Quarterly EM&A Report (June 2020 - August 2020)

0002/20/ED/0175 02 |

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

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

Date 12 January 2021
Our Ref. MCL/ED/0006/2021/C

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai, Hong Kong

BY EMAIL

Attn.: Mr. Manson Yeung, 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 June 2020 to August 2020 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
Ramboll Attn: Mr. Y. H. Hui, Mr. K. C. Chan
CHEC Attn: Mr. Marko Chan, Mr. Matthew Wu

Ref.: HYDHZMBEEM00_0_8336L.21

14 January 2021

By Fax (3748 8900) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
550 Cheung Tung Road, Lantau, Hong Kong

Attention: Mr. Jason Yu

Dear Sir,

Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2019/01
HZMB HKBCF – Phase 2 and Other Works
Quarterly EM&A Report for June 2020 - August 2020

Reference is made to the Environmental Team's submission of Quarterly EM&A Report for June 2020 - August 2020 certified by the ET Leader (ET's ref.: "MCL/ED/0006/2021/C" dated 12 January 2021) and provided to us via e-mail on 12 January 2021.

We are pleased to inform you that we have no further comments on the captioned submission.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

Yours faithfully,
For and on behalf of
Ramboll Hong Kong Limited

Manson Yeung
Independent Environmental Checker
HZMB HKBCF

c.c.	HyD	Attn.: Mr. Patrick Ng	(By Fax: 3188 6614)
	HyD	Attn.: Mr. Alan Ip	(By Fax: 3188 6614)
	Fugro	Attn.: Mr. Calvin Leung	(By Fax: 2450 6138)
	CHEC	Attn.: Mr. Johnason Ko	(By Fax: 2887 3104)

Internal: DY, YH, ENPO Site

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 (June 2020 - August 2020)
Fugro Project No.	0002/20
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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

Revision History

Issue	Date	Comments on Content	Prepared and checked By	Review By	Certified By
02	11 January 2021	Waiting IEC comments	KH	CY	MP
01	26 September 2020	IEC comments release	KH	CY	MP

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 2nd Quarterly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 June 2020 to 31 August 2020.

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

No reporting change in the reporting period.

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 2nd 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 June 2020 to 31 August 2020 (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
	Environmental Site Supervisor	Mr. Manson Yeung	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:

- Security measure at existing gate at South Public Transport Interchanges (SPTI) (land-based);
- Recessed Cover at South Public Transport Interchanges (SPTI) and North Public Transport Interchanges (NPTI) (land-based);
- UPS room near building 062 (land-based);
- Minor Works at Passenger Clearance Building (PCB) (land-based);
- Excavation at Vehicle Clearance Plaza (VCP) and WA3 (land-based);
- Road & Drain works at South Public Transport Interchanges (SPTI) and North Public Transport Interchanges (NPTI) (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);
- Site office demolition at WA3 (land-based);
- Refuse collection point at 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;
- Conceal Conduits Works at Vehicle Clearance Plaza (VCP) (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 suspended 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 month. 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.

2.2 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 The post-construction dolphin monitoring conducted is vessel-based and combines line-transect and photo-ID methodology, which have adopted. To avoid redundancy in the monitoring effort, the findings of Contract No. HY/2012/08 were used for this reporting month. The details 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 4 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 In accordance with the Dolphin Monitoring Survey Findings and Analysis in Section 3.3.9 and 3.3.10 of **Appendix I**, low dolphin occurrence of dolphins within the survey areas in both NEL and NWL were observed during the monitoring period. Moreover, such significantly and dramatically decrease of dolphin usage in those area has also been observed in this reporting quarter. In addition, the dolphin usage in North Lantau water has not only shown no sign of recovery, but also has continued to decline to the lowest ever level. However, it is critical to continuously monitor the dolphin usage in North Lantau region, in order to determine whether there is any sign of recovery under the post-construction activities of the HKBCF next quarter.

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 4 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:

<u>Air Quality Impact</u>

- The contractor was reminded dust suppression should be provided during breaking.

Construction Noise Impact

- No specific observation was identified in the reporting period.

Water Quality Impact

- The contractor was reminded the stagnant water should be removed.
- The contractor was reminded to fix the leakage of internal pipe connection of Wetsep.

Chemical and Waste Management

- The contractor was reminded to maintain housekeeping.
- The contractor was reminded the stain should be cleaned up immediately.

Landscape and Visual Impact

- No specific observation was identified in the reporting period.

Permit/ Licenses

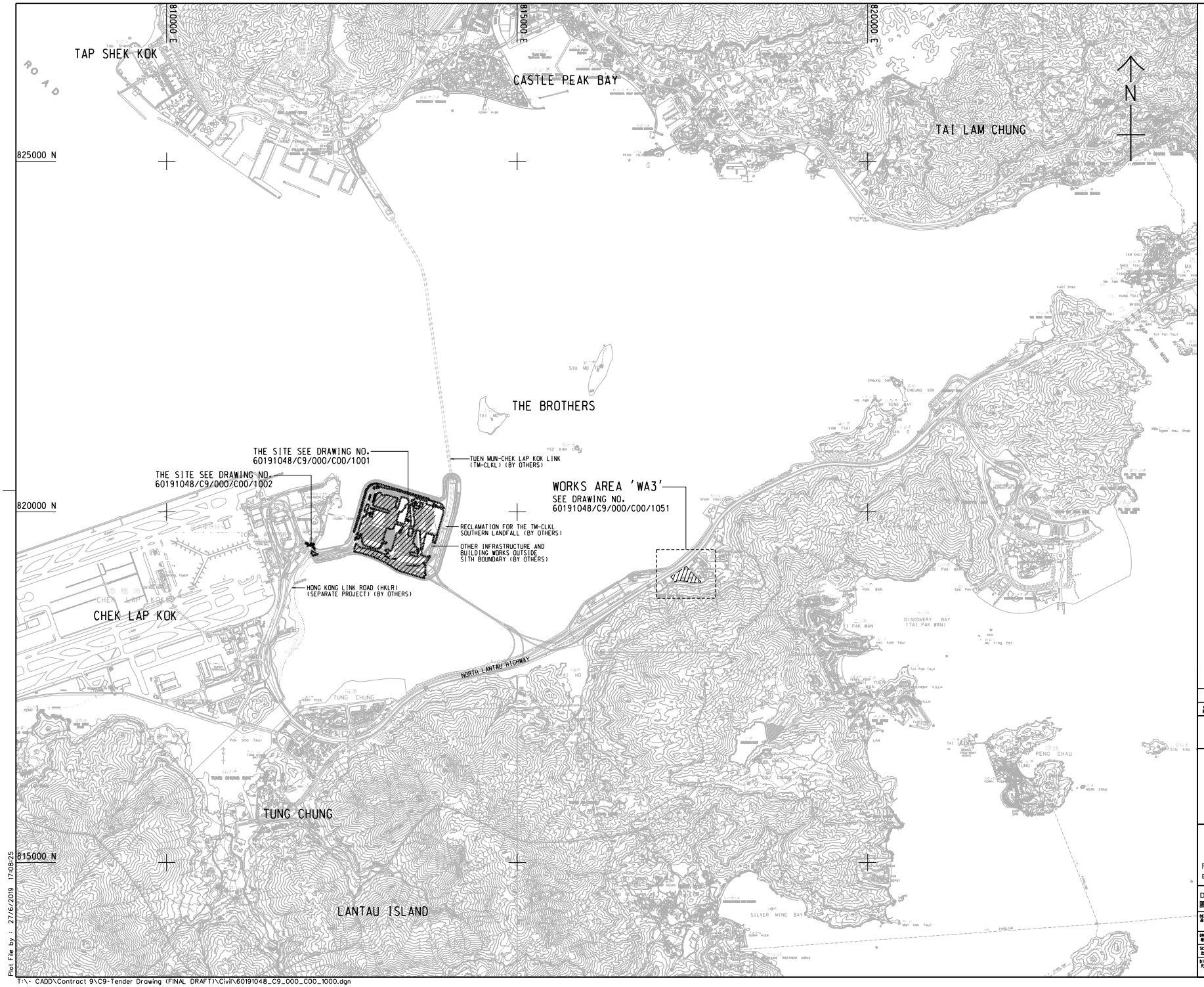
- No specific observation was identified in the reporting period.

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	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	
SCALE 比例 A1 1 : 25000		
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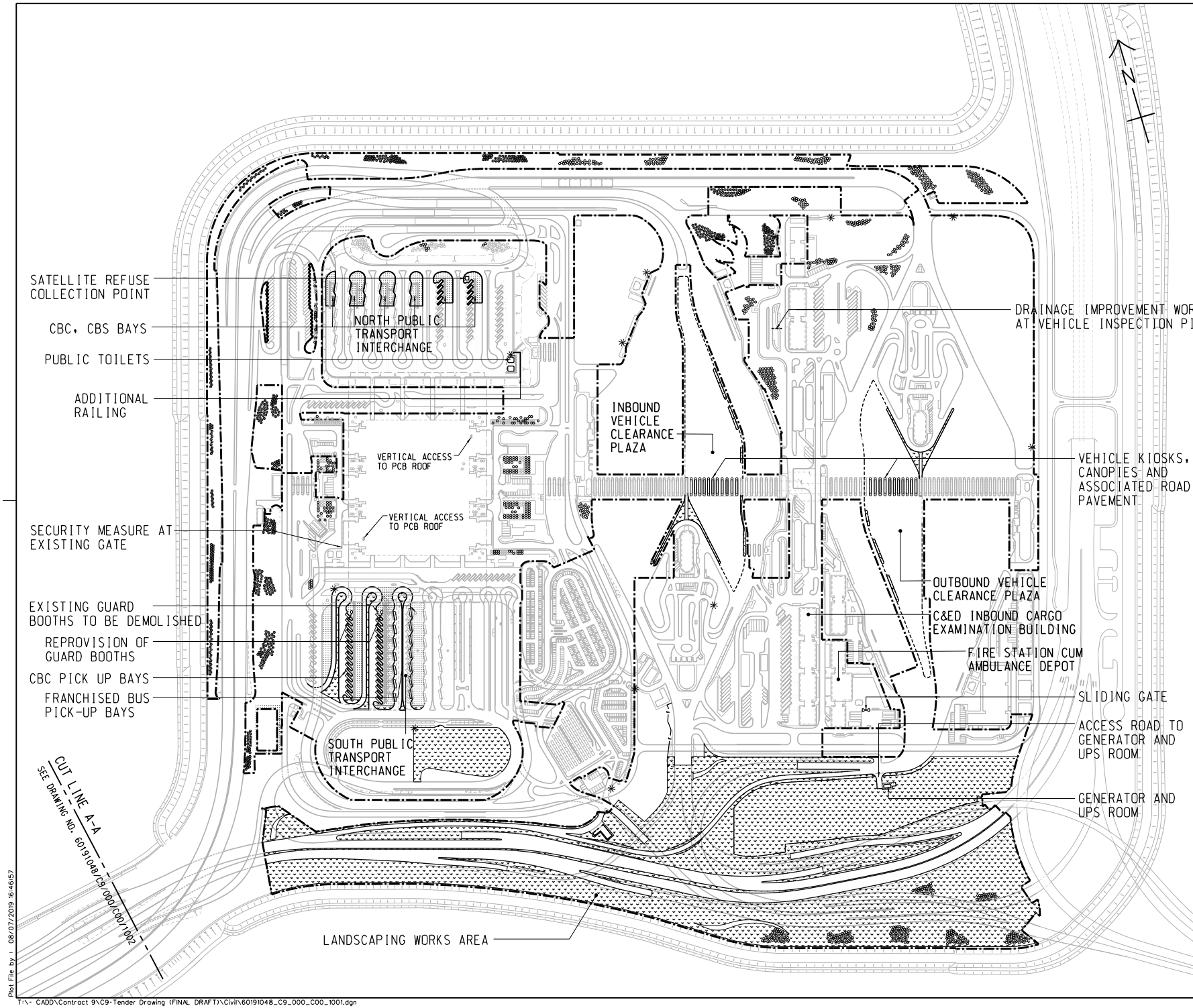

REMARKS:

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 內容修訂	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
TTHK	HY/2019/01	SCI
DRAWN BY 繪圖 JC	STATUS 狀態	
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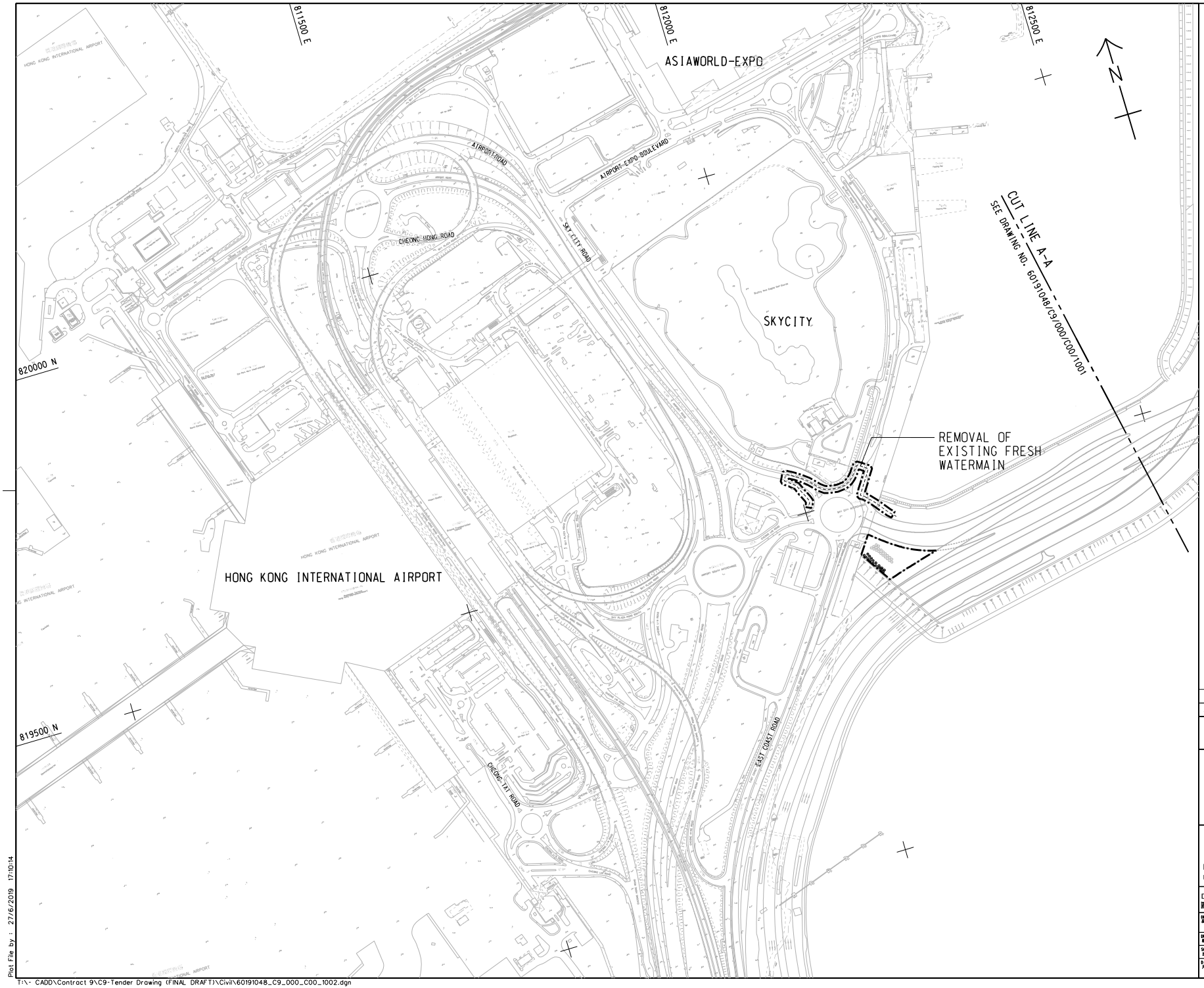

NOTE:

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	CHKD'D 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

817200 E
817400 E
817600 E
819200 N
819000 N
NORTH LANTAU HIGHWAY
CHEUNG TUNG ROAD
Siu Ho Wan Sewage Treatment Works

WORKS AREA FOR CONTRACT NO. HY/2019/01 AFTER 30 JUNE 2020

THE PROJECT MANAGER'S AND CONTRACTOR'S SITE ACCOMMODATION COMPOUND FOR HKBCF FOR CONTRACT NO. HY/2019/01

WORKS AREA TO BE SURRENDERED BY CONTRACT NO. HY/2019/01 ON 30 JUN 2020 OR LATER DATE AS INSTRUCTED

WORKS AREA FOR CONTRACT NO. HY/2019/01

10m WIDE COMMON ACCESS TO BE MAINTAINED UNDER CONTRACT NO. HY/2019/01

WORKS AREA TO BE SURRENDERED BY CONTRACT NO. HY/2019/01 ON 30 JUN 2020 OR LATER DATE AS INSTRUCTED

WORKS AREA TO BE SURRENDERED BY CONTRACT NO. HY/2019/01 ON 30 JUN 2020 OR LATER DATE AS INSTRUCTED

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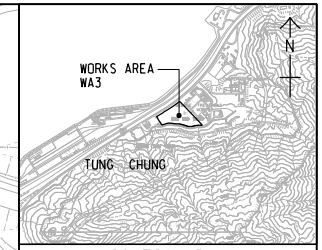
301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321



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	BY 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

