東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

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)

QUARTERLY EM&A REPORT NO. 9

(01 DECEMBER 2016 – 28 FEBRUARY 2017)

Prepared by: _____
LO, Ting Yi

Certified by: _____
LAU, Chi Leung
Environmental Team Leader

Issued Date: 27 March 2017 Report No.: ENA71713

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_5231L.17

3 April 2017

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)
Quarterly EM&A Report No. 9 for December 2016 to February 2017

Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report No. 9 for December 2016 to February 2017 certified by the ET Leader (ET's ref.: "OC/70173/CLL" dated 31 March 2017) and provided to us via e-mail on 31 March 2017.

We are pleased to inform you that we have no adverse comment on the captioned Quarterly Environmental Monitoring & Audit Report for December 2016 to February 2017.

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. Vico Cheung	(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, ENPO Site

Q:\Projects\HYDHZMBEEM00\02_Proj_Mgt\02_Corr\HYDHZMBEEM00_0_5231L.17.doc

Ramboll Environ Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wanchai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.Ramboll-Environ.com

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Your Ref. : ---
Our Ref. : OC/70173/CLL

31 March 2017

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

By Post and 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)
Quarterly EM&A Report No. 9 for December 2016 to February 2017

In accordance with the requirement specified in Section 16.4 of the updated Environmental Monitoring and Audit Manual for HKBCF (Version 1.0), we are pleased to submit the certified Quarterly EM&A Report No. 9 revised with the IEC's comment for your onward verification.

Yours faithfully,
ETS-TESTCONSULT LIMITED

Mr. C. L. Lau
Environmental Team Leader

CLL/pn

TABLE OF CONTENTS

		Page
EXECUTIVE SUMMARY		
1	**INTRODUCTION**	1-2
1.1	Basic Project Information	1
1.2	Project Organization	1
1.3	Construction Programme	2
1.4	Construction Works Undertaken During the Reporting Period	2
2	**EM&A REQUIREMENT**	3-6
2.1	Summary of EM&A Requirements	3-4
2.2	Monitoring Requirements	4
2.3	Action and Limit Levels	4-6
2.4	Event Action plans	6
2.5	Mitigation Measures	6
3	**ENVIRONMENTAL MONITORING AND AUDIT**	7-10
3.1	Air Quality Monitoring Result	7
3.2	Noise Monitoring Results	7
3.3	Water Quality Monitoring Results	7-8
3.4	Dolphin Monitoring	8
3.5	Implementation Status of Environmental Mitigation Measures	8-9
3.6	Advice on the Solid and Liquid Waste Management Status	9-10
3.7	Environmental Licenses and Permits	10
4	**SUMMARY OF EXCEEDANCE, COMPLAINT, NOTIFICATION OF SUMMONS AND SUCESSFUL PROSECUTION**	11-13
4.1	Summary of Exceedance of the Environmental Quality Performance Limit	11
4.2	Summary of Complaints, Notification of Summons and Successful Prosecution	11-13
5	**COMMENTS, RECOMMENDATION AND CONCLUSION**	14-15
5.1	Comments	14
5.2	Recommendations	14
5.3	Conclusions	14-15

FIGURES

Figure 1 Air Quality and Noise Monitoring Stations for HKBCF
Figure 2 Water Quality Monitoring Stations(construction phases)
Figure 3 Dolphin Monitoring Transect Line and Layout Map

Table

Table 1.1 Contact Information of Key Personnel
Table 2.1 Air Quality and Noise Monitoring Locations
Table 2.2 Water Quality Monitoring Stations (construction phases)
Table 2.3 Action and Limit Levels for 1-hour TSP
Table 2.4 Action and Limit Levels for 24-hour TSP
Table 2.5 Action and Limit Levels for Construction Noise
Table 2.6 Action and Limit Levels for Water Quality
Table 2.7 Action and Limit Levels for Chinese White Dolphin Monitoring – Approach to Define Action Level (AL) and Limit Level (LL)
Table 2.8 Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring
Table 3.1 Summary of marine sediment disposed to dumping site via Contract No. HY/2013/03

APPENDIX

Appendix A Location of Works Areas
Appendix B Project Organization for Environmental Works
Appendix C Construction Programme
Appendix D Event and Action Plan
Appendix E Implementation Schedule for Environmental Mitigation Measures (EMIS)
Appendix F Site Audit Findings and Corrective Actions
Appendix G Waste Flow Table
Appendix H Environmental Licenses and Permits
Appendix I Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions
Appendix J Investigation Reports on Action Level or Limit Level Non-compliance
Appendix K Complaint Investigation Report

EXECUTIVE SUMMARY

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

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

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

This is the Ninth Quarterly 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 2016 to 28 February 2017.

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality 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 AMS7 and noise monitoring at NMS2 and NMS3B show in **Figure 1**, water quality monitoring show in **Figure 2** and dolphin monitoring show in **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 environmental site inspections during the reporting period are listed below:

Environmental Site Inspection Date		
December 2016	**January 2017**	**February 2017**
01, 09, 15, 22 and 29	05, 12, 16 and 26	02, 09, 16 and 23

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 AMS7 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.

For water quality monitoring, there were four exceedances recorded during the reporting period. In December 2016, one Action Level exceedance of SS on impact water quality monitoring at station IS(Mf)9 during mid-flood tide was recorded on 14 December 2016. In January 2017, there was no Action and Limit Level exceedance for water quality recorded at the monitoring stations. In February 2017, two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide were recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide was recorded on 10 February 2017. After investigation,

there was concluded that the exceedances were not relevant to this Contract. The Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) on Action or Limit Level Non-compliance are provided in **Appendix J**. There was no Action and Limit Level exceedance recorded on other monitoring date at the monitoring stations showed in **Table 2.2** 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.

Implementation of Environmental Measures

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. Potential environmental impacts due to the construction activities were monitored and reviewed.

Complaint Log

There were five complaints received during the reporting period.

1. One complaint was received by EPD from public on 01 December 2016 and was forwarded by EPD to the HYD and ENPO and then to the R.E. (AECOM) on 01 December 2016.Then the R.E. (AECOM) forwarded the complaint by email to the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 17:57 on 01 December 2016. The complainant complained that large amount of mud/slurry at East Coast Road suspiciously originated from HZMB construction site.
2. One complaint was received by Contract No. HY/2010/02 referred by the Government's Hotline (1823) on 02 December 2016 and was forwarded by ENPO to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 by email on 14 December 2016. The complainant complained that the whole stretch of East Coast Road & Tung Fai Road is truly disgusting. The stone debris big and small and the mud is a nuisance to those who use the road every day. When dry there is a lot of dust and when it rains or when the road washing trucks are out it becomes a muddy mess. Cars and pedestrians are covered in dust or mud, cars are hit by stones is a daily hazard. Washing of construction vehicles is inadequate as the sand and soil is carried out onto the roads. Oversight of road conditions are not carried out by the Airport Authority. An alternative route should be created for the large number of construction vehicles as they drive fast.
3. One complaint was received by EPD on 13 December 2016 and referred by EPD to the ENPO on 14 December 2016. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 on 14 December 2016. The complainant complained that hammering noise generated over-night from unidentified sources possibly from Construction Sites of HZMB near a month.

The follow-up inspections for the above mentioned complaints on 01, 02, 13 December 2016 were performed by the ET of Contract No. HY/2013/02 on 02 and 15 December 2016. The complaint investigation reports (Log No. 006, 007 and 008) were issued by the ET of Contract No. HY/2013/02 and verified by the IEC/ENPO on 14, 16 and 19 December 2016.

According to the investigation on 01, 02, 13 December 2016, no mud/slurry was observed around the East Coast Road site entrance during the site inspection and audit on 01 December 2016, no stone debris and mud/slurry were observed around the East Coast Road site entrance according to the Contractor and RE's site checking on 02 December 2016 and the construction works of this Contract during the past month was carried out from 08:00 up to 23:00 and no any works and PME operation were undertaken at night-time after 23:00 until 13 December 2016 by Contract No. HY/2013/02. The complaints were found non-related to Contract No. HY/2013/02. The complaint investigation reports (Log No. 006, 007 and 008) for the above mentioned complaints on 01, 02 13 December 2016 were provided in **Appendix K**.

4. One complaint was received by Highways Department and referred by Highways Department to Contract No. HY/2010/02 on 28 December 2016. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 20:17 on 28 December 2016. The complainant complained that [大嶼山港珠澳人工島地盤多項問題，投訴人指出地盤內蚊患嚴重，而且洗手間衛生欠佳和沖洗設施不足，是屬於中國港灣建築的地盤，要求部門跟進。]

The follow-up inspection for the above mentioned complaint on 28 December 2016 was performed by the ET of Contract No. HY/2013/02 on 29 December 2016. The complaint investigation report (Log No. 009) was

issued by the ET of Contract No. HY/2013/02 on 31 December 2016 and verified by the IEC/ENPO on 11 January 2017.

According to the investigation, the site environment of the working areas were found acceptable that no mosquito was observed and cleanness of portable toilets were also found acceptable but it will have some improvement. Hence, the complaint was found non-related to Contract No. HY/2013/02. The complaint investigation report (Log No. 009) was provided in **Appendix K**.

5. One complaint received by *Environmental Protection Department* from a bus operator at the Hong Kong International Airport recently and referred to the ENPO. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 12:17 on 09 January 2017. The complainant complained that the external bodies of buses & vehicles were seriously stained by the heavy dusts and mud produced from the construction sites onto the East Coast Road & Tung Fai Road, Airport Road Interchange and Sky City Interchange.

The follow-up inspection was performed by the Environmental Officer and the RE of Contract No. HY/2013/02 and EPD's senior inspector Dionne Leung on 10 January 2017. The complaint investigation report (Log No. 010) was issued by the ET of Contract No. HY/2013/02 and verified by the IEC/ENPO on 23 January 2017.

According to the investigation, no mud/slurry was observed around the East Coast Road site entrance during the site inspection on 10 January 2017. Mitigation measures under the item A2 and W2 of EMIS were implemented including provide vehicle washing facilities with high pressure water jet at vehicle exit point and the area where vehicle washing takes place, the portion of road to construction site of the vehicle entrance or exit was kept clear of dusty materials, all vehicles and plant were cleaned before they leave the construction site, wheel overflow was directed to silt removal facilities before being discharged, the road section between the washing facilities and the exit point was hard paved and reminders were provided at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing etc. Besides, after received the last complaint from the EPD on 01 December 2016, the cleaning actions were reinforced such as providing one person at the site entrance for cleaning up the mud/slurry, frequently checking the East Coast Road site entrance. Hence, the complaint was found non-related to Contract No. HY/2013/02. The complaint investigation report (Log No. 010) was provided in **Appendix K**.

Notifications of Summons and Successful Prosecutions
There were no notification of summon or prosecution received during the reporting period.

Reporting Change
There was no reporting change during the reporting period.

1 INTRODUCTION

1.1 Basic Project Information

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

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

1.1.3 This is the Ninth Quarterly 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 2016 to 28 February 2017.

1.2 Project Organization

1.2.1 The project organisation structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. 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. Winston Wong*	*6330 8293*	*3152 5116*
		Mr. Dominic Mow	*6274 0909*	
Environmental Project Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	*Environmental Project Office Leader*	*Mr. Y. H. Hui*	*3465 2888*	*3465 2899*
	Independent Environmental Checker	*Mr. Raymond Dai*	*3465 2888*	*3465 2899*
	Environmental Site Supervisor	*Mr. Ray Yan*	*5181 8165*	*3465 2899*
Contractor (China Harbour Engineering Co., Ltd.)	*Environmental Officer*	*Mr. Richard Ng*	*5977 0593*	*3915 0300*
	Assistant Environmental Officer	*Mr. Paper Chan*	*6486 8967*	*3915 0300*
	Environmental Supervisor	*Mr. Endy Tse*	*5512 2662*	*3915 0300*
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 Piling in Portion C;*
- *Pier / Abutment in Portion A, C & F;*
- *Pile Cap in Portion C & F ;*
- *Pre-bored H-pile for sign gantries in Portion C & F;*
- *Storm drain and water main construction ;*
- *Retaining wall, slop and earth works*
- *Footing construction of directional signs, cable trench and ducting;*
- *Marine Delivery of precast segment & Construction of bridge deck in Portion D, A, E, C & F*
- *Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites*

2 EM&A Requirement

2.1 Summary of EM&A Requirements

2.1.1 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 AMS7, noise monitoring at NMS2 and NMS3B show at **Figure 1 and Table 2.1**, water quality monitoring stations show at **Figure 2** and **Table 2.2** 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 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.

2.1.2 A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 1.**

Table 2.1 Air Quality and Noise Monitoring Locations

Environmental Monitoring	Identification No.	Location Description
Air Quality	AMS6(1)	Dragonair / CNAC (Group) Building
	AMS7(1) (2)	Hong Kong SkyCity Marriott Hotel
Noise	NMS2(3)	Seaview Crescent
	NMS3B(3)(4)	Site Boundary of Site Office Area at Works Area WA2

Remarks:
(1) The ET of this Contract should conduct impact air quality monitoring at the AMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
(2) The air quality monitoring location AMS7A was relocated back to the original monitoring location AMS7 of the updated EM&A Manual started from January 2016.
(3) 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.
(4) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

2.1.3 A summary of water quality monitoring stations are presented in **Table 2.2**. The location of water quality monitoring stations are shown as in **Figure 2.**

Table 4.1 Water Quality Monitoring Stations (construction phases)

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10	Impact Station (Close to HKBCF construction site)	812577	820670
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
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.

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.

2.3 Action and Limit Levels

2.3.1 The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.3** and **Table 2.4** respectively.

Table 2.3 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level,μg/m³	Limit Level,μg/m³
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	360	500
AMS7 – Hong Kong SkyCity Marriott Hotel	370	500

Table 2.4 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, μg/m³	Limit Level,μg/m³
AMS6 – Dragnair / SNAC (Group) Building (HKIA)	173	260
AMS7 – Hong Kong SkyCity Marriott Hotel	183	260

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

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

Table 2.5 Action and Limit Levels for Construction Noise

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

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

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

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

Table 2.6 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg/L (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

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

Notes:
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.

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

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

Table 2.7 Action and Limit Levels for Chinese White Dolphin Monitoring – Approach to Define Action Level (AL) and Limit Level (LL)

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

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

Table 2.8 Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

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

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

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

2.4 Event Action Plans

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

2.5 Mitigation Measures

2.5.1 Environmental mitigation measures for the Contract were recommended in the Approved EIA Report. **Appendix E** lists the recommended mitigation measures and the implementation status.

3 ENVIRONMENTAL MONITORING AND AUDIT

3.1 Air Quality Monitoring Results

3.1.1 The monitoring results for AMS6 and AMS7 are reported in the monthly EM&A Reports (December 2016, January 2017 and February 2017) prepared for Contract Nos. HY/2011/03 and HY/2010/02 respectively.

3.1.2 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.

3.1.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3.2 Noise Monitoring Results

3.2.1 The monitoring results for NMS2 and NMS3B were reported in the monthly EM&A Reports (December 2016, January 2017 and February 2017) prepared by Contract No. HY/2010/02.

3.2.2 There was no exceedance of noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3.3 Water Quality Monitoring Result

3.3.1 The monitoring results for the monitoring stations showed in **Table 2.2** are reported in the monthly EM&A Reports (December 2016, January 2017 and February 2017) prepared for Contract No. HY/2010/02. There were four exceedances recorded during the reporting period. In December 2016, one Action Level exceedance of SS on impact water quality monitoring at station IS(Mf)9 during mid-flood tide was recorded on 14 December 2016. In January 2017, there was no Action and Limit Level exceedance for water quality recorded at the monitoring stations. In February 2017, two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide were recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide was recorded on 10 February 2017.

3.3.2 December 2016

There was one Action Level exceedance of Suspended Solids on impact water quality monitoring at station IS(Mf)9 during mid-flood tide recorded on 14 December 2016. Exceedance was not due to operation of the works under Contract No. HY/2013/02 because there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS(Mf)9 from 01 December 2016 to the water quality monitoring period at 07:51 on 14 December 2016 which was unlikely to generate suspended solids in the marine water. Therefore, it is unlikely that the SS exceedance recorded at IS(Mf)9 during mid-flood tide on 14 December 2016 was contributed by the works under Contract No. HY/2013/02.

