environmental Manager	Mr. Marko Chan	9427 2879
	Environmental Officer	Mr. Matthew Wu	6076 2675
Environmental Team (Fugro Technical Services Limited)	Environmental Team Leader (ETL)	Mr. Calvin Leung	3565 4441

1.4 Construction Programme and Activities

1.4.1 The site layout plan of the Contract is shown in **Figure 1**.

1.4.2 The construction programme of this Contract is shown in **Appendix A**.

1.5 Works undertaken during the report period

1.5.1 The main construction works carried out in the reporting period were as follow:

- Excavation at Vehicle Clearance Plaza (VCP) and WA3 (land-based);
- Road & Drain works at South Public Transport Interchanges (SPTI), North Public Transport Interchanges (NPTI) and Vehicle Clearance Plaza (VCP) (land-based);
- Vertical access at Passenger Clearance Building (PCB) (land-based);
- Covered Walkway at South Public Transport Interchanges (SPTI) and North Public Transport Interchanges (NPTI) (land-based);
- Public Toilet at North Public Transport Interchanges (NPTI) (land-based);
- Kiosks Construction at Vehicle Clearance Plaza (VCP) (land-based);
- Landscape Works at G1 and G5 (land-based);
- Conceal Conduits Works at Vehicle Clearance Plaza (VCP) (land-based);
- E&M Works at South Public Transport Interchanges (SPTI) (land-based).

2. EM&A REQUIREMENTS

2.1 Summary of EM&A Requirement

2.1.1 The Quarterly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality, noise and the post-construction dolphin monitoring works for the Contract are covered by Contract No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works".

2.1.2 According to the Contract Specific EM&A Manual, air quality monitoring at station AMS2, AMS3C and AMS7B, and noise monitoring at station NMS2 and NMS3C are covered by Contract No. HY/2019/01. It should be noted that the air quality monitoring at station AMS6 is covered by Contract No. HY/2011/03. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 as part of EM&A programme if the impact air quality monitoring work is no longer covered by Contract No. HY/2011/03 respectively. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

2.1.3 The most updated air and noise locations are summarized in **Table 2.1**. The locations of the air quality and noise monitoring stations shown in **Figure 2** and **Figure 3**, respectively.

Table 2.1 Air Quality and Noise Monitoring Location

Environmental Monitoring	Monitoring Station	Location
Air Quality	AMS2	Tung Chung Development Pier
	AMS3C	Ying Tung Estate Market Rooftop
	AMS6	Dragonair / CNAC (Group) Building (HKIA)
	AMS7B	Third Runway Site Office
Noise	NMS2	Seaview Crescent
	NMS3	Ying Tung Estate Refuse Collection Point

Remarks:

1. The ET of this Contract should conduct impact air quality monitoring at station AMS6 listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station is no longer covered by another ET of the HZMB project.
2. The Limit Levels for schools will be applied for NMS3C.

2.1.4 The remaining post-construction dolphin monitoring works under Contract No. HY/2013/04 "HZMB HKBCF – Infrastructure Works Stage II (Southern Portion)" were completed from 1 March 2020. The ET of Contract No. HY/2019/01 is required and continues the full implementation of environmental monitoring commencing on 1 March 2020.

2.1.5 Currently, the role of dolphin monitoring and data collection are still under Contract No. HY/2012/08 "Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section". To avoid redundancy in the monitoring effort, the findings of Contract No. HY/2012/08 were used for this reporting period. The dolphin monitoring programme have adopted the standard line-transect method (Buckland et al. 2001) to survey the pre-set and fixed transect lines defined by AFCD in the Northeast Lantau (NEL) and Northwest Lantau (NWL) survey areas.

2.1.6 According to the Proposal on Post-construction Dolphin Monitoring (PCDM) prepared by Contract No. HY/2013/ 04 which has been verified and approved by ENPO and EPD respectively, the tentative completion date of the PCDM is in February 2021. Therefore, the reporting of Chinese White Dolphins (CWD) monitoring works under this contract was completed on 1 March 2021.

2.2 Monitoring Requirement

2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A report prepared for this Contract.

2.2.2 The air quality monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information for AMS6 are detailed in the monthly EM&A report prepared for Contract No. HY/2011/03.

2.3 Action and Limit Levels

2.3.1 The Action and Limit Levels for noise impact monitoring have been set and are presented in **Appendix C**.

2.4 Event and Action Plans

2.4.1 The event and action plans for air quality and noise monitoring are presented in **Appendix D**.

2.5 Mitigation Measures

2.5.1 The Contractor had implemented environmental mitigation measures and requirements as stated in the EIA Reports, the EP and EM&A Manuals. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix E**.

3. ENVIRONMENTAL MONITORING AND AUDIT

3.1 Air Quality Monitoring Results

3.1.1 1-hour TSP and 24-hour TSP impact monitoring at AMS2, AMS3C and AMS7B were carried out in the reporting period, the monitoring results are reported in the monthly EM&A Report prepared for this Contract.

3.1.2 There was no Action / Limit Level exceedance of 1-hour TSP level and 24-hour TSP level at AMS2, AMS3C and AMS7B was recorded during the reporting period.

3.1.3 The monitoring results for AMS6 are reported in the monthly EM&A Reports prepared for Contract No. HY/2011/03.

3.1.4 Summary of Action and Limit Level exceedance of 1-hour TSP level and 24-hour TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

3.2 Noise Monitoring Results

3.2.1 Construction noise monitoring were carried out in the reporting period, the monitoring results for NMS2 and NMS3C are reported in the monthly EM&A Reports prepared for this Contract.

3.2.2 There was no Action / Limit Level exceedance for construction noise at NMS2 and NMS3C was recorded during the reporting period.

3.2.3 School calendar of Ho Yu College was checked against noise monitoring days at NMS3C.

3.3 Dolphin Monitoring Results

3.3.1 In accordance with the requirements of the updated EM&A manual, the dolphin monitoring programme have adopted the standard line-transect method (Buckland et al. 2001) to survey the pre-set and fixed transect lines defined by AFCD in the Northeast Lantau (NEL) and Northwest Lantau (NWL) survey areas.

3.3.2 Dolphin Final Review Report was submitted on 28 November 2022 and verified by IEC on 2 December 2022. Details of the final review of dolphin monitoring for HKBCF are presented in **Appendix I**.

3.4 Site Inspection

3.4.1 Site inspections were carried out weekly to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix E**.

3.4.2 13 weekly environmental site inspections were carried out in the reporting period. Details of observations recorded during the site inspections are presented in **Appendix F**.

3.4.3 6 Bi-weekly Landscape and Visual Site audits were carried out by a Registered Landscape Architect in the reporting period.

3.5 Advice on the Solid and Liquid Waste Management Status

3.5.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

3.5.2 The summary of waste flow table is detailed in **Appendix G**.

3.5.3 If off-site disposal is required, the excavated marine mud from the land-based works shall be disposed of at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee or other locations as agreed by the Director. The Contractor shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.

The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

4. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

4.1 Environmental Exceedance

4.1.1 No Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS2, AMS3C and AMS7B in the reporting period.

4.1.2 Summary of Action and Limit Level exceedance of 1-hour TSP level and 24-hour TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

4.1.3 No Action / Limit Level exceedance for construction noise at NMS2 and NMS3C was recorded during the reporting period.

4.2 Complaints, Notification of Summons and Prosecution

4.2.1 No environmental complaint, notification of summons and successful prosecution were received in the reporting period.

4.2.2 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix H**.

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

5.1.1 1-hour TSP and 24-hour TSP impact monitoring at AMS2, AMS3C and AMS7B were carried out in the reporting period, no Action / Limit Level exceedance was recorded during the period.

5.1.2 Summary of Action and Limit Level exceedance of 1-hour TSP level and 24-hour TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

5.1.3 Construction noise monitoring were carried out in the reporting period, no Action / Limit Level exceedance was recorded during the period.

5.1.4 Dolphin Final Review Report was submitted on 28 November 2022 and verified by IEC on 2 December 2022. Details of the final review of dolphin monitoring for HKBCF are presented in **Appendix I**.

5.1.5 13 weekly environmental site inspections were carried out in the reporting period. Recommendations on mitigation measures for air quality impact, water quality impact and chemical and waste management were given to the Contractor for remediating the deficiencies identified during the site inspections.

5.1.6 6 Bi-weekly Landscape and Visual Site audits were carried out by a Registered Landscape Architect in the reporting period.

5.1.7 Referring to the Contractor's information, no environmental complaint, notification of summons and successful prosecution was received in the reporting period.

5.2 Comment and Recommendations

5.2.1 The recommended environmental mitigation measures, as proposed in the EIA reports and EM&A Manuals shall be effectively implemented to minimize the potential environmental impacts from the Project. The EM&A programme would effectively monitor the environmental impacts generated from the construction activities and ensure the proper implementation of mitigation measures.

5.2.2 According to the environmental site inspections performed in the reporting period, the following recommendations were provided:

Air Quality Impact

- Contractor was reminded any activities cause dust rising should be sprayed with water.
- Contractor was reminded to increase the frequency of water spray.
- Contractor was reminded washing facilities should be provided at all exit.
- Contractor was reminded washing facilities should be a proper function.
- Contractor was reminded dusty material should be cleared.
- Contractor was reminded that water spray should be provided to prevent dusty arising.

Construction Noise Impact

- No specific observation was identified in the reporting period.

Water Quality Impact

- Contractor was reminded that stagnant water should be removed.

Chemical and Waste Management

- No specific observation was identified in the reporting period.

Landscape and Visual Impact

- No specific observation was identified in the reporting period.

Permit/ Licenses

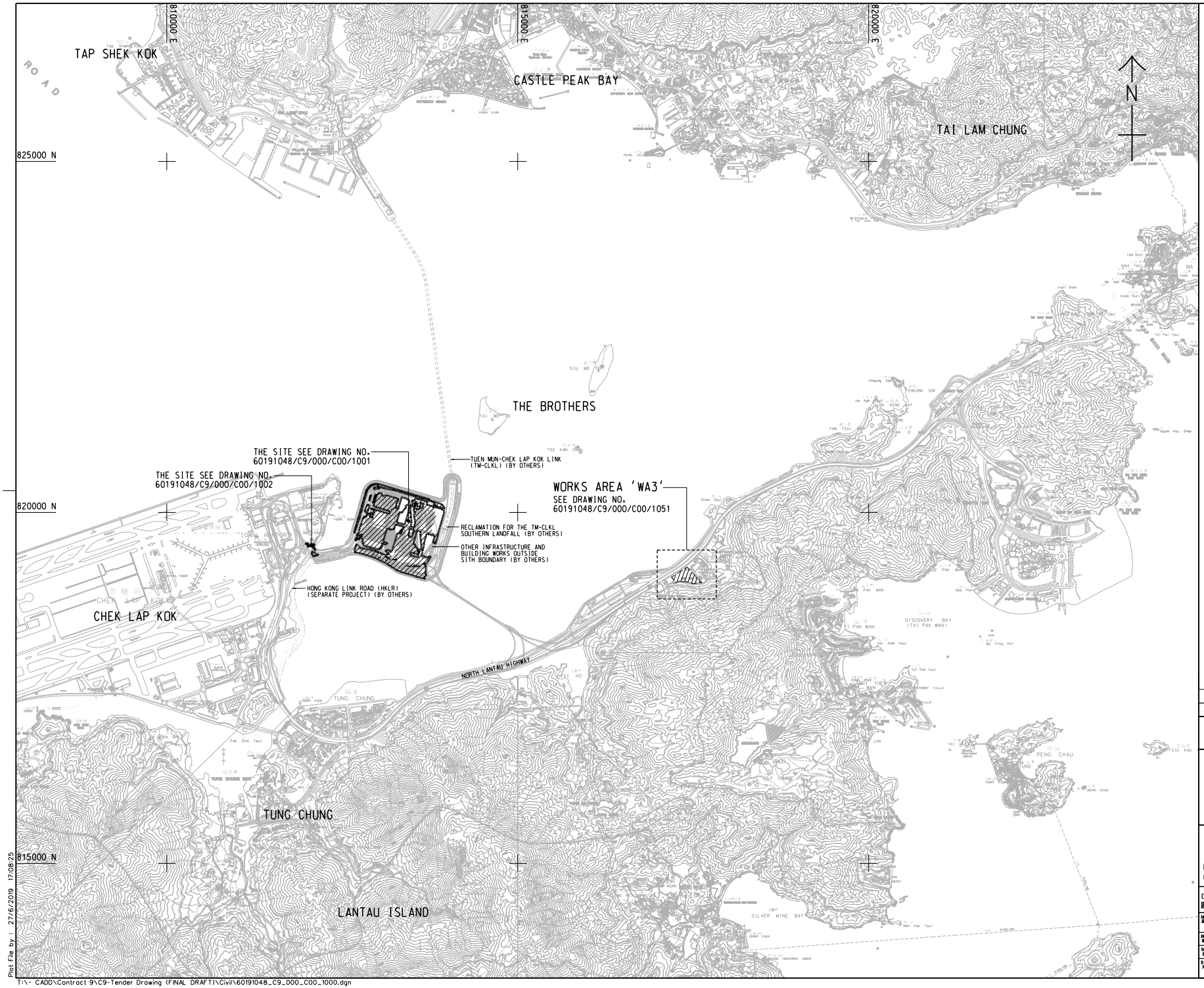
- Contractor was reminded NRMM label should be provided or replaced.
- Contractor was reminded EP should be provided at all entrance.

Others

- No specific observation was identified in the reporting period.

Figure 1

The Site Layout Plan of the Contract



NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

SITE BOUNDARY

WORKS AREA

REV. 修訂	DESCRIPTION 內容摘要	BY 由 / CHECKED 核查	DATE 日期
-	TENDER DRAWING	TTHK BCC	JUL 19

路政署
HIGHWAYS DEPARTMENT
主要工程管理處(專責事務)
Major Works Project Management Office (Special Duties)

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PHASE 2 AND OTHER WORKS

SITE LOCATION PLAN

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

Aedas

DRG.NO. 圖紙編號 60191048/C9/000/C00/1000

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
TTHK	HY/2019/01	SCI
DRAWN BY 繪圖 JC	STATUS 狀態	
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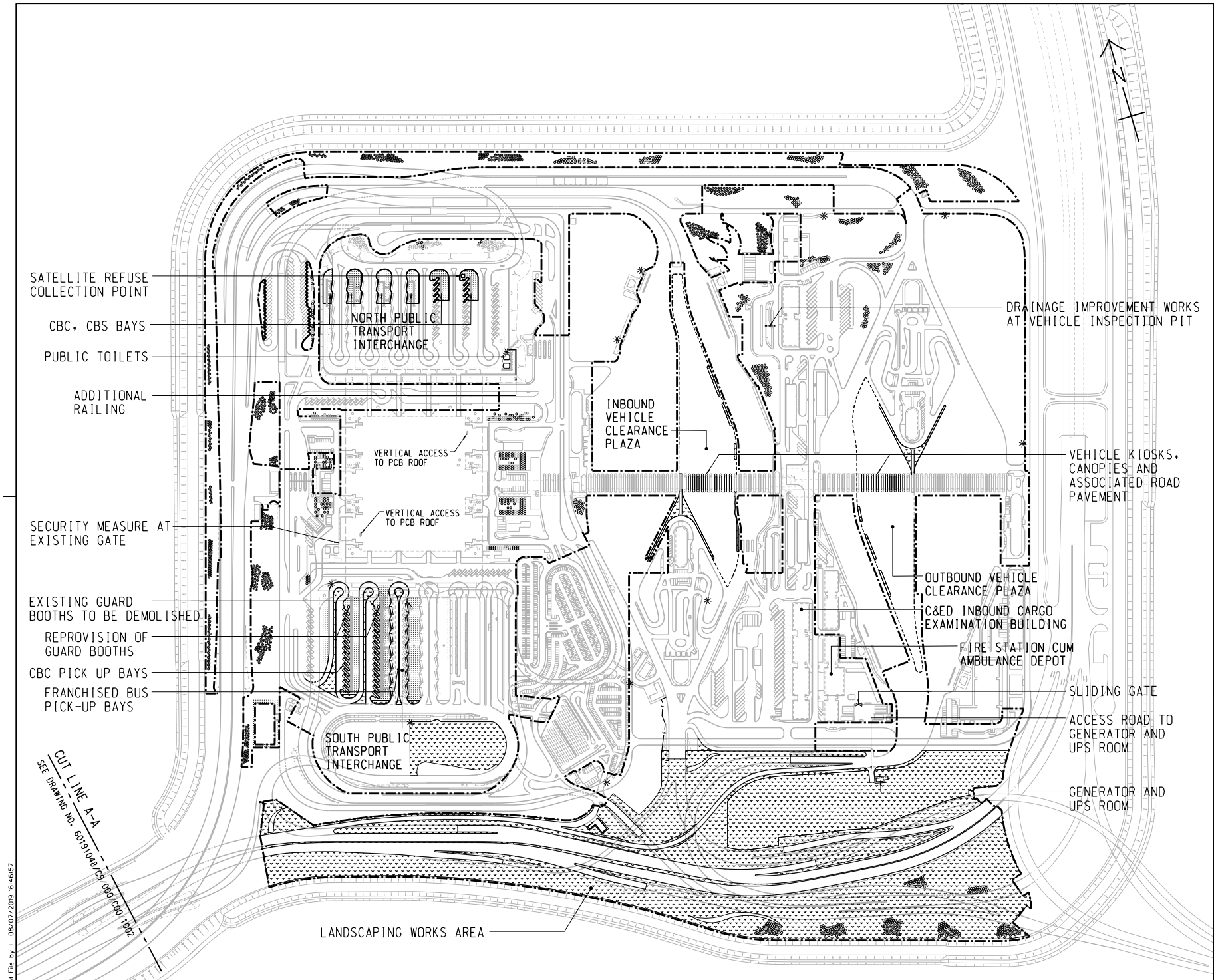

REMARKS:

1. IN SPTI:
   - DEMOLISH 2 NOS. EXISTING GUARD BOOTHS AND RE-PROVISION TO REVISED LOCATIONS AS SHOWN
   - CONSTRUCT COVERED WALKWAYS FOR THE NEW FB AND CBC PICK UP BAYS
   - MODIFY EXISTING DUCTING AND POLES FOR ELV SYSTEM, ROAD LIGHTING AND PILLAR BOXES, AND THE ASSOCIATED CABLING WORKS.
   - RELOCATE AND REINSTATE 3 NOS. OF EXISTING BUS OPERATOR OFFICES AND FOOD TRUCK
   - REPLACEMENT OF DRAINPIT COVERS
2. IN NPTI:
   - CONSTRUCT COVERED WALKWAYS FOR THE NEW CBC, CBS PICK UP BAYS AND PUBLIC TOILETS
   - PROVIDE AUTOMATIC IRRIGATION SYSTEM AT SLOPES
   - MODIFY EXISTING COVERED WALKWAY AND PROVISION OF LIGHTING
   - REPLACEMENT OF DRAINPIT COVERS
3. LANDSCAPING WORKS AREA:
   - CONSTRUCT IRRIGATION SYSTEM WITH 13 NOS. OF NEW WATER POINT AND THE AUTOMATIC IRRIGATION SYSTEM AND PROVIDE MAINTENANCE WORKS
   - LANDSCAPE SOFTWORK, ESTABLISHMENT AND MAINTENANCE WORKS
   - CONSTRUCT RIVER WASHED STONE SWATHE AND MAINTENANCE WORKS
   - PROTECT EXISTING PLANTING AND HARD STRUCTURES
4. PASSENGER CLEARANCE BUILDING
   - VERTICAL ACCESS
   - IMPROVEMENT WORKS FOR WATER FEATURE
   - MINOR REMAINING WORKS
   - PROVISION OF NEW CENTRAL AVCSS EQUIPMENT WITH SUFFICIENT CAPACITY, PROCESSING POWER AND STORAGE TO ACCOMMODATE BOTH THE EXISTING AND NEW AVCSS
5. VEHICLE KIOSKS AT INBOUND & OUTBOUND VCP
   - PROVISION OF AVCSS AT NEW KIOSKS TO SERVE 24 NOS. VEHICULAR LANES
   - REPLACEMENT OF BARRIER GATE WITH SKIRTING AT 72 NOS. EXISTING KIOSK
6. C&ED INBOUND CARGO EXAMINATION BUILDING
   - PROVISION OF NEW CENTRAL AVCSS EQUIPMENT WITH SUFFICIENT CAPACITY, PROCESSING POWER AND STORAGE TO ACCOMMODATE BOTH THE EXISTING AND NEW AVCSS

ABBREVIATION:

SPTI - SOUTH PUBLIC TRANSPORT INTERCHANGE
NPTI - NORTH PUBLIC TRANSPORT INTERCHANGE
VCP - VEHICLE CLEARANCE PLAZA
PCB - PASSENGER CLEARANCE BUILDING
FB - FRANCHISED BUS
CBC - CROSS BOUNDARY COACH
CBS - CROSS BOUNDARY SHUTTLE
ELV - EXTRA LOW VOLTAGE
AVCSS - AUTOMATIC VEHICLE CLEARANCE SUPPORT SYSTEM

NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C9/000/C00/1002

LEGEND:

- SITE BOUNDARY
- AMENITY AREA
- FOOTPATH
- COVERED WALKWAY
- SECURITY FENCE
- TREE PLANTING
- IRRIGATION POINT

REV. 修訂	DESCRIPTION 內容摘要	DRAWN 繪圖	CHECKED 核對	DATE 日期
-	TENDER DRAWING	TTHK	BCC	JUL 19

路政署
HIGHWAYS DEPARTMENT
主要工程管理處(專責事務)
Major Works Project Management Office (Special Duties)

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PHASE 2 AND OTHER WORKS

GENERAL ARRANGEMENT

SHEET 1 OF 2

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C9/000/C00/1001

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 負責人
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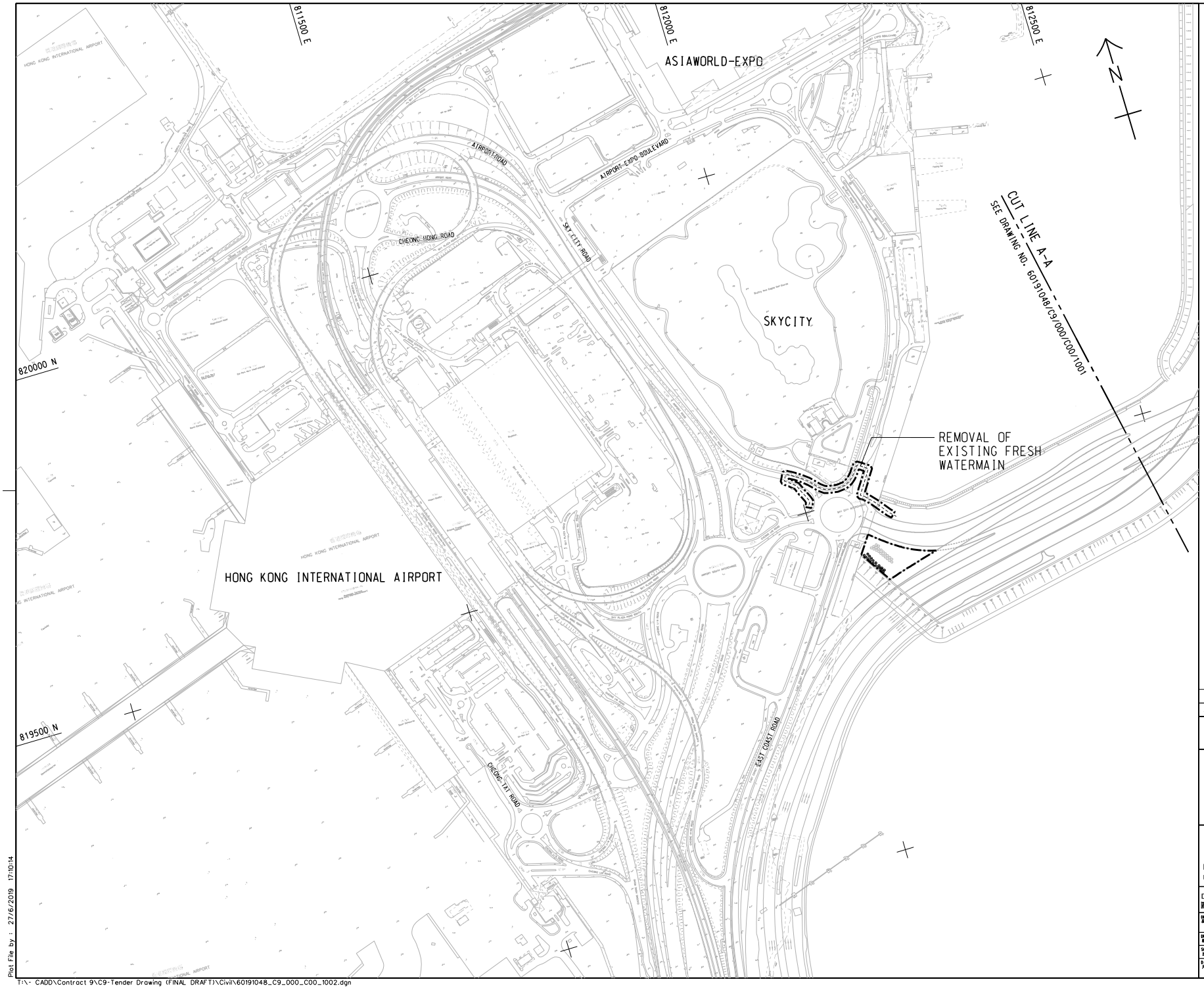


NOTE:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS.60191048/C9/000/C00/1001.

