Ref.: HYDHZMBEEM00_0_8151L.20

13 August 2020

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
Monthly EM&A Report for July 2020

Reference is made to the Environmental Team's submission of Monthly EM&A Report for July 2020 certified by the ET Leader (ET's ref.: "MCL/ED/0412/2020/C" dated 13 August 2020) and provided to us via e-mail on 13 August 2020.

We are pleased to inform you that we have no further comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-353/2009/K (the EP).

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. Andy Ho	(By Fax: 3188 6614)
	HyD	Attn.: Mr. Harry Louie	(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

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

Date 13 August 2020
Our Ref. MCL/ED/0412/2020/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,

EP Condition 5.4 – Monthly 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 Condition 5.4 of the Environmental Permit (EP-353/2009K) for the captioned project, we hereby submit the certified Monthly EM&A Report for July 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

Monthly EM&A Report (July 2020)

0002/20/ED/0133 02 | 31 July 2020

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

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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

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01	11 August 2020	IEC comments released	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 Monthly 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 6th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 July 2020 to 31 July 2020.

Environmental Monitoring and Audit Progress
The monthly 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 month. Also, no Action and Limit Level exceedance was recorded for construction noise monitoring in the reporting month.

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
There were no reporting changes during the reporting month.

Future Key Issues
The main works will be anticipated in the next reporting period are 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).

Contents

EXECUTIVE SUMMARY		**1**
1.	**INTRODUCTION**	**6**
1.1	Background	6
1.2	Project Description	6
1.3	Project Organization	7
1.4	Construction Programme and Activities	7
1.5	Works undertaken during the month	7
1.6	Status of Environmental Licences, Notification and Permits	8
2.	**AIR QUALITY**	**9**
2.1	Monitoring Requirement	9
2.2	Monitoring Equipment	9
2.3	Monitoring Methodology for HVS	10
2.4	Maintenance and Calibration for HVS	11
2.5	Monitoring Methodology for Direct Reading Dust Meter	11
2.6	Maintenance and Calibration for Direct Reading Dust Meter	12
2.7	Monitoring Locations	12
2.8	Monitoring Results	13
3.	**NOISE**	**14**
3.1	Monitoring Requirement	14
3.2	Monitoring Equipment	14
3.3	Monitoring Parameters and Frequency	14
3.4	Monitoring Methodology	15
3.5	Maintenance and Calibration	15
3.6	Monitoring Locations	16
3.7	Monitoring Results	16
4.	**ECOLOGY MONITORING**	**18**
4.1	Monitoring Requirements	18
4.2	Monitoring Locations	18
4.3	Monitoring Results	18
5.	**SITE INSPECTION AND AUDIT**	**20**
5.1	Site Inspection	20
5.2	Advice on the Solid and Liquid Waste Management Status	20
6.	**ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE**	**21**
6.1	Environmental Exceedance	21
6.2	Complaints, Notification of Summons and Prosecution	21

7.	**IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE**	**22**
7.1	Implementation Status	22
8.	**FUTURE KEY ISSUES**	**23**
8.1	Construction Programme for the Next Month	23
8.2	Key Issues for the Coming Month	23
8.3	Monitoring Schedules for the Next Month	23
9.	**CONCLUSION AND RECOMMENDATION**	**24**
9.1	Conclusions	24
9.2	Comment and Recommendations	24

Tables

Table 1.1 Contact Information of Key Personnel

Table 1.2 Environmental Licenses, Notification and Permits Summary

Table 2.1 Air Quality Monitoring Equipment

Table 2.2 Air Quality Monitoring Location

Table 2.3 Summary of Air Quality Monitoring Results

Table 3.1 Construction Noise Monitoring Equipment

Table 3.2 Monitoring Parameters and Frequencies of Noise Monitoring

Table 3.3 Construction Noise Monitoring Location

Table 3.4 Summary of Construction Noise Monitoring Results

Table 4.1 Dolphin encounter rates deduced from the two sets of TMCLKL surveys (two surveys in each set) during the reporting month in Northeast (NEL) and Northwest Lantau (NWL)

Table 4.2 Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four TMCLKL surveys conducted in the reporting month on primary lines only as well as both primary lines and secondary lines in NEL and NWL

Figures

Figure 1	The Site Layout Plan of the Contract
Figure 2	The Location of the Air Quality Monitoring Station
Figure 3	The Location of the Noise Monitoring Station
Figure 4	Post-Construction Dolphin Monitoring Line Transect Layout Map

Appendices

Appendix A	Construction Programme
Appendix B	Project Organization Chart
Appendix C	Action and Limit Levels
Appendix D	Calibration Certificate of Monitoring Equipment
Appendix E	Environmental Monitoring Schedule
Appendix F	Air Quality Monitoring Results and Construction Noise Monitoring Results
Appendix G	Wind Data
Appendix H	Event and Action Plan
Appendix I	Waste Flow Table
Appendix J	Implementation Status of Environment Mitigation Measures (Construction Phase)
Appendix K	Weather and Meteorological Conditions during Reporting Month
Appendix L	Cumulative statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions
Appendix M	Summary of Site Audit in the Reporting Month
Appendix N	Outstanding Issues and Deficiencies
Appendix O	Dolphin Monitoring Results

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 6th Monthly 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 July 2020 to 31 July 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
	Independent Environmental Checker (IEC)	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 month

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

- Security measure at existing gate at SPTI (land-based);
- Recessed Cover at SPTI and NPTI (land-based);
- UPS room near building 062 (land-based);
- Minor Works at PCB (land-based);
- Excavation at VCP and WA3 (land-based);
- Road & Drain works at SPTI and NPTI (land-based);
- Vertical access at PCB (land-based);
- Covered Walkway at SPTI and NPTI (land-based);
- Site office demolition at WA3 (land-based);
- Refuse collection point at NPTI (land-based);
- Public Toilet at NPTI (land-based);
- Kiosks Construction at VCP (land-based);
- Landscape Works at G1 and G5 (land-based);
- Conceal Conduits Works at VCP (land-based).

1.6 Status of Environmental Licences, Notification and Permits

1.6.1 A summary of the relevant permits, licenses and/or notifications on environmental protection for this Contract is presented in **Table 1.2**.

Table 1.2 Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Environmental Permit	EP-353/2009/K	11-Apr-16	Not Applicable
Notification pursuant to Air Pollution (Construction Dust) Regulation	451380	28-Nov-19	Not Applicable
Billing Account for Disposal of C&D waste	A/C No. 7036097	18-Dec-19	Not Applicable
Chemical Waste Producer Registration	5296-951-C1186-32	6-Feb-20	Not Applicable
Water Discharge License	WT00035721-2020	28-Apr-20	30-Apr-25
Construction Noise Permit	GW-RS0204-20	1-April-20	31-July-20
	GW-RS0452-20	8-July-20	5-Jan-21

2. AIR QUALITY

2.1 Monitoring Requirement

2.1.1 In accordance with the Contract Specific EM&A Manual, 1-hour and 24-hour Total Suspended Particulates (TSP) levels should be measured at the designated air quality monitoring stations to indicate the impacts of construction dust on air quality. Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days.

2.2 Monitoring Equipment

2.2.1 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) deployed at the designated monitoring stations. The HVS shall meet all the requirements of the EM&A Manual.

2.2.2 A portable direct reading dust meter was used to carry out the 1-hour TSP monitoring.

2.2.3 The model of the air quality monitoring equipment used is summarized in **Table 2.1**.

Table 2.1 Air Quality Monitoring Equipment

Item	Location	Brand	Model	Equipment	Serial No.
1	AMS2	Tisch	TE-5170 (TSP)	High Volume Sampler	HVS-01
			TE-300-310X	-Mass Flow Controller	3002
			TE-5005X	-Blower Motor Assembly	4607
			TE-5007X	-Mechanical Timer	5596
			TE-5009X	-Continuous Flow Recorder	5752
2	AMS3C	Tisch	TE-5170 (TSP)	High Volume Sampler	HVS-02
			TE-300-310X	-Mass Flow Controller	3000
			TE-5005X	-Blower Motor Assembly	4610
			TE-5007X	-Mechanical Timer	5597
			TE-5009X	-Continuous Flow Recorder	5756
3	AMS7B	Tisch	TE-5170 (TSP)	High Volume Sampler	HVS-03
			TE-300-310X	-Mass Flow Controller	2792
			TE-5005X	-Blower Motor Assembly	3802
			TE-5007X	-Mechanical Timer	5781
			TE-5009X	-Continuous Flow Recorder	5483
4		Tisch	TE-5025A	HVS Sampler Calibrator	438320/2456
5		Sibata	Model LD-5R	Sibata Portable TSP Monitors	761101
6			Model LD-5R		761104
7			Model LD-5R		882147

2.3 Monitoring Methodology for HVS

2.3.1 The following guidelines were adopted during the installation of HVS:

- Sufficient support is provided to secure the samplers against gusty wind.
- No two samplers are placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, is at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
- No furnaces or incineration flues are nearby.
- Airflow around the samplers is unrestricted.
- The samplers are more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- Permission must be obtained to set up the samplers and to obtain access to the monitoring stations.
- A secured supply of electricity is needed to operate the samplers.

2.3.2 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler shall be properly set. The power supply should be checked to ensure the proper functioning of the sampler. The sampler is recommended to be operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.3.3 The filter holding frame should be removed by loosening the four nuts and placing carefully a weighted and conditioned filter at the centre with the stamped number upwards on a supporting screen.

2.3.4 The filter should be aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. The filter holding frame should be tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.3.5 A programmed timer should be used to control the duration of operation. Information should be recorded on the record sheet, which included the starting time, the weather condition and the filter number.

2.3.6 After sampling process is finished, the filter should be removed and sent to the laboratory for weighting. The elapsed time should also be recorded.

2.3.7 All filters should be equilibrated in a conditioning environment for 24 hours before weighting. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be <50% and not vary by more than ±5%. A convenient working RH is 40%.

2.4 Maintenance and Calibration for HVS

2.4.1 The high volume motors and their accessories should be properly maintained, including routine motor brushes replacement and electrical wiring checking, to ensure that the equipment and a continuous power supply were in good working condition.

2.4.2 Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at fortnightly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The calibration certificate for the HVS is provided in **Appendix D**.

2.5 Monitoring Methodology for Direct Reading Dust Meter

2.5.1 Portable Laser Particle Photometer Monitors should be operated in accordance with the Manufacturer's instruction Manual as below:

a) Pulling up the air sampling inlet cover
b) Changing the Mode 0 to BG
c) Pressing Start/Stop switch
d) Turning the knob to SENSI.ADJ and press it
e) Pressing Start/Stop switch again
f) Returning the knob to the position MEASURE slowly
g) Pressing the timer set switch to set measuring time
h) Removing the cap and start the measurement

2.6 Maintenance and Calibration for Direct Reading Dust Meter

2.6.1 ET shall submit sufficient information to the IEC to prove that the instrument is capable of achieving comparable results to the HVS. The instrument should also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method. The calibration certificate for the direct reading dust meter is provided in **Appendix D**.

2.7 Monitoring Locations

2.7.1 In accordance with the Contract Specific EM&A Manual, four air quality monitoring locations, namely AMS2, AMS3C, AMS6 and AMS7B were set up at the proposed locations. AMS2, AMS3C and AMS7B are covered by Contract No. HY/2019/01 "Hong Kong-Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works"

2.7.2 AMS6 is covered by Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF". 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 this air quality monitoring station is no longer covered by Contract No. HY/2011/03.

2.7.3 The most updated locations are summarized in **Table 2.2** and the locations of the air monitoring stations shown in **Figure 2**.

Table 2.2 Air Quality Monitoring Location

Monitoring Station	Location
AMS2	Tung Chung Development Pier
AMS3C	Ying Tung Estate Market Rooftop
AMS6	Dragonair / CNAC (Group) Building (HKIA)
AMS7B	Third Runway Site Office

Remarks: 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.

2.8 Monitoring Results

2.8.1 The schedule of air quality monitoring in reporting month is provided in **Appendix E**.

2.8.2 No Action / Limit Level exceedance was recorded for 1-hr and 24-hr TSP at AMS2, AMS3C and AMS7B.

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

2.8.4 The weather conditions during the monitoring are provided in **Appendix K**.

2.8.5 The monitoring data of 1-hr TSP and 24-hr TSP are summarized in **Table 2.3**. Detailed monitoring data are presented in **Appendix F**.

Table 2.3 Summary of Air Quality Monitoring Results

Monitoring Station	Average (µg/m^3)	Range (µg/ m^3)	Action Level (µg/ m^3)	Limit Level (µg/ m^3)
1-hour TSP				
AMS2	52	22-92	374	500
AMS3C	37	20-54	368	
AMS7B	59	23-110	370	
24-hour TSP				
AMS2	25	12-55	176	260
AMS3C	23	10-34	167	
AMS7B	35	18-69	183	

2.8.6 The Event and Action Plan for air quality is given in **Appendix H**.

2.8.7 The wind data obtained from the on-site wind station during the reporting period is provided in **Appendix G**.

3. NOISE

3.1 Monitoring Requirement

3.1.1 In accordance with the Contract Specific EM&A Manuals, L_{eq} (30min) monitoring is conducted for at least once a week during the construction phase between 0700 and 1900 on normal weekdays at the designated monitoring locations.

3.2 Monitoring Equipment

3.2.1 The sound level meter used in noise monitoring shall comply with the International Electrotechnical Commission Publication (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications as referred to in the Technical Memorandum issued under the Noise Control Ordinance (NCO).

3.2.2 Sound level calibrator shall be used for the on-site calibration of the meter. This calibrator complies with the IEC Publication 942 (1988) Class 1 and ANSI S1.40 - 1984. Noise measurements were only accepted to be valid if the calibration levels from before and after the measurement agree to within 1.0 dB(A).

3.2.3 Measurements shall be recorded to the nearest 0.1dB(A). Sound level meters are programmed to measure A-weighted equivalent continuous sound pressure level at 30-minute intervals between 0700 and 1900 on normal weekdays at least once a week when construction activities are underway.

3.2.4 The model of the noise monitoring equipment used is summarized in **Table 3.1**.

Table 3.1 Construction Noise Monitoring Equipment

Item	Brand	Model	Equipment	Serial No.
1	Casella	CEL-63X Series	Integrating Sound Level Meter	1488272
2	Casella	CEL-63X Series	Integrating Sound Level Meter	2451048
3	Casella	CEL-120/1	Calibrator	2383852
4	Casella	CEL-120/1	Calibrator	2383886
5	Benetech	GM816	Wind Speed Anemometer	N/A

3.3 Monitoring Parameters and Frequency

3.3.1 The parameters and frequencies of impact noise monitoring is summarized in **Table 3.2**.

Table 3.2 Monitoring Parameters and Frequencies of Noise Monitoring

Parameter	Frequency
L_{eq} (30min) L_{10} and L_{90} will be recorded for reference	At each station at 0700-1900 hours on normal weekdays at a frequency of once a week

3.4 Monitoring Methodology

3.4.1 Noise measurement should be conducted as the following procedures:

- Free field measurements was made at monitoring location M-N3. A correction of +3 dB(A) shall be made to the free field measurements.
- The battery condition should be checked to ensure good functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time should set as follow:

  (i) Frequency weighting: A
  (ii) Time weighting: Fast
  (iii) Measurement time: continuous 5 minutes interval

- Prior to and after noise measurement, the meter shall be calibrated using the calibrator for 94.0 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB(A), the measurement will be considered invalid and repeat of noise measurement is required after re-calibration or repair of the equipment.
- The wind speed at the monitoring station shall be checked with the portable wind meter. Noise monitoring should be cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.
- Noise measurement should be paused during periods of high intrusive noise if possible and observation shall be recorded when intrusive noise is not avoided.
- At the end of the monitoring period, the L_{eq}, L_{10} and L_{90} should be recorded. In addition, site conditions and noise sources should also be recorded on a standard record sheet.

3.5 Maintenance and Calibration

3.5.1 Maintenance and calibration procedures should also be carried out, including:

- The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.
- The sound level meter and calibrator should be calibrated annually by a HOKLAS laboratory or the manufacturer.
- The calibration certificates for noise monitoring equipment are provided in **Appendix D.**

3.6 Monitoring Locations

3.6.1 In accordance with the Contract Specific EM&A Manual, two noise monitoring locations, namely NMS2 and NMS3C are covered under Contract No. HY/2019/01 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works.

3.6.2 Due to rejection from Ho Yu College (NMS3) for setting up a noise monitoring station at their school, an alternative location at site boundary of the site office area at Works Area WA2 (NMS3B) is proposed. Impact noise monitoring has been relocated from NMS3B to Ying Tung Estate Market Rooftop (NMS3C) on 20 August 2018 under Contract No. HY/2013/04. The same baseline and Action and Limit levels for noise, as derived from the baseline monitoring data recorded at Ho Yu College, are adopted for this alternative noise monitoring location.

3.6.3 The most updated locations are summarized in **Table 3.3** and the locations of the noise monitoring stations shown in **Figure 3**.

Table 3.3 Construction Noise Monitoring Location

Monitoring Station	Location
NMS2	Seaview Crescent
NMS3C	Ying Tung Estate Refuse Collection Point

Remark: The Limit Levels for schools will be applied for this alternative monitoring location at NMS3C.

3.7 Monitoring Results

3.7.1 The schedule of noise monitoring in reporting month is provided in **Appendix E**.

3.7.2 No raining and wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation. The weather conditions during the monitoring month are provided in **Appendix K**.

3.7.3 The noise monitoring data are summarized in **Table 3.4**. Detailed monitoring data are presented in **Appendix F**.

Table 3.4 Summary of Construction Noise Monitoring Results

Time Period	Noise Monitoring Stations	L_{eq} (30min) dB(A) (Range)	Action Level	Limit Level dB(A)
0700-1900 hrs on normal weekdays	NMS2	59-66	When one documented complaint is received	75
	NMS3C	65-69		70/65

Remark:
NMS2: Façade Measurement
NMS3C: Free-field measurement (+3 dB(A) correction has been applied), reduction to 65dB(A) during school examination periods will be applied.

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

3.7.5 No Action / Limit Level exceedance of location NMS2 was recorded for construction noise in the reporting month.

3.7.6 During the monitoring month, at NMS3C, road traffic along the Ying Tung Road and non-project related construction activities at the nearby construction site was observed.

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

3.7.8 The Event and Action Plan for noise is given in **Appendix H**.

4. ECOLOGY MONITORING

4.1 Monitoring Requirements

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

4.1.2 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 relevant sections of dolphin monitoring report of Contract No. HY/2012/08 for this reporting month is extracted and given in **Appendix O**.

4.1.3 The CV of the proposed dolphin specialist for this Contract has been submitted to IEC for review prior to submission to AFCD for approval.

4.2 Monitoring Locations and Methodology

4.2.1 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.

4.2.2 The coordinates of the transect lines are shown in **Table 1** of **Appendix O.** The map of the transect lines provided by AFCD is presented in **Figure 4**.

4.2.3 The details of the line-transect method (Buckland et al. 2001) adopted in the survey and the photo-identification work when Chinese White Dolphins (CWD) are sighted are presented in **Section 2** of **Appendix O**.

4.3 Monitoring Results

4.3.1 Vessel-based Line-Transect Survey

4.3.1.1 Two sets of vessel-based line transect surveys were conducted in NWL and NEL survey areas on 2, 7, 9 and 20 July 2020. The survey routes are presented in **Figures 2 to 5** of **Appendix O**.

4.3.1.2 During the 2 and 9 July 2020 surveys, several boats and barges involved in construction works near the southern end of Transect Line No. 8 were observed. Due to safety considerations, the survey vessel did not traverse these areas. Therefore, only a partial survey of Transect Line No. 8 was conducted as shown in **Figures 2** & **4** of **Appendix O**.

4.3.1.3 A total of 254.95 km of survey effort was collected, with 98.2% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) (**Annex I** of **Appendix O**).

4.3.1.4 A total of 93.60 km and 161.35 km of survey effort were collected from NEL and NWL survey areas, respectively while the total survey effort conducted on primary and secondary lines were 189.76 km and 65.19 km, respectively (**Annex I** of **Appendix O**).

4.3.1.5 During the reporting period, a single CWD was sighted in NWL and no CWD sighted in NEL. The dolphin sighting was made on the primary line during on-effort search, and was not associated with any operating fishing vessel (**Annex I** of **Appendix O**).

4.3.1.6 The dolphin was sighted to the northeast of Lung Kwu Chau, which is very far away from the TMCLKL alignment and the HKBCF work site. (Figure 6 of Appendix O)

4.3.1.7 Encounter rates of Chinese White Dolphin deduced from the survey effort and on-effort dolphin sighting data made under favourable conditions (Beaufort 3 or below) in July 2020 are presented in **Table 4.1** & **Table 4.2**.

Table 4.1 Dolphin encounter rates deduced from the two sets of TMCLKL surveys (two surveys in each set) during the reporting month in Northeast (NEL) and Northwest Lantau (NWL)

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphin from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
NEL	Set 1: July 2nd / 7th	0.0	0.0
	Set 2: July 9th / 20th	0.0	0.0
NWL	Set 1: July 2nd / 7th	0.0	0.0
	Set 2: July 9th / 20th	1.8	1.8

Table 4.2 Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four TMCLKL surveys conducted in the reporting month on primary lines only as well as both primary lines and secondary lines in NEL and NWL

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		Encounter rate (ANI) (no. of dolphin from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	Both Primary and Secondary Line	Primary Lines Only	Both Primary and Secondary Line
NEL	0.0	0.0	0.0	0.0
NWL	0.9	0.6	0.9	0.6

4.3.2 Photo-identification Work

4.3.2.1 The single CWD sighted was identified as NL202 (**Annexes III** and **IV** of **Appendix O**) and was not sighted with any young calf.

5. SITE INSPECTION AND AUDIT

5.1 Site Inspection

5.1.1 Site audits were carried out by ET on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.

5.1.2 In the reporting month, five site inspections were carried out on 2, 8, 15, 22 and 29 July 2020.

5.1.3 To monitor and audit the implementation of landscape and visual mitigation measures, two Bi-weekly landscape and visual site audits were carried out on 6 and 20 July 2020 by a Registered Landscape Architect.

5.1.4 No outstanding issues were reported during the reporting month. Details of observations recorded during the site inspections are summarized in **Appendix M**.

5.2 Advice on the Solid and Liquid Waste Management Status

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

5.2.2 The monthly summary of waste flow table is detailed in **Appendix I**.

5.2.3 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.

5.2.4 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.

6. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

6.1 Environmental Exceedance

6.1.1 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.

6.1.2 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.

6.2 Complaints, Notification of Summons and Prosecution

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

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

7. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

7.1 Implementation Status

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 J.**

8. FUTURE KEY ISSUES

8.1 Construction Programme for the Next Month

- Security measure at existing gate at SPTI (land-based);
- Recessed Cover at SPTI and NPTI (land-based);
- UPS room near building 062 (land-based);
- Minor Works at PCB (land-based);
- Excavation at VCP and WA3 (land-based);
- Road & Drain works at SPTI and NPTI (land-based);
- Vertical access at PCB (land-based);
- Covered Walkway at SPTI and NPTI (land-based);
- Site office demolition at WA3 (land-based);
- Refuse collection point at NPTI (land-based);
- Public Toilet at NPTI (land-based);
- Kiosks Construction at VCP (land-based);
- Landscape Works at G1 and G5 (land-based);
- Conceal Conduits Works at VCP (land-based).

8.2 Key Issues for the Coming Month

8.2.1 Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, waste management and landscape and visual impact issues.

8.3 Monitoring Schedules for the Next Month

8.3.1 The tentative schedule for environmental monitoring in the coming month is provided in **Appendix E**.

9. CONCLUSION AND RECOMMENDATION

9.1 Conclusions

9.1.1 1-hour TSP and 24-hour TSP impact monitoring at AMS2, AMS3C and AMS7B were carried out in the reporting month, no Action / Limit Level exceedance was recorded during the period.

9.1.2 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.

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

9.1.4 Based on previous dolphin surveys conducted for the HZMB project, monthly variation in dolphin occurrence within the survey areas was observed. Hence, it is more suitable to assess whether post-construction activities of the HKBCF have adverse impacts on dolphin occurrence every quarter where monthly comparison of distribution, group size, and encounter rates will be conducted.

9.1.5 Five environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for water quality impact and chemical and waste management were given to the Contractor for remediating the deficiencies identified during the site inspections.

9.1.6 Two Bi-weekly Landscape and Visual Site audits were carried out by a Registered Landscape Architect in the reporting month.

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

9.2 Comment and Recommendations

9.2.1 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.

9.2.2 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

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

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

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

Chemical and Waste Management

- The contractor was reminded to maintain housekeeping.