3.3.3 January 2017

There was no Action and Limit Level exceedance recorded by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3.3.4 February 2017

There was two Action Level exceedances of SS at station IS8 and SR7 during mid-flood tide recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS at station SR6 during mid-ebb tide was recorded on 10 February 2017. The three exceedances were not relevant to this Contract since there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 and SR7 from 04

February 2017 to 06 February 2017 and 13 February 2017 to 15 February 2017 which was unlikely to generate suspended solids in the marine water. Besides, during 08 February 2017 to 10 February 2017, there was no marine works worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 except only one marine pre-cast segment delivery barge which passed through the north-east side with distance more than 4000 meters from the monitoring station SR6. Therefore, it is unlikely that the SS exceedances recorded at IS8 and SR7 during mid-flood tide on 06 February 2017 and 15 February 2017 and SR6 during mid-ebb tide on 10 February 2017 were contributed by the works under Contract No. HY/2013/02.

3.3.5 There was no exceedance recorded on other monitoring date at the monitoring stations showed in **Table 2.2** by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3.3.6 Although the above mentioned exceedances were not relevant to this Contract, the Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solid (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal. The Contractor was also reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

3.4 Dolphin monitoring Result

3.4.1 Impact dolphin monitoring results at all transects were reported in the EM&A Report prepared for Contract No. HY/2010/02. One limit level exceedance was recorded in the monitoring period (December 2016 – February 2017).

3.4.2 During this reporting period, no marine base construction work was conducted by Contract No. HY/2013/02. After checked the Contractor's Marine Travel Route record, there were sixteen, twelve and ten trips of dry cargo barge recorded on December 2016, January 2017 and February 2017 and no other vessel under Contract No. HY/2013/02 in or out the HKBCF perimeter silt curtain during the reporting period. All trips of dry cargo barge recorded were restricted and followed the Regular Marine Travel Routes Plan. The RMTRP training was provided for the Captain since 21 July 2016 and all barges recorded during the reporting period were travelled in regular travel routes. No barge exceeded the speed limit was recorded.

3.4.3 The exceedance is still under investigation by Contract No. HY/2010/02. The Investigation Report (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance will be prepared by the ET of Contract No. HY/2010/02 and detailed in the quarterly EM&A Report prepared for Contract No. HY/2010/02. The implementation of Regular Marine Travel Route Plan (RMTRP) for the above mentioned dry cargo barges of marine transportation undertaken by Contract No. HY/2013/02 during the reporting period were checked by the ET. The Regular Marine Travel Route Plan were prepared and given to the Caption to use in order to minimize the chance of vessel collision and the routes would not go through the dolphin hotspot in Brothers Islands.

3.4.4 Although the exceedance was not relevant to this Contract, the Contractor was reminded to ensure provision of ongoing maintenance to the silt curtains and to carry out maintenance work by the Contractor of Contract No. HY/2010/02 once defects were found.

3.5 Implementation of Environmental Measures

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

3.5.2 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.

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

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

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

3.5.6 The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solid (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.

3.5.7 The implementation status of Regular Marine Travel Route Plan (RMTRP) was checked by ET. Training material of Regular Marine Travel Route Plan was prepared and given to relevant staff. Those records were kept properly. Since the marine delivery of precast segments was commenced and the RMTRP training was provided for the Captain on 21 July 2016, the Captain was reminded to use regular travel routes in order to minimize the chance of vessel collision and the routes would not go through the dolphin hotspot in Brothers Islands. The marine traffic records and geographical plots of all the vessels tracks to demonstrate the conformance of the vessel to the proposed route in December 2016, January 2017 and February 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of January 2017, February 2017 and March 2017 respectively.

3.5.8 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 the site area of Contract No. HY/2013/02 during the reporting period.

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

3.6 Advice on the Solid and Liquid Waste Management Status

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

3.6.2 88 m^3 of excavated marine sediment was generated in this reporting period. The excavated marine sediment was stored properly on site during this reporting period until further instruction by the Engineer. The disposal of excavated sediment as per EP-353/2009/K to be implemented subject to confirmation.

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

3.6.4 Disposal of Marine Sediment

3.6.4.1 For the marine sediment disposal, after the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal sites allocated to this Project are the Mud Pit CMP2 of the Confined Marine Sediment Disposal Facility to the South of The Brothers (or at the East of Sha Chau). As advised by CEDD in the memo dated 19 February 2016, from 00:00 on 22 March 2016 onward, the disposal space at CMP2 of the South of The Brothers is closed and all disposal of contaminated sediment is to be carried out at CMP Vd to the East of Sha Chau (ESC). As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04.

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

3.6.4.3 During dumping, HY/2013/02 is responsible for transporting the marine sediment from his site area to the barge by Land transportation. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of each Contract. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder (EP/MD/17-088 and EP/MD/17-105 in this reporting period) is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit.

3.6.5 Marine sediment extracted from bored piling in this Contract was disposed to allocated dumping site via Contract No. HY/2013/03 in December 2016 to February 2017. The quantity disposed up to end of February 2017 was 18608 m^3. The Monthly Summary of Marine sediment disposed to dumping site was provided in **Appendix G** and **Table 3.1**.

Table 3.1 Summary of marine sediment disposed to dumping site via Contract No. HY/2013/03

Month/Year	Quantity disposed (m^3)
January 2016	1272
February 2016	2816
March 2016	600
April 2016	5218
May 2016	0
June 2016	1200
July 2016	728
August 2016	1784
September 2016	2328
October 2016	1096
November 2016	0
December 2016	1568
January 2017	0
February 2017	88
Total =	18608

3.6.6 The Contractor shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.

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

3.7 Environmental Licenses and Permits

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

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

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

4.1.1 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.

4.1.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.1.3 There was no Action and Limit Level exceedance of noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.1.4 For water quality monitoring, there were four exceedances recorded during the reporting period. In December 2016, one Action Level exceedance of SS on impact water quality monitoring at station IS(Mf)9 during mid-flood tide was recorded on 14 December 2016. In January 2017, There was no Action and Limit Level exceedance for water quality recorded at the monitoring stations. In February 2017, two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide were recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide was recorded on 10 February 2017. After investigation, there was concluded that the exceedances were not relevant to this Contract. There was no Action and Limit Level exceedance recorded on other monitoring date at the monitoring stations showed in **Table 2.2** by the Environmental Team of Contract No. HY/2010/02 during the reporting period. The Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) on Action or Limit Level Non-compliance are provided in **Appendix J**.

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

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

4.2.1 There were five complaints received during the reporting period.

1. One complaint was received by EPD from public on 01 December 2016 and was forwarded by EPD to the HYD and ENPO and then to the R.E. (AECOM) on 01 December 2016.Then the R.E. (AECOM) forwarded the complaint by email to the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 17:57 on 01 December 2016. The complainant complained that large amount of mud/slurry at East Coast Road suspiciously originated from HZMB construction site.
2. One complaint was received by Contract No. HY/2010/02 referred by the Government's Hotline (1823) on 02 December 2016 and was forwarded by ENPO to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 by email on 14 December 2016. The complainant complained that the whole stretch of East Coast Road & Tung Fai Road is truly disgusting. The stone debris big and small and the mud is a nuisance to those who use the road every day. When dry there is a lot of dust and when it rains or when the road washing trucks are out it becomes a muddy mess. Cars and pedestrians are covered in dust or mud, cars are hit by stones is a daily hazard. Washing of construction vehicles is inadequate as the sand and soil is carried out onto the roads. Oversight of road conditions are not carried out by the Airport Authority. An alternative route should be created for the large number of construction vehicles as they drive fast.
3. One complaint was received by EPD on 13 December 2016 and referred by EPD to the ENPO on 14 December 2016. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 on 14 December 2016. The complainant complained that hammering noise generated over-night from unidentified sources possibly from Construction Sites of HZMB near a month.

4.2.2 The follow-up inspections for the above mentioned complaints on 01, 02, 13 December 2016 were performed by the ET of Contract No. HY/2013/02 on 02 and 15 December 2016. The complaint investigation reports (Log No. 006, 007 and 008) were issued by the ET of Contract No. HY/2013/02 and verified by the IEC/ENPO on 14, 16 and 19 December 2016.

4.2.3 According to the investigation on 01, 02, 13 December 2016, no mud/slurry was observed around the East Coast Road site entrance during the site inspection and audit on 01 December 2016, no stone debris and mud/slurry were observed around the East Coast Road site entrance according to the Contractor and RE's site checking on 02 December 2016 and the construction works of this Contract during the past month was carried out from 08:00 up to 23:00 and no any works and PME operation were undertaken at night-time after 23:00 until 13 December 2016 by Contract No. HY/2013/02. The complaints were found non-related to Contract No. HY/2013/02. The complaint investigation reports (Log No. 006, 007 and 008) for the above mentioned complaints on 01, 02 13 December 2016 were provided in **Appendix K**.

4. One complaint was received by Highways Department and referred by Highways Department to Contract No. HY/2010/02 on 28 December 2016. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 20:17 on 28 December 2016. The complainant complained that [大嶼山港珠澳人工島地盤多項問題，投訴人指出地盤內蚊患嚴重，而且洗手間衛生欠佳和沖洗設施不足，是屬於中國港灣建築的地盤，要求部門跟進。]

4.2.4. The follow-up inspection for the above mentioned complaint on 28 December 2016 was performed by the ET of Contract No. HY/2013/02 on 29 December 2016. The complaint investigation report (Log No. 009) was issued by the ET of Contract No. HY/2013/02 on 31 December 2016 and verified by the IEC/ENPO on 11 January 2017.

4.2.5. According to the investigation, the site environment of the working areas were found acceptable that no mosquito was observed and cleanness of portable toilets were also found acceptable but it will have some improvement. Hence, the complaint was found non-related to Contract No. HY/2013/02. The complaint investigation report (Log No. 009) was provided in **Appendix K**.

5. One complaint received by Environmental Protection Department from a bus operator at the Hong Kong International Airport recently and referred to the ENPO. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 12:17 on 09 January 2017. The complainant complained that the external bodies of buses & vehicles were seriously stained by the heavy dusts and mud produced from the construction sites onto the East Coast Road & Tung Fai Road, Airport Road Interchange and Sky City Interchange.

4.2.6. The follow-up inspection was performed by the Environmental Officer and the RE of Contract No. HY/2013/02 and EPD's senior inspector Dionne Leung on 10 January 2017. The complaint investigation report (Log No. 010) was issued by the ET of Contract No. HY/2013/02 and verified by the IEC/ENPO on 23 January 2017.

4.2.7. According to the investigation, no mud/slurry was observed around the East Coast Road site entrance during the site inspection on 10 January 2017. Mitigation measures under the item A2 and W2 of EMIS were implemented including provide vehicle washing facilities with high pressure water jet at vehicle exit point and the area where vehicle washing takes place, the portion of road to construction site of the vehicle entrance or exit was kept clear of dusty materials, all vehicles and plant were cleaned before they leave the construction site, wheel overflow was directed to silt removal facilities before being discharged, the road section between the washing facilities and the exit point was hard paved and reminders were provided at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing etc. Besides, after received the last complaint from the EPD on 01 December 2016, the cleaning actions were reinforced such as providing one person at the site entrance for cleaning up the mud/slurry, frequently checking the East Coast Road site entrance. Hence, the complaint was found non-related

to Contract No. HY/2013/02. The complaint investigation report (Log No. 010) was provided in **Appendix K**.

4.2.8. Although the complaints were non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to provide appropriate mitigation measures such as:

1. To check the East Coast Road site entrance more frequently to ensure no mud/slurry at the site entrance;
2. To clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I;
3. To provide one person stayed at the site entrance during working hours for cleaning up the mud/slurry;
4. Provide well-maintained plant operated on-site and plant served regularly;
5. Switched off vehicles and equipment while not in use;
6. Scheduled the construction works to minimize noise nuisance;
7. Avoid to use hammering equipment during any night works; and
8. Comply with the valid CNP for overnight operation
9. Provide appropriate mitigation measures to prevent mosquito breeding, such as to clear potential stagnant pools or add mosquito oil into the pools
10. Provide sufficient facilities for the toilets cleaning and arrange the cleaning of toilets more frequently.
11. Assign a person to check and clear sand/mud, clean up the mud/slurry immediately by washing lorry & sweeper to avoid public nuisance
12. Check all vehicles and plant were cleaned before they leave the construction site, treat the washing water by sedimentation tanks and Wetsep
13. Enhance daily cleaning for the precipitate at Wheel Washing Bay (WWB) and the haul road lead to site entrance
14. Purify and recycle the water at WWB by Wetsep before discharge.

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

4.2.10 Statistics on environmental complaints, notifications of summons and successful prosecutions are summarized in **Appendix I**.

5 COMMENTS, RECOMMENDATIONS AND CONCLUSION

5.1 Comments

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

- The Contractor was reminded to dispose the general refuse properly;
- The Contractor was reminded to provide appropriate label for temporary storage area;
- The Contractor was reminded to clear the muddy water on the road between vehicle washing facility and exit;
- The Contractor was reminded to sort the C & D materials and general refuse;
- The Contractor was reminded to provide drip tray for the chemical containers;
- The Contractor was reminded to provide Impervious cover for the pulverized soil;
- The Contractor was reminded to provide appropriate NRMM label for the machines;
- The Contractor was reminded to provide impervious sheet to cover the Bentonite bags;

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

5.2 Recommendations

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

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

5.3 Conclusions

5.3.1 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. This is the Ninth Quarterly EM&A Report which summaries findings of the EM&A work during the reporting period from 01 December 2016 to 28 February 2017.

5.3.2 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.

5.3.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

5.3.4 There was no Action and Limit Level exceedance of noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

5.3.5 There were four exceedances recorded during the reporting period. In December 2016, one Action Level exceedance of SS on impact water quality monitoring at station IS(Mf)9 during mid-flood tide was recorded on 14 December 2016. In January 2017, there was no Action and Limit Level exceedance for water quality recorded at the monitoring stations. In February 2017, two Action Level exceedances of SS on impact water quality monitoring at station IS8 and SR7 during mid-flood tide were recorded on 06 February 2017 and 15 February 2017, one Action Level exceedance of SS on impact water quality monitoring at station SR6 during mid-ebb tide was recorded on 10 February 2017. After investigation, there was concluded that the exceedances were not relevant to this Contract. There was no Action and Limit Level exceedance recorded on other monitoring date at the monitoring stations showed in **Table 2.2** by the Environmental Team of Contract No. HY/2010/02 during the reporting period. The

Investigation Reports No. 011, 012 and 013 (including the causes of exceedance, action taken and recommendation for mitigation) on Action or Limit Level Non-compliance are provided in **Appendix J**.

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

5.3.7 Environmental site inspections were carried out on 01, 09, 15, 22 and 29 December 2016, 05, 12, 16 and 26 January 2017 and 02, 09, 16 and 23 February 2017. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

5.3.8 There were five complaints received in relation to the environmental impact during the reporting period. The complaints were found non-related to Contract No. HY/2013/02. The complaint investigation reports (Log No. 006, 007, 008, 009 and 010) were provided in **Appendix K**.