REV. 修訂	DESCRIPTION 內容摘要	BY 由	CHECKED 審核	DATE 日期
-	TENDER DRAWING	TTHK	BCC	JUL 19

路政署
HIGHWAYS DEPARTMENT
主要工程管理處(專責事務)
Major Works Project Management Office (Special Duties)

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PHASE 2 AND OTHER WORKS

GENERAL ARRANGEMENT

SHEET 2 OF 2

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C9/000/C00/1002

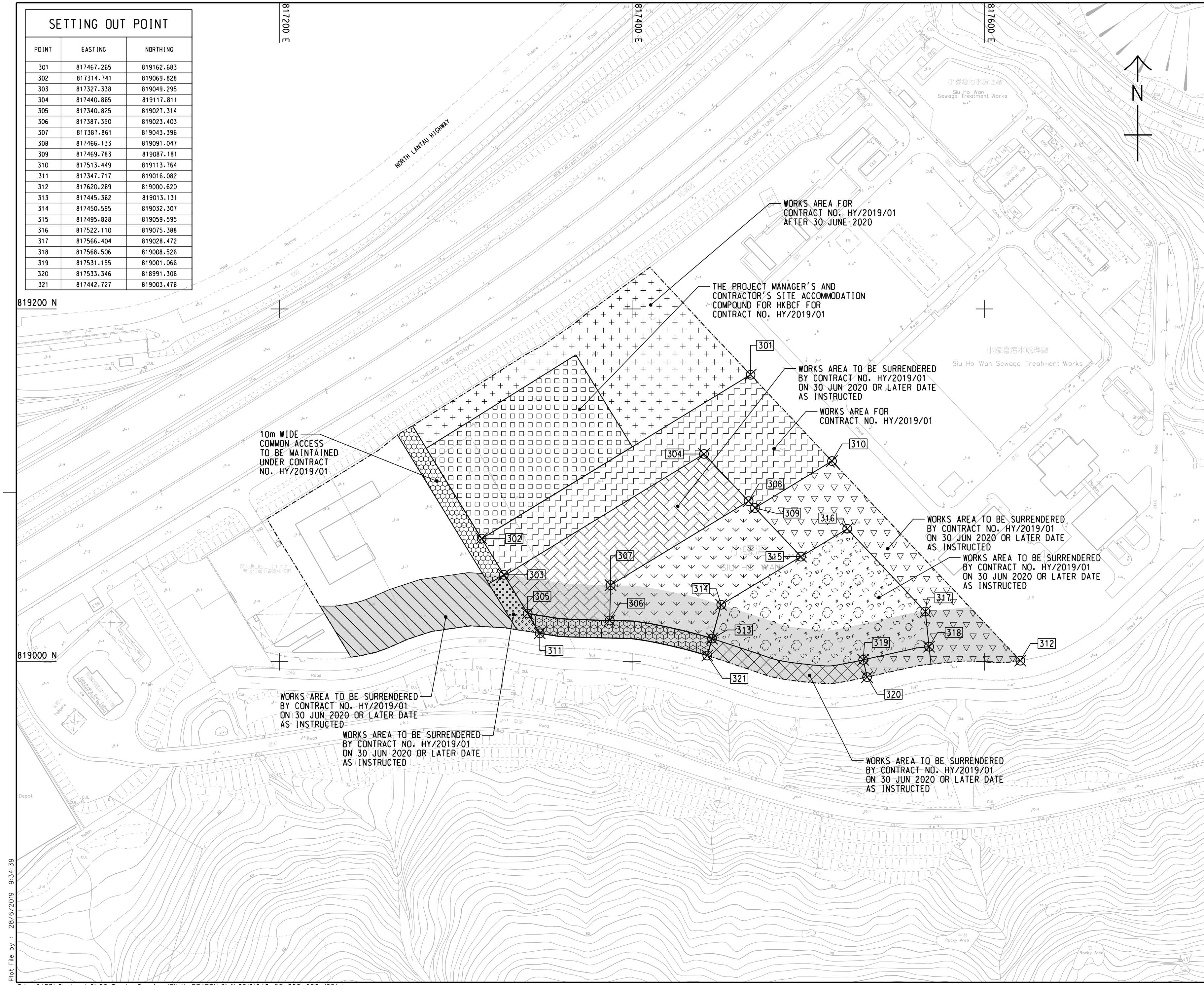
DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
TTHK	HY/2019/01	SCI
DRAWN BY 繪圖 JC	STATUS 狀態	
SCALE 比例 A1 1 : 2500		
DIMENSIONS ARE IN 尺寸單位 METRES	© COPYRIGHT RESERVED 版權所有	

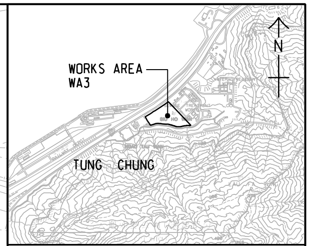
Plot File by : 27/6/2019 17:10:14

T:\- CADD\Contract 9\C9-Tender Drawing (FINAL DRAFT)\Civil\60191048_C9_000_C00_1002.dgn

SETTING OUT POINT

POINT	EASTING	NORTHING
301	817467.265	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.865	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817620.269	819000.620
313	817445.362	819013.131
314	817450.595	819032.307
315	817495.828	819059.595
316	817522.110	819075.388
317	817566.404	819028.472
318	817568.506	819008.526
319	817531.155	819001.066
320	817533.346	818991.306
321	817442.727	819003.476





LOCATION PLAN

SCALE 1 : 25000

NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 3.1
- PORTION 3.2
- PORTION 3.3
- PORTION 3.4
- PORTION 3.5
- PORTION 3.6
- PORTION 3.7
- PORTION 3.8
- PORTION 3.9
- PORTION 3.10
- PORTION 3.11
- PORTION 3.12
- NON-BUILDING AREA 8200m² (WHOLE)

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. 核對 CHECKED	DATE 日期
-	TENDER DRAWING	TTHK	BCC	JUL 19

路政署
HIGHWAYS DEPARTMENT
主要工程管理處(專責事務)
Major Works Project Management Office (Special Duties)

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PHASE 2 AND OTHER WORKS

WORKS AREA WA3

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C9/000/C00/1051

DESIGNED BY 設計 TTHK	CONTRACT NO. 合約編號 HY/2019/01	P. Dir. APPROVED 批准人 SCI
DRAWN BY 繪圖 JC	STATUS 階段	
SCALE 比例 A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位 METRES		

Plot File by : 28/6/2019 9:34:39

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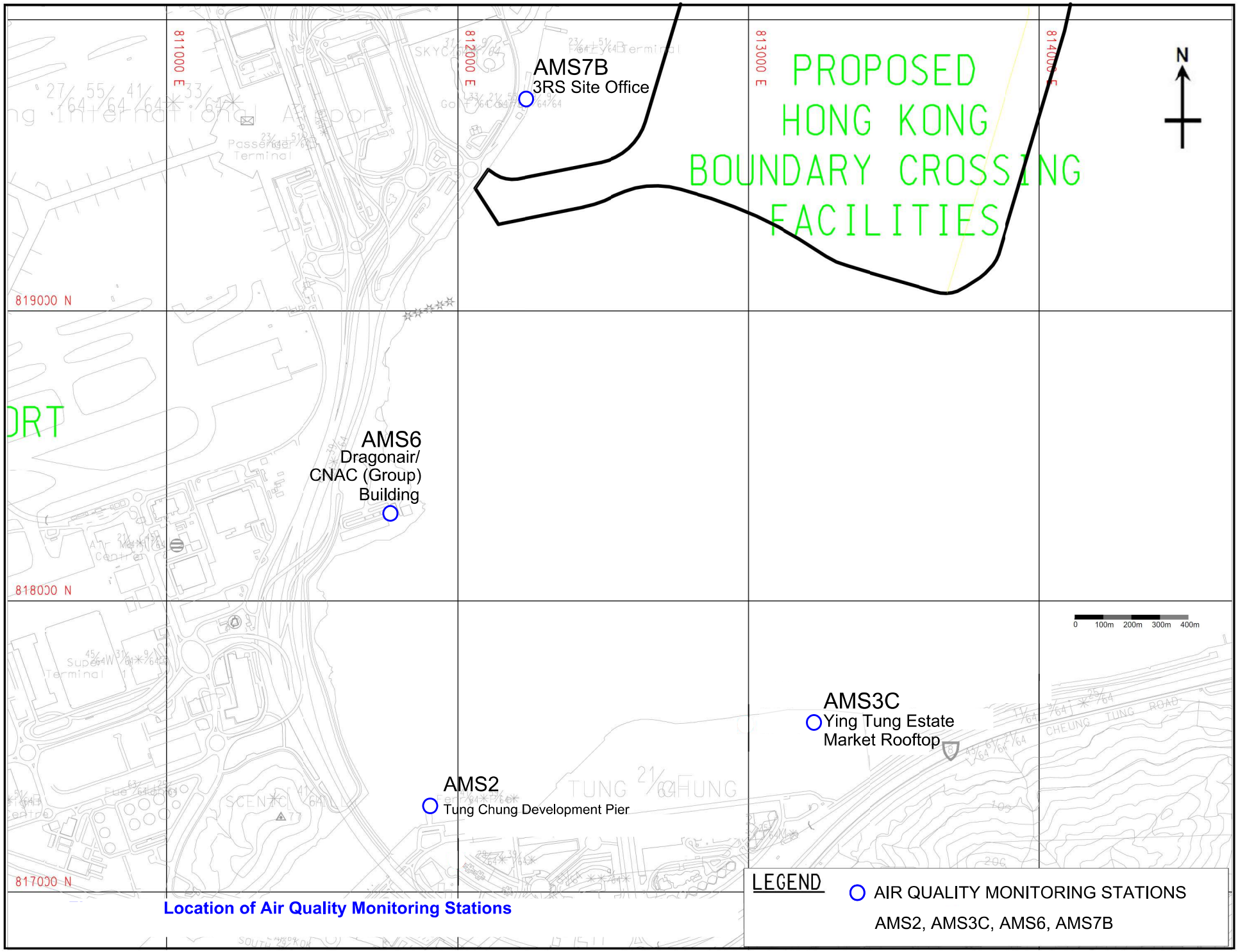
Figure 2

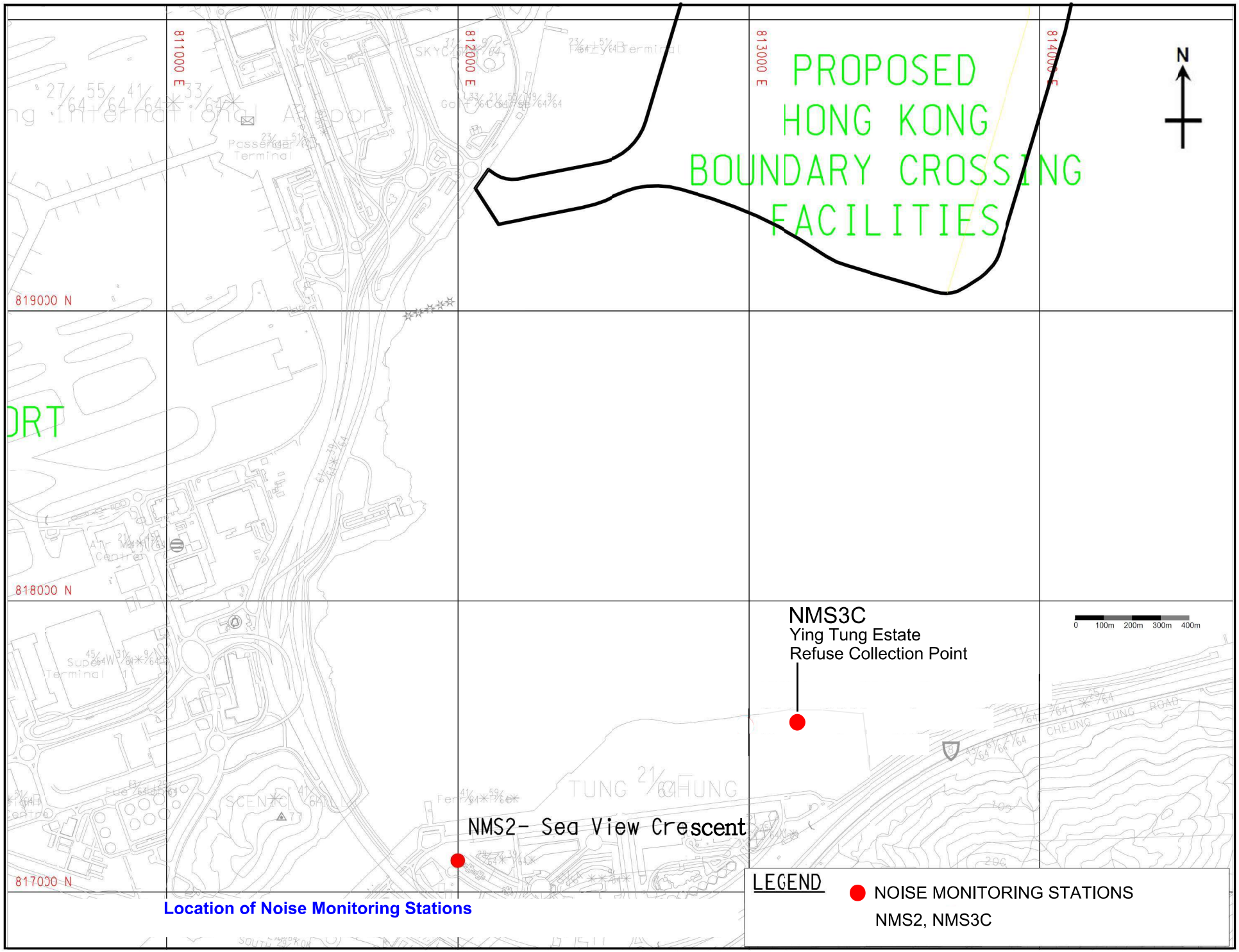
The Location of the Air Quality Monitoring Station



Location of Air Quality Monitoring Stations

Figure 3

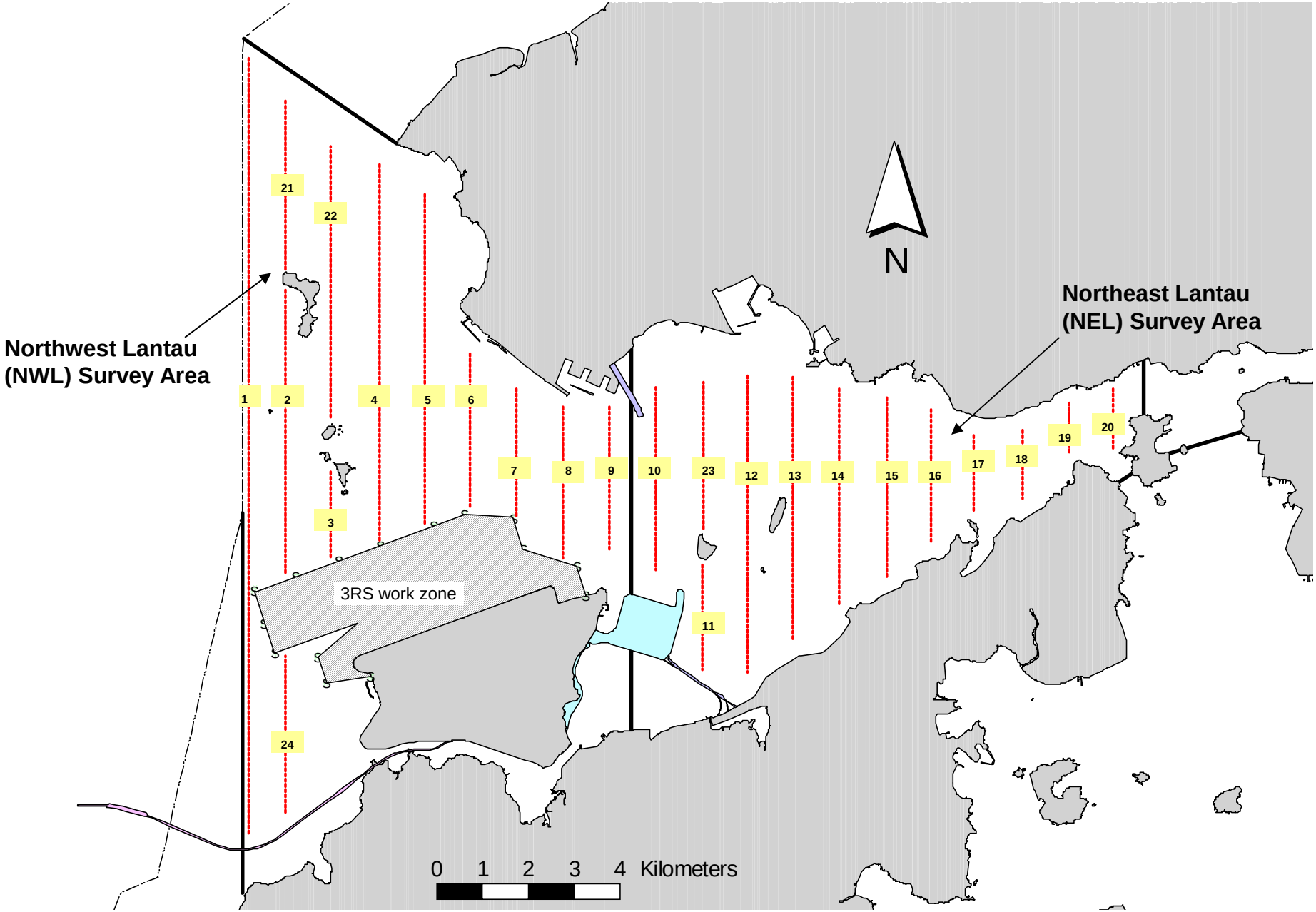
The Location of the Noise Monitoring Station



Location of Noise Monitoring Stations

Figure 4

Post-Construction Dolphin Monitoring Line Transect Layout Map



Transect Line Layout in Northwest and Northeast Lantau Survey Areas

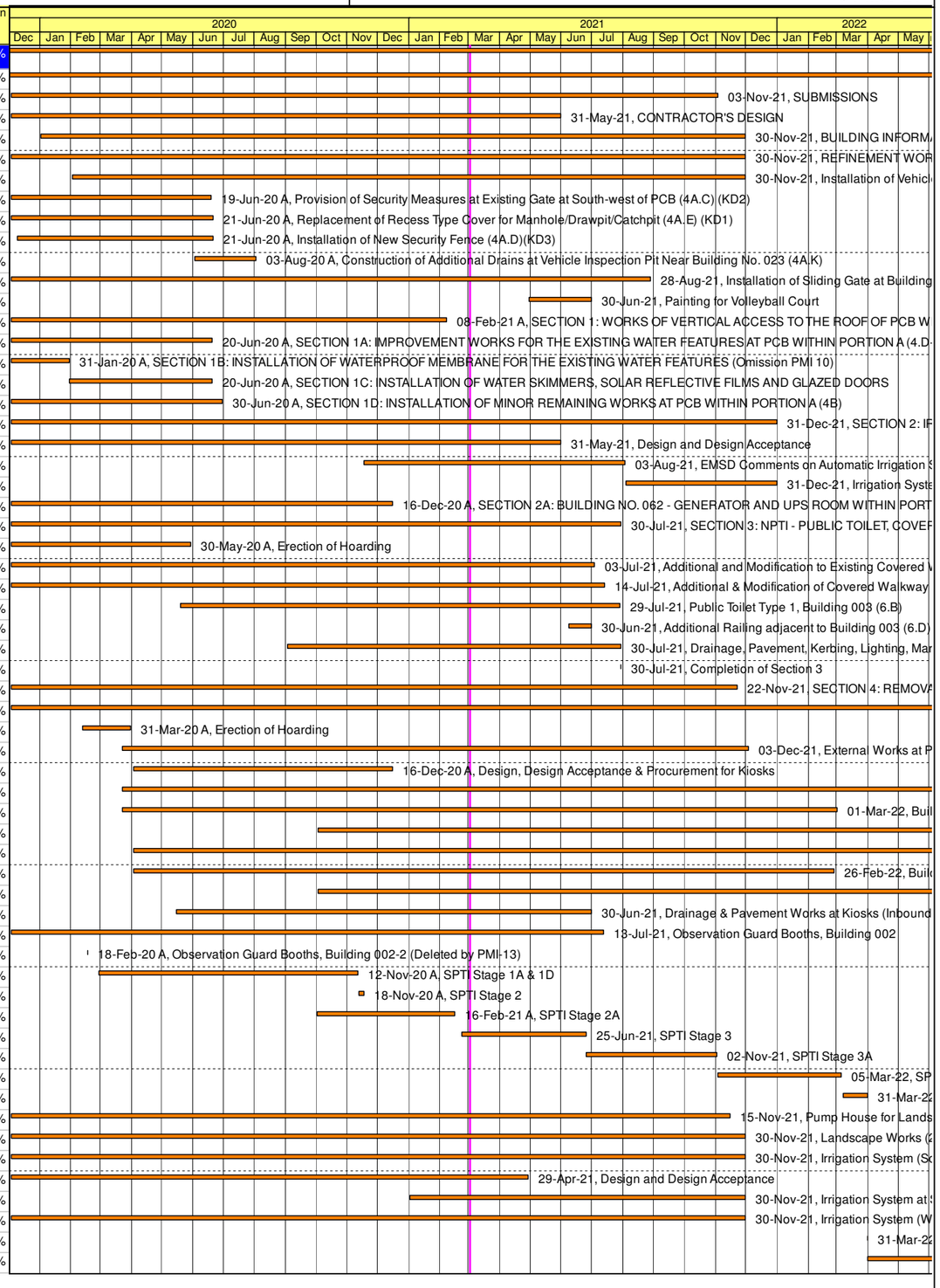
Appendix A

Construction Programme

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Mar-21

Activity Name	Start	Finish	% Completion
Revised Works Programme for HKZMB Phase 2 and Other Works (HY/2019/01)	20-Nov-19 A	31-Mar-23	37.59%
CONTRACT DATES	20-Nov-19 A	31-Mar-23	49.92%
SUBMISSIONS	04-Dec-19 A	03-Nov-21	0%
CONTRACTOR'S DESIGN	04-Dec-19 A	31-May-21	81.85%
BUILDING INFORMATION MODELING	02-Jan-20 A	30-Nov-21	62.45%
REFINEMENT WORKS AT HKP (4A)	04-Dec-19 A	30-Nov-21	60.64%
Installation of Vehicle Barrier Gate at Existing Vehicle Kiosks (4A.B)	03-Feb-20 A	30-Nov-21	56.92%
Provision of Security Measures at Existing Gate at South-west of PCB (4A.C) (KD2)	04-Dec-19 A	19-Jun-20 A	100%
Replacement of Recess Type Cover for Manhole/Drawpit/Catchpit (4A.E) (KD1)	04-Dec-19 A	21-Jun-20 A	100%
Installation of New Security Fence (4A.D)(KD3)	10-Dec-19 A	21-Jun-20 A	100%
Construction of Additional Drains at Vehicle Inspection Pit Near Building No. 023 (4A.K)	03-Jun-20 A	03-Aug-20 A	100%
Installation of Sliding Gate at Building No. 041 (4A.J)	04-Dec-19 A	28-Aug-21	70.16%
Painting for Volleyball Court	30-Apr-21	30-Jun-21	0%
SECTION 1: WORKS OF VERTICAL ACCESS TO THE ROOF OF PCB WITHIN PORTION A (4)	04-Dec-19 A	08-Feb-21 A	100%
SECTION 1A: IMPROVEMENT WORKS FOR THE EXISTING WATER FEATURES AT PCB WITHIN PORTION A (4.D-W)	04-Dec-19 A	20-Jun-20 A	100%
SECTION 1B: INSTALLATION OF WATERPROOF MEMBRANE FOR THE EXISTING WATER FEATURES (Omission PMI 10)	04-Dec-19 A	31-Jan-20 A	100%
SECTION 1C: INSTALLATION OF WATER SKIMMERS, SOLAR REFLECTIVE FILMS AND GLAZED DOORS	31-Jan-20 A	20-Jun-20 A	100%
SECTION 1D: INSTALLATION OF MINOR REMAINING WORKS AT PCB WITHIN PORTION A (4B)	04-Dec-19 A	30-Jun-20 A	100%
SECTION 2: IRRIGATION SYSTEM AT SLOPES OF NPTI WITHIN PORTION B (3)	04-Dec-19 A	31-Dec-21	58.04%
Design and Design Acceptance	04-Dec-19 A	31-May-21	66.67%
EMSD Comments on Automatic Irrigation System at SIMAR Slope of NPTI - NEC No. 120	18-Nov-20 A	03-Aug-21	49.51%
Irrigation System at Slopes of NPTI within Portion B	04-Aug-21	31-Dec-21	0%
SECTION 2A: BUILDING NO. 062 - GENERATOR AND UPS ROOM WITHIN PORTION C (4A.L)	04-Dec-19 A	16-Dec-20 A	100%
SECTION 3: NPTI - PUBLIC TOILET, COVERED WALKWAY & PAVEMENT (6)	04-Dec-19 A	30-Jul-21	73.74%
Erection of Hoarding	04-Dec-19 A	30-May-20 A	100%
Additional and Modification to Existing Covered Walkway, Area 1 - 6 (6.E)	04-Dec-19 A	03-Jul-21	77.41%
Additional & Modification of Covered Walkway adjacent to Building 003, Area 7 (6.C)	04-Dec-19 A	14-Jul-21	75.89%
Public Toilet Type 1, Building 003 (6.B)	20-May-20 A	29-Jul-21	73.87%
Additional Railing adjacent to Building 003 (6.D)	09-Jun-21	30-Jun-21	0%
Drainage, Pavement, Kerbing, Lighting, Marking and Signs (6.F)	03-Sep-20 A	30-Jul-21	50%
Completion of Section 3	30-Jul-21	30-Jul-21	0%
SECTION 4: REMOVAL OF WATERMAIN AT THE SKYCITY INTERCHANGE WITHIN PORTION C AND D	04-Dec-19 A	22-Nov-21	61.35%
SECTION 5: REMAINING WORKS	04-Dec-19 A	01-Dec-22	39.68%
Erection of Hoarding	13-Feb-20 A	31-Mar-20 A	100%
External Works at Plaza	23-Mar-20 A	03-Dec-21	52.31%
Design, Design Acceptance & Procurement for Kiosks	03-Apr-20 A	16-Dec-20 A	100%
Inbound: 11 No. of Private Car Kiosks between 027/028	23-Mar-20 A	01-Dec-22	34.05%
Builder Works (5.A)	23-Mar-20 A	01-Mar-22	47.61%
E&M Works	03-Oct-20 A	01-Dec-22	29.97%
Outbound: 11 No. of Private Car Kiosks between 029/030	03-Apr-20 A	29-Nov-22	34.14%
Builder's Works (5.A)	03-Apr-20 A	26-Feb-22	47.78%
E&M Works	03-Oct-20 A	29-Nov-22	27.72%
Drainage & Pavement Works at Kiosks (Inbound & Outbound)	16-May-20 A	30-Jun-21	61.2%
Observation Guard Booths, Building 002	04-Dec-19 A	13-Jul-21	76%
Observation Guard Booths, Building 002-2 (Deleted by PMI-13)	18-Feb-20 A	18-Feb-20 A	100%
SPTI Stage 1A & 1D	29-Feb-20 A	12-Nov-20 A	100%
SPTI Stage 2	13-Nov-20 A	18-Nov-20 A	100%
SPTI Stage 2A	02-Oct-20 A	16-Feb-21 A	100%
SPTI Stage 3	23-Feb-21 A	25-Jun-21	0%
SPTI Stage 3A	26-Jun-21	02-Nov-21	0%
SPTI Stage 3B	03-Nov-21	05-Mar-22	0%
SPTI Stage 3C	07-Mar-22	31-Mar-22	0%
Pump House for Landscape (2)	04-Dec-19 A	15-Nov-21	61.98%
Landscape Works (2)	04-Dec-19 A	30-Nov-21	60.64%
Irrigation System (Southern Portion)	04-Dec-19 A	30-Nov-21	60.64%
Design and Design Acceptance	04-Dec-19 A	29-Apr-21	88.31%
Irrigation System at Southern Portion	02-Jan-21 A	30-Nov-21	17.34%
Irrigation System (Water Point)	04-Dec-19 A	30-Nov-21	60.64%
Completion of Section 5	31-Mar-22	31-Mar-22	0%
SECTION 6: ESTABLISHMENT WORKS	01-Apr-22	31-Mar-23	0%



◆ Milestone

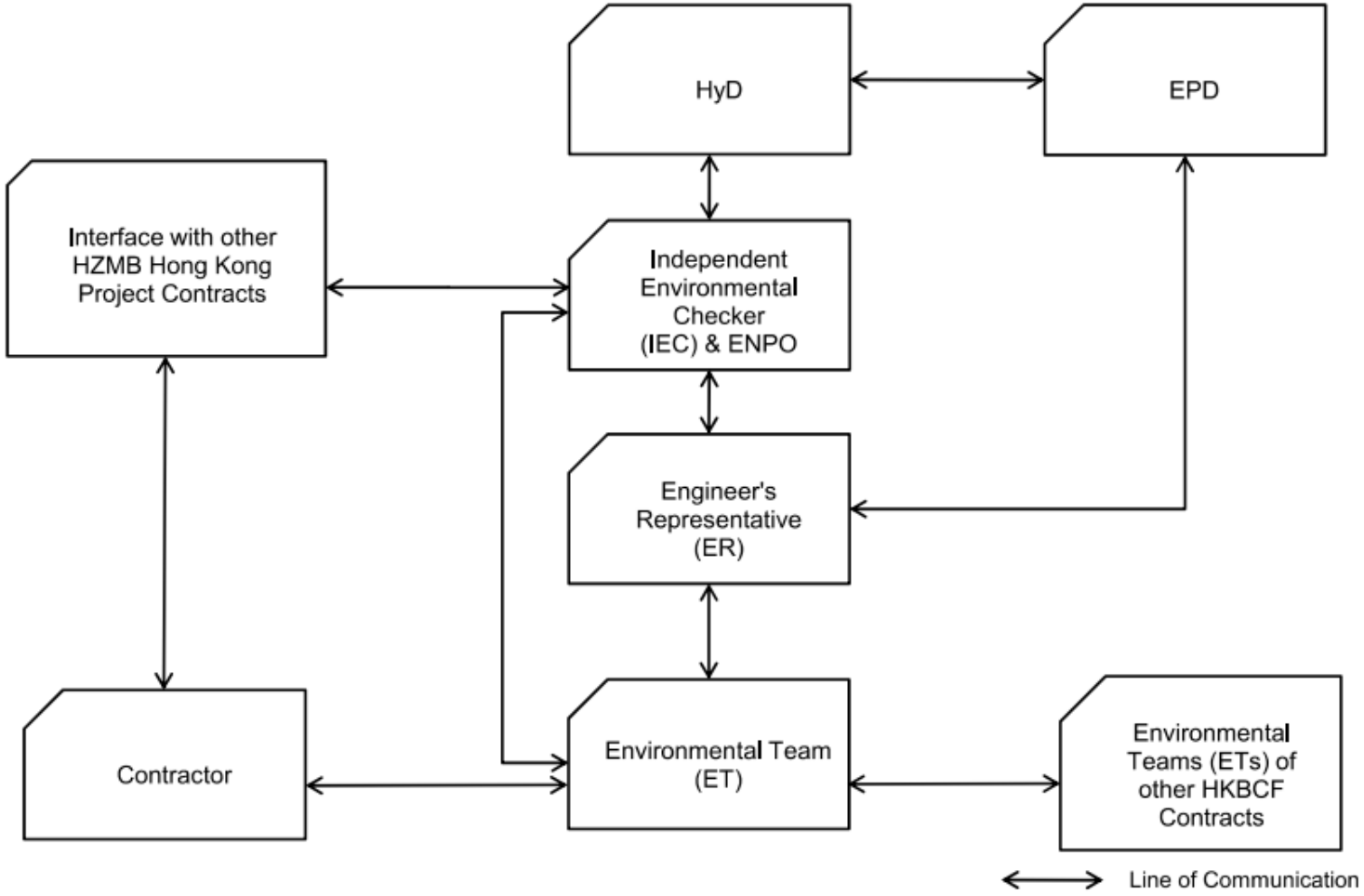
Summary

EXECUTIVE SUMMARY PROGRAMME FOR PHASE 2 AND OTHER WORKS
HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

Date	Revision	Checked	Approved
04-Mar-21	Works Programme for Phase 2	ZJ	

Appendix B

Project Organization Chart


HyD
EPD
Interface with other HZMB Hong Kong Project Contracts
Independent Environmental Checker (IEC) & ENPO
Engineer's Representative (ER)
Contractor
Environmental Team (ET)
Environmental Teams (ETs) of other HKBCF Contracts
Line of Communication

