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Attn:
Mr. Manson Yeung – Independent Environmental Checker

**Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge (HZMB)
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II
(Southern Portion)**

Our Reference
TC/GC/al/T355861/02/
02/L155

Quarterly EM&A Report for March to May 2020 (Revision 0)

3/F International Trade
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348 Kwun Tong Road
Kowloon
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21 July 2020

By Email

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Dear Sir,

In accordance with Section 16.4 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities (Version 1.0) covering the captioned contract, we are pleased to submit the certified Quarterly EM&A Report for March to May 2020 (Revision 0) for your verification.

Yours faithfully
For MOTT MACDONALD HONG KONG LIMITED



Gary Chow
Environmental Team Leader

Encl.

cc.

AECOM – Mr. Peter Lee (By Email)
China State Construction Engineering (Hong Kong) Ltd. – Mr. Jason Chung / Mr. Xavier Lam (By Email)

Ref.: HYDZHMBEEM00_0_8166L.20

18 August 2020

By Fax (3468 2076) and By Post

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

Attention: Mr. Peter Lee

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/2013/04 – HZMB HKBCF – Infrastructure Works Stage II
(Southern Portion)
Quarterly EM&A Report for March 2020 – May 2020 (Revision 0)**

Reference is made to the Environmental Team's submission of Quarterly EM&A Report for March 2020 – May 2020 certified by the ET Leader (ET's ref.: "TC/GC/al/T355861/02/02/L155" dated 21 July 2020) and provided to us via e-mail on 22 July 2020.

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

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



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



Manson Yeung
Independent Environmental Checker
HZMB HKBCF

c.c.	HyD	Mr. Andy Ho	(By Fax: 3188 6614)
	HyD	Mr. Harry Louie	(By Fax: 3188 6614)
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Internal: DY, YH, ENPO Site



Contract No. HY/2013/04 HZMB HKBCF –
Infrastructure Works Stage II (Southern Portion)
Quarterly EM&A Report for March to May 2020

July 2020

Information class: Standard

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Executive summary

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as “the Contractor”) and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract 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 13 March 2015 and the construction works commenced on 13 July 2015.

Mott MacDonald Hong Kong Limited 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 will be providing environmental team services for the Contract.

The proposal for termination of the construction phase EM&A programme for this Contract (including weekly site audits, air quality monitoring and noise monitoring) was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. Operational water quality monitoring under the Updated EM&A Manual for HKBCF (Version 1.0) was continued as described below.

This is the 20th Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 March 2020 to 31 May 2020 (the “reporting period”).

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0).

Air Quality

The remaining air quality monitoring works at AMS2, AMS3C and AMS7B under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 “HZMB HKBCF – Phase 2 and Other Works” is required and continues the full implementation of air quality monitoring commencing on 1 February 2020.

For this reporting period, it should be noted that air quality monitoring stations AMS2, AMS3C and AMS7B are covered by Contract No. HY/2019/01. Another ET of the HZMB project is required to conduct impact air quality monitoring at AMS2, AMS3C and AMS7B as part of EM&A programme if these monitoring stations are no longer covered under Contract No.

HY/2019/01. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

It should also be noted that the air quality monitoring station 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”. If the impact air quality monitoring at AMS6 is no longer covered under Contract No. HY/2011/03, another ET of the HZMB project is required to continue such monitoring at AMS6 as part of EM&A programme. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

Noise

The remaining noise monitoring works at NMS2 and NMS3C under this Contract were suspended from 1 February 2020. The ET of Contract No. HY/2019/01 “HZMB HKBCF – Phase 2 and Other Works” is required and continues the full implementation of environmental noise monitoring commencing on 1 February 2020.

A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

Water Quality

Water quality monitoring works under HZMB HKBCF are covered by this Contract.

Chinese White Dolphin

The reporting of Chinese White Dolphin monitoring works under this Contract were suspended on 1 March 2020. From 1 March 2020 onwards, the ET of Contract No. HY/2019/01 “HZMB HKBCF – Phase 2 and Other Works” continues the same implementation of post-construction Chinese White Dolphin monitoring.

For this reporting period, it should be noted that dolphin monitoring works are covered by Contract No. HY/2012/08. Another ET of the HZMB project is required to conduct impact dolphin monitoring as part of EM&A programme if such monitoring is no longer covered under Contract No. HY/2012/08. However, this is subject to ENPO’s final decision on which ET should carry out the dolphin monitoring works.

Monitoring Activities

A summary of monitoring and audit activities conducted under this Contract in the reporting period is listed below:

- Impact operation phase water quality monitoring: 3 sessions[^]
- Joint Environmental site inspection: 8 sessions[%]

Remarks:

[^] Monthly impact operation phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted during the reporting period.

[%] During this reporting period, the proposal for termination of the construction phase EM&A programme for this Contract (including weekly site audits) was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. Therefore, no weekly site audits for this Contract were conducted after 20 April 2020.

Breaches of Action and Limit Levels

Air Quality and Noise

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS2, AMS3C and AMS7B shall be referred to the monthly EM&A report prepared by Contract No. HY/2019/01.

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

Chinese White Dolphin

Post-construction dolphin monitoring results at all transects during the reporting period shall be referred to the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2019/01.

Complaint Log

There were no complaints received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during this reporting period.

Reporting Changes

The proposal for termination of the construction phase EM&A programme for this Contract including weekly site audits was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. No weekly site audits for this Contract were conducted after 20 April 2020.

The remaining dolphin monitoring works under this Contract were suspended from 1 March 2020. The ET of Contract No. HY/2019/01 “HZMB HKBCF – Phase 2 and Other Works” is required and continues the full implementation of dolphin monitoring commencing on 1 March 2020.

This Contract is required and continues the full implementation of operational phase water quality monitoring during the first year of project operation, which was duly completed during the reporting period. Impact operational phase water quality monitoring results were compared with the Action and Limit Levels. While some exceedances of the Action or Limit Levels for DO and SS were recorded, it was concluded that the exceedances were not caused by the project and that no significant impact was identified which is in line with Section 9.11.2.1 of the approved EIA Report. Therefore, the operational phase monitoring was ceased under Section 9.9.1 of the Updated EM&A Manual for HKBCF (Version 1.0).

1 Introduction

1.1 Basic Project Information

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as “the Contractor”) and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract 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 13 March 2015 and the construction works commenced on 13 July 2015. The works areas of the contract are shown in **Appendix A**.

This is the 20th Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 March 2020 to 31 May 2020 (the “reporting period”).

1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are 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	Fax
Engineer or Engineer’s Representative (AECOM Asia Co. Ltd.)	Senior Resident Engineer	Peter Lee	3958 7465	3748 8900
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Y H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Ray Yan	3465 2836 / 5181 8401	3465 2899
	Environmental Site Supervisor (until Dec 2019)	Harris Wong	3465 2805 / 5181 8709	3465 2899
	Environmental Site Supervisor (from Jan 2020)	Manson Yeung	9700 6767	3465 2899
Contractor (China State Construction Engineering (Hong Kong) Limited)	Site Agent	Jason Chung	9127 8369	2459 4336
	Environmental Officer	Xavier Lam	9493 2944	2459 4336
		K P Ng	9626 9961	2459 4336

Party	Position	Name	Telephone	Fax
Environmental Team (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Gary Chow	2828 5874	2827 1823
24-hour Complaint Hotline	-	-	5236 7111	-

1.3 Construction Programme

The Construction Works Programme of the Project is provided in **Appendix C**.

1.4 Construction Works undertaken during the Reporting Period

A summary of the construction activities undertaken during this reporting period is shown below:

- Defect works (Bridges and Drainages) (land-based)
- Temporary hydroseeding and watering on slopes (land-based)

2 EM&A Requirements

2.1 Summary of EM&A Requirements

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0).

Air Quality

For this reporting period, the air quality monitoring works at AMS2, AMS3C and AMS7B are covered by Contract No. HY/2019/01 “HZMB HKBCF – Phase 2 and Other Works”, and the same monitoring works at AMS6 (Dragonair/CNAC (Group) Building) are covered by Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF”.

Another ET of the HZMB project is required to conduct impact air quality monitoring at AMS2, AMS3C and AMS7B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2019/01. Similarly, 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 under Contract No. HY/2011/03. This is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

A summary of air quality monitoring locations is presented in **Table 2.1**. The location of air quality monitoring stations is shown as in **Figure 2.1**.