5.3.9 There was no notification of summons and successful prosecution received during the reporting period.

FIGURES

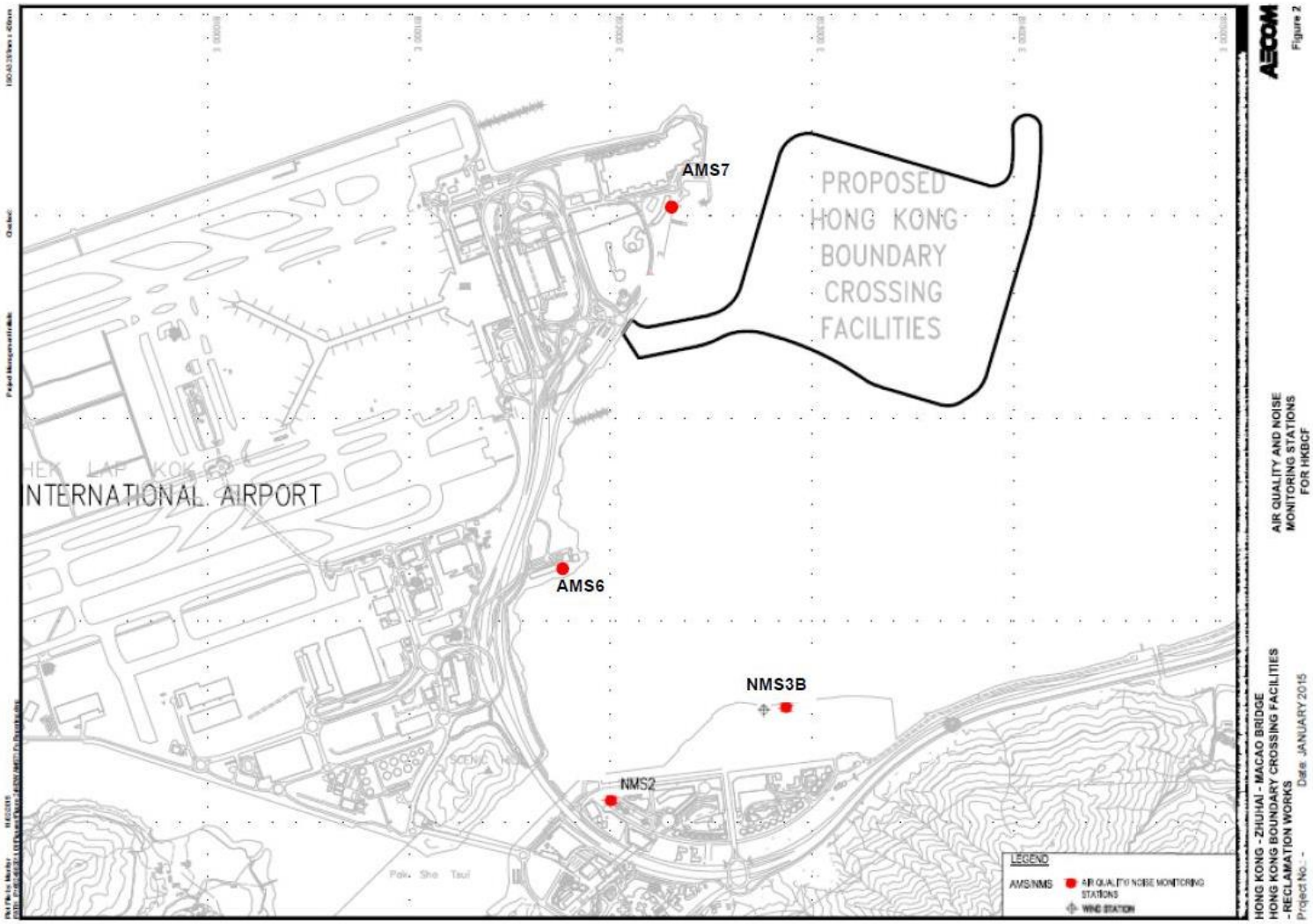
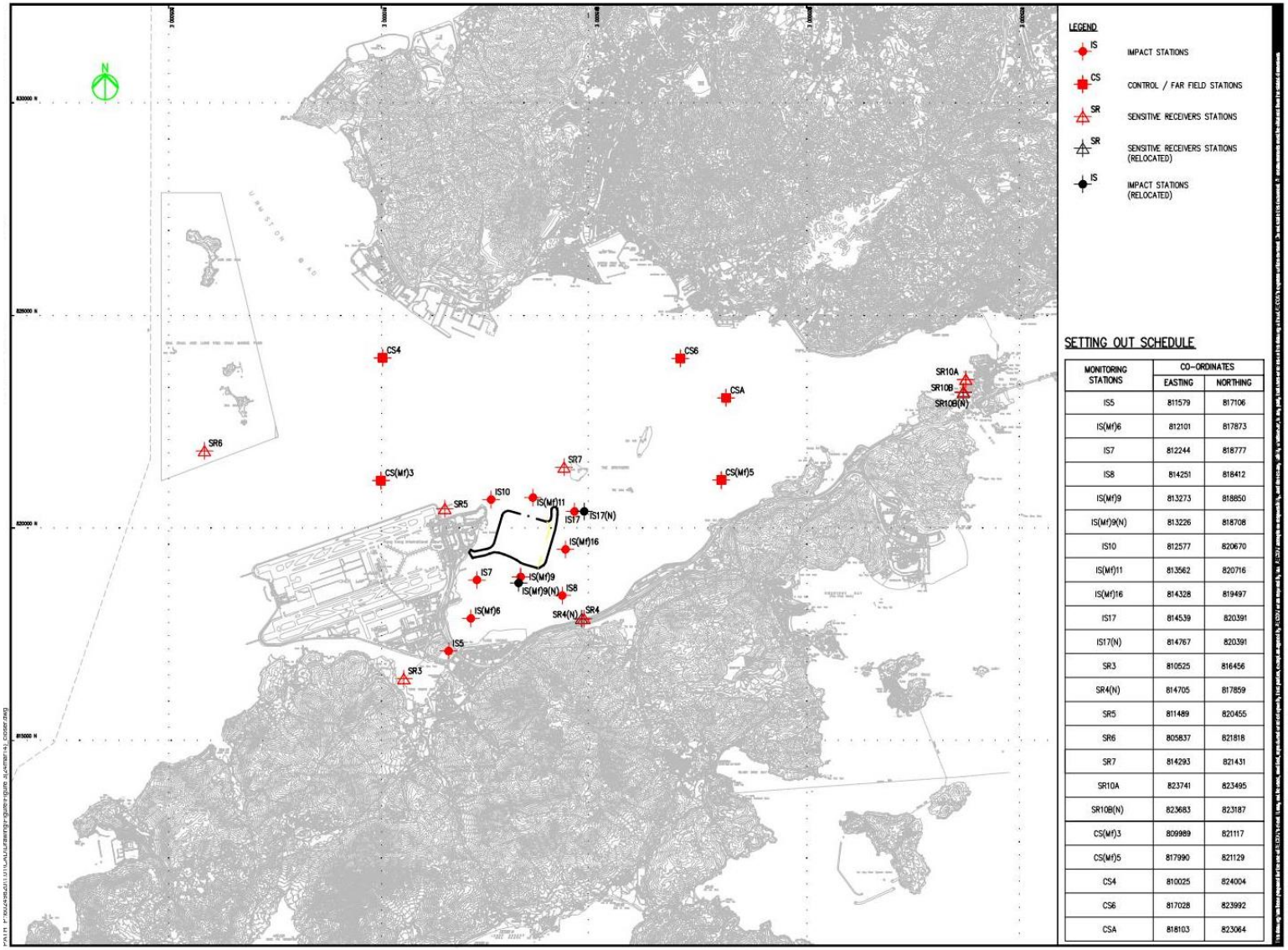


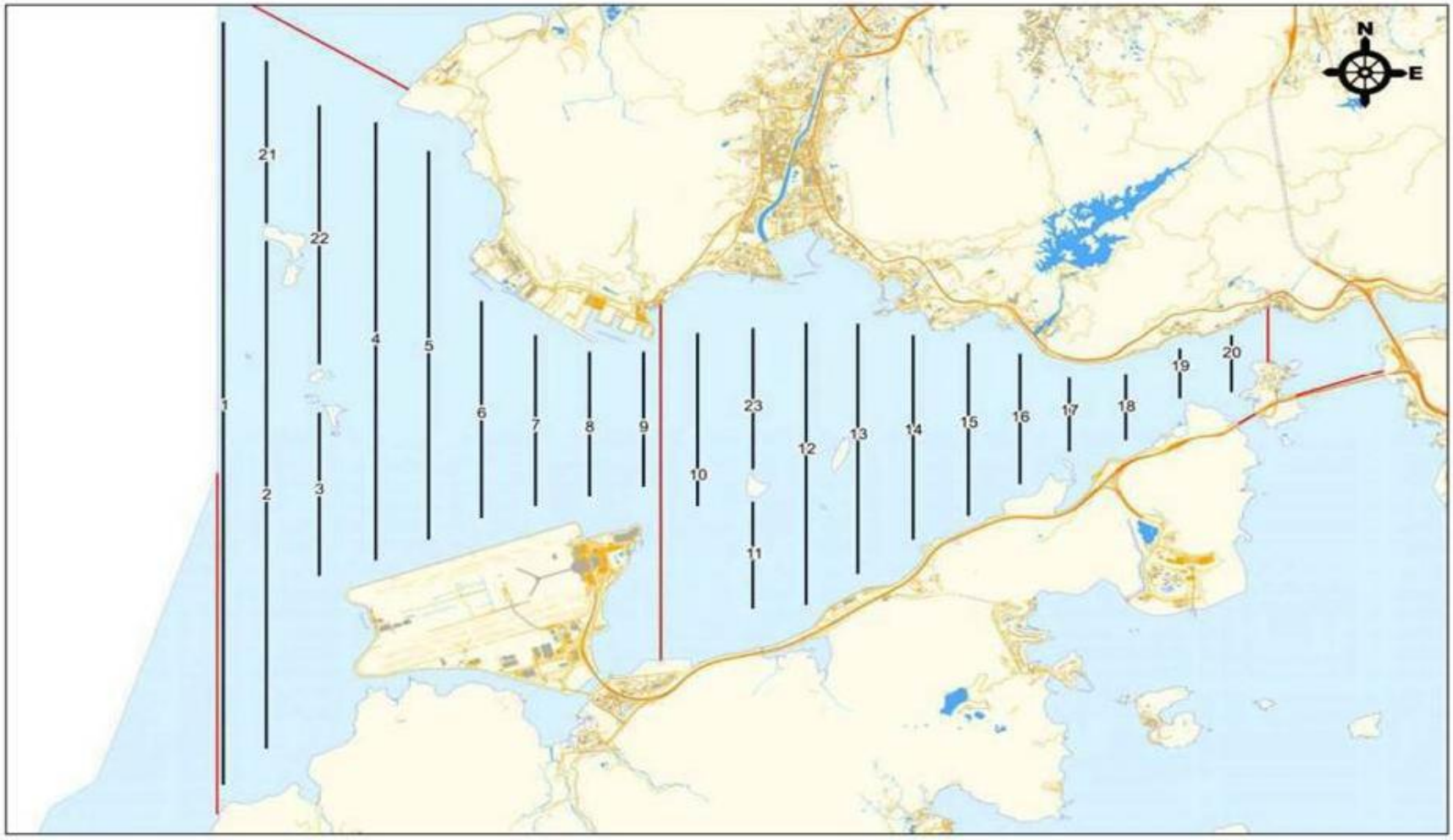
Figure 1 **Air Quality and Noise Monitoring Stations for HKBCF**



SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS(Mf)9(N)	813226	818708
IS10	812577	820670
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
IS17(N)	814767	820391
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:

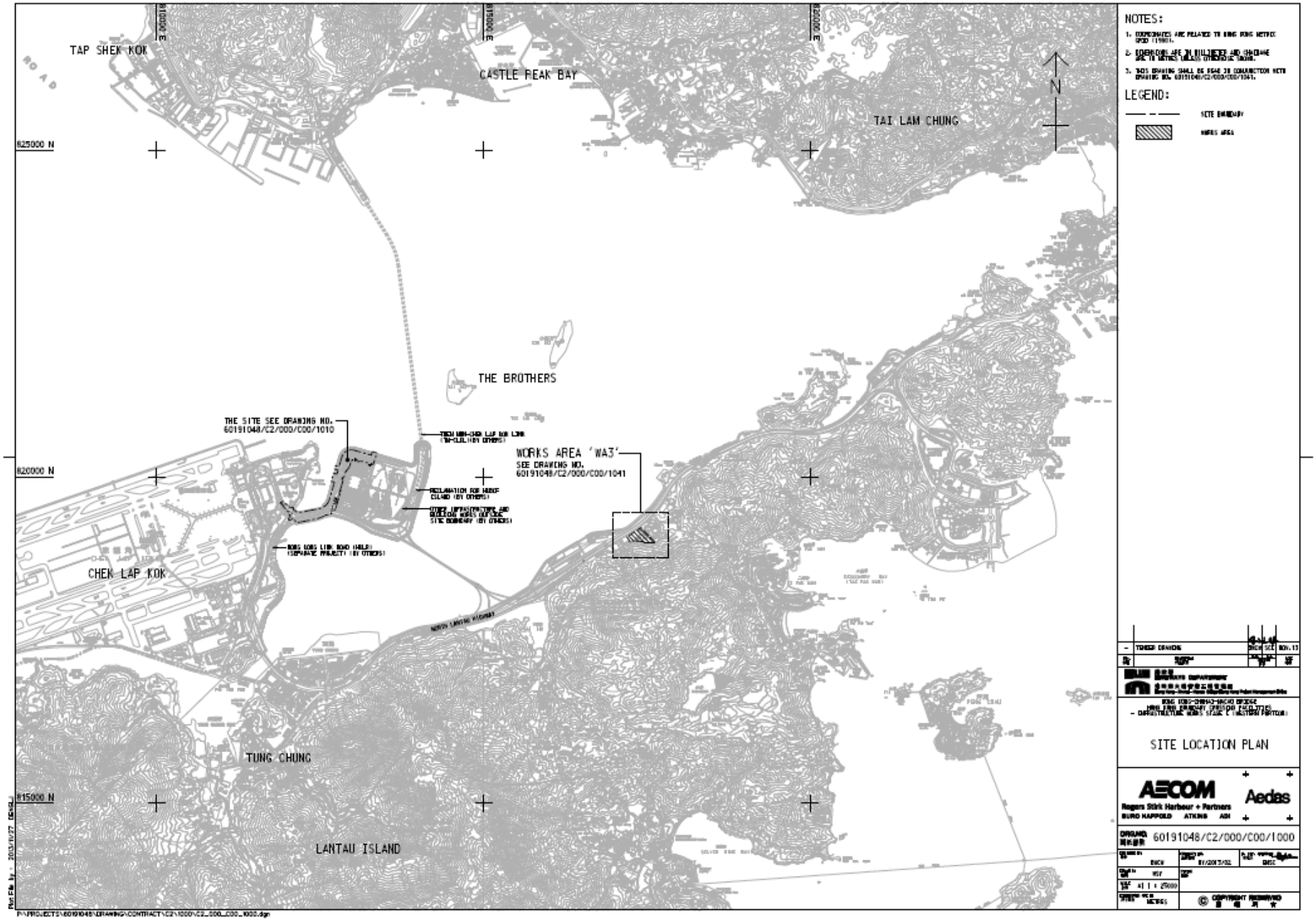
***Transect 10 is now 3.6km in length due to the HKBCF construction site.**

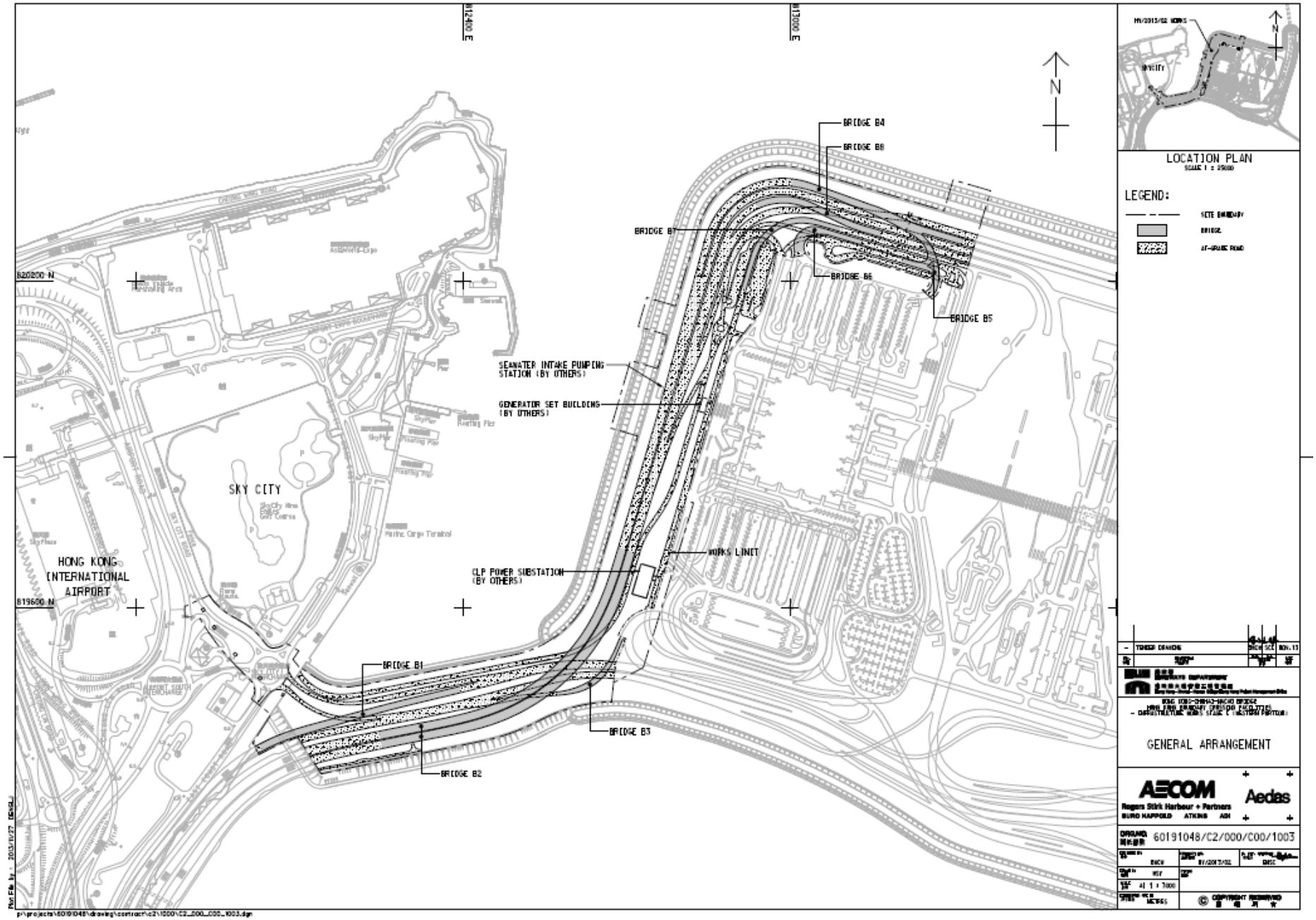
^Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015. The total transect length for both NEL and NWL combined is 108km.

