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**CHINA HARBOUR ENGINEERING CO.
LTD.**

**CONTRACT NO.: HY/2013/02
HONG KONG – ZHUHAI- MACAO BRIDGE
HONG KONG BOUNDARY CROSSING
FACILITIES – INFRASTRUCTURE
WORKS STAGE I
(WESTERN PORTION)
FINAL EM&A REPORT
(24 NOVEMBER 2014 to 31 JANUARY 2019)**

Prepared by:


LO, Ting Yi

Certified by:


LAU, Chi Leung
Environmental Team Leader

Issued Date: 30 April 2019

Report No.: ENA93361

This report shall not be reproduced unless with prior written approval from this laboratory.

25 June 2019

By Fax (3468 2076) and By Post

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

Attention: Mr. Bill Hon

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**

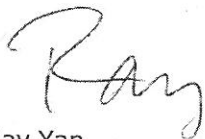
**Contract No. HY/2013/02
HZMB HKBCF – Infrastructure Works Stage I (Western Portion)
Final EM&A Report**

Reference is made to the ET's submission of the Final EM&A Report certified by the ET Leader (ET's ref.: "OC/90656/CLL" dated 25 June 2019) and provided to us via e-mail on 25 June 2019.

We are pleased to inform you that we have no adverse comments on the captioned Final EM&A Report.

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



Ray Yan
Independent Environmental Checker

c.c.	HyD	Mr. Cheng Pan	(By Fax: 3188 6614)
	HyD	Mr. Derek Chung	(By Fax: 3188 6614)
	ETS	Mr. C. L. Lau	(By Fax: 2695 3944)
	CHEC	Mr. Kenny Yu	(By Fax: 3915 0300)

Internal: DY, YH, DF, HW, ENPO Site



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Your Ref. : ---
Our Ref. : OC/90656/CLL

25 June 2019

Ramboll Hong Kong Limited
21st Floor, BEA Harbour View Centre
56 Gloucester Road,
Wan Chai
Hong Kong

By E-mail

Attn: Mr. Ray Yan

Dear Mr. Yan,

Contract No. HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)
Final EM&A Report for 24 November 2014 to 31 January 2019

In accordance with the requirement specified in Condition 5.4 of the Environmental Permit No. EP-353/2009/K, we are pleased to submit the certified Final EM&A Report for January 2019 revised with the IEC's comment for your onward verification.

Yours faithfully,
ETS-TESTCONSULT LIMITED

Mr. C. L. Lau
Environmental Team Leader

CLL/cklk



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EXECUTIVE SUMMARY

This Final Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/02 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Infrastructure Works Stage I (Western Portion) (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China Harbour Engineering Co., Ltd. (hereafter referred to as “the Contractor”) and ETS-Testconsult Limited was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract was started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014.

ETS-Testconsult 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 provide environmental team services to the Contract.

This is the Final Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries findings of the EM&A works conducted from 24 November 2014 to 31 January 2019. With reference to the memo with reference number () in E771/E1/100 by Environmental Protection Department, the EM&A programme of construction phase of Contract No. HY/2013/02 was terminated since 01 February 2019.

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality monitoring works for the Contract are covered by Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF” from 24 November 2014 to 31 January 2019, Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works from 24 November 2014 to 31 August 2017, Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building” from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion) from 01 October 2018 to 31 January 2019. And the noise monitoring for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works from 24 November 2014 to 31 August 2017, Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building” from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion) from 01 October 2018 to 31 January 2019. The impact air quality monitoring stations at AMS6, AMS7 and AMS7B, noise monitoring stations at NMS2, NMS3B and NMS3C, water quality monitoring stations were shown in **Figure 2** and dolphin monitoring station shown in **Figure 3** as part of EM&A programme. The following table summarized the responsibilities for each air quality and noise monitoring stations during the reporting periods.

Reporting Month	Water Quality Monitoring	Air Quality Monitoring				Noise Monitoring		
		AMS6	AMS7A	AMS7	AMS7B	NMS2	NMS3B	NMS3C
Dec-14		HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jan-15		HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Feb-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Mar-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Apr-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
May-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Jun-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Jul-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Aug-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Sep-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Oct-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Nov-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Dec-15	HY/2010/02	HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	



Jan-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Feb-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Mar-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Apr-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
May-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jun-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jul-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Aug-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Sep-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Oct-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Nov-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Dec-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jan-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Feb-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Mar-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Apr-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
May-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jun-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jul-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Aug-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Sep-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Oct-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Nov-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Dec-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Jan-18	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Feb-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Mar-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Apr-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
May-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Jun-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Jul-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Aug-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	HY/2013/04
Sep-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01		HY/2013/04
Oct-18	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04
Nov-18	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04
Dec-18	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04
Jan-19	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04

Breaches of Action and Limit Levels

Monitoring Results of 1-hr TSP level and 24-hr TSP level at AMS6, AMS7A, AMS7 and AMS7B shall be referred to the Contract Nos. HY/2011/03, HY/2010/02, HY/2013/01 and HY/2013/04.

Monitoring Results of noise monitoring at station NMS2, NMS3B and NMS3C shall be referred to the Contract Nos. HY/2010/02, HY/2013/01 and HY/2013/04.

Monitoring Results of water quality monitoring at stations shown in **Figure 2** shall be referred to the Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019.

Impact dolphin monitoring results at all transects were reported in the EM&A Report prepared for Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019.

In the construction phase, several exceedances were recorded in air quality, noise, water quality and dolphin monitoring. The summary of breaches of all environmental performance is shown below:

Parameter		Number of Exceedances	
		Action Level	Limit Level
Air Quality	1-hr TSP	0	0
	24-hr TSP	0	0
Noise	Leq (30min)	0	0
Water Quality	Dissolved Oxygen	449	105
	Turbidity	13	2
	Suspended Solids	111	9
Dolphin		0	13

Implementation of Environmental Measures

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for this Contract. Potential environmental impacts due to the construction activities were monitored and reviewed. Due to the commence operation of HKBCF on 24 October 2018, environmental site inspection would only be conducted if there are any ad-hoc construction works within the construction site of Contract No. HY/2013/02 from 25 October 2018 to 31 January 2019. In this period, there were no ad-hoc construction works raised by the Contractor and thus no environmental site inspection had been conducted during the mentioned period.

Complaint Log

There were 19 complaint received by this Contract in relation to the environmental impact from 24 November 2014 to 31 January 2019.

Notifications of Summons and Successful Prosecutions

There were no notification of summon or prosecution received from 24 November 2014 to 31 January 2019.



1 INTRODUCTION

1.1 Basic Project Information

1.1.1 This Final Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/02 Hong Kong–Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Infrastructure Works Stage I (Western Portion) (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China Harbour Engineering Co., Ltd. (hereafter referred to as “the Contractor”) and ETS-Testconsult Limited was appointed as the Environmental Team (ET) by the Contractor.

1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and an Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014. The works area of the Contract is shown in **Appendix A**.

1.1.3 This is the Final Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries findings of the EM&A works conducted during the reporting period from 24 November 2014 to 31 January 2019. With reference to the memo with reference number () in E771/E1/100 by Environmental Protection Department, the EM&A programme of construction phase of Contract No. HY/2013/02 was terminated since 01 February 2019.

1.2 Project Organization

1.2.1 The project organisation structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**.

1.3 Works Undertaken During the Construction Period

1.3.1 The master construction program is enclosed in **Appendix C**.

2 EM&A Requirement

2.1 Summary of EM&A Requirements

2.1.1 The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality monitoring works for the Contract are covered by Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF” from 24 November 2014 to 31 January 2019, Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works from 24 November 2014 to 31 August 2017, Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building” from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion) from 01 October 2018 to 31 January 2019. And the noise monitoring for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works from 24 November 2014 to 31 August 2017, Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building” from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion) from 01 October 2018 to 31 January 2019. The impact air quality monitoring stations at AMS6, AMS7A, AMS7 and AMS7B, noise monitoring stations at NMS2, NMS3B and NMS3C, water quality monitoring stations were shown in **Figure 2** and dolphin monitoring station shown in **Figure 3** as part of EM&A programme. The following table summarized the responsibilities for each air quality and noise monitoring stations during the reporting periods.



Reporting Month	Water Quality Monitoring	Air Quality Monitoring				Noise Monitoring		
		AMS6	AMS7A	AMS7	AMS7B	NMS2	NMS3B	NMS3C
Dec-14		HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jan-15		HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Feb-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Mar-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Apr-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
May-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Jun-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Jul-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Aug-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Sep-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Oct-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Nov-15		HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Dec-15	HY/2010/02	HY/2011/03	HY/2010/02			HY/2010/02	HY/2010/02	
Jan-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Feb-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
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Apr-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
May-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jun-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jul-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Aug-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Sep-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Oct-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Nov-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Dec-16	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jan-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Feb-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Mar-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Apr-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
May-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jun-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Jul-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Aug-17	HY/2010/02	HY/2011/03		HY/2010/02		HY/2010/02	HY/2010/02	
Sep-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Oct-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Nov-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Dec-17	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Jan-18	HY/2013/01	HY/2011/03		HY/2013/01		HY/2013/01	HY/2013/01	
Feb-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Mar-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Apr-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
May-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Jun-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Jul-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	
Aug-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01	HY/2013/01	HY/2013/04
Sep-18	HY/2013/01	HY/2011/03			HY/2013/01	HY/2013/01		HY/2013/04
Oct-18	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04
Nov-18	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04
Dec-18	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04
Jan-19	HY/2013/04	HY/2011/03			HY/2013/04	HY/2013/04		HY/2013/04

2.1.2 A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 1.1** and **Figure 1.2**.

Table 2.1 Air Quality and Noise Monitoring Locations

Environmental Monitoring	Identification No.	Location Description
Air Quality	AMS6 ⁽¹⁾	Dragonair / CNAC (Group) Building
	AMS7A ⁽¹⁾	Chu Kong Air-Sea Union Transportation Co. Ltd.
	AMS7 ⁽¹⁾⁽²⁾	Hong Kong SkyCity Marriott Hotel
	AMS7B ⁽¹⁾⁽³⁾	3RS Site Offices
Noise	NMS2 ⁽⁴⁾	Seaview Crescent
	NMS3B ⁽⁴⁾⁽⁵⁾	Site Boundary of Site Office Area at Works Area WA2
	NMS3C ⁽⁴⁾⁽⁵⁾⁽⁶⁾	Ying Tung Estate Refuse Collection Point

Remarks:

- (1) The ET of this Contract should conduct impact air quality monitoring at the AMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
- (2) Alternative Air Quality Monitoring Stations to replace AMS7A with effect from 01 January 2016.
- (3) Alternative Air Quality Monitoring Stations to replace AMS7 with effect from 06 February 2018
- (4) ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
- (5) The Limit Level for schools will be applied for this alternative monitoring location.
- (6) Alternative Noise Monitoring Station to replace NMS3B with effect from 20 August 2018

2.1.3 The water monitoring works for the Contract are covered by Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019. The ET of the Contract or another ET of the HZMB project is required to conduct water quality monitoring at twenty one stations (9 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations). Since several water quality monitoring (WQM) stations including IS10, SR5 and CS(Mf)3 will be occupied by the marine works of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project), alternative WQM stations named as IS10(N), SR5(N) and CS(Mf)3(N) were proposed to replace the occupied stations. The proposal for changes of the EM&A Programme was 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. Besides, due to topographical conditions of SR3, SR10A and SR10B(N), the water quality monitoring (WQM) stations was proposed to be monitored at alternative WQM stations named as SR3(N), SR10A(N) and SR10B(N2). The proposal for alternation of water quality monitoring stations for HZMB HKBCF was justified by the ET Leader for Contract No. HY/2013/01 on 08 November 2017 and verified by the IEC on 13 November 2017; and submitted to EPD on 29 November 2017, and it was approved by EPD on 22 December 2017. **Table 2.2** and **Figure 2** shows the locations of water quality monitoring stations.

Table 2.2 Water Quality Monitoring Stations (construction phases)

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10 ^[3]	Impact Station (Close to HKBCF construction site)	812577	820670



IS10(N)	Impact Station (Close to HKBCF construction site)	812942	820881
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
SR3(N) ^[4]	Sensitive receivers (San Tau SSSI)	810689	816591
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5 ^[3]	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR5(N)	Sensitive receiver (Artificial Reef in NE Airport)	812569	821475
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A ^[1]	Sensitive receivers (Ma Wan FCZ)1	823741	823495
SR10A(N) ^{[1][4]}	Sensitive receivers (Ma Wan FCZ)1	823644	823484
SR10B(N) ^[1]	Sensitive receivers (Ma Wan FCZ)2	823683	823187
SR10B(N2) ^{[1][4]}	Sensitive receivers (Ma Wan FCZ)2	823689	823159
CS(Mf)3 ^[3]	Control Station	809989	821117
CS(Mf)3(N)	Control Station	808814	822355
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA ^[2]	Control Station	818103	823064

Note:

- (1) Additional monitoring station for Ma Wan FCZ.
- (2) Additional control monitoring station for Ma Wan FCZ
- (3) Alternative WQM Stations with effect from 15 May 2017.
- (4) Alternative WQM Stations with effect from 22 December 2017

Remarks:

The ET of this Contract should conduct impact water quality monitoring at the WQMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project. The ET of the Contract shall communicate and share the monitoring data to the ET(s) of other works contracts if the water quality monitoring station(s) is/are as part of EM&A programme.

2.1.4 The dolphin monitoring works for the Contract are covered by Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019. **Figure 3** shown the layout map for the vessel-based transect lines.

2.2 Monitoring Requirements

2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract No. HY/2011/03, Contract No. HY/2010/02, Contract No. HY/2013/01 and Contract No. HY/2013/04.

2.3 Action and Limit Levels

2.3.1 The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.3** and **Table 2.4** respectively. The Action and Limit Levels of AMS7B are as same as the original levels of AMS7.

Table 2.3 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	360	500
AMS7A – Chu Kong Air-Sea Union Transportation Co. Ltd.	370	500
AMS7 – Hong Kong SkyCity Marriott Hotel	370	500
AMS7B – 3RS Site Offices	370	500

Table 2.4 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	173	260
AMS7A – Chu Kong Air-Sea Union Transportation Co. Ltd.	183	260
AMS7 – Hong Kong SkyCity Marriott Hotel	183	260
AMS7B – 3RS Site Offices	183	260

2.3.2 If exceedance(s) at these station(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 relevant EM&A reports for the Contract.

2.3.3 The Action and Limit Levels for construction noise are provided in **Table 2.5**

Table 2.5 Action and Limit Levels for Construction Noise

Parameter	Action Level	Limit Level
07:00 – 19:00 hours on normal weekdays	When one documented complaint is received	75 dB(A)*

Notes:

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

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

2.3.4 If exceedance(s) at these station(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 relevant EM&A reports for the Contract.

2.3.5 The Action and Limit Levels for Water Quality are provided in **Table 2.6**

Table 2.6 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (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 (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
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 turbidity at the same tide of the same day*

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



- Notes:
- "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
 - For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
 - For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
 - 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.
 - The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

2.3.6 If exceedance(s) at these station(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 relevant EM&A reports for the Contract.

2.3.7 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.7 & Table 2.8**

Table 2.7 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)]	

For North Lantau Social Cluster, action level will be trigger if either NEL or NWL fall below the criteria; limit level will be triggered if both NEL and NWL fall below the criteria.

Table 2.8 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)]	

The ET of this Contract should conduct impact dolphin monitoring as part of EM&A programme according to latest notification from ENPO when the monitoring transect(s) is/are no longer covered by another ET of the HZMB project.

2.3.8 If exceedance(s) at these 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 relevant EM&A reports for the Contract.

2.4 Event Action Plans

2.4.1 The event and action plan is provided in **Appendix D**.

3 ENVIRONMENTAL MONITORING AND AUDIT

3.1 Air Quality Monitoring Results

3.1.1 Monitoring Results of 1-hr TSP level and 24-hr TSP level at AMS6, AMS7A, AMS7 and AMS7B shall be referred to the Contract Nos. HY/2011/03, HY/2010/02, HY/2013/01 and HY/2013/04.

3.1.2 Summary of Action and Limit Level exceedance of air quality monitoring during the construction period are tabulated in **Table 3.1**



Table 3.1 Summary of the Air Quality Action/Limit Level Exceedances

Parameter	Number of Exceedances	
	Action Level	Limit Level
1-hr TSP	0	0
24-hr TSP	0	0

3.2 Noise Monitoring Results

3.2.1 Monitoring Results of noise monitoring at station NMS3B shall be referred to the Contract No. HY/2010/02 from 24 November 2014 to 31 August 2017 and Contract No. HY/2013/01 from 01 September 2017 to 19 August 2018.

3.2.2 Monitoring Results of noise monitoring at station NMS3C shall be referred to the Contract No. HY/2013/01 from 20 August 2018 to 30 September 2019 and Contract No. HY/2013/041 from 01 October 2018 to 31 January 2019.

3.2.3 Summary of Action and Limit Level exceedance of noise monitoring during the construction period are tabulated in **Table 3.2**

Table 3.2 Summary of the Noise Action/Limit Level Exceedances

Parameter	Number of Exceedances	
	Action Level	Limit Level
Leq (30min)	0	0

3.3 Water Quality Monitoring Result

3.3.1 The monitoring results for the monitoring stations showed in **Table 2.2** were reported in the monthly EM&A Reports prepared by Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019.

3.3.2 Summary of Action and Limit Level exceedance of water quality monitoring during the construction period are tabulated in **Table 3.3**

Table 3.3 Summary of the Water Quality Action/Limit Level Exceedances

Sampling Date	No. of Exceedances					
	DO		Turbidity		SS	
	Action	Limit	Action	Limit	Action	Limit
2015	0	0	0	0	1	0
2016	0	0	0	1	20	1
2017	144	34	7	1	53	6
2018	305	71	6	0	38	1
2019	0	0	0	0	0	0
Total:	449	105	13	2	112	8

3.3.2. Since the removal of temporary loading and unloading point by Contract No. HY/2013/02, which involved marine work, was completed on 10 September 2017 and the area was handed back to Reclamation Contractor with Contract No. HY/2010/02 on 11 September 2017 for subsequent seawall construction as confirmed by RSS, there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station under Contract No. HY/2013/02 from October 2017 to January 2019. Hence, specific investigation shall be referred to other ET's report(s) under the HZMB Projects in which the respective contract(s) with

remaining marine works on-going for the exceedances recorded in water quality monitoring during the construction period.

3.4 Dolphin monitoring Result

3.4.1 Summary of dolphin monitoring results at all transects were prepared by Contract Nos. HY/2010/02, HY/2013/01 and HY/2013/04. The monitoring results and Action or Limit Level Non-compliance were reported in the quarterly EM&A Reports by the ET of Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019.

3.5 Implementation of Environmental Measures

3.5.3 The environmental mitigation measures that recommended in the Environmental Monitoring and Audit Manual covered the issues of dust, noise, water quality, dolphin, waste management and landscaping and visual.

3.5.4 The implementation status of Regular Marine Travel Route Plan (RMTRP) was checked by ET. Training material of Regular Marine Travel Route Plan was prepared and given to relevant staff. Those records were kept properly. Since the marine delivery of precast segments was commenced and the RMTRP training was provided for the Captain on 21 July 2016, the Captain was reminded to use regular travel routes in order to minimize the chance of vessel collision and the routes would not go through the dolphin hotspot in Brothers Islands.

3.5.5. The tool box training of dolphin was carried out in December 2015. According to the action plan and communication flow chart of dolphin instruction, if any dolphin intruded BCF perimeter silt curtain, ETL should be informed. There was no notification received on any dolphin intrusion during the construction period.

3.5.6. The Contractor had been implementing the required environmental mitigation measures according to the Environmental Monitoring and Audit Manual. Environmental mitigation measures implemented during the construction period are summarized in **Appendix E**.

3.6 Advice on the Solid and Liquid Waste Management Status

3.6.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting. The quantities of waste for disposal in this reporting period are summarized in **Table 3.4** and **Table 3.5** and yearly summary waste flow table is shown in **Appendix F**.

Table 3.4 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity					
	2014	2015	2016	2017	2018	2019
Hard Rock and Large Broken Concrete (Inert) (m ³)	0	0	0	0	0	0
Reused in this Contract (Inert) (m ³)	0	0	0	0	0	0
Reused in other Projects (Inert) (m ³)	0	0	0	0	18737	0
Disposed as Public Fill (Inert) (m ³)	0	39.0	394.0	29099.3	6492	111
Imported Fill (Inert) (m ³)	0	182.5	36788.0	84895.2	59439	0

Table 3.5 Summary of Quantities of C&D Materials

Type of Waste	Quantity					
	2014	2015	2016	2017	2018	2019
Recycled Metal (kg)	0	5	105636.0	2168550	0	0
Recycled Paper / Cardboard Packing (kg)	492	289.5	838.5	1215.0	2480	0
Recycled Plastic (kg)	0	511.4	17933.2	13298.5	2046	0
Chemical Wastes (kg)	0	0	0	0	0	0
General Refuses (m ³)	0	162.5	643.5	6019.0	3538	78

3.7 Disposal of Marine Sediment

- 3.7.1** For the marine sediment disposal, 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 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 Contract No. HY/2013/02, HY/2013/03 and HY/2013/04.
- 3.7.2** For the dumping arrangement, the barge for disposal of marine sediment will moor at the temporary loading and unloading at the east shore of the HKBCF Island, which has been being used by contractor Contract No. HY/2010/02 for reclamation activities. In terms of safety consideration and to avoid mixing of sediment between contracts, each dumping date will be allocated to one Contract. The quantity of marine sediment disposed on each date is from one Contract.
- 3.7.3** During dumping, HY/2013/02 is responsible for transporting the marine sediment from his site area to the barge by Land transportation. 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.
- 3.7.4** The Summary of Marine sediment disposed to dumping site was provided in **Appendix F** and **Table 3.6**.

Table 3.6 Summary of marine sediment disposed to dumping site via Contract No. HY/2013/03

Year	Quantity disposed (m ³)
2014	0
2015	0
2016	18520
2017	2144

2018	0
2019	0
Total =	20664

3.8 Site Inspection

3.8.1 According to the Environmental Monitoring and Audit Manual, regular environmental site inspections was carried out by ET joined with RE and the Contractor to confirm the environmental performance.

3.8.2 During the construction period, 208 events of joint site inspections were undertaken by the RE, EO and ET to evaluate the site environmental performance. No adverse environmental impacts were registered, indicating that mitigation measures implemented were effective and sufficient for the construction activities undertaken. Minor deficiencies found during site inspections and audits were rectified by specified deadlines. The observations of each site inspection can be found in their relevant EM&A monthly reports.

3.8.3 As confirmed by RSS on 16 January 2018, the landscape construction works including planting (Shrubs & Grass), installation of irrigation pipe and soiling (Sub & Top soil) for Contract No. HY/2013/02 were commended on 04 November 2017. The landscape inspections were conducted on a bi-weekly basis during the weekly environmental site inspection.

3.8.4 During the site inspections, there was no conflict occurred regarding to the Landscape & Visual mitigation measures stated in Contract Specific EM&A Manual. The work site was found to be confined within site boundaries and grass-hydroseed was provided for bare soil surface and stock pile areas. Landscape & Visual mitigate measures during construction would be checked to ensure compliance with the intended aims of the measures.

4 SUMMARY OF EXCEEDANCE, COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

4.1.1 In the construction phase, several exceedances were recorded in air quality, noise and water quality monitoring. The summary of breaches of all environmental performance is shown below:

Table 4.1 Summary of the Action/Limit Level Exceedances

Parameter		Number of Exceedances	
		Action Level	Limit Level
Air Quality	1-hr TSP	0	0
	24-hr TSP	0	0
Noise	Leq (30min)	0	0
Water Quality	Dissolved Oxygen	449	105
	Turbidity	13	2
	Suspended Solids	111	9
Dolphin		0	13

4.1.2 Impact dolphin monitoring results at all transects were reported in the EM&A Report prepared by Contract Nos. HY/2010/02, HY/2013/01 and HY/2013/04. The monitoring results and Action or Limit Level Non-compliance were reported in the quarterly EM&A Reports by the ET of Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contract No. HY/2013/01 from 01

September 2017 to 30 September 2018 and Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

4.2.1 There were 19 complaints received by this Contract during the construction period.

4.2.2 The statistical summary table of environmental complaint is presented in **Table 4.2**.

Table 4.2 Statistical Summary of Environmental Complaints Received by This Contract

Reporting Period	Environmental Complaint	
	Frequency	Cumulative
2014	0	0
2015	4	4
2016	5	9
2017	7	16
2018	3	19
2019	0	0

4.2.3 The detailed summary and investigations of the complaints can be found in their respective monthly EM&A reports.

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

5 CONCLUSION

5.1 Conclusion

5.1.1 Construction works of Contract No. HY/2013/02 were terminated on 28 March 2018, and the EM&A programme for the construction phase were terminated since 01 February 2019.

5.1.2 The monitoring results demonstrated that the monitoring environmental parameters generally fluctuated consistently below the corresponding Action and Limit Levels. This implies that the implemented EM&A program for air quality, construction noise, and water quality was effective in generating data of necessary statistical power to reflect the ambient environmental trends of the area.

Table 5.1 Summary of the Action/Limit Level Exceedances and Source of Exceedances

Parameter		Number of Exceedances		Source of Exceedances
		Action Level	Limit Level	
Air Quality	1-hr TSP	0	0	Not related to the Works
	24-hr TSP	0	0	
Noise	Leq (30min)	0	0	
Water Quality	Dissolved Oxygen	449	105	
	Turbidity	13	2	
	Suspended Solids	111	9	
Dolphin		0	13	

5.1.3 As shown in **Table 5.1**, no works-related exceedances were registered during the construction period of this Contract, indicating no adverse environmental impacts of air quality, construction noise, and



water quality were generated from the construction activities under the Project. This also implies that the implemented environmental mitigation measures were effective to alleviate the adverse environmental impacts generated from the construction works under the Project.

- 5.1.4 During the construction period, there were no notifications of summons and successful prosecutions. However, there were 19 complaints received during the construction period. Investigations concluded that the complaints were not due to works under the Project, and no mitigation measures were advised.
- 5.1.5 The liquid and solid waste generated from the construction period under this Contract was satisfactorily managed in accordance with the liquid and solid waste regulations or guidelines as well as the Contractor's Environmental Management Plan and the associated Waste Management Plan approved by the Engineer prior to implementation.
- 5.1.6 The environmental protection performance of the Project was in general satisfactory.

- END OF REPORT -



FIGURES

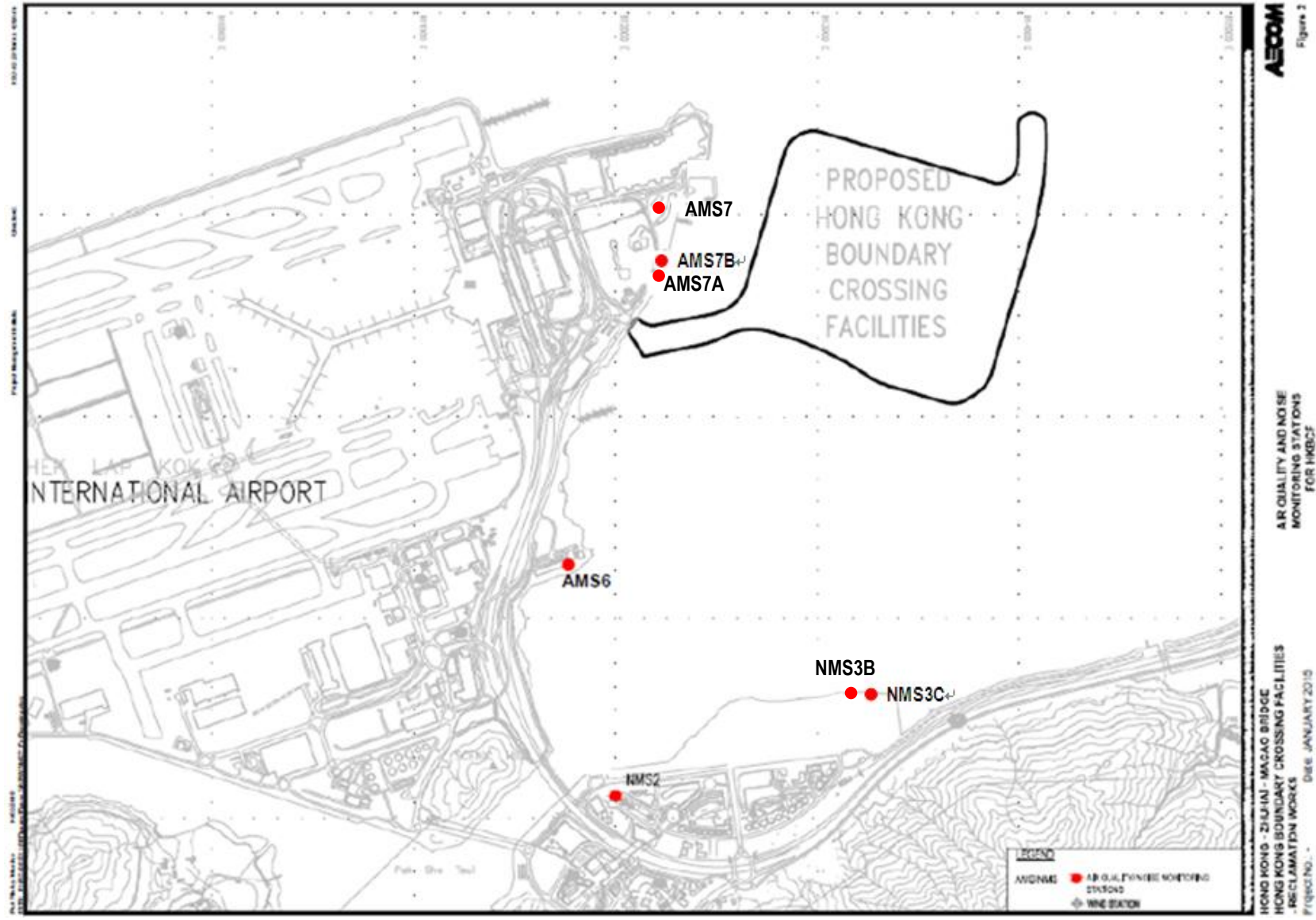


Figure 1 Air Quality and Noise Monitoring Stations for HKBCF

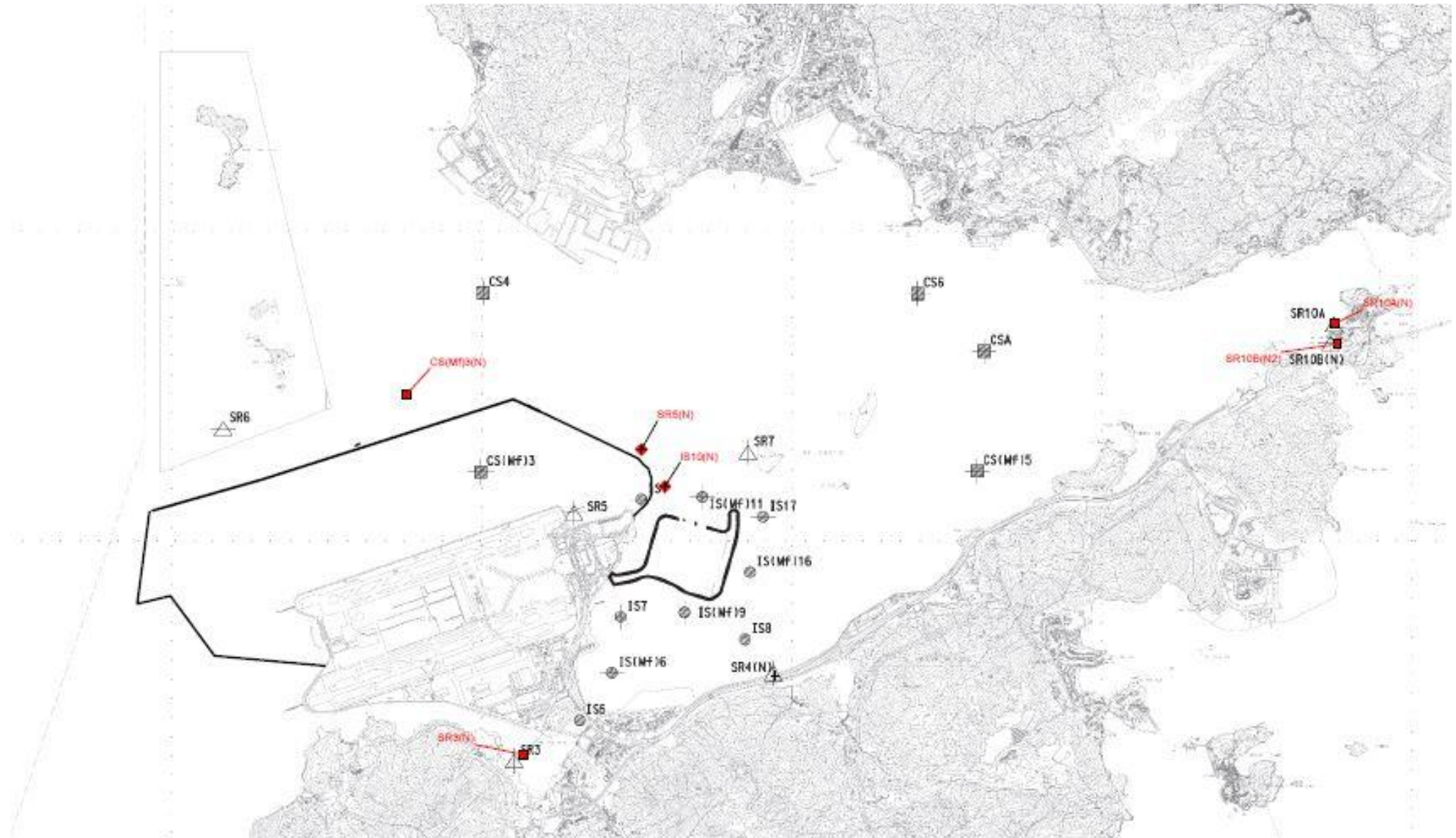
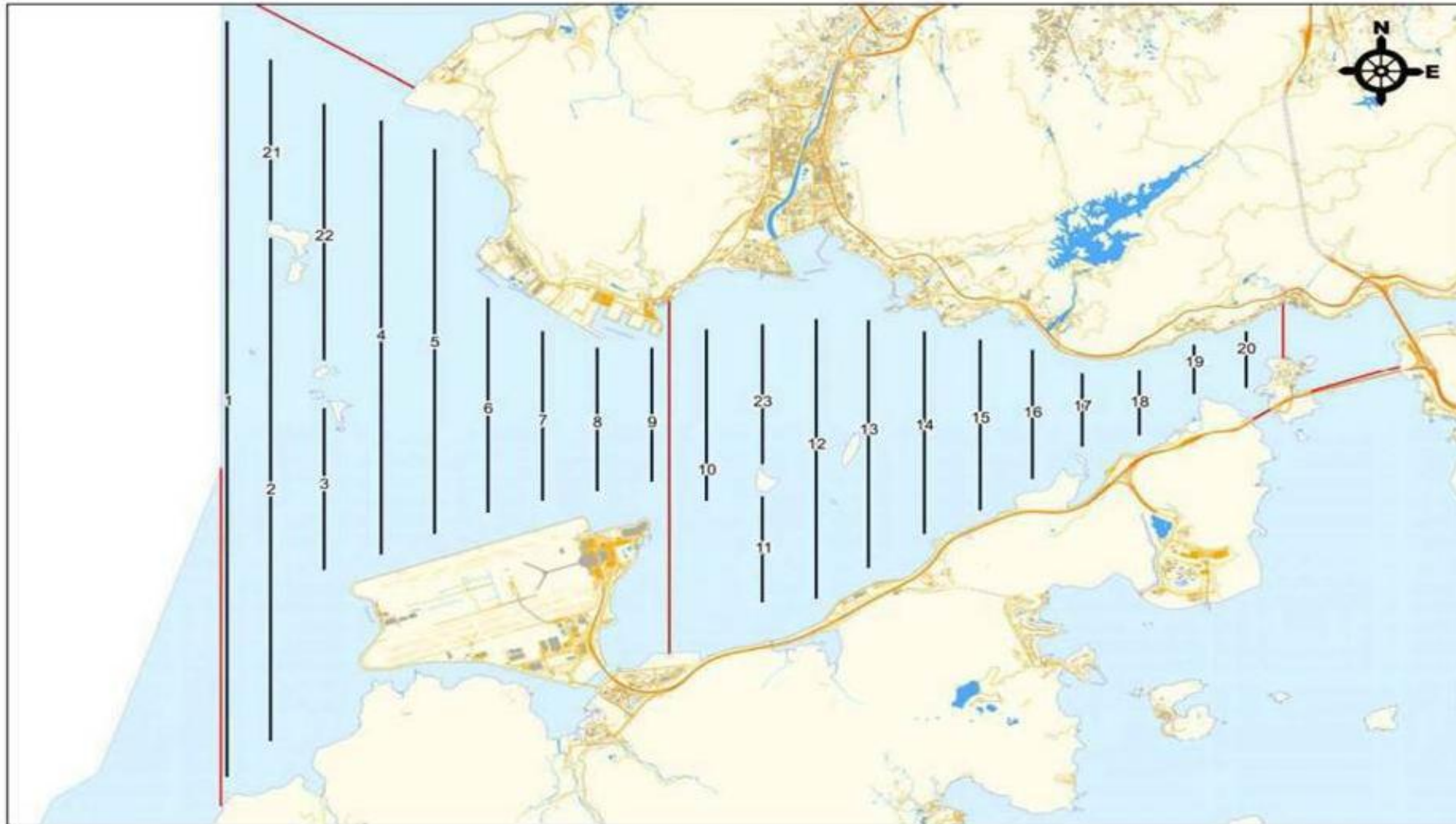


Figure 2 Water Quality Monitoring Stations (construction phases)



Remarks:

*Transect 10 is now 3.6km in length due to the HKBCF construction site.

^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. The total transect length for both NEL and NWL combined is 108km.

Figure 3.1

Dolphin Monitoring Transect Line and Layout Map on or before 15 May 2017

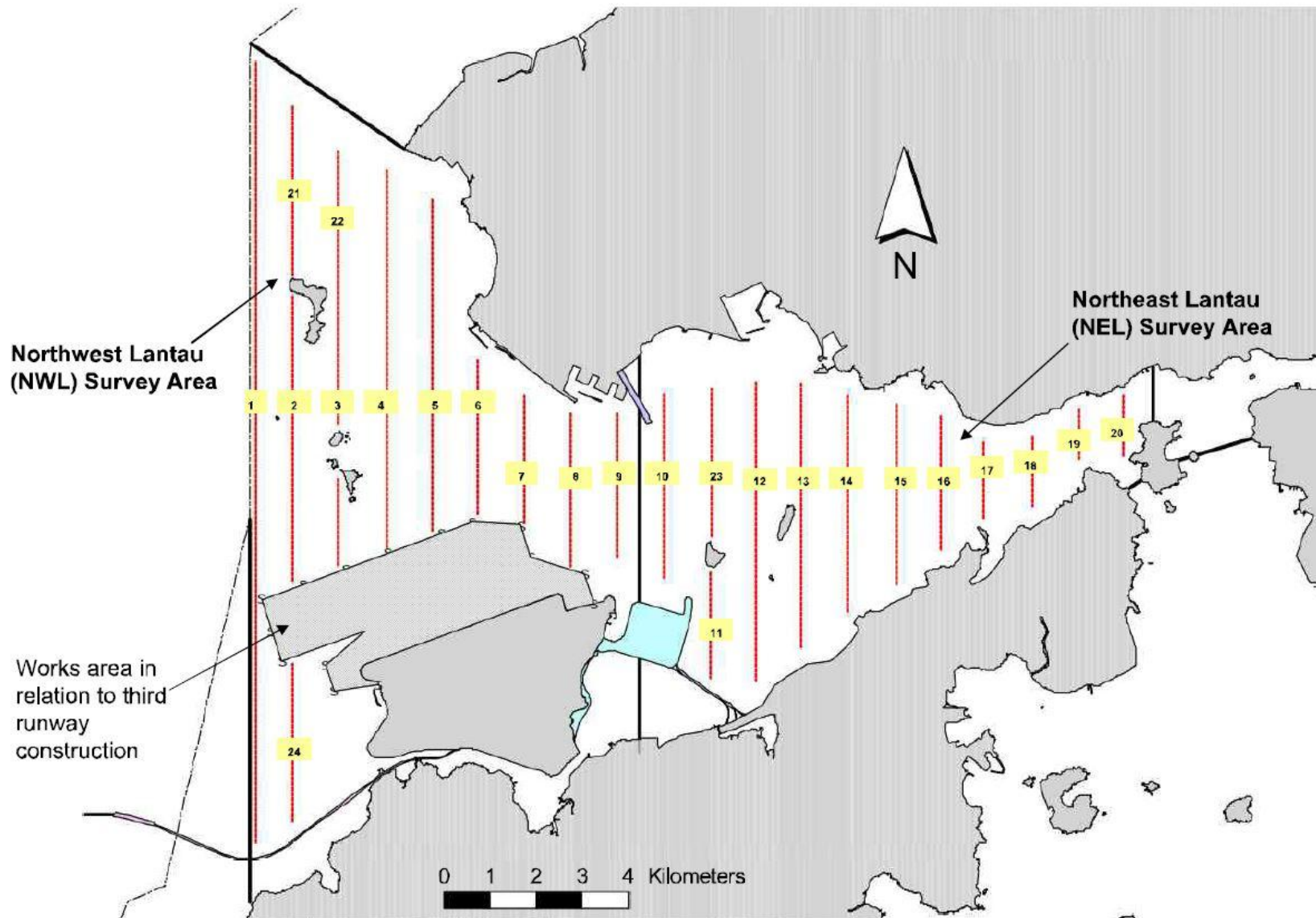
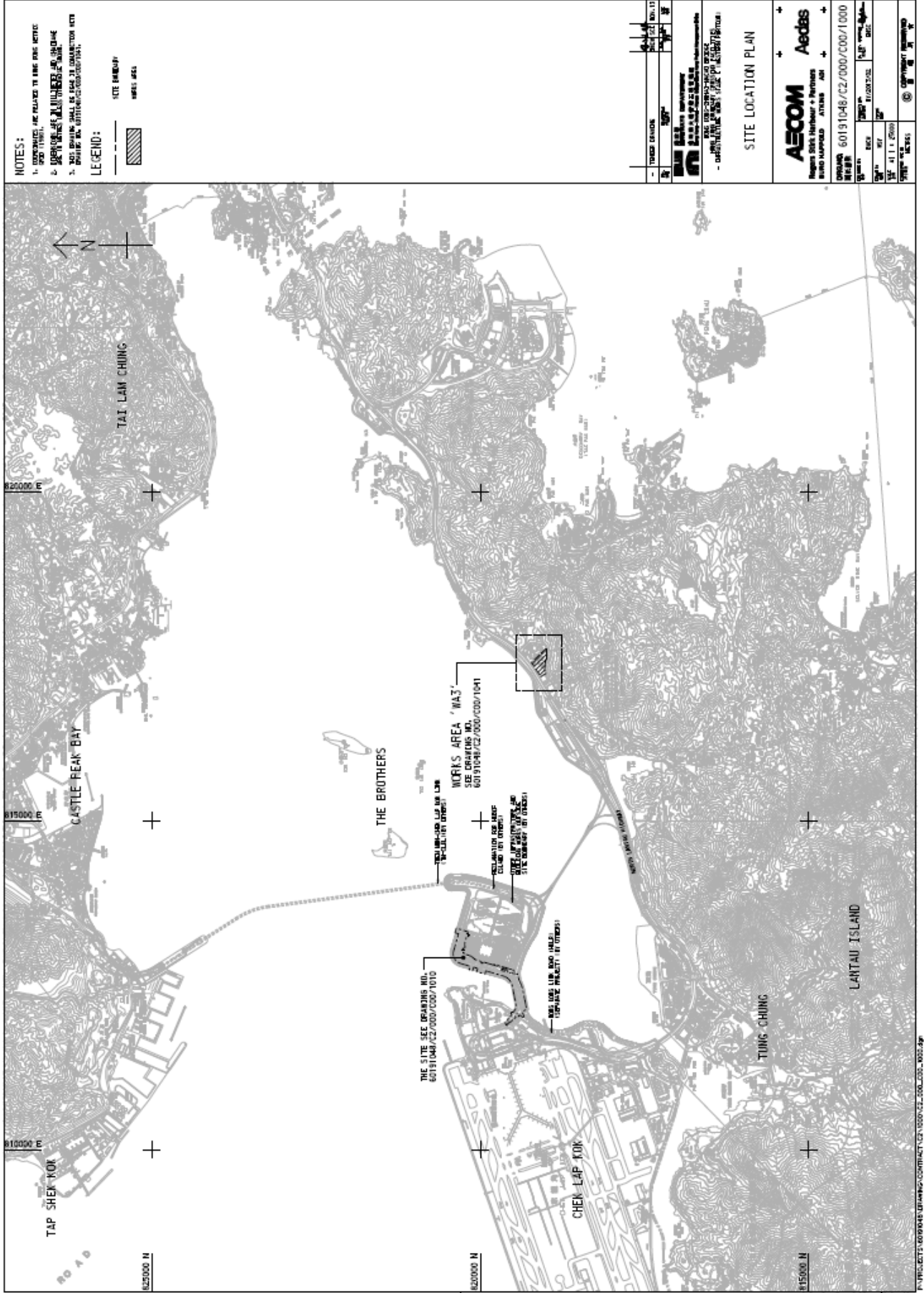


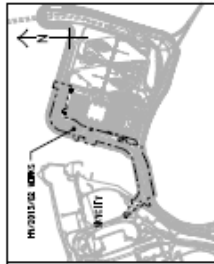
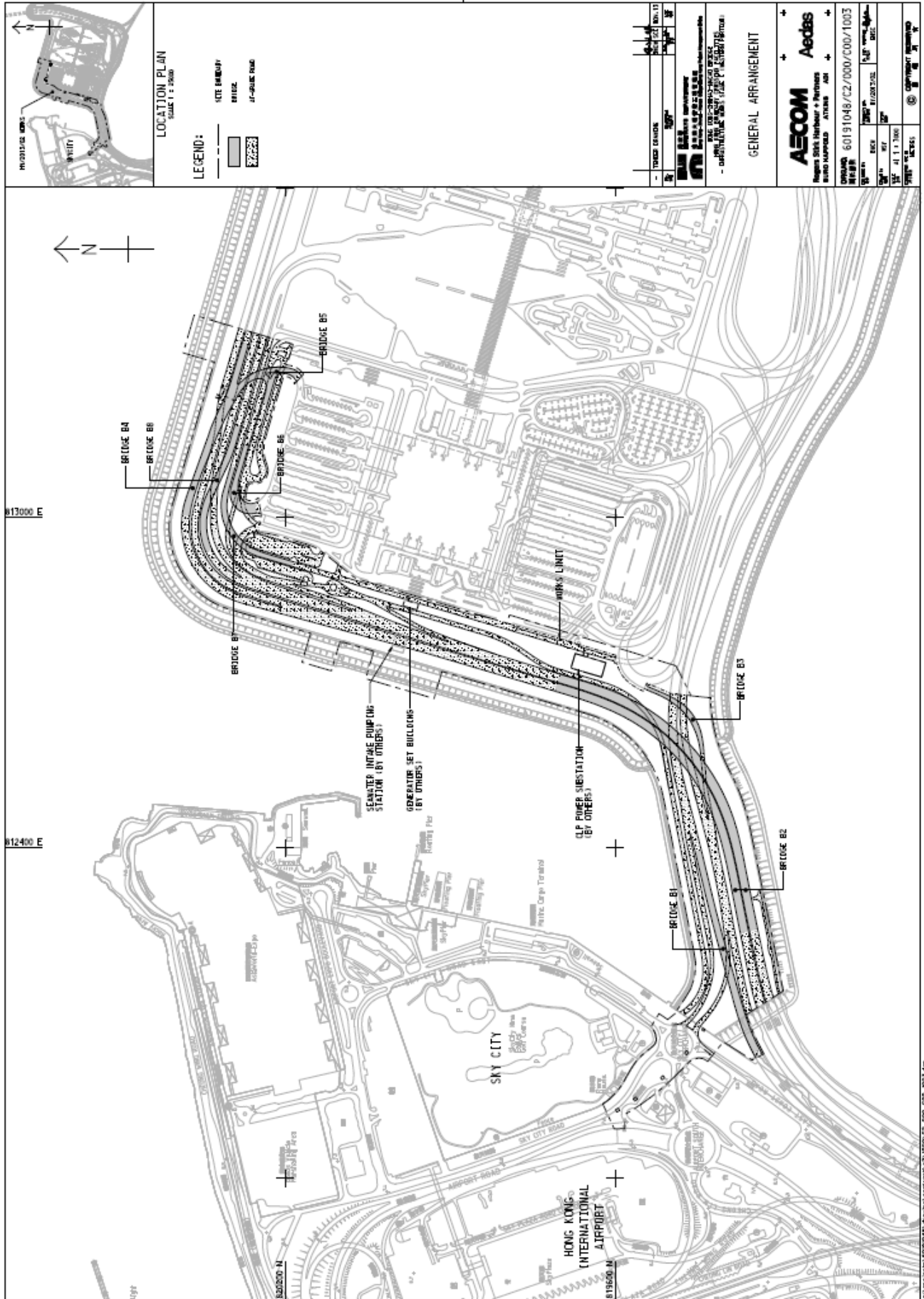
Figure 3.2 Dolphin Monitoring Transect Line and Layout Map after 15 May 2017



Appendix A

Location of Works Areas





LEGEND:

- UTE BOUNDARY
- BRIDGE
- AT-GRASS ROAD

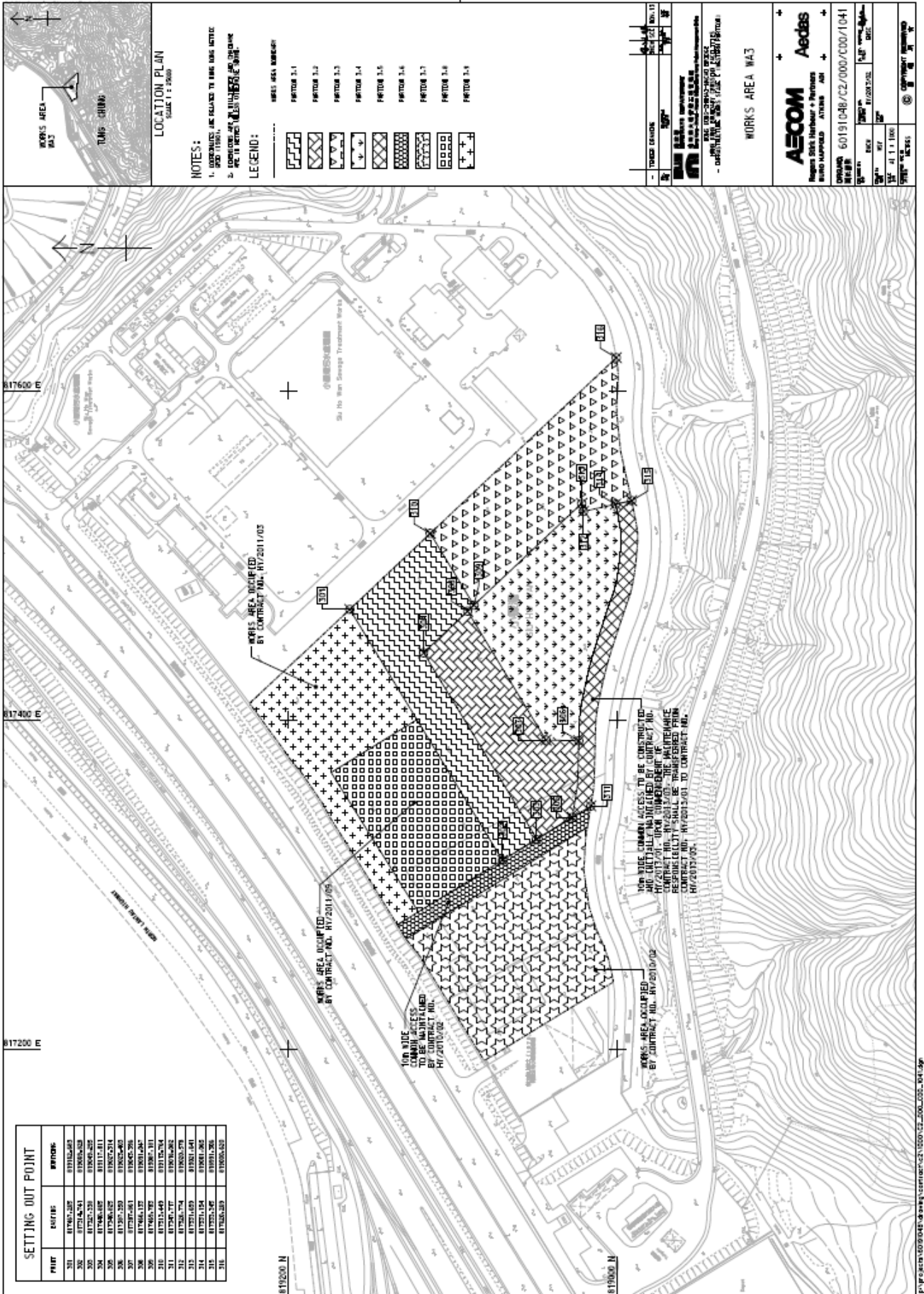
NO.	REVISION	DATE	BY	CHECKED	REV. NO.
1	ISSUED FOR TENDER	10/07/17	YIP	YIP	1

PROJECT INFORMATION

PROJECT NAME: SKY CITY
CLIENT: SKY CITY
DESIGNER: ETS-TESTCONSULT LIMITED
SCALE: 1:2,000
DATE: 10/07/17

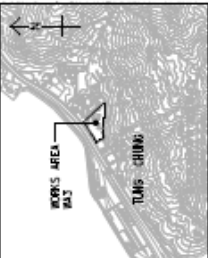
GENERAL ARRANGEMENT

AECOM	Aecobs
Project Skills Harbour + Partners	ATKINS
60191048/C2/000/C000/1003	
DATE: 10/07/17	SCALE: 1:2,000
BY: YIP	CHECKED: YIP
DATE: 10/07/17	DATE: 10/07/17



SETTING OUT POINT

POINT	EASTING	NORTHING
301	81760.282	81935.683
302	81761.474	81936.628
303	81762.239	81936.829
304	81766.482	81937.811
305	81766.622	81937.214
306	81767.259	81937.485
307	81767.681	81937.295
308	81768.122	81937.482
309	81768.448	81937.711
310	81768.448	81937.526
311	81767.272	81936.282
312	81766.774	81935.578
313	81767.629	81937.441
314	81767.124	81937.262
315	81767.547	81937.262
316	81766.289	81935.229



LOCATION PLAN
SCALE 1 : 25000

NOTES:

1. DIMENSIONS ARE RELATED TO THE WORK NOTICE NO. 11/2017.
2. ALL DIMENSIONS ARE TO THE CENTRE LINE OF THE WORKS AREA W43.

LEGEND:

WORKS AREA W43 HATCHING:

- FACTORY 3.1
- FACTORY 3.2
- FACTORY 3.3
- FACTORY 3.4
- FACTORY 3.5
- FACTORY 3.6
- FACTORY 3.7
- FACTORY 3.8
- FACTORY 3.9

WORKS AREA W43

AECOM Aedas
Regina Sze Harbour + Precinct
MARIO MARRAS ATINIA AM

60191048/02/000/000/1041

DATE OF PRELIMINARY WORKS NOTICE: 11/2017
DATE OF WORKS NOTICE: 11/2017

SCALE: 1:25000

PROJECT NO: 60191048/02/000/000/1041

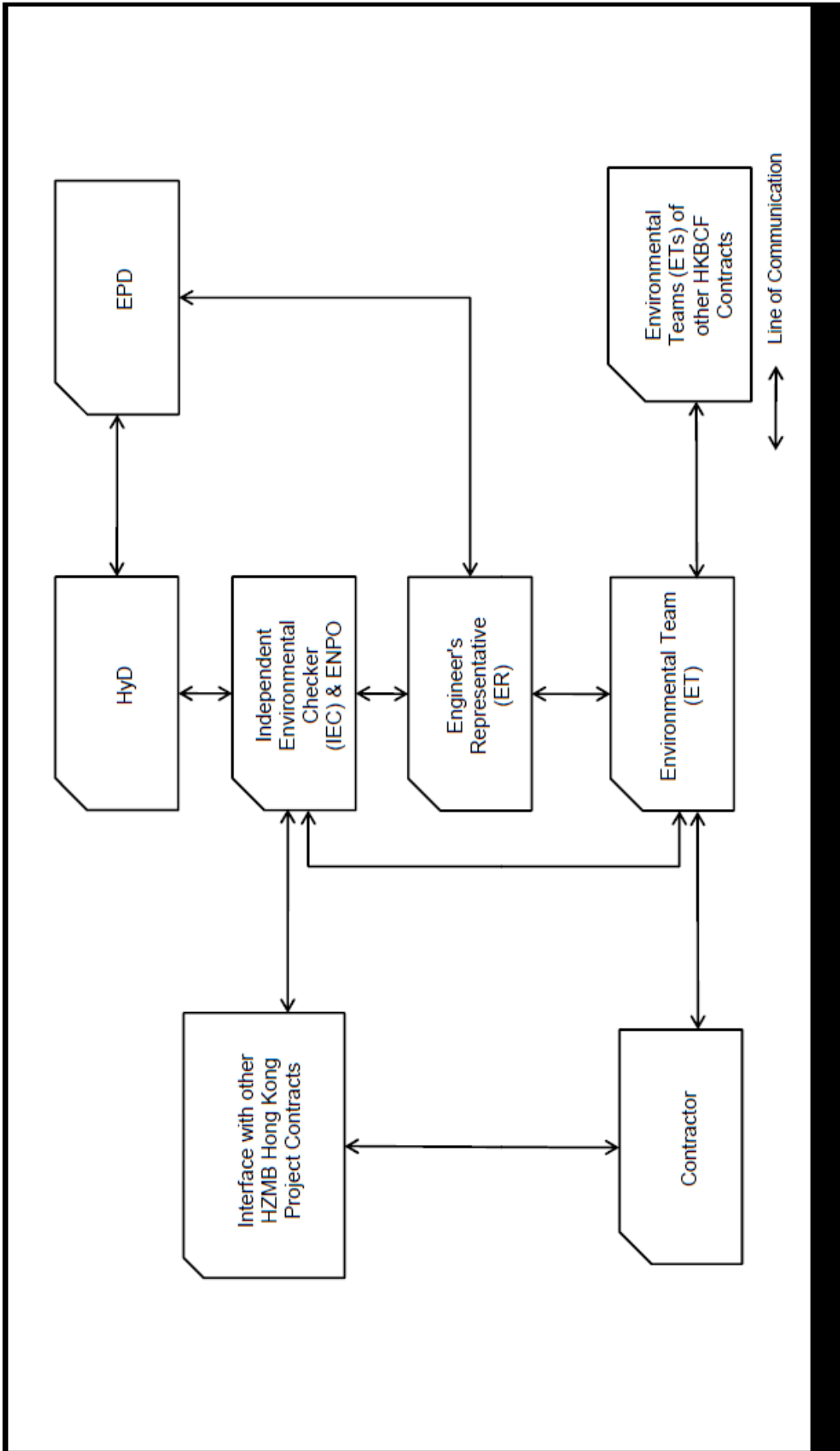
DATE OF PRELIMINARY WORKS NOTICE: 11/2017
DATE OF WORKS NOTICE: 11/2017

SCALE: 1:25000

PROJECT NO: 60191048/02/000/000/1041

Appendix B

Project Organization for Environmental Works





Contact Information of Key Personnel

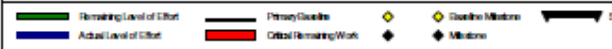
Party	Position	Name of Key Staff	Tel. No.	Fax No.
<i>Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)</i>	<i>Resident Engineer</i>	<i>Mr. Winston Wong</i>	<i>6330 8293</i>	<i>3152 5116</i>
<i>Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)</i>	<i>Environmental Project Office Leader</i>	<i>Mr. Y. H. Hui</i>	<i>3465 2888</i>	<i>3465 2899</i>
	<i>Independent Environmental Checker</i>	<i>Mr. Raymond Dai[#]</i>	<i>3465 2888</i>	<i>3465 2899</i>
	<i>Environmental Site Supervisor / Independent Environmental Checker</i>	<i>Mr. Ray Yan[#]</i>	<i>5181 8401</i>	<i>3465 2899</i>
	<i>Environmental Site Supervisor</i>	<i>Mr. Harris Wong[*]</i>	<i>5181 8165</i>	<i>3465 2899</i>
<i>Contractor (China Harbour Engineering Co., Ltd.)</i>	<i>Project Manager</i>	<i>Mr. Kenny Yu</i>	<i>9485 2870</i>	<i>3915 0300</i>
	<i>Site Agent</i>	<i>Mr. Wilkie Wu</i>	<i>9017 0356</i>	<i>3915 0300</i>
	<i>Environmental Officer</i>	<i>Mr. Endy Tse</i>	<i>5977 0594</i>	<i>3915 0300</i>
<i>Environmental Team (ETS-Testconsult Ltd.)</i>	<i>Environmental Team Leader</i>	<i>Mr. C. L. Lau</i>	<i>2946 7791</i>	<i>2695 3944</i>

Remark(s): (#) The duties of Mr. Raymond Dai was taken over by Mr. Ray Yan from 01 January 2019
(*Mr. Harris Wong was appointed to ENPO's Environmental Site Supervisor (ESS) for the project from 01 January 2019

Appendix C

Construction Programme

HKBCF Infrastructure (Western Portion)				Executive Summary Programme																																																	
Activity ID	Activity Name	Original Duration	% Comp	Start	Finish	2015				2016				2017				2018				2019																															
						A	S	O	N	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M																	
HKBCF Infrastructure (Western Portion) - Monthly Progress 56																																																					
Executive Summary Programme																																																					
Sum010	Site setup & major submission	189	100%	25/Jul/14A	16/Mar/15A																																																
Sum020	Pre-drill SI	161	100%	10/Nov/14A	15/Jul/15A																																																
Sum030	Bridge 3 Structure	239	100%	07/Jan/16A	17/Jun/17A																																																
Sum040	Bridge 2N Structure	360	100%	09/Sep/15A	07/Jul/17A																																																
Sum050	Bridge 2S Structure	360	100%	17/Aug/15A	07/Jul/17A																																																
Sum060	Bridge 1 Structure	227	100%	02/Feb/15A	25/Mar/17A																																																
Sum070	Bridge 7 Structure	207	100%	24/Sep/16A	23/Jun/17A																																																
Sum080	Bridge 4 Structure	209	100%	27/Jun/16A	12/Jun/17A																																																
Sum090	Bridge 8 Structure	207	100%	20/Oct/16A	20/Jul/17A																																																
Sum100	Bridge 6 Structure	232	100%	25/May/16A	12/May/17A																																																
Sum110	Bridge 5 Structure	262	100%	26/Apr/16A	11/Aug/17A																																																
Sum120	Bridge 1, 2 & 3 Retaining Structure	125	100%	08/Mar/17A	25/Aug/17A																																																
Sum130	Bridge 4, 7, 8 & 6 Retaining Structure	103	100%	23/May/17A	03/Oct/17A																																																
Sum140	Bridge 5 Retaining Structure	173	100%	24/Oct/16A	03/Oct/17A																																																
Sum150	Storm Drain below +1.3m	90	100%	24/Sep/16A	12/Jan/17A																																																
Sum160	Storm Drain above +1.3m	343	100%	08/Jun/16A	04/Dec/17A																																																
Sum170	Sewer Drain - CLP Sub-station & Intake Pumping Station	38	100%	13/Oct/16A	04/Sep/17A																																																
Sum180	Sewer Rising Main	160	100%	20/Sep/16A	23/Feb/17A																																																
Sum185	Branch, Collector drain, Gully & U-channel	194	100%	19/Sep/17A	17/Jan/18A																																																
Sum190	Fresh Watermain	464	100%	18/Mar/15A	21/Sep/17A																																																
Sum200	Flushing Watermain	201	100%	04/Jul/17A	17/Oct/17A																																																
Sum210	CLP Cable	339	100%	24/Sep/16A	13/Jul/17A																																																
Sum220	Utilities Duct	304	100%	10/Jul/17A	18/Apr/18A																																																
Sum230	TCSS Duct	376	100%	08/Oct/15A	12/Jan/17A																																																
Sum240	Bituminous Works - Bridge Area	124	100%	21/Sep/17A	21/Dec/17A																																																
Sum250	Bituminous Works - Portion D2 & D1	122	100%	19/Oct/17A	09/Dec/17A																																																
Sum260	Bituminous Works - Portion A & B	0	100%	15/Dec/17A	15/Dec/17A																																																
Sum270	Bituminous Works - Portion C2 & F	148	100%	18/Dec/17A	20/Dec/17A																																																
Sum280	Bituminous Works - Portion C1 & F	112	100%	29/Nov/17A	16/Dec/17A																																																
Sum290	Sign Gantry	308	100%	23/Nov/16A	07/Dec/17A																																																
Sum300	Lighting & Power	543	100%	24/Sep/16A	27/Apr/18A																																																
Sum310	Road Furniture	237	100%	15/Oct/17A	20/Mar/18A																																																
Sum320	Irrigation System	586	100%	24/Sep/16A	20/May/18A																																																
Sum330	Landscape Works	398	100%	19/Mar/18A	27/Apr/18A																																																
Sum340	Establishment Work for Landscape	398	98.49%	02/May/18A	28/Mar/19																																																



Date	Revision	Checked	Approved
22/Mar/19	Monthly Report 56		

Appendix D

Event and Action Plan

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	<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 Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose 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 and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in situ measurement on next day of exceedance 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; 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of noncompliance in writing; 2. Notify Contractor 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of noncompliance in writing; 2. Notify Contractor 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice; 3. 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 noncompliance 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 noncompliance 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.
Limit 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, 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 noncompliance 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.

<p>Limit level being exceeded by two or more consecutive sampling days</p>	<ol style="list-style-type: none"> 1. Repeat in-situ 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 noncompliance 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.
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Event / Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	ER / SOR	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.
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.



Appendix E

Implementation Schedule for Environmental Mitigation Measures (EMIS)

Environmental Mitigation Implementation Schedule – Hong Kong Boundary Crossing Facilities (Superstructures and Infrastructures)

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
Air Quality								
S5.5.6.1 of HKBCFEIA	A1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are $500\mu\text{g}\text{m}^{-3}$ and $260\mu\text{g}\text{m}^{-3}$ respectively)	V
S5.5.6.2 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A2	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 extended beyond the pedestrian barriers, fencing or traffic cones. - 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; - When there are open excavation and reinstatement works, hoarding of not 	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are $500\mu\text{g}\text{m}^{-3}$ and $260\mu\text{g}\text{m}^{-3}$ respectively)	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		<p>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;</p> <ul style="list-style-type: none"> - 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 						

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		area sheltered on the top and the 3 sides; - 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.						
S5.5.6.3 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A3	The Contractor should undertake proper watering on all exposed spoil and associated work areas (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	V
S5.5.6.4 of HKBCFEIA	A4	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 relevant latest Practice notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air pollution Control (Construction Dust) Regulation	V

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S5.5.6.4 of HKBCFEIA and S4.11 of TKCLKLEIA	A5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor of Contract No. HY/2011/03 from 24 November 2014 to 31 January 2019, Contractor of Contract No. HY/2010/02 from 24 November 2014 to 31 August 2017, Contractor of Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contractor of Contract No. HY/2013/04 from 01 October 2019 to 31 January 2019	Selected representative dust monitoring station	Construction stage	<ul style="list-style-type: none"> - Air Pollution Control (Construction Dust) Regulation - To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are $500\mu\text{gm}^{-3}$ and $260\mu\text{gm}^{-3}$ respectively) 	V

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S5.5.7.1 of HKBCFEIA	A6	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:</p> <p>Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;</p> <p>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;</p> <p>Vents for all silos and cement/ pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;</p> <p>The materials which may generate airborne dusty emissions should be wetted by water spray system;</p> <p>All receiving hoppers should be enclosed on three sides up to 3m above unloading point;</p> <p>All conveyor transfer points should be totally enclosed;</p> <p>All access and route roads within the premises should be paved and wetted; and</p> <p>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.</p>	<p>Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.</p>	Contractor	Selected representative dust monitoring station	Construction stage	<p>Air Pollution Control (Construction Dust) Regulation</p> <p>- To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are $500\mu\text{gm}^{-3}$ and $260\mu\text{gm}^{-3}$ respectively)</p>	N/A

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S5.5.2.7 of HKBCFEIA	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <p>All road surface within the barging facilities will be paved;</p> <p>Dust enclosures will be provided for the loading ramp;</p> <p>Vehicles will be required to pass through designated wheels wash facilities; and</p> <p>Continuous water spray at the loading points.</p>	Control construction dust	Contractor	All construction sites	Construction stage	Air Pollution Control (Construction Dust) Regulation	N/A (Construction in process)
Construction Noise (Air borne)								
S6.4.10 of HKBCFEIA	N1	<p>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 	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	Noise Control Ordinance	V

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		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 officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						
S6.4.11 of HKBCFEIA	N2	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.	Reduce the construction noise levels at low-level zone of NSRs through partial screening	Contractor	All construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S6.4.12 of HKBCFEIA	N3	Install movable noise barriers (typically density 14kg/m ²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises - The movable barrier should achieve at least 5 dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A
S6.4.13 of HKBCFEIA	N4	Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed In Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V

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S6.4.14 of HKBCFEIA	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> - Noise Control Ordinance - Annex 5, TM_EIA 	V
S5.1 of TMCLKLEIA	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at selected representative locations	Contractor of Contract No HY/2010/02 from 24 November 2014 to 31 August 2017, Contractor of Contract No HY/2013/01 from 01 September 2017 to 30 September 2018 and Contractor of Contract No. HY/2013/04 from 20 August 2018 to 31 January 2019	Selected representative noise monitoring station	Construction stage	<ul style="list-style-type: none"> - Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises 	V
Sediment								
	S1	All dredged marine mud, which required Type 2 Confined Marine Disposal under Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002 Management of Dredged/Excavated Sediment, from the Project shall be disposed of inside the sheet pile cellular structures within the Project boundary.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	<ul style="list-style-type: none"> - Waste Disposal Ordinance - ETWB TC 34/2002 	V

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	S2	Before re-deposition the contaminated sediment, a layer of geotextile shall be placed at the bottom of the sheet pile cellular structures to avoid direct contact of the contaminated sediment and the bottom sediment.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S3	A minimum of 2m thick sand fill or public fill shall be placed on top of the contaminated sediment to protect and cover the sediment after redeposition.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S4	The contaminated sediment shall not be disturbed after re-deposition. No piling works or deep foundation which may disturb the contaminated sediment is allowed within the cellular structures.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
Waste management (Construction Waste)								
S12.6 of TMCLKLEIA	WM1	The Contractor shall identify a coordinator for the management of waste.	Proper implementation of WMP	Contractor	Contractor All construction sites	Construction stage		V

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S12.6 of TMCLKLEIA	WM2	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Proper control of wastes disposal in accordance to relevant ordinances	Contractor	All construction sites	Construction Stage	<ul style="list-style-type: none"> - Land (Miscellaneous Provisions) Ordinance (Cap28); - Waste Disposal Ordinance (Cap 354); - Dumping at Sea Ordinance (Cap 466); - Water Pollution Control Ordinance. 	V
S12.6 of TMCLKLEIA	WM3	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	Ensure proper implementation mitigation measures stated in WMP	Contractor	All construction sites		Construction stage	V
S8.3.8 of HKBCFEIA and S12.6 of TMCLKLEIA	WM4	<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 	Good site practice to minimize and recycle the C&D material as far as practicable so as to reduce the amount for final disposal	Contractor	All construction site areas	Construction stage	<ul style="list-style-type: none"> - Land (Miscellaneous Provisions) Ordinance - Waste Disposal Ordinance - ETWB TC 19/2005 	V

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		properly documented and verified; - Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – “Environmental Management on Construction Sites” to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction; - In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation; - The surplus surcharge should be transferred to a fill bank.						
S8.3.9 - S8.3.11 of HKBCFEIA and S12.6 of TMCLKLEIA	WM5	<u>C&D Waste</u> - 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 and falsework 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	Good site practice to minimize and recycle the C&D material as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	- Land (Miscellaneous Provisions) Ordinance - Waste Disposal Ordinance - ETWB TC 19/2005	V

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		<p>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.</p>						
<p>S8.2.12 - S8.3.15 of HKBCFEIA and S12.6 of TMCLKLEIA</p>	<p>WM6</p>	<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 litres 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; 	<p>Control the chemical waste and ensure proper storage, handling and disposal.</p>	<p>Contractor</p>	<p>All construction sites</p>	<p>Construction stage</p>	<ul style="list-style-type: none"> - Waste Disposal(Chemical Waste) General Regulation - Code of Practice on the Packaging, Labelling and Storage of Chemical Waste 	<p>V</p>

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		<p>covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.</p> <ul style="list-style-type: none"> - 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. 						
S8.3.16 of HKBCFEIA and S12.6 of TMCLKLEIA	WM7	<p><u>Sewage</u></p> <p>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.</p>	Proper handling of sewage from worker to avoid odour, pest and litter impacts.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	V
S8.3.17 of HKBCFEIA and S12.6 of TMCLKLEIA	WM8	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> - The site and surroundings shall be kept tidy and litter free. 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 	Minimize production of the general refuse and avoid odour, pest and litter impacts.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	V

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		<p>collectors if they are segregated and made easily accessible. Separate labelled bins for their 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. - Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. - All waste containers shall be in a secure area on hardstanding. 						
Water Quality (Construction Phase)								
	W1	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:	To control construction water quality	Contractor of Contract No. HY/2013/01 and Contractor of Contract No. HY/2013/04	During dredging and filling	Construction stage	TM-EIAO	V

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		<ul style="list-style-type: none"> - No dredging works of marine sediment shall be carried out the Project except for the construction of box culverts and seawalls at Portion D. - Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit; - Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; - After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; - No more than 2 grab dredgers with a maximum daily dredging rate of 12,000m³ shall be employed for dredging operation at Portion D of the Project; - Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m³ for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and 						

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		<ul style="list-style-type: none"> - Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m³ for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. - Closed grabs should be used for sediment dredging to reduce sediment loss when lifting the grabs to the barges. Only grab dredgers shall be used for dredging works of the Project; - All mechanical grabs shall be designed and maintained to avoid spillage; - The moving speed of construction vessels in the dredging area should be reduced to prevent disturbance to the seabed generating sediment plumes; - Floating type silt curtains shall be installed enclosing the entire reclamation site at all time. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; - The cage-type silt-curtain with steel enclosure is proposed to be installed to enclose local pollution caused by the grab dredging. The grab dredging work should be carried out within the cage-type silt curtain; - Single layer silt curtain to be applied around the North-east airport water intake; - The silt-curtains should be maintained in good condition to ensure the 						

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		<p>sediment plume generated from dredging and filling be confined effectively within the site boundary;</p> <ul style="list-style-type: none"> - The dredging and filling works shall be scheduled to spread the works evenly over a working day; - Cellular structure shall be used for seawall construction; - A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall; - The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; - An additional layer of slit curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works. Stone blanket -> with silt curtain. 						
S9.11.1 - S9.11.1.2 of HKBCFEIA and S6.10 of TMCLKLEIA	W1	<p>- In addition, dredging operations should be undertaken in such a manner as to minimize resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging and filling contract.</p> <ol style="list-style-type: none"> 1. Trailer suction hopper dredgers shall not allow mud to overflow; 2. Use of Lean Material Overboard (LMOB) systems shall be prohibited; 3. Mechanical grabs shall be designed and maintained to avoid spillage and 	To control construction water quality	Contractor of Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contractor of Contract No. HY/2013/01 from 01 September 2017 to 30 September	During dredging and filling	Construction Stage	<ul style="list-style-type: none"> - TM-EIAO Marine Fill Committee Guidelines - DASO Permits Conditions 	V

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		<p>should seal tightly while being lifted;</p> <p>4. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;</p> <p>5. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;</p> <p>6. Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;</p> <p>7. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;</p> <p>8. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;</p> <p>9. All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;</p> <p>10. The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.</p>		<p>2018 and Contractor of Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019</p>				

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S9.11.1.3 of HKBCFEIA and S6.10 of TMCLKLEIA	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 WPCO or collected for disposal offsite. The use of soakaways shall be avoided; - storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; - silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; - temporary access roads should be surfaced with crushed stone or gravel; - rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt 	To control construction water quality	Contractor	All land-based construction sites	Construction stage	TM-EIAO	V

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

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		<ul style="list-style-type: none"> - vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; - the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; - waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; - all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and - surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 						
S9.14 of HKBCFEIA and S6.10 of TMCLKLEIA	W3	Implement a water quality monitoring programme	Control water quality	Contractor of Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contractor of Contract No. HY/2013/01	At identified monitoring location	During Construction stage	<ul style="list-style-type: none"> - TM-water - Water Pollution Control Ordinance 	V

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				from 01 September 2017 to 30 September 2018 and Contractor of Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019				
Ecology (construction Phase)								
S10.7 of HKBCFEIA and S8.14 of TMCLKLE IA	E1	<ul style="list-style-type: none"> - Use closed grab in dredging works. - Install silt curtain during the construction. - Limit dredging and works fronts. - Construct seawall prior to reclamation filling where practicable. - Good site practices - Strict enforcement of no marine dumping. - Site runoff control - Spill response plan 	Minimize marine water quality impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	V
S10.7 of HKBCFEIA	E2	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.	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	TM-Water	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E3	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time.	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction		V
S10.7 of HKBCFEIA and	E4	<ul style="list-style-type: none"> - Dolphin Exclusion Zone - Dolphin watching plan 	Minimize temporary marine habitat loss	Contractor	Marine works	During marine works	TM-EIAO	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S8.14 of TMCLKLEIA			impact to dolphins					
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E5	<ul style="list-style-type: none"> - Decouple compressors and other equipment on working vessels - Proposal on design and implementation of acoustic decoupling - measures applied during dredging and reclamation works - Avoidance of percussive piling 	Minimize marine noise impacts on dolphins	Contractor	Marine works	During marine works	<ul style="list-style-type: none"> - TM-EIAO - Marine Park Regulations 	
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E6	<ul style="list-style-type: none"> - Control vessel speed - Skipper training - Predefined and regular routes for working vessels; avoid Brothers Islands 	Minimize marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works		V
S10.10 of HKBCFEIA and S8.14 of TMCLKLEIA	E7	Vessel based dolphin monitoring	Minimize marine traffic disturbance on dolphins	Contractor of Contract No. HY/2010/02 from 01 December 2015 to 31 August 2017, Contractor of Contract No. HY/2013/01 from 01 September 2017 to 30 September 2018 and Contractor of Contract No. HY/2013/04 from 01 October 2018 to 31 January 2019	Northeast and Northwest Lantau	During marine works		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
Fisheries								
S11.7 of HKBCFEIA	F1	<ul style="list-style-type: none"> - Reduce re-suspension of sediments - Limit dredging and works fronts. - Good site practices 	Minimize marine water quality Impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	V
S11.7 of HKBCFEIA	F2	Install silt-grease trap in the drainage system collecting surface runoff	Minimize impacts on marine water quality impacts	Designer	Reclamation area	During construction	TM-Water	V
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1 of HKBCFEIA	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> - Roadside planting and planting along the edge of the reclamation 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; - 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; and - Providing salt-tolerant native trees 	Minimize visual & landscape impacts	Contractor	HKBCF	Design Stage		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		along the planter strip at affected seawall and newly reclaimed coastline.						
Landscape & Visual (Construction Phase)								
S14.3.3.3 of HKBCFEIA and S10.9 of TMCLKLEIA	LV2	<u>Mitigate Landscape Impacts</u> G1. Grass-hydroseed or sheeting bare soil surface and stock pile areas.	Minimize visual & landscape impacts	Contractor	All Site Area	Construction stage		V (Establishment)
		G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic.			All Site Area			V (Establishment)
		G3. For HKLR, providing aesthetic design on the viaduct, tunnel portals, at-grade roads and reclamation (e.g. subtle colour tone and slim form for viaduct, aesthetic design of the bridge form and its structural elements including the parapet, soffit, columns and so on and decorative urban design elements and lightings for the HKLR; featured form of tunnel portals, roadside planting along at-grade roads and landscape berm on & planting along edge of reclamation area) to beautify the HKLR alignment.			N/A			N/A
		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			All Site Area			V (Establishment)

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		and transparent cover for elevated footbridges) to provide harmonic atmosphere of the HKBCF						
		G5. Vegetation reinstatement and upgrading to disturbed areas.			Portion D			V (Establishment)
		G6. Maximize new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed.			All Site Area			V (Establishment)
		G7. Provide planting area around peripheral of and within HKBCF and HKLR for tree screening buffer effect.			All Site Area			V (Establishment)
		G8. Plant salt tolerant native tree and shrubs etc along the planter strip at affected seawall.		Shatin to Central Link (SCL) and Central Kowloon Route (CKR) projects	N/A			N/A
		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		Contractor	All Site Area			V (Establishment)
S10.9 of TMCLKLEIA	LV3	<u>Mitigate Landscape Impacts</u> CM1. Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained	Minimize landscape impact	Contractor	All construction site areas	Construction stage		N/A

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		<p>trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage).</p> <p>CM2. Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.</p> <p>CM7. Ensure no run-off into water body adjacent to the Project Area.</p> <p>CM9. Recycle/Reuse all felled trees and vegetation, e.g. mulching.</p>						
S14.3.3.3 of HKBCFEIA	LV4	Mitigate Visual Impacts V1. Minimize time for construction activities during construction period.	Minimize visual & landscape impacts	Contractor	All construction site areas	Construction stage		V
		Mitigate Visual Impacts 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.						N/A
S10.9 of TMCLKLEIA	LV5	<p>Mitigate Visual Impacts</p> <p>CM5. Screening of construction works by hoardings around works area in visually unobtrusive colors, to screen works.</p> <p>CM6. Control night-time lighting and glare by hooding all lights.</p> <p>CM8. Avoidance of excessive height and bulk of buildings and structures.</p>	Minimize visual impact	Contractor	All construction site areas	Construction stage		N/A

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
EM&A								
S15.2.2 of HKBCFEIA	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction site areas	Construction stage	- EIAO Guidance Note No. 4/2002 - TM_EIAO	V
S15.5 - S15.6 of HKBCFEIA	EM2	An Environmental Team needs to be employed as per the EM&A Manual. Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 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.	Perform environmental monitoring & auditing	Contractor	All construction site areas	Construction stage	- EIAO Guidance Note No. 4/2002 - TM_EIAO	V

Legend: V = implemented; x = not implemented; N/A = not applicable

Appendix F

Waste Flow Table

Monthly Summary Waste Flow Table for 2014 (year)

 Name of Person completing the record: Selena YANG / ES

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion)

Contract No.: HY/2013/02

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 (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste (see Note 4)	Others, e.g. general refuse (see Note 3)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m ³)
Jan											
Feb											
Mar											
Apr											
May											
Jun											
Sub-total											
Jul	0	0	0	0	0	0	0	0	0	0	0
Aug	0	0	0	0	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0.492	0	0	0
Total	0	0	0	0	0	0	0	0.492	0	0	0

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2015 (year)

 Name of Person completing the record: Joy CHAN / ES

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion)

Contract No.: HY/2013/02

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 (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste (see Note 4)	Others, e.g. general refuse (see Note 3)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m ³)
Jan	0	0	0	0	0	0	0	0.048	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	3.206	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0.046	0	0	0.0065
Jun	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0.094	3.206	0	0.0065
Jul	0	0	0	0	0	0	0.005	0.0575	0.007	0	0.013
Aug	0	0	0	0	0	0	0	0	1.043	0	0.013
Sep	0.039	0	0	0	0.039	0	0	0.069	0.004	0	0.013
Oct	0	0	0	0	0	0	0	0	0	0	0.0455
Nov	0	0	0	0	0	0.1825	0	0.069	0.854	0	0.0325
Dec	0	0	0	0	0	0	0	0	0	0	0.0390
Total	0.039	0	0	0	0.039	0.1825	0.005	0.2895	5.114	0	0.1625

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.



China Harbour Engineering Company Limited

Monthly Summary Waste Flow Table for 2016 (year)

 Name of Person completing the record: Paper CHAN / ES

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion)

Contract No.: HY/2013/02

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 (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m ³)
Jan	0	0	0	0	0	0	0	0.0690	2.6600	0	0.0195
Feb	0	0	0	0	0	0	0	0	0	0	0.0455
Mar	0	0	0	0	0	0	0	0.0690	0	0	0.0325
Apr	0	0	0	0	0	11.5920	0	0	0	0	0.0455
May	0	0	0	0	0	7.1400	6.3260	0.0805	0	0	0.0585
Jun	0	0	0	0	0	2.7600	0	0	6.0900	0	0.0325
Sub-total	0	0	0	0	0	21.4920	6.3260	0.2185	8.7500	0	0.2340
Jul	0	0	0	0	0	0	0	0	0	0	0.0780
Aug	0	0	0	0	0	2.6920	0	0.1400	0	0	0.0520
Sep	0	0	0	0	0	1.0350	0	0.1600	0	0	0.0325
Oct	0	0	0	0	0	0.6660	0	0.0000	0	0	0.0650
Nov	0	0	0	0	0	5.3590	0	0.1800	7.5500	0	0.0715
Dec	0	0	0	0	0.3940	5.5440	99.3100	0.1400	1.6332	0	0.1105
Total	0	0	0	0	0.3940	36.7880	105.6360	0.8385	17.9332	0	0.6435

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

(2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.

(3) Broken concrete for recycling into aggregates.



China Harbour Engineering Company Limited

 Monthly Summary Waste Flow Table for 2017 (year)

 Name of Person completing the record: Paper CHAN / EO

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Metals (in '000 kg)	Paper/ cardboard packaging (in '000kg)	Plastics (see Note 2) (in '000kg)	Chemical Waste (in '000kg)	Others, e.g. general refuse (in '000 m ³)
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill (see Note 1)					
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)					
Jan	0	0	0	0	0	0	0	0.0950	0	0	0.1755
Feb	0.4950	0	0	0	0.4950	5.4450	0	0.1800	0.0248	0	0.1105
Mar	0.0400	0	0	0	0.0400	0	0	0	0	0	0.2145
Apr	0	0	0	0	0	0	52.090	0.1800	0	0	0.2535
May	0	0	0	0	0	0	0	0	0.5880	0	0.3445
Jun	0	0	0	0	0	0	187.510	0.1600	1.6800	0	0.3380
Sub-total	0.5350	0	0	0	0.5350	5.4450	239.600	0.6150	2.2928	0	1.4365
Jul	4.8111	0	0	0	4.8111	0	274.710	0	2.1000	0	0.6955
Aug	3.0550	0	0	0	3.0550	1.8950	172.000	0.2200	3.6400	0	0.8580
Sep	4.6600	0	0	0	4.6600	7.1980	0	0.2200	2.6400	0	1.2025
Oct	2.0502	0	0	0	2.0502	9.1970	216.720	0	2.6040	0	0.5070
Nov	10.1628	0	0	0	10.1628	27.1957	1265.52	0.1600	0.0217	0	0.6175
Dec	3.82525	0	0	0	3.82525	33.9645	0	0	0	0	0.7020
Total	29.0993	0	0	0	29.0993	84.8952	2168.550	1.2150	13.2985	0	6.0190

- Notes:
- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.
 - (3) Broken concrete for recycling into aggregates.


China Harbour Engineering Company Limited

 Monthly Summary Waste Flow Table for 2018 (year)

 Name of Person completing the record: Endy Tse / EO

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion)

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 <small>(see Note 3)</small>	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill <small>(see Note 1)</small>	Metals	Paper/ cardboard packaging	Plastics <small>(see Note 2)</small>	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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m ³)
Jan	20.046	0	0	18.737	1.309	43.254	0	0.200	0	0	0.553
Feb	1.375	0	0	0	1.375	4.242	0	0.160	0	0	0.455
Mar	2.001	0	0	0	2.001	11.416	0	0.220	1.136	0	0.813
Apr	0.756	0	0	0	0.756	0.527	0	0	0	0	0.657
May	0.049	0	0	0	0.049	0	0	0.180	0.910	0	0.279
Jun	0.033	0	0	0	0.033	0	0	0.800	0	0	0.106
Sub-total	24.260	0	0	18.737	5.523	59.439	0	1.560	2.046	0	2.863
Jul	0.124	0	0	0	0.124	0	0	0.920	0	0	0.116
Aug	0.287	0	0	0	0.287	0	0	0	0	0	0.110
Sep	0.274	0	0	0	0.274	0	0	0	0	0	0.117
Oct	0.068	0	0	0	0.068	0	0	0	0	0	0.208
Nov	0.196	0	0	0	0.196	0	0	0	0	0	0.046
Dec	0.0195	0	0	0	0.0195	0	0	0	0	0	0.078
Total	25.229	0	0	18.737	6.492	59.439	0	2.480	2.046	0	3.538

Notes:

- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.
- (3) Broken concrete for recycling into aggregates.



China Harbour Engineering Company Limited

 Monthly Summary Waste Flow Table for 2019 (year)

 Name of Person completing the record: Endy Tse / EO

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion)

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 (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill (see Note 1)	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	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 '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m ³)
Jan	0.111	0	0	0	0.111	0	0	0	0	0	0.078
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	0.111	0	0	0.000	0.111	0.000	0	0.000	0.000	0	0.078
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.111	0	0	0.000	0.111	0.000	0	0.000	0.000	0	0.078

- Notes:
- (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
 - (2) Plastics refer to plastic bottles/containers, plastic sheets/ foam from packaging materials.
 - (3) Broken concrete for recycling into aggregates.



China Harbour Engineering Company Limited

Final revised Monthly Summary of Marine Sediment for 2016

Month	a. Volume of Marine Sediment Generated	b. Volume of Marine Sediment Disposed (m ³)	c. Estimated Volume of Marine Sediment Stored on
Jan	4029 ⁽¹⁾	1272	2757
Feb	1133	2816	1074
Mar	414	600	888
Apr	4240	5128	0
May	1020	0	1020
Jun	1097	1200	917
Jul	957	728	1146
Aug	953	1784	315
Sep	2013	2328	0
Oct	1096	1096	0
Nov*	1568	0	1568
Dec*	0	1568	0
Total	18520	18520	0

Note:

1) 2771 m³ Marine Sediment Generated has been brought forward from pervious year

2) c=(c in pervious month+a-b)

*Revised volume of marine sediment generated in Nov and Dec are confirmed with the RSS.



China Harbour Engineering Company Limited

Monthly Summary of Marine Sediment for 2017

Month	a. Volume of Marine Sediment Generated	b. Volume of Marine Sediment Disposed (m ³)	c. Estimated Volume of Marine Sediment Stored on
Jan	0	0	0 ^(*)
Feb	88	88	0
Mar	0	0	0
Apr	624	624	0
May	0	0	0
Jun	1432	1432	0
Jul	0	0	0
Aug	0	0	0
Sep	0	0	0
Oct	0	0	0
Nov			
Dec			
Total	2144	2144	0

Note:* The volume of marine sediment disposed is measured by barge load while the volume of marine sediment generated and stored on site is a rough estimation. The accurate volume of marine sediment excavated was hardly measured and thus tiny difference between the volume of marine sediment disposed and the volume of marine sediment generated would be existed. Therefore, after on-site checking by the Contractor and confirmed by RSS that the final estimated quantity of marine sediment stored at site in 2016 is 0 m³ instead of 1422 m³.