Table 2.1: Construction Dust Monitoring Locations

Environmental Monitoring	Identification No.	Location Description
Air Quality	AMS2	Tung Chung Development Pier
	AMS3C	Ying Tung Estate Market Rooftop
	AMS6 ⁽¹⁾	Dragonair / CNAC (Group) Building
	AMS7B	3RS Site Offices

Remarks: (1) Another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 as part of EM&A programme according to latest notification from ENPO, if this air quality monitoring station is no longer covered under Contract No. HY/2011/03.

Noise

A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

It should be noted that, for the reporting period, the noise monitoring works at NMS2 and NMS3C are covered by Contract No. HY/2019/01 “HZMB HKBCF – Phase 2 and Other Works”.

Another ET of the HZMB project is required to conduct impact noise monitoring at NMS2 and NMS3C as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2019/01. This is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

A summary of noise monitoring locations are presented in **Table 2.3**. The location of noise monitoring stations is shown as in **Figure 2.2**.

Table 2.2: Construction Noise Monitoring Locations

Environmental Monitoring	Identification No.	Location Description
Noise	NMS2	Seaview Crescent
	NMS3C ⁽¹⁾	Ying Tung Estate Refuse Collection Point

Remarks: (1) Limit Level for schools will be applied for NMS3C. Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

Water Quality

The water quality monitoring works for HZMB HKBCF under the approved EM&A Manual for the reporting period are covered by this Contract.

Upon completion of all marine-based construction activities, a post-project monitoring exercise on water quality shall be carried out for 4 weeks in the same manner as the Baseline monitoring and was conducted during May 2019. An impact operational phase monitoring exercise on water quality shall also be carried out monthly during the first year of Project operation at all designated monitoring stations including control stations. For post-construction and impact operational phase water quality monitoring, measurement was taken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). A total of four stations (two Sensitive Receiver Stations and two Control Stations) are covered for impact operational phase monitoring by the current EM&A programme.

Application of the alternative water quality monitoring stations at SR3(N) and CS2(A) to impact operational phase water quality monitoring was justified by the ET Leader of this Contract on 14 May 2019, verified by the IEC on 15 May 2019 and submitted to EPD for record on 15 May 2019 for implementation with effect from June 2019.

Table 2.3 and **Figure 2.3** show the locations of water quality monitoring stations.

Table 2.3: Impact Operational Phase Water Quality Monitoring Stations

Station	Description	East	North
SR2(A)	Sensitive receivers (Sha Lo Wan)	807810	817189
SR3(N)	Sensitive receivers (San Tau SSSI)	810689	816591
CS2(A)	Control Station	805232	818606
CS(Mf)5	Control Station	817990	821129

Chinese White Dolphin

Post-construction dolphin monitoring in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF was conducted during the reporting period.

The transfer of the role of implementation of dolphin monitoring and collection of monitoring data from the ET of Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF” to the ET of Contract No. HY/2012/08 “Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section” was justified by the ET Leader of Contract No. HY/2011/03 and verified by the IEC during August 2019, and approved by EPD during September 2019 for implementation with effect from October 2019.

The reporting of Chinese White Dolphin monitoring works under this Contract was suspended on 1 March 2020. From 1 March 2020 onwards, the ET of Contract No. HY/2019/01 “HZMB

HKBCF – Phase 2 and Other Works” continues the same implementation of Chinese White Dolphin monitoring.

During the reporting period, the ET of Contract No. HY/2012/08 continued the implementation of dolphin monitoring and collection of monitoring data, with the reporting by the ET of Contract No. HY/2019/01 for the entire HZMB HKBCF project from post-construction phase monitoring perspective.

Another ET of the HZMB project is required to conduct impact dolphin monitoring as part of EM&A programme if such monitoring is no longer covered under Contract No. HY/2012/08. However, this is subject to ENPO’s final decision on which ET should carry out the dolphin monitoring works.

The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau (NEL) survey area; and Northwest Lantau (NWL) survey area.

Table 2.4 shows the co-ordinates for the transect lines and layout map.

The revised layout map showing the transect lines have been provided by AFCD and are shown in **Figure 2.4**.

Table 2.4: Post-Construction Dolphin Monitoring Line Transect Co-ordinates (Provided by AFCD)

Transect	HK Grid System		Long Lat in WGS84	
	X	Y	Long	Lat
1 [#]	804671	815456	113.870287	22.277678
	804671	831404	113.869975	22.421696
2 ^{#^}	805476	820800	113.877995	22.325951
	805476	826654	113.877882	22.378815
3 [^]	806464	821150	114.030267	22.196697
	806464	822911	114.047344	22.196712
4 [^]	807518	821500	114.033651	22.206219
	807518	829230	114.108618	22.206267
5 [^]	808504	821850	114.037037	22.215126
	808504	828602	114.102523	22.215169
6 [^]	809490	822150	114.039938	22.224033
	809490	825352	114.070995	22.224056
7 ^{#^}	810499	822000	114.038474	22.233143
	810499	824613	114.063820	22.233163
8 [#]	811508	821123	113.936539	22.328966
	811508	824254	113.936486	22.357241
9 [#]	812516	821303	113.946320	22.330606
	812516	824254	113.946279	22.357255
10 [*]	813525	820827	113.956112	22.326321
	813525	824657	113.956066	22.360908
11 [#]	814556	818853	113.966155	22.304858
	814556	820992	113.966125	22.327820
12	815542	818807	113.975726	22.308109
	815542	824882	113.975647	22.362962
13	816506	819480	113.985072	22.314192

Transect	HK Grid System		Long Lat in WGS84	
	816506	824859	113.985005	22.362771
14	817537	820220	113.995070	22.320883
	817537	824613	113.995018	22.360556
15	818568	820735	114.005071	22.325550
	818568	824433	114.005030	22.358947
16	819532	821420	114.014420	22.331747
	819532	824209	114.014390	22.356933
17	820451	822125	114.023333	22.338117
	820451	823671	114.023317	22.352084
18	821504	822371	114.033556	22.340353
	821504	823761	114.033544	22.352903
19	822513	823268	114.043340	22.348458
	822513	824321	114.043331	22.357971
20	823477	823402	114.052695	22.349680
	823477	824613	114.052686	22.360610
21	805476	827081	113.877878	22.382668
	805476	830562	113.877811	22.414103
22	806464	824033	113.887520	22.355164
	806464	829598	113.887416	22.405423
23	814559	821739	113.966142	22.334574
	814559	824768	113.966101	22.361920
24^	805476	815900	113.979368	22.187721
	805476	819100	114.010398	22.187756

Remarks:

- (a) * Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 2.4 could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore, the total transect length for both NEL and NWL combined is reduced to approximately 108km.
- (b) # Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.
- (c) ^ The change of transect lines 2, 3, 4, 5, 6 and 7 and new transect line 24 were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

Landscape and Visual

Landscape and visual bi-monthly checking and reporting on compliance of the planting works is required during the 12-month Establishment Period after completion of the construction works. The 12-month Establishment Period was commenced in November 2018 and was concluded in October 2019.

2.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A reports prepared for Contract No. HY/2019/01 and Contract No. HY/2011/03.

2.3 Action and Limit Levels

Air Quality

The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.5** and **Table 2.6** respectively.

Table 2.5: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS2 – Tung Chung Development Pier	374	500
AMS3C – Ying Tung Estate Market Rooftop	368	500
AMS6 – Dragonair / CNAC (Group) Building (HKIA)	360	500
AMS7B – 3RS Site Offices	370	500

Table 2.6: Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS2 – Tung Chung Development Pier	176	260
AMS3C – Ying Tung Estate Market Rooftop	167	260
AMS6 – Dragonair / CNAC (Group) Building (HKIA)	173	260
AMS7B – 3RS Site Offices	183	260

If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the quarterly EM&A report.

Noise

The Action and Limit Levels for construction noise are defined in **Table 2.7**.

Table 2.7: Action and Limit Level for Construction Noise

Monitoring Station	Time Period	Action Level	Limit Level
NMS2	07:00 – 19:00 hours on normal weekdays	When one documented complaint is received	70 dB(A)
NMS3C			70/65 dB(A)*

Remark: Limit Level for schools will be applied for NMS3C. Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the quarterly EM&A Report.

Water Quality

The Action and Limit Levels for water quality are provided in **Table 2.8**.