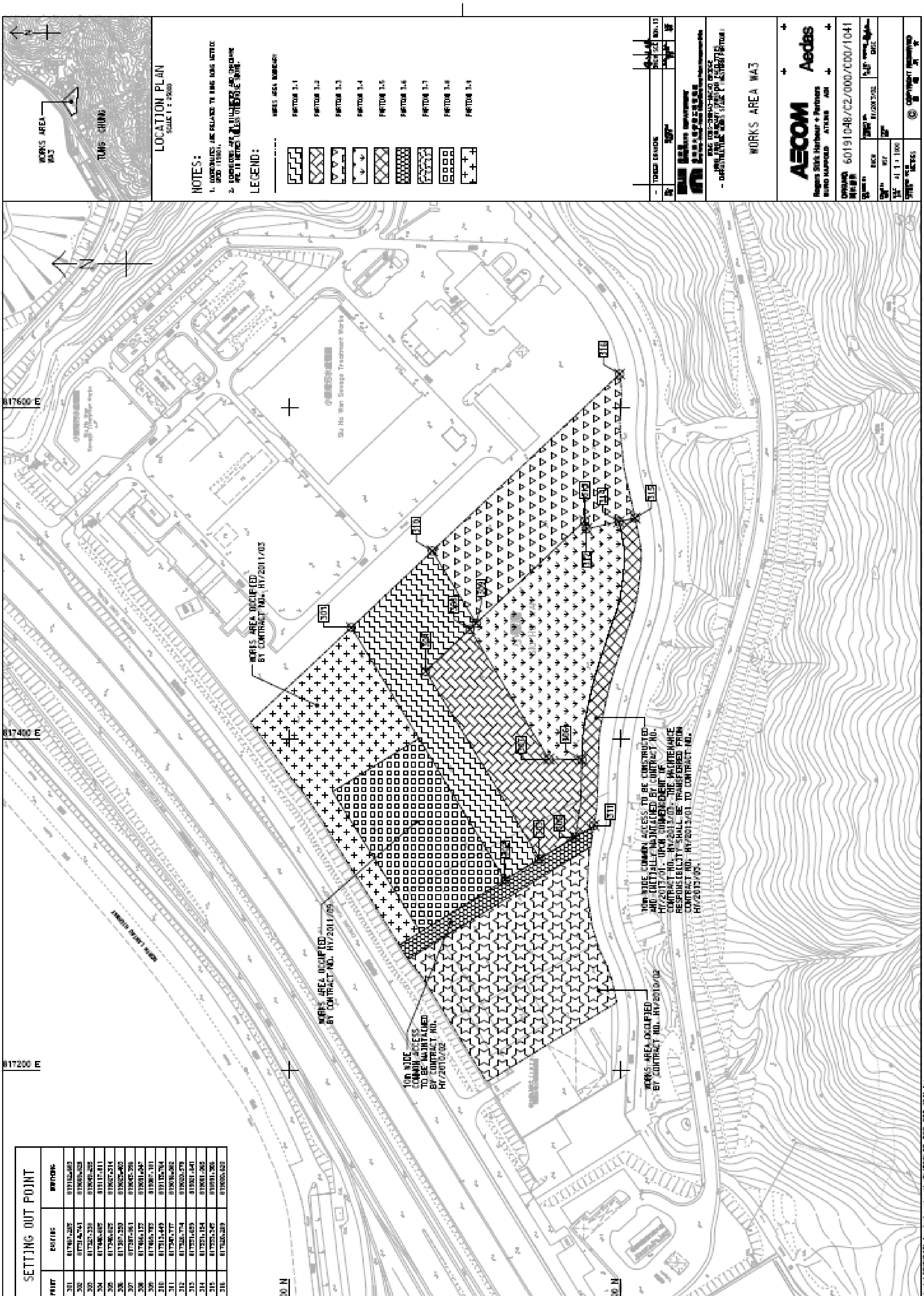
Figure 3 Dolphin Monitoring Transect Line and Layout Map

Appendix A

Location of Works Areas

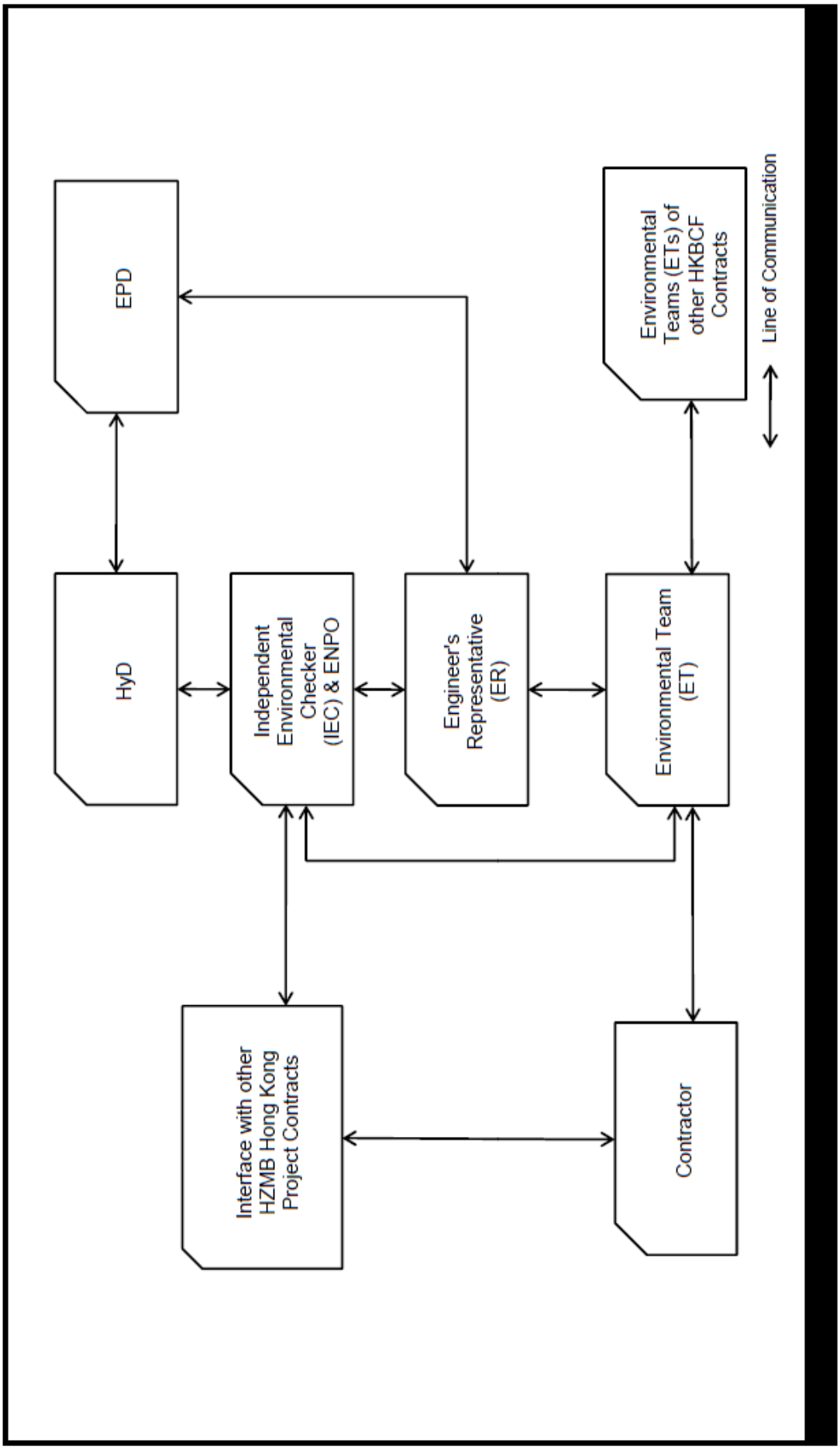





LOCATION PLAN
WORKS AREA WA3
TUNG CHUNG
NOTES:
LEGEND:
WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/03
WORKS AREA OCCUPIED BY CONTRACT NO. HY/2010/02
10m WIDE COMMON ACCESS TO BE MAINTAINED BY CONTRACT NO. HY/2010/02
817600 E
817400 E
817200 E
819200 N
819000 N
SETTING OUT POINT
AECOM
Aedas
60191048/C2/000/C00/1041

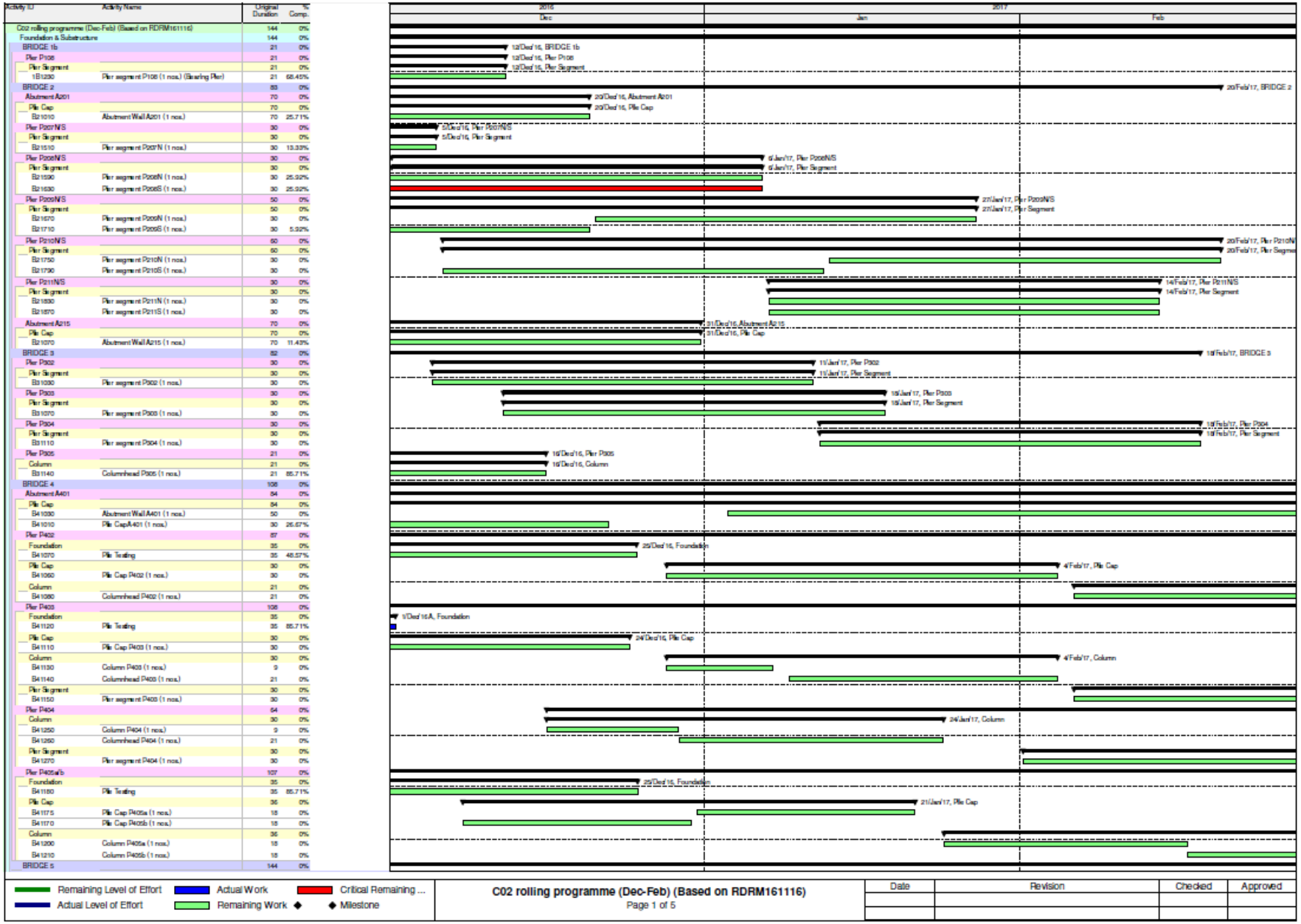
Appendix B

Project Organization for Environmental Works


EPD
HyD
Independent Environmental Checker (IEC) & ENPO
Engineer's Representative (ER)
Environmental Team (ET)
Environmental Teams (ETs) of other HKBCF Contracts
Line of Communication
Interface with other HZMB Hong Kong Project Contracts
Contractor

Appendix C

Construction Programme



C02 rolling programme (Dec-Feb) (Based on RDRM161116)