Landscape and Visual Impact

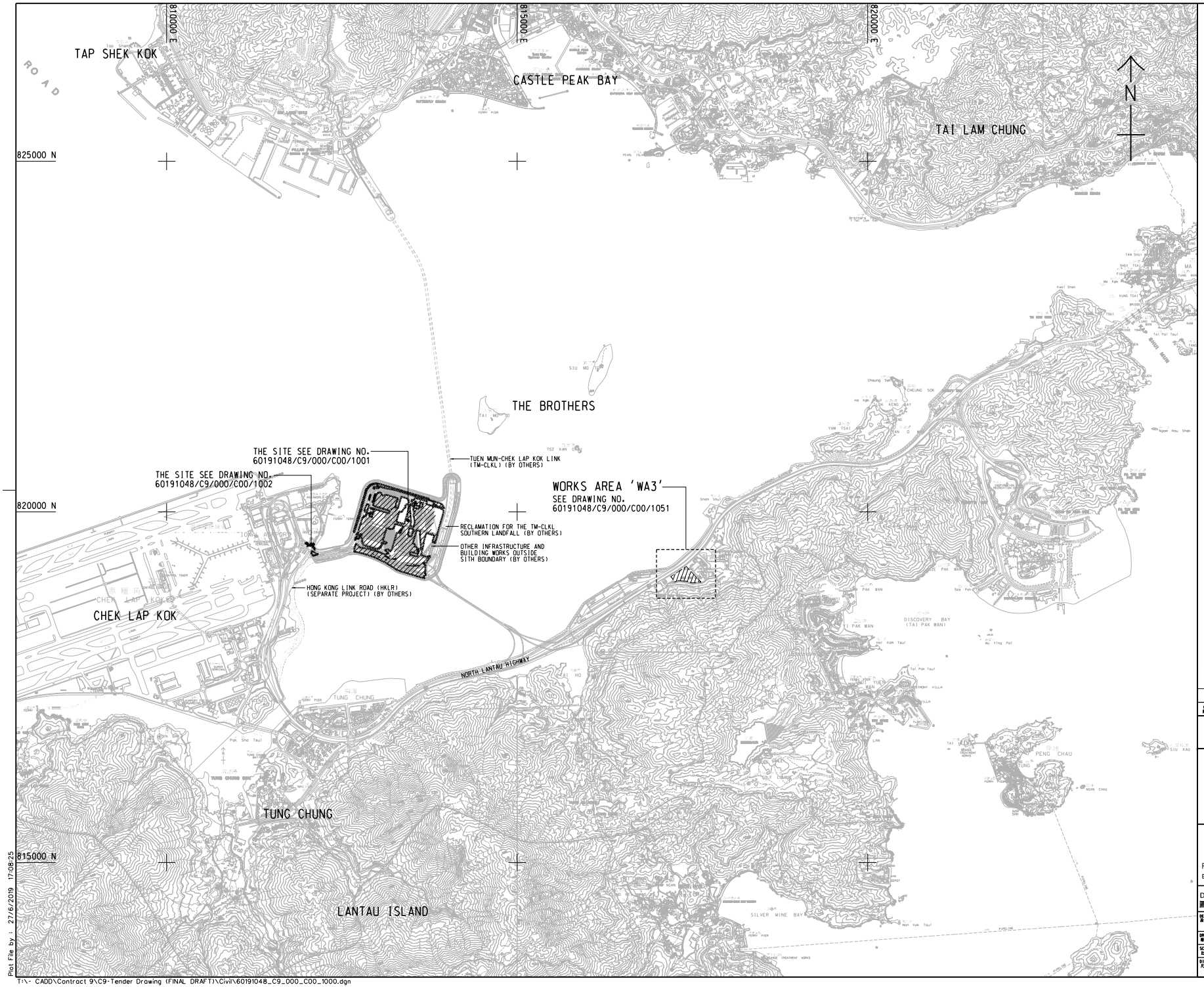
- No specific observation was identified in the reporting month.

Permit/ Licenses

- No specific observation was identified in the reporting month.

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

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BURO HAPPOLD ATKINS ADI
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DRG.NO. 圖紙編號 60191048/C9/000/C00/1000

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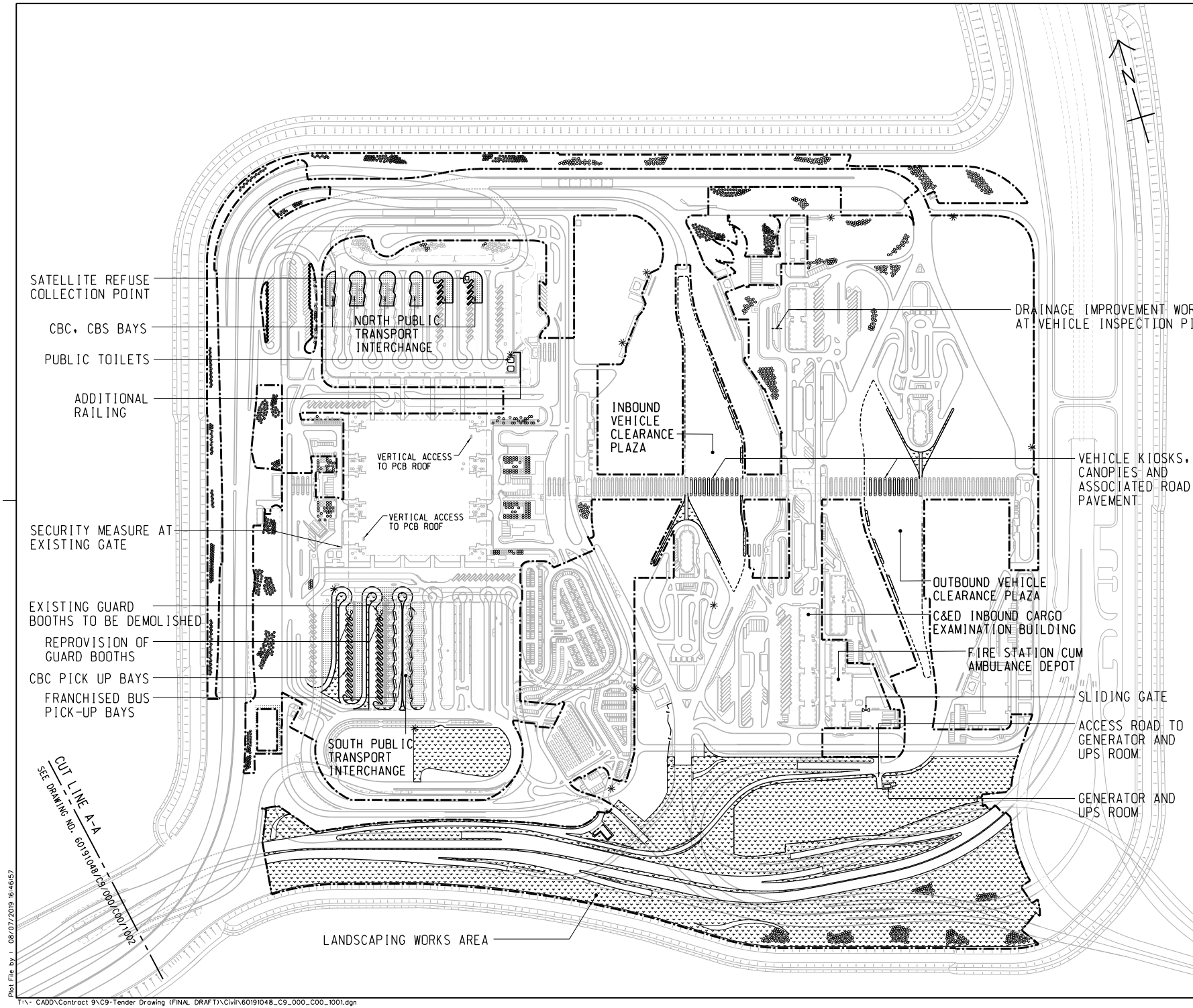

REMARKS:

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
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GENERAL ARRANGEMENT

SHEET 1 OF 2

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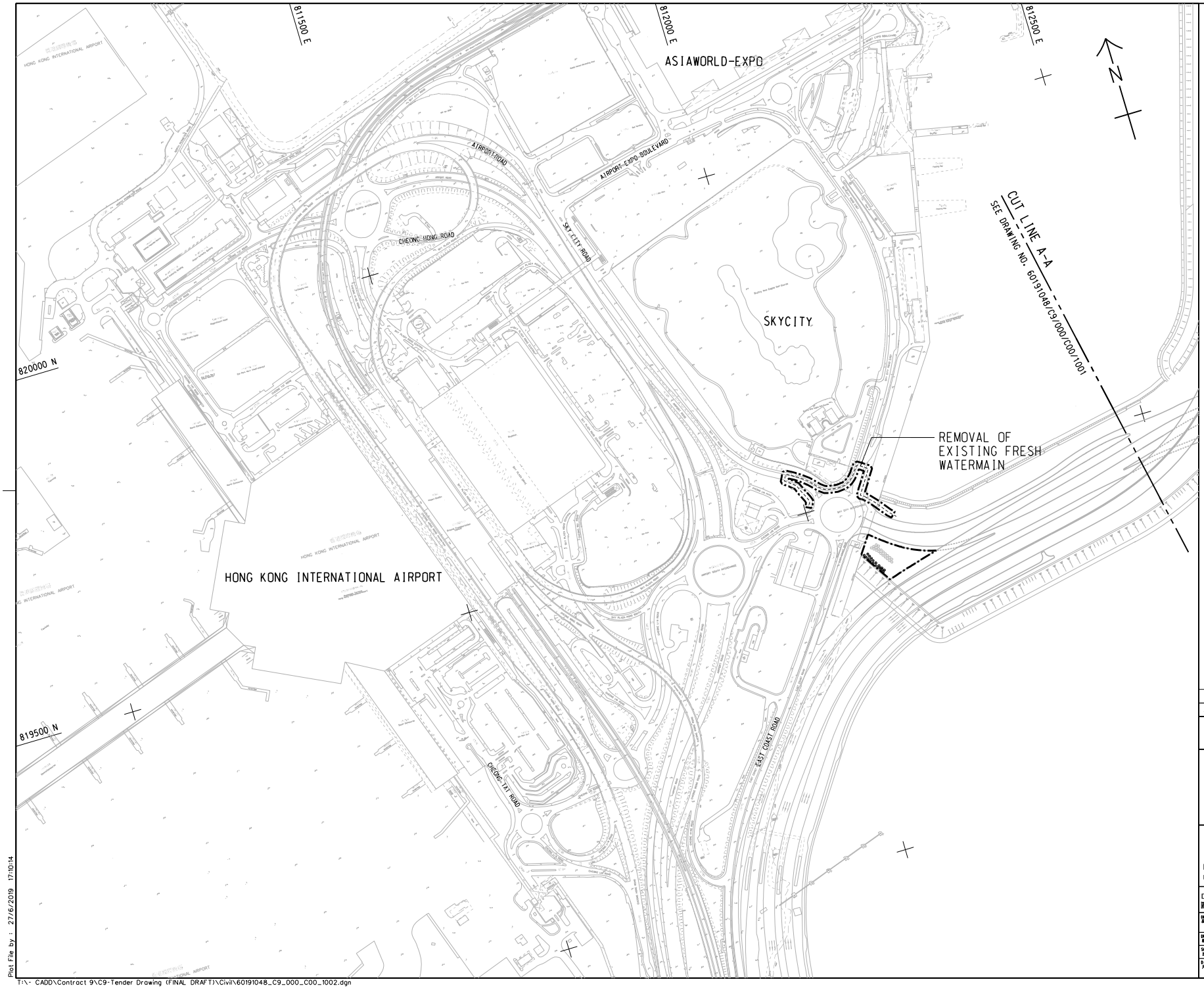

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GENERAL ARRANGEMENT

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SETTING OUT POINT

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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
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313	817445.362	819013.131
314	817450.595	819032.307
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317	817566.404	819028.472
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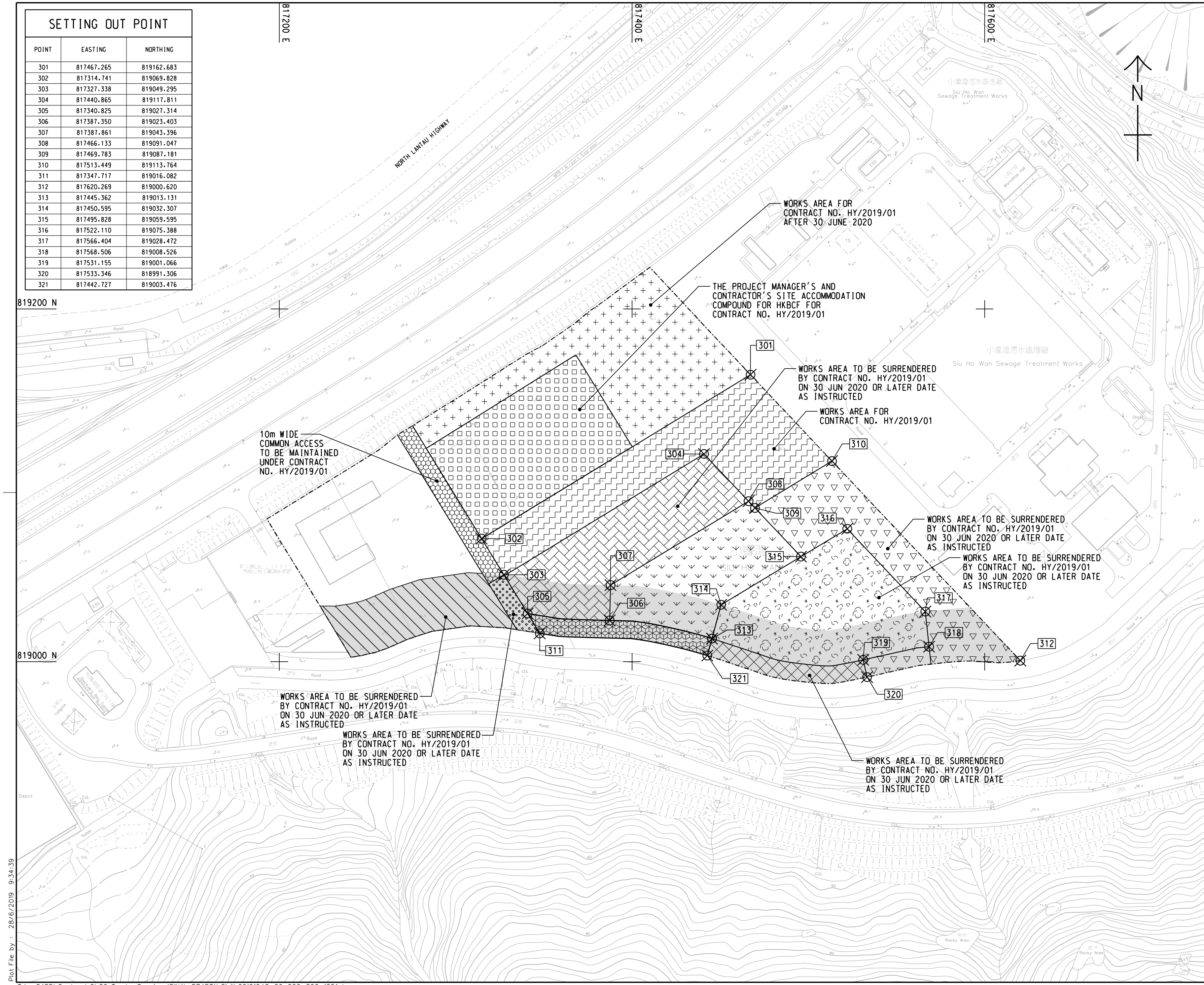

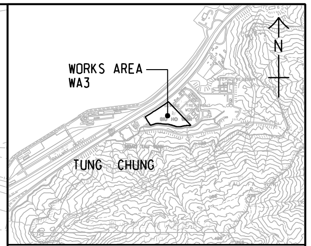

LOCATION PLAN
SCALE 1 : 25000

NOTES:

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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	CHECKED 複核 D.E.	P.E.	DATE 日期
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WORKS AREA WA3

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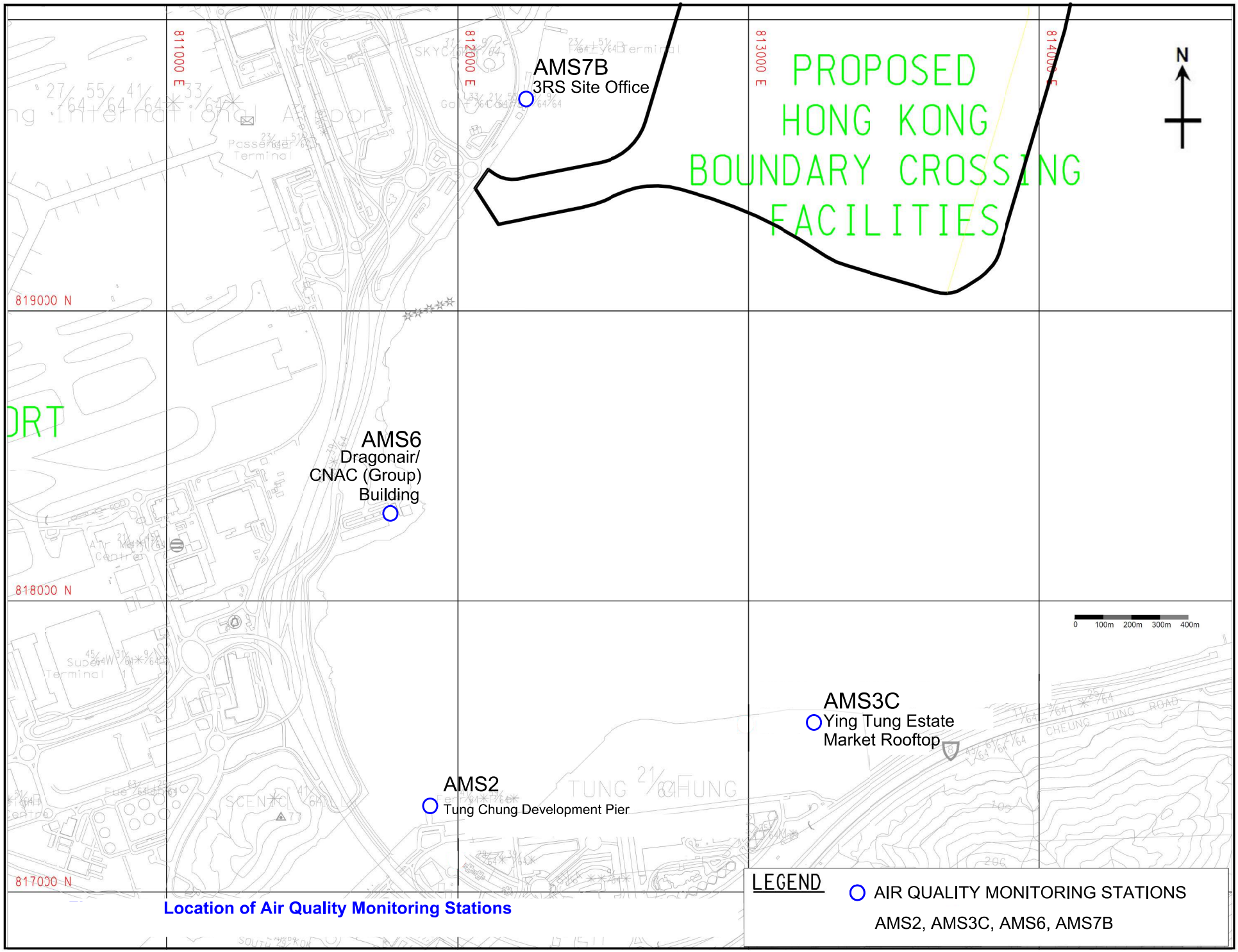
Figure 2

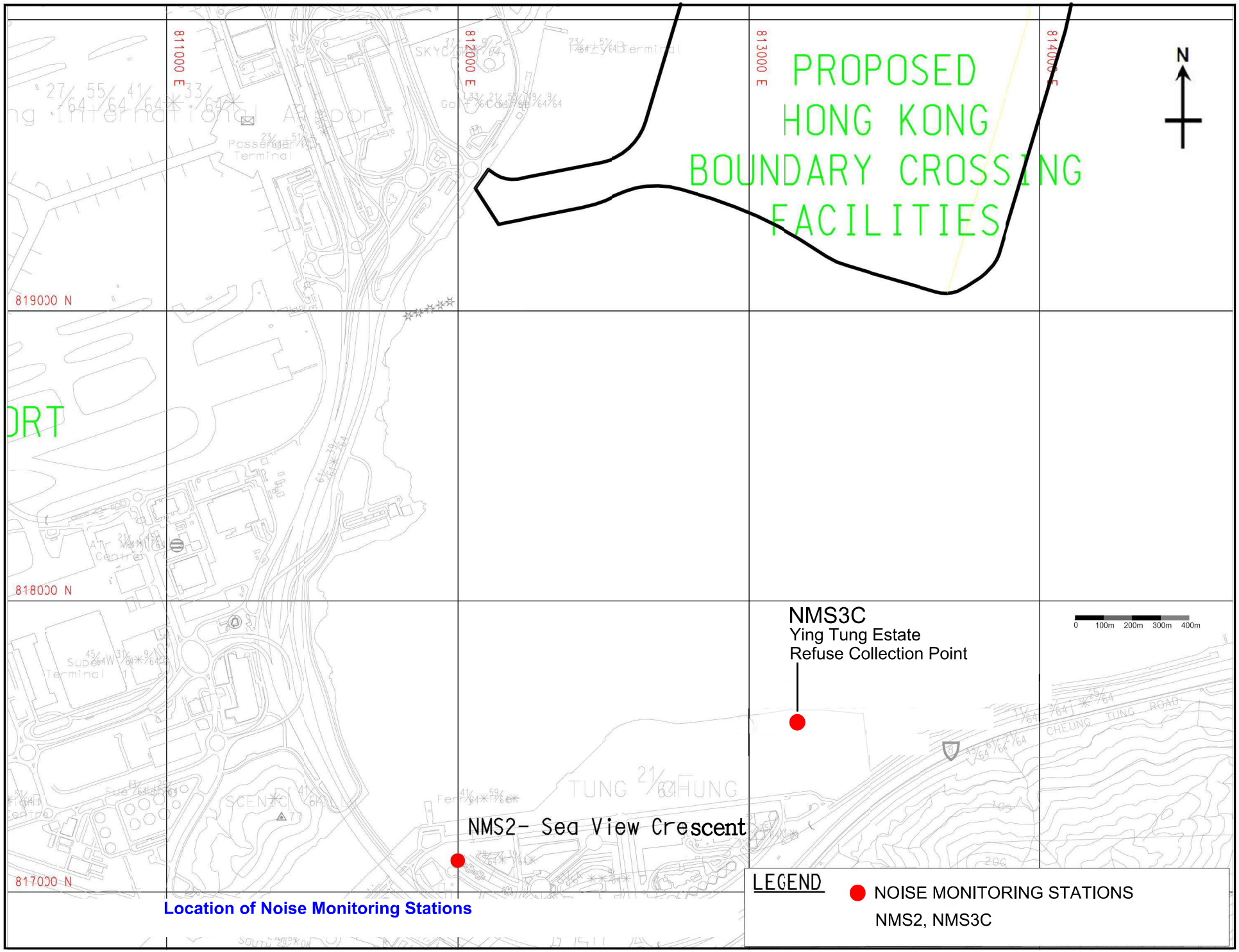
The Location of the Air Quality Monitoring Station



Location of Air Quality Monitoring Stations

Figure 3

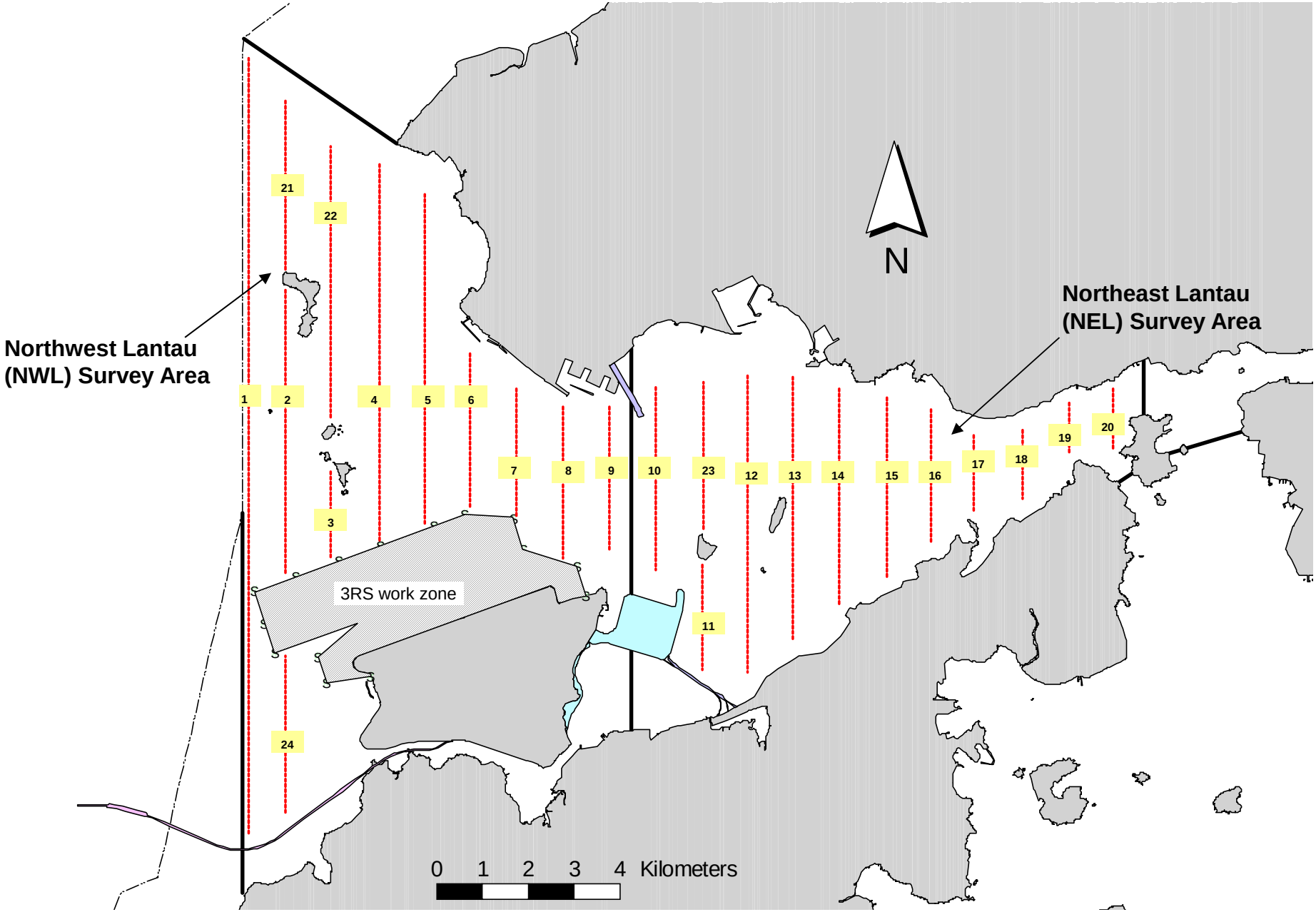
The Location of the Noise Monitoring Station