Table 2.8: Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg L^{-1} (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg L^{-1} (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes*

Parameters	Action	Limit
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's

Remarks:

* Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.

Notes:

1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
3. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
5. The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2 mg/L and 3.6 mg/L respectively.

Chinese White Dolphin

The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.9** and **Table 2.10**, respectively.

Table 2.9: Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)

	North Lantau Social Cluster	
	NEL	NWL
Action Level	(STG < 70% of baseline) & (ANI < 70% of baseline)	(STG < 70% of baseline) & (ANI < 70% of baseline)
Limit Level	[(STG < 40% of baseline) & (ANI < 40% of baseline)] AND [(STG < 40% of baseline) & (ANI < 40% of baseline)]	

Table 2.10: Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

	North Lantau Social Cluster	
	NEL	NWL
Action Level	(STG < 4.2) & (ANI < 15.5)	(STG < 6.9) & (ANI < 31.3)
Limit Level	[(STG < 2.4) & (ANI < 8.9)] AND [(STG < 3.9) & (ANI < 17.9)]	

If exceedance(s) at these survey transect(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

2.4 Event and Action Plans

The event and action plans for air quality, noise, water quality, dolphin monitoring, and landscape and visual are provided in **Appendix D**.

2.5 Mitigation Measures

Environmental mitigation measures for the contract were recommended in the approved EIA Report. **Appendix E** lists the recommended mitigation measures and the implementation status.

3 Environmental Monitoring and Audit

3.1 Air Quality Monitoring Results

AMS2, AMS3C and AMS7B

The proposal for termination of the construction phase EM&A programme for this Contract (including air quality monitoring) was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. Therefore, no air quality monitoring under this Contract was carried out or reported after 20 April 2020.

For this reporting period, the monitoring results for AMS2, AMS3C and AMS7B are reported in the monthly EM&A Report (for March, April and May 2020) prepared for Contract No. HY/2019/01. Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS2, AMS3C and AMS7B shall be referred to the monthly EM&A report (for March, April and May 2020) prepared by Contract No. HY/2019/01.

AMS6

The monitoring results for AMS6 are reported in the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2011/03.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in the monthly EM&A Reports (for March, April and May 2020) prepared by Contract No. HY/2011/03.

3.2 Noise Monitoring Results

The proposal for termination of the construction phase EM&A programme for this Contract (including noise monitoring) was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. Therefore, no noise monitoring under this Contract was carried out or reported after 20 April 2020.

For this reporting period, the monitoring results for NMS2 and NMS3C are reported in the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2019/01. Summary of Action and Limit Level exceedance of construction noise shall be referred to the monthly EM&A report prepared by Contract No. HY/2019/01.

3.3 Water Quality Monitoring Results

Monthly impact operational phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted during the reporting period on 23 March 2020, 20 April 2020 and 27 May 2020. Following these monitoring events, impact operation phase water quality monitoring during the first year of project operation was duly completed.

The impact operational phase monitoring results for the four monitoring stations are reported in the monthly EM&A Reports (for March, April and May 2020) prepared for this Contract.

Impact operational phase water quality monitoring results were compared with the Action and Limit Levels in **Table 2.8**. While some exceedances of the Action or Limit Levels for DO and SS were recorded, it was concluded that the exceedances were not caused by the project and that no significant impact was identified which is in line with Section 9.11.2.1 of the approved EIA Report. Therefore, the operational phase monitoring was ceased under Section 9.9.1 of the Updated EM&A Manual for HKBCF (Version 1.0).

3.4 Dolphin Monitoring Results

In accordance with the updated EM&A Manual, pre-set and fixed transect line vessel based dolphin survey was required in two AFCD designated areas (Northeast Lantau (NEL) and Northwest Lantau (NWL) survey areas). The post-construction dolphin monitoring at each survey area should be conducted twice per month.

The post-construction dolphin monitoring conducted is vessel-based and combines line-transect and photo-ID methodology, which have adopted similar survey methodologies as that adopted during baseline monitoring to facilitate comparisons between data sets.

The layout map of post-construction dolphin monitoring has been provided by AFCD and is shown in Figure 1 of **Appendix J**.

The monitoring results for dolphin monitoring during the reporting period are reported in the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2019/01.

The effort summary, sighting details and summary of key findings of the dolphin surveys completed during the reporting period, as well as details of the comparison and analysis methodology and their findings and discussions, are reported in the quarterly EM&A Report (for March – May 2020) prepared for Contract No. HY/2019/01.

3.5 Implementation of Environmental Measures

During this reporting period, the proposal for termination of the construction phase EM&A programme for this Contract (including weekly site audits) was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. Therefore, no weekly site audits for this Contract were conducted after 20 April 2020.

In response to the site audit findings, the Contractor carried out corrective actions. Details of site audit findings and the corrective actions during the reporting period are presented in **Appendix F**.

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

Implementation status of the Regular Marine Travel Route Plan (RMTRP) including checking of Contractor's marine traffic records by ER, ETL and IEC/ENPO would be conducted in the event of Contract-related marine traffic taking place during the reporting period.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract during the reporting period.

3.6 Landscape Establishment Monitoring

As coordinated between IEC and EPD, arrangements for the monitoring reports for landscape establishment for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 with respect to the reporting period are described below.

Bi-monthly landscape establishment monitoring for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 was commenced in November 2018 and completed in October 2019.

3.7 Advice on the Solid and Liquid Waste Management Status

The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting. As a practical means, the disposal operation is managed by a single HKBCF contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from this Contract.

There was no generation of excavated sediment for treatment during this reporting period. Any treatment of excavated marine sediment will be conducted using cement solidification / stabilization (Cement S/S) techniques and the treated sediment will be reused onsite for either backfilling or landscaping (e.g. berm material).

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

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.

3.7.1 Disposal of Marine Sediment Extracted from Bored Piling Works

3.7.1.1 Background

After the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal sites allocated to this Project are the Mud Pit CMP2 of the Confined Marine Sediment Disposal Facility to the South of The Brothers (or at the East of Sha Chau). As advised by CEDD in the memo dated 19 February 2016, from 00:00 on 22 March 2016 onward, the disposal space at CMP2 of the South of The Brothers is closed and all disposal of contaminated sediment is to be carried out at CMP Vd to the East of Sha Chau (ESC).

As Contract No. HY/2013/01 has commenced treatment of the extracted marine sediment, treatment will continue and the treated marine sediment will be re-used within the HKBCF Island. On the other hand, Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04 have not commenced the treatment of extracted marine sediment. Therefore the marine sediment extracted from these three Contracts will be disposed to the allocated disposal sites directly without treatment. As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from all three Contracts.

The SQR was further reviewed in mid-2016. EPD has no comment to extend the validity of the SQR to August 2017 under letter dated 18 August 2016.

Based on the actual piling operation, the estimated quantity of marine sediment to be extracted has been revised from 85,000 m³ to 126,000 m³ (bulk volume). EPD has no comments on the request as in the letter dated 20 October 2016. The Secretary of Marine Fill Committee, CEDD approved the increasing quantity in the memo dated 10 November 2016.

During the course of reviewing the SQR, it was noted that the contamination level of the marine sediment extracted from the inner part of the HKBCF Island was not identified during the previous sampling and testing. As requested by EPD, sampling and testing are required. The Sediment Sampling and Testing Proposal (SSTP) for the inner area of the HKBCF Island was approved by EPD on 2 June 2016.

As in the agreed SSTP for the inner area of the HKBCF Island, samples were taken from the seventeen batches of stockpiled marine sediments and from five boreholes each in one of the five sampling grids. After conducting chemical tests on samples, six batches of stockpiled samples under Contract No. HY/2013/03 and all eight batches of stockpiled samples under Contract No. HY/2013/04 are classified as Category L sediment. The Secretary of Marine Fill Committee of CEDD allocated disposal sites under memo dated 24 October 2016 and dated 22 November 2016 for disposal of a total of 9,500 m³ in-situ volume of Category L sediment (using a bulk factor of 1.3). The Category L sediment was disposed in December 2016.

One sample from the batch of stockpiled marine sediment under Contract No. HY/2013/03 and samples from all five sampling grids had contamination levels exceeding the Lower Chemical Exceedance Levels (LCEL) and biological screenings were carried out. All samples passed the biological screenings and are classified as Category Mp sediment and to be disposed off site using Type II confined marine disposal method the same method used for marine sediment extracted from other part of the HKBCF Island.

