



Monthly EM&A Report (August 2021)

0002/20/ED/0389 02 |

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

Ref.: HYDHZMBEEM00_0_8551L.21

13 September 2021

By Fax (3748 8900) and By Post

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

Attention: Mr. Jason Yu

Dear Sir,

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

Contract No. HY/2019/01
HZMB HKBCF – Phase 2 and Other Works
Monthly EM&A Report for August 2021

Reference is made to the Environmental Team's submission of Monthly EM&A Report for August 2021 certified by the ET Leader (ET's ref.: "MCL/ED/0366/2021/C" dated 13 September 2021) and provided to us via e-mail on 13 September 2021.

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



Brian Tam
Independent Environmental Checker
HZMB HKBCF

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

Internal: DY, YH, ENPO Site

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Date 13 September 2021

Our Ref. MCL/ED/0366/2021/C

Ramboll Hong Kong Limited
21/F, BEA Harbour View Centre,
56 Gloucester Road,
Wan Chai, Hong KongBY EMAILAttn.: Mr. Brian Tam, Independent Environmental Checker

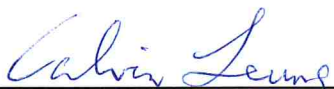
Dear Sir,

**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 August 2021 for your verification.

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

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



Calvin Leung
Environmental Team Leader

c.c.	AECOM	Attn: Mr. Jason Yu, Mr. Gordon Kok
	Ramboll	Attn: Mr. Y. H. Hui, Mr. K. C. Chan
	CHEC	Attn: Mr. Marko Chan, Mr. Matthew Wu

Document Control




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Client	China Harbour Engineering Co., Ltd. - Contract No. HY/2019/01
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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 19th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 August 2021 to 31 August 2021.

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:

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

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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 19th 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 August 2021 to 31 August 2021 (reporting period) and is submitted to fulfil Condition 5.4 of the EP.

1.2 Project Description

- 1.2.1 The works to be executed under Contract No. HY/2019/01 include the following major items:
- Landscaping and establishment works;
 - Irrigation system and associated drainage pumping system and facilities;
 - Erection and installation in the Passenger Clearance Building;
 - Public transport interchange (PTI) public toilet, satellite refuse collection point (RCP) and observation guard booths;
 - PTI cross boundary shuttle (CBS) / cross boundary coach (CBC) lanes and covered walkway;
 - Vehicle clearance plazas (VCP) vehicle kiosks and associate automatic vehicle clearance supporting system (AVCSS).

1.3 Project Organization

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

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Senior Resident Engineer	Mr. Jason Yu	3748 8903
	Resident Engineer	Mr. Winston Wong	3748 8918
	Resident Engineer	Mr. Gordon Kok	3748 8967
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3465 2888
	Independent Environmental Checker (IEC)	Mr. Brian Tam	9700 6767
	Environmental Site Supervisor	Mr. K. C. Chan	3465 2882
Contractor (China Harbour Engineering Co. Ltd)	Environmental Manager	Mr. Marko Chan	9427 2879
	Environmental Officer	Mr. Matthew Wu	6076 2675
Environmental Team (Fugro Technical Services Limited)	Environmental Team Leader (ETL)	Mr. Calvin Leung	3565 4443

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:

- Excavation at VCP (land-based);
- Road & Drain works at SPTI, NPTI and VCP (land-based);
- Covered Walkway at SPTI and 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);
- E&M Works at SPTI (land-based);
- Irrigation System at G1 and G5 (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
Construction Noise Permit	GW-RS0401-21	13-Jun-21	12-Dec-21
Construction Noise Permit	GW-RS0609-21	13-Aug-21	30-Oct-21
Water Discharge License	WT00035721-2020	8-Jun-21	30-Apr 25

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	438320/2154
5		Sibata	Model LD-5R	Sibata Portable TSP Monitors	761106
6			Model LD-5R		882146

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 $\pm 3^{\circ}\text{C}$; the relative humidity (RH) should be $< 50\%$ and not vary by more than $\pm 5\%$. 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 Due to the existing air quality monitoring location AMS7B would be hand over back to Airport Authority for their construction works. A new alternative air quality monitoring location is still under processing. Air quality monitoring location AMS7B was temporary suspended, effective from 10 December 2020.
- 2.7.4 According to the email date 11 August 2021, EPD have no comment on the Proposal for Relocation of Monitoring Location AMS 7B, the monitoring location AMS 7B are proposed to be relocated by alternative monitoring location AMS 7C for air quality monitoring. The updated EM&A Manual is pending IEC and EPD approval.
- 2.7.5 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)
AMS7C	East Sea Rescue Berth – Airport Fire Contingent 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 and AMS3C.
- 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/m³)	Range (µg/ m³)	Action Level (µg/ m³)	Limit Level (µg/ m³)
1-hour TSP				
AMS2	57	42-71	374	500
AMS3C	52	39-65	368	
AMS7C			370	
24-hour TSP				
AMS2	41	28-74	176	260
AMS3C	24	14-39	167	
AMS7C			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	1488295
2	Casella	CEL-63X Series	Integrating Sound Level Meter	1488300
3	Casella	CEL-120/1	Calibrator	2383707
4	Casella	CEL-120/1	Calibrator	2383982
5	Smart Sensor	AR816	Wind Speed Anemometer	H0423689

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	62-69	When one documented complaint is received	75
	NMS3C	67-70		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 The measured noise level recorded at NMS3C on 31 August 2021 was 70.4 dB (A), which exceeded the limit level 70 dB (A). The noise level were higher than the baseline level of 66.3 dB (A). Therefore, baseline correction was carried out and the corrected noise levels which solely represent the noise level of construction works was 68.3 dB (A), therefore there was no exceedance after correction. As such the Event and Action Plan was not triggered.
- 3.7.7 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.
- 3.7.8 The Action and Limit Levels for noise impact monitoring have been set and are presented in **Appendix C**.
- 3.7.9 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 The CV of the proposed dolphin specialist for this Contract has been submitted to IEC for review prior to submission to AFCD for approval.
- 4.1.3 According to the Proposal on Post-construction Dolphin Monitoring (PCDM) prepared by Contract No. HY/2013/04 which has been verified by ENPO and approved by EPD on 8 March 2019 (EPD ref. () in Ax(5) to E771/E1/100) , the completion date of the PCDM is in February 2021. Therefore, the reporting of Chinese White Dolphins monitoring works under this contract was completed on 1 March 2021.

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. The layout map of the transect lines provided by AFCD is presented in **Figure 4**.

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, four site inspections were carried out on 4, 12, 18 and 25 August 2021.
- 5.1.3 To monitor and audit the implementation of landscape and visual mitigation measures, three Bi-weekly landscape and visual site audits were carried out on 2, 16 and 30 August 2021 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 and AMS3C in the reporting period.
- 6.1.2 No Action and Limit Level exceedance was recorded for construction noise monitoring at station NMS2 and NMS3C in the reporting period.
- 6.1.3 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

- Excavation at VCP (land-based);
- Road & Drain works at SPTI, NPTI and VCP (land-based);
- Covered Walkway at SPTI and 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);
- E&M Works at SPTI (land-based);
- Irrigation System at G1 and G5 (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 and AMS3C 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 Four environmental site inspections were carried out in the reporting month. Recommendations on mitigation measures for air quality impact, water quality impact and chemical and waste management were given to the Contractor for remediating the deficiencies identified during the site inspections.
- 9.1.5 Three Bi-weekly Landscape and Visual Site audits were carried out by a Registered Landscape Architect in the reporting month.
- 9.1.6 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

- Cement materials should be stored properly or covered.
- Cement bag should be cleared as soon as possible.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Stagnant water should be cleared.

Chemical and Waste Management

- Waste generated at the site should be collected and cleared.

Landscape and Visual Impact

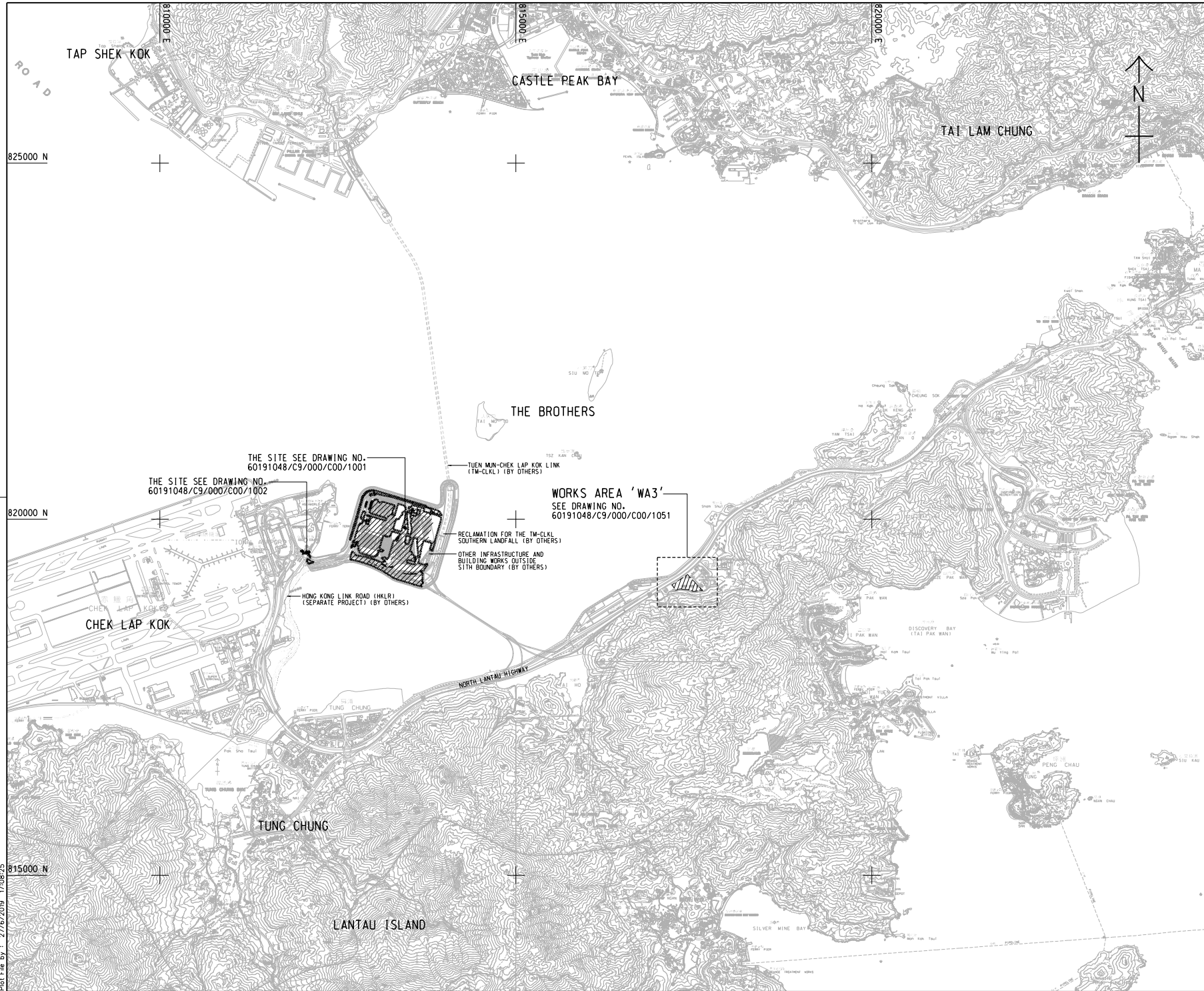
- No specific observation was identified in the reporting month.

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).

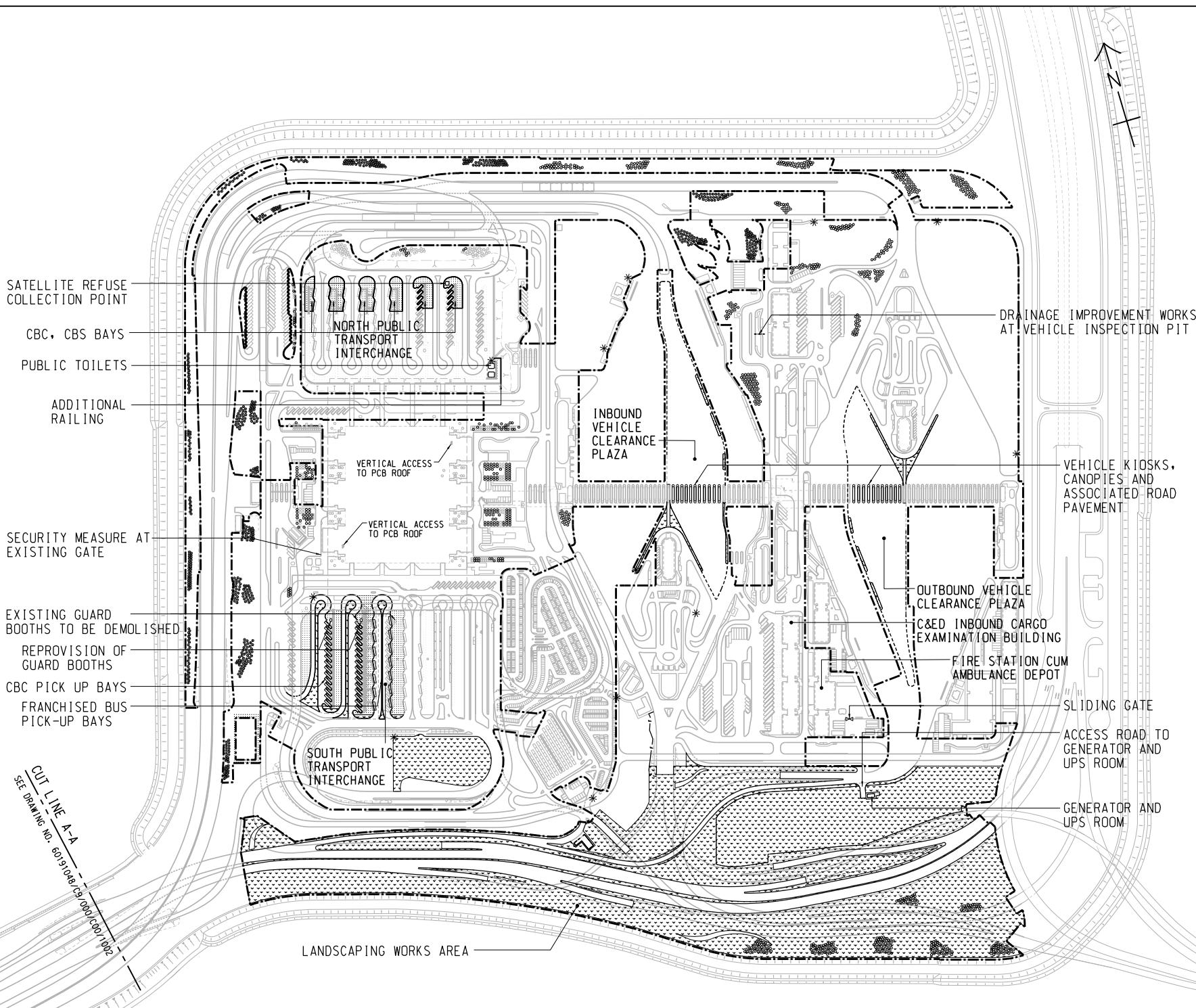
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.