WORKS AREA WA3

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

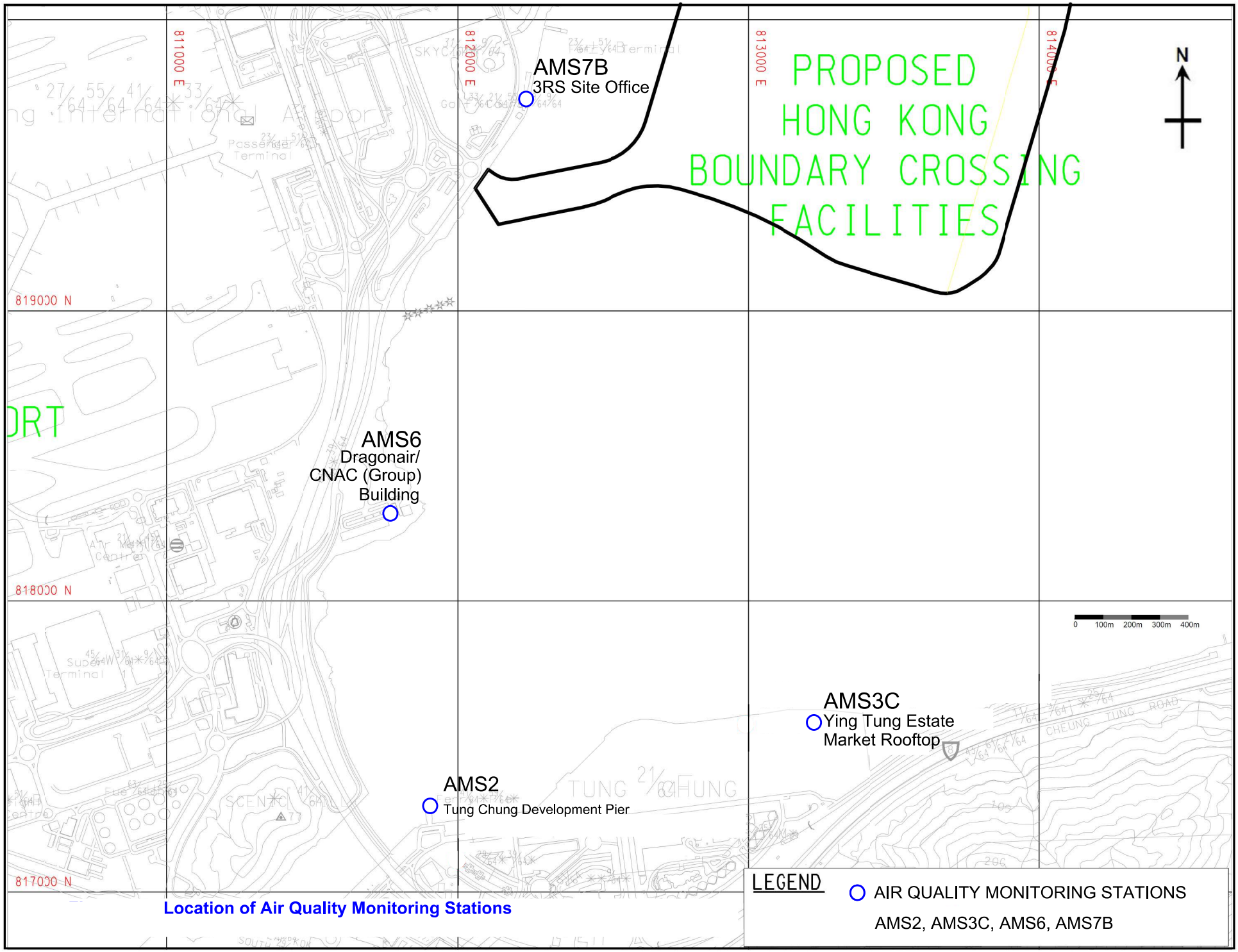
DRG.NO. 圖紙編號 60191048/C9/000/C00/1051

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 負責人
TTHK	HY/2019/01	SCI
DRAWN BY 繪圖	STATUS 狀態	
JC		
SCALE 比例		
A1 1 : 1000		
DIMENSIONS ARE IN 尺寸單位	© COPYRIGHT RESERVED 版權所有	
METRES		

Plot File by : 28/6/2019 9:34:39
T:\- CADD\Contract 9\C9-Tender Drawing (FINAL DRAFT)\Civil\60191048_C9_000_C00_1051.dgn

Figure 2

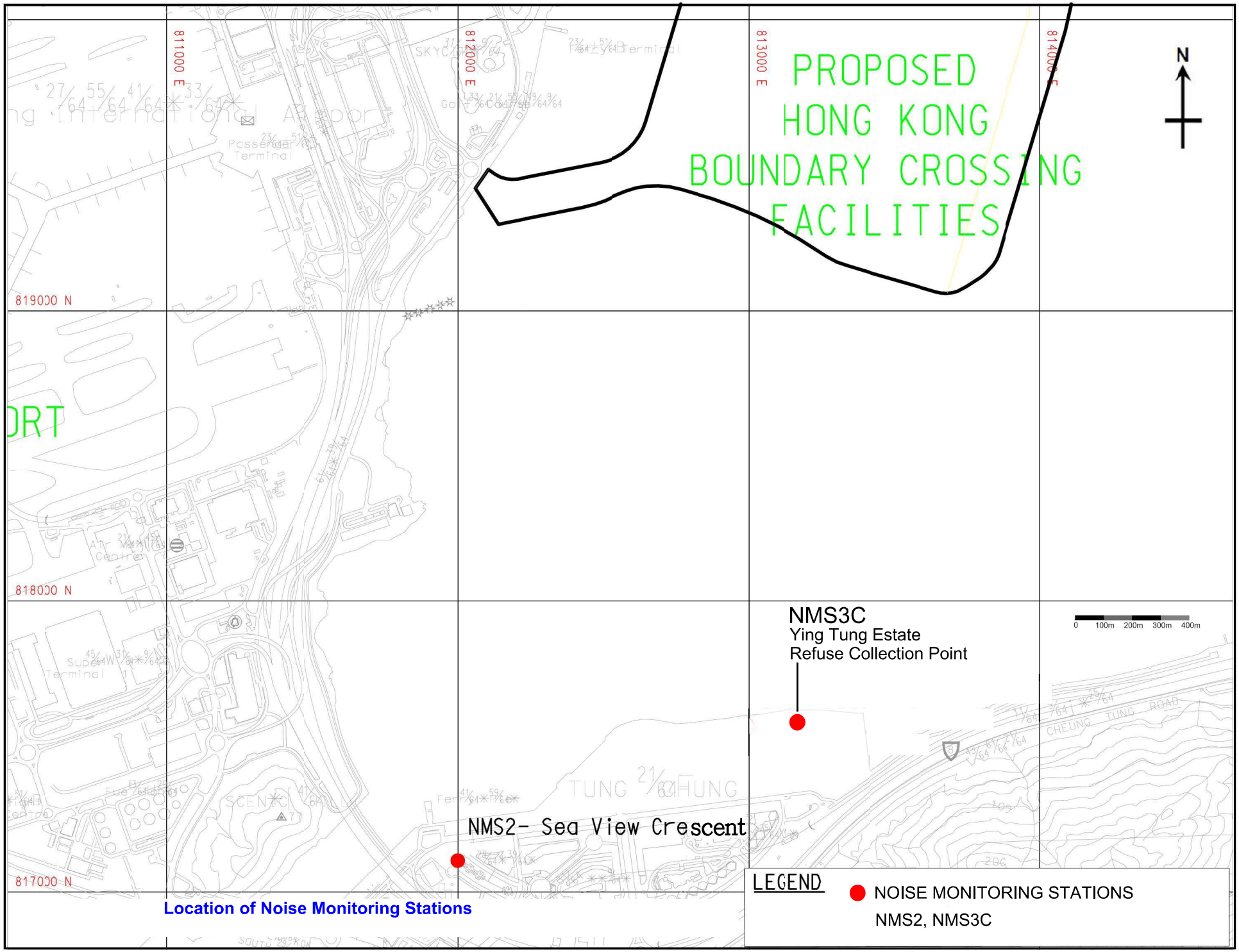
The Location of the Air Quality Monitoring Station



Location of Air Quality Monitoring Stations

Figure 3

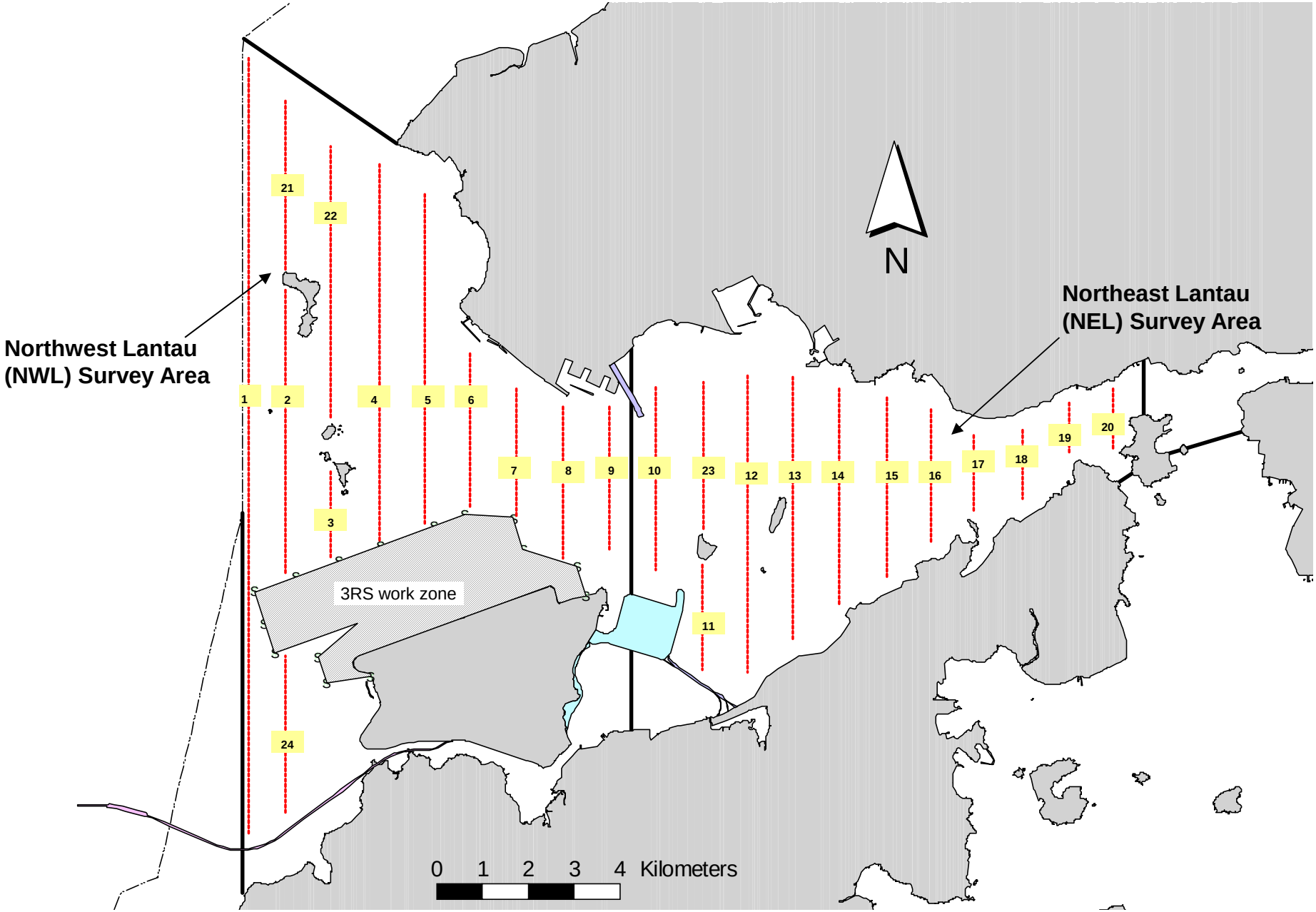
The Location of the Noise Monitoring Station



Location of Noise Monitoring Stations

Figure 4

Post-Construction Dolphin Monitoring Line Transect Layout Map



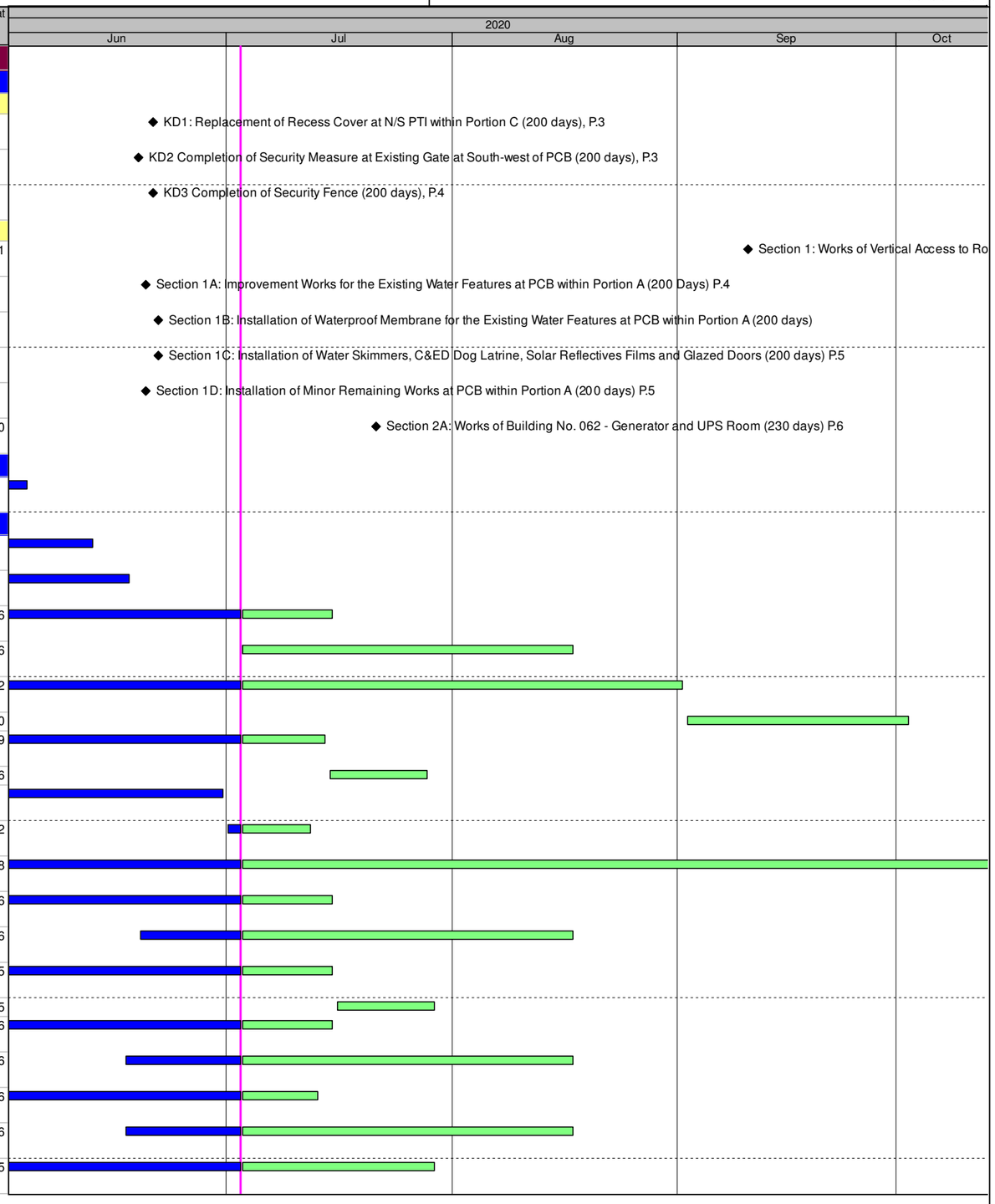
Transect Line Layout in Northwest and Northeast Lantau Survey Areas

Appendix A

Construction Programme

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works — **08-Jul-20**

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
3mth Rolling Programme for HKZMB Phase 2 and Other Works (HY/2019/01)					
CONTRACT DATES					
Key Date					
A0110	KD1: Replacement of Recess Cover at N/S PTI within Portion C (200 days), P.3	0		21-Jun-20 A	
A0130	KD2 Completion of Security Measure at Existing Gate at South-west of PCB (200 days), P.3	0		19-Jun-20 A	
A0140	KD3 Completion of Security Fence (200 days), P.4	0		21-Jun-20 A	
Sectional Completion					
A0210	Section 1: Works of Vertical Access to Roof of PCB within Portion A (270 days) P.4	0		10-Sep-20*	-11
A0220	Section 1A: Improvement Works for the Existing Water Features at PCB within Portion A (200 Days) P.4	0		20-Jun-20 A	
A0230	Section 1B: Installation of Waterproof Membrane for the Existing Water Features at PCB within Portion A (200 days)	0		21-Jun-20 A	
A0240	Section 1C: Installation of Water Skimmers, C&ED Dog Latrine, Solar Reflectives Films and Glazed Doors (200 days) P.5	0		21-Jun-20 A	
A0250	Section 1D: Installation of Minor Remaining Works at PCB within Portion A (200 days) P.5	0		20-Jun-20 A	
A0270	Section 2A: Works of Building No. 062 - Generator and UPS Room (230 days) P.6	0		21-Jul-20*	0
SUBMISSIONS					
A6180	Acceptance of Concrete Mix	0	04-May-20 A	03-Jun-20 A	
CONTRACTOR'S DESIGN					
A4945	Acceptance of Design for Skylight	0	30-May-20 A	12-Jun-20 A	
A4951	Acceptance of Design for BS & ELV Items (062)	0	17-Apr-20 A	17-Jun-20 A	
A4951A	Design for BS & ELV Items (SPTI)	13	01-May-20 A	15-Jul-20	926
A4951B	Acceptance of Design for BS & ELV Items (SPTI)	46	03-Jul-20 A	17-Aug-20	926
A4952	Design for BS & ELV Items (002)	52	04-Dec-19 A	01-Sep-20	712
A4953	Acceptance of Design for BS & ELV Items (002)	31	02-Sep-20	02-Oct-20	880
A4954	Design for BS & ELV Items (003)	10	04-Dec-19 A	14-Jul-20	769
A4955	Acceptance of Design for BS & ELV Items (003)	14	15-Jul-20	28-Jul-20	946
A4956	Design for BS & ELV Items (007)	0	04-Dec-19 A	30-Jun-20 A	
A4957	Acceptance of Design for BS & ELV Items (007)	10	01-Jul-20 A	12-Jul-20	962
A4958	Design for BS & ELV Items (Kiosks)	101	04-Dec-19 A	31-Oct-20	678
A5020	Design for Public Address (PA) System	13	04-Dec-19 A	15-Jul-20	926
A5025	Acceptance of Design for Public Address (PA) System	46	19-Jun-20 A	17-Aug-20	926
A5030	Design for Access Control and Security Alarm (ACS)	13	04-Dec-19 A	15-Jul-20	945
A5035	Acceptance of Design for Access Control and Security Alarm (ACS)	14	16-Jul-20	29-Jul-20	945
A5040	Design for Closed Circuit Television (CCTV) System	13	04-Dec-19 A	15-Jul-20	926
A5045	Acceptance of Design for Closed Circuit Television (CCTV) System	46	17-Jun-20 A	17-Aug-20	926
A5080	Design for Coach Parking Information System (CPIS)	11	04-Dec-19 A	13-Jul-20	926
A5085	Acceptance of Design for Coach Parking Information System (CPIS)	46	17-Jun-20 A	17-Aug-20	926
A5100	Acceptance of Design for Island Wide SCADA	27	11-Feb-20 A	29-Jul-20	945