Location of Noise Monitoring Stations

Figure 4

Post-Construction Dolphin Monitoring Line Transect Layout Map



Transect Line Layout in Northwest and Northeast Lantau Survey Areas

Appendix A

Construction Programme

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Aug-20

Activity ID	Activity Name	Remaining Duration	Start	Finish
Revised Works 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		08-Sep-20*
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		03-Aug-20*
CONTRACTOR'S DESIGN				
A4910	Design for Raised Access Floor System	89	04-Dec-19 A	30-Oct-20
A4920	Acceptance of Design for Raised Access Floor System	14	31-Oct-20	13-Nov-20
A4951A	Design for BS & ELV Items (SPTI)	0	01-May-20 A	15-Jul-20 A
A4951B	Acceptance of Design for BS & ELV Items (SPTI)	15	03-Jul-20 A	17-Aug-20
A4952	Design for BS & ELV Items (002)	26	04-Dec-19 A	01-Sep-20
A4953	Acceptance of Design for BS & ELV Items (002)	31	02-Sep-20	02-Oct-20
A4954	Design for BS & ELV Items (003)	0	04-Dec-19 A	14-Jul-20 A
A4955	Acceptance of Design for BS & ELV Items (003)	0	15-Jul-20 A	28-Jul-20 A
A4957	Acceptance of Design for BS & ELV Items (007)	0	01-Jul-20 A	12-Jul-20 A
A4958	Design for BS & ELV Items (Kiosks)	75	04-Dec-19 A	31-Oct-20
A4959	Acceptance of Design for BS & ELV Items (Kiosks)	14	01-Nov-20	14-Nov-20
A5020	Design for Public Address (PA) System	0	04-Dec-19 A	15-Jul-20 A
A5025	Acceptance of Design for Public Address (PA) System	15	19-Jun-20 A	17-Aug-20
A5030	Design for Access Control and Security Alarm (ACS)	0	04-Dec-19 A	15-Jul-20 A
A5035	Acceptance of Design for Access Control and Security Alarm (ACS)	0	16-Jul-20 A	29-Jul-20 A
A5040	Design for Closed Circuit Television (CCTV) System	0	04-Dec-19 A	15-Jul-20 A
A5045	Acceptance of Design for Closed Circuit Television (CCTV) System	15	17-Jun-20 A	17-Aug-20
A5050	Design for IT Network System	90	04-Dec-19 A	31-Oct-20
A5055	Acceptance of Design for IT Network System	14	01-Nov-20	14-Nov-20
A5060	Design for PABX System	90	04-Dec-19 A	31-Oct-20
A5065	Acceptance of Design for PABX System	14	01-Nov-20	14-Nov-20
A5075	Acceptance of Design for 2-Way Radio for MOM	90	11-Feb-20 A	31-Oct-20
A5080	Design for Coach Parking Information System (CPIS)	0	04-Dec-19 A	13-Jul-20 A

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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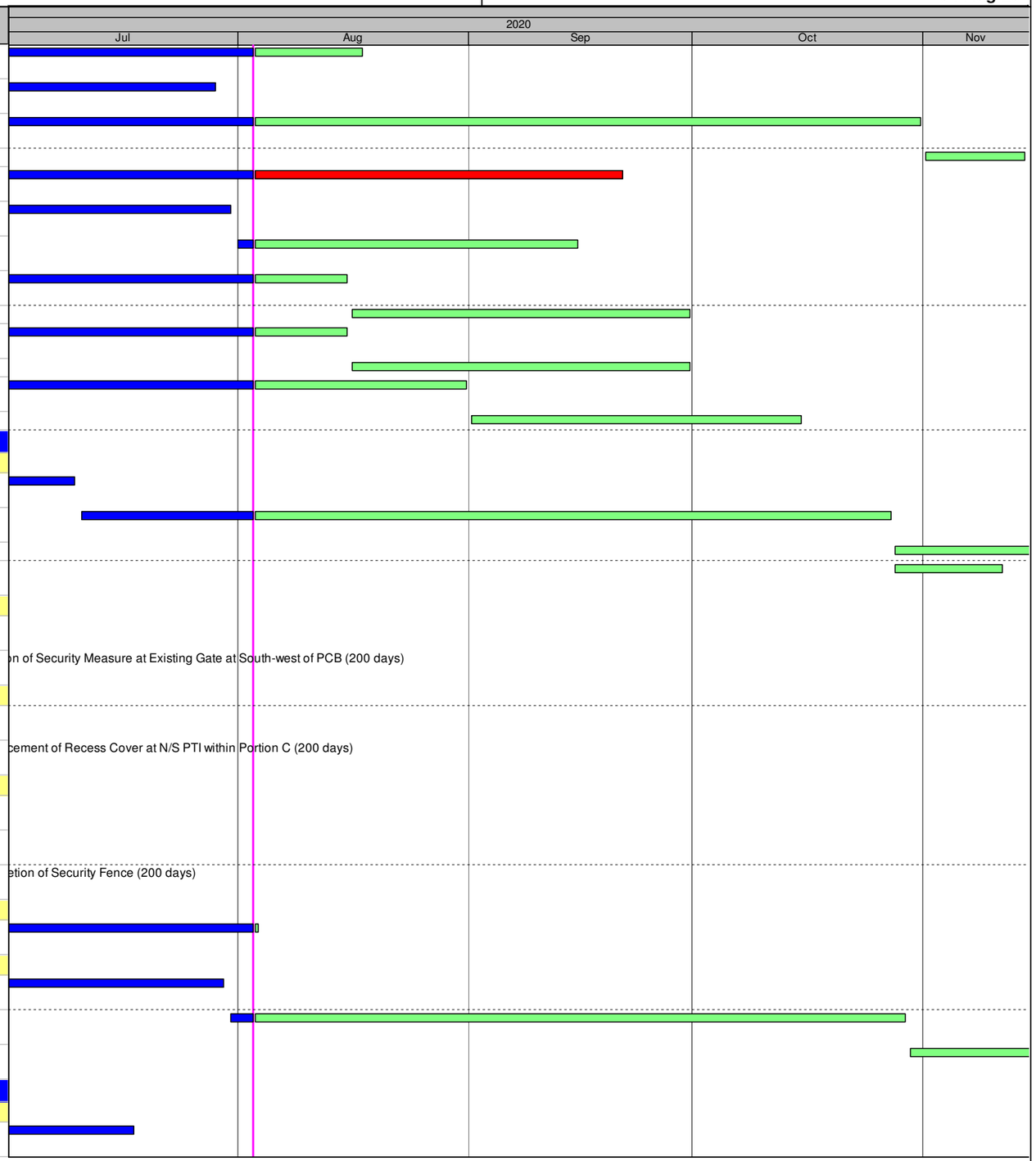
04-Aug-20	3mth Rolling Programme, Aug. - Oct. 2020	ZJ	

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Aug-20

Activity ID	Activity Name	Remaining Duration	Start	Finish
A5085	Acceptance of Design for Coach Parking Information System (CPIS)	15	17-Jun-20 A	17-Aug-20
A5100	Acceptance of Design for Island Wide SCADA	0	11-Feb-20 A	29-Jul-20 A
A6010	Design for HAVC System	90	04-Dec-19 A	31-Oct-20
A7510	Acceptance of Designs for HAVC System	14	01-Nov-20	14-Nov-20
A7530	8.1.1.2-Design for Automatic Vehicle Clearance Support System (AVCSS) - Approval	50	30-May-20 A	21-Sep-20
A7940	Design for Irrigation System (NPTI)	0	04-Dec-19 A	31-Jul-20 A
A7950	Acceptance of the Design for Irrigation System (NPTI)	44	01-Aug-20 A	15-Sep-20
A7960	Design for Pump House	13	04-Dec-19 A	15-Aug-20
A7980	Acceptance of the Design for Pump House	46	16-Aug-20	30-Sep-20
A7990	Design for Irrigation System (Southern Portion)	13	04-Dec-19 A	15-Aug-20
A8000	Acceptance of the Design for Irrigation System (Southern Portion)	46	16-Aug-20	30-Sep-20
A8010	Design for Irrigation System (Water Point)	29	04-Dec-19 A	31-Aug-20
A8020	Acceptance of the Design for Irrigation System (Water Point)	45	01-Sep-20	15-Oct-20
REFINEMENT WORKS AT HKP (4A)				
Installation of Vehicle Barrier Gate at Existing Vehicle Kiosks (4A.B)				
A4342	4A.2.1.1A-Approval of Design - Barrier Gate and Gate Control (by Engineer)	0	16-Jun-20 A	10-Jul-20 A
A4345-1	4A.2.1.2.1-Procurement and Delivery of Barrier Gate - Batch 1 (24 nos)	71	11-Jul-20 A	27-Oct-20
A4345-2	4A.2.1.2.2-Procurement and Delivery of Barrier Gate - Batch 2 (24 nos)	90	28-Oct-20	16-Feb-21
A4350-10	4A.2.1.3.1- User Approval to Replace Gates - Batch 1 (24 nos.) PA01-06, PA17-22, PD01-06, PD17-22	13	28-Oct-20	11-Nov-20
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)				
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)				
A6620	Time Risk Allowance for Installation Works	0	18-Jun-20 A	21-Jun-20 A
A6630	T&C	0	15-Jun-20 A	20-Jun-20 A
A7250	KD3 Completion of Security Fence (200 days)	0		21-Jun-20 A
Construction of Additional Drains at Vehicle Inspection Pit Near Building No. 023 (4A.K)				
A4360	Additional Drainage Works	1	03-Jun-20 A	03-Aug-20
Installation of Sliding Gate at Building No. 041 (4A.J)				
A6650	Acceptance for Design of Sliding Gate	0	02-May-20 A	30-Jul-20 A
A6660	Procurement of Sliding Gate	88	31-Jul-20 A	29-Oct-20
A6710	Installation of Security Fence and Sliding Gate (Fire Station cum Ambulance Depot 041)	75	30-Oct-20	28-Jan-21
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)	0	01-Jun-20 A	18-Jul-20 A



Actual Work ◆ ◆ Milestone
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HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

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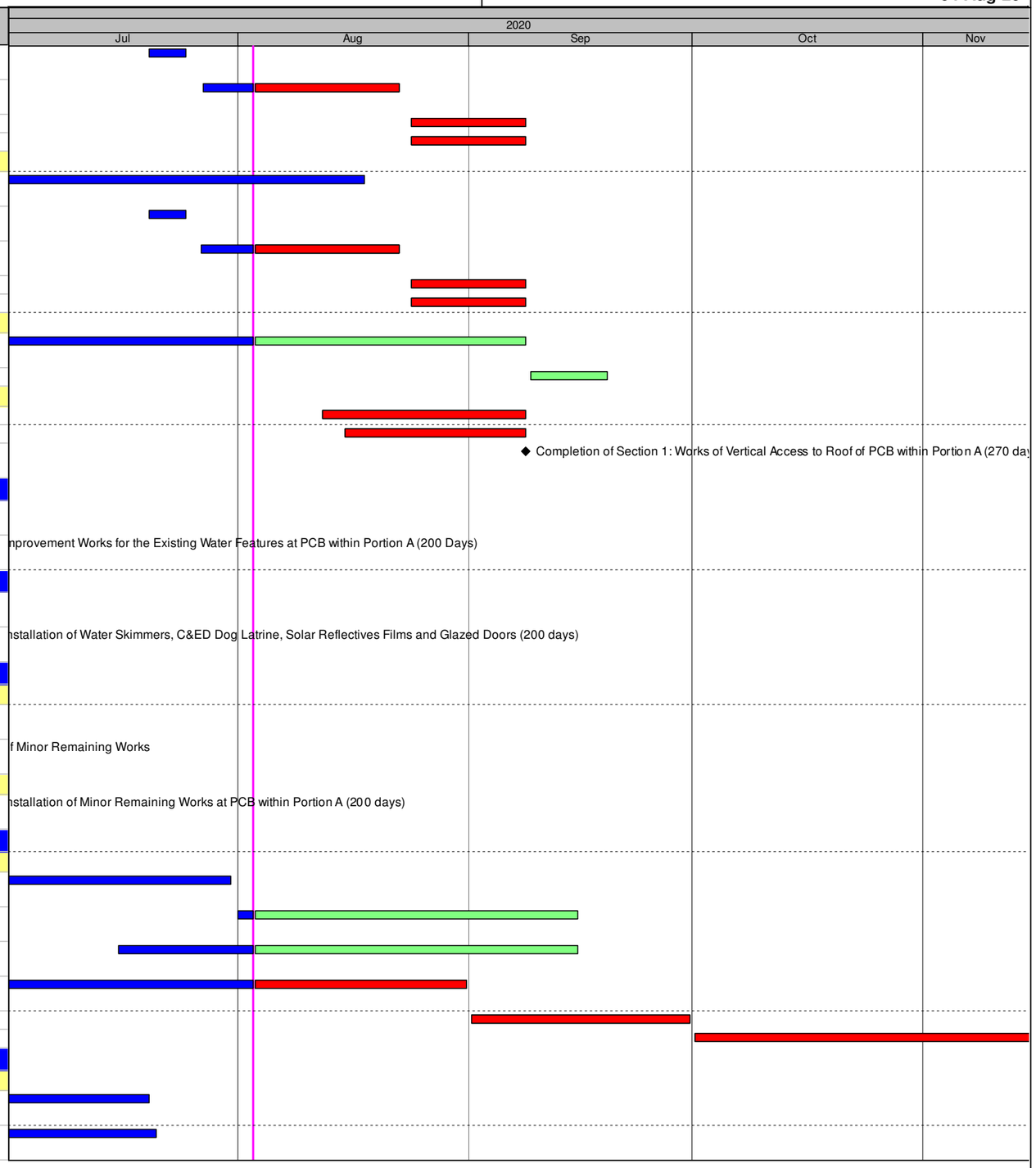
HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Aug-20

Activity ID	Activity Name	Remaining Duration	Start	Finish
A3770	Site Delivery and Assembly	0	20-Jul-20 A	25-Jul-20 A
A3780	Installation of the Steel Staircase	18	27-Jul-20 A	22-Aug-20
A3790	Install Additional Cleansing Water System	14	24-Aug-20	08-Sep-20
A3800	Install Power Socket	14	24-Aug-20	08-Sep-20
Vertical Access to the Roof of PCB at Zone G (4.C)				
A3810	Steel Prefabrication for the Staircase	0	01-Jun-20 A	18-Aug-20 A
A3830	Site Delivery and Assembly	0	20-Jul-20 A	25-Jul-20 A
A3840	Installation of the Steel Staircase	18	27-Jul-20 A	22-Aug-20
A3890	Install Addition Cleansing Water System	14	24-Aug-20	08-Sep-20
A3900	Install Power Socket	14	24-Aug-20	08-Sep-20
Existing Temporary Access Scaffold Tower at Zone F (4.A)				
A4300	Maintenance of the Existing Temporary Access Scaffold Tower at Zone F	32	04-Dec-19 A	08-Sep-20
A4310	Demolition of the Existing Temporary Access Scaffold Tower at Zone F	10	09-Sep-20	19-Sep-20
T&C				
A6140	T&C	24	12-Aug-20	08-Sep-20
A6150	TPIDC Inspection & Approval	21	15-Aug-20	08-Sep-20
A6160	Completion of Section 1: Works of Vertical Access to Roof of PCB within Portion A (270 days)	0		08-Sep-20
SECTION 1A: IMPROVEMENT WORKS FOR THE EXISTING WATER FEATURES AT PCB WITHIN PORTION A (4.D-W)				
A6750	Time Risk Allowance for Installation Works	0	20-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				
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		20-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)				
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
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)	0	04-Dec-19 A	31-Jul-20 A
A6470	Acceptance of the Design for Irrigation System (NPTI)	44	01-Aug-20 A	15-Sep-20
A6475	Liaison with WSD	44	16-Jul-20 A	15-Sep-20
A6480	Submission of Material	29	04-Dec-19 A	31-Aug-20
A6890	Acceptance of Submission of Material	30	01-Sep-20	30-Sep-20
A7140	Procurement of Material	93	01-Oct-20	01-Jan-21
SECTION 2A: BUILDING NO. 062 - GENERATOR AND UPS ROOM WITHIN PORTION C (4A.L)				
Generator and UPS Room 062				
A4260	BS Installation	0	02-Jun-20 A	20-Jul-20 A
A4270	ABWF Installation (by CHEC)	0	06-Jun-20 A	21-Jul-20 A



Actual Work ◆ ◆ Milestone
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HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

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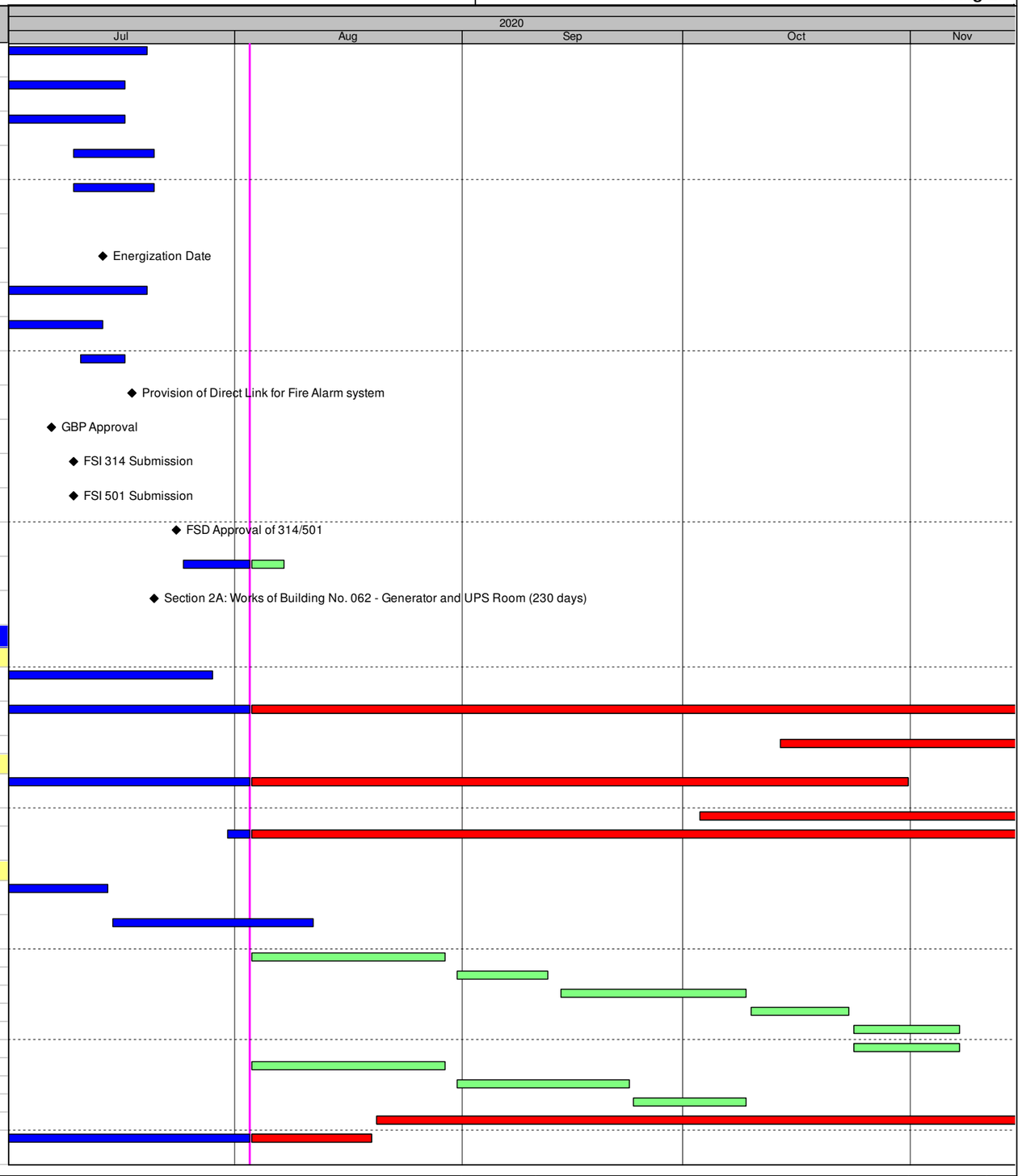
HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Aug-20

Activity ID	Activity Name	Remaining Duration	Start	Finish
A4280	Generator Installation	0	15-Jun-20 A	20-Jul-20 A
A4281	UPS and Panel Installation	0	30-May-20 A	17-Jul-20 A
A4282	Alarm Signal Installation for HY/2017/10	0	23-Jun-20 A	17-Jul-20 A
A4283	Alarm Signal Interface with HY/2017/10	0	10-Jul-20 A	21-Jul-20 A
A4284	Power Interface with TCSS contractor	0	10-Jul-20 A	21-Jul-20 A
A4290A	Incoming Main (from PB09A)	0	24-Jun-20 A	01-Jul-20 A
A4290B	Energization Date	0		14-Jul-20 A
A6930	T&C	0	20-Jun-20 A	20-Jul-20 A
A6940	CLP Inspection & Approval	0	08-Jun-20 A	14-Jul-20 A
A6940A	Pre-inspection for FSI	0	11-Jul-20 A	17-Jul-20 A
A6940B	Provision of Direct Link for Fire Alarm system	0		18-Jul-20 A
A6940C	GBP Approval	0		07-Jul-20 A
A6940D	FSI 314 Submission	0		10-Jul-20 A
A6940E	FSI 501 Submission	0		10-Jul-20 A
A6940F	FSD Approval of 314/501	0		24-Jul-20 A
A6940G	FSD Inspection	5	25-Jul-20 A	07-Aug-20
A7500	Section 2A: Works of Building No. 062 - Generator and UPS Room (230 days)	0		21-Jul-20 A
SECTION 3: NPTI - PUBLIC TOILET, COVERED WALKWAY & PAVEMENT (6)				
Additional and Modification to Existing Covered Walkway, Bay 1 - 6 (6.E)				
A1700	Acceptance of Submision of Shop Drawings	0	30-Jun-20 A	29-Jul-20 A
A2540	Footing for Covered Walkway	160	22-Jun-20 A	11-Feb-21
A2560	Steel prefabrication	100	14-Oct-20	11-Feb-21
Additional & Modification of Covered Walkway adjacent to Building 003, Bay 7 (6.C)				
A4420	Footing for Covered Walkway	75	01-Jun-20 A	31-Oct-20
A4430	Drainage & Ducting at Footpath	49	03-Oct-20	30-Nov-20
A4440	Steel prefabrication	100	31-Jul-20 A	30-Nov-20
Satellite Refuse Collection Point, Building 007 (6.A) - Omission				
A1730	Raft Foundation	0	22-Jun-20 A	14-Jul-20 A
A1750	Walls and Roof	0	15-Jul-20 A	11-Aug-20 A
A1760	Wall Finishing	24	03-Aug-20	29-Aug-20
A3150	Doors (3 Nos. of Metal Doors)	12	31-Aug-20	12-Sep-20
A3160	Metal Works (1 No. of Cat Ladder, 1 No. of Louvre, 1 No. of AP)	21	14-Sep-20	09-Oct-20
A3170	Roof Metal Railing	12	10-Oct-20	23-Oct-20
A3180	Cladding	12	24-Oct-20	07-Nov-20
A3190	Roller Shutter	12	24-Oct-20	07-Nov-20
A3230	Drainage	24	03-Aug-20	29-Aug-20
A3240	Floor & Roof Finishing	21	31-Aug-20	23-Sep-20
A3250	Sanitary Fitting (2 Nos. of Basin)	12	24-Sep-20	09-Oct-20
A3260	BS & E&M Works	150	20-Aug-20	20-Feb-21
A3270	WWO542 & WWO46 Part 1-3 Submission	15	12-Jun-20 A	19-Aug-20



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HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

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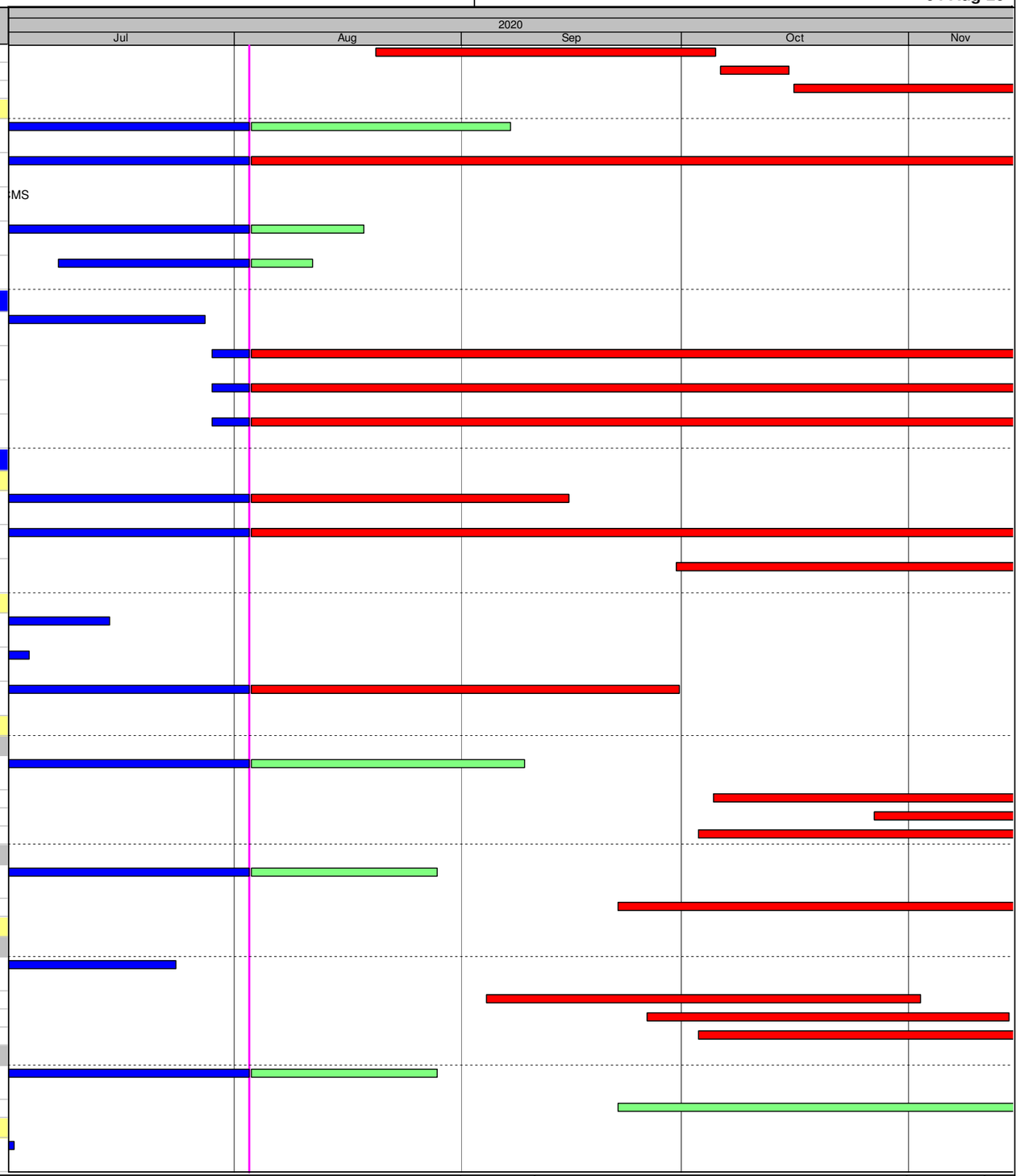
HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Aug-20