3.7.1.2 Dumping Arrangements

The barge for disposal of marine sediment will morn at the temporary loading and unloading at the east shore of the HKBCF Island, which has been being used by reclamation contractor (Contract No. HY/2010/02) for reclamation activities. In terms of safety consideration, each dumping date will be allocated to one Contract. The quantity of marine sediment disposed on the date is from one Contract.

During dumping, each Contractor is responsible for transporting the marine sediment from his site area to the barge. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of each Contract. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit.

3.7.1.3 Reporting

AECOM has confirmed that the disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017. The total quantities disposed are presented in the following table (**Table 3.1**):

Table 3.1: Summary of Marine Sediment disposed to Dumping Site via Contract No. HY/2013/03

	Type of Sediment and Quantity Disposed (m ³)	
	Cat. L (in Type I)	Type II
Total =	3,570	39,814

Note: For monthly breakdown of these quantities, please refer to the waste flow table in **Appendix G**.

3.8 Environmental Licences and Permits

The valid environmental licences and permits during the reporting period are summarized in **Appendix H**.

4 Summary of Exceedances, Complaints, Notification of Summons and Successful Prosecution

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

Air Quality

Not applicable for the reporting period since the construction phase EM&A programme for this Contract has been terminated.

Noise

Not applicable for the reporting period since the construction phase EM&A programme for this Contract has been terminated.

Water Quality

During the reporting period, monthly impact operational phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted on 23 March 2020, 20 April 2020 and 27 May 2020. Following these monitoring events, impact operation phase water quality monitoring during the first year of project operation was duly completed.

Impact operational phase water quality monitoring results were compared with the Action and Limit Levels in **Table 2.8**. While some exceedances of the Action or Limit Levels for DO and SS were recorded, it was concluded that the exceedances were not caused by the project and that no significant impact was identified which is in line with Section 9.11.2.1 of the approved EIA Report. Therefore, the operational phase monitoring was ceased under Section 9.9.1 of the Updated EM&A Manual for HKBCF (Version 1.0).

Chinese White Dolphin

Post-construction dolphin monitoring in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF (Version 1.0) commenced in March 2019 and was conducted during the reporting period. Dolphin survey monitoring results shall be referred to the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2019/01.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

There were no complaints received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

Notifications of Summons and Successful Prosecutions

Statistics on notifications of summons and successful prosecutions are summarized in **Appendix I**.

5 Comments, Recommendations and Conclusions

5.1 Comments

According to the environmental site inspections undertaken during the reporting period, the following recommendations were provided:

- The Contractor was reminded to clear the general refuse and more frequently
- The Contractor was reminded to provide bins for general refuse.

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

5.2 Recommendations

With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the Contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensured the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

5.3 Conclusions

General

Commencement of the Contract took place on 13 March 2015 and the construction works of the Contract commenced on 13 July 2015. This is the 20th Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 March 2020 to 31 May 2020 (the "reporting period").

Breaches of Action and Limit Levels

Air Quality

For the reporting period, the monitoring results for AMS2, AMS3C and AMS7B are reported in the monthly EM&A Report (for March, April and May 2020) prepared for Contract No. HY/2019/01. Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS2, AMS3C and AMS7B shall be referred to the monthly EM&A report (for March, April and May 2020) prepared by Contract No. HY/2019/01.

Noise

For this reporting period, the monitoring results for NMS2 and NMS3C are reported in the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2019/01.

Summary of Action and Limit Level exceedance of construction noise shall be referred to the monthly EM&A report prepared by Contract No. HY/2019/01.

Water Quality

During the reporting period, monthly impact operational phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted on 23 March 2020, 20 April 2020 and 27 May 2020. Following these monitoring events, impact operation phase water quality monitoring during the first year of project operation was duly completed.

Impact operational phase water quality monitoring results were compared with the Action and Limit Levels in **Table 2.8**. While some exceedances of the Action or Limit Levels for DO and SS were recorded, it was concluded that the exceedances were not caused by the project and that no significant impact was identified which is in line with Section 9.11.2.1 of the approved EIA Report. Therefore, the operational phase monitoring was ceased under Section 9.9.1 of the Updated EM&A Manual for HKBCF (Version 1.0).

Chinese White Dolphin

Post-construction dolphin monitoring in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF (Version 1.0) commenced in March 2019 and was conducted during the reporting period. Dolphin survey monitoring results shall be referred to the monthly EM&A Reports (for March, April and May 2020) prepared for Contract No. HY/2019/01.

Environmental Site Inspections

Environmental site inspections under this Contract were carried out on 4, 12, 18, 24 and 31 March, and 8, 15 and 20 April 2020. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

During this reporting period, the proposal for termination of the construction phase EM&A programme for this Contract (including weekly site audits) was certified by the ET Leader on 6 March 2020, verified by the IEC on 9 March 2020, approved by EPD on 9 April 2020 and implemented on 20 April 2020. Therefore, no weekly site audits for this Contract were conducted after 20 April 2020.

Landscape Establishment Monitoring

Bi-monthly landscape establishment monitoring for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 was commenced in November 2018 and completed in October 2019.

Complaints

There were no complaints received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during the reporting period.