LEGEND:

SITE BOUNDARY

WORKS AREA

-	TENDER DRAWING	TTM/000	JUL 19
REV.	DESCRIPTION	DATE	
01	ISSUED FOR TENDER	19 JUL 2019	
<div><div></div><div><div>HIGHWAYS DEPARTMENT</div><div>主要工程管理局 (傳真專用)</div><div>Major Works Project Management Office (Special Outlets)</div></div></div>			
<div><div></div><div><div>HONG KONG-ZHUAHAI-MACAO BRIDGE</div><div>HONG KONG BOUNDARY CROSSING FACILITIES</div><div>PHASE 2 AND OTHER WORKS</div></div></div>			
SITE LOCATION PLAN			
<div><div><div>AECOM</div><div>Rogers Stirk Harbour + Partners</div><div>BURO HAPPOLD</div></div><div><div>Aedas</div><div>ATKINS</div><div>ADI</div></div></div>			
DRG.NO. 60191048/C9/000/C00/1000			
DESIGNED BY	THHK	CONTRACT NO. HY/2019/01	P. Dir. APPROVED
DRAWN BY	JC	STATUS	SC1
SCALE	A1 1 : 25000		
UNIT	METRES		
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- REMARKS:**
- IN SPT1:
 - 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
 - IN NPT1:
 - 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
 - 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
 - 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
 - VEHICLE KIOSKS AT INBOUND & OUTBOUND VCP
 - PROVISION OF AVCESS AT NEW KIOSKS TO SERVE 24 NOS. VEHICULAR LANES
 - REPLACEMENT OF BARRIER GATE WITH SKIRTING AT 72 NOS. EXISTING KIOSK
 - C&D INBOUND CARGO EXAMINATION BUILDING
 - PROVISION OF NEW CENTRAL AVCESS EQUIPMENT WITH SUFFICIENT CAPACITY, PROCESSING POWER AND STORAGE TO ACCOMMODATE BOTH THE EXISTING AND NEW AVCESS

ABBREVIATION:

SPT1 - SOUTH PUBLIC TRANSPORT INTERCHANGE
NPT1 - 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.	DESCRIPTION	DATE
1	TENDER DRAWING	JUL 19

香港公路局
主務工程管理局 (專業車務)
Major Works Project Management Office (Special Duties)

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

GENERAL ARRANGEMENT

SHEET 1 OF 2

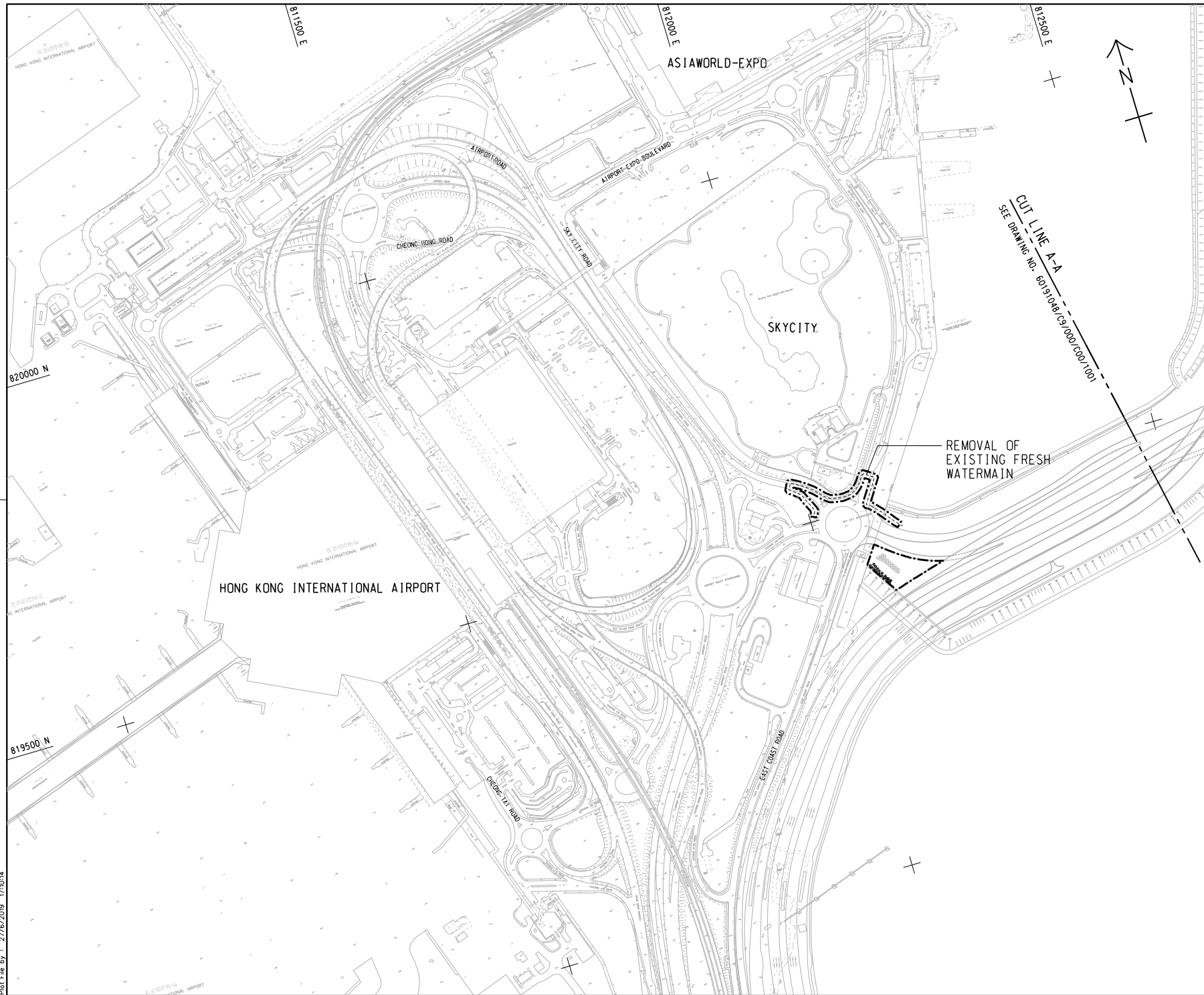
AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

DRGNO. 60191048/C9/000/C00/1001
圖紙編號

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DRAWN BY JC	STATUS REV	
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CUT LINE A-A
SEE DRAWING NO. 60191048/C9/000/C00/1002



NOTE:

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

REV.	DESCRIPTION	DATE
1	TENDER DRAWING	JUL 19

道路署
HIGHWAYS DEPARTMENT

主務工程經理處 (傳真專席)
Major Works Project Management Office (Special Outlets)

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

GENERAL ARRANGEMENT

SHEET 2 OF 2

AECOM

Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

Aedas

DRG.NO. 60191048/C9/000/C00/1002

圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 審核人
TTHK	HY/2019/01	SCI

DRAWN BY 繪圖	STATUS 狀態
JC	

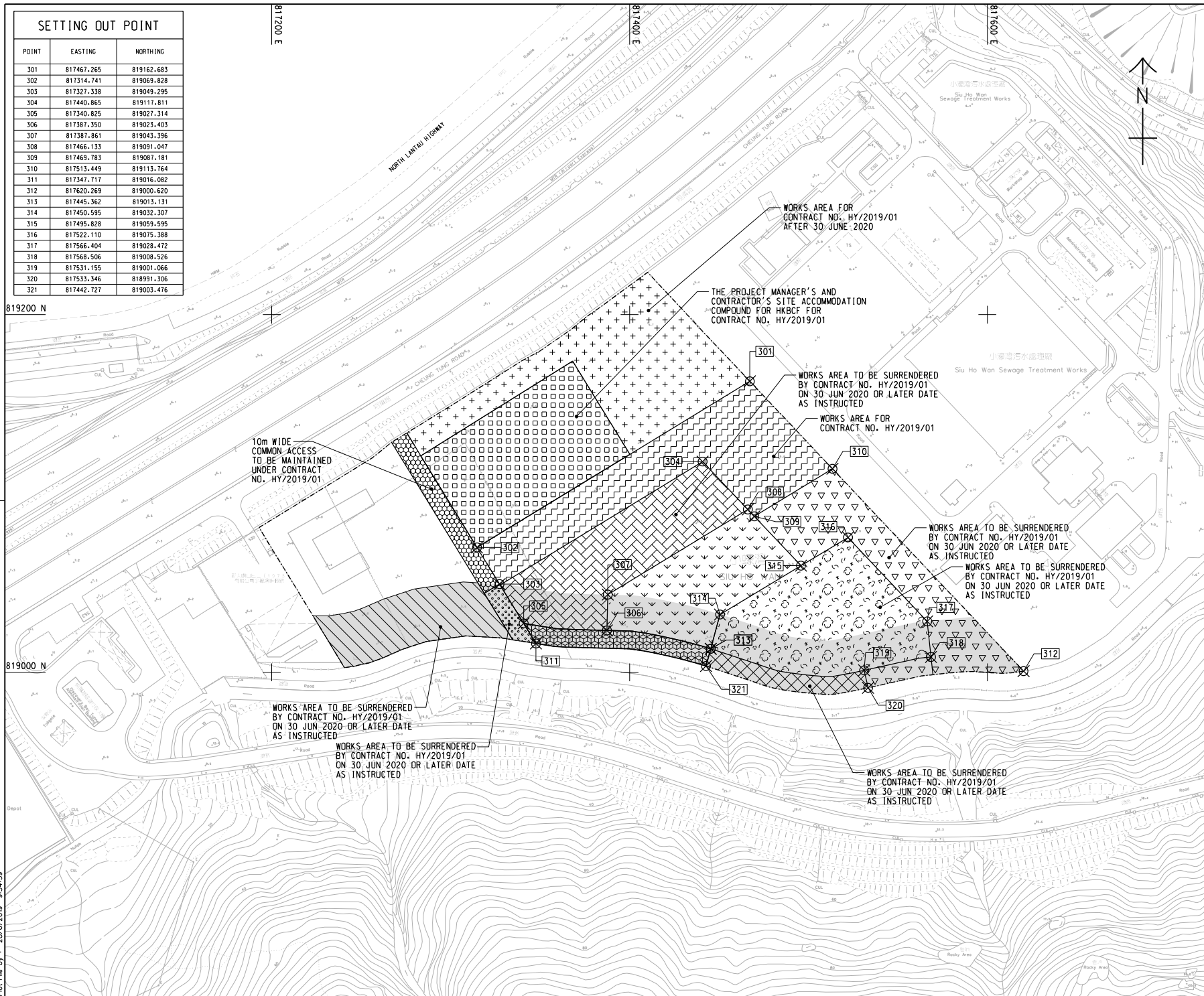
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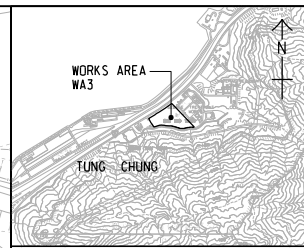
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METRES

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



LOCATION PLAN
SCALE 1 : 25000

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

LEGEND:

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[Pattern]	PORTION 3.12
[Pattern]	NON-BUILDING AREA 8200m ² (WHOLE)

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REV.	DESCRIPTION	BY	CHKD	DATE
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HONG KONG HIGHWAYS DEPARTMENT Major Works Project Management Office (Special Duties)				
HONG KONG-ZHUAHAI-MACAO BRIDGE PHASE 2 AND OTHER WORKS				

WORKS AREA WA3

AECOM + **Aedas**
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI +

DRGNO. 60191048/C9/000/C00/1051

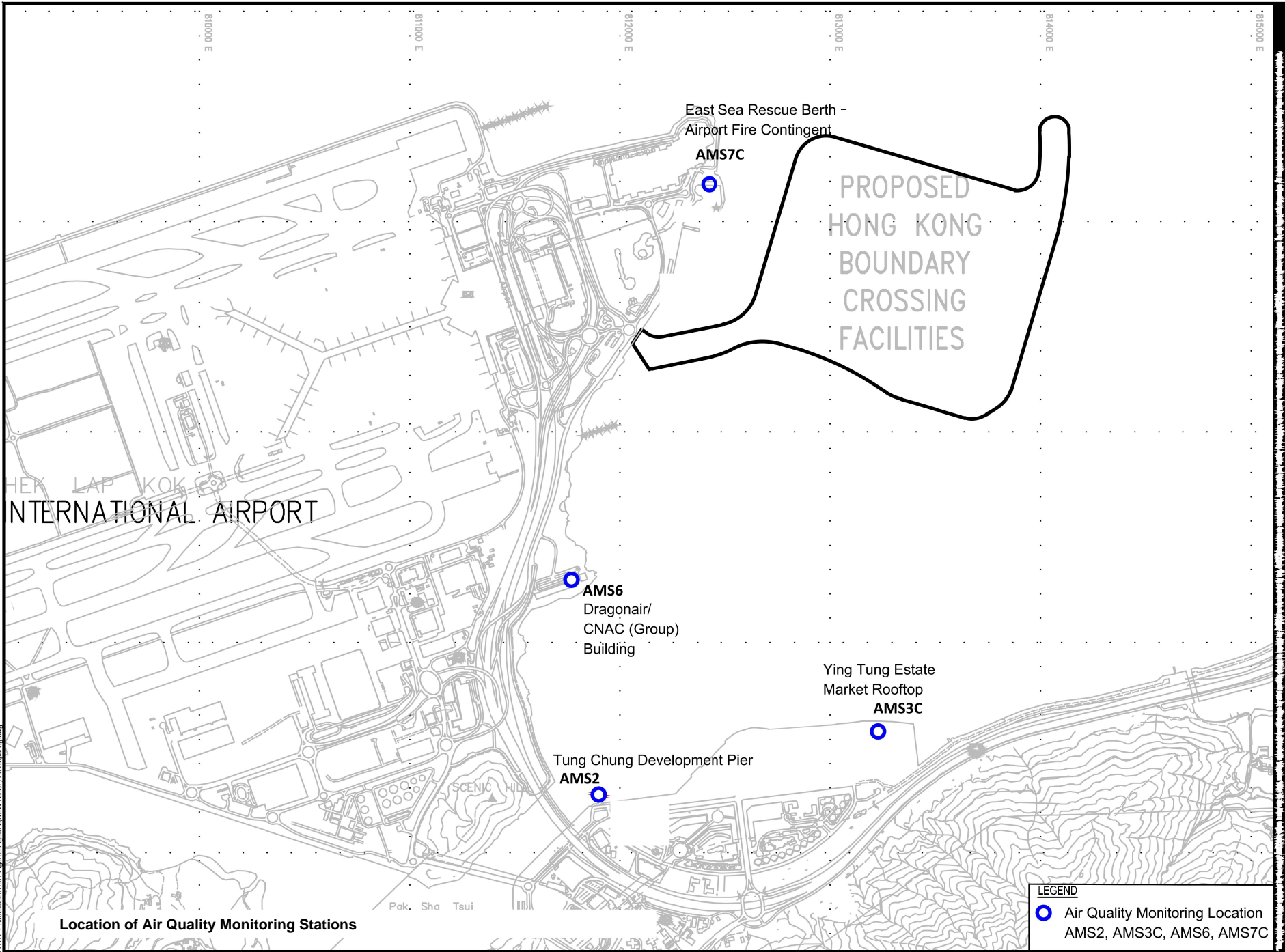
DESIGNED BY TTHK	CONTRACT NO. HY/2019/01	P. Dir. APPROVED B&A
SCALE A1 1 : 1000	STATUS REV	
DRAWING ARE IN METRES		

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Figure 2

The Location of the Air Quality Monitoring Station



HONG KONG INTERNATIONAL AIRPORT

East Sea Rescue Berth -
Airport Fire Contingent
AMS7C

PROPOSED
HONG KONG
BOUNDARY
CROSSING
FACILITIES

AMS6
Dragonair/
CNAC (Group)
Building

Ying Tung Estate
Market Rooftop
AMS3C

Tung Chung Development Pier
AMS2

Location of Air Quality Monitoring Stations

LEGEND

● Air Quality Monitoring Location
AMS2, AMS3C, AMS6, AMS7C

Figure 3

The Location of the Noise Monitoring Station

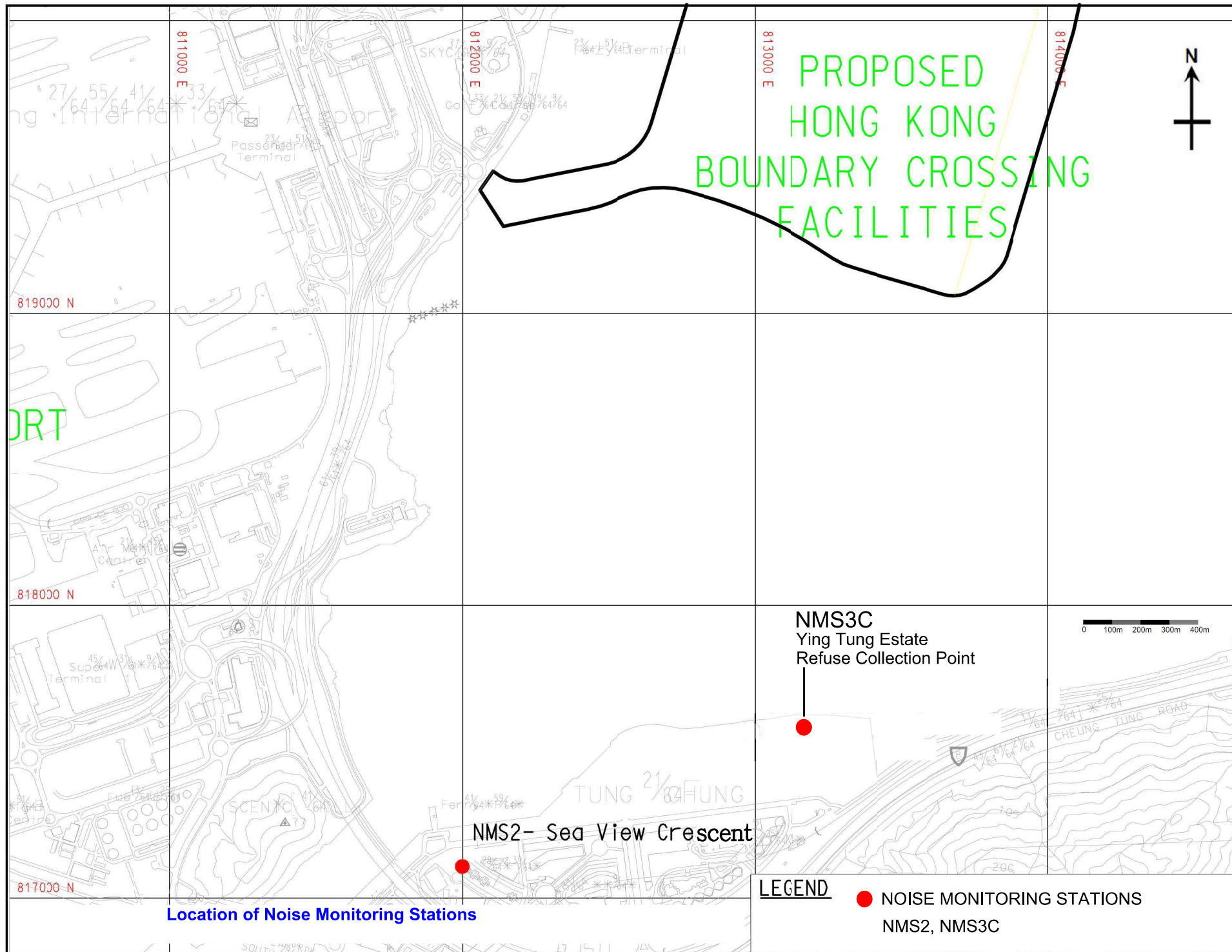
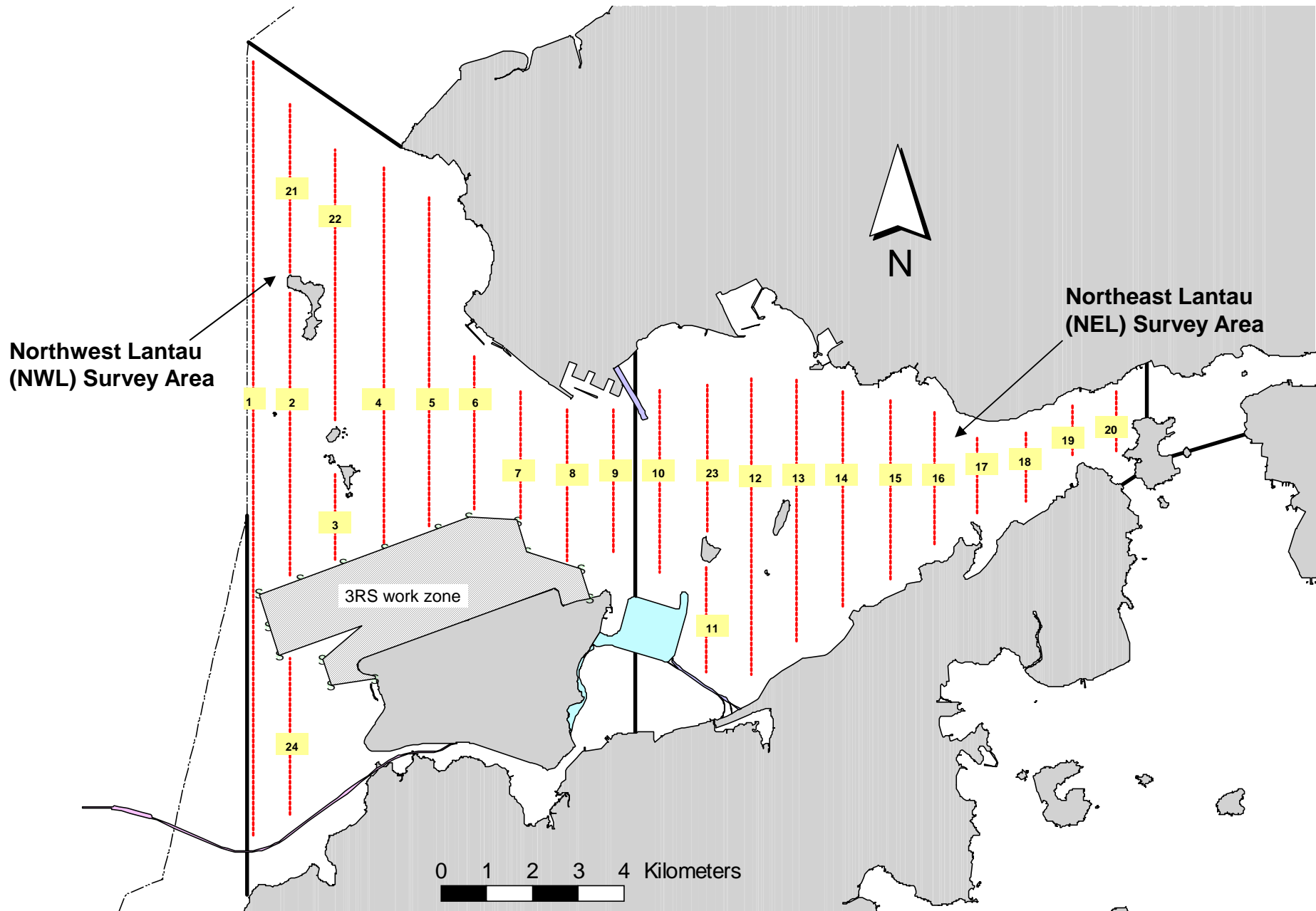


Figure 4

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					12-Aug-21				
Activity ID	Activity Name	Remaining Duration	Start	Finish	2021				
					Jul	Aug	Sep	Oct	Nov
Revised Works Programme for HKZMB Phase 2 and Other Works (HY/2019/01)									
CONTRACT DATES									
Sectional Completion									
A0260	Section 2: Irrigation System at Slopes of NPTI within Portion B (550 days)	0		30-Sep-21*					
A0280	Section 3: Modification of Walkway, Construction of Bldg003 and Bldg007at NPTI within Portion C (550 days)	0		30-Sep-21*					
SUBMISSIONS									
A0470	Submission of Landscape Softworks Method for Acceptance	16	04-Dec-19 A	18-Aug-21					
CONTRACTOR'S DESIGN									
A4920	Acceptance of Design for Raised Access Floor System for Kiosk 027 & 030	0	21-Sep-20 A	03-Jul-21 A					
A4945	Acceptance of Design for Skylight for Kiosks 027 & 030	0	21-Sep-20 A	03-Jul-21 A					
A7950	Acceptance of the Design for Irrigation System (NPTI)	8	01-Aug-20 A	10-Aug-21					
A7980	Acceptance of the Design for Pump House	8	16-Aug-20 A	10-Aug-21					
A8000	Acceptance of the Design for Irrigation System (Southern Portion)	8	16-Aug-20 A	10-Aug-21					
A8020	Acceptance of the Design for Irrigation System (Water Point)	8	01-Sep-20 A	10-Aug-21					
A8040	Acceptance of Design for Window System for Building No. 002 and Kiosks 027 & 030	0	17-Sep-20 A	03-Jul-21 A					
A8100	Acceptance of Design for Signage for Building No. 002 & 003 and Kiosks 027 & 030	0	17-Apr-21 A	31-Jul-21 A					
A8120	Acceptance of Design for Aluminum Cladding for for Building No. 002 & 003 and Kiosks 027 & 030	0	31-Oct-20 A	03-Jul-21 A					
A8140	Acceptance of Design for Blockwall System for Kiosks 027 & 030	0	17-Sep-20 A	03-Jul-21 A					
A8160	Acceptance of Design for External False Ceiling system for Kiosks 027 & 030	0	17-Sep-20 A	03-Jul-21 A					
A8730A	Design for Upgrading Works for DCS	32	04-Dec-19 A	03-Sep-21					
A8740	Acceptance for Design of Sliding Gate	29	03-May-20 A	31-Aug-21					
A8740A	Acceptance for Design for Design for Upgrading Works for DCS	32	03-May-20 A	03-Sep-21					
BUILDING INFORMATION MODELING									
A7570	Combined Services Drawing (Gen by BIM model)	32	01-Apr-20 A	03-Sep-21					
REFINEMENT WORKS AT HKP (4A)									
Installation of Vehicle Barrier Gate at Existing Vehicle Kiosks (4A.B)									
A4345-3	4A.2.1.2.3-Procurement and Delivery of Barrier Gate - Batch 3 (24 nos)	0	01-Dec-20 A	03-Jul-21 A					
A4350-30	User Approval to Replace Gates & Material-On-Site, Batch 3 (28 nos) PD1,21,22,GD1-5, GA3-8,CI	0	03-Jul-21 A	08-Jul-21 A					
A4350-32	Replacement of Gates - Batch 3 (28 nos) PD1,21,22, GD1-5, GA3-8, CD01-4, SK1-4, CA1-4, PA1,22	22	05-Jul-21 A	27-Aug-21					
Installation of Sliding Gate at Building No. 041 (4A.J)									
A4980	Design for Sliding Gate	32	03-Jul-21 A	03-Sep-21					
A6650	Acceptance for Design of Sliding Gate	32	03-Jul-21 A	03-Sep-21					
A6650A	Removal of the existing manual swing gate	36	04-Sep-21	09-Oct-21					
A6660	Procurement of Sliding Gate	68	03-May-21 A	09-Oct-21					
A6710	Installation of Security Fence and Sliding Gate (Fire Station cum Ambulance Depot 041)	25	11-Oct-21	09-Nov-21					
SECTION 2: IRRIGATION SYSTEM AT SLOPES OF NPTI WITHIN PORTION B (3)									
Design and Design Acceptance									
A6890	Acceptance of Submission of Material	0	01-Sep-20 A	03-Jul-21 A					
Irrigation System at Slopes of NPTI within Portion B									
A6900	Irrigaton Pipe Laying	50	05-Jul-21 A	30-Sep-21					
A6920	T&C	12	16-Sep-21	30-Sep-21					
A7330	Section 2: Irrigation System at Slopes of NPTI within Portion B (550 days)	0		30-Sep-21*					
SECTION 3: NPTI - PUBLIC TOILET, COVERED WALKWAY & PAVEMENT (6)									
Additional and Modification to Existing Covered Walkway, Area 1 - 6 (6.E)									
A2580	ELV & E&M works (incl. lighting installation)	0	06-Apr-21 A	06-Jul-21 A					
A2590	Paving Block Pavement at Footpath	0	07-Apr-21 A	06-Jul-21 A					
A6990	T&C	1	07-Jul-21 A	03-Aug-21					
Additional & Modification of Covered Walkway adjacent to Building 003, Area 7 (6.C)									
A4430	Drainage & Ducting at Footpath	22	03-Oct-20 A	27-Aug-21					
A4450	Erection of Covered Walkway	35	28-Nov-20 A	11-Sep-21					
A4455	Installation of aluminium honey comb panels to the existing covered walkways	11	17-Dec-20 A	14-Aug-21					
A4460	ELV & E&M works	5	01-Apr-21 A	07-Aug-21					
A4470	Paving Block Pavement at Footpath	25	01-Apr-21 A	31-Aug-21					
A4470E	Electrical Work inside EL Pillar Box	17	26-Apr-21 A	21-Aug-21					
A4470G	Canopy Lighting Installation	41	15-Apr-21 A	18-Sep-21					
A7010	T&C	39	16-Aug-21	30-Sep-21					
Public Toilet Type 1, Building 003 (6.B)									
A1710	Acceptance of Design for Toilet Partitions	0	30-Jun-21 A	28-Jul-21 A					
A2140	Floor Screeding, Public Toilet Bld003	1	20-May-21 A	03-Aug-21					

Actual Work

Remaining Work

Critical

◆

◆

Milestone

THREE MONTH ROLLING PROGRAMME FOR PHASE 2 AND OTHER WORKS

HKZMB - HONG KONG BOUNDARY CROSSING FACILITIES

Page 1 of 5

Date

12-Aug-21

Revision

3mth Rolling Programme, Aug. - Dec. 2021

Checked

ZJ

Appro...

HKZMB HK Boundary Crossing Facilities - Phase 2 and Other Works					12-Aug-21				
Activity ID	Activity Name	Remaining Duration	Start	Finish	2021				
					Jul	Aug	Sep	Oct	Nov
A2150	Water Proofing Works	1	16-Jun-21 A	03-Aug-21					
A2170	Block Wall and Finishing (with Furring Walls)	5	27-Jun-21 A	07-Aug-21					
A2180	External Finishing (Metal Cladding)	25	03-May-21 A	31-Aug-21					
A2190	Doors (7 Nos. of Metal Doors)	23	03-Jun-21 A	28-Aug-21					
A2210	Metal Works (1 No. of Cat Ladder, 1 No. of Louvre, 1 No. of Ap)	0	18-Jun-21 A	15-Jul-21 A					
A2220	Roof Metal Railing	17	18-Jun-21 A	21-Aug-21					
A2230	Roof Skylight System	17	03-Aug-21	21-Aug-21					
A2240	Roof Cladding	25	03-Aug-21	31-Aug-21					
A2250	Sanitary Fitting Installation	5	04-Aug-21	09-Aug-21					
A2270	Delivery of Furniture	0	22-Jun-20 A	31-Jul-21 A					
A2280	Furniture Installation	9	02-Aug-21 A	12-Aug-21					
A2290	Toilet Cubicle Installation	14	02-Aug-21 A	18-Aug-21					
A2310	Ceiling Installation	11	02-Aug-21 A	14-Aug-21					
A3379	WWO542 & WWO46 Part 1-4 Submission	0	14-Jun-21 A	20-Jul-21 A					
A3380A	Concealed conduit work	0	03-Mar-21 A	30-Jul-21 A					
A3380A1	Cabling works	0	03-Jun-21 A	30-Jul-21 A					
A3380B	BS Installation (above ceiling area)	4	24-May-21 A	06-Aug-21					
A3380C	BS (incl. signage) Installation (area except ceiling area)	37	26-May-21 A	14-Sep-21					
A3380D	SCADA and panic alarm (ELV) installation works	17	26-May-21 A	21-Aug-21					
A3380E	Cable ducting installation (from PU-PB-01 to building 003)	1	28-Apr-21 A	03-Aug-21					
A3380F	Power cable laying and submission of WR1A	1	03-Jun-21 A	03-Aug-21					
A3380G	FSD Inspection and approval	28	10-Aug-21	10-Sep-21					
A3390	TPIDC Authority Inspection & Approval	22	30-Aug-21	24-Sep-21					
A6100	ASD Approval, WWO Part V submission & Approval	22	30-Aug-21	24-Sep-21					
Additional Railing adjacent to Building 003 (6.D)									
A3410	Installation of Railing	25	03-Jul-21 A	31-Aug-21					
Drainage, Pavement, Kerbing, Lighting, Marking and Signs (6.F)									
A1620	Drainage & Sewerage	22	03-Nov-20 A	27-Aug-21					
A1620A	Fresh Water Main Laying	23	03-Nov-20 A	28-Aug-21					
A1620B	Flush Water Main Laying	23	03-Nov-20 A	28-Aug-21					
A1630	Ducting Works	17	03-May-21 A	21-Aug-21					
A1640	Pavement, Kerbing, Marking and Signs	46	18-Jun-21 A	25-Sep-21					
Completion of Section 3									
A7360	Section 3: Modification of Walkway, Construction of Bldg003 and Bldg007at NPPTI within Portion C (:	0		30-Sep-21					
SECTION 4: REMOVAL OF WATERMAIN AT THE SKYCITY INTERCHANGE WITHIN PORTION C AND D									
A3610	Submission of TTA	0	04-Dec-19 A	24-Jul-21 A					
A3650	Acceptance of TTA	0	06-Dec-20 A	24-Jul-21 A					
A4040	Preparation Works for Implementation of TTA (Release TTA by AA Contractor on 1.8.2020)	0	03-Jun-21 A	01-Aug-21 A					
A4050	Liaise with AAHK (does not include access to AA Contractor site) for Site Access	30	29-Jul-20 A	01-Sep-21					
A7380	Removal of Watermain at Skycity Interchange, Portion 1	63	04-Sep-21	19-Nov-21					
A7400	Removal of Watermain at Skycity Interchange, Portion 2	28	30-Jul-21 A	03-Sep-21					
A7440	Removal of Watermain at Skycity Interchange, Portion 4	0	23-Jun-21 A	29-Jul-21 A					
SECTION 5: REMAINING WORKS									
External Works at Plaza									
A1520	Additional Drainage Works	0	03-Jun-20 A	03-Aug-21					
A1530B	Pavement Works (Subbase) at Outbound North	23	08-Apr-21 A	28-Aug-21					
A1540	Pavement Works (Subbase) at Inbound South	41	02-Jul-21 A	18-Sep-21					
A1540A	Pavement Works (Roadbase and Base Course) at Outbound South	25	19-Feb-21 A	31-Aug-21					
A1540B	Pavement Works (Roadbase and Base Course) at Outbound North	35	10-May-21 A	11-Sep-21					
A1540C	Pavement Works (Roadbase and Base Course) at Inbound South	46	08-Jun-21 A	25-Sep-21					
A1550	Pavement Works (Roadbase and Base Course) at Inbound North	17	12-Apr-21 A	21-Aug-21					
A8750	Pavement Works (incl. waterproof+screeding layer) at kiosks area at outbound	74	15-May-21 A	30-Oct-21					
A8770	Pavement Works (Wearing Course) at Outbound	41	11-Oct-21*	27-Nov-21					
A8780	Pavement Works (Wearing Course) at Inbound	42	01-Nov-21*	18-Dec-21					
Inbound: 11 No. of Private Car Kiosks between 027/028									
Builder Works (5.A)									
A1070	Installation of Windows/Door at Kiosks	49	13-Apr-21 A	29-Sep-21					
A1080	ABWF Works at 1st Group Kiosks (3 nos.)	29	13-May-21 A	04-Sep-21					
A1080A	ABWF Works at 2nd Group Kiosks (3 nos.)	38	08-Jun-21 A	15-Sep-21					
A1080B	ABWF Works at 3rd Group Kiosks (3 nos.)	47	07-Jul-21 A	27-Sep-21					
A1080C	ABWF Works at 4th Group Kiosks (2 nos.)	57	27-Jul-21 A	09-Oct-21					

