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CHINA HARBOUR ENGINEERING CO. LTD.

CONTRACT NO.: HY/2013/02 HONG KONG – ZHUHAI- MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES – INFRASTRUCTURE WORKS STAGE I (WESTERN PORTION)

MONTHLY EM&A REPORT NO. 13

(01 DECEMBER – 31 DECEMBER 2015)

Prepared by: _____
Tsui, Ho Lam
Assistant Environmental Officer

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 7 January 2016 *Report No.:ENA60040*

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_3791L.16

20 January 2016

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. Ringo Tso

Dear Sir,

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

Contract No. HY/2013/02 – HZMB HKBCF – Infrastructure Works Stage I (Western Portion)
Monthly Environmental Monitoring & Audit Report for December 2015

Reference is made to the Environmental Team's submission of Monthly Environmental Monitoring & Audit Report for December 2015 certified by the ET Leader (ET's ref.: "OC/60026/CLL" dated 20 January 2016) and provided to us via e-mail on 20 January 2016.

We are pleased to inform you that we have no adverse comment on the captioned report. We write to verify the captioned submission in accordance with Condition 5.4 of the Environmental Permit No. EP-353/2009/I.

The ET Leader is reminded that it is the ET's responsibility to ensure the report be timely submitted to the Director of Environmental Protection and the reported information be true, valid and correct as per Conditions 5.4 and 5.5 of the EP

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

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

Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Matthew Fung	(By Fax: 3188 6614)
	HyD	Mr. Chee-Kuen Yu	(By Fax: 3188 6614)
	ETS	Mr. C. L. Lau	(By Fax: 2695 3944)
	CHEC	Mr. Kenny Yu	(By Fax: 3915 0300)

Internal: DY, YH, LP, CL, ENPO Site

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Ramboll Environ Hong Kong Limited 英環香港有限公司
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HKIAS 010 HOKLAS 022 TEST CAL

Your Ref. : ---
Our Ref. : OC/60022/CLL

18 January 2016

Ramboll Environ Hong Kong Limited
Room 2403, Jubilee Centre
18 Fenwick Street,
Wan Chai
Hong Kong

By E-mail

Attn: Mr. Raymond Dai

Dear Mr. Dai,

Contract No. HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)
Monthly EM&A Report for December 2015

In accordance with the requirement specified in Condition 5.4 of the Environmental Permit No. EP-353/2009/I, we are pleased to submit the certified EM&A Report for Dece mber 2015 revised with the IEC's comment for your onward verification.

Yours faithfully,
ETS-TESTCONSULT LIMITED

Mr. C. L. Lau
Environmental Team Leader

CLL/pn

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APPENDICES

EXECUTIVE SUMMARY

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

The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/I for HKBCF was issued on 17 July 2015. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract was started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014.

ETS-Testconsult Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and provide environmental team services to the Contract.

This is the Thirteen Monthly Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries findings of the EM&A works conducted during the reporting period from 01 December 2015 to 31 December 2015.

Site Activities

As informed by the Contractor, site activities were carried out in this reporting month:

- *Bored piles works in Portion A1 & D;*
- *Pier & Abutment in Portion H & Pile Cap in Portion D;*
- *Formwork and falsework for bridge deck at Portion H;*
- *Temporary marine loading and unloading point for segment delivery in Portion A1;*
- *UU Detection Works in Portion I;*
- *Pit excavation work and duct laying in Portion I;*

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7A, noise monitoring at NMS2 and NMS3B, water quality monitoring show at **Figure 2** and dolphin monitoring show at **Figure 3** as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2010/02 and HY/2011/03. However, this is subject to ENPO's final decision on which ET should carry out the monitoring works at these stations. The dates of site inspection during the reporting period are listed below:

Environmental Site Inspection: 02, 10, 18, 24 and 31 December 2015

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 shall be referred to 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 AMS7A by the Environmental Team of Contract No. HY/2010/02 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/2010/02 during the reporting period.

Since the marine construction works of temporary loading and unloading point was carried out from 02 Dec 2015 to 30 Dec 2015, water quality monitoring and impact dolphin monitoring are required from this reporting month.

For water quality monitoring, one Action Level exceedance of SS at IS(Mf)11 during mid-flood tide was recorded on 28 Dec 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. The Investigation Report No. 002 (including the causes of exceedance, action taken and recommendation for mitigation) on Action or Limit Level Non-compliance is provided in **Appendix J**. No Action and Limit Level exceedance was recorded on other date by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

Impact dolphin monitoring results at all transects are reported in the EM&A Report prepared for Contract No. HY/2010/02.

Complaint Log

There was no complaint received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

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

Reporting Change

There was no reporting change in the reporting period.

Future Key Issues

The future key issues to be undertaken in the upcoming month are as follows:

- Bored piles works in Portion A1, D, C1& F;
- Pile Cap in Portion H & Pile Cap in Portion D;
- Formwork and falsework for deck of Bridge B1 at Portion H;
- Construction of temporary marine loading and unloading point for segment delivery in Portion A1;
- UU Detection Works in Portion I; and
- Pit excavation work and duct laying in Portion I.

1 INTRODUCTION

1.1 Basic Project Information

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

1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a "Designated Project", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/I for HKBCF was issued on 17 July 2015. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014. The works area of the Contract is shown in **Appendix A.**

1.1.3 The proposed works under this Contract comprise the following:

- Construction of the viaducts and roads at the western portion of Hong Kong Boundary Crossing Facilities (HKBCF) mainly for connection with the Hong Kong **–** Zhuhai **–** Macao Bridge (HZMB), Hong Kong Link Road (HKLR), Hong Kong International Airport (HKIA) and the Tuen Mun-Chek Lap Kok Link (TM-CLKL);
- Construction of the road modification at the SkyCity Interchange at Airport Island;
- Construction of associated street lighting, street furniture, road marking, road signage, drainage, sewerage, fresh water and flushing water supply, irrigation, landscape, electrical and mechanical (E&M), utilities and services works;
- Provisioning of civil engineering works and power supply installation for the Traffic Control and Surveillance System TCSS);
- Other works in accordance with the Contract.

1.1.4 This is the Thirteen Monthly Environmental Monitoring and Audit (EM&A) Report for the Contract which summaries the audit findings of the EM&A programme during the reporting period from 01 December 2015 to 31 December 2015.

1.2 Project Organization

1.2.1 The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1.**

Table 1.1 Contact Information of Key Personnel

Party	*Position*	*Name of Key Staff*	*Tel. No.*	*Fax No.*
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	*Resident Engineer*	*Mr. Fred Yeung*	*63308293*	*31525116*
Environmental Project Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	*Environmental Project Office Leader*	*Mr. Y. H. Hui*	*34652888*	*34652899*
	Independent Environmental Checker	*Mr. Raymond Dai*	*34652888*	*34652899*
	Environmental Site Supervisor	*Mr. Ray Yan*	*51818165*	*34652899*
Contractor (China Harbour Engineering Co., Ltd.)	*Environmental Officer*	*Mr. Richard Ng*	*59770593*	*39150300*
	Environmental Supervisor	*Ms. Joy Chan*	*54005086*	*39150300*
	Environmental Supervisor	*Ms. Selena Yang*	*55122662*	*39150300*
Environmental Team (ETS-Testconsult Ltd.)	*Environmental Team Leader*	*Mr C. L. Lau*	*2946 7791*	*2695 3944*

1.3 Construction Programme

1.3.1 A copy of the Contractor's construction programme is provided in **Appendix C**.

1.4 Construction Works Undertaken During the Reporting Period

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

- Bored piles works in Portion A1 & D;
- Pier & Abutment in Portion H & Pile Cap in Portion D;
- Formwork and falsework for bridge deck at Portion H;
- Temporary marine loading and unloading point for segment delivery in Portion A1;
- UU Detection Works in Portion I; and
- Pit excavation work and duct laying in Portion I.

2 AIR QUALITY MONITORING

2.1 Monitoring Locations

2.1.1 The air quality monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7A as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract No. HY/2010/02 and HY/2011/03. **Table 2.1** and **Figure 1** shows the locations of air monitoring stations.

Table 2.1 Air Quality Monitoring Locations

Identification No.	Location Description
AMS6(1)	Dragonair / CNAC (Group) Buidling
AMS7A(1)(2)	Chu Kong Air-Sea Union Transportation Co. Ltd.

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) This location was relocated back to the original location AMS7 (located at Hong Kong SkyCity Marriott Hotel) of the updated EM&A Manual on 30 December 2015 and the air monitoring at AMS7 will be started in the next reporting period.

2.2 Monitoring Requirements

2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2010/02 and HY/2011/03.

2.2.2 The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.2** and **Table 2.3** respectively.

Table 2.2 Action and Limit Levels for 1-hour TSP

Monitoring Station.	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	360	500
AMS7A –Chu Kong Air-Sea Union Transportation Co. Ltd.	370	500

Table 2.3 Action and Limit Levels for 24-hour TSP

Monitoring Station.	Action Level, $\mu g/m^3$	Limit Level, $\mu g/m^3$
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	173	260
AMS7A –Chu Kong Air-Sea Union Transportation Co. Ltd.	183	260

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

2.2.4 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.

2.3 Monitoring Results

2.3.1 The monitoring results for AMS6 and AMS7A are reported in the monthly EM&A Reports prepared for Contract Nos. HY/2011/03 and HY/2010/02 respectively.

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

2.3.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3 NOISE MONITORING

3.1 Monitoring Locations

3.1.1 The noise monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2010/02. **Table 3.1** and **Figure 1** shows the locations of noise monitoring stations.

Table 3.1 Construction Noise Monitoring Locations

Identification No.	Location Description
NMS2(1)	Seaview Crescent
NMS3B(1) (2)	Site Boundary of Site Office Area at Works Area WA2

Remarks:
(1) 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 latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
(2) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

3.2 Monitoring Requirements

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

3.2.2 The Action and Limit Levels for construction noise are provided in **Table 3.2**

Table 3.2 Action and Limit Levels for Construction Noise

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

Notes:
If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination period.

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

3.2.4 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.

3.3 Monitoring Results

3.3.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports prepared for Contract No. HY/2010/02. There was no exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4 WATER QUALITY MONITORING

4.1 Monitoring Locations

The water monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct water quality monitoring at fifteen stations (3 Impact Stations, 7 Sensitive Receiver Stations and 5 Control/Far Field Stations) as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2010/02. **Table 4.1** and **Figure 2** shows the locations of water quality monitoring stations.

Table 4.1 Water Quality Monitoring Stations (construction phases)

Station	Description	East	North
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS10	Impact Station (Close to HKBCF construction site)	812577	820670
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A [1]	Sensitive receivers (Ma Wan FCZ)1	823741	823495
SR10B(N)[1]	Sensitive receivers (Ma Wan FCZ)2	823683	823187
CS(Mf)3	Control Station	809989	821117
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA [2]	Control Station	818103	823064

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

4.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2010/02.

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

4.2.2 The Action and Limit Levels for Water Quality are provided in **Table 4.2**

Table 4.2 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg/L (depthaveraged) 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*

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

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

Notes: 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 4.2mg/L and 3.6mg/L respectively

4.2.3 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.

4.3 Monitoring Result

Since the marine construction works of temporary loading and unloading point was carried out from 02 Dec 2015 to 30 Dec 2015, water quality monitoring is required from this reporting month.

The monitoring results for the monitoring stations showed in **Table 4.1** are reported in the monthly EM&A Report prepared for Contract No. HY/2010/02. One Action Level exceedance of SS at IS(Mf)11 during mid-flood tide was recorded on 28 Dec 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. The Investigation Report No. 002 (including the causes of exceedance, action taken and recommendation for mitigation) on Action or Limit Level Non-compliance is provided in **Appendix J**. No Action and Limit Level exceedance was recorded on other date by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

5 DOLPHIN MONITORING

5.1 Monitoring Locations

The dolphin monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at 23 transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2010/02. 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. **Figure 3** shows the co-ordinates for the transect lines and layout map

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

5.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2010/02.

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

5.2.2 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 5.1a & Table 5.1b**

Table 5.1a Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)

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

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

Table 5.1(b) 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)]	

5.2.3 If exceedance(s) at these transects 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.

5.3 Monitoring Result

Since the marine construction works of temporary loading and unloading point was carried out from 02 Dec 2015 to 30 Dec 2015, impact dolphin monitoring is required from this reporting month.