Actual Work ◆ ◆ Milestone
Remaining Work
Critical

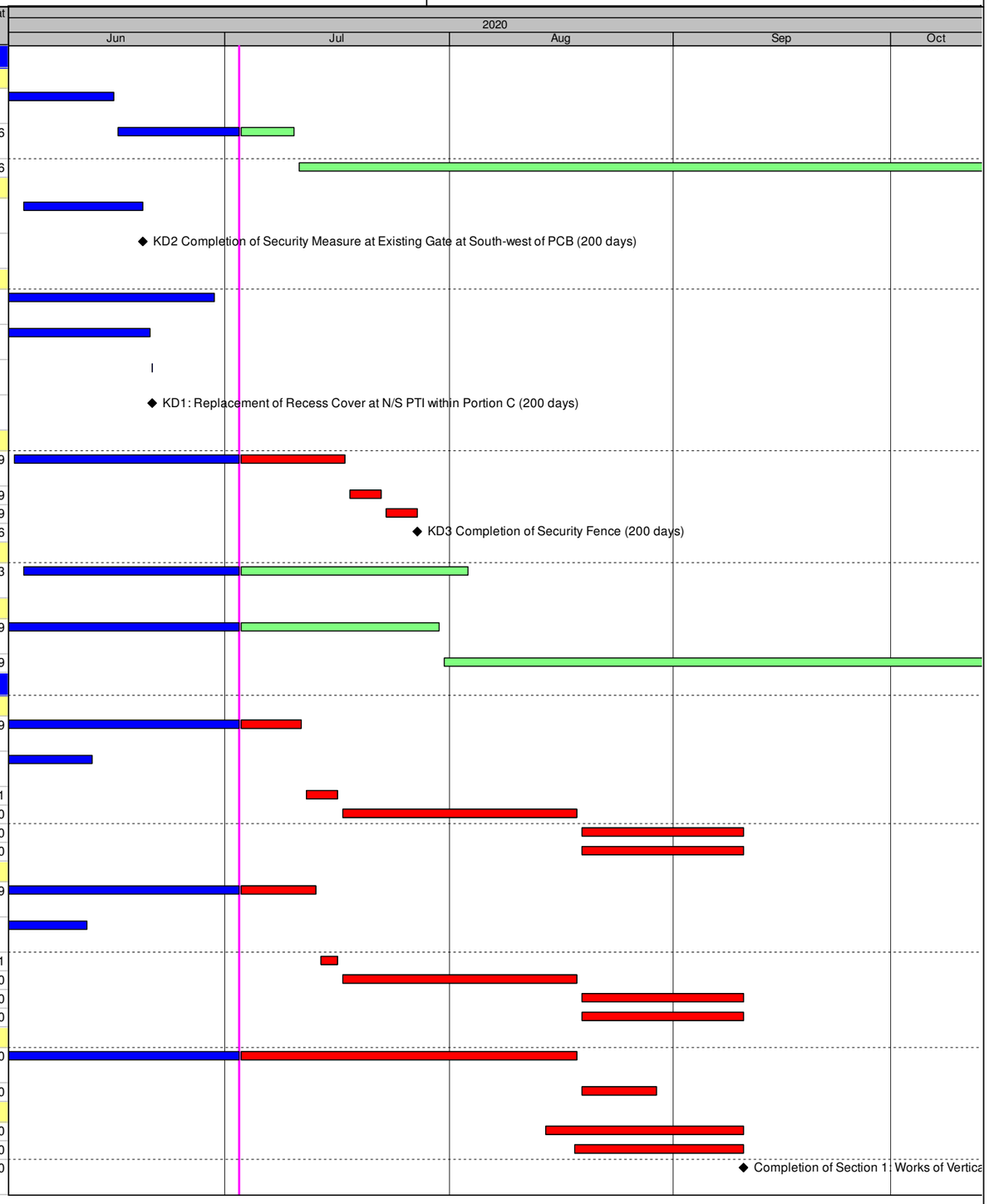
THREE MONTH ROLLING PROGRAMME FOR PHASE 2 AND OTHER WORKS
HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

Date	Revision	Checked	A...
08-Jul-20	3mth Rolling Programme, Jun. - Aug. 2020	ZJ	

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

08-Jul-20

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
	REFINEMENT WORKS AT HKP (4A)				
	Installation of Vehicle Barrier Gate at Existing Vehicle Kiosks (4A.B)				
A4340	4A.2.1.1-Condition Survey & Design of Barrier Gate and Gate Control	0	03-Feb-20 A	15-Jun-20 A	
A4342	4A.2.1.1A-Approval of Design - Barrier Gate and Gate Control (by Engineer)	7	16-Jun-20 A	10-Jul-20	16
A4345-1	4A.2.1.2.1-Procurement and Delivery of Barrier Gate - Batch 1 (24 nos)	90	11-Jul-20	27-Oct-20	16
	Provision of Security Measures at Existing Gate at South-west of PCB (4A.C) (KD2)				
A6640	T&C	0	03-Jun-20 A	19-Jun-20 A	
A7230	KD2 Completion of Security Measure at Existing Gate at South-west of PCB (200 days)	0		19-Jun-20 A	
	Replacement of Recess Type Cover for Manhole/Drawpit/Catchpit (4A.E) (KD1)				
A6080	Installation of Recess Cover in SPTI	0	30-Apr-20 A	29-Jun-20 A	
A6090	Installation of Recess Cover in NPTI	0	30-Apr-20 A	20-Jun-20 A	
A6610	Time Risk Allowance for Provision of Security Measure (KD1 achievement)	0	21-Jun-20 A	21-Jun-20 A	
A7240	KD1: Replacement of Recess Cover at N/S PTI within Portion C (200 days)	0		21-Jun-20 A	
	Installation of New Security Fence (4A.D)(KD3)				
A6070	Installation of SF Steelwork	13	02-Jun-20 A	17-Jul-20	-29
A6620	Time Risk Allowance for Installation Works	4	18-Jul-20	22-Jul-20	-29
A6630	T&C	4	23-Jul-20	27-Jul-20	-29
A7250	KD3 Completion of Security Fence (200 days)	0		27-Jul-20*	-36
	Construction of Additional Drains at Vehicle Inspection Pit Near Building No. 023 (4A.K)				
A4360	Additional Drainage Works	27	03-Jun-20 A	03-Aug-20	23
	Installation of Sliding Gate at Building No. 041 (4A.J)				
A6650	Acceptance for Design of Sliding Gate	28	02-May-20 A	30-Jul-20	189
A6660	Procurement of Sliding Gate	91	31-Jul-20	29-Oct-20	189
	SECTION 1: WORKS OF VERTICAL ACCESS TO THE ROOF OF PCB WITHIN PORTION A (4)				
	Vertical Access to the Roof of PCB at Zone C (4.B)				
A3750	Steel Prefabrication for the Staircase (include shop drawing)	8	01-Jun-20 A	11-Jul-20	-9
A3760	Plinth Construction	0	27-Apr-20 A	12-Jun-20 A	
A3770	Site Delivery and Assembly	5	12-Jul-20	16-Jul-20	-11
A3780	Installation of the Steel Staircase	28	17-Jul-20	18-Aug-20	-10
A3790	Install Additional Cleansing Water System	20	19-Aug-20	10-Sep-20	-10
A3800	Install Power Socket	20	19-Aug-20	10-Sep-20	-10
	Vertical Access to the Roof of PCB at Zone G (4.C)				
A3810	Steel Prefabrication for the Staircase	9	01-Jun-20 A	13-Jul-20	-9
A3820	Plinth Construction	0	27-Apr-20 A	12-Jun-20 A	
A3830	Site Delivery and Assembly	3	14-Jul-20	16-Jul-20	-11
A3840	Installation of the Steel Staircase	28	17-Jul-20	18-Aug-20	-10
A3890	Install Addition Cleansing Water System	20	19-Aug-20	10-Sep-20	-10
A3900	Install Power Socket	20	19-Aug-20	10-Sep-20	-10
	Existing Temporary Access Scaffold Tower at Zone F (4.A)				
A4300	Maintenance of the Existing Temporary Access Scaffold Tower at Zone F	40	04-Dec-19 A	18-Aug-20	0
A4310	Demolition of the Existing Temporary Access Scaffold Tower at Zone F	10	19-Aug-20	29-Aug-20	0
	T&C				
A6140	T&C	24	14-Aug-20	10-Sep-20	-10
A6150	TPIDC Inspection & Approval	21	18-Aug-20	10-Sep-20	-10
A6160	Completion of Section 1: Works of Vertical Access to Roof of PCB within Portion A (270 days)	0		10-Sep-20	-10



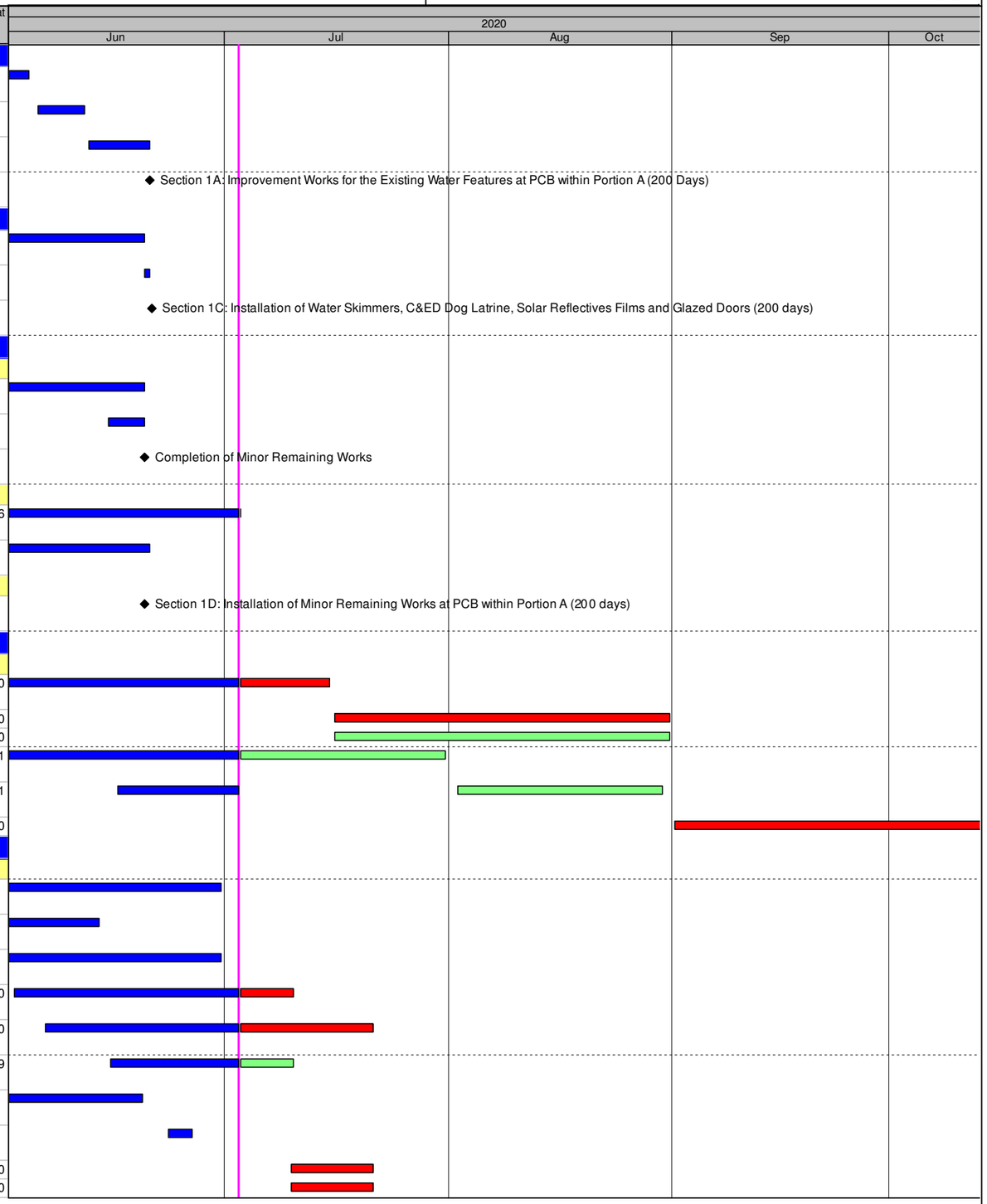
Actual Work ◆ ◆ Milestone
Remaining Work
Critical

THREE MONTH ROLLING PROGRAMME FOR PHASE 2 AND OTHER WORKS
HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

Date	Revision	Checked	A...
08-Jul-20	3mth Rolling Programme, Jun. - Aug. 2020	ZJ	

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works — **08-Jul-20**

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
SECTION 1A: IMPROVEMENT WORKS FOR THE EXISTING WATER FEATURES AT PCB WITHIN PORTION A (4.D-W)					
A6410	Improvement Works for the Existing Water Feature inside Plant Room and MCC Room	0	09-Apr-20 A	04-Jun-20 A	
A6750	Time Risk Allowance for Installation Works	0	05-Jun-20 A	11-Jun-20 A	
A6760	T&C	0	12-Jun-20 A	20-Jun-20 A	
A7270	Section 1A: Improvement Works for the Existing Water Features at PCB within Portion A (200 Days)	0		20-Jun-20 A	
SECTION 1C: INSTALLATION OF WATER SKIMMERS, SOLAR REFLECTIVE FILMS AND GLAZED DOORS					
A6840	Time Risk Allowance for Installation	0	01-Jun-20 A	20-Jun-20 A	
A6850	Handing over the Completed Minor Works to the Maintenance Authority	0	20-Jun-20 A	20-Jun-20 A	
A7290	Section 1C: Installation of Water Skimmers, C&ED Dog Latrine, Solar Reflectives Films and Glazed Doors (200 days)	0		21-Jun-20 A	
SECTION 1D: INSTALLATION OF MINOR REMAINING WORKS AT PCB WITHIN PORTION A (4B)					
Mechanical, Electrical and Plumbing (MEP) Works (4B.S-W)					
A6000	Time for Risk Allowance	0	27-May-20 A	20-Jun-20 A	
A6870	T&C and Production of As-built Drawings	0	15-Jun-20 A	20-Jun-20 A	
A6910A	Completion of Minor Remaining Works	0		20-Jun-20 A	
OTHER IMPROVEMENT WORKS AT PCB					
A6020	Fabrication and Supply of Holding Brackets for Baffle Ceiling Panel	0	03-Apr-20 A	03-Jul-20	426
A6030	Modification of Existing Sub-main Power Distribution System for TD's Room in PCB	0	15-Apr-20 A	20-Jun-20 A	
Completion of Section 1D					
A7300	Section 1D: Installation of Minor Remaining Works at PCB within Portion A (200 days)	0		20-Jun-20 A	
SECTION 2: IRRIGATION SYSTEM AT SLOPES OF NPTI WITHIN PORTION B (3)					
Design and Design Acceptance					
A6460	Design for Irrigation System (NPTI)	13	04-Dec-19 A	15-Jul-20	0
A6470	Acceptance of the Design for Irrigation System (NPTI)	47	16-Jul-20	31-Aug-20	0
A6475	Liaison with WSD	47	16-Jul-20	31-Aug-20	140
A6480	Submission of Material	29	04-Dec-19 A	31-Jul-20	1
A6890	Acceptance of Submission of Material	29	16-Jun-20 A	30-Aug-20	1
A7140	Procurement of Material	73	01-Sep-20	12-Nov-20	0
SECTION 2A: BUILDING NO. 062 - GENERATOR AND UPS ROOM WITHIN PORTION C (4A.L)					
Generator and UPS Room 062					
A4210	Procurement of Generator	0	04-Dec-19 A	30-Jun-20 A	
A4250	Installation of Lifting Beams	0	30-May-20 A	13-Jun-20 A	
A4252	Waterproofing Roof	0	01-Jun-20 A	30-Jun-20 A	
A4260	BS Installation	7	02-Jun-20 A	10-Jul-20	0
A4270	ABWF Installation (by CHEC)	16	06-Jun-20 A	21-Jul-20	0
A4280	Generator Installation	7	15-Jun-20 A	10-Jul-20	9
A4281	UPS and Panel Installation	0	30-May-20 A	19-Jun-20 A	
A4282	SCADA Installation Works	0	23-Jun-20 A	26-Jun-20 A	
A4283	SCADA Interface with HY/2017/10	10	10-Jul-20	21-Jul-20	0
A4284	Power Interface with TCSS contractor	10	10-Jul-20	21-Jul-20	0



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HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