Activity ID	Activity Name	Remaining Duration	Start	Finish
A3280	Cable ducting installation (from PU-PB-01 to building 007)	38	20-Aug-20	05-Oct-20
A3280A	Power cable laying and submission of WR1A	9	06-Oct-20	15-Oct-20
A3280B	T&C	122	16-Oct-20	15-Mar-21
Public Toilet Type 1, Building 003 (6.B)				
A1780	Procurement of Materials	36	25-Jun-20 A	07-Sep-20
A1800	Raft Foundation	113	22-Jun-20 A	15-Dec-20
A2260	Approval of CMS	0		20-Jun-20 A
A2270	Delivery of Furniture	14	22-Jun-20 A	18-Aug-20
A3379	WWO542 & WWO46 Part 1-3 Submission	8	08-Jul-20 A	11-Aug-20
SECTION 4: REMOVAL OF WATERMAIN AT THE SKYCITY INTERCHANGE WITHIN PORTION C AND D				
A3650	Acceptance of TTA	0	01-Jul-20 A	28-Jul-20 A
A4040	Preparation Works for Implementation of TTA (Release TTA by AA Contractor on 31.10.2020)	96	29-Jul-20 A	25-Nov-20
A4050	Liaise with AAHK for Site Access	96	29-Jul-20 A	25-Nov-20
A4060	Liaise with HyD & WSD for the Road Permit, Removed Details	96	29-Jul-20 A	25-Nov-20
SECTION 5: REMAINING WORKS				
External Works at Plaza				
A1510	Site Formation	38	23-Mar-20 A	15-Sep-20
A1520	Additional Drainage Works	101	03-Jun-20 A	01-Dec-20
A1530	Additional Ducting, Drawpits & Utiltities and Civil Provisions Works to Facilitate E&M Installations	145	30-Sep-20	27-Mar-21
Design, Design Acceptance & Procurement for Kiosks				
A1130	Acceptance of Design for Window System	0	16-Jun-20 A	15-Jul-20 A
A7110	Procurement of Steelwork/Glazing/ABWF/E&M Material	0	07-Apr-20 A	04-Jul-20 A
A7120	Procurement of Y-Junction	59	08-May-20 A	30-Sep-20
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)	33	23-Mar-20 A	09-Sep-20
A1030	Short Columns (22 nos.) Erection	53	05-Oct-20	05-Dec-20
A1040	Erection of Ring Beams (11 Nos.)	47	27-Oct-20	19-Dec-20
A1150	Fabrication of Roof Beams with Y-Junction	142	03-Oct-20	25-Mar-21
E&M Works				
A1120-10	8.1.2.0-Install Concealed Conduits at Base Slabs for AVCSS (027/028)	23	01-Jun-20 A	28-Aug-20
A1120-15	8.1.2.0-FAT AVCSS	60	22-Sep-20	03-Dec-20
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	0	03-Apr-20 A	24-Jul-20 A
A1220	Short Columns (22 nos.) Erection	48	04-Sep-20	02-Nov-20
A1230	Erection of Ring Beams (11 Nos.)	40	26-Sep-20	14-Nov-20
A1340	Fabrication of Roof Beams with Y-Junction	142	03-Oct-20	25-Mar-21
E&M Works				
A1310-10	8.1.2.0- Install Concealed Conduits at Base Slabs for AVCSS (029/030)	23	01-Jun-20 A	28-Aug-20
A1310-15	8.1.2.0-FAT AVCSS	60	22-Sep-20	03-Dec-20
Observation Guard Booths, Building 002				
A1960	Formation/Earthworks, Footing for Proposed Guard Booth	0	08-Jun-20 A	02-Jul-20 A



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HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

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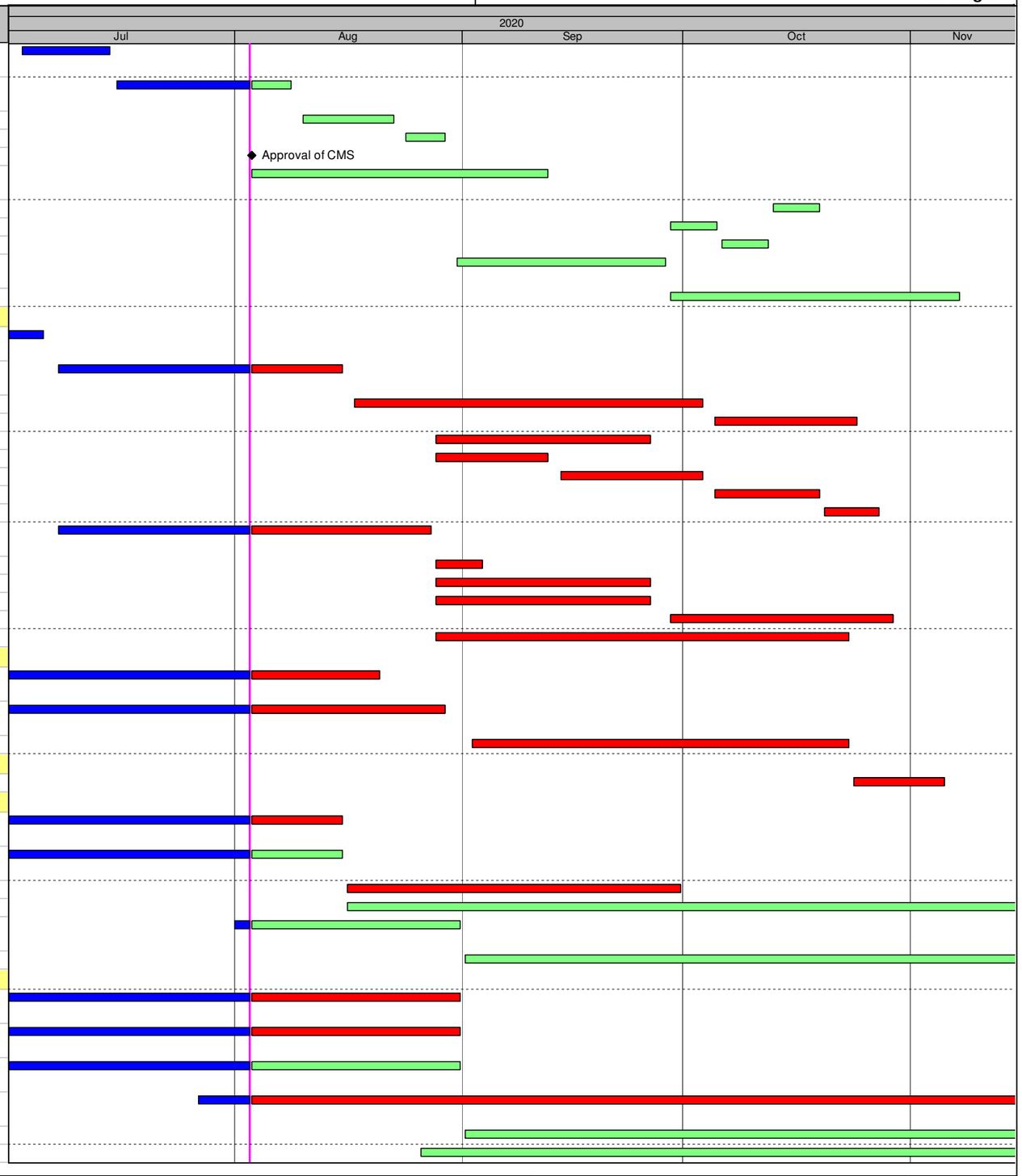
Activity ID	Activity Name	Remaining Duration	Start	Finish
A1970	Erection of the Superstructure	0	03-Jul-20 A	15-Jul-20 A
A1990	Cladding and Windows Installation	6	16-Jul-20 A	08-Aug-20
A2000	Roof Installation	12	10-Aug-20	22-Aug-20
A2010	Raised Floor	6	24-Aug-20	29-Aug-20
A3040	Approval of CMS	0		03-Aug-20
A3050	Delivery of Furniture	36	29-Aug-20 A	12-Sep-20
A3060	Furniture Installation	6	13-Oct-20	19-Oct-20
A3080	Ceiling	4	29-Sep-20	05-Oct-20
A3090	Internal Finishing	6	06-Oct-20	12-Oct-20
A3110	Electrical Installation (after completion of raised floor, before funiture and ceiling works)	25	31-Aug-20	28-Sep-20
A3110A	MVAC Equipment Installation	32	29-Sep-20	07-Nov-20
SPTI Stage 1				
A2650	E&M Ducting at Footpath	0	09-Jun-20 A	06-Jul-20 A
A2660	Covered Walkway Steel Prefabrication	12	08-Jul-20 A	15-Aug-20
A2670	Erect Covered Walkway Steel Portion	40	17-Aug-20	03-Oct-20
A2671	Footpath Paving Block	18	05-Oct-20	24-Oct-20
A2672	Canopy Lighting Installation	26	28-Aug-20	26-Sep-20
A2673	Electrical Work inside EL Pillar Box	14	28-Aug-20	12-Sep-20
A2674	Readiness of cutout fuse/CLP pillar box and CLP cable laying	16	14-Sep-20	03-Oct-20
A2675	CLP Meter Application	13	05-Oct-20	19-Oct-20
A2676	T&C for canopy lighting	6	20-Oct-20	27-Oct-20
A2690	Road Lighting & E&M Works	22	08-Jul-20 A	27-Aug-20
A7210	T&C for Lane 1	6	28-Aug-20	03-Sep-20
A7210A	CCTV, PA, FCS, Radio Equipment Reinstate Works	26	28-Aug-20	26-Sep-20
A7210B	CPIS, CCTV & PA Equipment Installation	26	28-Aug-20	26-Sep-20
A7210C	T&C for CPIS and CCTV, PA	24	29-Sep-20	29-Oct-20
A7220	Kerbing, Concrete Carriageway, Bitumen	47	28-Aug-20	23-Oct-20
SPTI Stage 1A (3rd Lane)				
A7660	Constructs Covered Walkway Drainage	16	12-Jun-20 A	20-Aug-20
A7670A	Kerb, Concrete Carriageway, Bitumen, Paving Block (4 bays in PMI-006)	24	01-Apr-20 A	29-Aug-20
A7670B	Kerb, Concrete Carriageway, Bitumen, Paving Block	43	02-Sep-20	23-Oct-20
SPTI Stage 2 (3rd Lane)				
A2700	TTA/Hoarding Works for Stage 2	10	24-Oct-20	05-Nov-20
Pump House for Landscape (2)				
A2890	Design for Pump House	13	04-Dec-19 A	15-Aug-20
A2900	Submission of Materials	13	04-Dec-19 A	15-Aug-20
A2910	Acceptance of the Design for Pump House	46	16-Aug-20	30-Sep-20
A2912	Liaison with WSD & Water Meter Installation	257	16-Aug-20	29-Apr-21
A2920	Acceptance for Submission of Materials	29	01-Aug-20 A	31-Aug-20
A2930	Purchasing & Delivery of Water Pump & Associated Equipment	156	01-Sep-20	03-Feb-21
Landscape Works (2)				
A4140	Material Submission for CDG and Acceptance	29	04-Dec-19 A	31-Aug-20
A4140A	Material Submission for Tree and Acceptance	29	04-Dec-19 A	31-Aug-20
A4140B	Material Submission for Plants (exclude Tree) and Acceptance	29	04-Dec-19 A	31-Aug-20
A4150A	Import CDG for Soilmix & Stockpile (G1 Access Landscaping Area)	100	27-Jul-20 A	30-Nov-20
A4160	Mix & Place Soilmix - G1 Access Tree Planting Area	92	01-Sep-20	19-Dec-20
A4160A	Mix & place Soilmix (G1 Access Landscaping Area)	118	26-Aug-20	16-Jan-21



Actual Work ◆ Milestone
Remaining Work
Critical

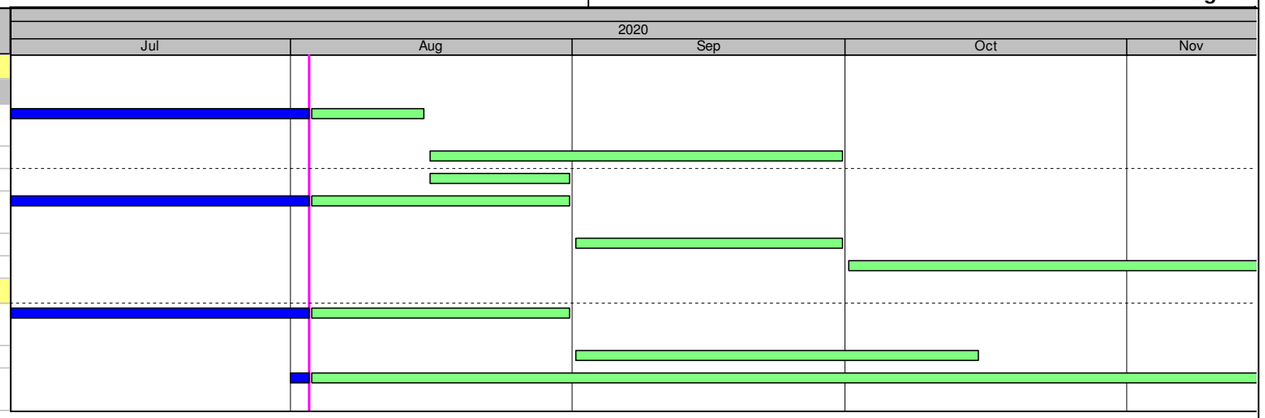
THREE MONTH ROLLING PROGRAMME FOR PHASE 2 AND OTHER WORKS
HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

Date	Revision	Checked	A...
04-Aug-20	3mth Rolling Programme, Aug. - Oct. 2020	ZJ	

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works

04-Aug-20

Activity ID	Activity Name	Remaining Duration	Start	Finish
Irrigation System (Southern Portion)				
Design and Design Acceptance				
A7850	Design for Irrigation System (Southern Portion)	13	04-Dec-19 A	15-Aug-20
A7860	Acceptance of the Design for Irrigation System (Southern Portion)	46	16-Aug-20	30-Sep-20
A7870	Liaison with WSD	16	16-Aug-20	31-Aug-20
A7880	Submission of Material	29	04-Dec-19 A	31-Aug-20
A7890	Acceptance of Submission of Material	30	01-Sep-20	30-Sep-20
A7900	Procurement of Material	80	01-Oct-20	19-Dec-20
Irrigation System (Water Point)				
A6510	Design for Irrigation System (Water Point)	29	04-Dec-19 A	31-Aug-20
A6520	Acceptance of the Design for Irrigation System	45	01-Sep-20	15-Oct-20
A6530	Liaison with WSD for Obtaining Statutory Approval	382	01-Aug-20 A	19-Aug-21



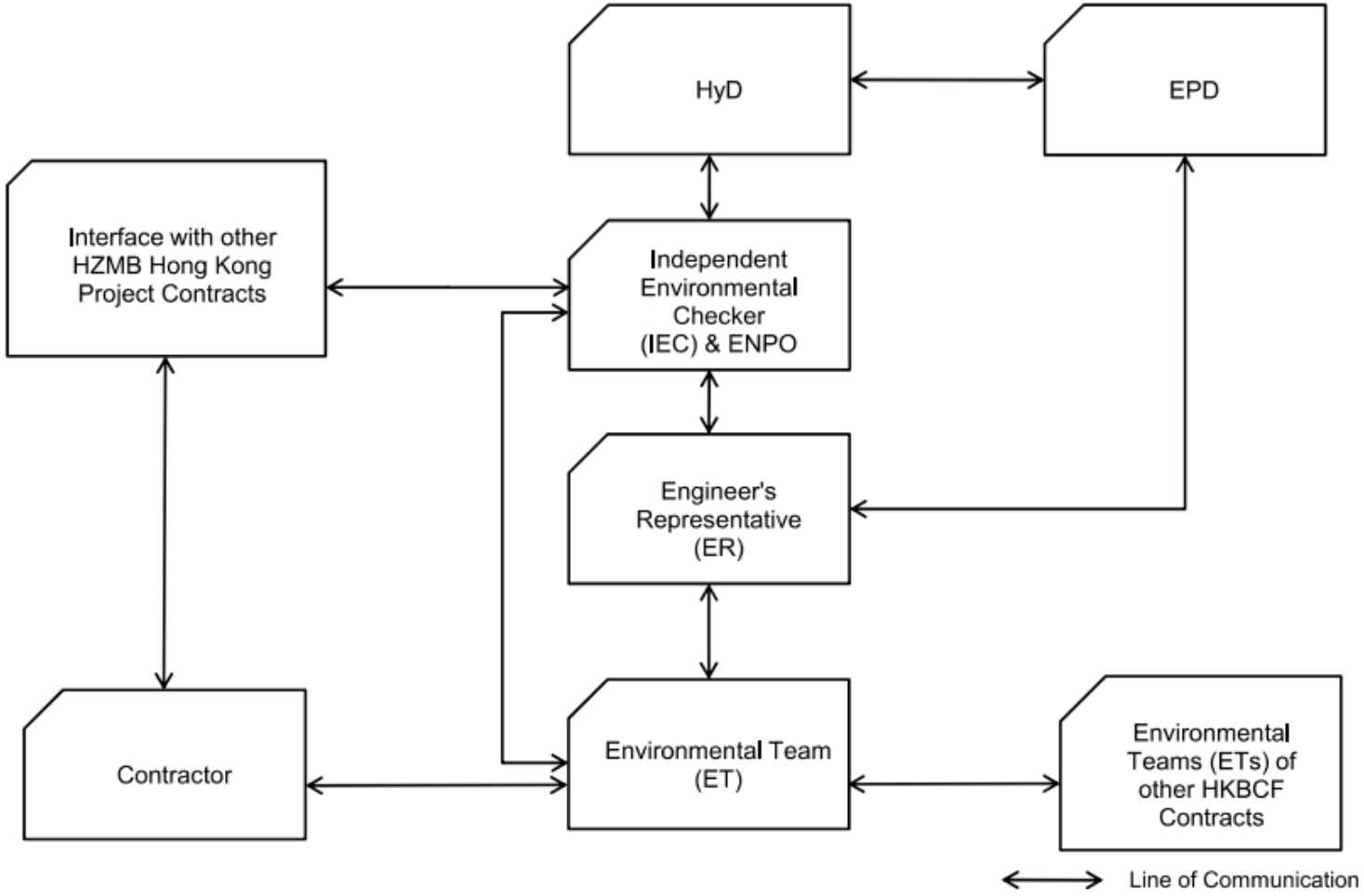
Actual Work ◆ ◆ Milestone
Remaining Work
Critical

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

Date	Revision	Checked	A...
04-Aug-20	3mth Rolling Programme, Aug. - Oct. 2020	ZJ	

Appendix B

Project Organization Chart


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

Appendix C

Action and Limit Levels

Action / Limit Levels for Air Quality

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

Notes:

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

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

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

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

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

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

Action and Limit Levels for Construction Noise

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

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

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

Appendix D

Calibration Certificate of Monitoring Equipment

TISCH Environmental

RECALIBRATION DUE DATE:
October 21, 2020

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	October 21, 2019	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 744.2	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **2456**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4200	3.2	2.00
2	3	4	1	1.0180	6.3	4.00
3	5	6	1	0.9030	7.9	5.00
4	7	8	1	0.8620	8.8	5.50
5	9	10	1	0.7120	12.6	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9849	0.6936	1.4066	0.9957	0.7012	0.8904
0.9808	0.9635	1.9892	0.9915	0.9740	1.2592
0.9787	1.0838	2.2240	0.9894	1.0957	1.4078
0.9775	1.1340	2.3325	0.9882	1.1464	1.4765
0.9724	1.3658	2.8131	0.9831	1.3807	1.7808
QSTD	**m=**	**2.08799**	**QA**	**m=**	**1.30746**
	b=	**-0.03545**		**b=**	**-0.02244**
	r=	**0.99989**		**r=**	**0.99989**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge — Date of Calibration: 28-Apr-20
Location : AMS2 — Next Calibration Date: 27-Jul-20
Brand: Tisch — Technician: Ting Chan
Model: TE-5170 S/N: HVS-01

CONDITIONS

Sea Level Pressure (hPa):	1017.5	Corrected Pressure (mm Hg):	763
Temperature (℃):	24.3	Temperature (K):	297

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.08799
Model:	TE-5025A	Qstd Intercept:	-0.03545
Calibration Date:	21-Oct-19	Expiry Date:	21-Oct-20
S/N:	2456		

CALIBRATION

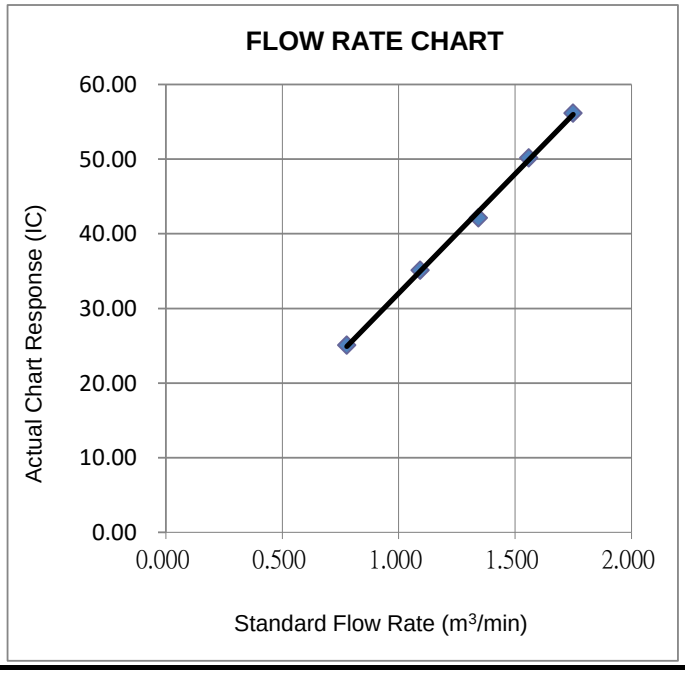
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	4.50	-8.50	13.000	1.749	56.00	56.18	Slope =	31.9482
13	3.10	-7.20	10.300	1.559	50.00	50.16	Intercept =	0.0870
10	1.80	-5.80	7.600	1.342	42.00	42.14	Corr. coeff.=	0.9993
7	0.50	-4.50	5.000	1.091	35.00	35.11		
5	-0.20	-2.70	2.500	0.777	25.00	25.08		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Report Date: **2/5/2020**

Wan Ka Ho
Project Consultant

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge
Date of Calibration: 27-Jul-20
Location : AMS2
Next Calibration Date: 26-Oct-20
Brand: Tisch
Technician: Sam Fong
Model: TE-5170 S/N: HVS-01

CONDITIONS

Sea Level Pressure (hPa):	1006.4	Corrected Pressure (mm Hg):	755
Temperature (℃):	30.5	Temperature (K):	304

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.08799
Model:	TE-5025A	Qstd Intercept:	-0.03545
Calibration Date:	21-Oct-19	Expiry Date:	21-Oct-20
S/N:	2456		

CALIBRATION

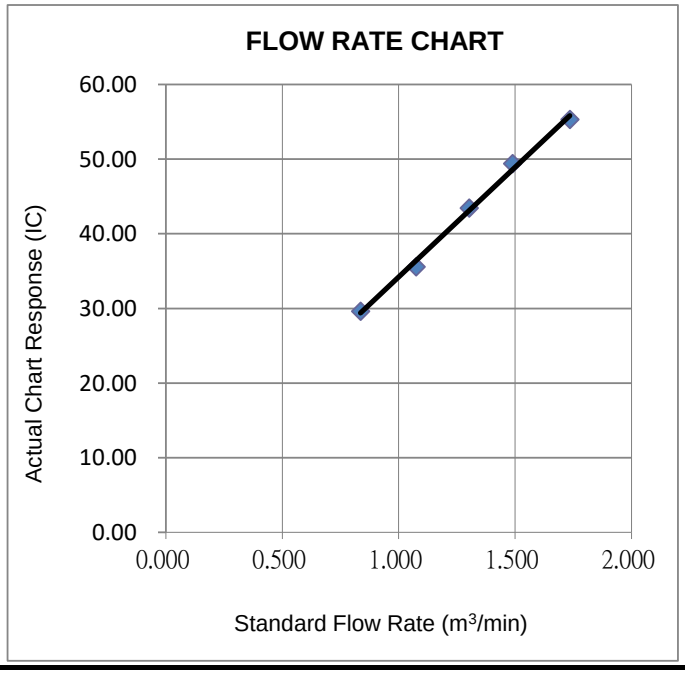
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	6.80	-6.40	13.200	1.735	56.00	55.30	Slope =	29.3988
13	4.50	-5.20	9.700	1.490	50.00	49.38	Intercept =	4.7982
10	3.40	-4.00	7.400	1.304	44.00	43.45	Corr. coeff.=	0.9980
7	1.20	-3.80	5.000	1.075	36.00	35.55		
5	0.80	-2.20	3.000	0.836	30.00	29.63		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Report Date: **28/7/2020**

Wan Ka Ho
Project Consultant

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge — Date of Calibration: 28-Apr-20
Location : AMS3C — Next Calibration Date: 27-Jul-20
Brand: Tisch — Technician: Ting Chan
Model: TE-5170 S/N: HVS-02

CONDITIONS

Sea Level Pressure (hPa):	1017.5	Corrected Pressure (mm Hg):	763
Temperature (℃):	24.3	Temperature (K):	297

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.08799
Model:	TE-5025A	Qstd Intercept:	-0.03545
Calibration Date:	21-Oct-19	Expiry Date:	21-Oct-20
S/N:	2456		