Appendix C

Action and Limit Levels

Action / Limit Levels for Air Quality

Parameters	Action Level	Limit Level
24-hour TSP Level in µg/m^3	[1]For baseline level ≤ 200 µg/m^3, Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 200 µg/m^3 Action level = Limit level	260 µg/m^3
1-hour TSP Level in µg/m^3	[2]For baseline level ≤ 384 µg/m^3, Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 384 µg/m^3, Action level = Limit level	500 µg/m^3

Notes:

1. The Action Level for 24-hour TSP Level:

a) AMS 2 = (71.1*1.3 + 260) / 2 = 176 µg/m^3; b) AMS 3C = (56.9*1.3 + 260) / 2 = 167 µg/m^3;

c) AMS 6 = (66.4*1.3 + 260) / 2 = 173 µg/m^3; d) AMS 7B = (82.3*1.3 + 260) / 2 = 183 µg/m^3;

2. The Action Level for 1-hour TSP Level:

a) AMS 2 = (191.5*1.3 + 500) / 2 = 374 µg/m^3; b) AMS 3C = (18.2.2*1.3 + 500) / 2 = 368 µg/m^3;

c) AMS 6 = (169.2*1.3 + 500) / 2 = 360 µg/m^3; d) AMS 7B = (184.2*1.3 + 500) / 2 = 370 µg/m^3;

Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700 - 1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) *

Note : If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

Appendix D

Event and Action Plan

Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	ACTION LEVEL			
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor;	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	LIMIT LEVEL			
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose 4. remedial 5. measures for the analysed noise problem; 6. Ensure remedial measures properly implemented; 7. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix E

Implementation Status of

Environment mitigation Measures (Construction Phase)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Air Quality				
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	Implemented
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: •Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; •Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; •A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. •The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; •Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	All construction sites	Partially Implemented
S5.5.6.2	A2	•When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; •The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials, •Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; •Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; •Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; •Any skip hoist for material transport should be totally enclosed by impervious sheeting; •Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top	All construction sites	Partially Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
S5.5.6.2	A2	• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site r part of the construction site where the exposed earth lies	All construction sites	N/A
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	Implemented
S5.5.6.4	A4	4) Project Manager to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	Implemented
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected representative dust monitoring station	Implemented
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant; •Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; •All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; •Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; •The materials which may generate airborne dusty emissions should be wetted by water spray system; •All receiving hoppers should be enclosed on three sides up to 3m above unloading point; •All conveyor transfer points should be totally enclosed; •All access and route roads within the premises should be paved and wetted; and •Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.	Selected representative dust monitoring station	Implemented
S5.5.2.7	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; •Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points.	All construction sites	Implemented
Construction Noise (Air borne)				
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following: •only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; •machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; •plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; •silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;	All construction sites	Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		•mobile plant should be sited as far away from NSRs as possible and practicable; •material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.		
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	All construction sites	Implemented
S6.4.12	N3	3) Install movable noise barriers (typically density@14kg/m acoustic mat or full enclosure close to noisy plants including compressor, generators, saw.	For plant items listed in Appendix 6D of the EIA report at all construction sites	N/A
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	For plant items listed in Appendix 6D of the EIA report at all construction sites	Implemented
S6.4.14	N5	5) Sequencing operation of construction plants where practicable	All construction sites where practicable	Implemented
S5.1	N6	6) Implement a noise monitoring under EM&A programme.	Selected representative noise monitoring station	Implemented
Waste Management (Construction Noise)				
S8.3.8	WM1	Construction and Demolition Material The following mitigation measures should be implemented in handling the waste: •Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; •Carry out on-site sorting; •Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; •Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and •Implement an enhanced Waste Management Plan similar to E7WBTC (Works) No. 19/2005 - "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. •In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation.	All construction sites	N/A
S8.3.9-S8.3.11	WM2	C&D Waste •Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. •The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	All construction sites	Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
S8.2.12-S8.3.15	WM3	Chemical Waste •Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. •Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. •The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. •Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	All construction sites	Implemented
S8.3.16	WM4	Sewage •Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	All construction sites	Implemented
S8.3.17–S8.3.19	WM5	General Refuse •General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. •A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. •Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. •Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. •Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.	All construction sites	Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Water Quality (Construction Phase)				
S9.11.1.7	W2	Land Works General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: •wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; •sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; •storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; •silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; •temporary access roads should be surfaced with crushed stone or gravel; •rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; •measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; •open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; •manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; •discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; •all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; •wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; •the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; •wastewater generated from concreting, plastering, Internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; •vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; •the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; •waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; •all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and •surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All land-based construction sites	Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Ecology (Construction Phase)				
S10.7	E4	•Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Seawall, reclamation area	N/A
	E9	•Dolphin vessel monitoring	North Lantau and West Lantau	Implemented (The results and the analysis adopted from published Quarterly EM&A report of Contract No. HY/2012/08)
Landscape & Visual (Construction Phase)				
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts G1. Grass-hydroseed bare soil surface and stock pile areas; G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic. G3. Providing aesthetic architectural design on related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonic atmosphere of the HKBCF. G4. Vegetation reinstatement and upgrading to disturbed areas; G5. Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; G6. Providing planting area around peripheral of HKBCF for tree planting screening effect; G7. Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline; and G8. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.	All construction site areas	G5 was Implemented
S14.3.3.3	LV3	Mitigate Visual Impacts V1. Minimize time for construction activities during construction period. V2. Provide screen hoarding at the portion of the project site/ works areas / storage areas near VSRs who have close low- level views to the Project during HKBCF construction.	All construction site areas	Implemented
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	All construction sites	Implemented
S15.5 –	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual.	All construction sites	Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
S15.6		2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.		

Appendix F

Summary of Site Audit in the Reporting Period

Summary of Site Audit in the Reporting Period

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	23 Dec 2020	Reminder: Contractor was reminded any activities cause dust rising should be sprayed with water. (VCP)	23 Dec 2020
	30 Dec 2020	Reminder: Contractor was reminded to increase the frequency of water spray. (VCP)	30 Dec 2020
	6 Jan 2021	Observation: Contractor was reminded washing facilities should be provided at all exit. (SPTI)	13 Jan 2021
	13 Jan 2021	Observation: Contractor was reminded washing facility should be a proper function. (VCP)	13 Jan 2021
	27 Jan 2021	Reminder: Contractor was reminded dusty material should be cleared. (NPTI)	NA
	3 Feb 2021	Reminder: Contractor was reminded that water spray should be provided to prevent dusty arising. (SPTI)	NA
Noise	NA		
Water Quality	10 Feb 2021	Reminder: Contractor was reminded that stagnant water should be removed.	NA
	17 Feb 2021	Reminder: Contractor was reminded that stagnant water should be removed. (NPTI)	NA
	24 Feb 2021	Observation: Contractor was reminded that stagnant water should be removed. (VCP)	26 Feb 2021
Chemical and Waste Management	NA		

Land Contamination	NA		
Landscape and Visual Impact	NA		
Permit / Licenses	2 Dec 2020	Observation: Contractor was reminded NRMM label should be provided. (VCP)	4 Dec 2020
	9 Dec 2020	Observation: Contractor was reminded EP should be provided at all entrance. (SPTI)	10 Dec 2020
	16 Dec 2020	Observation: Contractor was reminded NRMM label should be replaced. (VCP)	17 Dec 2020
Others	NA		

Appendix G

Waste Flow Table

Waste Flow Table for Year 2020

Monthly Ending	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated (Inert C&D)	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)
2020 Jan	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2020 Feb	720.34	Nil	720.34	Nil	Nil	Nil	0.335	Nil	Nil	2.23
2020 Mar	11344.57	Nil	10218.92	Nil	1125.65	Nil	0.669	Nil	Nil	8.05
2020 Apr	19649.37	Nil	18670.3	Nil	979.07	Nil	Nil	Nil	Nil	21.64
2020 May	26767.55	Nil	26692.04	Nil	75.51	Nil	2.42	Nil	Nil	196.64
2020 Jun	4628.13	Nil	4198.52	Nil	429.61	Nil	Nil	Nil	Nil	117.19
2020 Jul	4895.66	Nil	3398.41	Nil	1497.25	Nil	Nil	Nil	Nil	30.33
2020 Aug	4971.00	Nil	4774.49	Nil	196.51	Nil	0.418	Nil	Nil	36.91
2020 Sep	1175.26	Nil	736.1	Nil	439.16	Nil	Nil	Nil	Nil	36.16
2020 Oct	3433.83	Nil	Nil	2262.7	1171.13	Nil	Nil	Nil	Nil	32.25
2020 Nov	26481.72	Nil	Nil	24393.64	2088.08	Nil	Nil	Nil	Nil	40.09
2020 Dec	14361.90	Nil	Nil	13468.00	893.90	Nil	Nil	Nil	Nil	39.56
Total	118429.33	0	69409.12	40124.34	8895.87	0	3.842	0	0	561.05

Note:
1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.
3) Total Quantity Generated (Inert) = Hard Rock and Large Broken Concrete + Reused in the Contract + Disposed as Public Fill – Imported Fill

Waste Flow Table for Year 2021

Monthly Ending	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated (Inert C&D)	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)
2021 Jan	787.6	0	0	0	787.6	0	0	0	0	18.19
2021 Feb	254.95	0	0	0	254.95	0	0	0	0	154.94
2021 Mar										
2021 Apr										
2021 May										
2021 Jun										
2021 Jul										
2021 Aug										
2021 Sep										
2021 Oct										
2021 Nov										
2021 Dec										
Total	1042.55	0	0	0	1042.55	0	0	0	0	173.13

Note:
1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials.
3) Total Quantity Generated (Inert) = Hard Rock and Large Broken Concrete + Reused in the Contract + Disposed as Public Fill – Imported Fill

Appendix H

Cumulative Statistics on Environmental Complaints,

Notifications of Summons and Successful Prosecutions

Environmental Complaints Log

Reference No.	Date of Complaint Received	Received From	Received By	Nature of Complaint	Date of Investigation	Outcome	Date of Reply

Cumulative Statistics on Complaints

Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

Cumulative Statistics on Notification of Summons and Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Notification of Summons and Prosecutions This Month	Cumulative Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

Appendix I

HZMB Dolphin Final Review Report

Dolphin Final Review Report

Contact No. HY/2019/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works |

0002/20/ED/0429 6 | 28 November 2022

Draft

China Harbour Engineering Co., Ltd. - Contract No. HY/2019/01

ANEWR

Highways Department
5th Floor, Ho Man Tin Government Offices
88 Chung Hau Street
Ho Man Tin
Kowloon

Your reference:

Our reference: HKHYD203/50/108422

Date: 2 December 2022

Attention: Mr Eric Wong

BY EMAIL & POST
(email: se4.mwsd@hyd.gov.hk)

Dear Sirs

Agreement No. HMWSD 6/2022 (EP)
Environmental Project Office for the Hong Kong-Zhuhai-Macao Bridge
Hong Kong Link Road, Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities & Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2019/01
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities
– Phase 2 and Other Works
Dolphin Final Review Report (Revision 6)

We refer to the email of 28 November 2022, attaching the Dolphin Final Review Report (Revision 6), prepared by the Environmental Team (ET) of the captioned.

We have no comment and hereby verify the Proposal in accordance with Clause 5.4 of the Environmental Permit no. EP-353/2009/K.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Macavity Yau on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/YCFM/lsmt

cc Highways Department – Mr Tony Wong (Fax no.: 3188 6614)
Highways Department – Mr YF Lau (Fax no.: 3188 6614)
AECOM Asia Co. Ltd. – Mr KP Wong (Fax no.: 2218 7399)
Fugro Technical Services Limited – Mr Calvin Leung (Fax no.: 2450 6138)

ANewR Consulting Limited
Unit 517, 5/F, Tower A, Regent Centre
63 Wo Yi Hop Road, Kwai Chung, Hong Kong
Tel: (852) 2618 2831 Fax: (852) 3007 8648
Email: info@anewr.com
Web: www.anewr.com

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Document Information

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Client Information

Client	China Harbour Engineering Co., Ltd. - Contract No. HY/2019/01
Client Address	China Harbour Building, 370-4 King's Road, North Point Hong Kong
Client Contact	Matthew Wu

Executive Summary

This Dolphin Final Review Report ("the Report") is prepared for Contact No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works" ("the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR). Contract No. HY/2019/01 was awarded to China Harbour Engineering Co. Limited and Fugro Technical Services Limited (FTS) was appointed as the Environmental Team (ET) by the Contractor.

Fugro Technical Services Limited (FTS) has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme and provide environmental team services for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0).

This Report summarizes the findings of the 24-month post-construction phase monitoring along the baseline, and construction phase monitoring activities for Chinese White Dolphin (CWD).

Dolphin Monitoring Works in the Post-Construction Phase

All marine-based construction activities for the HKBCF project were completed in January 2019. Hence, no marine-based construction activities were undertaken under this Contract. However, the ET of this Contract or another ET of the HZMB is required to conduct post-construction dolphin monitoring in accordance with Section 10.7 of the updated EM&A Manual.

The post-construction dolphin monitoring for HKBCF for the period between March 2019 and February 2020 was conducted under Contract No. HY/2013/04 and Contract No. HY/2019/01 continued the monitoring since March 2020.

All Chinese White Dolphin (CWD) monitoring were conducted as scheduled under the 36-month post-construction phase. A summary of the post-construction phase dolphin monitoring works is listed as below:

Parameter	Monitoring Dates
Chinese White Dolphin Monitoring (Line-transect Vessel Surveys)	4th, 11th, 13th and 18th March 2019 10th, 15th, 23rd and 25th April 2019 2nd, 7th, 21st and 23rd May 2019 3th, 6th, 10th and 13th June 2019 16th, 18th, 22nd and 24th July 2019 13th, 14th, 20th, 26th and 29th August 2019 4th, 11th, 17th and 23rd September 2019 8th, 9th, 14th and 29th October 2019 5th, 9th, 27th and 28th November 2019 3rd, 10th, 12th and 16th December 2019 2nd, 6th, 9th and 16th January 2020 10th, 18th, 20th and 24th February 2020 3rd, 9th, 14th and 25th March 2020 8th, 15th, 22nd and 29th April 2020 5th, 12th, 18th and 25th May 2020 4th, 9th, 11th and 22nd June 2020

Parameter	Monitoring Dates
	2nd, 7th, 9th and 20th July 2020 4th, 14th, 18th and 21st August 2020 9th, 15th, 21st and 23rd September 2020 7th, 12th, 19th and 22nd October 2020 4th, 9th, 17th and 23rd November 2020 1st, 3rd, 8th and 10th December 2020 25th, 26th, 27th and 28th January 2021 2nd, 8th, 18th and 23rd February 2021 3rd, 8th, 17th and 25th March 2021 8th, 22nd, 27th and 29th April 2021 3rd, 11th, 25th and 26th May 2021 17th, 24th, 28th and 29th June 2021 13th, 21st, 27th and 29th July 2021 3rd, 5th, 9th and 24th August 2021 7th, 13th, 14th and 21st September 2021 7th, 19th, 26th and 27th October 2021 1st, 9th, 16th and 17th November 2021 2nd, 3rd, 14th and 15th December 2021 3rd, 4th, 21st and 25th January 2022 10th, 11th, 24th and 25th February 2022

Conclusion of Post-Construction Monitoring

The post-construction phase EM&A programme of dolphin monitoring works has been undertaken in the period from 1 March 2019 to 25 February 2022. The CWD usage in NEL and NWL region has been monitored throughout the post-construction phase of HKBCF Project to examine whether CWDs are affected by the lingering impacts from the construction works.

Contents

Appendices

Tables in the Main Text

1. Introduction

1.1 Background

1.1.1 Fugro Technical Services Limited was commissioned by China Harbour Engineering Co. Limited (also referred to as "the Contractor") to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for Contract No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works" ("this Contract").

1.1.2 Contract No. HY/2019/01 is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 4 December 2019 and the construction site preparation works commenced in early February 2020.

1.1.3 This is the Dolphin Final Review Report ("the Report") which summarizes the findings of the 24-month post-construction phase monitoring encompassing the reporting period from 1 March 2019 to 28 February 2021. Additionally, review and analysis of the monitoring data and results for the whole Chinese White Dolphin (CWD) monitoring programme for the HKBCF Project including the baseline, and construction/impact phases are also included in this report.

1.2 Project Organization

1.2.1 The Project Organization structure is shown in **Appendix A**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1: Contact Information of Key Personnel

Party	Position	Name	Telephone
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Senior Resident Engineer	Mr. Jason Yu	3748 8903
	Resident Engineer	Mr. Gordon Kok	3748 8967
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3465 2888
	Independent Environmental Checker (IEC)	Mr. Brian Tam	9700 6767
	Environmental Site Supervisor	Mr. K. C. Chan	3465 2882
Contractor (China Harbour Engineering Co. Ltd)	Environmental Manager	Mr. Marko Chan	9427 2879
	Environmental Officer	Mr. Matthew Wu	6076 2675
Environmental Team (Fugro Technical Services Limited)	Environmental Team Leader (ETL)	Mr. Calvin Leung	3565 4441

1.3 Summary of Environmental Status

1.3.1 All marine-based construction activities for the HKBCF project were completed in January 2019. Hence, no marine-based construction activities were undertaken under this Contract. Moreover, the dolphin monitoring works for this Contract is under the construction and post-construction phase monitoring period of the HZMB TM-CLKL (Contract No. HY/2012/08) Project from 1 March 2019 to 31 May 2020 and 1 June 2020 to 28 February 2022 respectively.

1.3.2 All CWD monitoring works were conducted as scheduled under the post-construction phase of the Project.

2. Summary of EM&A requirements

2.1 CWD Monitoring Requirements

2.1.1 All marine-based construction activities for the HKBCF project were completed in January 2019. Hence, no marine-based construction activities were undertaken under this Contract. However, the ET of this Contract or another ET of the HZMB HKBCF is required to conduct post-construction dolphin monitoring in accordance with Section 10.7 of the updated EM&A Manual.

2.1.2 Currently, the role of dolphin monitoring and data collection are under Contract No. HY/2012/08 "Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section". To avoid redundancy in the monitoring effort, the findings of Contract No. HY/2012/08 were used for this Report.

2.1.3 According to the Proposal on Post-construction Dolphin Monitoring (PCDM) prepared under Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion) which has been verified by ENPO and approved by EPD on 8 March 2019 (EPD ref. () in Ax(5) to E771/E1/100), the completion date of the PCDM is in February 2021. Consequently, the reporting period for this Contract covers the second half of the 24-month post-construction phase from 1 March 2020 to 28 February 2021.

2.1.4 The CV of the proposed dolphin specialist for this Contract has been submitted to IEC for review prior to submission to AFCD for approval. It was informed via email that IEC and AFCD have no objection to the proposed dolphin specialist on 12 March and 1 April 2020 respectively.

2.2 CWD Monitoring Locations and Methodology

2.2.1 Vessel-based Line-transect Survey

2.2.1.1 In accordance with the requirements of the updated EM&A Manual, the dolphin monitoring programme have adopted the standard line-transect method (Buckland et al. 2001) to survey the pre-set and fixed transect lines (Table 2.1) defined by AFCD in the Northeast Lantau (NEL) and Northwest Lantau (NWL) survey areas (**Appendix B**).

Table 2.1: Coordinates of the standard line-transect method conducted in the NEL and NWL survey areas

Line No.		Easting	Northing		Line No.		Easting	Northing
1	Start Point	804671	815456		13	Start Point	816506	819480
1	End Point	804671	831404		13	End Point	816506	824859
2	Start Point	805476	820800		14	Start Point	817537	820220
2	End Point	805476	826654		14	End Point	817537	824613
3	Start Point	806464	821150		15	Start Point	818568	820735
3	End Point	806464	822911		15	End Point	818568	824433
4	Start Point	807518	821500		16	Start Point	819532	821420
4	End Point	807518	829230		16	End Point	819532	824209
5	Start Point	808504	821850		17	Start Point	820451	822125
5	End Point	808504	828602		17	End Point	820451	823671
6	Start Point	809490	822150		18	Start Point	821504	822371
6	End Point	809490	825352		18	End Point	821504	823761
7	Start Point	810499	822000		19	Start Point	822513	823268
7	End Point	810499	824613		19	End Point	822513	824321
8	Start Point	811508	821123		20	Start Point	823477	823402
8	End Point	811508	824254		20	End Point	823477	824613
9	Start Point	812516	821303		21	Start Point	805476	827081
9	End Point	812516	824254		21	End Point	805476	830562
10	Start Point	813525	821176		22	Start Point	806464	824033
10	End Point	813525	824657		22	End Point	806464	829598
11	Start Point	814556	818853		23	Start Point	814559	821739
11	End Point	814556	820992		23	End Point	814559	824768
12	Start Point	815542	818807		24	Start Point	805476	815900
12	End Point	815542	824882		24	End Point	805476	819100

2.2.1.2 The systematic vessel surveys in the NEL and NWL survey areas followed the same technique of data collection that has been adopted over the last 22 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2018). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make(about 4.5 m above water surface) was used to make observations from the flying bridge area.

2.2.1.3 Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins and porpoises continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270° and 90° (in relation to the bow, which is defined as 0°). One to two additional experienced observers were available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and identifying local cetacean species.

2.2.1.4 During on-effort survey periods, the survey team recorded effort data including time, positions (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (*Garmin eTrex Legend*).

2.2.1.5 Data including time, position and vessel speed were also automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.

2.2.1.6 When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line was later calculated from the initial sighting distance and angle.

2.2.1.7 Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines was labelled as “primary” survey effort, while the survey effort conducted along the connecting lines between parallel lines was labelled as “secondary” survey effort. According to HKCRP long-term dolphin monitoring data, encounter rates of Chinese white dolphins deduced from effort and sighting data collected along primary and secondary lines were similar in NEL and NWL survey areas. Therefore, both primary and secondary survey effort were presented as on-effort survey effort in this report.

2.2.2 Photo-identification Works

2.2.2.1 When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.

2.2.2.2 A professional digital camera (*Canon* EOS 7D model), equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

2.2.2.3 All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995.

2.2.2.4 Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).

2.2.2.5 All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

2.2.3 Data Analyses and Assessment

As aforementioned, the data collection and dolphin monitoring works for this contract are covered within the construction phase monitoring of Contract No. HY/2012/08 HZMB TM-CLKL and the PCDM proposal prepared under Contract No. HY/2013/04 HZMB HKBCF. Consequently, all the survey results and analyses presented in this report were referenced from these said contracts. Monitoring data and results for the whole CWD monitoring programme encompassing the baseline, construction/impact, and post-construction phases were analysed as below:

2.2.3.1 Distribution Analysis

The line-transect survey data was integrated with the Geographic Information System (GIS) to visualize and interpret different spatial and temporal patterns of dolphin distribution using sighting positions. Location data of dolphin groups were plotted on map layers of Hong Kong using a desktop GIS (ArcView© 3.1) to examine their distribution patterns in details. The dataset was also stratified into different subsets to examine distribution patterns of dolphin groups with different categories of group sizes, young calves and activities.

2.2.3.2 Encounter Rate Analysis

Encounter rates of CWDs (number of on-effort sightings per 100 km of survey effort, and total number of dolphins sighted on-effort per 100 km of survey effort) were calculated in NEL and

NWL survey areas in relation to the amount of survey effort conducted during each quarterly monitoring survey. Only data collected under Beaufort 3 or below condition were used for the encounter rate analyses. Dolphin encounter rates were calculated in two ways for comparisons with the HZMB baseline monitoring results as well as to AFCD long-term marine mammal monitoring results.

Firstly, for the comparison with the HZMB baseline monitoring results, the encounter rates were calculated using primary survey effort alone. The average encounter rate of sightings (STG) and average encounter rate of dolphins (ANI) were deduced based on the encounter rates from six events each monitoring quarter (i.e. six sets of line-transect surveys in NEL and NWL), which was also compared with the one deduced from the six events during the baseline period (i.e. six sets of line-transect surveys in NEL and NWL).

Secondly, the encounter rates were calculated using both primary and secondary survey effort collected under Beaufort 3 or below condition as in AFCD long-term monitoring study. The encounter rate of sightings and dolphins were deduced by dividing the total number of on-effort sightings (STG) and total number of dolphins (ANI) by the amount of survey effort for the quarterly periods.

2.2.3.3 Line-transect Analysis

For the three phases of HKBCF construction (baseline, construction and post-construction), the density and abundance of Chinese White Dolphins in NEL and NWL waters were estimated in each period by line-transect analysis using systematic line-transect vessel survey data.

For the analysis, survey effort in each single survey day was used as the sample. Estimates were calculated only from dolphin sightings and effort data that were collected during conditions of Beaufort 0-3 (see Jefferson 2000) and using standard line-transect methods (Buckland et al. 2001). The estimates were made using the computer program DISTANCE Version 7.3 Release 2). The following formulae were used to estimate density, abundance, and their associated coefficient of variation:

$$\hat{D} = \frac{n\,\hat{f}(0)\,\hat{E}(s)}{2\,L\,\hat{g}(0)}$$

$$\hat{N} = \frac{n\,\hat{f}(0)\,\hat{E}(s)\,A}{2\,L\,\hat{g}(0)}$$

$$\widehat{CV} = \sqrt{\frac{\widehat{var}(n)}{n^2} + \frac{\widehat{var}[\hat{f}(0)]}{[\hat{f}(0)]^2} + \frac{\widehat{var}[\hat{E}(s)]}{[\hat{E}(s)]^2} + \frac{\widehat{var}[\hat{g}(0)]}{[\hat{g}(0)]^2}}$$

where D = density (of individuals),
n = number of on-effort sightings,
f(0) = trackline probability density at zero distance,
E(s) = unbiased estimate of average group size,
L = length of transect lines surveyed on effort,
g(0) = trackline detection probability,

N = abundance, A = size of the survey area,
CV = coefficient of variation, and var = variance.

A strategy of selective pooling and stratification was used in order to minimize bias and maximize precision in making the estimates of density and abundance (see Buckland et al. 2001). Distant sightings were truncated to remove outliers and accommodate modeling, and size-bias corrected estimate of group size was calculated by regressing $\log_e$ of group size against distance.

Three models (uniform, half- normal and hazard rate) were fitted to the data of perpendicular distances to estimate f(0) and the resulting dolphin density and abundance (Buckland et al. 2001). The best model (and thus its associated values for these parameters) was determined by the lowest Akaike's Information Criterion (AIC) value.

To perform the trend analysis to examine the temporal trend in dolphin abundance in NEL and NWL waters throughout the HKLR EM&A study, the linear regression model is considered as follow:

$$x_{t=a+bt+u_t} \text{ for } t = 1,2,\ldots n$$

where x_t denotes the abundance data of dolphin at time t,

n is the number of observations,

u_t is an error term which follows normal distribution with mean zero and variance σ^2

2.2.3.4 Quantitative Grid Analysis on Habitat Use

To conduct quantitative grid analysis of habitat use, positions of on-effort sightings of Chinese White Dolphins collected during the three phases of HKBCF construction (baseline, construction and post-construction), were plotted onto 1-km^2 grids among NWL and NEL survey areas on GIS. Sighting densities (number of on-effort sightings per km^2) and dolphin densities (total number of dolphins from on-effort sightings per km^2) were then calculated for each 1 km by 1 km grid with the aid of GIS.