Actual Work

Remaining Work

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Activity ID	Activity Name	Remaining Duration	Start	Finish	2021					
					Jul	Aug	Sep	Oct	Nov	
A1080D	ABWF Works at Kiosks at Inbound VCP (miscellaneous external railing, cladding etc.)	100	17-Aug-21	14-Dec-21						
A1170	Fabrication and delivery of Metal Roof Panel Components	11	03-Dec-20 A	14-Aug-21						
A1170A	Erection of Secondary Beams & Sub-frames	0	29-May-21 A	22-Jul-21 A						
A1170B	Erection of ODB Mounting Frames	17	08-Jul-21 A	21-Aug-21						
A1170C	Erection of Panel for ODB (bottom layer) (G25 - G35)	43	16-Aug-21*	06-Oct-21						
A1180	Erection of Roof Panels (top layer) G25 - G35	40	27-Sep-21*	13-Nov-21						
A4480	Removal of all hoarding for OPT	11	01-Nov-21*	12-Nov-21						
E&M Works										
A1108C	4th Group Kiosks (2nos.): Concealed conduit & BS Installation	0	11-Jun-21 A	06-Jul-21 A						
A1109	E&M Installation Work for CUE Area	62	20-Jan-21 A	16-Oct-21						
A1120-13	8.1.2.0-Install Cable and Fibres for AVCSS (027/028)	0	06-Mar-21 A	03-Jul-21 A						
A1120-15	8.1.2.0-FAT AVCSS	18	03-Oct-20 A	23-Aug-21						
A1120-20	8.1.2.1-Delivery of Major Equipment (Servers, Workstations, Core Switches, Access Switches)	0	03-May-21 A	30-Jul-21 A						
A1120-30	8.1.2.1A-Delivery of Remaining AVCSS Equipment	0	03-May-21 A	30-Jul-21 A						
A1120-44	8.1.2.2- 1st Installation of Equipment (027/028)	6	06-Sep-21	11-Sep-21						
A1120-44A	8.1.2.2- 2nd Installation of Equipment (027/028)	6	16-Sep-21	23-Sep-21						
A1120-44B	8.1.2.2- 3rd Installation of Equipment (027/028)	6	28-Sep-21	05-Oct-21						
A1120-44C	8.1.2.2- 4th Installation of Equipment (027/028)	6	11-Oct-21	18-Oct-21						
A1120-46	8.1.2.2-Pre-inspection of ODB	18	23-Aug-21	11-Sep-21						
A1120-46.1	8.1.2.2-Installation of ODB (027/028) - after A1170B Erection of Roof	32	07-Oct-21	13-Nov-21						
A1120-54	8.1.2A-Relocation of Inbound VID and VTS Equipment	13	07-Jun-21 A	17-Aug-21						
A1120-60	8.1.3 - System Configuration of AVCSS	56	13-Sep-21	19-Nov-21						
A1130-25	Proposal for Migration/Integration with existing AVCSS Before OPT subject to Users (C&ED)	71	28-Jul-21 A	27-Oct-21						
A1190	E&M Works at Roof	50	24-Jul-21 A	30-Sep-21						
A8360A	Design for Upgrading Works for DCS	32	04-Dec-19 A	03-Sep-21						
A8360B	Acceptance for Design for Design for Upgrading Works for DCS	32	03-May-20 A	03-Sep-21						
A8360C	Material Delivery for DCS upgrading	46	04-Sep-21	30-Oct-21						
A8370	Update and modification of District Cooling System (DCS) (incl. water balancing and calibration wo	50	01-Nov-21	30-Dec-21						
Outbound: 11 No. of Private Car Kiosks between 029/030										
Builder's Works (5.A)										
A1260	Installation of Windows/Door at Kiosks	41	08-Feb-21 A	18-Sep-21						
A1270	ABWF Works at 1st Group Kiosks (2 nos.)	23	11-Feb-21 A	28-Aug-21						
A1270A	ABWF Works at 2nd Group Kiosks (3 nos.)	32	15-Mar-21 A	08-Sep-21						
A1270B	ABWF Works at 3rd Group Kiosks (3 nos.)	42	12-Apr-21 A	20-Sep-21						
A1270C	ABWF Works at 4th Group Kiosks (3 nos.)	50	26-Apr-21 A	30-Sep-21						
A1360	Fabrication and delivery of Metal Roof Panel Components	0	28-Nov-20 A	30-Jul-21 A						
A1370B	Erection of OBD Mounting Frames	11	25-Jun-21 A	14-Aug-21						
A1370C	Erection of Panel for ODB (bottom layer) (GL11 - 22)	46	25-Jun-21 A	25-Sep-21						
A1380	Erection of Roof Panels (top layer) (GL12 - 22)	39	15-Sep-21*	02-Nov-21						
A1380A	MJ, Fall Arrest System, Maintenance Access	44	27-Oct-21	16-Dec-21						
E&M Works										
A1310-13	8.1.2.0-Install Cable and Fibres for AVCSS (029/030)	0	03-Jun-21 A	26-Jul-21 A						
A1310-15	8.1.2.0-FAT AVCSS	25	03-Oct-20 A	31-Aug-21						
A1310-44	8.1.2.2-1st Installation of Equipment (029/030)	35	03-Jul-21 A	11-Sep-21						
A1310-44A	8.1.2.2-2nd Installation of Equipment (029/030)	12	13-Sep-21	27-Sep-21						
A1310-44B	8.1.2.2-3rd Installation of Equipment (029/030)	12	28-Sep-21	12-Oct-21						
A1310-44C	8.1.2.2-4th Installation of Equipment (029/030)	12	02-Oct-21	16-Oct-21						
A1310-46	8.1.2.2-Pre-inspection of ODB	17	16-Aug-21	03-Sep-21						
A1310-46.1	8.1.2.2-Installation of ODB (029/030) - after A1370C: Erection of Panel for ODB (bottom layer) (GL1	35	27-Sep-21	08-Nov-21						
A1310-54	8.1.2A-Relocation of Outbound VID and VTS Equipment	0	03-May-21 A	14-Jul-21 A						
A1310-60	8.1.3 - System Configuration of AVCSS	56	13-Sep-21	19-Nov-21						
A1320-25	Proposal for Migration/Integration with existing AVCSS before OPT subject to Users (C&ED)	71	28-Jul-21 A	27-Oct-21						
A1390	E&M Works at Roof	50	03-Aug-21	30-Sep-21						
A8360D	Design for Upgrading Works for DCS	32	04-Dec-19 A	03-Sep-21						
A8360E	Acceptance for Design for Design for Upgrading Works for DCS	32	03-May-20 A	03-Sep-21						
A8360F	Material Delivery for DCS upgrading	30	04-Sep-21	11-Oct-21						
A8380	Update and modification of District Cooling System (DCS) (incl. water balancing and calibration wo	50	12-Oct-21	09-Dec-21						
Drainage & Pavement Works at Kiosks (Inbound & Outbound)										
A1370	Drainage at Kiosks Area	1	16-May-20 A	03-Aug-21						
A1370-A	Reinstatement of waterproofing & conc. screeding on CUE top	1	03-Jun-21 A	03-Aug-21						
A1370-B	Profile barriers w/conc. infill	14	03-Jun-21 A	18-Aug-21						

Actual Work

Remaining Work

Critical

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Activity ID	Activity Name	Remaining Duration	Start	Finish	2021				
					Jul	Aug	Sep	Oct	Nov
A1370-C	Paving works at kiosks area	62	21-Jun-21 A	16-Oct-21					
A1370-D	Testing for glazing of skylight	11	19-Jul-21 A	14-Aug-21					
A1370-E	Installation of skylight system (supporting frame & glazing panels)	50	02-Jul-21 A	30-Sep-21					
Observation Guard Booths, Building 002									
A2010	Raised Floor	1	11-May-21 A	03-Aug-21					
A3060	Furniture Installation	6	19-Jun-21 A	09-Aug-21					
A3080	Finishing works & ceiling installation	1	26-May-21 A	03-Aug-21					
A3090	Internal Finishing	14	29-May-21 A	19-Aug-21					
A3110	E&M installation (including T&C)	0	03-Jun-21 A	03-Aug-21					
A3110A	Installation of ELV equipment (including T&C)	0	15-Jun-21 A	19-Jul-21 A					
A3110F	Submission of FSI 501	0	03-Jul-21 A		◆ Submission of FSI 501				
A3110G	FSD Inspection	0	16-Aug-21		◆ FSD Inspection				
SPTI Stage 3A1									
A2840	Dismantle of Existing Covered Walkway	0	16-Jun-21 A	16-Jul-21 A					
A2850	Dismantle of Existing CPIS Facility	0	16-Jun-21 A	16-Jul-21 A					
A8530	Drainage Construction	0	16-Jun-21 A	16-Jul-21 A					
A8540A	Installation of Covered Walkway Canopy	25	17-Jul-21 A	31-Aug-21					
A8550	Underground Ducting, Drawpits and Foundations	0	16-Jun-21 A	09-Jul-21 A					
A8560	Rigid Pavement Type A and Kerb (incl. roundabout and SOL353)	0	18-Jun-21 A	30-Jul-21 A					
A8580	Dismantle of Existing Guard Booths	28	16-Aug-21	16-Sep-21					
A8590	Flexible Pavement Type C	5	19-Jun-21 A	07-Aug-21					
SPTI Stage 3B									
A8630	Covered Walkway Footing	45	16-Aug-21	08-Oct-21					
A8640	Installation of Covered Walkway Canopy	75	16-Aug-21	13-Nov-21					
A8650	Underground Ducting, Drawpits and Foundations	45	16-Aug-21	08-Oct-21					
A8660	Rigid Pavement Type A	100	17-Aug-21	14-Dec-21					
A8670	Kerb & Planter Barrier	100	18-Aug-21	15-Dec-21					
A8690	Flexible Pavement Type C (incl. SOL353)	92	27-Aug-21	15-Dec-21					
A8710	Footpath Paving Block	90	30-Aug-21	15-Dec-21					
A8720	Canopy Lighting and E&M Works	50	19-Oct-21	15-Dec-21					
Pump House for Landscape (2)									
A2910	Acceptance of the Design for Pump House	0	16-Aug-20 A	03-Aug-21					
A2920	Acceptance for Submission of Materials	0	03-Mar-21 A	03-Jul-21 A					
A2930	Purchasing & Delivery of Water Pump & Associated Equipment	0	03-Mar-21 A	03-Jul-21 A					
A2962	External Works	23	30-Apr-21 A	28-Aug-21					
A2970	Installation of Pumps & Associated Equipment	24	03-May-21 A	30-Aug-21					
A2972	Construction of Pillar Box and Builder's Works for Pump House	25	03-Jun-21 A	31-Aug-21					
A2974	CLP Cabling Works and Power On	49	01-Sep-21	30-Oct-21					
A2990	Final Connection and T&C	14	01-Nov-21	16-Nov-21					
A6440	WSD Inspection & Approval, Final Connection	16	01-Nov-21	16-Nov-21					
Substation Paving Unit									
A7800	Substation: Site formation for Pavement Works	24	02-Oct-21*	30-Oct-21					
A7810	Substation: Pavement Works (KP1 & K1) (Paving Unit)	26	01-Nov-21	30-Nov-21					
Landscape Works (2)									
A4160	Mix & place Soilmix (Southern Portion & Closed Area, exclude Hydroseeding Area)	74	26-Aug-20 A	30-Oct-21					
A4180A	Mix and Place Soilmix for Hydroseeding Area	74	28-Dec-20 A	30-Oct-21					
Irrigation System (Southern Portion)									
Design and Design Acceptance									
A7860	Acceptance of the Design for Irrigation System (Southern Portion)	0	16-Aug-20 A	03-Aug-21					
A7870	Liaison with WSD & Water Meter Installation	58	16-Aug-20 A	29-Sep-21					
Irrigation System at Southern Portion									
A7910	Irrigaton Pipe Laying (incl. install sprinklers and QCV)	74	02-Jan-21 A	30-Oct-21					
A7930	T&C	26	01-Nov-21	30-Nov-21					
Irrigation System (Water Point)									
A6520	Acceptance of the Design for Irrigation System	0	01-Sep-20 A	03-Jul-21 A					
A6530	Liaison with WSD for Obtaining Statutory Approval	17	01-Aug-20 A	19-Aug-21					
A6550	Irrigaton Pipe Installation and Water Meter Installation (incl. TTA & crossing road pipe)	50	17-May-21 A	30-Sep-21					
A7160	T&C	50	02-Oct-21	30-Nov-21					
Group 1: WP 12, 13, 14 & 18									
A6561	Construction of Additional Waterpoints (WP 12) for Irrigation	11	17-May-21 A	14-Aug-21					
A6562	Construction of Additional Waterpoints (WP 13) for Irrigation	11	17-May-21 A	14-Aug-21					

Actual Work

◆◆ Milestone

Remaining Work

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Activity ID	Activity Name	Remaining Duration	Start	Finish					
					2021				
					Jul	Aug	Sep	Oct	Nov
A6563	Construction of Additional Waterpoints (WP 14) for Irrigation	27	03-Aug-21*	02-Sep-21		<div style="width: 80%; background-color: #90EE90;"></div>			
A6567	Construction of Additional Waterpoints (WP 18) for Irrigation	27	03-Aug-21	02-Sep-21		<div style="width: 85%; background-color: #90EE90;"></div>			
Group 2: WP 19 - 22									
A6568	Construction of Additional Waterpoints (WP 19) for Irrigation	47	03-Sep-21	30-Oct-21			<div style="width: 100%; background-color: #90EE90;"></div>		
A6569	Construction of Additional Waterpoints (WP 20) for Irrigation	63	03-Aug-21*	18-Oct-21		<div style="width: 100%; background-color: #90EE90;"></div>			
A6571	Construction of Additional Waterpoints (WP 21) for Irrigation	63	03-Aug-21	18-Oct-21		<div style="width: 100%; background-color: #90EE90;"></div>			
A6572	Construction of Additional Waterpoints (WP 22) for Irrigation	63	03-Aug-21	18-Oct-21		<div style="width: 100%; background-color: #90EE90;"></div>			
Group 3: Warter Point NPTI									
A6905	Construction of Additional Water Point (WP15) for Irrigation and Water Meter Installation	50	17-May-21 A	30-Sep-21	<div style="width: 100%; background-color: blue;"></div>	<div style="width: 100%; background-color: #90EE90;"></div>			
Group 4: WP 8, & WP 23									
A6573	Construction of Additional Waterpoints (WP 23) for Irrigation	74	03-Aug-21	30-Oct-21		<div style="width: 100%; background-color: #90EE90;"></div>			

Actual Work

Remaining Work

Critical

◆ Milestone

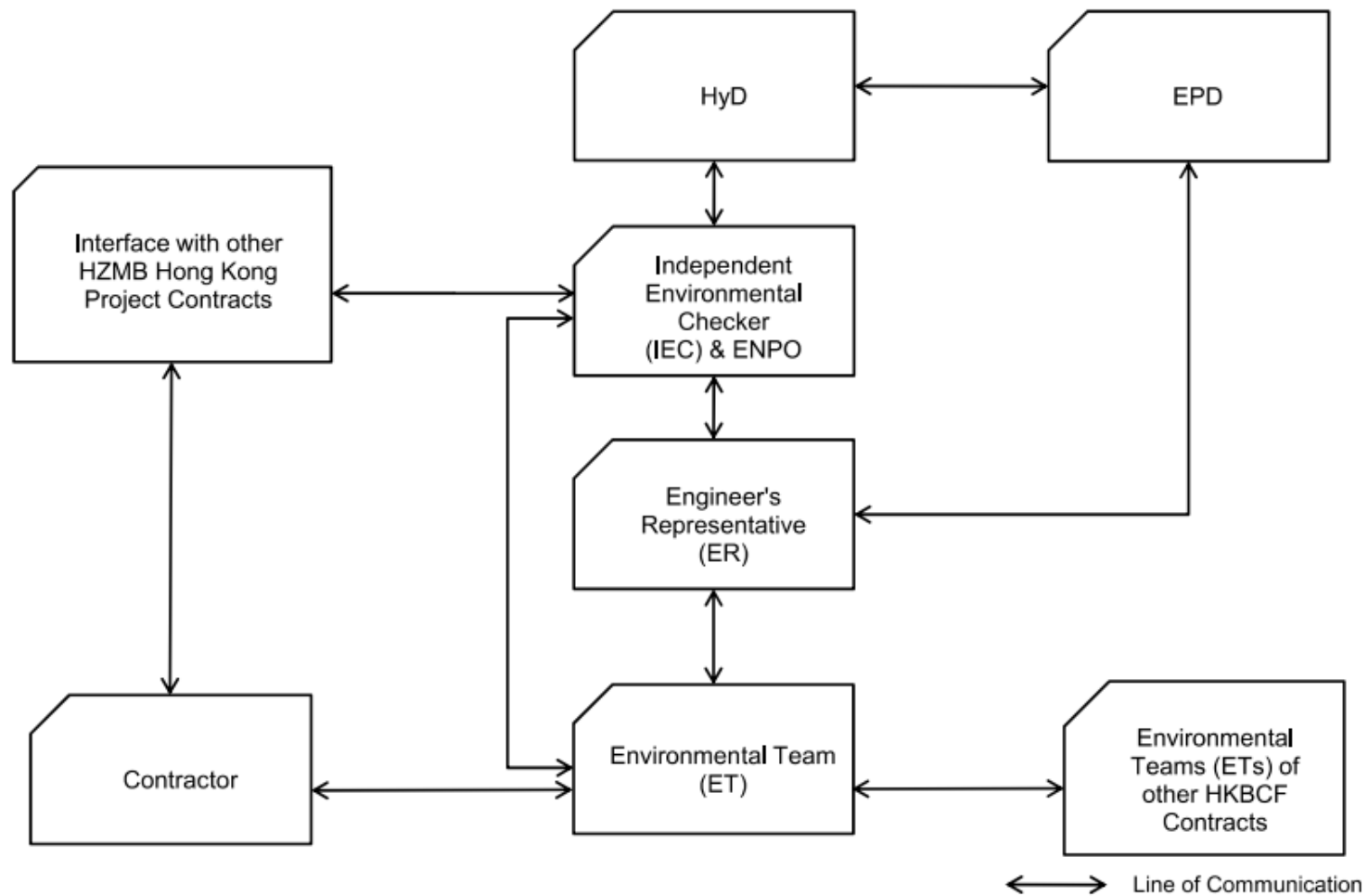
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Appendix B

Project Organization Chart



Appendix C

Action and Limit Levels

Action / Limit Levels for Air Quality

Parameters	Action Level	Limit Level
24-hour TSP Level in $\mu\text{g}/\text{m}^3$	¹ For baseline level $\leq 200 \mu\text{g}/\text{m}^3$, Action level = $(\text{baseline level} * 1.3 + \text{Limit level})/2$; For baseline level $> 200 \mu\text{g}/\text{m}^3$ Action level = Limit level	$260 \mu\text{g}/\text{m}^3$
1-hour TSP Level in $\mu\text{g}/\text{m}^3$	² For baseline level $\leq 384 \mu\text{g}/\text{m}^3$, Action level = $(\text{baseline level} * 1.3 + \text{Limit level})/2$; For baseline level $> 384 \mu\text{g}/\text{m}^3$, Action level = Limit level	$500 \mu\text{g}/\text{m}^3$

Notes:

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

a) AMS 2 = $(71.1 * 1.3 + 260) / 2 = 176 \mu\text{g}/\text{m}^3$; b) AMS 3C = $(56.9 * 1.3 + 260) / 2 = 167 \mu\text{g}/\text{m}^3$;

c) AMS 6 = $(66.4 * 1.3 + 260) / 2 = 173 \mu\text{g}/\text{m}^3$; d) AMS 7B = $(82.3 * 1.3 + 260) / 2 = 183 \mu\text{g}/\text{m}^3$;

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

a) AMS 2 = $(191.5 * 1.3 + 500) / 2 = 374 \mu\text{g}/\text{m}^3$; b) AMS 3C = $(18.2 * 1.3 + 500) / 2 = 368 \mu\text{g}/\text{m}^3$;

c) AMS 6 = $(169.2 * 1.3 + 500) / 2 = 360 \mu\text{g}/\text{m}^3$; d) AMS 7B = $(184.2 * 1.3 + 500) / 2 = 370 \mu\text{g}/\text{m}^3$;

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

Certificate of Calibration

Calibration Certification Information			
Cal. Date: September 11, 2020	Rootsmeter S/N: 438320	Ta: 297 °K	
Operator: Jim Tisch		Pa: 755.4 mm Hg	
Calibration Model #: TE-5025A	Calibrator S/N: 2154		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4510	3.3	2.00
2	3	4	1	1.0340	6.4	4.00
3	5	6	1	0.9260	8.0	5.00
4	7	8	1	0.8780	8.9	5.50
5	9	10	1	0.7250	13.0	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)	$\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)}$ (y-axis)
0.9929	0.6843	1.4123	0.9956	0.6862	0.8868
0.9888	0.9563	1.9973	0.9915	0.9589	1.2541
0.9867	1.0656	2.2330	0.9894	1.0685	1.4021
0.9855	1.1225	2.3420	0.9882	1.1255	1.4705
0.9801	1.3519	2.8246	0.9828	1.3556	1.7735
QSTD	m=	2.11508	QA	m=	1.32442
	b=	-0.02962		b=	-0.01860
	r=	0.99993		r=	0.99993

Calculations	
Vstd= $\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	Va= $\Delta Vol((Pa-\Delta P)/Pa)$
Qstd= $Vstd/\Delta Time$	Qa= $Va/\Delta Time$
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= $1/m \left(\left(\sqrt{\Delta H \left(\frac{Ta}{Pa} \right)} \right) - b \right)$

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

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Project : Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge				Date of Calibration: 16-Jul-21	
Location : AMS2				Next Calibration Date: 15-Sep-21	
Brand:	Tisch			Technician: Ting Chan	
Model:	TE-5170	S/N:	HVS-01		

CONDITIONS

Sea Level Pressure (hPa):	1013.2	Corrected Pressure (mm Hg):	760
Temperature (°C):	23.4	Temperature (K):	297

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11508
Model:	TE-5025A	Qstd Intercept:	-0.02962
Calibration Date:	11-Sep-20	Expiry Date:	11-Sep-21
S/N:	2154		

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	7.40	-3.80	11.200	1.600	60.00	60.15	Slope = 27.7246 Intercept = 14.7766 Corr. coeff.: 0.9943
13	6.80	-2.90	9.700	1.490	56.00	56.14	
10	5.20	-2.10	7.300	1.295	49.00	49.12	
7	4.30	-0.30	4.600	1.030	43.00	43.10	
5	2.80	0.20	2.600	0.778	37.00	37.09	

Calculations:

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$

$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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:

$$1/m((I)[\text{Sqrt}(298/Tav)(Pav/760)]-b)$$

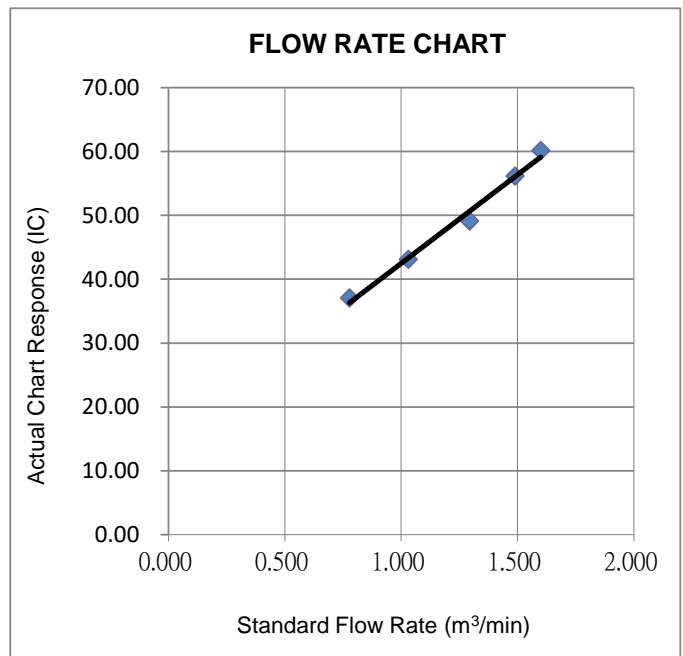
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure




Wan Ka Ho
Project Consultant

Report Date: 17/7/2021

**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: 16-Jul-21	
Location : AMS3C				Next Calibration Date: 15-Sep-21	
Brand:		Tisch		Technician: Ting Chan	
Model:		TE-5170		S/N: HVS-02	

CONDITIONS

Sea Level Pressure (hPa):	1013.2	Corrected Pressure (mm Hg):	760
Temperature (°C):	23.4	Temperature (K):	297

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11508
Model:	TE-5025A	Qstd Intercept:	-0.02962
Calibration Date:	11-Sep-20	Expiry Date:	11-Sep-21
S/N:	2154		

CALIBRATION

Plate No.	H2O (L) (in)	H2O (R) (in)	H2O (in)	Qstd (m ³ /min)	I (chart)	IC (corrected)	LINEAR REGRESSION
18	5.90	-11.40	17.300	1.985	59.00	59.14	Slope = 30.5359 Intercept = -2.3129 Corr. coeff.: 0.9971
13	4.80	-10.20	15.000	1.850	53.00	53.13	
10	3.70	-9.10	12.800	1.710	50.00	50.12	
7	3.00	-6.40	9.400	1.467	42.00	42.10	
5	2.10	-4.30	6.400	1.213	35.00	35.08	

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:
$$1/m((I)[\sqrt{298/Tav}(Pav/760)] - b)$$

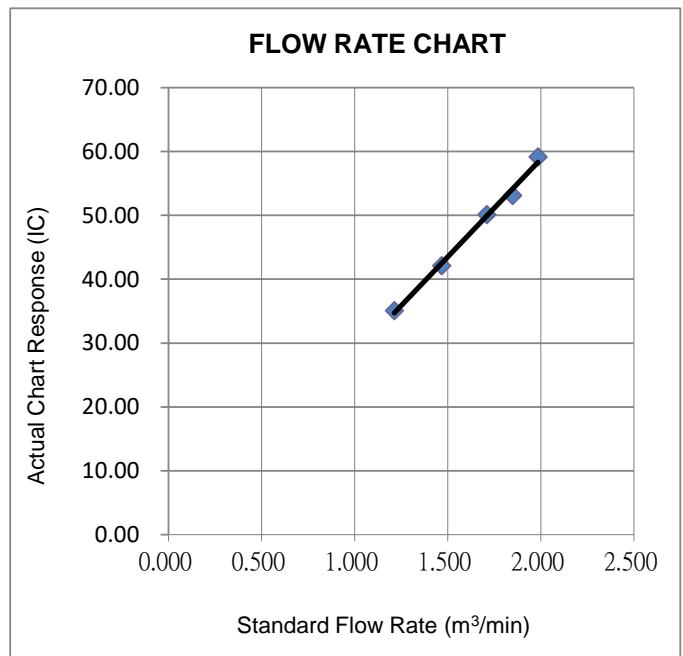
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



Wan Ka Ho
Project Consultant

Report Date: 17/7/2021

**CALIBRATION REPORT OF WIND METER**

Project: Contract No. HY/2019/01 - Hong Kong-Zhuhai-Macao Bridge	Date of Calibration: 30-Jun-2021
Location: AMS3C	Next Calibration Date: 29-Dec-2021
Brand: Global Water	Technician: Ting Chan
Model: GL500-7-2	

Anemometer

Brand: Smart Sensor
Model: AR816
Serial No: H0423689

Procedures:

- Wind Still Test:** The wind speed sensor was held by hand until stabilized.
- Wind Speed Test:** The wind meter was calibrated in-situ and compared with the Anemometer.
- 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)
0.7	0.9
2.3	2.4
3.2	3.1

Wind Direction Test:

	Marine Compass (o)
1	360
70	71
242	242
310	312

Wan Ka Ho
Project Consultant

Report Date: 1/7/2021

Report no. : 940891CA202793(1)

Page 1 of 1

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. : 761106
 Specification Limit : NA
 Next Calibration Date : 26-Nov-2021

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 27-Nov-2020 Ambient Temperature : 25 ± 10 °C
 Calibration Location : General Chemical Laboratory of FTS and 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)
0.3486	5134	85.57
0.1257	4394	73.23
0.0943	4408	73.47

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.002448
3. Correlation coefficient (r) : 0.9916

Checked by : Cherry Date : 30-12-2020 Certified by : K.T. Leung Date : 5-1-2021

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

Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no. : 940891CA202730(7)

Page 1 of 1

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. : 882146
 Specification Limit : NA
 Next Calibration Date : 22-Nov-2021

Laboratory Information

Description : 1. Balance 2. TSP high volume air sampler
 Equipment ID. / Serial no. : 1. C-065-9 2. 4350
 Date of Calibration : 23-Nov-2020 Ambient Temperature : 25 ± 10 °C
 Calibration Location : General Chemical Laboratory of FTS and 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)
0.0915	2788	46.47
0.0469	2287	38.12
0.1172	3129	52.15

Remarks:

1. The equipment being used in this calibration is traceable to recognized National Standards.
2. The interpolation equation : Concentration (mg/m³) = K x [UUT reading (CPM)], where K = 0.001869
3. Correlation coefficient (r) : 0.9990

Checked by : C. Wang Date : 15-12-2020 Certified by : K.T. Leung Date : 15-12-2020

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

Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no.: 203258CA202302(1)

Page 1 of 1

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.	1488295	02795	003538

Equipment ID : N-54

Next Calibration Date : 29-Oct-2021

Specification Limit : EN 61672-1: 2003 Class 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 : 30-Oct-2020

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters		Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	1.0	2.6 to -0.6
	2000Hz	-0.2	2.8 to -0.4
	1000Hz	0.0	1.1 to -1.1
	500Hz	-3.3	-1.8 to -4.6
	250Hz	-8.7	-7.2 to -10.0
	125Hz	-16.2	-14.6 to -17.6
	63Hz	-26.1	-24.7 to -27.7
	31.5Hz	-38.7	-37.4 to -41.4
Differential level linearity	94dB-104dB	0.0	± 0.6
	104dB-114dB	0.1	± 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 UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. 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 transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : Lillian Date : 4-11-2020 Certified by : K.T. Leung Date : 4-11-2020
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 203258CA202083(1)

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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

Model No. :

CEL-63X

Serial No. :

1488300

Equipment ID :

N/A

Next Calibration Date :

04-Oct-2021

Specification Limit :

EN 61672-1: 2003 Class 1

Meter	Microphone	Preamplifier
CEL-63X	CE-251	CEL-495
1488300	03456	002850

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 : 05-Oct-2020

Calibration Location : Calibration Laboratory of FTS

Ambient Temperature : 20±2 °C

Method Used : By direct comparison

Relative Humidity : <80% R.H.

Calibration Results :

Parameters	Mean Value (dB)	Specification Limit(dB)
A-weighting frequency response	4000Hz	0.8
	2000Hz	1.2
	1000Hz	0.0
	500Hz	-3.3
	250Hz	-8.7
	125Hz	-16.1
	63Hz	-26.2
	31.5Hz	-39.2
Differential level linearity	94dB-104dB	± 0.6
	104dB-114dB	± 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 UUT does comply with EN 61672-1: 2003 Class 1 sound level meter for the above measurement.
5. 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 transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : William Date : 7-10-2020 Certified by : K.L. Leung Date : 8-10-2020
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

** End of Report **

Report no.: 203258CA202146(2)

Page 1 of 1

CALIBRATION CERTIFICATE OF SOUND CALIBRATOR

Client : Fugro Technical Services Ltd.

Project : Calibration Services

Client Supplied Information**Details of Unit Under Test, UUT**

Description : Sound Calibrator
Manufacturer : Casella (Model CEL-120/1)
Serial No. : 2383707
Equipment ID : N/A

Next Calibration Date : 14-Oct-2021

Specification Limit : EN 60942: 2003 Class 1

Laboratory Information**Details of Calibration Equipment**

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

Date of Calibration : 15-Oct-2020

Calibration Location : Calibration Laboratory of FTS Ambient Temperature : 20±2 °C

Method Used : By direct comparison Relative Humidity : <80% R.H.

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.1 dB	±0.4dB
114dB	-0.2 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 unit under test complies with the specification limit.
4. The values given in this Calibration Certificate only relate to the unit-under-test and the values measured at the time of the test. Any uncertainties quoted 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 : 19-10-2020 Certified by : K.T. Leung Date : 19-10-2020
CA-R-297 (22/07/2009) Leung Kwok Tai (Assistant Manager)

**** End of Report ****

Report no.: 203258CA202018(1)

Page 1 of 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. : 2383982
Equipment ID : N/A
Next Calibration Date : 28-Sep-2021
Specification Limit : EN 60942: 2003 Class 1

Laboratory Information

Description : Reference Sound level meter
Equipment ID. : R-119-1
Date of Calibration : 29-Sep-2020
Ambient Temperature : 22 °C
Calibration Location : Calibration Laboratory of FTS
Relative Humidity : 80% R.H.
Method Used : By direct comparison

Calibration Results :

Parameters (Setting of UUT)	Mean Value (error of measurement)	Specification Limit(dB)
94dB	-0.1 dB	±0.4dB
114dB	-0.2 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 transportation, overloading, mis-handling or the capability of any other laboratory to repeat the measurement.

Checked by : William Date : 6-10-2020 Certified by : K.T. Leung Date : 6-10-2020

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 (August 2021)

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

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. Dust Monitoring Location: AMS2 (Tung Chung New Development Pier), AMS3C (Ying Tung Estate Market Rooftop) and AMS7B (3RS Site Offices)
4. 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 (September 2021)

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

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. 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)

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 ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
2-Aug-21	Fine	13:12	42	44	50	374	500
7-Aug-21	Fine	13:04	51	59	56		
13-Aug-21	Fine	13:20	57	63	71		
19-Aug-21	Fine	13:17	62	62	68		
25-Aug-21	Fine	14:10	57	50	56		
31-Aug-21	Fine	13:30	62	56	60		
Min			42				
Max			71				
Average			57				

AMS3C - Ying Tung Estate Market Rooftop

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
2-Aug-21	Fine	13:29	41	39	53	368	500
7-Aug-21	Fine	13:17	62	57	65		
13-Aug-21	Fine	13:39	54	60	51		
19-Aug-21	Fine	13:35	53	60	57		
25-Aug-21	Fine	14:27	44	51	48		
31-Aug-21	Fine	13:48	54	48	47		
Min			39				
Max			65				
Average			52				

AMS7C - East Sea Rescue Berth – Airport Fire Contingent Third Runway Site Office

Date	Weather Condition	Start Time	1-hour TSP ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Measurement	2nd Measurement	3rd Measurement		
						370	500
Min							
Max							
Average							

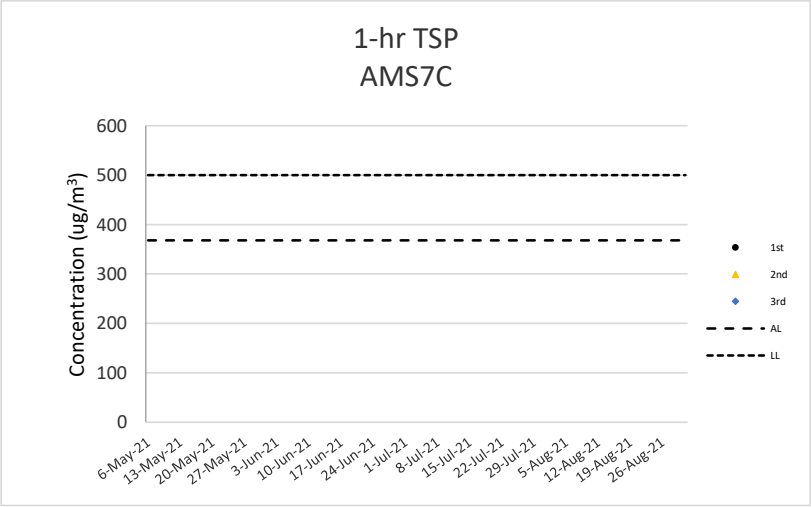
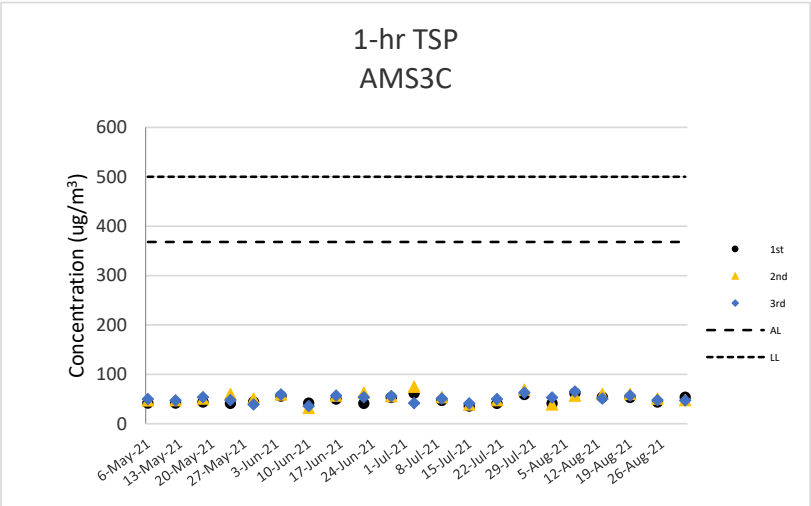
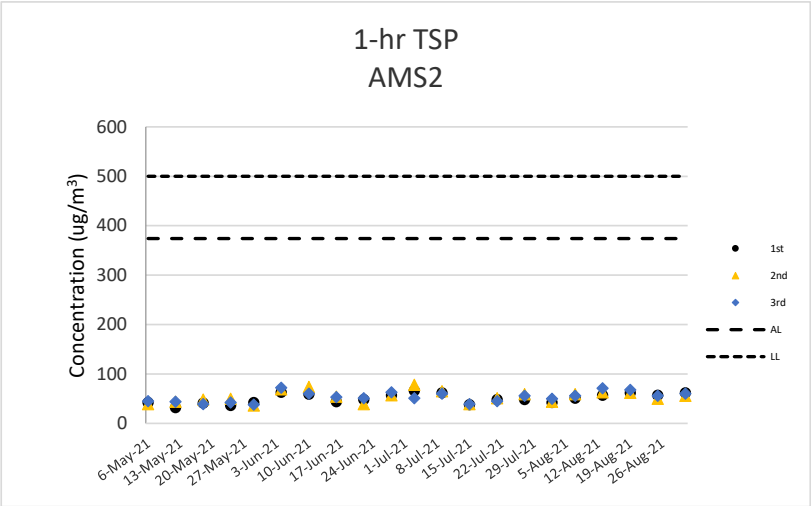
Note:

Underline: Exceedance of Action Level

Underline and Bold: Exceedance of Limit Level

1. Air quality monitoring location AMS7B was temporary suspended, effective from 10 December 2020.

2. According to the email date 11 August 2021, EPD have no comment on the Proposal for Relocation of Monitoring Location AMS 7B, the monitoring location AMS 7B are proposed to be relocated by alternative monitoring location AMS 7C for air quality monitoring.



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					
2-Aug-21	Fine	303.2	748.8	2.7153	2.7661	0.0508	24	0.89	0.91	0.90	1293.6	39	176	260
7-Aug-21	Fine	302.0	751.0	2.7414	2.8380	0.0966	24	0.89	0.91	0.90	1297.2	74		
13-Aug-21	Fine	301.8	754.7	0.0000	2.7342	0.0416	24	0.90	0.91	0.90	1300.0	32		
19-Aug-21	Fine	301.8	756.5	2.6728	2.7133	0.0405	24	1.04	0.98	1.01	1456.2	28		
25-Aug-21	Fine	302.9	756.8	2.6728	2.7133	0.0405	24	0.90	1.05	0.97	1403.5	29		
31-Aug-21	Fine	300.5	758.4	2.7013	2.7557	0.0544	24	0.90	0.91	0.91	1304.7	42		
												Min	28	
												Max	74	
												Average	41	

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					
2-Aug-21	Fine	303.2	748.8	2.7017	2.7519	0.0502	24	1.36	1.39	1.38	1980.4	25	167	260
7-Aug-21	Fine	302.0	751.0	2.7110	2.7915	0.0805	24	1.43	1.45	1.44	2077.4	39		
13-Aug-21	Fine	301.8	754.7	2.6594	2.6882	0.0288	24	1.37	1.39	1.38	1986.2	14		
19-Aug-21	Fine	301.8	756.5	2.6613	2.7161	0.0548	24	1.37	1.39	1.38	1987.3	28		
25-Aug-21	Fine	302.9	756.8	2.6613	2.7161	0.0548	24	1.50	1.52	1.51	2173.5	25		
31-Aug-21	Fine	300.5	758.4	2.7012	2.7285	0.0273	24	1.38	1.39	1.38	1990.5	14		
												Min	14	
												Max	39	
												Average	24	

AMS7C - East Sea Rescue Berth – Airport Fire Contingent Third Runway Site Office

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					
													183	260
												Min		
												Max		
												Average		

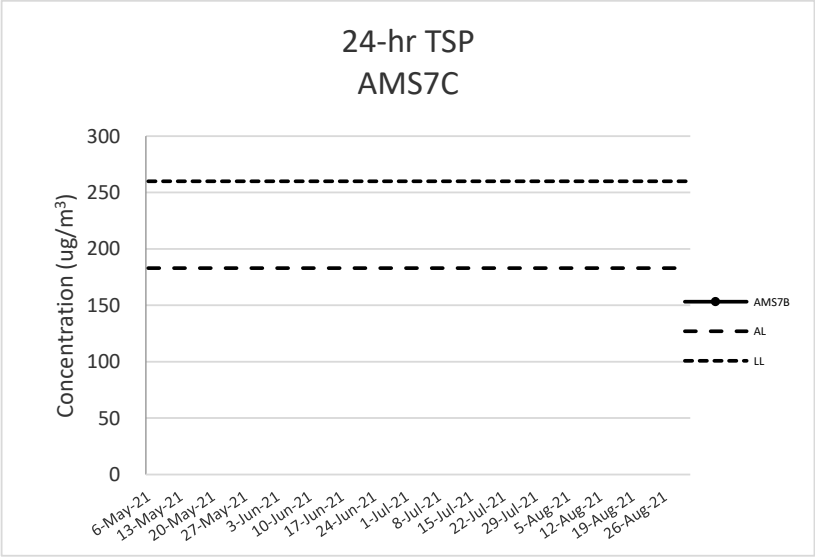
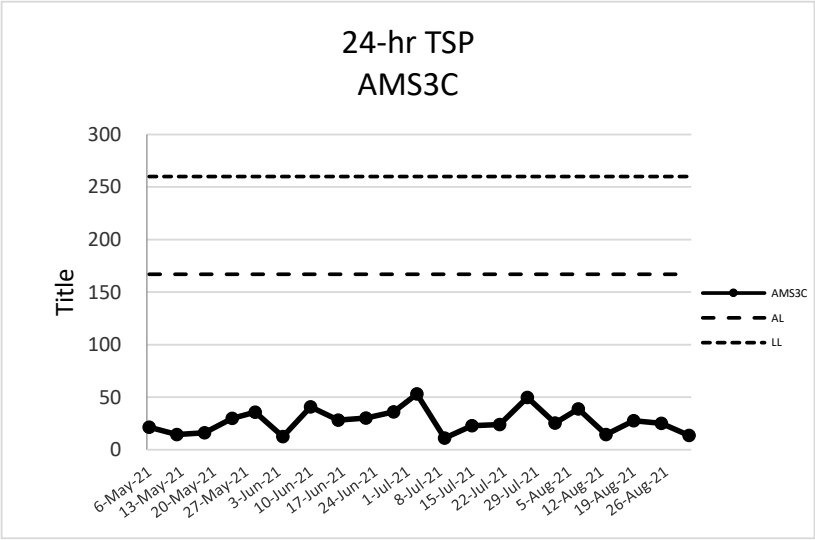
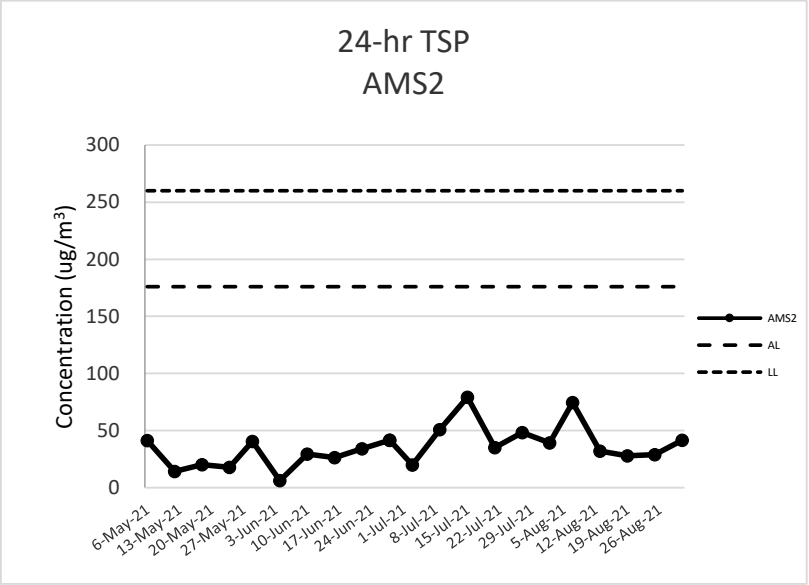
Note:

Underline: Exceedance of Action Level

Underline and Bold: Exceedance of Limit Level

1. Air quality monitoring location AMS7B was temporary suspended, effective from 10 December 2020.

2. According to the email date 11 August 2021, EPD have no comment on the Proposal for Relocation of Monitoring Location AMS 7B, the monitoring location AMS 7B are proposed to be relocated by alternative monitoring location AMS 7C for air quality monitoring.



**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)
2-Aug-21	14:08	62	67	59	0.9	Fine	75
13-Aug-21	14:32	64	66	60	0.8	Fine	75
19-Aug-21	14:25	65	67	61	0.8	Fine	75
25-Aug-21	15:17	63	66	60	1.1	Fine	75
31-Aug-21	14:45	69	71	65	0.9	Fine	75
	Max	69					
	Min	62					

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)	Corrected Noise Level*
2-Aug-21	13:20	69	73	66	1.3	Fine	70	
13-Aug-21	13:43	68	70	65	0.8	Fine	70	
19-Aug-21	13:38	67	72	65	0.9	Fine	70	
25-Aug-21	14:31	67	69	64	0.8	Fine	70	
31-Aug-21	13:54	70	74	68	1.2	Fine	70	68.3
	Max	70						
	Min	67						

Note:

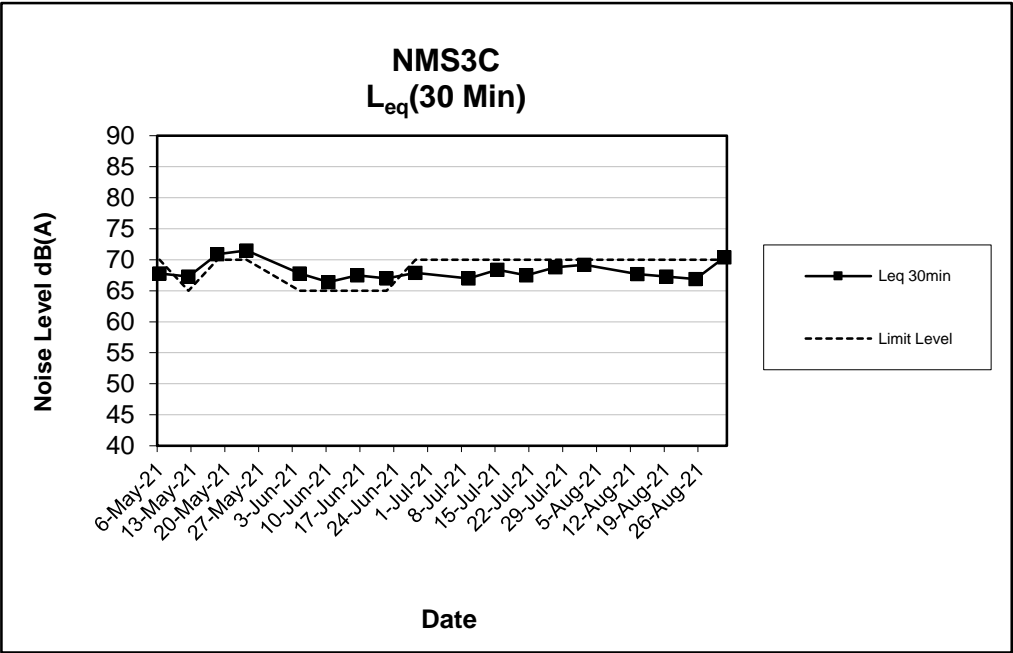
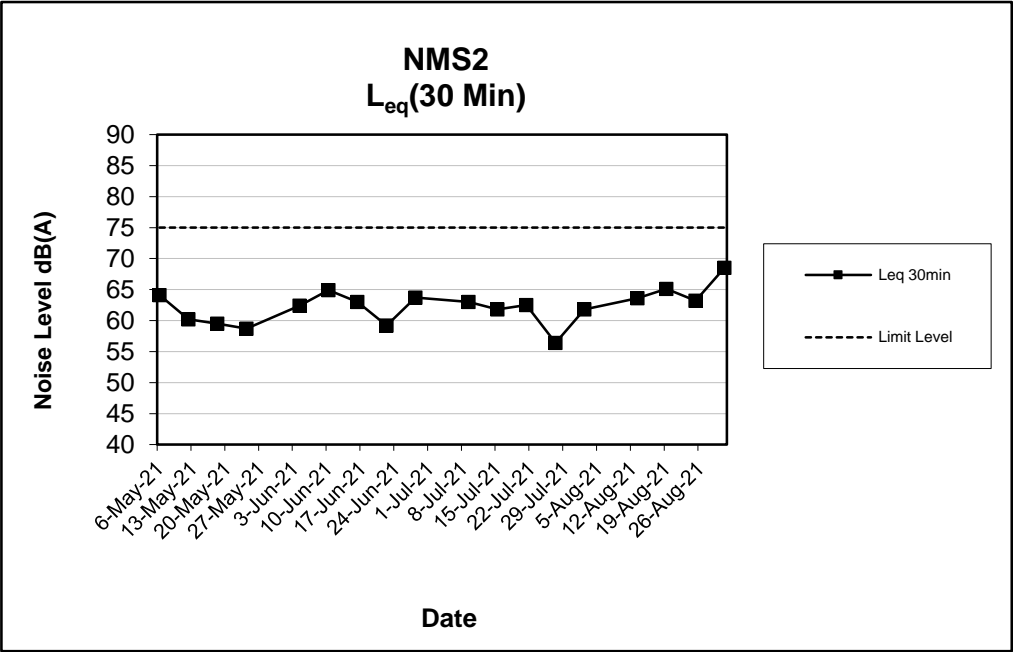
NMS2: Façade Measurement

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.

*Corrected Noise Level = $\text{LOG}(10^{(\text{Impact Noise Level} / 10)} - 10^{(\text{Baseline Noise Level} / 10)}) \times 10$

Baseline Noise Level = 66.3 dB(A)



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
01/08/2021 00:00	0	N
01/08/2021 01:00	0.7	NE
01/08/2021 02:00	0.0	W
01/08/2021 03:00	0.0	SE
01/08/2021 04:00	0.0	SWS
01/08/2021 05:00	0.0	SW
01/08/2021 06:00	0.0	NEE
01/08/2021 07:00	0.0	NEE
01/08/2021 08:00	0.0	N
01/08/2021 09:00	0.0	SWS
01/08/2021 10:00	0.1	N
01/08/2021 11:00	0.1	SW
01/08/2021 12:00	1.0	SES
01/08/2021 13:00	1.0	SES
01/08/2021 14:00	0.0	N
01/08/2021 15:00	0.0	N
01/08/2021 16:00	0.0	NEE
01/08/2021 17:00	0.0	SEE
01/08/2021 18:00	0.1	SE
01/08/2021 19:00	0.1	NWW
01/08/2021 20:00	0.0	SWS
01/08/2021 21:00	0.0	SEE
01/08/2021 22:00	0.0	SES
01/08/2021 23:00	0.0	NEE
01/08/2021 00:00	0.0	E
02/08/2021 01:00	0.0	SEE
02/08/2021 02:00	0.0	S
02/08/2021 03:00	0.0	SEE
02/08/2021 04:00	0.0	E
02/08/2021 05:00	0.0	NEE
02/08/2021 06:00	0.0	W
02/08/2021 07:00	0.0	SWW
02/08/2021 08:00	0.0	SW
02/08/2021 09:00	0.0	N
02/08/2021 10:00	0.0	W
02/08/2021 11:00	0.0	N
02/08/2021 12:00	0.0	SWW
02/08/2021 13:00	1.7	N
02/08/2021 14:00	0.0	NEN
02/08/2021 15:00	0.7	N

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

Date	Wind Speed	Wind Direction
02/08/2021 16:00	0.0	NEN
02/08/2021 17:00	0.2	NEE
02/08/2021 18:00	0.9	NEN
02/08/2021 19:00	0.0	SW
02/08/2021 20:00	0.0	NEE
02/08/2021 21:00	0.0	NE
02/08/2021 22:00	0.0	SW
02/08/2021 23:00	0.0	SEE
02/08/2021 00:00	0.0	NEN
03/08/2021 01:00	0.0	E
03/08/2021 02:00	0.0	NEN
03/08/2021 03:00	0.0	NEE
03/08/2021 04:00	0.0	S
03/08/2021 05:00	0.0	N
03/08/2021 06:00	0.0	NE
03/08/2021 07:00	0.4	NW
03/08/2021 08:00	0.4	NE
03/08/2021 09:00	0.0	NE
03/08/2021 10:00	0.0	SEE
03/08/2021 11:00	0.0	SES
03/08/2021 12:00	0.0	SWS
03/08/2021 13:00	1.5	N
03/08/2021 14:00	0.8	SW
03/08/2021 15:00	0.5	SES
03/08/2021 16:00	0.7	N
03/08/2021 17:00	0.0	NE
03/08/2021 18:00	0.0	NEN
03/08/2021 19:00	0.8	E
03/08/2021 20:00	0.1	NE
03/08/2021 21:00	0.1	SE
03/08/2021 22:00	0.0	SEE
03/08/2021 23:00	0.0	E
03/08/2021 00:00	0.1	SEE
04/08/2021 01:00	0.0	SWW
04/08/2021 02:00	0.1	E
04/08/2021 03:00	0.1	SES
04/08/2021 04:00	0.0	NEN
04/08/2021 05:00	0.0	SEE
04/08/2021 06:00	0.0	E
04/08/2021 07:00	0.0	N
04/08/2021 08:00	0.0	SWW