CALIBRATION

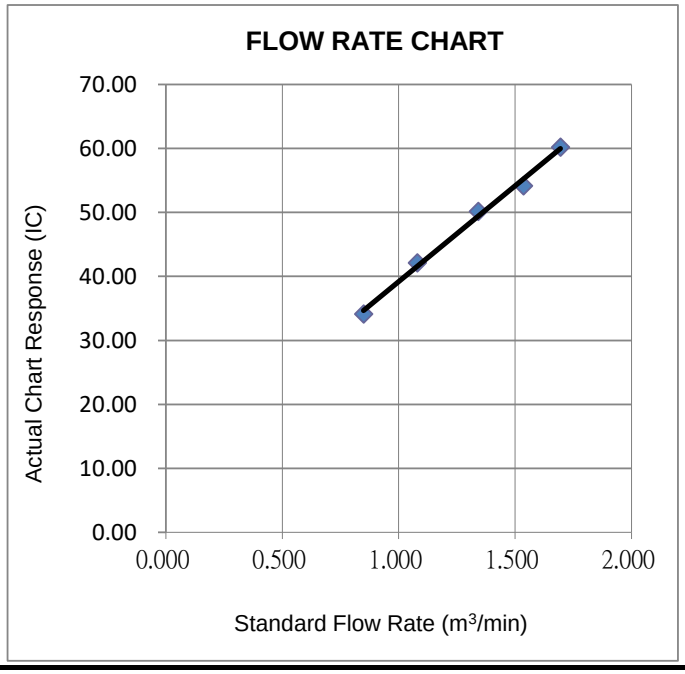
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	6.80	-5.40	12.200	1.695	60.00	60.20	Slope =	29.9170
13	5.60	-4.40	10.000	1.536	54.00	54.18	Intercept =	9.2460
10	4.80	-2.80	7.600	1.342	50.00	50.16	Corr. coeff.=	0.9972
7	3.30	-1.60	4.900	1.081	42.00	42.14		
5	2.40	-0.60	3.000	0.849	34.00	34.11		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Report Date: 2/5/2020

Wan Ka Ho
Project Consultant

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge — Date of Calibration: 27-Jul-20
Location : AMS3C — Next Calibration Date: 26-Oct-20
Brand: Tisch — Technician: Sam Fong
Model: TE-5170 S/N: HVS-02

CONDITIONS

Sea Level Pressure (hPa):	1006.4	Corrected Pressure (mm Hg):	755
Temperature (℃):	30.5	Temperature (K):	304

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.08799
Model:	TE-5025A	Qstd Intercept:	-0.03545
Calibration Date:	21-Oct-19	Expiry Date:	21-Oct-20
S/N:	2456		

CALIBRATION

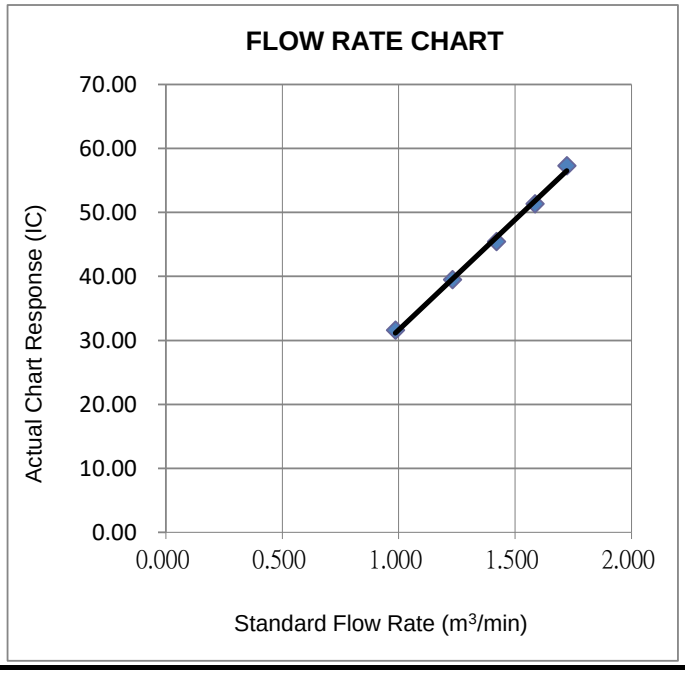
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	7.20	-5.80	13.000	1.722	58.00	57.28	Slope =	34.4066
13	6.20	-4.80	11.000	1.586	52.00	51.35	Intercept =	-2.7672
10	5.60	-3.20	8.800	1.420	46.00	45.43	Corr. coeff.=	0.9982
7	4.40	-2.20	6.600	1.232	40.00	39.50		
5	3.00	-1.20	4.200	0.986	32.00	31.60		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Report Date: **28/7/2020**

Wan Ka Ho
Project Consultant

T +852 24508238 | **F** +852 24508032 | **W** fugro.com

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge — Date of Calibration: 28-Apr-20
Location : AMS7B — Next Calibration Date: 27-Jul-20
Brand: Tisch — Technician: Ting Chan
Model: TE-5170 S/N: HVS-03

CONDITIONS

Sea Level Pressure (hPa):	1017.5	Corrected Pressure (mm Hg):	763
Temperature (℃):	24.3	Temperature (K):	297

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.08799
Model:	TE-5025A	Qstd Intercept:	-0.03545
Calibration Date:	21-Oct-19	Expiry Date:	21-Oct-20
S/N:	2456		

CALIBRATION

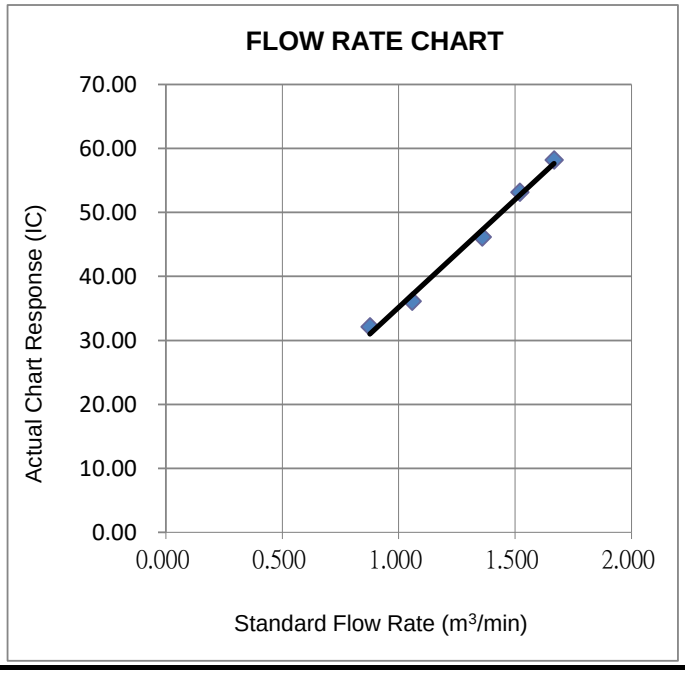
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	7.00	-4.80	11.800	1.668	58.00	58.19	Slope =	33.7189
13	6.00	-3.80	9.800	1.521	53.00	53.17	Intercept =	1.4285
10	5.00	-2.80	7.800	1.359	46.00	46.15	Corr. coeff.=	0.9959
7	3.40	-1.30	4.700	1.059	36.00	36.12		
5	2.60	-0.60	3.200	0.877	32.00	32.10		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Report Date: **2/5/2020**

Wan Ka Ho
Project Consultant

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge — Date of Calibration: 27-Jul-20
Location : AMS7B — Next Calibration Date: 26-Oct-20
Brand: Tisch — Technician: Sam Fong
Model: TE-5170 S/N: HVS-03

CONDITIONS

Sea Level Pressure (hPa):	1006.4	Corrected Pressure (mm Hg):	755
Temperature (℃):	30.5	Temperature (K):	304

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.08799
Model:	TE-5025A	Qstd Intercept:	-0.03545
Calibration Date:	21-Oct-19	Expiry Date:	21-Oct-20
S/N:	2456		

CALIBRATION

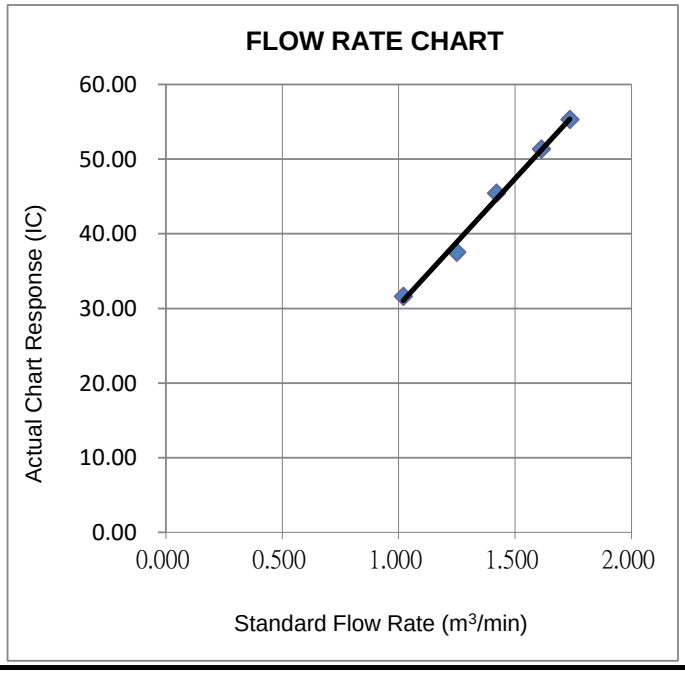
Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m^3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
18	7.00	-6.20	13.200	1.735	56.00	55.30	Slope =	34.0396
13	6.20	-5.20	11.400	1.614	52.00	51.35	Intercept =	-3.6848
10	5.40	-3.40	8.800	1.420	46.00	45.43	Corr. coeff.=	0.9964
7	4.20	-2.60	6.800	1.250	38.00	37.53		
5	2.70	-1.80	4.500	1.020	32.00	31.60		

Calculations:

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]
Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)
m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure



Report Date: **28/7/2020**

Wan Ka Ho
Project Consultant

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

CALIBRATION REPORT OF WIND METER

Project: Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge | **Date of Calibration:** 5-Feb-2020
Location: AMS3C | **Next Calibration Date:** 4-Jul-2020
Technician: Sam Fong

Brand: Global Water
Model: GL500-7-2 **S/N:** 1847003409

Anemometer

Brand: Benetech
Model: GM816 **Equipment ID:** 08

Procedures:

1. **Wind Still Test:** The wind speed sensor was held by hand until stabilized.
2. **Wind Speed Test:** The wind meter was calibrated in-situ and compared with the Anemometer.
3. **Wind Direction Test:** The wind meter was calibrated in-situ and compared with a marine compass from four directions.

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
2.3	2.6
3.0	2.8
3.4	3.0

Wind Direction Test:

	Marine Compass (o)
252	250
72	70
0	357
340	341

Report Date: 14/2/2020

Wan Ka Ho
Project Consultant

FUGRO TECHNICAL SERVICES LIMITED
Room 723 & 725, 7/F, Block B,
Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

CALIBRATION REPORT OF WIND METER

Project: Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge		**Date of Calibration:**	**2-Jul-2020**
Location:	**AMS3C**	**Next Calibration Date:**	**1-Jan-2021**
		Technician:	**Ting Chan**
Brand:	**Global Water**		
Model:	**GL500-7-2**	**S/N:**	**1847003409**

Anemometer

Brand:	**Benetech**		
Model:	**GM816**	**Equipment ID:**	**08**

Procedures:

1. **Wind Still Test:** **The wind speed sensor was held by hand until stabilized.**
2. **Wind Speed Test:** **The wind meter was calibrated in-situ and compared with the Anemometer.**
3. **Wind Direction Test:** **The wind meter was calibrated in-situ and compared with a marine compass from four directions.**

Wind Still Test:

Wind Speed (m/s)
0.00

Wind Speed Test:

Global Water (m/s)	Anemometer (m/s)
0.9	0.5
2.4	2.6
3.4	3.8

Wind Direction Test:

Global Water (o)	Marine Compass (o)
0	358
247	244
173	172
80	79

Report Date: **3/7/2020**

Wan Ka Ho
Project Consultant

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

Report No. : 183057CA200894(3)

CALIBRATION CERTIFICATE OF ANEMOMETER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Anemometer

Manufacturer : Benetech

Model No. : GM816

Serial No. : N/A

Equipment ID. : WS-08

Next Calibration Date : 14-Jun-2021

Laboratory Information

Details of Reference Equipment –

Description : Reference Anemometer

Equipment ID. : R-101-4

Date of Calibration : 15-Jun-2020 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : R-C-279

Calibration Results :

Reference Reading (m/s)	UUT Reading (m/s)	Error (m/s)
2.02	2.0	0.0
4.15	4.1	-0.1
6.27	6.0	-0.3
8.43	8.0	-0.4
10.75	10.1	-0.7

Remark :

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The reported readings in this calibration are an average from 10 trials.

Checked by : William Date : 20-6-2020 Certified by : K.T. Leung Date : 20-6-2020

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no. : 940891CA200109(2)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser dust monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 761101
Specification Limit	: NA
Next Calibration Date	: 09-Oct-2020

Laboratory Information

Description	: TSP high volume air sampler
Serial No.	: 4350
Date of Calibration	: 10-Oct-2019 Ambient Temperature : 28 °C
Calibration Location	: Ma Wan A1 Site Boundary
Method Used	: By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.1047	2110	35.17
0.0623	1948	32.47
0.0587	1908	31.80

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x [UUT reading (CPM)], where K = 0.002270
3. Correlation coefficient (r) : 0.9931

Checked by : _____ Date : 10-2-2020 Certified by : _____ Date : 10-2-2020

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no. : 940891CA200109(5)

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser dust monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 761104
Specification Limit	: NA
Next Calibration Date	: 21-Oct-2020

Laboratory Information

Description	: TSP high volume air sampler
Serial No.	: 4350
Date of Calibration	: 22-Oct-2019 Ambient Temperature : 25 °C
Calibration Location	: Ma Wan A1 Site Boundary
Method Used	: By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.1287	3564	59.40
0.0888	2877	47.95
0.1141	3267	54.45

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x [UUT reading (CPM)], where K = 0.002049
3. Correlation coefficient (r) : 0.9971

Checked by : Date : 10-2-2020 Certified by : Date : 10-2-2020

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no. : 940891CA200109

CALIBRATION CERTIFICATE OF DUST METER

Client : Fugro Technical Services Limited

Project : Calibration Services

Client Supplied Information

Details of Unit Under Test, UUT

Description	: Laser dust monitor
Manufacturer	: SIBATA
Model No.	: LD-5R
Serial No.	: 882147
Specification Limit	: NA
Next Calibration Date	: 09-Oct-2020

Laboratory Information

Description	: TSP high volume air sampler
Serial No.	: 4350
Date of Calibration	: 10-Oct-2019 Ambient Temperature : 28 °C
Calibration Location	: Ma Wan A1 Site Boundary
Method Used	: By direct comparison the weight of dust particle trapped in a filter paper using high volume sampler (TSP method) for a certain period, with the reading of the UUT. They should be placed at the same location and powered on and off at the same time.

Calibration Results :

Reference concentration (mg/m^3)	Total count for 1 hour	CPM (Count per minute)
0.1047	2477	41.28
0.0623	2121	35.35
0.0587	2073	34.55

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m^3) = K x [UUT reading (CPM)], where K = 0.002030
3. Correlation coefficient (r) : 0.9993

Checked by : Date : 10-2-2020 Certified by : Date : 10-2-2020

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report no.: 183057CA196181

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter

Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No.	CEL-63X	CE-251	CEL-495
Serial No.	1488272	02552	003942

Next Calibration Date : 01-Oct-2020

Specification Limit : EN 61672: 2003 Type 1

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Calibration : 02-Oct-2019 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : By direct comparison

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	2.0	2.6 to -0.6
	2000Hz	1.4	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.4	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.3	-14.6 to -17.6
	63Hz	-26.3	-24.7 to -27.7
	31.5Hz	-39.3	-37.4 to -41.4
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
4. The equipment does comply with EN 61672: 2003 Type 1 sound level meter for the above measurement.
5. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Uncertainties will not include allowances for the environmental changes, variation and shock during transportation, or the capability of any other laboratory to repeat the measurement.

Checked by : William Date : 4-10-2019 Certified by : KT Leung Date : 4-10-2019

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no.: 183057CA196458

CALIBRATION CERTIFICATE OF SOUND LEVEL METER

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description : Sound Level Meter

Manufacturer : Casella

	Meter	Microphone	Preamplifier
Model No. :	CEL-63X	CE-251	CEL-495
Serial No. :	2451048	02789	004065

Equipment ID : N/A

Next Calibration Date : 21-Nov-2020

Specification Limit : EN 61672: 2003 Type 1

Laboratory Information

Details of Reference Equipment -

Description : B & K Acoustic Multifunction Calibrator 4226 (Traditional free field setting)

Equipment ID. : R-108-1

Date of Calibration : 22-Nov-2019 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : By direct comparison

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weigthing frequency response	4000Hz	1.9	2.6 to -0.6
	2000Hz	1.5	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.4	-1.8 to -4.6
	250Hz	-8.8	-7.2 to -10.0
	125Hz	-16.2	-14.6 to -17.6
	63Hz	-26.2	-24.7 to -27.7
	31.5Hz	-38.9	-37.4 to -41.4
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.0	± 0.6

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. For calibration: Reference SPL are 94, 104 & 114dB, range setting is 20-140dB & time weighting is fast
4. The equipment does comply with EN 61672: 2003 Type 1 sound level meter for the above measurement.

Checked by : William Date : 27-11-2019 Certified by : K T Leung Date : 28-11-2019

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report no.: 183057CA196275

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description	:	Sound Calibrator
Manufacturer	:	Casella (Model CEL-120/1)
Serial No.	:	2383852
Equipment ID	:	N/A
Next Calibration Date	:	15-Oct-2020
Specification Limit	:	EN 60942: 2003 Type 1

Laboratory Information

Details of Reference Equipment -

Description	:	Reference Sound level meter
Equipment ID.	:	R-119-1

Date of Calibration : 16-Oct-2019 Ambient Temperature : 22 °C

Calibration Location : Calibration Laboratory of FTS

Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	0.0 dB	±0.4dB
114dB	0.0 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : Gillian Date : 22-10-2019 Certified by : K.T. Leung Date : 22-10-2019

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

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

Report no.: 183057CA200018(1)

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client Supplied Information

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Details of Unit Under Test, UUT

Description	:	Sound Calibrator
Manufacturer	:	Casella (Model CEL-120/1)
Serial No.	:	2383886
Equipment ID	:	N/A
Next Calibration Date	:	12-Jan-2021
Specification Limit	:	EN 60942: 2003 Type 1

Laboratory Information

Description	:	Reference Sound level meter
Equipment ID.	:	R-119-1
Date of Calibration	:	13-Jan-2020 Ambient Temperature : 22 °C
Calibration Location	:	Calibration Laboratory of FTS
Method Used	:	By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.2 dB	±0.4dB
114dB	-0.1 dB	

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The mean value is the average of four measurements.
3. The equipment does comply with the specification limit.
4. The values given in this Calibration Certificate only relate to the values at the time of the test and any uncertainties will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during tranportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : William Date : 20-1-2020 Certified by : K T Leung Date : 21-1-2020

CA-R-297 (22/07/2009)

Leung Kwok Tai (Assistant Manager)

** End of Report **

Appendix E

Environmental Monitoring Schedule

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

Impact Monitoring Schedule (July 2020)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2 Dolphin Monitoring	3	4
5	6 Dust Monitoring Noise Monitoring	7 Dolphin Monitoring	8	9 Dolphin Monitoring	10	11 Dust Monitoring
12	13	14	15	16	17 Dust Monitoring Noise Monitoring	18
19	20 Dolphin Monitoring	21	22	23 Dust Monitoring Noise Monitoring Dolphin Monitoring	24	25
26	27	28	29 Dust Monitoring Noise Monitoring	30	31	

Remarks

1. Dust Monitoring: 24-hours TSP Monitoring per 6 days, and 3 x 1-hour TSP Monitoring per 6 days
2. Noise Monitoring: Leq (30 min) between 0700 and 1900 hours
3. Dolphin Monitoring: Chinese White Dolphin (post-construction phase, monthly); monitoring conducted and data collected by TM-CLKL Contract No. HY/2012/08
4. Dust Monitoring Location: AMS2 (Tung Chung New Development Pier), AMS3C (Ying Tung Estate Market Rooftop) and AMS7B (3RS Site Offices)
5. Noise Monitoring Location: NMS2 (Seaview Crescent), NMS3C (Ying Tung Estate Refuse Collection Point)

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

Impact Monitoring Schedule (August 2020)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2	3	4 Dust Monitoring Noise Monitoring Dolphin Monitoring	5	6	7	8
9	10 Dust Monitoring Noise Monitoring	11 Dolphin Monitoring	12	13	14	15 Dust Monitoring Noise Monitoring
16	17	18 Dolphin Monitoring	19	20	21 Dust Monitoring Noise Monitoring	22
23 30	24 31	25 Dolphin Monitoring	26	27 Dust Monitoring Noise Monitoring	28	29

Remarks

1. Actual monitoring may be subjected to change due to any safety concern or adverse weather condition
2. Dust Monitoring: 24-hours TSP Monitoring per 6 days, and 3 x 1-hour TSP Monitoring per 6 days
3. Noise Monitoring: Leq (30 min) between 0700 and 1900 hours
4. Dolphin Monitoring: Chinese White Dolphin (post-construction phase, monthly); monitoring conducted and data collected by TM-CLKL Contract No. HY/2012/08
5. Dust Monitoring Location: AMS2 (Tung Chung New Development Pier), AMS3C (Ying Tung Estate Market Rooftop) and AMS7B (3RS Site Offices)
6. Noise Monitoring Location: NMS2 (Seaview Crescent), NMS3C (Ying Tung Estate Refuse Collection Point)

Appendix F

Air Quality Monitoring Results

and Construction Noise Monitoring Results

1-hour TSP Monitoring Result for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

AMS2 - Tung Chung Development Pier

Date	Weather Condition	Start Time	1-hour TSP (µg/m³) 1st Measurement	2nd Measurement	3rd Measurement	Action Level (ug/m³)	Limit Level (ug/m³)
6-Jul-20	Sunny	11:28	26	30	32	374	500
11-Jul-20	Fine	09:38	88	80	92		
17-Jul-20	Fine	11:34	42	40	40		
23-Jul-20	Fine	09:45	88	76	72		
29-Jul-20	Fine	11:42	22	26	28		
		Min	22				
		Max	92				
		Average	52				

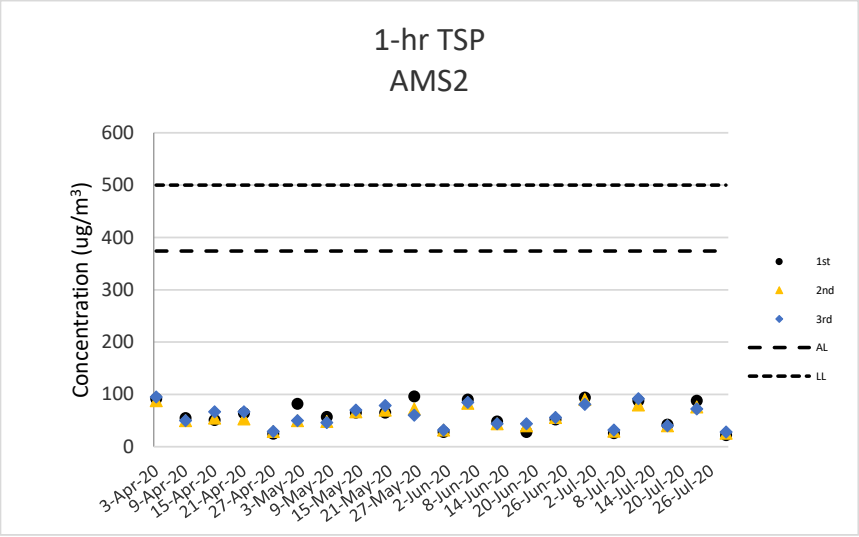
AMS3C - Ying Tung Estate Market Rooftop

Date	Weather Condition	Start Time	1-hour TSP (µg/m³) 1st Measurement	2nd Measurement	3rd Measurement	Action Level (ug/m³)	Limit Level (ug/m³)
6-Jul-20	Sunny	12:24	30	34	34	368	500
11-Jul-20	Fine	09:21	50	40	34		
17-Jul-20	Fine	11:48	36	38	44		
23-Jul-20	Fine	09:27	44	48	54		
29-Jul-20	Fine	12:15	20	26	24		
		Min	20				
		Max	54				
		Average	37				

AMS7B - 3RS Site Offices

Date	Weather Condition	Start Time	1-hour TSP (µg/m³) 1st Measurement	2nd Measurement	3rd Measurement	Action Level (ug/m³)	Limit Level (ug/m³)
6-Jul-20	Sunny	11:04	28	23	30	370	500
11-Jul-20	Fine	09:06	110	110	94		
17-Jul-20	Fine	11:20	55	60	60		
23-Jul-20	Fine	10:11	69	76	78		
29-Jul-20	Fine	11:18	28	32	30		
		Min	23				
		Max	110				
		Average	59				

Note:
Underline: Exceedance of Action Level
Underline and Bold: Exceedance of Limit Level