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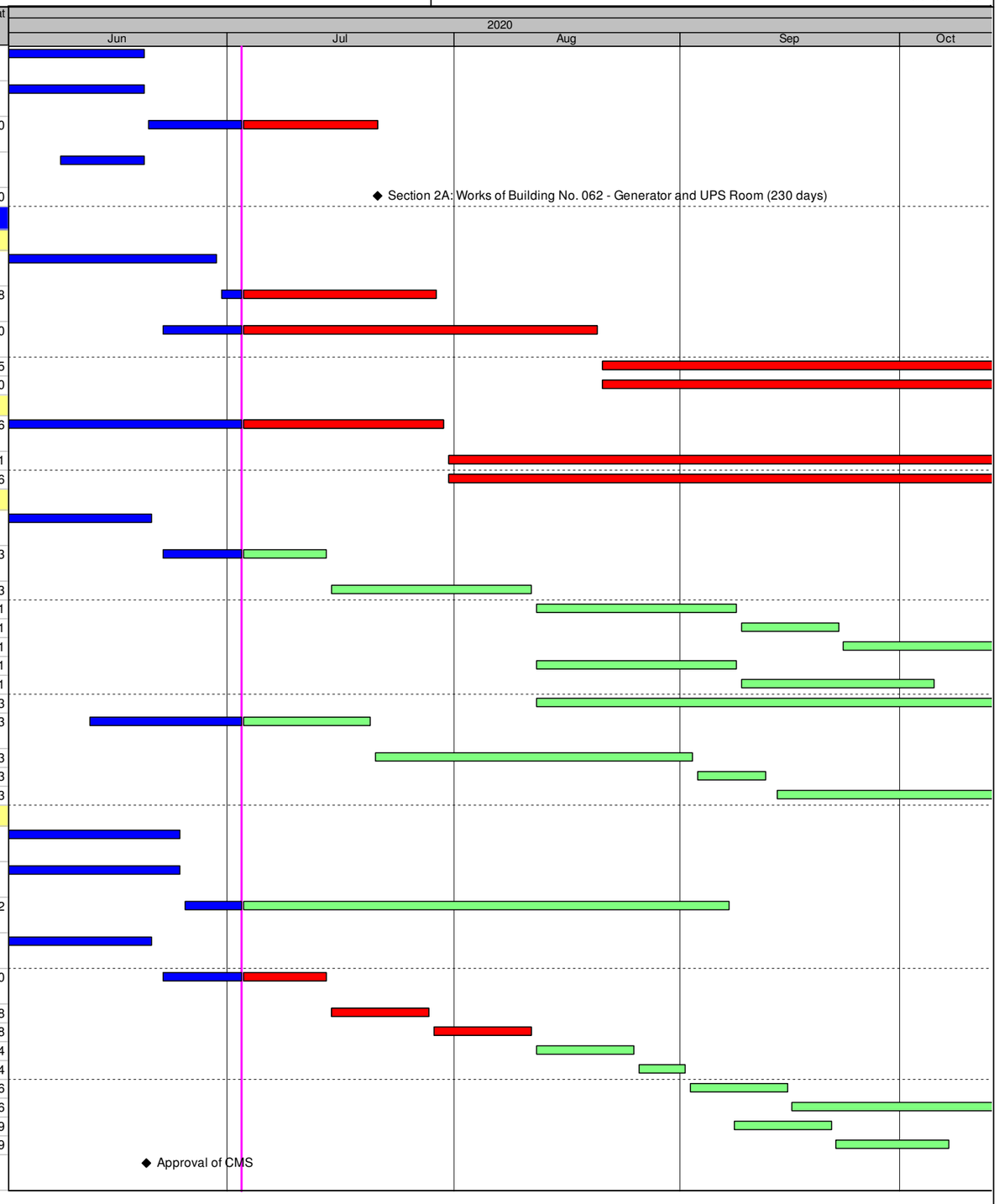
HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

08-Jul-20

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
A4288	Relocation of cutout fuse/New CLP Pillar box by CLP (by CHEC)	0	01-Feb-20 A	19-Jun-20 A	
A4290	External Cable Duct Installation (by CHEC)	0	01-Jun-20 A	19-Jun-20 A	
A6930	T&C and Power On	16	20-Jun-20 A	21-Jul-20	0
A6940	CLP Inspection & Approval	0	08-Jun-20 A	19-Jun-20 A	
A7500	Section 2A: Works of Building No. 062 - Generator and UPS Room (230 days)	0		21-Jul-20*	0
SECTION 3: NPTI - REFUSE COLLECTION POINT, PUBLIC TOILET, COVERED WALKWAY & PAVEMENT (6)					
Modification of Existing Covered Walkway (6.E)					
A1690	Submision of Shop Drawings	0	30-May-20 A	29-Jun-20 A	
A1700	Acceptance of Submision of Shop Drawings	27	30-Jun-20 A	29-Jul-20	-38
A2540	Footing for Covered Walkway	42	22-Jun-20 A	20-Aug-20	-50
A2550	Ducting at Footpath	75	21-Aug-20	19-Nov-20	-25
A2560	Steel prefabrication	100	21-Aug-20	18-Dec-20	-50
Additional Covered Walkway adjacent to Building 003 (6.C)					
A4420	Footing for Covered Walkway	24	01-Jun-20 A	30-Jul-20	-26
A4430	Drainage & Ducting at Footpath	75	31-Jul-20	29-Oct-20	-1
A4440	Steel prefabrication	100	31-Jul-20	27-Nov-20	-26
Satellite Refuse Collection Point, Building 007 (6.A)					
A1720	Formation/Earthworks	0	01-Jun-20 A	20-Jun-20 A	
A1730	Raft Foundation	10	22-Jun-20 A	14-Jul-20	3
A1750	Walls and Roof	24	15-Jul-20	11-Aug-20	3
A1760	Wall Finishing	24	12-Aug-20	08-Sep-20	21
A3150	Doors (3 Nos. of Metal Doors)	12	09-Sep-20	22-Sep-20	21
A3160	Metal Works (1 No. of Cat Ladder, 1 No. of Louvre, 1 No. of AP)	21	23-Sep-20	19-Oct-20	21
A3230	Drainage	24	12-Aug-20	08-Sep-20	21
A3240	Floor & Roof Finishing	21	09-Sep-20	05-Oct-20	21
A3260	BS & E&M Works	150	12-Aug-20	09-Feb-21	3
A3270	WWO542 & WWO46 Part 1-3 Submission	15	12-Jun-20 A	20-Jul-20	3
A3280	Cable ducting installation (from PU-PB-01 to building 007)	38	21-Jul-20	02-Sep-20	3
A3280A	Power cable laying and submission of WR1A	9	03-Sep-20	12-Sep-20	3
A3280B	T&C	122	14-Sep-20	09-Feb-21	3
Public Toilet Type 1, Building 003 (6.B)					
A1710	Acceptance of Design for Toilet Partitions	0	01-Jun-20 A	24-Jun-20 A	
A1770	Acceptance of Material for Toilet	0	01-Jun-20 A	24-Jun-20 A	
A1780	Procurement of Materials	67	25-Jun-20 A	07-Sep-20	22
A1790	Formation/Earthworks/Plate Load Test	0	01-Jun-20 A	20-Jun-20 A	
A1800	Raft Foundation	10	22-Jun-20 A	14-Jul-20	-50
A2110	Walls	12	15-Jul-20	28-Jul-20	-28
A2120	Roof Slab & Beams	12	29-Jul-20	11-Aug-20	-28
A2130	UG Drainage	12	12-Aug-20	25-Aug-20	24
A2140	Floor Screeding	6	26-Aug-20	01-Sep-20	24
A2150	Water Proofing Works	12	02-Sep-20	15-Sep-20	36
A2170	Wall Finishing (with Furring Walls)	24	16-Sep-20	15-Oct-20	36
A2190	Doors (7 Nos. of Metal Doors)	12	08-Sep-20	21-Sep-20	19
A2210	Metal Works (1 No. of Cat Ladder, 1 No. of Louvre, 1 No. of Ap)	12	22-Sep-20	07-Oct-20	19
A2260	Approval of CMS	0		20-Jun-20 A	



Actual Work ◆ ◆ Milestone
Remaining Work
Critical

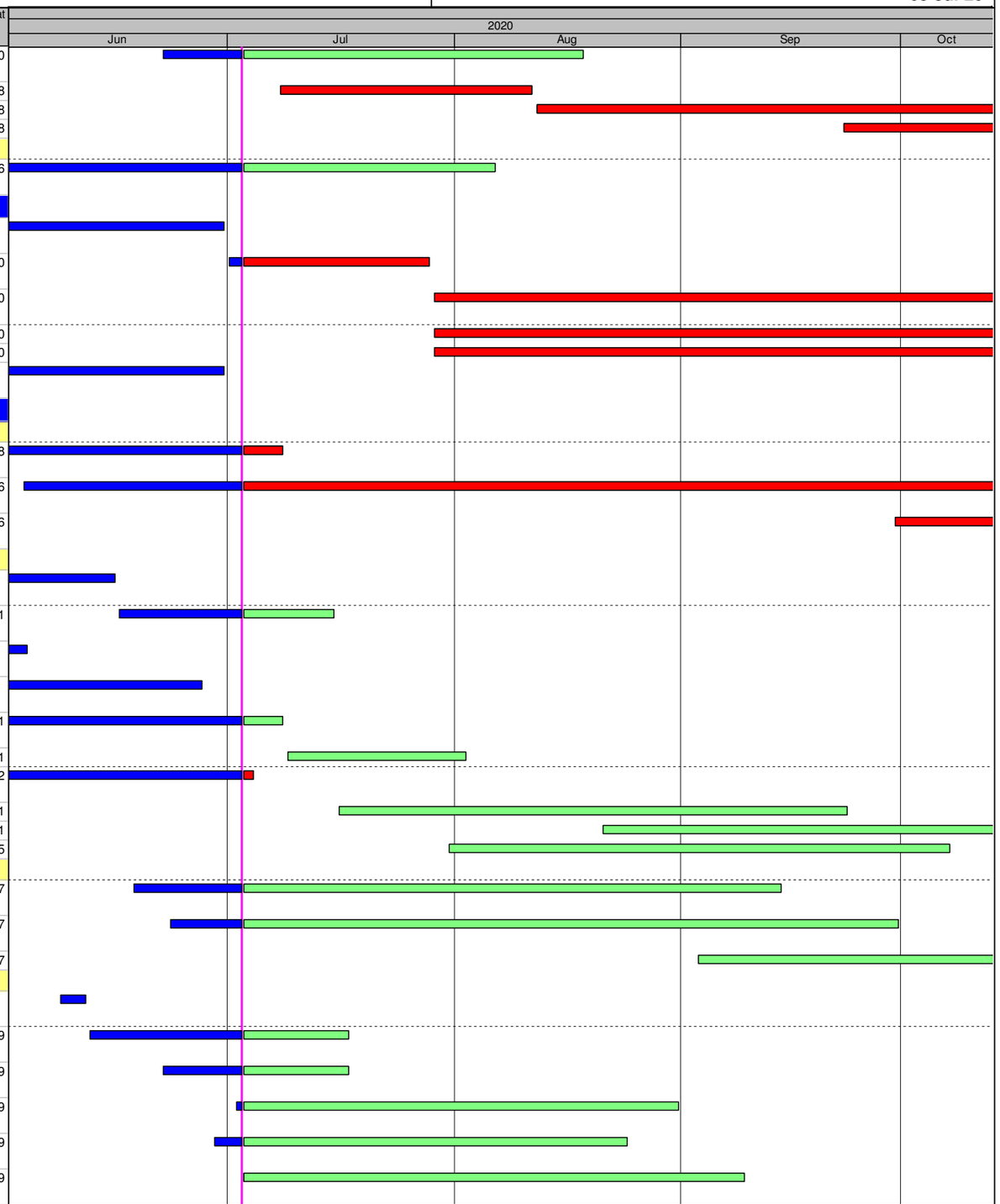
THREE MONTH ROLLING PROGRAMME FOR PHASE 2 AND OTHER WORKS
HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

Date	Revision	Checked	A...
08-Jul-20	3mth Rolling Programme, Jun. - Aug. 2020	ZJ	

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

08-Jul-20

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
A2270	Delivery of Furniture	40	22-Jun-20 A	18-Aug-20	60
A3379	WWO542 & WWO46 Part 1-3 Submission	30	08-Jul-20	11-Aug-20	-28
A3380A	Concealed conduit work and cabling works	61	12-Aug-20	23-Oct-20	-28
A3380B	BS Installation (above ceiling area)	50	23-Sep-20	23-Nov-20	-28
Drainage, Pavement, Kerbing, Lighting, Marking and Signs (6.F)					
A1420	Sewerage Pipelaying	30	03-Apr-20 A	06-Aug-20	106
SECTION 4: REMOVAL OF WATERMAIN AT THE SKYCITY INTERCHANGE WITHIN PORTION C AND D					
A3610	Submission of TTA	0	04-Dec-19 A	30-Jun-20 A	
A3650	Acceptance of TTA	26	01-Jul-20 A	28-Jul-20	0
A4040	Preparation Works for Implementation of TTA (Release TTA by AA Contractor on 25.8.2020)	100	29-Jul-20	25-Nov-20	0
A4050	Liaise with AAHK for Site Access	100	29-Jul-20	25-Nov-20	0
A4060	Liaise with HyD & WSD for the Road Permit, Removed Details	100	29-Jul-20	25-Nov-20	0
A4080	Removal of Watermain at Skycity Interchange, Stage 1 (Inside Existing TTA of AA contractor)	0	09-Apr-20 A	30-Jun-20 A	
SECTION 5: REMAINING WORKS					
External Works at Plaza					
A1510	Site Formation	5	23-Mar-20 A	08-Jul-20	-58
A1520	Additional Drainage Works	127	03-Jun-20 A	01-Dec-20	-26
A1530	Additional Ducting, Drawpits & Utiltities and Civil Provisions Works to Facilitate E&M Installations	145	30-Sep-20	27-Mar-21	-26
Design, Design Acceptance & Procurement for Kiosks					
A1120	Design for Window System	0	03-Apr-20 A	15-Jun-20 A	
A1130	Acceptance of Design for Window System	13	16-Jun-20 A	15-Jul-20	861
A1310	Design for Metal Roofing System	0	03-Apr-20 A	03-Jun-20 A	
A1320	Acceptance of Design for Metal Roofing System	0	03-May-20 A	27-Jun-20 A	
A1320A	Design for Block Wall	6	17-Apr-20 A	08-Jul-20	941
A1320B	Acceptance of Design of Block Wall	25	09-Jul-20	02-Aug-20	941
A7110	Procurement of Steelwork/Glazing/ABWF/E&M Material	2	07-Apr-20 A	04-Jul-20	-42
A7850	Material Submission for Windows	70	16-Jul-20	23-Sep-20	861
A7860	Material Submission for Doors	62	21-Aug-20	21-Oct-20	861
A7870	Material Submission for Cladding	69	31-Jul-20	07-Oct-20	875
Structural Steelworks					
A1000C	Fabrication for Short Column + Ring Beam	63	18-Jun-20 A	14-Sep-20	567
A1000D	Fabrication for Y-Junction Cladding	77	23-Jun-20 A	30-Sep-20	567
A1000E	Fabrication for Y-junctions & Roof Beams	123	03-Sep-20	30-Jan-21	567
Drainage Works					
A7880	Exposing of Existing DI drain outlet from CUE	0	08-Jun-20 A	11-Jun-20 A	
A7890	Manholes construction	13	12-Jun-20 A	17-Jul-20	199
A7900	DI drain pipes installation	13	22-Jun-20 A	17-Jul-20	199
A7910	Conc. pipelines installation	51	02-Jul-20 A	31-Aug-20	199
A7920	Test of Pipelines	45	29-Jun-20 A	24-Aug-20	199
A7930	Backfilling to sub-base bottom formation	59	03-Jul-20 A	09-Sep-20	199



Actual Work ◆ Milestone
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THREE MONTH ROLLING PROGRAMME FOR PHASE 2 AND OTHER WORKS
HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

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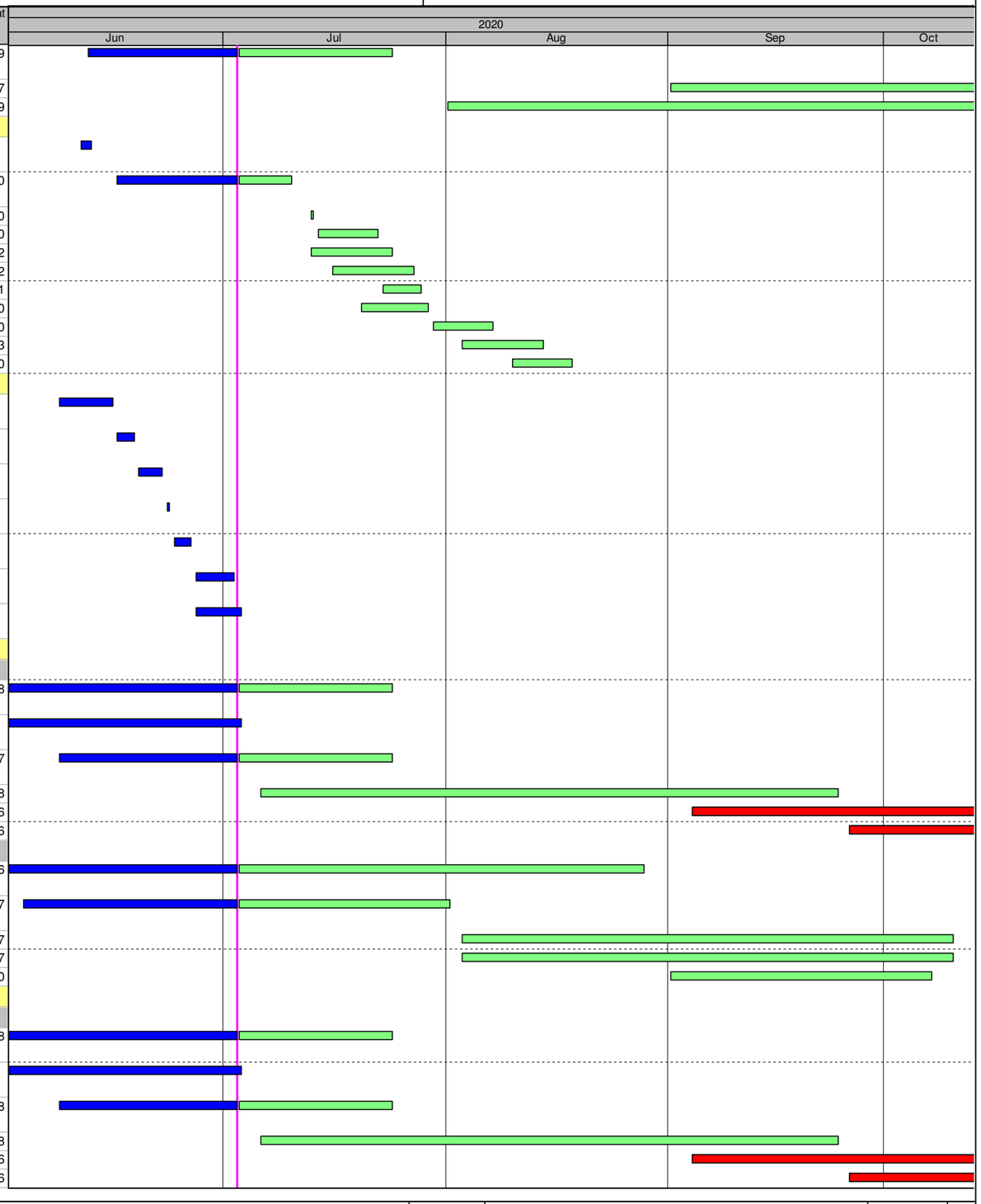
HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