Sighting density grids and dolphin density grids were then further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin density of each grid were then normalized (i.e. divided by the unit of survey effort).

The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort **s**ightings **p**er 100 units of **s**urvey **e**ffort. In addition, the derived unit for actual dolphin density was termed DPSE, representing the number of **d**olphins **p**er 100 units of **s**urvey **e**ffort.

Among the 1-km^2 grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km^2 grid within the study area:

$$SPSE = ((S / E) \times 100) / SA\%$$
$$DPSE = ((D / E) \times 100) / SA\%$$

where S = total number of on-effort sightings
D = total number of dolphins from on-effort sightings
E = total number of units of survey effort
SA% = percentage of sea area

2.2.3.5 Behavioural Analysis

When dolphins were sighted during vessel surveys, their behaviour was observed. Different activities were categorized (i.e. feeding, socializing, traveling, and milling/resting) and recorded on sighting datasheets. This data was then input into a separate database with sighting information, which can be used to determine the distribution of behavioural data with a desktop GIS. Distribution of sightings of dolphins engaged in different activities and behaviours would then be plotted on GIS and carefully examined to identify important areas for different activities of the dolphins.

2.2.3.6 Ranging Pattern Analysis

Location data of individual dolphins that occurred during the three phases of HKBCF construction (baseline, construction and post-construction) were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program Animal Movement Analyst Extension was loaded as an extension with ArcView© 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

3. Review of Chinese White Dolphin Monitoring Results

3.1 Summary of Survey Effort and Dolphin Sightings

3.1.1 During the three-year post-construction monitoring period from March 2019 to February 2022, a total of 72 sets of systematic line transect vessel surveys were conducted to cover all transect lines in NWL and NEL survey areas twice per month.

3.1.2 From these surveys, a total of 9, 546.58 km of survey effort was collected, with 98.77% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). Among the two areas, 3, 582.04 km and 5, 964.54 km of survey effort were conducted from NEL and NWL survey areas, respectively.

3.1.3 The total survey effort conducted on primary lines was 6, 914.98 km, while the effort on secondary lines was 2, 631.6 km. Survey effort conducted on primary and secondary lines were both considered as on-effort survey data. A summary table of the survey effort is shown in **Appendix C.1.**

3.1.4 During the 12-quarterly post-construction monitoring period in 2019-22, a total of 55 groups of 138 Chinese White Dolphins were sighted. Among them, 46 out of 55 sightings were made on primary lines. All the sightings within this monitoring period were made during on-effort search. A summary table of dolphin sightings is shown in **Appendix C.2**.

3.1.5 During this post-construction monitoring period, all 55 dolphin groups were sighted in NWL, and no dolphin was sighted at all in NEL.

3.2 Distribution

The distribution of dolphin sightings during the post-construction period (March 2019 to February 2022) were at the north, west and northeast portions of Lung Kwu Chau, west and east of Sha Chau; and west of airport platform. Currently, all of the sightings were located far away from the HKBCF site.

For the distribution patterns of dolphin sightings in NEL and NWL waters amongst the 37 quarterly monitoring periods spanning across the baseline, construction and post-construction phases (**Appendix D**) of HZMB HKBCF, drastic differences were noted. Currently, a general disappearance of dolphins was noted from the NEL region in contrast to their frequent occurrence around the Brothers Islands, near Shum Shui Kok and in the vicinity of HKBCF reclamation site during the baseline period.

3.3 Encounter Rate

For the entire post-construction monitoring period (March 2019 to February 2022), the available quarterly encounter rates of CWD deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) were used.

For the comparison amongst the monitoring periods spanning across the construction and post-construction phases of HZMB HKBCF, dolphin encounter rates significantly (F-value = 4.05; p-value = 7.50E-12; α = 0.05) reduced in both NEL and NWL survey areas. Moreover, even though all marine works associated with the HZMB construction have already been completed, and the Brothers Marine Park has been established as a compensation measure for the permanent habitat loss in association with the HZMB reclamation works since late 2016, there is still no sign of recovery of dolphin usage in North Lantau waters at all, while such usage has diminished to a very low level.

Table 3.1: Quarterly encounter rates calculated using both primary and secondary survey effort collected under Beaufort 3 or below condition (as in AFCD long-term monitoring study) during the construction and post-construction monitoring periods

Project Phase	Monitoring Period	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
Baseline	September 2011-November 2011	7.12	29.44
Construction	March 2013-May 2013	4.46	15.29
	June 2013-August 2013	4.65	16.04
	September 2013-November 2013	7.63	32.60
	December 2013-February 2014	4.43	17.47
	March 2014-May 2014	3.47	10.02
	June 2014-August 2014	3.11	10.87
	September 2014-November 2014	2.54	9.80
	December 2014-February 2015	1.69	5.86
	March 2015-May 2015	0.46	2.39
	June 2015-August 2015	1.32	4.55
	September 2015-November 2015	1.98	10.50
	December 2015-February 2016	1.39	5.44
	March 2016-May 2016	0.49	2.10
	June 2016-August 2016	0.84	3.74
	September 2016-November 2016	1.51	5.57
	December 2016-February 2017	1.71	6.32
	March 2017-May 2017	0.52	3.09
	June 2017-August 2017	1.42	3.87

Project Phase	Monitoring Period	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
	September 2017-November 2017	1.56	6.23
	December 2017-February 2018	2.12	5.93
	March 2018-May 2018	1.27	4.22
	June 2018-August 2018	0.80	2.14
	September 2018-November 2018	0.80	1.74
	December 2018-February 2019	1.32	4.34
Post-construction	March 2019-May 2019	0.65	1.44
	June 2019-August 2019	0.40	0.93
	September 2019-November 2019	0.51	0.90
	December 2019-February 2020	0.90	3.71
	March 2020-May 2020	0.26	0.26
	June 2020-August 2020	0.26	0.26
	September 2020-November 2020	0.26	0.52
	December 2020-February 2021	1.83	5.23
	March 2021-May 2021	0.52	1.57
	June 2021-August 2021	0.00	0.00
	September 2021-November 2021	0.35	0.59
	December 2021-February 2022	0.95	2.13

Table 3.2: Quarterly average encounter rates calculated using primary survey effort collected under Beaufort 3 or below condition (as in HZMB baseline monitoring) during the baseline, construction and post-construction monitoring periods

Project Phase	Monitoring Period	Encounter Rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter Rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
		NEL	NWL	NEL	NWL
Baseline	September 2011-November 2011	6.00 ± 5.05	9.85 ± 5.85	22.19 ± 26.81	44.66 ± 29.85
Construction	March 2013-May 2013	0.42 ± 1.03	7.75 ± 3.96	0.42 ± 1.03	24.23 ± 18.05
	June 2013-August 2013	0.88 ± 1.36	6.56 ± 3.68	3.92 ± 8.36	27 ± 18.71
	September 2013-November 2013	1.01 ± 1.59	8.04 ± 5.70	3.77 ± 6.49	32.48 ± 26.51
	December 2013-February 2014	0.45 ± 1.10	8.21 ± 2.21	1.34 ± 3.29	32.58 ± 11.21
	March 2014-May 2014	0.0	6.51 ± 3.34	0.0	19.14 ± 7.19
	June 2014-August 2014	0.42 ± 1.04	4.74 ± 3.84	1.69 ± 4.15	17.52 ± 15.12
	September 2014-November 2014	0.0	5.10 ± 4.40	0.0	20.52 ± 15.10
	December 2014-February 2015	0.0	2.91 ± 2.69	0.0	11.27 ± 15.19
	March 2015-May 2015	0.0	0.47 ± 0.73	0.0	2.36 ± 4.07
	June 2015-August 2015	0.44 ± 1.08	2.53 ± 3.20	0.44 ± 1.08	9.21 ± 11.57
	September 2015-November 2015	0.0	3.94 ± 1.57	0.0	21.05 ± 17.19
	December 2015-February 2016	0.0	2.64 ± 1.52	0.0	10.98 ± 3.81
	March 2016-May 2016	0.0	0.98 ± 1.10	0.0	4.78 ± 6.85
	June 2016-August 2016	0.0	1.72 ± 2.17	0.0	7.48 ± 10.98
	September 2016-November 2016	0.0	2.86 ± 1.98	0.0	10.89 ± 10.98

Project Phase	Monitoring Period	Encounter Rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter Rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
		NEL	NWL	NEL	NWL
	December 2016-February 2017	0.0	3.80 ± 3.79	0.0	14.52 ± 17.21
	March 2017-May 2017	0.0	0.93 ± 1.03	0.0	5.25 ± 9.53
	June 2017-August 2017	0.0	2.20 ± 2.88	0.0	6.58 ± 8.12
	September 2017-November 2017	6.58 ± 8.12	3.12 ± 1.91	6.58 ± 8.12	10.35 ± 9.66
	December 2017-February 2018	0.0	4.75 ± 2.26	0.0	15.73 ± 15.94
	March 2018-May 2018	0.0	2.88 ± 4.81	0.0	11.12 ± 22.46
	June 2018-August 2018	0.0	1.16 ± 1.39	0.0	2.87 ± 3.32
	September 2018-November 2018	0.0	1.51 ± 2.25	0.0	2.70 ± 3.78
	December 2018-February 2019	0.0	2.40 ± 1.88	0.0	7.95 ± 6.60
Post-construction	March 2019-May 2019	0.0	1.13 ± 1.39	0.0	2.54 ± 3.00
	June 2019-August 2019	0.0	0.62 ± 1.52	0.0	1.55 ± 3.80
	September 2019-November 2019	0.0	0.83 ± 0.91	0.0	1.10 ± 1.34
	December 2019-February 2020	0.0	1.96 ± 2.23	0.0	8.15 ± 10.85
	March 2020-May 2020	0.0	0.56 ± 0.86	0.0	0.56 ± 0.86
	June 2020-August 2020	0.0	0.57 ± 0.86	0.0	0.57 ± 0.86
	September 2020-November 2020	0.0	0.54 ± 0.84	0.0	1.09 ± 1.69
	December 2020-February 2021	0.0	3.01 ± 2.83	0.0	8.47 ± 9.07

Project Phase	Monitoring Period	Encounter Rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter Rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
		NEL	NWL	NEL	NWL
	March 2021-May 2021	0.0	1.13 ± 1.37	0.0	3.44 ± 4.26
	June 2021-August 2021	0.0	0.0	0.0	0.0
	September 2021-November 2021	0.0	0.81 ± 1.36	0.0	1.35 ± 2.61
	December 2021-February 2022	0.0	1.63 ± 1.47	0.0	3.52 ± 3.87

3.4 Abundance

Abundances of CWD in NEL and NWL waters were estimated during different phases of the Project. For the comparison among the three phases of the Project, the baseline phase, quarter September 2011- November 2011 recorded a high dolphin abundance (with around 244 dolphins) next to the construction phase (with the highest quarterly abundance of 289 dolphins recorded during September 2013 - November 2013). Meanwhile, lowest quarterly abundance was recorded during the post-construction phase.

3.5 Group Size

During the post-construction monitoring period (March 2019 to February 2022), group size of CWD ranged from two to 26 individuals per group in NEL and NWL survey areas.

Table 3.3: Comparison of average dolphin group sizes in NEL and NWL across the 37 quarterly monitoring periods before, during and after construction of HKBCF. (± denotes the standard deviation of the average group sizes)

Project Phase	Monitoring Period	Average Dolphin Group Sizes (Overall)	Average Dolphin Group Sizes in NEL	Average Dolphin Group Sizes in NWL
Baseline	September – November 2011	3.72 ± 3.13 (n = 66)	3.18 ± 2.16 (n = 17)	3.92 ± 3.40 (n = 49)
Construction	March-May 2013	3.26 ± 3.89 (n = 39)	1 ± 0 (n = 2)	3.38 ± 3.96 (n = 37)
	June- August 2013	3.42 ± 2.43 (n = 45)	2.6 ± 3.05 (n = 5)	3.53 ± 2.36 (n = 40)
	September-November 2013	6.55 ± 2.56 (n = 66)	4 ± 2.83 (n = 2)	4.39 ± 2.57 (n = 64)
	December 2013-February 2014	3.87 ±2.84 (n = 38)	5.33 ± 3.21 (n = 3)	3.74 ± 2.82 (n = 35)
	March-May 2014	3.32 ± 2.87 (n = 31)	NA	3.32 ± 2.87 (n = 31)
	June-August 2014	3.43 ± 1.95 (n = 28)	NA	3.41 ± 1.99 (n = 27)

Project Phase	Monitoring Period	Average Dolphin Group Sizes (Overall)	Average Dolphin Group Sizes in NEL	Average Dolphin Group Sizes in NWL
	September-November 2014	3.88 ± 2.69 (n = 24)	NA	3.88 ± 2.69 (n = 24)
	December 2014-February 2015	3.47 ± 2.29 (n = 15)	NA	3.47 ± 2.29 (n = 15)
	March-May 2015	3.57 ± 2.82 (n = 7)	NA	3.57 ± 2.82 (n = 7)
	June-August 2015	3.50 ± 2.6 5 (n = 12)	NA	3.73 ± 2.65 (n = 11)
	September-November 2015	5.28 ± 3.54 (n =18)	NA	5.28 ± 3.54 (n =18)
	December 2015-February 2016	4.07 ± 3.22 (n = 14)	NA	4.07 ± 3.22 (n = 14)
	March-May 2016	3.14 ± 2.27 (n = 7)	NA	3.14 ± 2.27 (n = 7)
	June-August 2016	3.40 ± 3.34 (n = 10)	NA	3.67 ± 3.47 (n = 9)
	September-November 2016	3.69 ± 2.87 (n =13)	NA	3.69 ± 2.87 (n =13)
	December 2016-February 2017	3.65 ± 2.37 (n = 17)	NA	3.65 ± 2.37 (n = 17)
	March-May 2017	6 ± 4.90 (n = 4)	NA	6 ± 4.90 (n = 4)
	June-August 2017	2.83 ± 2.33 (n = 12)	NA	2.83 ± 2.33 (n = 12)
	September-November 2017	3.85 ± 3.39 (n = 13)	NA	3.85 ± 3.39 (n = 13)
	December 2017-February 2018	2.65 ± 2.50 (n = 17)	NA	2.65 ± 2.50 (n = 17)
	March-May 2018	3.33 ± 3.39 (n = 9)	NA	3.33 ± 3.39 (n = 9)
	June-August 2018	2.43 ± 1.62 (n = 7)	NA	2.43 ± 1.62 (n = 7)
	September-November 2018	2.17 ± 0.98 (n = 6)	NA	2.17 ± 0.98 (n = 6)
	December 2018-February 2019	3.17 ± 1.80 (n = 12)	NA	3.17 ± 1.80 (n = 12)
Post-construction	March-May 2019	2.2 ± 0.45 (n = 5)	NA	2.2 ± 0.45 (n = 5)
	June-August 2019	2 ± 1.41 (n = 4)	NA	2 ± 1.41 (n = 4)
	September-November 2019	1.75 ± 0.96 (n = 4)	NA	1.75 ± 0.96 (n = 4)
	December 2019-February 2020	4.14 ± 4.41 (n = 7)	NA	4.14 ± 4.41 (n = 7)
	March-May 2020	1 ± 0 (n = 2)	NA	1 ± 0 (n = 2)
	June-August 2020	1 ± 0 (n = 2)	NA	1 ± 0 (n = 2)
	September-November 2020	1 ± 0 (n = 2)	NA	1 ± 0 (n = 2)
	December 2020-February 2021	2.86 ± 2.44 (n = 14)	NA	2.86 ± 2.44 (n = 14)

Project Phase	Monitoring Period	Average Dolphin Group Sizes (Overall)	Average Dolphin Group Sizes in NEL	Average Dolphin Group Sizes in NWL
	March-May 2021	3 ± 1.41 (n = 4)	NA	3 ± 1.41 (n = 4)
	June-August 2021	NA	NA	NA
	September-November 2021	1.67 ± 1.15 (n = 3)	NA	1.67 ± 1.15 (n = 3)
	December 2021-February 2022	2.25 ± 1.83 (n = 8)	NA	2.25 ± 1.83 (n = 8)

The dolphin group size recorded during the 37 quarterly monitoring periods across the three phases of the Project are also compared (**Appendix E**). During the baseline phase result (September 2011- November 2011 Quarter), 65 groups were noted. Meanwhile, during the construction phase, the maximum quarterly the dolphin group size during this period was recorded during September 2013- November 2013 (66 groups). Lastly, among the three phases, the post-construction phase, was recorded with the lowest group size (maximum of only 14 groups).

During the post-construction period, more small group sizes (with 1-4 individuals per group only), were observed compared to relatively large group sizes (with 10 or more individuals per group). All these groups were only noted in NWL and none in NEL in contrast to the baseline conditions when larger aggregations of dolphins were mostly found near Sha Chau and between Lung Kwu Chau and Black Point in NWL; and around the Brothers Islands in NEL. Additionally, during this baseline period, several large dolphin groups were found near the alignments of HKLR and TM-CLKL as well as the reclamation site of HKBCF too. However, starting the construction phase and throughout this period, the distribution of larger groups started to be confined to the northwestern portion of North Lantau region.

3.6 Habitat Use

During the post-construction monitoring period from March 2019 to February 2022, the grids that recorded higher densities of dolphins were located near Lung Kwu Chau, at the northwestern corner of NWL survey area, and to the southwest of the airport platform, while grids with moderate dolphin density were at the northeast of Lung Kwu Chau and near Black Point. Notably, all grids near TMCLKL alignment did not record any presence of dolphins at all during on-effort search during this post-construction period, in addition to the complete absence of dolphin in NEL grids.

The dolphin habitat use of NWL waters also started to decline dramatically starting the construction phase as baseline phase was recorded with a more evenly spread usage in NWL. Similar with NWL, NEL habitat dolphin usage also progressively diminished during the construction phase period from its baseline condition. During the baseline period, a number of grids between Siu Mo To and Shum Shui Kok were still recorded with moderately high to high dolphin densities, and most grids in NEL recorded dolphin usage.

3.7 Mother-calf Pairs

Throughout the post-construction monitoring period (March 2019 – February 2022), five calves were sighted with their mothers in NLW waters (one in September 2020, one in January 2021 and three unspotted juveniles in December 2019 to February 2020).

The drastic decline on the occurrence of mother-calf pairs started during the construction phase and continued to the post-construction phase with respect to the baseline data when the young calves were still sighted throughout NWL waters.

3.8 Activities and Associations with Fishing Boats

During the post-construction monitoring period (March 2019 – February 2022), a total of eight and two groups of dolphins were engaged in feeding and socializing activities respectively, while the rest of other groups were not engaged in traveling or milling/resting activity. Dolphin groups in feeding activity were only noted southwest corner of the NWL survey area, near Black Point, west of Lung Kwu Chau and the airport platform. Meanwhile, socializing dolphin groups were only noted west of Lung Kwu Chau and near the HKLR09 alignment.

During the construction phase, a relatively similar distribution of feeding activities was also noted to be scattered near Black Point, to the north of Lung Kwu Chau and third runway expansion construction site, as well as near the HKLR09 alignment. For the baseline conditions, all three activities such as feeding, socializing, and traveling activities were still noted and there were even several sightings associated with feeding activities observed along and near the alignments of HKLR and TM-CLKL, and around the reclamation site of HKBCF.

With respect to associations with fishing boats, no dolphin group associated with these vessels throughout the post-construction period and similar result was noted during the construction period, unlike that of the baseline phase where a total of 14 groups were associated with fishing boats.

3.9 Summary of Photo-identification Works

In the post-construction monitoring period, a total of 61 individuals sighted 69 times altogether were identified. All these re-sightings were made in NWL. Similar results during the construction phase also indicated these individuals' stronger reliance of NWL waters as part of their home ranges.

3.10 Individual Range Use

Ranging patterns of the 103 individuals identified during the post-construction monitoring period and accumulated with at least five re-sightings were determined by fixed kernel method. All these individuals utilized NWL waters only and have completely avoided NEL waters where many of them have utilized as their core areas in the past. This current range is in contrary to their extensive movements between NEL and NWL survey areas during the earlier impact monitoring quarters as well as the baseline period.

3.11 Comparison between Baseline, Construction & Post-Construction Monitoring

There were drastic distribution differences noted during the post-construction phase and the baseline conditions. A current general disappearance of dolphins was noted from the NEL region in contrast to their frequent occurrence around the Brothers Islands, near Shum Shui Kok and in the vicinity of HKBCF reclamation site during the baseline period.

Dolphin encounter rates continued to significantly reduce in both NWL and NEL survey areas throughout the monitoring period relative to these areas' baseline conditions. Also, even though all marine works associated with the HZMB construction have already been completed, and the Brothers Marine Park that was established as a compensation measure for the permanent habitat loss in association with the HZMB reclamation works, there has still no sign of recovery of dolphin usage in North Lantau waters at all.

Post-construction results showed that currently, large dolphin groups were only noted in NWL and none in NEL. This is in contrast to the baseline condition when larger aggregations were mostly found near Sha Chau and between Lung Kwu Chau and Black Point in NWL; and around the Brothers Islands in NEL; and near the alignments of HKLR and TM-CLKL as well as the reclamation site of HKBCF too. Meanwhile, throughout the construction phase, distribution of these larger groups started to be confined to the northwestern portion of North Lantau region.

The dolphin habitat use of NWL waters started to decline dramatically during the construction phase monitoring periods and this is in contrast to a more evenly spread usage in NWL during the baseline phase. For the NEL habitat, dolphin usage in NEL has also progressively diminished during the construction phase period from its baseline condition. It was during the baseline period that a number of grids were still recorded with moderately high to high dolphin densities, and most grids in NEL recorded dolphin usage. However, a complete absence of dolphin in this area (NEL) was recorded in the post-construction period.

Drastic decline on the occurrence of mother-calf pairs started during the construction phase and continued to the post-construction phase with respect to the baseline data when the young calves were still sighted throughout NWL waters.

Throughout the different phases of the project, dolphin activities near the alignment of HKLR09 were continuously noted.

With respect to associations with fishing boats, no dolphin group associated with these vessels throughout the post-construction period. Similar result was noted during the construction period, unlike at the baseline condition when a total of 14 groups were associated with fishing boats.

4. Review of the Validity of EIA Predictions

4.1 EIA Predictions on Potential Impacts

This review emphasizes on the EIA predictions regarding the HKBCF's potential impacts to the Chinese White Dolphins. For HKBCF establishment, a total of 138 ha of sea area (including soft substrate seabed and water column); less than 250m seawall; and less than 250m hard substrate seabed were permanently lost. Environmental impacts predicted during the construction and post-construction phases were summarized as below.

4.1.1 Impact of Habitat Loss

The waters within the HKBCF footprint are not frequently used by the CWD and thus, not as important for the cetacean. Majority of the HKBCF reclamation footprint is within the waters near the eastern shore of Airport Island (low ecological value), while only the facility's northeast part falls within the waters of moderate ecological value (elevated value due to the Brothers Islands, one of the dolphin hotspots). Baseline data showed that more dolphin groups were sighted near the northeast corner of the airport (north of the HKBCF site) and near the Brothers Islands). Given the low usage of the reclamation area by CWD, physical loss of habitat therefore should not be a critical issue for CWD. However, the EIA, after considering the reclamation size and its relatively close distance to the Brothers Islands, this impact is therefore considered moderate impact for dolphin and mitigation measure was recommended.

4.1.2 Impact of Marine Habitat Fragmentation

The study on individual movement range of CWD revealed that some individuals would utilize a larger size of sea area that may cover different dolphin hotspots such as Sha Chau, the West Lantau waters, or the Brothers Islands. Thus, any large-scale reclamation in between these mentioned dolphin hotspots might block the movement/travel of individual dolphins between these areas. However, the location of HKBCF reclamation is to the east of the airport island in an area that is not highly utilised by the CWD; away from the waters between the Sha Chau/Lung Kwu Chau area; and the area around the Brothers Islands/Sham Shui Kok (i.e. a potential CWD travelling corridor). In connection, the EIA considered that reclamation's impact would not be significant.

4.1.3 Impact of Bioaccumulation

Based on worst-case estimations that the suspended sediments from the projects would be moderately contaminated up to the threshold of UCELs and could immediately desorbed/dissolved from the solid phase into solution, the predicted maximum increases in the sediment borne contaminants will still be well within the criteria for the protection of marine life. The potential impacts from the release of the above contaminants would thus be insignificant. Furthermore, the locations for the dredging required for reclamation will be protected by silt curtains which is a proven measure to effectively control sediment re-suspension. The concerned contaminants, if any, would therefore be controlled to be

redistributed into the water column, and would not be made more available for uptake by CWD or their prey. It is thus reasonable to predict that bioaccumulation impacts would not be significantly increased by the Project.

4.1.4 Impact of Marine Noise

Noise pollution adversely affects marine mammals, such as Chinese White Dolphin, which rely on sound as a primary means of exploration and communication. During project design, two types of work activities that are known to be most disturbing for cetaceans were excluded, i.e. underwater blasting and percussive piling (see below), to minimize the potential noise impacts to CWD. However, noise from other construction activities (e.g. bored piling, marine traffic and dredging) might still be a source of impacts. Construction of HKBCF were done in separate phases so the number of work fronts would thus be smaller than if all construction works were to be undertaken at the same time. The level of noise from this source would be much lower than those from percussive piling and might be similar with marine industrial activities. To take a precautionary approach, the EIA ranked the noise impact as Moderate, and mitigation measure is proposed to reduce this impact.

4.1.5 Impact on Hydrodynamic Regime and Water Quality

The 138 ha HKBCF reclamation might cause some changes on the hydrodynamic regime in its vicinity. However, the hydrodynamic regime of the Pearl River Estuary as a whole, is not likely to be significantly affected by the Project as the reclamation size is relatively not smaller with respect to the size of the entire estuary. The water quality of the reclamation area along with that of the dolphin habitat Brothers Islands, San Tau Beach SSSI, the artificial reefs should also not be significantly affected once construction is completed, thus, the EIA predicted that project's impact on the water quality in these areas would be acceptable. Further, the HKBCF reclamation sites are not frequently used by CWD.

4.1.6 Impact of Marine Traffic

Although actual collisions of CWD and vessels have not been observed, it is considered that high speed vessels such as out-board engine speed boat would be the prime source of collision risk. However, since most of the vessels that were involved in the construction of the HKBCF were slow-moving, the collision issue was predicted to be not critical. Also, the reclamation area is not used frequently by the CWD, it was predicted that both collision risk and disturbance are low, thus, the impact from marine traffic on the dolphin was ranked as minor to moderate, however, mitigation measures would be needed.

4.1.7 Entanglement and entrapment

Double-layer silt curtains were installed surrounding the areas for seawall dredging and filling. The silt curtains were in the form of a fabric sheet rather than a net, and thus should not pose any net entanglement risk to the CWD. The opening for vessel access were small and thus the chance that CWD accidentally enter the waters surrounded by silt curtains were very low. Furthermore, a construction dolphin watching plan were included in the EM&A programme.

The plan also included regular inspection of the curtains, scanning of the waters surrounded by the curtains, and an action plan in case CWD were found within the waters surrounded by the silt curtains. This impact is ranked as insignificant in the EIA.

4.1.8 Cumulative Impact

Cumulative impact for marine habitat loss from some projects were also predicted. Aside from the marine habitat loss caused by HKBCF, the marine habitat loss due to TMCLKL was estimated to be about 47 ha (with 21 ha at the northern reclamation in Tuen Mun shore; 25.4 ha adjacent to HKBCF; and about 0.2 ha for viaduct). Other marine habitat loss (272 ha) includes the two development phases of LLP (112 ha), and the Future Tung Chung East and West Development (110 ha from the east development and 50 ha from the west development). The total marine habitat loss from other concurrent projects would count up to about 319 ha (47 ha from TMCLKL + 272 ha from others). If it is assumed that all of these projects with reclamation occurring in North Lantau will actually proceed to construction, a cumulative marine habitat loss from these projects is possible as these projects are all located in the Western Hong Kong waters. The different concurrent projects' contribution towards the issue of permanent loss of dolphin habitat however would not be the same. Quite a significant portion of the loss is not in key dolphin habitats, such as the future Tung Chung East and West Development which is adjacent to the existing Tung Chung town. For the coastal waters, there are very limited dolphin sightings on Tung Chung coastlines except the waters around Sham Shui Kok. Similarly, the LLP extension is also located in coastal waters near Tung Chung town and limitedly used by CWD. Therefore, the area size of the cumulative loss of habitats regularly used by CWD would be much smaller than 319 ha.