1-hr TSP
AMS2
Concentration (ug/m³)
600
500
400
300
200
100
0
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
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1st
2nd
3rd
AL
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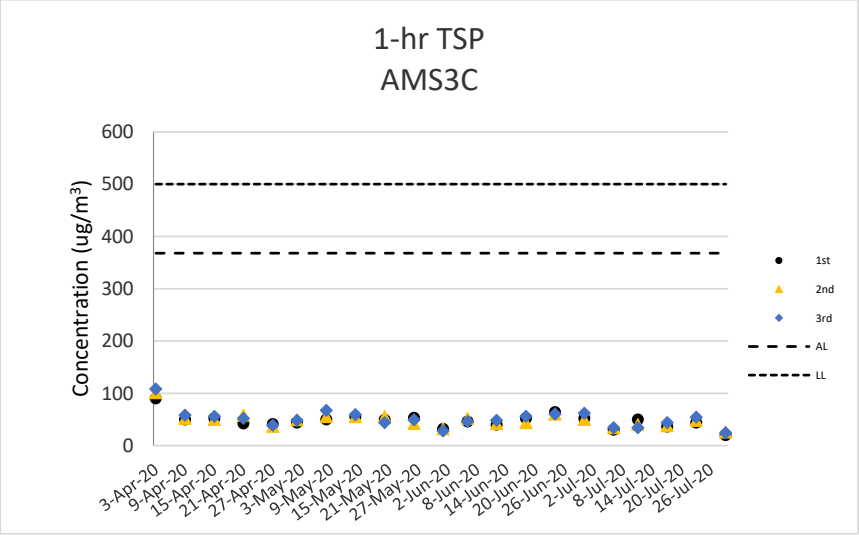
1-hr TSP
AMS3C
Concentration (ug/m³)
600
500
400
300
200
100
0
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
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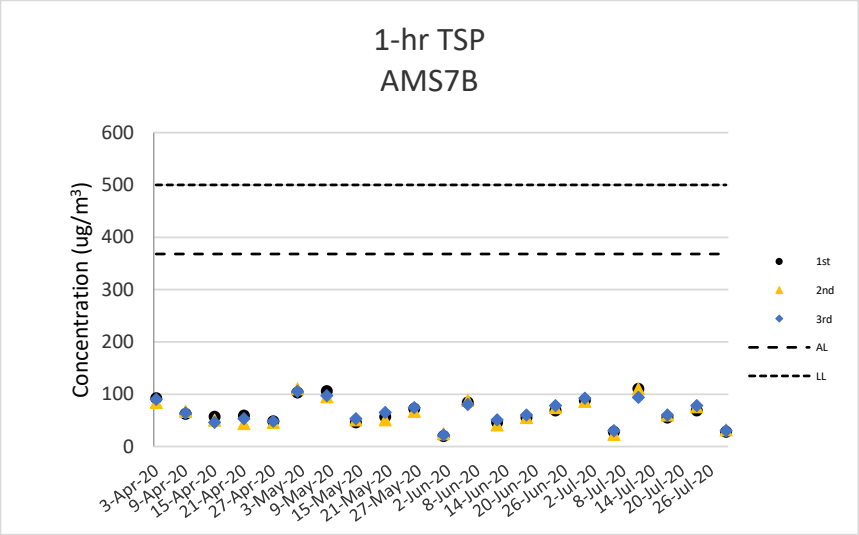
AL
LL


1-hr TSP
AMS7B
Concentration (ug/m³)
600
500
400
300
200
100
0
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
26-Jun-20
2-Jul-20
8-Jul-20
14-Jul-20
20-Jul-20
26-Jul-20
1st
2nd
3rd
AL
LL

24-hour TSP Monitoring Result for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

AMS2 - Tung Chung Development Pier

Start Date	Weather Condition	Air Temperature (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Sampling Time(hrs)	Flow Rate (m^3/min.)		Average flow (m^3/min.)	Total volume (m^3)	Conc. (ug/m^3)	Action Level (ug/m^3)	Limit Level (ug/m^3)
				Initial	Final			Initial	Final					
6-Jul-20	Sunny	303.1	755.6	2.7142	2.7453	0.0311	24	1.24	1.25	1.24	1788.8	17	176	260
11-Jul-20	Fine	303.4	755.6	2.7408	2.7700	0.0292	24	1.54	1.56	1.55	2236.4	13		
17-Jul-20	Fine	303.3	756.4	2.6786	2.7000	0.0214	24	1.24	1.25	1.24	1789.0	12		
23-Jul-20	Fine	304	756.8	2.7512	2.8497	0.0985	24	1.23	1.25	1.24	1788.2	55		
29-Jul-20	Fine	303.5	755.5	2.7140	2.7581	0.0441	24	1.18	1.20	1.19	1712.4	26		
											Min	12		
											Max	55		
											Average	25		

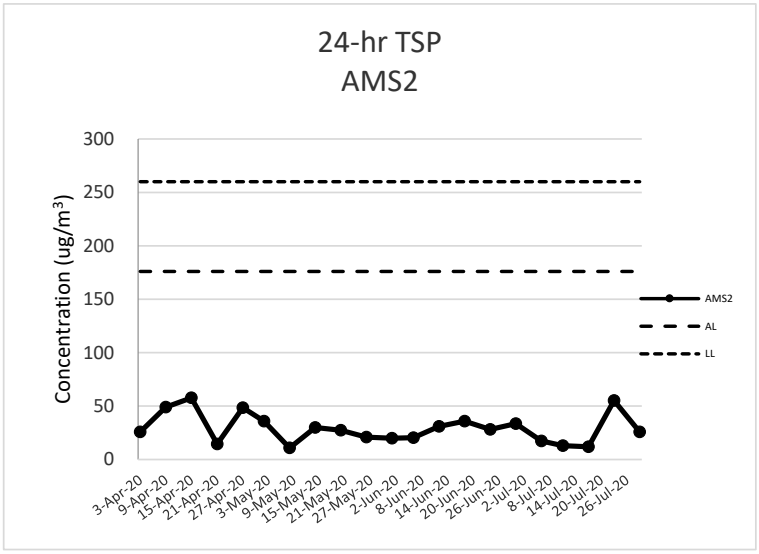
AMS3C - Ying Tung Estate Market Rooftop

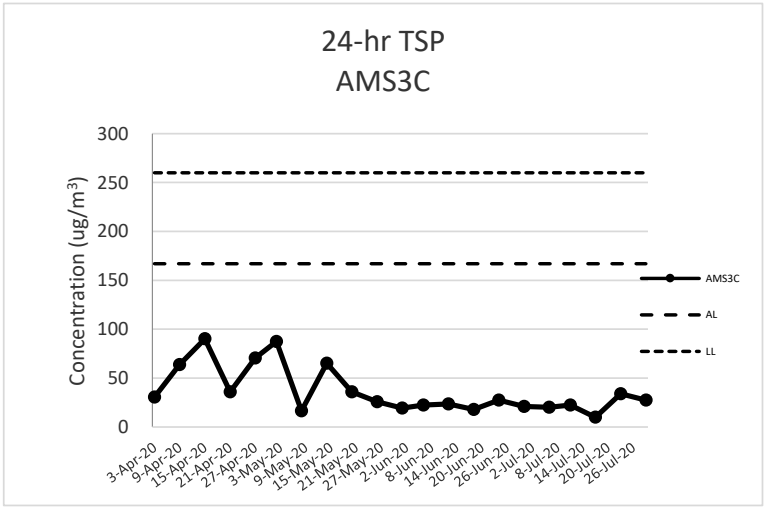
Start Date	Weather Condition	Air Temperature (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Sampling Time(hrs)	Flow Rate (m^3/min.)		Average flow (m^3/min.)	Total volume (m^3)	Conc. (ug/m^3)	Action Level (ug/m^3)	Limit Level (ug/m^3)
				Initial	Final			Initial	Final					
6-Jul-20	Sunny	303.1	755.6	2.6927	2.7242	0.0315	24	1.08	1.09	1.09	1565.1	20	167	260
11-Jul-20	Fine	303.4	755.6	2.6967	2.7320	0.0353	24	1.08	1.09	1.09	1564.6	23		
17-Jul-20	Fine	303.3	756.4	2.6684	2.6830	0.0146	24	1.01	1.03	1.02	1469.6	10		
23-Jul-20	Fine	304	756.8	2.7444	2.7944	0.0500	24	1.01	1.03	1.02	1468.7	34		
29-Jul-20	Fine	303.5	755.5	2.7106	2.7595	0.0489	24	1.23	1.24	1.24	1779.8	27		
											Min	10		
											Max	34		
											Average	23		

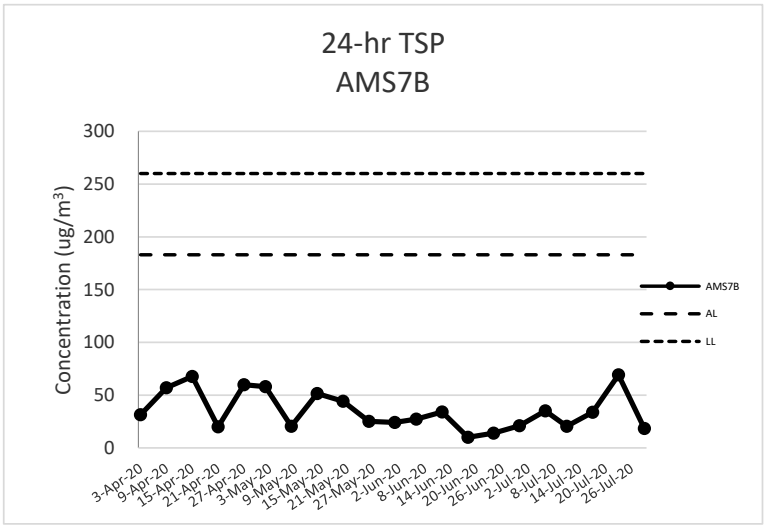
AMS7B - 3RS Site Offices

Start Date	Weather Condition	Air Temperature (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Sampling Time(hrs)	Flow Rate (m^3/min.)		Average flow (m^3/min.)	Total volume (m^3)	Conc. (ug/m^3)	Action Level (ug/m^3)	Limit Level (ug/m^3)
				Initial	Final			Initial	Final					
6-Jul-20	Sunny	303.1	755.6	2.6753	2.7478	0.0725	24	1.42	1.44	1.43	2062.2	35	183	260
11-Jul-20	Fine	303.4	755.6	2.7365	2.7786	0.0421	24	1.42	1.44	1.43	2061.7	20		
17-Jul-20	Fine	303.3	756.4	2.6592	2.7288	0.0696	24	1.42	1.44	1.43	2062.4	34		
23-Jul-20	Fine	304	756.8	2.7412	2.8838	0.1426	24	1.42	1.44	1.43	2061.5	69		
29-Jul-20	Fine	303.5	755.5	2.7148	2.7484	0.0336	24	1.27	1.28	1.28	1837.8	18		
											Min	18		
											Max	69		
											Average	35		

Note:
Underline: Exceedance of Action Level
Underline and Bold: Exceedance of Limit Level


24-hr TSP
AMS2
Concentration (ug/m³)
300
250
200
150
100
50
0
AMS2
AL
LL
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
26-Jun-20
2-Jul-20
8-Jul-20
14-Jul-20
20-Jul-20
26-Jul-20


24-hr TSP
AMS3C
Concentration (ug/m³)
300
250
200
150
100
50
0
AMS3C
AL
LL
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
26-Jun-20
2-Jul-20
8-Jul-20
14-Jul-20
20-Jul-20
26-Jul-20


24-hr TSP
AMS7B
Concentration (ug/m³)
300
250
200
150
100
50
0
AMS7B
AL
LL
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
26-Jun-20
2-Jul-20
8-Jul-20
14-Jul-20
20-Jul-20
26-Jul-20

Noise Impact Monitoring Result for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

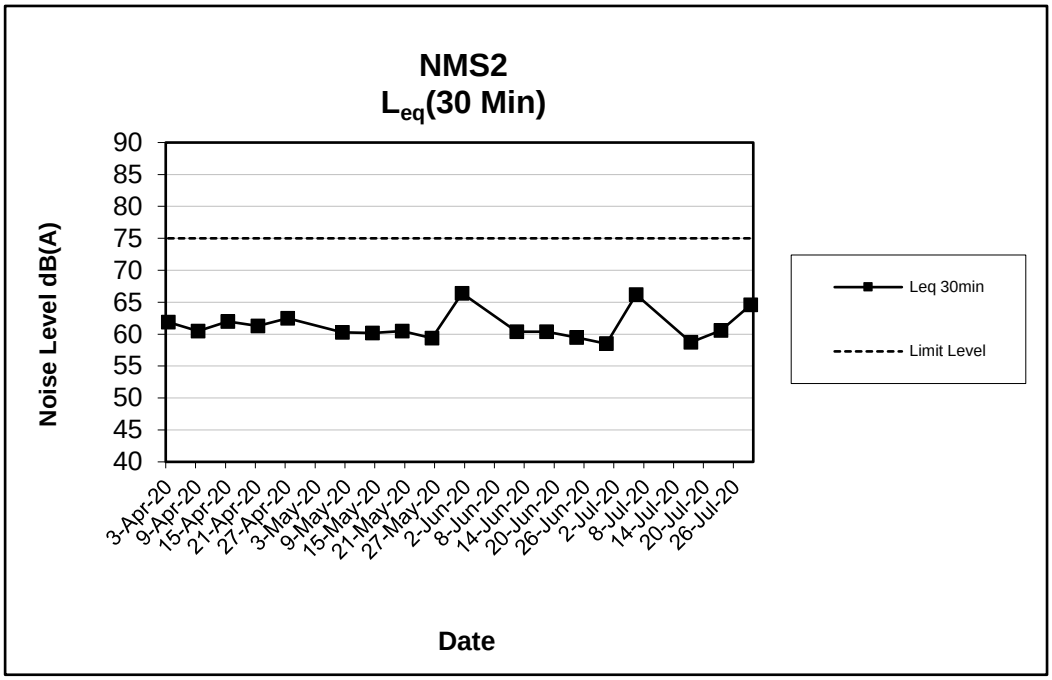
NMS2 - Seaview Crescent

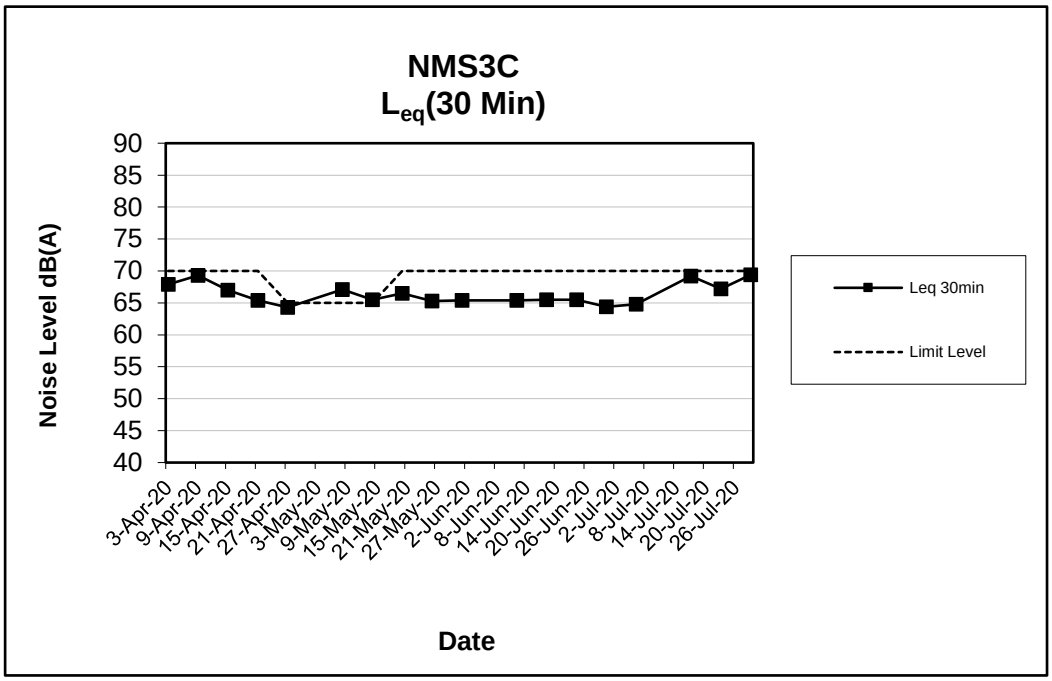
Date	Start Time	L_{eq} 30min dB(A)	L_{10} dB(A)	L_{90} dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
6-Jul-20	11:35	66	69	62	0.6	Sunny	75
17-Jul-20	12:31	59	62	54	1.8	Fine	75
23-Jul-20	08:38	61	64	55	0.9	Fine	75
29-Jul-20	10:30	65	67	63	0.5	Fine	75
	Max	66					
	Min	59					

NMS3C - Ying Tung Estate Refuse Collection Point

Date	Start Time	L_{eq} 30min dB(A)	L_{10} dB(A)	L_{90} dB(A)	Wind Speed (m/s)	Weather	Limit Level dB(A)
6-Jul-20	12:28	65	69	62	0.9	Sunny	70
17-Jul-20	11:50	69	72	65	0.4	Fine	70
23-Jul-20	09:25	67	68	65	0.2	Fine	70
29-Jul-20	12:15	69	72	67	0.2	Fine	70
	Max	69					
	Min	65					

Note:
NMS2: Façade Measurement
NMS3C: Free-field measurement (+3dB(A) correction has been applied), reduction to 65dB(A) during school examination periods will be applied.
No raining or wind with speed over 5 m/s was observed during noise monitoring according to the onsite observation.


NMS2
L_{eq}(30 Min)
Noise Level dB(A)
90
85
80
75
70
65
60
55
50
45
40
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
26-Jun-20
2-Jul-20
8-Jul-20
14-Jul-20
20-Jul-20
26-Jul-20
Date
Leq 30min
Limit Level


NMS3C
L_{eq}(30 Min)
Noise Level dB(A)
90
85
80
75
70
65
60
55
50
45
40
3-Apr-20
9-Apr-20
15-Apr-20
21-Apr-20
27-Apr-20
3-May-20
9-May-20
15-May-20
21-May-20
27-May-20
2-Jun-20
8-Jun-20
14-Jun-20
20-Jun-20
26-Jun-20
2-Jul-20
8-Jul-20
14-Jul-20
20-Jul-20
26-Jul-20
Date
Leq 30min
Limit Level

Appendix G

Wind Data

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
01/07/2020 00:00	0.2	S
01/07/2020 01:00	0.0	SW
01/07/2020 02:00	0.5	S
01/07/2020 03:00	0.2	N
01/07/2020 04:00	1.0	S
01/07/2020 05:00	0.0	N
01/07/2020 06:00	0.0	N
01/07/2020 07:00	0.0	NW
01/07/2020 08:00	0.2	SE
01/07/2020 09:00	0.0	S
01/07/2020 10:00	0.0	NE
01/07/2020 11:00	0.0	N
01/07/2020 12:00	0.2	S
01/07/2020 13:00	0.0	SE
01/07/2020 14:00	0.0	NE
01/07/2020 15:00	0.0	SW
01/07/2020 16:00	0.0	E
01/07/2020 17:00	0.0	NE
01/07/2020 18:00	0.0	S
01/07/2020 19:00	0.0	W
01/07/2020 20:00	0.0	S
01/07/2020 21:00	0.0	N
01/07/2020 22:00	0.7	N
01/07/2020 23:00	0.0	S
02/07/2020 00:00	0.1	S
02/07/2020 01:00	0.0	W
02/07/2020 02:00	0.2	N
02/07/2020 03:00	0.0	SW
02/07/2020 04:00	0.0	S
02/07/2020 05:00	0.0	SW
02/07/2020 06:00	0.0	NW
02/07/2020 07:00	0.0	NW
02/07/2020 08:00	0.0	S
02/07/2020 09:00	0.0	SW
02/07/2020 10:00	0.1	N
02/07/2020 11:00	0.7	N
02/07/2020 12:00	1.8	S
02/07/2020 13:00	0.0	E
02/07/2020 14:00	0.1	S
02/07/2020 15:00	0.1	N

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
02/07/2020 16:00	0.3	NW
02/07/2020 17:00	0.3	N
02/07/2020 18:00	2.5	N
02/07/2020 19:00	0.7	N
02/07/2020 20:00	0.0	N
02/07/2020 21:00	0.5	NE
02/07/2020 22:00	0.2	SW
02/07/2020 23:00	0.2	SW
03/07/2020 00:00	0.4	NW
03/07/2020 01:00	0.9	N
03/07/2020 02:00	1.4	NE
03/07/2020 03:00	0.4	S
03/07/2020 04:00	0.0	S
03/07/2020 05:00	0.1	NW
03/07/2020 06:00	0.5	SW
03/07/2020 07:00	0.1	SE
03/07/2020 08:00	0.3	N
03/07/2020 09:00	0.1	N
03/07/2020 10:00	0.0	W
03/07/2020 11:00	0.0	SE
03/07/2020 12:00	0.4	NE
03/07/2020 13:00	0.0	N
03/07/2020 14:00	0.0	N
03/07/2020 15:00	0.4	N
03/07/2020 16:00	0.5	S
03/07/2020 17:00	0.1	NE
03/07/2020 18:00	0.0	S
03/07/2020 19:00	0.3	N
03/07/2020 20:00	0.0	E
03/07/2020 21:00	0.0	NE
03/07/2020 22:00	0.0	N
03/07/2020 23:00	0.6	NW
04/07/2020 00:00	0.6	NW
04/07/2020 01:00	0.0	W
04/07/2020 02:00	0.2	S
04/07/2020 03:00	1.8	N
04/07/2020 04:00	1.5	NE
04/07/2020 05:00	0.4	N
04/07/2020 06:00	1.5	N
04/07/2020 07:00	1.7	N

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
04/07/2020 08:00	0.5	S
04/07/2020 09:00	0.8	NE
04/07/2020 10:00	1.2	N
04/07/2020 11:00	0.2	NW
04/07/2020 12:00	0.1	NE
04/07/2020 13:00	0.0	W
04/07/2020 14:00	0.5	N
04/07/2020 15:00	0.1	N
04/07/2020 16:00	0.0	N
04/07/2020 17:00	0.1	S
04/07/2020 18:00	0.1	N
04/07/2020 19:00	0.1	N
04/07/2020 20:00	0.4	NE
04/07/2020 21:00	0.2	NW
04/07/2020 22:00	1.0	N
04/07/2020 23:00	0.0	SE
05/07/2020 00:00	0.6	E
05/07/2020 01:00	0.2	N
05/07/2020 02:00	1.3	W
05/07/2020 03:00	0.4	NW
05/07/2020 04:00	0.1	N
05/07/2020 05:00	1.8	N
05/07/2020 06:00	1.2	SE
05/07/2020 07:00	0.0	NW
05/07/2020 08:00	1.0	NW
05/07/2020 09:00	0.0	SE
05/07/2020 10:00	0.2	S
05/07/2020 11:00	0.0	NW
05/07/2020 12:00	0.0	NE
05/07/2020 13:00	1.1	SE
05/07/2020 14:00	0.2	S
05/07/2020 15:00	0.0	NW
05/07/2020 16:00	0.0	N
05/07/2020 17:00	0.7	SW
05/07/2020 18:00	0.0	S
05/07/2020 19:00	0.0	NW
05/07/2020 20:00	0.0	SW
05/07/2020 21:00	0.0	W
05/07/2020 22:00	0.0	S
05/07/2020 23:00	0.0	NW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
06/07/2020 00:00	0.0	SW
06/07/2020 01:00	0.0	SW
06/07/2020 02:00	0.0	S
06/07/2020 03:00	0.0	N
06/07/2020 04:00	0.0	S
06/07/2020 05:00	0.0	SW
06/07/2020 06:00	0.4	NE
06/07/2020 07:00	0.4	S
06/07/2020 08:00	0.0	SE
06/07/2020 09:00	0.0	N
06/07/2020 10:00	0.7	W
06/07/2020 11:00	0.0	SW
06/07/2020 12:00	0.0	SE
06/07/2020 13:00	0.0	W
06/07/2020 14:00	0.2	N
06/07/2020 15:00	0.0	N
06/07/2020 16:00	0.0	N
06/07/2020 17:00	0.0	SE
06/07/2020 18:00	0.0	NE
06/07/2020 19:00	0.1	SW
06/07/2020 20:00	0.4	S
06/07/2020 21:00	0.1	N
06/07/2020 22:00	0.0	S
06/07/2020 23:00	0.0	NE
07/07/2020 00:00	1.4	S
07/07/2020 01:00	1.2	S
07/07/2020 02:00	0.0	W
07/07/2020 03:00	0.0	SE
07/07/2020 04:00	0.0	W
07/07/2020 05:00	0.0	W
07/07/2020 06:00	0.2	SW
07/07/2020 07:00	0.0	W
07/07/2020 08:00	0.0	S
07/07/2020 09:00	0.0	W
07/07/2020 10:00	0.0	NE
07/07/2020 11:00	0.0	N
07/07/2020 12:00	0.2	N
07/07/2020 13:00	0.0	S
07/07/2020 14:00	0.0	W
07/07/2020 15:00	0.0	NW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
07/07/2020 16:00	0.2	SE
07/07/2020 17:00	0.0	S
07/07/2020 18:00	0.0	W
07/07/2020 19:00	0.7	S
07/07/2020 20:00	0.2	NW
07/07/2020 21:00	0.0	N
07/07/2020 22:00	0.8	SE
07/07/2020 23:00	0.2	NW
08/07/2020 00:00	0.5	NW
08/07/2020 01:00	0.0	NE
08/07/2020 02:00	0.3	SW
08/07/2020 03:00	0.0	W
08/07/2020 04:00	0.0	SW
08/07/2020 05:00	2.0	SE
08/07/2020 06:00	1.7	NE
08/07/2020 07:00	0.0	SE
08/07/2020 08:00	0.2	W
08/07/2020 09:00	0.0	SW
08/07/2020 10:00	0.0	NW
08/07/2020 11:00	0.0	N
08/07/2020 12:00	0.5	SE
08/07/2020 13:00	0.1	S
08/07/2020 14:00	0.3	S
08/07/2020 15:00	0.4	SE
08/07/2020 16:00	0.0	SE
08/07/2020 17:00	0.0	SW
08/07/2020 18:00	0.0	S
08/07/2020 19:00	0.5	NW
08/07/2020 20:00	0.0	W
08/07/2020 21:00	0.1	N
08/07/2020 22:00	1.4	SE
08/07/2020 23:00	0.4	NW
09/07/2020 00:00	0.0	N
09/07/2020 01:00	0.9	NW
09/07/2020 02:00	0.2	N
09/07/2020 03:00	1.0	NE
09/07/2020 04:00	0.0	NW
09/07/2020 05:00	0.8	NE
09/07/2020 06:00	0.0	S
09/07/2020 07:00	0.9	W