The dolphin survey results for all transects are reported in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

6 ENVIRONMENTAL SITE INSPECTION AND AUDIT

6.1 Site Inspection

6.1.1 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 02, 10, 18, 24 and 31 December 2015.

6.1.2 Particular observations during the site inspections are described below:

24 November 2015
(a) Chemical container without drip tray was observed at Portion H. A drip tray was provided. This observation was closed on 2 December 2015.

02 December 2015
(a) Chemical waste container was observed improperly stored at Portion H. The Chemical waste container was removed. This observation was closed on 10 December 2015.

10 December 2015
(a) No observation was made during this site inspection.

18 December 2015
(a) Chemical container without drip tray was observed at Portion D. A drip tray was provided for the chemical container. This observation was closed on 24 December 2015.

24 December 2015
(a) Unsealed water safety barriers were observed at Portion D. The water safety barriers were sealed. This observation was closed on 31 December 2015.
(b) General refuses were observed at Portion D. The refuses were collected. This observation was closed on 31 December 2015.

31 December 2015
(a) No observation was made during this site inspection.

6.2 Advice on the Solid and Liquid Waste Management Status

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

6.2.2 Disposal of excavated sediment was generated and stored properly on site during this reporting period. The excavated sediment will be stored properly on site until further instruction by the Engineer. The disposal of excavated sediment as per EP-353/2009/I to be implemented subject to confirmation.

6.2.3 The monthly summary of waste flow table is detailed in **Appendix E**.

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

6.3 Environmental Licenses and Permits

The valid environmental licenses and permits during the reporting period are summarized in **Appendix F**.

6.4 Implementation Status of Environmental Mitigation Measures

6.4.1 In response to the site audit findings, the Contractor carried out corrective actions.

6.4.2 The Contractor waters 8 times per day on all exposed soil within the project site and associated works areas when construction activities are being undertaken..

6.4.3 The Contractor was reminded to provide well-maintained plant operated on-site and plant served regularly;

6.4.4 The Contractor was reminded to switch off vehicles and equipment while not in use;

6.4.5 The Contractor was reminded to schedule the construction works to minimize noise nuisance etc.

6.4.6 Training material of Regular Marine Travel Route Plan was prepared. Since the training material is under review, and marine delivery operation still not commence, the RMTRP training is not yet started. There haven't any vessel in or out the BCF perimeter silt curtain so that no Marine Travel Route was recorded.

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

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

6.5 Summary of Exceedance of the Environmental Quality Performance Limit

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

6.5.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

6.5.3 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/2010/02 during the reporting period.

6.5.4 For water quality monitoring, one Action Level exceedance of SS at IS(Mf)11 during mid-flood tide was recorded on 28 Dec 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other date by the Environmental Team of Contract No. HY/2010/02 during the reporting period. The Investigation on Action or Limit Level Non-compliance is provided in **Appendix J**.

6.5.5 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2010/02.

6.6 Summary of Complaints, Notification of Summons and Successful Prosecution

6.6.1 There were no complaints received during the reporting period.

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

6.6.3 Statistics on environmental complaints, notifications of summons and successful prosecutions are summarized in **Appendix H**

7 FUTURE KEY ISSUES

7.1 Construction Programme for the Coming Months

7.1.1 As informed by the Contractor, the major construction activities for January 2016 are summarized in **Table 7.1**.

Table 7.1 Construction Activities for Coming Month

Site Area	Description of Activities
Portion A1, D, C1 & F	Bored Piles Works
Portion I	Pit excavation work and duct laying
Portion I	UU Detection Works
Portion H.	Pile Cap & abutment
Portion H.	Formwork and falsework for deck of Bridge B1
Portion D.	Pile Cap
Portion A1	Temporary marine loading and unloading point for segment delivery

7.2 Environmental Site Inspection Schedule for the Coming Month

7.2.1 The tentative schedule for weekly site inspections for January 2016 is provided in **Appendix I**

8 CONCLUSION.

8.1 Conclusions

8.1.1 The site preparation work of the Contract was started on 25 July 2014 and the construction works of the Contract commenced on 24 November 2014.

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

8.1.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

8.1.4 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/2010/02 during the reporting period.

8.1.5 For water quality monitoring, one Action Level exceedance of SS at IS(Mf)11 during mid-flood tide was recorded on 28 Dec 2015. After investigation, there is no adequate information to conclude the recorded exceedance is related to this Contract. No Action and Limit Level exceedance was recorded on other date by the Environmental Team of Contract No. HY/2010/02 during the reporting period. The Investigation on Action or Limit Level Non-compliance is provided in **Appendix J**.

8.1.6 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2010/02.

8.1.7 There were no complaints received during the reporting period.

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

- END OF REPORT -

FIGURES

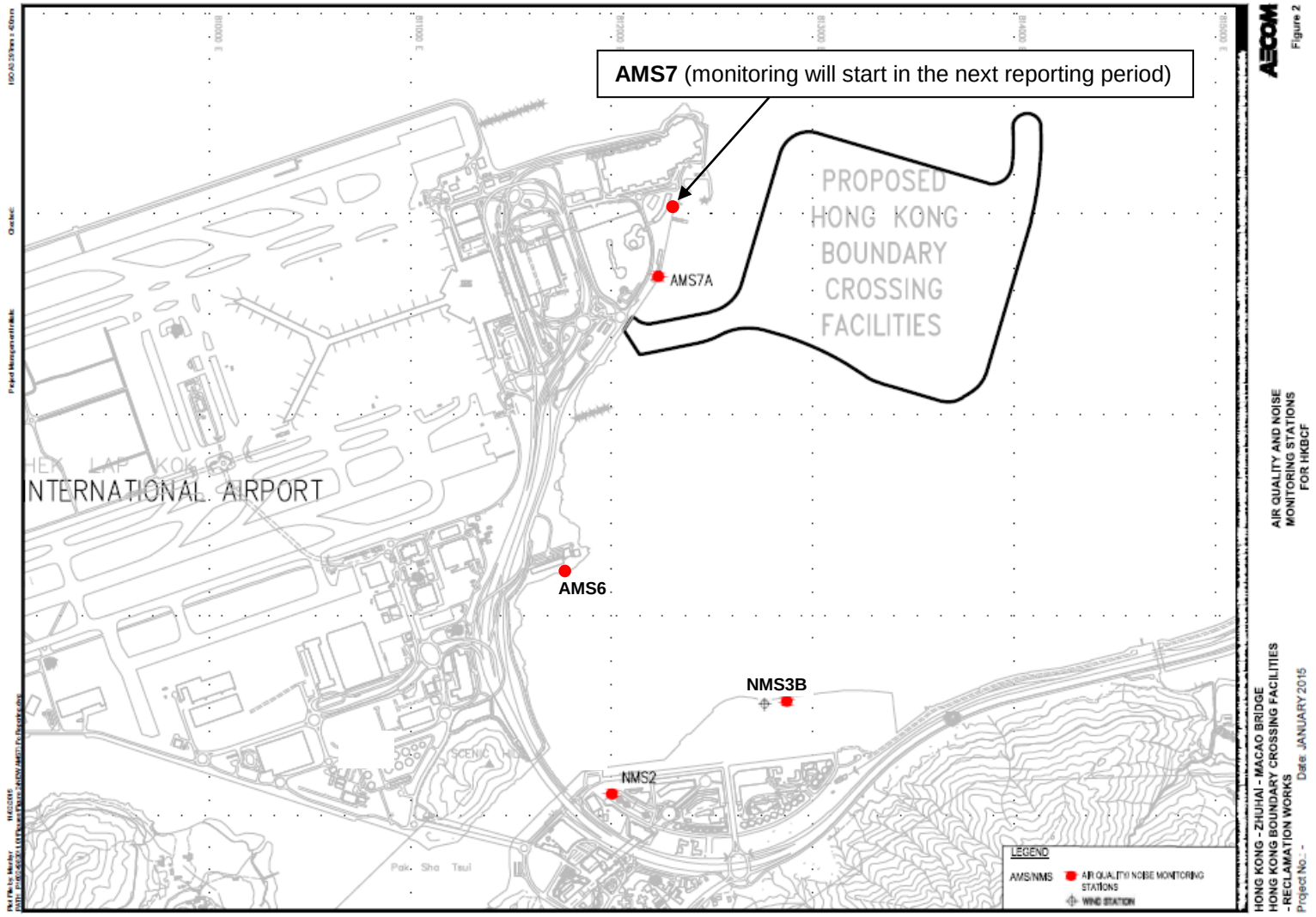
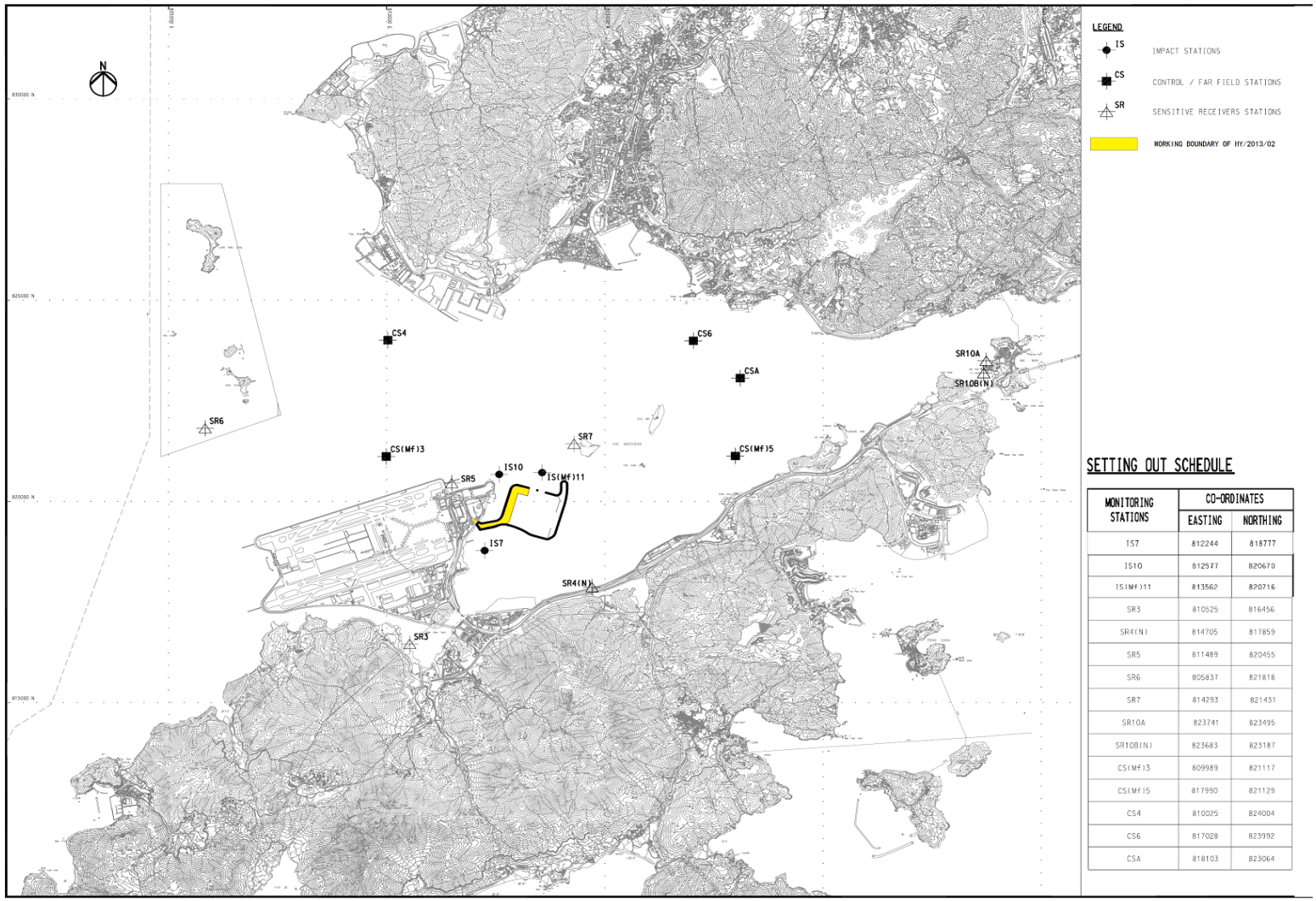