However, among these projects, the HKBCF reclamation was considered as the main contributor towards the cumulative permanent loss of CWD habitat in the EIA. Different from the future Tung Chung East and West Development or the LLP extension which are located in areas not used by dolphin, HKBCF is a large reclamation within dolphin habitats, and thus would contribute to the impact in terms of both significance of impacts and area size. If the HKBCF habitat loss to CWD could be effectively mitigated, the severity of cumulative loss of CWD habitat would also be significantly reduced. The measure of setting up a marine protected area is proposed to mitigate the marine habitat loss from HKBCF reclamation and is considered an effective measure in the EIA. As such, the cumulative CWD habitat loss would not require other specific mitigation measure.

4.1.9 Positive Effects

There are also potential positive effects due to change in marine traffic volume, distribution and pattern in the North Lantau waters during the operation phase of HKCBF. After the road opening of HZMB, there will be a decreased demand on marine traffic between Hong Kong and Mainland. Marine traffic to/from Mainland and Macau might reduce. If vessels are less frequently to pass through waters of high dolphin abundance, there might be a reduction in risk of CWD colliding with marine vessels. There might also be speed restrictions/regulations

on marine traffic near the bridge. Positive effects on the CWD are foreseen during the operation of the bridge.

4.2 EIA Prediction vs. Actual Situation

In contrary to the EIA predictions that the HKBCF construction would not cause significant impact to CWD outside the reclamation site with sufficient mitigation measures in place, actual CWD occurrence, distribution, and encounter rates in waters of survey areas of both northeastern Lantau and northwestern Lantau drastically declined during the post-construction phase relative to the baseline conditions. Further, even though all marine works associated with the HZMB construction have already been completed, and the Brothers Marine Park has been established as a compensation measure for the permanent habitat loss in association with the HZMB reclamation works since late 2016, there has been no sign of recovery of dolphin usage in North Lantau waters at all.

4.2.1 Possible Contributions to Discrepancies

Discrepancies between the EIA predictions and the actual outcome of the CWD monitoring results for the HZMB HKBCF EM&A programme were noted. The EIA report has underestimated the magnitude of its predictions particularly on the impact of marine traffic to the dolphins. The EIA report has predicted that disturbance by marine traffic would only be minor to moderate, however, actual condition such as large number of work boats that transported workers to and from various HKBCF working areas during the construction phase might have caused permanent shift in dolphins' acoustic behavioural patterns until the post-construction phase. Further, there was also a continuous decline in dolphin abundance in North Lantau waters in the past decades which could be attributed to the increase in high-speed ferry traffic from the Sky Pier (see Marcotte et al. 2015) which is just adjacent to the HKBCF.

4.3 Comments on the Overall EM&A Programme

The EM&A programme requires continued post-construction phase monitoring for CWD. All monitoring works were conducted as scheduled. The overall performance of the monitoring methodology adopted in this Assignment was deemed effective.

5. Conclusion

5.1.1 This Dolphin Final Review Report presents the post-construction environmental monitoring works of another contract undertaken in the 36-month period which overlaps with the period of the part of the construction phase of the Contract from 1 March 2020 to 25 February 2022.

5.1.2 The post-construction dolphin monitoring works in NEL and NWL waters under this contract was completed on 25 February 2022.

5.1.3 With reference to the raw data as attached on the Annex sections of dolphin monitoring survey reports throughout the baseline, impact, and post-construction dolphin monitoring periods for the Contract No. HY/2012/08, that were previously prepared by Mr. Samuel K.Y. Hung, PhD., Hong Kong Cetacean Research Project, it was concluded that as indicated in both dolphin distribution patterns and encounter rates, the dolphin usage has been significantly reduced in both NEL and NWL survey areas relative to the baseline conditions.

5.1.4 Even though all marine works associated with the HZMB construction have already been completed, and the Brothers Marine Park has been established as a compensation measure for the permanent habitat loss in association with the HZMB reclamation works since late 2016, there has been no sign of recovery of dolphin usage in North Lantau waters at all.

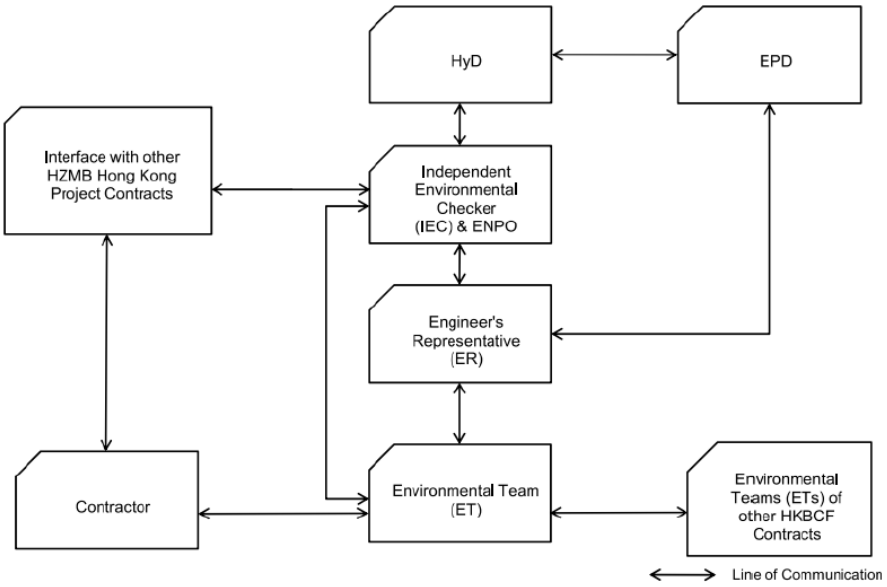
6. References

Hung, S. K. 2021. Monitoring of marine mammals in Hong Kong waters – data collection: final report (2020-21). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department of Hong Kong SAR Government.

Hung, S. K. 2011.Draft Final Report on Baseline Monitoring (September - November 2011). Hong Kong Cetacean Research Project

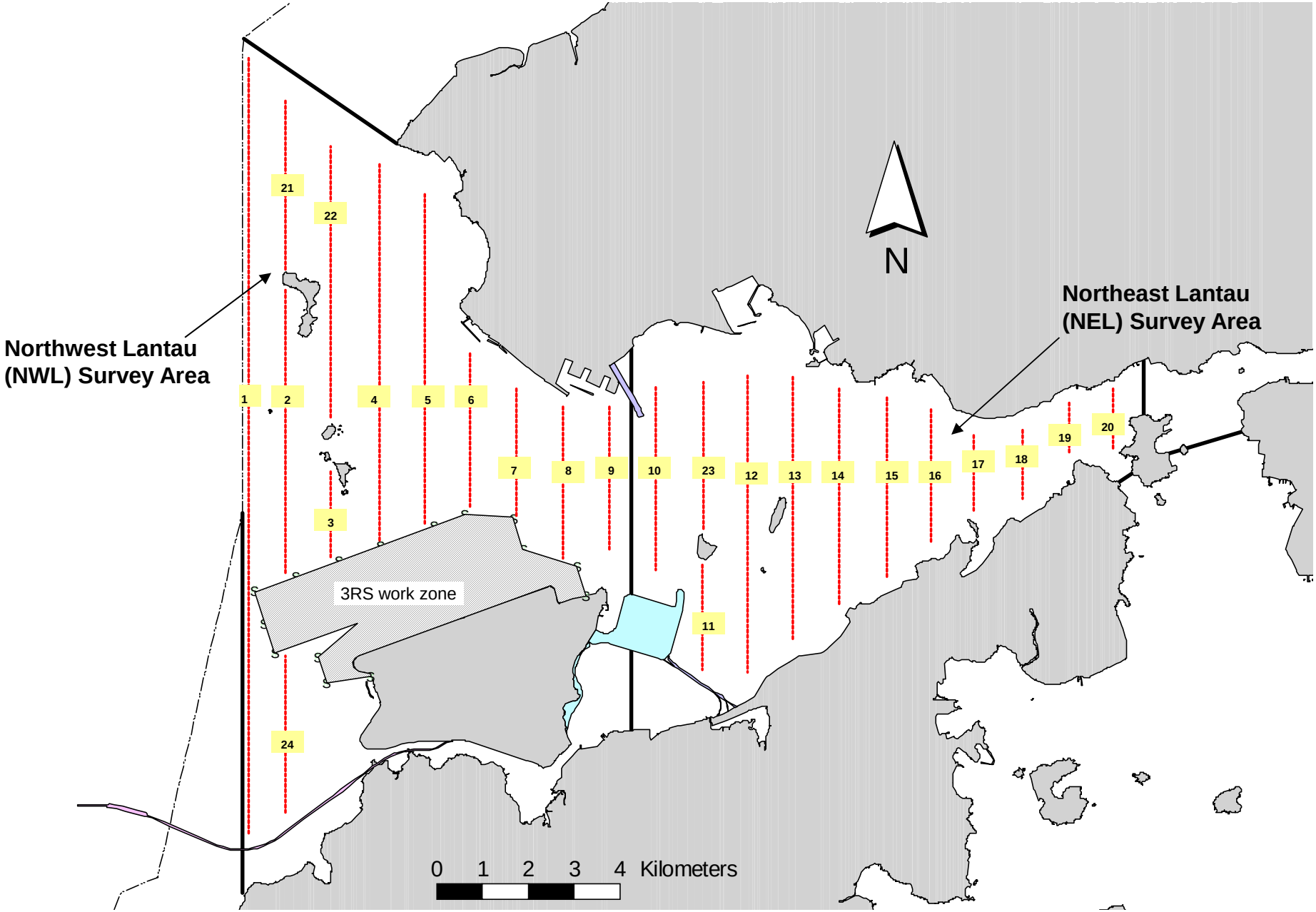
Appendix A

Project Organization Structure


HyD
EPD
Interface with other HZMB Hong Kong Project Contracts
Independent Environmental Checker (IEC) & ENPO
Engineer's Representative (ER)
Contractor
Environmental Team (ET)
Environmental Teams (ETs) of other HKBCF Contracts
Line of Communication

Appendix B

Post-Construction Dolphin Monitoring Line Transect Layout Map



Transect Line Layout in Northwest and Northeast Lantau Survey Areas

Appendix C

Survey Effort and Sighting Database

C.1 HZMB Post-construction Survey Effort Database in NEL and NWL (2019-2022)

(Note: P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
4-Mar-19	NW LANTAU	2	11.18	SPRING	STANDARD36826	HKLR	P
4-Mar-19	NW LANTAU	2	8.70	SPRING	STANDARD36826	HKLR	S
4-Mar-19	NE LANTAU	2	4.90	SPRING	STANDARD36826	HKLR	P
4-Mar-19	NE LANTAU	2	2.97	SPRING	STANDARD36826	HKLR	S
4-Mar-19	NW LANTAU	3	20.02	SPRING	STANDARD36826	HKLR	P
4-Mar-19	NW LANTAU	3	2.90	SPRING	STANDARD36826	HKLR	S
4-Mar-19	NE LANTAU	3	19.04	SPRING	STANDARD36826	HKLR	P
4-Mar-19	NE LANTAU	3	6.69	SPRING	STANDARD36826	HKLR	S
4-Mar-19	NE LANTAU	4	9.20	SPRING	STANDARD36826	HKLR	P
4-Mar-19	NE LANTAU	4	2.30	SPRING	STANDARD36826	HKLR	S
11-Mar-19	NW LANTAU	2	26.50	SPRING	STANDARD36826	HKLR	P
11-Mar-19	NW LANTAU	2	14.30	SPRING	STANDARD36826	HKLR	S
13-Mar-19	NW LANTAU	1	2.59	SPRING	STANDARD36826	HKLR	P
13-Mar-19	NW LANTAU	1	3.40	SPRING	STANDARD36826	HKLR	S
13-Mar-19	NW LANTAU	2	21.23	SPRING	STANDARD36826	HKLR	P
13-Mar-19	NW LANTAU	2	4.45	SPRING	STANDARD36826	HKLR	S
13-Mar-19	NE LANTAU	2	17.90	SPRING	STANDARD36826	HKLR	P
13-Mar-19	NE LANTAU	2	10.55	SPRING	STANDARD36826	HKLR	S
13-Mar-19	NW LANTAU	3	7.50	SPRING	STANDARD36826	HKLR	P
13-Mar-19	NW LANTAU	3	4.60	SPRING	STANDARD36826	HKLR	S
13-Mar-19	NE LANTAU	3	18.05	SPRING	STANDARD36826	HKLR	P
13-Mar-19	NE LANTAU	3	1.90	SPRING	STANDARD36826	HKLR	S
18-Mar-19	NW LANTAU	2	19.21	SPRING	STANDARD36826	HKLR	P
18-Mar-19	NW LANTAU	2	9.25	SPRING	STANDARD36826	HKLR	S
18-Mar-19	NW LANTAU	3	8.19	SPRING	STANDARD36826	HKLR	P
18-Mar-19	NW LANTAU	3	1.55	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NE LANTAU	1	4.30	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NE LANTAU	2	32.38	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NE LANTAU	2	13.15	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NW LANTAU	2	4.14	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NW LANTAU	2	3.74	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NE LANTAU	3	0.77	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NW LANTAU	3	21.86	SPRING	STANDARD36826	HKLR	P
10-Apr-19	NW LANTAU	3	8.86	SPRING	STANDARD36826	HKLR	S
10-Apr-19	NW LANTAU	4	1.50	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	2	2.50	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	2	3.37	SPRING	STANDARD36826	HKLR	S
15-Apr-19	NW LANTAU	3	17.18	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	3	5.37	SPRING	STANDARD36826	HKLR	S
15-Apr-19	NW LANTAU	4	13.38	SPRING	STANDARD36826	HKLR	P
15-Apr-19	NW LANTAU	4	2.10	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NW LANTAU	2	20.00	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NW LANTAU	2	8.17	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NE LANTAU	2	34.43	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NE LANTAU	2	13.81	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NW LANTAU	3	8.13	SPRING	STANDARD36826	HKLR	P
23-Apr-19	NW LANTAU	3	2.90	SPRING	STANDARD36826	HKLR	S
23-Apr-19	NE LANTAU	3	2.70	SPRING	STANDARD36826	HKLR	P
25-Apr-19	NW LANTAU	2	20.27	SPRING	STANDARD36826	HKLR	P
25-Apr-19	NW LANTAU	2	13.23	SPRING	STANDARD36826	HKLR	S

25-Apr-19	NW LANTAU	3	12.70	SPRING	STANDARD36826	HKLR	P
2-May-19	NW LANTAU	2	22.59	SPRING	STANDARD36826	HKLR	P
2-May-19	NW LANTAU	2	9.51	SPRING	STANDARD36826	HKLR	S
2-May-19	NE LANTAU	2	22.54	SPRING	STANDARD36826	HKLR	P
2-May-19	NE LANTAU	2	12.74	SPRING	STANDARD36826	HKLR	S
2-May-19	NW LANTAU	3	4.80	SPRING	STANDARD36826	HKLR	P
2-May-19	NW LANTAU	3	2.80	SPRING	STANDARD36826	HKLR	S
2-May-19	NE LANTAU	3	13.82	SPRING	STANDARD36826	HKLR	P
7-May-19	NW LANTAU	2	14.50	SPRING	STANDARD36826	HKLR	P
7-May-19	NW LANTAU	2	8.25	SPRING	STANDARD36826	HKLR	S
7-May-19	NW LANTAU	3	16.55	SPRING	STANDARD36826	HKLR	P
7-May-19	NW LANTAU	3	2.00	SPRING	STANDARD36826	HKLR	S
7-May-19	NW LANTAU	4	0.90	SPRING	STANDARD36826	HKLR	P
21-May-19	NE LANTAU	2	27.09	SPRING	STANDARD36826	HKLR	P
21-May-19	NE LANTAU	2	11.51	SPRING	STANDARD36826	HKLR	S
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23-May-19	NW LANTAU	2	18.63	SPRING	STANDARD36826	HKLR	P
23-May-19	NW LANTAU	2	11.32	SPRING	STANDARD36826	HKLR	S
23-May-19	NW LANTAU	3	10.25	SPRING	STANDARD36826	HKLR	P
23-May-19	NW LANTAU	3	1.00	SPRING	STANDARD36826	HKLR	S
3-Jun-19	NE LANTAU	2	24.60	SUMMER	STANDARD36826	HKLR	P
3-Jun-19	NE LANTAU	2	11.83	SUMMER	STANDARD36826	HKLR	S
3-Jun-19	NW LANTAU	3	25.81	SUMMER	STANDARD36826	HKLR	P
3-Jun-19	NW LANTAU	3	11.38	SUMMER	STANDARD36826	HKLR	S
3-Jun-19	NE LANTAU	3	11.37	SUMMER	STANDARD36826	HKLR	P
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3-Jun-19	NW LANTAU	4	1.66	SUMMER	STANDARD36826	HKLR	P
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6-Jun-19	NW LANTAU	2	5.99	SUMMER	STANDARD36826	HKLR	S
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13-Jun-19	NW LANTAU	3	8.10	SUMMER	STANDARD36826	HKLR	P
16-Jul-19	NW LANTAU	2	22.62	SUMMER	STANDARD36826	HKLR	P
16-Jul-19	NW LANTAU	2	9.44	SUMMER	STANDARD36826	HKLR	S
16-Jul-19	NW LANTAU	3	5.34	SUMMER	STANDARD36826	HKLR	P
16-Jul-19	NW LANTAU	3	0.80	SUMMER	STANDARD36826	HKLR	S
18-Jul-19	NW LANTAU	0	4.07	SUMMER	STANDARD36826	HKLR	P
18-Jul-19	NW LANTAU	1	3.86	SUMMER	STANDARD36826	HKLR	P

18-Jul-19	NW LANTAU	1	2.20	SUMMER	STANDARD36826	HKLR	S
18-Jul-19	NW LANTAU	2	24.87	SUMMER	STANDARD36826	HKLR	P
18-Jul-19	NW LANTAU	2	8.80	SUMMER	STANDARD36826	HKLR	S
18-Jul-19	NE LANTAU	2	30.03	SUMMER	STANDARD36826	HKLR	P
18-Jul-19	NE LANTAU	2	11.89	SUMMER	STANDARD36826	HKLR	S
18-Jul-19	NE LANTAU	3	5.56	SUMMER	STANDARD36826	HKLR	P
22-Jul-19	NW LANTAU	1	7.40	SUMMER	STANDARD36826	HKLR	P
22-Jul-19	NW LANTAU	1	4.40	SUMMER	STANDARD36826	HKLR	S
22-Jul-19	NW LANTAU	2	19.85	SUMMER	STANDARD36826	HKLR	P
22-Jul-19	NW LANTAU	2	7.65	SUMMER	STANDARD36826	HKLR	S
22-Jul-19	NE LANTAU	2	27.91	SUMMER	STANDARD36826	HKLR	P
22-Jul-19	NE LANTAU	2	10.29	SUMMER	STANDARD36826	HKLR	S
22-Jul-19	NE LANTAU	3	5.70	SUMMER	STANDARD36826	HKLR	P
22-Jul-19	NE LANTAU	3	2.80	SUMMER	STANDARD36826	HKLR	S
24-Jul-19	NW LANTAU	2	34.15	SUMMER	STANDARD36826	HKLR	P
24-Jul-19	NW LANTAU	3	9.95	SUMMER	STANDARD36826	HKLR	S
13-Aug-19	NE LANTAU	2	34.82	SUMMER	STANDARD36826	HKLR	P
13-Aug-19	NE LANTAU	2	9.78	SUMMER	STANDARD36826	HKLR	S
13-Aug-19	NW LANTAU	2	0.84	SUMMER	STANDARD36826	HKLR	P
13-Aug-19	NW LANTAU	2	0.90	SUMMER	STANDARD36826	HKLR	S
13-Aug-19	NE LANTAU	3	2.90	SUMMER	STANDARD36826	HKLR	P
13-Aug-19	NE LANTAU	3	1.90	SUMMER	STANDARD36826	HKLR	S
13-Aug-19	NW LANTAU	3	24.00	SUMMER	STANDARD36826	HKLR	P
13-Aug-19	NW LANTAU	3	8.66	SUMMER	STANDARD36826	HKLR	S
13-Aug-19	NW LANTAU	4	7.90	SUMMER	STANDARD36826	HKLR	P
13-Aug-19	NW LANTAU	4	1.40	SUMMER	STANDARD36826	HKLR	S
14-Aug-19	NW LANTAU	2	27.12	SUMMER	STANDARD36826	HKLR	P
14-Aug-19	NW LANTAU	2	14.88	SUMMER	STANDARD36826	HKLR	S
20-Aug-19	NW LANTAU	2	27.37	SUMMER	STANDARD36826	HKLR	P
20-Aug-19	NW LANTAU	2	11.23	SUMMER	STANDARD36826	HKLR	S
20-Aug-19	NW LANTAU	3	5.80	SUMMER	STANDARD36826	HKLR	P
26-Aug-19	NE LANTAU	1	4.21	SUMMER	STANDARD138716	HKLR	P
26-Aug-19	NE LANTAU	1	1.10	SUMMER	STANDARD138716	HKLR	S
26-Aug-19	NW LANTAU	2	17.21	SUMMER	STANDARD138716	HKLR	P
26-Aug-19	NW LANTAU	2	6.10	SUMMER	STANDARD138716	HKLR	S
26-Aug-19	NE LANTAU	2	26.68	SUMMER	STANDARD138716	HKLR	P
26-Aug-19	NE LANTAU	2	4.11	SUMMER	STANDARD138716	HKLR	S
26-Aug-19	NW LANTAU	3	11.36	SUMMER	STANDARD138716	HKLR	P
26-Aug-19	NW LANTAU	3	4.13	SUMMER	STANDARD138716	HKLR	S
26-Aug-19	NE LANTAU	3	0.27	SUMMER	STANDARD138716	HKLR	P
26-Aug-19	NE LANTAU	3	0.97	SUMMER	STANDARD138716	HKLR	S
29-Aug-19	NE LANTAU	2	2.61	SUMMER	STANDARD36826	HKLR	P
29-Aug-19	NE LANTAU	2	1.90	SUMMER	STANDARD36826	HKLR	S
29-Aug-19	NE LANTAU	3	2.42	SUMMER	STANDARD36826	HKLR	P
29-Aug-19	NE LANTAU	3	0.96	SUMMER	STANDARD36826	HKLR	S
4-Sep-19	NW LANTAU	2	21.38	AUTUMN	STANDARD36826	HKLR	P
4-Sep-19	NW LANTAU	2	9.12	AUTUMN	STANDARD36826	HKLR	S
4-Sep-19	NE LANTAU	2	16.70	AUTUMN	STANDARD36826	HKLR	P
4-Sep-19	NE LANTAU	2	7.75	AUTUMN	STANDARD36826	HKLR	S
4-Sep-19	NW LANTAU	3	6.40	AUTUMN	STANDARD36826	HKLR	P
4-Sep-19	NW LANTAU	3	2.52	AUTUMN	STANDARD36826	HKLR	S
4-Sep-19	NE LANTAU	3	18.83	AUTUMN	STANDARD36826	HKLR	P
4-Sep-19	NE LANTAU	3	5.12	AUTUMN	STANDARD36826	HKLR	S
11-Sep-19	NW LANTAU	1	1.60	AUTUMN	STANDARD36826	HKLR	P
11-Sep-19	NW LANTAU	1	1.40	AUTUMN	STANDARD36826	HKLR	S
11-Sep-19	NW LANTAU	2	29.50	AUTUMN	STANDARD36826	HKLR	P
11-Sep-19	NW LANTAU	2	8.99	AUTUMN	STANDARD36826	HKLR	S

11-Sep-19	NW LANTAU	3	2.10	AUTUMN	STANDARD36826	HKLR	P
17-Sep-19	NW LANTAU	2	8.96	AUTUMN	STANDARD36826	HKLR	P
17-Sep-19	NW LANTAU	2	4.54	AUTUMN	STANDARD36826	HKLR	S
17-Sep-19	NW LANTAU	3	22.90	AUTUMN	STANDARD36826	HKLR	P
17-Sep-19	NW LANTAU	3	4.90	AUTUMN	STANDARD36826	HKLR	S
17-Sep-19	NW LANTAU	4	1.90	AUTUMN	STANDARD36826	HKLR	P
17-Sep-19	NW LANTAU	4	1.20	AUTUMN	STANDARD36826	HKLR	S
23-Sep-19	NE LANTAU	1	11.30	AUTUMN	STANDARD36826	HKLR	P
23-Sep-19	NE LANTAU	1	3.61	AUTUMN	STANDARD36826	HKLR	S
23-Sep-19	NW LANTAU	2	19.22	AUTUMN	STANDARD36826	HKLR	P
23-Sep-19	NW LANTAU	2	9.84	AUTUMN	STANDARD36826	HKLR	S
23-Sep-19	NE LANTAU	2	25.35	AUTUMN	STANDARD36826	HKLR	P
23-Sep-19	NE LANTAU	2	10.74	AUTUMN	STANDARD36826	HKLR	S
23-Sep-19	NW LANTAU	3	7.79	AUTUMN	STANDARD36826	HKLR	P
23-Sep-19	NW LANTAU	3	4.25	AUTUMN	STANDARD36826	HKLR	S
8-Oct-19	NW LANTAU	1	3.70	AUTUMN	STANDARD36826	TMCLKL	P
8-Oct-19	NW LANTAU	2	23.60	AUTUMN	STANDARD36826	TMCLKL	P
8-Oct-19	NW LANTAU	2	8.30	AUTUMN	STANDARD36826	TMCLKL	S
8-Oct-19	NE LANTAU	2	11.50	AUTUMN	STANDARD36826	TMCLKL	P
8-Oct-19	NE LANTAU	2	5.40	AUTUMN	STANDARD36826	TMCLKL	S
8-Oct-19	NW LANTAU	3	5.20	AUTUMN	STANDARD36826	TMCLKL	P
8-Oct-19	NW LANTAU	3	2.80	AUTUMN	STANDARD36826	TMCLKL	S
8-Oct-19	NE LANTAU	3	21.93	AUTUMN	STANDARD36826	TMCLKL	P
8-Oct-19	NE LANTAU	3	8.87	AUTUMN	STANDARD36826	TMCLKL	S
9-Oct-19	NW LANTAU	2	7.77	AUTUMN	STANDARD36826	TMCLKL	P
9-Oct-19	NW LANTAU	2	4.33	AUTUMN	STANDARD36826	TMCLKL	S
9-Oct-19	NW LANTAU	3	19.26	AUTUMN	STANDARD36826	TMCLKL	P
9-Oct-19	NW LANTAU	3	8.44	AUTUMN	STANDARD36826	TMCLKL	S
14-Oct-19	NW LANTAU	1	3.10	AUTUMN	STANDARD36826	TMCLKL	P
14-Oct-19	NW LANTAU	1	1.60	AUTUMN	STANDARD36826	TMCLKL	S
14-Oct-19	NW LANTAU	2	24.38	AUTUMN	STANDARD36826	TMCLKL	P
14-Oct-19	NW LANTAU	2	11.62	AUTUMN	STANDARD36826	TMCLKL	S
29-Oct-19	NW LANTAU	2	7.60	AUTUMN	STANDARD36826	TMCLKL	P
29-Oct-19	NW LANTAU	2	5.10	AUTUMN	STANDARD36826	TMCLKL	S
29-Oct-19	NE LANTAU	2	31.08	AUTUMN	STANDARD36826	TMCLKL	P
29-Oct-19	NE LANTAU	2	12.30	AUTUMN	STANDARD36826	TMCLKL	S
29-Oct-19	NW LANTAU	3	14.90	AUTUMN	STANDARD36826	TMCLKL	P
29-Oct-19	NW LANTAU	3	6.10	AUTUMN	STANDARD36826	TMCLKL	S
29-Oct-19	NE LANTAU	3	4.40	AUTUMN	STANDARD36826	TMCLKL	P
29-Oct-19	NW LANTAU	4	10.10	AUTUMN	STANDARD36826	TMCLKL	P
5-Nov-19	NE LANTAU	1	4.62	AUTUMN	STANDARD36826	TMCLKL	P
5-Nov-19	NE LANTAU	1	3.48	AUTUMN	STANDARD36826	TMCLKL	S
5-Nov-19	NW LANTAU	2	13.97	AUTUMN	STANDARD36826	TMCLKL	P
5-Nov-19	NW LANTAU	2	4.90	AUTUMN	STANDARD36826	TMCLKL	S
5-Nov-19	NE LANTAU	2	32.15	AUTUMN	STANDARD36826	TMCLKL	P
5-Nov-19	NE LANTAU	2	10.95	AUTUMN	STANDARD36826	TMCLKL	S
5-Nov-19	NW LANTAU	3	13.02	AUTUMN	STANDARD36826	TMCLKL	P
5-Nov-19	NW LANTAU	3	8.21	AUTUMN	STANDARD36826	TMCLKL	S
19-Nov-19	NW LANTAU	2	12.62	AUTUMN	STANDARD36826	TMCLKL	P
19-Nov-19	NW LANTAU	2	5.63	AUTUMN	STANDARD36826	TMCLKL	S
19-Nov-19	NW LANTAU	3	20.43	AUTUMN	STANDARD36826	TMCLKL	P
19-Nov-19	NW LANTAU	3	5.22	AUTUMN	STANDARD36826	TMCLKL	S
27-Nov-19	NW LANTAU	2	30.30	AUTUMN	STANDARD36826	TMCLKL	P
27-Nov-19	NW LANTAU	2	9.30	AUTUMN	STANDARD36826	TMCLKL	S
27-Nov-19	NW LANTAU	3	1.10	AUTUMN	STANDARD36826	TMCLKL	P
27-Nov-19	NW LANTAU	3	2.60	AUTUMN	STANDARD36826	TMCLKL	S
28-Nov-19	NW LANTAU	2	10.90	AUTUMN	STANDARD36826	TMCLKL	P

