



**中國建築工程(香港)有限公司**  
CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.

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

### CONTRACTOR SUBMISSION FORM (CSF)

To	Engineer's Representative	Attn.	Mr. Alfred Cheng
Ref. No.	CDG/CSF/MA02.05/2018/8554	CSF No.	CSF/02922/A
Subject	Monthly EM&A Report for Quarterly EM&A Report for April to June 2018		
Item	Description		
1	Pursuant to G.S. Clause 25.01A and Condition 5.4 of the Environmental Permit No. EP-353/2009/K, we would like to submit herewith a copy of EM&A Report certified by our ETL, Messrs. Mott MacDonald for your onward submission to Environmental Protection Department.		

Remarks :

Purpose of Submission :

For Approval

For Information

For Record Purposes

Expected Reply Date :

From : Contractor's Representative

Name : Jason Chung

Date : 21 November 2018

Signature :

Prepared by : KPN

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

**Attn:**  
**Mr. Raymond Dai – Independent Environmental Checker**

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

**Our Reference**  
TC/GC/bw/T355861/02/  
02/L102

**Quarterly EM&A Report for April 2018 to June 2018**

3/F Mapletree Bay Point  
348 Kwun Tong Road  
Kowloon  
Hong Kong

30 October 2018

**By Email**

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mottmac.hk

Dear Sir,

In accordance with Section 16.4 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities (Version 1.0) covering the captioned contract, we are pleased to submit the certified Quarterly EM&A Report for April 2018 to June 2018 for your verification.

Yours faithfully  
For MOTT MACDONALD HONG KONG LIMITED



Gary Chow  
Environmental Team Leader

Encl.

cc.

AECOM – Mr. Alfred Cheng (By Email)  
China State Construction Engineering (Hong Kong) Ltd. – Mr. Xavier Lam / Mr. Ng  
Ka Po (By Email)

31 October 2018

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.  
The PRE's Office  
5 Ying Hei Road, Tung Chung, Lantau  
Hong Kong

Attention: Mr. Alfred Cheng

Dear Sir,

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

**Contract No. HY/2013/04 – HZMB HKBCF – Infrastructure Works Stage II  
(Southern Portion)  
Quarterly EM&A Report for April 2018 to June 2018**

Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report for April 2018 to June 2018 certified by the ET Leader (ET's ref.: "TC/GC/bw/T355861/02/02/L102" dated 30 October 2018) and provided to us via e-mail on 30 October 2018.

We are pleased to inform you that we have no adverse comment on the captioned Quarterly EM&A Report for April 2018 to June 2018.

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





Raymond Dai  
Independent Environmental Checker

c.c.	HyD	Mr. Tony Pang	(By Fax: 3188 6614)
	HyD	Mr. Harry Louie	(By Fax: 3188 6614)
	MMHK	Mr. Gary Chow	(By Fax: 2827 1823)
	CSCCE	Mr. Jason Chung	(By Fax: 2459 4336)

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

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Contract No. HY/2013/04 HZMB HKBCF –  
Infrastructure Works Stage II (Southern Portion)  
Quarterly EM&A Report for April 2018 to June 2018

July 2018

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# Executive summary

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

The Contract is part of the “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities” (HZMB HKBCF) Project which is a “Designated Project” under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015.

Mott MacDonald Hong Kong Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and will be providing environmental team services for the Contract. This is the 12<sup>th</sup> Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 April 2018 to 30 June 2018 (the “reporting period”).

## Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that, for this Contract:

- The air quality monitoring works are covered by Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF” and Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”; and
- The noise, water quality and marine ecology monitoring works are covered by Contract No. HY/2013/01.

The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7B, noise monitoring at NMS2 and NMS3B, water quality monitoring at the twenty-one stations and dolphin monitoring at the twenty-four transects as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2011/03 and HY/2013/01 (as the case may be). However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

The dates of site inspection during the reporting period are listed below:

- 4, 11, 18 and 23 April, 2, 10, 14, 23 and 30 May and 6, 11, 20 and 27 June 2018

### Breaches of Action and Limit Levels

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

During April 2018, a total of five Action Level exceedances of SS were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During May 2018, a total of four Action Level exceedances of water quality (consisting of two Action Level exceedances of turbidity and two Action Level exceedances of dissolved oxygen) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During June 2018, a total of twenty-one exceedances of water quality (consisting of 18 Action Level and two Limit Level exceedances of dissolved oxygen, and one Action Level exceedance of turbidity) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

Furthermore, Limit Level exceedances of impact dolphin monitoring were recorded by the Environmental Team of Contract No. HY/2013/01 during the period of March 2018 to May 2018 and investigated by the ET of Contract No. HY/2013/01.

Impact dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Reports for Contract No. HY/2013/01.

### Complaint Log

There was one new complaint received in relation to the environmental impact during the reporting period.

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
009	ENPO-C0135	22 June 2018	Water Quality

The complaint was about discharge of muddy water from HKBCF. According to site photos provided by HyD, it is noticed that there was muddy water discharged via as-constructed box culverts/outfall structures at various parts of seawall on 13 June 2018.

The complaint investigation by the ET of the Contract is ongoing and the findings will be presented in the next Quarterly EM&A report.



### **Notifications of Summons and Successful Prosecutions**

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

### **Reporting Changes**

There was no reporting change during the reporting period.

# 1 Introduction

## 1.1 Basic Project Information

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

The Contract is part of the “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities” (HZMB HKBCF) Project which is a “Designated Project” under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015. The works areas of the contract are shown in **Appendix A**.

This is the 12<sup>th</sup> Quarterly EM&A Report summarising the findings of EM&A activities conducted under the Contract from 1 April 2018 to 30 June 2018 (the “reporting period”).

## 1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

**Table 1.1: Contact Information of Key Personnel**

Party	Position	Name	Telephone	Fax
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Alfred Cheng	3958 7471	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Y H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Ray Yan	5181 8165	3465 2899
Contractor (China State Construction Engineering (Hong Kong) Limited)	Site Agent	Jason Chung	9127 8369	2459 4336
	Environmental Officer	Xavier Lam	9493 2944	2459 4336
		Billy Lao	6679 1950	2459 4336
Environmental Team (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Gary Chow	2828 5874	2827 1823
24-hour Complaint Hotline	-	-	5236 7111	-

### 1.3 Construction Programme

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

### 1.4 Construction Works undertaken during the Reporting Period

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

- Box Culvert D: whole structure completed
- Box Culvert C: whole structure completed
- Pier Column: no works done
- Cofferdam Removal Works (land-based)
- Seawall Reinstatement Works (land-based)
- Segment Erection: 202 no. completed
- No marine-based segment delivery (all segments stored at segment storage yard on HKBCF island site)
- Depressed road: whole structure completed
- No generation of excavated marine sediment

During this reporting month, temporary soft landscaping works were conducted and marine-based outfall works had not commenced.

## 2 EM&A Requirements

### 2.1 Summary of EM&A Requirements

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that, for this Contract:

- The air quality monitoring works are covered by Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF” and Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”; and
- The noise monitoring works are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”.

The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7B and noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2011/03 and HY/2013/01 (as the case may be). However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

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 2.1** and **Figure 2.2**, respectively.

**Table 2.1: Construction Dust and Noise Monitoring Locations**

Environmental Monitoring	Identification No.	Location Description
Air Quality	AMS6 <sup>(1)</sup>	Dragonair/CNAC (Group) Building
	AMS7B <sup>(1)</sup>	3RS Site Offices
Noise	NMS2 <sup>(2)</sup>	Seaview Crescent
	NMS3B <sup>(2)(3)</sup>	AECOM PRE’s Office

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

(3) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

The water quality monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”. A total of twenty-one stations (nine Impact Stations, seven Sensitive Receiver Stations and five Control/Far Field Stations) are covered by the current EM&A programme. The ET of the Contract or another ET of the HZMB project is required to conduct water quality at these stations as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/01. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

**Table 2.2** and **Figure 2.3** show the locations of water quality monitoring stations.

**Table 2.2: Impact Water Quality Monitoring Stations**

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(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(N)	Sensitive receivers (San Tau SSSI)	810689	816591
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5(N)	Sensitive receivers (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(N)	Sensitive receivers (Ma Wan FCZ) 1	823644	823484
SR10B(N2)	Sensitive receivers (Ma Wan FCZ) 2	823689	823159
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	Control Station	818103	823064

The dolphin monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”. The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at the twenty-four transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2013/01. The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau survey area; and Northwest Lantau survey area.

**Table 2.3** shows the co-ordinates for the transect lines and layout map.

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

**Table 2.3: Impact Dolphin Monitoring Line Transect Co-ordinates (Provided by AFCD)**

Transect	HK Grid System		Long Lat in WGS84	
	X	Y	Long	Lat
1#	804671	815456	113.870287	22.277678
	804671	831404	113.869975	22.421696
2#^	805476	820800	113.877995	22.325951
	805476	826654	113.877882	22.378815
3^	806464	821150	114.030267	22.196697
	806464	822911	114.047344	22.196712
4^	807518	821500	114.033651	22.206219
	807518	829230	114.108618	22.206267
5^	808504	821850	114.037037	22.215126

Transect	HK Grid System		Long Lat in WGS84	
	808504	828602	114.102523	22.215169
6^	809490	822150	114.039938	22.224033
	809490	825352	114.070995	22.224056
7#^	810499	822000	114.038474	22.233143
	810499	824613	114.063820	22.233163
8#	811508	821123	113.936539	22.328966
	811508	824254	113.936486	22.357241
9#	812516	821303	113.946320	22.330606
	812516	824254	113.946279	22.357255
10*	813525	820827	113.956112	22.326321
	813525	824657	113.956066	22.360908
11#	814556	818853	113.966155	22.304858
	814556	820992	113.966125	22.327820
12	815542	818807	113.975726	22.308109
	815542	824882	113.975647	22.362962
13	816506	819480	113.985072	22.314192
	816506	824859	113.985005	22.362771
14	817537	820220	113.995070	22.320883
	817537	824613	113.995018	22.360556
15	818568	820735	114.005071	22.325550
	818568	824433	114.005030	22.358947
16	819532	821420	114.014420	22.331747
	819532	824209	114.014390	22.356933
17	820451	822125	114.023333	22.338117
	820451	823671	114.023317	22.352084
18	821504	822371	114.033556	22.340353
	821504	823761	114.033544	22.352903
19	822513	823268	114.043340	22.348458
	822513	824321	114.043331	22.357971
20	823477	823402	114.052695	22.349680
	823477	824613	114.052686	22.360610
21	805476	827081	113.877878	22.382668
	805476	830562	113.877811	22.414103
22	806464	824033	113.887520	22.355164
	806464	829598	113.887416	22.405423
23	814559	821739	113.966142	22.334574
	814559	824768	113.966101	22.361920
24^	805476	815900	113.979368	22.187721
	805476	819100	114.010398	22.187756

## Remarks:

- (a) \* Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 2.4 could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore the total transect length for both NEL and NWL combined is reduced to approximately 108km.
- (b) # Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.

- (c) ^ The change of transect lines 2, 3, 4, 5, 6 and 7 and new transect line 24 were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

## 2.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the quarterly EM&A reports prepared for Contract Nos. HY/2013/01 and HY/2011/03.

## 2.3 Action and Limit Levels

The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.4** and **Table 2.5** respectively.

**Table 2.4: 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 – Dragonair / SNAC (Group) Building (HKIA)	360	500
AMS7B – 3RS Site Offices	370	500

**Table 2.5: 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 – Dragonair / SNAC (Group) Building (HKIA)	173	260
AMS7B – 3RS Site Offices	183	260

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

The Action and Limit Levels for construction noise are defined in **Table 2.6**.

**Table 2.6: Action and Limit Level 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.

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

The Action and Limit Levels for water quality are provided in **Table 2.7**.

**Table 2.7: Action and Limit Levels for Water Quality**

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

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

## Remarks:

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

## Notes:

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

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

The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.8** and **Table 2.9**, respectively.

**Table 2.8: Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)**

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

**Table 2.9: Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring**

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

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

## 2.4 Event and Action Plans

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

## 2.5 Mitigation Measures

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





## 3 Environmental Monitoring and Audit

### 3.1 Air Quality Monitoring Results

The monitoring results for AMS6 and AMS7B are reported in the monthly EM&A Reports (for April, May and June 2018) prepared for Contract Nos. HY/2011/03 and HY/2013/01 respectively.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in the monthly EM&A Reports (for April, May and June 2018) prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

### 3.2 Noise Monitoring Results

The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports (for April, May and June 2018) prepared for Contract No. HY/2013/01.

No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2013/01 during the reporting period.

### 3.3 Water Quality Monitoring Results

The monitoring results for the twenty-one monitoring stations are reported in the monthly EM&A Report (for April, May and June 2018) prepared for Contract No. HY/2013/01.

During April 2018, a total of five Action Level exceedances of SS were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During May 2018, a total of four Action Level exceedances of water quality (consisting of two Action Level exceedances of turbidity and two Action Level exceedances of dissolved oxygen) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During June 2018, a total of twenty-one exceedances of water quality (consisting of 18 Action Level and two Limit Level exceedances of dissolved oxygen, and one Action Level exceedance of turbidity) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

Water quality exceedances recorded during the reporting period are summarised in **Table 3.1**.