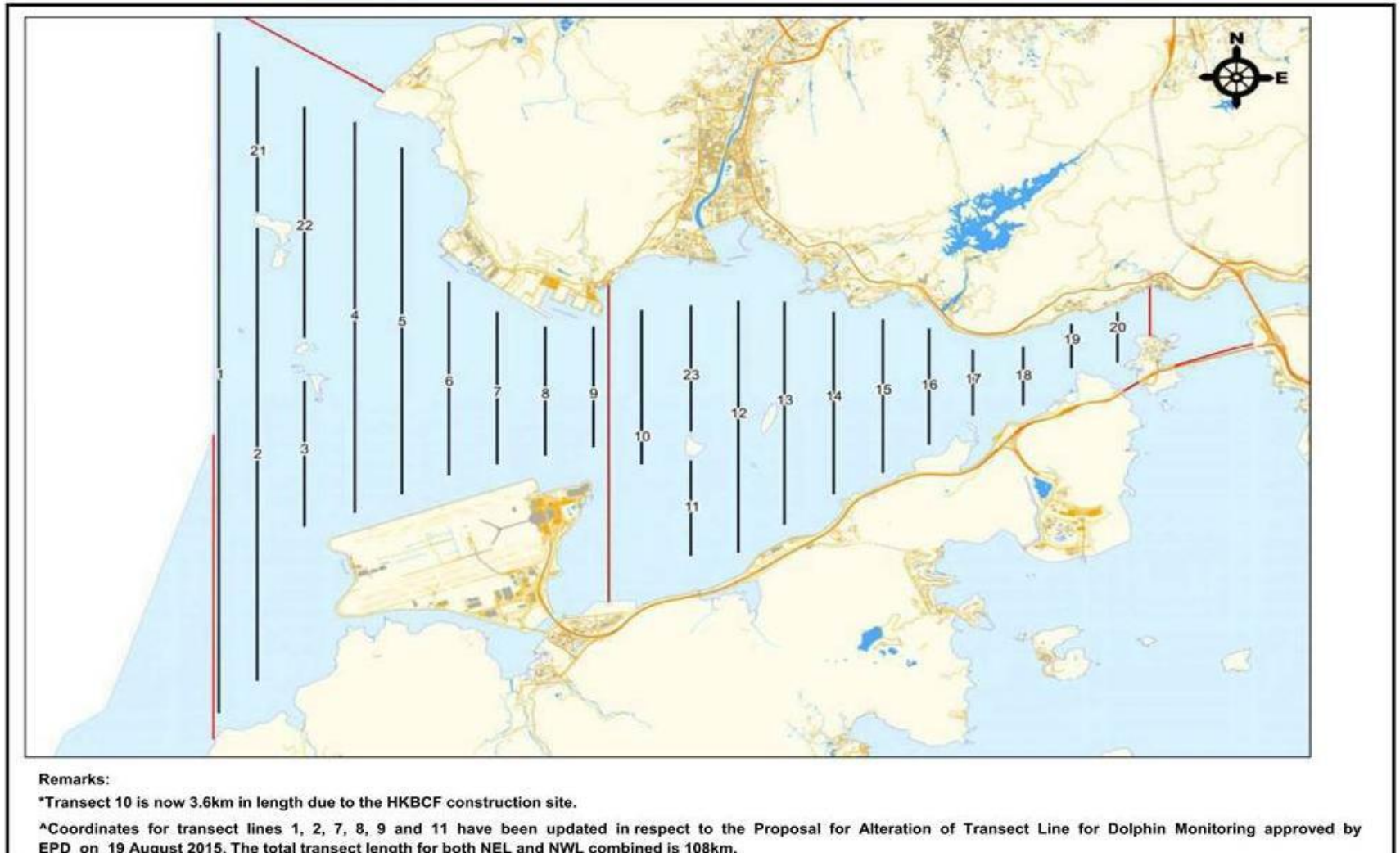
Figure 1 Air Quality and Noise Monitoring Stations for HKBCF



SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS7	812244	818777
IS10	812577	820670
IS(MF)11	813562	820716
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823187
CS(MF)3	809989	821117
CS(MF)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

Figure 2 Water Quality Monitoring Stations(construction phases)



Remarks:

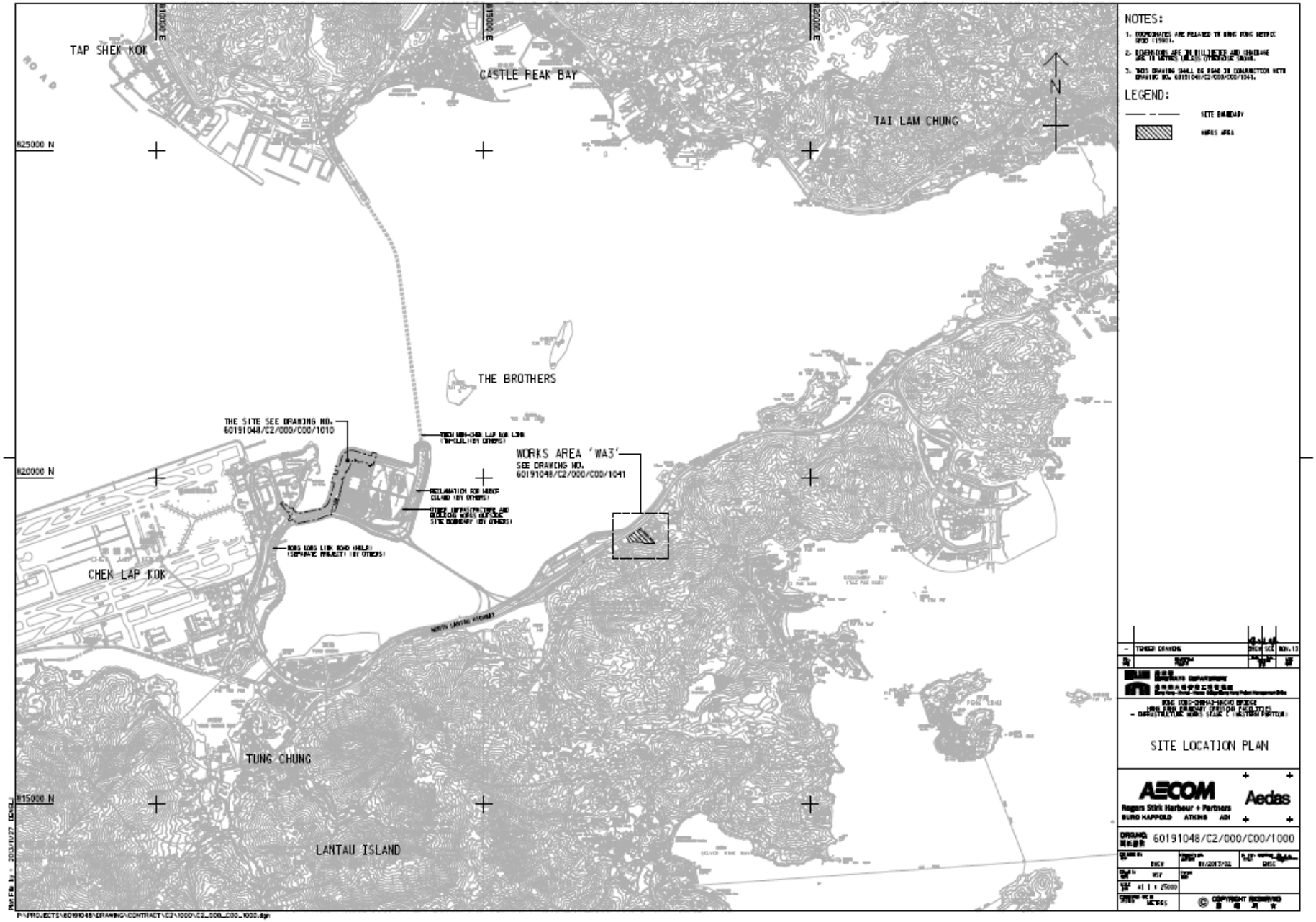
***Transect 10 is now 3.6km in length due to the HKBCF construction site.**

^Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015. The total transect length for both NEL and NWL combined is 108km.