28-Nov-19	NW LANTAU	2	2.80	AUTUMN	STANDARD36826	TMCLKL	S
28-Nov-19	NE LANTAU	2	26.61	AUTUMN	STANDARD36826	TMCLKL	P
28-Nov-19	NE LANTAU	2	11.39	AUTUMN	STANDARD36826	TMCLKL	S
28-Nov-19	NW LANTAU	3	13.76	AUTUMN	STANDARD36826	TMCLKL	P
28-Nov-19	NW LANTAU	3	8.74	AUTUMN	STANDARD36826	TMCLKL	S
28-Nov-19	NE LANTAU	3	8.50	AUTUMN	STANDARD36826	TMCLKL	P
28-Nov-19	NE LANTAU	3	1.10	AUTUMN	STANDARD36826	TMCLKL	S
28-Nov-19	NW LANTAU	4	1.96	AUTUMN	STANDARD36826	TMCLKL	P
28-Nov-19	NW LANTAU	4	1.24	AUTUMN	STANDARD36826	TMCLKL	S
3-Dec-19	NW LANTAU	2	12.20	WINTER	STANDARD36826	TMCLKL	P
3-Dec-19	NW LANTAU	2	2.10	WINTER	STANDARD36826	TMCLKL	S
3-Dec-19	NE LANTAU	2	35.34	WINTER	STANDARD36826	TMCLKL	P
3-Dec-19	NE LANTAU	2	13.06	WINTER	STANDARD36826	TMCLKL	S
3-Dec-19	NW LANTAU	3	14.35	WINTER	STANDARD36826	TMCLKL	P
3-Dec-19	NW LANTAU	3	10.85	WINTER	STANDARD36826	TMCLKL	S
3-Dec-19	NE LANTAU	3	1.20	WINTER	STANDARD36826	TMCLKL	S
10-Dec-19	NW LANTAU	1	2.21	WINTER	STANDARD36826	TMCLKL	P
10-Dec-19	NW LANTAU	1	1.72	WINTER	STANDARD36826	TMCLKL	S
10-Dec-19	NW LANTAU	2	30.56	WINTER	STANDARD36826	TMCLKL	P
10-Dec-19	NW LANTAU	2	9.41	WINTER	STANDARD36826	TMCLKL	S
12-Dec-19	NW LANTAU	1	1.88	WINTER	STANDARD36826	TMCLKL	P
12-Dec-19	NW LANTAU	2	20.64	WINTER	STANDARD36826	TMCLKL	P
12-Dec-19	NW LANTAU	2	9.59	WINTER	STANDARD36826	TMCLKL	S
12-Dec-19	NE LANTAU	2	35.13	WINTER	STANDARD36826	TMCLKL	P
12-Dec-19	NE LANTAU	2	11.07	WINTER	STANDARD36826	TMCLKL	S
12-Dec-19	NW LANTAU	3	9.32	WINTER	STANDARD36826	TMCLKL	P
12-Dec-19	NW LANTAU	3	1.29	WINTER	STANDARD36826	TMCLKL	S
16-Dec-19	NW LANTAU	0	1.25	WINTER	STANDARD36826	TMCLKL	P
16-Dec-19	NW LANTAU	1	7.14	WINTER	STANDARD36826	TMCLKL	P
16-Dec-19	NW LANTAU	1	1.60	WINTER	STANDARD36826	TMCLKL	S
16-Dec-19	NW LANTAU	2	19.38	WINTER	STANDARD36826	TMCLKL	P
16-Dec-19	NW LANTAU	2	10.73	WINTER	STANDARD36826	TMCLKL	S
2-Jan-20	NW LANTAU	2	32.30	WINTER	STANDARD36826	TMCLKL	P
2-Jan-20	NW LANTAU	2	11.20	WINTER	STANDARD36826	TMCLKL	S
2-Jan-20	NE LANTAU	2	36.31	WINTER	STANDARD36826	TMCLKL	P
2-Jan-20	NE LANTAU	2	12.59	WINTER	STANDARD36826	TMCLKL	S
6-Jan-20	NW LANTAU	2	13.30	WINTER	STANDARD36826	TMCLKL	P
6-Jan-20	NW LANTAU	2	7.90	WINTER	STANDARD36826	TMCLKL	S
6-Jan-20	NW LANTAU	3	14.25	WINTER	STANDARD36826	TMCLKL	P
6-Jan-20	NW LANTAU	3	4.85	WINTER	STANDARD36826	TMCLKL	S
9-Jan-20	NW LANTAU	2	10.10	WINTER	STANDARD36826	TMCLKL	P
9-Jan-20	NW LANTAU	2	1.20	WINTER	STANDARD36826	TMCLKL	S
9-Jan-20	NE LANTAU	2	19.91	WINTER	STANDARD36826	TMCLKL	P
9-Jan-20	NE LANTAU	2	7.70	WINTER	STANDARD36826	TMCLKL	S
9-Jan-20	NW LANTAU	3	17.66	WINTER	STANDARD36826	TMCLKL	P
9-Jan-20	NW LANTAU	3	9.84	WINTER	STANDARD36826	TMCLKL	S
9-Jan-20	NE LANTAU	3	14.81	WINTER	STANDARD36826	TMCLKL	P
9-Jan-20	NE LANTAU	3	5.78	WINTER	STANDARD36826	TMCLKL	S
16-Jan-20	NW LANTAU	2	16.55	WINTER	STANDARD36826	TMCLKL	P
16-Jan-20	NW LANTAU	2	8.05	WINTER	STANDARD36826	TMCLKL	S
16-Jan-20	NW LANTAU	3	16.60	WINTER	STANDARD36826	TMCLKL	P
10-Feb-20	NW LANTAU	2	32.50	WINTER	STANDARD36826	TMCLKL	P
10-Feb-20	NW LANTAU	2	10.60	WINTER	STANDARD36826	TMCLKL	S
18-Feb-20	NW LANTAU	2	19.10	WINTER	STANDARD36826	TMCLKL	P
18-Feb-20	NW LANTAU	2	10.43	WINTER	STANDARD36826	TMCLKL	S
18-Feb-20	NE LANTAU	2	25.24	WINTER	STANDARD36826	TMCLKL	P
18-Feb-20	NE LANTAU	2	9.40	WINTER	STANDARD36826	TMCLKL	S

18-Feb-20	NW LANTAU	3	8.06	WINTER	STANDARD36826	TMCLKL	P
18-Feb-20	NW LANTAU	3	1.67	WINTER	STANDARD36826	TMCLKL	S
18-Feb-20	NE LANTAU	3	10.09	WINTER	STANDARD36826	TMCLKL	P
18-Feb-20	NE LANTAU	3	3.07	WINTER	STANDARD36826	TMCLKL	S
20-Feb-20	NW LANTAU	1	14.10	WINTER	STANDARD36826	TMCLKL	P
20-Feb-20	NW LANTAU	1	6.00	WINTER	STANDARD36826	TMCLKL	S
20-Feb-20	NW LANTAU	2	17.97	WINTER	STANDARD36826	TMCLKL	P
20-Feb-20	NW LANTAU	2	4.63	WINTER	STANDARD36826	TMCLKL	S
20-Feb-20	NE LANTAU	2	17.89	WINTER	STANDARD36826	TMCLKL	P
20-Feb-20	NE LANTAU	2	7.11	WINTER	STANDARD36826	TMCLKL	S
20-Feb-20	NE LANTAU	3	17.90	WINTER	STANDARD36826	TMCLKL	P
20-Feb-20	NE LANTAU	3	3.80	WINTER	STANDARD36826	TMCLKL	S
24-Feb-20	NW LANTAU	2	15.23	WINTER	STANDARD36826	TMCLKL	P
24-Feb-20	NW LANTAU	2	7.51	WINTER	STANDARD36826	TMCLKL	S
24-Feb-20	NW LANTAU	3	11.66	WINTER	STANDARD36826	TMCLKL	P
24-Feb-20	NW LANTAU	3	4.90	WINTER	STANDARD36826	TMCLKL	S
3-Mar-20	NW LANTAU	2	7.92	SPRING	STANDARD36826	TMCLKL	P
3-Mar-20	NW LANTAU	2	7.77	SPRING	STANDARD36826	TMCLKL	S
3-Mar-20	NW LANTAU	3	24.49	SPRING	STANDARD36826	TMCLKL	P
3-Mar-20	NW LANTAU	3	3.20	SPRING	STANDARD36826	TMCLKL	S
9-Mar-20	NW LANTAU	2	13.90	SPRING	STANDARD36826	TMCLKL	P
9-Mar-20	NW LANTAU	2	6.20	SPRING	STANDARD36826	TMCLKL	S
9-Mar-20	NE LANTAU	2	29.58	SPRING	STANDARD36826	TMCLKL	P
9-Mar-20	NE LANTAU	2	10.81	SPRING	STANDARD36826	TMCLKL	S
9-Mar-20	NW LANTAU	3	13.86	SPRING	STANDARD36826	TMCLKL	P
9-Mar-20	NW LANTAU	3	4.74	SPRING	STANDARD36826	TMCLKL	S
9-Mar-20	NE LANTAU	3	5.14	SPRING	STANDARD36826	TMCLKL	P
9-Mar-20	NE LANTAU	3	1.87	SPRING	STANDARD36826	TMCLKL	S
18-Mar-20	NW LANTAU	1	2.30	SPRING	STANDARD36826	TMCLKL	P
18-Mar-20	NW LANTAU	1	1.66	SPRING	STANDARD36826	TMCLKL	S
18-Mar-20	NW LANTAU	2	13.75	SPRING	STANDARD36826	TMCLKL	P
18-Mar-20	NW LANTAU	2	6.73	SPRING	STANDARD36826	TMCLKL	S
18-Mar-20	NW LANTAU	3	16.02	SPRING	STANDARD36826	TMCLKL	P
18-Mar-20	NW LANTAU	3	0.90	SPRING	STANDARD36826	TMCLKL	S
25-Mar-20	NE LANTAU	2	25.17	SPRING	STANDARD36826	TMCLKL	P
25-Mar-20	NE LANTAU	2	11.93	SPRING	STANDARD36826	TMCLKL	S
25-Mar-20	NW LANTAU	2	20.01	SPRING	STANDARD36826	TMCLKL	P
25-Mar-20	NW LANTAU	2	9.43	SPRING	STANDARD36826	TMCLKL	S
25-Mar-20	NE LANTAU	3	11.60	SPRING	STANDARD36826	TMCLKL	P
25-Mar-20	NE LANTAU	3	2.00	SPRING	STANDARD36826	TMCLKL	S
25-Mar-20	NW LANTAU	3	5.90	SPRING	STANDARD36826	TMCLKL	P
25-Mar-20	NW LANTAU	3	2.64	SPRING	STANDARD36826	TMCLKL	S
8-Apr-20	NW LANTAU	1	10.88	SPRING	STANDARD36826	TMCLKL	P
8-Apr-20	NE LANTAU	1	1.70	SPRING	STANDARD36826	TMCLKL	P
8-Apr-20	NE LANTAU	1	1.10	SPRING	STANDARD36826	TMCLKL	S
8-Apr-20	NW LANTAU	2	11.06	SPRING	STANDARD36826	TMCLKL	P
8-Apr-20	NW LANTAU	2	12.06	SPRING	STANDARD36826	TMCLKL	S
8-Apr-20	NE LANTAU	2	18.30	SPRING	STANDARD36826	TMCLKL	P
8-Apr-20	NE LANTAU	2	7.05	SPRING	STANDARD36826	TMCLKL	S
8-Apr-20	NW LANTAU	3	4.40	SPRING	STANDARD36826	TMCLKL	P
8-Apr-20	NW LANTAU	3	1.50	SPRING	STANDARD36826	TMCLKL	S
8-Apr-20	NE LANTAU	3	15.66	SPRING	STANDARD36826	TMCLKL	P
8-Apr-20	NE LANTAU	3	5.19	SPRING	STANDARD36826	TMCLKL	S
14-Apr-20	NW LANTAU	1	1.46	SPRING	STANDARD36826	TMCLKL	P
14-Apr-20	NW LANTAU	2	31.85	SPRING	STANDARD36826	TMCLKL	P
14-Apr-20	NW LANTAU	2	3.95	SPRING	STANDARD36826	TMCLKL	S
21-Apr-20	NW LANTAU	1	1.20	SPRING	STANDARD36826	TMCLKL	P

21-Apr-20	NW LANTAU	1	1.80	SPRING	STANDARD36826	TMCLKL	S
21-Apr-20	NW LANTAU	2	19.06	SPRING	STANDARD36826	TMCLKL	P
21-Apr-20	NW LANTAU	2	9.33	SPRING	STANDARD36826	TMCLKL	S
21-Apr-20	NW LANTAU	3	11.81	SPRING	STANDARD36826	TMCLKL	P
22-Apr-20	NE LANTAU	2	4.00	SPRING	STANDARD36826	TMCLKL	P
22-Apr-20	NE LANTAU	2	3.50	SPRING	STANDARD36826	TMCLKL	S
22-Apr-20	NW LANTAU	3	19.50	SPRING	STANDARD36826	TMCLKL	P
22-Apr-20	NW LANTAU	3	7.42	SPRING	STANDARD36826	TMCLKL	S
22-Apr-20	NE LANTAU	3	31.97	SPRING	STANDARD36826	TMCLKL	P
22-Apr-20	NE LANTAU	3	9.53	SPRING	STANDARD36826	TMCLKL	S
22-Apr-20	NW LANTAU	4	8.95	SPRING	STANDARD36826	TMCLKL	P
22-Apr-20	NW LANTAU	4	3.33	SPRING	STANDARD36826	TMCLKL	S
5-May-20	NW LANTAU	2	7.25	SPRING	STANDARD36826	TMCLKL	P
5-May-20	NE LANTAU	2	24.87	SPRING	STANDARD36826	TMCLKL	P
5-May-20	NE LANTAU	2	9.29	SPRING	STANDARD36826	TMCLKL	S
5-May-20	NW LANTAU	3	20.75	SPRING	STANDARD36826	TMCLKL	P
5-May-20	NW LANTAU	3	11.20	SPRING	STANDARD36826	TMCLKL	S
5-May-20	NE LANTAU	3	9.60	SPRING	STANDARD36826	TMCLKL	P
5-May-20	NE LANTAU	3	3.34	SPRING	STANDARD36826	TMCLKL	S
12-May-20	NW LANTAU	2	32.61	SPRING	STANDARD36826	TMCLKL	P
12-May-20	NW LANTAU	2	6.74	SPRING	STANDARD36826	TMCLKL	S
12-May-20	NW LANTAU	3	1.85	SPRING	STANDARD36826	TMCLKL	S
18-May-20	NW LANTAU	1	1.50	SPRING	STANDARD36826	TMCLKL	P
18-May-20	NE LANTAU	1	6.72	SPRING	STANDARD36826	TMCLKL	P
18-May-20	NE LANTAU	1	3.53	SPRING	STANDARD36826	TMCLKL	S
18-May-20	NW LANTAU	2	9.00	SPRING	STANDARD36826	TMCLKL	P
18-May-20	NW LANTAU	2	5.20	SPRING	STANDARD36826	TMCLKL	S
18-May-20	NE LANTAU	2	23.97	SPRING	STANDARD36826	TMCLKL	P
18-May-20	NE LANTAU	2	8.46	SPRING	STANDARD36826	TMCLKL	S
18-May-20	NW LANTAU	3	16.13	SPRING	STANDARD36826	TMCLKL	P
18-May-20	NW LANTAU	3	7.27	SPRING	STANDARD36826	TMCLKL	S
18-May-20	NE LANTAU	3	4.22	SPRING	STANDARD36826	TMCLKL	P
25-May-20	NW LANTAU	1	1.31	SPRING	STANDARD36826	TMCLKL	P
25-May-20	NW LANTAU	2	26.44	SPRING	STANDARD36826	TMCLKL	P
25-May-20	NW LANTAU	2	9.85	SPRING	STANDARD36826	TMCLKL	S
25-May-20	NW LANTAU	3	3.83	SPRING	STANDARD36826	TMCLKL	P
4-Jun-20	NW LANTAU	2	8.70	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NW LANTAU	2	3.50	SUMMER	STANDARD36826	TMCLKL	S
4-Jun-20	NE LANTAU	2	25.33	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NE LANTAU	2	11.57	SUMMER	STANDARD36826	TMCLKL	S
4-Jun-20	NW LANTAU	3	17.62	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NW LANTAU	3	9.58	SUMMER	STANDARD36826	TMCLKL	S
4-Jun-20	NE LANTAU	3	8.60	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NE LANTAU	3	1.10	SUMMER	STANDARD36826	TMCLKL	S
9-Jun-20	NW LANTAU	2	27.60	SUMMER	STANDARD36826	TMCLKL	P
9-Jun-20	NW LANTAU	2	9.10	SUMMER	STANDARD36826	TMCLKL	S
9-Jun-20	NW LANTAU	3	2.10	SUMMER	STANDARD36826	TMCLKL	S
9-Jun-20	NW LANTAU	"]" from report	5.50	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NW LANTAU	2	20.23	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NW LANTAU	2	9.87	SUMMER	STANDARD36826	TMCLKL	S
11-Jun-20	NE LANTAU	2	27.09	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NE LANTAU	2	8.71	SUMMER	STANDARD36826	TMCLKL	S
11-Jun-20	NW LANTAU	3	5.70	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NE LANTAU	3	8.40	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NE LANTAU	3	2.10	SUMMER	STANDARD36826	TMCLKL	S
16-Jun-20	NW LANTAU	2	23.10	SUMMER	STANDARD36826	TMCLKL	P

16-Jun-20	NW LANTAU	2	10.11	SUMMER	STANDARD36826	TMCLKL	S
16-Jun-20	NW LANTAU	3	12.79	SUMMER	STANDARD36826	TMCLKL	P
16-Jun-20	NW LANTAU	3	0.50	SUMMER	STANDARD36826	TMCLKL	S
2-Jul-20	NE LANTAU	1	2.38	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NW LANTAU	2	13.11	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NW LANTAU	2	7.43	SUMMER	STANDARD36826	TMCLKL	S
2-Jul-20	NE LANTAU	2	31.42	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NE LANTAU	2	11.80	SUMMER	STANDARD36826	TMCLKL	S
2-Jul-20	NW LANTAU	3	15.06	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NW LANTAU	3	2.10	SUMMER	STANDARD36826	TMCLKL	S
7-Jul-20	NW LANTAU	2	21.74	SUMMER	STANDARD36826	TMCLKL	P
7-Jul-20	NW LANTAU	2	2.01	SUMMER	STANDARD36826	TMCLKL	S
7-Jul-20	NW LANTAU	3	9.90	SUMMER	STANDARD36826	TMCLKL	P
7-Jul-20	NW LANTAU	3	6.60	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NE LANTAU	2	26.80	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NE LANTAU	2	11.35	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NW LANTAU	3	24.11	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NW LANTAU	3	10.69	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NE LANTAU	3	8.75	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NE LANTAU	3	1.10	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NW LANTAU	4	4.60	SUMMER	STANDARD36826	TMCLKL	P
20-Jul-20	NW LANTAU	2	23.18	SUMMER	STANDARD36826	TMCLKL	P
20-Jul-20	NW LANTAU	2	11.11	SUMMER	STANDARD36826	TMCLKL	S
20-Jul-20	NW LANTAU	3	8.71	SUMMER	STANDARD36826	TMCLKL	P
20-Jul-20	NW LANTAU	3	1.00	SUMMER	STANDARD36826	TMCLKL	S
4-Aug-20	NW LANTAU	1	20.77	SUMMER	STANDARD36826	TMCLKL	P
4-Aug-20	NW LANTAU	1	7.33	SUMMER	STANDARD36826	TMCLKL	S
4-Aug-20	NW LANTAU	2	7.90	SUMMER	STANDARD36826	TMCLKL	P
4-Aug-20	NW LANTAU	2	3.50	SUMMER	STANDARD36826	TMCLKL	S
4-Aug-20	NE LANTAU	2	18.34	SUMMER	STANDARD36826	TMCLKL	P
4-Aug-20	NE LANTAU	2	8.60	SUMMER	STANDARD36826	TMCLKL	S
4-Aug-20	NE LANTAU	3	16.56	SUMMER	STANDARD36826	TMCLKL	P
4-Aug-20	NE LANTAU	3	4.60	SUMMER	STANDARD36826	TMCLKL	S
14-Aug-20	NW LANTAU	1	7.35	SUMMER	STANDARD36826	TMCLKL	P
14-Aug-20	NW LANTAU	2	23.38	SUMMER	STANDARD36826	TMCLKL	P
14-Aug-20	NW LANTAU	2	6.42	SUMMER	STANDARD36826	TMCLKL	S
14-Aug-20	NW LANTAU	3	1.15	SUMMER	STANDARD36826	TMCLKL	P
14-Aug-20	NW LANTAU	3	2.40	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NW LANTAU	1	3.24	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NW LANTAU	1	4.16	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NE LANTAU	1	10.37	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NE LANTAU	1	3.03	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NW LANTAU	2	21.53	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NW LANTAU	2	3.67	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NE LANTAU	2	5.19	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NE LANTAU	2	1.71	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NW LANTAU	3	3.40	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NW LANTAU	3	2.40	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NW LANTAU	1	2.56	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NW LANTAU	1	2.80	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NE LANTAU	1	9.62	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NE LANTAU	1	1.10	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NW LANTAU	2	30.10	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NW LANTAU	2	7.90	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NE LANTAU	2	10.89	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NE LANTAU	2	6.49	SUMMER	STANDARD36826	TMCLKL	S
9-Sep-20	NW LANTAU	1	12.70	AUTUMN	STANDARD36826	TMCLKL	P

9-Sep-20	NW LANTAU	1	5.92	AUTUMN	STANDARD36826	TMCLKL	S
9-Sep-20	NE LANTAU	1	7.01	AUTUMN	STANDARD36826	TMCLKL	P
9-Sep-20	NE LANTAU	1	5.00	AUTUMN	STANDARD36826	TMCLKL	S
9-Sep-20	NW LANTAU	2	16.50	AUTUMN	STANDARD36826	TMCLKL	P
9-Sep-20	NW LANTAU	2	5.48	AUTUMN	STANDARD36826	TMCLKL	S
9-Sep-20	NE LANTAU	2	28.49	AUTUMN	STANDARD36826	TMCLKL	P
9-Sep-20	NE LANTAU	2	7.80	AUTUMN	STANDARD36826	TMCLKL	S
15-Sep-20	NW LANTAU	1	4.25	AUTUMN	STANDARD36826	TMCLKL	P
15-Sep-20	NW LANTAU	2	26.45	AUTUMN	STANDARD36826	TMCLKL	P
15-Sep-20	NW LANTAU	2	10.93	AUTUMN	STANDARD36826	TMCLKL	S
15-Sep-20	NW LANTAU	3	2.28	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-20	NW LANTAU	1	1.77	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-20	NW LANTAU	2	15.75	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-20	NW LANTAU	2	7.08	AUTUMN	STANDARD36826	TMCLKL	S
21-Sep-20	NE LANTAU	2	13.67	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-20	NE LANTAU	2	6.48	AUTUMN	STANDARD36826	TMCLKL	S
21-Sep-20	NW LANTAU	3	9.30	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-20	NW LANTAU	3	5.10	AUTUMN	STANDARD36826	TMCLKL	S
21-Sep-20	NE LANTAU	3	21.76	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-20	NE LANTAU	3	5.39	AUTUMN	STANDARD36826	TMCLKL	S
23-Sep-20	NW LANTAU	1	14.56	AUTUMN	STANDARD36826	TMCLKL	P
23-Sep-20	NW LANTAU	2	16.32	AUTUMN	STANDARD36826	TMCLKL	P
23-Sep-20	NW LANTAU	2	8.42	AUTUMN	STANDARD36826	TMCLKL	S
23-Sep-20	NW LANTAU	3	2.00	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NW LANTAU	2	6.09	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NW LANTAU	2	3.90	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-20	NE LANTAU	2	31.32	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NE LANTAU	2	10.22	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-20	NW LANTAU	3	20.74	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NW LANTAU	3	7.77	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-20	NE LANTAU	3	3.11	AUTUMN	STANDARD36826	TMCLKL	P
7-Oct-20	NE LANTAU	3	2.25	AUTUMN	STANDARD36826	TMCLKL	S
12-Oct-20	NW LANTAU	2	16.39	AUTUMN	STANDARD36826	TMCLKL	P
12-Oct-20	NW LANTAU	2	8.68	AUTUMN	STANDARD36826	TMCLKL	S
12-Oct-20	NW LANTAU	3	15.53	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	1	3.80	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	1	1.20	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NW LANTAU	2	14.73	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NW LANTAU	2	7.60	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NE LANTAU	2	28.13	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	2	9.47	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NW LANTAU	3	11.54	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NW LANTAU	3	4.63	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-20	NE LANTAU	3	3.00	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-20	NE LANTAU	3	0.80	AUTUMN	STANDARD36826	TMCLKL	S
22-Oct-20	NW LANTAU	2	0.90	AUTUMN	STANDARD36826	TMCLKL	S
22-Oct-20	NW LANTAU	3	32.58	AUTUMN	STANDARD36826	TMCLKL	P
22-Oct-20	NW LANTAU	3	9.62	AUTUMN	STANDARD36826	TMCLKL	S
4-Nov-20	NW LANTAU	2	19.01	AUTUMN	STANDARD36826	TMCLKL	P
4-Nov-20	NW LANTAU	2	7.30	AUTUMN	STANDARD36826	TMCLKL	S
4-Nov-20	NE LANTAU	2	34.20	AUTUMN	STANDARD36826	TMCLKL	P
4-Nov-20	NE LANTAU	2	12.50	AUTUMN	STANDARD36826	TMCLKL	S
4-Nov-20	NW LANTAU	3	9.69	AUTUMN	STANDARD36826	TMCLKL	P
4-Nov-20	NW LANTAU	3	3.10	AUTUMN	STANDARD36826	TMCLKL	S
4-Nov-20	NE LANTAU	3	2.70	AUTUMN	STANDARD36826	TMCLKL	P
4-Nov-20	NE LANTAU	3	1.00	AUTUMN	STANDARD36826	TMCLKL	S
9-Nov-20	NW LANTAU	2	12.64	AUTUMN	STANDARD36826	TMCLKL	P