Page 1 of 5

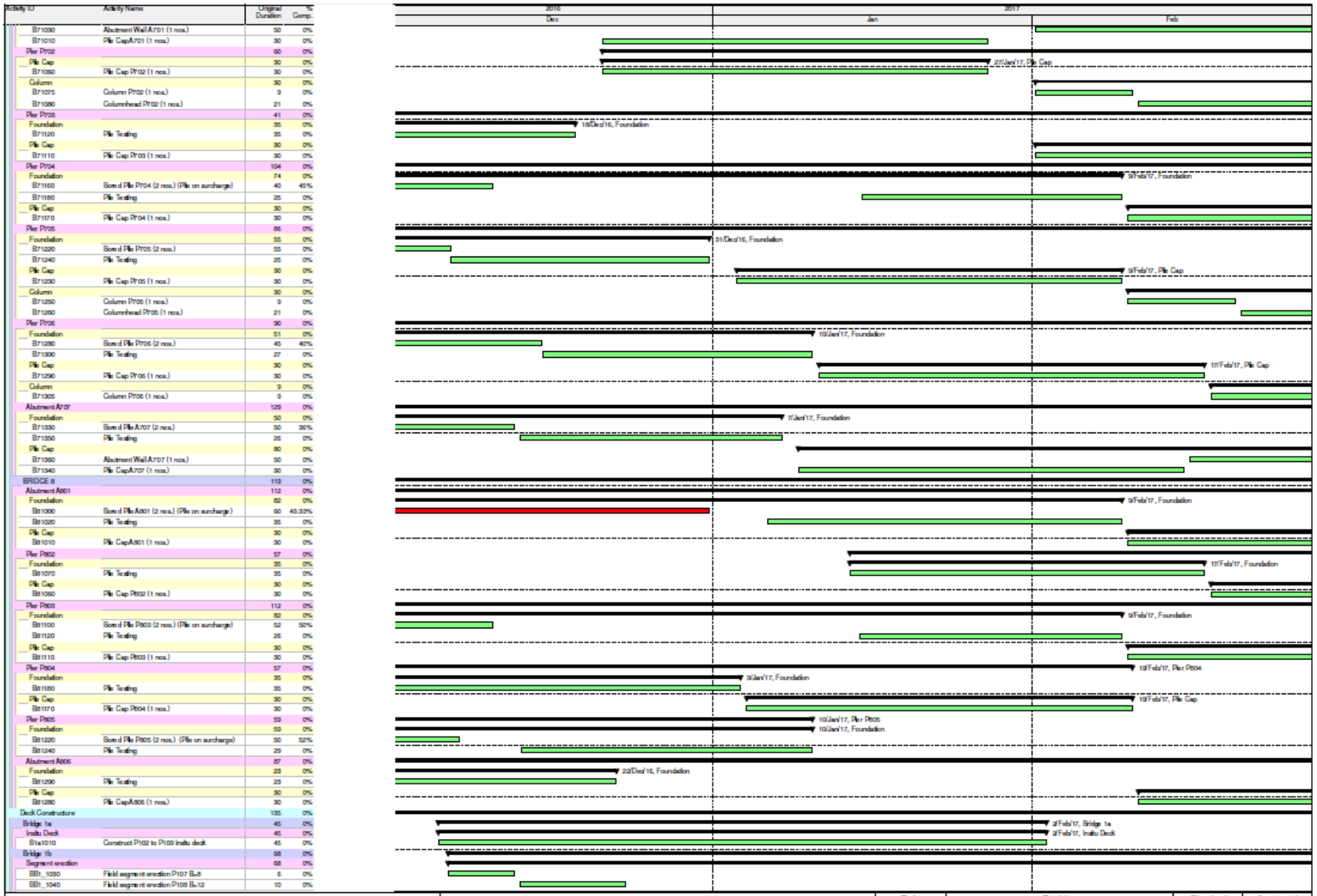
Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	% Comp.
Pier P501		65	0%
Foundation		35	0%
BS1020	Pile Testing	35	8.57%
Pile Cap		30	0%
BS1010	Pile Cap P501 (1 nos.)	30	0%
Column		30	0%
BS1030	Column P501a (1 nos.)	9	0%
BS1050	Column P501b (1 nos.)	9	0%
BS1040	Columnhead P501a (1 nos.)	21	0%
Pier P502		21	0%
Column		21	0%
BS1110	Columnhead P502 (1 nos.)	21	0%
Pier P504		99	0%
Foundation		35	0%
BS1150	Pile Testing	35	85.71%
Pile Cap		21	0%
BS1140	Pile Cap P504 (1 nos.)	21	0%
Column		30	0%
BS1160	Column P504 (1 nos.)	9	0%
BS1170	Columnhead P504 (1 nos.)	21	0%
Pier P505		95	0%
Foundation		35	0%
BS1210	Pile Testing	35	85.71%
Pile Cap		21	0%
BS1200	Pile Cap P505 (1 nos.)	21	0%
Column		30	0%
BS1220	Column P505 (1 nos.)	9	0%
BS1230	Columnhead P505 (1 nos.)	21	0%
Abutment P506 (VO)		50	0%
Pile Cap		50	0%
BS1320	Abutment Wall P506 (1 nos.)	50	0%
Pier P507		82	0%
Foundation		35	0%
BS1260	Pile Testing	35	60%
Pile Cap		30	0%
BS1250	Pile Cap P507 (1 nos.)	30	0%
Column		21	0%
BS1270	Columnhead P507 (1 nos.)	21	0%
Abutment AS03		50	0%
Pile Cap		50	0%
BS1310	Abutment Wall AS03 (1 nos.)	50	12%
Abutment AS06		136	0%
Foundation		35	0%
BS1350	Pile Testing	35	60%
Pile Cap		106	0%
BS1360	Abutment Wall AS06 (1 nos.)	50	0%
BS1340	Pile CapAS06 (1 nos.)	30	0%
BRIDGE 6		106	0%
Abutment P501 (VO)		61	0%
Pile Cap		61	0%
BS1340	Abutment Wall P501 (1 nos.)	40	0%
BS1330	Pile Cap W1 (1 nos.)	21	0%
Pier P502		55	0%
Pile Cap		30	0%
BS1010	Pile Cap P502 (1 nos.)	30	0%
Column		30	0%
BS1030	Column P502 (1 nos.)	9	0%
BS1040	Columnhead P502 (1 nos.)	21	0%
Pier P503		103	0%
Foundation		35	0%
BS1070	Pile Testing	35	60%
Pile Cap		30	0%
BS1060	Pile Cap P503 (1 nos.)	30	0%
Column		30	0%
BS1080	Column P503 (1 nos.)	9	0%
BS1090	Columnhead P503 (1 nos.)	21	0%
Pier P504		106	0%
Foundation		35	0%
BS1120	Pile Testing	35	60%
Pile Cap		30	0%
BS1110	Pile Cap P504 (1 nos.)	30	0%
Column		21	0%
BS1130	Columnhead P504 (1 nos.)	21	0%
Abutment AS05		95	0%
Foundation		35	0%
BS1170	Pile Testing	35	60%
Pile Cap		30	0%
BS1160	Pile CapAS05 (1 nos.)	30	0%
BRIDGE 7		129	0%
Abutment AT01		116	0%
Foundation		35	0%
BT1020	Pile Testing	35	60%
Pile Cap		80	0%

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

C02 rolling programme (Dec-Feb) (Based on RDRM161116)

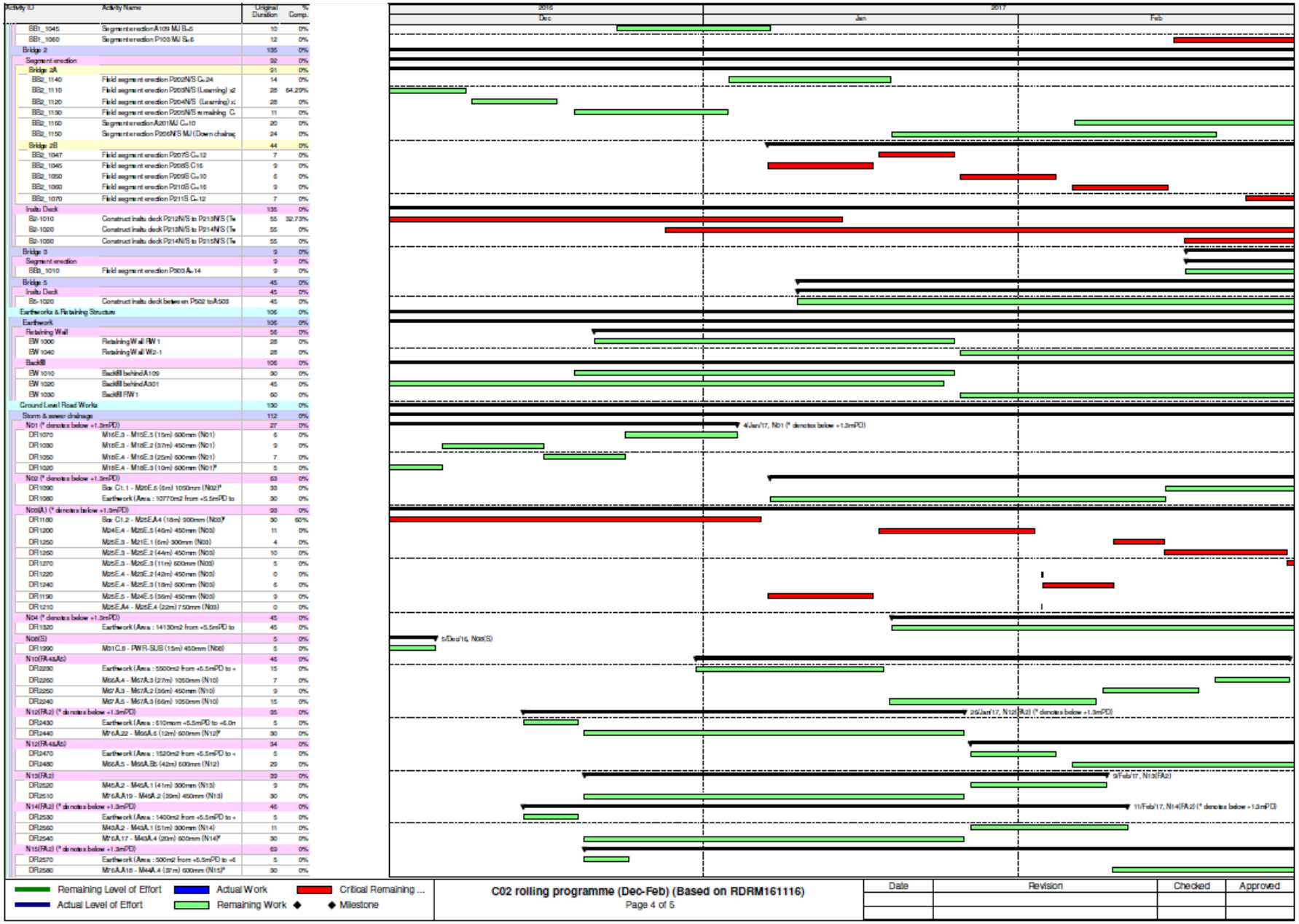
Date	Revision	Checked	Approved



Activity ID	Activity Name	Original Duration	% Comp.
Bt1030	Abutment Wall A701 (1 nos.)	50	0%
Bt1010	Pile CapA701 (1 nos.)	30	0%
Pier P702		60	0%
Pile Cap		30	0%
Bt1060	Pile Cap P702 (1 nos.)	30	0%
Column		30	0%
Bt1075	Column P702 (1 nos.)	9	0%
Bt1080	Columnhead P702 (1 nos.)	21	0%
Pier P703		41	0%
Foundation		35	0%
Bt1120	Pile Testing	35	0%
Pile Cap		30	0%
Bt1110	Pile Cap P703 (1 nos.)	30	0%
Pier P704		104	0%
Foundation		74	0%
Bt1160	Bored Pile P704 (2 nos.) (Pile on surcharge)	40	45%
Bt1180	Pile Testing	25	0%
Pile Cap		30	0%
Bt1170	Pile Cap P704 (1 nos.)	30	0%
Pier P705		86	0%
Foundation		55	0%
Bt1220	Bored Pile P705 (2 nos.)	55	0%
Bt1240	Pile Testing	25	0%
Pile Cap		30	0%
Bt1230	Pile Cap P705 (1 nos.)	30	0%
Column		30	0%
Bt1250	Column P705 (1 nos.)	9	0%
Bt1260	Columnhead P705 (1 nos.)	21	0%
Pier P706		90	0%
Foundation		51	0%
Bt1280	Bored Pile P706 (2 nos.)	45	40%
Bt1300	Pile Testing	27	0%
Pile Cap		30	0%
Bt1290	Pile Cap P706 (1 nos.)	30	0%
Column		9	0%
Bt1305	Column P706 (1 nos.)	9	0%
Abutment A707		129	0%
Foundation		50	0%
Bt1330	Bored Pile A707 (2 nos.)	50	36%
Bt1350	Pile Testing	26	0%
Pile Cap		80	0%
Bt1360	Abutment Wall A707 (1 nos.)	50	0%
Bt1340	Pile CapA707 (1 nos.)	30	0%
BRIDGE 8		113	0%
Abutment A801		112	0%
Foundation		82	0%
Bt1000	Bored Pile A801 (2 nos.) (Pile on surcharge)	60	43.33%
Bt1020	Pile Testing	35	0%
Pile Cap		30	0%
Bt1010	Pile CapA801 (1 nos.)	30	0%
Pier P802		57	0%
Foundation		35	0%
Bt1070	Pile Testing	35	0%
Pile Cap		30	0%
Bt1060	Pile Cap P802 (1 nos.)	30	0%
Pier P803		112	0%
Foundation		82	0%
Bt1100	Bored Pile P803 (2 nos.) (Pile on surcharge)	52	50%
Bt1120	Pile Testing	26	0%
Pile Cap		30	0%
Bt1110	Pile Cap P803 (1 nos.)	30	0%
Pier P804		57	0%
Foundation		35	0%
Bt1150	Pile Testing	35	0%
Pile Cap		30	0%
Bt1170	Pile Cap P804 (1 nos.)	30	0%
Pier P805		59	0%
Foundation		59	0%
Bt1220	Bored Pile P805 (2 nos.) (Pile on surcharge)	50	52%
Bt1240	Pile Testing	29	0%
Abutment A806		87	0%
Foundation		23	0%
Bt1290	Pile Testing	23	0%
Pile Cap		30	0%
Bt1280	Pile CapA806 (1 nos.)	30	0%
Deck Constructure		135	0%
Bridge 1a		45	0%
Insitu Deck		45	0%
Bta1010	Construct P102 to P103 insitu deck	45	0%
Bridge 1b		68	0%
Segment erection		68	0%
BB1_1030	Field segment erection P107 B-8	6	0%
BB1_1040	Field segment erection P108 B-12	10	0%

C02 rolling programme (Dec-Feb) (Based on RDRM161116)