Figures

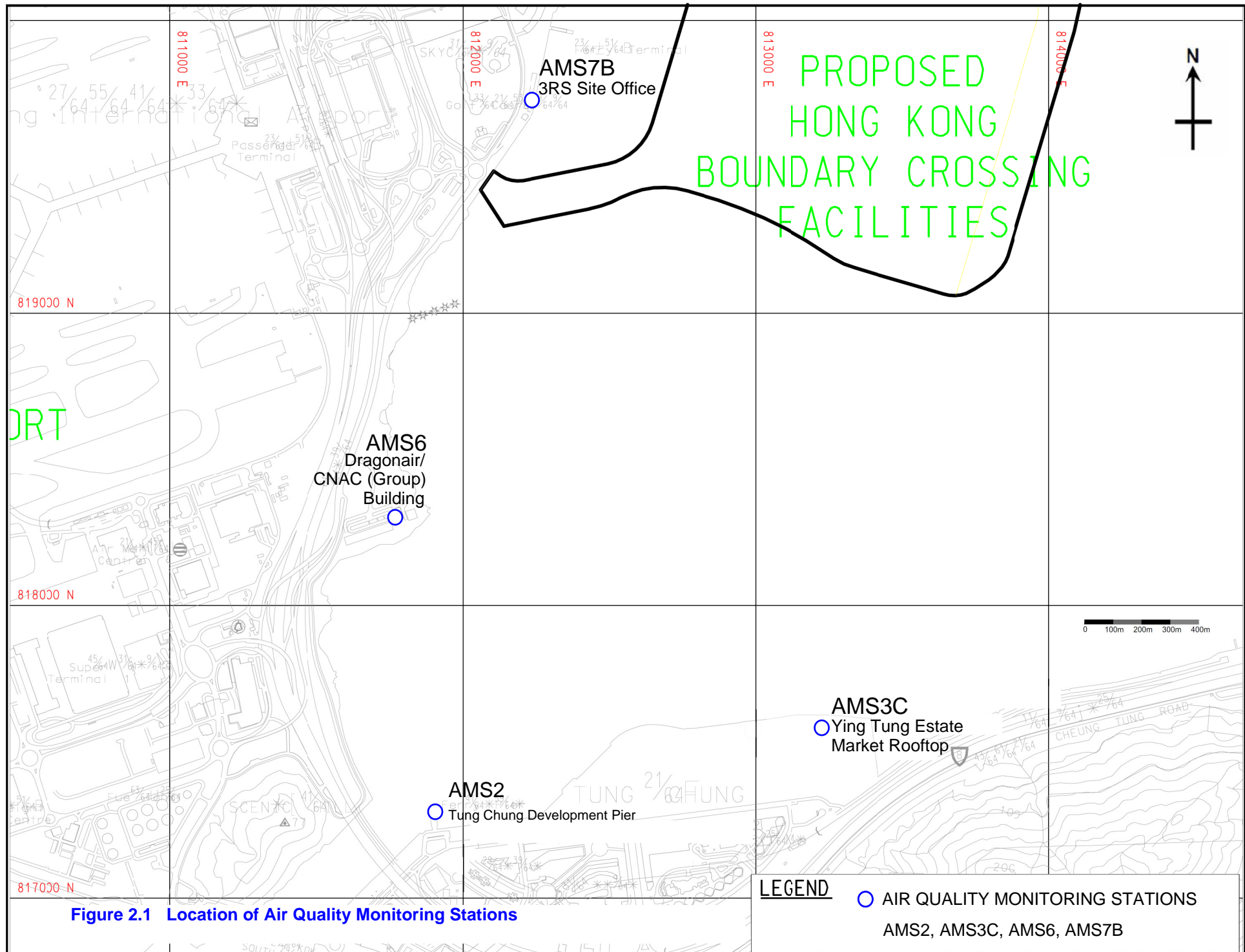
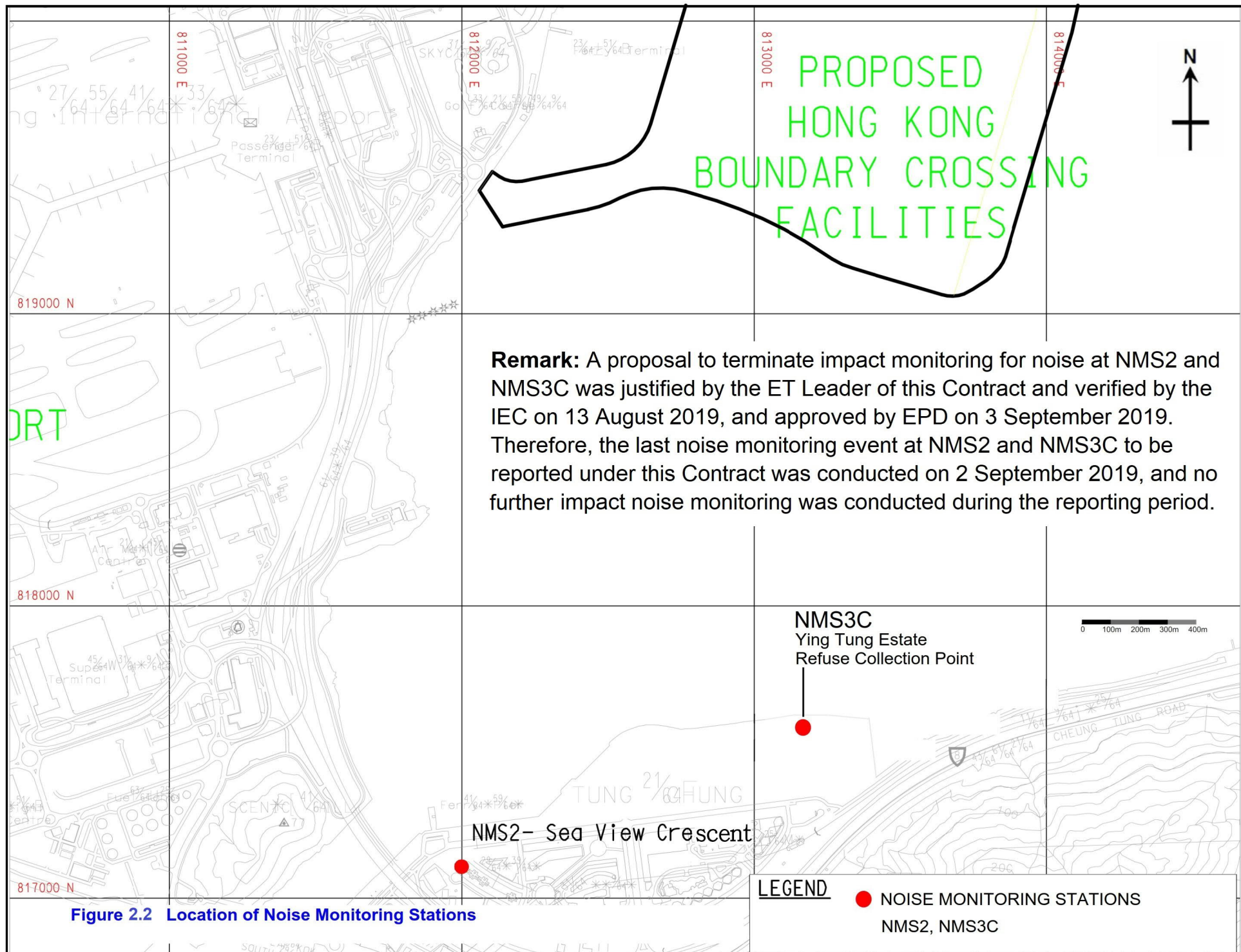


Figure 2.1 Location of Air Quality Monitoring Stations





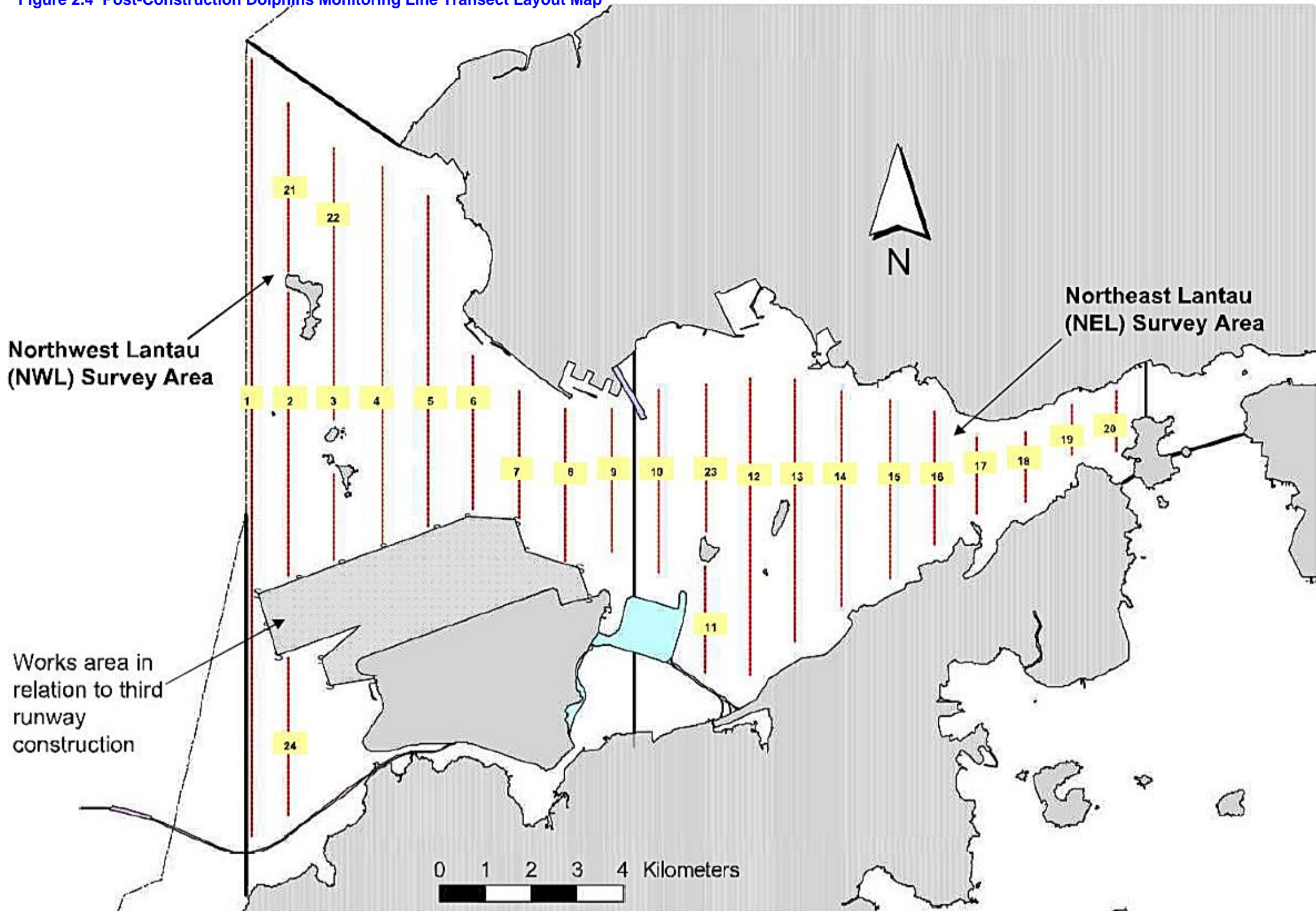
Station	East	North
SR2(A)	807810	817189
SR3(N)	810689	816591
CS2(A)	805232	818606
CS(Mf)5	817990	821129