9-Nov-20	NW LANTAU	2	7.26	AUTUMN	STANDARD36826	TMCLKL	S
9-Nov-20	NW LANTAU	3	19.96	AUTUMN	STANDARD36826	TMCLKL	P
9-Nov-20	NW LANTAU	3	1.54	AUTUMN	STANDARD36826	TMCLKL	S
17-Nov-20	NW LANTAU	2	3.80	AUTUMN	STANDARD36826	TMCLKL	P
17-Nov-20	NW LANTAU	2	3.47	AUTUMN	STANDARD36826	TMCLKL	S
17-Nov-20	NE LANTAU	2	32.10	AUTUMN	STANDARD36826	TMCLKL	P
17-Nov-20	NE LANTAU	2	12.72	AUTUMN	STANDARD36826	TMCLKL	S
17-Nov-20	NW LANTAU	3	24.32	AUTUMN	STANDARD36826	TMCLKL	P
17-Nov-20	NW LANTAU	3	7.33	AUTUMN	STANDARD36826	TMCLKL	S
17-Nov-20	NE LANTAU	3	3.38	AUTUMN	STANDARD36826	TMCLKL	P
23-Nov-20	NW LANTAU	2	11.30	AUTUMN	STANDARD36826	TMCLKL	P
23-Nov-20	NW LANTAU	2	8.30	AUTUMN	STANDARD36826	TMCLKL	S
23-Nov-20	NW LANTAU	3	20.90	AUTUMN	STANDARD36826	TMCLKL	P
1-Dec-20	NE LANTAU	1	2.50	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NE LANTAU	1	1.20	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NW LANTAU	2	9.10	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NW LANTAU	2	9.00	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NE LANTAU	2	32.93	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NE LANTAU	2	11.77	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NW LANTAU	3	13.63	WINTER	STANDARD36826	TMCLKL	P
1-Dec-20	NW LANTAU	3	2.44	WINTER	STANDARD36826	TMCLKL	S
1-Dec-20	NW LANTAU	4	4.83	WINTER	STANDARD36826	TMCLKL	P
3-Dec-20	NW LANTAU	2	1.43	WINTER	STANDARD36826	TMCLKL	P
3-Dec-20	NW LANTAU	2	1.84	WINTER	STANDARD36826	TMCLKL	S
3-Dec-20	NW LANTAU	3	23.50	WINTER	STANDARD36826	TMCLKL	P
3-Dec-20	NW LANTAU	3	6.47	WINTER	STANDARD36826	TMCLKL	S
3-Dec-20	NW LANTAU	4	8.46	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NW LANTAU	2	5.40	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NW LANTAU	2	3.60	WINTER	STANDARD36826	TMCLKL	S
8-Dec-20	NE LANTAU	2	35.51	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NE LANTAU	2	12.49	WINTER	STANDARD36826	TMCLKL	S
8-Dec-20	NW LANTAU	3	22.14	WINTER	STANDARD36826	TMCLKL	P
8-Dec-20	NW LANTAU	3	8.06	WINTER	STANDARD36826	TMCLKL	S
10-Dec-20	NW LANTAU	2	27.88	WINTER	STANDARD36826	TMCLKL	P
10-Dec-20	NW LANTAU	2	8.26	WINTER	STANDARD36826	TMCLKL	S
10-Dec-20	NW LANTAU	3	4.95	WINTER	STANDARD36826	TMCLKL	P
25-Jan-21	NW LANTAU	1	4.08	WINTER	STANDARD36826	TMCLKL	P
25-Jan-21	NW LANTAU	2	28.26	WINTER	STANDARD36826	TMCLKL	P
25-Jan-21	NW LANTAU	2	8.25	WINTER	STANDARD36826	TMCLKL	S
26-Jan-21	NW LANTAU	1	4.74	WINTER	STANDARD36826	TMCLKL	P
26-Jan-21	NW LANTAU	1	1.50	WINTER	STANDARD36826	TMCLKL	S
26-Jan-21	NE LANTAU	1	2.60	WINTER	STANDARD36826	TMCLKL	P
26-Jan-21	NE LANTAU	1	2.30	WINTER	STANDARD36826	TMCLKL	S
26-Jan-21	NW LANTAU	2	24.42	WINTER	STANDARD36826	TMCLKL	P
26-Jan-21	NW LANTAU	2	8.81	WINTER	STANDARD36826	TMCLKL	S
26-Jan-21	NE LANTAU	2	33.98	WINTER	STANDARD36826	TMCLKL	P
26-Jan-21	NE LANTAU	2	9.92	WINTER	STANDARD36826	TMCLKL	S
27-Jan-21	NW LANTAU	1	6.50	WINTER	STANDARD36826	TMCLKL	P
27-Jan-21	NW LANTAU	1	3.90	WINTER	STANDARD36826	TMCLKL	S
27-Jan-21	NW LANTAU	2	26.15	WINTER	STANDARD36826	TMCLKL	P
27-Jan-21	NW LANTAU	2	6.75	WINTER	STANDARD36826	TMCLKL	S
28-Jan-21	NW LANTAU	1	0.52	WINTER	STANDARD36826	TMCLKL	P
28-Jan-21	NW LANTAU	1	2.53	WINTER	STANDARD36826	TMCLKL	S
28-Jan-21	NW LANTAU	2	22.11	WINTER	STANDARD36826	TMCLKL	P
28-Jan-21	NW LANTAU	2	9.50	WINTER	STANDARD36826	TMCLKL	S
28-Jan-21	NE LANTAU	2	21.46	WINTER	STANDARD36826	TMCLKL	P
28-Jan-21	NE LANTAU	2	8.40	WINTER	STANDARD36826	TMCLKL	S

28-Jan-21	NW LANTAU	3	3.73	WINTER	STANDARD36826	TMCLKL	P
28-Jan-21	NE LANTAU	3	14.01	WINTER	STANDARD36826	TMCLKL	P
28-Jan-21	NE LANTAU	3	4.03	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NE LANTAU	0	1.60	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NW LANTAU	1	3.60	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NW LANTAU	1	2.45	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NE LANTAU	1	15.60	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NE LANTAU	1	5.60	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NW LANTAU	2	24.81	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NW LANTAU	2	7.70	WINTER	STANDARD36826	TMCLKL	S
2-Feb-21	NE LANTAU	2	18.77	WINTER	STANDARD36826	TMCLKL	P
2-Feb-21	NE LANTAU	2	8.33	WINTER	STANDARD36826	TMCLKL	S
8-Feb-21	NW LANTAU	2	9.76	WINTER	STANDARD36826	TMCLKL	P
8-Feb-21	NW LANTAU	2	0.90	WINTER	STANDARD36826	TMCLKL	S
8-Feb-21	NW LANTAU	3	23.48	WINTER	STANDARD36826	TMCLKL	P
8-Feb-21	NW LANTAU	3	7.33	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NW LANTAU	1	5.60	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NW LANTAU	1	1.50	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NE LANTAU	1	9.55	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	1	2.74	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NW LANTAU	2	18.88	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NW LANTAU	2	10.02	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NE LANTAU	2	20.88	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	2	8.73	WINTER	STANDARD36826	TMCLKL	S
18-Feb-21	NW LANTAU	3	3.50	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	3	4.70	WINTER	STANDARD36826	TMCLKL	P
18-Feb-21	NE LANTAU	3	1.20	WINTER	STANDARD36826	TMCLKL	S
23-Feb-21	NW LANTAU	1	9.54	WINTER	STANDARD36826	TMCLKL	P
23-Feb-21	NW LANTAU	1	7.39	WINTER	STANDARD36826	TMCLKL	S
23-Feb-21	NW LANTAU	2	18.92	WINTER	STANDARD36826	TMCLKL	P
23-Feb-21	NW LANTAU	2	3.55	WINTER	STANDARD36826	TMCLKL	S
23-Feb-21	NW LANTAU	3	5.20	WINTER	STANDARD36826	TMCLKL	P
3-Mar-21	NW LANTAU	2	17.29	SPRING	STANDARD36826	TMCLKL	P
3-Mar-21	NW LANTAU	2	6.60	SPRING	STANDARD36826	TMCLKL	S
3-Mar-21	NE LANTAU	2	32.08	SPRING	STANDARD36826	TMCLKL	P
3-Mar-21	NE LANTAU	2	11.87	SPRING	STANDARD36826	TMCLKL	S
3-Mar-21	NW LANTAU	3	10.70	SPRING	STANDARD36826	TMCLKL	P
3-Mar-21	NW LANTAU	3	4.75	SPRING	STANDARD36826	TMCLKL	S
3-Mar-21	NE LANTAU	3	3.05	SPRING	STANDARD36826	TMCLKL	P
3-Mar-21	NE LANTAU	3	1.00	SPRING	STANDARD36826	TMCLKL	S
8-Mar-21	NW LANTAU	2	7.06	SPRING	STANDARD36826	TMCLKL	P
8-Mar-21	NW LANTAU	2	2.86	SPRING	STANDARD36826	TMCLKL	S
8-Mar-21	NW LANTAU	3	25.36	SPRING	STANDARD36826	TMCLKL	P
8-Mar-21	NW LANTAU	3	5.32	SPRING	STANDARD36826	TMCLKL	S
17-Mar-21	NW LANTAU	1	9.65	SPRING	STANDARD36826	TMCLKL	P
17-Mar-21	NW LANTAU	1	3.10	SPRING	STANDARD36826	TMCLKL	S
17-Mar-21	NE LANTAU	1	3.50	SPRING	STANDARD36826	TMCLKL	P
17-Mar-21	NE LANTAU	1	2.00	SPRING	STANDARD36826	TMCLKL	S
17-Mar-21	NW LANTAU	2	18.44	SPRING	STANDARD36826	TMCLKL	P
17-Mar-21	NW LANTAU	2	7.99	SPRING	STANDARD36826	TMCLKL	S
17-Mar-21	NE LANTAU	2	31.93	SPRING	STANDARD36826	TMCLKL	P
17-Mar-21	NE LANTAU	2	9.37	SPRING	STANDARD36826	TMCLKL	S
25-Mar-21	NW LANTAU	2	6.30	SPRING	STANDARD36826	TMCLKL	P
25-Mar-21	NW LANTAU	2	5.92	SPRING	STANDARD36826	TMCLKL	S
25-Mar-21	NW LANTAU	3	26.28	SPRING	STANDARD36826	TMCLKL	P
25-Mar-21	NW LANTAU	3	4.90	SPRING	STANDARD36826	TMCLKL	S
8-Apr-21	NW LANTAU	2	25.85	SPRING	STANDARD36826	TMCLKL	P

8-Apr-21	NW LANTAU	2	10.80	SPRING	STANDARD36826	TMCLKL	S
8-Apr-21	NE LANTAU	2	34.14	SPRING	STANDARD36826	TMCLKL	P
8-Apr-21	NE LANTAU	2	11.56	SPRING	STANDARD36826	TMCLKL	S
8-Apr-21	NW LANTAU	3	6.95	SPRING	STANDARD36826	TMCLKL	P
22-Apr-21	NW LANTAU	1	5.79	SPRING	STANDARD36826	TMCLKL	P
22-Apr-21	NW LANTAU	2	26.60	SPRING	STANDARD36826	TMCLKL	P
22-Apr-21	NW LANTAU	2	11.11	SPRING	STANDARD36826	TMCLKL	S
27-Apr-21	NW LANTAU	2	15.81	SPRING	STANDARD36826	TMCLKL	P
27-Apr-21	NW LANTAU	2	8.23	SPRING	STANDARD36826	TMCLKL	S
27-Apr-21	NE LANTAU	2	5.30	SPRING	STANDARD36826	TMCLKL	P
27-Apr-21	NE LANTAU	2	3.70	SPRING	STANDARD36826	TMCLKL	S
27-Apr-21	NW LANTAU	3	12.76	SPRING	STANDARD36826	TMCLKL	P
27-Apr-21	NW LANTAU	3	3.00	SPRING	STANDARD36826	TMCLKL	S
27-Apr-21	NE LANTAU	3	31.17	SPRING	STANDARD36826	TMCLKL	P
27-Apr-21	NE LANTAU	3	8.43	SPRING	STANDARD36826	TMCLKL	S
29-Apr-21	NW LANTAU	2	16.60	SPRING	STANDARD36826	TMCLKL	P
29-Apr-21	NW LANTAU	2	7.08	SPRING	STANDARD36826	TMCLKL	S
29-Apr-21	NW LANTAU	3	11.22	SPRING	STANDARD36826	TMCLKL	P
29-Apr-21	NW LANTAU	3	1.40	SPRING	STANDARD36826	TMCLKL	S
3-May-21	NW LANTAU	2	1.10	SPRING	STANDARD36826	TMCLKL	S
3-May-21	NE LANTAU	2	15.62	SPRING	STANDARD36826	TMCLKL	P
3-May-21	NE LANTAU	2	4.70	SPRING	STANDARD36826	TMCLKL	S
3-May-21	NW LANTAU	3	26.45	SPRING	STANDARD36826	TMCLKL	P
3-May-21	NW LANTAU	3	11.85	SPRING	STANDARD36826	TMCLKL	S
3-May-21	NE LANTAU	3	18.05	SPRING	STANDARD36826	TMCLKL	P
3-May-21	NE LANTAU	3	7.33	SPRING	STANDARD36826	TMCLKL	S
11-May-21	NW LANTAU	2	2.72	SPRING	STANDARD36826	TMCLKL	P
11-May-21	NW LANTAU	2	4.46	SPRING	STANDARD36826	TMCLKL	S
11-May-21	NW LANTAU	3	25.99	SPRING	STANDARD36826	TMCLKL	P
11-May-21	NW LANTAU	3	6.24	SPRING	STANDARD36826	TMCLKL	S
25-May-21	NW LANTAU	1	2.78	SPRING	STANDARD36826	TMCLKL	P
25-May-21	NW LANTAU	2	26.32	SPRING	STANDARD36826	TMCLKL	P
25-May-21	NW LANTAU	2	7.40	SPRING	STANDARD36826	TMCLKL	S
26-May-21	NW LANTAU	1	1.60	SPRING	STANDARD138716	TMCLKL	P
26-May-21	NW LANTAU	1	4.80	SPRING	STANDARD138716	TMCLKL	S
26-May-21	NE LANTAU	1	11.39	SPRING	STANDARD138716	TMCLKL	P
26-May-21	NE LANTAU	1	3.51	SPRING	STANDARD138716	TMCLKL	S
26-May-21	NW LANTAU	2	30.69	SPRING	STANDARD138716	TMCLKL	P
26-May-21	NW LANTAU	2	6.61	SPRING	STANDARD138716	TMCLKL	S
26-May-21	NE LANTAU	2	14.50	SPRING	STANDARD138716	TMCLKL	P
26-May-21	NE LANTAU	2	8.00	SPRING	STANDARD138716	TMCLKL	S
26-May-21	NE LANTAU	3	5.80	SPRING	STANDARD138716	TMCLKL	P
26-May-21	NE LANTAU	3	1.60	SPRING	STANDARD138716	TMCLKL	S
17-Jun-21	NW LANTAU	2	10.99	SUMMER	STANDARD138716	TMCLKL	P
17-Jun-21	NE LANTAU	2	10.21	SUMMER	STANDARD138716	TMCLKL	P
17-Jun-21	NW LANTAU	3	24.81	SUMMER	STANDARD138716	TMCLKL	P
17-Jun-21	NW LANTAU	3	13.60	SUMMER	STANDARD138716	TMCLKL	S
17-Jun-21	NE LANTAU	3	4.40	SUMMER	STANDARD138716	TMCLKL	P
24-Jun-21	NW LANTAU	1	4.00	SUMMER	STANDARD138716	TMCLKL	P
24-Jun-21	NW LANTAU	1	0.70	SUMMER	STANDARD138716	TMCLKL	S
24-Jun-21	NE LANTAU	1	6.20	SUMMER	STANDARD138716	TMCLKL	P
24-Jun-21	NE LANTAU	1	4.20	SUMMER	STANDARD138716	TMCLKL	S
24-Jun-21	NW LANTAU	2	22.55	SUMMER	STANDARD138716	TMCLKL	P
24-Jun-21	NW LANTAU	2	8.35	SUMMER	STANDARD138716	TMCLKL	S
24-Jun-21	NE LANTAU	2	10.36	SUMMER	STANDARD138716	TMCLKL	P
24-Jun-21	NE LANTAU	2	6.24	SUMMER	STANDARD138716	TMCLKL	S
24-Jun-21	NE LANTAU	3	2.70	SUMMER	STANDARD138716	TMCLKL	P

28-Jun-21	NW LANTAU	2	30.81	SUMMER	STANDARD138716	TMCLKL	P
28-Jun-21	NW LANTAU	2	14.19	SUMMER	STANDARD138716	TMCLKL	S
28-Jun-21	NE LANTAU	2	11.99	SUMMER	STANDARD138716	TMCLKL	P
28-Jun-21	NE LANTAU	2	8.91	SUMMER	STANDARD138716	TMCLKL	S
28-Jun-21	NW LANTAU	3	4.10	SUMMER	STANDARD138716	TMCLKL	P
28-Jun-21	NE LANTAU	3	3.60	SUMMER	STANDARD138716	TMCLKL	P
28-Jun-21	NE LANTAU	3	1.30	SUMMER	STANDARD138716	TMCLKL	S
29-Jun-21	NW LANTAU	2	1.77	SUMMER	STANDARD36826	TMCLKL	P
29-Jun-21	NE LANTAU	2	17.57	SUMMER	STANDARD36826	TMCLKL	P
29-Jun-21	NE LANTAU	2	10.58	SUMMER	STANDARD36826	TMCLKL	S
29-Jun-21	NW LANTAU	3	21.57	SUMMER	STANDARD36826	TMCLKL	P
29-Jun-21	NW LANTAU	3	9.09	SUMMER	STANDARD36826	TMCLKL	S
29-Jun-21	NE LANTAU	3	1.85	SUMMER	STANDARD36826	TMCLKL	P
29-Jun-21	NW LANTAU	4	2.32	SUMMER	STANDARD36826	TMCLKL	P
29-Jun-21	NW LANTAU	4	1.30	SUMMER	STANDARD36826	TMCLKL	S
13-Jul-21	NW LANTAU	1	3.60	SUMMER	STANDARD36826	TMCLKL	P
13-Jul-21	NE LANTAU	1	3.80	SUMMER	STANDARD36826	TMCLKL	P
13-Jul-21	NW LANTAU	2	32.90	SUMMER	STANDARD36826	TMCLKL	P
13-Jul-21	NW LANTAU	2	13.50	SUMMER	STANDARD36826	TMCLKL	S
13-Jul-21	NE LANTAU	2	13.70	SUMMER	STANDARD36826	TMCLKL	P
13-Jul-21	NE LANTAU	2	8.80	SUMMER	STANDARD36826	TMCLKL	S
21 -Jul-21	NW LANTAU	2	20.30	SUMMER	STANDARD138716	TMCLKL	P
21 -Jul-21	NW LANTAU	2	10.60	SUMMER	STANDARD138716	TMCLKL	S
21 -Jul-21	NE LANTAU	2	11.47	SUMMER	STANDARD138716	TMCLKL	P
21 -Jul-21	NE LANTAU	2	10.04	SUMMER	STANDARD138716	TMCLKL	S
21 -Jul-21	NW LANTAU	3	5.40	SUMMER	STANDARD138716	TMCLKL	P
21 -Jul-21	NE LANTAU	3	8.19	SUMMER	STANDARD138716	TMCLKL	P
27-Jul-21	NW LANTAU	1	32.40	SUMMER	STANDARD36826	TMCLKL	P
27-Jul-21	NW LANTAU	1	11.10	SUMMER	STANDARD36826	TMCLKL	S
27-Jul-21	NE LANTAU	1	10.70	SUMMER	STANDARD36826	TMCLKL	P
27-Jul-21	NE LANTAU	1	4.02	SUMMER	STANDARD36826	TMCLKL	S
27-Jul-21	NW LANTAU	2	5.50	SUMMER	STANDARD36826	TMCLKL	P
27-Jul-21	NW LANTAU	2	2.20	SUMMER	STANDARD36826	TMCLKL	S
27-Jul-21	NE LANTAU	2	6.57	SUMMER	STANDARD36826	TMCLKL	P
27-Jul-21	NE LANTAU	2	5.41	SUMMER	STANDARD36826	TMCLKL	S
29-Jul-21	NW LANTAU	1	10.90	SUMMER	STANDARD138716	TMCLKL	P
29-Jul-21	NW LANTAU	1	2.10	SUMMER	STANDARD138716	TMCLKL	S
29-Jul-21	NE LANTAU	1	5.11	SUMMER	STANDARD138716	TMCLKL	P
29-Jul-21	NE LANTAU	1	4.00	SUMMER	STANDARD138716	TMCLKL	S
29-Jul-21	NW LANTAU	2	17.54	SUMMER	STANDARD138716	TMCLKL	P
29-Jul-21	NW LANTAU	2	6.56	SUMMER	STANDARD138716	TMCLKL	S
29-Jul-21	NE LANTAU	2	11.45	SUMMER	STANDARD138716	TMCLKL	P
29-Jul-21	NE LANTAU	2	4.72	SUMMER	STANDARD138716	TMCLKL	S
29-Jul-21	NE LANTAU	3	2.83	SUMMER	STANDARD138716	TMCLKL	P
29-Jul-21	NE LANTAU	3	1.27	SUMMER	STANDARD138716	TMCLKL	S
3-Aug-21	NW LANTAU	1	1.10	SUMMER	STANDARD36826	TMCLKL	P
3-Aug-21	NE LANTAU	1	1.20	SUMMER	STANDARD36826	TMCLKL	P
3-Aug-21	NE LANTAU	1	1.40	SUMMER	STANDARD36826	TMCLKL	S
3-Aug-21	NW LANTAU	2	13.28	SUMMER	STANDARD36826	TMCLKL	P
3-Aug-21	NW LANTAU	2	9.30	SUMMER	STANDARD36826	TMCLKL	S
3-Aug-21	NE LANTAU	2	13.39	SUMMER	STANDARD36826	TMCLKL	P
3-Aug-21	NE LANTAU	2	7.31	SUMMER	STANDARD36826	TMCLKL	S
3-Aug-21	NW LANTAU	3	23.12	SUMMER	STANDARD36826	TMCLKL	P
3-Aug-21	NW LANTAU	3	2.60	SUMMER	STANDARD36826	TMCLKL	S
3-Aug-21	NE LANTAU	3	2.60	SUMMER	STANDARD36826	TMCLKL	P
5-Aug-21	NW LANTAU	2	2.90	SUMMER	STANDARD138716	TMCLKL	P
5-Aug-21	NW LANTAU	2	1.20	SUMMER	STANDARD138716	TMCLKL	S

5-Aug-21	NE LANTAU	2	7.89	SUMMER	STANDARD138716	TMCLKL	P
5-Aug-21	NE LANTAU	2	2.10	SUMMER	STANDARD138716	TMCLKL	S
5-Aug-21	NW LANTAU	3	27.11	SUMMER	STANDARD138716	TMCLKL	P
5-Aug-21	NW LANTAU	3	4.09	SUMMER	STANDARD138716	TMCLKL	S
5-Aug-21	NE LANTAU	3	10.89	SUMMER	STANDARD138716	TMCLKL	P
5-Aug-21	NE LANTAU	3	8.42	SUMMER	STANDARD138716	TMCLKL	S
9-Aug-21	NW LANTAU	1	2.20	SUMMER	STANDARD138716	TMCLKL	S
9-Aug-21	NW LANTAU	2	16.60	SUMMER	STANDARD138716	TMCLKL	P
9-Aug-21	NW LANTAU	2	6.30	SUMMER	STANDARD138716	TMCLKL	S
9-Aug-21	NE LANTAU	2	17.30	SUMMER	STANDARD138716	TMCLKL	P
9-Aug-21	NE LANTAU	2	6.30	SUMMER	STANDARD138716	TMCLKL	S
9-Aug-21	NW LANTAU	3	18.90	SUMMER	STANDARD138716	TMCLKL	P
9-Aug-21	NW LANTAU	3	3.90	SUMMER	STANDARD138716	TMCLKL	S
9-Aug-21	NE LANTAU	3	1.30	SUMMER	STANDARD138716	TMCLKL	S
24-Aug-21	NE LANTAU	1	5.95	SUMMER	STANDARD36826	TMCLKL	P
24-Aug-21	NE LANTAU	1	3.27	SUMMER	STANDARD36826	TMCLKL	S
24-Aug-21	NW LANTAU	2	28.93	SUMMER	STANDARD36826	TMCLKL	P
24-Aug-21	NW LANTAU	2	7.97	SUMMER	STANDARD36826	TMCLKL	S
24-Aug-21	NE LANTAU	2	10.48	SUMMER	STANDARD36826	TMCLKL	P
24-Aug-21	NE LANTAU	2	7.10	SUMMER	STANDARD36826	TMCLKL	S
24-Aug-21	NE LANTAU	3	2.70	SUMMER	STANDARD36826	TMCLKL	P
24-Aug-21	NE LANTAU	3	0.30	SUMMER	STANDARD36826	TMCLKL	S
7-Sep-21	NW LANTAU	1	0.40	AUTUMN	STANDARD36826	TMCLKL	P
7-Sep-21	NW LANTAU	1	1.10	AUTUMN	STANDARD36826	TMCLKL	S
7-Sep-21	NW LANTAU	2	32.70	AUTUMN	STANDARD36826	TMCLKL	P
7-Sep-21	NW LANTAU	2	6.70	AUTUMN	STANDARD36826	TMCLKL	S
7-Sep-21	NE LANTAU	2	12.16	AUTUMN	STANDARD36826	TMCLKL	P
7-Sep-21	NE LANTAU	2	6.02	AUTUMN	STANDARD36826	TMCLKL	S
7-Sep-21	NW LANTAU	3	4.00	AUTUMN	STANDARD36826	TMCLKL	P
7-Sep-21	NW LANTAU	3	5.50	AUTUMN	STANDARD36826	TMCLKL	S
7-Sep-21	NE LANTAU	3	3.69	AUTUMN	STANDARD36826	TMCLKL	P
7-Sep-21	NE LANTAU	3	3.33	AUTUMN	STANDARD36826	TMCLKL	S
13-Sep-21	NE LANTAU	1	1.20	AUTUMN	STANDARD138716	TMCLKL	P
13-Sep-21	NE LANTAU	1	1.80	AUTUMN	STANDARD138716	TMCLKL	S
13-Sep-21	NW LANTAU	2	25.31	AUTUMN	STANDARD138716	TMCLKL	P
13-Sep-21	NW LANTAU	2	10.49	AUTUMN	STANDARD138716	TMCLKL	S
13-Sep-21	NE LANTAU	2	18.20	AUTUMN	STANDARD138716	TMCLKL	P
13-Sep-21	NE LANTAU	2	8.40	AUTUMN	STANDARD138716	TMCLKL	S
14-Sep-21	NW LANTAU	2	27.80	AUTUMN	STANDARD36826	TMCLKL	P
14-Sep-21	NW LANTAU	2	8.10	AUTUMN	STANDARD36826	TMCLKL	S
14-Sep-21	NE LANTAU	2	16.76	AUTUMN	STANDARD36826	TMCLKL	P
14-Sep-21	NE LANTAU	2	9.34	AUTUMN	STANDARD36826	TMCLKL	S
14-Sep-21	NW LANTAU	3	6.90	AUTUMN	STANDARD36826	TMCLKL	P
14-Sep-21	NW LANTAU	3	4.80	AUTUMN	STANDARD36826	TMCLKL	S
14-Sep-21	NE LANTAU	3	0.40	AUTUMN	STANDARD36826	TMCLKL	S
21-Sep-21	NW LANTAU	2	25.33	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-21	NW LANTAU	2	10.67	AUTUMN	STANDARD36826	TMCLKL	S
21-Sep-21	NE LANTAU	2	13.40	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-21	NE LANTAU	2	6.10	AUTUMN	STANDARD36826	TMCLKL	S
21-Sep-21	NE LANTAU	3	5.60	AUTUMN	STANDARD36826	TMCLKL	P
21-Sep-21	NE LANTAU	3	4.20	AUTUMN	STANDARD36826	TMCLKL	S
7-Oct-21	NE LANTAU	2	7.50	AUTUMN	STANDARD138716	TMCLKL	P
7-Oct-21	NE LANTAU	2	2.80	AUTUMN	STANDARD138716	TMCLKL	S
7-Oct-21	NW LANTAU	3	25.70	AUTUMN	STANDARD138716	TMCLKL	P
7-Oct-21	NW LANTAU	3	10.20	AUTUMN	STANDARD138716	TMCLKL	S
7-Oct-21	NE LANTAU	3	11.60	AUTUMN	STANDARD138716	TMCLKL	P
7-Oct-21	NE LANTAU	3	6.50	AUTUMN	STANDARD138716	TMCLKL	S