08-Jul-20

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
A7940	Surface channels, conc drain pipe & catchpits	19	12-Jun-20 A	24-Jul-20	359
A7950	Demolition of existing channels	48	01-Sep-20	29-Oct-20	327
A7960	Deposition of sub-base	202	01-Aug-20	07-Apr-21	199
Relocation of Existing CCTV					
A8010	TMLG meeting for TTA	0	11-Jun-20 A	12-Jun-20 A	
A8020	RA application	7	16-Jun-20 A	10-Jul-20	80
A8030	Implementation of TTA	1	13-Jul-20	13-Jul-20	80
A8040	Excavation & blinding for footing	8	14-Jul-20	22-Jul-20	80
A8050	Provision of temp CCTV	11	13-Jul-20	24-Jul-20	82
A8060	Switch off & disconnection of existing CCTV	10	16-Jul-20	27-Jul-20	82
A8070	Construction/delivery of footing to new location	5	23-Jul-20	28-Jul-20	81
A8080	Ducting & drawpits/earthpits installation	9	20-Jul-20	29-Jul-20	80
A8090	Installation of CCTV at new location	8	30-Jul-20	07-Aug-20	80
A8100	T&C	11	03-Aug-20	14-Aug-20	83
A8110	Backfilling & reinstatement of ground	8	10-Aug-20	18-Aug-20	80
Relocation of Existing VTS/VID					
A8140	Ducting & drawpits/earthpits installation	0	08-Jun-20 A	15-Jun-20 A	
A8150	Excavation & blinding for footing	0	16-Jun-20 A	18-Jun-20 A	
A8170	Switch off & disconnection of VTS/VID	0	19-Jun-20 A	22-Jun-20 A	
A8180	Relocation of footing	0	23-Jun-20 A	23-Jun-20 A	
A8200	Re-assemble & re-connection of VTS/VID	0	24-Jun-20 A	26-Jun-20 A	
A8210	T&C	0	27-Jun-20 A	02-Jul-20 A	
A8220	Backfilling & reinstatement of ground	0	27-Jun-20 A	03-Jul-20 A	
Inbound: 11 No. of Private Car Kiosks between 027/028					
Builder Works (5.A)					
A1010	Formation and Demolishment of Existing Slab and Associated Works (FS Hoarding)	19	23-Mar-20 A	24-Jul-20	18
A1010A	Exposed Remaining Breakout Slab for Construction	0	01-Jun-20 A	03-Jul-20 A	
A1010B	Joint Formation /Drill and Fix Rebar	19	08-Jun-20 A	24-Jul-20	37
A1010C	Formwork, Steel Fixing and Concrete	70	06-Jul-20	24-Sep-20	48
A1030	Short Columns (22 nos.) Erection	77	04-Sep-20	05-Dec-20	-36
A1040	Erection of Ring Beams (11 Nos.)	124	26-Sep-20	27-Feb-21	-36
E&M Works					
A1120-10	8.1.2.0-Install Concealed Conduits at Base Slabs for AVCSS (027/028)	49	01-Jun-20 A	28-Aug-20	306
A1120-60	8.1.3 - System Configuration of AVCSS	26	03-Jun-20 A	01-Aug-20	257
A1120-70	8.1.4-Complete Training, SAT (exclude ODB) (12 AVCSS Kiosks at 027/028)	58	03-Aug-20	10-Oct-20	257
A1120-80	8.1.5-Preparation of O&M Manual and Spare Parts	58	03-Aug-20	10-Oct-20	257
A1130-10	8.1.7-D1-TTA for OPT (027/028)	30	01-Sep-20	07-Oct-20	260
Outbound: 11 No. of Private Car Kiosks between 029/030					
Builder's Works (5.A)					
A1200	Formation and Demolishment of Existing Slab and Associated Works	19	03-Apr-20 A	24-Jul-20	18
A1200A	Exposed Remaining Breakout Slab for Construction	0	01-Jun-20 A	03-Jul-20 A	
A1200B	Joint Formation /Drill and Fix Rebar	19	08-Jun-20 A	24-Jul-20	48
A1200C	Formwork, Steel Fixing and Concrete	70	06-Jul-20	24-Sep-20	48
A1220	Short Columns (22 nos.) Erection	77	04-Sep-20	05-Dec-20	-36
A1230	Erection of Ring Beams (11 Nos.)	124	26-Sep-20	27-Feb-21	-36



Actual Work ◆ Milestone
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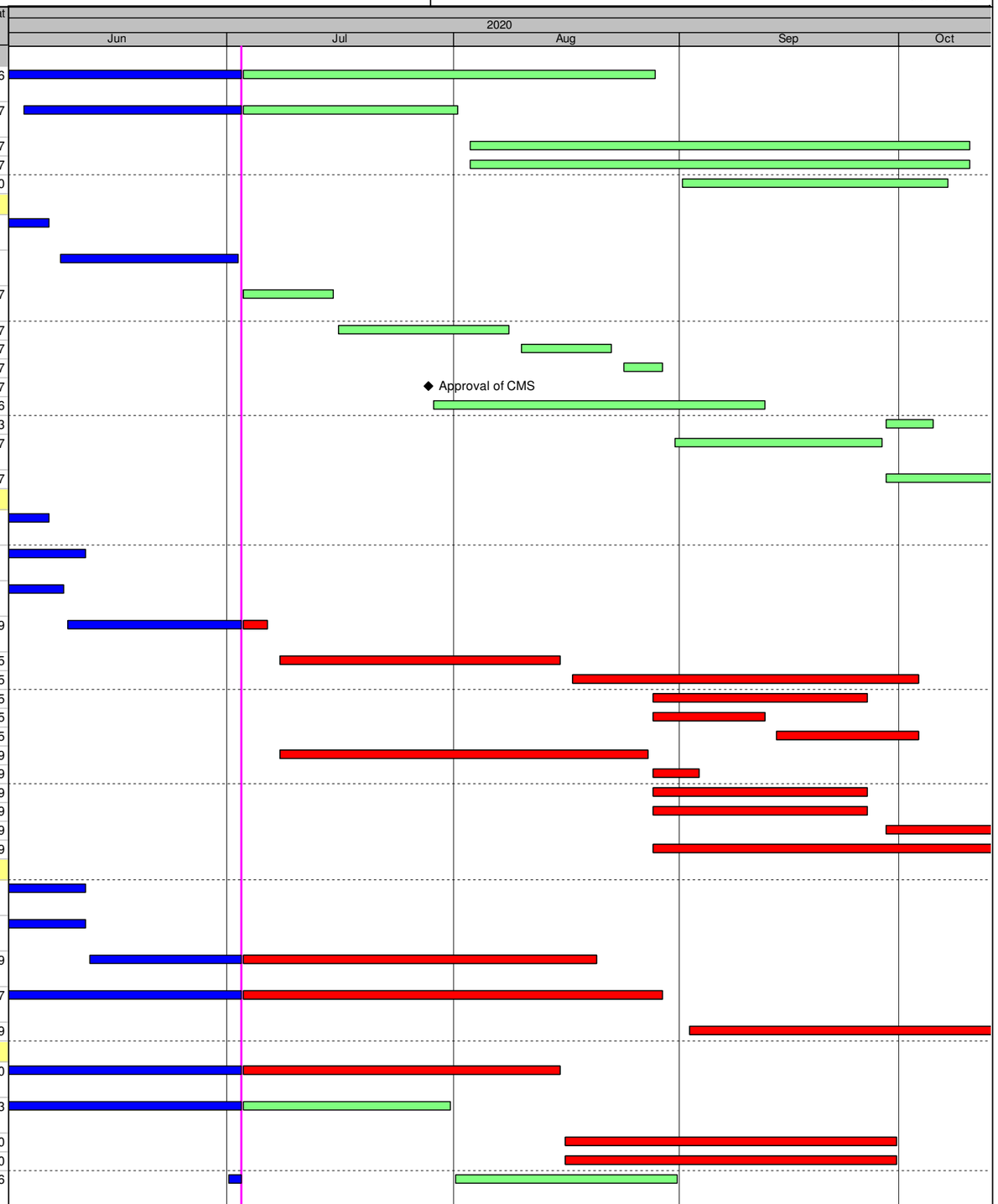
E&M Works					
A1310-10	8.1.2.0-Install Concealed Conduits at Base Slabs for AVCSS (029/030)	49	01-Jun-20 A	28-Aug-20	306
A1310-60	8.1.3 - System Configuration of AVCSS	26	03-Jun-20 A	01-Aug-20	257
A1310-70	8.1.4-Complete Training, SAT (exclude ODB) (12 AVCSS Kiosks at 029/030)	58	03-Aug-20	10-Oct-20	257
A1310-80	8.1.5-Preparation of O&M Manual and Spare Parts	58	03-Aug-20	10-Oct-20	257
A1320-10	8.1.7-D1-TTA for OPT (029/030)	30	01-Sep-20	07-Oct-20	260
Observation Guard Booths, Building 002					
A1820	Demolition of Existing Guard Booth	0	02-May-20 A	06-Jun-20 A	
A1960	Formation/Earthworks, Footing for Proposed Guard Booth	0	08-Jun-20 A	02-Jul-20 A	
A1970	Erection of the Superstructure	11	03-Jul-20 A	15-Jul-20	277
A1990	Cladding and Windows Installation	21	16-Jul-20	08-Aug-20	277
A2000	Roof Installation	12	10-Aug-20	22-Aug-20	277
A2010	Raised Floor	6	24-Aug-20	29-Aug-20	277
A3040	Approval of CMS	0		28-Jul-20	387
A3050	Delivery of Furniture	40	29-Jul-20	12-Sep-20	316
A3080	Ceiling	4	29-Sep-20	05-Oct-20	293
A3110	Electrical Installation (after completion of raised floor, before funiture and ceiling works)	25	31-Aug-20	28-Sep-20	277
A3110A	MVAC Equipment Installation	32	29-Sep-20	07-Nov-20	277
SPTI Stage 1					
A2610	TTA/Hoarding for Stage 1	0	03-Apr-20 A	06-Jun-20 A	
A2630	Site Formation Works	0	23-Mar-20 A	11-Jun-20 A	
A2640	Constructs of Footing	0	30-Mar-20 A	08-Jun-20 A	
A2650	E&M Ducting at Footpath	3	09-Jun-20 A	06-Jul-20	-69
A2660	Covered Walkway Steel Prefabrication	34	08-Jul-20	15-Aug-20	-65
A2670	Erect Covered Walkway Steel Portion	40	17-Aug-20	03-Oct-20	-65
A2672	Canopy Lighting Installation	26	28-Aug-20	26-Sep-20	-65
A2673	Electrical Work inside EL Pillar Box	14	28-Aug-20	12-Sep-20	-65
A2674	Readiness of cutout fuse/CLP pillar box and CLP cable laying	16	14-Sep-20	03-Oct-20	-65
A2690	Road Lighting & E&M Works	44	08-Jul-20	27-Aug-20	-69
A7210	T&C for Lane 1	6	28-Aug-20	03-Sep-20	-69
A7210A	CCTV, PA, FCS, Radio Equipment Reinstate Works	26	28-Aug-20	26-Sep-20	-49
A7210B	CPIS, CCTV & PA Equipment Installation	26	28-Aug-20	26-Sep-20	-49
A7210C	T&C for CPIS and CCTV, PA	24	29-Sep-20	29-Oct-20	-49
A7220	Kerbing, Concrete Carriageway, Bitumen	47	28-Aug-20	23-Oct-20	-69
SPTI Stage 1A (3rd Lane)					
A7640	Site Formation Works & Demolish Existing Drainage & Footing	0	01-Apr-20 A	11-Jun-20 A	
A7650	Constructs New Drainage and Covered Walkway Footing	0	01-Apr-20 A	11-Jun-20 A	
A7660	Constructs Covered Walkway Drainage	42	12-Jun-20 A	20-Aug-20	-59
A7670A	Kerb, Concrete Carriageway, Bitumen, Paving Block (4 bays in PMI-006)	50	01-Apr-20 A	29-Aug-20	-67
A7670B	Kerb, Concrete Carriageway, Bitumen, Paving Block	43	02-Sep-20	23-Oct-20	-69
Pump House for Landscape (2)					
A2890	Design for Pump House	44	04-Dec-19 A	15-Aug-20	0
A2900	Submission of Materials	29	04-Dec-19 A	31-Jul-20	103
A2910	Acceptance of the Design for Pump House	46	16-Aug-20	30-Sep-20	0
A2915	Liaison with WSD	46	16-Aug-20	30-Sep-20	0
A2920	Acceptance for Submission of Materials	31	01-Jul-20 A	31-Aug-20	756



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HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

08-Jul-20

Activity ID	Activity Name	Remaining Duration	Start	Finish	Total Float
A2930	Purchasing & Delivery of Water Pump & Associated Equipment	156	01-Sep-20	03-Feb-21	756
Landscape Works (2)					
A4150A	Import CDG for Soilmix & Stockpile (G1 Access Landscaping Area)	126	02-Jul-20 A	30-Nov-20	0
A4160	Mix & Place Soilmix - G1 Access Tree Planting Area	92	01-Sep-20	19-Dec-20	54
A4160A	Mix & place Soilmix (G1 Access Landscaping Area)	118	01-Aug-20	19-Dec-20	54
Irrigation System (3)					
A6510	Design for Irrigation System	29	04-Dec-19 A	31-Jul-20	4
A6520	Acceptance of the Design for Irrigation System	46	01-Aug-20	15-Sep-20	4
A6530	Liaison with WSD for Obtaining Statutory Approval	118	01-Aug-20	26-Nov-20	4

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HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

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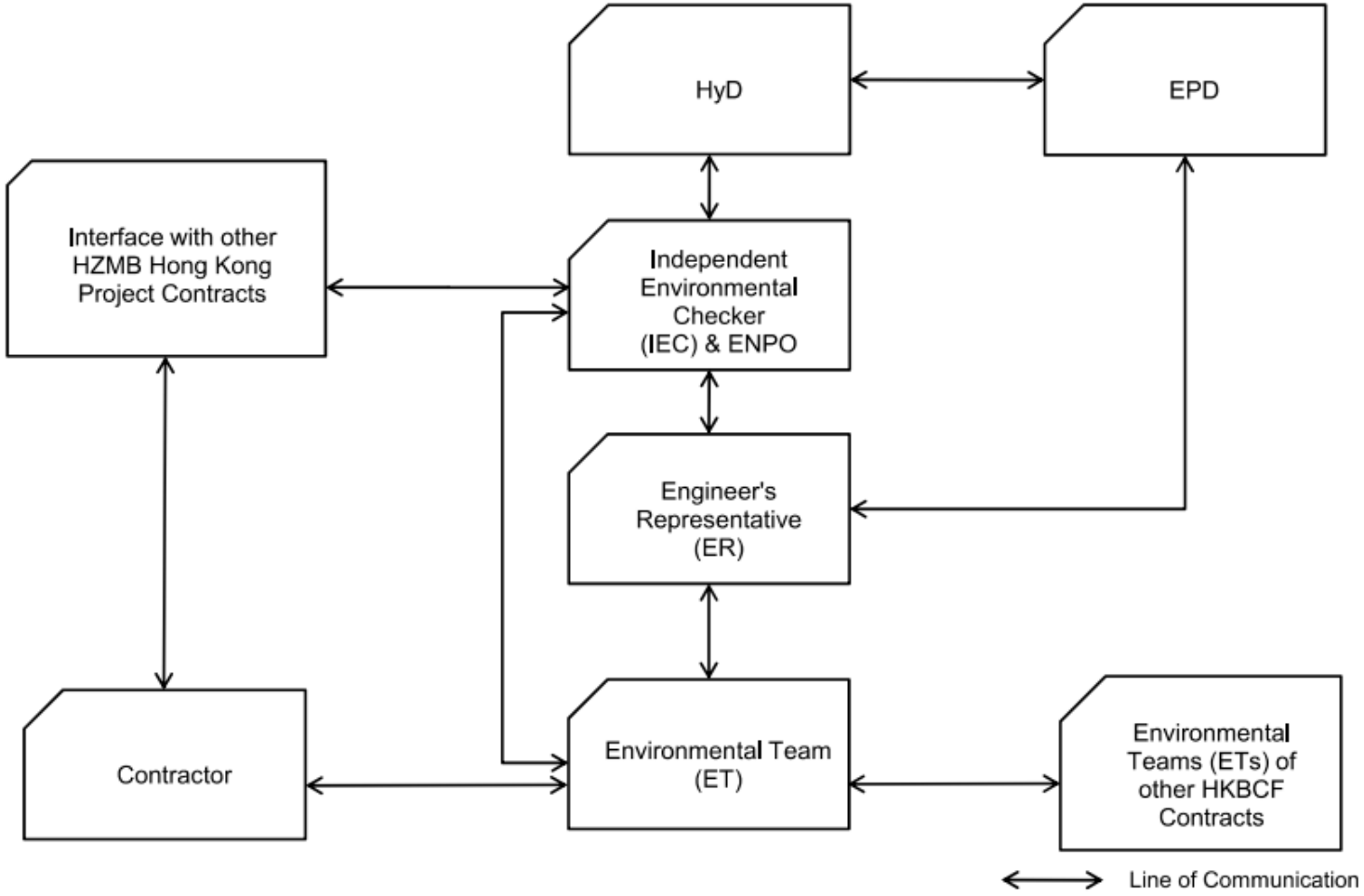
Appendix B

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	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	Partially 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	Partially 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	8 July 2020	Observation: The contractor was reminded dust suppression should be provided during breaking. (VCP)	10 July 2020
Noise	NA		
Water Quality	10 June 2020	Observation: The contractor was reminded the stagnant water should be removed. (SPTI)	12 June 2020
	15 July 2020	Reminder: The contractor was reminded to fix the leakage of internal pipe connection of Wetsep. (SPTI)	NA
	29 July 2020	Observation: The contractor was reminded the stagnant water should be removed. (NPTI)	31 July 2020
	5 August 2020	Observation: The contractor was reminded the stagnant water should be removed. (NPTI)	7 August 2020
	19 August 2020	Observation: The contractor was reminded the stagnant water should be removed. (VCP)	21 August 2020
Chemical and Waste Management	4 June 2020	Observation: The contractor was reminded to maintain housekeeping. (NPTI)	8 June 2020
	18 June 2020	Observation: The contractor was reminded the stain should be cleaned up immediately. (NPTI)	22 June 2020
	24 June 2020	Observation: The contractor was reminded to maintain housekeeping. (NPTI)	26 June 2020
	2 July 2020	Observation: The contractor was reminded to maintain housekeeping. (C5)	6 July 2020

Land Contamination	NA
Landscape and Visual Impact	NA
Permit / Licenses	NA
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										
2020 Oct										
2020 Nov										
2020 Dec										
Total	72976.62	0	68673.02	0	4303.6	0	3.842	0	0	412.99

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

Dolphin Monitoring Survey Findings and Analysis From Contract No. HY/2012/08

Remarks:

1. The relevant sections of dolphin monitoring survey findings and analysis report of Contract No. HY/2012/08 is extracted.
2. The introduction part in Appendix I is introducing Contract No. HY/2012/08, it is not applicable for our contract.
3. Conclusions have been provided in this quarterly report (Section 5.1.4), so the conclusions from Contract No. HY/2012/08 was not applicable.