FIGURE 2.3 – LOCATION OF WATER QUALITY MONITORING STATIONS

LEGEND

-  CS CONTROL STATIONS
-  SR SENSITIVE RECEIVERS STATIONS

Figure 2.4 Post-Construction Dolphins Monitoring Line Transect Layout Map



Appendix A. Location of Works Areas



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

LEGEND:

- SITE BOUNDARY
- WORKS AREA

THE SITE SEE DRAWING NO. 60191048/C4/000/C00/1010

WORKS AREA 'WA3' SEE DRAWING NO. 60191048/C4/000/C00/1041

RECLAMATION FOR HKBCF (ISLAND) (BY OTHERS)
OTHER INFRASTRUCTURE AND BUILDING WORKS OUTSIDE SITE BOUNDARY (BY OTHERS)

HONG KONG LINK ROAD (HKLR) (SEPARATE PROJECT) (BY OTHERS)

REV.	DESCRIPTION	DATE
1	TENDER DRAWING	FEB.14

路政處 HIGHWAYS DEPARTMENT
港珠澳大橋粵港工程署
 Hong Kong-Zhuhai-Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - INFRASTRUCTURE WORKS STAGE (I) (SOUTHERN PORTION)

SITE LOCATION PLAN

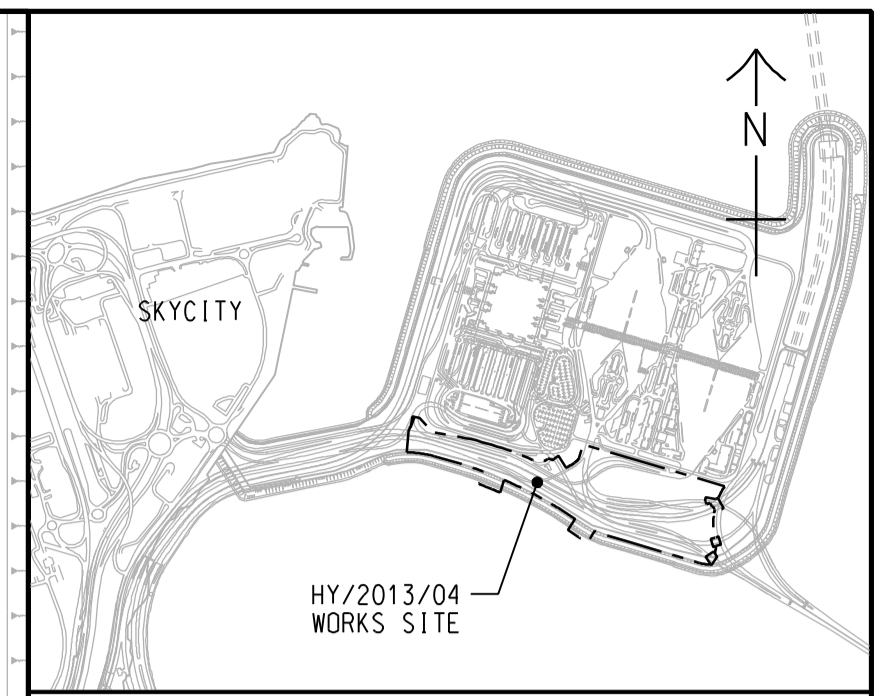
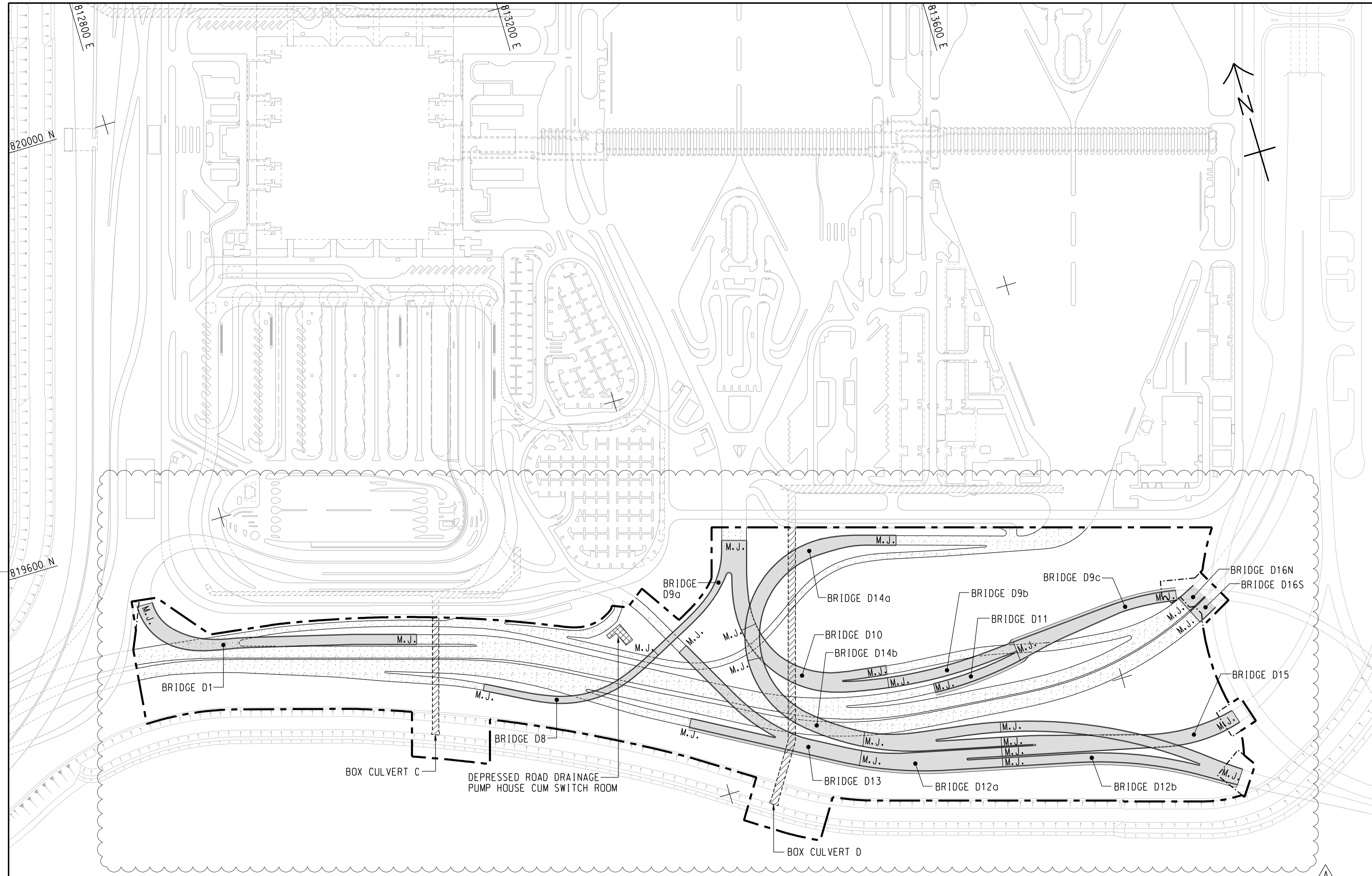
AECOM +
 Rogers Stirk Harbour + Partners
 BURO HAPPOLD ATKINS ADI +
Aedas

DRG. NO. 60191048/C4/000/C00/1000
 圖紙編號

DESIGNED BY BWCW	CONTRACT NO. HY/2013/04	APPROVED BY TKH
DRAWN BY MSY	STATUS REV.	