**Table 3.1: Summary of Water Quality Exceedances during Reporting Period**

Date	Parameter (Units)	Station	Depth	Exceedance Recorded during Mid-ebb Tide	Exceedance Recorded during Mid-flood Tide
2 Apr 2018	SS	IS5	Depth Average	Action Level	-
18 Apr 2018	SS	SR6	Depth Average	-	Action Level
18 Apr 2018	SS	SR7	Depth Average	-	Action Level
20 Apr 2018	SS	IS10(N)	Depth Average	-	Action Level
23 Apr 2018	SS	SR7	Depth Average	-	Action Level
13 May 2018	Turbidity	IS(Mf)11	Depth Average	-	Action Level
13 May 2018	Turbidity	SR5(N)	Depth Average	-	Action Level
25 May 2018	DO	IS8	Bottom	Action Level	-
28 May 2018	DO	IS5	Bottom	Action Level	-
1 Jun 2018	DO	SR6	Surface and Middle	Action Level	-
1 Jun 2018	DO	SR6	Bottom	Action Level	-
11 Jun 2018	DO	SR6	Surface and Middle	-	Action Level
13 Jun 2018	DO	SR6	Surface and Middle	-	Action Level
13 Jun 2018	DO	SR6	Bottom	-	Action Level
15 Jun 2018	DO	SR6	Surface and Middle	-	Action Level
15 Jun 2018	DO	SR6	Bottom	-	Action Level
15 Jun 2018	DO	SR7	Surface and Middle	-	Action Level
15 Jun 2018	DO	IS(Mf)11	Surface and Middle	-	Action Level
25 Jun 2018	DO	IS10(N)	Bottom	Action Level	-
25 Jun 2018	Turbidity	IS(Mf)6	Depth Average	Action Level	-
27 Jun 2018	DO	IS10(N)	Bottom	Action Level	Action Level
27 Jun 2018	DO	IS(Mf)11	Bottom	Action Level	Action Level
27 Jun 2018	DO	SR6	Surface and Middle	-	Action Level
29 Jun 2018	DO	IS5	Bottom	Action Level	-
29 Jun 2018	DO	SR10A(N)	Surface and Middle	-	Limit Level
29 Jun 2018	DO	SR10A(N)	Bottom	-	Action Level
29 Jun 2018	DO	SR10B(N2)	Surface and Middle	-	Limit Level
29 Jun 2018	DO	SR10B(N2)	Bottom	-	Action Level

The details of water quality exceedances can be made reference to the monthly EM&A reports under Contract No. HY/2013/01.

### 3.4 Dolphin Monitoring Results

The monitoring results for dolphin monitoring during the reporting periods are reported in the monthly EM&A Reports (for April, May and June 2018) prepared for Contract No. HY/2013/01.

Limit Level exceedance of impact dolphin monitoring was recorded by the Environmental Team of Contract No. HY/2013/01 during the period of March 2018 to May 2018 and investigated by the ET of Contract No. HY/2013/01.

Dolphin monitoring exceedances recorded are summarised in **Table 3.2**.

**Table 3.2: Action and Limit Level Exceedance for Dolphin Monitoring**

Period	Parameter	Area	Exceedance Recorded
Mar 2018 – May 2018	Ecology (Chinese White Dolphin Monitoring)	Northeast Lantau (NEL)	Limit Level

Period	Parameter	Area	Exceedance Recorded
Mar 2018 – May 2018	Ecology (Chinese White Dolphin Monitoring)	Northwest Lantau (NWL)	Limit Level

The details of the dolphin monitoring exceedances can be referred to in the Monthly EM&A reports under Contract No. HY/2013/01.

### 3.5 Implementation of Environmental Measures

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

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

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

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

Implementation status of the Dolphin Watching Plan (DWP) was checked by ET. Training of marine mammal observer (MMO) was given to relevant staff and relevant records were kept properly. Silt curtains were provided at each box culvert for marine works areas in accordance with the approved Dolphin Watching Plan. The silt curtains were inspected regularly by ET and Contractor and the implementation was found to be in working order.

### 3.6 Advice on the Solid and Liquid Waste Management Status

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

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

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

The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

### 3.6.1 Disposal of Marine Sediment Extracted from Bored Piling Works

#### 3.6.1.1 Background

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

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

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

Based on the actual piling operation, the estimated quantity of marine sediment to be extracted has been revised from 85,000 m<sup>3</sup> to 126,000 m<sup>3</sup> (bulk volume). EPD has no comments on the request as in the letter dated 20 October 2016. The Secretary of Marine Fill Committee, CEDD approved the increasing quantity in the memo dated 10 November 2016.

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

As in the agreed SSTP for the inner area of the HKBCF Island, samples were taken from the seventeen batches of stockpiled marine sediments and from five boreholes each in one of the five sampling grids. After conducting chemical tests on samples, six batches of stockpiled samples under Contract No. HY/2013/03 and all eight batches of stockpiled samples under Contract No. HY/2013/04 are classified as Category L sediment. The Secretary of Marine Fill Committee of CEDD allocated disposal sites under memo dated 24 October 2016 and dated 22 November 2016 for disposal of a total of 9,500 m<sup>3</sup> in-situ volume of Category L sediment (using a bulk factor of 1.3). The Category L sediment was disposed in December 2016.

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

### 3.6.1.2 Dumping Arrangements

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

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

### 3.6.1.3 Reporting

AECOM has confirmed that the disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017. The total quantities disposed are presented in the following table (**Table 3.3**):

**Table 3.3: Summary of Marine Sediment disposed to Dumping Site via Contract No. HY/2013/03**

Month/Year	Type of Sediment and Quantity Disposed (m <sup>3</sup> )	
	Cat. L (in Type I)	Type II
Total =	3,570	39,814

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

## 3.7 Environmental Licences and Permits

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

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

### 4.1 Summary of Exceedance of the Environmental Quality Performance Limit

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in the monthly EM&A Reports (for April, May and June 2018) prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

During April 2018, a total of five Action Level exceedances of SS were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During May 2018, a total of four Action Level exceedances of water quality (consisting of two Action Level exceedances of turbidity and two Action Level exceedances of dissolved oxygen) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During June 2018, a total of twenty-one exceedances of water quality (consisting of 18 Action Level and two Limit Level exceedances of dissolved oxygen, and one Action Level exceedance of turbidity) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

Furthermore, Limit Level exceedances of impact dolphin monitoring were recorded by the Environmental Team of Contract No. HY/2013/01 during the period of March 2018 to May 2018 and investigated by the ET of Contract No. HY/2013/01.

Impact dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/01.

## 4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

There was one new complaint received in relation to the environmental impact during the reporting period. The summary of environmental complaints is presented in **Table 4.1**.

The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

**Table 4.1: Summary of Environmental Complaints for the Reporting Month**

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
009	ENPO-C0135	22 June 2018	Water Quality

### Environmental Complaint Ref. No. ENPO-C0135

The complaint was about discharge of muddy water from HKBCF. According to site photos provided by HyD, it is noticed that there was muddy water discharged via as-constructed box culverts/outfall structures at various parts of seawall on 13 June 2018.

The complaint investigation by the ET of the Contract is ongoing and the findings will be presented in the next Quarterly EM&A report.

### Notifications of Summons and Successful Prosecutions

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



# 5 Comments, Recommendations and Conclusions

## 5.1 Comments

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

- The Contractor was reminded to clear the general refuse as soon as possible.
- The Contractor was reminded to clear the stagnant water or provide effective mosquito mitigation measures.
- The Contractor was reminded to sort and clear the C&D waste as soon as possible.
- The Contractor was reminded to provide water spraying to keep road surface wet.
- The Contractor was reminded to secure the silt curtain to prevent contained site runoff entering the open waters.
- The Contractor was reminded to provide drip tray for the chemical container.
- The Contractor was reminded to provide larvicide to prevent growth of mosquito.
- The Contractor was reminded to check the integrity of the silt curtain.
- The Contractor was reminded to clear the stagnant water as soon as possible.
- The Contractor was reminded to have good maintenance for the lifting crane.
- The Contractor was reminded to provide the NRMM label for the lifting crane.
- The Contractor was reminded to properly sort the construction materials.
- The Contractor was reminded to provide maintenance to the excavator to prevent further visible smoke emission.

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

## 5.2 Recommendations

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

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

### 5.3 Conclusions

Commencement of the Contract took place on 13 March 2015 and the construction works of the Contract commenced on 13 July 2015. This is the 12<sup>th</sup> Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 April 2018 to 30 June 2018.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for April, May and June 2018) prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

During April 2018, a total of five Action Level exceedances of SS were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During May 2018, a total of four Action Level exceedances of water quality (consisting of two Action Level exceedances of turbidity and two Action Level exceedances of dissolved oxygen) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

During June 2018, a total of twenty-one exceedances of water quality (consisting of 18 Action Level and two Limit Level exceedances of dissolved oxygen, and one Action Level exceedance of turbidity) were recorded by the Environmental Team of Contract No. HY/2013/01 and were referred to this Contract for follow-up. The ET of this Contract conducted investigations and the findings with respect to the Contract can be referred to the corresponding monthly EM&A Report prepared under Contract No. HY/2013/01.

Furthermore, Limit Level exceedances of impact dolphin monitoring were recorded by the Environmental Team of Contract No. HY/2013/01 during the period of March 2018 to May 2018 and investigated by the ET of Contract No. HY/2013/01.

Impact dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Reports (for April, May and June 2018) prepared for Contract No. HY/2013/01.

Environmental site inspection was carried out on 4, 11, 18 and 23 April, 2, 10, 14, 23 and 30 May and 6, 11, 20 and 27 June 2018. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

There was one new complaint received in relation to the environmental impact during the reporting period. The complaint was about discharge of muddy water from HKBCF. According to site photos provided by HyD, it is noticed that there was muddy water discharged via as-constructed box culverts/outfall structures at various parts of seawall on 13 June 2018. The

complaint investigation by the ET of the Contract is ongoing and the findings will be presented in the next Quarterly EM&A report.

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

# Figures

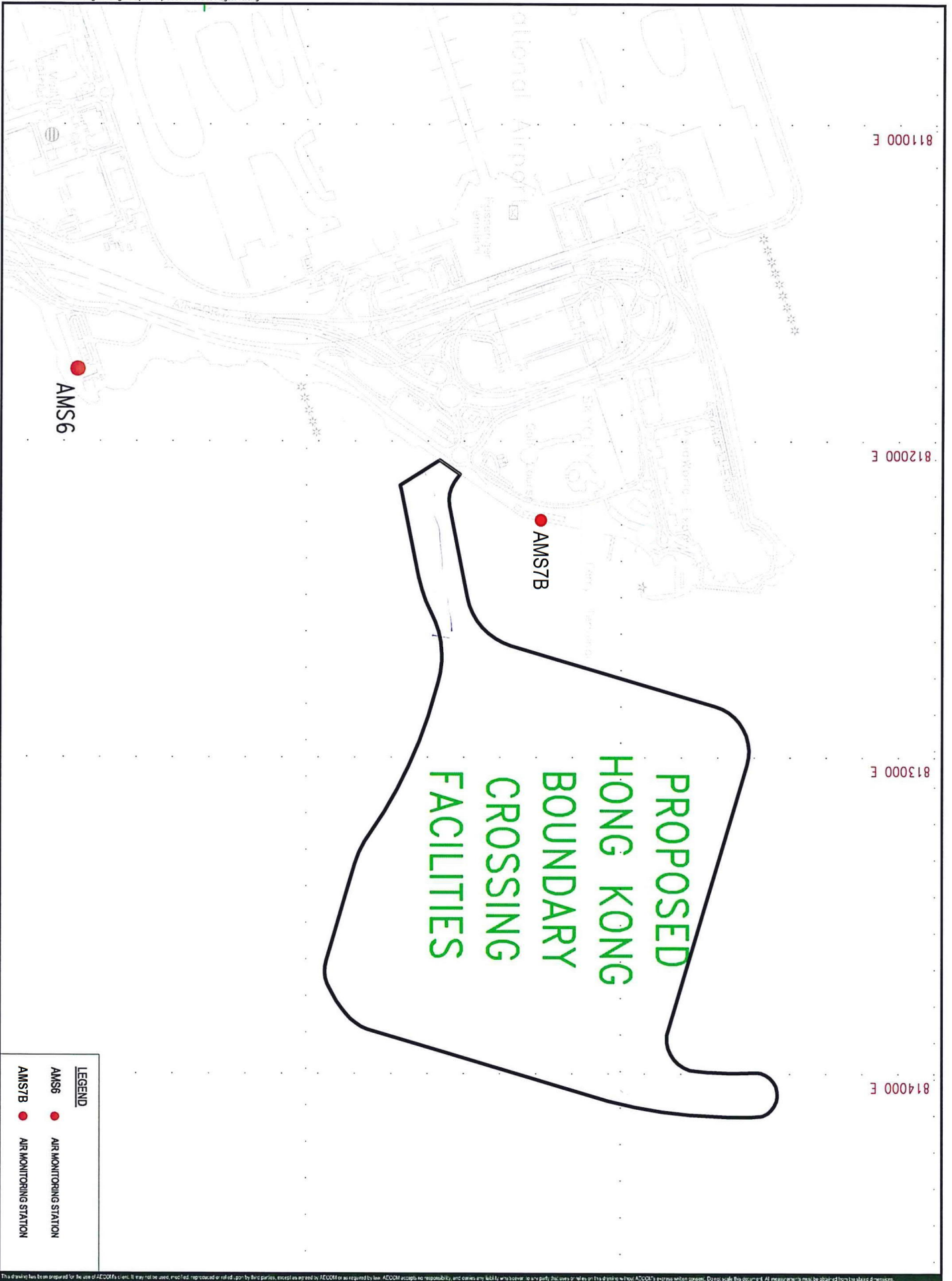
**Figure 2.1 Location of Air Quality Monitoring Stations**

Plot File by: Mankyr 19/08/2013  
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Project Management Initials:

Checked:

ISO A3 297mm x 420mm



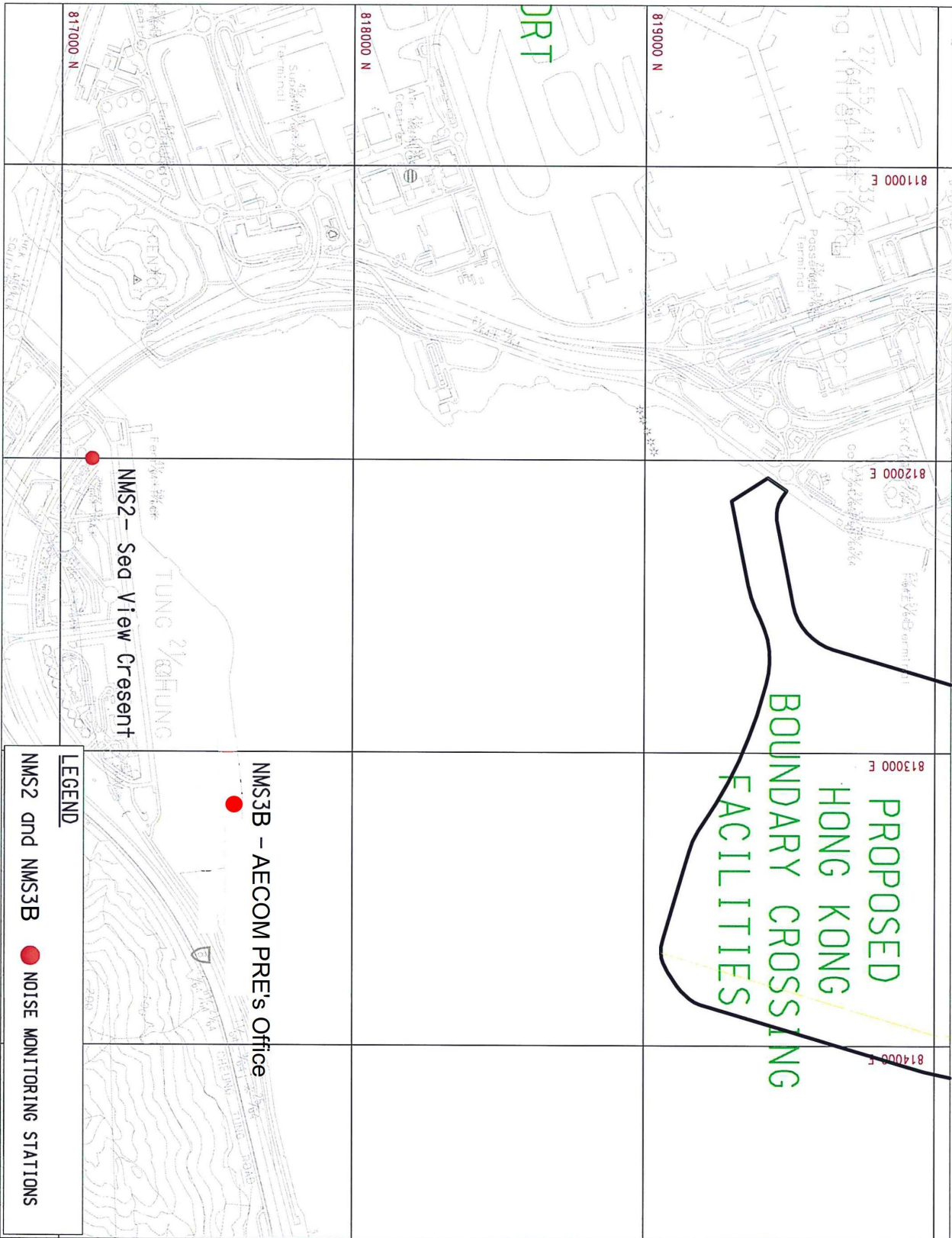
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**Figure 2.2 Location of Noise Quality Monitoring Stations**

Plot File by: LAMMCL 15/03/2012  
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Project Management Initials: Checked:

ISO A3 297mm x 420mm





Station	East	North
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10(N)	812942	820881
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3(N)	810689	816591
SR4(N)	814705	817859
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A(N)	823644	823484
SR10B(N2)	823689	823159
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

FIGURE 2.3 – LOCATION OF WATER QUALITY MONITORING STATIONS

**LEGEND**




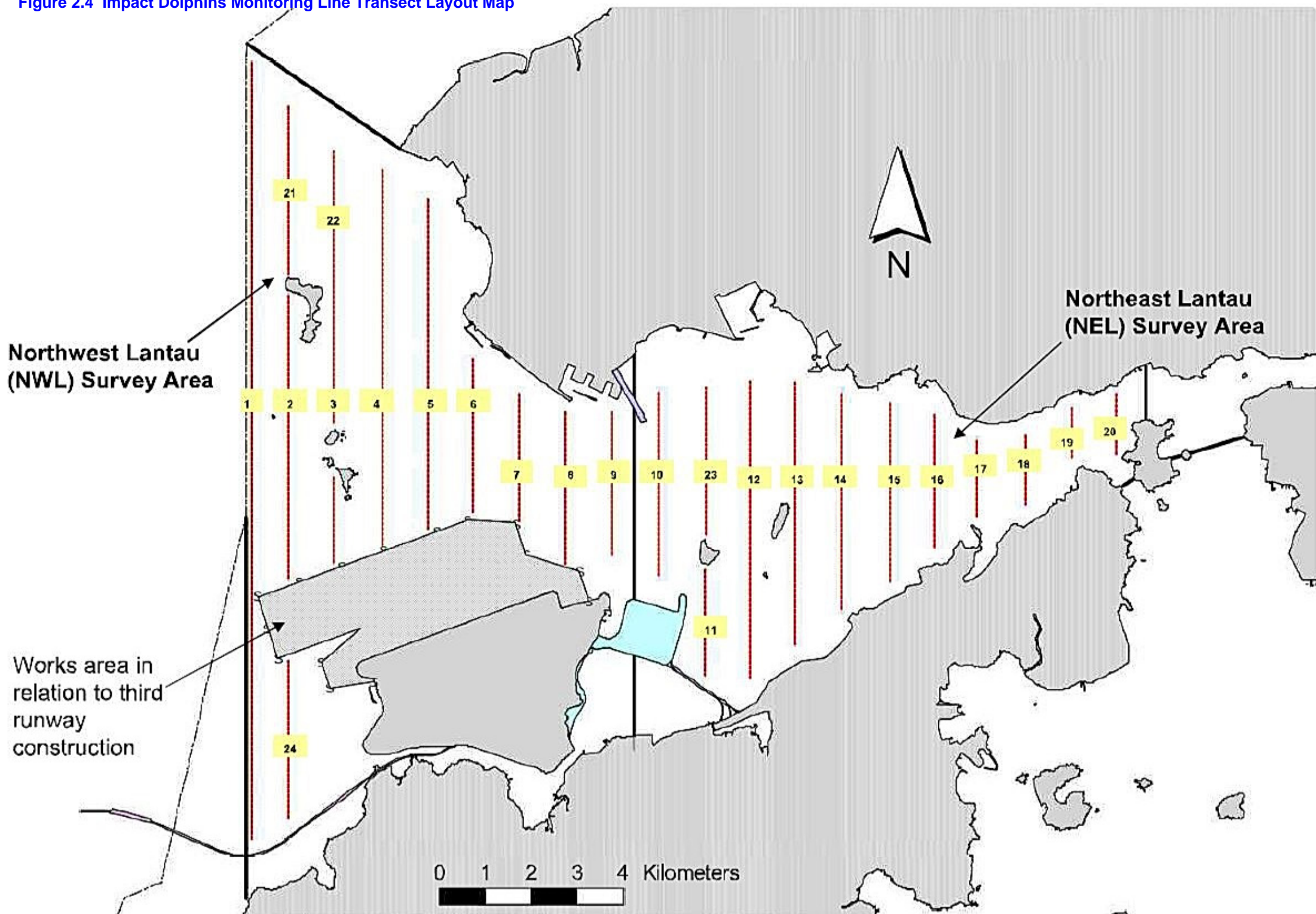
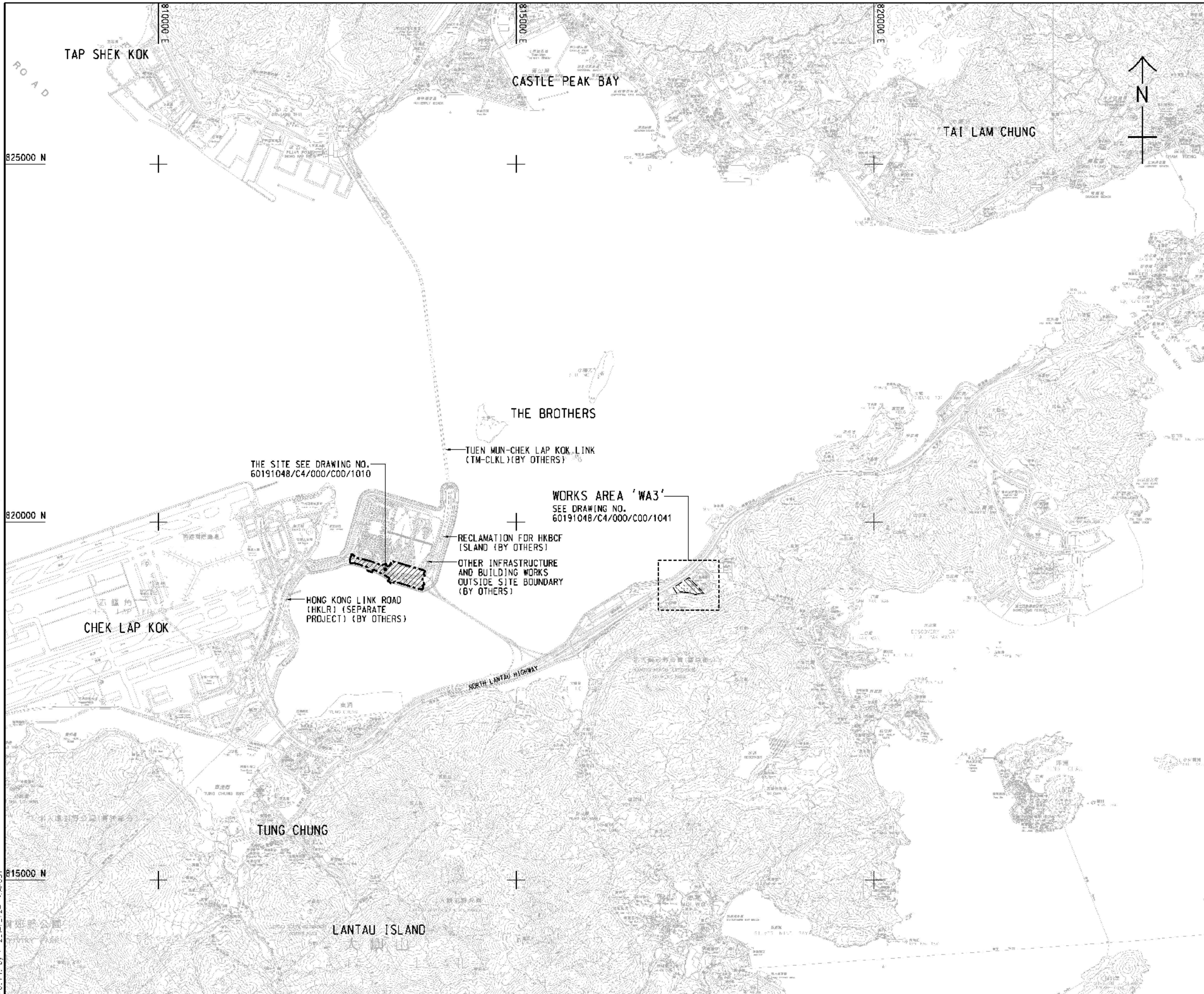
-  IS      IMPACT STATIONS
-  CS      CONTROL / FAR FIELD STATIONS
-  SR      SENSITIVE RECEIVERS STATIONS