Date	Revision	Checked	Approved

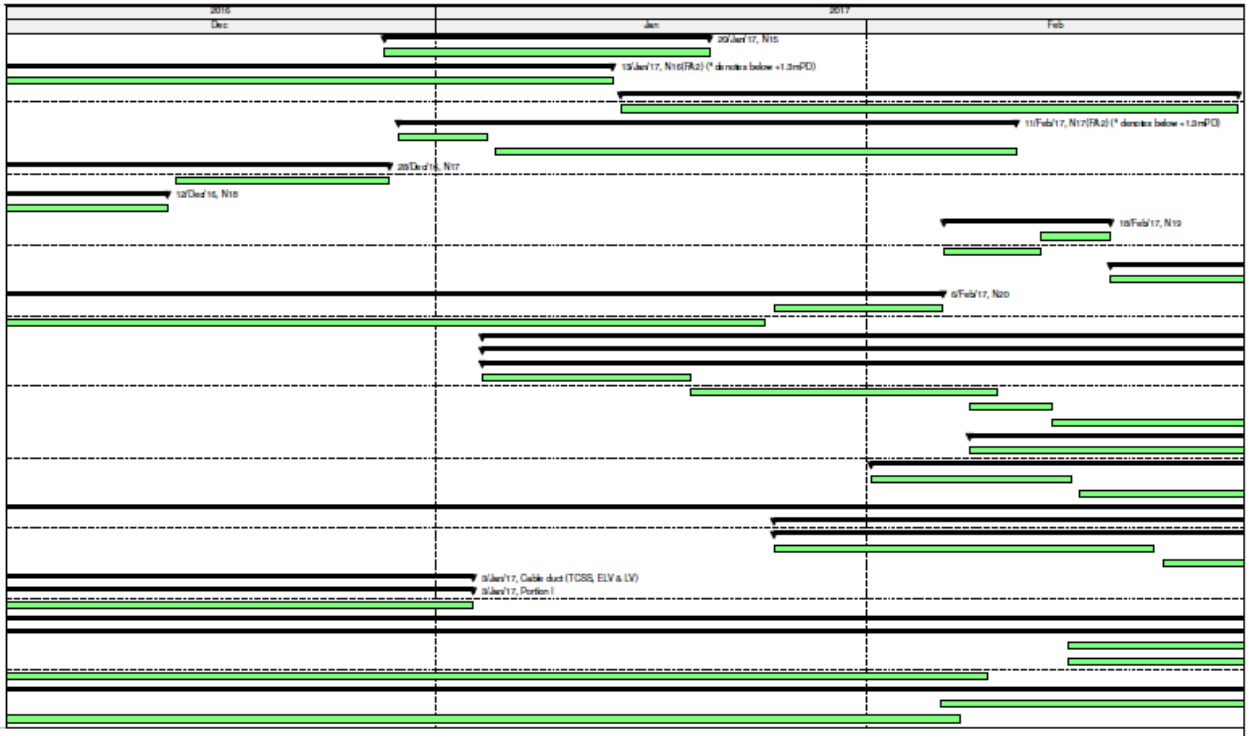


Activity ID	Activity Name	Original Duration	% Comp.
BB1_1045	Segment erection A109 MJ B...5	10	0%
BB1_1060	Segment erection P103 MJ B...6	12	0%
Bridge 2		135	0%
Segment erection		92	0%
Bridge 2A		91	0%
BB2_1140	Field segment erection P202N/S C...24	14	0%
BB2_1110	Field segment erection P203N/S (Learning) s2	28	64.29%
BB2_1120	Field segment erection P204N/S (Learning) s1	28	0%
BB2_1130	Field segment erection P205N/S remaining C...	11	0%
BB2_1160	Segment erection A201MJ C...10	20	0%
BB2_1150	Segment erection P206N/S MJ (Down chainag	24	0%
Bridge 2B		44	0%
BB2_1047	Field segment erection P207S C...12	7	0%
BB2_1045	Field segment erection P208S C16	9	0%
BB2_1050	Field segment erection P209S C...10	6	0%
BB2_1060	Field segment erection P210S C...16	9	0%
BB2_1070	Field segment erection P211S C...12	7	0%
Insitu Deck		135	0%
Bz-1010	Construct insitu deck P212N/S to P213N/S (Te	55	32.73%
Bz-1020	Construct insitu deck P213N/S to P214N/S (Te	55	0%
Bz-1030	Construct insitu deck P214N/S to P215N/S (Te	55	0%
Bridge 3		9	0%
Segment erection		9	0%
BB3_1010	Field segment erection P303 A...14	9	0%
Bridge 5		45	0%
Insitu Deck		45	0%
Bz-1020	Construct insitu deck between P502 toA503	45	0%
Earthworks & Retaining Structure		106	0%
Earthwork		106	0%
Retaining Wall		56	0%
EW 1000	Retaining Wall RW1	28	0%
EW 1040	Retaining Wall W2-1	28	0%
Backfill		106	0%
EW 1010	Backfill behindA109	30	0%
EW 1020	Backfill behindA301	45	0%
EW 1030	Backfill RW1	60	0%
Ground Level Road Works		130	0%
Storm & sewer drainage		112	0%
N01 (* denotes below +1.3mPD)		27	0%
DR1070	Mt1E.3 - Mt1E.5 (15m) 600mm (N01)	6	0%
DR1030	Mt1E.3 - Mt1E.2 (37m) 450mm (N01)	9	0%
DR1050	Mt1E.4 - Mt1E.3 (25m) 600mm (N01)	7	0%
DR1020	Mt1E.4 - Mt1E.3 (10m) 600mm (N01)*	5	0%
N02 (* denotes below +1.3mPD)		63	0%
DR1090	Sc...Ct1.1 - Mb1E.6 (6m) 1050mm (N02)*	33	0%
DR1080	Earthwork (Area : 10770m2 from +5.5mPD to	30	0%
Nos(A) (* denotes below +1.3mPD)		93	0%
DR1180	Sc...Ct1.2 - Mb1E.A4 (18m) 900mm (Nos)*	30	60%
DR1200	Mb4E.4 - Mb5E.5 (46m) 450mm (Nos)	11	0%
DR1250	Mb2E.3 - Mb1E.1 (6m) 300mm (Nos)	4	0%
DR1260	Mb2E.3 - Mb2E.2 (44m) 450mm (Nos)	10	0%
DR1270	Mb2E.3 - Mb6E.3 (11m) 600mm (Nos)	5	0%
DR1220	Mb2E.4 - Mb2E.2 (42m) 450mm (Nos)	0	0%
DR1240	Mb2E.4 - Mb6E.3 (18m) 600mm (Nos)	6	0%
DR1190	Mb2E.5 - Mb4E.5 (36m) 450mm (Nos)	9	0%
DR1210	Mb2E.A4 - Mb2E.4 (22m) 750mm (Nos)	0	0%
N04 (* denotes below +1.3mPD)		45	0%
DR1320	Earthwork (Area : 14130m2 from +5.5mPD to	45	0%
Nos(S)		5	0%
DR1290	Mb1C.8 - PWR-SUB (15m) 450mm (Nos)	5	0%
N10(FA4&Ac)		46	0%
DR2230	Earthwork (Area : 5500m2 from +5.5mPD to +	15	0%
DR2250	Mb2A.4 - Mb7A.3 (27m) 1050mm (N10)	7	0%
DR2260	Mb7A.3 - Mb7A.2 (36m) 450mm (N10)	9	0%
DR2240	Mb7A.5 - Mb7A.3 (66m) 1050mm (N10)	15	0%
N12(FA2) (* denotes below +1.3mPD)		35	0%
DR2430	Earthwork (Area : 610mom +5.5mPD to +6.0m	5	0%
DR2440	Mb1A.22 - Mb5A.5 (12m) 600mm (N12)*	30	0%
N12(FA4&Ac)		34	0%
DR2470	Earthwork (Area : 1520m2 from +5.5mPD to +	5	0%
DR2480	Mb5A.5 - Mb5A.Bb (42m) 600mm (N12)	29	0%
N13(FA2)		39	0%
DR2520	M4bA.2 - M4bA.1 (41m) 300mm (N13)	9	0%
DR2510	Mb1A.A19 - M4bA.2 (39m) 450mm (N13)	30	0%
N14(FA2) (* denotes below +1.3mPD)		46	0%
DR2530	Earthwork (Area : 1400m2 from +5.5mPD to +	5	0%
DR2550	M4bA.2 - M4bA.1 (51m) 300mm (N14)	11	0%
DR2540	Mb1A.17 - M4bA.4 (20m) 600mm (N14)*	30	0%
N15(FA2) (* denotes below +1.3mPD)		69	0%
DR2570	Earthwork (Area : 500m2 from +5.5mPD to +6	5	0%
DR2580	Mb1A.A18 - M44A.4 (37m) 600mm (N15)*	30	0%

C02 rolling programme (Dec-Feb) (Based on RDRM161116)

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	% Comp.
N15		20	0%
DR2590	Earthwork (Area : 3800m2 from +5.5mPD to +	20	0%
N16(RA2) (* denotes below +1.3mPD)		36	0%
DR2640	MtrsA.23 - MtrsA.9 (67m) 1200mm (N16)*	36	36.11%
N16		35	0%
DR2650	Earthwork (Area : 12000 from +5.5mPD to +6	35	0%
N17(RA2) (* denotes below +1.3mPD)		35	0%
DR2740	Earthwork (Area : 150m2 from +5.5mPD to +6	5	0%
DR2750	MtrsA.18 - MtrsA.15 (12m) 1200mm (N17)*	30	0%
N17		12	0%
DR2770	MtrsA.15 - MtrsA.13 (61m) 1050mm (N17)	12	58.33%
N18		11	0%
DR2880	MtrsA.10 - MtrsA.8 (55m) 1050mm (N18)	11	100%
N19		11	0%
DR3000	MtrsA.1 - MtrsA.A1 (13m) 300mm (N19)	5	0%
DR3000	MtrsA.6 - MtrsA.5 (18m) 750mm (N19)	6	0%
N20(RA2) (* denotes below +1.3mPD)		10	0%
DR3040	Earthwork (Area : 10800m2 from +5.5mPD to	10	0%
N20		60	0%
DR3070	MtrsA.A20 - MtrsA.9 (65m) 1050mm (N20)	15	0%
DR3060	MtrsA.A20.1 - MtrsA.A20 (81m) 1050mm (N2(	45	40%
Watermain		52	0%
Fresh watermain		52	0%
Portion D2 (site entrance)		44	0%
FW1370	Fresh main H DN300 (CH250-CH400) - Instal	13	0%
FW1380	Fresh main H DN300 (CH250-CH400) - Testir	14	0%
FW1390	Fresh main H1 DN300 (CH0-CH50) - Installat	5	0%
FW1400	Fresh main H1 DN300 (CH0-CH50) - Testing	14	0%
Portion D1 (12m/day)		25	0%
FW1410	Fresh main H DN300 (CH400-CH700) - Instal	25	0%
Portion C1		27	0%
FW1210	Fresh main C1 NS315 (CH0-CH200) - Installa	13	0%
FW1220	Fresh main C1 NS315 (CH0-CH200) - Testing	14	0%
Utilities		129	0%
Utilities & ducting		66	0%
Portion A (before CLP sub-station)		66	0%
UU1040	Tel duct for abutment A301 at Bridge 3	21	0%
UU1050	Tel duct from site entrance to Portion A	45	0%
Cable duct (TCSS, ELV & LV)		45	0%
Portion I		45	0%
TCSS1020	Cable duct for TCSS, ELV, LV & other departm	45	40%
Road furniture & fitout		120	0%
Pre-bored H-pile & cap for sign gantry		110	0%
RF1030	Cap - GT020, GT119, DS301 (7 no.)	49	0%
RF1020	Cap - GT405, FADS302, FADS301 (3x2 no.)	42	0%
RF1190	H-pile - GT122 (2x4 no.)	56	0%
Road lighting design & submission		118	0%
RF1110	Perpare, submit & approval of road lighting sys	60	0%
RF1100	Submit & approval of road lighting system sub-	60	13.33%



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

C02 rolling programme (Dec-Feb) (Based on RDRM161116)

Date	Revision	Checked	Approved

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	1. Repeat in-situ measurement to confirm findings;	1. Check monitoring data submitted by ET and	1. Confirm receipt of notification of failure in writing;	1. Inform the ER and confirm notification of the noncompliance in writing;

exceeded by two or more consecutive sampling days	2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days	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.	2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Make agreement on the mitigation measures to be implemented; 5. Ensure mitigation measures are properly implemented; 6. Assess the effectiveness of the implemented mitigation measures; 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	2. Take immediate action to avoid further exceedance; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 6. Implement the agreed mitigation measures; 7. Resubmit proposals of mitigation measures if problem still not under control; 8. As directed by the engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Event / Action Plan for Dolphin Monitoring

Event	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

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

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

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
		- 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 be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and - Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						
S5.5.6.3 of HKBCFEIA and S4.8.1 of TKCLKLEIA	A3	The Contractor should undertake proper watering on all exposed spoil and associated work areas (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	V

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
S5.5.6.4 of HKBCFEIA	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to relevant latest Practice notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air pollution Control (Construction Dust) Regulation	V
S5.5.6.4 of HKBCFEIA and S4.11 of TKCLKLEIA	A5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor of Contract No. HY/2010/02 and Contractor of Contract No. HY/2011/03	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 260$\mu gm^{-3,}$ 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
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; 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.	Monitor the 24hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	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 hr TSP levels are 500μgm^{-3} and 260$\mu gm^{-3,}$ respectively)	N/A

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
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	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;	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	Noise Control Ordinance	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
		- silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; - mobile plant should be sited as far away from NSRs as possible and practicable; - material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.						
S6.4.11 of HKBCFEIA	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening	Contractor	All construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S6.4.12 of HKBCFEIA	N3	Install movable noise barriers (typically density 14kg/m^2), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises - The movable barrier should achieve at least 5 dB(A) and the full enclosure should be designed to achieve 10dB(A)	N/A
S6.4.13 of HKBCFEIA	N4	Select “Quiet plants” which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed In Appendix 6D of the EIA report at all construction sites	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V

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
S6.4.14 of HKBCFEIA	N5	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA	V
S5.1 of TMCLKLEIA	N6	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at selected representative locations	Contractor of Contract No. HY/2010/02	Selected representative noise monitoring station	Construction stage	- Noise Control Ordinance - Annex 5, TM_EIA - 75dB(A) for residential premises	V
Sediment								
	S1	All dredged marine mud, which required Type 2 Confined Marine Disposal under Environment, Transport and Works Bureau Technical Circular (Works) No. 34/2002 Management of Dredged/Excavated Sediment, from the Project shall be disposed of inside the sheet pile cellular structures within the Project boundary.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- 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
	S2	Before re-deposition the contaminated sediment, a layer of geotextile shall be placed at the bottom of the sheet pile cellular structures to avoid direct contact of the contaminated sediment and the bottom sediment.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S3	A minimum of 2m thick sand fill or public fill shall be placed on top of the contaminated sediment to protect and cover the sediment after redeposition.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
	S4	The contaminated sediment shall not be disturbed after re-deposition. No piling works or deep foundation which may disturb the contaminated sediment is allowed within the cellular structures.	Re-deposition of Contaminated Sediment	Contractor	Dredged Contaminated Sediment	Construction stage	- Waste Disposal Ordinance - ETWB TC 34/2002	V
Waste management (Construction Waste)								
S12.6 of TMCLKLEIA	WM1	The Contractor shall identify a coordinator for the management of waste.	Proper implementation of WMP	Contractor	Contractor All construction sites	Construction stage		V

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
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
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;	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

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
		- 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; - 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	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

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
		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.						
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 litres unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the	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, Labelling and Storage of Chemical Waste	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
		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.						
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	WM8	*General Refuse* - The site and surroundings shall be kept tidy and litter free. General	Minimize production of the general refuse	Contractor	All construction sites	Construction stage	Waste Disposal Ordinance	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		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, aluminium cans, plastic bottles etc., should be provided. - Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. - Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and	and avoid odour, pest and litter impacts.					

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
		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	To control construction water quality	Contractor of Contract No. HY/2010/02	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
		filling below +2.5mPD during construction of the seawall; - After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; - No more than 2 grab dredgers with a maximum daily dredging rate of 12,000m^3 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 m^3 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 m^3 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;						

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
		- All mechanical grabs shall be designed and maintained to avoid spillage; - The moving speed of construction vessels in the dredging area should be reduced to prevent disturbance to the seabed generating sediment plumes; - Floating type silt curtains shall be installed enclosing the entire reclamation site at all time. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; - The cage-type silt-curtain with steel enclosure is proposed to be installed to enclose local pollution caused by the grab dredging. The grab dredging work should be carried out within the cage-type silt curtain; - Single layer silt curtain to be applied around the North-east airport water intake; - The silt-curtains should be maintained in good condition to ensure the 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						

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
		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.						
S9.11.1 - S9.11.1.2 of HKBCFEIA and S6.10 of TMCLKLEIA	W1	- In addition, dredging operations should be undertaken in such a manner as to minimize resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging and filling contract. 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;	To control construction water quality	Contractor of Contract No. HY/2010/02	During dredging and filling	Construction Stage	- TM-EIAO - Marine Fill Committee Guidelines - DASO Permits Conditions	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
		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 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; 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.						

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
S9.11.1.3 of HKBCFEIA and S6.10 of TMCLKLEIA	W2	<u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: - 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	To control construction water quality	Contractor	All land-based construction sites	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
		surfaced with crushed stone or gravel; - rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; - measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; - open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; - manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; - discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; - all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; - wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;						

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
		- the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; - wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; - vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; - the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; - waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; - all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and - surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.						

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
S9.14 of HKBCFEIA and S6.10 of TMCLKLEIA	W3	Implement a water quality monitoring programme	Control water quality	Contractor of Contract No. HY/2010/02	At identified monitoring location	During Construction stage	- TM-water - Water Pollution Control Ordinance	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	Minimize marine water quality impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	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 where practicable. - Good site practices - Strict enforcement of no marine dumping. - Site runoff control - Spill response plan						
S10.7 of HKBCFEIA	E2	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater.	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	TM-Water	V
S10.7 of HKBCFEIA and S8.14 of TMCLKLEIA	E3	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time.	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction		V
S10.7 of HKBCFEIA and 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	Minimize marine noise impacts on dolphins	Contractor	Marine works	During marine works	- TM-EIAO - Marine Park Regulations	
S10.7 of HKBCFEIA and S8.14 of	E6	- Control vessel speed - Skipper training - Predefined and regular routes for	Minimize marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
TMCLKLEIA		working vessels; avoid Brothers Islands						
S10.10 of HKBCFEIA and S8.14 of TMCLKLEIA	E7	Vessel based dolphin monitoring	Minimize marine traffic disturbance on dolphins	Contractor of Contract No. HY/2010/02	Northeast and Northwest Lantau	During marine works		V
Fisheries								
S11.7 of HKBCFEIA	F1	- Reduce re-suspension of sediments - Limit dredging and works fronts. - Good site practices	Minimize marine water quality Impacts	Contractor	Seawall, reclamation area	During construction	TM-Water	V
S11.7 of HKBCFEIA	F2	Install silt-grease trap in the drainage system collecting surface runoff	Minimize impacts on marine water quality impacts	Designer	Reclamation area	During construction	TM-Water	V
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1 of HKBCFEIA	LV1	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;	Minimize visual & landscape impacts	Contractor	HKBCF	Design Stage		V

EIA Ref.	EM&A Log Ref	Environmental Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location	When to implement the measures?	What requirements or standards for the measure to achieve?	Implementation Status
		- 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.						
Landscape & Visual (Construction Phase)								
S14.3.3.3 of HKBCFEIA and S10.9 of TMCLKLEIA	LV2	*Mitigate Landscape Impacts* G1. Grass-hydroseed or sheeting bare soil surface and stock pile areas.	Minimize visual & landscape impacts	Contractor	All construction site areas	Construction stage		V
S10.9 of TMCLKLEIA	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).	Minimize landscape impact	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
		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.						
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.	Minimize visual & landscape impacts	Contractor	All construction site areas	Construction stage		V
S10.9 of TMCLKLEIA	LV5	Mitigate Visual Impacts CM5. Screening of construction works by hoardings around works area in visually unobtrusive colors, 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.	Minimize visual impact	Contractor	All construction site areas	Construction stage		V
EM&A								

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

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

Appendix F

Site Audit Findings and Corrective Actions

Appendix F - Site Audit Findings and Corrective Actions

Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the project. During the reporting period, thirteen site inspections were carried out on 01, 09, 15, 22 & 29 December 2016, 05, 12, 16 & 26 January 2017 and 02, 09, 16 & 23 February 2017. Particular observations during the site inspections are described below:

24 November 2016

(a) No label for temporary storage of C & D wastes was observed at Portion A. Label for temporary storage of C & D wastes was provided at Portion A. The observation was closed on 01 December 2016.

01 December 2016

(a) Muddy water was found accumulated on the road between vehicle washing facility and exit. Muddy water was cleared on the road between vehicle washing facility and exit. The observation was closed on 09 December 2016.

09 December 2016

(a) C & D materials mixed with general refuse was observed at Portion A. C & D materials and general refuse was sorted at Portion A. The observation was closed on 15 December 2016.

(b) Mud / Soil was observed on the road side near the site exit. Mud / Soil was cleaned on the road side near the site exit. The observation was closed on 15 December 2016.

15 December 2016

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

22 December 2016

(a) Oil container without drip tray was observed at Portion F. Oil container was removed at Portion F. The observation was closed on 29 December 2016.

(b) Improper storage of C & D materials was observed at Portion I. C & D materials was collected at Portion I. The observation was closed on 29 December 2016.

(c) Pulverized soil without impervious cover was observed at Portion I. Impervious cover was provided at Portion I. The observation was closed on 29 December 2016.

29 December 2016

(a) Improper disposal of general refuses was observed at Portion A. The general refuse was collected at Portion A. The observation was closed on 05 January 2017.