SCALE 1 : 25000
 DIMENSIONS ARE IN METRES
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P.S. [1] : 2.14.2024 9:46:03



LOCATION PLAN
SCALE 1 : 25000

LEGEND:

	SITE BOUNDARY
	AT-GRADE WORKS LIMIT
	MOVEMENT JOINT
	BRIDGE
	BUILDING/FACILITIES
	AT-GRADE ROAD
	BOX CULVERT

B	WORKING DRAWING	BWCW SCI	APR. 15
A	TENDER ADDENDUM NO. 3	BWCW SCI	MAY. 14
-	TENDER DRAWING	BWCW SCI	FEB. 14

路政署
HIGHWAYS DEPARTMENT
 港珠澳大橋香港工程管理處
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

GENERAL ARRANGEMENT

AECOM
 Rogers Stirk Harbour + Partners
Aedas
 BURO HAPPOLD ATKINS ADI

DRG.NO. 60191048/C4/000/C00/1002B
 圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/04	P. O. APPROVED 批准人	TKH
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DRAWN BY
繪圖
WSY
STATUS
階段
WORKING DRAWING

SCALE
比例
A1 1 : 2000
DIMENSIONS ARE IN
尺寸單位
METRES
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Plot File by : 2014/5/7 WANGSY

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
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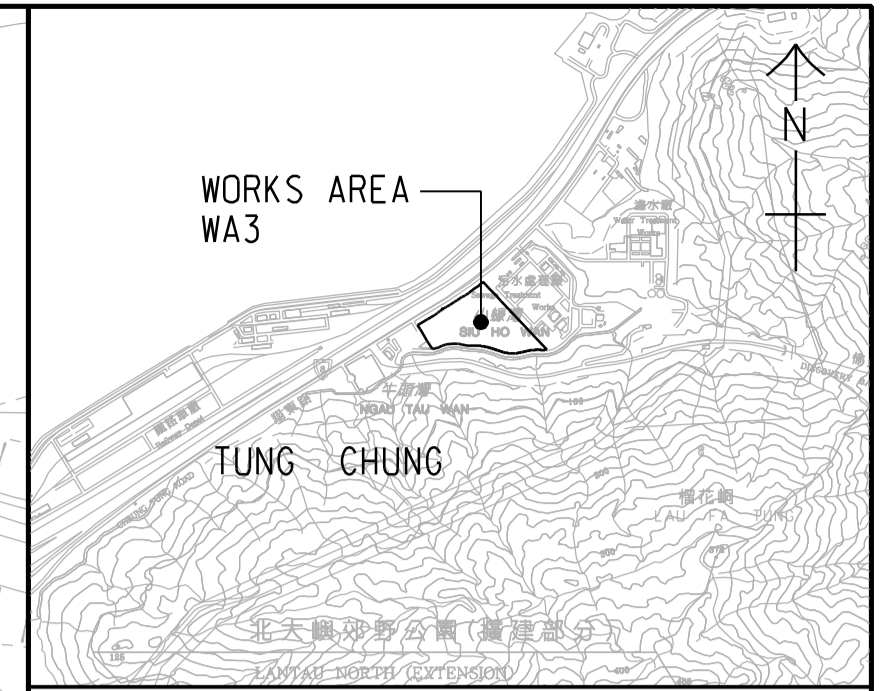
81200 E

81400 E

81600 E

819200 N

819000 N



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:

	WORKS AREA BOUNDARY
	PORTION 3.1
	PORTION 3.2
	PORTION 3.3
	PORTION 3.4
	PORTION 3.5
	PORTION 3.6
	PORTION 3.7
	PORTION 3.8
	PORTION 3.9
	PORTION 3.10

10m WIDE COMMON ACCESS TO BE MAINTAINED BY CONTRACT NO. HY/2010/02

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2010/02

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/09

10m WIDE COMMON ACCESS TO BE CONSTRUCTED AND INITIALLY MAINTAINED BY CONTRACT NO. HY/2013/01. UPON COMMENCEMENT OF CONTRACT NO. HY/2013/03, THE MAINTENANCE RESPONSIBILITY SHALL BE TRANSFERRED FROM CONTRACT NO. HY/2013/01 TO CONTRACT NO. HY/2013/03.

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/04

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/03

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/02

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/01

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/03

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2014/05

B	WORKING DRAWING	BWCW SCI	APR. 15
A	TENDER ADDENDUM NO. 2	BWCW SCI	APR. 14
-	TENDER DRAWING	BWCW SCI	FEB. 14
REV. 修改	DESCRIPTION 內容摘要	CHK. 校核	DATE 日期

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理局
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

WORKS AREA WA3

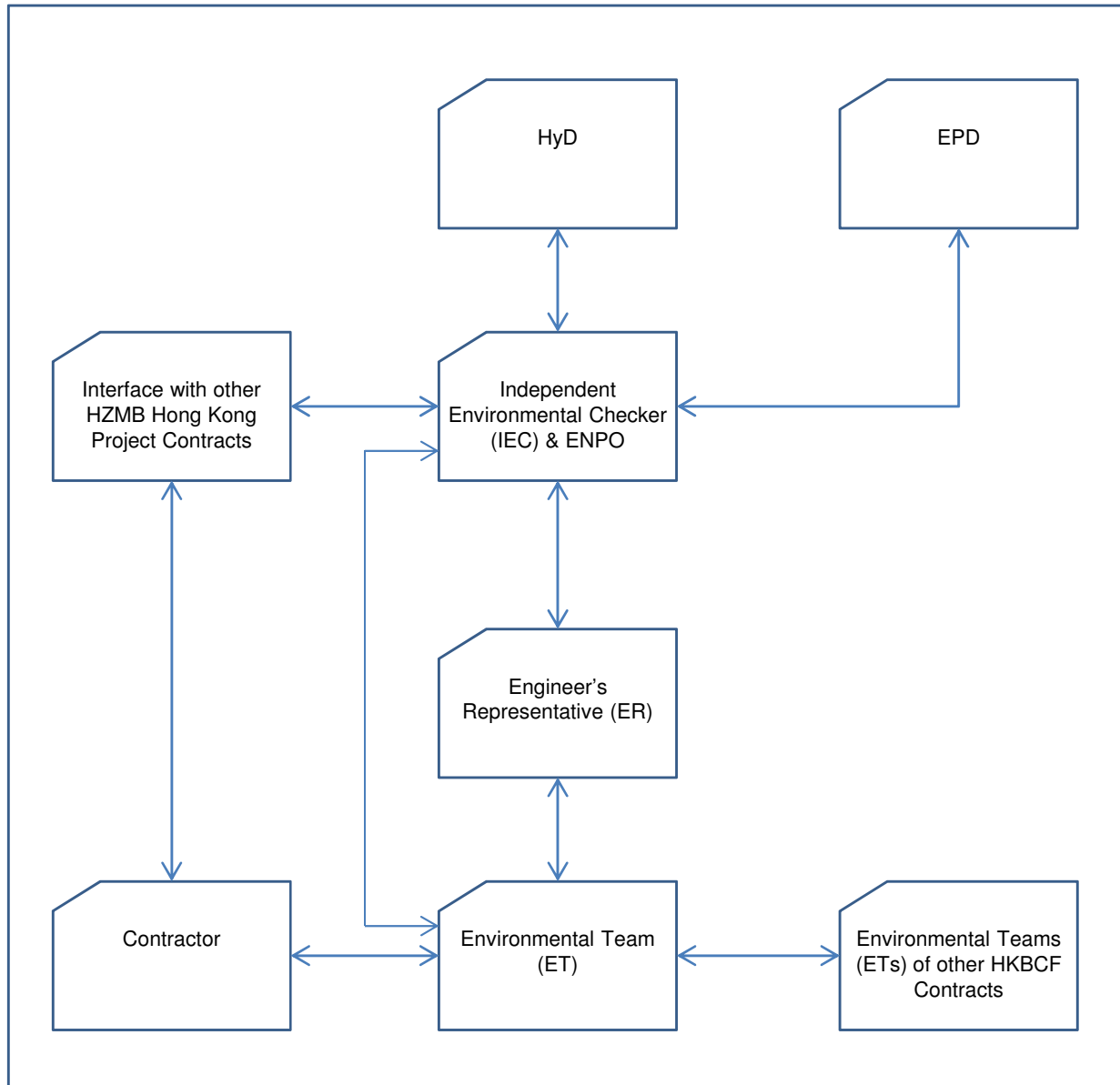
AECOM Aedas
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

DRG.NO. 60191048/C4/000/C00/1041B
圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/04	P. Dir. APPROVED 批准人	TKH
DRAWN BY 繪圖	WSY	STATUS 階段	WORKING DRAWING		
SCALE 比例	A1 1 : 1000				
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Appendix B. Project Organization for Environmental Works

Project Organisation for Environmental Works



↔ Line of Communication

Appendix C. Construction Programme

Appendix D. Event and Action Plan

Event/Action Plan for Air Quality Monitoring

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 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. 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 Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<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. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<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. Require Contractor to propose remedial measures for the analysed noise problem; 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 Water Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Repeat measurement on next day of exceedance to confirm findings. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working methods; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER; 5. Implement the agreed mitigation measures. 6. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of non-compliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat <i>in-situ</i> measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat <i>in-situ</i> measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented; 5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor; 5. Check monitoring data. 6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and finding with the ET and the Contractor. 	<ol style="list-style-type: none"> 1. Discuss monitoring with the IEC and any other measures proposed by the ET; 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER/SOR; 3. Implement the agreed measures.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly. 	<ol style="list-style-type: none"> 1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

Action Plan for Landscape and Visual

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Conflicts occur	<ul style="list-style-type: none"> • Check Contractor's proposed remedial design conforms to the requirements of EP and prepare checking report(s) 	<ul style="list-style-type: none"> • Check and endorse ET's report(s) • Check and certify Contractor's proposed remedial design 	<ul style="list-style-type: none"> • Supervise the Contractor to carry out the proposed remediation work 	<ul style="list-style-type: none"> • Propose remedial design and carry out the proposed work

Appendix E. Implementation Schedule for Environmental Mitigation Measures (EMIS)

Appendix E – Implementation Schedule of Environmental Mitigation Measures (EMIS)

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	V
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	V
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 and the 3 sides 	All construction sites	V
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	V
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	V
S5.5.6.4	A4	4) Engineer 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	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected representative dust monitoring station	V (impact air quality monitoring, covered by Contract No. HY/2019/01 (AMS2, AMS3C, AMS7B) & HY/2011/03 (AMS6))

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
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	N/A
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	N/A
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; • 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. 	All construction sites	V
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	V
S6.4.12	N3	3) Install movable noise barriers (typically density @ 14kg/m ²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	For plant items listed in Appendix 6D of the EIA report at all construction sites	V
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	V
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	All construction sites where practicable	V
	N6	6) Implement a noise monitoring under EM&A programme.	Selected representative noise monitoring station	V (impact noise monitoring, covered by Contract No. HY/2019/01 (NMS2, NMS3C))
Sediment				
S7.3	S1	1) The requirements as recommended in ETWB TC(W) 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Waste Management (Construction Noise)				
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></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; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • 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 ETWB TC(W) 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	V
S8.3.9- S8.3.11	WM2	<p><u>C&D Waste</u></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	V
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></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 a 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	V
S8.3.16	WM4	<p><u>Sewage</u></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	V
S8.3.17	WM5	<p><u>General Refuse</u></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 	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>deposit should be provided if feasible.</p> <ul style="list-style-type: none"> • 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. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. 		
Water Quality (Construction Phase)				
S9.11.1.1	W1	<p><u>Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below.</u></p> <ul style="list-style-type: none"> • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. • Silt curtain shall be fully maintained throughout the works. 	Marine works	N/A
S9.11.1.7	W2	<p><u>Land Works</u></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 W PCO 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 W PCO 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 	Land-based works areas	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 		
S9.14	W3	Implement a water quality monitoring programme	At identified monitoring locations	V (impact operational phase water quality monitoring programme, covered by Contract No. HY/2013/04)
Ecology (Construction Phase)				
S10.7	E2	<ul style="list-style-type: none"> • Install silt curtain during the construction. • Limit dredging and works fronts. • Good site practices. • Site runoff control. 	Marine works and Land-based works areas	N/A
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	Land-based works areas	V
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Land-based works areas	V
S10.7	E6	<ul style="list-style-type: none"> • Dolphin Exclusion Zone; • Dolphin watching plan 	Marine works	N/A
S10.7	E7	<ul style="list-style-type: none"> • Decouple compressors and other equipment on working vessels • Avoidance of percussive piling 	Marine works	N/A
S10.7	E8	<ul style="list-style-type: none"> • Control vessel speed • Skipper training • Predefined and regular routes for working vessels; avoid Brother Islands. 	Marine Traffic	N/A
S10.10	E9	<ul style="list-style-type: none"> • Dolphin vessel monitoring 	North Lantau and West Lantau	V (post-construction dolphin monitoring, covered by Contract No. HY/2012/08)
Fisheries				
S11.7	F4	<ul style="list-style-type: none"> • Maritime Oil Spill Response Plan (MOSRP); • Contingency plan. 	HKBCF	V
Landscape & Visual (Detailed Design Phase)				
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> • Roadside planting and planting along the edge of the HKBCF Island is proposed; • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline; • For HKBCF, providing aesthetic architectural design on the 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 harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF. 	HKBCF	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Landscape & Visual (Construction Phase)				
S14.3.3.3	LV2	<p><u>Mitigate both Landscape and Visual Impacts</u></p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p> <p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the 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 harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;</p> <p>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.</p> <p>G9. 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.</p>	HKBCF	V
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <p>V1. Minimize time for construction activities during construction period.</p> <p>V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.</p>		V
EM&A				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	All construction sites	V
S15.5 - S15.6	EM2	<p>1) An Environmental Team needs to be employed as per the EM&A Manual.</p> <p>2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.</p> <p>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.</p>	All construction sites	V
Legend:	V = implemented; x = not implemented; N/A = not applicable			

Appendix F. Site Audit Findings and Corrective Actions

Appendix G. Waste Flow Table

Monthly Summary Waste Flow Table for 2020

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Transported to other Projects (Note 2)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (Note 1)	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	0.0079	0	0	0	0.0079	0	0	0	0	0	0.0237
Feb	0.0228	0	0	0	0.0228	0	0	0	0	0	0.0211
Mar	0.0235	0	0	0	0.0235	0	0	0	0	0	0.0227
Apr	0.0000	0	0	0	0.0000	0	0	0	0	0	0.0072
May	0.0000	0	0	0	0.0000	0	0	0	0	0	0.0000
Jun											
Sub-total	0.0542	0	0	0.000	0.0542	0	0	0	0	0	0.0747
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.0542	0	0	0.000	0.0542	0	0	0	0	0	0.0747

Note: (1) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material
(2) "Other Projects" refers to HKBCF Contract No. HY/2013/03

Monthly Summary of Excavated Marine Sediment for 2020

Month	a. Estimated Volume of Excavated Marine Sediment Generated	b. Estimate Volume of Accumulated Excavated Marine Sediment Treated	c. Reused in the Contract	d. Estimated Volume of Excavated Marine Sediment Transported to Other Projects (Note 1)	e. Estimated Volume of Treated Excavated Marine Sediment Stored on Site (Unused)
	(in m ³)	(in m ³)	(in m ³)	(in m ³)	(in m ³)
Jan	0	0	0	0	0
Feb	0	0	0	0	0
Mar	0	0	0	0	0
Apr	0	0	0	0	0
May	0	0	0	0	0
Jun					
Sub-total	0	0	0	0	0
Jul					
Aug					
Sep					
Oct					
Nov					
Dec					
Total	0	0	0	0	0

Note: (1) "Other Projects" refers to HKBCF Contract No. HY/2013/03. The disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017.

Appendix H. Environmental Licenses and Permits

Environmental Licences and Permits

Item No.	Type of Permit / Licence	Reference No.	Application Date	Valid from	Valid until	Remark
1	Environmental Permit under EIAO	EP-353/2009/K	24 Mar 2016	11 Apr 2016	N/A	Issued
2	Further Environmental Permit under EIAO	FEP-01/353/2009/K	29 Nov 2018	27 Dec 2018	N/A	Issued
3	Construction Dust Notification (HKBCF Southern Portion)	387156	26 Mar 2015	1 Apr 2015	N/A	Notified
4	Construction Waste Disposal Account	7022038	16 Mar 2015	1 Apr 2015	N/A	Account approved
5	Registration as a Chemical Waste Producer (HKBCF Southern Portion)	Waste Producer Number (WPN): 5213-951-C3952-01	27 Mar 2015	27 Apr 2015	N/A	Registration completed
6	Discharge Licence under WPCO (Works Area WA3)	WT00022316-2015	1 Jun 2015	14 Aug 2015	31 Aug 2020	Issued
7	Discharge Licence under WPCO (HKBCF Works Area)	WT00028782-2017	25 May 2017	19 Jul 2017	31 Jul 2022	Issued
8	Construction Noise Permit	GW-RS0713-19	19 Jul 2019	30 Sep 2019	4 Mar 2020	Expired during reporting period
9	Construction Noise Permit	GW-RS0079-20	23 Jan 2020	5 Mar 2020	4 Sep 2020	Issued

Appendix I. Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	0	0	0
From commencement date of construction to end of reporting month	11	0	0