Figure 2.4 Impact Dolphins Monitoring Line Transect Layout Map





# Appendix A. Location of Works Areas



**NOTES:**

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

**LEGEND:**

- SITE BOUNDARY
- WORKS AREA

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

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

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

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

NORTH LANTAU HIGHWAY

REV. NO.	DESCRIPTION	DATE
1	TENDER DRAWING	BWCW SCI FEB.14

**路政處 HIGHWAYS DEPARTMENT**  
**港珠澳跨境通道工程營地處**  
 Hong Kong-Zhuhai-Macau Bridge Hong Kong Project Management Office

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

**SITE LOCATION PLAN**

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

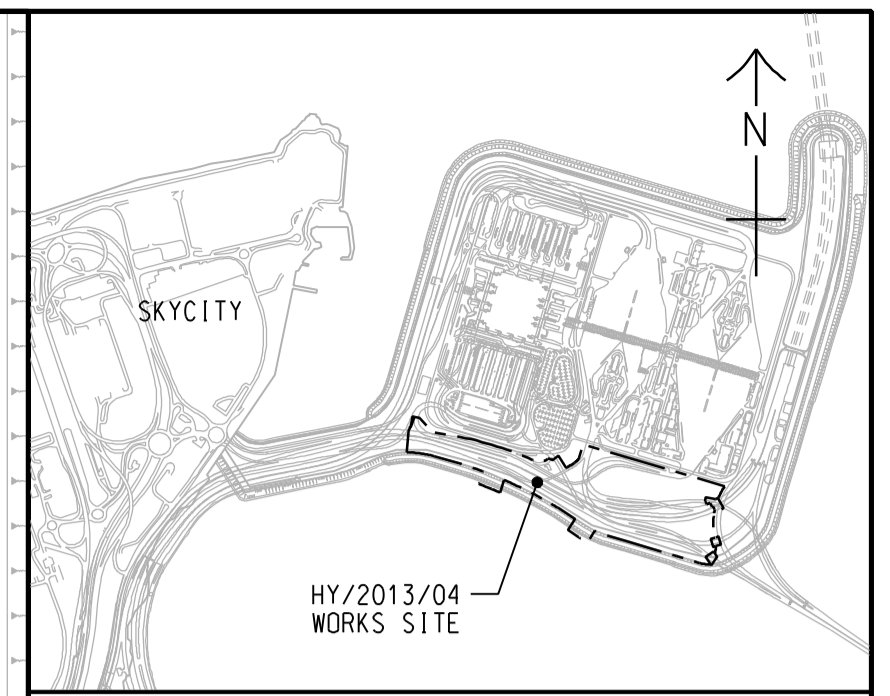
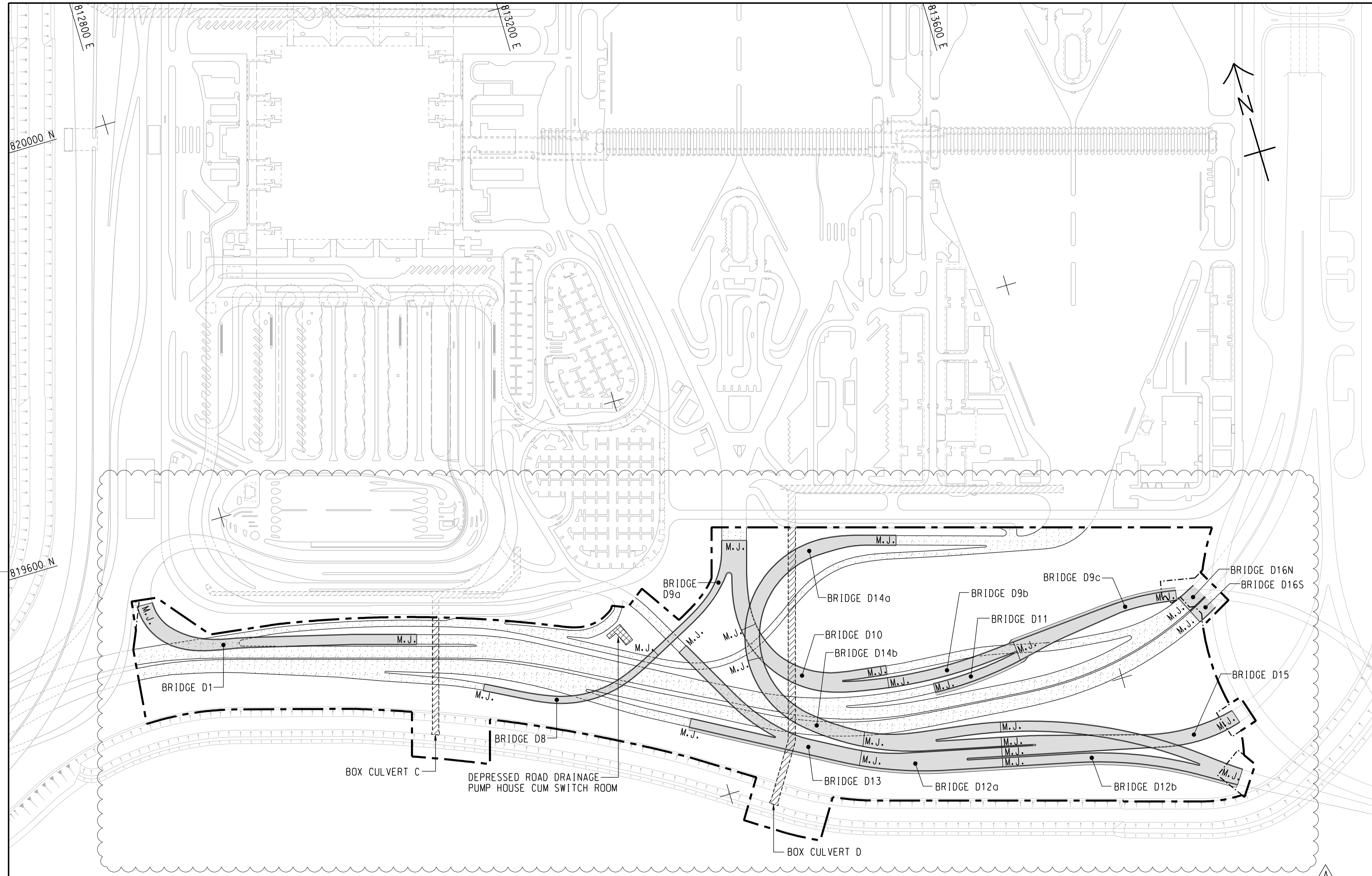
DRG. NO. 60191048/C4/000/C00/1000  
 圖紙編號

DESIGNED BY BWCW	CONTRACT NO. HY/2013/04	APPROVED BY TKH
DRAWN BY MSY	STATUS REV.	
SCALE 1:25000		

DIMENSIONS ARE IN METRES  
 © COPYRIGHT RESERVED  
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P.S. [1]: By : 2014/02/24 14:03:57

\\P010101\SYSTEM\DRAWING\GEN\FACTORY\60191048\C00\C00\1000.DWG



LOCATION PLAN  
SCALE 1 : 25000

**LEGEND:**

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

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

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

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

**GENERAL ARRANGEMENT**

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

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

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

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

SETTING OUT POINT

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

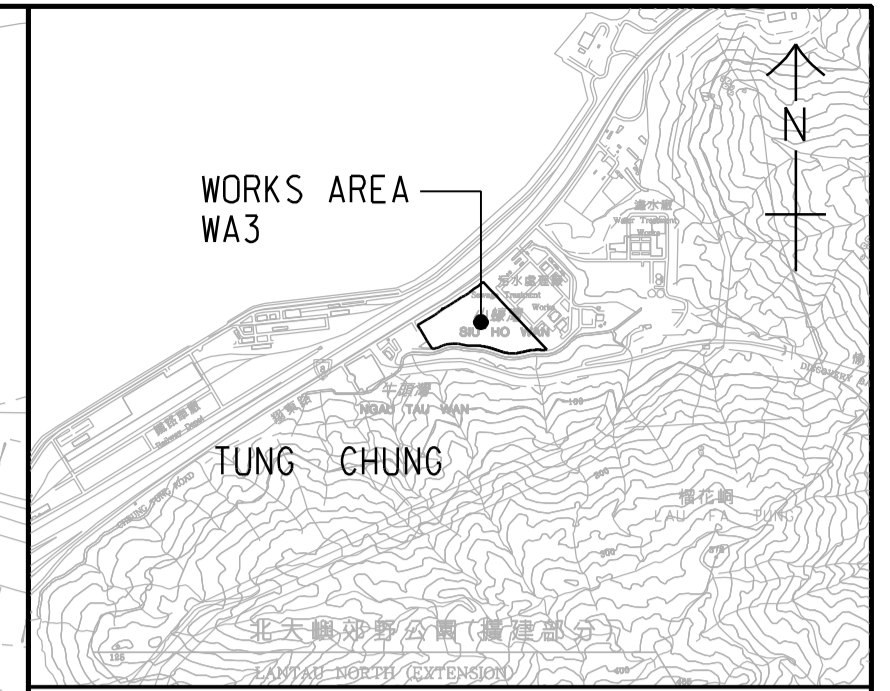
81200 E

81400 E

81600 E

819200 N

819000 N



LOCATION PLAN  
SCALE 1 : 25000

NOTES:

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

LEGEND:

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

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

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

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

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

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

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

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

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

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

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

小濠灣污水處理廠  
Siu Ho Wan Sewage Treatment Works

小濠灣污水處理廠  
Siu Ho Wan Sewage Treatment Works

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

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

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

WORKS AREA WA3

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

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

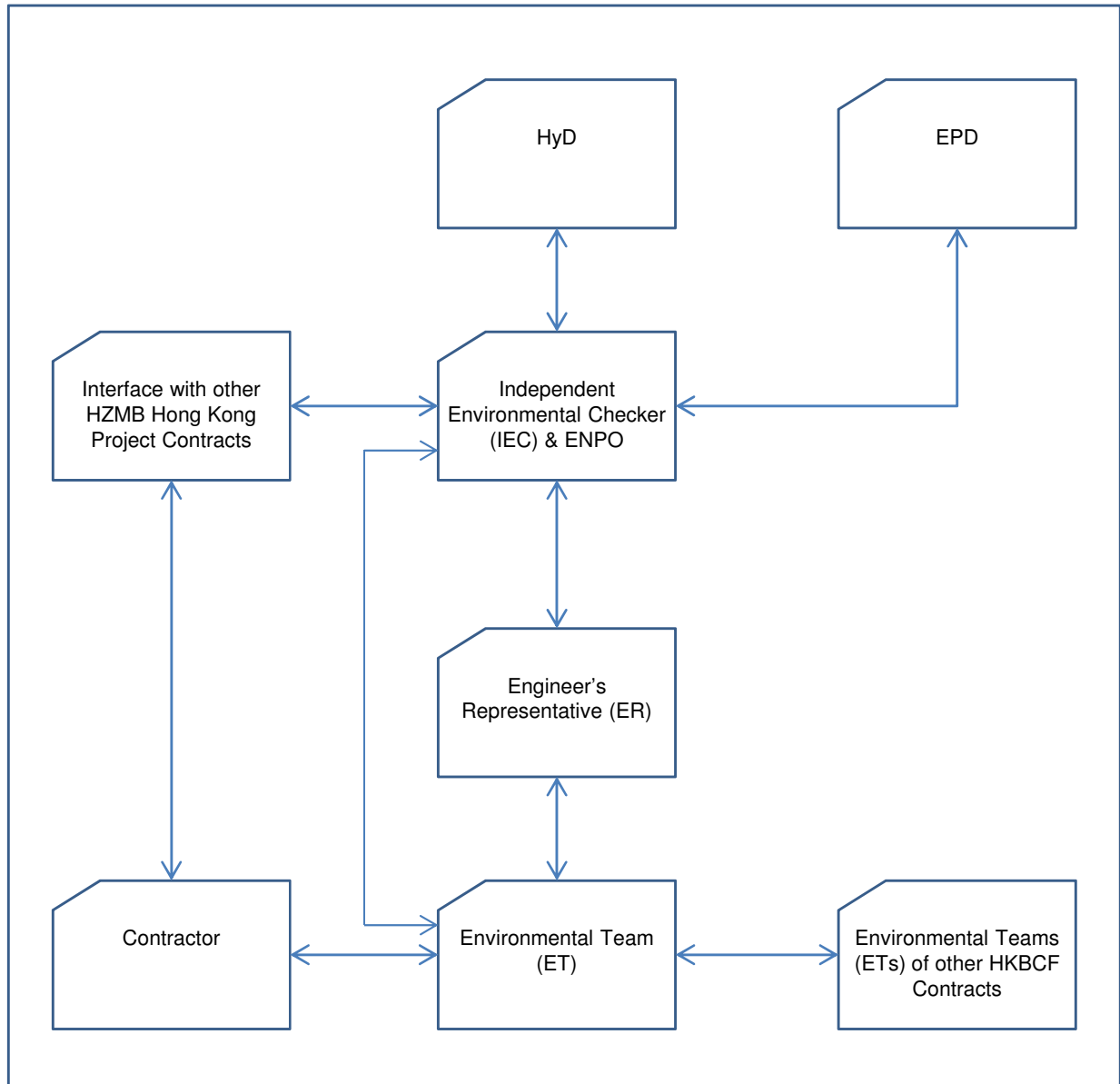
DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/04	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	WORKING DRAWING