19-Oct-21	NW LANTAU	2	24.98	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-21	NW LANTAU	2	10.36	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-21	NE LANTAU	2	16.49	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-21	NE LANTAU	2	10.71	AUTUMN	STANDARD36826	TMCLKL	S
19-Oct-21	NW LANTAU	3	10.76	AUTUMN	STANDARD36826	TMCLKL	P
19-Oct-21	NW LANTAU	3	3.70	AUTUMN	STANDARD36826	TMCLKL	S
26-Oct-21	NW LANTAU	2	12.60	AUTUMN	STANDARD36826	TMCLKL	P
26-Oct-21	NW LANTAU	2	6.90	AUTUMN	STANDARD36826	TMCLKL	S
26-Oct-21	NE LANTAU	2	19.60	AUTUMN	STANDARD36826	TMCLKL	P
26-Oct-21	NE LANTAU	2	10.90	AUTUMN	STANDARD36826	TMCLKL	S
26-Oct-21	NW LANTAU	3	14.65	AUTUMN	STANDARD36826	TMCLKL	P
26-Oct-21	NW LANTAU	3	2.15	AUTUMN	STANDARD36826	TMCLKL	S
27-Oct-21	NW LANTAU	2	31.21	AUTUMN	STANDARD36826	TMCLKL	P
27-Oct-21	NW LANTAU	2	13.10	AUTUMN	STANDARD36826	TMCLKL	S
27-Oct-21	NE LANTAU	2	15.95	AUTUMN	STANDARD36826	TMCLKL	P
27-Oct-21	NE LANTAU	2	9.85	AUTUMN	STANDARD36826	TMCLKL	S
27-Oct-21	NW LANTAU	3	4.09	AUTUMN	STANDARD36826	TMCLKL	P
1-Nov-21	NW LANTAU	2	30.50	AUTUMN	STANDARD138716	TMCLKL	P
1-Nov-21	NW LANTAU	2	11.40	AUTUMN	STANDARD138716	TMCLKL	S
1-Nov-21	NE LANTAU	2	8.53	AUTUMN	STANDARD138716	TMCLKL	P
1-Nov-21	NE LANTAU	2	8.81	AUTUMN	STANDARD138716	TMCLKL	S
1-Nov-21	NW LANTAU	3	4.60	AUTUMN	STANDARD138716	TMCLKL	P
1-Nov-21	NW LANTAU	3	2.40	AUTUMN	STANDARD138716	TMCLKL	S
1-Nov-21	NE LANTAU	3	8.07	AUTUMN	STANDARD138716	TMCLKL	P
1-Nov-21	NE LANTAU	3	1.39	AUTUMN	STANDARD138716	TMCLKL	S
9-Nov-21	NW LANTAU	2	15.50	AUTUMN	STANDARD36826	TMCLKL	P
9-Nov-21	NW LANTAU	2	7.50	AUTUMN	STANDARD36826	TMCLKL	S
9-Nov-21	NE LANTAU	2	17.85	AUTUMN	STANDARD36826	TMCLKL	P
9-Nov-21	NE LANTAU	2	10.45	AUTUMN	STANDARD36826	TMCLKL	S
9-Nov-21	NW LANTAU	3	12.36	AUTUMN	STANDARD36826	TMCLKL	P
9-Nov-21	NW LANTAU	3	1.94	AUTUMN	STANDARD36826	TMCLKL	S
9-Nov-21	NE LANTAU	3	1.40	AUTUMN	STANDARD36826	TMCLKL	P
16-Nov-21	NW LANTAU	2	11.17	AUTUMN	STANDARD36826	TMCLKL	P
16-Nov-21	NW LANTAU	2	6.00	AUTUMN	STANDARD36826	TMCLKL	S
16-Nov-21	NE LANTAU	2	12.07	AUTUMN	STANDARD36826	TMCLKL	P
16-Nov-21	NE LANTAU	2	12.13	AUTUMN	STANDARD36826	TMCLKL	S
16-Nov-21	NW LANTAU	3	25.75	AUTUMN	STANDARD36826	TMCLKL	P
16-Nov-21	NW LANTAU	3	7.00	AUTUMN	STANDARD36826	TMCLKL	S
16-Nov-21	NE LANTAU	3	2.30	AUTUMN	STANDARD36826	TMCLKL	P
17-Nov-21	NE LANTAU	1	4.20	AUTUMN	STANDARD138716	TMCLKL	P
17-Nov-21	NE LANTAU	1	1.80	AUTUMN	STANDARD138716	TMCLKL	S
17-Nov-21	NW LANTAU	2	22.62	AUTUMN	STANDARD138716	TMCLKL	P
17-Nov-21	NW LANTAU	2	10.85	AUTUMN	STANDARD138716	TMCLKL	S
17-Nov-21	NE LANTAU	2	15.37	AUTUMN	STANDARD138716	TMCLKL	P
17-Nov-21	NE LANTAU	2	8.33	AUTUMN	STANDARD138716	TMCLKL	S
17-Nov-21	NW LANTAU	3	1.93	AUTUMN	STANDARD138716	TMCLKL	P
2-Dec-21	NW LANTAU	2	16.61	WINTER	STANDARD138716	TMCLKL	P
2-Dec-21	NW LANTAU	3	19.19	WINTER	STANDARD138716	TMCLKL	P
2-Dec-21	NW LANTAU	2	8.40	WINTER	STANDARD138716	TMCLKL	S
2-Dec-21	NW LANTAU	3	5.10	WINTER	STANDARD138716	TMCLKL	S
2-Dec-21	NE LANTAU	2	15.98	WINTER	STANDARD138716	TMCLKL	P
2-Dec-21	NE LANTAU	2	10.62	WINTER	STANDARD138716	TMCLKL	S
3-Dec-21	NW LANTAU	2	2.60	WINTER	STANDARD138716	TMCLKL	P
3-Dec-21	NW LANTAU	3	24.09	WINTER	STANDARD138716	TMCLKL	P
3-Dec-21	NW LANTAU	2	2.70	WINTER	STANDARD138716	TMCLKL	S
3-Dec-21	NW LANTAU	3	8.21	WINTER	STANDARD138716	TMCLKL	S
3-Dec-21	NE LANTAU	2	17.85	WINTER	STANDARD138716	TMCLKL	P

3-Dec-21	NE LANTAU	3	1.50	WINTER	STANDARD138716	TMCLKL	P
3-Dec-21	NE LANTAU	2	7.55	WINTER	STANDARD138716	TMCLKL	S
3-Dec-21	NE LANTAU	3	2.40	WINTER	STANDARD138716	TMCLKL	S
14-Dec-21	NW LANTAU	2	16.31	WINTER	STANDARD36826	TMCLKL	P
14-Dec-21	NW LANTAU	3	10.60	WINTER	STANDARD36826	TMCLKL	P
14-Dec-21	NW LANTAU	2	6.99	WINTER	STANDARD36826	TMCLKL	S
14-Dec-21	NW LANTAU	3	2.00	WINTER	STANDARD36826	TMCLKL	S
14-Dec-21	NE LANTAU	2	14.67	WINTER	STANDARD36826	TMCLKL	P
14-Dec-21	NE LANTAU	3	4.10	WINTER	STANDARD36826	TMCLKL	P
14-Dec-21	NE LANTAU	2	4.23	WINTER	STANDARD36826	TMCLKL	S
14-Dec-21	NE LANTAU	3	6.10	WINTER	STANDARD36826	TMCLKL	S
15-Dec-21	NW LANTAU	2	34.20	WINTER	STANDARD138716	TMCLKL	P
15-Dec-21	NW LANTAU	2	14.30	WINTER	STANDARD138716	TMCLKL	S
15-Dec-21	NE LANTAU	2	16.72	WINTER	STANDARD138716	TMCLKL	P
15-Dec-21	NE LANTAU	2	9.98	WINTER	STANDARD138716	TMCLKL	S
3-Jan-22	NW LANTAU	1	3.14	WINTER	STANDARD36826	TMCLKL	P
3-Jan-22	NW LANTAU	2	21.72	WINTER	STANDARD36826	TMCLKL	P
3-Jan-22	NW LANTAU	2	11.14	WINTER	STANDARD36826	TMCLKL	S
3-Jan-22	NE LANTAU	2	14.45	WINTER	STANDARD36826	TMCLKL	P
3-Jan-22	NE LANTAU	2	10.34	WINTER	STANDARD36826	TMCLKL	S
3-Jan-22	NE LANTAU	3	4.81	WINTER	STANDARD36826	TMCLKL	P
4-Jan-22	NW LANTAU	2	20.76	WINTER	STANDARD36826	TMCLKL	P
4-Jan-22	NW LANTAU	2	6.94	WINTER	STANDARD36826	TMCLKL	S
4-Jan-22	NE LANTAU	2	9.20	WINTER	STANDARD36826	TMCLKL	P
4-Jan-22	NE LANTAU	2	6.53	WINTER	STANDARD36826	TMCLKL	S
4-Jan-22	NW LANTAU	3	14.76	WINTER	STANDARD36826	TMCLKL	P
4-Jan-22	NW LANTAU	3	6.70	WINTER	STANDARD36826	TMCLKL	S
4-Jan-22	NE LANTAU	3	7.30	WINTER	STANDARD36826	TMCLKL	P
4-Jan-22	NE LANTAU	3	3.47	WINTER	STANDARD36826	TMCLKL	S
21-Jan-22	NW LANTAU	2	17.36	WINTER	STANDARD36826	TMCLKL	P
21-Jan-22	NW LANTAU	2	10.49	WINTER	STANDARD36826	TMCLKL	S
21-Jan-22	NE LANTAU	2	14.56	WINTER	STANDARD36826	TMCLKL	P
21-Jan-22	NE LANTAU	2	10.75	WINTER	STANDARD36826	TMCLKL	S
21-Jan-22	NW LANTAU	3	9.05	WINTER	STANDARD36826	TMCLKL	P
21-Jan-22	NE LANTAU	3	4.79	WINTER	STANDARD36826	TMCLKL	P
25-Jan-22	NE LANTAU	1	6.55	WINTER	STANDARD36826	TMCLKL	P
25-Jan-22	NE LANTAU	1	5.59	WINTER	STANDARD36826	TMCLKL	S
25-Jan-22	NW LANTAU	2	28.02	WINTER	STANDARD36826	TMCLKL	P
25-Jan-22	NW LANTAU	2	13.80	WINTER	STANDARD36826	TMCLKL	S
25-Jan-22	NE LANTAU	2	8.92	WINTER	STANDARD36826	TMCLKL	P
25-Jan-22	NE LANTAU	2	4.24	WINTER	STANDARD36826	TMCLKL	S
25-Jan-22	NW LANTAU	3	7.68	WINTER	STANDARD36826	TMCLKL	P
10-Feb-22	NW LANTAU	2	21.03	WINTER	STANDARD36826	TMCLKL	P
10-Feb-22	NW LANTAU	2	7.32	WINTER	STANDARD36826	TMCLKL	S
10-Feb-22	NE LANTAU	2	18.50	WINTER	STANDARD36826	TMCLKL	P
10-Feb-22	NE LANTAU	2	10.40	WINTER	STANDARD36826	TMCLKL	S
10-Feb-22	NW LANTAU	3	5.70	WINTER	STANDARD36826	TMCLKL	P
10-Feb-22	NW LANTAU	3	1.55	WINTER	STANDARD36826	TMCLKL	S
11-Feb-22	NW LANTAU	2	10.84	WINTER	STANDARD36826	TMCLKL	P
11-Feb-22	NW LANTAU	2	11.10	WINTER	STANDARD36826	TMCLKL	S
11-Feb-22	NE LANTAU	2	16.21	WINTER	STANDARD36826	TMCLKL	P
11-Feb-22	NE LANTAU	2	9.39	WINTER	STANDARD36826	TMCLKL	S
11-Feb-22	NW LANTAU	3	24.96	WINTER	STANDARD36826	TMCLKL	P
11-Feb-22	NW LANTAU	3	2.60	WINTER	STANDARD36826	TMCLKL	S
24-Feb-22	NW LANTAU	2	18.70	WINTER	STANDARD36826	TMCLKL	P
24-Feb-22	NW LANTAU	2	8.70	WINTER	STANDARD36826	TMCLKL	S
24-Feb-22	NE LANTAU	2	7.92	WINTER	STANDARD36826	TMCLKL	P

24-Feb-22	NE LANTAU	2	8.90	WINTER	STANDARD36826	TMCLKL	S
24-Feb-22	NW LANTAU	3	16.54	WINTER	STANDARD36826	TMCLKL	P
24-Feb-22	NW LANTAU	3	5.16	WINTER	STANDARD36826	TMCLKL	S
24-Feb-22	NE LANTAU	3	7.07	WINTER	STANDARD36826	TMCLKL	P
24-Feb-22	NE LANTAU	3	1.11	WINTER	STANDARD36826	TMCLKL	S
25-Feb-22	NW LANTAU	2	16.14	WINTER	STANDARD36826	TMCLKL	P
25-Feb-22	NW LANTAU	2	7.22	WINTER	STANDARD36826	TMCLKL	S
25-Feb-22	NE LANTAU	2	17.97	WINTER	STANDARD36826	TMCLKL	P
25-Feb-22	NE LANTAU	2	7.73	WINTER	STANDARD36826	TMCLKL	S
25-Feb-22	NW LANTAU	3	9.58	WINTER	STANDARD36826	TMCLKL	P
25-Feb-22	NW LANTAU	3	3.36	WINTER	STANDARD36826	TMCLKL	S
25-Feb-22	NE LANTAU	3	1.00	WINTER	STANDARD36826	TMCLKL	P
25-Feb-22	NE LANTAU	3	2.60	WINTER	STANDARD36826	TMCLKL	S

C.2 HZMB Post-construction Chinese White Dolphin Sighting Database in NEL and NWL (2019-2022)

(Note: P = sightings made on primary lines; S = sightings made on secondary lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
13-Mar-19	1	1018	2	NW LANTAU	2	131	ON	HKLR	815946	804673	SPRING	NONE	P
13-Mar-19	2	1131	2	NW LANTAU	1	371	ON	HKLR	830873	804580	SPRING	NONE	P
18-Mar-19	1	1140	2	NW LANTAU	2	853	ON	HKLR	829406	807254	SPRING	NONE	S
23-Apr-19	1	1102	2	NW LANTAU	2	58	ON	HKLR	825168	805485	SPRING	NONE	P
7-May-19	1	1137	3	NW LANTAU	2	254	ON	HKLR	827293	806457	SPRING	NONE	P
3-Jun-19	1	1138	4	NW LANTAU	3	121	ON	HKLR	827734	807488	SUMMER	NONE	P
6-Jun-19	1	1312	1	NW LANTAU	3	77	ON	HKLR	814894	804681	SUMMER	NONE	P
16-Jul-19	1	1152	2	NW LANTAU	2	197	ON	HKLR	829052	807326	SUMMER	NONE	S
24-Jul-19	1	1330	1	NW LANTAU	2	ND	OFF	HKLR	814451	804453	SUMMER	NONE	-
4-Sep-19	1	1046	2	NW LANTAU	2	311	ON	HKLR	823375	805440	AUTUMN	NONE	P
11-Sep-19	1	1058	3	NW LANTAU	2	430	ON	HKLR	829316	807975	AUTUMN	NONE	S
9-Oct-19	1	1221	1	NW LANTAU	3	57	ON	TMCLKL	827538	805469	AUTUMN	NONE	P
19-Nov-19	1	1144	1	NW LANTAU	3	386	ON	TMCLKL	827671	805583	AUTUMN	NONE	P
12-Dec-19	1	1016	11	NW LANTAU	2	55	ON	TMCLKL	815115	804650	WINTER	NONE	P
12-Dec-19	2	1112	1	NW LANTAU	3	36	ON	TMCLKL	823299	804678	WINTER	NONE	P
16-Dec-19	1	1126	1	NW LANTAU	2	674	ON	TMCLKL	827556	807529	WINTER	NONE	P

18-Feb-20	1	1014	1	NW LANTAU	2	94	ON	TMCLKL	818137	805450	WINTER	NONE	P
18-Feb-20	2	1059	2	NW LANTAU	3	176	ON	TMCLKL	826011	805136	WINTER	NONE	P
20-Feb-20	1	1057	10	NW LANTAU	2	272	ON	TMCLKL	825978	804817	WINTER	NONE	P
24-Feb-20	1	1115	3	NW LANTAU	2	69	ON	TMCLKL	826515	807537	WINTER	NONE	P
3-Mar-20	1	1310	1	NW LANTAU	3	3	ON	TMCLKL	817341	804686	SPRING	NONE	P
14-Apr-20	1	1002	1	NW LANTAU	2	210	ON	TMCLKL	815038	804702	SPRING	NONE	P
20-Jul-20	1	1201	1	NW LANTAU	2	208	ON	TMCLKL	827414	806478	SUMMER	NONE	P
21-Aug-20	1	1022	1	NW LANTAU	1	337	ON	TMCLKL	817308	804686	SUMMER	NONE	P
15-Sep-20	1	1213	2	NW LANTAU	1	218	ON	TMCLKL	827104	806457	AUTUMN	NONE	P
17-Nov-20	1	1018	2	NW LANTAU	3	105	ON	TMCLKL	818225	805409	AUTUMN	NONE	P
10-Dec-20	1	1326	2	NW LANTAU	2	6	ON	TMCLKL	822941	806253	WINTER	NONE	S
25-Jan-21	1	1057	1	NW LANTAU	2	237	ON	TMCLKL	825934	804590	WINTER	NONE	P
25-Jan-21	2	1123	8	NW LANTAU	2	852	ON	TMCLKL	831175	803417	WINTER	NONE	P
25-Jan-21	3	1329	2	NW LANTAU	2	165	ON	TMCLKL	826628	806507	WINTER	NONE	P
26-Jan-21	1	1013	1	NW LANTAU	1	55	ON	TMCLKL	817461	805469	WINTER	NONE	P
28-Jan-21	1	1052	1	NW LANTAU	3	67	ON	TMCLKL	824681	805453	WINTER	NONE	P
28-Jan-21	2	1105	4	NW LANTAU	2	85	ON	TMCLKL	825689	805465	WINTER	NONE	P
28-Jan-21	4	1213	2	NW LANTAU	2	74	ON	TMCLKL	827103	807466	WINTER	NONE	P
28-Jan-21	3	1133	6	NW LANTAU	2	62	ON	TMCLKL	827494	805469	WINTER	NONE	S

2-Feb-21	1	1011	7	NW LANTAU	1	215	ON	TMCLKL	816841	805468	WINTER	NONE	P
2-Feb-21	3	1127	1	NW LANTAU	2	112	ON	TMCLKL	829332	805473	WINTER	NONE	P
2-Feb-21	2	1050	1	NW LANTAU	2	1589	ON	TMCLKL	820219	805032	WINTER	NONE	S
8-Feb-21	1	1022	3	NW LANTAU	2	172	ON	TMCLKL	816378	804643	WINTER	NONE	P
23-Feb-21	1	1136	1	NW LANTAU	2	71	ON	TMCLKL	826949	806446	WINTER	NONE	P
3-Mar-21	1	1011	3	NW LANTAU	3	404	ON	TMCLKL	816830	805427	SPRING	NONE	P
3-Mar-21	2	1151	2	NW LANTAU	2	121	ON	TMCLKL	828365	807489	SPRING	NONE	P
17-Mar-21	1	1016	2	NW LANTAU	1	786	ON	TMCLKL	816121	805487	SPRING	NONE	P
11-May-21	1	1046	5	NW LANTAU	3	191	ON	TMCLKL	825639	808524	SPRING	NONE	P
13-Sep-21	1	1053	1	NW LANTAU	2	3	ON	TMCLKL	827184	805396	AUTUMN	NONE	P
16-Nov-21	1	1023	1	NW LANTAU	2	238	ON	TMCLKL	817297	804676	AUTUMN	NONE	P
17-Nov-21	1	1125	3	NW LANTAU	2	152	ON	TMCLKL	828000	807231	AUTUMN	NONE	P
3-Jan-22	2	1116	2	NW LANTAU	2	392	ON	TMCLKL	827559	806169	WINTER	NONE	P
3-Jan-22	1	1104	1	NW LANTAU	2	142	ON	TMCLKL	826896	805262	WINTER	NONE	S
4-Jan-22	1	1020	2	NW LANTAU	2	28	ON	TMCLKL	815381	804682	WINTER	NONE	P
4-Jan-22	2	1205	4	NW LANTAU	2	1394	ON	TMCLKL	824649	805165	WINTER	NONE	S
21-Jan-22	1	1048	1	NW LANTAU	3	99	ON	TMCLKL	825047	805464	WINTER	NONE	P
10-Feb-22	1	1141	6	NW LANTAU	2	106	ON	TMCLKL	823813	807542	WINTER	NONE	P
24-Feb-22	1	1106	1	NW LANTAU	2	125	ON	TMCLKL	827629	804615	WINTER	NONE	P

25-Feb-22	1	1113	1	NW LANTAU	2	132	ON	TMCLKL	829288	805462	WINTER	NONE	P

Appendix D

Distribution Patterns of Dolphin Sightings in NEL and NWL Monitoring Areas

N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

0 375 750 1,500 2,250 3,000
Meters

SIGHTING LOCATIONS

- BASELINE MONITORING
- CONSTRUCTION PHASE
- POST-CONSTRUCTION PHASE

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

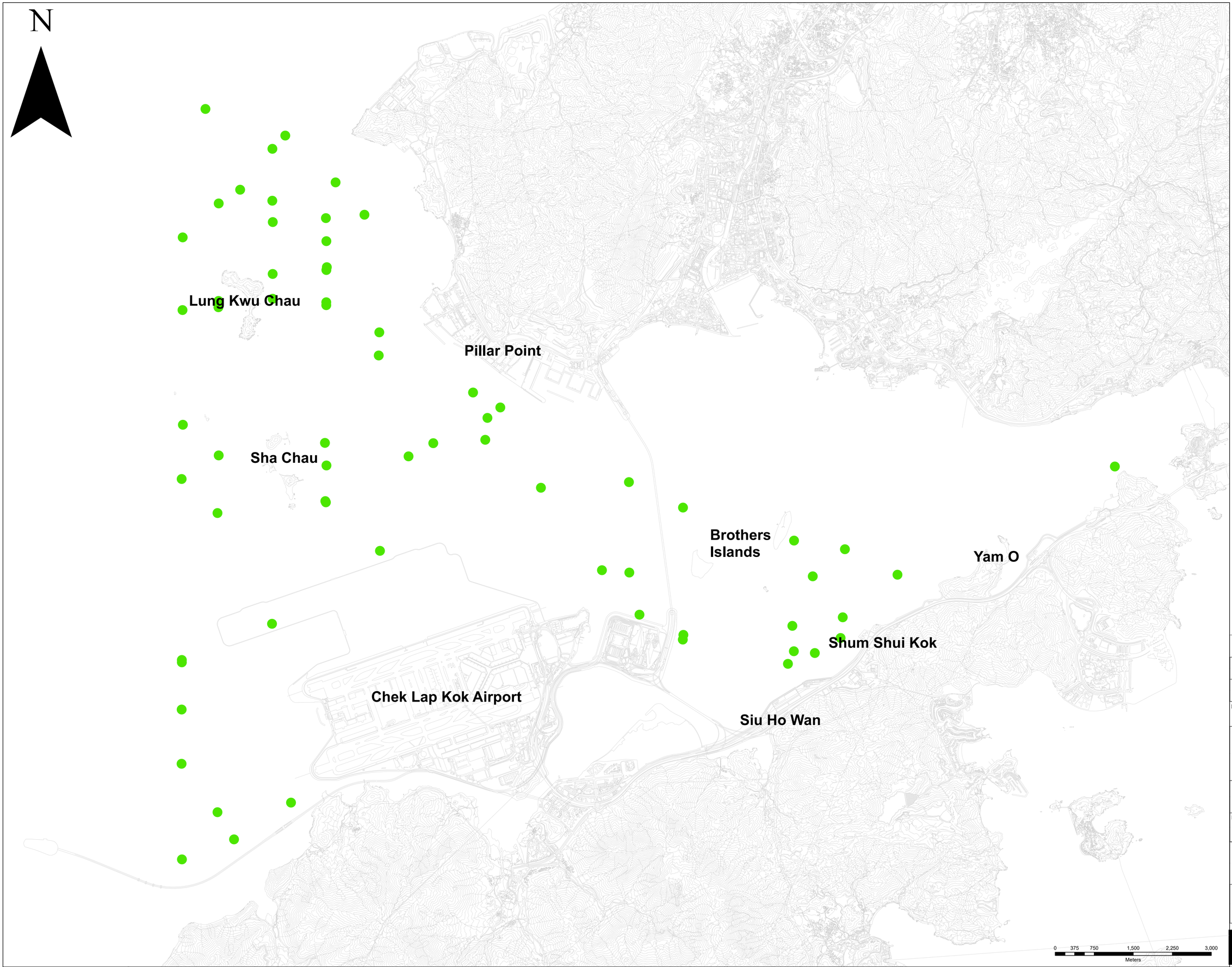
Figure title
DISTRIBUTION OF
CHINESE WHITE DOLPHIN SIGHTINGS

Drawing No.	Revision	Scale
0002/20/001	1	1:32000 in A1

Client
[redacted]RTMENT OF HKSAR

Contractor
CHINA HARBOUR ENGINEERING CO., LTD

Consultant
[redacted]CHNICAL SERVICES LIMITED



	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION OF
CHINESE WHITE DOLPHIN SIGHTINGS-
BASELINE MONITORING

Drawing No.	Revision	Scale
0002/20/002	1	1:32000 in A1

Client
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Contractor
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N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

0 375 750 1,500 2,250 3,000
Meters

LEGEND

- SIGHTING LOCATIONS

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION OF
CHINESE WHITE DOLPHIN SIGHTINGS-
CONSTRUCTION PHASE

Drawing No.	Revision	Scale
0002/20/003	1	1:32000 in A1

Client
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Contractor
CHINA HARBOUR ENGINEERING CO., LTD

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N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

0 375 750 1,500 2,250 3,000
Meters

LEGEND

- SIGHTING LOCATIONS

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION OF
CHINESE WHITE DOLPHIN SIGHTINGS-
POST-CONSTRUCTION PHASE

Drawing No.	Revision	Scale
0002/20/004	1	1:32000 in A1

Client
[redacted]RTMENT OF HKSAR

Contractor
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Appendix E

Dolphin Group Sizes

N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

0 375 750 1,500 2,250 3,000
Meters

GROUP SIZES

Baseline Monitoring

- 1 - 4 (small size)
- 5 - 9 (moderate size)
- 10 - 20 (large size)

Construction Phase

- 1 - 4 (small size)
- 5 - 9 (moderate size)
- 10 - 20 (large size)

Post-Construction Phase

- 1 - 4 (small size)
- 5 - 9 (moderate size)
- 10 - 20 (large size)

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION ANALYSIS OF CHINESE WHITE DOLPHIN

Drawing No.	Revision	Scale
0002/20/005	1	1:32000 in A1

Client
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Contractor
CHINA HARBOUR ENGINEERING CO., LTD

Consultant
[redacted]CHNICAL SERVICES LIMITED

N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

0 375 750 1,500 2,250 3,000
Meters

Group Size

- 1 - 4 (small size)
- 5 - 9 (moderate size)
- 10 - 20 (large size)

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION ANALYSIS OF
CHINESE WHITE DOLPHIN-BASELINE MONITORING

Drawing No.	Revision	Scale
0002/20/006	1	1:32000 in A1

Client
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Contractor
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N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

Group Size

- 1 - 4 (small size)
- 5 - 9 (moderate size)
- 10 - 20 (large size)

0 375 750 1,500 2,250 3,000

Meters

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION ANALYSIS OF
CHINESE WHITE DOLPHIN-CONSTRUCTION PHASE

Drawing No.	Revision	Scale
0002/20/007	1	1:32000 in A1

Client
[redacted]RTMENT OF HKSAR

Contractor
CHINA HARBOUR ENGINEERING CO., LTD

Consultant
[redacted]CHNICAL SERVICES LIMITED

N

Lung Kwu Chau

Pillar Point

Sha Chau

Brothers Islands

Yam O

Shum Shui Kok

Chek Lap Kok Airport

Siu Ho Wan

0 375 750 1,500 2,250 3,000
Meters

Group Size

- 1 - 4 (small size)
- 5 - 9 (moderate size)
- 10 - 20 (large size)

	Name	Date
Drawn	SMR	24 NOV 2022
Checked	CL	24 NOV 2022

Project No.
0002/20

Project Title
CONTACT NO. HY/2019/01
HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – PHASE 2 AND OTHER WORKS

Figure title
DISTRIBUTION ANALYSIS OF
CHINESE WHITE DOLPHIN-
POST-CONSTRUCTION PHASE

Drawing No.	Revision	Scale
0002/20/008	1	1:32000 in A1

Client
[redacted]RTMENT OF HKSAR

Contractor
CHINA HARBOUR ENGINEERING CO., LTD

Consultant
[redacted]CHNICAL SERVICES LIMITED