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
09/07/2020 08:00	0.0	W
09/07/2020 09:00	1.4	S
09/07/2020 10:00	0.8	E
09/07/2020 11:00	0.5	SE
09/07/2020 12:00	0.2	SE
09/07/2020 13:00	0.2	NW
09/07/2020 14:00	0.0	N
09/07/2020 15:00	0.1	E
09/07/2020 16:00	0.9	SE
09/07/2020 17:00	0.0	NW
09/07/2020 18:00	0.0	S
09/07/2020 19:00	0.0	SE
09/07/2020 20:00	0.0	W
09/07/2020 21:00	0.0	E
09/07/2020 22:00	0.2	NW
09/07/2020 23:00	0.2	E
10/07/2020 00:00	0.9	SE
10/07/2020 01:00	0.1	SE
10/07/2020 02:00	0.3	N
10/07/2020 03:00	3.0	N
10/07/2020 04:00	0.3	SE
10/07/2020 05:00	0.5	NW
10/07/2020 06:00	0.3	NW
10/07/2020 07:00	0.2	NW
10/07/2020 08:00	0.0	W
10/07/2020 09:00	0.3	S
10/07/2020 10:00	0.3	S
10/07/2020 11:00	0.0	SE
10/07/2020 12:00	0.0	S
10/07/2020 13:00	0.3	SW
10/07/2020 14:00	0.1	NE
10/07/2020 15:00	0.0	N
10/07/2020 16:00	1.3	NW
10/07/2020 17:00	0.0	NE
10/07/2020 18:00	0.0	SE
10/07/2020 19:00	0.0	SE
10/07/2020 20:00	0.0	N
10/07/2020 21:00	0.0	S
10/07/2020 22:00	0.2	SW
10/07/2020 23:00	0.0	SE

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
11/07/2020 00:00	0.0	N
11/07/2020 01:00	0.0	N
11/07/2020 02:00	0.5	N
11/07/2020 03:00	0.1	S
11/07/2020 04:00	0.0	SW
11/07/2020 05:00	0.0	SW
11/07/2020 06:00	0.8	W
11/07/2020 07:00	0.2	W
11/07/2020 08:00	1.0	W
11/07/2020 09:00	0.3	W
11/07/2020 10:00	1.1	S
11/07/2020 11:00	0.5	SW
11/07/2020 12:00	0.0	S
11/07/2020 13:00	0.6	N
11/07/2020 14:00	0.0	W
11/07/2020 15:00	0.1	S
11/07/2020 16:00	0.8	N
11/07/2020 17:00	0.0	SW
11/07/2020 18:00	0.2	SW
11/07/2020 19:00	0.0	SW
11/07/2020 20:00	0.0	N
11/07/2020 21:00	0.0	E
11/07/2020 22:00	0.0	SE
11/07/2020 23:00	0.0	SW
12/07/2020 00:00	0.0	S
12/07/2020 01:00	0.0	S
12/07/2020 02:00	0.0	S
12/07/2020 03:00	0.0	NW
12/07/2020 04:00	0.0	SE
12/07/2020 05:00	0.0	SE
12/07/2020 06:00	0.2	SE
12/07/2020 07:00	0.1	SE
12/07/2020 08:00	0.4	SW
12/07/2020 09:00	0.4	SE
12/07/2020 10:00	0.4	W
12/07/2020 11:00	0.4	SE
12/07/2020 12:00	0.0	SE
12/07/2020 13:00	2.6	W
12/07/2020 14:00	0.4	SW
12/07/2020 15:00	0.1	SW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
12/07/2020 16:00	0.0	S
12/07/2020 17:00	0.0	S
12/07/2020 18:00	0.2	SE
12/07/2020 19:00	1.0	SW
12/07/2020 20:00	0.1	SE
12/07/2020 21:00	0.1	SW
12/07/2020 22:00	0.1	W
12/07/2020 23:00	0.9	S
13/07/2020 00:00	0.0	SW
13/07/2020 01:00	0.0	SW
13/07/2020 02:00	0.0	SW
13/07/2020 03:00	0.0	N
13/07/2020 04:00	0.0	N
13/07/2020 05:00	0.0	N
13/07/2020 06:00	0.0	SE
13/07/2020 07:00	0.0	SW
13/07/2020 08:00	0.0	SW
13/07/2020 09:00	0.4	W
13/07/2020 10:00	0.1	W
13/07/2020 11:00	0.2	SW
13/07/2020 12:00	0.0	SW
13/07/2020 13:00	0.5	SE
13/07/2020 14:00	0.7	W
13/07/2020 15:00	0.3	S
13/07/2020 16:00	0.0	NW
13/07/2020 17:00	0.2	W
13/07/2020 18:00	1.3	NE
13/07/2020 19:00	0.0	SW
13/07/2020 20:00	0.0	W
13/07/2020 21:00	0.4	S
13/07/2020 22:00	0.0	SW
13/07/2020 23:00	0.1	SW
14/07/2020 00:00	0.4	SE
14/07/2020 01:00	2.0	S
14/07/2020 02:00	0.7	SE
14/07/2020 03:00	0.0	W
14/07/2020 04:00	0.0	E
14/07/2020 05:00	0.0	NE
14/07/2020 06:00	0.4	S
14/07/2020 07:00	0.0	W

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
14/07/2020 08:00	0.0	SE
14/07/2020 09:00	0.2	W
14/07/2020 10:00	0.2	W
14/07/2020 11:00	0.4	SE
14/07/2020 12:00	0.8	S
14/07/2020 13:00	2.9	S
14/07/2020 14:00	0.2	NE
14/07/2020 15:00	1.4	SE
14/07/2020 16:00	3.9	S
14/07/2020 17:00	0.0	W
14/07/2020 18:00	1.2	NE
14/07/2020 19:00	0.7	SE
14/07/2020 20:00	0.0	NW
14/07/2020 21:00	2.3	NW
14/07/2020 22:00	0.4	SE
14/07/2020 23:00	0.0	SW
15/07/2020 00:00	0.0	W
15/07/2020 01:00	0.1	SE
15/07/2020 02:00	0.0	NW
15/07/2020 03:00	0.2	SE
15/07/2020 04:00	0.5	SW
15/07/2020 05:00	3.1	NW
15/07/2020 06:00	0.2	N
15/07/2020 07:00	0.0	SW
15/07/2020 08:00	0.0	N
15/07/2020 09:00	0.0	SE
15/07/2020 10:00	2.0	NW
15/07/2020 11:00	0.0	SE
15/07/2020 12:00	0.1	N
15/07/2020 13:00	0.5	N
15/07/2020 14:00	0.0	SE
15/07/2020 15:00	0.0	N
15/07/2020 16:00	0.5	SE
15/07/2020 17:00	0.0	SE
15/07/2020 18:00	0.0	NW
15/07/2020 19:00	0.0	N
15/07/2020 20:00	0.2	SW
15/07/2020 21:00	0.0	S
15/07/2020 22:00	0.5	S
15/07/2020 23:00	0.0	SW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
16/07/2020 00:00	0.0	NW
16/07/2020 01:00	0.0	W
16/07/2020 02:00	0.0	S
16/07/2020 03:00	0.1	W
16/07/2020 04:00	0.0	S
16/07/2020 05:00	0.0	N
16/07/2020 06:00	0.0	SE
16/07/2020 07:00	0.0	SE
16/07/2020 08:00	0.1	S
16/07/2020 09:00	0.0	S
16/07/2020 10:00	0.0	SW
16/07/2020 11:00	0.0	N
16/07/2020 12:00	0.0	E
16/07/2020 13:00	1.0	NW
16/07/2020 14:00	0.4	NW
16/07/2020 15:00	0.1	SE
16/07/2020 16:00	0.0	W
16/07/2020 17:00	1.1	N
16/07/2020 18:00	0.4	NW
16/07/2020 19:00	0.4	SE
16/07/2020 20:00	0.0	SW
16/07/2020 21:00	0.0	W
16/07/2020 22:00	0.0	S
16/07/2020 23:00	0.0	N
17/07/2020 00:00	0.0	S
17/07/2020 01:00	0.0	NE
17/07/2020 02:00	0.0	N
17/07/2020 03:00	0.3	S
17/07/2020 04:00	0.0	S
17/07/2020 05:00	0.4	NE
17/07/2020 06:00	0.0	N
17/07/2020 07:00	0.5	S
17/07/2020 08:00	0.0	NW
17/07/2020 09:00	0.5	S
17/07/2020 10:00	0.0	W
17/07/2020 11:00	0.2	NE
17/07/2020 12:00	0.3	NW
17/07/2020 13:00	0.2	SE
17/07/2020 14:00	0.3	NW
17/07/2020 15:00	1.5	NW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
17/07/2020 16:00	1.8	NW
17/07/2020 17:00	0.0	SW
17/07/2020 18:00	0.0	N
17/07/2020 19:00	0.2	S
17/07/2020 20:00	0.0	S
17/07/2020 21:00	0.5	NE
17/07/2020 22:00	0.0	N
17/07/2020 23:00	0.0	S
18/07/2020 00:00	0.0	NW
18/07/2020 01:00	0.2	N
18/07/2020 02:00	0.0	S
18/07/2020 03:00	0.0	SW
18/07/2020 04:00	0.0	W
18/07/2020 05:00	0.0	SE
18/07/2020 06:00	0.3	S
18/07/2020 07:00	0.0	E
18/07/2020 08:00	0.1	S
18/07/2020 09:00	0.0	NW
18/07/2020 10:00	0.1	N
18/07/2020 11:00	0.0	W
18/07/2020 12:00	1.7	SE
18/07/2020 13:00	2.2	N
18/07/2020 14:00	0.2	S
18/07/2020 15:00	0.2	SE
18/07/2020 16:00	0.9	N
18/07/2020 17:00	0.6	S
18/07/2020 18:00	2.9	NW
18/07/2020 19:00	1.5	NW
18/07/2020 20:00	0.3	S
18/07/2020 21:00	0.4	NE
18/07/2020 22:00	0.0	W
18/07/2020 23:00	0.5	NW
19/07/2020 00:00	0.0	W
19/07/2020 01:00	0.2	NW
19/07/2020 02:00	0.2	NW
19/07/2020 03:00	0.0	NW
19/07/2020 04:00	0.0	S
19/07/2020 05:00	0.0	NW
19/07/2020 06:00	0.0	S
19/07/2020 07:00	0.0	N

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
19/07/2020 08:00	0.1	SW
19/07/2020 09:00	0.0	SE
19/07/2020 10:00	0.0	SW
19/07/2020 11:00	0.0	SE
19/07/2020 12:00	0.0	NW
19/07/2020 13:00	0.1	SE
19/07/2020 14:00	0.2	NW
19/07/2020 15:00	1.3	N
19/07/2020 16:00	0.3	N
19/07/2020 17:00	0.4	S
19/07/2020 18:00	0.8	NW
19/07/2020 19:00	0.4	SW
19/07/2020 20:00	0.0	W
19/07/2020 21:00	0.0	N
19/07/2020 22:00	1.3	NW
19/07/2020 23:00	0.0	SE
20/07/2020 00:00	0.0	NW
20/07/2020 01:00	0.0	E
20/07/2020 02:00	0.0	SW
20/07/2020 03:00	0.0	NW
20/07/2020 04:00	0.0	W
20/07/2020 05:00	0.0	SE
20/07/2020 06:00	0.0	S
20/07/2020 07:00	0.0	S
20/07/2020 08:00	0.0	NW
20/07/2020 09:00	0.0	NE
20/07/2020 10:00	0.0	NW
20/07/2020 11:00	0.0	NW
20/07/2020 12:00	0.0	SW
20/07/2020 13:00	0.0	SW
20/07/2020 14:00	0.1	W
20/07/2020 15:00	0.5	W
20/07/2020 16:00	0.0	SE
20/07/2020 17:00	0.2	W
20/07/2020 18:00	0.4	SE
20/07/2020 19:00	0.1	SE
20/07/2020 20:00	0.3	NW
20/07/2020 21:00	0.1	NW
20/07/2020 22:00	1.6	NW
20/07/2020 23:00	1.2	NW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
21/07/2020 00:00	0.1	NW
21/07/2020 01:00	2.1	NW
21/07/2020 02:00	0.0	NE
21/07/2020 03:00	0.1	N
21/07/2020 04:00	0.0	S
21/07/2020 05:00	0.0	N
21/07/2020 06:00	0.3	S
21/07/2020 07:00	1.4	S
21/07/2020 08:00	0.0	S
21/07/2020 09:00	0.1	NW
21/07/2020 10:00	0.0	S
21/07/2020 11:00	0.0	N
21/07/2020 12:00	0.5	SE
21/07/2020 13:00	0.0	S
21/07/2020 14:00	0.0	N
21/07/2020 15:00	0.0	NW
21/07/2020 16:00	0.0	S
21/07/2020 17:00	0.0	SE
21/07/2020 18:00	0.4	NE
21/07/2020 19:00	0.5	NW
21/07/2020 20:00	0.0	S
21/07/2020 21:00	0.1	N
21/07/2020 22:00	0.5	NE
21/07/2020 23:00	0.0	S
22/07/2020 00:00	0.0	NW
22/07/2020 01:00	0.1	NW
22/07/2020 02:00	0.3	N
22/07/2020 03:00	0.0	SW
22/07/2020 04:00	0.1	W
22/07/2020 05:00	0.0	S
22/07/2020 06:00	0.0	E
22/07/2020 07:00	0.0	S
22/07/2020 08:00	0.6	S
22/07/2020 09:00	0.1	S
22/07/2020 10:00	0.1	SE
22/07/2020 11:00	0.1	NE
22/07/2020 12:00	1.2	SE
22/07/2020 13:00	0.0	NW
22/07/2020 14:00	0.0	NW
22/07/2020 15:00	0.0	NW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
22/07/2020 16:00	0.0	N
22/07/2020 17:00	0.9	SE
22/07/2020 18:00	1.0	N
22/07/2020 19:00	0.3	NW
22/07/2020 20:00	0.0	NW
22/07/2020 21:00	0.0	S
22/07/2020 22:00	0.0	SE
22/07/2020 23:00	0.5	SW
23/07/2020 00:00	0.8	N
23/07/2020 01:00	0.2	NW
23/07/2020 02:00	0.1	NW
23/07/2020 03:00	0.0	SW
23/07/2020 04:00	1.8	W
23/07/2020 05:00	0.8	NW
23/07/2020 06:00	0.2	SW
23/07/2020 07:00	0.0	SW
23/07/2020 08:00	0.4	NW
23/07/2020 09:00	0.1	SE
23/07/2020 10:00	0.0	W
23/07/2020 11:00	0.0	E
23/07/2020 12:00	0.1	N
23/07/2020 13:00	0.0	S
23/07/2020 14:00	0.0	W
23/07/2020 15:00	0.0	W
23/07/2020 16:00	0.4	S
23/07/2020 17:00	0.0	S
23/07/2020 18:00	0.0	S
23/07/2020 19:00	0.1	NW
23/07/2020 20:00	0.3	N
23/07/2020 21:00	0.0	SE
23/07/2020 22:00	0.0	W
23/07/2020 23:00	0.0	N
24/07/2020 00:00	0.0	S
24/07/2020 01:00	0.0	SE
24/07/2020 02:00	0.2	NW
24/07/2020 03:00	0.0	NE
24/07/2020 04:00	0.0	NE
24/07/2020 05:00	0.0	NW
24/07/2020 06:00	1.3	NW
24/07/2020 07:00	0.1	SW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
24/07/2020 08:00	0.2	SE
24/07/2020 09:00	0.0	SW
24/07/2020 10:00	0.0	S
24/07/2020 11:00	0.0	SE
24/07/2020 12:00	0.1	W
24/07/2020 13:00	0.0	S
24/07/2020 14:00	0.0	N
24/07/2020 15:00	0.0	W
24/07/2020 16:00	0.0	SW
24/07/2020 17:00	0.7	S
24/07/2020 18:00	0.0	SE
24/07/2020 19:00	0.0	S
24/07/2020 20:00	0.0	SE
24/07/2020 21:00	0.0	SE
24/07/2020 22:00	0.1	SE
24/07/2020 23:00	0.0	NW
25/07/2020 00:00	0.6	S
25/07/2020 01:00	0.0	S
25/07/2020 02:00	0.0	SW
25/07/2020 03:00	0.0	SE
25/07/2020 04:00	0.3	SE
25/07/2020 05:00	0.8	S
25/07/2020 06:00	0.0	W
25/07/2020 07:00	0.1	SE
25/07/2020 08:00	0.1	S
25/07/2020 09:00	0.0	S
25/07/2020 10:00	0.0	W
25/07/2020 11:00	0.0	S
25/07/2020 12:00	0.2	S
25/07/2020 13:00	0.2	S
25/07/2020 14:00	0.3	E
25/07/2020 15:00	0.2	S
25/07/2020 16:00	0.0	S
25/07/2020 17:00	0.0	SE
25/07/2020 18:00	0.1	NW
25/07/2020 19:00	0.2	NW
25/07/2020 20:00	0.0	SW
25/07/2020 21:00	0.2	NW
25/07/2020 22:00	1.1	SE
25/07/2020 23:00	1.0	NW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
26/07/2020 00:00	0.0	NW
26/07/2020 01:00	0.0	S
26/07/2020 02:00	0.0	S
26/07/2020 03:00	0.4	S
26/07/2020 04:00	0.0	W
26/07/2020 05:00	0.0	S
26/07/2020 06:00	0.0	SE
26/07/2020 07:00	0.4	SE
26/07/2020 08:00	0.0	NW
26/07/2020 09:00	0.0	SE
26/07/2020 10:00	1.1	SE
26/07/2020 11:00	1.0	S
26/07/2020 12:00	0.0	NE
26/07/2020 13:00	0.0	SE
26/07/2020 14:00	0.0	SE
26/07/2020 15:00	0.0	S
26/07/2020 16:00	0.0	NW
26/07/2020 17:00	0.0	SW
26/07/2020 18:00	0.0	N
26/07/2020 19:00	0.1	NW
26/07/2020 20:00	0.1	SE
26/07/2020 21:00	0.0	NW
26/07/2020 22:00	0.0	NE
26/07/2020 23:00	0.0	SE
27/07/2020 00:00	0.0	E
27/07/2020 01:00	0.2	SE
27/07/2020 02:00	1.4	S
27/07/2020 03:00	0.2	N
27/07/2020 04:00	0.0	E
27/07/2020 05:00	0.0	W
27/07/2020 06:00	0.0	SE
27/07/2020 07:00	0.5	NW
27/07/2020 08:00	0.0	N
27/07/2020 09:00	0.4	S
27/07/2020 10:00	0.2	W
27/07/2020 11:00	0.5	W
27/07/2020 12:00	0.4	W
27/07/2020 13:00	0.3	W
27/07/2020 14:00	0.0	SW
27/07/2020 15:00	0.4	W

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
27/07/2020 16:00	0.0	SW
27/07/2020 17:00	0.0	S
27/07/2020 18:00	0.0	NW
27/07/2020 19:00	0.0	SW
27/07/2020 20:00	0.0	SE
27/07/2020 21:00	0.1	S
27/07/2020 22:00	0.0	SW
27/07/2020 23:00	0.0	NW
28/07/2020 00:00	0.0	NW
28/07/2020 01:00	0.0	SE
28/07/2020 02:00	0.0	W
28/07/2020 03:00	0.0	SE
28/07/2020 04:00	0.0	NW
28/07/2020 05:00	0.1	NW
28/07/2020 06:00	0.0	N
28/07/2020 07:00	0.0	SE
28/07/2020 08:00	0.0	S
28/07/2020 09:00	0.2	SE
28/07/2020 10:00	0.0	NW
28/07/2020 11:00	0.2	E
28/07/2020 12:00	0.0	SE
28/07/2020 13:00	0.0	SE
28/07/2020 14:00	0.0	NE
28/07/2020 15:00	0.0	NW
28/07/2020 16:00	0.7	NW
28/07/2020 17:00	0.0	NE
28/07/2020 18:00	0.0	SE
28/07/2020 19:00	0.0	N
28/07/2020 20:00	0.2	S
28/07/2020 21:00	0.0	SE
28/07/2020 22:00	0.1	E
28/07/2020 23:00	0.2	S
29/07/2020 00:00	0.4	S
29/07/2020 01:00	3.3	NW
29/07/2020 02:00	0.9	NW
29/07/2020 03:00	0.6	NW
29/07/2020 04:00	0.0	S
29/07/2020 05:00	0.2	W
29/07/2020 06:00	0.0	SE
29/07/2020 07:00	0.0	SE

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
29/07/2020 08:00	0.0	N
29/07/2020 09:00	0.0	NW
29/07/2020 10:00	0.8	NW
29/07/2020 11:00	0.6	N
29/07/2020 12:00	0.5	NW
29/07/2020 13:00	0.0	S
29/07/2020 14:00	0.0	NW
29/07/2020 15:00	0.0	S
29/07/2020 16:00	1.1	N
29/07/2020 17:00	0.0	SW
29/07/2020 18:00	0.2	W
29/07/2020 19:00	0.2	NE
29/07/2020 20:00	0.1	E
29/07/2020 21:00	0.1	S
29/07/2020 22:00	0.1	NW
29/07/2020 23:00	0.0	NW
30/07/2020 00:00	0.2	W
30/07/2020 01:00	1.0	SE
30/07/2020 02:00	0.0	NW
30/07/2020 03:00	0.6	S
30/07/2020 04:00	0.1	NW
30/07/2020 05:00	0.1	SW
30/07/2020 06:00	0.0	NW
30/07/2020 07:00	0.3	NW
30/07/2020 08:00	0.0	N
30/07/2020 09:00	0.0	NE
30/07/2020 10:00	0.0	NE
30/07/2020 11:00	0.0	NW
30/07/2020 12:00	0.0	SE
30/07/2020 13:00	0.0	SE
30/07/2020 14:00	0.0	NE
30/07/2020 15:00	0.0	N
30/07/2020 16:00	0.0	S
30/07/2020 17:00	0.5	SE
30/07/2020 18:00	0.4	NW
30/07/2020 19:00	0.2	NW
30/07/2020 20:00	0.1	S
30/07/2020 21:00	0.2	SE
30/07/2020 22:00	0.6	NW
30/07/2020 23:00	0.2	SW

Wind Data for
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Phase 2 and Other Works

Date	Wind Speed	Wind Direction
31/07/2020 00:00	1.3	NW
31/07/2020 01:00	0.0	E
31/07/2020 02:00	0.3	S
31/07/2020 03:00	0.2	SE
31/07/2020 04:00	0.1	SE
31/07/2020 05:00	0.1	S
31/07/2020 06:00	0.3	SE
31/07/2020 07:00	1.3	NW
31/07/2020 08:00	0.0	NW
31/07/2020 09:00	0.1	N
31/07/2020 10:00	0.0	W
31/07/2020 11:00	0.0	SE
31/07/2020 12:00	0.0	E
31/07/2020 13:00	0.0	N
31/07/2020 14:00	0.0	N
31/07/2020 15:00	0.0	E
31/07/2020 16:00	0.0	S
31/07/2020 17:00	0.0	NW
31/07/2020 18:00	0.0	S
31/07/2020 19:00	0.2	SE
31/07/2020 20:00	0.3	SE
31/07/2020 21:00	0.1	NW
31/07/2020 22:00	0.0	NW
31/07/2020 23:00	0.4	SW
01/08/2020 00:00	0.4	SE

Appendix H

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 I

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										
2020 Sep										
2020 Oct										
2020 Nov										
2020 Dec										
Total	68005.62	0	63898.53	0	4107.09	0	3.424	0	0	376.08

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 J

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 (Post-construction dolphin monitoring, covered by 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.	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 K

Weather and Meteorological Conditions during Reporting Month

Station: Hong Kong Observatory

Date	Mean Pressure (hPa)	Air Temperature			Mean Relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
July 2020						
1	1004.0	32.7	30.2	28.9	78	1.1
2	1005.1	33.3	30.2	27.7	79	9.3
3	1008.4	33.1	29.2	27.3	84	29.5
4	1008.9	33.3	29.8	27.5	80	8.3
5	1007.3	32.9	30.0	28.0	77	1.3
6	1007.4	32.3	30.1	28.3	76	4.1
7	1009.2	32.7	30.1	28.5	77	0.7
8	1007.1	32.2	30.0	29.0	79	0.6
9	1004.2	31.9	30.1	29.0	79	Trace
10	1005.9	32.2	30.3	29.3	75	0.0
11	1007.4	33.4	30.4	29.2	76	0.0
12	1007.7	33.5	30.4	29.1	75	0.0
13	1007.8	33.2	30.5	28.7	74	0.0
14	1006.5	33.6	30.6	28.6	75	0.0
15	1006.1	33.9	30.5	28.8	74	0.0
16	1006.9	32.7	30.4	27.4	76	2.4
17	1008.5	33.4	30.3	27.8	75	2.5
18	1008.2	33.2	30.4	28.9	75	2.2
19	1007.7	32.9	30.3	28.8	75	0.0
20	1009.5	32.2	29.9	27.5	77	3.1
21	1010.5	34.7	30.4	28.1	76	0.0
22	1009.3	33.1	30.0	27.7	79	2.5
23	1009.0	35.3	31.0	28.6	73	Trace
24	1008.3	33.9	30.8	28.8	74	0.0
25	1007.3	34.0	30.7	28.8	75	0.0
26	1006.6	34.9	30.8	28.9	74	Trace
27	1006.4	33.5	30.5	28.4	75	2.3
28	1007.5	35.0	30.8	27.9	73	3.0
29	1007.2	34.9	30.5	28.6	77	2.6
30	1006.7	34.9	30.2	26.0	75	13.3
31	1004.2	29.7	27.9	25.9	84	36.6

Remark: The corresponding weather station at Hong Kong International Airport were unavailable at the time of preparation of this report.
Source: Hong Kong Observatory

Appendix L

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 M

Summary of Site Audit in the Reporting Month

Summary of Site Audit in the Reporting Month

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	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
Chemical and Waste Management	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 N

Outstanding Issues and Deficiencies

Summary of Outstanding Issues and Deficiencies in the Reporting Month

Parameters	Outstanding Issues	Deficiencies
Air Quality	NA	Any items of deficiencies can be referred to **Appendix M**.
Noise	NA	
Water Quality	NA	
Chemical and Waste Management	NA	
Land Contamination	NA	
Landscape and Visual Impact	NA	
Permit / Licenses	NA	
Others	NA	

Appendix O

Dolphin Monitoring Results

Remarks:

1. The relevant sections of dolphin monitoring report of Contract No. HY/2012/08 is extracted.
2. Introduction (Section 1) and Conclusion (Section 4) are not shown in this report.
3. The introduction part is introducing Contract No. HY/2012/08, it is not applicable for our contract.
4. Conclusions have been provided in this monthly report, so the conclusions from Contract No. HY/2012/08 was not applicable.

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 second monthly progress report under the TMCLKL post-construction phase dolphin monitoring programme submitted to the Contractor, summarizing the results of the survey findings during the month of July 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 period. The co-ordinates of all transect lines are shown in Table 1.

Table 1 Co-ordinates of transect lines

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 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 2019). 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 *Fuijnon* 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, position (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.