SCALE 比例	DIMENSIONS ARE IN 尺寸單位	COPYRIGHT RESERVED 版權所
A1 1 : 1000	METRES	

# Appendix B. Project Organization for Environmental Works

## Project Organisation for Environmental Works



↔ Line of Communication

# Appendix C. Construction Programme

Activity ID	Activity Name	2015				2016				2017				2018				2019				2020				2021																															
		A	M	J	J	A	S	O	N	D	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	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
<b>Essential Works Updates - Tier 1 - 26 C</b>																																																									
<b>Contract Key Dates</b>																																																									
CON.KD.0005	Letter of Acceptance (LOA)	Letter of Acceptance (LOA)																																																							
CON.KD.0010	Commencement Date	Commencement Date																																																							
CON.KD.0020	Completion of the whole of the Works (1520)	◆ 11-May-19, Completion of the whole of the Works (1520)																																																							
<b>Possession Dates</b>																																																									
CON.PD.1010	Site Possession of Portion A1 (61) - 8	◆ Site Possession of Portion A1 (61) - 8																																																							
CON.PD.1020	Site Possession of Portion A2 (61)	◆ Site Possession of Portion A2 (61)																																																							
CON.PD.1050	Site Possession of Portion A5 (61)	◆ Site Possession of Portion A5 (61)																																																							
CON.PD.1060	Site Possession of Portion A6 (61)	◆ Site Possession of Portion A6 (61)																																																							
CON.PD.1070	Site Possession of Portion B1-5 (92)	◆ Site Possession of Portion B1-5 (92)																																																							
CON.PD.1080	Site Possession of Portion B2 (123)	◆ Site Possession of Portion B2 (123)																																																							
CON.PD.1130	Site Possession of Portion B5 (123)	◆ Site Possession of Portion B5 (123)																																																							
CON.PD.1140	Site Possession of Portion C1 (184)	06-Oct-16 ◆ Site Possession of Portion C1 (184)																																																							
CON.PD.1150	Site Possession of Portion C2 (184)	◆ Site Possession of Portion C2 (184)																																																							
CON.PD.1160	Site Possession of Portion D1 (183)	◆ Site Possession of Portion D1 (183)																																																							
CON.PD.1180	Site Possession of Portion D3 (183)	◆ Site Possession of Portion D3 (183)																																																							
CON.PD.1190	Site Possession of Portion A1 (61) - 2	◆ Site Possession of Portion A1 (61) - 2																																																							
CON.PD.1200	Site Possession of Portion A1 (61) - 5	◆ Site Possession of Portion A1 (61) - 5																																																							
CON.PD.1210	Site Possession of Portion A1 (61) - 1	◆ Site Possession of Portion A1 (61) - 1																																																							
CON.PD.1220	Site Possession of Portion C1 -1 (184)	◆ Site Possession of Portion C1 -1 (184)																																																							
CON.PD.1230	Site Possession of Portion C1 -2 (184)	◆ Site Possession of Portion C1 -2 (184)																																																							
CON.PD.1240	Site Possession of Portion B1 -1 (92)	◆ Site Possession of Portion B1 -1 (92)																																																							
CON.PD.1250	Site Possession of Portion B1 -2 (92)	◆ Site Possession of Portion B1 -2 (92)																																																							
CON.PD.1260	Site Possession of Portion A1 (61) - 7	◆ Site Possession of Portion A1 (61) - 7																																																							
CON.PD.1270	Site Possession of Portion B1-3 (92)	◆ Site Possession of Portion B1-3 (92)																																																							
CON.PD.1280	Site Possession of Portion B1-4 (92)	◆ Site Possession of Portion B1-4 (92)																																																							
CON.PD.1290	Site Possession of Portion C1 -3 (184)	◆ Site Possession of Portion C1 -3 (184)																																																							
<b>Site Access Dates</b>																																																									
CON.PD.1030	Site Access of Portion A3 (476)	06-Oct-16 ◆ Site Access of Portion A3 (476)																																																							
CON.PD.1040	Site Access of Portion A4 (627)	29-Nov-16 ◆ Site Access of Portion A4 (627)																																																							
CON.PD.1090	Site Access of Portion B3 (476)	06-Oct-16 ◆ Site Access of Portion B3 (476)																																																							
CON.PD.1100	Site Access of Portion B4 (627)	29-Nov-16 ◆ Site Access of Portion B4 (627)																																																							
CON.PD.1170	Site Access of Portion D2 (488)	06-Oct-16 ◆ Site Access of Portion D2 (488)																																																							
<b>Contractual Key Dates - Stage / Section I</b>																																																									
CON.FOT.KD01	KD01 - Achievement of Stage 1A (525)	◆ 06-Oct-16, KD01 - Achievement of Stage 1A (525)																																																							
CON.FOT.KD02	KD02 - Achievement of Stage 1B (650)	◆ 22-Dec-16, KD02 - Achievement of Stage 1B (650)																																																							
CON.FOT.KD03	KD03 - Achievement of Stage 2 (525)	◆ 06-Oct-16, KD03 - Achievement of Stage 2 (525)																																																							
CON.FOT.KD04	KD04 - Achievement of Stage 3 (465)	◆ 06-Oct-16, KD04 - Achievement of Stage 3 (465)																																																							
CON.FOT.KD05	KD05 - Achievement of Stage 4 (615)	◆ 17-Nov-16, KD05 - Achievement of Stage 4 (615)																																																							
CON.FOT.KD06	KD06 - Achievement of Stage 5 (615)	◆ 17-Nov-16, KD06 - Achievement of Stage 5 (615)																																																							
CON.FOT.KD07	KD07 - Achievement of Stage 6 (270)	◆ 06-Oct-16, KD07 - Achievement of Stage 6 (270)																																																							
CON.FOT.KD08	KD08 - Completion of Section I of the Works (795)	◆ 16-May-17, KD08 - Completion of Section I of the Works (795)																																																							
CON.FOT.KD09	KD09 - Completion of Section II of the Works (803)	◆ 24-May-17, KD09 - Completion of Section II of the Works (803)																																																							
CON.FOT.KD10	KD10 - Completion of Section III of the Works (803)	◆ 24-May-17, KD10 - Completion of Section III of the Works (803)																																																							
CON.FOT.KD11	KD11 - Completion of Section IV of the Works (565)	◆ 06-Oct-16, KD11 - Completion of Section IV of the Works (565)																																																							
CON.FOT.KD12	KD12 - Completion of Section V of the Works (803)	◆ 24-May-17, KD12 - Completion of Section V of the Works (803)																																																							
CON.FOT.KD13	KD13 - Completion of Section VI of the Works (465)	◆ 06-Oct-16, KD13 - Completion of Section VI of the Works (465)																																																							
CON.FOT.KD14	KD14 - Completion of Section VII of the Works (1155)	◆ 11-May-18, KD14 - Completion of Section VII of the Works (1155)																																																							
CON.FOT.KD15	KD15 - Completion of Section VIIIA of the Works (795)	◆ 16-May-17, KD15 - Completion of Section VIIIA of the Works (795)																																																							
CON.FOT.KD16	KD16 - Completion of Section VIIIB of the Works (1155)	◆ 11-May-18, KD16 - Completion of Section VIIIB of the Works (1155)																																																							
CON.FOT.KD17	KD17 - Achievement of Stage 7 (718)	◆ 28-Feb-17, KD17 - Achievement of Stage 7 (718)																																																							
CON.FOT.KD17A	KD17A - Completion of Section VIIIC of the Works (795)	◆ 16-May-17, KD17A - Completion of Section VIIIC of the Works (795)																																																							
CON.FOT.KD18	KD18 - Completion of Section VIIID of the Works (1155)	◆ 11-May-18, KD18 - Completion of Section VIIID of the Works (1155)																																																							
CON.FOT.KD19	KD19 - Completion of Section IXA of the Works (1160)	◆ 16-May-18, KD19 - Completion of Section IXA of the Works (1160)																																																							
CON.FOT.KD20	KD20 - Completion of Section IXB of the Works (1520)	◆ 11-May-19, KD20 - Completion of Section IXB of the Works (1520)																																																							
<b>Contractual Handover Dates to Employer</b>																																																									
CON.HD.1190	Handover of Portion A1 (KD8+28 days)	◆ 13-Jun-17, Handover of Portion A1 (KD8+28 days)																																																							
CON.HD.1200	Handover of Portion A2 (KD8+28 days)	◆ 13-Jun-17, Handover of Portion A2 (KD8+28 days)																																																							
CON.HD.1210	Handover of Portion A3 (KD9+28 days)	◆ 21-Jun-17, Handover of Portion A3 (KD9+28 days)																																																							
CON.HD.1220	Handover of Portion A4 (KD10+28 days)	◆ 21-Jun-17, Handover of Portion A4 (KD10+28 days)																																																							
CON.HD.1240	Handover of Portion A5 (KD13+0 days)	◆ 06-Oct-16, Handover of Portion A5 (KD13+0 days)																																																							

◆ Current Milestone  
 Late Bar  
 Actual Work

HY/2013/04 - Detailed Works Programme

Detailed Works Programme (IWP) Rev. 04			
Date	Revision	Chec...	Approved
09-Sep-15	Detailed Works Programme ...	WN/WC	ET
17-Oct-15	Detailed Works Programme ...	WN/WC	ET
29-Oct-15	Detailed Works Programme ...	WN/WC	ET
25-Nov-15	Detailed Works Programme ...	WN/WC	ET