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

Date	Wind Speed	Wind Direction
04/08/2021 09:00	0.1	N
04/08/2021 10:00	0.9	SW
04/08/2021 11:00	0.0	NWN
04/08/2021 12:00	0.2	SW
04/08/2021 13:00	1.6	S
04/08/2021 14:00	0.9	N
04/08/2021 15:00	0.1	SW
04/08/2021 16:00	0.0	S
04/08/2021 17:00	1.1	SWW
04/08/2021 18:00	0.6	SWS
04/08/2021 19:00	0.2	SW
04/08/2021 20:00	0.0	W
04/08/2021 21:00	0.0	SWS
04/08/2021 22:00	0.0	W
04/08/2021 23:00	0.0	NEN
04/08/2021 00:00	0.0	SWW
05/08/2021 01:00	0.0	SWW
05/08/2021 02:00	0.0	SWW
05/08/2021 03:00	0.0	NWW
05/08/2021 04:00	0.4	W
05/08/2021 05:00	0.0	SWW
05/08/2021 06:00	0.0	NW
05/08/2021 07:00	0.1	SWS
05/08/2021 08:00	0.6	SE
05/08/2021 09:00	0.0	SE
05/08/2021 10:00	0.6	W
05/08/2021 11:00	0.0	SWS
05/08/2021 12:00	0.0	SW
05/08/2021 13:00	0.0	S
05/08/2021 14:00	0.0	S
05/08/2021 15:00	0.0	NEE
05/08/2021 16:00	0.0	SES
05/08/2021 17:00	0.0	SWS
05/08/2021 18:00	0.0	SWS
05/08/2021 19:00	0.1	S
05/08/2021 20:00	0.7	SWS
05/08/2021 21:00	0.0	SWS
05/08/2021 22:00	0.0	S
05/08/2021 23:00	0.0	SW
06/08/2021 00:00	0.1	W
06/08/2021 01:00	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
06/08/2021 02:00	0.1	SW
06/08/2021 03:00	0.0	SW
06/08/2021 04:00	0.0	W
06/08/2021 05:00	0.0	SES
06/08/2021 06:00	0.0	N
06/08/2021 07:00	0.0	NW
06/08/2021 08:00	0.0	NWW
06/08/2021 09:00	0.0	SEE
06/08/2021 10:00	0.0	SW
06/08/2021 11:00	0.1	SWW
06/08/2021 12:00	0.0	NE
06/08/2021 13:00	0.0	SW
06/08/2021 14:00	0.0	NEE
06/08/2021 15:00	0.0	SW
06/08/2021 16:00	0.0	SWS
06/08/2021 17:00	0.1	NE
06/08/2021 18:00	0.0	SW
06/08/2021 19:00	0.0	SWS
06/08/2021 20:00	0.0	S
06/08/2021 21:00	0.1	NE
06/08/2021 22:00	0.0	E
06/08/2021 23:00	0.0	E
07/08/2021 00:00	0.0	NEE
07/08/2021 01:00	0.0	SE
07/08/2021 02:00	0.0	NEE
07/08/2021 03:00	0.0	SW
07/08/2021 04:00	0.0	NW
07/08/2021 05:00	0.0	W
07/08/2021 06:00	0.0	SWW
07/08/2021 07:00	0.0	W
07/08/2021 08:00	0.1	SWS
07/08/2021 09:00	0.0	S
07/08/2021 10:00	0.0	N
07/08/2021 11:00	0.0	NWW
07/08/2021 12:00	0.0	S
07/08/2021 13:00	0.2	N
07/08/2021 14:00	0.0	N
07/08/2021 15:00	0.0	NE
07/08/2021 16:00	0.0	NE
07/08/2021 17:00	0.0	NEN
07/08/2021 18:00	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
07/08/2021 19:00	0.0	NEN
07/08/2021 20:00	0.0	NEE
07/08/2021 21:00	0.1	NEE
07/08/2021 22:00	0.0	NE
07/08/2021 23:00	0.0	S
08/08/2021 00:00	0.0	NE
08/08/2021 01:00	0.4	NEE
08/08/2021 02:00	0.0	NEN
08/08/2021 03:00	0.0	NE
08/08/2021 04:00	0.0	NE
08/08/2021 05:00	0.0	NE
08/08/2021 06:00	0.0	SEE
08/08/2021 07:00	0.0	NE
08/08/2021 08:00	0.0	N
08/08/2021 09:00	0.1	SEE
08/08/2021 10:00	0.0	SEE
08/08/2021 11:00	0.2	NE
08/08/2021 12:00	0.0	SE
08/08/2021 13:00	0.0	NWN
08/08/2021 14:00	0.4	NE
08/08/2021 15:00	0.3	N
08/08/2021 16:00	0.6	S
08/08/2021 17:00	0.0	NEN
08/08/2021 18:00	0.1	SW
08/08/2021 19:00	0.1	SES
08/08/2021 20:00	0.0	E
08/08/2021 21:00	0.0	SEE
08/08/2021 22:00	0.3	NE
08/08/2021 23:00	0.1	SW
09/08/2021 00:00	0.0	SWS
09/08/2021 01:00	0.0	N
09/08/2021 02:00	0.0	NE
09/08/2021 03:00	0.0	NEN
09/08/2021 04:00	0.0	NEE
09/08/2021 05:00	0.0	NWN
09/08/2021 06:00	0.0	NE
09/08/2021 07:00	0.0	NEN
09/08/2021 08:00	0.0	E
09/08/2021 09:00	0.8	NEN
09/08/2021 10:00	0.0	SES
09/08/2021 11:00	0.2	NEE

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

Date	Wind Speed	Wind Direction
09/08/2021 12:00	1.9	SWW
09/08/2021 13:00	0.2	SWW
09/08/2021 14:00	0.1	NEN
09/08/2021 15:00	0.7	W
09/08/2021 16:00	0.5	SW
09/08/2021 17:00	0.6	SWS
09/08/2021 18:00	0.0	S
09/08/2021 19:00	0.7	NWN
09/08/2021 20:00	0.1	SW
09/08/2021 21:00	0.0	E
09/08/2021 22:00	0.0	SEE
09/08/2021 23:00	0.0	NE
10/08/2021 00:00	0.0	S
10/08/2021 01:00	0.0	SE
10/08/2021 02:00	0.2	NEE
10/08/2021 03:00	0.0	NE
10/08/2021 04:00	0.0	NEE
10/08/2021 05:00	0.0	W
10/08/2021 06:00	0.0	W
10/08/2021 07:00	0.0	S
10/08/2021 08:00	0.0	SWW
10/08/2021 09:00	0.1	SWS
10/08/2021 10:00	0.0	SW
10/08/2021 11:00	0.0	SW
10/08/2021 12:00	0.9	NE
10/08/2021 13:00	0.0	SW
10/08/2021 14:00	0.0	SW
10/08/2021 15:00	0.0	NE
10/08/2021 16:00	0.0	E
10/08/2021 17:00	0.0	E
10/08/2021 18:00	0.0	SE
10/08/2021 19:00	0.8	W
10/08/2021 20:00	0.0	N
10/08/2021 21:00	0.0	NEE
10/08/2021 22:00	0.0	NEN
10/08/2021 23:00	0.0	N
11/08/2021 00:00	0.0	N
11/08/2021 01:00	0.0	NE
11/08/2021 02:00	0.0	NEN
11/08/2021 03:00	0.0	N
11/08/2021 04:00	0.0	E

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

Date	Wind Speed	Wind Direction
11/08/2021 05:00	0.0	N
11/08/2021 06:00	0.0	N
11/08/2021 07:00	0.0	NWN
11/08/2021 08:00	0.0	SWS
11/08/2021 09:00	0.0	NEE
11/08/2021 10:00	0.1	SW
11/08/2021 11:00	0.0	NWW
11/08/2021 12:00	0.0	NEE
11/08/2021 13:00	0.0	NEN
11/08/2021 14:00	1.0	NEE
11/08/2021 15:00	0.0	N
11/08/2021 16:00	0.1	NEE
11/08/2021 17:00	0.0	SWS
11/08/2021 18:00	0.0	SWW
11/08/2021 19:00	0.6	NEN
11/08/2021 20:00	0.0	SES
11/08/2021 21:00	0.4	N
11/08/2021 22:00	0.0	SWS
11/08/2021 23:00	0.0	SW
12/08/2021 00:00	0.4	N
12/08/2021 01:00	0.0	N
12/08/2021 02:00	0.0	NE
12/08/2021 03:00	0.0	NE
12/08/2021 04:00	0.0	SW
12/08/2021 05:00	0.0	SEE
12/08/2021 06:00	0.0	W
12/08/2021 07:00	0.0	SWW
12/08/2021 08:00	0.0	E
12/08/2021 09:00	0.3	NEE
12/08/2021 10:00	0.1	E
12/08/2021 11:00	0.4	SE
12/08/2021 12:00	0.3	E
12/08/2021 13:00	0.0	SW
12/08/2021 14:00	1.4	N
12/08/2021 15:00	0.9	N
12/08/2021 16:00	1.5	SWS
12/08/2021 17:00	0.0	NE
12/08/2021 18:00	0.8	NE
12/08/2021 19:00	0.0	SES
12/08/2021 20:00	0.2	N
12/08/2021 21:00	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
12/08/2021 22:00	0.0	SES
12/08/2021 23:00	0.0	E
13/08/2021 00:00	0.0	SWW
13/08/2021 01:00	0.0	NEN
13/08/2021 02:00	0.0	N
13/08/2021 03:00	0.0	NEE
13/08/2021 04:00	0.0	SWW
13/08/2021 05:00	0.0	SEE
13/08/2021 06:00	0.0	SEE
13/08/2021 07:00	0.0	SEE
13/08/2021 08:00	0.0	SEE
13/08/2021 09:00	0.0	E
13/08/2021 10:00	0.3	NEE
13/08/2021 11:00	0.2	NEE
13/08/2021 12:00	0.4	SES
13/08/2021 13:00	0.0	NE
13/08/2021 14:00	0.0	E
13/08/2021 15:00	0.1	SW
13/08/2021 16:00	0.0	NEE
13/08/2021 17:00	0.0	S
13/08/2021 18:00	0.1	SWW
13/08/2021 19:00	0.4	NW
13/08/2021 20:00	0.2	SW
13/08/2021 21:00	0.0	SES
13/08/2021 22:00	0.3	SWW
13/08/2021 23:00	3.4	SW
14/08/2021 00:00	0.0	N
14/08/2021 01:00	0.0	N
14/08/2021 02:00	0.0	SWS
14/08/2021 03:00	0.0	NW
14/08/2021 04:00	0.0	S
14/08/2021 05:00	0.0	S
14/08/2021 06:00	0.0	SWW
14/08/2021 07:00	0.1	SWW
14/08/2021 08:00	0.0	E
14/08/2021 09:00	0.0	N
14/08/2021 10:00	0.2	NEE
14/08/2021 11:00	0.0	N
14/08/2021 12:00	0.0	S
14/08/2021 13:00	0.0	N
14/08/2021 14:00	0.0	SWS

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

Date	Wind Speed	Wind Direction
14/08/2021 15:00	0.0	N
14/08/2021 16:00	0.0	NW
14/08/2021 17:00	0.0	SWS
14/08/2021 18:00	0.3	S
14/08/2021 19:00	0.1	NEE
14/08/2021 20:00	1.0	SWS
14/08/2021 21:00	0.0	SWS
14/08/2021 22:00	0.1	SWW
14/08/2021 23:00	0.0	NE
15/08/2021 00:00	0.0	NE
15/08/2021 01:00	0.4	NEN
15/08/2021 02:00	0.0	N
15/08/2021 03:00	0.0	SE
15/08/2021 04:00	0.0	NEE
15/08/2021 05:00	0.0	N
15/08/2021 06:00	0.0	N
15/08/2021 07:00	0.0	W
15/08/2021 08:00	0.0	NEN
15/08/2021 09:00	0.9	NWW
15/08/2021 10:00	0.0	SES
15/08/2021 11:00	0.0	NEN
15/08/2021 12:00	0.1	E
15/08/2021 13:00	0.0	NE
15/08/2021 14:00	0.0	NE
15/08/2021 15:00	0.0	S
15/08/2021 16:00	0.7	NEN
15/08/2021 17:00	0.0	NEN
15/08/2021 18:00	0.0	SE
15/08/2021 19:00	0.0	N
15/08/2021 20:00	0.1	NE
15/08/2021 21:00	0.0	S
15/08/2021 22:00	0.1	SWS
15/08/2021 23:00	0.0	NWN
16/08/2021 00:00	0.0	NE
16/08/2021 01:00	0.3	NEN
16/08/2021 02:00	0.0	SWW
16/08/2021 03:00	0.2	NEN
16/08/2021 04:00	0.0	SWW
16/08/2021 05:00	0.0	NEE
16/08/2021 06:00	0.0	SW
16/08/2021 07:00	0.0	E

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

Date	Wind Speed	Wind Direction
16/08/2021 08:00	0.0	SEE
16/08/2021 09:00	0.0	SEE
16/08/2021 10:00	0.0	N
16/08/2021 11:00	0.0	SE
16/08/2021 12:00	0.0	SWS
16/08/2021 13:00	0.3	N
16/08/2021 14:00	0.0	NEN
16/08/2021 15:00	0.3	N
16/08/2021 16:00	0.1	NEE
16/08/2021 17:00	0.0	SES
16/08/2021 18:00	0.2	SEE
16/08/2021 19:00	0.0	NEE
16/08/2021 20:00	0.0	E
16/08/2021 21:00	0.0	SES
16/08/2021 22:00	0.0	NE
16/08/2021 23:00	0.0	SWS
17/08/2021 00:00	0.0	SES
17/08/2021 01:00	0.0	E
17/08/2021 02:00	0.0	N
17/08/2021 03:00	0.0	NWN
17/08/2021 04:00	0.0	NWW
17/08/2021 05:00	0.0	SE
17/08/2021 06:00	0.0	SEE
17/08/2021 07:00	0.0	SWS
17/08/2021 08:00	0.0	SW
17/08/2021 09:00	0.1	SEE
17/08/2021 10:00	0.6	NE
17/08/2021 11:00	0.7	E
17/08/2021 12:00	0.1	SW
17/08/2021 13:00	0.0	SW
17/08/2021 14:00	0.1	S
17/08/2021 15:00	0.0	W
17/08/2021 16:00	1.2	N
17/08/2021 17:00	0.0	NEE
17/08/2021 18:00	0.1	N
17/08/2021 19:00	0.0	NEN
17/08/2021 20:00	0.0	N
17/08/2021 21:00	0.0	SES
17/08/2021 22:00	0.0	SWW
17/08/2021 23:00	0.0	SE
18/08/2021 00:00	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
18/08/2021 01:00	0.0	SWW
18/08/2021 02:00	0.0	NEN
18/08/2021 03:00	0.0	SW
18/08/2021 04:00	0.0	SES
18/08/2021 05:00	0.0	SEE
18/08/2021 06:00	0.0	SEE
18/08/2021 07:00	0.0	SEE
18/08/2021 08:00	0.0	E
18/08/2021 09:00	0.1	NE
18/08/2021 10:00	0.2	NEN
18/08/2021 11:00	0.0	NE
18/08/2021 12:00	0.2	N
18/08/2021 13:00	0.0	E
18/08/2021 14:00	0.7	SE
18/08/2021 15:00	0.6	E
18/08/2021 16:00	0.0	N
18/08/2021 17:00	0.0	N
18/08/2021 18:00	0.0	SW
18/08/2021 19:00	0.0	N
18/08/2021 20:00	0.1	SEE
18/08/2021 21:00	0.0	SE
18/08/2021 22:00	0.0	SEE
18/08/2021 23:00	0.0	NE
19/08/2021 00:00	0.0	SE
19/08/2021 01:00	0.0	SEE
19/08/2021 02:00	0.0	E
19/08/2021 03:00	0.0	NEN
19/08/2021 04:00	0.0	N
19/08/2021 05:00	0.0	SEE
19/08/2021 06:00	0.0	SWW
19/08/2021 07:00	0.0	NW
19/08/2021 08:00	0.0	SWS
19/08/2021 09:00	0.0	W
19/08/2021 10:00	0.0	N
19/08/2021 11:00	0.0	NEE
19/08/2021 12:00	0.0	NWW
19/08/2021 13:00	0.0	N
19/08/2021 14:00	0.0	N
19/08/2021 15:00	0.0	SEE
19/08/2021 16:00	0.5	E
19/08/2021 17:00	0.0	NE