2.1.8. Encounter rates of Chinese White Dolphins (number of on-effort sightings per 100 km of survey effort and number of dolphins from all on-effort sightings 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 collected under Beaufort 3 or below condition would be used for encounter rate analysis. Dolphin encounter rates were calculated using primary survey effort alone, as well as the combined survey effort from both primary and secondary lines.

2.2. Photo-identification Work

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

2.2.2. 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.

3. Monitoring Results

3.1. Vessel-based Line-transect Survey

3.1.1. During the second month of post-construction dolphin monitoring programme, two sets of systematic line-transect vessel surveys were conducted on the 2nd, 7th, 9th and 20th of July 2020, to cover all transect lines in NWL and NEL survey areas twice. The survey routes

of each survey day are shown in Figures 2-5.

3.1.2. A total of 254.95 km of survey effort was collected, with 98.2% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) during the July's surveys (Appendix I).

3.1.3. Among the two areas, 93.60 km and 161.35 km of survey effort were collected from NEL and NWL survey areas respectively. The total survey effort conducted on primary and secondary lines were 189.76 km and 65.19 km respectively (Appendix I).

3.1.4. During the two sets of monitoring surveys in July 2020, only a single Chinese White Dolphin was sighted in NWL, while no dolphin was sighted at all in NEL (Appendix II). The lone dolphin sighting in NWL was made on primary line during on-effort search, and was not associated with any operating fishing vessel (Appendix II).

3.1.5. Distribution of the single dolphin sighting made in July 2020 is shown in Figure 6. The lone dolphin was sighted to the northeast of Lung Kwu Chau, which is very far away from the TMCLKL alignment.

3.1.6. During the July's surveys, encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) are shown in Tables 2 & 3.

Table 2. Dolphin encounter rates deduced from the two sets of surveys (two surveys in each set) in July 2020 in Northeast (NEL) and Northwest Lantau (NWL)

		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**
NEL	Set 1: July 2nd / 7th	0.0	0.0
	Set 2: July 9th / 20th	0.0	0.0
NWL	Set 1: July 2nd / 7th	0.0	0.0
	Set 2: July 9th / 20th	1.8	1.8

Table 3. Overall dolphin encounter rates (sightings per 100 km of survey effort) from all four surveys conducted in July 2020 on primary lines only as well as both primary lines and secondary lines in Northeast and Northwest Lantau

	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	**Both Primary and Secondary Lines**	**Primary Lines Only**	**Both Primary and Secondary Lines**
Northeast Lantau	0.0	0.0	0.0	0.0
Northwest Lantau	0.9	0.6	0.9	0.6

3.2. Photo-identification Work

3.2.1. The only individual sighted during the July's surveys was identified as NL202 (Appendices III and IV). This lone animal was not sighted with any young calf.

5. References

- Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.

- Hung, S. K. 2019. Monitoring of Marine Mammals in Hong Kong waters: final report (2018-19). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department, 140 pp.

- Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. Wildlife Monographs 144:1-65.

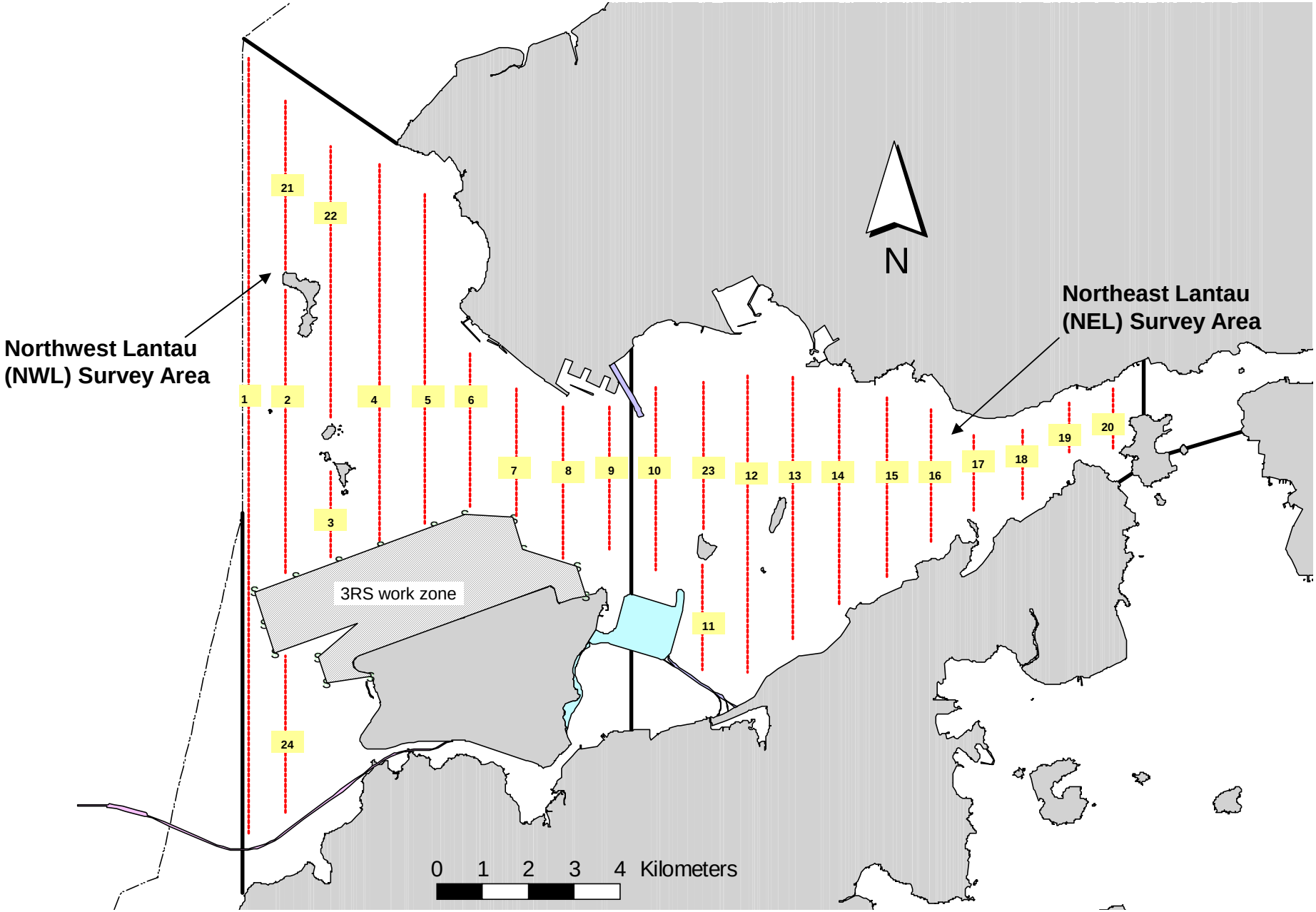


Figure 1. Transect Line Layout in Northwest and Northeast Lantau Survey Areas

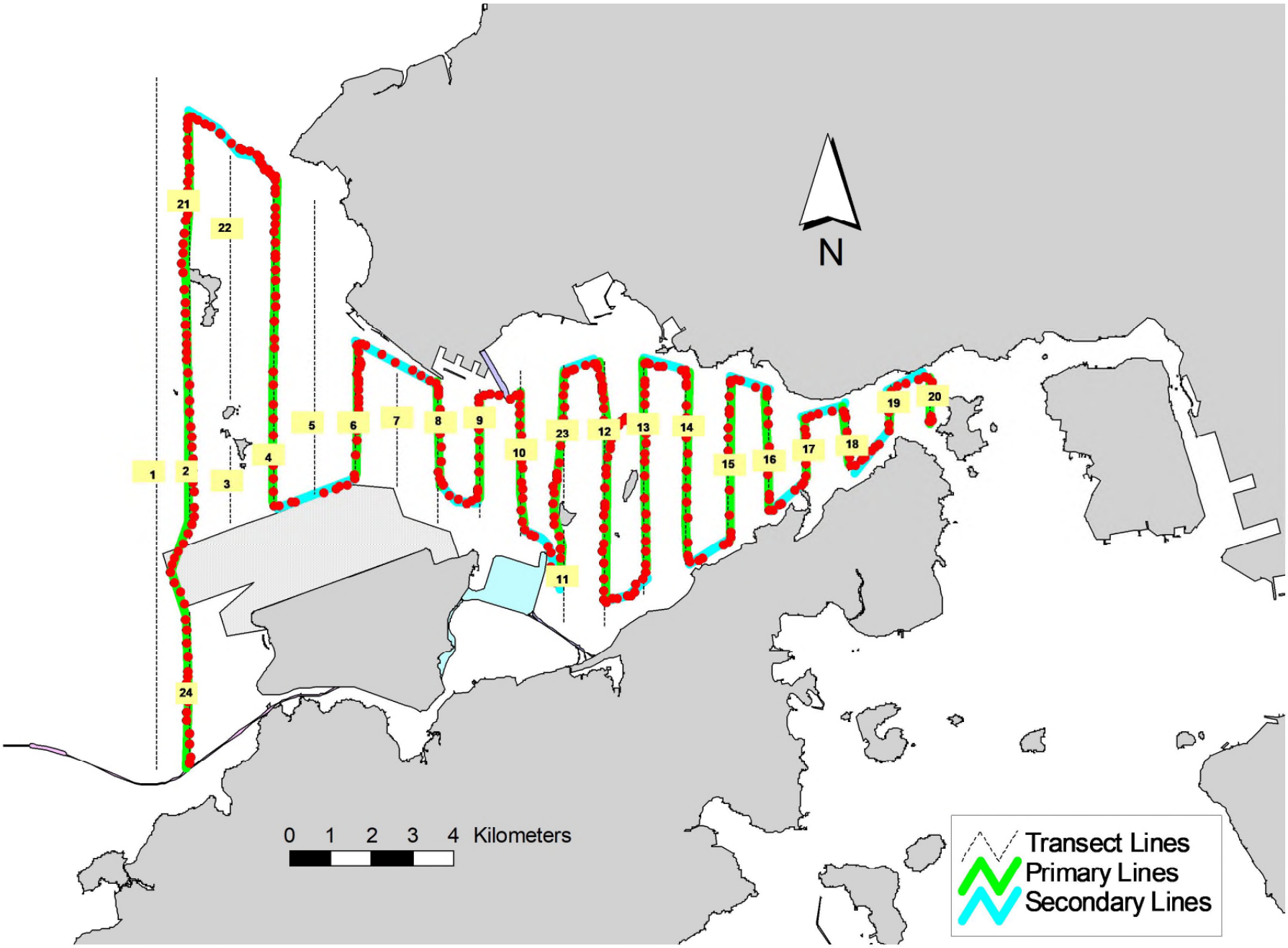


Figure 2. Survey Route on July 2nd, 2020

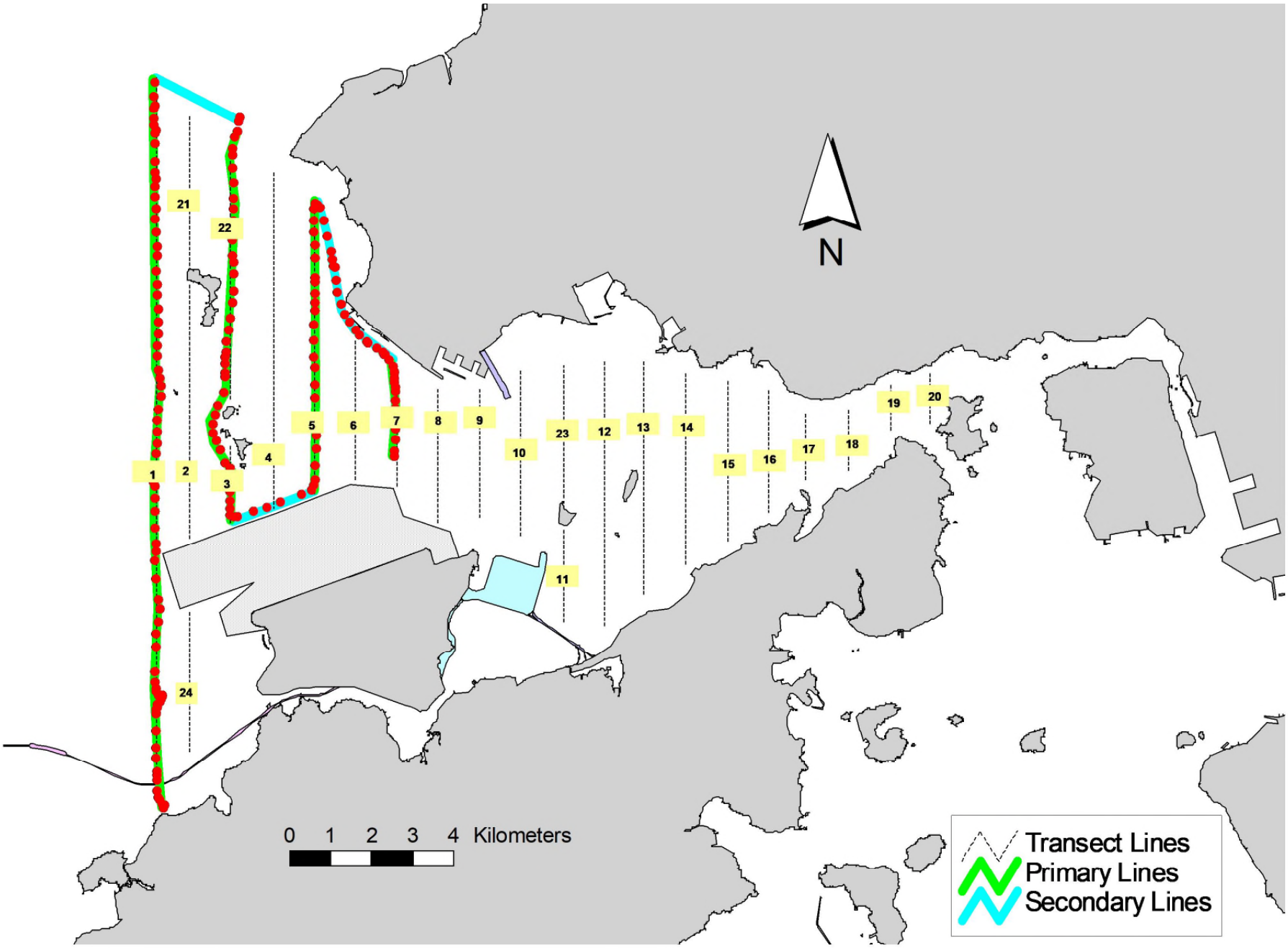


Figure 3. Survey Route on July 7th, 2020

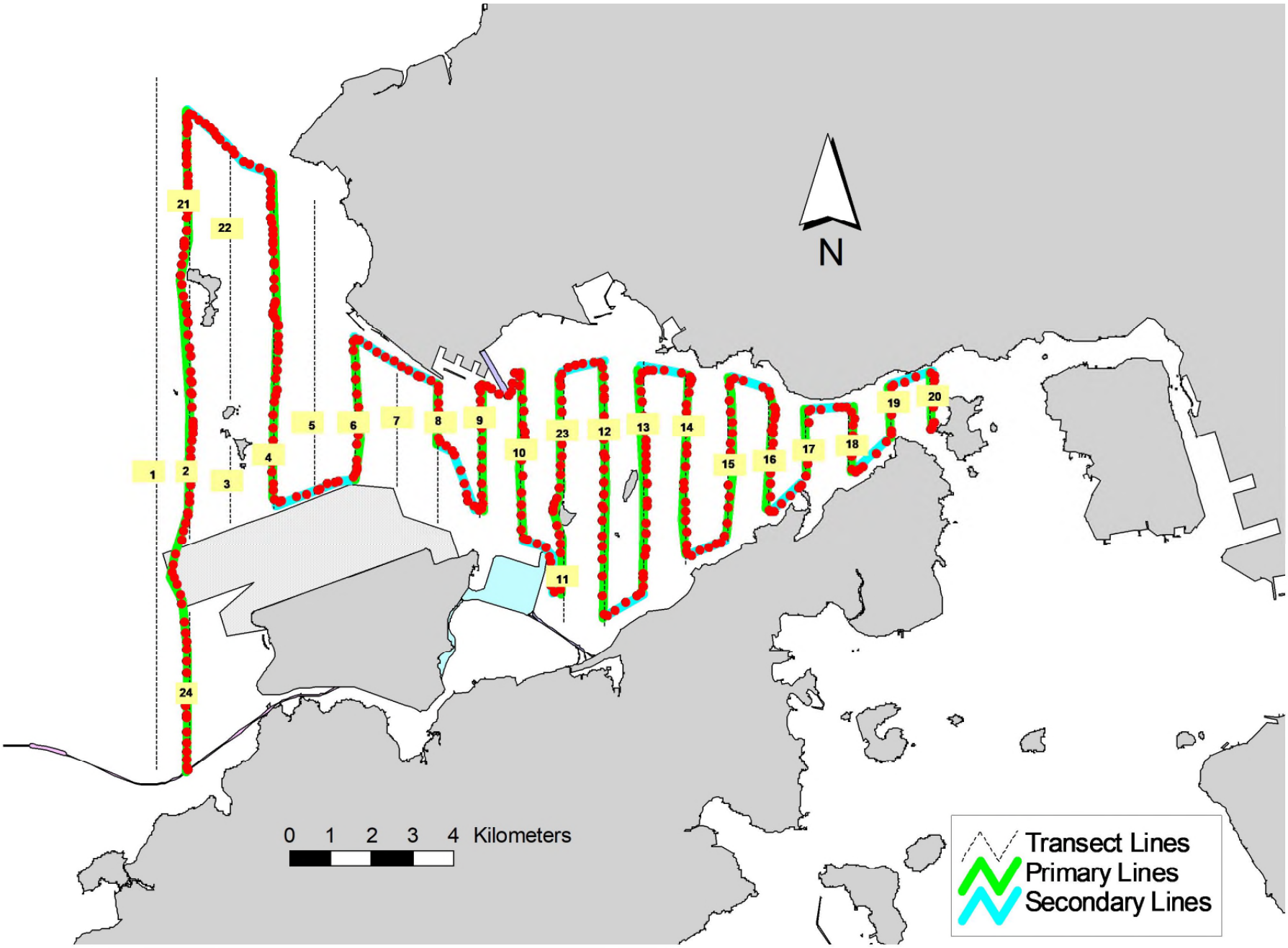


Figure 4. Survey Route on July 9th, 2020

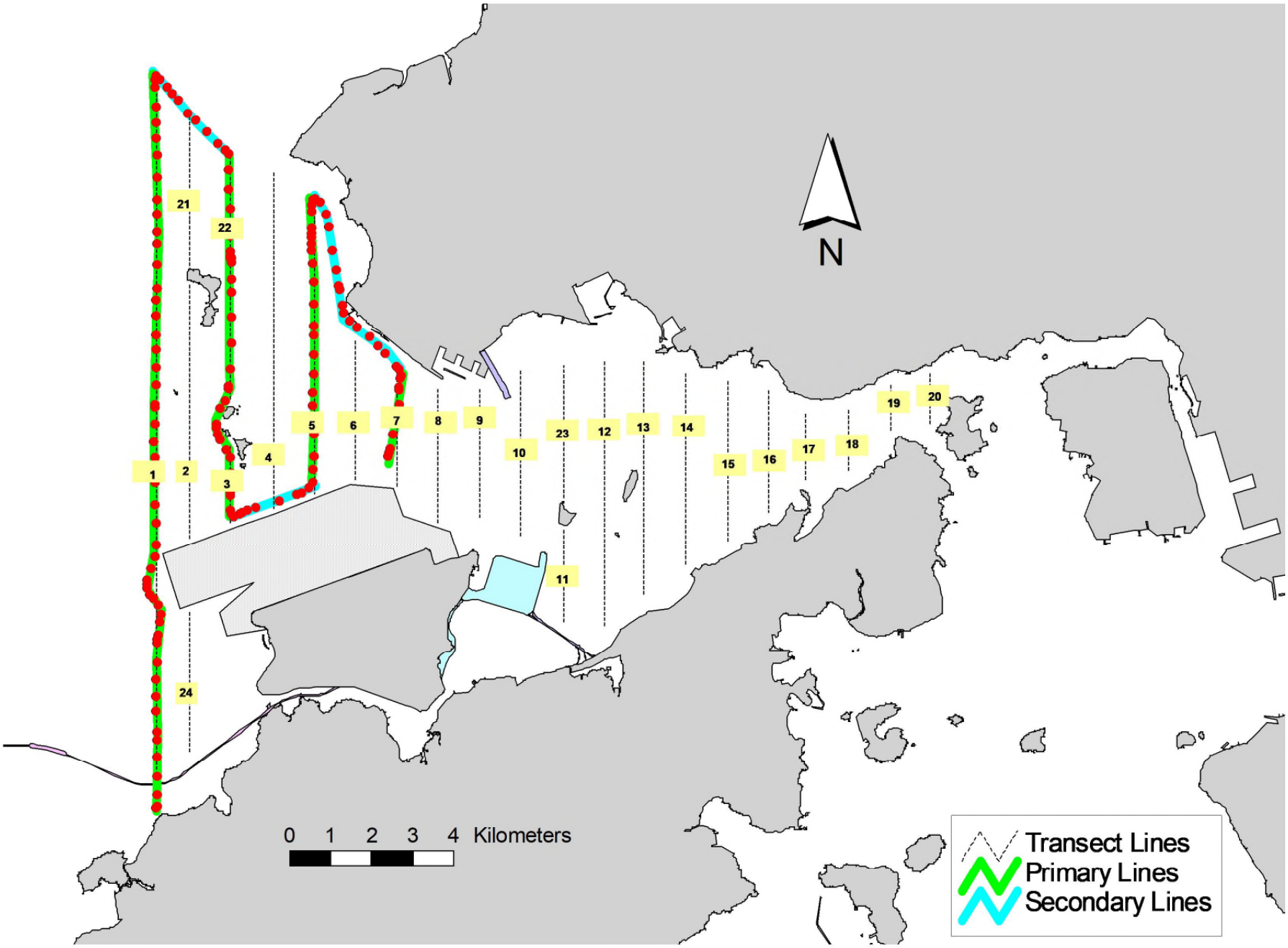


Figure 5. Survey Route on July 20th, 2020

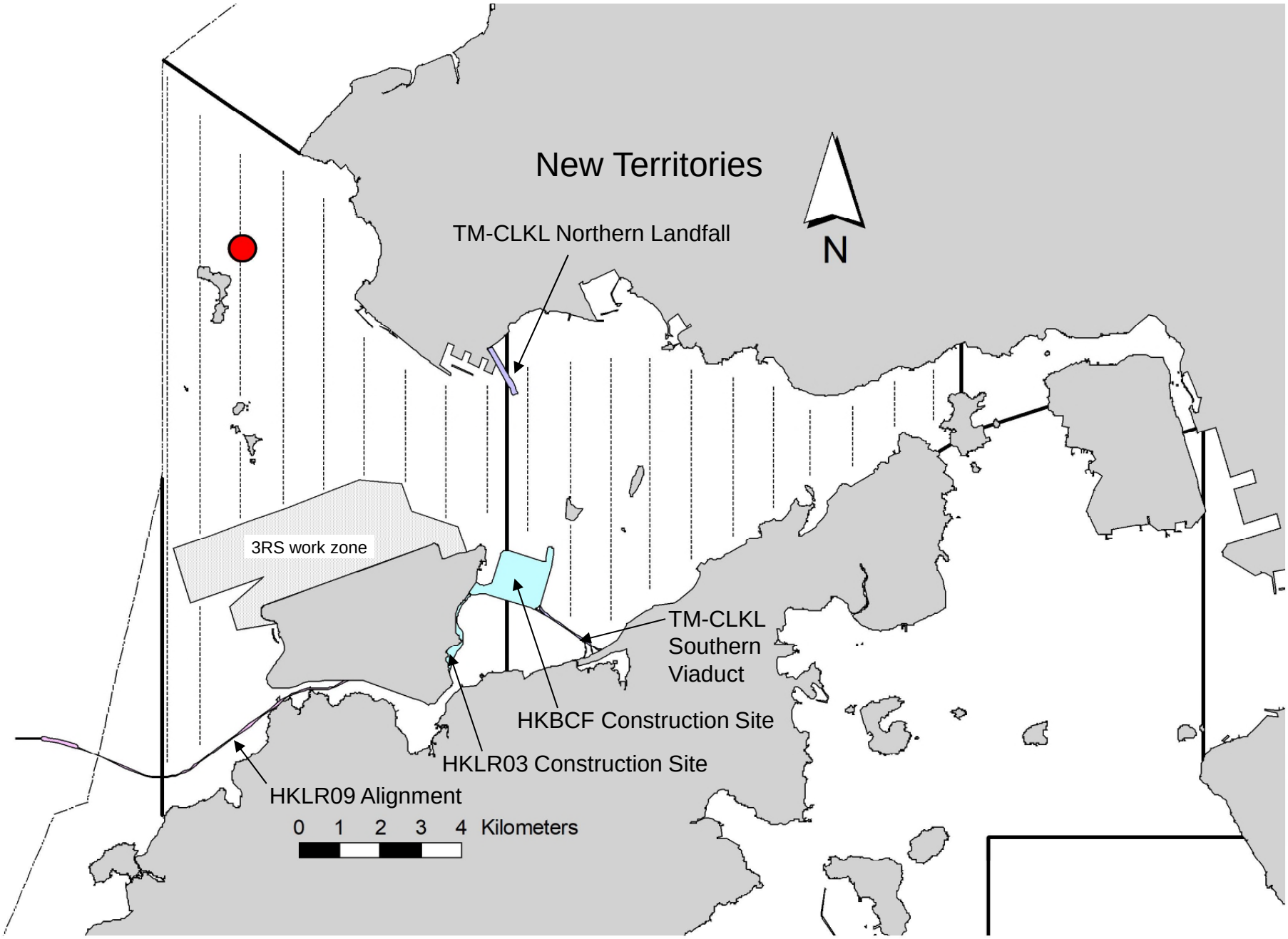


Figure 6. Distribution of Chinese White Dolphin Sightings during July 2020 Monitoring Surveys

Appendix I. TMCLKL Survey Effort Database (July 2020)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/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

Appendix II. TMCLKL Chinese White Dolphin Sighting Database (July 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

Appendix III. Individual dolphins identified during TMCLKL monitoring surveys in (July 2020)

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

Appendix IV. Photograph of Identified Individual Dolphin in July 2020 (TMCLKL)