CONTRACT NO. HY/2012/08
Hong Kong-Zhuhai-Macao Bridge Tuen Mun – Chek Lap Kok Link (Northern Connection Sub-sea Tunnel Section) Post-Construction Dolphin Monitoring

1st Quarterly Progress Report (June-August 2020)
submitted to Dragages – Bouygues Joint Venture & ERM Hong Kong Ltd.

Submitted by
Samuel K.Y. Hung, Ph.D.
Hong Kong Cetacean Research Project

31 August 2020

1. Introduction

1.1. As part of the Hong Kong-Zhuhai-Macao Bridge, the Tuen Mun-Chek Lap Kok Link (TM-CLKL) Northern Connection Sub-sea Tunnel Section (Contract no. HY/2012/08) comprises the sub-sea TBM tunnels (two tubes with cross passages) across the Urmston Road to connect Tuen Area 40 and Hong Kong Boundary Crossing Facilities (HKBCF) of approximately 4 km in length with dual 2-lane carriageway, the tunnels at both the southern landfall and the northern landfall for construction of approach roads to the sub-sea TBM tunnels of approximately 1.5 km in length, as well as the northern landfall reclamation of approximately 16.5 hectares and about 20.km long seawalls. Dragages – Bouygues Joint Venture (hereinafter called the "Contractor") was awarded as the main contractor for the Northern Connection Sub-sea Tunnel Section, and ERM Hong Kong Limited would serve as the Environmental Team to implement the Environmental Monitoring and Audit (EM&A) programme.

1.2. According to the updated EM&A Manual (for TM-CLKL), monthly line-transect vessel surveys for Chinese White Dolphin should be conducted to cover the Northwest (NWL) and Northeast Lantau (NEL) survey areas as in AFCD annual marine mammal monitoring programme. Between 2013 and 2019, as such surveys have already been undertaken by the HKLR03 and HKBCF projects in the survey same areas of NEL and NWL, a combined monitoring approach was recommended by the Highways Department, that the TM-CLKL EM&A project can utilize the monitoring data collected by HKLR03 or HKBCF project to avoid any redundancy in monitoring effort. Such exemption for the dolphin monitoring has ended in September 2019 as the dolphin monitoring works carried out by HKLR03 and HKBCF contract have been completed. Starting in October 2019, TMCLKL08 contract takes over the dolphin monitoring works by conducting the regular vessel-based line-transect surveys during the construction phase. And as the construction works for the TMCLKL08 contract has also been completed in May 2020, the post-construction dolphin monitoring works have subsequently commenced in June 2020.

1.3. Since November 2013, the Director of Hong Kong Cetacean Research Project (HKCRP), Dr. Samuel Hung, has been appointed by ERM Hong Kong Limited as the dolphin specialist for the TMCLKL Northern Connection Sub-sea Tunnel Section EM&A project. He is responsible for the dolphin monitoring study, including the data collection on Chinese White Dolphins during the construction phase (i.e. impact period) as well as the post-construction phase of the TMCLKL project in Northwest Lantau (NWL) and Northeast Lantau (NEL) survey areas. During both phases, the dolphin specialist is responsible to utilize the collected monitoring data in order to examine any potential impacts on the dolphins during and after the TMCLKL construction works.

1.4. This report is the first quarterly progress report under the TM-CLKL post-construction phase dolphin monitoring programme submitted to the Contractor, which summarizes the results of the survey findings during the period of June to August 2020.

2. Monitoring Methodology

2.1. Vessel-based Line-transect Survey

2.1.1. According to the requirement of the updated EM&A manual, dolphin monitoring programme should cover all transect lines in NEL and NWL survey areas (see Figure 1) twice per month throughout the entire construction and post-construction monitoring period. The co-ordinates of all transect lines are shown in Table 1.

Table 1 Co-ordinates of transect lines conducted by TMCLKL08 project

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

2.1.2. The TMCLKL08 survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and 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 2020). 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 observations from the flying bridge area.

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^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). 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.

2.1.4. 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*).

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

2.1.6. 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.

2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as "primary" survey effort, while the survey effort conducted along the connecting lines between parallel lines was labeled 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. Photo-identification Work

2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the TMCLKL08 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. 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.

2.2.3. 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.

2.2.4. 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).

2.2.5. 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.

2.3. Data Analysis

2.3.1. Distribution Analysis – The line-transect survey data was integrated with the Geographic Information System (GIS) in order 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.

2.3.2. Encounter rate analysis – Encounter rates of Chinese white dolphins (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 month of monitoring survey. Only data collect under Beaufort 3 or below condition would be 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 during the present quarter (i.e. six sets of line-transect surveys in North Lantau), 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 North Lantau).

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 present quarterly period.

2.3.3. 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 quarterly monitoring period 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) x 100) / SA%
DPSE = ((D / E) x 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

2.3.4. 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.

2.3.5. Ranging pattern analysis – Location data of individual dolphins that occurred during the 3-month impact phase monitoring period 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. Monitoring Results

3.1. Summary of survey effort and dolphin sightings

3.1.1. During the period of June to August 2020, six sets of systematic line-transect vessel surveys were conducted under the TMCLKL08 post-construction dolphin monitoring works to cover all transect lines in NWL and NEL survey areas twice per month.

3.1.2. From these TMCLKL08 surveys, a total of 772.31 km of survey effort was collected, with 99.4% 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, 283.00 km and 489.31 km of survey effort were conducted in NEL and NWL survey areas respectively.

3.1.3. The total survey effort conducted on primary lines was 572.77 km, while the effort on secondary lines was 199.54 km. Survey effort conducted on both primary and secondary lines were considered to be on-effort survey data. A summary table of the survey effort is shown in Appendix I.

3.1.4. During the six sets of TMCLKL08 monitoring surveys from June to August 2020, only two groups of two Chinese White Dolphins were sighted (i.e. both were single

individuals). Both dolphin sightings were made on primary lines during on-effort search in this quarter. A summary table of dolphin sightings is shown in Appendix II.

3.1.5. In this quarterly period, both dolphin groups were sighted in NWL, and no dolphin was sighted at all in NEL. In fact, since August 2014, only two sightings of two lone dolphins were made respectively in NEL during the HKLR03/TMCLKL08 monitoring surveys.

3.2. Distribution

3.2.1. Distribution of dolphin sightings made during the TMCLKL08 monitoring surveys from June to August 2020 is shown in Figure 1. The two sightings were made to the northeast of Lung Kwu Chau and to the west of the airport platform respectively (Figure 1). As consistently recorded in previous monitoring quarters in recent years, the dolphins were completely absent from the central and eastern portions of North Lantau waters (Figure 1).

3.2.2. Notably, both dolphin sightings were located far away from the TMCLKL alignment as well as the HKBCF and HKLR03 reclamation sites during the quarterly period (Figure 1).

3.2.3. Sighting distribution of dolphins during the present post-construction monitoring period was drastically different from the one during the baseline monitoring period (Figure 1). In the present quarter, dolphins have disappeared from the NEL region, which was in stark 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 (Figure 1). The nearly complete abandonment of NEL region by the dolphins has been consistently recorded in the past seven years of HKLR03/TMCLKL08 dolphin monitoring, which has resulted in zero to extremely low encounter rates in this area.

3.2.4. In NWL survey area, dolphin occurrences were also drastically different between the baseline and the present post-construction monitoring periods. During the present quarter, dolphins were rarely sighted here, and only at the western end of the North Lantau region. This was in contrary to their frequent occurrences throughout the area during the baseline period (Figure 1).

3.2.5. Another comparison in dolphin distribution was made between the six quarterly periods of summer months in 2015-20 (Figure 2). Dolphins were sighted mostly around the Sha Chau and Lung Kwu Chau Marine Park and near the HKLR09 alignment in NWL waters during the first three summer quarters, and their occurrence has progressively diminished further in the past three summer quarters in 2018-20 (Figure 2). Notably, they were consistently absent from the NEL survey area throughout the six quarterly periods.

3.3. Encounter rate

3.3.1. During the present quarterly period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) for each set of the TMCLKL08 surveys in NEL and NWL are shown in Table 2. The average encounter rates deduced from the six sets of surveys were also compared with the ones deduced from the baseline

monitoring period (September-November 2011) (Table 3).

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) during June-August 2020

SURVEY AREA	DOLPHIN MONITORING DATES	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)
		Primary Lines Only	Primary Lines Only
Northeast Lantau	Set 1 (4 & 9 Jun 2020)	0.00	0.00
	Set 2 (11 & 16 Jun 2020)	0.00	0.00
	Set 3 (2 & 7 Jul 2020)	0.00	0.00
	Set 4 (9 & 20 Jul 2020)	0.00	0.00
	Set 5 (4 & 14 Aug 2020)	0.00	0.00
	Set 6 (18 & 21 Aug 2020)	0.00	0.00
Northwest Lantau	Set 1 (4 & 9 Jun 2020)	0.00	0.00
	Set 2 (11 & 16 Jun 2020)	0.00	0.00
	Set 3 (2 & 7 Jul 2020)	0.00	0.00
	Set 4 (9 & 20 Jul 2020)	1.79	1.79
	Set 5 (4 & 14 Aug 2020)	0.00	0.00
	Set 6 (18 & 21 Aug 2020)	1.64	1.64

Table 3. Comparison of average dolphin encounter rates from the present post-construction monitoring period (June-August 2020) and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average encounter rates)

	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)	
	June – August 2020	September – November 2011	June – August 2020	September – November 2011
Northeast Lantau	0.0	6.00 ± 5.05	0.0	22.19 ± 26.81
Northwest Lantau	0.57 ± 0.89	9.85 ± 5.85	0.57 ± 0.89	44.66 ± 29.85

3.3.2. To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in NWL were 0.41 sightings and 0.41 dolphins per 100 km of survey effort respectively, while the encounter rates of sightings (STG) and dolphins (ANI) in NEL were both nil for this quarter.

3.3.3 In NEL, the average dolphin encounter rates (both STG and ANI) in the present quarterly post-construction monitoring period were both zero with no on-effort sighting being made,

and such extremely low occurrence of dolphins in NEL have been consistently recorded during the same summer quarters throughout the HKLR03/TMCLKL08 dolphin monitoring in the past seven consecutive years (Table 4).

Table 4. Comparison of average dolphin encounter rates in Northeast Lantau survey area from the same summer quarters of HKLR03/TMCLKL08 impact and post-construction monitoring periods since 2012 and the baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average encounter rates)

	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-November 2011 (Baseline)	6.00 ± 5.05	22.19 ± 26.81
June-August 2013 (Impact)	0.88 ± 1.36	3.91 ± 8.36
June-August 2014 (Impact)	0.42 ± 1.04	1.69 ± 4.15
June-August 2015 (Impact)	0.44 ± 1.08	0.44 ± 1.08
June-August 2016 (Impact)	0.00	0.00
June-August 2017 (Impact)	0.00	0.00
June-August 2018 (Impact)	0.00	0.00
June-August 2019 (Impact)	0.00	0.00
June-August 2020 (Post-Construction)	0.00	0.00

3.3.4. On the other hand, the average dolphin encounter rates (STG and ANI) in NWL during the present quarterly period were only tiny fractions of the ones recorded during the three-month baseline period (with reductions of 94.2% and 98.7% respectively), indicating a dramatic decline in dolphin usage of this survey area during the present quarterly period as compared to the baseline period in 2011 (Table 5).

3.3.5. When comparing to the past seven summer quarters in 2013-19, the quarterly encounter rates in 2020 continued to plummet to the lowest level among all summer quarters during the HKLR03/TMCLKL08 monitoring period (Table 5). Such dramatic drop in dolphin occurrence in NWL raises serious concerns, and the temporal trend should be closely monitored in the upcoming monitoring quarters while all construction activities of HZMB works has already been completed.

Table 5. Comparison of average dolphin encounter rates in Northwest Lantau survey area from the same summer quarters of HKLR03/TMCLKL08 impact and post-construction monitoring periods since 2012 and the baseline monitoring period (September- November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions; ± denotes the standard deviation of the average encounter rates)

	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-November 2011 (Baseline)	9.85 ± 5.85	44.66 ± 29.85
June-August 2013 (Impact)	6.56 ± 3.68	27.00 ± 18.71
June-August 2014 (Impact)	4.74 ± 3.84	17.52 ± 15.12
June-August 2015 (Impact)	2.53 ± 3.20	9.21 ± 11.57
June-August 2016 (Impact)	1.72 ± 2.17	7.48 ± 10.98
June-August 2017 (Impact)	2.20 ± 2.88	6.58 ± 8.12
June-August 2018 (Impact)	1.16 ± 1.39	2.87 ± 3.32
June-August 2019 (Impact)	0.62 ± 1.52	1.55 ± 3.80
June-August 2020 (Post-Construction)	0.57 ± 0.89	0.57 ± 0.89

3.3.6. A two-way ANOVA with repeated measures and unequal sample size was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and HKLR03/TMCLKL08 monitoring periods. The two variables that were examined included the two periods (baseline and impact phases) and two locations (NEL and NWL).

3.3.7. For the comparison between the baseline period and the present quarter (the first quarter of the TMCLKL08 post-construction monitoring period being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0016 and 0.0119 respectively. If the alpha value is set at 0.05, significant differences were detected between the baseline period and present quarter in both the average dolphin encounter rates of STG and ANI.

3.3.8. For the comparison between the baseline period and the cumulative quarters of the HKLR03/TMCLKL08 monitoring period (i.e. the first 31 quarters of the impact and post-construction phases being assessed), the p-values for the differences in average dolphin encounter rates of STG and ANI were both 0.000000. Even if the alpha value is set at 0.00001, significant differences were still detected in both the average dolphin encounter rates of STG and ANI (i.e. between the cumulative periods and the locations).

3.3.9. As indicated in both dolphin distribution patterns and encounter rates, dolphin usage has been significantly and dramatically reduced in both NEL and NWL survey areas during the present quarterly period, and such low occurrence of dolphins has also been consistently documented throughout the HKLR03/TMCLKL08 monitoring period.

3.3.10. 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, apparently there has been no sign of recovery of dolphin usage in North Lantau waters at all, while such usage has continued to diminish to the lowest ever level.

3.4. Group size

3.4.1. Group size of both Chinese White Dolphin sightings were singletons in North Lantau region during June to August 2020. The average dolphin group sizes from these three months were compared with the ones deduced from the baseline period in September to November 2011, as shown in Table 6.

Table 6. Comparison of average dolphin group sizes from the present post-construction monitoring period (June – August 2020) and baseline monitoring period (September – November 2011) (Note: ± denotes the standard deviation of the average group size)

	Average Dolphin Group Size	
	June – August 2020	**September – November 2011**
Overall	1.00 ± 0.00 (n = 2)	3.72 ± 3.13 (n = 66)
Northeast Lantau	---	3.18 ± 2.16 (n = 17)
Northwest Lantau	1.00 ± 0.00 (n = 2)	3.92 ± 3.40 (n = 49)

3.4.2. The average dolphin group size in NWL waters during the present quarter was much lower than the one recorded during the three-month baseline period, but it should also be noted that the sample size of only two dolphin groups in the present quarter was only a tiny fraction of the 66 dolphin groups sighted during the baseline period (Table 6).

3.5. Habitat use

3.5.1. From June to August 2020, only two grids in North Lantau waters have recorded dolphin occurrences, and both of them recorded very low dolphin densities (Figures 3a and 3b). Notably, all grids near TMCLKL alignment did not record any presence of dolphins at all during on-effort search in the present quarterly period (Figures 3a and 3b).

3.5.2. It should be emphasized that the amount of survey effort collected in each grid during the three-month period was fairly low (6-12 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution.

3.5.3. When compared with the habitat use patterns during the baseline period, dolphin usage in NEL and NWL has drastically diminished in both areas during the present post-construction monitoring period (Figure 4). During the baseline period, many grids between Siu Mo To and Shum Shui Kok in NEL recorded moderately high to high dolphin densities, which was in stark contrast to the complete absence of dolphins there during the present quarter (Figure 4).

3.5.4. The density patterns were also very different in NWL between the baseline and present post-construction monitoring periods, with high dolphin usage throughout the area, especially around Sha Chau, near Black Point, to the west of the airport, as well as between Pillar Point and airport platform during the baseline period. In contrast, both grids with dolphin records were distributed at the western end of the NWL survey area in very low densities during the present quarter (Figure 4).

3.6. Mother-calf pairs

3.6.1. During the present quarterly period, no mother-calf pair was sighted.

3.7. Activities and associations with fishing boats

3.7.1. From June to August 2020, neither of the two dolphin groups was engaged in any activities, and both groups were not associated with any operating fishing vessel during this post-construction monitoring period.