(b) Improper disposal of general refuses was observed at Portion D. The general refuse was collected at Portion D. The observation was closed on 05 January 2017.

05 January 2017

(a) Oil containers without drip tray were observed at Portion C. Oil containers were removed at Portion C. The observation was closed on 12 January 2017.

(b) C & D materials with general refuse was observed at Portion A. C & D materials and general refuse was sorted at Portion A. The observation was closed on 12 January 2017.

12 January 2017

(a) Improper disposal of general refuse was observed at Portion C. The general refuse was collected at Portion C. The observation was closed on 16 January 2017.

(b) Improper disposal of general refuse was observed at Portion A. The general refuse was sorted at Portion A. The observation was closed on 16 January 2017.

16 January 2017

(a) Chemical containers without drip tray were observed at Portion C. Chemical containers were removed at Portion C. The observation was closed on 26 January 2017.

(b) Discoloured label for NRMM was observed on a generator at Portion C. Coloured NRMM label was provided on a generator at Portion C. The observation was closed on 26 January 2017.

(c) General refuse disposed improperly was observed at Portion C. General refuse was collected at Portion C. The observation was closed on 26 January 2017.

26 January 2017

(a) Chemical container without drip tray was observed at Portion C. Chemical container was removed at Portion C. The observation was closed on 02 February 2017.

(b) Improper disposal of general refuse was observed at Portion A. The general refuse was collected at Portion A. The observation was closed on 02 February 2017.

02 February 2017

(a) Improper disposal of general refuse was observed at Portion A. The general refuse was collected at Portion A. The observation was closed on 09 February 2017.

(b) NRMM labels were missing on two excavators at Portion D. NRMM labels were provided on two excavators at Portion D. The observation was closed on 09 February 2017.

09 February 2017

(a) Improper disposal of general refuse was observed at Portion C. The general refuse was sorted at Portion C. The observation was closed on 16 February 2017.

(b) Bentonite bags without impervious cover were observed at Portion C. Impervious cover was provided to cover the bentonite bags at Portion C. The observation was closed on 16 February 2017.

16 February 2017

(a) Improper disposal of general refuse was observed at Portion C. The general refuse was collected at Portion C. The observation was closed on 23 February 2017.

23 February 2017

(a) Oil containers without drip tray were observed at Portion C. Follow-actions for outstanding observation will be inspected during the next site inspection.

(b) General refuse mixed with C & D materials disposed improperly was observed at Portion C. Follow-actions for outstanding observation will be inspected during the next site inspection.

(c) General refuse and C & D materials disposed improperly was observed at Portion A. Follow-actions for outstanding observation will be inspected during the next site inspection.

Appendix G

Waste Flow Table

China Harbour Engineering Company Limited

Monthly Summary Waste Flow Table for 2016 (year)

Name of Person completing the record: Paper CHAN / ES

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

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

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

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

(3) Broken concrete for recycling into aggregates.

China Harbour Engineering Company Limited

Monthly Summary Waste Flow Table for 2017 (year)

Name of Person completing the record: Paper CHAN / ES

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

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete (see Note 1)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse (see Note 3)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 m^3)
Jan	0	0	0	0	0	0	0	0.0950	0	0	0.1755
Feb	0.4950	0	0	0	0.4950	5.445	0	0.1800	0.0248	0	0.1105
Mar											
Apr											
May											
Jun											
Sub-total	0.4950	0	0	0	0.4950	5.4450	0	0.2750	0.0248	0	0.2860
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.4950	0	0	0	0.4950	5.4450	0	0.2750	0.0248	0	0.2860

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

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

(3) Broken concrete for recycling into aggregates.

China Harbour Engineering Company Limited

Final revised Monthly Summary of Marine Sediment for 2016

Month	a. Volume of Marine Sediment Generated (m^3)	b.Volume of Marine Sediment Disposed (m^3)	c.Estimated Volume of Marine Sediment Stored on Site (m^3)(2)
Jan	4029(1)	1272	2757
Feb	1133	2816	1074
Mar	414	600	888
Apr	4240	5128	0
May	1020	0	1020
Jun	1097	1200	917
Jul	957	728	1146
Aug	953	1784	315
Sep	2013	2328	0
Oct	1096	1096	0
Nov*	1568	0	1568
Dec*	0	1568	0
Total	**18520**	**18520**	**0**

Note:

1) 2771 m^3 Marine Sediment Generated has been brought forward from pervious year

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

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

China Harbour Engineering Company Limited

Monthly Summary of Marine Sediment for 2017

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

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

Appendix H

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/K	24 Mar 2016	11 Apr 2016	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-RS1317-16	8 Dec 2016	22 Dec 2016	30 May 2017	Permit Approved and Superseded by GW-RS0072-17
10	Construction Noise Permit under NCO for HKBCF(Western Portion)	License No.: GW-RS0072-17	12 Jan 2017	26 Jan 2017	25 May 2017	Permit Approved

Appendix I

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	5	0	0
From commencement date of construction to end of reporting month	10	0	0

Appendix J

Investigation Reports on Action and Limit Level Non-compliance

Report No. 011

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

Report No. **011**

Monitoring Date **06-Feb-17**

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

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

Mid-Flood tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depth averaged	Level Exceeded
IS8	13:32	26.5	Action

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

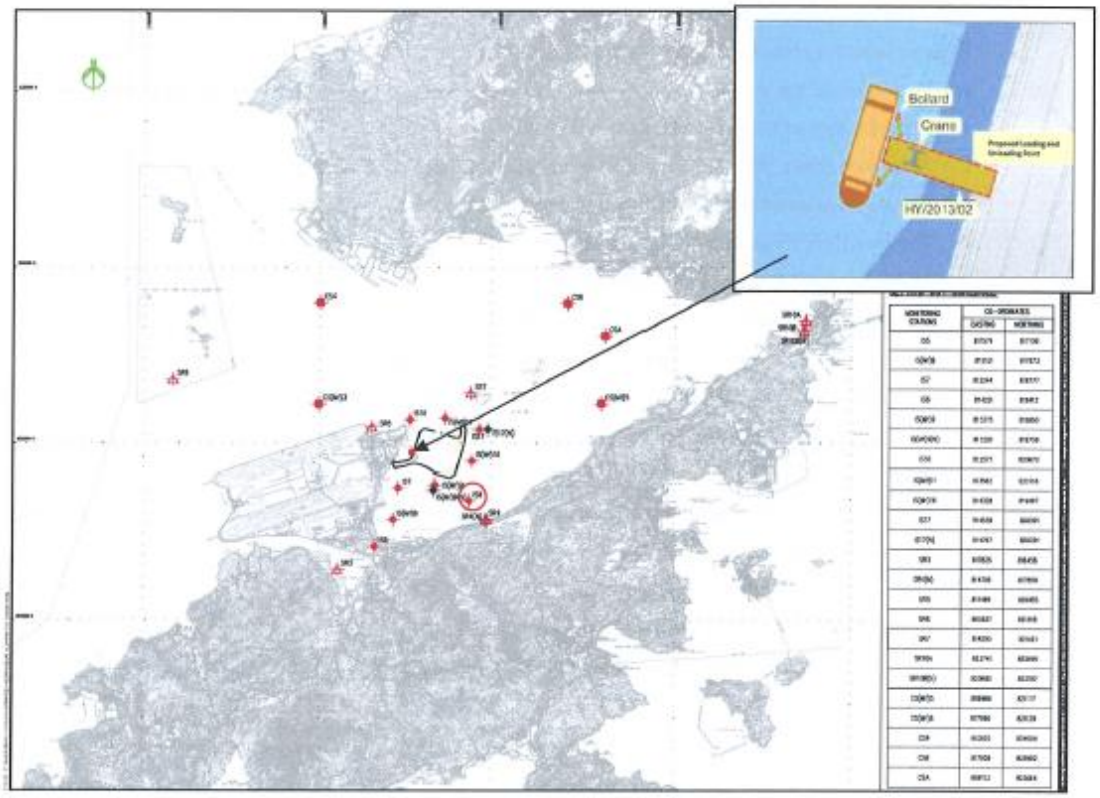


Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedances

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

- It was confirmed that there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station IS8 from 04 February 2017 to the water quality monitoring period on 06 February 2017 under Contract No. HY/2013/02 so that it was unlikely to generate suspended solids in the marine water to cause the SS exceedance recorded at the monitoring station IS8 during mid-flood tide on 06 February 2017. **Figure 1** showing the location of the Water Quality Monitoring Station where recorded exceedance and all relevant WQM stations.
- The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. The exceedance was considered as non-Project related.

b) Action required under the action plan

Refer to Table 9.4 of the updated EM&A Manual for HKBCF.

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;

d) ET's conclusions and recommendations for mitigation

- All relevant water quality mitigation measurement was checked to be fully implemented.
- The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solids (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- The Contractor was reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

e) Contractor's actions to implement the mitigation

- All construction activities that generate wastewater with high concentrations of suspended solids (SS) like wheel washing etc. was collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- All silt removal facilities, channels and manholes was maintained and any deposited silt and grit was removed regularly.

ET Leader Signature & Date 24-Feb-17

Report No. 012

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

Report No. **012**

Monitoring Date **10-Feb-17**

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

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

Mid-Ebb tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depth averaged	Level Exceeded
SR6	11:29	23.8	Action

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

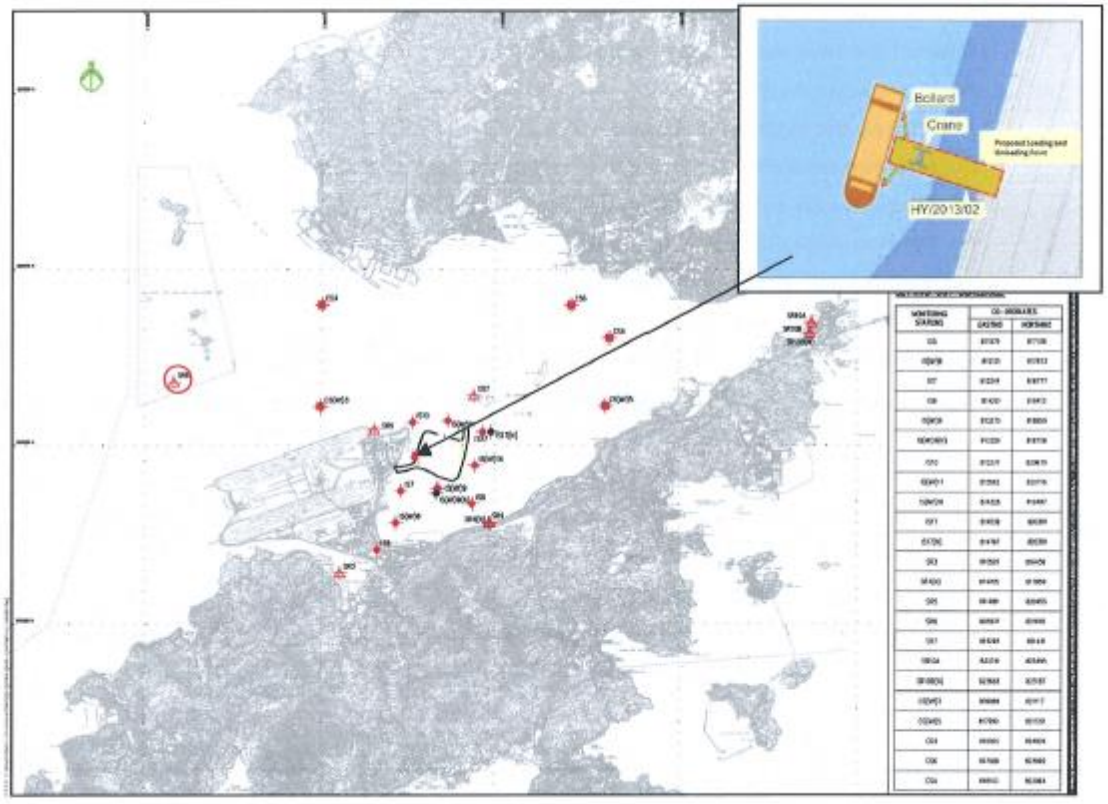


Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedances

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

- It was confirmed that except one marine pre-cat segment delivery which travelled passing through the north-east side with distance more than 4000 meters from the monitoring station SR6, there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station SR6 from 08 February 2017 to the water quality monitoring period on 10 February 2017 under Contract No. HY/2013/02 so that it was unlikely to generate suspended solids in the marine water to cause the SS exceedance recorded at the monitoring station SR6 during mid-ebb tide on 10 February 2017. **Figure 1** showing the location of the Water Quality Monitoring Station where recorded exceedance and all relevant WQM stations.
- The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. The exceedance was considered as non-Project related.

b) Action required under the action plan

Refer to Table 9.4 of the updated EM&A Manual for HKBCF.

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;

d) ET's conclusions and recommendations for mitigation

- All relevant water quality mitigation measurement was checked to be fully implemented.
- The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solids (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- The Contractor was reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

e) Contractor's actions to implement the mitigation

- All construction activities that generate wastewater with high concentrations of suspended solids (SS) like wheel washing etc. was collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- All silt removal facilities, channels and manholes was maintained and any deposited silt and grit was removed regularly.

ET Leader Signature & Date 04-Mar-17

Report No. 013

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

Report No. **013**

Monitoring Date **15-Feb-17**

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

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

Mid-Flood tide

Suspended Solids (SS) (in mg/L)

Monitoring Station	Monitoring time	Measured depth averaged	Level Exceeded
SR7	09:35	23.6	Action

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

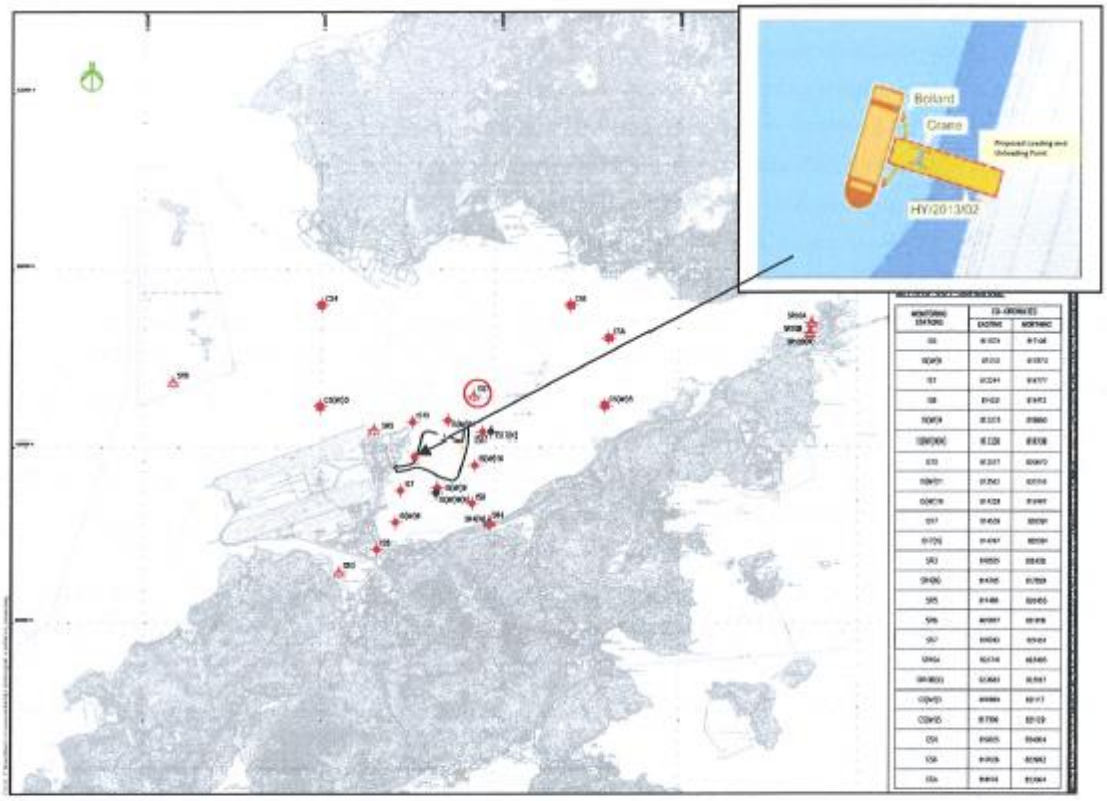


Figure 1 Location of Water Quality Monitoring Stations

Investigation Results:

a) Causes of exceedances

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

- It was confirmed that there was no marine works or barge of this Contract worked at HKBCF reclamation site near the sea area or area near the monitoring station SR7 from 13 February 2017 to the water quality monitoring period on 15 February 2017 under Contract No. HY/2013/02 so that it was unlikely to generate suspended solids in the marine water to cause the SS exceedance recorded at the monitoring station SR7 during mid-flood tide on 15 February 2017. **Figure 1** showing the location of the Water Quality Monitoring Station where recorded exceedance and all relevant WQM stations.
- The water quality mitigation measures as mentioned in EM&A Manual and EP was fully implemented in this Contract which including maintenance of the silt curtain on a daily basis by Contract No. HY/2010/02 etc. The exceedance was considered as non-Project related.

b) Action required under the action plan

Refer to Table 9.4 of the updated EM&A Manual for HKBCF.