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

Date	Wind Speed	Wind Direction
19/08/2021 18:00	0.0	NE
19/08/2021 19:00	0.0	SWS
19/08/2021 20:00	0.0	E
19/08/2021 21:00	0.0	SWS
19/08/2021 22:00	0.0	NE
19/08/2021 23:00	0.0	NWN
20/08/2021 00:00	0.0	S
20/08/2021 01:00	0.0	S
20/08/2021 02:00	0.0	SEE
20/08/2021 03:00	0.0	SEE
20/08/2021 04:00	0.0	SWS
20/08/2021 05:00	0.0	SWS
20/08/2021 06:00	0.0	SWS
20/08/2021 07:00	0.0	SW
20/08/2021 08:00	0.0	SW
20/08/2021 09:00	0.0	E
20/08/2021 10:00	0.3	NEN
20/08/2021 11:00	0.0	NE
20/08/2021 12:00	0.0	NE
20/08/2021 13:00	0.0	E
20/08/2021 14:00	0.3	NEN
20/08/2021 15:00	0.6	NEN
20/08/2021 16:00	1.3	SEE
20/08/2021 17:00	0.0	SEE
20/08/2021 18:00	0.3	NE
20/08/2021 19:00	0.0	NEN
20/08/2021 20:00	0.0	SW
20/08/2021 21:00	0.0	SWS
20/08/2021 22:00	0.0	SW
20/08/2021 23:00	0.0	E
21/08/2021 00:00	0.0	NEN
21/08/2021 01:00	0.0	NEE
21/08/2021 02:00	0.0	N
21/08/2021 03:00	0.0	SWS
21/08/2021 04:00	0.0	S
21/08/2021 05:00	0.0	SWW
21/08/2021 06:00	0.0	SW
21/08/2021 07:00	0.0	SW
21/08/2021 08:00	0.1	SW
21/08/2021 09:00	0.0	N
21/08/2021 10:00	0.1	NWW

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

Date	Wind Speed	Wind Direction
21/08/2021 11:00	0.0	N
21/08/2021 12:00	0.3	NEN
21/08/2021 13:00	0.0	S
21/08/2021 14:00	0.7	SE
21/08/2021 15:00	0.1	SES
21/08/2021 16:00	0.1	E
21/08/2021 17:00	0.0	NEN
21/08/2021 18:00	0.0	NEN
21/08/2021 19:00	0.3	SE
21/08/2021 20:00	0.0	S
21/08/2021 21:00	0.1	SW
21/08/2021 22:00	0.0	W
21/08/2021 23:00	0.0	SWS
22/08/2021 00:00	0.0	NEE
22/08/2021 01:00	0.0	SE
22/08/2021 02:00	0.0	S
22/08/2021 03:00	0.0	NEN
22/08/2021 04:00	0.0	SW
22/08/2021 05:00	0.0	NWN
22/08/2021 06:00	0.0	NW
22/08/2021 07:00	0.0	SW
22/08/2021 08:00	0.0	SWS
22/08/2021 09:00	0.0	N
22/08/2021 10:00	0.0	NWW
22/08/2021 11:00	0.0	N
22/08/2021 12:00	0.1	SWW
22/08/2021 13:00	0.0	SWS
22/08/2021 14:00	0.2	SW
22/08/2021 15:00	1.0	N
22/08/2021 16:00	0.0	NEN
22/08/2021 17:00	0.4	SWS
22/08/2021 18:00	2.9	SWW
22/08/2021 19:00	0.7	W
22/08/2021 20:00	0.3	N
22/08/2021 21:00	0.4	NWW
22/08/2021 22:00	0.0	NE
22/08/2021 23:00	0.0	NE
23/08/2021 00:00	0.0	SW
23/08/2021 01:00	0.0	SW
23/08/2021 02:00	0.0	NE
23/08/2021 03:00	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
23/08/2021 04:00	0.0	N
23/08/2021 05:00	0.0	SWW
23/08/2021 06:00	0.0	SWW
23/08/2021 07:00	0.0	SWW
23/08/2021 08:00	0.0	SWW
23/08/2021 09:00	0.0	SWS
23/08/2021 10:00	0.1	SWS
23/08/2021 11:00	0.0	NEN
23/08/2021 12:00	0.0	NE
23/08/2021 13:00	0.0	NEN
23/08/2021 14:00	0.6	N
23/08/2021 15:00	0.1	NE
23/08/2021 16:00	0.1	SEE
23/08/2021 17:00	0.0	E
23/08/2021 18:00	0.0	N
23/08/2021 19:00	0.0	SEE
23/08/2021 20:00	0.1	NW
23/08/2021 21:00	0.0	N
23/08/2021 22:00	0.0	NWN
23/08/2021 23:00	0.0	N
24/08/2021 00:00	0.0	NWW
24/08/2021 01:00	0.0	NWW
24/08/2021 02:00	0.0	SEE
24/08/2021 03:00	0.0	NE
24/08/2021 04:00	0.1	NEN
24/08/2021 05:00	0.0	NEE
24/08/2021 06:00	0.0	SWW
24/08/2021 07:00	0.0	NE
24/08/2021 08:00	0.0	E
24/08/2021 09:00	0.0	NE
24/08/2021 10:00	0.0	NW
24/08/2021 11:00	0.0	SW
24/08/2021 12:00	0.1	SE
24/08/2021 13:00	0.0	N
24/08/2021 14:00	0.0	W
24/08/2021 15:00	0.8	NEN
24/08/2021 16:00	0.0	SES
24/08/2021 17:00	0.8	SWS
24/08/2021 18:00	0.0	SE
24/08/2021 19:00	0.0	N
24/08/2021 20:00	0.0	SEE

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

Date	Wind Speed	Wind Direction
24/08/2021 21:00	0.1	NWW
24/08/2021 22:00	0.0	SEE
24/08/2021 23:00	0.0	E
25/08/2021 00:00	0.0	NEN
25/08/2021 01:00	0.6	N
25/08/2021 02:00	0.0	NEE
25/08/2021 03:00	0.0	N
25/08/2021 04:00	0.0	SEE
25/08/2021 05:00	0.0	NE
25/08/2021 06:00	0.1	SE
25/08/2021 07:00	0.0	N
25/08/2021 08:00	0.0	SWS
25/08/2021 09:00	0.0	N
25/08/2021 10:00	0.1	SWS
25/08/2021 11:00	0.0	NW
25/08/2021 12:00	0.6	NEN
25/08/2021 13:00	0.4	N
25/08/2021 14:00	0.0	SWW
25/08/2021 15:00	0.0	E
25/08/2021 16:00	0.2	SES
25/08/2021 17:00	0.7	NEN
25/08/2021 18:00	0.0	NEN
25/08/2021 19:00	0.0	E
25/08/2021 20:00	0.0	E
25/08/2021 21:00	0.0	SEE
25/08/2021 22:00	0.0	E
25/08/2021 23:00	0.1	E
26/08/2021 00:00	0.0	SE
26/08/2021 01:00	0.0	NE
26/08/2021 02:00	0.0	E
26/08/2021 03:00	0.6	NEE
26/08/2021 04:00	0.0	NE
26/08/2021 05:00	0.0	W
26/08/2021 06:00	0.0	S
26/08/2021 07:00	0.0	SE
26/08/2021 08:00	0.0	S
26/08/2021 09:00	0.0	SEE
26/08/2021 10:00	0.4	E
26/08/2021 11:00	0.0	SE
26/08/2021 12:00	0.0	NE

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

Date	Wind Speed	Wind Direction
26/08/2021 13:00	0.2	SWS
26/08/2021 14:00	3.0	N
26/08/2021 15:00	3.0	SES
26/08/2021 16:00	1.7	NEN
26/08/2021 17:00	0.3	NEE
26/08/2021 18:00	1.2	NEE
26/08/2021 19:00	0.1	SWW
26/08/2021 20:00	0.0	NEN
26/08/2021 21:00	0.1	NEE
26/08/2021 22:00	0.3	SE
26/08/2021 23:00	0.4	NEE
27/08/2021 00:00	0.0	NEE
27/08/2021 01:00	0.5	N
27/08/2021 02:00	0.7	N
27/08/2021 03:00	0.0	NEE
27/08/2021 04:00	0.0	E
27/08/2021 05:00	0.0	NEE
27/08/2021 06:00	0.0	NEE
27/08/2021 07:00	0.4	E
27/08/2021 08:00	0.0	SWS
27/08/2021 09:00	0.0	NEE
27/08/2021 10:00	0.2	NW
27/08/2021 11:00	0.3	NWW
27/08/2021 12:00	0.0	NE
27/08/2021 13:00	0.0	SEE
27/08/2021 14:00	1.8	N
27/08/2021 15:00	0.0	SES
27/08/2021 16:00	0.0	SE
27/08/2021 17:00	1.6	N
27/08/2021 18:00	2.6	N
27/08/2021 19:00	0.0	SWS
27/08/2021 20:00	0.0	N
27/08/2021 21:00	0.0	N
27/08/2021 22:00	0.0	SW
27/08/2021 23:00	0.0	S
28/08/2021 00:00	0.0	S
28/08/2021 01:00	0.0	SWW
28/08/2021 02:00	0.0	SW
28/08/2021 03:00	0.0	SW
28/08/2021 04:00	0.0	SW
28/08/2021 05:00	0.0	SEE

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

Date	Wind Speed	Wind Direction
28/08/2021 06:00	0.0	SEE
28/08/2021 07:00	0.0	NEE
28/08/2021 08:00	0.0	NEE
28/08/2021 09:00	0.1	N
28/08/2021 10:00	0.0	N
28/08/2021 11:00	0.5	E
28/08/2021 12:00	0.0	E
28/08/2021 13:00	0.1	E
28/08/2021 14:00	0.1	NE
28/08/2021 15:00	0.6	N
28/08/2021 16:00	0.0	SES
28/08/2021 17:00	0.0	NEE
28/08/2021 18:00	0.0	W
28/08/2021 19:00	0.2	S
28/08/2021 20:00	0.0	NEN
28/08/2021 21:00	0.0	NE
28/08/2021 22:00	0.0	NW
28/08/2021 23:00	0.0	NEE
29/08/2021 00:00	0.0	SEE
29/08/2021 01:00	0.1	E
29/08/2021 02:00	0.0	NEE
29/08/2021 03:00	0.0	SE
29/08/2021 04:00	0.0	SWS
29/08/2021 05:00	0.0	E
29/08/2021 06:00	0.0	SEE
29/08/2021 07:00	0.2	NWN
29/08/2021 08:00	0.0	NE
29/08/2021 09:00	0.0	NEE
29/08/2021 10:00	0.0	SE
29/08/2021 11:00	0.0	SEE
29/08/2021 12:00	0.0	NEN
29/08/2021 13:00	0.9	NE
29/08/2021 14:00	0.6	NEN
29/08/2021 15:00	0.8	N
29/08/2021 16:00	0.6	NEN
29/08/2021 17:00	0.0	N
29/08/2021 18:00	0.0	N
29/08/2021 19:00	1.1	N
29/08/2021 20:00	0.6	N
29/08/2021 21:00	0.0	SWW
29/08/2021 22:00	0.4	NE

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

Date	Wind Speed	Wind Direction
29/08/2021 23:00	0.0	NWN
30/08/2021 00:00	0.6	N
30/08/2021 01:00	0.0	SEE
30/08/2021 02:00	0.0	SE
30/08/2021 03:00	0.0	SES
30/08/2021 04:00	0.6	NEE
30/08/2021 05:00	0.0	SE
30/08/2021 06:00	0.0	E
30/08/2021 07:00	0.0	SEE
30/08/2021 08:00	0.0	SEE
30/08/2021 09:00	0.0	SE
30/08/2021 10:00	0.4	NEE
30/08/2021 11:00	0.0	N
30/08/2021 12:00	0.2	E
30/08/2021 13:00	0.5	SE
30/08/2021 14:00	1.0	N
30/08/2021 15:00	0.6	NE
30/08/2021 16:00	0.1	NEE
30/08/2021 17:00	0.8	N
30/08/2021 18:00	0.6	SW
30/08/2021 19:00	0.0	NEE
30/08/2021 20:00	0.0	NEN
30/08/2021 21:00	0.0	N
30/08/2021 22:00	0.0	NE
30/08/2021 23:00	0.1	E
31/08/2021 00:00	0.0	SW
31/08/2021 01:00	0.0	SW
31/08/2021 02:00	1.7	E
31/08/2021 03:00	0.0	NE
31/08/2021 04:00	0.0	NEE
31/08/2021 05:00	0.0	SEE
31/08/2021 06:00	0.0	SEE
31/08/2021 07:00	0.0	SES
31/08/2021 08:00	0.0	SWS
31/08/2021 09:00	0.0	SWW
31/08/2021 10:00	0.4	NEE
31/08/2021 11:00	0.0	SEE
31/08/2021 12:00	0.0	NEN
31/08/2021 13:00	0.1	SEE
31/08/2021 14:00	0.9	NE
31/08/2021 15:00	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
31/08/2021 16:00	0.0	NWW
31/08/2021 17:00	0.0	NW
31/08/2021 18:00	0.0	SES
31/08/2021 19:00	0.0	NEE
31/08/2021 20:00	0.0	SE
31/08/2021 21:00	0.0	SW
31/08/2021 22:00	0.0	SES
31/08/2021 23:00	0.0	NWN
01/09/2021 00:00	0.0	NWN

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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. <u>Notify IEC and Contractor;</u> 2. <u>Identify source, investigate the causes of exceedance and propose remedial measures;</u> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. <u>Inform IEC, ER, EPD and Contractor;</u> 2. <u>Identify source;</u> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	4971.00	Nil	4774.49	Nil	196.51	Nil	0.418	Nil	Nil	36.91
2020 Sep	1175.26	Nil	736.1	Nil	439.16	Nil	Nil	Nil	Nil	36.16
2020 Oct	3433.83	Nil	Nil	2262.7	1171.13	Nil	Nil	Nil	Nil	32.25
2020 Nov	26481.72	Nil	Nil	24393.64	2088.08	Nil	Nil	Nil	Nil	40.09
2020 Dec	14361.90	Nil	Nil	13468.00	893.90	Nil	Nil	Nil	Nil	39.56
Total	118429.33	0	69409.12	40124.34	8895.87	0	3.842	0	0	561.05

Note:

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

Waste Flow Table for Year 2021										
Monthly Ending	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated (Inert C&D)	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)
2021 Jan	787.6	0	0	0	787.6	0	0	0	0	18.19
2021 Feb	254.95	0	0	0	254.95	0	0	0	0	154.94
2021 Mar	1899.61	0	0	1720.5	179.11	0	0	0	0	371.73
2021 Apr	4056.27	0	0	0	4056.27	2.13	8.17	0	0	144.08
2021 May	2738.81	0	0	0	2738.81	0.495	0	0	0	31.63
2021 Jun	1009.53	0	0	0	1009.53	0	0	0	0	90.91
2021 Jul	1384.29	0	0	0	1384.29	0	0	0	0	51.69
2021 Aug	340.46	0	0	0	340.46	5.85	0	0	0	42.99
2021 Sep										
2021 Oct										
2021 Nov										
2021 Dec										
Total	12471.52	0	0	1720.5	10751.02	8.470	8.170	0	0	906.16

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)

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

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: <ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •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

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
S5.5.6.2	A2	<ul style="list-style-type: none"> • 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 or 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	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant;</p> <ul style="list-style-type: none"> • 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	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> • 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	<p>1) Use of good site practices to limit noise emissions by considering the following:</p> <ul style="list-style-type: none"> • 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

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> •mobile plant should be sited as far away from NSRs as possible and practicable; •material stockpiles, mobile container site office 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	<p>Construction and Demolition Material</p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> •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	<p>C&D Waste</p> <ul style="list-style-type: none"> •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

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
S8.2.12-S8.3.15	WM3	<p>Chemical Waste</p> <ul style="list-style-type: none"> •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	<p>Sewage</p> <ul style="list-style-type: none"> •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	<p>General Refuse</p> <ul style="list-style-type: none"> •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

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Water Quality (Construction Phase)				
S9.11.1.7	W2	<p>Land Works</p> <p>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:</p> <ul style="list-style-type: none"> •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

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

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	N/A Completed on 1 March 2021
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	G6, G8, G9 and V1 were 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

Implementation Status of Environment Mitigation Measures (Construction Phase) - Contract No. HY/2019/01

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)		
August 2021						
1	998.5	32.5	29.4	27.1	83	11.6
2	998.3	33.9	30	28.5	80	Trace
3	997.2	29.7	28.2	27.1	88	19.7
4	995.6	31.3	28.2	25.9	85	41.9
5	996	28.6	27.6	26.2	90	28.1
6	998	29.7	28.3	26.4	89	31
7	1001.3	30.9	28.8	27.6	85	0
8	1004.3	31.5	29.3	27.8	85	3.1
9	1005.4	31.3	29.1	27.2	85	36.3
10	1005.9	30.4	29	27.5	87	17.3
11	1008.3	32.1	29.5	27.1	84	3
12	1008.9	33	29	26.8	82	1
13	1006.2	30.7	28.6	26.6	83	5.4
14	1006.4	29.2	28	26.6	85	2.2
15	1010.2	30	27.3	25.7	87	5.7
16	1012.5	31	28.3	26.2	83	3.9
17	1010.5	32.5	29.5	27.4	78	0
18	1008.2	32.3	29.5	28.1	77	0
19	1008.6	31	28.6	26.2	84	34.6
20	1009.5	32.5	29.5	27.3	77	Trace
21	1008.6	32.5	29.8	28	76	0
22	1007.4	33.1	30.1	28.3	74	0
23	1007.2	33.2	30.2	28.4	75	Trace
24	1007.7	32.1	29.6	26.6	79	23.7
25	1009	34.4	29.7	28.2	79	1.1
26	1011	32.7	29.7	27.1	80	2.2
27	1012	29.2	25.6	23.4	89	29.3
28	1011.6	29.8	26.9	24.9	81	22
29	1011.2	29.9	27.8	25.3	83	13.9
30	1011.4	32.9	29.1	27.4	81	Trace
31	1011.1	29.1	27.3	25.2	88	13.5

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	4 August 2021	Observation: Cement should be covered to prevent dust arising. (NPTI)	5 August 2021
	18 August 2021	Observation: Cement materials should be stored properly or covered. (NPTI)	19 August 2021
	25 August 2021	Observation: Cement bag should be cleared as soon as possible. (VCP)	25 August 2021
Noise	NA		
Water Quality	12 August 2021	Observation: Stagnant water should be cleared. (SPTI)	13 August 2021
Chemical and Waste Management	12 August 2021	Observation: Waste generated at the site should be collected and cleared. (VCP)	13 August 2021
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	