3.8. Summary of photo-identification works

3.8.1. About 100 digital photographs of Chinese White Dolphins were taken during the present post-construction monitoring period for the photo-identification work. In total, two individuals sighted twice were identified (see summary table in Appendix III and photographs of identified individuals in Appendix IV). Both re-sightings were made in NWL.

3.8.2. Notably, one of the two individuals (NL202) was also sighted in WL waters during the HKLR09 monitoring surveys under the same three-month monitoring period of June-August 2020.

3.9. Individual range use

3.9.1. Ranging patterns of the two individuals identified during the present quarterly period were determined by fixed kernel method, and are shown in Appendix V.

3.9.2. Both identified dolphins sighted in the present quarter were utilizing NWL waters only, but have completely avoided NEL waters where many of them have utilized as their core areas in the past (Appendix V). This is in contrary to the extensive movements between NEL and NWL survey areas observed in the earlier impact monitoring quarters as well as the baseline period.

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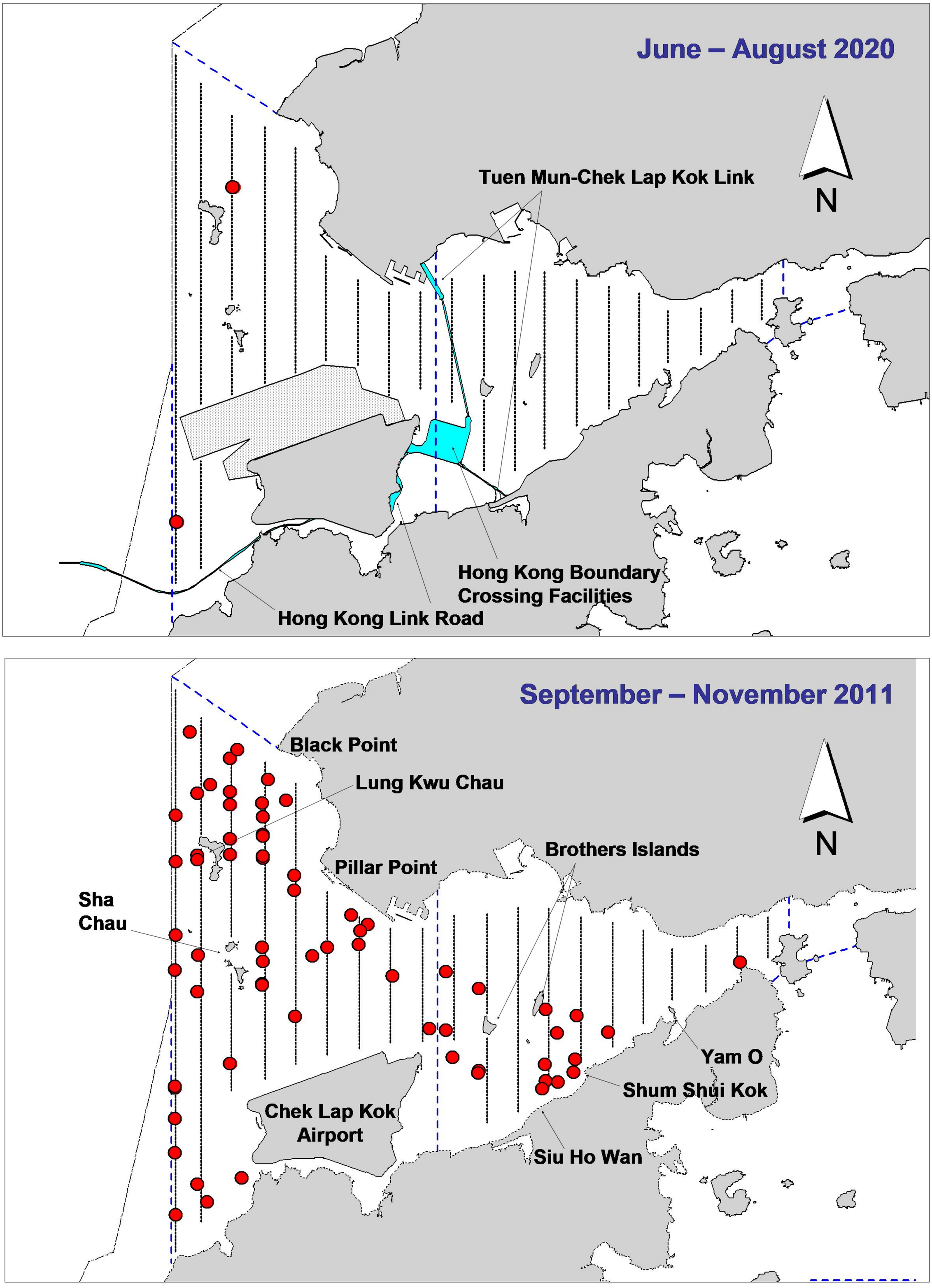
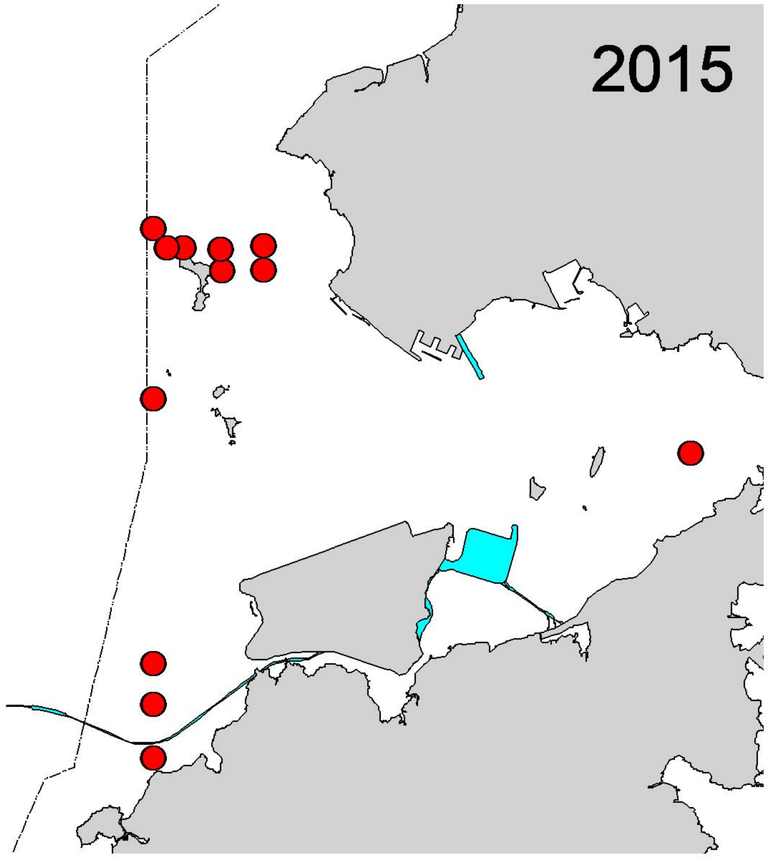
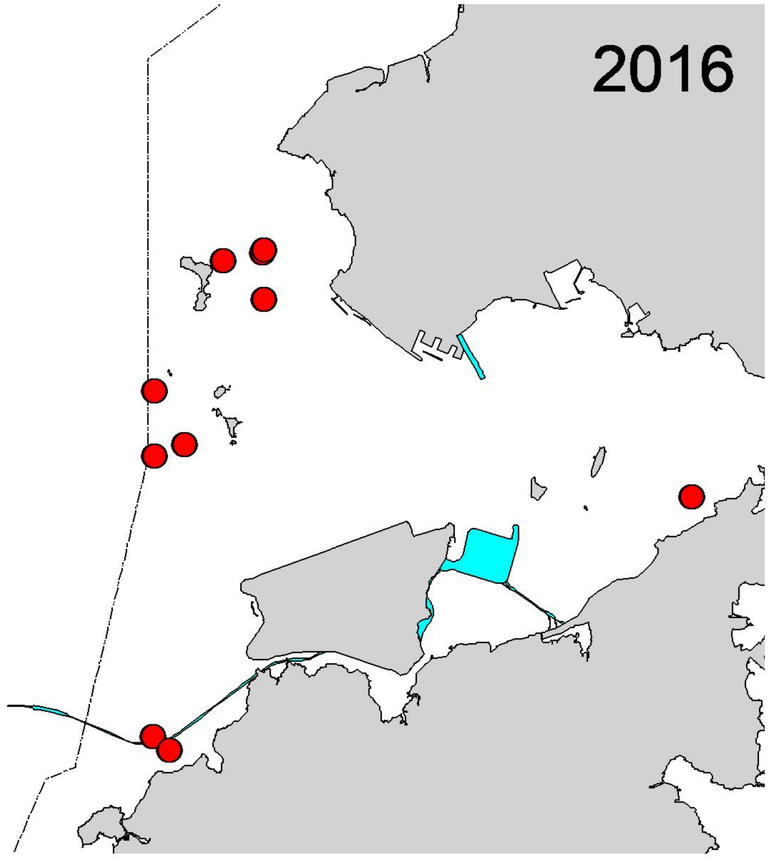
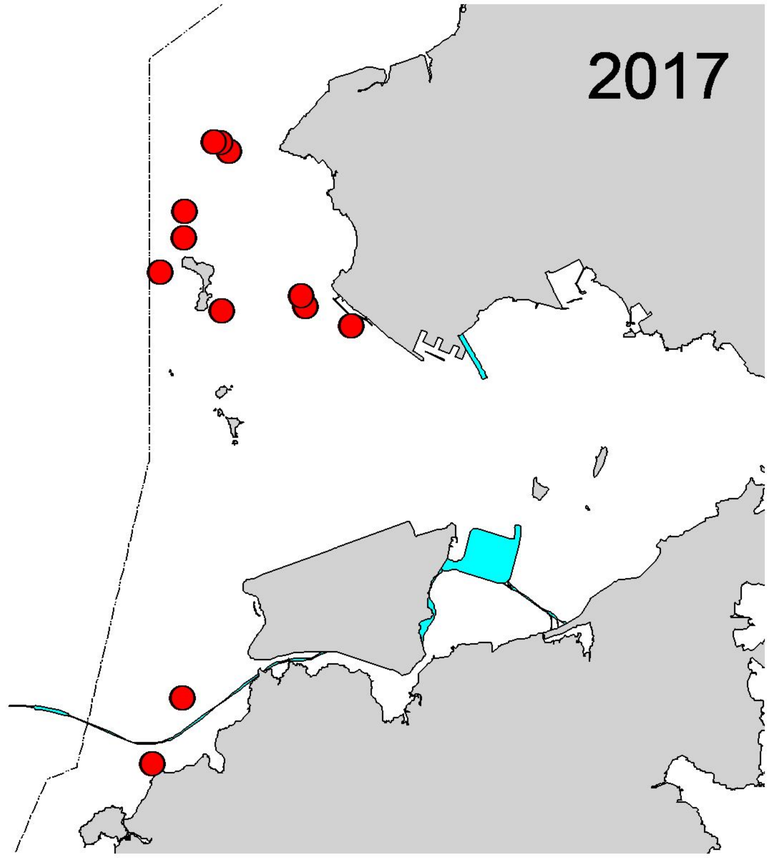
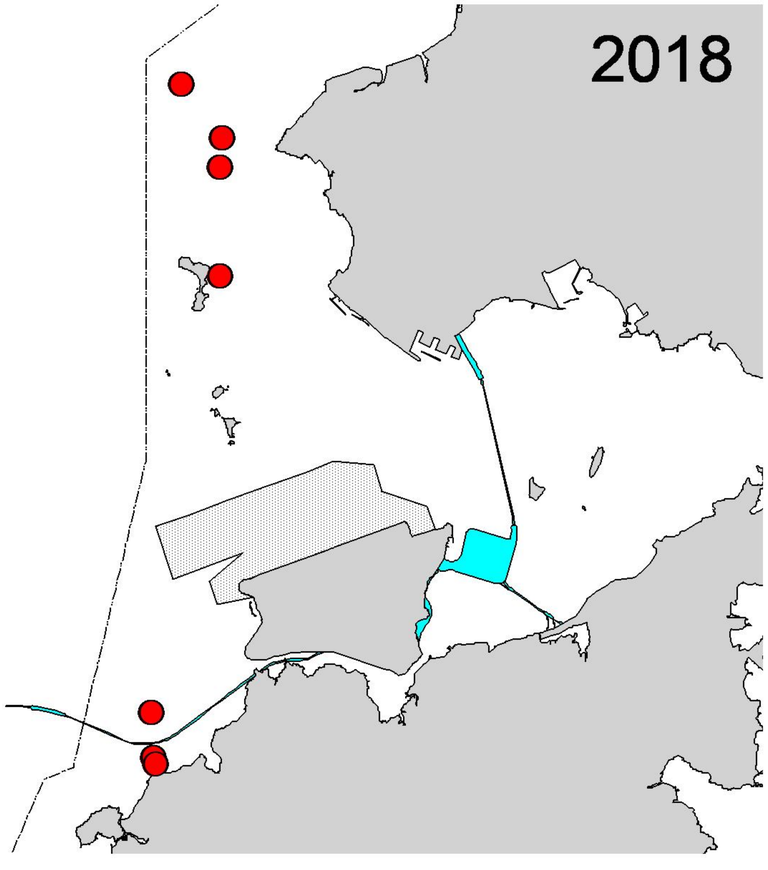


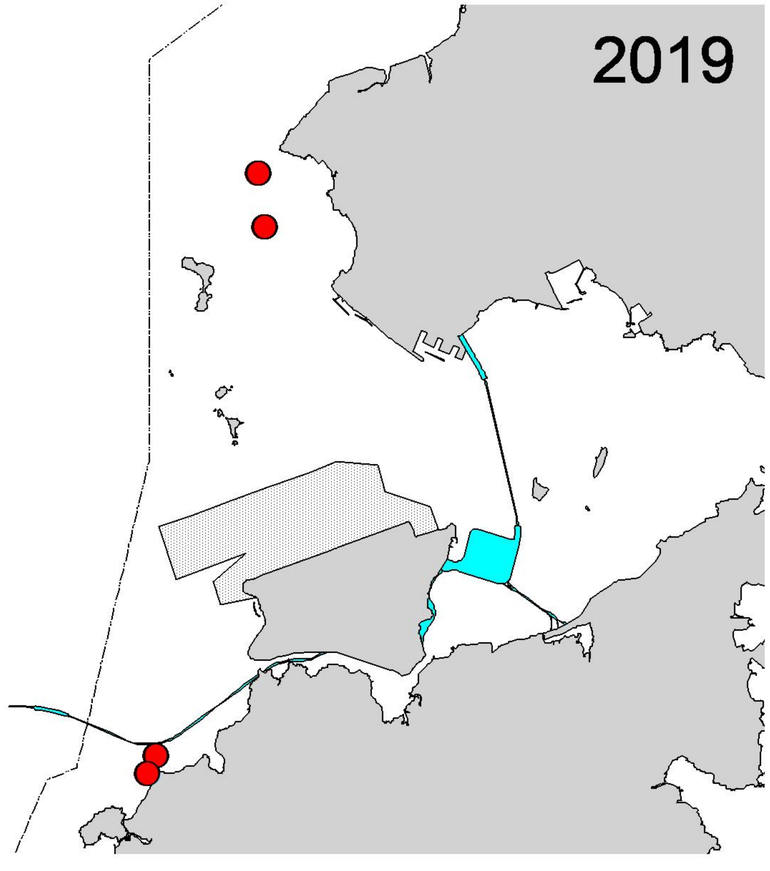
Figure 1. Distribution of Chinese white dolphin sightings in Northwest and Northeast Lantau during the present TMCLKL08 monitoring period (top) and the baseline period in 2011 (bottom)











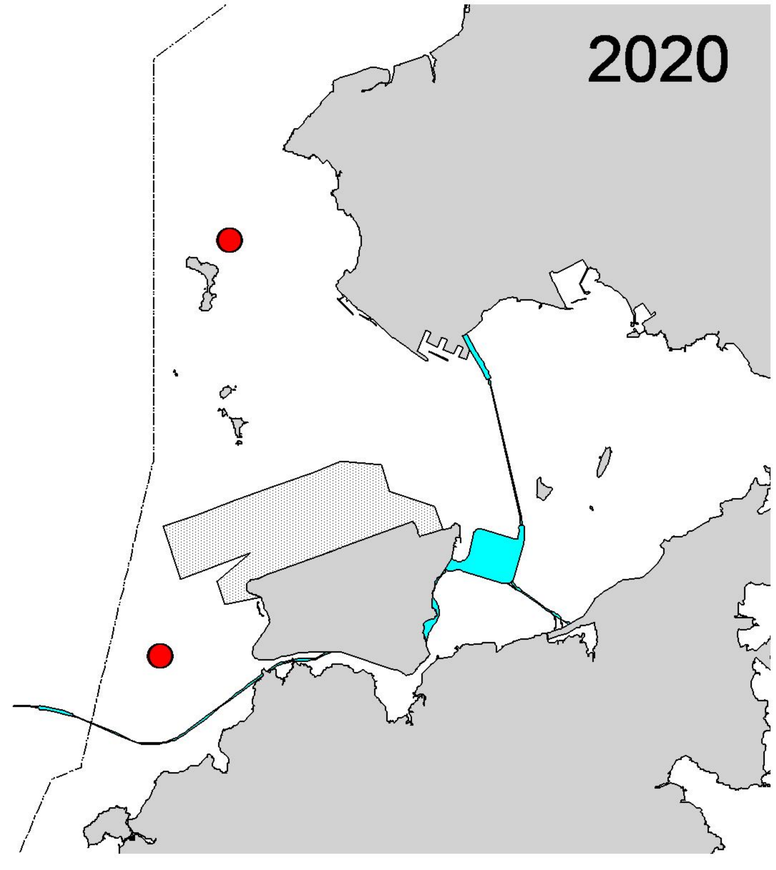


Figure 2. Distribution of Chinese White Dolphin sightings in Northwest and Northeast Lantau during the past six summer quarters (June-August) of HKLR03/TMCLKL08 monitoring period in 2015-20