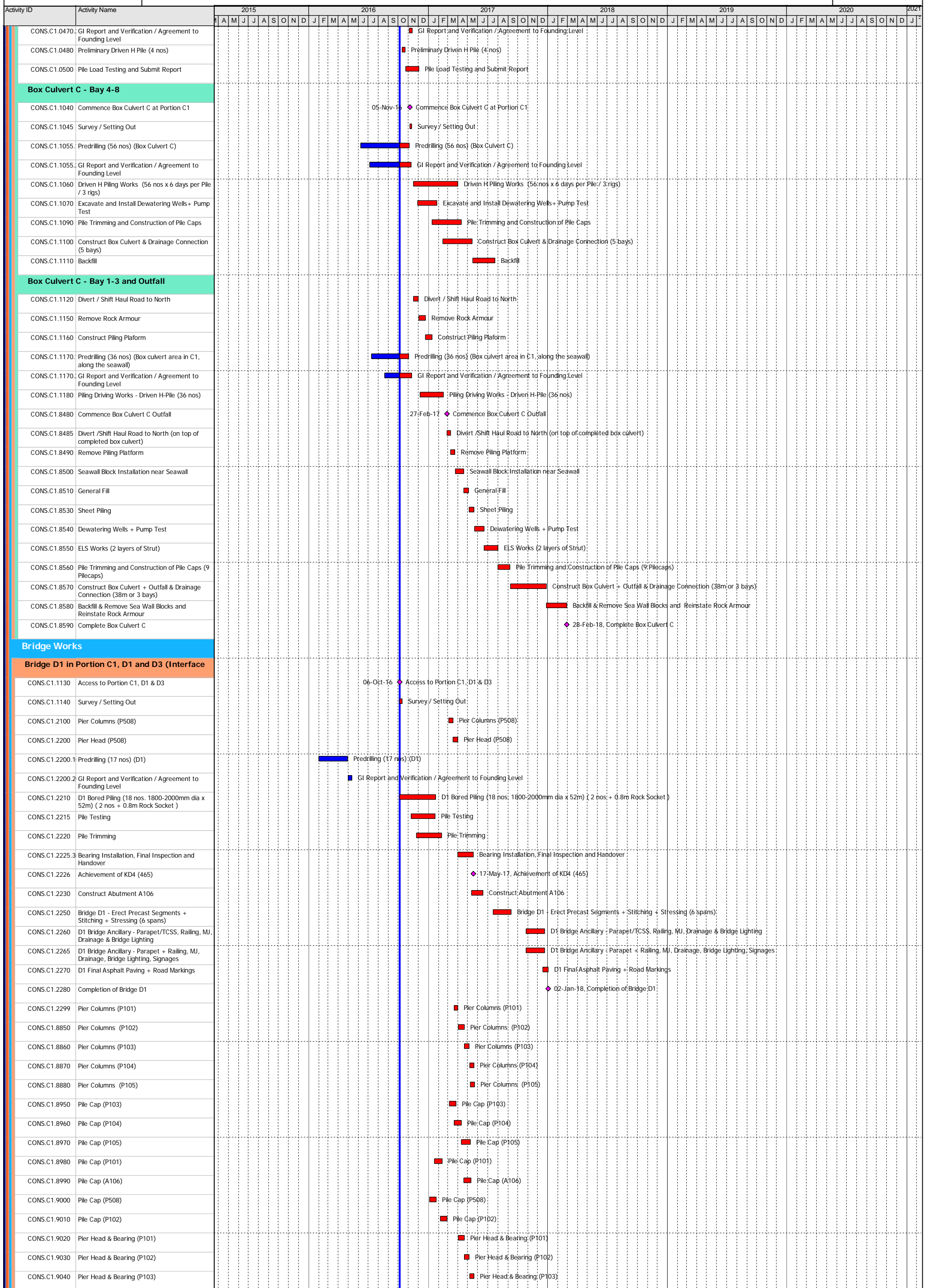




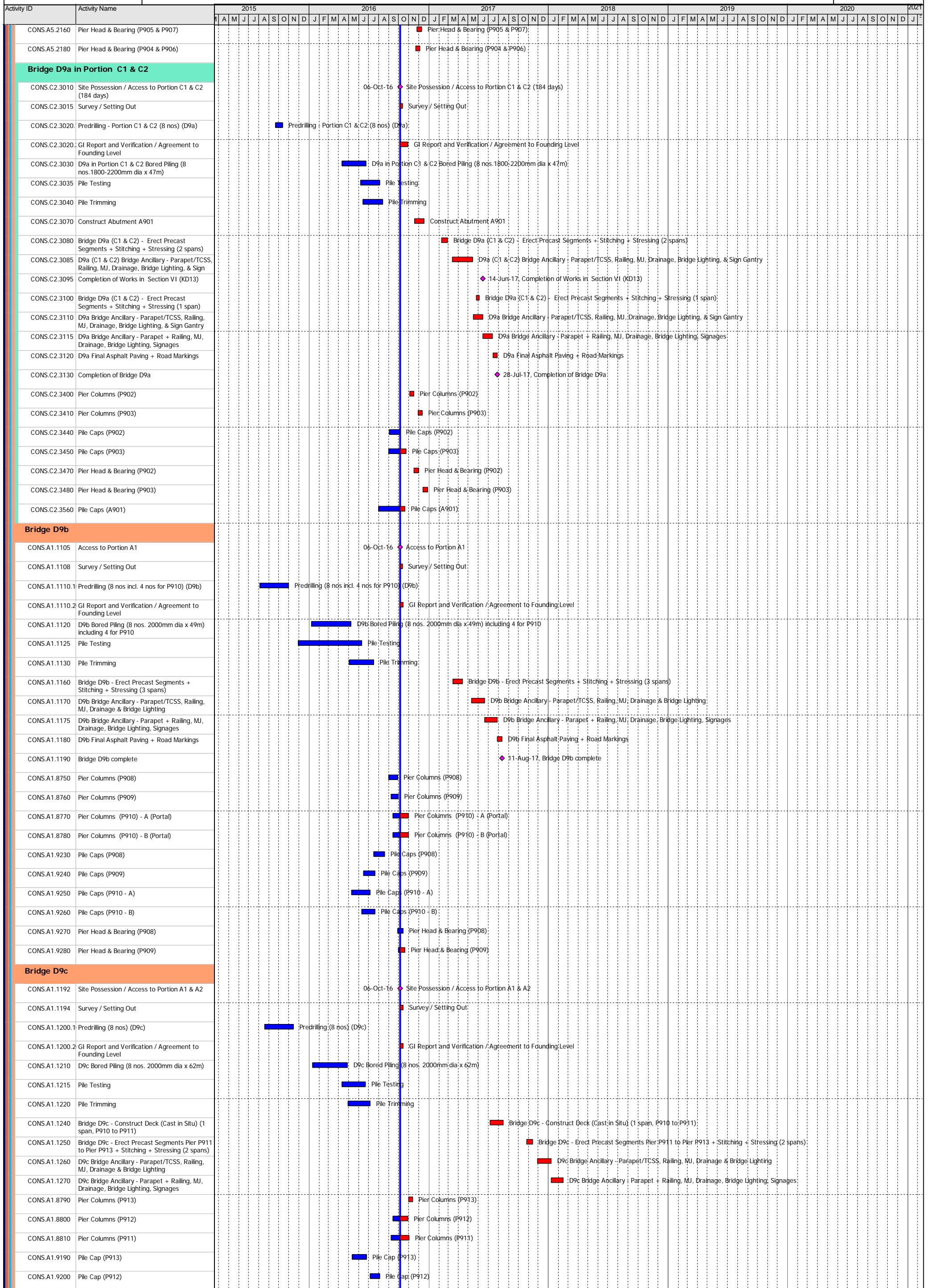


Activity ID	Activity Name	2015					2016					2017					2018					2019					2020					2021																									
		A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
<b>Mobilisation and Site Establishment</b>																																																									
CONS.A1.0100	Site Possession / Access to Portion A1, A2, A5 & A6	◆ Site Possession / Access to Portion A1, A2, A5 & A6																																																							
CONS.A1.0110	Mobilisation, Site Clearing and Site Set-up	■ Mobilisation, Site Clearing and Site Set-up																																																							
CONS.A1.0120	Install Temporary Facilities / Hygiene Facilities	■ Install Temporary Facilities / Hygiene Facilities																																																							
<b>Gates and Haul Road Construction (as per DW)</b>																																																									
CONS.A1.1010	Site Possession / Access to Portion A1	◆ Site Possession / Access to Portion A1																																																							
CONS.A1.1020	Survey/ Setting Out	■ Survey/ Setting Out																																																							
CONS.A1.1030	Construct Gate 1 at Haul Road	■ Construct Gate 1 at Haul Road																																																							
CONS.B1.1010	Site Possession / Access to Portion B1	◆ Site Possession / Access to Portion B1																																																							
CONS.B1.1020	Mobilisation, Site Survey and Setting Out	■ Mobilisation, Site Survey and Setting Out																																																							
CONS.B1.1030	Construct Gate 3 and Temporary Haul Road	■ Construct Gate 3 and Temporary Haul Road																																																							
CONS.B2.1010	Site Possession / Access to Portion B2 & B5	◆ Site Possession / Access to Portion B2 & B5																																																							
CONS.B2.1020	Site Survey / Setting out	■ Site Survey / Setting out																																																							
CONS.B2.1030	Construct Temporary Haul Road	■ Construct Temporary Haul Road																																																							
<b>Preliminary Bored Pile with Additional Instrum</b>																																																									
CONS.A1.0180	Commence Preliminary Bored Pile at Abutment A1101	◆ Commence Preliminary Bored Pile at Abutment A1101																																																							
CONS.A1.0190	Mobilise Plant & Set-up Support	■ Mobilise Plant & Set-up Support																																																							
CONS.A1.0195.1	Predrilling to Preliminary Bored Pile (D11)	■ Drilling to Preliminary Bored Pile (D11)																																																							
CONS.A1.0195.2	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																							
CONS.A1.0200	Preliminary Bored Piling with Additional Instrumentation at Abutment A1101 (1 no.	■ Preliminary Bored Piling with Additional Instrumentation at Abutment A1101 (1 no. 2000mm dia x 42m)																																																							
CONS.A1.0210	Pile Curing	■ Pile Curing																																																							
CONS.A1.0220	Pile Load Testing & Submit Report	■ Pile Load Testing & Submit Report																																																							
<b>Replacement Preliminary Bored Pile and Load</b>																																																									
CONS.A1.0195.6	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																							
CONS.A1.0195.7	Engineer's Representative confirmed the replacement bored pile at Pier P908-P1	■ Engineer's Representative confirmed the replacement bored pile at Pier P908-P1																																																							
CONS.A1.0280	Commence Replacement Preliminary Bored Pile at Abutment A1004	◆ Commence Replacement Preliminary Bored Pile at Abutment A1004																																																							
CONS.A1.0290	Mobilise Plant & Set-up Support	■ Mobilise Plant & Set-up Support																																																							
CONS.A1.0300	Replacement Preliminary Bored Piling - Pier P908	■ Replacement Preliminary Bored Piling - Pier P908																																																							
CONS.A1.0310	Pile Curing	■ Pile Curing																																																							
CONS.A1.0320	Pile Load Testing & Submit Report	■ Pile Load Testing & Submit Report																																																							
<b>Preliminary Bored Pile and Load Testing at Ab</b>																																																									
CONS.C1.0400	Commence Preliminary Bored Pile at Abutment A106	◆ Commence Preliminary Bored Pile at Abutment A106																																																							
CONS.C1.0410	Mobilise Plant & Set-up Support	■ Mobilise Plant & Set-up Support																																																							
CONS.C1.0415.1	Predrilling to Preliminary Bored Pile (D1)	■ Drilling to Preliminary Bored Pile (D1)																																																							
CONS.C1.0415.2	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																							
CONS.C1.0420	Preliminary Bored Piling - Abutment A106 (1 no. 2000mm dia x 52m)	■ Preliminary Bored Piling - Abutment A106 (1 no. 2000mm dia x 52m)																																																							
CONS.C1.0430	Pile Curing	■ Pile Curing																																																							
CONS.C1.0440	Pile Load Testing and Submit Report	■ Pile Load Testing and Submit Report																																																							
<b>Preliminary Driven H Piles and Load Testing</b>																																																									
CONS.A1.4360	Test Pile approved, commence permanent driven h-pile	◆ Test Pile approved, commence permanent driven h-pile																																																							
CONS.C1.0510	Engineer select Preliminary Test Pile (Driven H Pile)	◆ Engineer select Preliminary Test Pile (Driven H Pile)																																																							
CONS.C1.0520	Mobilise Plant & Set-up Support	■ Mobilise Plant & Set-up Support																																																							
CONS.C1.0530.1	Pre-drilling (2 nos) (Sign Gantry - Preliminary Pile)	■ Pre-drilling (2 nos) (Sign Gantry - Preliminary Pile)																																																							
CONS.C1.0530.2	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																							
CONS.C1.0540	Preliminary Driven H Pile (2 nos)	■ Preliminary Driven H Pile (2 nos)																																																							
CONS.C1.0550	Pile Load Testing and Submit Report	■ Pile Load Testing and Submit Report																																																							
<b>Preliminary Pre-Bored H-Pile and Load Testing</b>																																																									
CONS.A1.0195.3	Predrilling to Preliminary Pre-Bored H-Pile - 1 no.	■ Drilling to Preliminary Pre-Bored H-Pile - 1 no.																																																							
CONS.A1.0195.4	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																							
CONS.A1.0230	Engineer select Preliminary Test Pile (Pre-Bored H-Pile)	◆ Engineer select Preliminary Test Pile (Pre-Bored H-Pile)																																																							
CONS.A1.0240	Mobilise Plant & Set-up Support	■ Mobilise Plant & Set-up Support																																																							
CONS.A1.0250	Preliminary Pre-Bored H-Piling - 1 no.	■ Preliminary Pre-Bored H-Piling - 1 no.																																																							
CONS.A1.0270	Pile Load Testing & Submit Report	■ Pile Load Testing & Submit Report																																																							
<b>Treatment for Bored Piling Excavated Materials</b>																																																									
CONS.EX.1010	Set-up Stockpile for Excavated Marine Mud	■ Set-up Stockpile for Excavated Marine Mud																																																							
CONS.EX.1020	Pilot Test for Marine Mud Treatment	■ Pilot Test for Marine Mud Treatment																																																							
CONS.EX.1030	Solidification / Stabilisation / Approval Method	■ Solidification / Stabilisation / Approval Method																																																							
CONS.EX.1040	Set-up Treatment Facilities and Storage Yard	■ Set-up Treatment Facilities and Storage Yard																																																							
CONS.EX.1050	Full Scale Solidification / Stabilization Treatment and Verification Testing	■ Full Scale Solidification / Stabilization Treatment and Verification Testing																																																							
CONS.EX.1060	Decommissioning of Treatment Facilities	■ Decommissioning of Treatment Facilities																																																							
<b>Site Set Up at Portion C1</b>																																																									
CONS.C1.1010	Site Possession / Access to Portion C1 and C2	◆ Site Possession / Access to Portion C1 and C2																																																							
CONS.C1.1020	Site Possession / Access to Portion D1 and D3	◆ Site Possession / Access to Portion D1 and D3																																																							
CONS.C1.1030	Site Set-Up	■ Site Set-Up																																																							
<b>Pump House cum Switch Room</b>																																																									
CONS.C1.5110	Commence Pump House Cum Switch Room (2B+ GF)	◆ Commence Pump House Cum Switch Room (2B+ GF)																																																							































Activity ID	Activity Name	2015				2016				2017				2018				2019				2020				2021																																					
		A	M	J	J	A	S	O	N	D	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	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
CONS.RW.37	Road Formation to Base Course																																																														
<b>Installation of Railing and Fencing + Road Light</b>																																																															
CONS.RW.37	Install Road Railing and Fencing																																																														
CONS.RW.37	Install Road Lighting and Signages																																																														
<b>Final Paving and Road Markings</b>																																																															
CONS.RW.37	Final Road Paving (Wearing Course)																																																														
CONS.RW.37	Road Markings and Road Signages																																																														
<b>Road SOL 104 (Phase 1)</b>																																																															
<b>Kerbing and Footings for Railing, Fencing, Sigr</b>																																																															
CONS.RW.33	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																														
CONS.RW.33	Road Formation to Sub-base																																																														
CONS.RW.33	Construct Precast Road Kerbings																																																														
<b>Road Works to Road Base and Base Course</b>																																																															
CONS.RW.33	Road Formation to Road Base																																																														
CONS.RW.33	Road Formation to Base Course																																																														
<b>Installation of Railing and Fencing + Road Light</b>																																																															
CONS.RW.33	Install Road Railing and Fencing																																																														
CONS.RW.33	Install Road Lighting and Signages																																																														
<b>Final Paving and Road Markings</b>																																																															
CONS.RW.33	Final Road Paving (Wearing Course)																																																														
CONS.RW.33	Road Markings and Road Signages																																																														
<b>Road SOL 104 (Phase 2)</b>																																																															
<b>Kerbing and Footings for Railing, Fencing, Sigr</b>																																																															
CONS.RW.38	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																														
CONS.RW.38	Road Formation to Sub-base																																																														
CONS.RW.38	Construct Precast Road Kerbings																																																														
<b>Road Works to Road Base and Base Course</b>																																																															
CONS.RW.38	Road Formation to Road Base																																																														
CONS.RW.38	Road Formation to Base Course																																																														
<b>Installation of Railing and Fencing + Road Light</b>																																																															
CONS.RW.38	Install Road Railing and Fencing																																																														
CONS.RW.38	Install Road Lighting and Signages																																																														
<b>Final Paving and Road Markings</b>																																																															
CONS.RW.37	Final Road Paving (Wearing Course)																																																														
CONS.RW.37	Road Markings and Road Signages																																																														
<b>Area 2 (East of Pump House Portion C1, A1, A2)</b>																																																															
<b>Road Works</b>																																																															
<b>Road SOL 101 / 109 / 114 (Phase 1)</b>																																																															
<b>Kerbing and Footings for Railing, Fencing, Sigr</b>																																																															
CONS.RE.384	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																														
CONS.RE.385	Road Formation to Sub-base																																																														
CONS.RE.386	Construct Precast Road Kerbings																																																														
<b>Road Works to Road Base and Base Course</b>																																																															
CONS.RE.372	Road Formation to Road Base																																																														
CONS.RE.373	Road Formation to Base Course																																																														
<b>Installation of Railing and Fencing + Road Light</b>																																																															
CONS.RE.374	Install Road Railing and Fencing																																																														
CONS.RE.375	Install Road Lighting and Signages																																																														
<b>Road SOL 101 / 109 / 114 (Phase 2)</b>																																																															
<b>Kerbing and Footings for Railing, Fencing, Sigr</b>																																																															
CONS.RE.442	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																														
CONS.RE.443	Road Formation to Sub-base																																																														
CONS.RE.444	Construct Precast Road Kerbings																																																														
<b>Road Works to Road Base and Base Course</b>																																																															
CONS.RE.438	Road Formation to Road Base																																																														
CONS.RE.439	Road Formation to Base Course																																																														
<b>Installation of Railing and Fencing + Road Light</b>																																																															
CONS.RE.440	Install Road Railing and Fencing																																																														
CONS.RE.441	Install Road Lighting and Signages																																																														
<b>Road SOL 102 (Phase 1)</b>																																																															
<b>Kerbing and Footings for Railing, Fencing, Sigr</b>																																																															
CONS.RE.415	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																														
CONS.RE.416	Construct Precast Road Kerbings																																																														
CONS.RE.417	Road Formation to Sub-base																																																														
<b>Road Works to Road Base and Base Course</b>																																																															
CONS.RE.410	Road Formation to Road Base																																																														

Activity ID	Activity Name	2015				2016				2017				2018				2019				2020				2021																																	
		A	M	J	J	A	S	O	N	D	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	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
CONS.RE.411	Road Formation to Base Course																																																										
<b>Installation of Railing and Fencing + Road Light</b>																																																											
CONS.RE.418	Install Road Railing and Fencing																																																										
CONS.RE.419	Install Road Lighting and Signages																																																										
<b>Final Paving and Road Markings</b>																																																											
CONS.RE.402	Final Road Paving (Wearing Course)																																																										
CONS.RE.403	Road Markings and Road Signages																																																										
<b>Road SOL 102 (Phase 2)</b>																																																											
<b>Kerbing and Footings for Railing, Fencing, Sign</b>																																																											
CONS.RE.449	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																										
CONS.RE.450	Construct Precast Road Kerbings																																																										
CONS.RE.451	Road Formation to Sub-base																																																										
<b>Road Works to Road Base and Base Course</b>																																																											
CONS.RE.447	Road Formation to Road Base																																																										
CONS.RE.448	Road Formation to Base Course																																																										
<b>Installation of Railing and Fencing + Road Light</b>																																																											
CONS.RE.452	Install Road Railing and Fencing																																																										
CONS.RE.453	Install Road Lighting and Signages																																																										
<b>Final Paving and Road Markings</b>																																																											
CONS.RE.445	Final Road Paving (Wearing Course)																																																										
CONS.RE.446	Road Markings and Road Signages																																																										
<b>Road SOL 107 / 113 (Phase 1)</b>																																																											
<b>Kerbing and Footings for Railing, Fencing, Sign</b>																																																											
CONS.RE.393	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																										
CONS.RE.394	Road Formation to Sub-base																																																										
CONS.RE.395	Construct Precast Road Kerbings																																																										
<b>Road Works to Road Base and Base Course</b>																																																											
CONS.RE.396	Road Formation to Road Base																																																										
CONS.RE.397	Road Formation to Base Course																																																										
<b>Installation of Railing and Fencing + Road Light</b>																																																											
CONS.RE.398	Install Road Railing and Fencing																																																										
CONS.RE.399	Install Road Lighting and Signages																																																										
<b>Final Paving and Road Markings</b>																																																											
CONS.RE.400	Final Road Paving (Wearing Course)																																																										
CONS.RE.401	Road Markings and Road Signages																																																										
<b>Road SOL 107 / 113 (Phase 2)</b>																																																											
<b>Kerbing and Footings for Railing, Fencing, Sign</b>																																																											
CONS.RE.454	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																																																										
CONS.RE.455	Road Formation to Sub-base																																																										
CONS.RE.456	Construct Precast Road Kerbings																																																										
<b>Road Works to Road Base and Base Course</b>																																																											
CONS.RE.457	Road Formation to Road Base																																																										
CONS.RE.458	Road Formation to Base Course																																																										
<b>Installation of Railing and Fencing + Road Light</b>																																																											
CONS.RE.459	Install Road Railing and Fencing																																																										
CONS.RE.460	Install Road Lighting and Signages																																																										
<b>Final Paving and Road Markings</b>																																																											
CONS.RE.461	Final Road Paving (Wearing Course)																																																										
CONS.RE.462	Road Markings and Road Signages																																																										
<b>Road SOL 108 / 106 &amp; SOL 110</b>																																																											
<b>Adjacent to Road SOL 108 / 106, Abutment A9</b>																																																											
CONS.RE.362	Excavate and Construct footing for Railing and Road lighting																																																										
CONS.RE.363	Road formation to Subbase																																																										
CONS.RE.364	Construct Precast Road Kerbings																																																										
CONS.RE.365	Road formation to Road base and Base course																																																										
CONS.RE.366	Install Road Lighting, Railing and Signages																																																										
CONS.RE.367	Final Road Paving and Road markings (KD13 - Completion of Section VI)																																																										
<b>Portion A1 and A2 - Sub-Base Area</b>																																																											
CONS.A1.8710	Demobilisation of Temporary Facilities on Site																																																										
CONS.A1.8720	Site Survey / Site Clearing																																																										
CONS.A1.8730	Area to Formation Level																																																										
CONS.A1.8740	Sub-Base Material Topping (Area 29,963 m2 x 100mm thk Subbase)																																																										
<b>Area 3 (in Portion A6)</b>																																																											
<b>Final Paving and Road Markings</b>																																																											
<b>Portion A6 - Final Paving and Road Markings</b>																																																											
CONS.RE.3780	Road Clearing																																																										



Activity ID	Activity Name	2015				2016				2017				2018				2019				2020				2021																			
		A	M	J	J	A	S	O	N	D	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	A	M	J	J	A	S	O	N
<b>Zone BC4 in Portion D1</b>																																													
CONS.C1.8220	Install Irrigation Main Line + Construct Swale	■ Install Irrigation Main Line + Construct Swale																																											
CONS.C1.8230	Install Lateral Irrigation Pipes / Sprinklers	■ Install Lateral Irrigation Pipes / Sprinklers																																											
CONS.C1.8240	Irrigation Coverage Test	■ Irrigation Coverage Test																																											
CONS.C1.8250	Soft Landscaping - Shrubs Planting / Ground Cover	■ Soft Landscaping - Shrubs Planting / Ground Cover																																											
CONS.C1.8260	Complete Landscape Works in Zone BC4 W02	◆ 15-May-18, Complete Landscape Works in Zone BC4 W02																																											
CONS.C1.8600	Commence Landscape Works in Portion D1	◆ 17-Nov-17, Commence Landscape Works in Portion D1																																											
CONS.C1.8610	Top Soil to Landscaped Areas	■ Top Soil to Landscaped Areas																																											
CONS.C1.8620	Install Irrigation Main Line + Construct Swale	■ Install Irrigation Main Line + Construct Swale																																											
CONS.C1.8630	Install Lateral Irrigation Pipes / Sprinklers	■ Install Lateral Irrigation Pipes / Sprinklers																																											
CONS.C1.8640	Irrigation Coverage Test	■ Irrigation Coverage Test																																											
CONS.C1.8650	Soft Landscaping - Shrubs Planting / Ground Cover	■ Soft Landscaping - Shrubs Planting / Ground Cover																																											
CONS.C1.8660	Complete Landscape Works in Portion D1 of Zone BC4 W02	◆ 05-May-18, Complete Landscape Works in Portion D1 of Zone BC4 W02																																											
<b>Zone CC4</b>																																													
CONS.C1.8270	Commence Landscape Works in Zone CC4	◆ 15-Dec-17, Commence Landscape Works in Zone CC4																																											
CONS.C1.8280	Top Soil to Landscaped Areas	■ Top Soil to Landscaped Areas																																											
CONS.C1.8290	Install Irrigation Main Line	■ Install Irrigation Main Line																																											
CONS.C1.8300	Install Lateral Irrigation Pipes / Sprinklers	■ Install Lateral Irrigation Pipes / Sprinklers																																											
CONS.C1.8310	Irrigation Coverage Test	■ Irrigation Coverage Test																																											
CONS.C1.8320	Soft Landscaping - Shrubs Planting / Ground Cover	■ Soft Landscaping - Shrubs Planting / Ground Cover																																											
CONS.C1.8330	Complete Landscape Works in Zone CC4	◆ 19-Jun-18, Complete Landscape Works in Zone CC4																																											
<b>Zone EC4</b>																																													
CONS.C1.8340	Commence Landscape Works	◆ 18-Jan-18, Commence Landscape Works																																											
CONS.C1.8350	Top Soil to Landscaped Areas	■ Top Soil to Landscaped Areas																																											
CONS.C1.8360	Install Irrigation Main Line	■ Install Irrigation Main Line																																											
CONS.C1.8370	Install Lateral Irrigation Pipes / Sprinklers	■ Install Lateral Irrigation Pipes / Sprinklers																																											
CONS.C1.8380	Irrigation Coverage Test	■ Irrigation Coverage Test																																											
CONS.C1.8390	Soft Landscaping - Shrubs Planting / Ground Cover	■ Soft Landscaping - Shrubs Planting / Ground Cover																																											
CONS.C1.8400	Complete Landscape Works in Zone EC4 W02	◆ 13-Jul-18, Complete Landscape Works in Zone EC4 W02																																											
<b>Zone FC4</b>																																													
CONS.C1.8410	Commence Landscape Works	◆ 05-Feb-18, Commence Landscape Works																																											
CONS.C1.8420	Top Soil to Landscaped Areas	■ Top Soil to Landscaped Areas																																											
CONS.C1.8430	Install Irrigation Main Line	■ Install Irrigation Main Line																																											
CONS.C1.8440	Install Lateral Irrigation Pipes / Sprinklers	■ Install Lateral Irrigation Pipes / Sprinklers																																											
CONS.C1.8450	Irrigation Coverage Test	■ Irrigation Coverage Test																																											
CONS.C1.8460	Soft Landscaping - Shrubs Planting / Ground Cover	■ Soft Landscaping - Shrubs Planting / Ground Cover																																											
CONS.C1.8470	Complete Landscape Works in Zone FC4 W02	◆ 03-Aug-18, Complete Landscape Works in Zone FC4 W02																																											
<b>Irrigation Water Tanks and Booster Pumps</b>																																													
CONS.C1.8790	Identify and Agree location with Engineer	■ Identify and Agree location with Engineer																																											
CONS.C1.8800	Construct Irrigation Water Tanks and Booster Pump Chamber	■ Construct Irrigation Water Tanks and Booster Pump Chamber																																											
CONS.C1.8810	MEP Works - Electrical and Mechanical Installation + T&C	■ MEP Works - Electrical and Mechanical Installation + T&C																																											
<b>Establishment Period (1 year)</b>		■ Establishment of Landscape Works																																											
<b>Executive Summary</b>																																													
<b>Box Culverts</b>																																													
<b>Box Culvert D</b>																																													
BCD.ES.1010	Box Culvert D - Bored Piling, Testing + Pile caps (Bay 1-15)	■ Box Culvert D - Bored Piling, Testing + Pile caps (Bay 1-15)																																											
BCD.ES.1020	Box Culvert D - RC Box Structure + Backfilling (Bay 1-15)	■ Box Culvert D - RC Box Structure + Backfilling (Bay 1-15)																																											
BCD.ES.1030	Box Culvert D - Bored Piling + Pile Testing (Bay 1-3)	■ Box Culvert D - Bored Piling + Pile Testing (Bay 1-3)																																											
BCD.ES.1040	Box Culvert D - Cofferdam + ELS (Bay 1-3 + Outfall)	■ Box Culvert D - Cofferdam + ELS (Bay 1-3 + Outfall)																																											
BCD.ES.1050	Box Culvert D - Pile Caps + RC Box Structure (Bay 1-3 + Outfall)	■ Box Culvert D - Pile Caps + RC Box Structure (Bay 1-3 + Outfall)																																											
<b>Box Culvert C</b>																																													
BCC.ES.2010	Box Culvert C - Driven H Pile + Pile caps (Bay 4-8)	■ Box Culvert C - Driven H Pile + Pile caps (Bay 4-8)																																											
BCC.ES.2020	Box Culvert C - Construct RC Box Structure (Bay 4-8)	■ Box Culvert C - Construct RC Box Structure (Bay 4-8)																																											
BCC.ES.2030	Box Culvert C - Driven H Pile + Load Testing (Bay 1-3)	■ Box Culvert C - Driven H Pile + Load Testing (Bay 1-3)																																											
BCC.ES.2040	Box Culvert C - Cofferdam + ELS (Bay 1-3 + Outfall)	■ Box Culvert C - Cofferdam + ELS (Bay 1-3 + Outfall)																																											
BCC.ES.2050	Box Culvert C - Pilecaps + RC Box Structure (Bay 1-3 + Outfall)	■ Box Culvert C - Pilecaps + RC Box Structure (Bay 1-3 + Outfall)																																											
<b>Bridge Works</b>																																													
<b>Bridges in Portion A &amp; B</b>																																													
BRG.ES.1010	Bridges in Portion A & B - Bored Piling + Pilecaps	■ Bridges in Portion A & B - Bored Piling + Pilecaps																																											
BRG.ES.1020	Bridges in Portion A & B - Column / Pier Head + Bearings	■ Bridges in Portion A & B - Column / Pier Head + Bearings																																											
BRG.ES.1030	Bridges in Portion A & B - Decking / Segments Erection + Stitching	■ Bridges in Portion A & B - Decking / Segments Erection + Stitching																																											
BRG.ES.1040	Bridges in Portion A & B - Parapet + Ancillary Works	■ Bridges in Portion A & B - Parapet + Ancillary Works																																											
<b>Bridges in Portion C &amp; D</b>																																													
BRG.ES.2010	Bridges in Portion C & D - Bored Piling + Pilecaps	■ Bridges in Portion C & D - Bored Piling + Pilecaps																																											
BRG.ES.2020	Bridges in Portion C & D - Column, Pier Head + Bearings	■ Bridges in Portion C & D - Column, Pier Head + Bearings																																											



# Appendix D. Event and Action Plan

## Event/Action Plan for Air Quality Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform IEC and ER;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and ER;</li> <li>3. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase monitoring frequency to daily;</li> <li>6. Discuss with IEC and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and ER;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial to ER within 3 working days of notification;</li> <li>2. Implement the agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>



EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>LIMIT LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform ER, Contractor and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, ER, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

## Event / Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Notify IEC and Contractor;</li> <li>2. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>3. Report the results of investigation to the IEC, ER and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analysed results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC;</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Inform IEC, ER, EPD and Contractor;</li> <li>2. Identify source;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

## Event / Action Plan for Water Quality Monitoring

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

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

## Event / Action Plan for Dolphin Monitoring

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

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit Level	<ol style="list-style-type: none"> <li>1. Repeat statistical data analysis to confirm findings;</li> <li>2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> <li>3. Identify source(s) of impact;</li> <li>4. Inform the IEC, ER/SOR and Contractor of findings;</li> <li>5. Check monitoring data;</li> <li>6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET and Contractor;</li> <li>2. Discuss monitoring results and findings with the ET and the Contractor;</li> <li>3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>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.</li> <li>5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>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.</li> <li>3. Supervise the implementation of additional monitoring and/or any other mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER/SOR and confirm notification of the non-compliance in writing;</li> <li>2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary.</li> <li>4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.</li> </ol>

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

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

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
<b>Air Quality</b>				
S5.5.6.1	A1	1) The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> <li>• 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;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;</li> <li>• 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;</li> </ul>	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides</li> </ul>	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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</li> <li>• 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.</li> </ul>	All construction sites	V
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the Contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected representative dust monitoring station	V (covered by Contract No. HY/2013/01 & HY/2011/03)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:	Selected representative dust	N/A



EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> <li>• Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;</li> <li>• 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;</li> <li>• Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;</li> <li>• The materials which may generate airborne dusty emissions should be wetted by water spray system;</li> <li>• All receiving hoppers should be enclosed on three sides up to 3m above unloading point;</li> <li>• All conveyor transfer points should be totally enclosed;</li> <li>• All access and route roads within the premises should be paved and wetted; and</li> <li>• 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.</li> </ul>	monitoring station	
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> <li>• All road surface within the barging facilities will be paved;</li> <li>• Dust enclosures will be provided for the loading ramp;</li> <li>• Vehicles will be required to pass through designated wheels wash facilities; and</li> <li>• Continuous water spray at the loading points.</li> </ul>	All construction sites	N/A
<b>Construction Noise (Air borne)</b>				
S6.4.10	N1	<p>1) Use of good site practices to limit noise emissions by considering the following:</p> <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• 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;</li> <li>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	All construction sites	V
S6.4.11	N2	<p>2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.</p>	All construction sites	V
S6.4.12	N3	<p>3) Install movable noise barriers (typically density @ 14kg/m<sup>2</sup>), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.</p>	For plant items listed in Appendix 6D of the EIA report at all construction sites	V
S6.4.13	N4	<p>4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.</p>	For plant items listed in Appendix 6D of the EIA report at all construction sites	V
S6.4.14	N5	<p>5) Sequencing operation of construction plants where practicable.</p>	All construction sites where practicable	V
	N6	<p>6) Implement a noise monitoring under EM&amp;A programme.</p>	Selected representative noise monitoring station	V (covered by Contract No. HY/2013/01)
<b>Sediment</b>				
S7.3	S1	<p>1) The requirements as recommended in ETWB TC(W) 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.</p>	All construction sites	V
<b>Waste Management (Construction Noise)</b>				
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> <li>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>• Carry out on-site sorting;</li> <li>• Make provisions in the Contract documents to allow and promote the use of recycled</li> </ul>	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>aggregates where appropriate;</p> <ul style="list-style-type: none"> <li>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</li> <li>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>• Implement an enhanced Waste Management Plan similar to ETWB TC(W) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&amp;D materials and to minimize their generation during the course of construction.</li> <li>• In addition, disposal of the C&amp;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.</li> </ul>		
S8.3.9- S8.3.11	WM2	<p><u>C&amp;D Waste</u></p> <ul style="list-style-type: none"> <li>• Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.</li> <li>• The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.</li> </ul>	All construction sites	V
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.</li> <li>• The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.</li> <li>• 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.</li> </ul>	All construction sites	V
S8.3.16	WM4	<p><u>Sewage</u></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	All construction sites	V
S8.3.17	WM5	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>• 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.</li> <li>• Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible.</li> <li>• 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.</li> <li>• Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.</li> </ul>	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
<b>Water Quality (Construction Phase)</b>				
S9.11.1.1	W1	<p><u>Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below.</u></p> <ul style="list-style-type: none"> <li>• Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works.</li> <li>• Silt curtain shall be fully maintained throughout the works.</li> </ul>	Marine works	V
S9.11.1.7	W2	<p><u>Land Works</u></p> <p>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> <li>• wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;</li> <li>• sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the W PCO or collected for disposal offsite. The use of soakaways shall be avoided;</li> <li>• 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;</li> <li>• 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;</li> <li>• temporary access roads should be surfaced with crushed stone or gravel;</li> <li>• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;</li> <li>• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;</li> <li>• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;</li> <li>• 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;</li> <li>• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;</li> <li>• 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;</li> <li>• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;</li> <li>• the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel;</li> <li>• wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects;</li> <li>• vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the W PCO or collected for off site disposal;</li> <li>• the Contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;</li> <li>• waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance;</li> <li>• 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</li> <li>• surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.</li> </ul>	Land-based works areas	V
S9.14	W3	Implement a water quality monitoring programme	At identified monitoring locations	V (covered by Contract No. HY/2013/01)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
<b>Ecology (Construction Phase)</b>				
S10.7	E2	<ul style="list-style-type: none"> <li>• Install silt curtain during the construction.</li> <li>Limit dredging and works fronts.</li> <li>• Good site practices.</li> <li>• Site runoff control.</li> </ul>	Marine works and Land-based works areas	V
S10.7	E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Land-based works areas	V
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Land-based works areas	V
S10.7	E6	<ul style="list-style-type: none"> <li>• Dolphin Exclusion Zone;</li> <li>• Dolphin watching plan</li> </ul>	Marine works	V
S10.7	E7	<ul style="list-style-type: none"> <li>• Decouple compressors and other equipment on working vessels</li> <li>• Avoidance of percussive piling</li> </ul>	Marine works	V
S10.7	E8	<ul style="list-style-type: none"> <li>• Control vessel speed</li> <li>• Skipper training</li> <li>• Predefined and regular routes for working vessels; avoid Brother Islands.</li> </ul>	Marine Traffic	V
S10.10	E9	<ul style="list-style-type: none"> <li>• Dolphin vessel monitoring</li> </ul>	North Lantau and West Lantau	V (covered by Contract No. HY/2013/01)
<b>Fisheries</b>				
S11.7	F4	<ul style="list-style-type: none"> <li>• Maritime Oil Spill Response Plan (MOSRP);</li> <li>• Contingency plan.</li> </ul>	HKBCF	V
<b>Landscape &amp; Visual (Detailed Design Phase)</b>				
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> <li>• Roadside planting and planting along the edge of the HKBCF Island is proposed;</li> <li>• 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;</li> <li>• Protection measures for the trees to be retained during construction activities;</li> <li>• Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations;</li> <li>• Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed;</li> <li>• Providing planting area around peripheral of HKBCF for tree planting screening effect;</li> <li>• Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;</li> <li>• For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and</li> <li>• Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.</li> </ul>	HKBCF	V
<b>Landscape &amp; Visual (Construction Phase)</b>				
S14.3.3.3	LV2	<p><u>Mitigate both Landscape and Visual Impacts</u></p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p> <p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening</p>	HKBCF	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		effect; G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. 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.		
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> V1. Minimize time for construction activities during construction period. V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.		N/A
<b>EM&amp;A</b>				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	All construction sites	V
S15.5 - S15.6	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	All construction sites	V
Legend:	V = implemented;                      x = not implemented;                      N/A = not applicable			

# Appendix F. Site Audit Findings and Corrective Actions

## Appendix F – Site Audit Findings and Corrective Actions

Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 4, 11, 18 and 23 April, 2, 10, 14, 23 and 30 May and 6, 11, 20 and 27 June 2018.

Particular observations during the site inspections are described below.

### 28 March 2018

- a. Accumulation of general refuse without covering was observed near P803. Subsequently, the general refuse was cleared. The observation was closed on 2 May 2018.
- b. Accumulation of stagnant water was observed at the gully on the deck of bridge D15. Subsequently, anti-mosquito repellent was applied to the stagnant water. The observation was closed on 4 April 2018.
- c. Loose general refuse was observed between bridge D9c and bridge D14. Subsequently, the general refuse was cleared. The observation was closed on 4 April 2018.
- d. Accumulation of C&D waste was observed on the deck of bridge D15. Subsequently, the C&D waste was cleared. The observation was closed on 4 April 2018.

### 4 April 2018

- a. Stagnant water was observed on the deck of Bridge D10. Subsequently, larvicidal oil was applied to the stagnant water on the deck of Bridge D10 to prevent growing of mosquito. The observation was closed on 11 April 2018.

### 11 April 2018

- a. General refuse and C&D wastes were observed on the deck of Bridge D14. Subsequently, the general refuse and C&D wastes were cleared. The observation was closed on 18 April 2018.
- b. Dust emission was observed at haul road near P1411 area. Subsequently, water spray was provided to ensure wet surface on the haul road. The observation was closed on 18 April 2018.

### 18 April 2018

- a. Loose general refuse without cover was observed near P910 area. Subsequently, the general refuse was cleared. The observation was closed on 23 April 2018.
- b. Loose general refuses were observed near P105 area. Subsequently, the general refuse was cleared. The observation was closed on 23 April 2018.

### 23 April 2018

- a. Silt curtain at Box Culvert C was not securely positioned at one end. Subsequently, the silt curtain was securely fixed at both ends. The observation was closed on 2 May 2018.
- b. Chemical container on bare ground was observed near P803. Subsequently, the chemical container was removed. The observation was closed on 2 May 2018.
- c. Part of an access road near P1411 was dusty. Subsequently, water spraying was provided for the access road. The observation was closed on 2 May 2018.
- d. Some loose general refuse on the ground was observed near P1213. Subsequently, the general refuse on the ground was cleared. The observation was closed on 2 May 2018.

### 2 May 2018

- a. Scattered general refuses were observed near the paved haul road next to site office. Subsequently, the general refuse was cleared. The observation was closed on 10 May 2018.
- b. Accumulation of uncovered general refuses were observed near P1008 area. Subsequently, the general refuse was cleared. The observation was closed on 10 May 2018.
- c. Dry haul road near P1008 area was observed. Subsequently, water spray was provided for the haul road. The observation was closed on 10 May 2018.

**10 May 2018**

- a. Loose C&D waste was observed at P910. Subsequently, the loose C&D waste was removed. The observation was closed on 14 May 2018.

**14 May 2018**

- a. Accumulation of stagnant water was observed on the deck of Bridge D13. Subsequently, the stagnant water was cleared. The observation was closed on 23 May 2018.
- b. Silty water was observed outside silt curtain at Box Culvert D. Subsequently, the silt curtain was implemented and no leakage of silty water was observed outside silt curtain at Box Culvert D. The observation was closed on 23 May 2018.
- c. Dust emission was observed near RW1 road. Subsequently, water spray was provided. The observation was closed on 30 May 2018.
- d. Accumulation of stagnant water was observed in the drip trays between Bridge D8 and D13. Subsequently, the stagnant water was removed. The observation was closed on 30 May 2018.

**23 May 2018**

- a. Dust emission was observed near P803 area. Subsequently, water spray was provided. The observation was closed on 30 May 2018.
- b. General refuse was observed near P910 area. Subsequently, the general refuse was cleared. The observation was closed on 30 May 2018.

**30 May 2018**

- a. Dry haul road near RW13 was observed. Subsequently, water spraying was provided for the haul road. The observation was closed on 6 June 2018.
- b. Some general refuse on the ground near P908 was observed. Subsequently, the general refuse was cleared. The observation was closed on 6 June 2018.

**6 June 2018**

- a. Unsorted C&D waste mixed with general refuse was observed near Bridge P14 area. Subsequently, the C&D waste and the general refuse were cleared. The observation was closed on 20 June 2018.
- b. Dark smoke emission was observed from a lifting crane near the Bridge P14 area. Subsequently, the lifting crane was repaired. The observation was closed on 20 June 2018.
- c. No NRMM label for the lifting crane near Bridge P14 area was observed. Subsequently, the NRMM label was provided. The observation was closed on 20 June 2018.

**11 June 2018**

- a. Unsorted stockpile of construction materials was observed at Bridge D13. Subsequently, the construction materials were cleared. The observation was closed on 27 June 2018.
- b. The haul road next to Box Culvert D was dry. Subsequently, water spray was provided for the haul road. The observation was closed on 27 June 2018.
- c. Loose general refuse was observed in the vicinity of Bridge D9c. The Contractor was reminded to remove all loose general refuse and dispose of these properly. Follow-up actions for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.
- d. Chemical container without drip tray was observed near Bridge D9c/D11. Subsequently, drip tray was provided. The observation was closed on 27 June 2018.

**20 June 2018**

- a. The C&D waste was observed near P1505 area. Subsequently, the C&D waste was cleared. The observation was closed on 27 June 2018.

**27 June 2018**

- a. Visible smoke was observed in the exhaust of an excavator near P1302. The Contractor was reminded to provide maintenance to the excavator to prevent further visible smoke emission.



Follow-up actions for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

- b. Loose general refuse and C&D waste were observed at RW11 and the segment storage area. The Contractor was reminded to remove all such wastes. Follow-up actions for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

## Appendix G. Waste Flow Table

**Monthly Summary Waste Flow Table for 2018**

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Transported to other Projects (Note 2)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (Note 1)	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	0	0	0	0	0	0	0	0	0	0	0.1293
Feb	0	0	0	0	0	0	0	0	0	0.2	0.1397
Mar	0	0	0	0	0	0	0	0	0	0	0.1346
Apr	0	0	0	0	0	0	0	0	0	0	0.2334
May	0	0	0	0	0	0	0	0	0	0	0.1748
Jun	0	0	0	0	0	0	0	0	0	0	0.2044
Sub-total	0.000	0	0	0.000	0	0	0	0	0	0.2	1.0162
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.000	0	0	0.000	0	0	0	0	0	0.2	1.0162

Note: (1) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

(2) "Other Projects" refers to HKBCF Contract No. HY/2013/03

**Monthly Summary of Excavated Marine Sediment for 2018**

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

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

# Appendix H. Environmental Licenses and Permits

## Environmental Licences and Permits

Item No.	Type of Permit / Licence	Reference No.	Application Date	Valid from	Valid until	Remark
1	Environmental Permit under EIAO	EP-353/2009/K	24 Mar 2016	11 Apr 2016	N/A	Issued
2	Construction Dust Notification (HKBCF Southern Portion)	387156	26 Mar 2015	1 Apr 2015	N/A	Notified
3	Construction Waste Disposal Account	7022038	16 Mar 2015	1 Apr 2015	N/A	Account approved
4	Registration as a Chemical Waste Producer (HKBCF Southern Portion)	Waste Producer Number (WPN): 5213-951-C3952-01	27 Mar 2015	27 Apr 2015	N/A	Registration completed
5	Discharge Licence under WPCO (Works Area WA3)	WT00022316-2015	1 Jun 2015	14 Aug 2015	31 Aug 2020	Issued
6	Discharge Licence under WPCO (HKBCF Works Area)	WT00028782-2017	25 May 2017	19 Jul 2017	31 Jul 2022	Issued
7	Construction Noise Permit	GW-RS0945-17	16 Oct 2017	1 Nov 2017	30 Apr 2018	Expired
8	Construction Noise Permit	GW-RS0293-18	23 Mar 2018	1 May 2018	31 Oct 2018	Issued

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

## Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	1	0	0
From commencement date of construction to end of reporting month	10	0	0