Figure 3 Dolphin Monitoring Transect Line and Layout Map

Appendix A

Location of Works Areas



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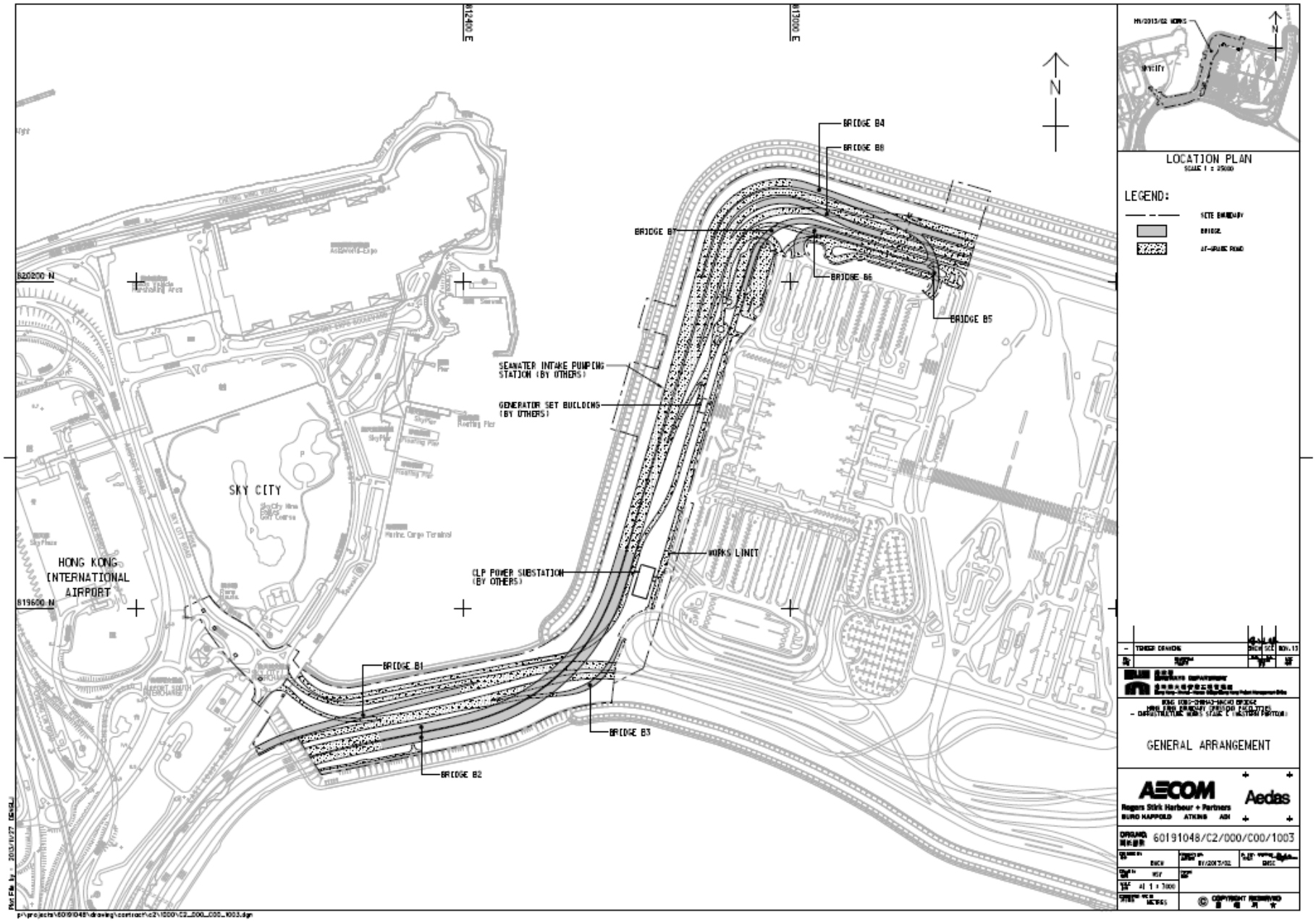
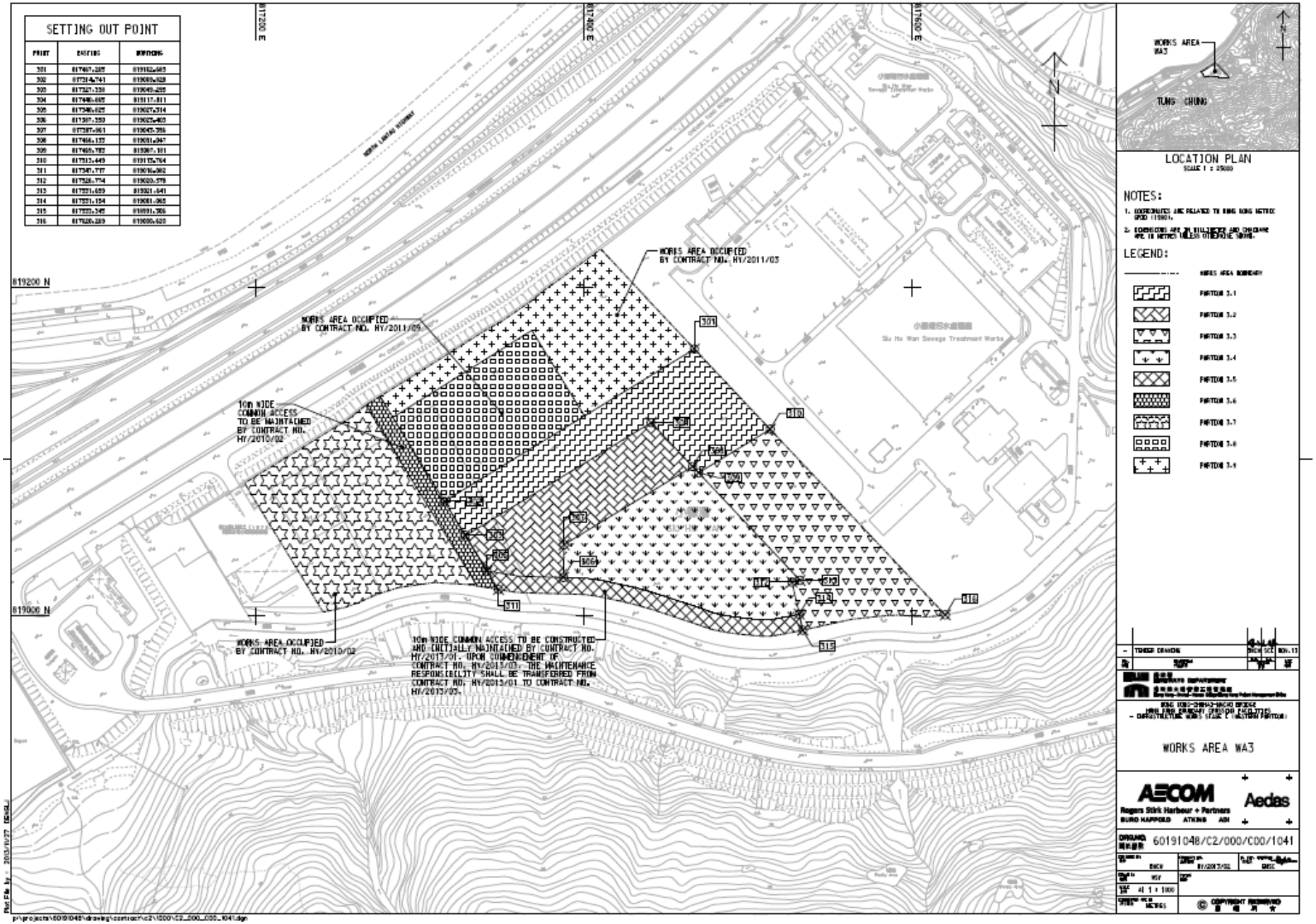
ETS-TESTCONSULT LIMITED



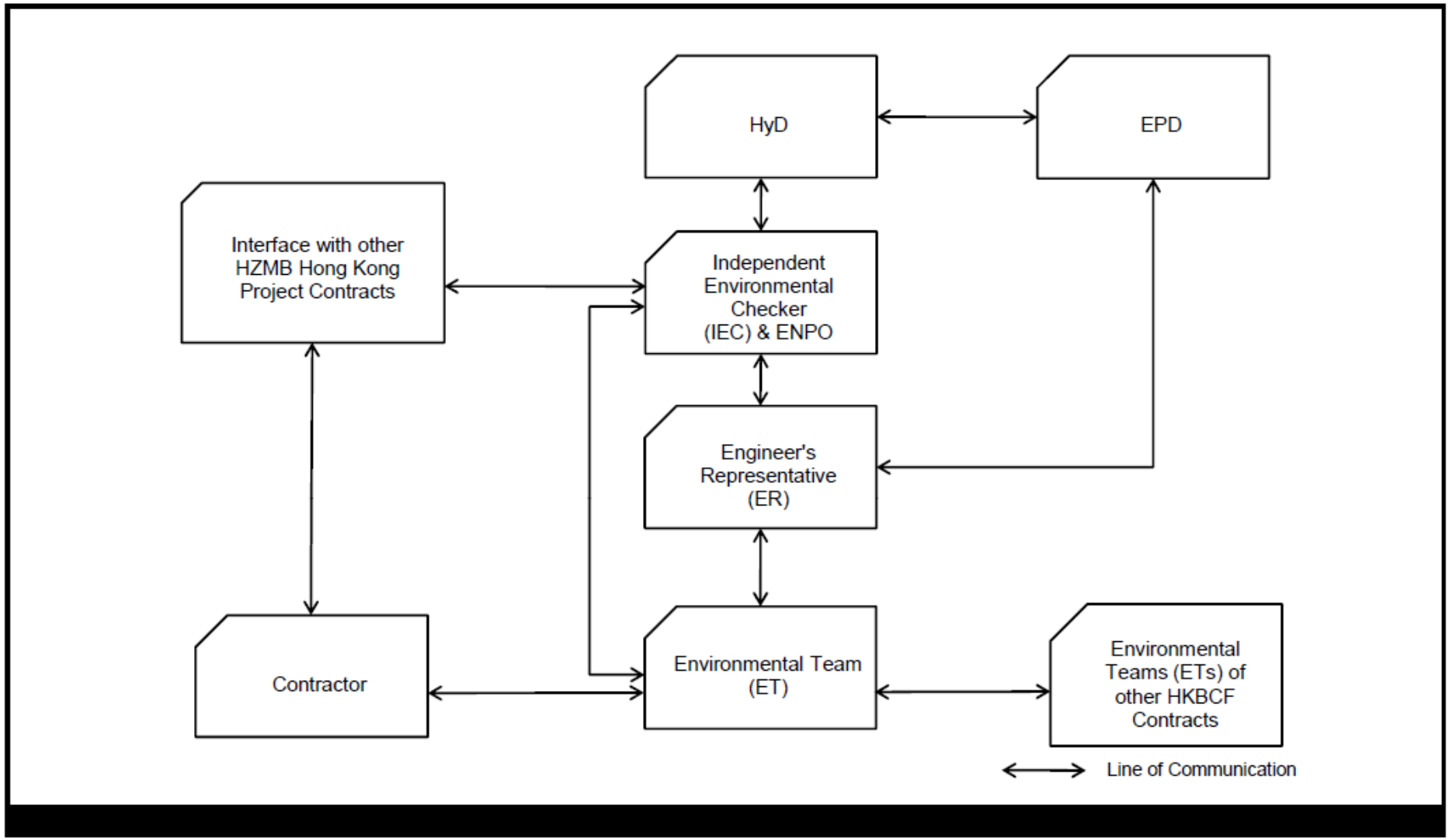


SETTING OUT POINT		
POINT	EASTING	NORTHING
301	817467.285	819182.663
302	817314.741	819099.928
303	817327.330	819049.295
304	817446.885	819117.811
305	817346.825	819027.314
306	817307.350	819025.403
307	817287.061	819045.396
308	817466.137	819091.947
309	817465.783	819087.101
310	817513.449	819113.764
311	817347.777	819016.992
312	817526.774	819020.579
313	817221.659	819021.641
314	817221.154	819081.065
315	817223.245	819091.386
316	817226.289	819099.620

Appendix B

Project Organization for Environmental Works

Appendix B Project Organization for Environmental Works



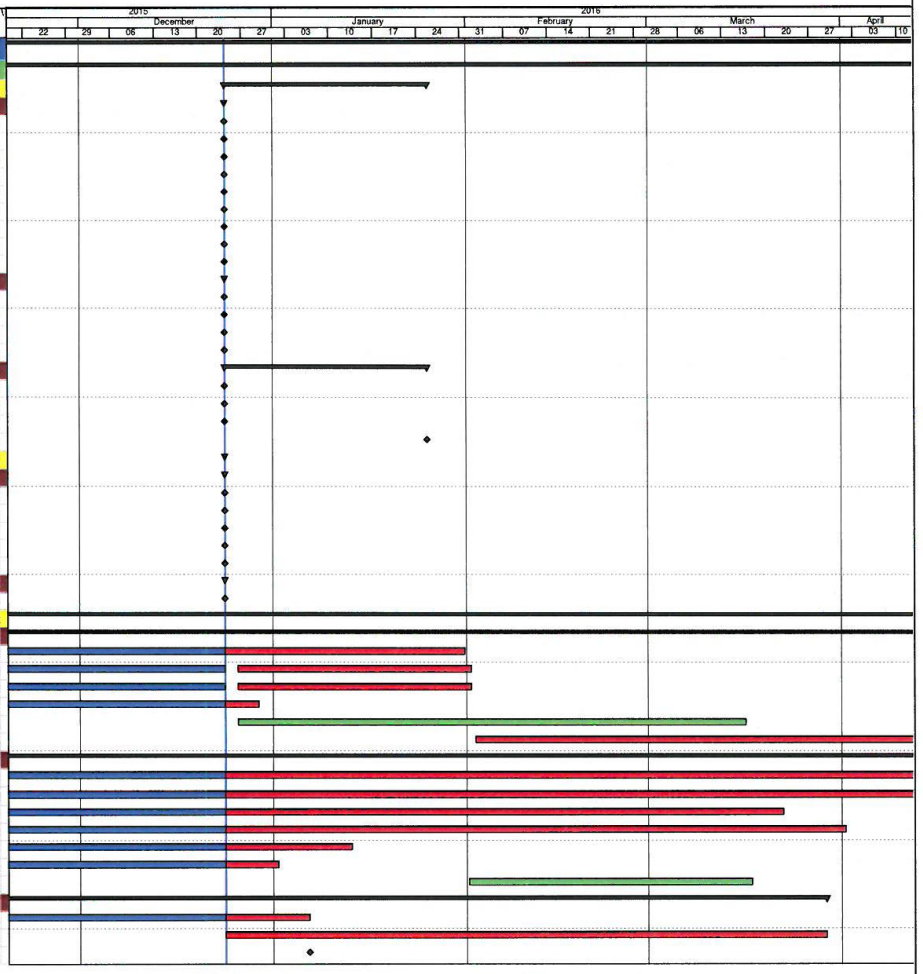
Appendix C

Construction Programme

Western Portion - Integrated Works Prog 3 - Monthly Progress 17 - Three Month Rolling Programme

Int 2(a)-MRP17

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Calendar	Total Float
Western Portion - Integrated Works Prog 3 - Monthly Proj		605	28-12-14	16-01-17			598
Preliminaries		605	28-12-14	16-01-17			598
Contractual Date		33	24-12-15	25-01-16		WP-7d	1073
Possession		0	24-12-15	24-12-15		WP-7d	1082
CA4	Possession of Portion A4 (COW+386d)	0	24-12-15		0%	WP-7d	-131
CA5	Possession of Portion A5 (COW+386d)	0	24-12-15		0%	WP-7d	-131
CB1	Possession of Portion B1 (COW+107d)	0	24-12-15		0%	WP-7d	-406
CB2	Possession of Portion B2 (COW+107d)	0	24-12-15		0%	WP-7d	1082
CB3	Possession of Portion B3 (COW+107d)	0	24-12-15		0%	WP-7d	1082
CB4	Possession of Portion B4 (COW+107d)	0	24-12-15		0%	WP-7d	1082
CE1	Possession of Portion E (COW+387d)	0	24-12-15		0%	WP-7d	-130
CF1	Possession of Portion F (COW+487d)	0	24-12-15		0%	WP-7d	-30
CG1	Possession of Portion G (COW+174d)	0	24-12-15		0%	WP-7d	-343
Key Date		0	24-12-15	24-12-15		WP-7d	1106
KD09	KD9-CLP cabling other then portion A4, A5, E & F (COW+290c	0		24-12-15	0%	WP-7d	-227
KD10	KD10-CLP cabling for portion A4, A5, E & F (COW+510d)	0		24-12-15	0%	WP-7d	-7
KD15	KD15-handover of Portion B2 to HY/2013/03 (COW+250d)	0		24-12-15	0%	WP-7d	1106
KD16	KD16-handover of Portion A2 & B3 to HY/2013/04 (COW+25	0		24-12-15	0%	WP-7d	1106
Handover		33	24-12-15	25-01-16		WP-7d	1073
HA2	Handover of Portion A2 (KD16)	0		24-12-15	0%	WP-7d	1106
HB2	Handover of Portion B2 (KD15)	0		24-12-15	0%	WP-7d	1106
HB3	Handover of Portion B3 (KD16)	0		24-12-15	0%	WP-7d	1106
HH1	Handover of Portion H (KD11)	0		25-01-16	0%	WP-7d	0
Interfaces with other		0	24-12-15	24-12-15		WP-7d	1106
HY/2013/01 - Passenger Clearance Building		0	24-12-15	24-12-15		WP-7d	1106
A1-0100	Handover of B1 & B3 to PCB for there works	0	24-12-15		0%	WP-7d	1106
A1-0110	Handover of Abutment at Bridge 6	0		24-12-15	0%	WP-7d	-6
A1-0120	Handover of Abutment at Bridge 5b	0		24-12-15	0%	WP-7d	183
A1-0130	Handover of Pumping Station, Gen set Building, intake & discl	0		24-12-15	0%	WP-7d	1106
A1-0140	Handover of Gen set Building to PCB	0	24-12-15		0%	WP-7d	1106
HY/2013/03 - Vehical Clearance Plazas		0	24-12-15	24-12-15		WP-7d	1106
A1-0150	Handover of B2 to VCP for there works	0	24-12-15		0%	WP-7d	1106
Area Handover from BCF-Reclamation		747	28-12-14	16-01-17		WP-7d	716
Portion A		747	28-12-14	16-01-17		WP-7d	716
A1-0220	Portion A CH5+110 to CH5+440 50-120m offset - surcharge +	120	28-12-14	31-01-16	67.5%	WP-7d	-446
A1-0230	Portion A CH5+110 to CH5+440 10-50m offset - surcharge + r	274	01-01-15	01-02-16	86.13%	WP-7d	-446
A1-0240	Portion A CH5+440 to CH5+650 10-40m offset - surcharge + r	274	02-01-15	01-02-16	86.13%	WP-7d	-446
A1-0250	Portion A CH5+440 to CH5+650 40-120m offset - surcharge +	224	01-02-15	29-12-15	97.32%	WP-7d	-329
A1-0260	Portion A C118 - C134 - Remove Temp rockfill & install rock Ar	82	26-12-15	16-03-16	0%	WP-7d	1022
A1-0270	Portion A CH5+110 to CH5+440 50-120m offset - C1 work in	350	02-02-16	16-01-17	0%	WP-7d	-420
Portion C2a		466	22-01-15	31-05-16		WP-7d	946
A1-0300	Portion C2a West main - surcharge + removal	382	01-02-15	31-05-16	58.12%	WP-7d	-357
A1-0310	Portion C2a East main - surcharge + removal	368	16-02-15	31-05-16	56.52%	WP-7d	-229
A1-0320	Portion C2a C113 - C117 Edge area - surcharge + removal	332	22-01-15	22-03-16	72.89%	WP-7d	-341
A1-0330	Portion C2a C108 - C112 Edge area - surcharge + removal	444	13-02-15	01-04-16	77.48%	WP-7d	-242
A1-0340	Portion C2a C104 - C107 Edge area - surcharge + removal	438	13-02-15	13-01-16	95.32%	WP-7d	-231
A1-0350	Portion C2a C101 - C103 Edge area - surcharge + removal	283	30-04-15	01-01-16	96.82%	WP-7d	-21
A1-0370	Portion C2a C101 - C112 - Remove Temp rockfill & install rock	46	01-02-16	17-03-16	0%	WP-7d	1021
Portion D (Culvert C1)		197	14-09-15	29-03-16		WP-7d	313
A1-0470	Portion D West 1 (C1) - Vertical Seawall	77	14-09-15	06-01-16	81.82%	WP-7d	-313
A1-0480	Portion D West 1 (C1) - Const C1-1 at sloping seawall	97	24-12-15	29-03-16	0%	WP-7d	-313
A1-0490	Portion D West 1 (C1) - Handover C1 vertical seawall	0		06-01-16	0%	WP-7d	-232

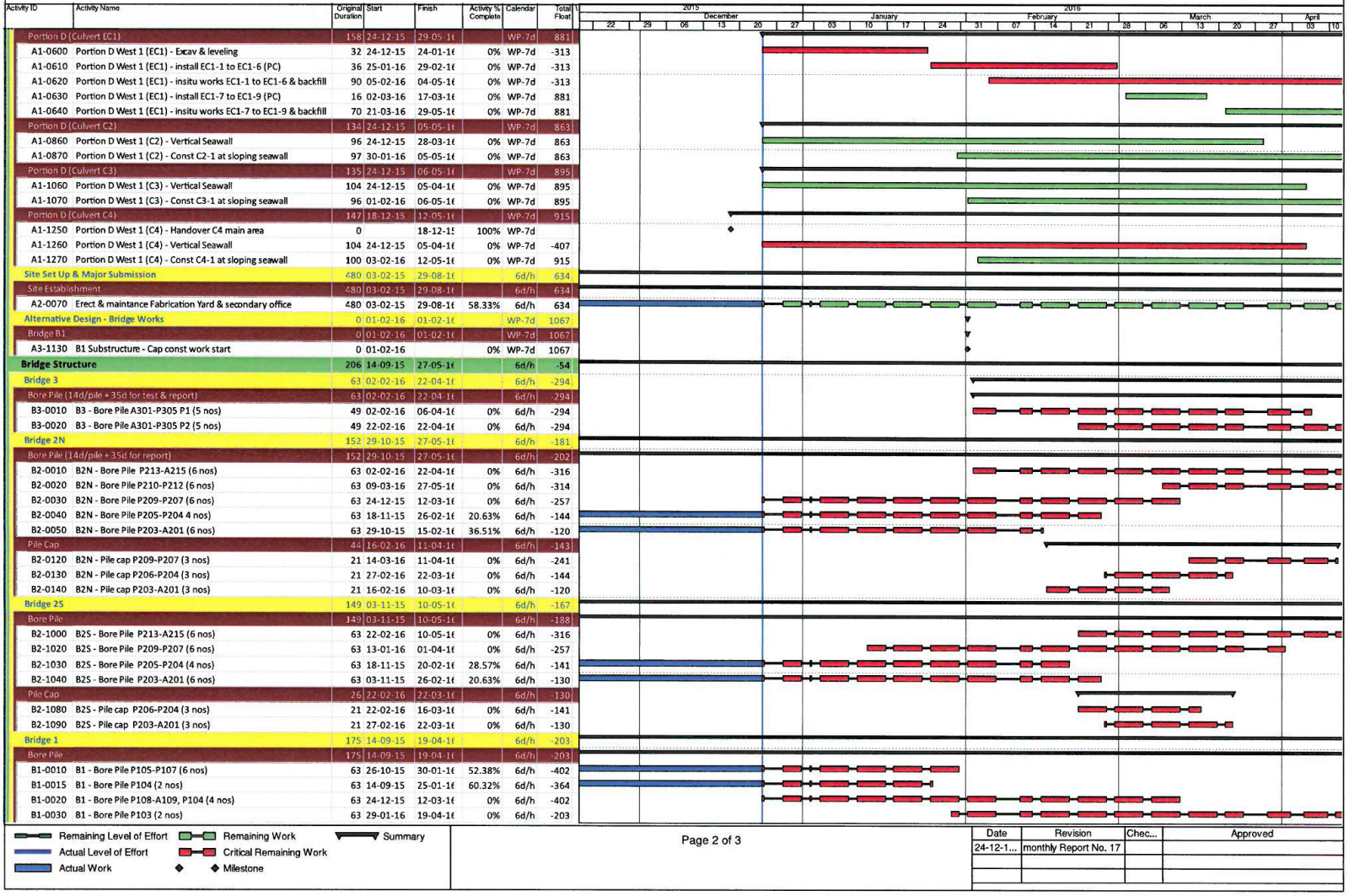


Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Date	Revision	Chec...	Approved
24-12-1...	monthly Report No. 17		

Western Portion - Integrated Works Prog 3 - Monthly Progress 17 - Three Month Rolling Programme

Int 2(a)-MRP17



Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Calendar	Total Float
	Portion D (Culvert EC1)	158	24-12-15	29-05-16		WP-7d	881
A1-0600	Portion D West 1 (EC1) - Excav & leveling	32	24-12-15	24-01-16	0%	WP-7d	-313
A1-0610	Portion D West 1 (EC1) - install EC1-1 to EC1-6 (PC)	36	25-01-16	29-02-16	0%	WP-7d	-313
A1-0620	Portion D West 1 (EC1) - insitu works EC1-1 to EC1-6 & backfill	90	05-02-16	04-05-16	0%	WP-7d	-313
A1-0630	Portion D West 1 (EC1) - install EC1-7 to EC1-9 (PC)	16	02-03-16	17-03-16	0%	WP-7d	881
A1-0640	Portion D West 1 (EC1) - insitu works EC1-7 to EC1-9 & backfill	70	21-03-16	29-05-16	0%	WP-7d	881
	Portion D (Culvert C2)	134	24-12-15	05-05-16		WP-7d	863
A1-0860	Portion D West 1 (C2) - Vertical Seawall	96	24-12-15	28-03-16	0%	WP-7d	863
A1-0870	Portion D West 1 (C2) - Const C2-1 at sloping seawall	97	30-01-16	05-05-16	0%	WP-7d	863
	Portion D (Culvert C3)	135	24-12-15	06-05-16		WP-7d	895
A1-1060	Portion D West 1 (C3) - Vertical Seawall	104	24-12-15	05-04-16	0%	WP-7d	895
A1-1070	Portion D West 1 (C3) - Const C3-1 at sloping seawall	96	01-02-16	06-05-16	0%	WP-7d	895
	Portion D (Culvert C4)	147	18-12-15	12-05-16		WP-7d	915
A1-1250	Portion D West 1 (C4) - Handover C4 main area	0		18-12-15	100%	WP-7d	
A1-1260	Portion D West 1 (C4) - Vertical Seawall	104	24-12-15	05-04-16	0%	WP-7d	-407
A1-1270	Portion D West 1 (C4) - Const C4-1 at sloping seawall	100	03-02-16	12-05-16	0%	WP-7d	915
	Site Set Up & Major Submission	480	03-02-15	29-08-16		6d/h	634
	Site Establishment	480	03-02-15	29-08-16		6d/h	634
A2-0070	Erect & maintance Fabrication Yard & secondary office	480	03-02-15	29-08-16	58.33%	6d/h	634
	Alternative Design - Bridge Works	0	01-02-16	01-02-16		WP-7d	1067
	Bridge B1	0	01-02-16	01-02-16		WP-7d	1067
A3-1130	B1 Substructure - Cap const work start	0	01-02-16		0%	WP-7d	1067
	Bridge Structure	206	14-09-15	27-05-16		6d/h	-54
	Bridge 3	63	02-02-16	22-04-16		6d/h	-294
	Bore Pile (14d/pile + 35d for test & report)	63	02-02-16	22-04-16		6d/h	-294
B3-0010	B3 - Bore Pile A301-P305 P1 (5 nos)	49	02-02-16	06-04-16	0%	6d/h	-294
B3-0020	B3 - Bore Pile A301-P305 P2 (5 nos)	49	22-02-16	22-04-16	0%	6d/h	-294
	Bridge 2N	152	29-10-15	27-05-16		6d/h	-181
	Bore Pile (14d/pile + 35d for report)	152	29-10-15	27-05-16		6d/h	-202
B2-0010	B2N - Bore Pile P213-A215 (6 nos)	63	02-02-16	22-04-16	0%	6d/h	-316
B2-0020	B2N - Bore Pile P210-P212 (6 nos)	63	09-03-16	27-05-16	0%	6d/h	-314
B2-0030	B2N - Bore Pile P209-P207 (6 nos)	63	24-12-15	12-03-16	0%	6d/h	-257
B2-0040	B2N - Bore Pile P205-P204 4 nos)	63	18-11-15	26-02-16	20.63%	6d/h	-144
B2-0050	B2N - Bore Pile P203-A201 (6 nos)	63	29-10-15	15-02-16	36.51%	6d/h	-120
	Pile Cap	44	16-02-16	11-04-16		6d/h	-143
B2-0120	B2N - Pile cap P209-P207 (3 nos)	21	14-03-16	11-04-16	0%	6d/h	-241
B2-0130	B2N - Pile cap P206-P204 (3 nos)	21	27-02-16	22-03-16	0%	6d/h	-144
B2-0140	B2N - Pile cap P203-A201 (3 nos)	21	16-02-16	10-03-16	0%	6d/h	-120
	Bridge 2S	149	03-11-15	10-05-16		6d/h	-167
	Bore Pile	149	03-11-15	10-05-16		6d/h	-188
B2-1000	B2S - Bore Pile P213-A215 (6 nos)	63	22-02-16	10-05-16	0%	6d/h	-316
B2-1020	B2S - Bore Pile P209-P207 (6 nos)	63	13-01-16	01-04-16	0%	6d/h	-257
B2-1030	B2S - Bore Pile P205-P204 (4 nos)	63	18-11-15	20-02-16	28.57%	6d/h	-141
B2-1040	B2S - Bore Pile P203-A201 (6 nos)	63	03-11-15	26-02-16	20.63%	6d/h	-130
	Pile Cap	26	22-02-16	22-03-16		6d/h	-130
B2-1080	B2S - Pile cap P206-P204 (3 nos)	21	22-02-16	16-03-16	0%	6d/h	-141
B2-1090	B2S - Pile cap P203-A201 (3 nos)	21	27-02-16	22-03-16	0%	6d/h	-130
	Bridge 1	175	14-09-15	19-04-16		6d/h	-203
	Bore Pile	175	14-09-15	19-04-16		6d/h	-203
B1-0010	B1 - Bore Pile P105-P107 (6 nos)	63	26-10-15	30-01-16	52.38%	6d/h	-402
B1-0015	B1 - Bore Pile P104 (2 nos)	63	14-09-15	25-01-16	60.32%	6d/h	-364
B1-0020	B1 - Bore Pile P108-A109, P104 (4 nos)	63	24-12-15	12-03-16	0%	6d/h	-402
B1-0030	B1 - Bore Pile P103 (2 nos)	63	29-01-16	19-04-16	0%	6d/h	-203

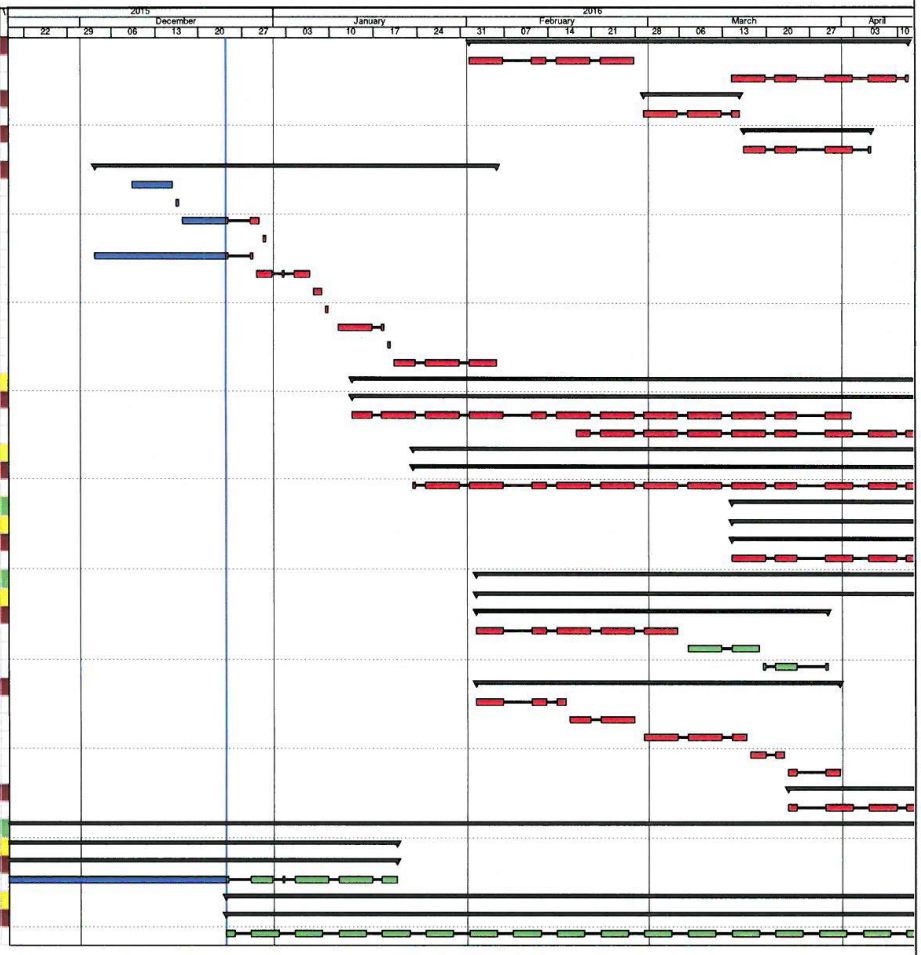
Remaining Level of Effort | Remaining Work | Summary
Actual Level of Effort | Critical Remaining Work
Actual Work | Milestone

Date	Revision	Chec...	Approved
24-12-1...	monthly Report No. 17		

Western Portion - Integrated Works Prog 3 - Monthly Progress 17 - Three Month Rolling Programme

Int 2(a)-MRP17

Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Calendar	Total Float
Pile Cap		54	01-02-16	11-04-16		6d/h	-402
B1-0050	B1 - Pile cap P105-P107 (3 nos)	21	01-02-16	27-02-16	0%	6d/h	-390
B1-0060	B1 - Pile cap P108-A109, P104 (3 nos)	21	14-03-16	11-04-16	0%	6d/h	-402
Pier & Abutment		14	29-02-16	15-03-16		6d/h	-198
B1-0090	B1 - Pier & Abutment P105-P107 (3 nos)	14	29-02-16	15-03-16	0%	6d/h	-198
Deck 1 (P105-P107)		14	16-03-16	05-04-16		6d/h	-198
B1-0200	B1 - Falsework & Base F/W (P105-P107)	14	16-03-16	05-04-16	0%	6d/h	-198
Deck 5 (P102-A101)		52	03-12-15	05-02-16		6d/h	-254
B1-593	B1 - Side formworks (40m from A101)	6	09-12-15	15-12-15	100%	6d/h	
B1-594	B1 - Concrete base portion (40m from A101)	1	16-12-15	16-12-15	100%	6d/h	
B1-595	B1 - Top slab rebar (40m from A101)	8	17-12-15	29-12-15	62.5%	6d/h	-238
B1-596	B1 - Concrete top slab (40m from A101)	1	30-12-15	30-12-15	0%	6d/h	-238
B1-600	B1 - Falsework & Base F/W (P102 20m both side)	21	03-12-15	28-12-15	90.48%	6d/h	-254
B1-610	B1 - Rebar & post-tender member (P102 20m both side)	7	29-12-15	06-01-16	0%	6d/h	-254
B1-620	B1 - Side formworks (P102 20m both side)	2	07-01-16	08-01-16	0%	6d/h	-254
B1-630	B1 - Concrete base portion (P102 20m both side)	1	09-01-16	09-01-16	0%	6d/h	-254
B1-640	B1 - Top slab rebar (P102 20m both side)	7	11-01-16	18-01-16	0%	6d/h	-254
B1-650	B1 - Concrete top slab (P102 20m both side)	1	19-01-16	19-01-16	0%	6d/h	-254
B1-660	B1 - Curing & post-tensioning (P102-A101)	15	20-01-16	05-02-16	0%	6d/h	-254
Bridge 4		91	13-01-16	07-05-16		6d/h	-190
Bore Pile		91	13-01-16	07-05-16		6d/h	-190
B4-0010	B4 - Bore Pile P405, P406 (4 nos)	63	13-01-16	02-04-16	0%	6d/h	-190
B4-0020	B4 - Bore Pile P403, P404 (4 nos)	63	18-02-16	07-05-16	0%	6d/h	-190
Bridge 5		63	23-01-16	13-04-16		6d/h	-18
Bore Pile		63	23-01-16	13-04-16		6d/h	-18
B5-1000	B5 - Bore Pile P502- A503 (4 nos)	63	23-01-16	13-04-16	0%	6d/h	-18
Auxiliary Structure		42	14-03-16	06-05-16		6d/h	-18
Retaining Wall, Slope & Earth Works		42	14-03-16	06-05-16		6d/h	-18
Slope & Earth Works at Bridge Abutment		42	14-03-16	06-05-16		6d/h	-18
B2-1700	Slope & earth works - RW1 & C2-S1	42	14-03-16	06-05-16	0%	6d/h	-18
Storm & Sewer Drainage Works		57	02-02-16	15-04-16		6d/h	752
Storm Drain about +1.3m (7m/day)		57	02-02-16	15-04-16		6d/h	752
A(1) - seawall next to B2		43	02-02-16	29-03-16		6d/h	766
D2-0010	M4E.8 - M4E.3 (183m) 750mm	26	02-02-16	05-03-16	0%	6d/h	-362
D2-0020	M4E.3 - M4E.1 (71m) 600mm	11	07-03-16	18-03-16	0%	6d/h	766
D2-0600	M4E.7 - M1E.1 (39m) 300mm	6	19-03-16	29-03-16	0%	6d/h	766
B(1) - CLP to PCB		45	02-02-16	31-03-16		6d/h	-362
D2-0030	M31C.A8 - M31C.7 (66m) 900mm	10	02-02-16	16-02-16	0%	6d/h	-362
D2-0040	M31C.7 - M31C.5 (70m) 750mm	10	17-02-16	27-02-16	0%	6d/h	-362
D2-0050	M31C.5 - M31C.2 (105m) 600mm	15	29-02-16	16-03-16	0%	6d/h	-362
D2-0060	M12E.4 - M12E.3 (35m) 750mm	5	17-03-16	22-03-16	0%	6d/h	-362
D2-0070	M12E.3 - M12E.2 (35m) 600mm	5	23-03-16	31-03-16	0%	6d/h	-362
C2(1) - B4		17	23-03-16	15-04-16		6d/h	-279
D2-0980	M80A.7 - M80A.4 (112m) 450mm	17	23-03-16	15-04-16	0%	6d/h	-279
Road Works		210	21-09-15	08-06-16			780
Road Furniture & Fit out		42	21-09-15	20-01-16		6d/h	891
Road Furniture		42	21-09-15	20-01-16		6d/h	891
RW-2050	Road Signage for Portion I	42	21-09-15	20-01-16	50%	6d/h	891
Landscape		120	24-12-15	08-06-16		tandar	430
Sublet & design of Irrigation system		120	24-12-15	08-06-16		tandar	430
RW-2020	Prepare, submit & approval of Irrigation System sub-contracto	120	24-12-15	08-06-16	0%	tandar	430



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Date	Revision	Chec...	Approved
24-12-1...	monthly Report No. 17		

Appendix D

Event and Action Plan

Event/Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurement s to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5 Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Water Quality

Event	ET Leader	IEC	ER	Contractor
Action level being exceeded by one sampling day	1. Repeat in situ measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods;	1. Confirm receipt of notification of noncompliance in writing; 2. Notify Contractor	1. Confirm receipt of notification of noncompliance in writing; 2. Notify Contractor	1. Inform the ER and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice; 3. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	1. Repeat in situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level; 8. Repeat measurement on next day of exceedance to confirm findings.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of noncompliance in writing; 2. Discuss with IEC on the proposed mitigation measures; 3. Make agreement on mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Assess the effectiveness of the implemented mitigation measures.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure mitigation measures are properly implemented; 5. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the noncompliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures; 6. Amend working methods if appropriate.
Limit level being exceeded by two or more consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor;	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented;	1. Inform the ER and confirm notification of the noncompliance in writing; 2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods;

	6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days		5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	ER / SOR	Contractor
Action Level	1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor; 5. Check monitoring data. 6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and finding with the ET and the Contractor.	1. Discuss monitoring with the IEC and any other measures proposed by the ET; 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER/SOR; 3. Implement the agreed measures.
Limit Level	1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary.	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly.	1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

Appendix E

Waste Flow Table

China Harbour Engineering Company Limited

Monthly Summary Waste Flow Table for 2015 (year)

Name of Person completing the record: Joy CHAN / ES

Project : Hong Kong – Zhuhai – Macao Bridge, Hong Kong Crossing Boundary Facilities – Infrastructure Works Stage I (Western Portion) Contract No.: HY/2013/02

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste (see Note 4)	Others, e.g. general refuse (see Note 3)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	0	0	0	0	0	0	0	0.048	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0	0	3.206	0	0
Apr	0	0	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0.046	0	0	0.0065
Jun	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	0.094	3.206	0	0.0065
Jul	0	0	0	0	0	0	0.005	0.0575	0.007	0	0.013
Aug	0	0	0	0	0	0	0	0	1.043	0	0.013
Sep	0.039	0	0	0	0.039	0	0	0.069	0.004	0	0.013
Oct	0	0	0	0	0	0	0	0	0	0	0.0455
Nov	0	0	0	0	0	0.1825	0	0.069	0.854	0	0.0325
Dec	0	0	0	0	0	0	0	0	0	0	0.0390
Total	0.039	0	0	0	0.039	0.1825	0.005	0.2895	5.114	0	0.1625

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

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

(3) Broken concrete for recycling into aggregates.

Appendix F

Environmental Licenses and Permits

Environmental Licenses and Permits

Item No.	Type of Permit / Licence	Reference No.	Application Date	Date of Issue	Date of Expiry	Remark
1	Environmental Permit under EIAO	EP-353/2009/I	30 Jun 2015	17 July 2015	NA	Issued
2	Construction Dust Notification (Western Portion)	Acknowledge Receipt: 377883	5 Aug 2014	11 Aug 2014	NA	Notified
3	Construction Dust Notification (Works Area WA3)	Acknowledge Receipt: 377884	5 Aug 2014	18 Aug 2014	NA	Notified
4	Construction Waste Disposal Account	Billing Account No.: 7020516	5 Aug 2014	15 Aug 2014	NA	Account approved
5	Registration as a Chemical Waste Producer (Works Area WA3)	Waste Producer Number (WPN): 5213-961-C1186-23	1 Sep 2014	17 Oct 2014	NA	Registration completed
6	Registration as a Chemical Waste Producer (Western Portion)	Waste Producer Number (WPN): 5213-961-C1186-27	20 Oct 2014	24 Nov 2014	NA	Registration completed
7	Discharge License under WPCO (Works Area WA3)	License No.: WT00020194-2014	21 Aug 2014	27 Oct 2014	31 Oct 2019	License approved
8	Discharge License under WPCO(Western Portion)	License No.: WT00020597-2014	25 Sep 2014	16 Mar 2015	31 Mar 2020	License approved
9	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS1333-15	20 Nov 2015	4 Dec 2015	14 Apr 2016	Permit approved with effective on 14 Dec 2015
10	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS0072-15	6 Jan 2015	22 Jan 2015	21 Jul 2015	Permit was surrendered with effective on 12 Feb 2015.
11	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS0128-15	26 Jan 2015	12 Feb 2015	8 Aug 2015	Cancelled with effective on 14 May 2015
12	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS0528-15	30 Apr 2015	14 May 2015	13 Nov 2015	Cancelled with effective on 27 Jul 2015
13	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS0794-15	7 Jul 2015	21 Jul 2015	27 Dec 2015	Cancelled with effective on 12 Oct 2015
14	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS1098-15	23 Sep 2015	7 Oct 2015	12 Feb 2016	Cancelled with effective on 14 Dec 2015

Appendix G

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
Air Quality								
S5.5.6.1 of HKBCFEIA	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260μgm^{-3}, respectively)	V
S5.5.6.2 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; When there are open excavation and reinstatement works, hoarding of not 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	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260μgm^{-3}, respectively)	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		hoardings are properly maintained throughout the construction period; The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should						

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						
S5.5.6.3 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A3	3) The Contractor should undertake proper watering on all exposed spoil and associated work areas (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	V
S5.5.6.4 of HKBCFEIA	A4	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 relevant latest Practice notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air pollution Control (Construction Dust) Regulation	V
S5.5.6.4 of HKBCFEIA and S4.11 of TKCLKLEIA	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	referred by the other ET under the HZMB project to the Contract	Selected representative dust monitoring station	Construction stage	- Air Pollution Control (Construction Dust) Regulation - To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24 hr TSP levels are 500μgm^{-3} and 260μgm^{-3}, respectively)	V
S5.5.7.1 of HKBCFEIA	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the	Contractor	Selected representative dust monitoring station	Construction stage	Air Pollution Control (Construction Dust) Regulation - To control the dust impact to within the HKAQO and TM-EIA criteria(Ref. 1-hr and 24	N/A

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		All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; Vents for all silos and cement/ pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; The materials which may generate airborne dusty emissions should be wetted by water spray system; All receiving hoppers should be enclosed on three sides up to 3m above unloading point; All conveyor transfer points should be totally enclosed; All access and route roads within the premises should be paved and wetted; and Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.	construction period.				hr TSP levels are $500\mu gm^{-3}$ and $260\mu gm^{-3}$, respectively)	

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S5.5.2.7 of HKBCFEIA	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: All road surface within the barging facilities will be paved; Dust enclosures will be provided for the loading ramp; Vehicles will be required to pass through designated wheels wash facilities; and Continuous water spray at the loading points.	Control construction dust	Contractor	All construction sites	Construction stage	Air Pollution Control (Construction Dust) Regulation	N/A (Construction in process)
Construction Noise (Air borne)								
S6.4.10 of HKBCFEIA	N1	1) Use of good site practices to limit noise emissions by considering the following: only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	Noise Control Ordinance	V

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		mobile plant should be sited as far away from NSRs as possible and practicable; material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						
S6.4.11 of HKBCFEIA	N2	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.	Reduce the construction noise levels at low-level zone of NSRs through partial screening	Contractor	All construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S6.4.12 of HKBCFEIA	N3	3) Install movable noise barriers (typically density 14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises - The movable barrier should achieve at least 5 dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A
S6.4.13 of HKBCFEIA	N4	4) Select “Quiet plants” which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed In Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V

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S6.4.14 of HKBCFEIA	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S5.1 of TMCLKLEIA	N6	6) Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at selected representative locations	Referred by the other ET under the HZMB project to the Contract.	Selected representative noise monitoring station	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises	V
Sediment								
S7.3	S1	1) The requirements as recommended un ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	Develop sediment disposal arrangement	Engineer	All construction site areas	Design stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S2	Before re-deposition the contaminated sediment, a layer of geotextile shall be placed at the bottom of the sheet pile cellular structures to avoid direct contact of the contaminated sediment and the bottom sediment.	Develop sediment disposal arrangement	Engineer	All construction site areas	Design stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S3	A miniumum of 2m thick sand fill or public fill shall be placed on top of the contaminated sediment to protect and cover the sediment after redeposition.	Develop sediment disposal arrangement	Engineer	All construction site areas	Design stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
	S4	The contaminated sediment shall not be disturbed after re-deposition. No piling works or deep foundation which may disturb the contaminated sediment is allowed within the cellular structures.	Develop sediment disposal arrangement	Engineer	All construction site areas	Design stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
Waste management (Construction Waste)								
S12.6 of TMCLKLEIA	WM1	The Contractor shall identify a coordinator for the management of waste.	Proper implementation of WMP	Contractor	Contractor All construction sites	Construction		V
S12.6 of TMCLKLEIA	WM2	The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Proper control of wastes disposal in accordance to relevant ordinances	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance (Cap28); • Waste Disposal Ordinance (Cap 354); • Dumping at Sea Ordinance (Cap 466); • Water Pollution Control Ordinance.	V

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S12.6 of TMCLKLEIA	WM3	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	Ensure proper implementation mitigation measures stated in WMP	Contractor	All construction sites		Construction stage	V
S8.3.8 of HKBCFEIA and S12.6 of TMCLKLEIA	WM4	*Construction and Demolition Material* The following mitigation measures should be implemented in handling the waste: Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; Carry out on-site sorting; Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction; In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation;	Good site practice to minimize and recycle the C&D material as far as practicable so as to reduce the amount for final disposal	Contractor	All construction site areas	Construction stage	- Land (Miscellaneous Provisions) Ordinance - Waste Disposal Ordinance - ETWB TC 19/2005	V

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		The surplus surcharge should be transferred to a fill bank.						
S8.3.9 - S8.3.11 of HKBCFEIA and S12.6 of TMCLKLEIA	WM5	*C&D Waste* Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding and falsework should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and 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.	Good site practice to minimize and recycle the C&D material as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	- Land (Miscellaneous Provisions) Ordinance - Waste Disposal Ordinance - ETWB TC 19/2005	V

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S8.2.12 - S8.3.15 of HKBCFEIA and S12.6 of TMCLKLEIA	WM6	*Chemical Waste* Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers 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.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	- Waste Disposal(Chemical Waste) General Regulation - Code of Practice on the Packaging, Labeling and Storage of Chemical Waste	V

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S8.3.16 of HKBCFEIA and S12.6 of TMCLKLEIA	WM7	*Sewage* Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	Proper handling of sewage from worker to avoid odour, pest and litter impacts.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	V
S8.3.17 of HKBCFEIA and S12.6 of TMCLKLEIA	WM8	*General Refuse* The site and surroundings shall be kept tidy and litter free. General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. Sufficient dustbins shall be provided for storage	Minimize production of the general refuse and avoid odour, pest and litter impacts.	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	V

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		of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. All waste containers shall be in a secure area on hardstanding.						
Water Quality (Construction Phase)								
	W1	Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below: No dredging works of marine sediment shall be carried out the Project except for the construction of box culverts and seawalls at Portion D. Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit; Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for	To control construction water quality	Contractor	During dredging and filling	Construction stage	TM-EIAO	V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; No more than 2 grab dredgers with a maximum daily dredging rate of 12,000m3 shall be employed for dredging operation at Portion D of the Project; Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. Closed grabs should be used for sediment dredging to reduce sediment loss when lifting the grabs to the barges. Only grab dredgers shall be used for dredging works of the Project; All mechanical grabs shall be designed and maintained to avoid spillage; The moving speed of construction vessels in the dredging area should be reduced to prevent disturbance to the seabed generating sediment plumes; Floating type silt curtains shall be installed enclosing the entire reclamation site at all time. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least						

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		200m; The cage-type silt-curtain with steel enclosure is proposed to be installed to enclose local pollution caused by the grab dredging. The grab dredging work should be carried out within the cage-type siltcurtain; Single layer silt curtain to be applied around the North-east airport water intake; The silt-curtains should be maintained in good condition to ensure the sediment plume generated from dredging and filling be confined effectively within the site boundary; The dredging and filling works shall be scheduled to spread the works evenly over a working day; Cellular structure shall be used for seawall construction; A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall; The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works. Stone blanket -> with silt curtain.						

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		In addition, dredging operations should be undertaken in such a manner as to minimise resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging and filling contract. 1. trailer suction hopper dredgers shall not allow mud to overflow; 2. use of Lean Material Overboard (LMOB) systems shall be prohibited; 3. mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted; 4. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material; 5. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; 6. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; 7. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; 8. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; 9. all vessels shall be sized such that adequate						

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		clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and 10. the works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.						
	W2	*Re-deposition of Contaminated Sediment* All dredged marine mud, which required Type 2 Confined Marine Disposal under Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002, from the Project shall be disposed of inside the sheet pile cellular structures within the Project boundary. Before re-deposition the contaminated sediment, a layer of geotextile shall be placed at the bottom of the sheet pile cellular structures to avoid direct contact of the contaminated sediment and the bottom sediment. A miniumum of 2m thick sand fill or public fill shall be placed on top of the contaminated sediment to protect and cover the sediment after redeposition. The contaminated sediment shall not be disturbed after re-deposition. No piling works or deep foundation which may disturb the contaminated sediment is allowed within the cellular structures.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	• Waste Disposal Ordinance • ETWB TC34/2002	V
S9.11.1.3 of HKBCFEIA and S6.10 of	W3	Land Works General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	V

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TMCLKLEIA		works contracts should include: wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; Sewage effluent and discharges from on –site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins.Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; temporary access roads should be surfaced with crushed stone or gravel; rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;						

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		manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for offsite disposal; the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; waste oil should be collected and stored for						

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		recycling or disposal, in accordance with the Waste Disposal Ordinance; All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the storm water system.						
S9.14 of HKBCFEIA and S6.10 of TMCLKLEIA	W4	Implement a water quality monitoring programme	Control water quality	Contractor	At identified monitoring location	During construction period	• TM-water • Water Pollution Control Ordinance	V
S6.10 of TMCLKLEIA	W5	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	To control construction water quality	Contractor	All construction site areas	During Construction period		V
Ecology (construction Phase)								
S10.7 of HKBCFEIA and S8.14 of TMCLKLE IA	E1	▪ Use closed grab in dredging works. ▪ Install silt curtain during the construction. ▪ Limit dredging and works fronts. ▪ Construct seawall prior to reclamation filling where practicable. ▪ Good site practices ▪ Strict enforcement of no marine dumping. ▪ Site runoff control ▪ Spill response plan	Minimise marine water quality impacts	Contractor	Seawall, reclamation area	During Construction	TM-Water	V
S10.7 of HKBCFEIA	E2	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater.	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	TM-Water	V
S10.7 of HKBCFEIA	E3	Good site practices, including strictly following the permitted works hours, using quieter	Prevent disturbance to terrestrial fauna and	Contractor	Land-based works	During construction		V

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and S8.14 of TMCLKLEIA		machines where practicable, and avoiding excessive lightings during night time.	habitats		areas			
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E4	Dolphin Exclusion Zone Dolphin watching plan	Minimize temporary marine habitat loss impact to dolphins	Contractor	Marine works	During marine works	TM-EIAO	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E5	■ Decouple compressors and other equipment on working vessels ■ Proposal on design and implementation of acoustic decoupling ■ measures applied during dredging and reclamation works ■ Avoidance of percussive piling	Minimise marine noise impacts on dolphins	Contractor	Marine works	During marine works	• TM-EIAO • Marine Park Regulations	
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E6	■ Control vessel speed ■ Skipper training ■ Predefined and regular routes for working vessels; avoid Brothers Islands	Minimise marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works		V
S10.10 of HKBCFEIA and S8.14 of TMCLKLEIA	E7	Vessel based dolphin monitoring	Minimise marine traffic disturbance on dolphins	Contractor	Northeast and Northwest Lantau	Prior to construction, during		V
Fisheries								
S11.7 of HKBCFEIA	F1	■ Reduce re-suspension of sediments ■ Limit dredging and works fronts. ■ Good site practices	Minimise marine water quality impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	V

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S11.7 of HKBCFEIA	F2	Install silt-grease trap in the drainage system collecting surface runoff	Minimise impacts on marine water quality impacts	Designer	Reclamation area	During Construction	TM-Water	V
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1 of HKBCFEIA	LV1	General design measures include: ■ Roadside planting and planting along the edge of the reclamation is ■ proposed; ■ Transplanting of mature trees in good health and amenity value where ■ appropriate and reinstatement of areas disturbed during construction ■ by compensatory hydro-seeding and planting; ■ Protection measures for the trees to be retained during construction ■ activities; ■ Maximizing new tree, shrub and other vegetation planting to ■ compensate tree felled and vegetation removed; ■ Providing planting area around peripheral of HKBCF for tree planting ■ screening effect; and ■ Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline.	Minimise visual & landscape impacts	Contractor	HKBCF	Design Stage		V
Landscape & Visual (Construction Phase)								
S14.3.3.3 of HKBCFEIA and S10.9 of	LV2	*Mitigate Landscape Impacts* G1. Grass-hydroseed or sheeting bare soil surface and stock pile areas.	Minimise visual & landscape impacts	Contractor	All construction site areas	Construction stage		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
TMCLKLEIA								
S10.9 of TMCLKLEIA	LV3	LV3 Mitigate Landscape Impacts CM1. Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage). CM2. Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme. CM7. Ensure no run-off into water body adjacent to the Project Area. CM9. Recycle/Reuse all felled trees and vegetation, e.g. mulching.	Minimise landscape impact	Contractor	All construction site areas	Construction stage		V
S14.3.3.3 of HKBCFEIA	LV4	Mitigate Visual Impacts 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.	Minimise visual & landscape impacts	Contractor	All construction site areas	Construction stage		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
S10.9 of TMCLKLEIA	LV5	Mitigate Visual Impacts CM5. Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works. CM6. Control night-time lighting and glare by hooding all lights. CM8. Avoidance of excessive height and bulk of buildings and structures.	Minimise visual impact	Contractor	All construction site areas	Construction stage		V
EM&A								
S15.2.2 of HKBCFEIA	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction site areas	Construction stage	-EIAO Guidance Note No. 4/2002 -TM_EIAO	V
S15.5 - S15.6 of HKBCFEIA	EM2	An Environmental Team needs to be employed as per the EM&A Manual. Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction site areas	Construction stage	-EIAO Guidance Note No. 4/2002 -TM_EIAO	V

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

Appendix H

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting period	0	0	0
From commencement date of construction to end of reporting month	4	0	0

Appendix I

Environmental Site Inspection Schedule

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Contract No.: HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)

Schedule for Weekly Environmental Site Inspection

Dec 2015

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

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Contract No.: HY/2013/02
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage I (Western Portion)

Schedule for Weekly Environmental Site Inspection

Jan 2016

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

Appendix J

Investigation Report on Action and Limit Level Non-compliance

Contract No. HY/2013/02
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities –Infrastructure Works Stage I (Western Portion)
InvestigationReport on Action Level or Limit Level Non-compliance

Report No. **002**

Monitoring Date **28-Dec-15**

The Action and Limit Levels of turbidity and suspended solids (SS) determined from baseline monitoring data are reproduced below:

Monitoring Parameter	Action Level (AL)	Limit Level (LL)
Depth averaged turbidity (in NTU)	27.5	47.0
Depth averaged SS (in mg/L)	23.5	34.4

Mid-Flood tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depthaveraged	Level Exceeded
IS(Mf)11	09:38	24.9	Action

*Monitoring was undertaken by the E.T. of Contract No. HY/2010/02

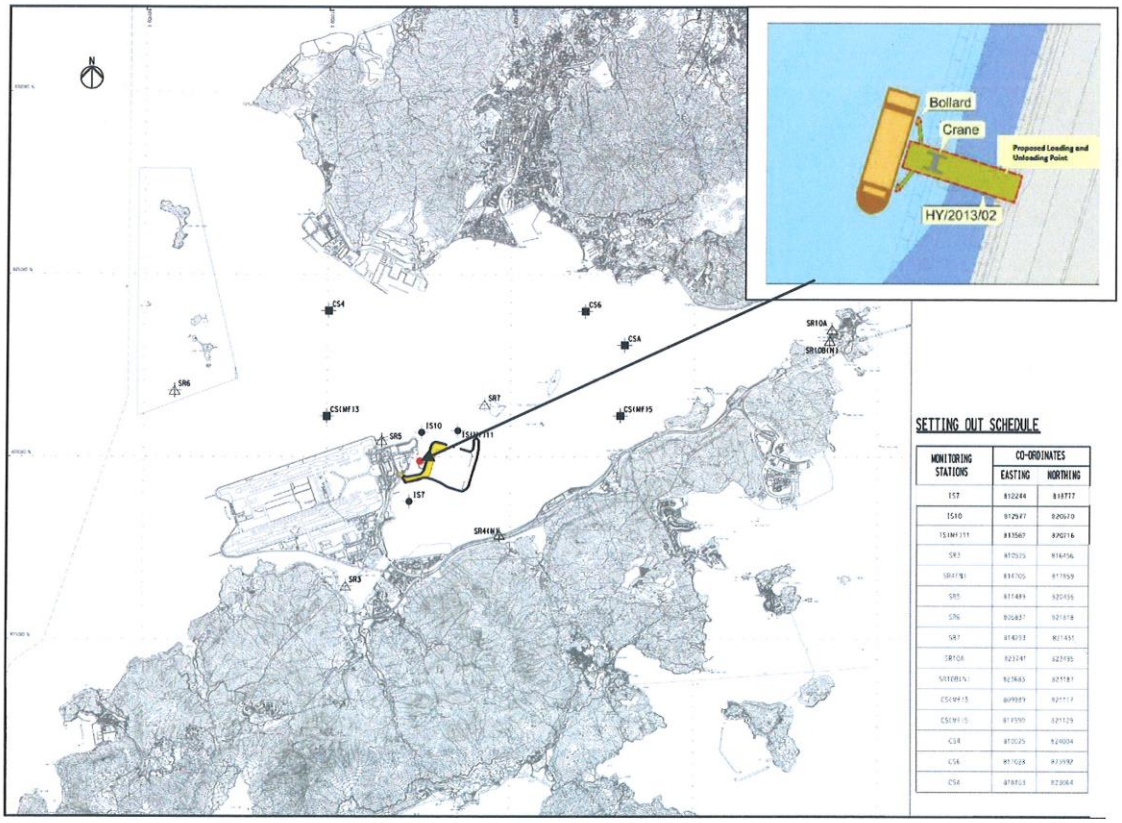

Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedance

Exceedance was not due to operation of the works under Contract No. HY/2013/02 because:

- Only steel piles installation works was carried out at the temporary loading and unloading point in Portion A1 during the monitoring period which was unlikely to generate much suspended solids in the marine water. Location plan showing the location of the above mentioned works and all relevant WQM stations.
- The exceedance was recorded during flood tide in which the direction of flow was flowing from east to west and the monitoring station IS(Mf)11 is located at the east side (upstream) of the above mentioned works area and no water can pass through the box culvert connecting between the Airport Island and the HKBCF from south to north side to the monitoring station IS(Mf)11. Secondly, suspended solids value recorded at Impact Station closer to the works (e.g. IS10) is below the Action and Limit Level during the same tide on the same day. Therefore it is unlikely that the exceedance recorded was contributed by the works under Contract No. HY/2013/02.
- The actual marine piling works at the temporary loading and unloading point was confirmed to be carried out from 02 to 30 December 2015. Same type of works was carried out at the same works area in other days of the above mentioned period but no exceedance of SS was recorded.
- The exceedance was considered as non-Project related.

b) Action required under the action plan

1. Repeat in situ measurement on next day of exceedance to confirm findings;
2. Identify source(s) of impact;
3. Inform IEC, Contract and ER;
4. Check monitoring data, all plant, equipment and Contractor's working methods.

c) Action taken under the action plan

1. Not applicable as SS was not measured in situ;
2. After considered the above mentioned investigation results, it appears that it was unlikely that the SS exceedance was attributed to the above mentioned work site of this Contract;
3. The exceedance was informed by IEC and ER;
4. Monitoring data, all plant, equipment and Contractor's working methods were checked;
5. Since it is considered that the SS exceedance is unlikely to be project related, no further action was taken.

d) ET's conclusions and recommendations for mitigation

The Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains and to carry out maintenance work once defects were found.

e) Contractor's actions to implement the mitigation

Maintenance work of the silt curtain was carried out by the Contractor on a daily basis except Sundays and Public Holidays.

ET Leader Signature & Date 18-Jan-16