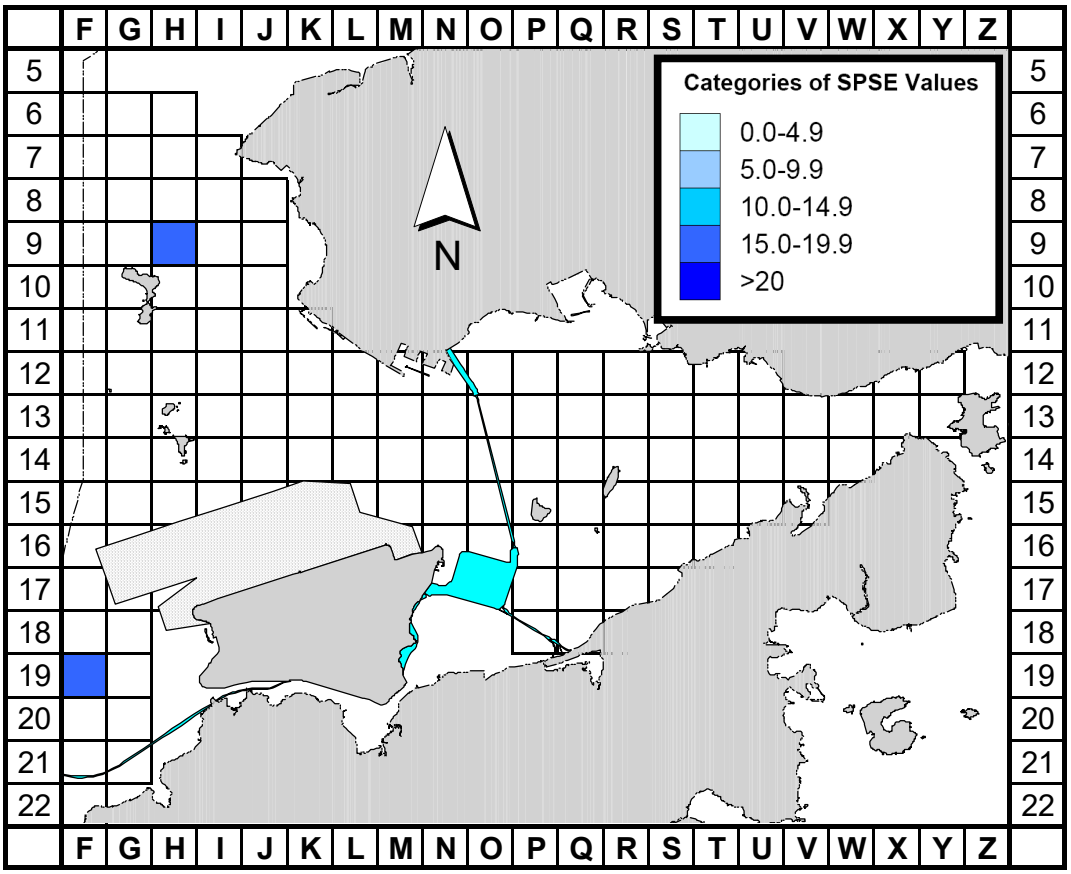


Figure 3a. Sighting density of Chinese White Dolphins with corrected survey effort per km^2 in Northeast and Northwest Lantau survey areas, using data collected during the TMCLKL08 monitoring period in June-August 2020 (SPSE = no. of on-effort sightings per 100 units of survey effort)

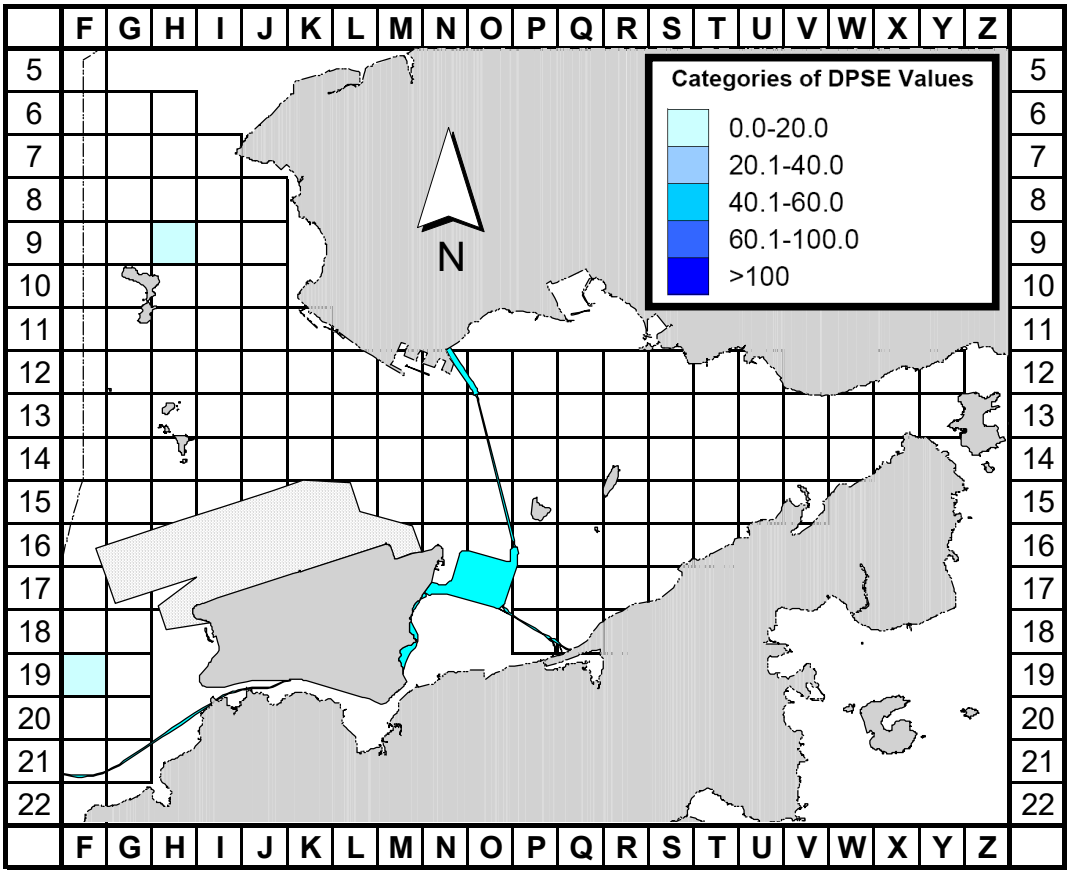


Figure 3b. Density of Chinese White Dolphins with corrected survey effort per km^2 in Northeast and Northwest Lantau survey areas, using data collected during the TMCLKL08 monitoring period in June-August 2020 (DPSE = no. of dolphins per 100 units of survey effort)

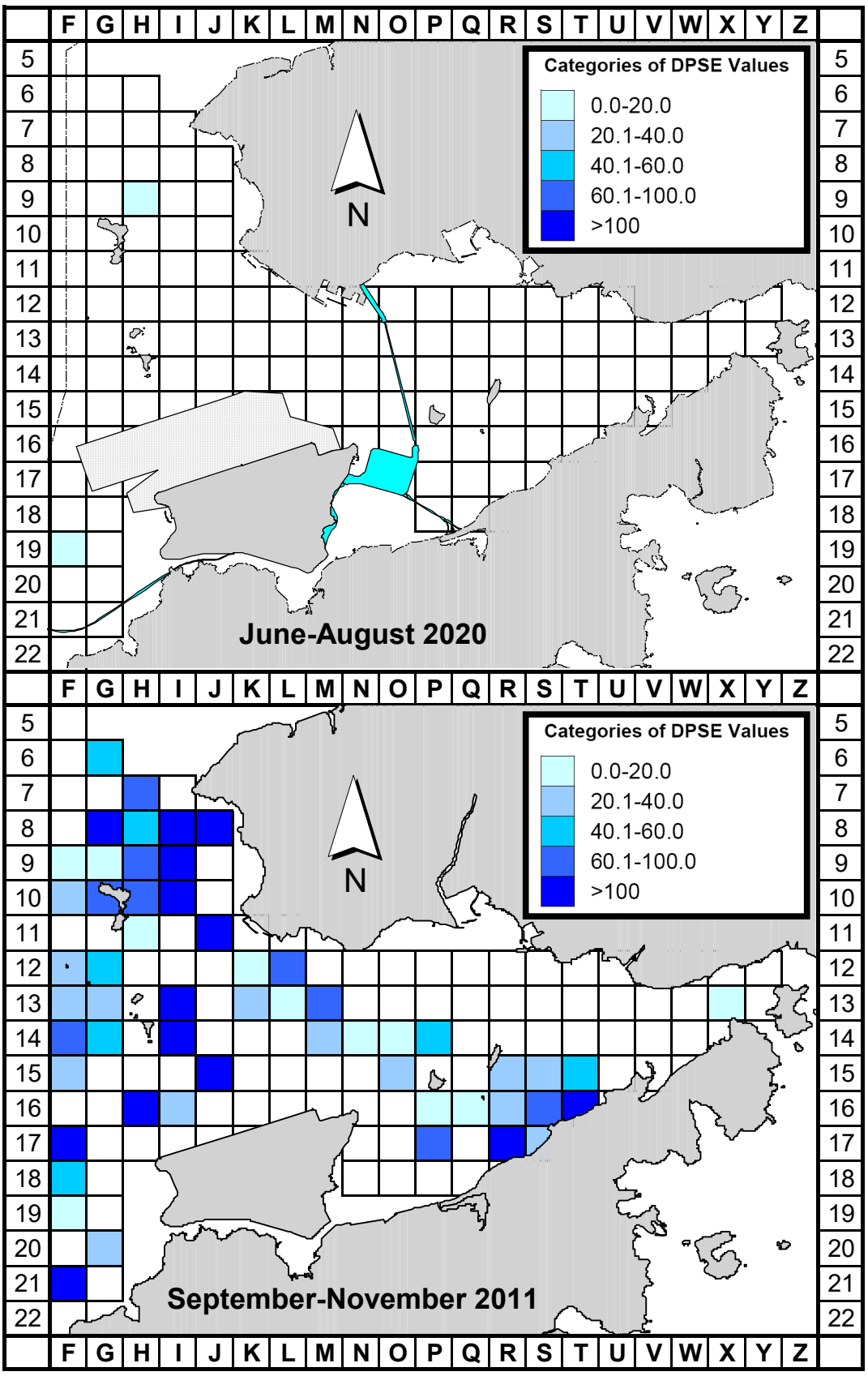


Figure 4. Comparison of density of Chinese White Dolphins with corrected survey effort per km^2 in Northwest and Northeast Lantau survey areas between the present TMCLKL08 monitoring period (June-August 2020) and baseline monitoring period (September-November 2011)
(DPSE = no. of dolphins per 100 units of survey effort)

Appendix I. TMCLKL08 Survey Effort Database (June-August 2020)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
4-Jun-20	NW LANTAU	2	8.70	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NW LANTAU	3	17.62	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NW LANTAU	2	3.50	SUMMER	STANDARD36826	TMCLKL	S
4-Jun-20	NW LANTAU	3	9.58	SUMMER	STANDARD36826	TMCLKL	S
4-Jun-20	NE LANTAU	2	25.33	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NE LANTAU	3	8.60	SUMMER	STANDARD36826	TMCLKL	P
4-Jun-20	NE LANTAU	2	11.57	SUMMER	STANDARD36826	TMCLKL	S
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	]	5.50	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
11-Jun-20	NW LANTAU	2	20.23	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NW LANTAU	3	5.70	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	3	8.40	SUMMER	STANDARD36826	TMCLKL	P
11-Jun-20	NE LANTAU	2	8.71	SUMMER	STANDARD36826	TMCLKL	S
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	3	12.79	SUMMER	STANDARD36826	TMCLKL	P
16-Jun-20	NW LANTAU	2	10.11	SUMMER	STANDARD36826	TMCLKL	S
16-Jun-20	NW LANTAU	3	0.50	SUMMER	STANDARD36826	TMCLKL	S
2-Jul-20	NW LANTAU	2	13.11	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NW LANTAU	3	15.06	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NW LANTAU	2	7.43	SUMMER	STANDARD36826	TMCLKL	S
2-Jul-20	NW LANTAU	3	2.10	SUMMER	STANDARD36826	TMCLKL	S
2-Jul-20	NE LANTAU	1	2.38	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NE LANTAU	2	31.42	SUMMER	STANDARD36826	TMCLKL	P
2-Jul-20	NE LANTAU	2	11.80	SUMMER	STANDARD36826	TMCLKL	S
7-Jul-20	NW LANTAU	2	21.74	SUMMER	STANDARD36826	TMCLKL	P
7-Jul-20	NW LANTAU	3	9.90	SUMMER	STANDARD36826	TMCLKL	P
7-Jul-20	NW LANTAU	2	2.01	SUMMER	STANDARD36826	TMCLKL	S
7-Jul-20	NW LANTAU	3	6.60	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NW LANTAU	3	24.11	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NW LANTAU	4	4.60	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NW LANTAU	3	10.69	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NE LANTAU	2	26.80	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NE LANTAU	3	8.75	SUMMER	STANDARD36826	TMCLKL	P
9-Jul-20	NE LANTAU	2	11.35	SUMMER	STANDARD36826	TMCLKL	S
9-Jul-20	NE LANTAU	3	1.10	SUMMER	STANDARD36826	TMCLKL	S
20-Jul-20	NW LANTAU	2	23.18	SUMMER	STANDARD36826	TMCLKL	P
20-Jul-20	NW LANTAU	3	8.71	SUMMER	STANDARD36826	TMCLKL	P
20-Jul-20	NW LANTAU	2	11.11	SUMMER	STANDARD36826	TMCLKL	S
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	2	7.90	SUMMER	STANDARD36826	TMCLKL	P
4-Aug-20	NW LANTAU	1	7.33	SUMMER	STANDARD36826	TMCLKL	S
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	3	16.56	SUMMER	STANDARD36826	TMCLKL	P

Appendix I. (cont'd)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
4-Aug-20	NE LANTAU	2	8.60	SUMMER	STANDARD36826	TMCLKL	S
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	3	1.15	SUMMER	STANDARD36826	TMCLKL	P
14-Aug-20	NW LANTAU	2	6.42	SUMMER	STANDARD36826	TMCLKL	S
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	2	21.53	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NW LANTAU	3	3.40	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NW LANTAU	1	4.16	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NW LANTAU	2	3.67	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NW LANTAU	3	2.40	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NE LANTAU	1	10.37	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NE LANTAU	2	5.19	SUMMER	STANDARD36826	TMCLKL	P
18-Aug-20	NE LANTAU	1	3.03	SUMMER	STANDARD36826	TMCLKL	S
18-Aug-20	NE LANTAU	2	1.71	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NW LANTAU	1	2.56	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NW LANTAU	2	30.10	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NW LANTAU	1	2.80	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NW LANTAU	2	7.90	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NE LANTAU	1	9.62	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NE LANTAU	2	10.89	SUMMER	STANDARD36826	TMCLKL	P
21-Aug-20	NE LANTAU	1	1.10	SUMMER	STANDARD36826	TMCLKL	S
21-Aug-20	NE LANTAU	2	6.49	SUMMER	STANDARD36826	TMCLKL	S

Appendix II. TMCLKL08 Chinese White Dolphin Sighting Database (June-August 2020)

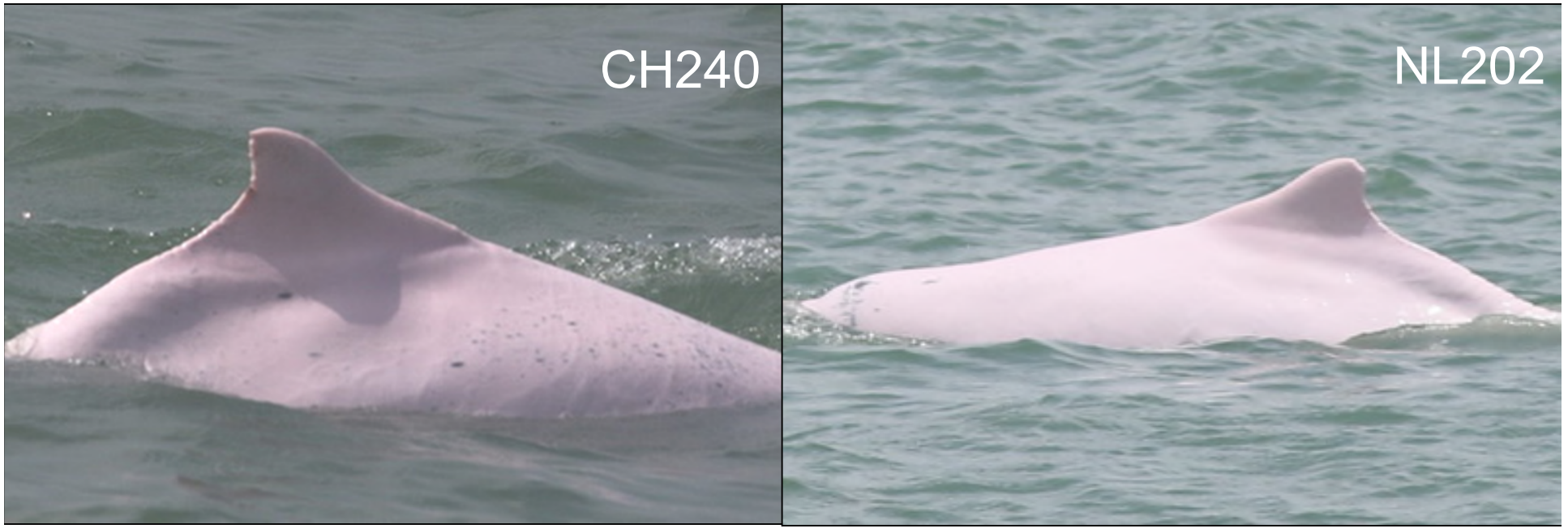
(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
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

Appendix III. Individual dolphins identified during TMCLKL08 monitoring surveys in June-August 2020

ID#	DATE	STG#	AREA
CH240	21/08/20	1	NW LANTAU
NL202	20/07/20	1	NW LANTAU

Appendix IV. Two individual dolphins that were identified between June-August 2020 during the TMCLKL08 monitoring surveys



Appendix V. Ranging patterns (95% kernel ranges) of two individual dolphins that were sighted during the present TMCLKL08 monitoring period

(note: yellow dots indicate sightings made in June-August 2020 during TMCLKL08 monitoring surveys)