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;

d) ET's conclusions and recommendations for mitigation

- All relevant water quality mitigation measurement was checked to be fully implemented.
- The Contractor was reminded to ensure all construction activities that generate wastewater with high concentrations of suspended solids (SS) should be collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- The Contractor was reminded to ensure that all silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly.

e) Contractor's actions to implement the mitigation

- All construction activities that generate wastewater with high concentrations of suspended solids (SS) like wheel washing etc. was collected to sedimentation tanks or package treatment systems for proper treatment prior to disposal.
- All silt removal facilities, channels and manholes was maintained and any deposited silt and grit was removed regularly.

ET Leader Signature & Date  02-Mar-17

Appendix K

Complaint Investigation Report

Log No. 006

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

ETS-Testconsult Ltd – Environmental Team (ET)

Complaint Investigation Report

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

Details of the Complaint			**Log No. : 006**
Date	01 December 2016	**Time**	---

Location

Hong Kong – Zhuhai – Macao Bridge construction site at East Coast Road

Circumstances:

One complaint was received by EPD from public on 01 December 2016 and was forwarded by EPD to the HYD and ENPO and then to the R.E. (AECOM) on 01 December 2016.Then the R.E. (AECOM) forwarded the complaint by email to the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 17:57 on 01 December 2016. The complainant complained that large amount of mud/slurry at East Coast Road suspiciously originated from HZMB construction site.

Follow action(s)

Follow up by	Environmental Team of Contract No. HY/2013/02	**Date**	02 December 2016

Details of Follow up action(s)

After received the details of the complaint from the R.E. (AECOM) on 01 December 2016, the ET of Contract No. HY/2013/02 have performed a follow-up investigation on 02 December 2016 to investigate this event. The investigation was included to check that if any mud/slurry originated to East Coast Road by the Contractor of Contract No. HY/2013/02 on 01 December 2016. After checked, no mud/slurry was observed around the East Coast Road site entrance during the site inspection and audit on 01 December 2016. Hence, the complaint was found non-related to Contract No. HY/2013/02.
Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to check the East Coast Road site entrance more frequently to ensure no mud/slurry at the site entrance, clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I and provide one person stayed at the site entrance during working hours for cleaning up the mud/slurry.

Details of Action(s) Taken by the Contactor of Contract No. HY/2013/02

1. To check the East Coast Road site entrance more frequently to ensure no mud/slurry at the site entrance.
2. To clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I.
3. To provide one person stayed at the site entrance during working hours for cleaning up the mud/slurry.

Conclusion

Refer to the above mentioned inspection, no mud/slurry was observed around the East Coast Road site entrance of Contract No. HY/2013/02 during the site inspection and audit on 01 December 2016. The complaint was found non-related to Contract No. HY/2013/02.
Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to check the East Coast Road site entrance more frequently to ensure no mud/slurry at the site entrance, clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I and provide one person stayed at the site entrance during working hours for cleaning up the mud/slurry.

Issued by:	C. L. Lau	Date:	12 December 2016
Designation:	Environmental Team Leader	Signature:	

Log No. 007

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

ETS-Testconsult Ltd – Environmental Team (ET)

Complaint Investigation Report

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

Details of the Complaint			**Log No. : 007**
Date	02 December 2016	**Time**	---

Location

Hong Kong – Zhuhai – Macao Bridge construction site, the whole stretch of East Coast Road & Tung Fai Road

Circumstances:

One complaint was received by Contract No. HY/2010/02 referred by the Government's Hotline (1823) on 02 December 2016 and was forwarded by ENPO to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 by email on 14 December 2016. The complainant complained that the whole stretch of East Coast Road & Tung Fai Road is truly disgusting. The stone debris big and small and the mud is a nuisance to those who use the road every day. When dry there is a lot of dust and when it rains or when the road washing trucks are out it becomes a muddy mess. Cars and pedestrians are covered in dust or mud, cars are hit by stones is a daily hazard. Washing of construction vehicles is inadequate as the sand and soil is carried out onto the roads. Oversight of road conditions are not carried out by the Airport Authority. An alternative route should be created for the large number of construction vehicles as they drive fast.

Follow action(s)

Follow up by	Environmental Team of Contract No. HY/2013/02	**Date**	15 December 2016

Details of Follow up action(s)

After received the details of the complaint from ENPO on 14 December 2016, the ET of Contract No. HY/2013/02 have performed a follow-up investigation on 15 December 2016 to investigate this event. The investigation was included to check that if any stone debris and mud/slurry originated to East Coast Road by the Contractor of Contract No. HY/2013/02 on 02 December 2016. After checked, no stone debris and mud/slurry were observed around the East Coast Road site entrance according to the Contractor and RE's site checking on 02 December 2016 (see attached photo 1). Hence, the complaint was found non-related to Contract No. HY/2013/02. During the site inspection of ET on 15 December 2016, the site entrance's condition was found much improved (see attached photo 2).

Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to check the East Coast Road site entrance more frequently to ensure no stone debris and mud/slurry, clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I and provide one person stayed at the site entrance continuously during working hours for cleaning up the mud/slurry.

Details of Action(s) Taken by the Contactor of Contract No. HY/2013/02

1. To check the East Coast Road site entrance more frequently to ensure no stone debris and mud/slurry at the site entrance.
2. To clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I.
3. To provide one person stayed at the site entrance continuously during working hours for cleaning up the mud/slurry.

Conclusion

Refer to the above mentioned checking, no stone debris and mud/slurry were observed around the East Coast Road site entrance of Contract No. HY/2013/02 according to the Contractor and RE's site checking on 02 December 2016 (see attached photo 1). The complaint was found non-related to Contract No. HY/2013/02. During the site inspection of ET on 15 December 2016, the site entrance's condition was found much improved (see attached photo 2).

Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to check the East Coast Road site entrance more frequently to ensure no mud/slurry at the site entrance, clean up the mud/slurry immediately to avoid public nuisance no matter the mud/slurry was generated from them or not once received the complaint of the location which specified within Contract No. HY/2013/02's site boundary at portion I and provide one person stayed at the site entrance continuously during working hours for cleaning up the mud/slurry.

Issued by:	C. L. Lau	Date:	16 December 2016
Designation:	Environmental Team Leader	Signature:	

Log No. 008

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

ETS-Testconsult Ltd – Environmental Team (ET)

Complaint Investigation Report

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

Details of the Complaint			**Log No. : 008**
Date	13 December 2016	**Time**	---

Location

Construction Sites of HZMB

Circumstances:

One complaint was received by EPD on 13 December 2016 and referred by EPD to the ENPO on 14 December 2016. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 on 14 December 2016. The complainant complained that hammering noise generated over-night from unidentified sources possibly from Construction Sites of HZMB near a month.

Follow action(s)

Follow up by	Environmental Team of Contract No. HY/2013/02	**Date**	15 December 2016

Details of Follow up action(s)

After received the details of the complaint from the ENPO on 14 December 2016, the ET of Contract No. HY/2013/02 have performed a related follow-up inspection on 15 December 2016 to investigate this event. The inspection was concentrated to check the working hours for construction activities carried out by the Contractor of Contract No. HY/2013/02 during the past month. After checked with the Contractor of Contract No. HY/2013/02, the construction works of this Contract during the past month was carried out from 08:00 up to 23:00 and no any works and PME operation were undertaken at night-time after 23:00. Hence, the complaint was found non-related to Contract No. HY/2013/02.

Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to provide appropriate noise mitigation measures, such as switched off vehicles and equipment while not in use, scheduled the construction works to minimize noise nuisance and well-maintained plant operated on-site to minimize noise nuisance and particularly to avoid to use hammering equipment during any night works etc. and comply with the valid CNP for overnight operation.

Details of Action(s) Taken by the Contactor of Contract No. HY/2013/02

1. Provide well-maintained plant operated on-site and plant served regularly;
2. Switched off vehicles and equipment while not in use;
3. Scheduled the construction works to minimize noise nuisance;
4. Avoid to use hammering equipment during any night works; and
5. Comply with the valid CNP for overnight operation.

Conclusion

Refer to the above mentioned inspection, since no any works was undertaken at night-time after 23:00 by Contract No. HY/2013/02 in the past month, this complaint was found non-related to Contract No. HY/2013/02.

Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to provide appropriate noise mitigation measures, such as switched off vehicles and equipment while not in use, scheduled the construction works to minimize noise nuisance and well-maintained plant operated on-site to minimize noise nuisance and particularly to avoid to use hammering equipment during any night works etc. and comply with the valid CNP for overnight operation.

Issued by:	C. L. Lau	Date:	19 December 2016
Designation:	Environmental Team Leader	Signature:	

Log No. 009

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

ETS-Testconsult Ltd – Environmental Team (ET)

Complaint Investigation Report

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

Details of the Complaint			**Log No. : 009**
Date	28 December 2016	**Time**	---

Location

Construction Sites of HKBCF

Circumstances:

One complaint was received by Highways Department and referred by Highways Department to Contract No. HY/2010/02 on 28 December 2016. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 20:17 on 28 December 2016. The complainant complained that [大嶼山港珠澳人工島地盤多項問題，投訴人指出地盤內蚊患嚴重，而且洗手間衛生欠佳和沖洗設施不足，是屬於中國港灣建築的地盤，要求部門跟進。]

Follow action(s)

Follow up by	Environmental Team of Contract No. HY/2013/02	**Date**	29 December 2016

Details of Follow up action(s)

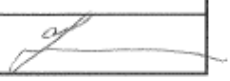
After received the details of the complaint from the ENPO at 20:17 on 28 December 2016, the ET of Contract No. HY/2013/02 have performed a related follow-up inspection on 29 December 2016 to investigate this event. The inspection was concentrated to check the site environment of the working areas and cleanness of portable toilets of Contract No. HY/2013/02. After checked, the site environment of the working areas were found acceptable that no mosquito was observed and cleanness of portable toilets were also found acceptable but it will have some improvement (see attached photos). Hence, the complaint was found non-related to Contract No. HY/2013/02.
Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to provide appropriate mitigation measures to prevent mosquito breeding, such as to clear potential stagnant pools or add mosquito oil into the pools, provide sufficient facilities for the toilets cleaning and arrange the cleaning of toilets more frequently.

Details of Action(s) Taken by the Contactor of Contract No. HY/2013/02

1. Provide appropriate mitigation measures to prevent mosquito breeding, such as to clear potential stagnant pools or add mosquito oil into the pools;
2. Provide sufficient facilities for the toilets cleaning; and arrange the cleaning of toilets more frequently;
3. Arrange the cleaning of toilets more frequently.

Conclusion

Refer to the above mentioned inspection, since the site environment of the working areas were found acceptable that no mosquito was observed and cleanness of portable toilets were also found acceptable but it will have some improvement. Hence, the complaint was found non-related to Contract No. HY/2013/02.
Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to provide appropriate mitigation measures to prevent mosquito breeding, such as to clear potential stagnant pools or add mosquito oil into the pools, provide sufficient facilities for the toilets cleaning and arrange the cleaning of toilets more frequently.

Issued by:	C. L. Lau	Date:	31 December 2016
Designation:	Environmental Team Leader	Signature:	

Log No. 010

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

ETS-Testconsult Ltd – Environmental Team (ET)

Complaint Investigation Report

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

Details of the Complaint			**Log No. : 010**
Date	09 January 2017	**Time**	---

Location:

Construction Sites of HKBCF

Circumstances:

One complaint was received by Environmental Protection Department from a bus operator at the Hong Kong International Airport recently and referred to the ENPO. Then the ENPO forwarded the complaint by email to the R.E. (AECOM), the Contractor (China Harbour) and the ET (ETS-Testconsult Ltd.) of Contract No. HY/2013/02 at 12:17 on 09 January 2017. The complainant complained that the external bodies of buses & vehicles were seriously stained by the heavy dusts and mud produced from the construction sites onto the East Coast Road & Tung Fai Road, Airport Road Interchange and Sky City Interchange.

Follow action(s)

Follow up by	Environmental Team of Contract No. HY/2013/02	**Date**	11 January 2017

Details of Follow up action(s)

After received the details of the complaint from the ENPO on 09 January 2017, the Environmental Officer and the RE of Contract No. HY/2013/02 performed a related follow-up inspection on 10 January 2017 with EPD's senior inspector Dionne Leung to investigate this event. The inspection was concentrated to check if any mud/slurry and dusts produced from the construction sites of Contract No. HY/2013/02 originated to East Coast Road and other nearby roads. After checked, no mud/slurry was observed around the East Coast Road site entrance during the site inspection on 10 January 2017. Contract HY/2013/02 is responsible for managing the site entrance of BCF. Mitigation measures under the item A2 and W2 of EMIS were implemented including provide vehicle washing facilities with high pressure water jet at vehicle exit point and the area where vehicle washing takes place, the portion of road to construction site of the vehicle entrance or exit was kept clear of dusty materials, all vehicles and plant were cleaned before they leave the construction site, wheel overflow was directed to silt removal facilities before being discharged, the road section between the washing facilities and the exit point was hard paved and reminders were provided at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing etc. Besides, after received the last complaint from the EPD on 01 December 2016, the cleaning actions were reinforced such as providing one person at the site entrance for cleaning up the mud/slurry, frequently checking the East Coast Road site entrance. Hence, the complaint was found non-related to Contract No. HY/2013/02.

Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of HY/2013/02 was reminded to assign a person to check and clear sand/mud, clean up the mud/slurry immediately by washing lorry & sweeper to avoid public nuisance, check all vehicles and plant were cleaned before they leave the construction site, treat the washing water by sedimentation tanks and Wetsep, enhance daily cleaning for the precipitate at Wheel Washing Bay (WWB) and the haul road lead to site entrance and purify and recycle the water at WWB by Wetsep before discharge. The Contractor of HY/2013/02 was also reminded to keep the reminders at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing for the proper implementation of environmental mitigation measures associated with the site exit.

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Details of Action(s) Taken by the Contactor of Contract No. HY/2013/02
1. Deploy washing lorry & sweeper at the site entrance to clear the road; 2. Designate a person to check and clear sand/mud remains once found at the site entrance; 3. Deploy sedimentation tanks and Wetsep to treat washing water collected at the site entrance; 4. Enhance daily cleaning for the precipitate at Wheel Washing Bay (WWB) and the haul road lead to site entrance; 5. Deploy Wetsep to purify and recycle the water at WWB before discharge; 6. Reminders were provided at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing
Conclusion
Refer to the above mentioned inspection, no mud/slurry was observed around the East Coast Road site entrance of Contract No. HY/2013/02 during the site inspection on 10 January 2017. Contract HY/2013/02 is responsible for managing the site entrance of BCF. Mitigation measures under the item A2 and W2 of EMIS were implemented including provide vehicle washing facilities with high pressure water jet at vehicle exit point and the area where vehicle washing takes place, the portion of road to construction site of the vehicle entrance or exit was kept clear of dusty materials, all vehicles and plant were cleaned before they leave the construction site, wheel overflow was directed to silt removal facilities and the road section between the washing facilities before being discharged and the exit point was hard paved and reminders were provided at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing etc. Besides, after received the last complaint from the EPD on 01 December 2016, the cleaning actions were reinforced such as providing one person at the site entrance for cleaning up the mud/slurry, frequently checking the East Coast Road site entrance. Hence, the complaint was found non-related to Contract No. HY/2013/02. Although this complaint was non-related to Contract No. HY/2013/02, the Contractor of Contract No. HY/2013/02 was reminded to assign a person to check and clear sand/mud, clean up the mud/slurry immediately by washing lorry & sweeper to avoid public nuisance, check all vehicles and plant were cleaned before they leave the construction site, treat the washing water by sedimentation tanks and Wetsep, enhance daily cleaning for the precipitate at Wheel Washing Bay (WWB) and the haul road lead to site entrance and purify and recycle the water at WWB by Wetsep before discharge. The Contractor of HY/2013/02 was also reminded to keep the reminders at the wheel washing basin and exit to remind all Contract(s) vehicles using the site exit for proper wheel washing for the proper implementation of environmental mitigation measures associated with the site exit.

Issued by:	C. L. Lau	Date:	20 January 2017
Designation:	Environmental Team Leader	Signature: