

中國港灣工程有限責任公司

香港代表: 振華工程有限公司

CHINA HARBOUR ENGINEERING COMPANY LIMITED HONG KONG REPRESENTATIVE: ZHEN HUA ENGINEERING CO., LTD.

Date

21 November 2018

Our Ref.:

CHEC300/OUT/2018/11/04.05/044218

By Hand

AECOM Asia Company Limited

8/F Grand Central Plaza
Tower 2, 138 Shatin Rural Committee Road
Shatin, Hong Kong

Attn: Mr. Jason Yu

The Engineer's Representative

Dear Sir,

Contract No. HY/2013/03

Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities EP Condition 5.4 – Quarterly EM&A Report (September 2017 – November 2017)

Pursuant to the Condition 5.4 of the EP-353/2009/K, we are pleased to submit one soft copy and three copies of the certified Quarterly EM&A Report (Rev.1) for September 2017 to November 2017 for your on-ward submission.

Thank you for your kind attention.

Yours faithfully, For and on behalf of China Harbour Engineering Co. Ltd.

Paul PUT

Site Agent

PP/MC/mt

Encl.





Ref.: HYDHZMBEEM00_0_6975L.18

9 November 2018

By Fax (3468 2076) and By Post

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

Attention: Mr. W.S. Nq

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/2013/03 - HZMB HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Quarterly EM&A Report No.9 for September 2017 to November 2017

Reference is made to the Environmental Team's submission of Quarterly Environmental Monitoring & Audit Report No.9 for September 2017 to November 2017 certified by the ET Leader (ET's ref.: "MCL/ED/0532/2018/C" dated 7 November 2018) and provided to us via e-mail on 7 November 2018.

We are pleased to inform you that we have no adverse comment on the captioned report. We write to verify the captioned submission in accordance with Section 16.4.1 of the Updated EM&A Manual (2011).

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

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

Ronguet

Raymond Dai

Independent Environmental Checker

c.c. HyD Mr. Tony Pang

 HyD
 Mr. Tony Pang
 (By Fax: 3188 6614)

 HyD
 Mr. Ken Woo
 (By Fax: 3188 6614)

 MCL
 Mr. Arthur Cheng
 (By Fax: 2450 8032)

 CHEC
 Mr. Johnason Ko
 (By Fax: 2597 3368)

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



Room 723 & 725, 7/F, Block B, Profit Industrial Building,

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Hong Kong

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Website : www.fugro.com

Date

07 November 2018

Our Ref

MCL/ED/0532/2018/C

Ramboll Hong Kong Limited (formerly Ramboll Environ Hong Kong Limited) 21/F, BEA Harbour View Centre 56 Gloucester Road, Wan Chai Hong Kong

Attn.: Mr. Raymond Dai, IEC

BY HAND

Dear Sir.

Quarterly EM&A Report for September 2017 to November 2017 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities (Contract No. HY/2013/03)

Pursuant to Section 16.4 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities (Version 1.0) covering the captioned contract, we are pleased to submit the certified Quarterly EM&A Report for September 2017 to November 2017 for your verification.

Should you require further information, please do not hesitate to contact our Mr. Vincent Lu at 3565 4158 or the undersigned at 3565 4115.

Yours faithfully, for and on behalf of MATERIALAB CONSULTANTS LIMITED

Arthur Cheng

Environmental Team Leader

AC/vI

Encl.

C.C.

AECOM - Mr. P.K. Lee, Mr. W.S. Ng, Mr. Dominic Mow RAMBOLL ENVIRON - Mr. Ray Yan, Mr. Harris Wong

CHEC - Mr. Marko Chan

Room 723 & 725, 7/F, Block B, Profit Industrial Building,

(852)-24508238 (852)-24508032 mcl@fugro.com Tel 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong, Email



Report No.: 0165/15/ED/1043

QUARTERLY ENVIRONMENTAL MONITORING & AUDIT REPORT

September 2017 to November 2017

Client:

China Harbour Engineering Co., Ltd.

Project:

Contract No. HY/2013/03

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Boundary Crossing Facilities -

Vehicle Clearance Plazas and **Ancillary Buildings and Facilities**

Report No.:

0165/15/ED/1043

Prepared by: Vincent Lu

Reviewed by: Bong Yu

Certified by:

Arthur Cheng

Environmental Team Leader

Room 723 & 725, 7/F, Block B,

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Report No.: 0165/15/ED/1043

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Report No.: 0165/15/ED/1043

EXECUTIVE SUMMARY

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities" (includes the construction works of Contract No. HY/2013/06 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System" within Contract No. HY/2013/03 works area) (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. Limited (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/03 works area) (hereafter referred to as "the Contractor") and MateriaLab Consultants Limited (MCL) was appointed as the Environmental Team (ET) by the Contractor.

Contract No. HY/2013/03 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of Contract No. HY/2013/03 took place on 10 April 2015 while the construction works and the EM&A programme of Contract No. HY/2013/03 commenced on 29 August 2015 (commencement of Contract No. HY/2013/06 took place on 14 August 2015 while the construction works and the EM&A programme of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area commenced on 13 September 2016).

MateriaLab Consultants Limited (MCL) has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and will be providing environmental team services for the Contract. This is the 9th Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 01 September 2017 to 30 November 2017 (includes the findings of the EM&A programme of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area during the reporting period from 01 September 2017 to 30 November 2017) (the "reporting period").

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao Bridge HKBCF — Passenger Clearance Building" 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, water quality monitoring at the locations shown in **Figure 3** and ecological monitoring as shown in **Figure 4** as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2013/01 and HY/2011/03. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

The dates of site inspection for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) during the reporting period are listed below:

Environmental Site Inspection:

Room 723 & 725, 7/F, Block B, Profit Industrial Building,

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- 08, 15, 21 and 25 September 2017
- 06, 12, 19 and 27 October 2017
- 02, 09, 16, 23 and 30 November 2017

Breaches of Action and Limit Levels

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

There was one Action and Limit Level exceedance of 24-hr TSP level recorded at station AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. 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/2013/01 during the reporting period.

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

There were Action and Limit Level exceedances for water quality recorded on twenty-seven days at the monitoring stations shown at **Table 2.2** by the Environmental Team of Contract No. HY/2013/01 during the reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown at **Table 2.2** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

Ecological monitoring results at all transects are reported in the EM&A report prepared by Contract No. HY/2013/01.

Complaint Log

There were two complaints received in relation to the environmental impact during the reporting period.

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
013	ENPO-C0127	27 October 2017	Water discharge
014	ENPO-C0128	23 November 2017	Air pollution

After investigation, Complaint No. 013 and 014 were not related to Contract No. HY/2013/03.

Notifications of Summons and Successful Prosecutions

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

Reporting Changes

The implementation of environmental monitoring for air quality, noise, water quality and marine ecology (dolphin monitoring) have been conducting by the ET for Contract No. HY/2013/01 of which the noise monitoring station (NMS3B) and the meteorological station have been slightly re-located to AECOM PRE's Office without re-branding since 01 September 2017 as shown below:

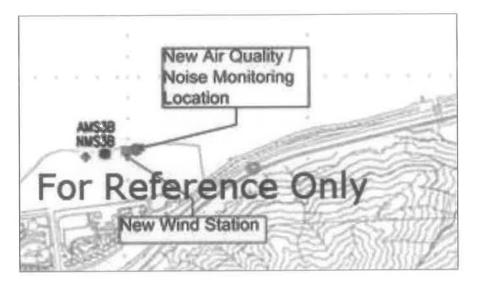
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Report No.: 0165/15/ED/1043

1. INTRODUCTION

1.1 Basic Project Information

- 1.1.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities Vehicle Clearance Plazas and Ancillary Buildings and Facilities" (includes the construction works of Contract No. HY/2013/06 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities Automatic Vehicle Clearance Support System" within Contract No. HY/2013/03 works area) (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. Limited (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/03 works area) (hereafter referred to as "the Contractor") and MateriaLab Consultants Limited (MCL) was appointed as the Environmental Team (ET) by the Contractor.
- 1.1.2 Contract No. HY/2013/03 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of Contract No. HY/2013/03 took place on 10 April 2015 while the construction works and the EM&A programme of Contract No. HY/2013/03 commenced on 29 August 2015 (commencement of Contract No. HY/2013/06 took place on 14 August 2015 while the construction works and the EM&A programme of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area commenced on 13 September 2016). The works areas of the contract are shown in Appendix A.
- 1.1.3 This is the 9th Quarterly EM&A Report summarising the findings of EM&A activities conducted under Contract No. HY/2013/03 from 01 September 2017 to 30 November 2017 (from 01 September 2017 to 30 November 2017 for the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) (the "reporting period") and is submitted to fulfil Condition 16.4 of the Updated EM&A Manual for HKBCF.

1.2 Project Organisation

1.2.1 The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1** and **Table 1.2**.

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Table 1.1 Contact Information of Key Personnel (for Contract No. HY/2013/03)

Party Position		Contact Person	Telephone No.	Fax No.
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.) Chief Resident Engineer		Mr. W. S. Ng	3958 7400	3902 8800
Environmental Project	Environmental Project Office Leader	Mr. Y. H. Hui	3547 2133	3465 2899
Office / Independent Environmental Checker (Ramboll Environ Hong	Independent Environmental Checker (IEC)	Mr. Raymond Dai	3465 2888	3465 2899
Kong Limited)	Environmental Site Supervisor	Mr. Ray Yan	5181 8165	3465 2899
Contractor	Site Agent	Mr. Paul Pui	9125 0700	2512 0427
(China Harbour Engineering Co. Ltd)	Environmental Officer	Mr. Marko Chan	9427 2879	2512 0427
Environmental Team (MateriaLab Consultants Limited)	Environmental Team Leader (ETL)	Mr. Arthur Cheng	3565 4115	2450 8032
24-hr Complaint Hotline			5236 7111	int.

Table 1.2 Contact Information of Key Personnel (for Contract No. HY/2013/06 within Contract

No. HY/2013/03 works area)

Party	Position	Contact Person	Telephone No.	Fax No.
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Mr. W. S. Ng	3958 7400	3902 8800
Environmental Project	Environmental Project Office Leader	Mr. Y. H. Hui	3547 2133	3465 2899
Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Independent Environmental Checker (IEC)	Mr. Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Mr. Ray Yan	5181 8165	3465 2899
Contractor	Site Agent	Mr. Eric Yim	2565 3355	3162 5217
(ATAL Technologies Limited)	Environmental Officer	Mr. W. Li	2565 3137	3162 5217
Environmental Team (MateriaLab Consultants Limited)	Environmental Team Leader (ETL)	Mr. Arthur Cheng	3565 4115	2450 8032
24-hr Complaint Hotline		777	6509 0375	No orio

Construction Programme 1.3

The construction programme for Contract No. HY/2013/03 (includes the construction works of 1.3.1 HY/2013/06 within Contract No. HY/2013/03 works area) are provided in Appendix C.

Construction Works undertaken during the Reporting Period 1.4

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

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Report No.: 0165/15/ED/1043

For Contract No. HY/2013/03

September 2017

- 1. Building at Portion A1, B, G, N, J, STP & Pumping Stations;
- 2. CUE Construction at Portion B, C & J;
- 3. Drainage & Sewerage Work, Water Main & Cable Duct at Portion B, H1, H2, J, P, G & A1;
- 4. Radiation Screen Wall at Portion B, E P, N,M,C;
- 5. Sign Gantry Footing at Portion B:
- 6. Sewerage Pumping Station, High Mast Lighting Foundation & Box Culvert C at Portion G;
- 7. Bridge Works at A1 to A9:
- 8. Site Foundation Works at Portion K;
- 9. Cover Walkway at Portion H1 & H2;
- 10. Box Culvert B at Portion N; Shuttle kiosk & Subway at Portion E
- 11. Deployment, maintenance and inspection of silt curtain;
- 12. Construction of water outfall of box culvert: and
- 13. Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee.

October 2017

- 1. Building at Portion A1, B, G, N, J, STP & Pumping Stations;
- 2. CUE Construction at Portion B, C & J;
- 3. Drainage & Sewerage Work, Water Main & Cable Duct at Portion B, H1, H2, J, P, G & A1;
- 4. Radiation Screen Wall at Portion B, E P, N,M,C;
- 5. Sign Gantry Footing at Portion B;
- 6. Sewerage Pumping Station, High Mast Lighting Foundation & Box Culvert C at Portion G;
- 7. Bridge Works at A1 to A9:
- 8. Site Foundation Works at Portion K:
- 9. Cover Walkway at Portion H1 & H2;
- 10. Box Culvert B at Portion N; Shuttle kiosk & Subway at Portion E
- 11. Deployment, maintenance and inspection of silt curtain;
- 12. Construction of water outfall of box culvert; and
- 13. Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee.

November 2017

- 1. Building at Portion A1, B, G, N, J, STP & Pumping Stations;
- 2. CUE Construction at Portion B, C & J;
- 3. Drainage & Sewerage Work, Water Main & Cable Duct at Portion B, H1, H2, J, P, G & A1;
- 4. Radiation Screen Wall at Portion B, E P, N, M, C;
- 5. Sign Gantry Footing at Portion B;
- 6. Sewerage Pumping Station, High Mast Lighting Foundation & Box Culvert C at Portion G;
- 7. Bridge Works at A1 to A9;
- Site Foundation Works at Portion K;
- Cover Walkway at Portion H1 & H2:
- 10. Box Culvert B at Portion N;
- 11. Shuttle kiosk & Subway at Portion E.

For Contract No. HY/2013/06 within Contract No. HY/2013/03 works area

September 2017

1. Conduits & Wiring installation at Building 037, kiosk and CUE works area.

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Report No.: 0165/15/ED/1043

October 2017

Conduits & Wiring installation at Building 037, kiosk and CUE works area.

November 2017

Conduits & Wiring installation at Building 037, kiosk and CUE works area.

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Report No.: 0165/15/ED/1043

2. **EM&A REQUIREMENTS**

2.1 **Summary of EM&A Requirements**

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for 2.1.1 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/2013/01 "Hong Kong-Zhuhai-Macao-Bridge HKBCF - Passenger Clearance Building" 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, water quality monitoring at the locations shown in Figure 3 and ecological monitoring as shown in Figure 4 as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2013/01 and HY/2011/03. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

The ET of the Contract or another ET of the HZMB project is required to conduct impact ecological monitoring at 24 transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2013/01. The impact ecological 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. The co-ordinates for the transect lines and layout map are shown as in Figure 4.

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 and Figure 2, respectively.

Table 2.1 Air Quality and Noise Monitoring Locations

Environmental Monitoring	Identification No.	Location Description
Air Quality	AMS6(1)	Dragonair/CNAC (Group) Building (A80)
7 til Quality	AMS7(1)	Hong Kong SkyCity Marriott Hotel
Noise	NMS2(2)	Seaview Crescent
110130	NMS3B(2) (3)	Site Boundary of Site Office Area at WA2

- (1) The ET of this Contract should conduct impact air quality monitoring at the AMS listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
- (2) The ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the
- 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 3.

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Table 2.2 Water Quality Manitoring Stations

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10(N)	Impact Station (Close to HKBCF construction site)	812942	820881
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5(N)	Control Station	812569	821475
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A(1)	Sensitive receivers (Ma Wan FCZ) 1	823741	823495
SR10B(N)(1)	Sensitive receivers (Ma Wan FCZ) 2	823683	823187
CS(Mf)3(N)	Control Station	808814	822355
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA(2)	Control Station	818103	823064

Note:

Remarks:

The ET of the 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 if water quality monitoring is 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 the other contracts if the water quality monitoring station(s) is/are as part of EM&A programme.

2.2 **Monitoring Requirements**

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

2.3 **Action and Limit Levels**

The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in Table 2.3 and Table 2.3.1 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	360	500
AMS7	370	300

Table 2.4 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level (µg/m³)	Limit Level (µg/m³)
AMS6	173	260
AMS7	183	200

⁽¹⁾ Additional monitoring station for Ma Wan FCZ

⁽²⁾ Additional control monitoring station for Ma Wan FCZ

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2.3.2 The Action and Limit Levels for construction noise are defined in Table 2.5.

Table 2.5 Action and Limit Level for Construction Noise

Monitoring Station	Action Level	Limit Level
For the Time F	Period 0700-1900 hrs. on Norm	al Weekdays
NMS2	When one documented	75.0 dB (A) Leg (30 min.)
NMS3B	complaint is received	70.0 dB (A) Leg (30 min.)*

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.

2.3.3 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
windale & Bottom)	Bottom 4.7	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 intakes*
Turbidity in NTU (depth averaged)	station's turbidity at the same tide of	47.0 and 130% of upstream control station's turbidity at the
* Remarks: Peferense is made	the same day*	same tide of the same day*

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

Notes:

"depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.

For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

3. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

 All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

 The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

2.3.4 The Action and Limit Levels for Ecological Monitoring are provided in Table 2.7 and Table 2.8.

Table 2.7 Action and Limit Levels for Ecological 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)]		

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 Ecological 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 ecological 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.

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

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2.3.5 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 and Action Plans

2.4.1 The event and action plans are 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.

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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 (for September 2017, October 2017 and November 2017) prepared for Contract Nos. HY/2011/03 and HY/2013/01 respectively.
- 3.1.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in the monthly EM&A Reports (for September 2017, October 2017 and November 2017) 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/2013/01 during the reporting period.
- 3.1.4 There was one Action and Limit Level exceedances of 24-hr TSP level recorded at station AMS3B on 28 November 2017. After investigation, it was concluded that the exceedance was not relevant to Contract No. HY/2013/03.

3.2 Noise Monitoring Results

- 3.2.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports (for September 2017, October 2017 and November 2017) prepared for Contract No. HY/2013/01.
- 3.2.2 No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2013/01 during the reporting period.

3.3 Water Quality Monitoring Results

3.3.1 The monitoring results for the monitoring stations shown in Table 2.2 were reported in the monthly EM&A Report (for September 2017, October 2017 and November 2017) prepared for Contract No. HY/2013/01. There were Action and Limit Level exceedances recorded at different WQM stations during mid-ebb and mid-flood tide on twenty-seven days. The summary of water quality exceedances is shown in Table 3.1. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03.

Table 3.1 Action and Limit Levels for Water Quality

Station	Exceedance	DO (S&M)		DO (Bottom)		Turbidity		SS	
	Level	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
IS5	Action	0	1 (08 Sep)	3 (01 Sep, 13 Sep, 18 Sep)	3 (01 Sep, 13 Sep, 29 Sep)	1 (08 Sep)	0	1 (08 Sep)	0
	Limit	0	0	0	0	0	0	0	0
IS(Mf6)	Action	0	0	0	0	0	0	0	2 (06 Nov, 15 Nov)
	Limit	0	0	0	0	0	0	0	0
IS7	Action	1 (08 Sep)	0	2 (08 Sep, 29 Sep)	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS8	Action	0	3 (08 Sep, 11 Sep,	1 (29 Sep)	1 (11 Sep)	0	0	0	4 (18 Sep, 25 Sep,

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01.11	Exceedance	DO (S	88M)	DO (Bo	ottom)	Turbidity		SS	
Station	Level	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
			22 Sep)						13 Nov, 24 Nov)
	Limit	0	0	0	0	0	1 (15 Sep)	0	0
IS(Mf)9	Action	0	3 (08 Sep, 11 Sep, 22 Sep)	0	1 (13 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS10(N)	29 Sep) 29 Sep) 29 Sep)	1 (08 Sep)	0	0					
	Limit	0	0	0	0	0	0	0	(08 Sep
IS(Mf)11	Action	3 (11 Sep, 15 Sep, 22 Sep)	5 (08 Sep, 11 Sep, 13 Sep, 15 Sep, 22 Sep)	4 (01 Sep, 11 Sep, 18 Sep, 29 Sep)	4 (01 Sep, 8 Sep, 11 Sep, 29 Sep)	0	2 (06 Sep, 08 Sep)	0	4 (08 Sep 20 Oct, 03 Nov, 08 Nov)
	Limit	0	0	0	0	0	0	0	0
IS(Mf)16	Action	1 (08 Sep)	3 (08 Sep, 11 Sep, 22 Sep)	5 (08 Sep, 11 Sep, 13 Sep, 18 Sep, 29 Sep)	2 (11 Sep, 13 Sep)	0	0	0	1 (06 Nov
	Limit	0	0	0	0	0	0	0	0
IS17	Action	4 (08 Sep, 11 Sep, 13 Sep, 15 Sep)	3 (08 Sep, 11 Sep, 22 Sep)	7 (01 Sep, 06 Sep, 08 Sep, 11 Sep, 13 Sep, 15 Sep, 27 Sep)	4 (08 Sep, 11 Sep, 13 Sep, 29 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR3	Action	2 (08 Sep, 22 Sep)	1 (08 Sep)	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR4(N)	Action	0	2 (11 Sep, 22 Sep)	0	1 (08 Sep)	0	0	0	0
0111(11)	Limit	0	0	0	0	0	0	0	1 (06 Nov
SR5(N)	Action	3 (11 Sep, 13 Sep, 22 Sep)	2 (11 Sep, 22 Sep)	4 (01 Sep, 11 Sep, 27 Sep, 29 Sep)	3 (08 Sep, 11 Sep, 29 Sep)	0	0	0	3 (18 Oct 20 Oct 23 Oct
	Limit	0	0	0	0	0	0	0	2 (03 Nov 08 Nov
SR6	Action	3 (11 Sep, 18 Sep, 22 Sep)	7 (06 Sep, 08 Sep, 11 Sep, 15 Sep, 18 Sep, 20 Sep, 22 Sep)	1 (18 Sep)	5 (08 Sep, 11 Sep, 15 Sep, 18 Sep, 20 Sep)	0	1 (08 Sep)	3 (03 Nov, 08 Nov, 22 Nov)	1 (20 Se
	Limit	0	0	0	0	0	0	0	(22 No
	Action	1	2	0	1	0	0	0	4

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Station	Exceedance			DO (I	Bottom)	Tur	rbidity		SS	
	Level	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	
		(11 Sep)	(11 Sep, 22 Sep)		(08 Sep)				(20 Oct, 03 Nov, 06 Nov, 20 Nov)	
	Limit	0	0	0	0	0	0	0	0	
SR10A	Action	0	0	2 (02 Oct, 04 Oct)	9 (06 Sep, 08 Sep, 11 Sep, 13 Sep, 15 Sep, 20 Sep, 27 Sep, 02 Oct, 04 Oct)	0	0	0	1 (06 Nov)	
	Limit	5 (06 Sep, 08 Sep, 13 Sep, 22 Sep, 04 Oct)	9 (06 Sep, 08 Sep, 11 Sep, 13 Sep, 15 Sep, 18 Sep, 20 Sep, 22 Sep, 04 Oct)	0	0	0	0	0	0	
	Action	0	0	3 (11 Sep, 27 Sep, 29 Sep)	10 (06 Sep, 11 Sep, 13 Sep, 15 Sep, 22 Sep, 25 Sep, 27 Sep, 02 Oct, 04 Oct, 06 Oct)	0	0	0	1 (06 Nov)	
R10B(N)	Limit	6 (06 Sep, 08 Sep, 11 Sep, 22 Sep, 04 Oct, 06 Oct)	14 (06 Sep, 08 Sep, 11 Sep, 13 Sep, 15 Sep, 18 Sep, 20 Sep, 22 Sep, 25 Sep, 27 Sep, 02 Oct, 04 Oct, 06 Oct, 09 Oct)	0	0	0	0	0	0	

Note: S&M: Surface & Middle

3.4 Ecology Monitoring Results

3.4.1 The dolphin survey results for all transects were reported in the monthly EM&A Reports (for September 2017, October 2017 and November 2017) prepared by Contract No. HY/2013/01. There was no Action and Limit Level exceedance recorded by the Environmental Team of Contract No. HY/2013/01 during the reporting period (September 2017 to November 2017).

3.5 Implementation of Environmental Measures

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- 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 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. All necessary mitigation measures at this stage of works were implemented properly.
- 3.5.3 Implementation status of Regular Marine Travel Route Plan (RMTRP) was checked by ET. In general, the Contractor has complied with the plan. Training of marine travel route for marine vessels operator was given to relevant staff and relevant records were kept properly. Marine traffic records which indicated the number of trips data for pelican barge, hopper barge, tug boat, floating concrete batching plant and derrick lighter on the implementation of RMTRP from September 2017 to November 2017 were checked by ET. The marine traffic records and geographical plots of all the vessels tracks to demonstrate the conformance of the vessel to the proposed route in September 2017, October 2017 and November 2017 were provided by Contractor to ER, IEC/ENPO for checking within the month of October 2017, November 2017 and December 2017 respectively. The implementation of marine traffic follows the Regular Marine Travel Route Plan with respect to ET's checking on the marine traffic records for the reporting period.
- 3.5.4 With respect to condition 3.26A of EP-353/2009/K approved by EPD on 11 April 2016, the numbers and operating periods of floating grout production facilities and floating concrete batching plants on-site to review on the compliance to this EP condition were checked. Under Contract No. HY/2013/03, no floating concrete batching plant was operated on-site during the reporting period.
- 3.5.5 As silt curtain was installed since May 2017, Dolphin Watching Plan (DWP) should be implemented. The status of silt curtain was reviewed by ET and there was no change on the status of silt curtain during the reporting period. Implementation status of DWP was checked by ET. The records of dolphin watching training, regular inspection of the silt curtains and visual inspection of waters surrounded by the silt curtain in September, October and November 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of October, November and December 2017 respectively.
- 3.5.6 The landscape work of green roof for Contract No. HY/2013/03 was commenced on 07 November 2017. Detail commencement date of each building were shown in **Table 3.2**. The implementation of mitigation measures for landscape and visual resources recommended in the EIA Report were monitoring during the reporting period. Landscape and visual mitigation measures in accordance with the EP, EIA and EM&A Manual were implemented by the Contractor.

Table 3.2 Commencement date of green roof for each building

Building No. of Green Roof	Commencement dates of planting for roof greening
037	07 Nov 2017

3.6 Advice on the Solid and Liquid Waste Management Status

3.6.1 The Contractor of Contract No. HY/2013/03 registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

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- 3.6.2 No extracted marine sediment was treated using cement solidification/stabilisation (Cement S/S) techniques under Contract No. HY/2013/03 during this reporting period. No marine sediment extracted from this Contract was disposed to the Marine Fill Committee (MFC) allocated disposal sites directly without treatment during this reporting period. As a practical mean, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from all three Contracts (Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04).
- 3.6.3 The barge for disposal of marine sediment was morn at the temporary loading and unloading at the east shore of the HKBCF Island, which has been being used by reclamation contractor (Contract No. HY/2010/02) for reclamation activities. In terms of safety consideration and to avoid mixing of sediment between contracts, each dumping date was allocated to one Contract. The quantity of marine sediment disposed on each date was from one Contract.
- 3.6.4 During dumping, Contractor of Contract No. HY/2013/03 is responsible for transporting the marine sediment from the site area of Contract No. HY/2013/03 to the barge. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit. The disposal site allocated to this Project are the Mud Pit CMP Vd of the Confined Marine Sediment Disposal Facility to the East of Sha Chau (ESC) during this reporting period.
- 3.6.5 No marine sediment extracted from bored piling from this Contract was disposed to allocated dumping site during this reporting period. As confirmed by RSS, all marine sediments extracted from HY/2013/02, HY/2013/03 and HY/2013/04 have been completed with the last batch disposal on 30 August 2017. The summary of marine sediment disposed during this reporting period is shown in the following table:

Table 3.3 Summary of Marine Sediment Disposed to Dumping Site

Month/Year	Quantity disposed (in'000m³)						
	HY/2013/02	HY/2013/03	HY/2013/04	Total			
Sep 2017	0.000	0.000	0.000	0.000			
Oct 2017	0.000	0.000	0.000	0.000			
Nov 2017	0.000	0.000	0.000	0.000			
Total	0.000	0.000	0.000	0.000			

- 3.6.6 The summary of waste flow table for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) is detailed in **Appendix G**.
- 3.6.7 Contract No. HY/2013/03 has been assigned to arrange for delivery of surplus filling materials from Contract No. HY/2013/03 to other projects, including Tuen Mun Chek Lap Kok Link (TM-CLKL) project of HZMB, the Airport Authority Hong Kong's Three Runway (3RS) Project, Wan Chai Development Phase II Project, Contract No. HY/2013/02 of HKBCF and Hong Kong Link Road (HKLR) project of HZMB. The estimated quantity of surplus filling materials is confirmed by Resident Site Staff of Contract No. HY/2013/03. The summary of surplus filling materials delivered to other projects up to the end of November 2017 is shown in Table 3.4.

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Table 3.4 Summary of Surplus Filling Materials Delivered from Contract No. HY/2013/03 to

other projects

1	Density (in tonnes/m³)	Quantity disposed (in '000m ³)							
Month/Year		To HY/2013/02	To TM-CLKL Project	To 3RS Project	To WDII Project	To HKLR Project	Total		
May 2017	2.3	0	12.637	0	0	0	12.637		
Jun 2017	2.63925	0	14.769	11.238	0	0	26.007		
Jul 2017	1.9	0	4.406	34.875	10.048	0.760	50.089		
Aug 2017	1.9	0.480	0	67.942	2.761	7.455	78.638		
Sep 2017	1.9	5.544	0	62.770	0	4.648	72.962		
Oct 2017	1	3.384	0	45.92809	0	0	49.31209		
Nov 2017		5.412	0	5.507	0	0	10.919		
Total	1	14.82	31.812	228.26009	12.809	12.863	300.56409		

Remarks

· The variation in density is due to different compositions of surplus filling materials

There may be discrepancies in the total quantities with the quantities of inert C&D materials stated in Appendix G, due to rounding errors

 No density was given for October and November 2017 due to the direct volume figures as provided and confirmed by the RSS

3.6.8 Contractor of Contract No. HY/2013/03's site arrangement for disposal of bentonite slurry to Tseung Kwan O Area 137 Fill Bank was checked by ET and formal consent has been obtained from Tseung Kwan O Area 137 Fill Bank for receiving used bentonite slurry generated from Contract No. HY/2013/03.

3.7 Environmental Licences and Permits

3.7.1 The valid environmental licences and permits for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) during the reporting period are summarized in **Appendix H**. The Contractor of Contract No. HY/2013/06 was advised to register as a chemical waste producer when chemical waste is expected to generate for the foreseeable future from the operations (For Registration as Waste Producer Pursuant to Waste Disposal (Chemical Waste) (General) Regulation).

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- 4. SUMMARY OF EXCEEDANCES, COMPLAINTS, 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 is reported in the monthly EM&A Reports (for September, October and November 2017) 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/2013/01 during the reporting period.
- 4.1.3 There was one Action and Limit Level exceedances of 24-hr TSP level recorded at station AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
 - Regarding the exceedance on 28 November 2017, the mitigation measures according to Water Spraying Arrangement in November 2017 are implemented to avoid dust emission. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr. For 24-hr TSP exceedance recorded at the station AMS3B, the Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix C of monthly EM&A report for November 2017. The hourly AQHI of Tung Chung station ranged 3 to 8 (Low to Very High) on 28 and 29 November 2017 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The Vehicle Clearance Plazas and Ancillary Buildings and Facilities site of HKBCF is far away from AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS3B during the monitoring period. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused 24-hr TSP exceedance recorded at station AMS3B on 28 November 2017.
- 4.1.4 There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 4.1.5 There were Action and Limit Level exceedances recorded at different WQM stations during mid-ebb and mid-flood tide on twenty-seven days. The investigation reports (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix I**.

Regarding the exceedance on 01 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken in the current stage is the preparation work of precast installation which was suspended on the date of exceedance due to safety issues. But silt curtain was still maintained to enclose the work area of the outlet of the box culvert fully. All sea water flow into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved

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oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 01 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 01 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 06 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8, SR4(N) and SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). For turbidity exceedance recorded at the WQM station IS(Mf)11 closer to the marine delivery route, there was no turbidity exceedance recorded at WQM station IS10(N) which also close to the marine delivery route. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen or generate suspended solid to cause the DO, turbidity and SS exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 06 September 2017. Besides, the concerned WQM stations where DO and SS exceedances recorded were far away from the works areas (i.e. box Culvert B), while there was only Action Level exceedance of turbidity but no notification of exceedance of DO and SS received at the WQM stations closer to the works areas, such as IS(Mf)11. Therefore, the exceedances on 06 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 06 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 08 September 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 08 September 2017. For turbidity and SS exceedance recorded at the WQM station IS10(N) closer to the works area Box Culvert B, there was no turbidity and SS exceedance recorded at the same WQM station under similar work environment on 06 September 2017 and 11 September 2017. For turbidity and SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no turbidity and SS exceedance recorded at the same WQM station under similar work environment on 11 September 2017. For turbidity and SS exceedance recorded at the WQM station IS5 and SR6, the exceedance recorded at the concerned WQM station is far away from the marine works area of Contract No. HY/2013/03. It was unlikely that the works undertaken by Contract No.

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HY/2013/03 caused turbidity or SS exceedance recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 08 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 08 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 11 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during midflood and mid-ebb tide on 11 September 2017. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed, while there was only Action Level exceedance of DO at the WQM stations closer to the works areas, such as IS(Mf)11. Therefore, the exceedances on 11 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 11 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 13 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during midflood and mid-ebb tide on 13 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 13 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 15 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For turbidity exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works

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in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely that the works undertaken by Contract No. HY/2013/03 consumed any dissolved oxygen to cause DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 15 September 2017. For turbidity exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. Besides, fast boats moving around near the monitoring location during measurement period as mentioned in Notification of Action/Limit Level Exceedance may be one of the reason for turbidity exceedance. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused turbidity exceedance recorded at the concerned WQM stations during mid-flood tide on 15 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 15 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 18 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 18 September 2017. For SS exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 18 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 18 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 20 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For turbidity exceedance recorded at the WQM station SR6, the concerned WQM

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stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the exceedances recorded at the concerned WQM stations (i.e. SR6, SR10A and SR10B(N)) are far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 20 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 20 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 22 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during midflood tide on 22 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 22 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 25 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM station where exceedances were recorded (i.e. SR10B(N)) was far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances

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recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 25 September 2017. For SS exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 25 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 25 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 27 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 27 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 27 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 29 September 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during midflood tide on 29 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 29 September 2017 was not related to Contract No. HY/2013/03.

Regarding the exceedance on 02 October 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate

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seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 02 October 2017.

Regarding the exceedance on 04 October 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 04 October 2017.

Regarding the exceedance on 06 October 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 06 October 2017.

Regarding the exceedance on 09 October 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the

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outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood on 09 October 2017.

Regarding the exceedance on 18 October 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 18 October 2017.

Regarding the exceedance on 20 October 2017, there no marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS(Mf11), SR5(N) and SR 7, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marinebased works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR7, there was no SS exceedance recorded at the same WQM station under similar work environment on 18 October 2017 and 23 October 2017. For SS exceedance recorded at the WQM station SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work

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environment on 18 October 2017 and 23 October 2017. There was a complaint received by EPD with discharge concern around the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no discharge activities during the complained period. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 20 October 2017.

Regarding the exceedance on 23 October 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 23 October 2017.

Regarding the exceedance on 03 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the marine delivery route, there was no SS exceedance recorded at WQM station IS10(N) which also close to the marine delivery route. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 01 November 2017 and 06 November 2017. It was unlikely

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that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 03 November 2017.

Regarding the exceedance on 06 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS(Mf)6, IS(Mf)16, SR7, SR10A and SR10B(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS(Mf)6, IS(Mf)16, SR7, SR10A and SR10B(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 06 November 2017.

Regarding the exceedance on 08 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR4(N), SR5(N) and SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 06 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 08 November 2017.

Regarding the exceedance on 13 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast

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installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 13 November 2017.

Regarding the exceedance on 15 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS(Mf)6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 15 November 2017.

Regarding the exceedance on 20 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR7, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR7, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 20 November 2017.

Regarding the exceedance on 22 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will

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be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide and mid-ebb tide on 22 November 2017.

Regarding the exceedance on 24 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 24 November 2017.

After investigation, it was concluded that the exceedances were not related to Contract No. HY/2013/03 due to the above reasons. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 2.2** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

Although the exceedances were not relevant to Contract No. HY/2013/03, the Contractor was reminded to continue to fully maintain all water quality mitigation measures and ensure the silt curtain is fully maintained to prevent any water quality impact to seawater.

- 4.1.6 Ecological monitoring results at all transects are reported in the EM&A report (for the reporting period) prepared by Contract No. HY/2013/01.
- 4.2 Summary of Complaints, Notification of Summons and Successful Prosecution
- 4.2.1 There were two complaints received in relation to the environmental impact during the reporting period. The summary of environmental complaints is presented in **Table 4.1**. The details of cumulative statistics of Environmental Complaints are provided in **Appendix J**.

Table 4.1 Summary of Environmental Complaints for the Reporting Period

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
013	ENPO-C0127	27 October 2017	Water discharge
014	ENPO-C0128	23 November 2017	Air pollution

(a) 27 October 2017 (Log No. 013)

The complaint was received by EPD from a member of the public on 27 October 2017. The complainant complained about the construction site C3 of HZMB artificial island. The

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construction site discharged muddy water into open waters which lasted for a week. The complainant required EPD to follow up and reply.

After investigation, the ET of Contract No. HY/2013/03 (including Contract No. HY/2013/06 within Contract No. HY/2013/03) cannot conclude that the captioned complaint is related to the construction activities of our contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material:
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 3. 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters:
- 2. 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;
- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system:
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

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(b) 23 November 2017 (Log No. 014)

The complaint was received by EPD from a member of the public on 23 November 2017. The complainant complained that the watering on the construction site is not evenly, resulting in a lot of dust spreading around, especially construction area near toll kiosks.

After investigation, the ET of Contract No. HY/2013/03 (including Contract No. HY/2013/06 within Contract No. HY/2013/03) concluded that the captioned complaint is not related to the construction activities of our contract. Nevertheless, ET has recommended the Contractor to remind workers to report dusty spots to contractor to ensure prompt response and necessary follow-up on dust suppression measures through the complaint hotline. The Contractor had also been reminded to fulfil the conditions set out in the EP, in particular:

· Condition 3.23:

The Permit Holder shall undertake watering at least 8 times per day on all exposed soil within the Project site and associated work areas throughout the construction phase.

The Contractor had also been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

· Air Quality:

A3: The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.

- 4.2.2 No notification of summons or prosecutions was received during the reporting period.
- 4.2.3 Statistics on notifications of summons and successful prosecutions are summarized in **Appendix J**.

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5. COMMENTS, RECOMMENDATIONS AND CONCLUSIONS

5.1 Comments

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

For Contract No. HY/2013/03

- 1. CHEC was reminded to remove general and construction waste accumulated on site;
- 2. CHEC was reminded to remove stagnant water accumulated on site;
- 3. CHEC was reminded to provide drip tray for the chemical container and oil drum on site;
- 4. CHEC was reminded to provide watering for dust suppression on site; and
- 5. CHEC was reminded to provide NRMM label on site.

For Contract No. HY/2013/06 within Contract No. HY/2013/03 works area

- No recommendation.
- 5.1.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix E. All necessary mitigation measures at this stage of works were implemented properly.

5.2 Recommendations

- With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. 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

- Commencement of Contract No. HY/2013/03 took place on 10 April 2015 and the construction 5.3.1 works of Contract No. HY/2013/03 commenced on 29 August 2015 (commencement of Contract No. HY/2013/06 took place on 14 August 2015 and the construction works of Contract No. HY/2013/06 commenced on 13 September 2016 within Contract No. HY/2013/03 works area). This is the 9th Quarterly EM&A Report summarising the findings of EM&A activities conducted under Contract No. HY/2013/03 from 01 September 2017 to 30 November 2017 (includes the findings of EM&A activities conducted under Contract No. HY/2013/06 within Contract No. HY/2013/03 works area from 01 September 2017 to 30 November 2017).
- Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for September, October and November 2017) prepared by Contract No. HY/2011/03.

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- 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/2013/01 during the reporting period.
- There was one Action and Limit Level exceedances of 24-hr TSP level recorded at station 5.3.4 AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03.
- 5.3.5 There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved 5.3.6 oxygen recorded on twenty-seven days by the Environmental Team of Contract No. HY/2013/01 during reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at Table 2.2 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- Ecological monitoring results at all transects are reported in the EM&A report prepared by Contract No. HY/2013/01.
- Environmental site inspection was carried out on 08, 15, 21 and 25 September 2017, 06, 12, 19 and 27 October 2017, 02, 09, 16, 23 and 30 November 2017 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area). Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.
- There were two complaints received in relation to the environmental impact during the reporting period. After investigation, all the complaints were not related to Contract No. HY/2013/03.
- 5.3.10 There were no notifications of summons or prosecutions received during the reporting period.

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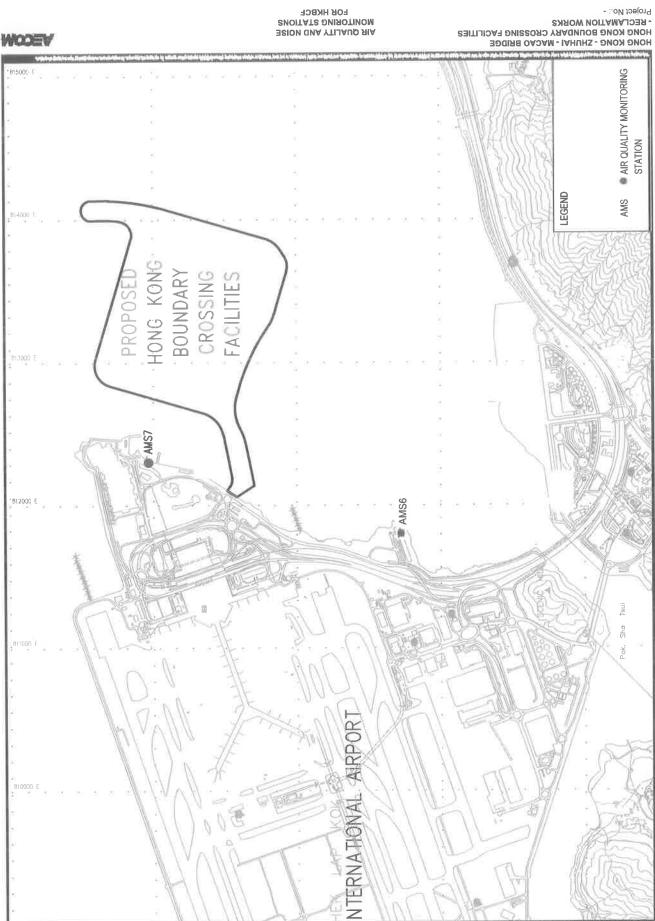
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Figure 1

Air Quality Monitoring Stations



mmDSP x mm7es ea osi

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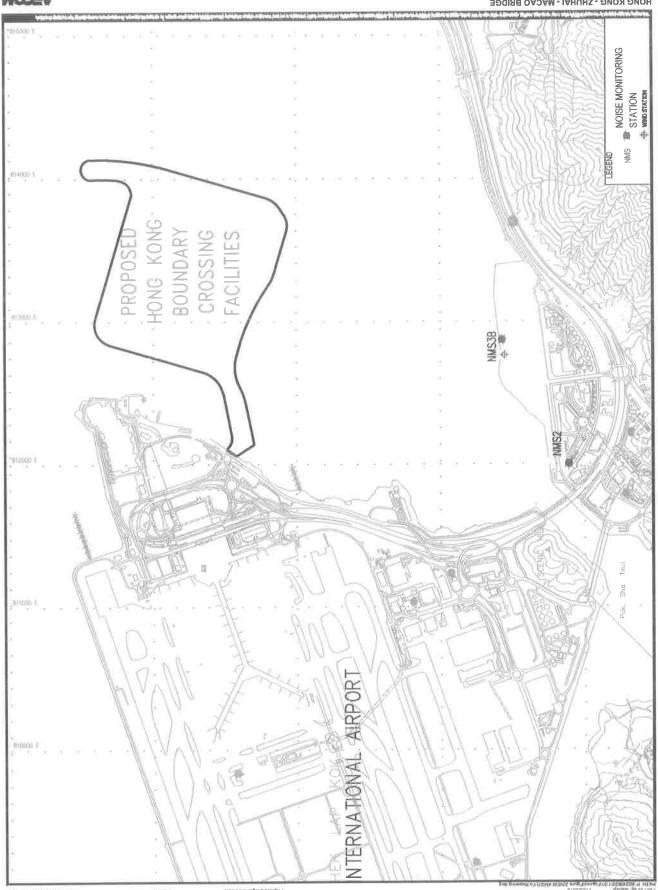


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Figure 2

Noise Monitoring Stations





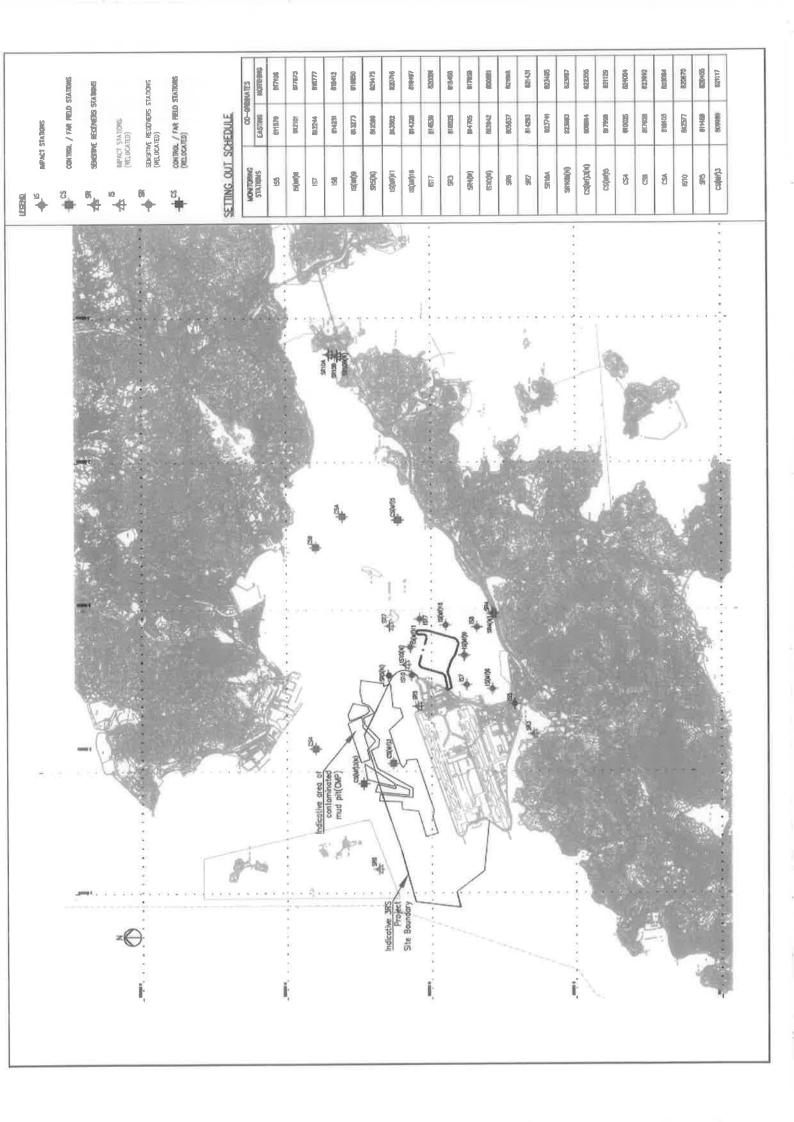
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Figure 3

Water Quality Monitoring Stations



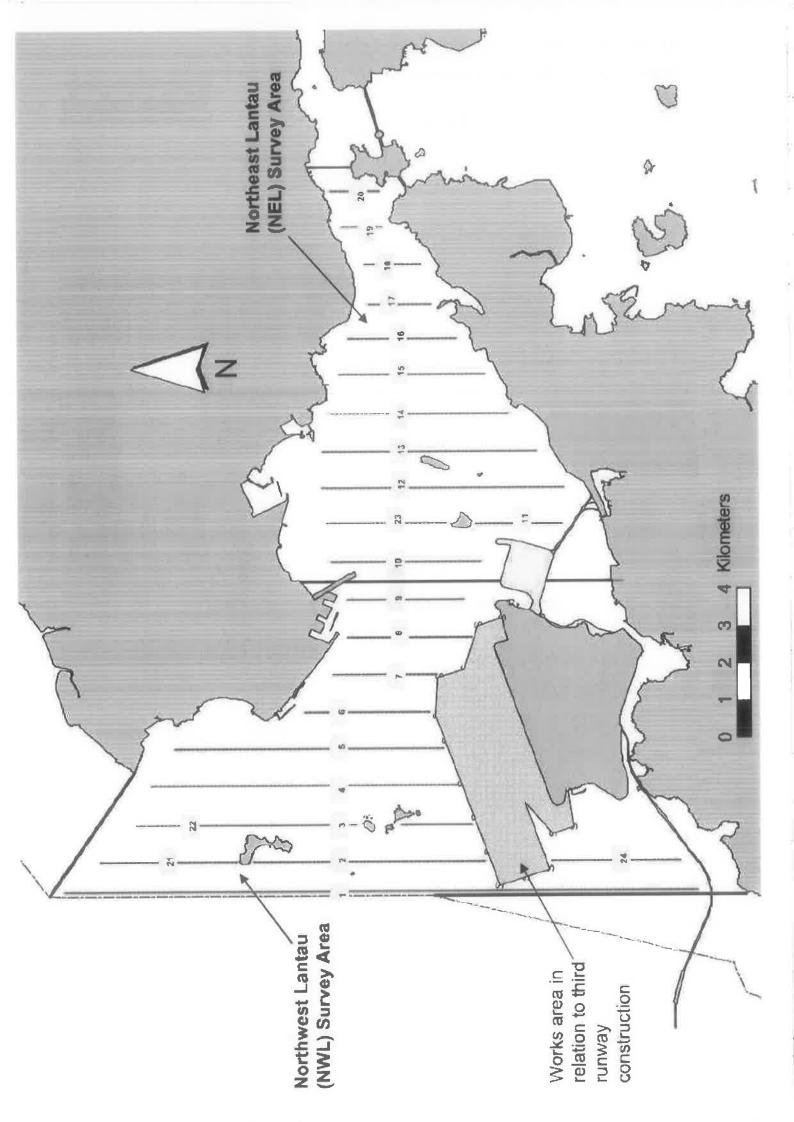
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Figure 4

Ecological Monitoring Transect Line and Layout Map



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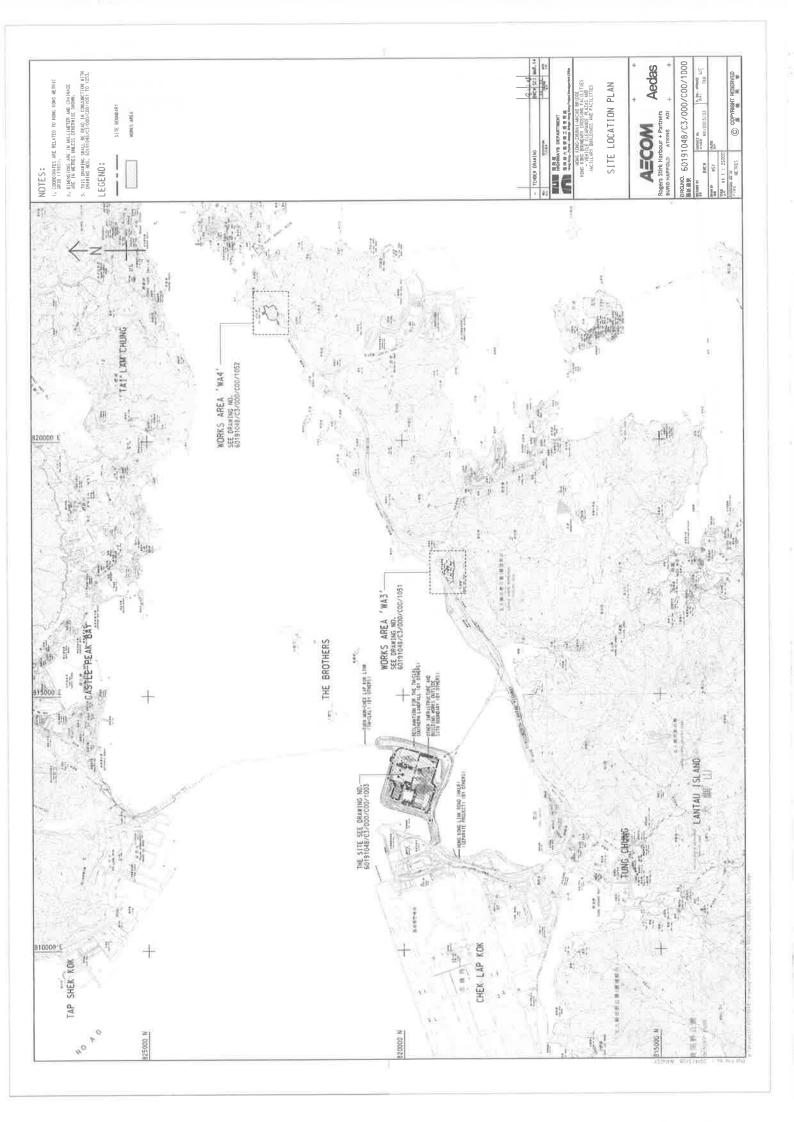
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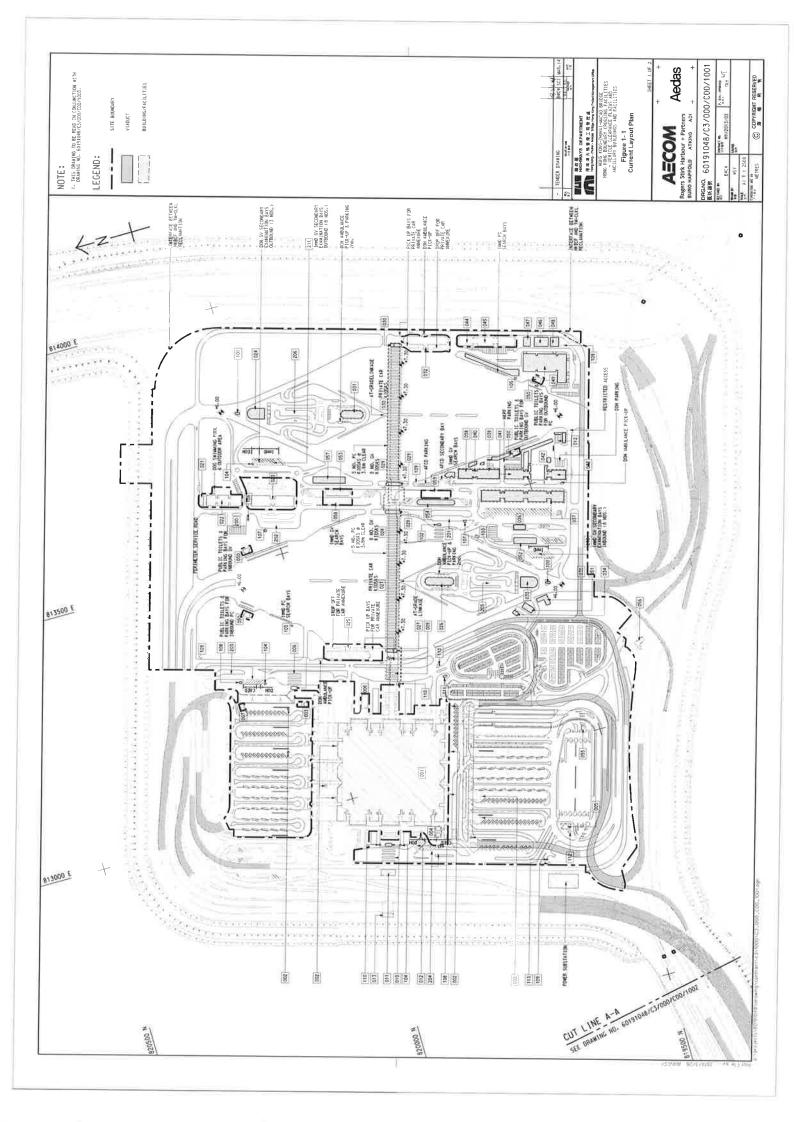


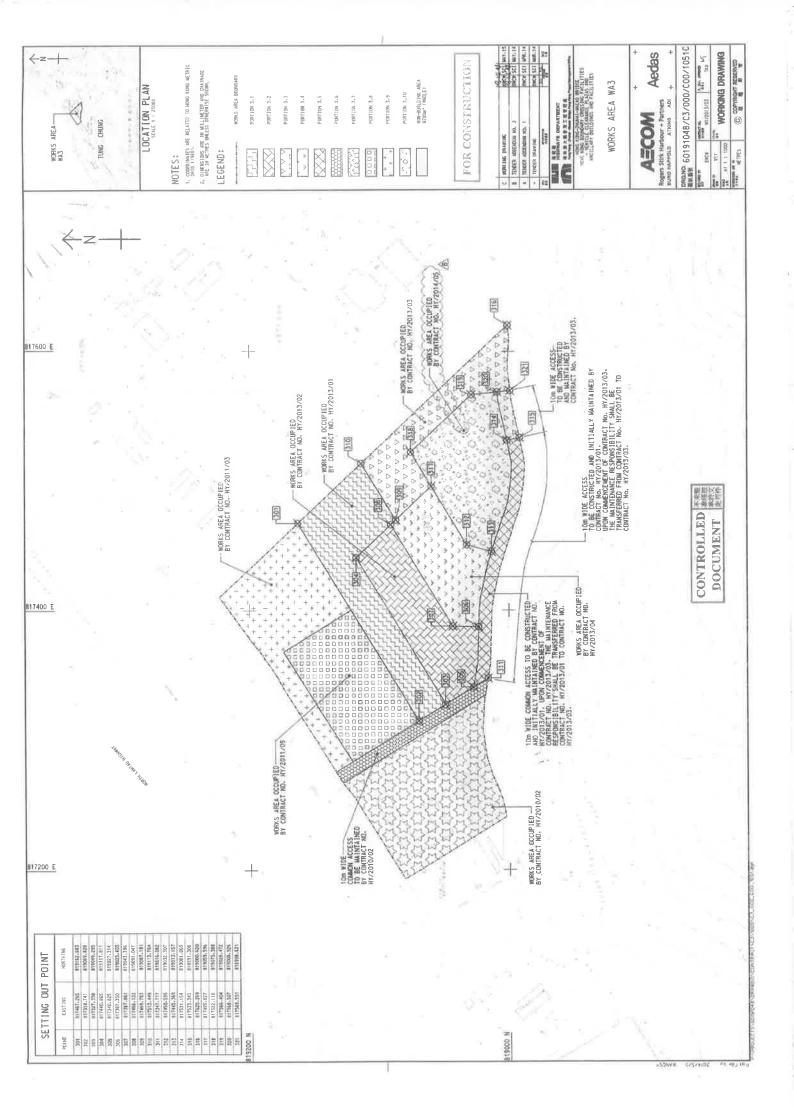
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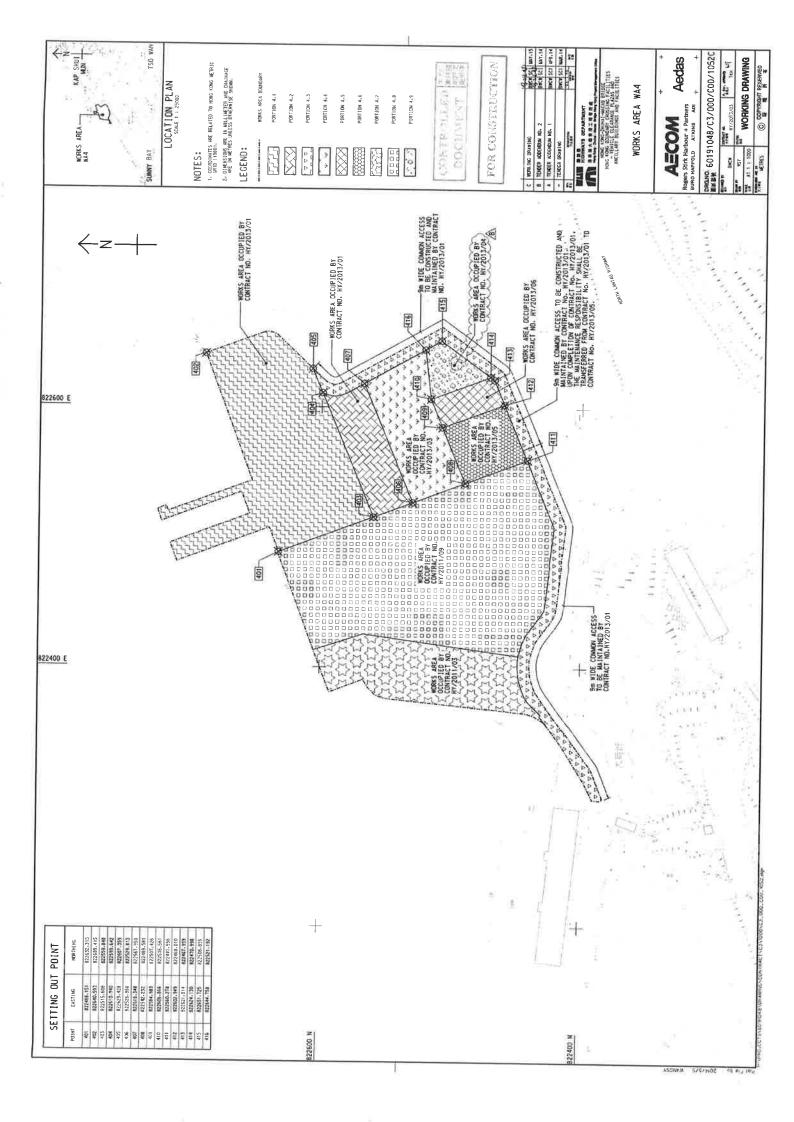
Appendix A

Location of Works Areas









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Appendix B

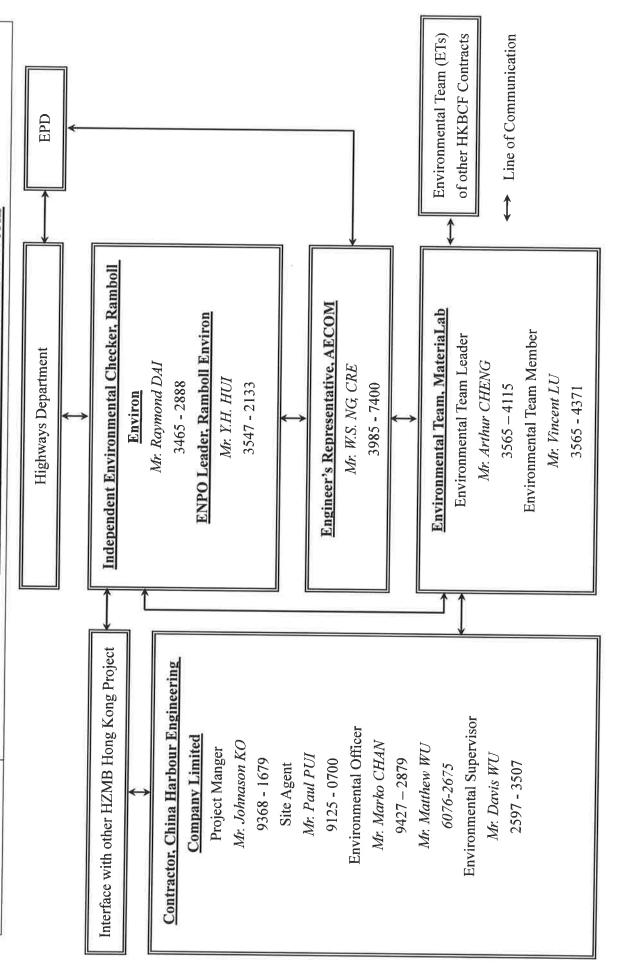
Project Organization for Environmental Works



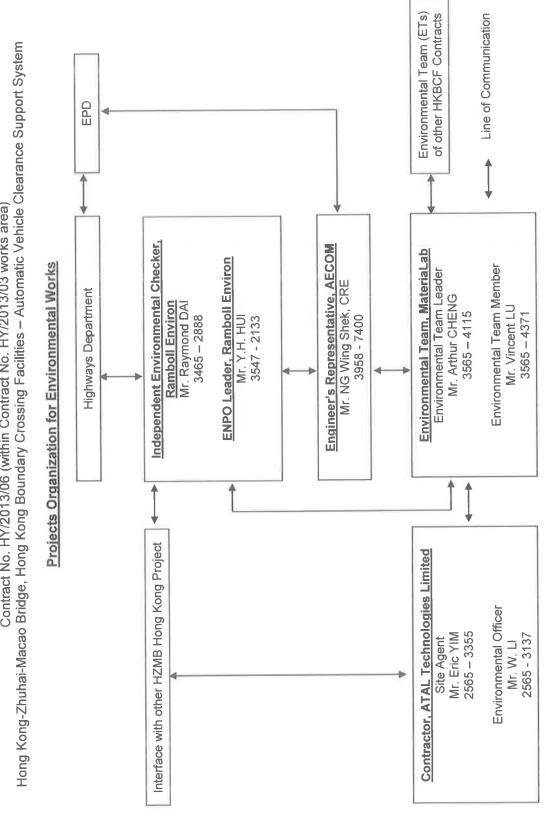
CHINA HARBOUR ENGINEERING COMPANY LIMITED

Contract No. HY/2013/03 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Projects Organization for Environmental Works



Contract No. HY/2013/06 (within Contract No. HY/2013/03 works area)



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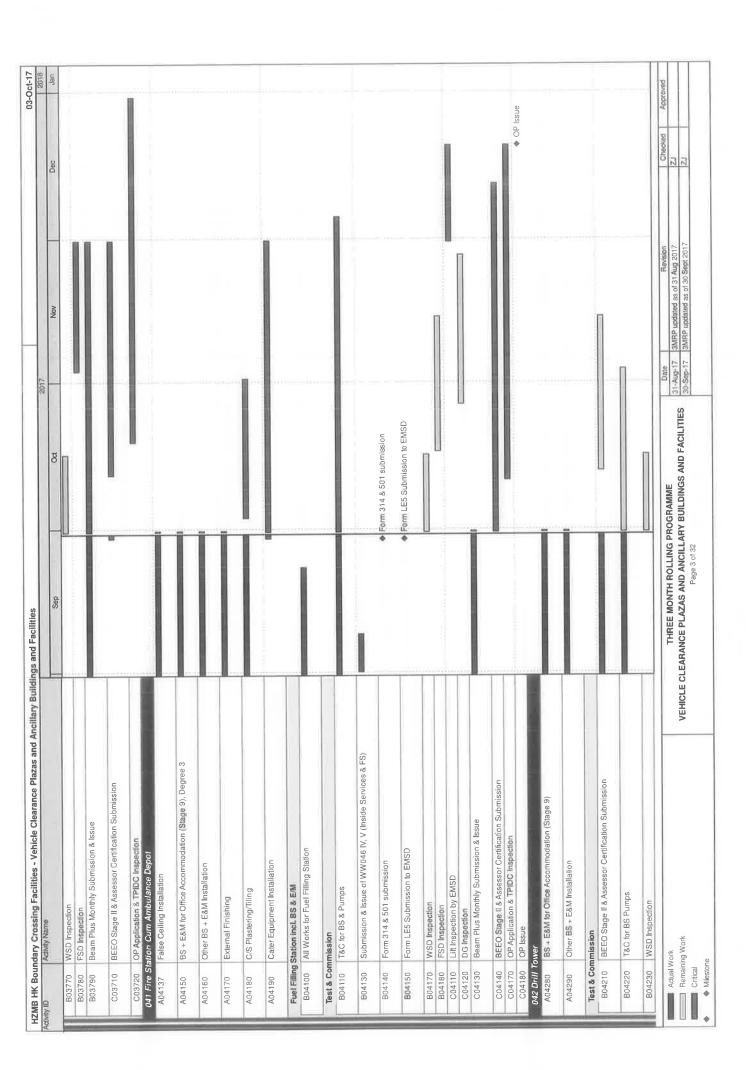
Appendix C

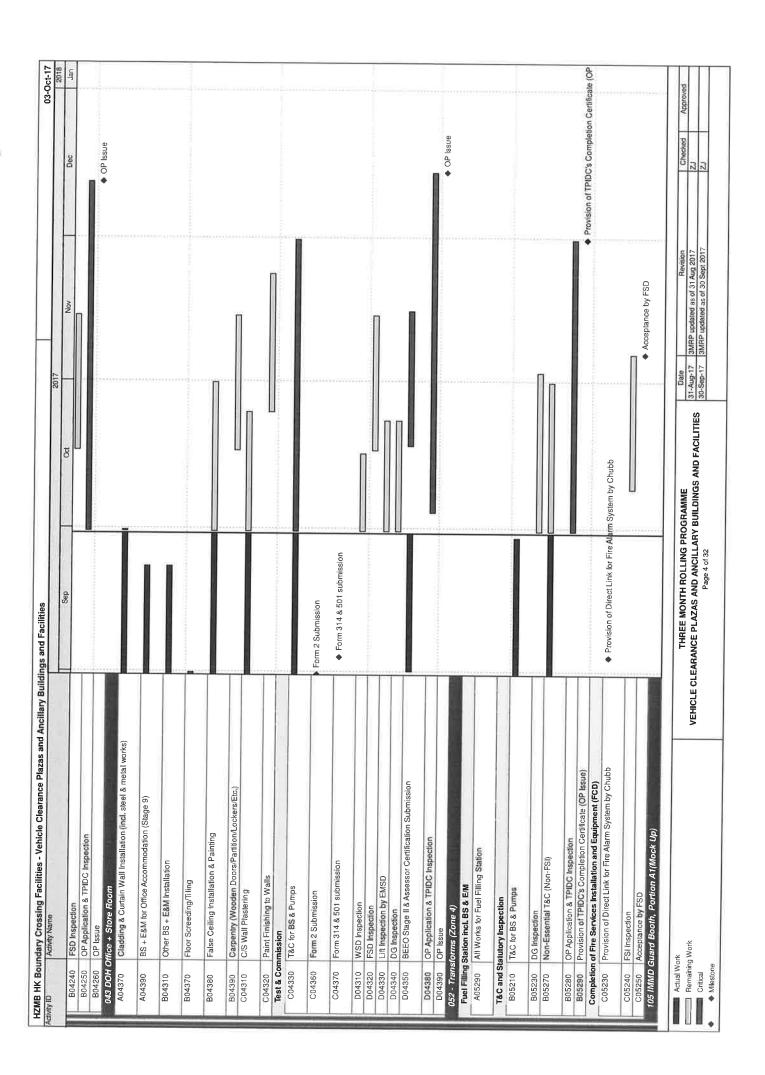
Construction Programme

	Activity Name		2017		2018
Course france		Sep	00	Nov	Dec Jan
HKBCF - VCP & Ancillary Buildings and Facilities, DWP04 (+ DRMS CONTRACT DATES	and Facilities, DWP04 (+ DRMS 2)				
A110 KD11 Achievement of Stage 10 A1160 KD16 Achievement of Stage 15 A1170 KD17 Achievement of Stage 15 A1190 KD18. A Arhievement of Stage 15	KD11 Achievement of Stage 10 of the Works (730 days, 08 Apr. 17) KD16 Achievement of Stage 15 of the Works (548 days, 08 Oct, 16) KD17 Achievement of Stage 16 of the Works (548 days, 08 Oct, 16) KD17 Achievement of Stage 16 of the Works (548 days; 30, 101, 16 FD11)		◆ KD16 Achievement of Star ◆ KD17 Achievement of Star	 KD16 Achievement of Slage 15 of the Works (548 days, 08 Oct.16) KD17 Achievement of Slage 16 of the Works (548 days, 08 Oct.16) KD17 Achievement of Slage 16 of the Works (548 days, 08 Oct.16) 	 KD11 Achievement of Stage 10 of the Works (73 days, 08 Oct. 16) days, 08 Oct. 16) KD18A Achievement of Stage 18 of the Works (478 days; 30,
	KD18B Achievement of Stage 19 of the Works (558 days; 18 Oct, 16 EOT 1)				♦ KD18BAch
	KD18C Achievement of Stage 20 of the Works (670 days; 07 Feb. 17)		★ KD18C Achievement of Stage 20 of the Works (670 days; 07 Feb. 17) ★ KD18C	ks (670 days; 07 Feb. 17)	Feb. 17) • KD18D Achievement of State 21 of the Works (725 days: 23 Apr. 17)
A1180E KD18E Achievement of Stage 2	KD18D Achievement of Stage 21 of the Works (745 days: 23 Apr. 17) KD18E. Achievement of Stage 22 of the Works (835 days; 22 Jul. 17)		1-000mg	X • X • Y • Y • Y • Y • Y • Y • Y • Y •	◆ KD18E Achievement of Stage 22 of the Works (8)
A1180F KD18F Achievement of Stage 2 A1210 KD21 Achievement of Section II	KD18F Achievement of Stage 23 of the Works (730 days; 08 Apr. 17) KD21 Achievement of Section IIA of the Works (770 days; 18 May 17)		•	 ▼ KD18F Achievement of Stage 25 of the Works (150 days, of Apr. 17) ◆ KD21 Achievement of Section 	KD21 Achievement of Section IIA of the Works (7)
П	KD22 Achievement of Section IIB of the Works (770 days, 18 May 17) KD3.4 Achievement of Section IIC of the Works (770 days, 18 May 17)			♦♦	KD22 Achievement of Section IIB of the Works (* KD23 Achievement of Section IIC of the Works (*
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A0330 Contract Date for Access to Exte	ocations of the Site Contract Date for Account Area for Contract HY/2013/01 for ELV Contract Date for Account Area for Contract HY/2013/01 for ELV		Contract Date for Access to External Area for Contract HV/2013/01 for ELV System Installation (570 days)	- Contract HY/2013/01 for ELV Systemilns	stallation (570 days)
A0340 Contract Date for Access to Exit	Contract Label for Access to External Area for Contract HY/2013/02 for ELV Survivan herball-she for Access to External		 Contract Date for Access to External Area for Contract HY/2013/02 for ELV System Installation (560 days) 	r Contract HY/2013/02 for ELV System:Ins	istallation (560 days)
A0350 Contract Date for Access to Extended Installation (560 days)	Option installation (200 co.p.) Confract Date for Access to External Area for Contract HY/2013/04 ELV System Installation (560 days)		 Contract Date for Access to External Area for Contract HY/2013/04 ELV System Installation (580 days) 	r Contract HY/2013/04 ELV System Instal	llation (560 days)
PORTION A1					
Portion A1 Structures					
Structure Deck					
SA9470 Parapet (38 pour) & E&M Works	ks				
SA9480 Bituminous Paving (492 ton) (KD25)	KD25)				
SW8130 Parapel W8-1 (16 pour) & E&M Works	/ Works				
	ble Laying				
SW8150 Bltuminous Paving W8-1 (347 ton) (KD25)	ton) (KD25)				
Retaining Watl W9-1 SW9120 Backfilling W9-1					
SW9130 Parapet W9-1 (16 pour) & E&M Works	vi Works				
SW9140 Drainage System & Cable Laying	ing				
SW9150 Bituminous Paving W9-1 (347 ton)	(not)				
047 - Fresh Water Pumping Station, Portion A1 & A2 A04780 BS installation + E&M (Degree 3)	ortion A1 & A2				
A04790 T&C for BS & Pumps					
Actual Work	, MEDIAN		S AND FACILITIES	Revision -17 3MRP updated as of 31 Aug 2017	Checked Approved
Critical Critical			30-Sep-17		77

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Du4985 Energisation by CLP				4110	
E04940 BS ± E&M Installation (KD9) (Doctor)					
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E04950 BS + E&M Installation (KD10) (Deoree 3)			****		
T&C and Statutory Inspection					
F04910 Essential T&C (FSI)			0.04		
F04920 Non-Essential T&C (Non-FSI)					
F04950 Submission & Issue of WW046 IV, V (Inside Services & FS)					
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	Discharge	Discharge Licence Issued by FPD		0.0000000000000000000000000000000000000	
G04940 OP Application & TPIDC Inspection					
Portion A1 Buildings					
012 - DOH Disinsection Area and Store Room 1, at Portion A1					
A01250 Finishing					
A01970 DC FOM CALLA					
BS + EMM lot Office Accommodation (Stage 9) (Degree 3)					
A01280 Other BS + E&M Installation					
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CU1260 OP Issue			5.0.01	♦ OP Issue	
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BO3590 OP Application & IPIDO Inspection					
110				◆ OP Issue	
-	A1 & B)		9000		1000
A03758 Paint Finish					
Test & Commission				10.00	
B03710 T&C for BS & Pumps				***	
B03750 Lift Inspection by EMSD		- 43			
Actual Work	TO CHARLES TO THE CANADA TO TH		Dark		
☐ Remaining Work	VEHICLE CLEARANCE DI AZAS AND ANCILI ADV DIIII DINCE AND FACILITATA		-		Approved
Critical	Page 2 of 32		30-Sep-17 3MRP updated as of 30 Sept 2017	Z	
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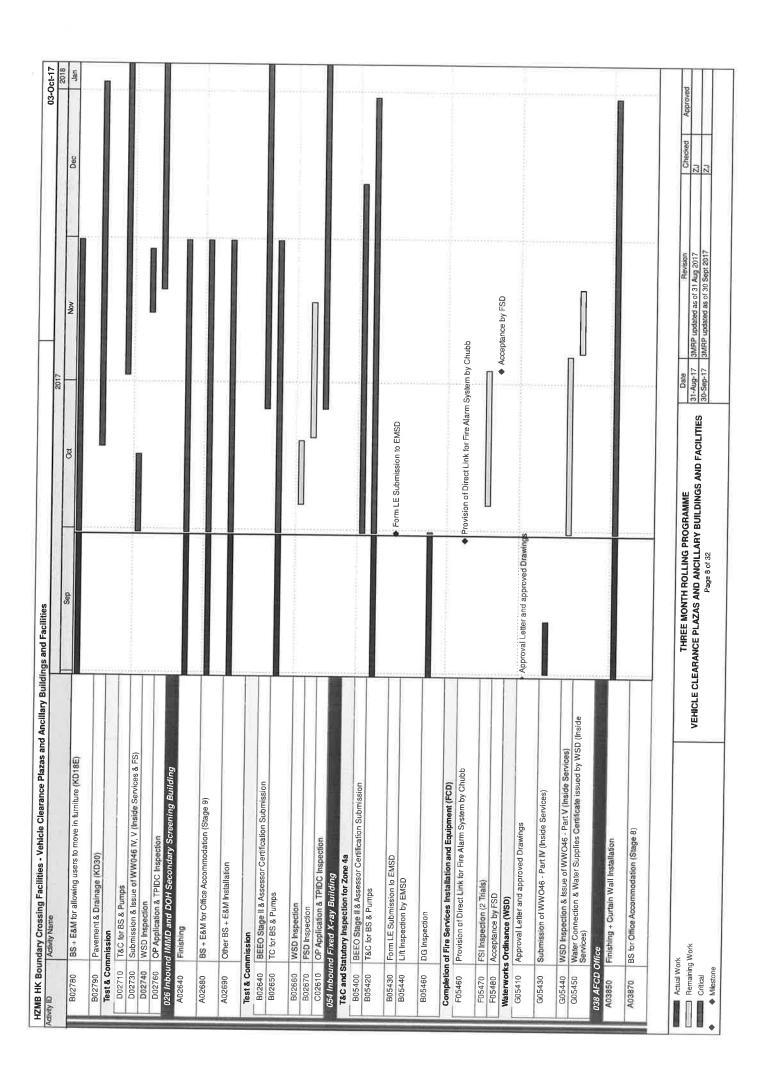


Activity 1D	clivity ID Activity Name		2017	Con	or or
		Sep	Nov	Dec	Jan
B10550	BS for Office Accommodations (KD9)				
B10560	BS + E&M for Office Accommodation (KD10)				
B10570	Other BS + E & M Installation				
C10540	T&C for BS & Pumps				
C10550	Form 314 & 501 Submission		◆ Form 314 & 501 Submission	CONTROL OF COMMENTS OF AN	100
C10560	FS inspection by FSD				ĺ
C10570	OP Application & TPIDC Inspection				ĺ
Facade Er	Facade Envelop Structure Installation				
B10590	Fabrication of F/C System				
C10520	Steel Frame Installation				
C10530	Envelop Cladding and Roofing Panel Installation				I
210 - Imm ER5830	210 - ImmD GV Secondary Examination bays Inbound ER5830 Construction of the Area and Access to the Interface Contractor				
xternal W	External Works for Portion A1				
Drainage Works	Works				
ED5590	Drainage Works (774m & 35MHs), Stage 2				
ED5600	Sewerage (300m & 9MHs), Stage 2				
ED5610	Drainage Works (773m & 34MHs), Stage 3				
ED5620	Sewerage (269m & 7MHs), Stage 3				
Material prima	or included				
EW5010	Fresh Water Main Laying (1660 m)				
EW6010	Flushing Water Main Laying (967 m)				
EW6180	Chilled Water Pipe Laying in Portion A1 (external)				
Duct Layi	Duct Laying for Utilities. Telecom Cabling, TCSS & Lighting				
EU5260	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV				
EU5270	Duct & Cable Laying for TCSS & Lighting				
Roadworks	ks				
ER1520	Subbase (8500 ton), Stage 1				
ER3540	Bitumen Pavement (10000 ton), Stage 1				
ER3550	Rigid Pavement (900 m3), Footpath & EVA, Stage 1				
ER5530	Subbase (8829 ton), Stage 2 (Remaining)				
ER5540 ER5550				4 0	
Hailing ER0820	Railing				
Road Furniture	miture				
Actual Work	Work	THREE MONTH ROLLING PROGRAMME	Date Revision 31-Aug 2017	Chaded	Approved
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Milestone					

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Activity ID Activity Name		/1-O-50
		2018
EB0800 FIV Installation	Sep Oct Nov	Dec Jan
ER0830 Road Furniture		
PORTION A2		
Portion A2 Structures		0 (10)
046 - Refuse Collection Point, Portion A2		
no for Office Accommodations (Stage 8) (KD9)		33110
A04640 BS + E&M for Office Accommodations (Stage 9) (KD10)		00011
A04660 Other BS + E&M Installation		
Took 9.		
5		00-4
B04630 Submission & Issue of WW046 IV, V (Inside Services & FS)		
BO4650 WOU INSpection		
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1 6		◆ OP Issue
B04820 BS for Office Accommodations (Stage 8) (KD9)		uca
B04830 BS + E&M for Office Accommodation (Stage 9) (KD10)		
BOAR40 Other BS . ESM inchallotton		
Test & Commission		
B04850 T&C for BS & Pumps & SWT		2007
	hoo	
B04870 DG Inspection		
COARTO Form 344 g. End authorities.		
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C04870 OP Issue		
5		• Or issue
SW9220 Backfilling for Retaining Wall W9-2		
SW9230 Parapet for Retaining Wall W9-2 (22 pour) & E&M Works		
SW9240 Retaining Wall W9-2 Designant System 9 Could I		29F1-
1.9		
Drainage Works		
ED2280 Drainage Works (228m & 15MHs)		
ED3560 Sewerane (320m & 9MHe)		4014
Comorage (SALIII & SMITS)		>***
9		
EW2290 Fresh Water Main Laying (236m)		
Actual Work	THREE MONTH ROLLING DROCKDAMME Date Revision	Charlest
Bemaning Work Critical Critical	S AND FACILITIES 30-Sep-17 3MRP updated as of 31 / 30-Sep-17 3MRP updated as of 30 is	ZJ
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Activity ID	ctivity ID Activity Name	Sep 0ct Nov	Dec	Jan
EW2300	Flushing Water Main Laying (91m)			
Duct Laying EUS280	Duct Laying for Utilities Telecom Cabling, TCSS & Lighting EUS280 Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV			n
EU5290	Duct & Cable Laying for TCSS & Lighting			
PORTION !				
Portion B Structures	tructures			
Retaining Wall W7-2	Wall W7-2			
S70970	Retained Wall W7-2 Parabel (2 pour) & E&M Works			
S70980	Retaining Wall W7-2 Drainage System & Cable Laying			
	Retaining Wall W7-2 Bituminous Paving (79 ton) (KD25)			
Retaining V	Wall W6-1 Detaining Mell W6-1 Deramat (8 point) & FSM Works			
S62080	Retaining Wall W6-1 Drainage System & Cable Laying			
S62210				
Bay 25 - 29				
C02960	Internal Finishes & Cable Containment			
C02970	BS + E&M Installation for AVCSS			
Portion B Buildings	uildings			
027 028 In	027 028 Inbound Kiosks & 029 Outbound Kiosks			
A02720	Superstructure			
A02730	Construction of Subway Entrance			
A02740	Construction of Subway Toilets			-
A02750	Finishing			
A02760	BS for Office Accommodation			
A02770	BS + E&M for office accommodation (Stage 9)			
A02790	BS + E&M for AVCSS Cabling (KD18B)			
B02720	Other BS + E&M Installation			
Test & Commission	mmission			
B02810	T&C for BS & Pumps			
B02830	Submission & Issue of WW046 IV, V (Inside Services & FS)			
B02840	WSD Inspection	4.07		
B02860	B02860 OP Application & TPIDC Inspection 027.028 Inhound Kinsks, 8.029 Outhound Kinsks, Section IX, Subject to Excision	lioi		
B02750	Superstructure			
B02770	BS + E&M for AVCSS Works (KD18D)			
Actual Work		Date 31-Ain-17	hecked	Approved
Remain Critical	g Work	VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES 790-56p-17 3MRP updated as of 30 Sept 2017 Page 7 of 32	27	
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Activity ID	Activity Name	201/		0102
		Sep Oct Nov	Dec	Jan
A03880	BS + E&M for Office Accommodation (Stage 9)			
A03890	Other BS + E&M Installation			
Test & Co	Test & Commission			-
B03810				
B03840	Submission & Issue at WW048 IV, V (Inside Services & FS)			ı
B03850	WSD Inspection			
B03880	Form 314 & 501 submission			
C03820	Form 2 Submission	Form 2 Submission		
C03830	Lift Inspection by EMSD			
C03850				
C03870	OP Application & TPIDC Inspection			П
339 Polic	ø		ALC: COMMON TOWNS OF STREET	ı
A03940	Finishing + Curtain Wall Installation			ı
A03950	BS for Office Accommodation (Stage B), & for TCSS works (KD14)			
A03960	BS + E&M for Office Accommodation (Stage 9)			
A03970	Other BS + E&M Installation.			
Fuel Fillin	Fuel Filling Station incl. BS & E/M			
B03910	All Works for Fuel Filling Station			
Test & Co	lest & Commission			
B03930	Submission & Issue of WW046 IV, V (Inside Services & FS)			
070000				
B03950	Beam Plus Monthly Submission & Issue			
B03960	Form 314 & 501 submission			
C03920	DG Inspection			
C03960				
C03970	T&C for BS & Pumps			П
C03980	WSD Inspection			
C03990	Т			1
D03930				ı
A04050	Finishing (KD9)			
A04060	BS for Office Accommodation (Stage 8), & for TCSS works (KD14)			
A04070	BS + E&M for Office Accommodation (Stage 9)			1
Actual Actual Remain	Addual Work Addual work	THREE MONTH ROLLING PROGRAMME 31-Aug-17 3MRP updated as of 31 Aug 2017 SO-Sep-17 3MRP updated as of 30 Sept 2017 Page 9 of 32	ZJ ZJ ZJ	Approved

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Engado Claddi	III Divid	des	Ö	Nov	Dec	arus.
ra i	Jing System					
B04040 St	Steel Frame Installation					
B04050 CI	Cladding Panel Installation					
Glass Wall			6500			
C04040 Ste	Steel Frame Installation			THE RESERVOIS THE PROPERTY OF THE PERSON NAMED IN COLUMN TWO T		
004050						
116	Glass Panel Installation					
и	Form 314 & 501 submission		i.			
D04030 T&	T&C for BS & Pumps	2121222	P Form 314 & 501 submission			
D04040 Fo	Form 2 Submission	◆ Form 2 Submission	\$1000 Block Color (1000) and the property of the Color (1000) and the Co	All to reason personal property and a second control of		
D04050 Lift	Lift Inspection by EMSD					
	FSD Inspection					
D04080 OP	OP Application & TPIDC Inspection	T				
22 HKPF UVS	102 HKPF UVSS Monitor Room					
A10230 Fin	Finishing (False Ceiling) (KD9)					
A10240 BS	BS for Office Accommodation (Stage 8)		=====	555488	OH::19	
A10260 BS	BS + E&M for Office Accommodation (Stage 9)			***		
A10270 Oth	Other BS + E&M Installation					
A10990	797 to Do D.					
	so for book rumps					
C10220 WV	WWO 46 Part IV, V Submission (inside Service + FS)	◆ WWO 46 Part IV, V Submission (Inside Service + FS)	5 Service + FS)			
C10230 Plu	Plumbing Inspection by WSD					
C10240 FSI	FSI Form 314 & 501 Submission	A FQI Form 314 9 504 Cubming		-6.18)	90,400	
C10250 FS	FS inspection by FSD					
10260 TP	C10260 TPIDC inspection				~	
Metal Canopy a	py and Root Installation				STATE OF THE PARTY	
	eel Frame installation	BH .		h-(=)+		
B10240 Gla	Glass panel, metal cladding panel installation					
3 Police Insp	pection Post					
10350 Fin	A10350 Finishing (False Ceiling) (KD9)					
A10360 BS	BS for Office Accommodation (Stage 8)	100000000000000000000000000000000000000	THE PERSON NAMED AND ADDRESS OF THE PERSON NAMED AND ADDRESS O			
A10370 BS.	RS + F&M for Office Accommodation (0)					
	o + Exim for Oilice Accommodation (Stage 9)				- Dana -	
A10380 Othe	Other BS + E&M Installation					
C10310 T&C	T&C for BS & Pumps					I
Actual Work						
Remaining Work		THREE MONTH ROLLING PROGRAMME VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES Page 10 of 32	ROGRAMME IY BUILDINGS AND FACILITIES	31-Aug-17 3MRP updated as of 31 Aug 2017 30-Sep-17 3MRP updated as of 30 Sept 2017	Checked ZJ ZJ ZJ	Approved
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C10330	WWO 46 Part IV, V Submission (inside Service + FS)	ubmission (inside Service + FS)	
C10340	WSD inspection		
C10350	FS inspection by FSD		
C10360	TPIDC Inspection		
HPL Com	8		
B10340	Steel Frame Installation		
B10350	HPL Cladding Panel Installation		
057 Trans	057 Transformers (Zone 2)		
Fuel Fillin	Fuel Filling Station incl. BS & E/M		
A05790	All Works for Fuel Filling Station		
T&C and	T&C and Statutory Inspection for Zone 2a & 2b		
C05700	T&C for BS & Pumps		
F05700	Essential T&C (FSI)		
F05710	Non-Essential T&C (Non-FSI)		
F05720			
F05730	Provision of TPIDC's Completion Certificate	◆ Provision	Provision of TPIDC's Completion
Completi	등		
F05750	Application for FSI Inspection (FSV501) c/w FSI Plan (FSV314)	Application for FSI Inspection (FSI/50) c/w FSI Plan (FSI/314)	
F05760	Provision of Direct Link for Fire Alarm System by Chubb	◆ Provision of Direct Link for Fire Alarm System by Chubb	
F05770	FSI Inspection (2 Trials)		
F05780	Acceptance by FSD	◆ Acceptance by FSD	
DG Licen	Se		
G05710	Approval Letter and approved Drawings	◆ Approval Letter and approved Drawings	
G05730	DG Inspection		
107 - C&L	8		
C10740	Finishing		
C10750	BS for Office Accammodation (Stage 8)		
C10760	BS + E&M for Office Accommodation (Stage 9)		
C10770	Other BS + E&M Installation		
C10780	T&C for BS & Pumps		
C10784	FS inspection by FSD		
C10790	TPIDC Inspection		
113 - Fie	ē I		
B11340	Finishing		
Actual	Actual Work	Date Revision 31-Aug-17 3MRP updated as of 31 Aug 2017	Checked Approved ZJ
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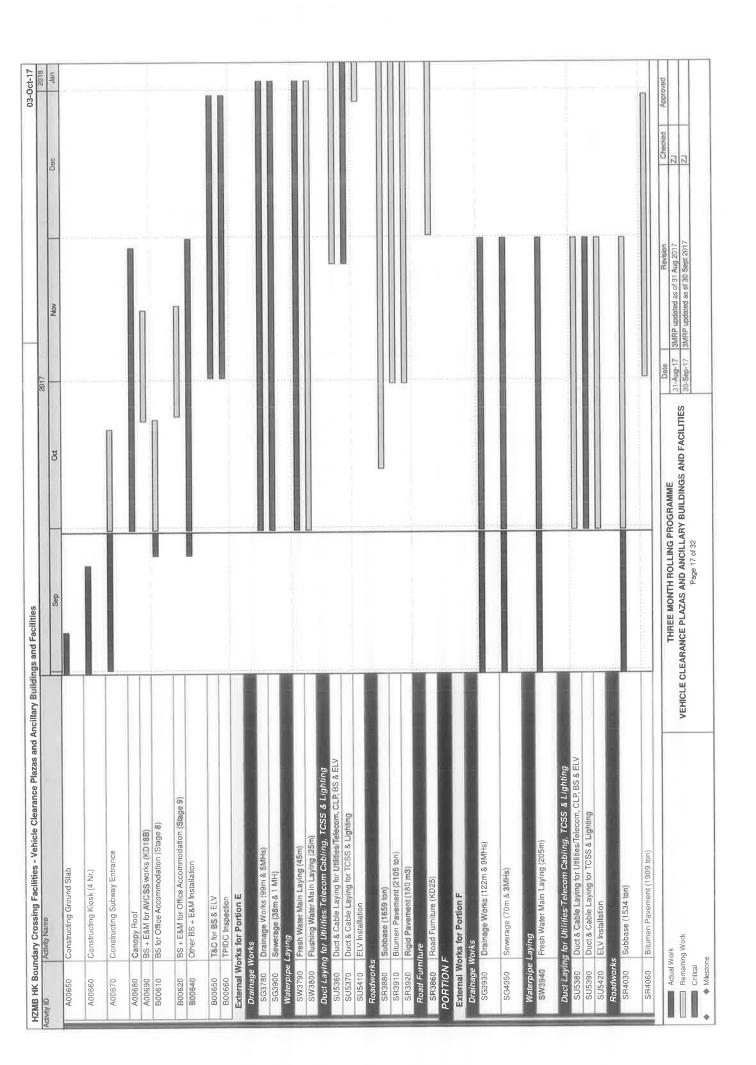
B 11350 BS for Office Accommodation (Stage 8) B11360 BS + E&M for Office Accommodation (Stage 9)			2017		0000
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Ī	den	Oct	Nov	Dec	Jan
B11370 Other BS + E&M Installation					
B11380 T&C for BS & Pumps				70.000	
B11384 FS inspection by FSD					
B11390 TPIDC Inspection					
External Works for Portion B		000,648.00,000,000 to 154.44.14.14.14.14.14.14.14.14.14.14.14.14			
BB1480 ELV Works & T&C in Location 1.7A					
Works in Location 1 7B			Ke)ruli		cm.
BB1490 ELV Works & T&C in Location 1,7B			7793		******
Waterpipe Laying		***************************************	THE CONTRACTOR OF THE PARTY OF		
EW6100 Fresh Water Main Laying (1000m), Stage 3				П	=======================================
EW6110 Flushing Water Main Laying (931m), Stage 3				П	****
EW6190 Chilled Water Pipe Laying in Portion B (external)					
Duct Laying for Utilities/Telecom Cabling, TCSS & Linhting	4		3300		
EU5300 Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV					
EU5310 Duct & Cable Laying for TCSS & Lighting			1000		
EU5550 ELV Installation			m325		
Roadworks ER1640 Subbase (21000 ton). State 1					1
ER3590 Rithman Pavement (2000) Chara 4					
ER\$590 Subbase (22152 ton). Stage 2 (Remaining) Road Furniture ER1620 Road Furniture					
Sign cantry ADS 306A & ADS 306B ES5250 Erection of Sign Gantry					
PORTION C Portion C Buildings					11011000
010 Inbound Coach Kiosk & Staff Subway Entrance (Subway Deleted) A01020 Base Slab & Klosk superstructure	led)				
A01030 BS + Finishing + E&M for AVCSS works (KD18A) A01040 BS + + Finishing E&M for AVCSS Cabling (KD18B)					
Actual Work Control Critical Critical	THREE MONTH ROLLING PROGRAMME VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES Page 12 of 32	SRAMME BUILDINGS AND FACILITIES	Date Revision 31-Aug-17 3MRP updated as of 31 Aug 2017 30-Sep-17 3MRP updated as of 30 Sept 2017	on Checked 73 2J 73 2J 72 2J	Approved
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Activity ID	ctwry ID Activity Name	Sep Oct Nov Dec
A01050 BS	BS + Finishing + E&M for Office Accommodation (Stage 9) (KD10)	
Т	Other BS + Finishing + E&M Installation	
9 - Staff Sub	009 - Staff Subway Entrance (Bay 0 - 3) & Shuttle Bus Klosks	
B00930 BS	BS + E&M & Filshing for AVCSS works (KD18A)	
B00940 BS	BS + E&M & Finishing for AVCSS Cabling (KD18B)	
B00970 BS	BS + E&M & Finishing for Office Accommodation (Stage 9) (KD10)	
C00920 T&	T&C for BS & Pumps	
C00940 TP	TPIDC Inspection	
712 - <i>DOH Disi</i> B01220 Ra	012 - DOH Disinsection Area and Store Room 1, at Portion C B01220 Raft Foundation	
	and the second s	
B01230 Su	Superstructure	
B01240 Fir	Finishing	
B01270 BS	BS for Office Accommodation (KD 9)	
B01280 BS	BS + E&M for Office Accommodation (KD 10)	
	Other BS + E&M Installation	
Test & Commission	CONTRACTOR	
E01210 Su	Submission of WWO46 - Parl I, II, III (Inside Services + FS)	Submission of WWO46 - Part I, II, III (Inside Services + FS)
E01220 Su	Submission of WWO46 - Part IV, V (Intide Services + FS)	◆ Submission of WWO46 - Fart IV, V (Inside Services + FS)
E01040	Wen benavijon	◆ WSD Inspection
	Sinspection by ESD	
	TPIDC Inspection	
4 - DOH Sec	104 - DOH Secondary Screening Station, at Portion C	
A10430 Su	Substructure	
A10435 Fi	Finishing	
A10440 BS	BS for Office Accommodation (Stage 8)	
A10450 BS	S + E&M for Office Accommodation (Stage 9)	
	Other BS + E&M Installation	
B10420 T8	T&C for BS & Pumps	
	FS inspection by FSD	
B10440 TF	TPIDC Inspection	
2	ling System	
A10465 Fa	Fabrication of F/G System	
A10470 Ca	Casted-in Items Installation	
A10480 St	Steel Frame Installation	
A10490 E	Envelop Cladding and Roof Panel Installation	
Actual Work Remaining Work	Vork	THREE MONTH ROLLING PROGRAMME 31-Aug-17 3MRP updated as of 31 Aug 2017 ZJ 30-Sep-17 3MRP updated as of 30 Sep17 ZJ 30-Sep-17 3MRP updated as of 30 Sep17 ZJ 30-Sep-17 ZMRP updated as of 30 Sep17 ZJ 30-Sep-17 ZMRP updated as of 30 Sep1 ZD 30-Sep-17 ZMRP updated as of 30 Sep1 ZMRP updated as of 30
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Figure F	108 C&ED Mobil	ile X-rav Machine Operation Office Portion C	deS	Oct			Dec	Jan
55 of the Accompanion (Stape 8) 15 o	A10850 Finis	shing						
105 105	A10860 BS fo	for Office Accommodation (Stage 8)						
Not or Size A furnity Not		+ E&M for Office Accommodation (Stage 9)						
Contraction by Standard Stan		el bo + exivi installation						
Princip Equation (1992) Princip Equation	F10830 T&C	Sfor BS & Pumps				** 1 <u>***</u>		
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Street Partie Installation Street Partie	B11050 TPID(OC Inspection						
Steel Frame Installation Emretop Cladding and Roofing Panel Installation Emretop Cladding and Roofing Panel Installation Est EMAIl roofine Accommodation Est	Facade Envelop S	Structure Installation						1
Envelop Cladding and Roofing Panel Installation		Frame Installation		Ī				
Substructure	A11070 Envel	elop Cladding and Rooling Panel Installation						
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Enishing Bis Fac Mine Accommodation Chick Accommodation Chick Accommodation Chick Accommodation Chick Bis Fac Mine Installation		structure			1-16-16			
BS is Coffice Accommodation BS + E8M for Office Accommodation Chief S + E8M for Office Accommodation Casted to the S + E8M for Office Accommodation Casted to the S + E8M for Office Accommodation Casted to the S + E8M for Office Accommodation Casted to the S + E8M for Installation Chief S + E8M for Installation Ch	C11030 Finish	hing						
BS + E8M for Office Accommodation	C11040 BS for	or Office Accommodation				20002		70000
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TRC for BS & Pumps		r BS + E&M Installation						
FS inspection by FSD	Т	for BS & Pumps						ľ
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Casted-in Rems Installation Steel Frame Installation Envelop Cladding and Roofing Panel Installation Fane Installation Envelop Cladding and Roofing Panel Installation Fane Inst	C11090 TPIDC	C Inspection				4		п
Steel Frame Installation Steel Frame Installation Envelop Cladding and Roofing Panel Installation THREE MONTH ROLLING PROGRAMME THREE MONTH ROLLING PROGRAMME Steel Frame Installation THREE MONTH ROLLING PROGRAMME 31-Aug-17 3MRP updated as of 31 Aug 2017 2.3 30-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-14 of 32 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-14 of 32 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3 10-Sep-17 3MRP updated as of 30 Sept 2017 2.3	Facade Envelop S.	Structure Installation						
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Envelop Cladding and Roofing Panel Installation Nork THREE MONTH ROLLING PROGRAMME Nork THREE MONTH ROLLING PROGRAMME Sage 14 of 32 Page 14 of 32 Page 14 of 32 Page 14 of 32 Page 15 of 30-Sept 2017 Sam Pupdated as of 30 Sept 2017 Sam Pupdated As of 30 S	D11020 Steel F	Frame Installation			n			000-1-000
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES Page 14 of 32 THREE MONTH ROLLING PROGRAMME Onto Date Revision Checked 31-Aug-17 3MRP updated as of 31 Aug 2017 AND updated as of 30 Sept 2017 2.3 2.3	D11030 Envelo	lop Cladding and Roofing Panel Installation			ا			
Page 14 of 32	Actual Work Remaining Work		THREE MONTH ROLLING PROGRAMME VEHICLE CLEARANCE PLAZAS AND ANCILL ARV RITH DINGS		11	Revision of 31 Aug 2017	hecked	pevord
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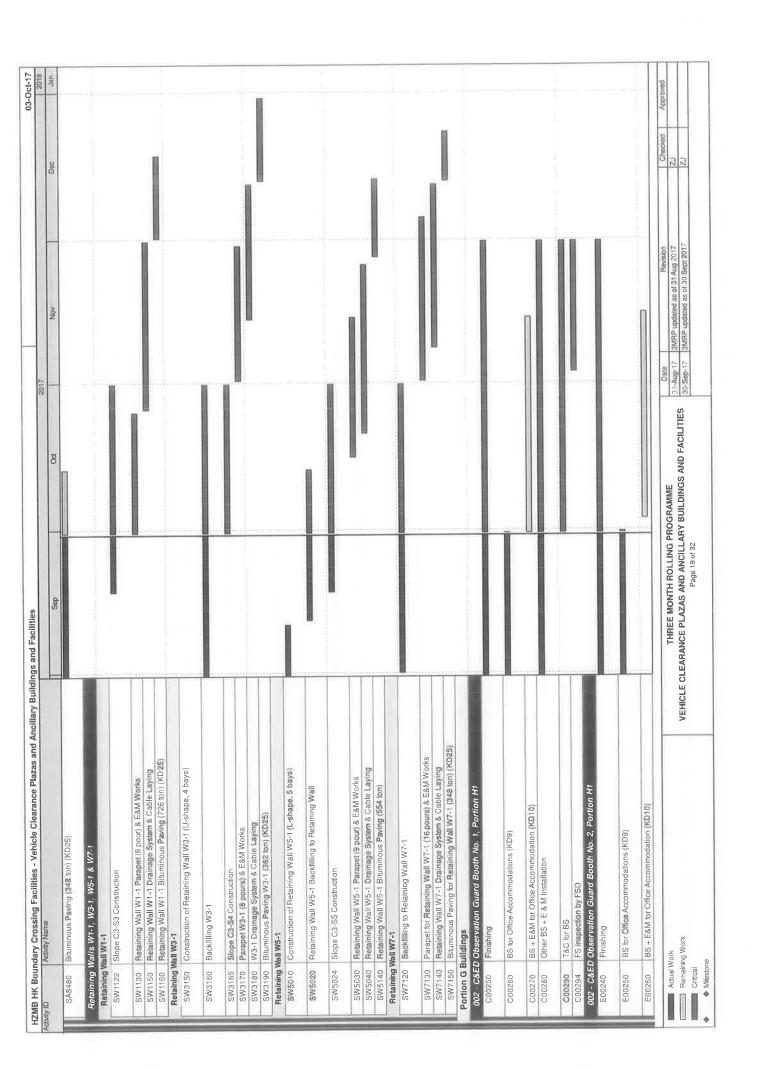
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A11120	Excavation & Blinding					
A11130	Raft Foundation					
A11140	Superstructure (Roof beams & Stabs)					
A11150	Finishing					
A11160	BS for Office Accommodation (Stage 8)					
A11170	BS + E&M for Office Accommodation (Slage 9)					
A11180	Other BS + E&M Installation					
B11160	T&C for BS & Pumps					
B11170	FS inspection by FSD					
B11180	TPIDC Inspection					
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C11340	Finishing				14-	
D11310	BS for Office Accommodation (Stage 8)					
D11320	BS + E&M for Office Accommodation (Stage 9)			u		
D11330	Other BS + E&M Installation					
F11310	T&C for BS & Pumps					
F11320	FS inspection by FSD					
F11330	TPIDC Inspection					
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ER5760	Radiation Screen Wall Construction					
ER5880	Construction of the Area and Access to the Interface Contractor	T				
cternal	External Works for Portion C					
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BB1440	Works & T&C in Location 1,2	, ala				
BB1450	Works & T&C in Location 1.8					
BB1460	ELV System installations and T&C for Contract HY/2013/01					
BB1470	Provisioning of Civil Engineering Works for 011-Emergency Generator Building (KD18)	ilding				
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SW2410	Fresh Water Main Łaying (272m)					
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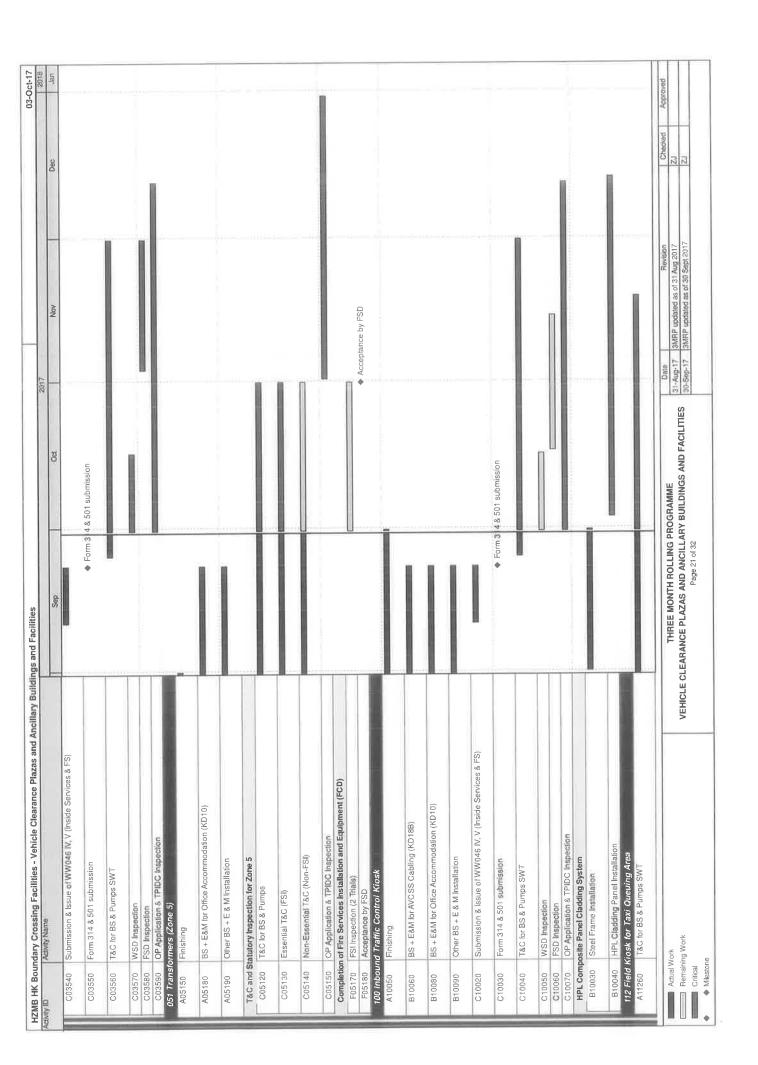


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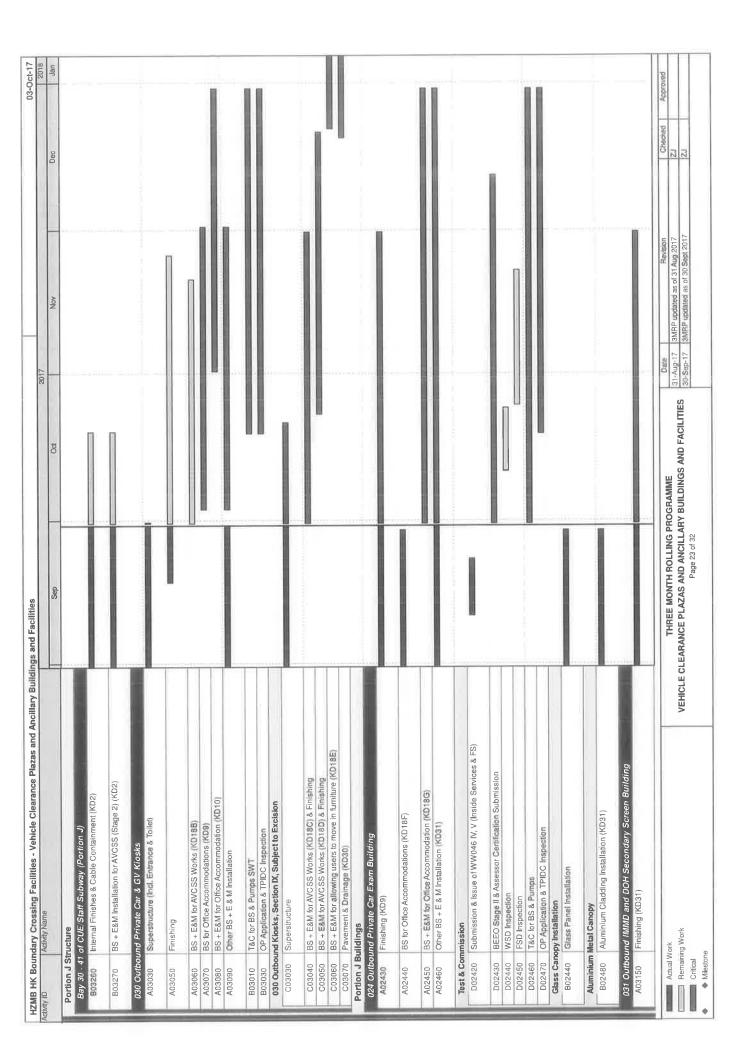
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THREE MONTH ROLLING PROCRAMME Work VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES Page 24 of 32						
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Page 24 of 32	Remaining Work		Y BUILDINGS AND FACILITIES	П	27	\sqcup
	• Milestone	Page 24 of 32		1	77	

Activity ID Activity Name			281/		2018
	Sep	OCE	Nov	Dec	Jan
G06060 DG Inspection 061 Teiecom Building		J.			
A06170 BS + E&M for Office Accommodation (KD10)					
A06180 Other BS + E & M Installation					
A06190 T&C for BS					
B06170 OP Application & TPIDC Inspection Aliminium Metal Canony			in the second se		
B06140 Aluminium Cladding Installation					
101 Outbound Traffic Control Kiosk					
A10140 Finishing					
A10150 BS + E&M for AVCSS Works (KD18A)					
A10160 BS + E&M for AVC SS Cabing (KD18B)					
A10180 BS + E&M for Office Accommodation (KD10)					
			De ()		
C10120 Submission of WWO46 - Part IV (Inside Services)	Vices)				
C10130 T&C for BS & Pumps					
C10140 WSD Inspection					
HPL Composite Panel Cladding System			->-		
B10140 Steel Frame Installation					
B10150 HPL Cladding Panel Installation (KD25)					
ê	n Area				
ER5780 Radiation Screen Wall Construction					
ER5800 Construction of the Area and Access to the Interface Contractor	Interface Contractor				
External Works for Portion J	The state of the s				
EU1500 ELV.Works & T&C in Location 1.7B					
Works in Location 1 7C	Name and Address of the Owner, where the Owner, which is the Owner, where the Owner, which is the Owner, where the Owner, which is the Ow				
EU1530 ELV Works & T&C in Location 1.7C		65			
Waterpipe Laying					
			7		
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		3		7102		2018
SW9290 Chill	Chilled Water Pipe Laying in Portion J (external)	dec	Oct	Nov	Dec	Jan
Duct Laying for	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting					
EU5420 Duc	t& Cable Laying for Utilities/Telecom, CLP, BS & ELV					
EU5430 Duct	Duct & Cable Laying for TCSS & Lighting					
FIIEEZO	C V britallotton			ma		
	installation					
ks	100 100 100 100 100 100 100 100 100 100	***************************************				1
ER4320 Subt	Subbase (15400 ton), Stage 1					I
	nen Pavement (20000 ton), Stage 1) = L.
ER4360 Rigid	Rigid Pavement (173 m3), Footpath & EVA, Stage 1			100		
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ER4300 Road	Road Furniture					CONTRACTOR OF THE PARTY OF THE
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ES5160 Erect	Erection of Sign Gantry					
POBTION K I M S & T	T & S M			77***	0000	
Portion K Building				16100	***	***
OO2 CRED OF	£					40
Appear	VIZ - C&EU Ubservation Guard Booth No. 1, Portion K					
	Supersiructure					
A00240 Finishing	hing			P4 II I		
\neg						
A00250 BS to	BS for Office Accommodations (Degree of Completion 2)					
A00260 BS+	E&M for Office Accommodation (Degree of Completion 3)			0143		2410
	Other BS + E & M Installation	Comments of the Comments of th	22.2 E 1 S 1 S 1 S 1 S 1 S 1 S 1 S 1 S 1 S 1	The state of the s		
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B00250 BS for	BS for Office Accommodations (Degree of Completion 2)					00+10
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	Order 65 + E & M Installation	2				
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Portion M Buildings	SB					n
108 - C&ED Mobil	108 - C&ED Mobile X-ray Operation Office, Portion M			i en		
B10850 Finishing	lng					
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Actual Work		THREE MONTH ROLLING PROGRAMME	1		Checked	Approved
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Contract ID	Awhitiv Marrie		7100			200
un's err	Aniali valile	des	Oct	Nov	Dec	Jan
B10860	BS for Office Accommodations (KD9)					
B10870	BS + E&M for Office Accommodation (KD10)					
B10880	Other BS + E & M Installation					
B10890	T&C for BS & Pumps					8
C10800	FSD Inspection					-
010800	OF Application & IPIDC Inspection					
C10840	C10840 Steel Frame Installation					
C10850	HPL Cladding Panel Installation					ı
104 DOH .	Š					
C10450	BS for Office Accommodations (KD9)					
C10460	BS + E&M for Office Accommodation (KD10)					
C10470	Other BS + E & M Installation					
C10480	T&C for BS & Pumps					
C10490	FSD Inspection					
D10490	OP Application & TPIUC Inspection					
Facade E	2					
D10470	Steel Frame Installation	J + 3				-
D10480	Envelop Cladding and Roofing Panel Installation					
203 · Out	203 - Outbound Coach Shuttle Bus Exam Area & Mobile X-ray Operation Area	ation Area				
ER5870	Construction of the Area and Access to the Interface Contractor					
External Works	Vorks					
Additiona	ā					
ED3236	П	CONTRACTOR OF THE PROPERTY OF		Commission of the Commission o		
ED3237	Reinstatement and constructing of north slope					
ED3336	Construct Rock Fill Slope near PCB (South East)					
ED3338	Consolidation of IIII at the Platform (South West)	***				
ED3350	Remove surcharge at the Platform (South West)					
ED3355	Construct RE slope near PCB (South West)		And the state of t			
ED3360	Construct Rock Fill Slope near PCB (South West)				1	
ED3410			♦ C2	 C2 Contractor to complete abutment at the North (2 nos.) 	(Z nos.)	
ED3420	FIII Slope around C2 abutments					
Construc	Construction of Slopes					
ED3440	Construction of fill slope (East)					
ED3520	Construct RE slope (West)					
ED3550	Construction of fill slope (North)					- :
Actual	Actual Work	THREE MONTH ROLLING PROGRAMME		Revision 7 34MRP undated as of 31 Aug 2017	Checked	Approved
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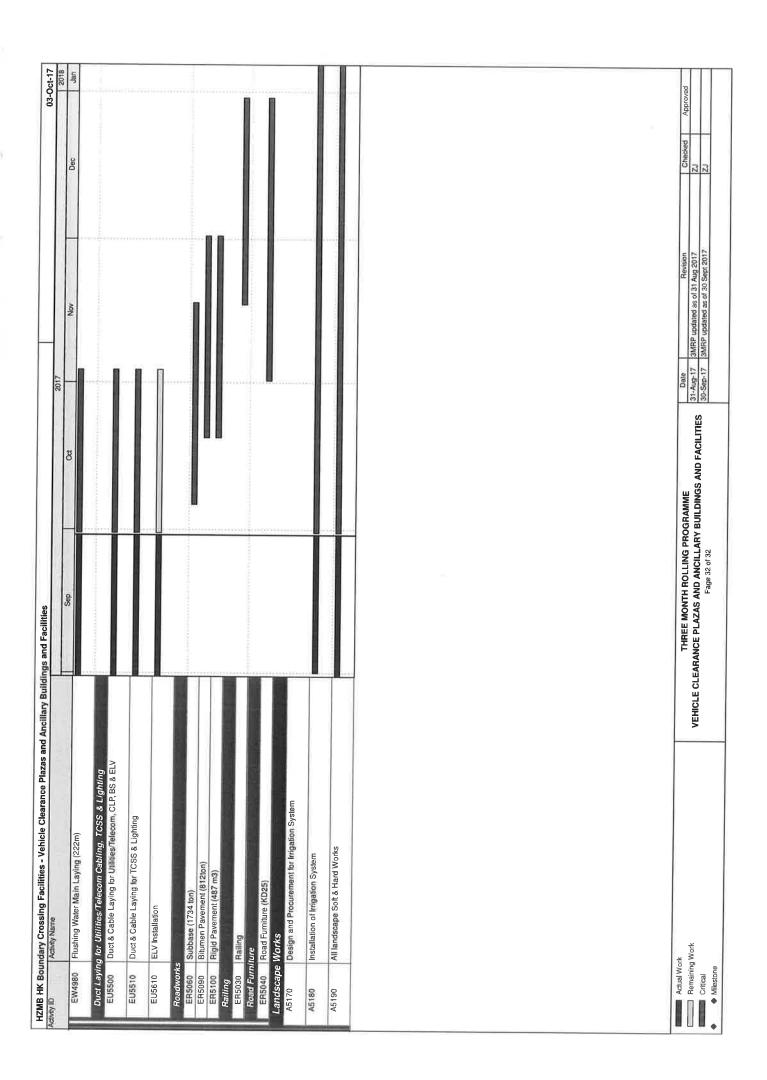
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		or Charles	Challengy Marrier			2017			2018
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D10430 Steel Frame Installation			
D10440 Envelop Cladding and Roofing Panel Installation			
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E10840 BS for Office Accommodations (KD9)			
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E10660 Other BS + E & M Installation			
E10670 T&C for BS & Pumps			
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B10630 Steel Frame Installation			
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B10640 Envelop Cladding and Rooming Panel Installation			
A10750 Other BS ± E & M Installation (KD10)			
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A10770 T&C for BS & Pumps			
A10790 OP Application & TPIDC Inspection			
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B10/40 Sieel Frame Installation			
B10750 HPL Cladding Panel Installation			
200 - Inbound/Outbound Vehicle Dectection Area			
ER5810 Construction of the Area and Access to the Interface Contractor			
202 - Outbound Cargo Mobile X-ray Opeartion Area			
ER5820 Construction of the Area and Access to the Interface Contractor			
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ER5840 Construction of the Bays and Access to the Interface Contractor			
External Works for Portion N			
Works in Location 1. /A			
Drainage Works			
ED4620 Drainage Works (964m & 56MHs), Stage 1			
ED4650 Sewerage (383m & 12MHs), Stage 1			
ED5750 Drainage Works (963m & 55MHs), Stage 2 (Remaining) ED5760 Sewerage (383m & 12MHs), Stage 2 (Remaining)			
Waterpipe Laying			
	THREE MONTH ROLLING PROGRAMME 31-Aug-17	Revision Charles as of 31 Aug 2017 ZJ	Approved
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SW9300 Chilled Water Pipe Laying in Portion N (external)		id	
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ER4660 Rigid Pavement (183 m3), Footpath & EVA		Constitution of the Consti	
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E10530 Form 314 Submission	◆ Form 3 4 Submission		
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E10540 Form 501 Submission	◆ Form 501 Submission		
E10550 T&C for BS & Pumps	T		
E10560 FS Inspection by FSD			
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Facade Envelop Structure Installation			5
A10560 Shop Drawing Submission and Approval			

A10580 Steel Frame Installation			
A10590 Envelop Charles and Baston Baston			
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ED4670 Drainage Works (2957m & 128MHs)			
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Waterpipe Laving			
EW4680 Fresh Water Main Laving (1270m)			****
EW4690 Flushing Water Main Laying (455m)	The state of the s		
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EU5480 Duct & Cable Laying for Utilities/Tetecom, CLP, BS & ELV			
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EUDOUU ELV Installation			
	THREE MONTH BOLLING BROGBANNE	Date Revision	Obecked Approximate
ing Work	VEHICLE CLEABANCE PLAZAS AND ANCILLABY BLILDINGS AND FACILITIES	7 3MRP updated as of 31 A	
	Page 30 of 32		23
◆ Milestone			

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D00230 Superstructure					
D00240 Enishing					
D00250 BS for Office Accommodations (KD9)					
D00260 BS + E&M for Office Accommodation (KD10)					
D00270 Other BS + E & M Installation					
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ED5080 Sewerage (272m & 7MHs)					
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EW4970 Fresh Water Main Laying (614m)					****
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Actual Work Remaining Work	THREE MONTH FOLLING PROGRAMME NCE PLAZAS AND ANCILLARY BUILDING	SS AND FACILITIES	7 3MRP updated as of 317	72	
Critical	Page 31 of 32		1		



		2017	2018
VBOE	UNDER VED & Ancillary Buildings and Eacilities DWD5 (+ DBM 9)	000	
- 200	VCF & Ancillary buildings and racinities, DWF3 (+ DAM 2)		
riges o	Stages of the Project Completion		
rage I:	Stage I: 51St Dec. ZUI/		◆ All Kiask 006,009,010,027,028,029 & 030
AZUTU	All Nigsk Uub, Uub, U LV, Uzb, Uzb & Usu		Road Pavement: Traffic Lanes through Klosk 4-2-2-4
AZUZU	TORU PAVEILEII. IMIIIC LAITES DIQUEI NIOSA 4-2-2-4		Northern PTI(Except SW Corner)
AZUSU	Northern Fill Except OV Comer		◆ Southern P.TI
A2040	Southern P.I.		All: Camark Area surronded by A2 A6 & A7
A2050	All Camars Area surronded by A2, A6 & A7		Bridge A 1 - 9
A2060	Sridge A1 - 9		Page 200 Assument: 2 Traffe: Japas through Kinsk 106-1089
A2070	Road Pavement: 2 Traffic Lanes Integrat Kiosk 006, 009 & 010		Post of the formal post of the f
A2080	Internal Road (up to TTA)		Interval nood (up to 1.1A)
A2090	Boundary Road (up to subbase) (Half Lane)		Society Fencion
A2100	Security Fending		Seciple 19 rolled and C
A2200	Completion of Buildings		
omplet	Completion of Works		
tage 1:	Stage 1: Klosks of 906, 009, 010, 027, 028, 029 & 030		
Kiosks of 027	nf 027		
K010	9-Kiosks: RC Wall & Rool		
K020	9-Kiosks: Frinthing Glass Window & Door		
K030	9-Kiosks: Degree 3 Handover	◆ 9-Klosks: Degree 3 Handover	
K032	Remaining 12-Kiosks: RC Wall & Roof		
K034	Remaining 12-Klosks: Finishing, Glass Window & Door		
K036	Remaining 12-Kloska: Degree 3 Handover		 Remaining 12-Klosks: Degree 3 Handover
K040	Installation of Steel Y-Junction, remaining		
K050	Installation of Cladding remaining		
Kiosks of 028	of 028		
K150	5-Kiosks: RC Wall & Roof		
K160	5-Kiosks: Finishing Glass Window & Door		
K170	5-Kiosks: Degree 3 Handover	• 5-Klosks: Degree 3 Handover	
K172	Remaining 5-Kiosks: RC Wall & Roof		
K174	Remaining 5-Kiosks: Finithing, Glass Window & Door		
K175	Remaining 5-Kiosks; Degree 3 Handover		 Remaining 5-Kiosks: Degree 3 Handover
K180	Installation of Stool Y-Junction, remaining		
K190	Installation of Ctadding, romaining		
Kiosks of 029	of 029		
K100	5-Kiosks: RC Wall & Roof		
K110	5-Kiosks: Finishing, Glass Window & Door		
K120	5-Kiosks: Degree 3 Handover	JANODNIEL SABIBO O'SWEOIN-C	
K122	Remaining 5-Kiosks: RC Wall & Roof		
K124	Remaining 5-Kiosks: Finishing, Glass Window & Door		3
K126	Remaining 5-Kiosks: Degree 3 Handover		• Homeling 5-Klosks: Legree 3 Handover
K130	Installation of Steel Y-Junction, remaining		
K140	Installation of Cladding, remaining		
Kiosks of 030	of 030		
K200	9-Klosks: RC Wall & Roof		
K210	9-Kiosks: Finishing, Glass Window & Door		
K220	9-Kiosks: Dogree 3 Handover	◆ 9-Klopks: Degree 3 Handover	
K222	Remaining 12-Kiosks: RC Wall & Roof		
K224	Remaining 12-Kiosks: Finishing, Glass Window & Door		
K228	Remaining 12-Kiosks: Degree 3 Handover		 Remaining 12-Klosks: Degree 3 Hardover
K230	Installation of Steel V-Junction temaining		
K240	Installation of Cladding, remaining		
Kiosk 006 (AII)	06 (AII)		
K250	RC Wall & Roof		
K260	Finishing, Glass Window & Door		
K270	Degree 3 Handover	Degree 3 Handover	
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Table Participation Part
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Sections to Comment the section of t	CCHAIG ID ACTIVITY Name OCI	2017 2018 Dec 2018	
R330 Street lighting			
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R340 Concrete Pavement	ement		
R350 Road Marking	0.0		
R360 Security Fend	guic		
gh 2+	600, 000		
D230 Watermains 8	Watermains & Flush Watering		
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T	Chi		
R445 Concrete Pavement	Vement		
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D250 Drainage			
П			
D270 Watermains 8	Watermains & Flush Watering		
D280 UU Ducts Laying	ying		
R1440 Streetlighting	d according		
D1456 Congrete Daywood	amani		
Т	Actions of the contract of the		
age 1: Internal Road as	Stage 1: Internal Road around Buildings and Boundary Road		
tems! Road - South of	Internal Road - South of CIFF West Side (026-033)		
Date Drainge			
	Watermains & Flush Watering		
	UU (LV & ELV etc.) Ducts Laying		
	ist RB, as TTA for Internal Road		
H522 U-channel			
fernal Road - South o	Internal Road - South of CUE. East Side (037-054)		
D350 Drainage			
	Watermains & Flush Watering		
	UU (LV & ELV etc.) Ducts Laying		
	Subbase & 1st RB, as TTA for Internal Road		
R980 Street inning	Habu Street Hanning City Corner Mide		
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	Watermains & Flush Watering		
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	Subbase & 1st RB, as TTA for Internal Road		
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R2990 Street lighting	δu		
nternal Road - North o	Internal Road - North of CUE, West Side (023-057)		
D410 Drainage			
D420 Sewerage		Ш	11.
Actual Work	◆ Milestone	WORKS PROGRAMME, AS OF 31 OCTOBER 2017 31-0ct-17 Works Programme (+DRMZ), updated as of 31 Oct. 2017	ZJ Checked Approm
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D430		2017
	Watermains & Flush Watering	Dec
D440	UU (LV & ELV etc.) Ducts Laying	
R1110	Subbase & 1st RB, as TTA for Internal Road	
R1140	Kerb/Edges	
R 150	U-channel	
R1160	Street lighting	
nternal Ru	Internal Road - North of CUE, East Side (024-031)	
D500	Drainage	
D520	Sewerage	
D530	Watermains & Flush Watering	
D540	Ull (IV & FIV atc.) Ducks I summe	
R1500	Subbace 8 10t Do on The feel for	
R1510	Kom Edage & 11 change	
00000	Contraction of Contraction	
2000	Street iighting	
ige 1: Br	Stage 1: Bridges (All), include W7-W	
R1280	Installation of Movement Joint	
R1290	Backfilling to Retaining Walls and Embankment	
R1300	Parapet	
R1303	Railling	
H1330	Remaining Pavement on Bridges & Bataion Wells	
B1340	Tokking Courses of the same of the same	
02420	Chimin of ingges a canity	
0/1	Hoad Marking	
ge I: Bo	Stage 1: Boundary Road (Half Lane)	
rth Bour	North Boundary Road	
D510	Drainsos	
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	UD ILV & ELV etc.) Ducis Laying	
H770	Subbase & half lane with 1st RB	
R790	Kerb/Edges	
R810	U-channel	
R910	Security Fence	
	Street Intima	111111111111111111111111111111111111111
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	Orainage	
	Sewerage	
D650	UU (LV & ELV etc.) Ducks Laving	
B2090	Subbase & half lane with 1st DD	
B2100	No. of the second secon	
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H2890	Security Fence	
١	Street lighting	
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	UU (LV & ELV 91C.) DUCIS Laying	
MZ 1 Z U	Subbase & half lane with 1st RB	
R2130	Kerb/Edges	
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H2930	Security Fence	
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	Security Fence	
R3030	Street lighting	
e 1: Nor.	Stage 1: North of CUE, North Coast Road	
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Simple	South P.	ublic Transport Interchange	
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	R1260	Subbase & Pavement	
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A CHACLE CLEARANCE PLAZAS AND EACH LIFE A CHACLE CLEARANCE PLAZAS AN	R3050	Street lighting	
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R1340 Remaining Pavement on Bridges & Relaing Walls, R1340 Lighting, Signages & Gantry R1340 Lighting, Signages & Gantry R1340 Lighting, Signages & Gantry R1340 R	
R1240 Lighting, Signages & Cantry R2170 Road Marking R2270 Road Marking R2270 Road Marking R2270 Read Marking R2270 Rebess & Marking R2270 Repetighing R2270 Repetighing R2270 Repetighing R2270	
R2170 Road Markings Stage 1: Boundary Road (fail Lane)	
Stage 1's Curriad warking	
North Boundary Hoad (Hair Lake) North Boundary Road District District District Distr	
D510 Drainage Druck Laying	
Description Use ELV etc.) Ducist Laying	
D510 UU (LV & ELV etc.) Ducts Laying	
R770 Subbase & half lane with 1st RB R750 KerbiEdges R810 U-channel R920 Security Fence R920 Streetlighting East Boundary Road D620 D630 Sewerage D650 Sewerage D650 UU (LV & EV etc.) Ducts Laying	
R790 KerbiEdges R810 U-channel R910 Security Fence R920 Sizeutilighting East Boundary Road D620 D630 Sewerage D630 Sewerage D650 UU (LV & ELV etc.) Ducts Laying	
R810 U-channel R910 Security Fence R920 Security Fence R920 Security Fence R920 Carlinge D630 Sewerage D650 UU (LV & ELV etc.) Ducts Laying	
H910 Security Fence	
R920 Street lighting East Boundary Road	
East Boundary Road D620 Drainage D630 Sewerage D650 UU (LV & ELV etc.) Ducts Laying	
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R2090 Subbase & half lane with 1st RB	
R2110 U-drainiel	
♦ ♦ Milestone WORKS PROGRAMME, AS OF 30 NOVEMBER 2017 Date	
PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES 31-04-17 3MRP, updated as of 31 Oct. 2	3MRP, updated as of 31 Oct. 2017
Page 4 of 9	3MRP updated as of 30 Nev 2017

rity to	Activity D. Activity Name Nov	Nov 2017 Dec Jan 2018 Feb	Feb
R3010	Street lighting		
West Bot	West Boundary Road		
D710	Drainage		
D720	UU (LV & ELV etc.) Ducts Laying		
H2120	Subbase & nair lane With 1st RB		
D2140	Lichannal		
R2930	Seruiriy Pence		
R3020	Street lighting		
South Be	South Boundary Road, include W7-W		
D860	Drainage		
D670	UU (LV & ELV etc.) Ducts Laying		
R2900	Subbase & half lane with 1st RB		
R2910	Kerbridges		
R2920	U-channel		
R2940	Security Fence		
R3030	Street lighting		
Stage 1: h	Stage 1: North of CUE, North Coast Road		
D730	Drainage		
D740	Sewerage		
D750	Watermains & Flush Watering		
D760	UU (LV & ELV etc.) Ducts Laying		
R2030	Subbase & 1st RB as TTA for Internal Road	LOGICAL COLLEGE CONTINUES CONTINUES TO DESCRIPTION OF THE PROPERTY OF THE PROP	
R2040	Kerb/Edges & U-channel		
H2950	Security rende		
H3040	Street lighting		
Stage 1:	Stage 1: Public Transport Interchange		
South P	South Public Transport merchange		
0780	Dramage Unit / V & FI V etc.) Ducks Laving		
B1260	Cubbase & Bavemen)		
R1350	Canopy for Covered Walkway		
R3050	Т		
Around	Hol		
D11560	Drainage		
D11570	T		
R1550	Subbase & Pavement		
R1570		INCOCCUPATION OF THE PROPERTY IN THE PROPERTY OF THE PROPERTY	
R1600			
R2150			
R2160			
R3130	Security Fence		
North P.	North Public Transport Interchange (Except SW Corner)		
D810	Dramage		
0850			
M1310	Subbase & Paverierii		
00011			
R3090	Т		
Stage 1:	Car		
Carparks	99		
D830	Drainage		
Aci	Actual Work	Date Date Revision C	Chacked Approv.
	/ork	VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES 30-Now-17 3MRP updated as of 30 Nov. 2017 2J	3.73

D845 Sewerage D840 UU (LV & ELV etc.) Ducts Laying		Nov Dic Feb	Fob
	and a second second		
-	ucis Laying		
R1540 Kerb/Edges			
ī			
		WORKELING OF THE PROPERTY OF T	
R3100 Road Marking			
Taxi			
D850 Drainage		A	
	icts Laying		
R3080 Street lighting			
R3110 Road Marking			-11
Link Road West			
D12020 Drainage			
Т	-		
T	icis Layıng		
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1			
T			
R3430 Road Marking			
Stage 1: Security Fenceing outsit	Stage 1: Security Fenceing outside Boundary Roads (Exclude E&M)		
	internal road		
D11940 Security Fence, adjacent Kiosks	ent Kiosks		
D11950 Security Fence, other place	place		
Stage 1: FSD Inspection of Buildings (Access to Users)	lings (Access to Users)		
A00290 002 - C&ED Observation	002 - C&ED Observation Guard Booth, Portion K No.1		
	002 - C&ED Observation Guard Booth, Portion K No. 2		
B00294 002 - C&ED Observatio	002 - C&ED Observation Guard Booth, Portion H1 No. 1		
	002 - C&ED Observation Guard Booth, Portion H1 No. 2		
	002 - C&ED Observation Guard Booth, Portion R		
B00610 006 - Shuttle Bus Klosk & Staff Subway	k & Staff Subway		
B00910 009 - Outbound Coach Klosk & Staff Subway	Kiosk & Staff Subway	ABMORS STREET,	
	Gosk & Staff Subway	Over-industry Control NORA & SUB-SUB-Way Over-industry Control NORA & SUB-SUB-Way Over-industry Control NORA & SUB-SUB-Way	
	012 - DOH Disinsection Area and Store , Portion A1	Agnonia Costan Anoma Castan Ano	
	012 - DOH Disinsection Area, Portion C, FSD inspection		
	024 - Outbound Private Car Exam Building, FSD Inspection		
\Box	026 - Inbound IMMD and DOH Secondary Screening Building		
П	027 - Inbound VCP private Car Klosks & Inbound Staff Subway	◆ 027 Inhound VCP private Car Klosks & hhound Staff Suhway	
	028 - Inbound GV Kiosks & Inbound Staff subway	028 lihbound GV Klosks & hbound Staff subway	
T	029 - Outbound GV Kiosks & Outbound Staff subway		
T	030 - Outbound VCP Private Kiosk & Outbound Staff Subway	◆ 030- Dutbound VCP Private Klosk & Outbound Staff Subway	
	031 - Outbound IMMD and DOH Secondary Screen Building		
T	033 - Inbound Private Car Exam Building, FSD Inspection		
1	uth, FSD Inspection		
٦	035 - Sewage Pumping Station, FSD Inspection		
C03660 036 - Weigh Station, FSD Inspection	SD Inspection		
•	◆ Milestone	WORKS DOOG DAMME AS DE SO NOVINGE TO SECURE DOOG DOOG DOOG DOOG DOOG DOOG DOOG DOO	- 11
Remaining Work Critical		D FACILITIES 31-001.7 3MRR updated as of 31 Oct. 2	Checked Approx
		Smith updated as of 50 Nov. 2017	77

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C03780 037 C&ED Tower & Inbound Cargo Examination Building	hation Building	
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D04070 040 - Incident Control Tower, FSD Inspection	Internation	
D04180 041 File Station & Minutaine Debut FS D04240 042 - Drill Tower, FSD Inspection		
Ī	edion estimate and a second estimate and a second estimate a second estimate and a second estimate a second estimate and a second estimate	
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D04750 047 - Fresh Water Pumping Station, FSD Inspection	nspection	
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П		
П) Inspection	
D06160 061 - Telecom Building, FSD Inspection		
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	The presenting	
T	7. F. Spinspetton	
П	n B, FSD inspection	
F11360 114 - Field Kiosk for Access Control, Portion D, FS inspection	n D. FS Inspection	
Stage 2: Traffic Lanes through Kiosk 9-5-5-9 & 006, 009 & 010	5, 009 & 010	
D550 Remaining Drainage		
R1120 Remaining Subbase		
Inbound West: Through 5 Kiosk of 027		
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Actual Work Wilestone Remaining Work	AUNOVEMBER 2017 31-0ci-17 31-0ci-17 30-Nov-17 30-Nov-17 30-Nov-27	ZJ

Activity ID Activity Name		30-Nov-17
R2220 Brad Marking	Nov 2018 Feb	PERMIT
pu		
R2230 U-channel		
R2240 Kerb/Edges		
R2270 Road Marking		
Outbound East: Through 5 Klask of 030		
R2280 U-channel		
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R1860 Road Marking		
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R1910 Hoad Marking		
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R2330 1st Layer RB		
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R2420 1st Layer RB		
Internal Road - North of CUE, West Side (023-057)		
R2430 1st Layer RB		
Ros		
R2440 1st Layer RB		
ing		
R3140 Remaining North PTI (SW Comer)		
Sour		
R3150 South Boundary Road, up to WC		
abe		
R2620 Laying of Top Soil		
Stage 3		
PO.		
Marking Board County Street lighting & Road Marking		
R2460 Completion of Pavement with Street linking 8 Dood Madein		
8		
R2470 Completion of Pavement with Street lighting & Road Marking		
Internal Road - North of CUE, East Side (024-031)		
R2480 Completion of Pavement with Street lighting & Road Marking		
Internal Road - North of CUE, North Coast Road		
R2490 Completion of Pavement with Street lighting & Road Marking		
uno		
R2600 Pavement with street lighting up to 1st Layer RB		
Actual Work A Milestone	1	
• vork	PROGRAMME, AS OF 30 NOVEMBER 2017	necked Appray
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Pavernent with street lighting up to 1st Layer RB Completion of Landscape Works Completion of Landscape Works Roadworks through Remaining Klosks (027, 028, 029 & 030) West: Through 12 Klosk of 027 Kerbi-Cages U-chamel Blumen Pavernent Gest: Through 5 Klosk of 028 Werb-Cages U-chamel Kerbi-Cages Street lighting Blumen Pavernent West: Through 5 Klosk of 029 U-chamel West-Cages Street lighting Street lighting Street lighting U-chamel Kerbi-Cages Street lighting Street lighting Street lighting
Completion of Landscape Works Completion of Landscape Works Redeverks through T2 Klosk of 027 Kerb Edges U-channel Street lighting Bitumen Pavement West, Through 5 Klosk of 028 Kerb Edges U-channel U-channel Bitumen Pavement West, Through 5 Klosk of 029 U-channel West, Through 12 Klosk of 039 U-channel West, Through 12 Klosk of 030 U-channel West, Through 12 Klosk of 030 U-channel Kerb Edges Street lighting Bitumen Pavement West Edges Street lighting
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A Artischoo WORKE DOCDAMME AS OF 30 NOVEMBER 2017

Detail Work Programme Hong Kong-Zhuhai Macao Bridge Hong Kong Boundary Crossing F Location 3(Inbd Cargo Exam Bidg (037) Inspector Offices 128,129,130,131,128,129,14 Location 2(PCB (001) First Floor Main Server Room) - For Server Installation - Deg2 Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BDS)) Location 3a(Inbd Cargo Exam Bidg (037) Main Server Room) - For Server Installation Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line 8D5) Joint Site and Facility Inspection with Interface Contractor at Location 14 - Deg2 Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg1 Joint Site and Facility Inspection with Interface Contractor at Location 18 - Degz Joint Site and Facility Inspection with Interface Contractor at Location 4 - Deg2 Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3)) - Deg1 (330d) Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)-Deg2 (500d) Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)-Deg2 (480d) Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg1 (400d) Phase 2 Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)-Deg2 (480d) Pre Site and Facility Inspection by Contractor at Location 18 - Deg2 Pre Site and Facility Inspection by Contractor at Location 14 - Deg2 Location 6(Common Utility Enclosure & Staff Subway)-Deg1 (400d) Pre Site and Facility Inspection by Contractor at Location 18 - Deg1 Location 2(PCB (001) First Floor Main Server Room)-Deg1 (330d) Location 2(PCB (001) First Floor Main Server Room)-Deg2 (380d) Location 7(Common Utility Enclosure & Staff Subway)-Deg1 (270d) Pre Site and Facility Inspection by Contractor at Location 4 - Deg2 Location 9(Outbd Private Car Annex (032) Canopy)-Deg1 (520d) Location 9(Outbd Private Car Annex (032) Canopy)-Deg2 (660d) Location 12(Inbd Private Car Kiosks(027))-Deg1 (400d) Phase 2 ocation 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 2 Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 1 Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (270d) ocation 8(Inbd Private Car Annex (025) Canopy)-Deg1 (430d) Location 8(Inbd Private Car Annex (025) Canopy)-Deg2 (580d) Location 1(PCB (001) ELV Room (Grid Line E3))-Deg2 (380d) Localion 4a(Outbd Cargo Exam Bldg (023))-Deg2 (630d) Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (680d) Location 9(Outbd Private Car Annex (032))-Deg1 (5204) Location 9(Outbd Private Car Annex (032))-Deg2 (660g) Location B(Inbd Private Car Annex (025))-Deg2 (580d) Location 8(Inbd Privale Car Annex (025))-Deg1 (430d) Location 1(PCB (001) Basement)-Deg2 (380d) Location 1(PCB (001) Basement)-Deg1 (270d) Site and Facility Inspection Interface Activities Contract No.: HY/2013/06 Access Dates Key Dates JS1210 S1620 AD1030 AD1040 AD1070 AD1170 AD1080 JS1770 JS1780 JS1200 JS1630 AD1000 AD1010 ■ AD1020 AD1050 ■ AD1240 AD1270 - AD1060 AD1090 AD1130 AD1150 AD1190 AD1200 → AD1220 AD1290 AD1300 AD1310 AD1320 JS1760 AD1330 AD1340 AD1510 JS1790 AD1350 → AD1360 AD1370 AD1501 AD1511 AD1521

Location 1(PCB (001) Besement)-Deg1 (2700), 31-May Location 1(PCB (001) Basement)-Deg2 (380d), 15-Location 1(PCB (001) ELV Room (Grid Line E3))-De Location 2(PCB (001) First Floor Main Server Room)-D

▼ 24-Aug-17, Access Dates

Pre Site and Facility Inspection by Contractor at Local

▼ 23-Jun-17, Site and Facility Inspection

Pre Site and Facility Inspection by Contractor at Local

Joint Site and Facety Inspection with Interface Cont Joint Site and Facility Inspection with Interface Conti Joint Site and Facility Inspection with Interface Contr. Joint Site and Facility Inspection with Interface Contra

Pre Site and Facility Inspection by Contractor at Local

Pre Site and Facility Inspection by Contractor at Local

Location 1(PCB (801) ELV Room (Grid Line E3))-Deg1

Page 1 of 8

24 Q1 Q2 Q3 Q4 Q1 Q2 Z2-OCI-17, Hong Kong-Zhuhai Macao Bris

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Location 3(Inbd Cargo Exam Bidg (037) Inspector Off Location 3a(Inbd Cargo Exam Bidg (037) ROCARS R Location 3a(Inbd Cargo Exam Bldg (037) Main Serve Location 4(Dutbd Cargo Exam Bldg (023))-Deg2 (6

Location 3s(Inbd Cargo Exam Bldg (037) Main Serve

Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 Location 6(Common Utility Enclosure & Staff Subway)-Location 7(Common Utility Enclosure & Staff Subway)

Location 2(PCB (001) Ground Floor ELV Room (Grid Li Location 2(PCB (001) Ground Floor DOH Port Heal Location 3(Inbd Cargo Exam Bidg (037) Platform Cor

Location 2(PCB (001) Ground Floor DOH Port Health (

Location 2(PCB (001) First Floor Main Server Roor Location 2(PCB (001) First Floor Main Server Roor

Location 8(Inbd Private Car Annex (025))-Deg1 (430

Location 8(Inbd Private Car Annex (025))-Deg2 (58)

Location 8(Inbd Private Car Annex (025) Canopy)-D Location 8(Inbd Private Car Annex (025) Canopy)-D Location 9(Outbd Private Car Annex (032))-Deg1 (5) Location 9(Outbd Private Car Annex (032))-Deg2 (6)

> System (AVCSS) ai-Macao Bridge ndary Crossing matic Vehicle

Date	Revision	Checked	
14-Nov-16	Rev. 0	wc	
10-Mar-17	Rev: 1.0a	wc	
5-May-17	Rev: 1.0b	WC	

Location 12(Inbd Private Car Klosks(027))-Deg1 (400 Location 12(Inbd Private Car Kiosks(027))-Deg2 (48

Location 9(Outbd Private Car Annex (032) Canopy)

Location 9(Outbd Private Car Annex (032) Canopy

Location 12(Inbd Private Car Kesks(027))-Deg2 (480d)

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v summary						
Actual Level of Effort	Primary Baseline	Actual Work	Remaining Work	Critical Remaining Work	Baseline Milestone	◆ Milestone
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Programme No. HZMB-DWP

Data Date: 14-Aug-15

(by COS) (UUD9.3) between Inbd Private Car Exam Bigs
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(by COS) (Inhound Vahide Clearence Plaza, 01-Jun-17-Location 13(Outbd Private Car Klosks (030))-Deg1 (48 🗞 Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (48 Lecation 12(Outbd GV Klosks (029) Canopy)-Deg1 (400 Location 12(Outhd GV Klosks (029) Canopy)-Deg1 (4 Location 12(Outbd GV Klasks (029) Canopy)-Deg2 (48 S Location 12(Culbd GV Kosks (029) Canapy)-Deg2 Location 13(Outbd Private Car Kindos (030))-Deg2 (5 Location 16(Outbd Traffic Control Klosk (101))-Deg1 (40 Location 18(Outbd Private Car Exam Bidg(024))-Deg (by C03) (UUD) 2) between Inbd Cargo Exam Bidg So (by C03) (UUD2) between Inbd Cargo Exam Bidg North (by CO3) Outbound Vehicle Clearance Plaza, 01-Jun-17 Location 12(Inbd GV Kosks (828) Canopy)-Deg1 (40) Location 15(Outbd Traffic Control Klock (101))-Die Location 18(Outbd Private Car Exam Bidg(024))-Deg (by 503) Underground Ducting (UUD1.1) between CUI Page 2 of 8 Location 12(Inbd GV Klosks (028) Canppy)-Deg2 (480 Location 12(Outbd GV Klosks (029))-Deg1 (4004) Ph Location 12(Outbd GV Kipsks (029))-Deg2 (480d) Phil S Location 12(Outbd GV Kooks (029))-Deg2 (480d) Location 13(Outbd Private Car Kinsks (030) Camppy) Location 14(Future-Dutbd/Intbd Private Car Kiosks)-De (by C03) (UUD9.1) biw Inbd Cargo Evern Bldg S. (037) S Location 12(Inbd GV Kloaks (928))-Deg1 (400d) Phase S Location 12(Inbd GV:Rosks (028))+Deg2 (480d) Pr Location 13(Outbd Private Car Kosks (030) Canopy S Location 14(Future-Outbd/Inbd Private Car Klosks) S Location 12 (Inbd Private Car Klosks(027) Canopy Location 12(Inhd GV Klosks (628) Canopy)-Degri (400 Location 12(Ihbd Private Car Kosks(027) Canopy)-De Location 12(Clubs GV Kesks (029))-Deg1 (400d) Ph Approved Location 12(Inbd GV Klosks (025))-Deg1 (400b) PI Location 12(Inbd GV Koskg (028))-Deg2 (480d) Ph 01 02 03 04 01 02 03 04 01 02 22-Del-17, Mobilization Provisons 12-Aug-17, Interfaces Provisions WC Revision Rev.: 1.0a Rev: 0 14-Nov-18 Date 10-Mar-17 S-May-17 01 02 03 04 70 02 Clearance Support System (AVCSS) Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities - Automatic Vehicle Detail Work Programme remmary summary (by C03) (UUD3,2) btw Outbd Car Exam Bldg (023) and Outbd PC Exam Bldg (024) as (by C03) Underground Ducting (UUD3_1) between CUE to Outbd Cargo Exam Bidg (0 (byC03) (UUD4.1) between Outbd Private Car Exam Bldg (024) and Outbd Vehicle Cle (by C03) Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bidg (8 (by C03) (UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo C (by C03) (UUD2) between Inbd Cargo Exam Bidg North (037[N]) and Inbd Vehicle Cle. (byC03) (UUD5) between Outbd Car Exam Bldg South (023[S]) and Outbd Vehicle Cle (by C03) (UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clear; (by C03) (UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clears (by C03) (UUD9.1) btw Inbd Cargo Exam Bldg S (037[S]) & Inbd PC Exam Bldg(033) a (by C03) Underground Bucing (UUD8) between CUE and Gutbd PCA (032) Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg1 (480d) Phase 1 Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg2 (550d) Phase 1 Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 1 Location 12(Inbd Private Car Klosks(027) Canopy)-Deg2 (480d) Phase 2 Critical Remaining Work Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 2 Actual Level of Effort Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 1 Location 12(Outbd GV Klosks (029) Canopy)-Deg2 (480d) Phase 2 Location 12(Outbd GV Kosks (029) Canopy)-Deg2 (480d) Phase 1 Location 13(Outbd Private Car Kiosks (030))-Deg1 (480d) Phase 1 Location 13(Outbd Private Car Kiosks (030))-Ded2 (550d) Phase 1 Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 2 Location 14(Future-Outbollnbd Private Car Kiosks)-Deg1 (610d) Baseline Milestone Location 12 (Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 1 Location 12 (Inbd GV Klosks (028) Canopyl-Deg2 (480d) Phase 2 Location 12(Inbd GV Klosks (028) Canopy)-Deg2 (480d) Phase Location 14(Future-Outbd/Inbd Private Car Kosks)-Deg2 (880d) Remaining Work Primary Baseline Location 18(Outbd Private Car Exam Bldg(024))-Deg2 (670d) Location 16(Outbd Traffic Control Kiosk (101))-Drg1 (400d) Location 16(Outbd Traffic Control Klosk (101))-Deg2 (480d) Location 12(Outbd GV Kosks (029))-Deg1 (400d) Phase 1 Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 2 Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 1 Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 2 Actual Work Location 18(Outbd Private Car Exam Bldg(024))-Deg1 (+) Location 12(Inbd GV Klosks (028))-Deg1 (4004) Phase 1 Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 2 Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 2 Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 1 (by C03) Outbound Vehicle Clearance Plaza (by C03) Inbound Vehicle Clearance Plaza WA4 Site Erection & Servicing Mobilization Provisons Interfaces Provisions Programme No. HZMB-DWP Contract No.: HY/2013/06 Data Date: 14-Aug-15 AD1580 AD1810 ■ AD1820 ■ AD1830 AD1840 ■ AD1850 AD1860 AD1870 AD1880 AD1910 ■ AD1920 M AD1530 ■ AD1630 ■ AD1640 AD1710 ■ AD1740 ■ AD1750 AD1780 ■ AD1790 AD1800 AD1540 AD1550 AD1551 AD1560 AD1590 ■ AD1600 ■ AD1610 AD1611 ■ AD1620 ■ AD1650 ■ AD1660 ■ AD1670 AD1700 AD1531 AD1541 ■ AD1570 AD1571 AD1591 ■ AD1601 AD1561 8 Activity 10

ct No.: HY/2013/06	Detail Work Programme	Dans 2 als
ACTIVITY ID ACTIVITY Name		2017 Z018 Z019
Detailed Design Specification	02 03 04 01 02 03 04 01	02 03 04 01 02 03 04 01 02 03
Contruction Design and Management		
Supply/Manufacture Mock-up items		
Supply/Manufacture prototypes		
Software Design, Coding and Testing		
Coding		
Software System Inetgration		
Trototype & Software Simulation Tests		
Procurement - Phase 1/ Section I		
Supply/Manufacture products for FAT		
- Factory Acceptance Test (FAT)		
- Supply/Manufacture Equipment		
- Delivery and Bench Acceptance Test for Phase 1/ Section I		
Installation - Phase 1 / Section 1		01-Sec. 17 Installation - Phase 1 / Section
-		22-lun-17 oralinn:1(PCR (001); Racement)
EM1920 L1(00°)B/F - Cable Laying and termination at Location 1 and Location 2		TOOLS OF THE PARTY
EM1940 1 (100.) FIV Pm. Cable I alima and termination at I continued to the case of the case of termination at I continued to the case of termination at I continued to the case of the case of termination at I continued to the case of the ca		
- D		☐ L1(001)ELV Rm - Cable Laying and termination at Local
EM1960 12(00°) ELV Rm - Cable Laving and termination at Location 2		
		L2(001)ELV Rm - Cable Laying and termination at Loc
EM1080 L2(001) Heath Ctrl Rm - Cable Laying and termination at Location 1 and Location 2		18-Aug-17, Location 2(PCB (001) Ground Floor Di
EM1100		L2(001) Heath Ctrl Rm - Cable Laying and termination
		 L2(001) Heath Ctrl Rm - Cable Splicing and Testing an
EM1140 L2(001) Heath Ctrl Rm - Intercom and PA system tuning		L2(001)Health Ctrl Rm - Intercom and PA system in
9		LZ(001) Heath Ctrl Rm - Intercom and PA system to
EM1000		
EM1020		-
EM1050 L2(001)Main Server Rm - AVCSS Network and Server Installation EM1060 L2(001)Main Server Rm - AVCSS Network and Server Tuning		L2(001) Main Server Rm - AVCSS Network and Ser
ocation 3(lr		II L2(001)Main Server Rm - AVCSS Network and Se
Location 3(inbd Cargo Exam Bidg (037) ELV Room)		
Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,128,130,131,128,129,14		07-August 7 position 3/John Claren Bide (027
EM2020 L3(037)Inspec Offices - Cable Laying and lermination in Location 3 and Location 3a		Coop and the coop of the coop
EM2040 L3(037)Inspec Offices - Cable Splicing and Testing and Labeling		L3(037)/inspec Offices - Cable Spicing and Testing an
EM2080		L3(037)Inspec Offices - AVCSS SURCON WS and 5
EM2100		L3(037)Inspec Offices - VTS WS Installation
		L3(037) Inspec Offices - SURCON and WS Tuning 07-Aug-17 Location 3 (lobd Caro, Evan Ride (037)
EM1160		
EM1180		L3(03/)PLF CITIRM - Cable Laying and termination in
EM1200		13(037) PEF CITIEM - Cable Splicing and Testing and
EMIZZU L3(U3/1PLF Cff Rm - AVCSS SYSCON WS Tuning		
fort version summary	40	1 1
Actual Work		14-Nov-16 Rev.: 0 WC LC 10-Mar-17 Rev.: 1.0a WC I.C
	Paclitites - Automatic Vehicle	Rev: 1.0b WC
Work		
A Milesione A Milesione		

Christy ID Activity Name	2015 2016 2017 2018 2019
	Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q4 Q4 Q4 Q4 Q4 Q4
33(T. Ur-Augha V. Loddanon adjunto curingo Estima bolg (v
EM1240	L3q(34) VCCARS/Rm - Cable Laying and terrimate
EM1280	DO DEL TOTALO Y THE YORK TO THE TOTAL THE TOTA
EM1300	E. Laguari Roman V. D. Wal Hazaniton E. Laguari Roman V. D. Wal Hazaniton E. Samost Bonna R. W. Letalinium
EM 320 Languary ROCARS Rm - VID We installation EM 340 N W ROCARS Rm - SURCON and SYSCON and WS Tuning	
Destion 3st	V V 07-Aug-17, Location Salinba Cergo Exem Bidg (03
EM2120 L3a(037)Man Server Rm - Cable Laying and termination in Location 3 and Location 3a	■ L3a(037)Main Server Rm - Cable Laying and termine
EM2140	
	L3a(03') Main Server Rm - AVCSS Server Institute
EM2180	1.3a(03) Man Service (Tristalando
EM2200 L3a(037) Main Server Rm - Servers Tuning	Logius / Main Server Kith Server I um
Location 4 Output Carro Evam Blog (929) MIDT ROUTH	V4-Aug-17, Location 4a(Outbd Cargo Exam Bidg (0
m EM2240 L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling	■ :L4a(023)ROCARS Rm - Cable Splicing and Testing a
EM2260	I 14a(023)ROCARS Rm - AVCSS SYSCON and SU
EM2280 L4a(023)ROCARS Rm - VTS WS Installation	L4a(023)ROCARS Rm - VTS WS Installation
EM2300 L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning	Lide(2023) RCCARS (STREED) WAS ASSESSED TO STREET A
cation 5(C	
EM2341	TOLOGICAL CONTROL OF THE CONTROL OF
EM2361	-
EM2380 L5(CUE) - Cable Splicing and Testing and Labeling	L'estront de principal de la company de la c
2	IRCO Description of and less and le
EM2400	TO THE PROPERTY OF THE PROPERT
EW2420 Lb(CUE) - Cade Splicing and resugging Laborary	0.1.56p-17, Losalton 7(Cormon Ultiv Endante
Location / (Common Utility Enclosure & Staff Subway)	T/CUE) - Cable Lavind between Localion 5 and L
	TXCCD Cappe Spigeon and Testing as
scation 12(30-Aug-17, Location 12(Inbd Private Car Koaks,
inhal Private Car Kiosko (027) - 8 nos (Phase 1)	24-Aug-17, Inbd Private Car Kioske(027) - 9 nos
EM1500 L12(027)(9nos P1) - Cable Splicing and Testing and Labeling	E L12(927) (9nos P1) - Cable Splicing and Testing and
EM1520 L12(027)(9nos P1) - AVCSS/MOM Krask Equipment Installation (9 nos)	U.12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment II
EM1541 L12(027)(9nos P1) - XDB installation (18 nos)	1 L12(027)(9nos P1) - XDB installation (18 nos)
EM1542 L12(027)(9nos P1) - ODB installation (5 thot)	L12(027)(9nos P1) - ODB installation (5 nos)
EM1543 L12(027)(9nas P1) - ODB installation (2 nas)	1. (12(027)(9nos P1) - ODB installation (2 nos)
EM1544 [1/2(027)(9nos P1) - ODB installation (2 nos)	LY2(QZ7)(ghos P1) - ODB installation (2 nos)
EMISSO L12(027)(Snos P1) - Loop installation (45 nos)	30-Aug-17 inhd Goods Vehicle Kroskig(78) - 5
India Goods Wentella Archan (200) (Finale 1) EM1620 L12(028)(5nos P1) - Cable Laying and termination	112(028)(500s P1) * Cable Laying and termination
EM1640 L12(028)(Snos P1) - Cable Splicing and Testing and Labeling	1 (12(028)(5nos P1)- Cable Splicing and Testing and
EM1660 L12(028)(5nos P1) - AVCSS/MOM Klosk Equipment Installation (5 nos)	☐ 1.12(028)(5nos P1) - AVCSS/MOM Kiask Equipment 1
EM1681 L12(028)(5nos P1) - XDB installation (10 nos)	[:12(028)(5nos P1) XDB installation (10 nos)
 EM1682 L12(028)(5ngs P1) - ODB installation (3 nos) 	L12(028)(5nos P1) ODB installation (3 nos)
EM1683 L12(028)(5nos P1) + ODB installation (2 nos)	1 112(028)(5nos P1) - ODB statilistion (2 nos)
Actual evel of Effort Taylor Daylor Laylor Daylor D	Revision Checked
Primary Baseline	14-Nov-16
Actual Work	5-May-17 Rew. 1.0b WC
	SS)
Critical Remaining Work	
> 4	
◆ ◆ Milestone	

Contract No.: HY/2013/06		Detail Work Programme		1
Activity ID Activity Name		Detail Work Logianing	2015 2016	2017 2018 2016
EM1700 L12(028) Snos P1) - AIOP Installation (5 nos)	alation (5 nos)		8	33 Q4 Q1 Q2 Q3 Q4 Q1
	allation (25 nos)			U12(028)(5nos P1) - AIOP Installation (5.nos)
Outhd Goods Vehicle Kiosks(029) - 5 nos (Phase 1)	os (Phase 1)			 L12(028)(5nos P1) - Loop installation (25 nos) Z5-Aug-17, Outbd Goods Vehicle Kinsks(029) - 5
EM1740 L12(029)(5nos P1) - Cable Containment in Kiosks	ntainment in Kiosks			☐ L12(829)(5nos P1) - Cable Containment in Klosks
	fing and Testing and Labeling			L12(029)(Snos P1) - Cable Laying and termination
	OM Kiosk Equipment Installation (5 nos)			L12(029)(5nos P1) - Cable Splicing and Testing and
EM1821 L12(029)(5nos P1) - XDB installation (5 nos)	illation (5 nos)			L12(029)(Since D1) - AVCSS/MOM Kosk Equipment
EM1822 L12(029)(5nos P1) - ODB installation (4 nos)	silation (4 nos)			1 L12(029)(5nos P1) - ODB installation (4 nos)
EM1823 C12(029)(5nos P1) - ODB installation (1 nos)	illation (1 nos)			L12(029)(5nos P1) - ODB installation (1 nos)
Location 13(Outbd Private Car Klosks (030)) - 9 nos (Phase 1)	03001 - 9 nos (Phase 1)			1 (12(029)(5nos P1) - AIOP Installation (5 nos)
EM2520 L13(030)(9nos P1) - Cable Containment in Kiosks	ntainment in Kiosks			Ze-Aug-17 Location 13(Outbd Private Car Kosks
EM2540	ing and termination		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	L13(030)(9nos P1) - Cable Contamment in Klosks
EM2560 L13(030)(9nos P1) - Cable Splicing and Testing and Labeling	icing and Testing and Labeling			L13(030)(9nos P1) - Cable Splicing and Testing a
1	L (3(U3U)(9flos P1) - AVCSS/MOM Klosk Equipment Installation (9 nos)			L13(030)(9nos P1) - AVCSS/MOM Klosk Equipmen
	Illation (7 nos)			L13(030)(9nos P1) - XDB installation (9 nos)
7	Car Klosks) - 6+6 nos			L13(030)(9nos P1) - OOB installation (7 nos)
EM1440 L14 - Cable Laying and termination at ELV Room in CUE	ition at ELV Room in CUE			DO DIESTO CONTRACTOR DE LA CONTRACTOR DE
Location 15(Inbd Traffic Control Kiosk (100))	100))			Control Laying and termination at ELV Room in C
76	((101))			29-Aug-17, Location 16(Outbd Traffic Control Ko
EMZ/b0 L1b(101) - Cable Laying and termination	rmination			L16(101) - Cable Laying and termination
CMADOOD	lesting and Labeling			1 L16(101) - Cable Spicing and Testing and Labeling
EMIZBUU	nd SURCON Installation			L16(101) - AVCSS SYSCON and SURCON Instal
EMIZBZU LT6(101) - VIS WS and 55" LCD Installation	CD Installation			1 L16(101) - VTS WS and 55" LCD Installation
Location 17(Inbd Private Car Exam Bidgi033) Operational Office)	g(033) Operational Office)			
Location 18 (Outbd Private Car Exam Bidg(024) Operational Office)	idg(024) Operational Office)			▼ 07-Jul-17, Location 18 (Outbd Privale Car Exam Bidg
EWORD 118(024) - Cable Laying and Termination	rmination			L18(024) - Cable Laying and termination
	nd 55" I CD Installation			1 L18(024) - Cable Splicing and Testing and Labeling
EM3000				L18(024) - AVCSS SURCON and 55" LCD Installation
Location 19 (DOH Cargo Clearance Bidg(043))	9(043))			1 L18(024) - SURGON Tuning
EM1350 L19(043) - Cable Laying and termination	rmination			Calgo Creatance biog
	esting and Labeling			H. L19(043) Cable Laying and termination
	Iallation			Lights and lesting and Labeling
EM1420 L19(043) - PA and Intercom Tuning	ning			1 1 30/043) - DA and Inferent Trains
<u>a</u>	3, 7 nos VTS, 4 nos TLS			VIII 02-Aug-17 Inbd Vehicle: Clearance: Plaza - 8 nos VI
EMISUZU	box to VID field equipment			Inbound VID cabing from pillar box to VID field equipm
EM3060 Inbound TLS cabing from pillar box to VI S field equipment	box to VI S field equipment			Inbound VTS cabing from pillar box to VTS field equip
EM3080	datation (8 VID)			Inbound TLS cabling from pillar box to TLS field equi
EM3100 Inbound VTS field equipment installation (4 RFID + 3 Cameras)	stallation (4 RFID + 3 Cameras)			Infound VID field equipment installation (8 VID)
	stallation (4 TLS)			
■ EM3140 Inbound VID and VTS and TLS field equipment tuning	field equipment funing			Inbound ILS feld equipment installation (4 TLS) Inbound VID and VTS and TLS feld equipment turii
Programme No · HZMR_DM/D				
Data Date: 14-Aug-15	Primary Baseline	Hong Kong-Zhuhai-Macao Bridge		14_Nov-16 Rear Novel
0	Actual Work	Hong Kong Boundary Crossing		Rev: 1.0a WC
	Remaining Work	Clearance Support System (AVCSS)		5-May-17 Rev: 1.0b WC LC
	Critical Remaining Work	(00)		

Contract No.: HY/2013/06	Detail Work Programme	Page o or 8
Activity ID Activity Name		115 2016 2017 2018 20
		22 23 24 24 21 22 23 24 21 22 23 24 21 22 23 24 21 22 23 24 21 22 2
Outbd Vehicle Clearance Plaza - 8 nos VID, 6 nos VTS, 4 nos TLS	S.T.S	UZ-Aug-17, Cuibo Vehicle Clearance Plaza - 8 nos
EM3150 Outbound VID cabling from pillar box to VID field aguipment	- Land	☐ Cutbound VID cabing from plian box to VID field equip
EM3180	pment	■ Outbound VTS cabling from pillar box to VTS field equ
EM3200	pment	Outbound TLS cabling from piller box to TLS field eq
EM3220		Outbound VID faid equipment installation (8 VID)
EM3240 Outbound VTS field equipment installation (3 RFID + 3 Cumeras)	Cumeras)	Outbound VTS field equipment installation (3 RFID)
EM3260 Outbound TLS field equipment installation (4 TLS)		Outbound TLS field equipment installation (4 TLS)
EM3286 Outbound VID and VTS and TLS field equipment tuning	6	Outbound VID and VIS and TLS field equipment to
8	go Exam Bidg (037)	
UUD1000 (UUD1.1 [CUE-037]) - Cable laying and termination	Governor Course	▼ 27-Jun-17, (UUD) 2) between Intid Cargo Exam Bidg
UD1050 (UUD12 to 775-043h - Cable laving and termination		B. (UUD1.2 (037)S)-Cable laying and Xermination
ΪĔ	S. Klosk (006) and Inbd Priv	
(UUD9:1) btw IB Cargo Exam Bidg South(037[S]) & IB PC Exam Bidg(033) & IB Traffic	xam Bidg(633) & IB Traffic	W. 12-Jul-17. (UUD9.1) bitw IB Cargo Exam Bidg South
uD1040 (UUD9.1 [037[S]-033-100) - Cable laying and termination	tion	1 (UUDS 1 (037/SF033-100) - Cable laying and termin 25-10102) between Intal Cargo Exam SRot
UUD2) between Inbd Cargo Exam Bidg North (037[N]) to Inbd VCP	DO VCP	II (ULUD) (0327NN-IB VCPN- Cable towns and termin
- 0	bd Vehicle Clearance Plaza	▼ 09-Aug-17, (UUB9:3) between Intid Private Car E
up1070 (UUD9.3 [033-18 VCP[W]) - Cable laying and termination	tion	II (UUD9.3 (933-IB VCP[W]) - Cable kaying and term
Se	lbd Vehicle Clearance Plaza	
■ UD1020 (UUD9:2 (033-18 VCP[E]) - Cable laying and termination	no	H. (UUD9:2 [033-IB VCP[E]) - Cable laying and terr
Underground Ducting (UDD7) between PCB(901) and Inbd Coach Klosks(010)	Coach Klosks(010)	W 14-Jun-17, Underground Ducting (UJD3,1) between C
UD1030 (UUD3.1 (CUE-023)) - Cable laying and termination	THE EVEL OF THE CASE	■ (UUD3.1 [CUE-023]) - Cable laying and termination:
(UUD3.2) btw OB Car Exam Bidg(023) & OB PC Exam Bidg(024) & OB Traffic Control	3(024) & OB Traffic Control I	▼ 28-Jun-17, (UUD3, 2) btw OB Car Exam Bldg(023), 8
uD1050 (UUD3.2 [023-024-101]) - Cable laying and termination	C.	UUD3.2 (023-024-101)) - Cable laying and lermination
8	A (032)	A Gentlering Country of the Country
up UD1100 (UUD8 [CUE-032]) - Cable laying and termination		■ (UUD8 (CUE-USX)) - Cabe - Syng and remainten ▼ 13-Uk+17, (UUD4.1) between Outbd PC Exam Bldg
UD1080 [(UUD4.1 l024-08 VCPI) - Cable laving and termination	William Oreal alive Tlaza	(UUD4.1 (024-OB VCPI) - Cable laying and forminal
12	Vehicle Clearance Plaza	64
UD1090 (UUD5 [023(S]-OB VCP]) - Cable laying and termination	no	II. (UUDS [023(S)-OB VCP]) - Cable laying and terminal
Initial On-Site Test and Commissioning / Pre-SAT (Phase 1 / Section I)	(Phase 1 / Section I)	
Site Acceptance Test (Phase 1 / Section I)		
Security Risk Assessment and Audit		
Operability Period Test (Phase 1 / Section I)		
Completion (Phase 1 /Section I)		
In Training and Document (Phase 1 /Section I)		
■ Operation (Phase 1 /Section I)		
Engineering Support for Phase 1 / Section I		
Procurement - Phase 2 / Section II		
Delivery and Bench Acceptance Test for Phase 2/Section II	Section II	
Installation - Phase 2 / Section II		30-Aug-17; Installation - Phase 27 Section II:
Programme No.; HZMB-DWP Does Date: 14.Auro.15	Actual Level of Effort Hong Kong-Zhuhai-Macao Bridge	Revision Checked
NATURE OF STREET	Vork	10-3087-17 Rev. 1.05 WC LC 5-May-17 Rev. 1.05 WC LC
Critical R	Critical Remaining Work	

ct No.: HY/201		Detail Work Programme	S Jo 7 oced
Activity ID Activity Name			115 2016 2017 2018
In Cration Office Division Cor Assessing	, (DL A)		22 03 04 01 02 03 04 01 02 03 04 01 02 03 04 01 02
5	(Frase 2)		30-Aug-17, Location 8(Inbd Private Car Annex)
CINISSTO	n Kiosks		L8(025) - Cable Containment in Kooks
EMISSBU	mination		☐ L8(025) - Cable Laving and termination
EM3400 L8(025) - Cable Splicing and Testing and Labeling	esting and Labeling		18 (100) Carlo Salino and Taction and Taction and Taction
9	(2)) (Phase 2)		T 30-Aug-17. Location 9 Outbd Private Car Annex
EM3500 L9(032) - Cable Containment in Kiosks	n Kiosks		
EM3520 L9(032) - Cable Laying and termination	mination		TS(USZ) - Cable Containment in Klosks
Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section II)	oning / Pre-SAT (Phase 2 / Section II)		Lyjuoz) + Cebe Laying and termination
Site Acceptance Test (Phase 2 / Section III)	ection III		
- Operability Period Test (Phase 2 / Section III)	Section II)		
Completion (Phase 2 / Section II)			
Engineering Support for Phase 2 / Section II	Section II		
Procurement for Phase 2 / Section III			
III Dolivery and Bonch Accontance Tool for Black of Statismile	III		
Toursely and Delicit Acceptance in	est ior Fridsez / Section III		
Installation - Phase 2 / Section III			V 09-Oci-17, Installation -: Phase 27 Section III
Location 10,11,12,13 (Vehicle Clearance Klosks)	e Kiosks)		V 09-Oct-17, Location 10,11,12,13 (Vehicle Clear
Location 12 Inbd Private Car Klosks (027) - 12 nos (Phase 2) EMARKO 112(107)(12nos D2) - Cable Laving and termination	7) - 12 nos (Phase 2)		09-0ct-17, Location 12 Inbd Private Car Klosk
EM4460 L12(027)(12nos P2) - Cable Solicion and Technological	sying and termination		L12(027)(12nos P2) - Cable Laying and terminatio
EM4480 L12(027)(12nos P2) - AVCSS/D	EM4480 L12(027)(12nos P2) - AVCSSIDOHMOM Kiosk Emilionent Installation (12 nos)		L L12(027)(12nos P2) - Cable Splicing and Testing
Location 13 Outbd Private Car Klosks (030) - 12 pgs (Phase 2)	12 nos (Phase 2)		L12(027) (12nas P2) - AVCSS/DCH/MOM Kas
EM4560 L13(030) (12nos P2) - Cable Containment in Kiosks	onlainment in Kiosks		UI-Sep-17, Location 13 Outpd Private Car Kost
Location 12 Outbd Goods Vehicle Klosks (029) - 3 nos (Phase 2)	cs (029) - 3 nos (Phase 2)		13(030)(12nos P2) - Cable Containment in Klos
EM4880 L12(029)(3nos P2) - Cable Laying and termination	ing and termination		N. Shiring and the state of the
EM4900 L12(029)(3nos P2) - Cable Splicing and Testing and Labeling	icing and Testing and Labeling		Lig(US)(Jnos PZ) - Cabe Laying and termination
EM4920 L12(029)(3nos P2) - AVCSS/DC	EM4920 L12(029)(3nos P2) - AVCSS/DOH/MOM Klosk Equipment Installation (3 nos)		Burning Burning (2000) - (21 sour) (620) 1
EM4940 L12(029)(3nos P2) - ODB & XDB Installation (3 nos)	OB Installation (3 nos)		L 12(03B)(3ne D). (OD 9 (200 E)
	silation (3 nos)		L (20030)300s D3 - AlOB Installation 3 notes
EM4980 L12(029)(3nos P2) - Loop Installation (15 nos)	allation (15 nos)		1.12(029)(3005 P2) - Loon Installation (15 not
Location 11 Outbd Coach Klosks (009) - 4 nos (Phase 2)	-4 nos (Phase 2)		Donate Control of the
EN4720 L12028/(3ng-P2) - Cable Laving and farmington	(UZS) - 3 nos (Phase 2)		V 24-Aug-17, Location 12 Inbd Goods Vehicle Klosk
	ing and termination		L12(028)(3nos P2) - Cable Laying and termination
1.0	EMAZED 112/028/Cans DD - AVCSS/DOHANDW Knek For immediate /2		1 L12(028)(3nos P2) - Cable Splicing and Testing and
	OR Installation (3 week)		1 L12(028)(3nos P2) - AVCSS/DOH/MOM Mosk Equi
-1	ob instantation (5 nos)		1.12(028)(3nos P2);- ODB & XDB Installation (3 no
EM4820	Marion (15 nos)		L12(028)(3nos P2) - AIOP Installation (3 nos)
EM4840 L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos)	poment Configuration (3 nos)		L12(028)(3hos P2) - Loop Installation (15 hos)
	s Vehicle Kiosks Installation Complete		
Location 10 Shuttle Bus Klosks (866) - 4 nos (Phase 2)	I nos (Phase 2)		. \$ 112(028)(3nos P2) - Inbd Goods Vehicle Kinsks In N 30-Aug-17, Lecation 10 Shuttle Bus Kinsks (006)
EM4000 L10(006)(4nos P2) - Cable Containment in Kosks	stainment in Koosks		
Location 11 into Coach Klosks (910) - 2 nos (Phase 2)-1 Lecation 11 into Coach Klosks (910) - 2 nos (Phase 2)-2 Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section III)	nos (Phase 2)-1 nos (Phase 2)-2 bning / Pre-SAT (Phase 2 / Section III)		
Programme No.: HZMB-DWP	Actual Level of Effort Summary	Hong Kong-Zhuhai-Macao Bridge	24 Nov. 16 Davis Ohecked Approved
	Actual Work	Hong Kong Boundary Crossing	Rev: 1.0a WC
	Remaining Work	Facilities - Automatic Vehicle	Rev: 1.0b WC
	Ī	Clearance Support System (AVCSS)	
	♦ ♦ Baseline Milestone		

02 03 04 01 02 03 04 01 02 03 04 01 02 03 04 01 02 02 03 Page 8 of 8 Rev.: 1.0a Rev.: 1.0b Date Revisio
14-Nov-16 Rev.: 0
10-Mar-17 Rev.: 1.0a
5-May-17 Rev.: 1.0b 2015 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities - Automatic Vehicle Clearance Support System (AVCSS) Detail Work Programme vemmary summary Critical Remaining Work Actual Level of Effort Baseline Milestone Primary Baseline Remaining Work Actual Work Milestone © Operability Period Test (Phase 2 / Section III)
© Completion (Phase 2 / Section III)
© Operation (Phase 2 / Section III)
© Defect Liability Period (DLP)
© Document Submission (Phase 2 / Section III) Site Acceptance Test (Phase 2 / Section III) Programme No.: HZMB-DWP Data Date: 14-Aug-15 Contract No.: HY/2013/06 Activity (D

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Report No.: 0165/15/ED/1043

Appendix D

Event / Action Plan

Appendix D -

Event / Action Plan for Air Quality and Noise Monitoring and Water Quality Monitoring and Ecological Monitoring

Event / Action Plan for Air Quality

Event		Ac	tion	
LVCIII	ET	IEC	ER	Contractor
Action Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measureme nt 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.

Event		Ac	tion	
	ET	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	 Identify source; Inform IEC and ER; Advise the ER on the effectiveness of the proposed remedial measures; Repeat measurement s to confirm findings; Increase monitoring frequency to daily; Discuss with IEC and Contractor on remedial actions required; If exceedanc e continues, arrange meeting with IEC and ER; If exceedanc e stops, cease additional monitoring. 	 Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures; Supervise Implementatio n 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		Ac	tion		
Event	ET	IEC	ER	Contractor	
Limit Level			L.		
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance a nd 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.	

Event		Ac	tion	
	ET	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	 Notify IEC, ER, Contractor and EPD; Identify source; Repeat measurement to confirm findings; Increase monitoring frequency to daily; Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 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.	 Confirm receipt of notification of failure in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly implemented; 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 exceedances 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.		

Event		Ac	tion	
	ET	IEC	ER	Contractor
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 abaled.

Event / 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	Confirm receipt of notification of noncompliance in writing Notify Contractor	Confirm receipt of notification of noncompliance in writing Notify Contractor	Inform the ER and confirm notification of the noncompliance in writing Rectify unacceptable practice 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	Check monitoring data submitted by ET and Contractor's working method Discuss with ET and Contractor on possible remedial actions Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly Assess the effectiveness of the implemented mitigation measures	Confirm receipt of notification of noncompliance in writing Discuss with IEC on the proposed mitigation measures Make agreement on mitigation measures to be implemented Ensure mitigation measures are properly implemented 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

Event	ET Leader	IEC	ER	Contractor
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, Contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly 4. Assess the effectiveness of the implemented mitigation measures	1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Ensure mitigation measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures	1. Inform the ER and confirm notification of the noncompliance in writing 2. Rectify unacceptable practice 3. Check all plant and equipment and consider changes of working methods 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 5. Implement the agreed mitigation measures 6. Amend working methods if appropriate
Limit level being exceeded by two or more consecutive sampling days	1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days	1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly	1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Make agreement on the mitigation measures to be implemented 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	1. Inform the ER and confirm notification of the noncompliance in writing 2. Take immediate action to avoid further exceedance 3. Rectify unacceptable practice 4. Check all plant and equipment and consider changes of working methods 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 6. Implement the agreed mitigation measures 7. Resubmit proposals of mitigation measures if problem still not under control 8. As directed by the engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level

Event / Action Plan for Ecological Monitoring

Event	ET Leader	IEC	ER	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.	Check monitoring data submitted by ET and Contractor; 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.

Event	ET Leader	IEC	ER	Contractor
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 noncompliance 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.

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Report No.: 0165/15/ED/1043



Appendix E

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Air Quality				
S5.5,6.1	A1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	 2) Proper watering of exposed spoil should be undertaken throughout the construction phase: Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; 	All construction sites	V
\$5,5,6.2	A2	 When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials, Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an 	All construction sites	V
S5.5.6.2	A2	The state of the stop Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high.	All construction sites	N/A

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
\$5,5,6.3	АЗ	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 r part of the construction site where the exposed earth lies 3) The Contractor should undertake proper watering	All construction	V
05.504		on all exposed spoil (with at least 8 times per day) throughout the construction phase.	sites	V
\$5.5.6.4	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 the relevant latest Practice Notes issued by EPD.	All construction sites	
S5,5,6,4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected Representative dust monitoring station	V (Conducted by Contract No. HY/2013/01 and HY/2011/03)
S5.5.7.1	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	Selected Representative dust monitoring station	N/A
\$5,5,2,7	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	All construction sites	V
	ion Nose (Air bo			
S6.4.10	N1	Use of good site practices to limit noise emissions by considering the following: only well-maintained plant should be operated onsite and plant should be serviced regularly during.	All construction sites	V

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EIA Ref.	EM&A Log	Recommended Mitigation Measures	Location of the	Implementation Status
	Ref.	the construction programme; machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works:	measures	imponentation datus
		 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	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	All construction sites	V
S6.4.12	N3	 Install movable noise barriers (typically density@14kg/m acoustic mat or full enclosure close to noisy plants including compressor, generators, saw. 	For plant items listed in Appendix 6D of the EIA report at all construction sites	N/A
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	For plant items listed in Appendix 6D of the EIA report at all construction site	V
S6.4.14	N5	5) Sequencing operation of construction plants where practicable	All construction sites where practicable	V
S5.1	N6	6) Implement a noise monitoring under EM&A programme.	Selected representative noise monitoring station	V (Conducted by Contract No. HY/2013/01)
Sediment			Station	
S7.3	S1	The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	All construction sites	V
S8.3.8	agement (Constr	Construction and Demolition Material	All popularistics	V
G0.J.0	VVIVI	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; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to E7WBTC (Works) No. 19/2005 - "Environmental Management on Construction Sites" to encourage on-site sorting of C&D	All construction sites	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		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		
S8.3.9- S8.3.11	WM2	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 should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	All construction sites	V
S8.2.12- S8.3.15	VVM3	Chemical Waste Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. The storage area for chemical wastes should be clearly labeled 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 chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	All construction sites	V
S8.3.16	WM4	Sewage Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state which will not	All construction sites	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		toilets. Night soil should be collected by licensed		
S8.3.17	WM5	toilets. Night soil should be collected by licensed collectors regularly. General Refuse General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. Training should be provided to workers about the	All construction sites	V
		concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.		
Water Qual S9.11.1.1-	lity (Construction	n Phase)		
S9.11.1.2		 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 and summarised in the Environmental Mitigation Implementation Schedule in EM&A Manual Construction of seawalls to be advanced by at least 100-200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 9.2 and detailed in Appendix 9D6 of the EIA Report. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: TMCLKL northern reclamation; TMCLKL southern reclamation (after formation of the nips); Reclamation dredging and filling for Portion B of HKBCF; Reclamation filling for Portion C of HKBCF; Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and Reclamation dredging and filling for Portion 1 of HKLR; Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts; For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing; A maximum of 30% public fill shall be used for all backfilling below -2.5mPD for the southern reclamation of TMCLKL, HKBCF and HKLR projects; where public fill is proposed for filling below - 	Marine-based works area	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		controlled to 25%;		
		silt curtains (cage type) will be applied round all		
		grab dredgers during the HKBCF, HKLR and TMCLKL southern reclamation works;		
		single layer silt curtains will be applied around all		
		works;		
		when constructing Portion D of the HKBCF, one		
		side of the seawall crossing the channel should		
		be constructed first and prior to the other works.		
		This would reduce the maximum flow speed		
		across the channel and enhance the effectiveness		
		of other mitigation measures such as silt curtain		
		system;		
		during the first two months of dredging work for		
		HKBCF and HKLR, the silt-removal efficiency of		
		the silt-curtains shall be verified by examining the		
		results of water quality monitoring points. The water quality monitoring points to be selected for		
		the above shall be those close to the locations of		
		the initial period of dredging work. Details in this		
		regard shall be determined by the		
		ENPO to be established, taking account of the		
		Contractor's proposed actual locations of his		
		initial period of dredging work		
		a sheet piled wall shall be constructed north of the		
		HKBCF island ,in order to allow the use of silt		
		curtains during Phase 2 works; and silt curtain shall be fully maintained throughout the		
		works.		
		In addition, dredging operations should be		
		undertaken in such a manner as to minimise		
		resuspension of sediments. Standard good		
		dredging practice measures should, therefore, be		
		implemented including the following requirements		
		which should be written into the dredging contract.		
		 trailer suction hopper dredgers shall not allow mud to overflow; 		
		use of Lean Material Overboard (LMOB) systems		
		shall be prohibited;		
		mechanical grabs shall be designed and		
		maintained to avoid spillage and should seal		
		tightly while being lifted;		
		barges and hopper dredgers shall have tight fitting		
		seals to their bottom openings to prevent leakage		
		of material; any pipe leakages shall be repaired quickly. Plant		
		should not be operated with leaking pipes;		
		 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;		
		excess material shall be cleaned from the decks and exposed fittings of barges and hopper		
		dredgers before the vessel is moved;		
		adequate freeboard shall be maintained on		
		barges to reduce the likelihood of decks being		
		washed by wave action;		
		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; and		
		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.		
9.11.1.3	W2	Land Works	Land-based	V
		General construction activities on land should also	works area	

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Recommended Mitigation Measurement Specific measures to be written into contracts should include:	Ires Implementation Status
wastewater from temporary site facilit be controlled to prevent direct dis surface or marine waters; sewage effluent and discharges from kitchen facilities shall be directed to discover in accordance with the requirem WPCO or collected for disposal offsite. Soakaways shall be avoided; storm drainage shall be directed to storm drainage shall be directed to storm drainage shall be directed to storm adequately designed sand/sill facilities such as sand traps, silt sediment basins. Channels, earth bund bag barriers should be provided on site direct stormwater to such silt removal Catchpits and perimeter channels acconstructed in advance of site formal and earthworks; silt removal facilities, channels and shall be maintained and any deposited shall be removed regularly, including at the onset of and after each rainstorm; temporary access roads should be surcrushed stone or gravel; rainwater pumped out from trenches or excavations should be discharged in drains via silt removal facilities; measures should be taken to prevent the of construction materials, soil, silt or cany drainage system; open stockpiles of construction mate aggregates and sand) on site should be with tarpaulin or similar fabric during rain manholes (including any newly construction).	the works ties should charge to om on-site iovernment ents of the The use of orm drains removal traps and ds or sand to properly il facilities. should be tion works manholes silt and grit specifically faced with foundation into storm e washout debris into orials (e.g. e covered istorms;

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EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
	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.		
W3	Implement a water quality monitoring programme	Selected representative WQM stations	(Conducted by Contract No. HY/2013/01)
onstruction Pha	ise)		
E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Land-based works areas	V
E5	permitted works hours, using quieter machines where practicable, and avoiding excessive	works areas	V
E6	Dolphin Exclusion Zone Dolphin watching plan	Marine works	V
E7	working vessels Proposal on design and implementation of acoustic decoupling measures applied during dredging and reclamation works	Marine works	V
E8	Control vessel speed Skipper training Predefined and regular routes for working vessels; avoid Brother Islands.	Marine Traffic	V
E9	Vessel based dolphin monitoring	Northeast and Northwest Lantau	V (Conducted by Contract No. HY/2013/01)
F4	Contingency plan.	HKBCF	V
		LUKUCE	TV
	 Roadside planting and planting along the edge of the HKBCF Island is proposed; Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; Protection measures for the trees to be retained during construction activities; Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; Providing planting area around peripheral of HKBCF for tree planting screening effect; Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline; For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar 		
	Ref. W3 Onstruction Pha E4 E5 E6 E7 E8 E9	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. W3 Implement a water quality monitoring programme E4 * Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater E5 * Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time E6 * Dolphin Exclusion Zone * Dolphin watching plan E7 * 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 pilling E8 * Control vessel speed * Skipper training * Predefined and regular routes for working vessels; avoid Brother Islands. E9 * Vessel based dolphin monitoring E4 * Maritime Oil Spill Response Plan (MOSRP);	Immediately:

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.		
	& Visual (Const			
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts G1. Grass-hydroseed bare soil surface and stock pile areas. G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. G3. Not applicable as this is for HKLR. G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF G5. Vegetation reinstatement and upgrading to disturbed areas G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed G7. Providing planting area around peripheral of HKBCF for tree planting screening effect; G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. G9. Reserve of loose natural granite rocks for reuse, Provide new coastline to adopt "naturallook" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.	Building 037	V
EM&A	LV3	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.	Building 037	V
S15.2.2	EM1	An Independent Environmental Charles	AH	
~ 101E/E	-141.1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	All construction sites	V
S15.5 – S15.6	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.	All construction sites	V

Legend:

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

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Appendix F

Site Audit Findings and Corrective Actions

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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, 13 site inspections were carried out on 08, 15, 21 and 25 September 2017, 06, 12, 19 and 27 October 2017, 02, 09, 16, 23 and 30 November 2017 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area).

Particular observations during the site inspections are described below.

For Contract No. HY/2013/03

31 August 2017

 The Contractor was reminded to remove or provide a drip tray for the chemical container in A6 Bridge. Subsequently, the chemical container was removed. The observation was closed on 08 September 2017.

08 September 2017

- The Contractor was reminded to remove construction waste accumulated at 006. Subsequently, construction waste was removed. The observation was closed on 08 September 2017.
- The Contractor was reminded to remove stagnant water accumulated at 006. Subsequently, stagnant water accumulated was removed. The observation was closed on 08 September 2017.

15 September 2017

- The Contractor was reminded to remove general waste accumulated at CUE works area. Subsequently, general waste accumulated was removed. The observation was closed on 21 September 2017.
- 2. The Contractor was reminded to remove stagnant water accumulated at Building 031. Subsequently, stagnant water accumulated was removed. The observation was closed on 21 September 2017.
- The Contractor was reminded to provide a drip tray to the chemical container at Building 031. Subsequently, a drip tray is provided to the chemical container. The observation was closed on 21 September 2017.

21 September 2017

- The Contractor was reminded to remove general waste accumulated at CUE works area. Subsequently, general waste was removed. The observation was closed on 25 September 2017.
- 2. The Contractor was reminded to provide drip trays to the chemical containers at Building 049. Subsequently, the chemical containers were removed. The observation was closed on 25 September 2017.

25 September 2017

 The Contractor was reminded to remove general waste accumulated at Building 038 and Building 039. Subsequently, general waste was removed. The observation was closed on 06 October 2017.

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2. The Contractor was reminded to provide watering for dust suppression on site. Subsequently, watering was provided. The observation was closed on 06 October 2017.

06 October 2017

- The Contractor was reminded to provide watering for dust suppression on the road next to Building 040. Subsequently, watering was provided. The observation was closed on 12 October 2017.
- 2. The Contractor was reminded to remove general waste accumulated at Building 040. Subsequently, construction waste was removed. The observation was closed on 12 October 2017.

12 October 2017

 The Contractor was reminded to remove general waste and stagnant water accumulated at Building 047, 048 and 049. Subsequently, general waste and stagnant water accumulated was removed. The observation was closed on 19 October 2017.

19 October 2017

1. The Contractor was reminded to remove general waste accumulated at Building 027. Subsequently, general waste was removed. The observation was closed on 27 October 2017.

27 October 2017

- 1. The Contractor was reminded to remove general waste accumulated at Building 049. Subsequently, general waste was removed. The observation was closed on 02 November 2017.
- The Contractor was reminded to provide NRMN label to the mobile crane at Box Culvert B. Subsequently, NRMN label d. The observation was closed on 02 November 2017.

02 November 2017

 The Contractor was reminded to remove general waste accumulated at Building 040. Subsequently, construction waste was removed. The observation was closed on 09 November 2017.

09 November 2017

1. The Contractor was reminded to remove general waste accumulated at Building 027. Subsequently, general waste was removed. The observation was closed on 16 November 2017.

16 November 2017

 The Contractor was reminded to remove general waste accumulated at Portion K and Building 048. Subsequently, general waste was removed. The observation was closed on 23 November 2017.

23 November 2017

 The Contractor was reminded to remove general waste accumulated at Building 030. Subsequently, general waste was removed. The observation was closed on 30 November 2017.

30 November 2017

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The Contractor was reminded to provide drop tray for the oil drum beside Building 049. Follow-up actions for outstanding observation will be checked in the upcoming site inspections and reported in the coming reporting period.

For Contract No. HY/2013/06 within Contract No. HY/2013/03 works area

08 September 2017

- 1. Nil findings.
- 15 September 2017
- 1. Nil findings.
- 21 September 2017
- 1. Nil findings.
- 25 September 2017
- 1. Nil findings.
- 06 October 2017
- 1. Nil findings.
- 12 October 2017
- 1. Nil findings.
- 19 October 2017
- 1. Nil findings.
- 27 October 2017
- 1. Nil findings.
- 02 November 2017
- 1. Nil findings.
- 09 November 2017
- 1. Nil findings.
- 16 November 2017
- 1. Nil findings.
- 23 November 2017
- 1. Nil findings.
- 30 November 2017
- Nil findings.

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The Contractor has rectified most of the observations as identified during environmental site inspections during the reporting period. Follow-up actions for outstanding observations will be inspected during the next site inspections.

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Appendix G

Waste Flow Table



Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Monthly Summary of Waste Flow Table for 2017 (year)

Name of Person completing the Record:

Marko Chan

Actual Quantities of Inert C&D Materials G	Generated Monthly Actual Quantities of Non-inert C&D Wastes Generated Monthly		Others or
Broken Reused in other	Disposed as Metals cardboard	Plastics Cho W	Chemical general
(see Note 1) Projects	packaging		_
), ui) (¿m000, ui) (¿m000, ui)	(000m³) (in '000m³) (in '000 Kg) (in '000 Kg) (in '000 Kg)	(in '000 Kg) (in '0	(in '000 Kg) (in '000m ³)
	0 0000	0	0 0.580
0 0	0 0.000 0 0	0	0 0.585
0 0	0 0.000 0	0	0.999
0 0	0 0.043 0 0 0	0	
0 0	12.637 0.045 0 0 0 0		0 1.073
0 0	6.007 1.122 0 0 0	0	0 1.073
0 0		0 0	0 1.073 0 1.321 0 2.023
0	1.122 0 0 0.486 0 0	0 0 0	0 1.073 0 1.321 0 2.023 0 1.448
0 0	0 0 0	0 0 0 0	0 1.073 0 1.321 0 2.023 0 1.448 0 1.656
0 0	1.122 0 0 0.486 0 0 3.596 0 0 3.469 0 0	0 0 0 0	0 1.073 0 2.023 0 2.023 0 1.448 0 1.656 0 1.950
0 0	1.122 0 0 0.486 0 0 3.596 0 0 3.469 0 0 1.027 0 0	0 0 0 0 0	0 1.073 0 2.023 0 1.448 0 1.656 0 1.950
	1.122 0 0 0.486 0 0 3.596 0 0 3.469 0 0 1.027 0 0 1.557 0 0	0 0 0 0 0 0	0 1.073 0 2.023 0 2.023 0 1.448 0 1.656 0 1.950 0 1.750
0.000 0.000 297.775	1.122 0 0 0.486 0 0 3.596 0 0 1.027 0 0 1.557 0 0	0 0 0 0 0 0	

Notes:

(1) Broken concrete for recycling into aggregates.

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



ATAL
ATAL
ATAL Technologies Ltd.
Contract: HY/2013/06 HKBCF- Automatic Vehicle Clearence Support System
Location: Artifical Island of HKBCF (C3 Area)

Monthly Summary Waste Flow Table for 2017

\$ 0					T_		1,5	T_	-	T-	T-	T -	1 -	T		
Total Quantity Generated 總生產量		(a)= (b+c+d+e)	Act. Qty 資際數量	-	0.000	0.002	0.005	0.020	0.020	0.020	0.030	0.050	0.050	0.050		0 247
		(a)= (b	Est. Qty. 估計数量	00000	0.000	0.002	0.005	0.020	0.020	0.020	0.030	0.050	0.050	0.050		0.247
	i Waste 發物	(ē)	Act. Qly. 質際數量	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00		0000
文的廢物	Chemical Waste 化學廢物	(in litre)	Est. Oty. 估計數圖	0.000	000'0	000'0	0.000	0.000	00000	0.000	0.000	0.000	0.000	0.000		0.000
賈利用或回4	dboard ging 長紙類	nes)	Act. Oty 實際數量	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.004
	Paper/cardboard packaging 廢紙/包裝紙燒	(in tonnes)	Est Oty. 估計数量	0.002	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.004
Waste to be recycled and returned / 可再循環利用或回收的廢物	tic S	nes)	Act. Qty. 百際數量	0.000	0,000	0.000	0.000	0.000	0.000	0,000	0.000	0.000	00000	0.000		0.000
be recycled	Plastic 遊霧	(in tonnes)	Est. Oty. 估計数量	0.000	0.000	0.000	0.000	0.000	00000	0.000	0.000	0.000	0.000	0.000		0.000
Waste to	S B B	nes)	Act. Qly. 實際數量	0.000	0.000	0.005	0.005	0.020	0.020	0.020	0:030	0:030	0.030	0.030		0.190
	Metals 金屬	(in tonnes)	Est. Oty. 估計数量	0.000	0.000	0.005	0.005	0.020	0.020	0.020	0:030	0.030	0.030	0.030		0.190
&D Waste ssal :廢物	Others (e.g. general refuse, broken formwork etc) 其他 (知近版, 廢稅結學)	(e)	Act Qly 質際数量	0.000	0.000	0.002	0.005	0.020	0.020	0.020	0:030	0.050	0.050	0.050		0.247
Non-inert C&D Waste disposal 非뗠性廢物 (in tonnes)			Est. Oty. 估計數量	0.000	0.000	0.002	0.005	0.020	0.020	0.020	0.030	0.050	0.050	0.050		0.247
	Inert Waste (e.g. soil, broken concrete, rubble, fill material etc.) 廢性廢物 似泥, 石矢頭, 石、填 料等)	()	Act. Oty 實際數量	0.000	0.000	0.000	0,000	0,000	0.00.0	0.00.0	0.000	0.000	0.000	0.000		0.000
生廢物	Inert Waste (e.g., soil, broken concrete, rubble, fill material etc.) 質性酸物 (如泥, 石矢頭, 石, 墳	(p)	Est. Qty. 估計數量	0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.000	0.000	0,000	0.000		0.000
isposal / 墮	Reused in other Projects 再用於其他工程	(c)	Act. Oty. 實際數量	0.000	00000	0.000	0.000	0.000	0,000	0.000	0.000	0.000	0,000	0.000		0.000
Inert C&D Waste disposal / 暨性廢物 (in tonnes) (see Note 1)			Est. Oty. 估計数据	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0,000	0.000	0.000	0.000		0.000
	the Work age kfilling) 工程 填)	(p)	Act. Qty. 實際數量	00000	0.000	0,000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
	Reused in the Work Package (e.g. backfilling) 再用於工程 (如回墳)		Est. Oty. 估計數量	0000	00000	0.000	0,000	0.000	0.000	0.00	0.000	0.000	0.000	0.000		0.000
Month				January	February	March	April	May	June	July	August	September	October	November	December	Total

(1) The quantitles of C&D Materials, in tonne, was calculated by multiply the estimated volume, in m3, with the density of the soil, which is 1.5 gcm-3,

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Appendix H

Environmental Licenses and Permits

Environmental Permit / Licences Summary for Contract No. HY/2013/03

Item	Permit/Licence Registration	Permit No.	Work Area	Annlication Data	Tema Data	Valid	Valid Date		Remark
)		MOIN OLD	Application Date	Issue Date	From	To	Status	
-	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/H	HKBCF	16-Jan-15	19 Jan 15	19 Jan 15	i iz	Superseded	
2	Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	Ref No. 387703	Main Site Arca	15-Apr-15	15-Apr-15	15-Apr-15	ïZ	Valid	
89	Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	Ref No. 387735	Works Area WA3	15-Apr-15	15-Apr-15	15-Apr-15	Nil	Valid	
4	Billing A/C for Construction Waste Disposal Pursuant to Section 6 & 9 of the Waste Disposal (Charges for Disposal of Construction waste) Regulation	A/C No. 7022228	Main Site Area, WA3 & 4	15-Apr-15	06-May-15	06-May-15	Nil	Valid	
5	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0477-15	Works Area WA3	20-Apr-15	04-May-15	18-May-15	17-Nov-15	Expired	
9	Registration as Waste Producer Pursuant to Waste Disposal (Chemical Waste) (General) Regulation	5213-951-C1186-28	Main Site Area	28-Apr-15	01-Jun-15	01-Jun-15	Nil	Valid	
7	Registration as Waste Producer Pursuant to Waste Disposal (Chemical Waste) (General) Regulation	5213-974-C3597-03	Works Area WA4	28-Apr-15	01-Jun-15	01-Jun-15	Nil	Valid	
∞	Water Discharge License Pursuant to Water Pollution Control Ordinance (Cap 358)	WT00022180-2015	Works Area WA3	29-Apr-15	04-Aug-15	03-Aug-15	31-Aug-20	Valid	
6	Water Discharge License Pursuant to Water Pollution Control Ordinance (Cap 358)	WT00022391-2015	Main Site Area	06-May-15	04-Sep-15	04-Sep-15	30-Sep-20	Superseded	
10	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0566-15	Box Culvert D	08-May-15	22-May-15	08-Jun-15	07-Nov-15	Expired	
=	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0674-15	CUE	05-Jun-15	19-Jun-15	19-Jun-15	18-Aug-15	Expired	
12	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/I	HKBCF	30-Jun-15	17-Jul-15	17-Jul-15	Nii	Superseded	
13	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	PP-RS0020-15	Drill Tower	06-Jul-15	20-Jul-15	01-Aug-15	30-Nov-15	Expired	
14	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0999-15	CUE	28-Aug-15	11-Sep-15	14-Sep-15	10-Dec-15	Superseded	
15	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1065-15	Portion A1	15-Sept-15	29-Sep-15	30-Sep-15	31-Dec-15	Superseded	

Construction Noise Permit	vise Permit					1 0		7	
rrsuant to Section 8(6	Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1203-15	COLE	20-Oct-15	03-Nov-15	02-Nov-15	31-Jan-16	Superseaea	
ermit issued Under t	Permit issued Under the Dumping at Sea Ordinance	EP/MD/16-121	South of Brothers (CMP2)	26-Oct-15	17-Dec-15	18-Dec-15	17-Jan-16	Expired	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1315-15	Portion G	12-Nov-15	26-Nov-15	28-Nov-15	28-Feb-16	Expired	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	PP-RS0029-15	Drill Tower	27-Nov-15	11-Dec-15	14-Dec-15	13-Apr-16	Expired	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1388-15	Main Site Area	27-Nov-15	16-Dec-15	21-Dec-15	18-Mar-16	Superseded	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0035-16	Main Site Area	31-Dec-15	14-Jan-16	18-Jan-16	17-Mar-16	Superseded	
ermit issued Under	Permit issued Under the Dumping at Sea Ordinance	EP/MD/16-161	South of Brothers (CMP2)	31-Dec-15	15-Jan-16	20-Jan-16	19-Feb-16	Expired	
ermit issued Under	Permit issued Under the Dumping at Sea Ordinance	EP/MD/16-177	South of Brothers (CMP2)	26-Jan-16	11-Feb-16	20-Feb-16	19-Mar-16	Expired	
Environmental Permit Pursuant to Environme	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/J	HKBCF	18-Feb-16	25-Feb-16	25-Feb-16	ZiiZ	Superseded	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	PP-RS0009-16	Portion G	02-Mar-16	16-Mar-16	21-Mar-16	20-Jul-16	Expired	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0244-16	Main Site Area	03-Mar-16	17-Mar-16	18-Mar-16	18-Jun-16	Expired	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0249-16	Main Site Area	03-Мат-16	17-Mar-16	19-Mar-16	18-Jun-16	Superseded	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0269-16	Floating Concrete Batching Plant	03-Mar-16	17-Mar-16	19-Mar-16	18-Jun-16	Superseded	
ermit issued Under	Permit issued Under the Dumping at Sea Ordinance	EP/MD/16-202	East of Sha Chau (CMP Vd)	09-Mar-16	18-Mar-16	24-Mar-16	23-Apr-16	Expired	
Environmental Permit Pursuant to Environme	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/K	HKBCF	24-Mar-16	11-Apr-16	11-Apr-16	ïż	Valid	
Construction Noise Permit Pursuant to Section 8(6) of	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0348-16	Main Site Area	29-Mar-16	12-Apr-16	15-Apr-16	14-Jul-16	Superseded	
ermit issued Under	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-007	East of Sha Chau (CMP Vd)	08-Apr-16	19-Apr-16	24-Apr-16	23-May-16	Expired	
ermit issued Under	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-029	East of Sha Chau (CMP Vd)	09-May-16	19-May-16	24-May-16	23-Jun-16	Expired	

_	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-040	East of Sha Chau (CMP Vd)	31-May-16	13-Jun-16	14-Jun-16	13-Jul-16	Expired	
ह इ	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0607-16	Main Site Area	02-Jun-16	16-Jun-16	19-Jun-16	18-Sep-16	Superseded	
8 2 1	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0629-16	Floating Concrete Batching Plant	02-Jun-16	16-Jun-16	19-Jun-16	18-Dec-16	Superseded	
	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0639-16	Main Site Area	02-Jun-16	16-Jun-16	15-Jul-16	14-0ct-16	Superseded	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-062	East of Sha Chau (CMP Vd)	30-Jun-16	12-Jul-16	14-Jul-16	13-Aug-16	Expired	
	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	PP-RS0020-16	Portion A, G & H	13-Jul-16	27-Jul-16	28-Jul-16	24-Jan-17	Superseded	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-075	East of Sha Chau (CMP Vd)	27-Jul-16	05-Aug-16	14-Aug-16	31-Aug-16	Expired	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-088	East of Sha Chau (CMP Vd)	16-Aug-16	26-Aug-16	01-Sep-16	30-Sep-16	Expired	
	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0933-16	Main Site Arca	18-Aug-16	01-Sep-16	05-Sep-16	31-Dcc-16	Expired	
	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0960-16	Main Site Area	06-Sep-16	15-Sep-16	19-Sep-16	18-Dec-16	Expired	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-105	East of Sha Chau (CMP Vd)	15-Sep-16	27-Sep-16	01-Oct-16	31-Oct-16	Expired	
	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	PP-RS0028-16	Portion A, G, H & N	15-Sep-16	29-Sep-16	03-Oct-16	02-Apr-17	Expired	
	Water Discharge License Pursuant to Water Pollution Control Ordinance (Cap 358)	WT00025384-2016	Main Site Area	09-Mar-16	10-Nov-16	10-Nov-16	30-Sep-20	Valid	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-132	East of Sha Chau (CMP Vd)	03-Nov-16	30-Nov-16	05-Dec-16	04-Jan-17	Expired	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-140	East of Sha Chau (CMP Va) or South of Brothers (CMP2)	14-Nov-16	30-Nov-16	30-Nov-16	29-Dec-16	Expired	
	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-146	East of Sha Chau (CMP Va) or South of Brothers (CMP2	28-Nov-16	16-Dec-16	16-Dec-16	29-Dec-16	Expired	
	Construction Noise Permit	GW-RS1267-16	Main Site Area	02-Dec-16	16-Dec-16	19-Dec-16	18-Mar-17	Exnired	

	Pursuant to Section 8(6) of the Noise Control Ordinance								
-	Specified Process Licence for Tar and Bitumen Works Pursuant to Section 14 of the Air Pollution Control Ordinance	L-15-039(1)	Temporary Asphalt Mixing Facility	05-Dec-16	16-Mar-17	16-Mar-17	15-Mar-19	Valid	
52	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1329-16	Main Site Area	09-Dec-16	23-Dec-16	01-Jan-17	30-Apr-17	Superseded	
53	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-161	East of Sha Chau (CMP Vd)	15-Dec-16	04-Jan-17	05-Jan-17	04-Fcb-17	Expired	
54	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-170	East of Sha Chau (CMP Vd)	12-Jan-17	24-Jan-17	05-Feb-17	04-Mar-17	Expired	
55	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0205-17	Main Site Area	01-Mar-17	15-Mar-17	19-Mar-17	18-Jun-17	Expired	
56	Permit issued Under the Dumping at Sea Ordinance	EP/MD/17-190	East of Sha Chau (CMP Vd)	01-Mar-17	17-Mar-17	20-Mar-17	19-Apr-17	Expired	
57	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	PP-RS0008-17	Box Culvert B	06-Apr-17	20-Apr-17	21-Apr-17	19-Jul-17	Expired	
58	Permit issued Under the Dumping at Sea Ordinance	EP/MD/18-005	East of Sha Chau (CMP Vd)	10-Apr-17	24-Apr-17	25-Apr-17	24-May-17	Expired	
59	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0382-17	Main Site Area	10-Apr-17	25-Apr-17	27-Apr-17	24-Jul-17	Expired	
09	Permit issued Under the Dumping at Sea Ordinance	EP/MD/18-018	East of Sha Chau (CMP Vd)	19-May-17	01-Jun-17	02-Jun-17	01-Jul-17	Expired	
61	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0516-17	Main Site Area	31-May-17	14-Jun-17	19-Jun-17	18-Sep-17	Expired	
62	Permit issued Under the Dumping at Sea Ordinance	EP/MD/18-037	East of Sha Chau (CMP Vd)	19-Jun-17	06-Jul-17	07-Jul-17	06-Aug-17	Expired	
63	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0632-17	Main Site Area	07-Jul-17	21-Jul-17	25-Jul-17	24-Nov-17	Superseded	
64	Permit issued Under the Dumping at Sea Ordinance	EP/MD/18-052	East of Sha Chau (CMP Vd)	25-Jul-17	07-Aug-17	09-Aug-17	31-Aug-17	Expired	
65	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0771-17	Main Site Area	28-Aug-17	11-Sep-17	19-Sep-17	18-Jan-18	Valid	
99	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0778-17	Main Site Area	28-Aug-17	11-Sep-17	14-Sep-17	13-Mar-18	Superseded	
67	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0834-17	Main Site Area	12-Sep-17	26-Sep-17	28-Sep-17	27-Mar-18	Superseded	
89	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0901-17	Main Site Area	25-Sep-17	11-0ct-17	13-0ct-17	12-Apr-18	Valid	

ATAL Technologies Limited

Environmental License/ Permits /Notification Register

Contract: HY/2013/06 – Hong Kong Zhuhai and Macao Bridge - HKBCF – Automatic Vehicle Clearance Support System



LCAL H2642

	Remark			
ember 2017		Issuing Office	EPD	EPD
Date: 30 November 2017	Fx	Date	1	30 Nov 2017
	Issue/Start	Date	20 August 2015	1 June 2017
	Permit/License/	Registration Number	7023015	GW-RS0452-17
	Permit/License/	Notification/ Registration Description	Disposal of Construction Waste Billing Account	Construction Noise Permit
	gistration	Reference	WFG14980	ľ.
	Permit/License or Registration Application	Date	31 July 2015	4 May 2017
	Permit/L	Work Area	HZMB-HK Boundary Crossing Facilities	HZMB-HK Boundary Crossing Facilities
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Report No.: 0165/15/ED/1043

Appendix I

Investigation Reports on Action Level or Limit Level Non-compliance

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0004

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent,

Kwai Fong, Hong Kong.

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR004

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170901DO_v1) was forwarded by the ET of Contract No. HY/2013/01 on 27 September 2017:

Monitoring Date: 1 September 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
Surface and Middle	5.0	4.2 (except 5 mg/L for FCZ)
Bottom	4.7	3.6

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	IS5	Bottom	4.4	4.4
DO	IS10(N)	Bottom	4.5	4.5
DO	IS(Mf)11	Bottom	4.6	4.5
DO	IS17	Bottom	4.5	5.2
DO	SR5(N)	Bottom	4.5	4.7

Bold means AL exceedance.

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170901DO_v1) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken in the current stage is the preparation work of precast installation which was suspended on the date of exceedance due to safety issues. But silt curtain was still maintained to enclose the work area of the outlet of the box culvert fully. All sea water flow into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 1 September 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

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4. Follow up Status (Exceedance)

During weekly site audit on 31 August, 8 and 14 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

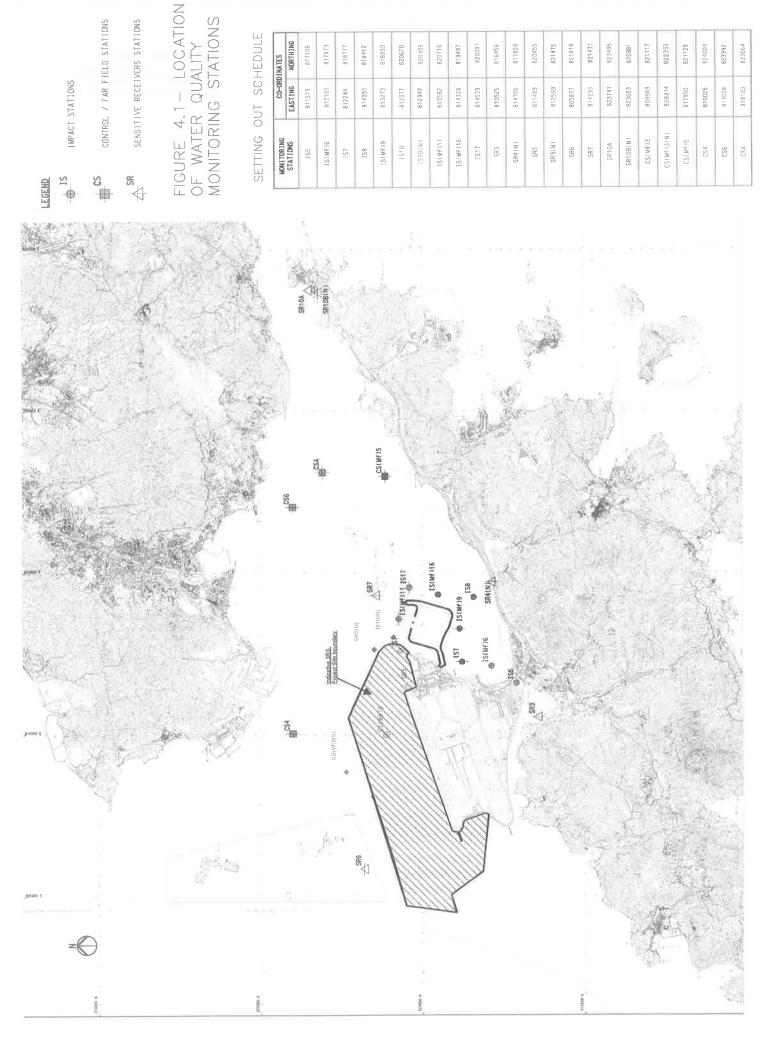
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Figure 1

The Location of WQM Stations



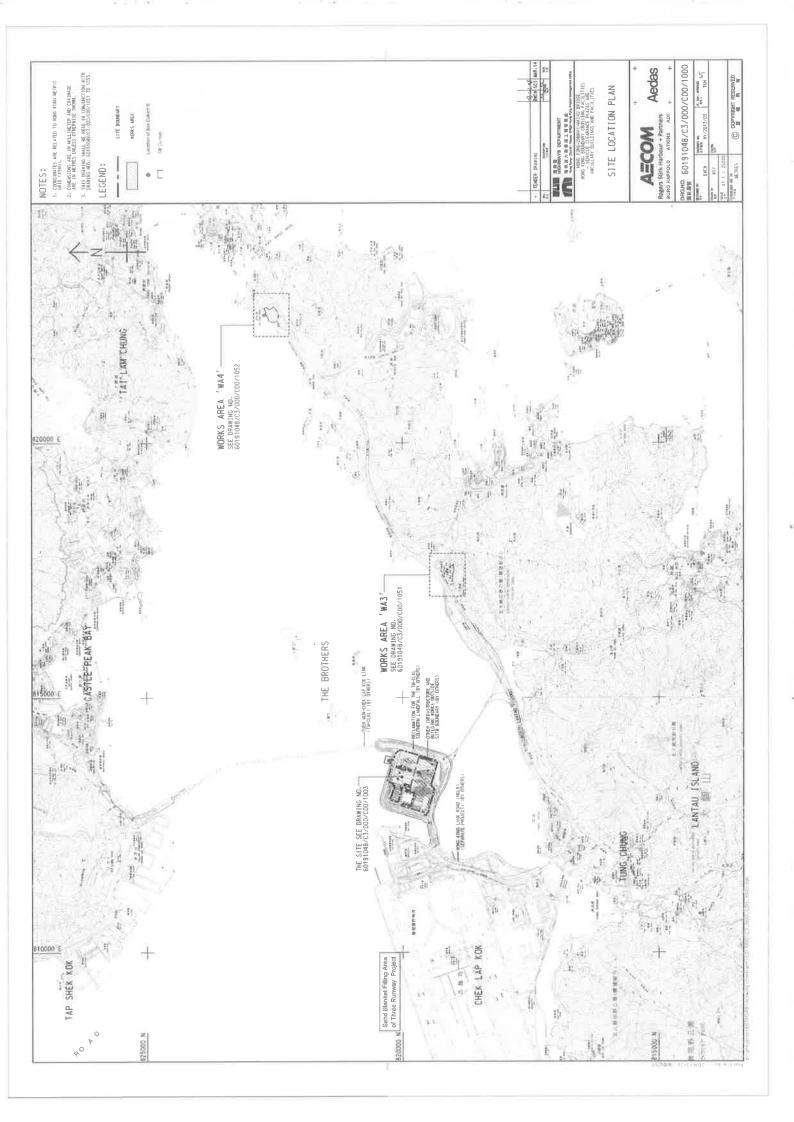
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20170901DO_v1)

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170901DO_v1

Date of Notification: 5 September 2017

Works Inspected: Data collected from water sampling works on 1 September 2017 and the results were issued on 4 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

million moves for						
STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)	
IS5	Bottom	Conformand	Surface and	4.4	4.4	
IS10(N)	Bottom			Middle	4.5	4.5
	Bottom		4.2 (except 5	4.6	4.5	
IS17	Bottom	_		4.5	5.2	
SR5(N)	Bottom	4.7	Bottom 3.6	4.5	4.7	
	STATION IS5 IS10(N) IS(Mf)11 IS17	STATION DEPTH IS5 Bottom IS10(N) Bottom IS(Mf)11 Bottom IS17 Bottom	IS5	STATION DEPTH AL (mg/L) LL (mg/L)	STATION DEPTH AL (mg/L) LL (mg/L) MEASURED AT MIDEBB TIDE (mg/L)	

Notes:

AL means Action Level.

LL means Limit Level.

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by

Keith Chau

Title 🖫

ET Leader

Date :

27 September 2017

Copied to:

Contractor and Engineer Representative

Certh

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0005

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR005

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170906DO_TURB_v3 & 20170906SS_v1) were forwarded by the ET of Contract No. HY/2013/01 on 26 September 2017 and 21 September 2017 respectively:

Monitoring Date: 6 September 2017

The Action and Limit Levels of dissolved oxygen (DO), turbidity and suspended solid

(SS) at determined from baseline monitoring data are listed below:

(55) at determined	Trom paseline monitoring data an	e listed below.
Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6
Depth-averaged turbidity	27.5 and 120% (i.e. 17.6 for mid-ebb/18.7 for mid-flood) of upstream control station's turbidity at the same tide of the same day	47.0 and 130% (i.e. 19.0 for mid-ebb/20.2 for mid-flood) of upstream control station's turbidity at the same tide of the same day
SS	23.5 and 120% (i.e. 11.3 for mid-ebb /14.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 12.3 for mid-ebb/15.3 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

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Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS17	Bottom	4.6	4.9
	SR6	Surface & Middle	5.7	4.8
DO	SR10A	Surface & Middle	<u>4.9</u>	<u>4.6</u>
		Bottom	4.8	4.5
	SR10B(N)	Surface & Middle	4.8	4.6
		Bottom	4.8	4.5
Turbidity	IS(Mf)11	Depth average	14.6 NTU	27.9 NTU
	IS8	Donth	8.1	26.4
SS	SR4(N)	Depth	9.4	25.3
	SR6	average	6.2	23.6

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170906DO_TURB_v3 & 20170906SS_v1) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8. SR4(N) and SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). For turbidity exceedance recorded at the WQM station IS(Mf)11 closer to the marine delivery route, there was no turbidity exceedance recorded at WQM station IS10(N) which also close to the marine delivery route. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities

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before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen or generate suspended solid to cause the DO, turbidity and SS exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 6 September 2017. Besides, the concerned WQM stations where DO and SS exceedances recorded were far away from the works areas (i.e. box Culvert B), while there was only Action Level exceedance of turbidity but no notification of exceedance of DO and SS received at the WQM stations closer to the works areas, such as IS(Mf)11. Therefore, the exceedances on 6 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:

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- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 25 and 31 August, 8 and 15 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved:
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

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- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

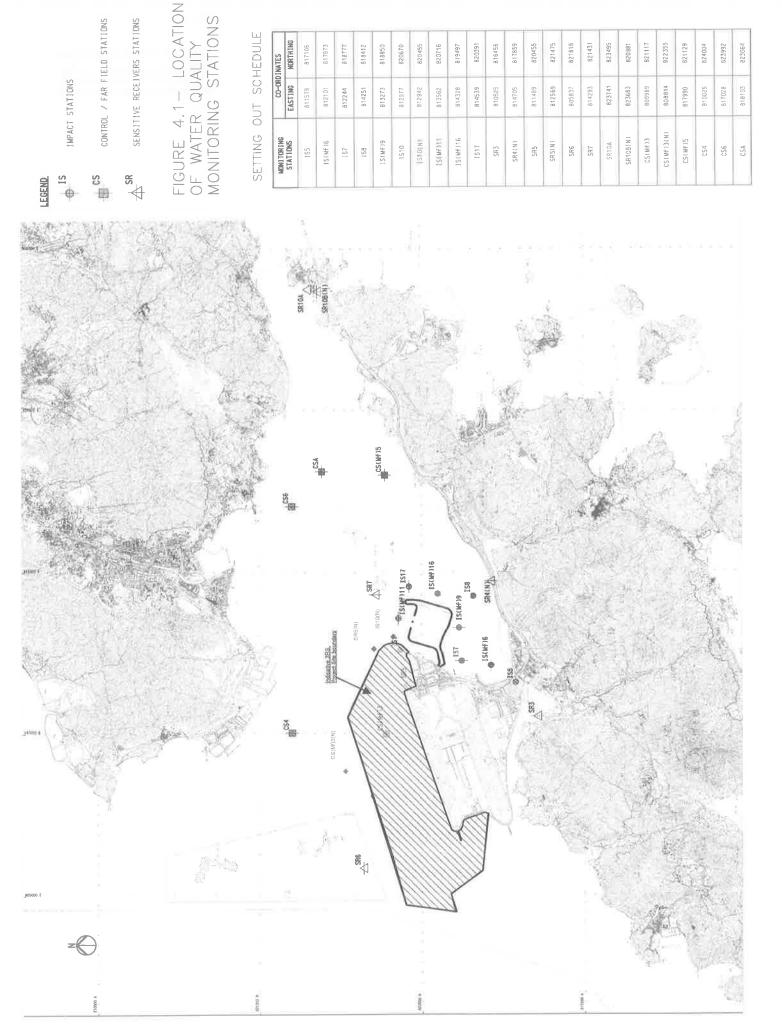
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Figure 1

The Location of WQM Stations



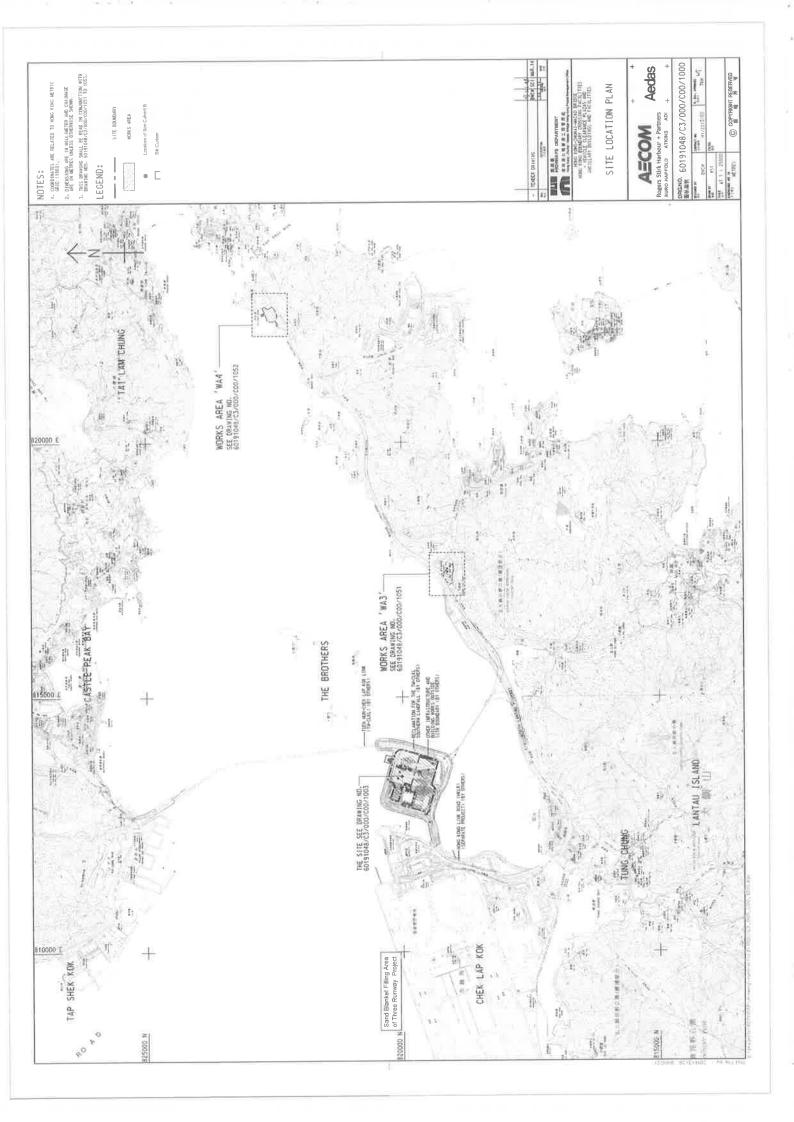
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170906DO_TURB_v3

Date of Notification: 11 September 2017

Works Inspected: Data collected from water sampling works on 6 September 2017 and the results were issued on 11 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS17	Bottom			4.6	4.9
	SR6	Surface and Middle		Surface and	5.7	4.8
DO	SR10A	Surface and Middle	Surface and Middle 5.0	Middle 4.2 (except 5 mg/L for	4.9	4.6
		Bottom	Bottom 4.7	FCZ) Bottom	4.8	4.5
	SR10B(N)	Surface and Middle	49.1	3.6	4.8	4.6
		Bottom			4.8	4.5
TURB	IS(MI)11	Depth Average	27.5 and 120% (i.e. 17.6 for mid- ebb/18.7 for mid- flood) of upstream control station's turbidity at the same tide of the same day	47.0 and 130% (i.e. 19.0 for mid- ebb/20.2 for mid- flood) of upstream control station's turbidity at the same tide of the same day	14.6	27.9

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by

Keith Chau

Title :

ET Leader

Date:

26 September 2017

Copied to

: Contractor, Engineer Representative and IEC/ENPO

Certho

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170906SS_v1

Date of Notification: 19 September 2017

Works Inspected: Data collected from water sampling works on 6 September 2017 and the results were issued on 15

September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS8		23.5 and 120% (i.e. 11.3 for mid-	34.4 and 130% (i.e. 12.3 for mid- ebb/15.3 for mid-	8.1	26.4
ss	SR4(N)	Depth Average	ebb/14.1 for mid- flood) of upstream control station's SS at the same	flood) of upstream control station's SS at the same tide of the same	9.4	25.3
	SR6		tide of the same day	day and 10mg/L for WSD Seawater intakes	6.2	23.6

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by Keith Chau

Title : ET Leader

Certh Date : 21 September 2017

Copied to Contractor, Engineer Representative and IEC/ENPO

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR006

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 25/10/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR006

1. **Project Details**

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. **Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20170908DO_TURB_v2) were forwarded by the ET of Contract No. HY/2013/01 on 26 September 2017. Notification of Action/Limit Level Exceedance (20170908SS) were forwarded by the ET of Contract No. HY/2013/01 on 21 September 2017:

Monitoring Date: 8 September 2017

The Action and Limit Levels of dissolved oxygen (DO), turbidity and suspended solid

(SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)	
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)	
DO (Bottom)	4.7	3.6	
Depth-averaged turbidity*	27.5 and 120% (i.e. 20.2 for mid-ebb/13.7 for mid-flood) of upstream control station's turbidity at the same tide of the same day	47.0 and 130% (i.e. 21.9 for mid-ebb/14.9 for mid-flood) of upstream control station's turbidity at the same tide of the same day	
SS	23.5 and 120% (i.e. 20.4 for mid-ebb /10.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 22.1 for mid-ebb/11.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	

^{*:} The unit for turbidity is nephelometric turbidity unit (NTU)

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Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
DO	IS5	Surface & Middle	5.0	4.9
	107	Surface & Middle	4.8	5.1
	IS7	Bottom	4.6	5.2
	IS8	Surface & Middle	5.0	4.9
	IS(Mf)9	Surface & Middle	5.3	4.8
	IS10(N)	Surface & Middle	4.9	4.7
	IS(Mf)11	Surface & Middle	5.0	4.7
		Bottom	4.8	4.6
	IS(Mf)16	Surface & Middle	4.6	4.9
		Bottom	4.3	5.0
	IS17	Surface & Middle	4.9	4.7
		Bottom	4.3	4.5
	SR3	Surface & Middle	4.7	4.9
	SR4(N)	Surface & Middle	5.2	4.9
	SR5(N)	Surface & Middle	5.0	4.8
	SR6	Surface & Middle	4.9	4.9
	SR7	Surface & Middle	5.1	4.9
	SR10A	Surface & Middle	4.9	4.3
		Bottom	4.8	4.3
	SR10B(N)	Surface & Middle	4.8	4.7
Turbidity*	IS5		34.4	6.6
	IS10(N)	Donth everage	25.2	31.6
	IS(Mf)11	Depth average	17.8	29.0
	SR6		12.2	35.3
SS	IS5		28.4	8.7
	IS10(N)	Depth average	19.5	35.5
	IS(Mf)11		15.4	33.2

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

* The unit for turbidity is nephelometric turbidity unit (NTU)

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170908DO_TURB_v2 & 20170908SS) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03.Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 8 September 2017.

For turbidity and SS exceedance recorded at the WQM station IS10(N) closer to the works area Box Culvert B, there was no turbidity and SS exceedance recorded at the same WQM station under similar work environment on 06 September 2017 and 11 September 2017. For turbidity and SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no turbidity and SS exceedance recorded at the same WQM station under similar work environment on 11 September 2017. For turbidity and SS exceedance recorded at the WQM station IS5 and SR6, the exceedance recorded at the concerned WQM station is far away from the marine works area of Contract No. HY/2013/03. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused turbidity or SS exceedance recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 8 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;

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- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 25 and 31 August, 8 and 15 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

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The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

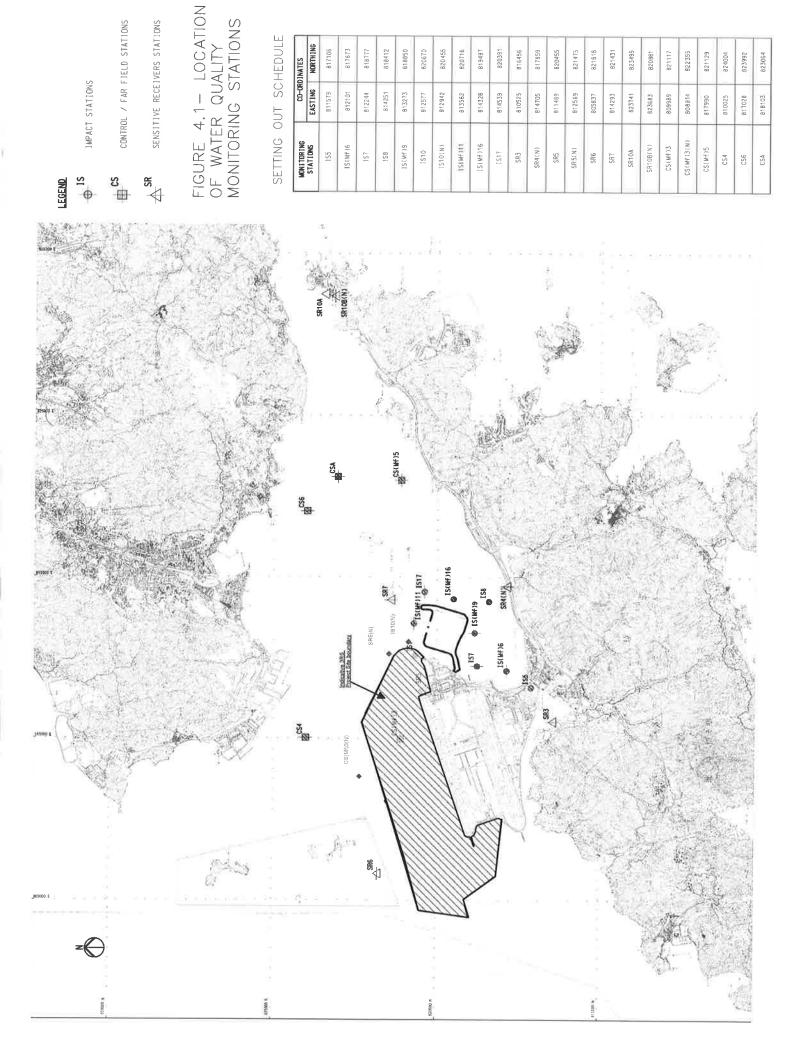
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Tel : (852)-24508238
Fax : (852)-24508032
Email : mcl@fugro.com



Figure 1

The Location of WQM Stations



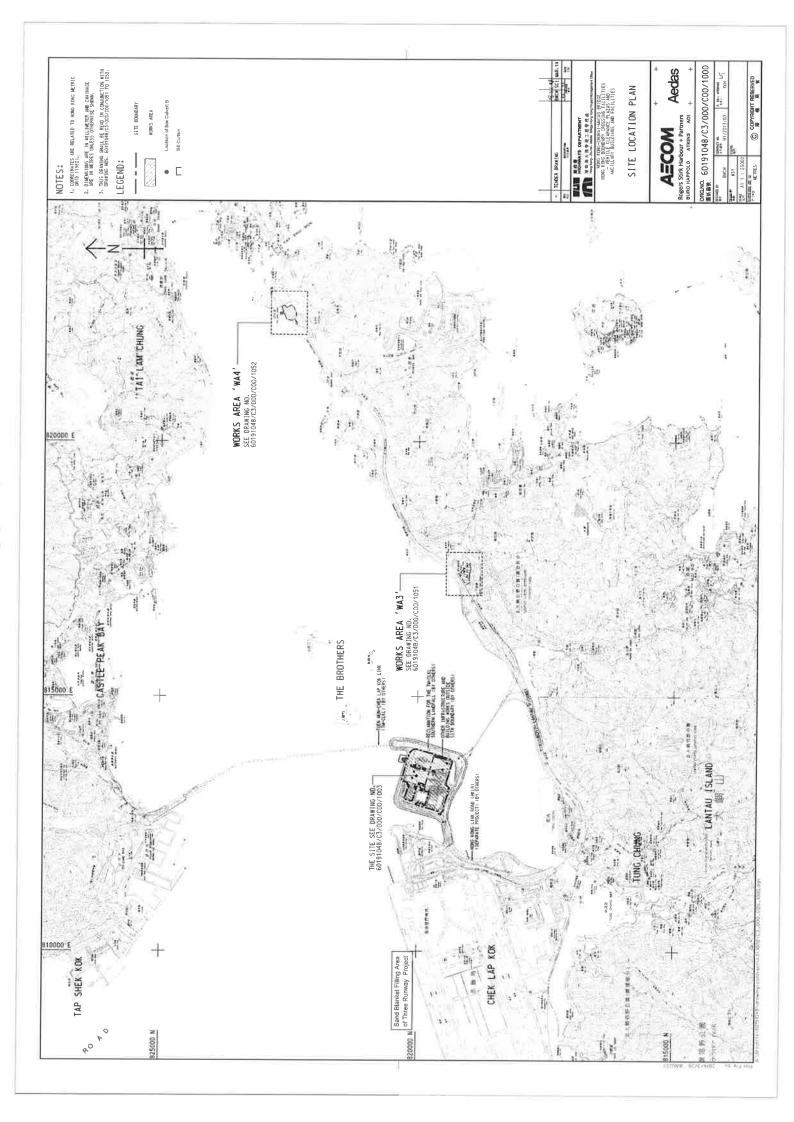
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170908DO_TURB_v2

Date of Notification: 13 September 2017

Works Inspected: Data collected from water sampling works on 8 September 2017 and the results were Issued on 12

September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS5	Surface and Middle			5.0	4.9
	IS7	Surface and Middle]	Surface and Middle 4.2	4.8	5.1
	137	Bottom			4.6	5,2
	IS8	Surface and Middle			5.0	4.9
	IS(Mf)9	Surface and Middle			5.3	4.8
	IS10(N)	Surface and Middle			4.9	4.7
	IS(Mf)11	Surface and Middle]		5.0	4.7
	IS(MI)II	Bottom			4.8	4.6
	IS(Mf)16	Surface and Middle	Surface and		4.6	4.9
DO	13(1011)10	Bottom	Middle 5.0	(except 5	4.3	5.0
50	IS17	Surface and Middle	Bottom 4.7	mg/L for FCZ) Bottom	4.9	4.7
	1317	Bottom			4.3	4.5
	SR3	Surface and Middle		3.6	4.7	4.9
	SR4(N)	Surface and Middle			5.2	4.9
	SR5(N)	Surface and Middle			5.0	4.8
ĺ	SR6	Surface and Middle			4.9	4.9
	SR7	Surface and Middle			5.1	4.9
	SR10A	Surface and Middle			4.9	4.3
		Bottom			4.8	4.3
	SR10B(N)	Surface and Middle			4.8	4.7
	IS5		27.5 and 120% (i.e. 20.2 for mid- ebb/13.7 for mid-flood) of upstream control station's turbidity at	% (i.e. 130% (i.e. or mid- 3.7 for abb/14.9 for mid-flood) of rearm upstream control station's	34.4	6.6
TURB	IS10(N)	Depth Average			25.2	31.6
	IS(Mf)11	pebui Average			17.8	29.0
	SR6		the same tide of the same day	the same tide of the same day	12.2	35.3

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by : Keith Chau Title :: ET Leader

Date : 26 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

Page 1

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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33.2

Hong Kor	No. HY/2013/ ng- Zhuhai- M ng Boundary	acao Bridg	e acilities – Passenge	r Clearance Building		
Notification	ons of Enviro	nmental Q	uality Limits Exceed:	ances	Notific	ation No.: 20170908SS
Date of N	otification: 1	9 Septembe	er 2017			
Works In: Septembe		a collected f	rom water sampling w	orks on 8 September	2017 and the results wer	e issued on 18
			y Monitoring Station			
	Transferonsec-12		Suspended Solid (S	S)/ Turbidity (TURB)		
Action &	Limit Level (A	L & LL) /N	leasured Level:			
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS5		23.5 and 120% (i.e. 20.4 for mid-	34.4 and 130% (i.e. 22.1 for mid- ebb/11.4 for mid-	28.4	8.7
SS	IS10(N)	Depth Average	ebb/10.5 for mid- flood) of upstream control station's	flood) of upstream control station's SS at the same	19.5	<u>35.5</u>

tide of the same day and 10mg/L

for WSD Seawater Intakes

15.4

Title :

Date :

ET Leader

21 September 2017

Remarks:

Reviewed by

Copied to

IS(Mf)11

Bold means AL exceedances.

Bold with underline means LL exceedances.

Keith Chau

: Contractor, Engineer Representative and IEC/ENPO

SS at the same tide of the same

day

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0007

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Date: _14/12/2017

Environmental Team Leader

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR007

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170911DO_v1) were forwarded by the ET of Contract No. HY/2013/01 on 27 September 2017:

Monitoring Date: 11 September 2017

The Action and Limit Levels of dissolved oxygen (DO), turbidity and suspended solid (SS) at determined from baseline monitoring data are listed below:

Monitoring ParameterAction Level (mg/L)Limit Level (mg/L)DO (Surface and Middle)5.04.2 (except 5 mg/L for FCZ)DO (Bottom)4.73.6

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS8	Surface & Middle	5.2	4.8
	150	Bottom	5.0	4.6
	IS(Mf)9	Surface & Middle	5.3	4.8
	IC40/NI)	Surface & Middle	4.9	4.6
	IS10(N)	Bottom	4.8	4.4
	IS(Mf)11	Surface & Middle	4.9	4.6
		Bottom	4.6	4.5
	IS(Mf)16	Surface & Middle	5.2	4.7
DO		Bottom	4.3	4.6
	IS17	Surface & Middle	4.8	4.5
		Bottom	4.2	4.2
	SR4(N)	Surface & Middle	5.3	4.8
	ODEAN	Surface & Middle	4.7	4.6
	SR5(N)	Bottom	4.6	4.6
	SR6	Surface & Middle	4.7	4.7
	SKO	Bottom	4.7	4.6
	SR7	Surface & Middle	4.9	4.7

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	Bottom	4.8	4.7
SR10A	Surface & Middle	5.2	4.5
SKIDA	Bottom	5.1	4.1
SR10B(N)	Surface & Middle	4.8	4.2
SIX TOB(IV)	Bottom	4.6	4.0

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170911DO_v1) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during midflood and mid-ebb tide on 11 September 2017. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed, while there was only Action Level exceedance of DO at the WQM stations closer to the works areas. such as IS(Mf)11. Therefore, the exceedances on 11 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

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W1-

1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

2. any pipe leakages shall be repaired quickly. Plant should not be operated with

leaking pipes;

3. 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;

excess material shall be cleaned from the decks and exposed fittings of

barges and hopper dredgers before the vessel is moved;

5. adequate freeboard shall be maintained on barges to reduce the likelihood of

decks being washed by wave action; and

6. 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.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;

- 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 25 and 31 August, 8 and 15 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

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The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

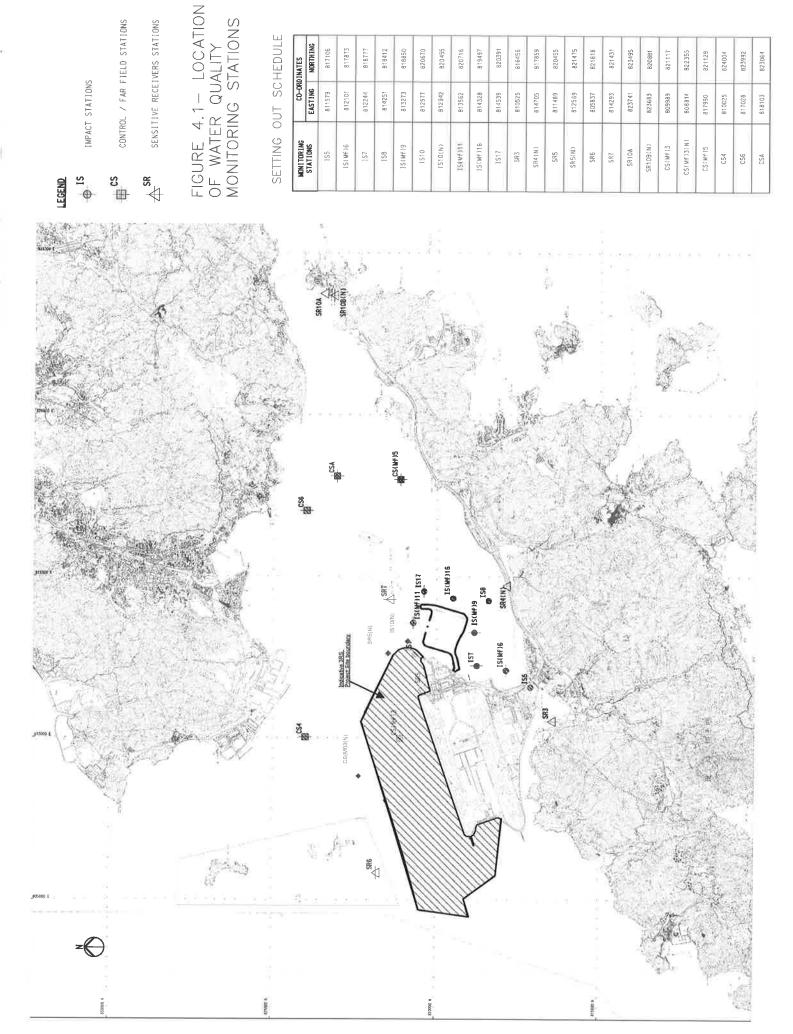
- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

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Figure 1
The Location of WQM Stations



CO-ORDINATES
EASTING NORTHING

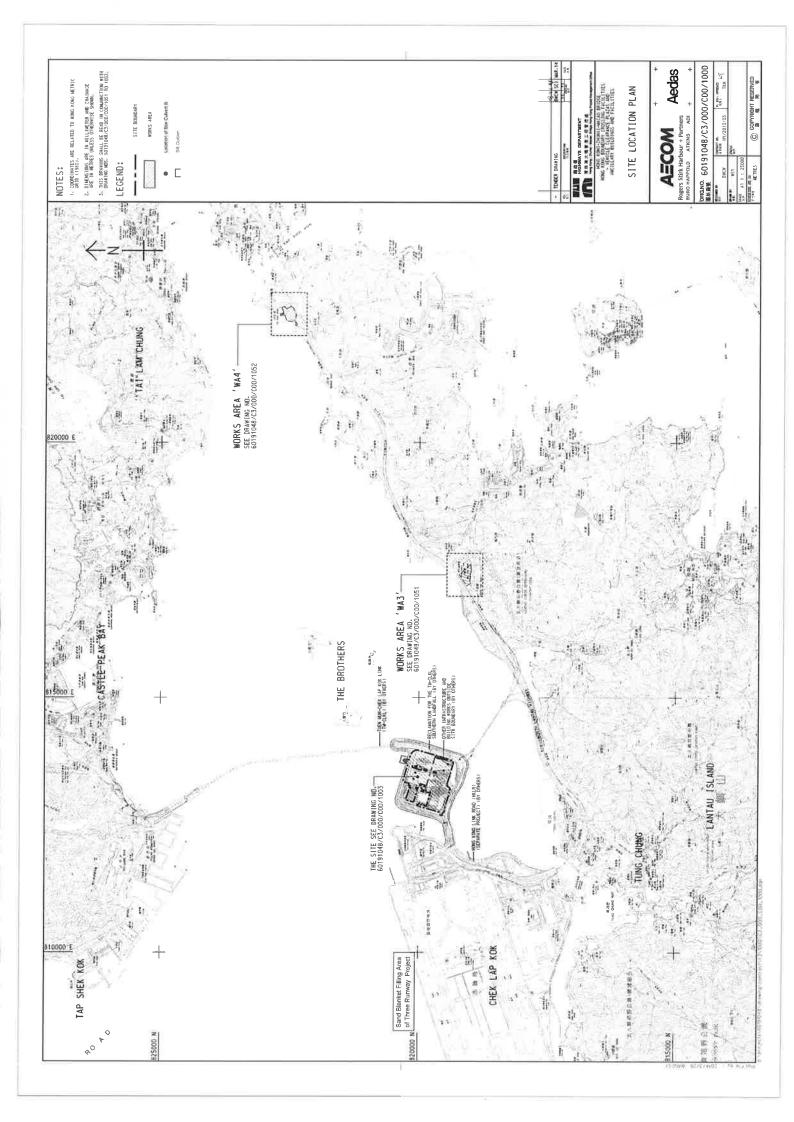
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong-Zhuhal-Macao Bridge Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170911DO v1

Date of Notification: 15 September 2017

Works Inspected: Data collected from water sampling works on 11 September 2017 and the results were laused on 14 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended-Solid (SS)/Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	138	Surface and Middle			5.2	4.8
	130	Bottom			5.0	4.6
	IS(Mf)9	Surface and Middle			5.3	4.8
	IS10(N)	Surface and Middle			4.9	4.0
	12 IO(N)	Bottom			4.8	4.4
	IS(Mf)11	Surface and Middle			4.9	4.6
	15(MI)11	Bottom			4.6	4.5
	IS(MI)16	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Boltom 3.6	5.2	4.7
		Bottom			4.3	4.6
	IS17	Surface and Middle			4.8	4.5
DO		Bottom			4.2	4.2
ь	SR4(N)	Surface and Middle			5.3	4.8
	3R5(N)	Surface and Middle			4.7	4.6
		Bottom			4.6	4.6
	SR6	Surface and Middle			4.7	4.7
	SPO	Bottom			4.7	4.6
	SR7	Surface and Middle			4.9	4.7
	381	Bottom			4.8	4.7
	SR10A	Surface and Middle			5.2	4.5
	SR IUM	Bottom			5.1	4.1
	CD400(t)	Surface and Middle			4.1	4.2
	SR10B(N)	Bottom			4.6	4.0

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by : Keith Chau

Title :

ET Leader

Date :

27 September 2017

Copied to

: Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: <u>0165-15-IR00</u>08

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR008

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170913DO_v2) were forwarded by the ET of Contract No. HY/2013/01 on 4 October 2017:

Monitoring Date: 13 September 2017

The Action and Limit Levels of dissolved oxygen (DO), turbidity and suspended solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS5	Bottom	4.1	4.1
	IS(Mf)9	Bottom	6.5	4.2
	IS10(N)	Surface & Middle	4.7	5.0
	IS(Mf)11	Surface & Middle	5.1	4.9
	IS(Mf)16	Bottom	4.1	4.2
DO	IS17	Surface & Middle	5.0	4.9
ЪО	1017	Bottom	3.8	4.1
	SR5(N)	Surface & Middle	4.8	5.5
	SR10A	Surface & Middle	4.9	4.4
	SKIUA	Bottom	5.2	3.9
	SD40D/NI)	Surface & Middle	5.2	4.4
	SR10B(N)	Bottom	5.4	4.1

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

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Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170913DO_v2) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 13 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and

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 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 4 rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 25 and 31 August, 8 and 15 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

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Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

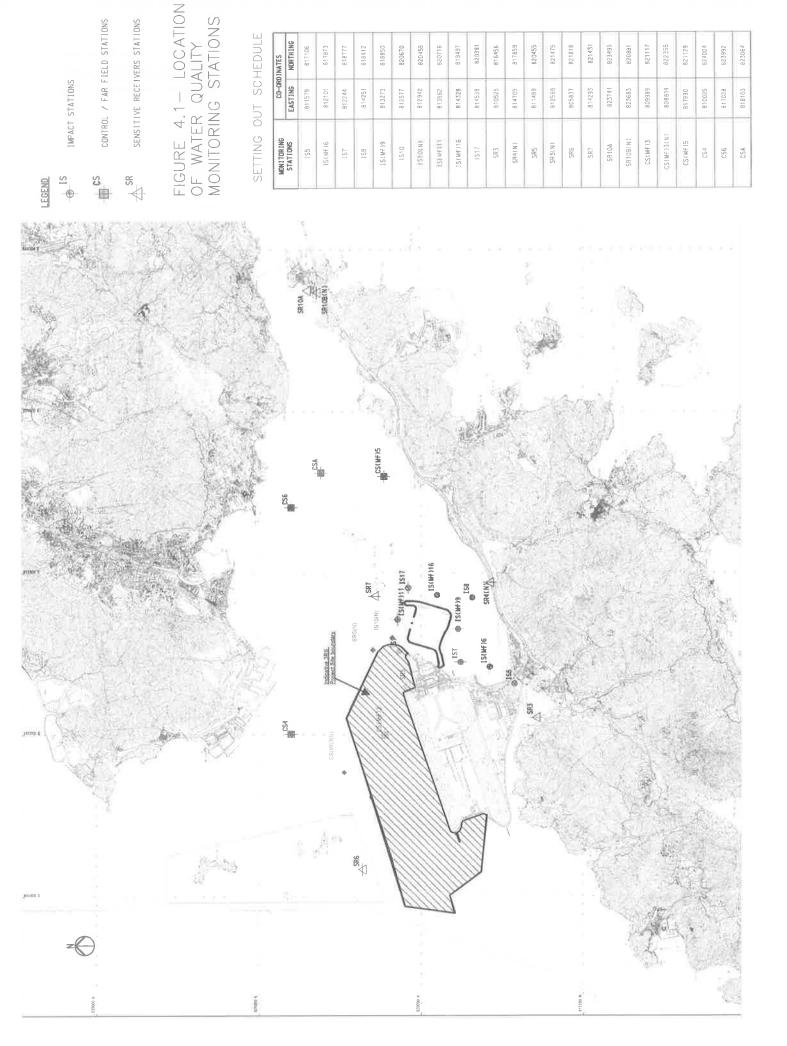
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Figure 1

The Location of WQM Stations



B20881

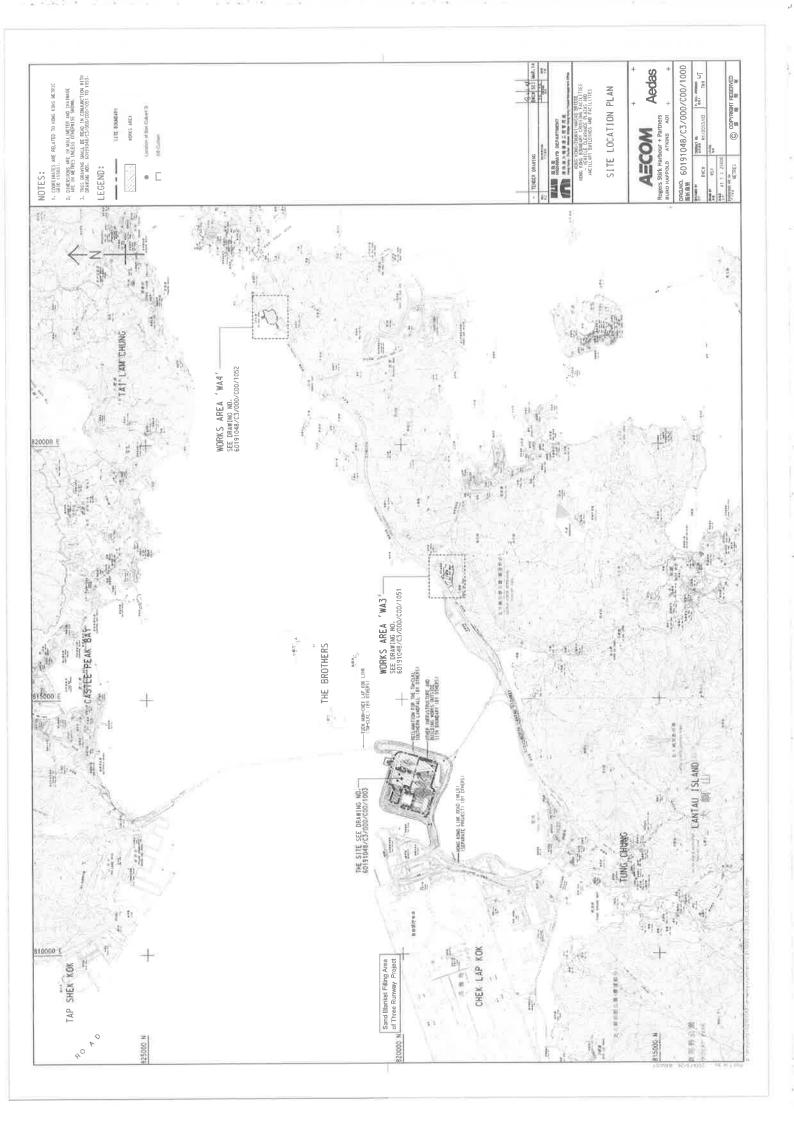
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong-Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170913DO_v2

Date of Notification: 19 September 2017

Works Inspected: Data collected from water sampling works on 13 September 2017 and the results were issued on 18 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS5	Bottom			4.1	4.1
	IS(Mf)9	Bottom	1		6.5	4.2
	IS10(N)	Surface and Middle]		4.7	5.0
	IS(Mf)11	Surface and Middle		Surface and	5.1	4.9
	IS(Mf)16	Bottom	Surface and	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.1	4.2
	IS17	Surface and Middle	5.0		5.0	4.9
DO		Bottom			3.6	4.1
	SR5(N)	Surface and Middle	4.7		4.8	5.5
	00404	Surface and Middle			4.9	4.4
	SR10A	Bottom			5.2	3.9
	CD40D(N)	Surface and Middle	1		5.2	4.4
	SR10B(N)	Bottom			5.4	4.1

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by : Keith Chau

Title 🐒

ET Leader

Date ::

4 October 2017

Copied to

: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0009

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR009

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170915DO_TURB_v3) were forwarded by the ET of Contract No. HY/2013/01 on 27 September 2017:

Monitoring Date: 15 September 2017

The Action and Limit Levels of dissolved oxygen (DO), turbidity and suspended solid

(SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6
Depth- averaged turbidity	27.5 and 120% (i.e. 19.6 for mid-ebb/15.4 for mid-flood) of upstream control station's turbidity at the same tide of the same day	47.5 and 130% (i.e. 21.2 for midebb/16.7 for mid-flood) of upstream control station's turbidity at the same tide of the same day

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS10(N)	Bottom	4.2	4.5
	IS(Mf)11	Surface & Middle	4.1	4.7
	IS17	Surface & Middle	4.9	5.7
500		Bottom	3.9	4.7
DO	SR6	Surface & Middle	5.5	4.8
		Bottom	4.7	4.5
	SR10A	Surface & Middle	5.5	4.7
	0.11071	Bottom	5.4	3.9

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	SR10B(N)	Surface & Middle	5.4	4.6
		Bottom	5.0	4.3
Turbidity	IS8	Depth average	10.6 NTU	95.4 NTU*

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

*The muddy water was observed due to 3 fast boats were moving around near the monitoring location during measurement period.

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170915DO_TURB_v3) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For turbidity exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B. the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely that the works undertaken by Contract No. HY/2013/03 consumed any dissolved oxygen to cause DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 15 September 2017.

For turbidity exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. Besides, fast boats moving around near the monitoring location during measurement period as mentioned in Notification of Action/Limit Level Exceedance may be one of the reason for turbidity exceedance.

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It was unlikely that the works undertaken by Contract No. HY/2013/03 caused turbidity exceedance recorded at the concerned WQM stations during mid-flood tide on 15 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;

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- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 8, 15 and 21 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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

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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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

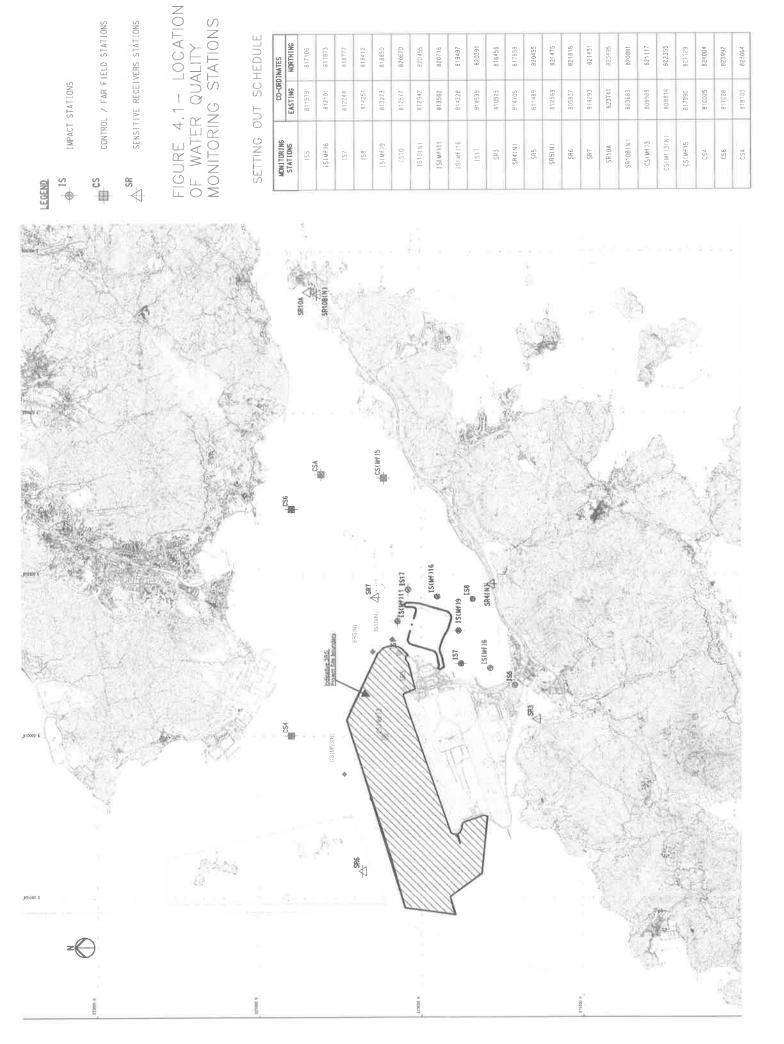
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Figure 1

The Location of WQM Stations



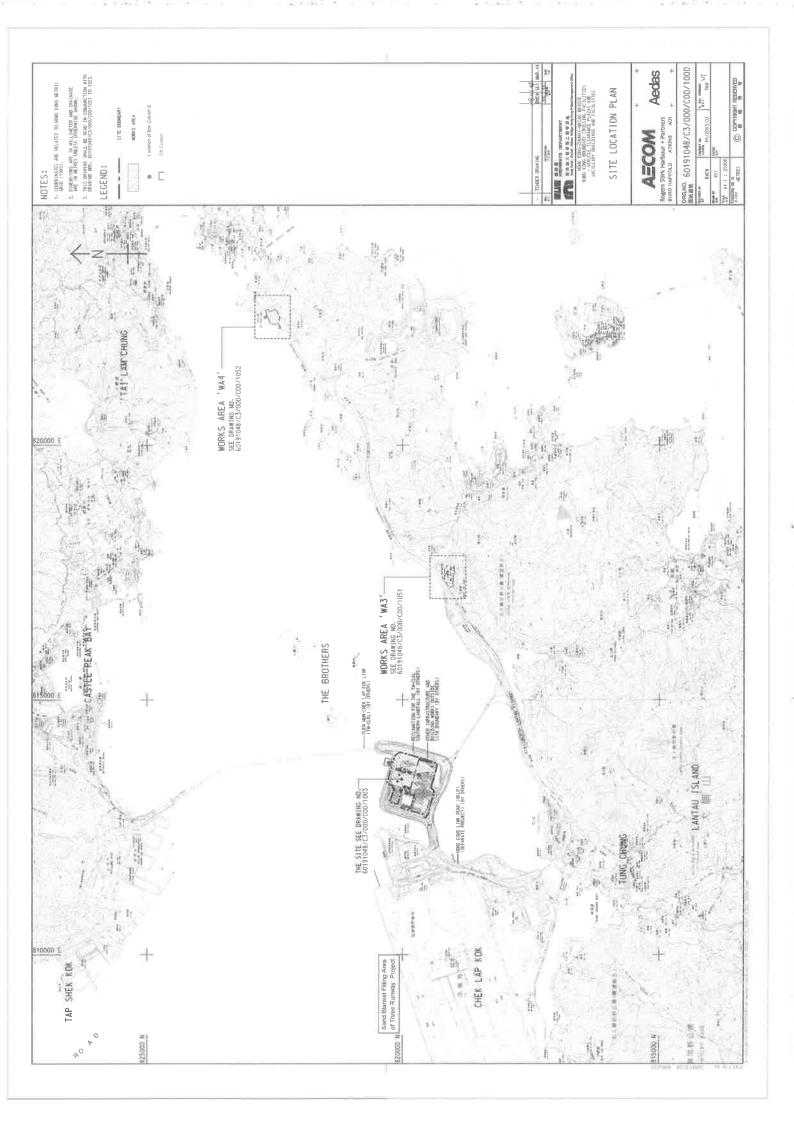
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170915DO_TURB_v3

Date of Notification: 21 September 2017

Works inspected: Data collected from water sampling works on 15 September 2017 and the results were issued on 19 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended-Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID FLOOD TIDE (mg/L)
	IS10(N)	Bottom			4.2	4.5
	IS(Mf)11	Surface and Middle			4.1	4.7
IS17 DO SR6 SR10A SR10B(N)	Surface and Middle		Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.9	5.7	
	Bottom	Surface and		3.9	4.7	
	Surface and Middle	Middle 5.0		5.5	4.8	
	Bottom	Bottom		4.7	4.5	
	Surface and Middle	4.7		5.5	4.7	
	Bottom			5.4	3.9	
	Surface and Middle			5.4	4.6	
	Bottom			5.0	4.3	
TURB	IS8	Depth Average	27.5 and 120% (i.e. 19.6 for mid- ebb/15.4 for mid-flood) of upstream control station's turbidity at the same tide of the same day	47.0 and 130% (i.e. 21.2 for mid- ebb/16,7 for mid-flood) of upstream control station's turbidity at the same tide of the same day	10.6	<u>95.4°</u>

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

*The muddy water was observed due to 3 fast boats were moving around near the monitoring location during measurement period,

Reviewed by

: Keith Chau

Title ::

ET Leader

Date :

27 September 2017

Copied to

: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0010

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: __14/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0010

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170918DO & 20170918SS) were forwarded by the ET of Contract No. HY/2013/01 on 21 September 2017 & 27 September 2017:

Monitoring Date: 18 September 2017

The Action and Limit Levels of dissolved oxygen (DO) and suspended solid (SS) at

determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6
Depth- averaged Suspended Solid	23.5 and 120% (i.e. 9.9 for mid-ebb/13.4 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 10.8 for midebb/14.5 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	IS5	Bottom	4.5	5.8
	IS10(N)	Bottom	4.6	5.0
	IS(Mf)11	Bottom	4.6	5.0
	IS(Mf)16	Bottom	4.4	5.0
		Surface & Middle	4.7	4.4
	SR6	Bottom	4.5	4.3
	SR10A	Surface & Middle	5.5	4.7
	SR10B(N)	Surface & Middle	5.4	4.9
SS	IS8	Depth average	6.3	25.0

Notes:

Bold means AL exceedances

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Bold with underline means LL exceedances
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170918DO & 20170918SS) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix** Δ

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8. the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 18 September 2017.

For SS exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 18 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the

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Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 8, 15 and 21 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

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Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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:
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;

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- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

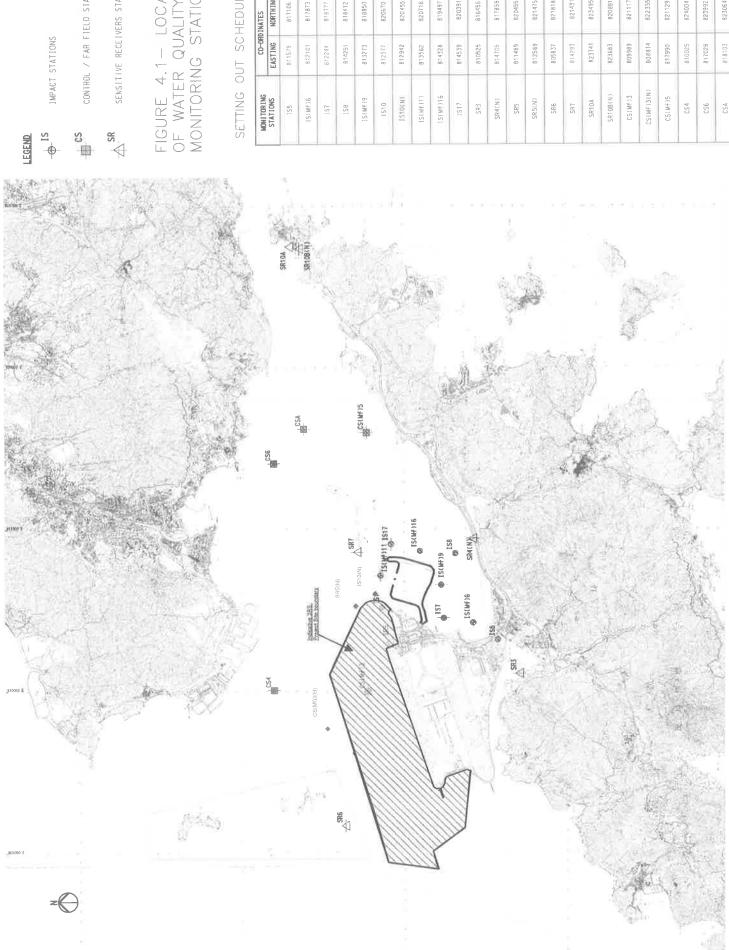
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Figure 1

The Location of WQM Stations



IMPACT STATIONS

SENSITIVE RECEIVERS STATIONS

CONTROL / FAR FIELD STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING	מחחח	TIMMIES
STATIONS	EASTING	NDRTHING
551	811579	817106
151MF16	812101	817873
157	812244	818777
158	814251	818412
1S(Mf)9	813273	818850
1510	812577	820670
18:01N	812942	820455
1SCMF111	813562	820716
15(Mf)16	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(Mf)3	686608	821117
CS(MF)3(N)	808814	822355
CSIMF)5	817990	821129
CS4	810025	824004
950	817028	823992
CSA	818103	823064

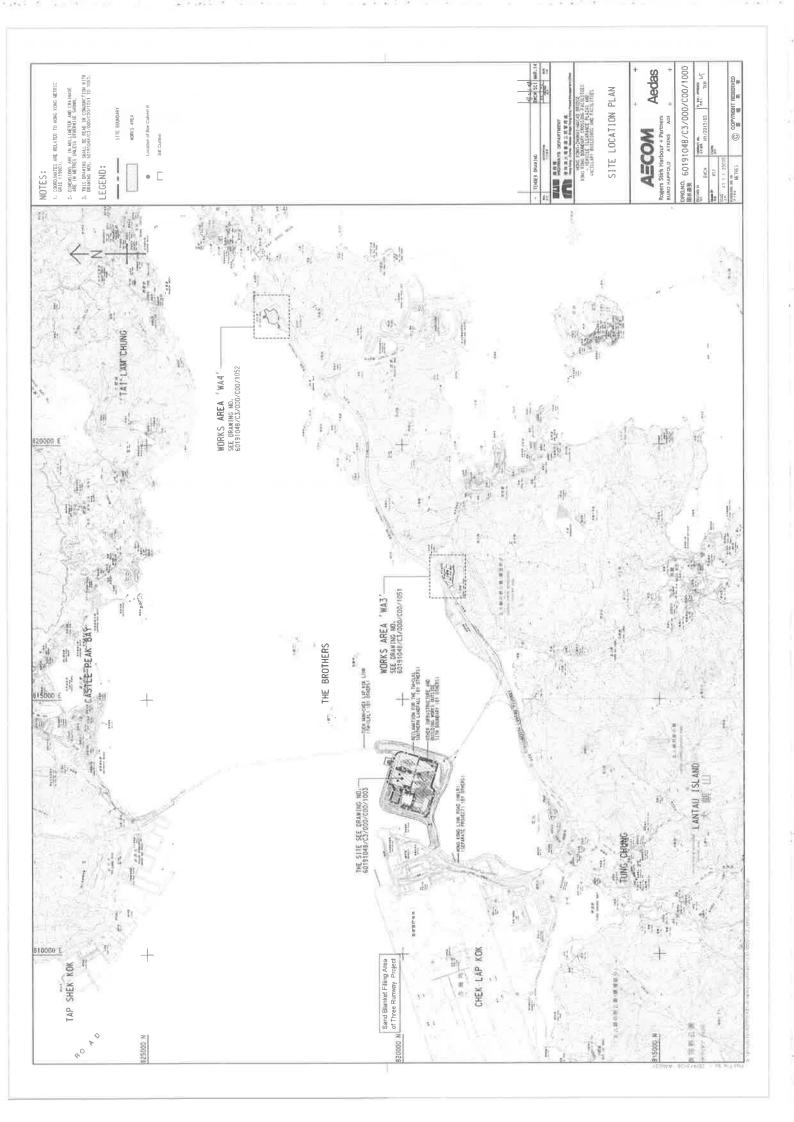
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170918SS

Date of Notification: 27 September 2017

Works Inspected: Data collected from water sampling works on 18 September 2017 and the results were issued on 27

September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

ACUOII &	rilliir reael (v	un de ning / in	leasuled Level.			
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (I.e. 9.9 for mid- ebb/13.4 for mid- flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (I.e. 10.8 for mid- ebb/14.5 for mid- flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	6.3	25.0

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by

Keith Chau

Title:

ET Leader

Date :

27 September 2017

Copied to

: Contractor, Engineer Representative and IEC/ENPO

Keith

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities -- Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170918DO

Date of Notification: 21 September 2017

Works Inspected: Data collected from water sampling works on 18 September 2017 and the results were issued on 21

September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
ļ	IS5	Bottom			4.5	5.8
	IS10(N)	Bottom		Surface and	4.6	5.0
	IS(Mf)11 Bottom	Bottom	Surface and	Middle 4.2	4.6	5.0
DO IS(Mf)16	Bottom	Middle 5.0 Bottom	(except 5 mg/L for FCZ)	4.4	5.0	
	Surface and Middle			4.7	4.4	
	SKO	Bottom	4.7	Bottom	4.5	4.3
	SR10A Surface and Middle]	3.6	5.5	4.7
	SR10B(N)	Surface and Middle			5.4	4.9

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by : Keith Chau

Title : ET Leader

Date:

21 September 2017

Copied to

Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0011

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0011

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170920DO) was forwarded by the ET of Contract No. HY/2013/01 on 27 September 2017. Notification of Action/Limit Level Exceedance (20170920SS) was forwarded by the ET of Contract No. HY/2013/01 on 06 October 2017:

Monitoring Date: 20 September 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)	
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)	
DO (Bottom)	4.7	3.6	
SS	23.5 and 120% (i.e. 20.4 for mid-ebb /10.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 22.1 for mid- ebb/11.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	SR6	Surface & Middle	5.1	4.5
		Bottom	5.0	4.6
	SR10A	Surface & Middle	5.0	4.5
		Bottom	4.7	4.5
	SR10B(N)	Surface & Middle	5.0	<u>4.5</u>
SS	SR6	Depth average	10.4	25.4

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Notes:

Bold means AL exceedances
Bold with underline means LL exceedances
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170920DO) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For turbidity exceedance recorded at the WQM station SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the exceedances recorded at the concerned WQM stations (i.e. SR6, SR10A and SR10B(N)) are far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 20 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

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Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes:
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities:
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 25 and 31 August, 8, 15 and 21 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

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5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;

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• surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

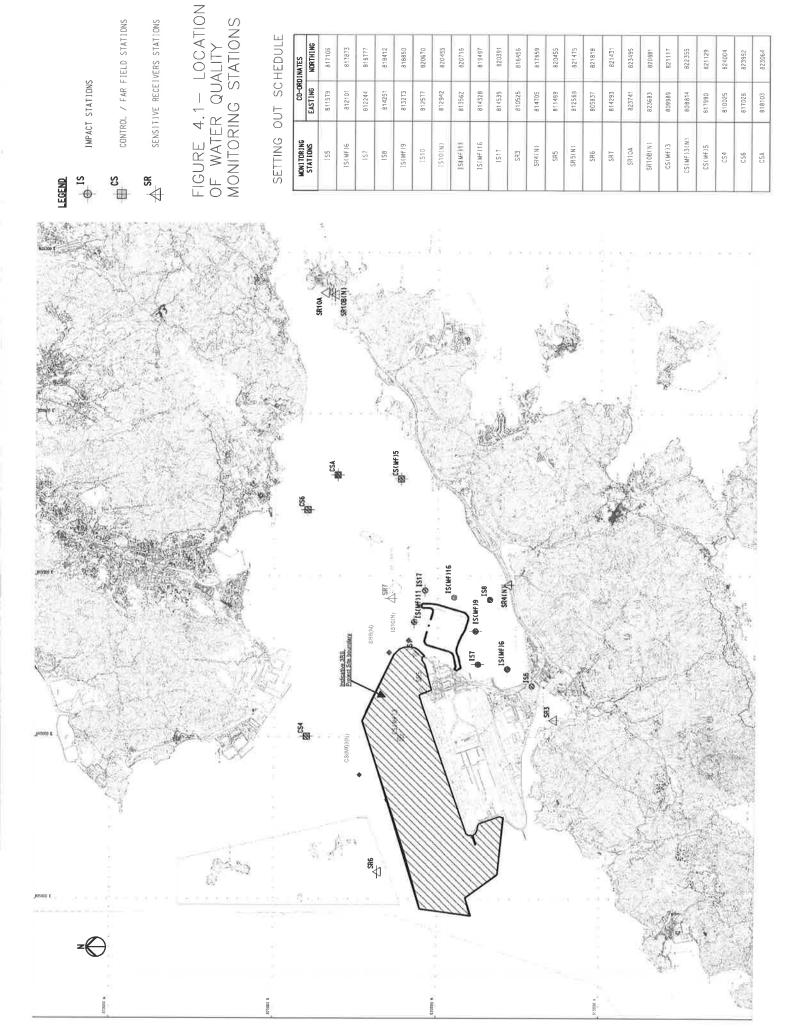
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Figure 1

The Location of WQM Stations



CD-ORDINATES
EASTING NORTHING

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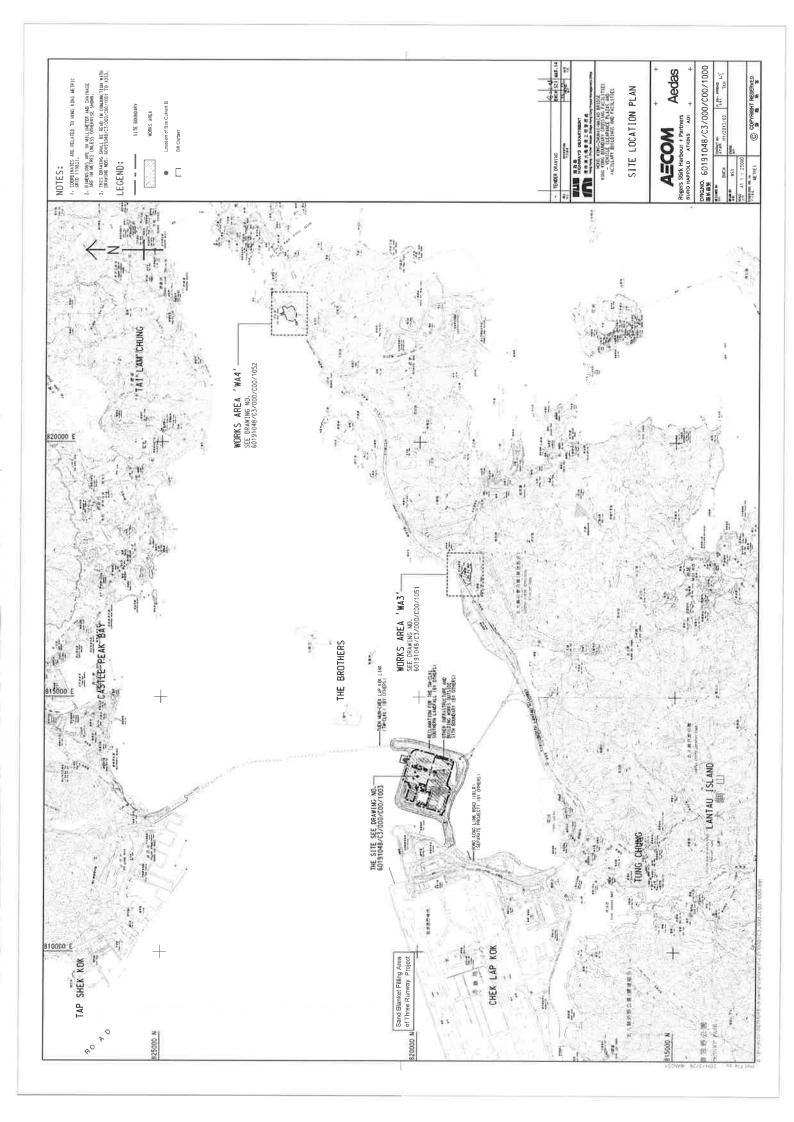
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong - Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170920DO

Date of Notification: 25 September 2017

Works Inspected: Data collected from water sampling works on 20 September 2017 and the results were issued on 23 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	SR6 SR10A	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	Middle 4.2 5.0 (except 5	5.1	4.5
		Bottom			5.0	4.6
DO		Surface and Middle			5.0	4.5
		Bottom		4 7 FCZ)	,	4.7
	SR10B(N)	Surface and Middle		Bottom 3.6	5.0	4.5

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by

Keith Chau

Title 🖫

ET Leader

Date :

25 September 2017

Copied to

Contractor, Engineer Representative and IEC/ENPO

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170920SS

Date of Notification: 6 October 2017

Works Inspected: Data collected from water sampling works on 20 September 2017 and the results were issued on 29 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved-Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

ACTION &	Limit Level (A	AL & LL) / N	leasured Level:			
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 16.7 for mid- ebb/19.0 for mid- flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 18.1 for midebb/20.6 for midflood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	10.4	25.4

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by

Keith Chau

Title :

ET Leader

Date :

6 October 2017

Copied to

Contractor, Engineer Representative and IEC/ENPO

Certh

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: <u>0165-15-IR00</u>12

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: _14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0012

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170922DO) was forwarded by the ET of Contract No. HY/2013/01 on 27 September 2017:

Monitoring Date: 22 September 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS8	Surface & Middle	5.2	4.8
	IS(Mf)9	Surface & Middle	5.3	4.9
	IS10(N)	Surface & Middle	4.8	4.8
		Bottom	4.6	4.8
DO	IS(Mf)11	Surface & Middle	4.7	4.9
	IS(Mf)16	Surface & Middle	5.1	4.8
	IS17	Surface & Middle	5.0	4.8
	SR3	Surface & Middle	4.9	5.0
	SR4(N)	Surface & Middle	5.2	4.8

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SR5(N)	Surface & Middle	4.9	4.8
SR6	Surface & Middle	4.8	4.8
SR7	Surface & Middle	5.0	4.8
SR10A	Surface & Middle	<u>4.9</u>	<u>4.7</u>
SR10B(N)	Surface & Middle	4.8	<u>4.6</u>
	Bottom	4.9	4.5

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170922DO) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 22 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the

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Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 8, 15, 21 and 25 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

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Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;

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- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

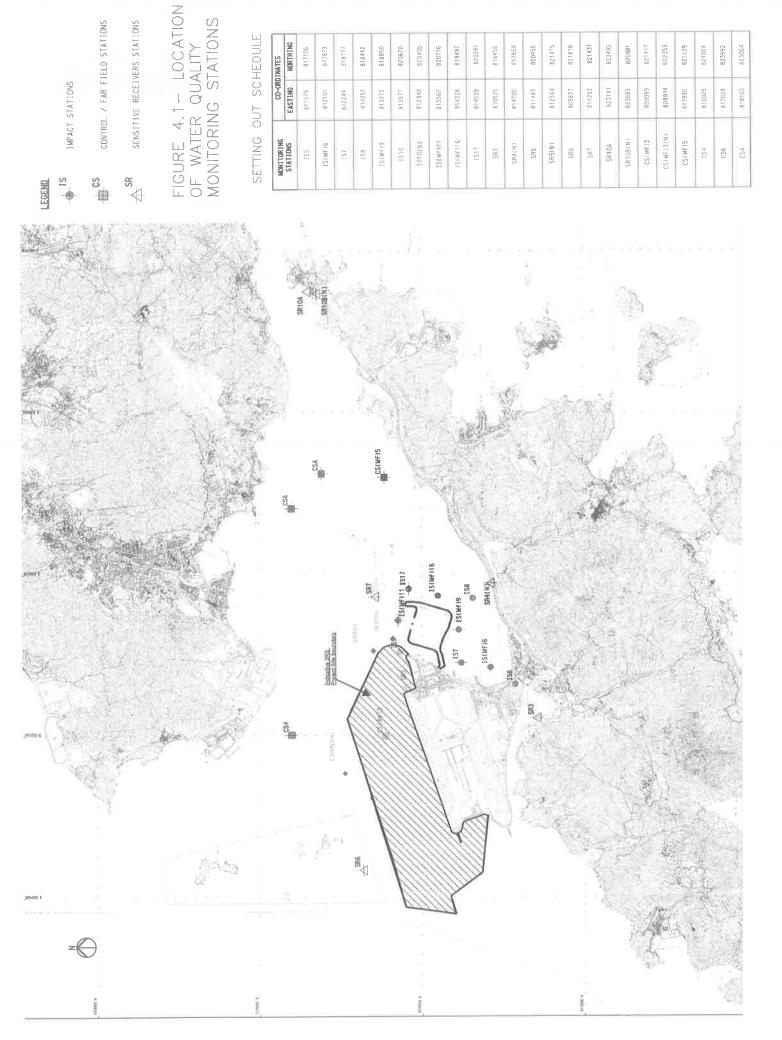
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Figure 1

The Location of WQM Stations



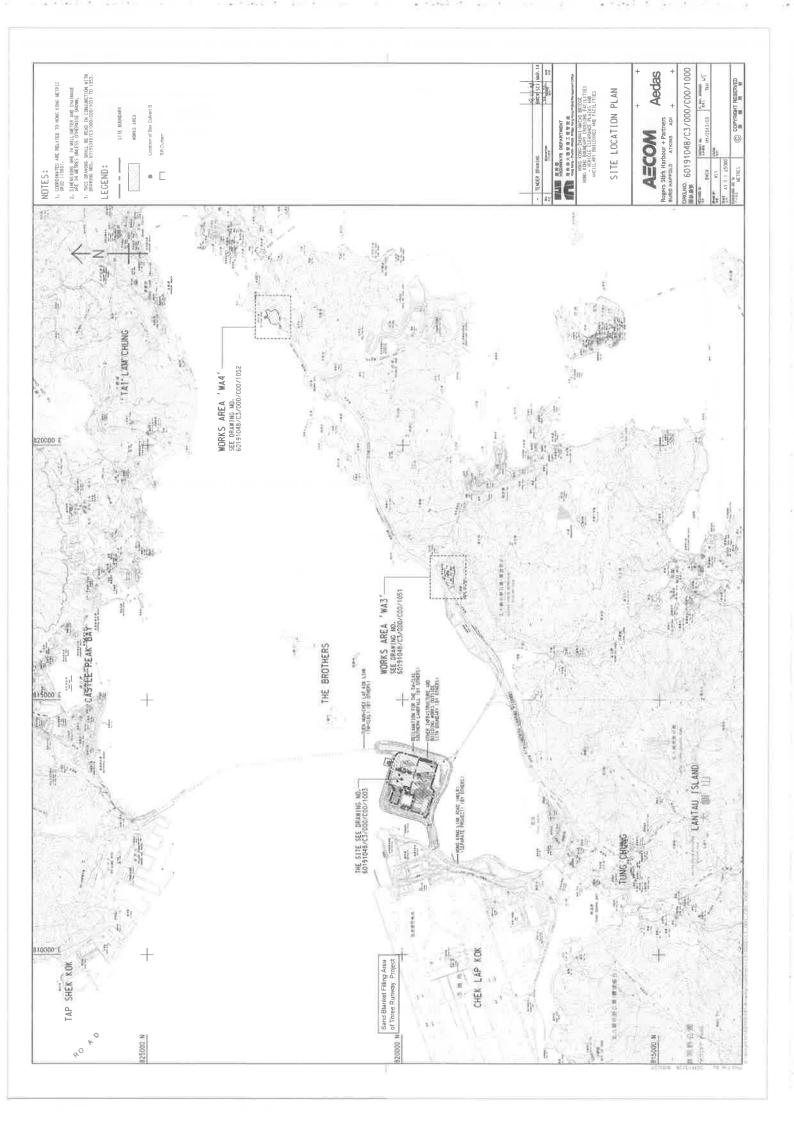
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170922DO

Date of Notification: 27 September 2017

Works Inspected: Data collected from water sampling works on 22 September 2017 and the results were issued on 26 September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS8	Surface and Middle			5.2	4.8
	IS(Mf)9	Surface and Middle			5.3	4.9
	10.40(1)	Surface and Middle			4.8	4.8
	IS10(N)	Bottom			4.6	4.8
	IS(Mf)11	Surface and Middle			4.7	4.9
	IS(Mf)16	Surface and Middle		Surface and Middle 4.2	5.1	4.8
	IS17	Surface and Middle	Surface and Middle		5.0	4.8
DO	SR3	Surface and Middle	5.0 Bottom 4.7	(except 5 mg/L for	4.9	5.0
00	SR4(N)	Surface and Middle		FCZ) Bottom 3.6	5.2	4.8
	SR5(N)	Surface and Middle			4.9	4.8
	SR6	Surface and Middle			4.8	4.8
	SR7	Surface and Middle			5.0	4.8
	SR10A	Surface and Middle			4.9	4.7
		Surface and Middle			4.8	4.6
	SR10B(N)	Bottom			4.9	4.5

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by Keith Chau Title :

ET Leader

Date :

27 September 2017

Copied to

Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0013

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0013

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170925DO) was forwarded by the ET of Contract No. HY/2013/01 on 4 October 2017. Notification of Action/Limit Level Exceedance (20170925SS) was forwarded by the ET of Contract No. HY/2013/01 on 9 October 2017:

Monitoring Date: 25 September 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6
SS	23.5 and 120% (i.e. 7.3 for mid-ebb /9.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 7.9 for mid-ebb/9.8 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Parameter	neter Station Depth		Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	SR10B(N)	Surface & Middle	5.1	<u>4.7</u>
		Bottom	5.0	4.6
SS	IS8	Depth average	11.3	30.4

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

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Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170925DO) & (20170925SS) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B. the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM station where exceedances were recorded (i.e. SR10B(N)) was far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 25 September 2017.

For SS exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 25 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

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Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 8, 15, 21 and 25 September 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

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5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;

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• surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

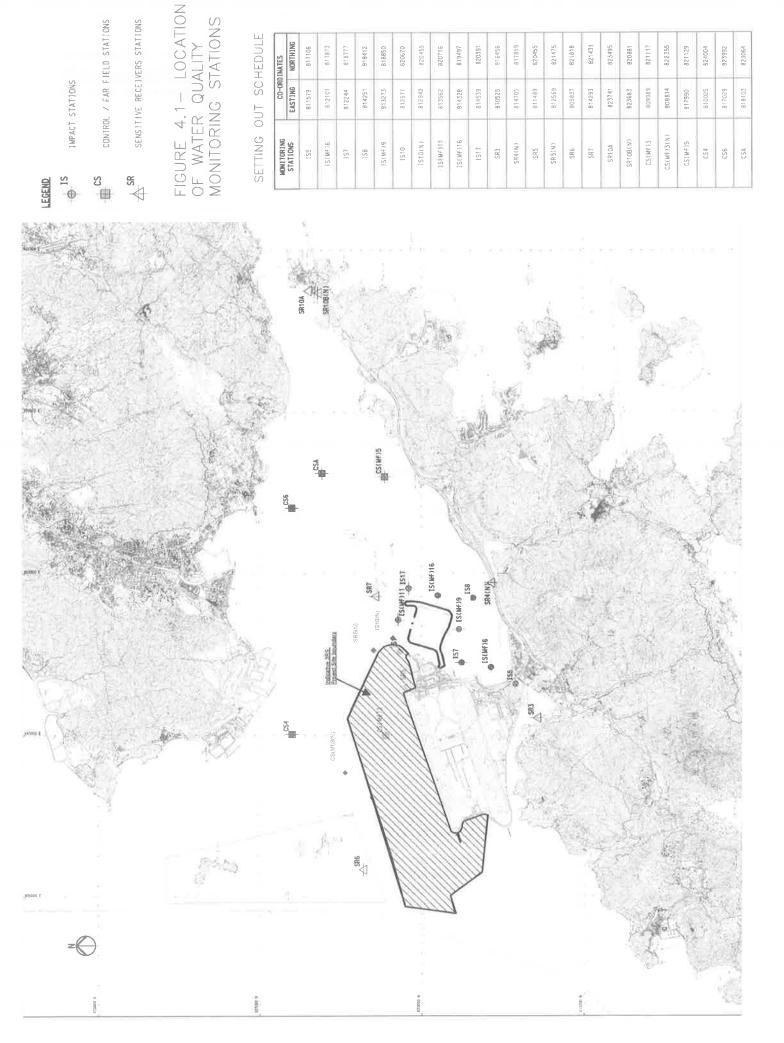
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Figure 1

The Location of WQM Stations



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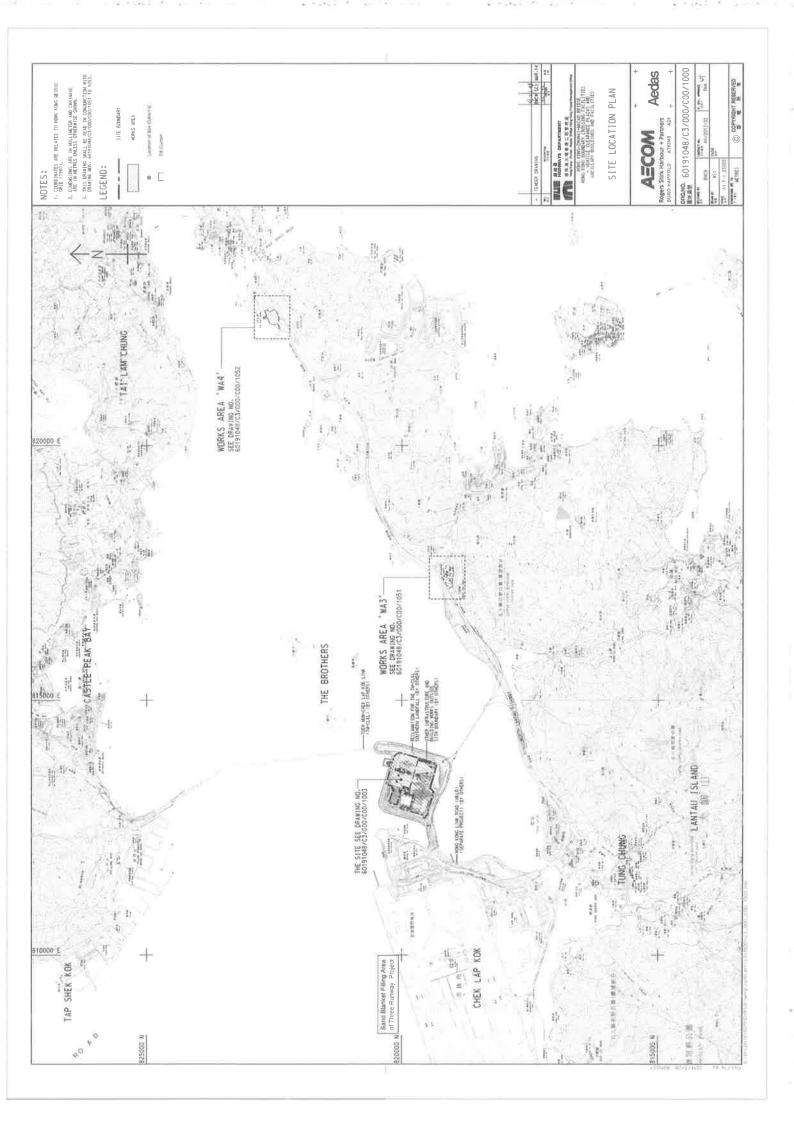
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -

Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170925DO

Date of Notification: 3 October 2017

Works Inspected: Data collected from water sampling works on 25 September 2017 and the results were issued on 29

September 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
DO		Surface and Middle	Surface and Middle	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	5.1	4.7
	SR10B(N)	Bottom	5.0 Bottom 4.7		4.6	

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by Keith Chau Title : ET Leader

Date :

3 October 2017

Copied to

Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel (852)-24508238 Fax (852)-24508032 Email mcl@fugro.com



Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170925SS

Date of Notification: 9 October 2017

Works Inspected: Data collected from water sampling works on 25 September 2017 and the results were issued on 6 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

7 400011 4	TOTAL TENTE LEVE (FILE LEVE MICHAELE LEVE)								
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)			
SS	IS8	Depth Average	23.5 and 120% (i.e. 7.3 for mid- ebb/9.1 for mid- flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 7.9 for mid- ebb/9.8 for mid- flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	11.3	30.4			

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by

Keith Chau

Title :

ET Leader

Date :

9 October 2017

Copied to

: Contractor, Engineer Representative and IEC/ENPO

Keith

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0014

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR014

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170927_DO_NOE_v1) were forwarded by the ET of Contract No. HY/2013/01 on 4 October 2017:

Monitoring Date: 27 September 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Par	ameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface Middle)	and	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottor	n)	4.7	3.6

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS10(N)	Bottom	4.6	5.0
	IS17	Bottom	4.6	4.8
1	SR5(N)	Bottom	4.6	5.0
DO	SR10A	Bottom	5.3	4.6
	SR10B(N)	Surface & Middle	5.0	4.7
		Bottom	4.4	4.4

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170927_DO_NOE_v1) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 27 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes:
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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

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undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 15, 21, 25 September 2017 and 6 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

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- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

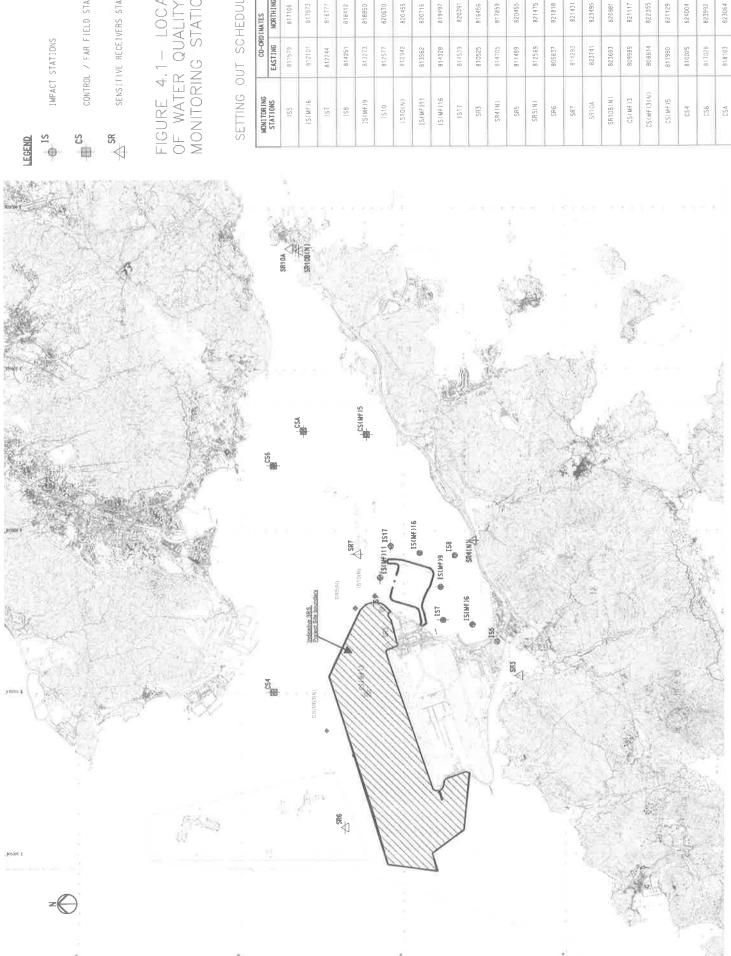
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Figure 1

The Location of WQM Stations



IMPACT STATIONS

CONTROL / FAR FIELD STATIONS

SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

STATIONS	EASTING	NORTHING
155	811579	817105
ISCMF16	812101	817873
157	812244	818777
158	814251	818412
IS(Mf)9	813273	818850
1510	812577	820670
[S10(N)	812942	820455
SIMFIT	813562	820716
1S(MF)16	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SRECNI	812569	821475
SR6	805837	B2181B
SRT	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(MF)3	809989	821117
CS(MF)3(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
980	817028	823992
CSA	818103	823064

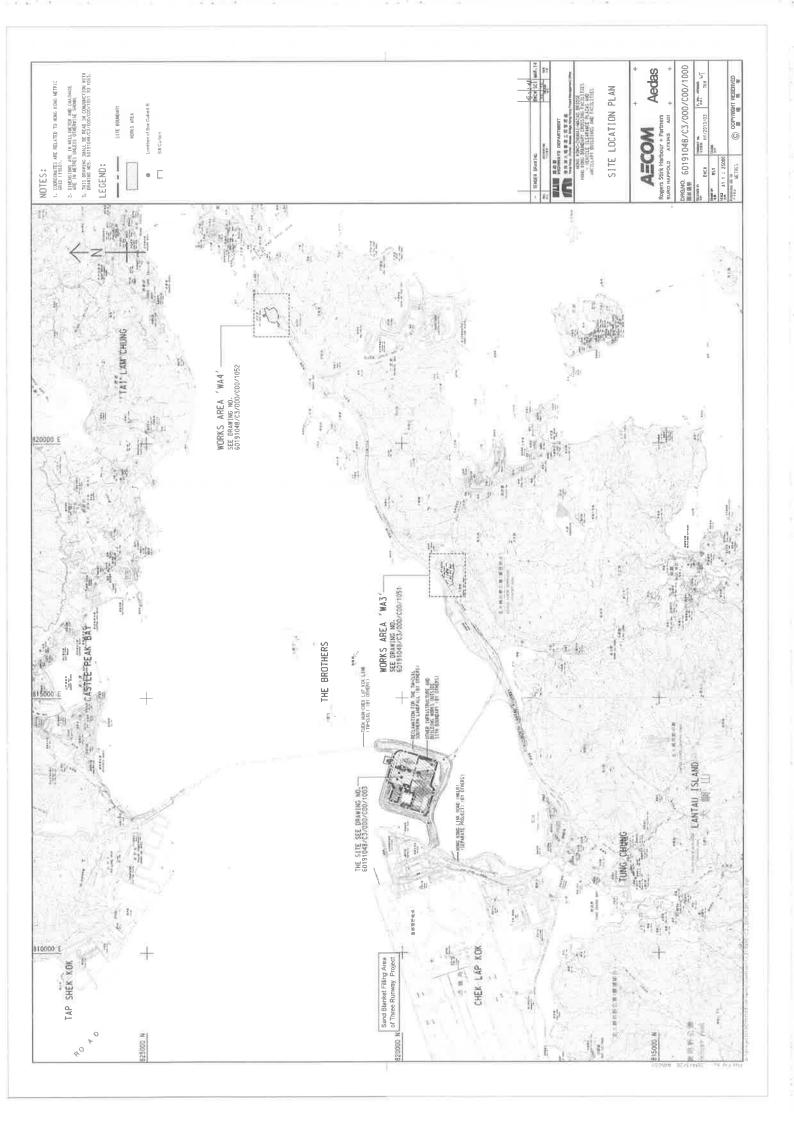
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170927 DO NOE v1

Date of Notification: 4 October 2017

Works Inspected: Data collected from water sampling works on 27 September 2017 and the results were issued on 3 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended-Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EB8 TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	(S10(N)	Bottom		Surface and	4.6	5.0
DO	IS17	Bottom	1	Middle	4.6	4.8
DO	SR5(N)	Bottom	Surface and Middle 5.0 Bottom 4.7	60	4.6	5.0
DO	SR10A	Bottom		(except 5 mg/L for FCZ)	5.3	4.6
DÓ	SR10B(N)	Surface and Middle		Bottom 3.6	5.0	4.7
DO	SR10B(N)	Bottom	1		4.4	4.4

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by : Kelth Chau

Title: ET Leader

Date: 04-Oct-17

Copied to:

Contractor, Engineer Representative and IEC/ENPO

Keith

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0015

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR015

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20170929DO) were forwarded by the ET of Contract No. HY/2013/01 on 9 October 2017:

Monitoring Date: 29 September 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
DO (Surface and Middle)	5.0	4.2 (except 5 mg/L for FCZ)
DO (Bottom)	4.7	3.6

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS5	Bottom	4.8	4.4
	IS7	Bottom	4.3	15.0
	IS8	Bottom	4.4	5.7
	IS10(N)	Surface & Middle	4.8	6.2
DO	,	Bottom	4.2	4.2
	IS(Mf)11	Bottom	4.6	4.1
	IS(Mf)16	Bottom	4.4	5.5
	IS17	Bottom	4.7	4.2
	SR5(N)	Bottom	4.3	4.2
Ì	SR10B(N)	Bottom	4.5	5.0

Notes:

Bold means AL exceedances

Bold with underline means LL exceedances

Red tide was observed by ET for Contract No. HY/2013/01 near WQM stations, SR3, IS5, IS(Mf)6, IS7 and IS(Mf)16, during mid-flood tide on 29 September 2017

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Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20170927_DO_NOE_v1) provided by the ET of Contract No. HY/2013/01 of HKBCF are shown in **Appendix A**.

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during midflood tide on 29 September 2017.

The location of the WQM stations where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the locations of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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

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undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 15, 21, 25 September 2017 and 6 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit in mid-October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

 Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

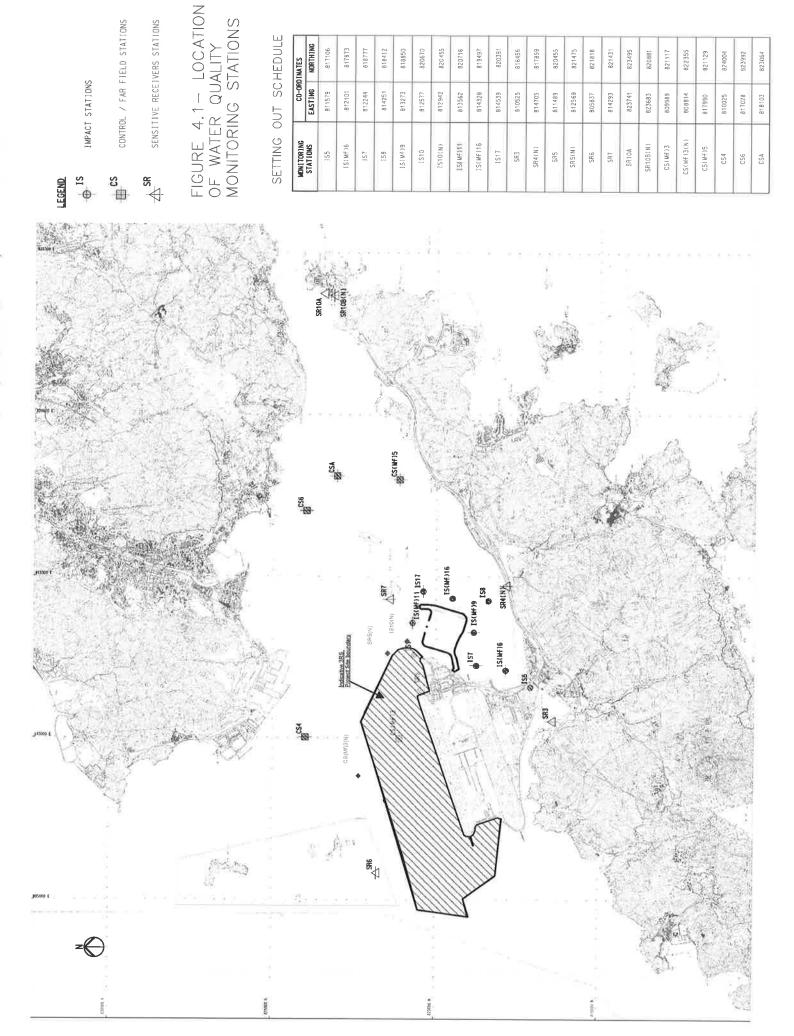
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Figure 1

The Location of WQM Stations



CO-ORDINATES
EASTING NORTHING

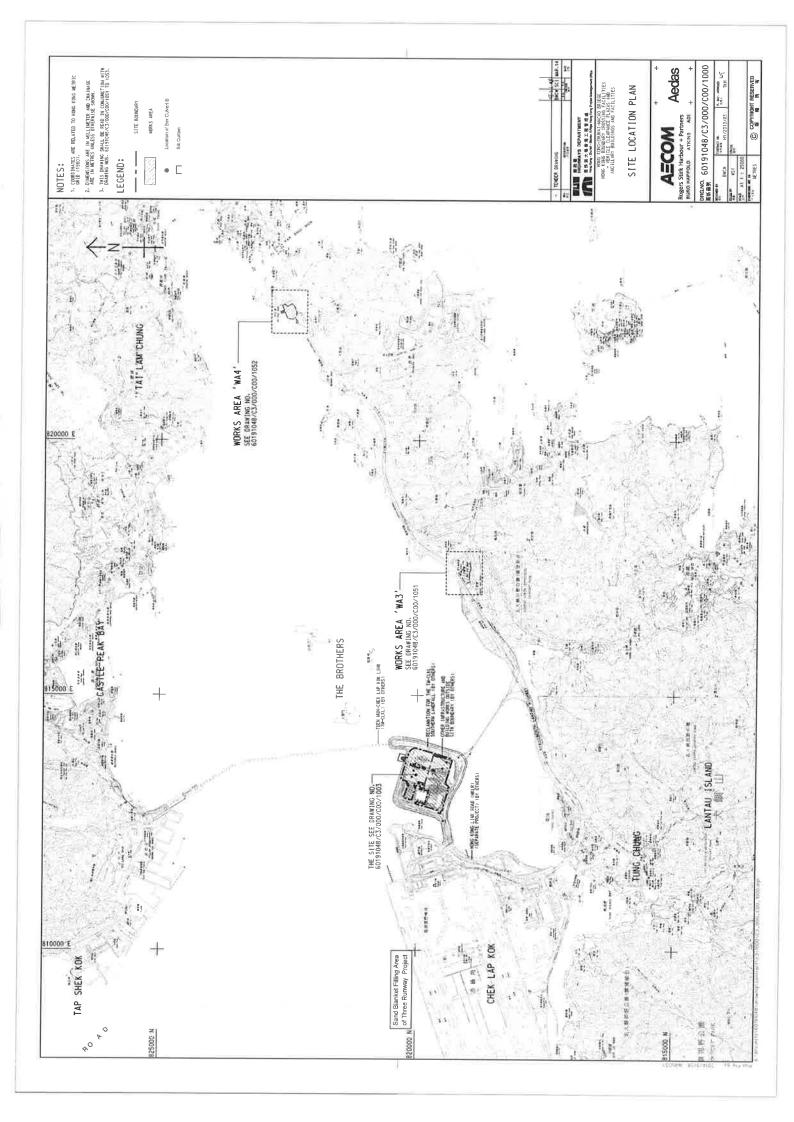
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix A

Notification of Limit Level Exceedance

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20170929DO

Date of Notification: 9 October 2017

Works Inspected: Data collected from water sampling works on 29 September 2017 and the results were issued on 6 October

2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID- EBB TIDE (mg/L)	MEASURED AT MID- FLOOD TIDE (mg/L)
	IS5	Bottom			4.8	4.4
	IS7	Bottom		Surface and Middle	4.3	15.0
	IS8	Bottom			4.4	5.7
DO IS10(N)	Surface and Middle	Surface and Middle 5.0	4.2 (except 5	4.8	6.2	
	Bottom			4.2	4.2	
	IS(Mf)11	Bottom	Bottom 4.7	FLZ	4.6	4.1
	IS(Mf)16	Bottom			4.4	5.5
	IS17 Botto	Bottom			4.7	4.2
	SR5(N)	Bottom		0	4.3	4.2
	SR10B(N)	Bottom			4.5	5.0

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Reviewed by : Keith Chau

Title :

ET Leader

Keith

Date 🗄

9 October 2017

Copied to

Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



Appendix B

Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0016

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 16/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0016

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171002DO) was forwarded by the ET of Contract No. HY/2013/01 on 10 October 2017:

Monitoring Date: 2 October 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
Surface and Middle	5.0	4.2 (except 5 mg/L for FCZ)
Bottom	4.7	3.6

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	SR10A	Bottom	4.6	4.5
DO	SR10B(N)	Surface and Middle	5.4	4.7
DO	SR10B(N)	Bottom	5.1	4.6

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171002DO) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 2 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

W2-

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,



- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;

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- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

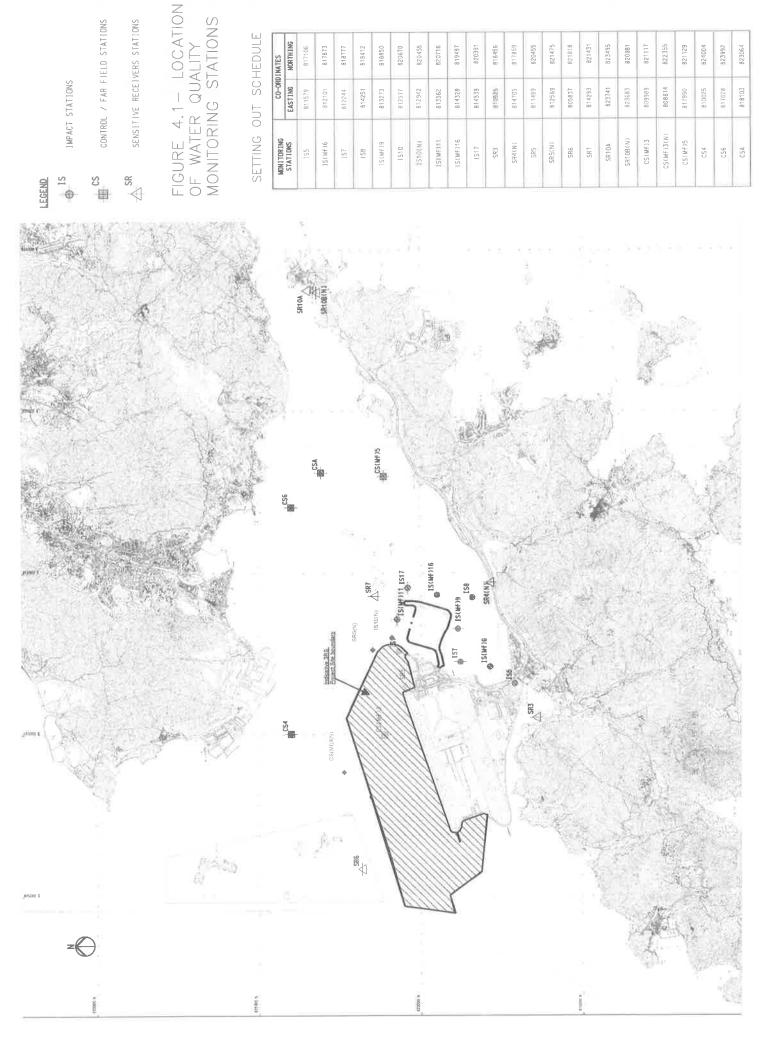
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Figure 1

The Location of WQM Stations



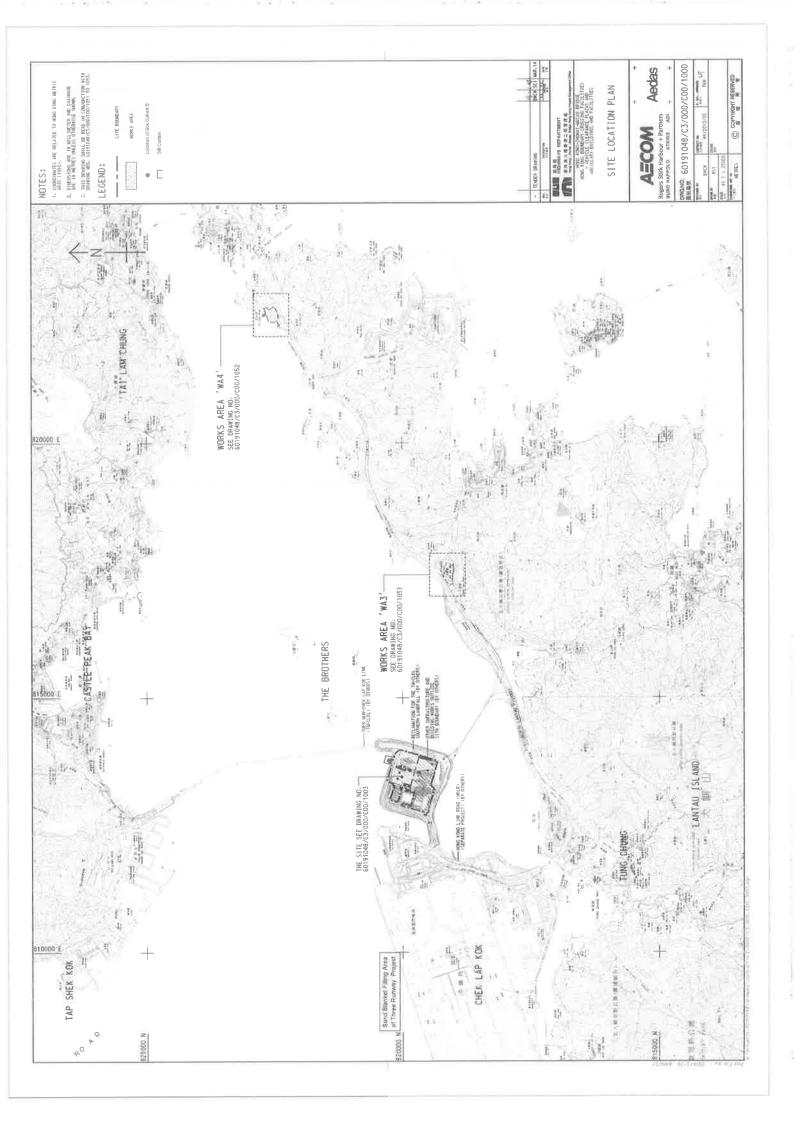
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171002DO)

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Notification No.: 20171002 DO NOE

Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 10 October 2017

Works Inspected: Data collected from water sampling works on 2 October 2017 and the results were issued on 10 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)	
DO	SR10A	Bottom		Surface and Middle	4.6	4.5	
DO	SR10B(N)	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	5.0 Boltom 4.7 (except for		5.4	4.7
DO	SR10B(N)	Bottom		3.6	5.1	4,6	

Sam	olini	g Ti	me

Sampling III	16	
195	11:44:00	16:12:00
IS(MI)6	11:34:00	16:19:00
137	11:25:00	18:29:00
138	11:02:00	16:52:00
IS(MI)9	11:13:00	16:40:00
IS10(N)	10:19:00	17:10:00
IS(MI)11	10:10:00	17:19:00
IS(MI)16	10:30:00	17:22:00
1817	10:21:00	17:32:00
SR3	11:54:00	15:59:00
SR4(N)	10:55:00	17:02:00
SRS(N)	10:27:00	17:02:00
SR6	11:25:00	15:59:00
SR7	10:01:00	17:29:00
SR10A	09:06:00	18:37:00
SR108(N)	09:14:00	18:31:00

Donnarie	

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-abb tide: CS(MI)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

> Reviewed by : Keith Chau Keith

Title: ET Leader

Date : 10-Oct-17

Copied to :

Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0017

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 16/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent,

Kwai Fong, Hong Kong.

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0017

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171004NOEv1) was forwarded by the ET of Contract No. HY/2013/01 on 12 October 2017:

Monitoring Date: 4 October 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
Surface and Middle	5.0	4.2 (except 5 mg/L for FCZ)
Bottom	4.7	3.6

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	SR10A*	Surface and Middle	4.7	4.5
DO	SR10A*	Bottom	4.6	4.3
DO	SR10B(N)	Surface and Middle	4.8	4.5
DO	SR10B(N)	Bottom	4.9	4.5

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

* Location was changed due to fishing net installed in the vicinity (22°21,1165'N; 114°03.1185'E)

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171004DONOEv1) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 4 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

 Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
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- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

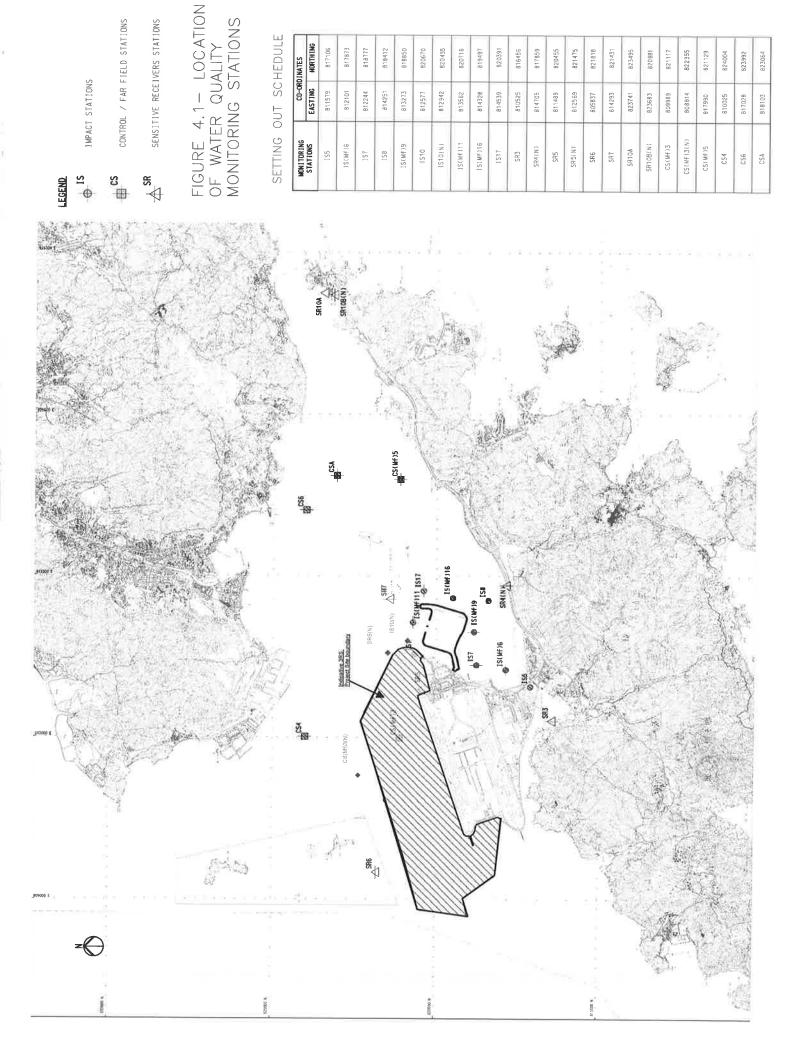
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Figure 1

The Location of WQM Stations



CD-ORDINATES
EASTING NORTHING

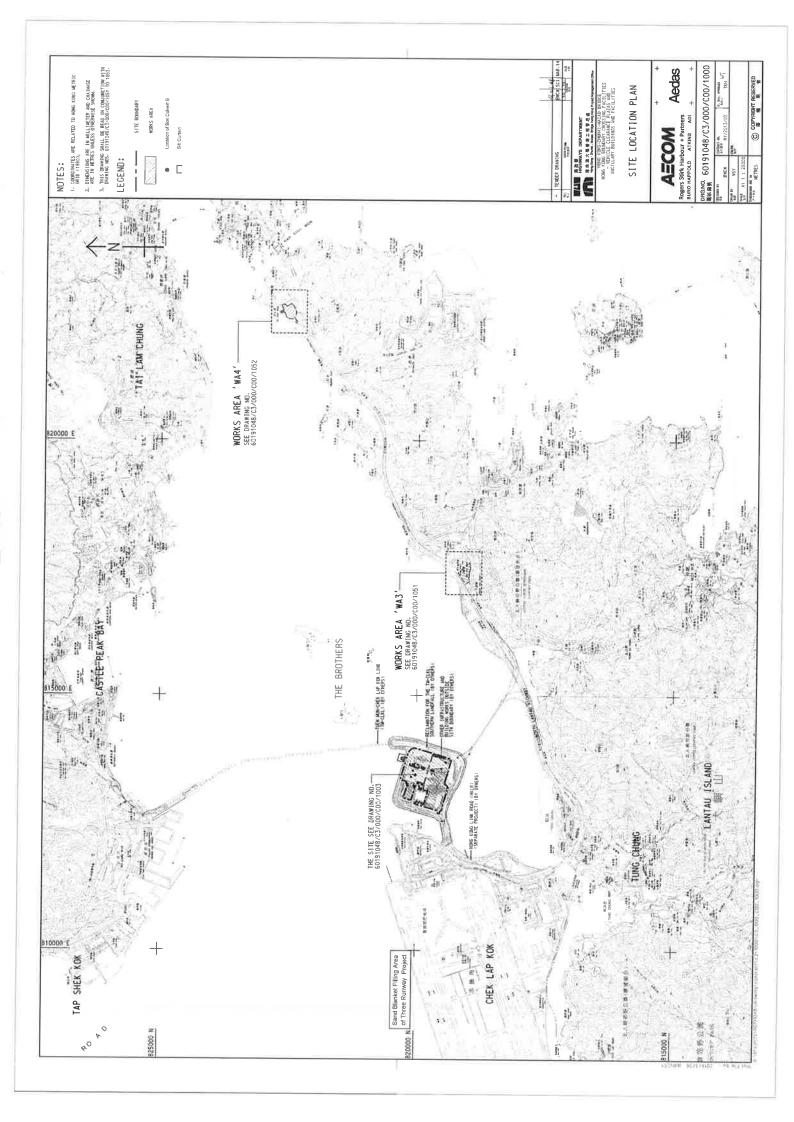
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171004DONOEv1)

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 12 Oct 2017

Notification No.: 20171004 NOE v1

Works Inspected: Data collected from water sampling works on 4 October 2017 and the results were issued on 9 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

	10.00	- Contractive				
PARAM	STATION	DEPTH	AL (mg/L)	止 (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	SR10A*	Surface and Middle	Surface and Middle	Surface and Middle	4.7	4.5
DO	5R10A*	Bottom	5.0	4,2	4.6	4.3
DO	SR10B(N)	Surface and Middle	Bottom 4.7	(except 5 mg/L for FCZ) Bottom	4.8	4.5
DO	SR10B(N)	Bottom		3.6	4.9	4.5

Sampling Time

Photo 1:

Sampling	ime	
IS5	13:04:00	16:53:00
IS(Mf)6	12:57:00	17:00:00
IS7	12:48:00	17:09:00
IS8	12:28:00	17:26:00
IS(Mf)9	12:38:00	17:17:00
IS10(N)	12:15:00	17:51:00
IS(MI)11	12:09:00	17:56:00
IS(Mf)16	12:02:00	17:51:00
IS17	11:57:00	17:59:00
SR3	13:10:00	16:46:00
SR4(N)	12:23:00	17:33:00
SR5(N)	12:22:00	17:44:00
SR6	13:17:00	16:46:00
SR7	12:00:00	18:04:00
SR10A	10:38:00	19:06:00
SR10B(N)	10:47:00	18:58:00



Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

* Location was changed due to fishing net installed in the vicinity (22°21.1165'N; 114°03.1185'E) (See Photo 1)

Reviewed by : Keith Chau

Title : ET Leader

Date: 12-Oct-17

Copied to:

EPD, Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0018

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: _16/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0018

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171006DO) was forwarded by the ET of Contract No. HY/2013/01 on 11 October 2017:

Monitoring Date: 6 October 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
Surface and Middle	5.0	4.2 (except 5 mg/L for FCZ)
Bottom	4.7	3.6

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	SR10B(N)	Surface and Middle	4.9	<u>4.5</u>
DO	SR10B(N)	Bottom	5.0	4.6

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171006DO) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 6 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes:
- 3. 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

۱۸/2-

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- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

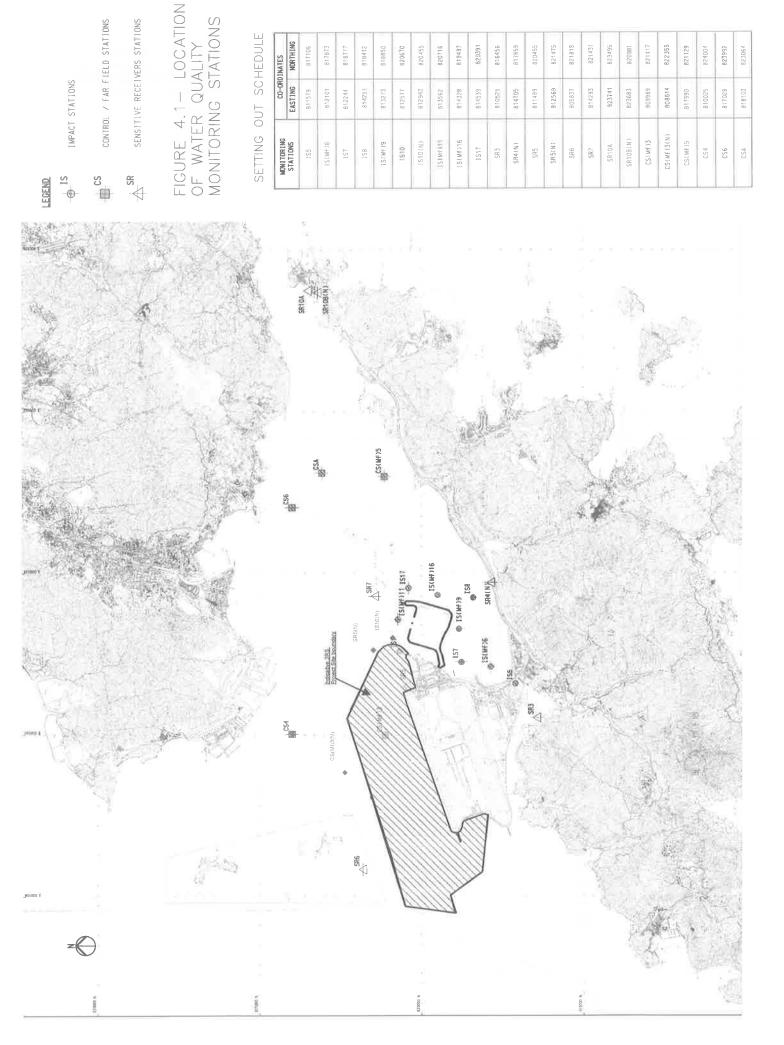
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Figure 1

The Location of WQM Stations



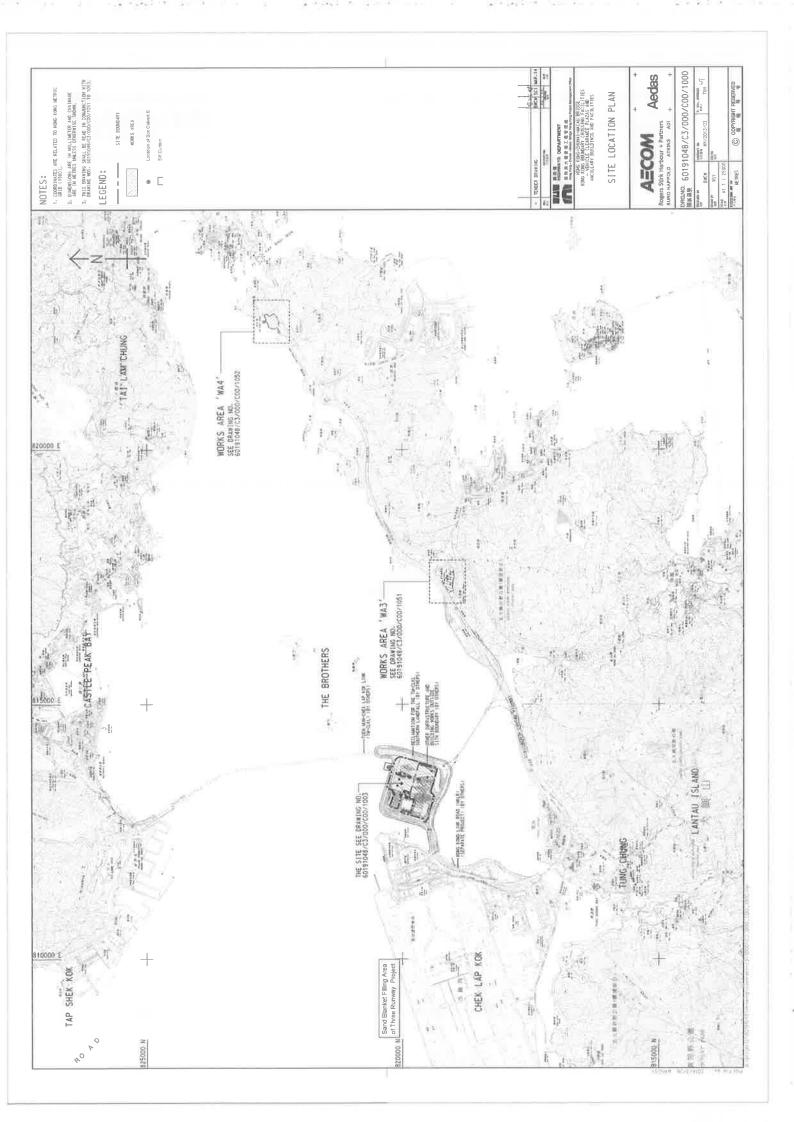
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171006DO)

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Notification No.: 20171006 NOE

Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 11 October 2017

Works Inspected: Data collected from water sampling works on 6 October 2017 and the results were issued on 11 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EB9 TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	SR10B(N)	Surface and Middle	Surface and Middle 5.0	Middle 4.2 (except 5 mg/L	4.9	4.5
DO	SR10B(N)	Bottom	Bottom 4.7	for FCZ) Bottom 3.6	5.0	4.6

Sampling Tin	18	
IS5	11:33:00	07:50:00
IS(Mf)6	11:40:00	07:43:00
IS7	11:47:00	07:36:00
IS8	12:03:00	07:18:00
IS(Mf)9	11:54:00	07:25:00
IS10(N)	12:24:00	06:50:00
IS(Mf)11	12:30:00	06:45:00
IS(Mf)16	12:24:00	06:51:00
1\$17	12:34:00	06:44:00
SR3	11:27:00	07:58:00
SR4(N)	12:10:00	07:13:00
SR5(N)	12:17:00	08:57:00
SR6	11:27:00	08:04:00
SR7	12:38:00	06:36:00
SR10A	13:27:00	05:48:00
SR10B(N)	13:20:00	05:56:00

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by : Keith Chau

Title: ET Leader

Date : 11-Oct-17

Copied to:

Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0019

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: _16/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0019

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171009DO) was forwarded by the ET of Contract No. HY/2013/01 on 12 October 2017:

Monitoring Date: 9 October 2017

The Action and Limit Levels of dissolved oxygen (DO) at determined from baseline

monitoring data are listed below:

Ì	Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
İ	Surface and Middle	5.0	4.2 (except 5 mg/L for FCZ)
	Bottom	4.7	3.6

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
DO	SR10B(N)	Surface and Middle	5.2	4.8

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171009DO) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood on 9 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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:
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12 and 19 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

 Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

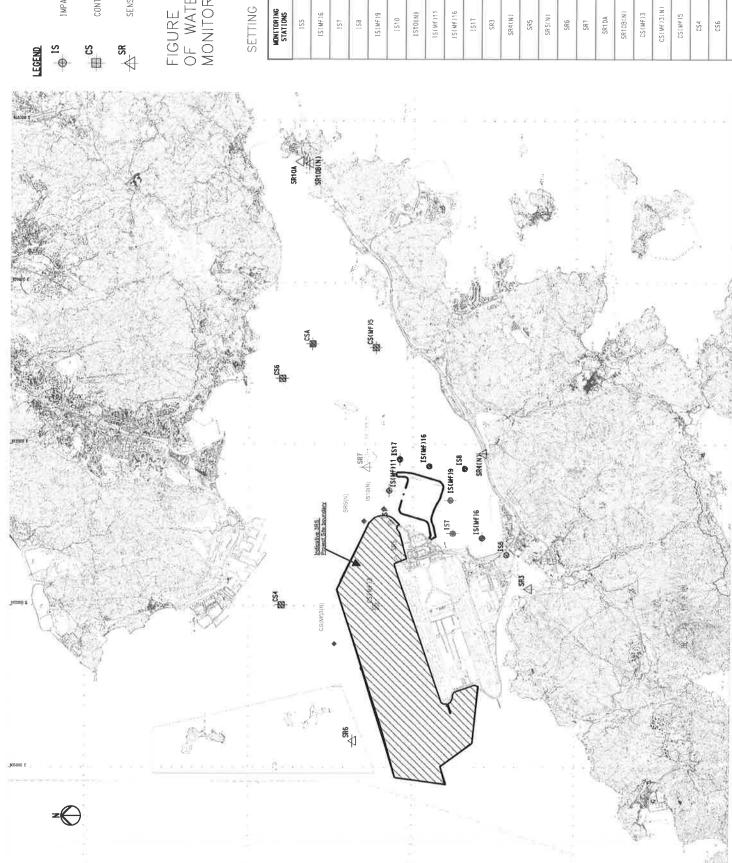
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Figure 1

The Location of WQM Stations



IMPACT STATIONS

CONTROL / FAR FIELD STATIONS

SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

SIALLUNS	EASTING	NORTHING
155	811579	817106
IS(Mf)6	1012101	817873
157	812244	818777
158	814251	818412
1S(Mf)9	813273	818850
1510	812577	820670
ISTOIN	812942	820455
1S(Mf)11	813562	820716
1StMf316	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(Mf)3	809989	821117
CS(MF)3(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
950	817028	823992

823064

CSA

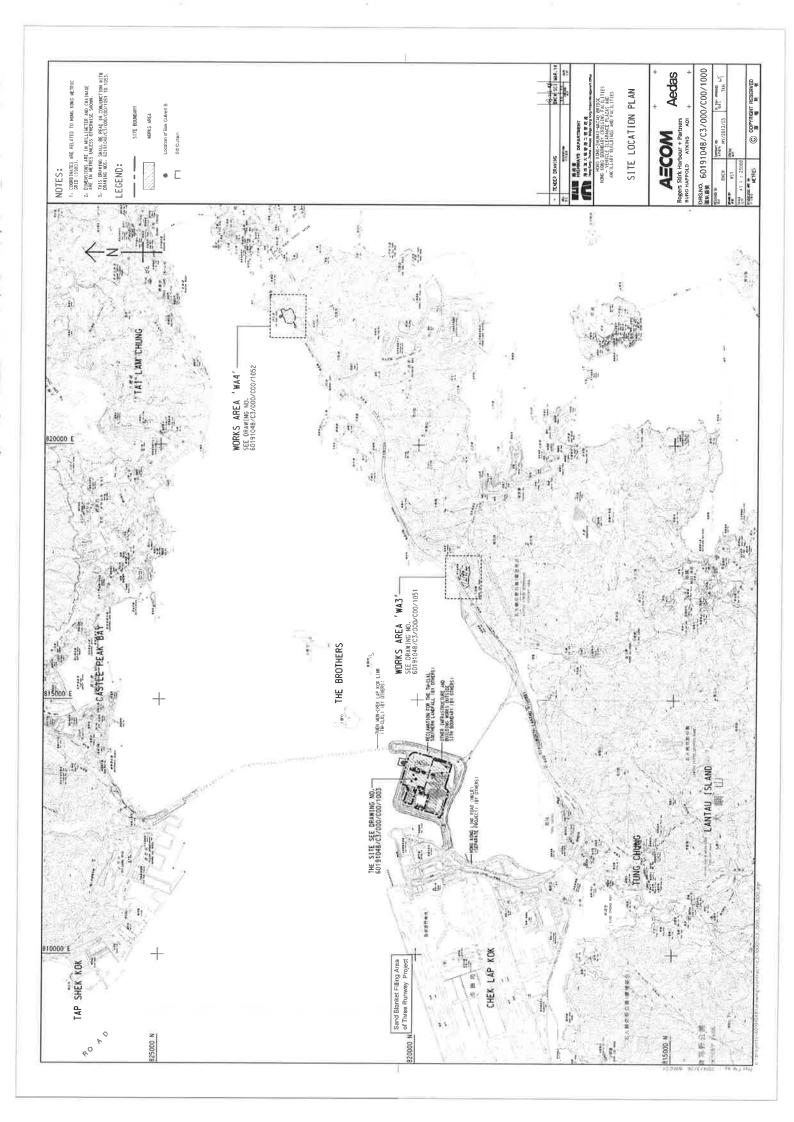
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171009DO)

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20171009 NOE

Date of Notification: 12 Oct 2017

Works Inspected: Data collected from water sampling works on 9 October 2017 and the results were Issued on 12 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

Action & Li	tion & Limit Level (AL & LL) / Measured Level:								
PARAM	STATION	DEPTH	AL (mg/L)	ഥ (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)			
DÓ	SR10B(N)	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	5.2	<u>4.8</u>			

Sampling Time

IS(Mf)6	13:48:00	09:59:00
IS7	13:56:00	09:51:00
IS8	14:13:00	09:35:00
IS(Mf)9	14:04:00	09:43:00
IS10(N)	14:47:00	09:06:00
IS(Mf)11	15:11:00	08:58:00
IS(Mf)16	14:39:00	09:09:00
IS17	14:51:00	09:01:00
SR3	13:33:00	10:13:00
SR4(N)	14:21:00	09:29:00
SR5(N)	14:40:00	09:22:00
SR6	13:33:00	10:20:00
SR7	15:04:00	08:47:00
SR10A	15:48:00	08:01:00
SR10B(N)	15:42:00	08:11:00

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Reviewed by : Keith Chau

Title : ET Leader

Date : 12-Oct-17

Copied to:

EPD, Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix B

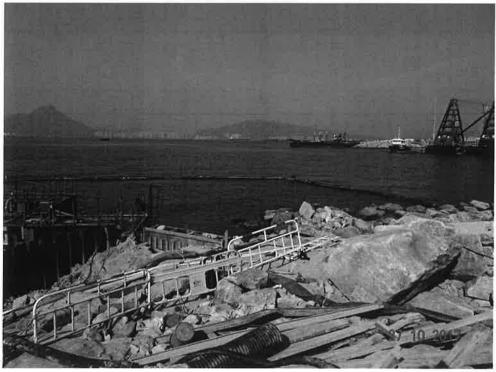
Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0020

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 16/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0020

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171018 SS NOE v1) was forwarded by the ET of Contract No. HY/2013/01 on 30 October 2017:

Monitoring Date: 18 October 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 10.6 for mid-ebb /23.9 for mid- flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 11.5 for mid-ebb/25.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	SR5(N)	Depth Average	9.5	30.1

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171018 SS NOE v1) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 18 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and

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 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.

W2-

- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms:
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

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Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

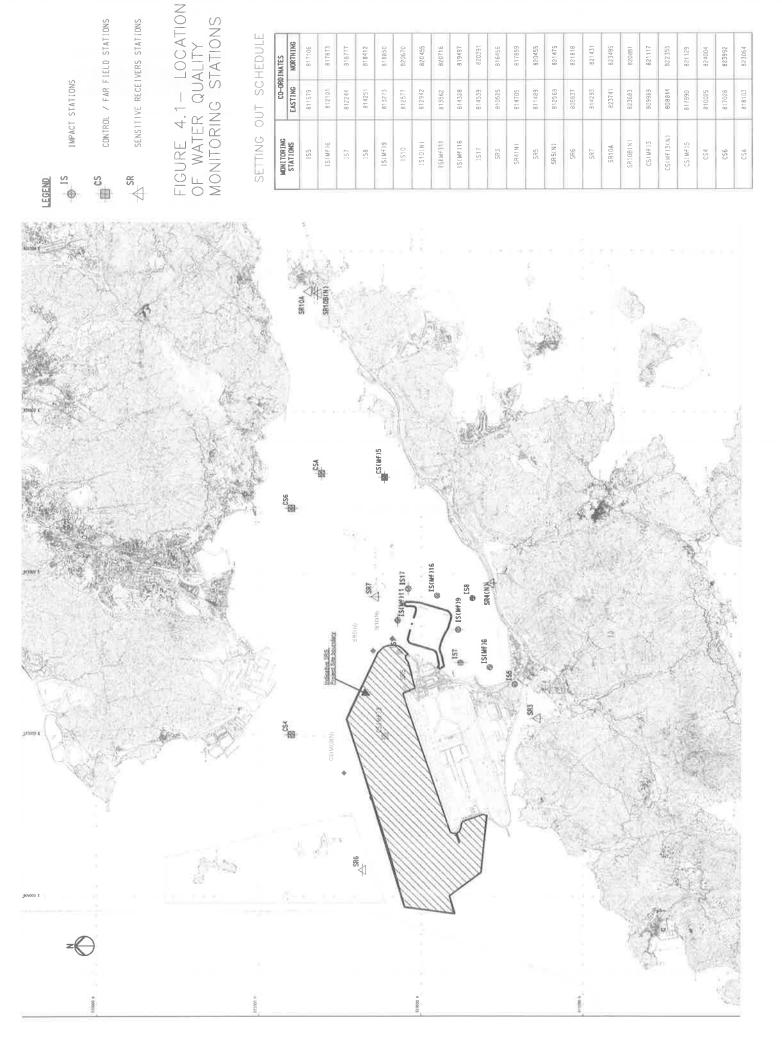
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Figure 1

The Location of WQM Stations



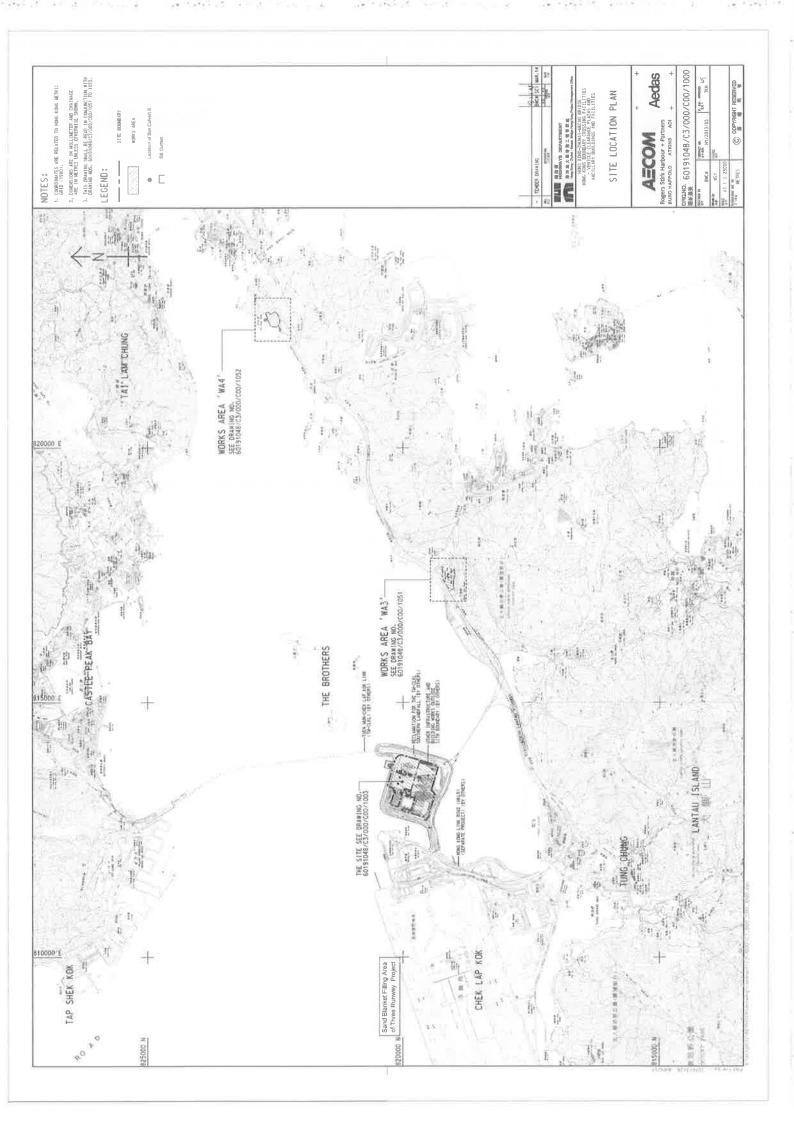
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171018 SS NOE v1)

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Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20171018 SS NOE v1

Date of Notification: 30 October 2017

Works Inspected: Data collected from water sampling works on 18 October 2017 and the results were issued on 26 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Disselved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM ST	TATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS S	5R5(N)	Depth Average	23.5 and 120% (i.e. 10.6 for mid-ebb/23.9 for mid-flood) of upstream control station's \$8 at the same tide of the same day	ebb/25.9 for mid- flood) of upstream control station's \$\$	9.5	30.1

Remarks:

Bold means AL exceedances.

Boid with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Title: ET Representative

4

_ Date :

30-Oct-17

Reviewed by

Prepared by:

Keith Chau

Evan Wong

Title:

ET Leader

1

Date:

30-Oct-17

Copied to :

Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0021

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 03/01/2018

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0021

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171020 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 31 October 2017:

Monitoring Date: 20 October 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 20.8 for mid-ebb /20.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 22.6 for mid-ebb/21.8 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS(Mf)11		11.9	26.1
SS	SR5(N)	Depth Average	8.0	24.4
	SR7		14.9	28.3

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171020 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS(Mf11), SR5(N) and SR 7, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR7, there was no SS exceedance recorded at the same WQM station under similar work environment on 18 October 2017 and 23 October 2017. For SS exceedance recorded at the WQM station SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 18 October 2017 and 23 October 2017. There was a complaint received by EPD with discharge concern around the date of exceedance. As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no discharge activities during the complained period.

It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 20 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

 Water Quality: W1-

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- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 3. 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
 W2-
- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

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5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

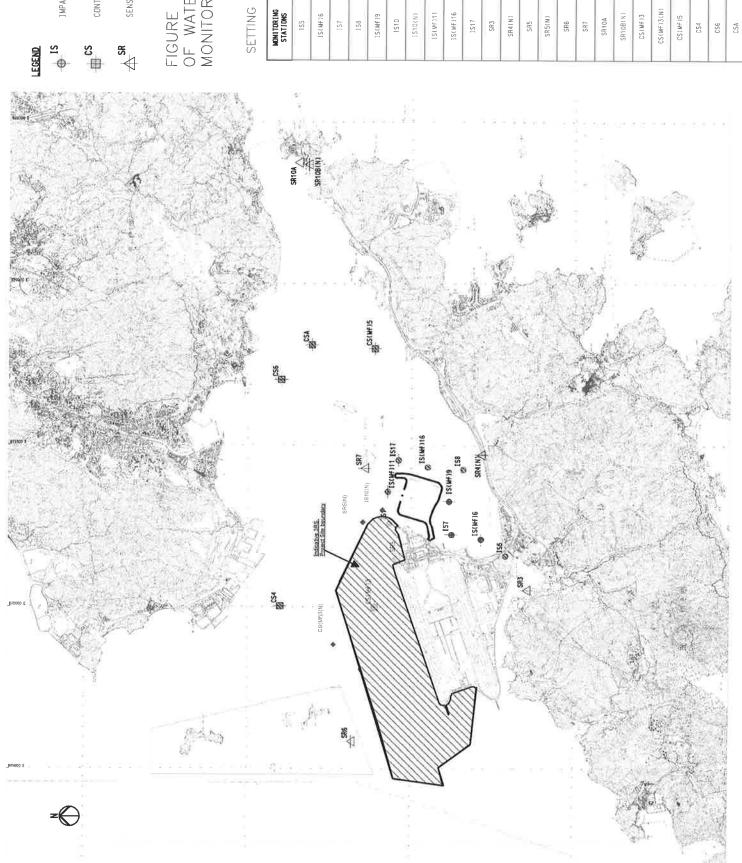
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Figure 1

The Location of WQM Stations



IMPACT STATIONS

CONTROL / FAR FIELD STATIONS

SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

STATIONS 1S5	EASTING	NORTHING
185		
1,787.7.5	811579	817105
C LWL	812101	817873
157	812244	818777
158	814251	818412
IS(Mf)9	813273	818850
1510	812577	820670
1S10(N)	812942	820455
1SCMF111	813562	820716
1S(MF)16	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SRT	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(MF)3	809989	821117
CS(MF)3(N)	808814	822355
CS(MF)5	817990	821129
0.54	810025	B24004
950	817028	823992

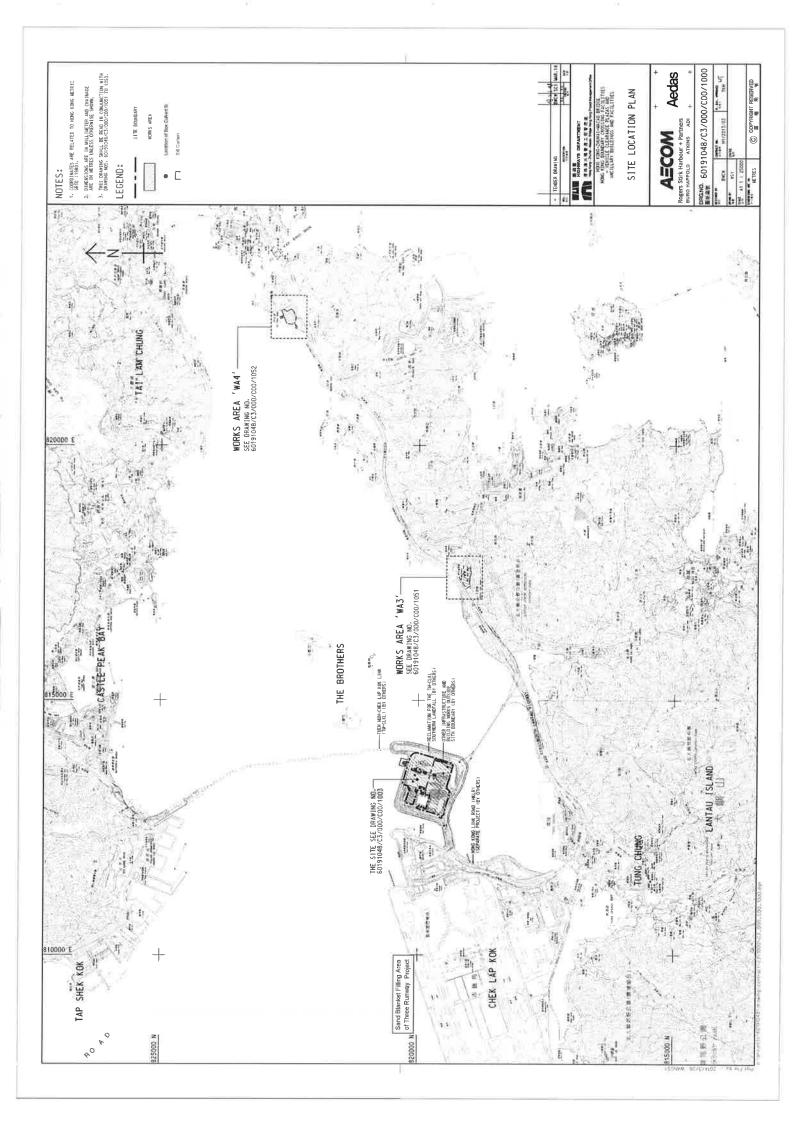
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171020 SS NOE)

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

: (852)-24508238 : (852)-24508032 Tel Fax : mcl@fugro.com Email



Notification No.: 20171020 SS NOE

Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 31 October 2017

Works Inspected: Data collected from water sampling works on 20 October 2017 and the results were issued on 30 October 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TUR8)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
ss	IS(Mf)11	Depth Average	23.5 and 120% (i.e. 20.8 for mid-	34.4 and 130% (i.e. 22.6 for mid- ebb/21.8 for mid-	11.9	26.1
ss	SR5(N)	Depth Average	ebb/20.1 for mid- flood) of upstream control station's SS	flood) of upstream control station's SS at the same tide of	8.0	24.4
SS	SR7	Depth Average	at the same tide of the same day	the same day and 10mg/L for WSD Seawater intakes	14.9	28.3

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Prepared by: Evan Wong Title: ET Representative Date : 31-Oct-17 Reviewed by: Keith Chau Title: ET Leader Date: 31-Oct-17

Copied to:

Contractor, Engineer Representative and IEC/ENPO

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Appendix B

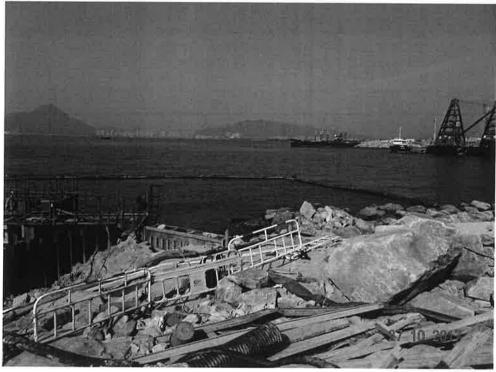
Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com







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INVESTIGATION REPORT ON ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0022

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 21/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0022

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing

Facilities - Vehicle Clearance Plazas and Ancillary Buildings and

Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171023 SS NOE v1) was forwarded by the ET of Contract No. HY/2013/01 on 6 November 2017:

Monitoring Date: 23 October 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 14.8 for mid-ebb /16.9 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 16.0 for mid-ebb/18.3 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level: Mid-flood tide

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	SR5(N)	Depth Average	10.4	26.3

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171023 SS NOE v1) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 23 October 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and

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6. 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. W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 27 October are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

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Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

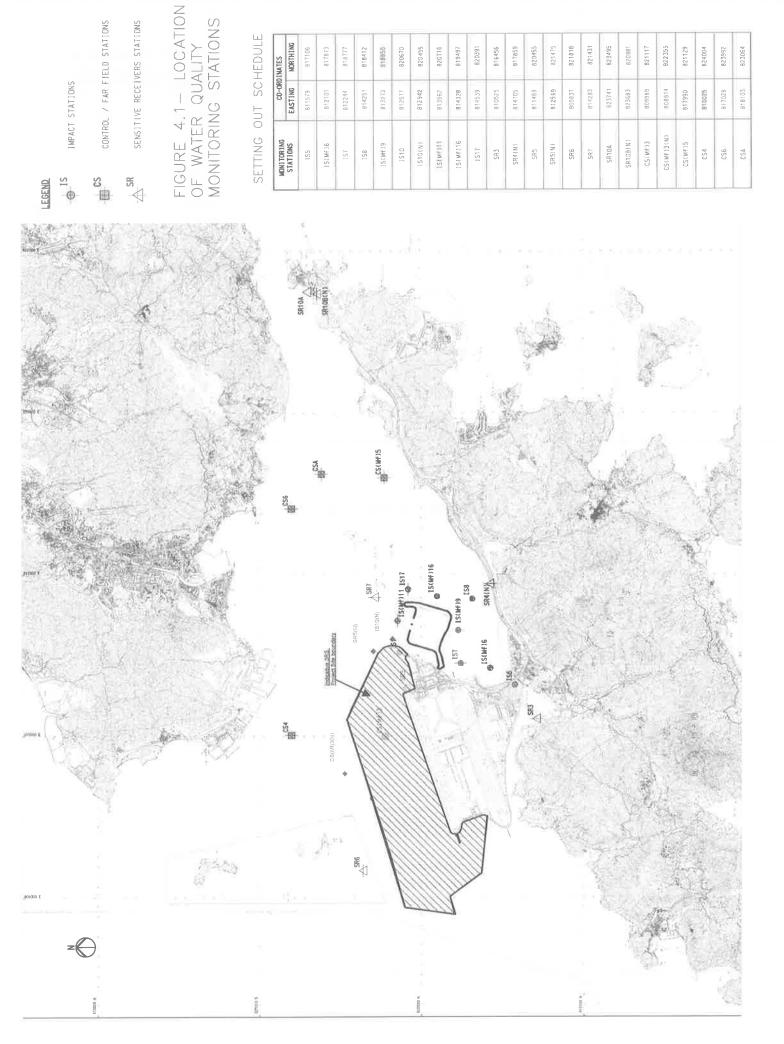
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Figure 1

The Location of WQM Stations



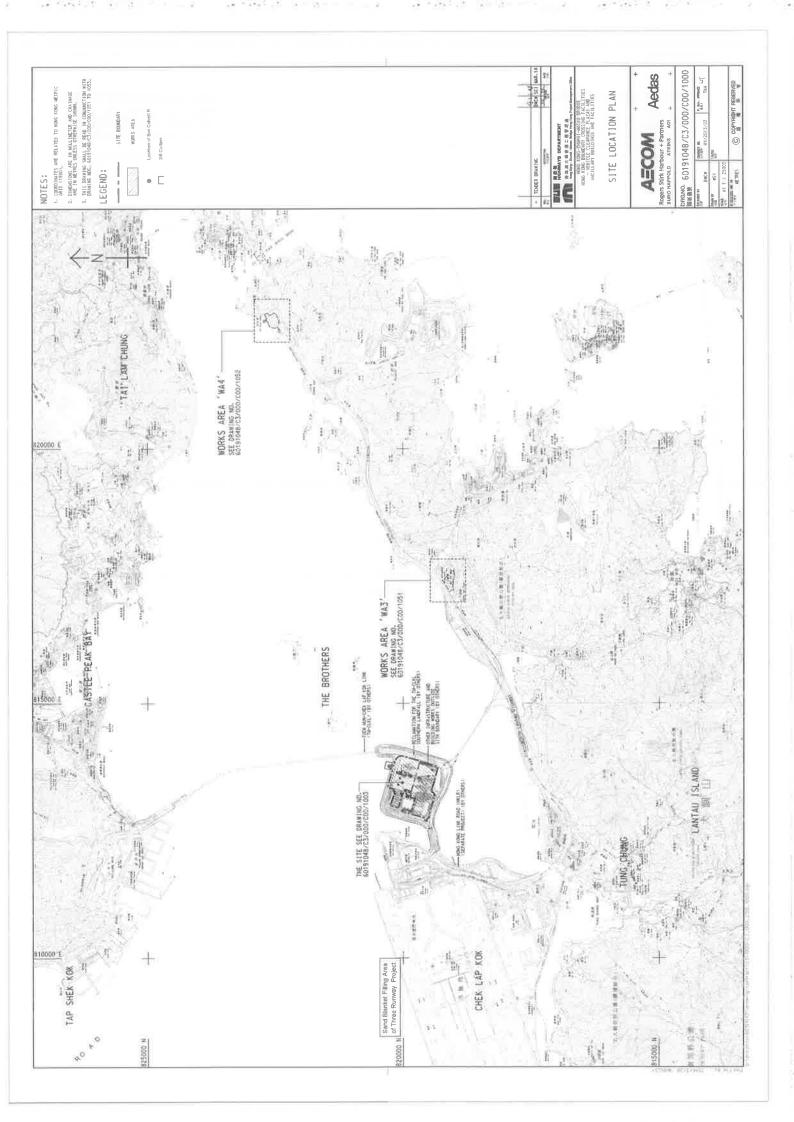
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171018 SS NOE v1)

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel (852)-24508238 Fax (852)-24508032 Email mcl@fugro.com



Notification No.: 20171023 SS NOE

Contract No. HY/2013/01 -

Hong Kong- Zhuhai- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 06 Nov 2017

Works Inspected: Data collected from water sampling works on 23 October 2017 and the results were issued on 1 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Disselved Oxygen (DO) Suspended Solid (SS) Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-E88 TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR5(N)	Depth Average	ebb/16.9 for mid-	ebb/18.3 for mid- flood) of upstream control station's SS at the same tide of	10.4	26.3

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Sampling Time

	Mid-Ebb	Mid-Flood
135	13:26:00	09:55:00
IS(MI)6	13:36:00	09:50:00
137	13:45:00	09:42:00
IS8	14:05:00	09:24:00
IS(Mf)9	13:52:00	09:32:00
IS10(N)	14:18:00	08:45:00
IS(MI)11	14:24:00	08:39:00
IS(MI)16	14:36:00	08:59:00
IS17	14:46:00	08:51:00
SR3	13:19:00	10:03:00
SR4(N)	14:15:00	09:18:00
SR5(N)	14:13:00	08:51:00
SR6	13:18:00	09:44:00
SR7	14:31:00	08:32:00
SR10A	15:47:00	07:52:00
SR10B(N)	15:41:00	06:04:00

Prepared by :	Ruby Law	Title :	ET Representative	
	Lilo	Date :	06-Nov-17	
Reviewed by :	Keith Chau	Title :	ET Leader	
	Keeth	Dale :	06-Nov-17	
	7			

Copied to: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0023

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Cauci

Date: 13/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0023

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171103 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 10 November 2017:

Monitoring Date: 3 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 15.7 for mid-ebb /13.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 17.0 for mid-ebb/14.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS(Mf)11		10.8	26.6
ss	SR5(N)	Depth Average	14.8	37.8
	SR6		25.9	14.1
	SR7		13.6	33.7

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171103 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in Appendix A

Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the marine delivery route, there was no SS exceedance recorded at WQM station IS10(N) which also close to the marine delivery route. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 1 November 2017 and 6 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 3 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 3. 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

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which will cause overflow of materials or pollution of water during loading or transportation;

- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9 and 16 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

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The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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:
- 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;

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- open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

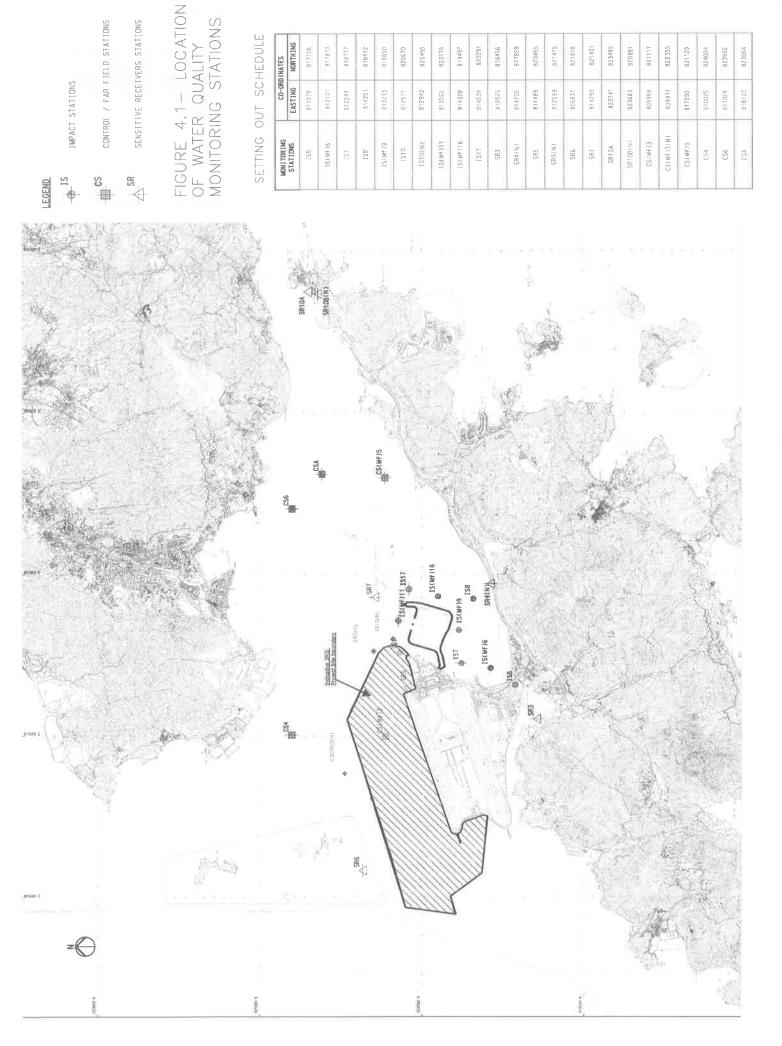
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Figure 1

The Location of WQM Stations



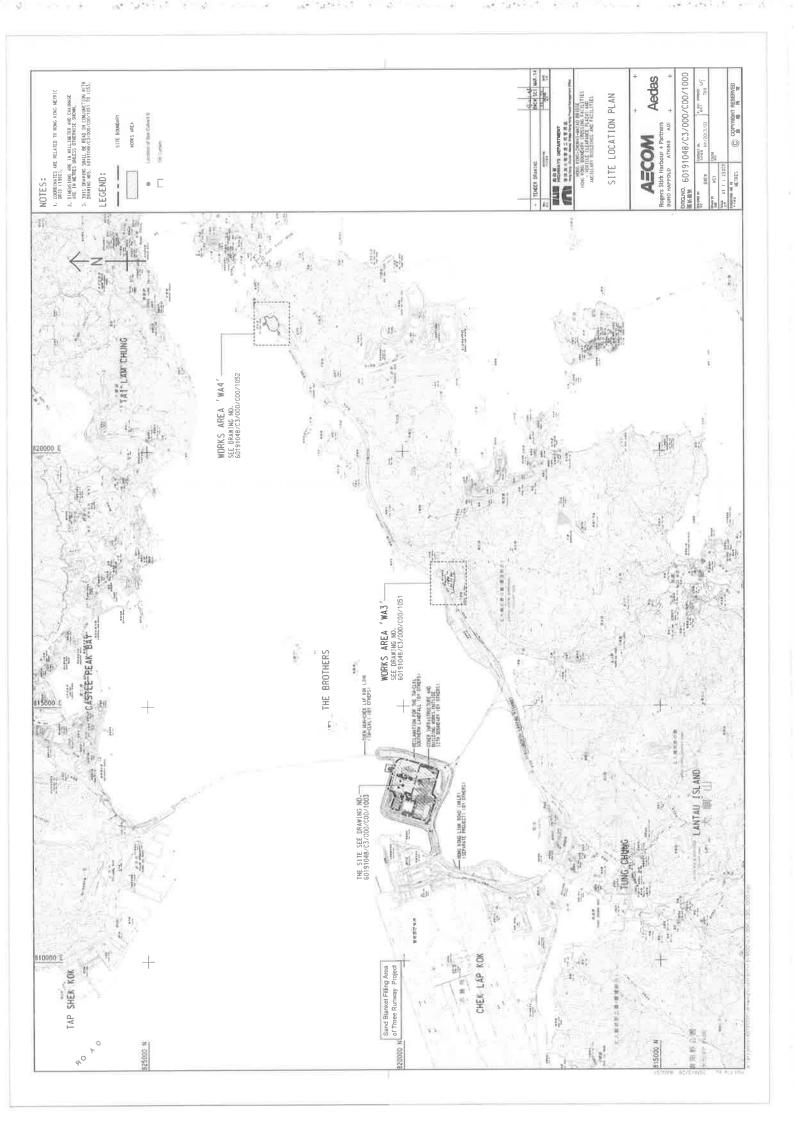
Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171103 SS NOE)

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Notification No.: 20171103 88 NOE

Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedences

Date of Notification: 10 Nov 2017

Works Inspected: Data collected from water sampling works on 3 November 2017 and the results were issued on 10 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved-Oxygon (DO)/-Suspended Solid (SS)/-Turbidity (TURS)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)	
SS	IS(Mf)11	Depth Average	23.5 and 120% (i.e. 15.7 for mid- ebb/13.8 for mid- flood) of upstream control station's SS	34.4 and 130% (i.e. 23.5 and 120% (i.e. 17.0 for mid-		25.6	
88	SRS(N)	Depth Average		THE RESERVE OF THE PARTY OF THE	14.8	37.8	
33	SR6	Depth Average		control station's 99 at the same tid	at the same tide of	25.9	14.1
SS	SR7	Depth Average		10mg/L for WSD Seawater intakes	13.6	33.7	

Remerks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-abb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
135	10:26:00	06:54:00
IS(MI)6	10:34:00	06:38:00
137	10:40:00	06:30:00
138	10:57:00	06:13:00
ISOMO	10:48:00	06:21:00
IS10(N)	11:08:00	05:42:00
IS(MI)11	11:14:00	05:36:00
IS(MI)16	11:21:00	05:49:00
1517	11:30:00	05:40:00
SR3(N)	10:19:00	07:02:00
SR4(N)	11:04:00	08:08:00
SRS(N)	11:02:00	05:50:00
SR6	10:19:00	08:35:00
SR7	11:23:00	05:27:00
SRIOA(N)	12:22:00	04:38:00
SR10B(N2)	12:17:00	04:53:00

Prepared by	Even Wong	Title :	ET Representative	
	1	Date :	10-Nov-17	
Reviewed by :	Keith Chau	Title :	ET Leader	
	Keith	Date :	10-Nov-17	
	/			

Copied to: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: <u>0165-15-IR00</u>24

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 21/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0024

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171106 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 15 November 2017:

Monitoring Date: 6 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 15.9 for mid-ebb /19.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 17.2 for mid-ebb/21.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS(Mf)6		10.0	27.2
	IS(Mf)16	Depth Average	11.5	25.1
SS	SR7		10.3	25.5
00	SR10A		15.0	26.0
	SR10B(N)		7.9	25.2

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171106 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS(Mf)6, IS(Mf)16, SR7, SR10A and SR10B(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS(Mf)11. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS(Mf)6, IS(Mf)16, SR7, SR10A and SR10B(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 6 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;

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- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:
- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9 and 16 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

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The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

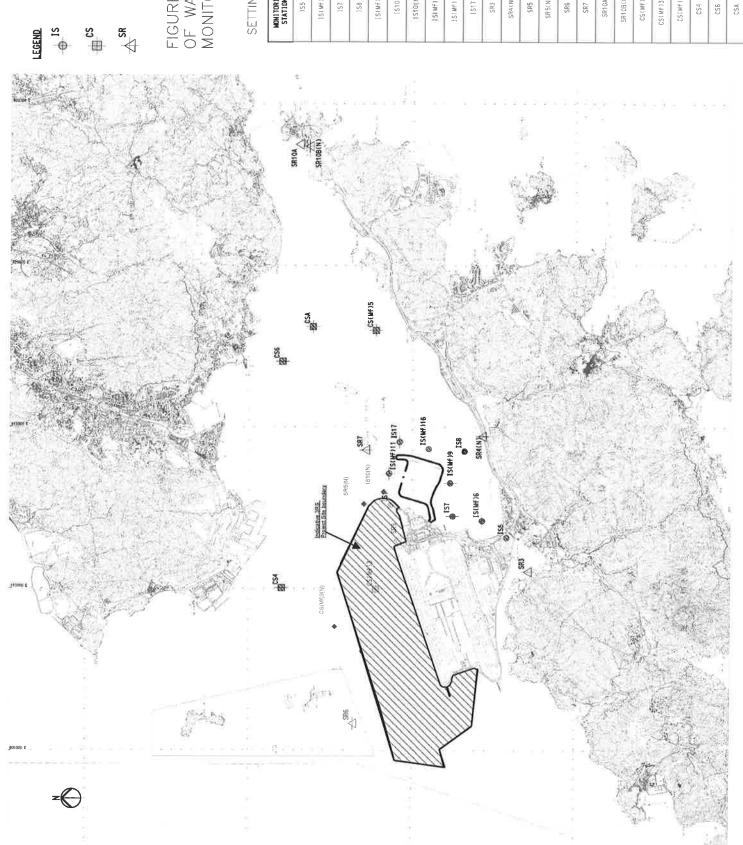
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Figure 1

The Location of WQM Stations



IMPACT STATIONS

CONTROL / FAR FIELD STATIONS

SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

STAT10NS	EASTING	NORTHING
155	811579	817106
1S(Mf)6	812101	817873
157	812244	818777
158	814251	818412
IS(Mf)9	813273	818850
1510	812577	820670
ISTOTN	812942	820455
\$ SI M F 111	813562	820715
1S(MF)16	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(MF)3	809989	821117
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
950	817028	623992

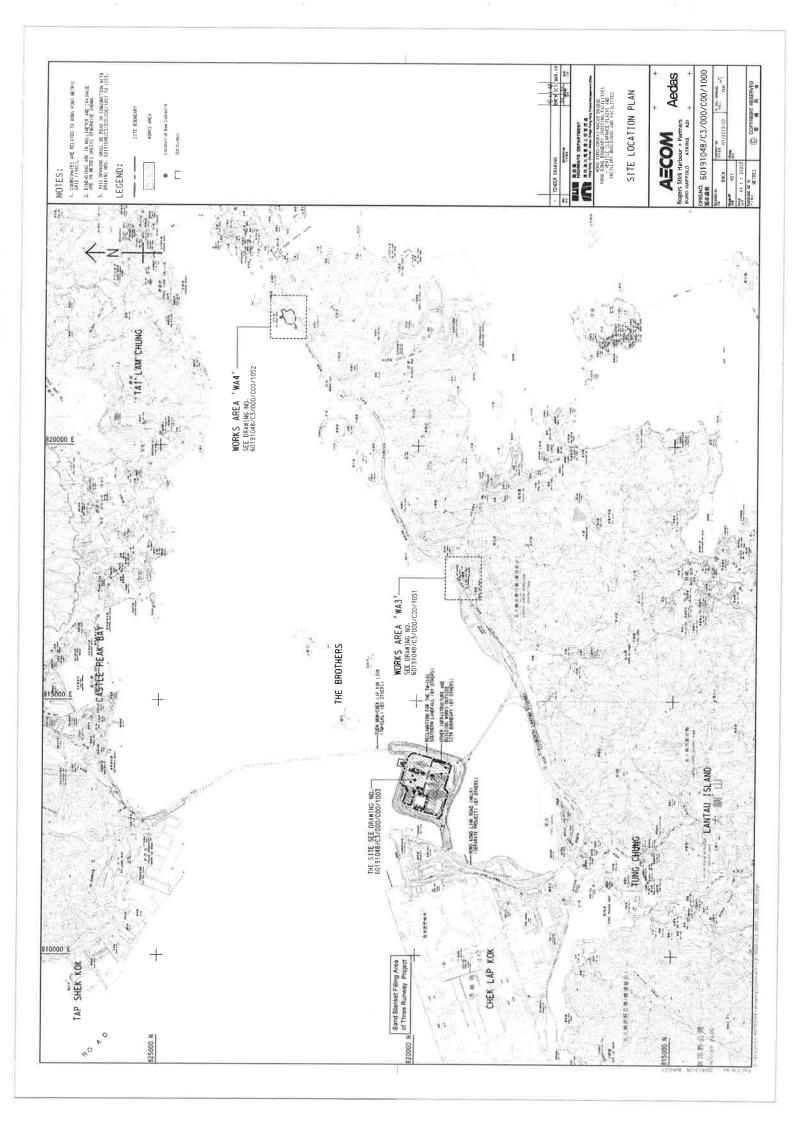
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171106 SS NOE)

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20171106 98 NOE

Date of Notification: 15 Nov 2017

Works inspected: Data collected from water sampling works on 6 November 2017 and the results were issued on 14 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DOY Suspended Solid (SSY Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)			
33	IS(Mf)6	Depth Average	23.5 and 120% (i.e. 15.9 for mid- ebb/19.8 for mid- flood) of upstream control station's SS	9 for mid- 19.8 for mid- 19.8 for mid- 19.8 for mid-	10.0	27.2			
33	IS(Mf)16	Depth Average			11.5	25.1			
33	SR7	Depth Average			100	25.5			
88	SR10A	Depth Average		at the same tide of	at the same tide of	at the same tide of	the same day and 10mg/L for WSD	15.0	26.0
53	SR10B(N)	Depth Average		Seawater intakes	7.9	25.2			

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(MI)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
185	12:42:00	09:27:00
IS(Mf)6	12:50:00	09:20:00
137	12:55:00	09:14:00
198	13:09:00	06:58:00
IS(MI)9	13:02:00	09:06:00
IS10(N)	13:22:00	08:40:00
(S(MI)11	13:26:00	08:34:00
IS(Mf)16	13:31:00	08:27:00
1317	13:39:00	08:19:00
SR3	12:37:00	09:34:00
SR4(N)	13:15:00	06:53:00
SRS(N)	13:16:00	08:47:00
SR6	12:38:00	09:33:00
SR7	13:35:00	08:25:00
SR10A	14:30:00	07:25:00
SR10B(N)	14:26:00	07:35:00

Prepared by :	Even Wong	Title :	ET Representative	
	_4	Dale :	15-Nov-17	
Reviewed by :	Keith Chau	Title :	ET Leader	
	Keith	Dale :	15-Nov-17	

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0025

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0025

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171108 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 17 November 2017:

Monitoring Date: 8 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 19.7 for mid-ebb /13.2 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 21.3 for mid-ebb/14.3 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
	IS(Mf)11	Danth Assass	10.2	24.3
SS	SR4(N)		18.5	35.1
33	SR5(N)	Depth Average	14.9	38.2
SF	SR6		27.9	18.9

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171108 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR4(N), SR5(N) and SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 6 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 8 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and

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6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9 and 16 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

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6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

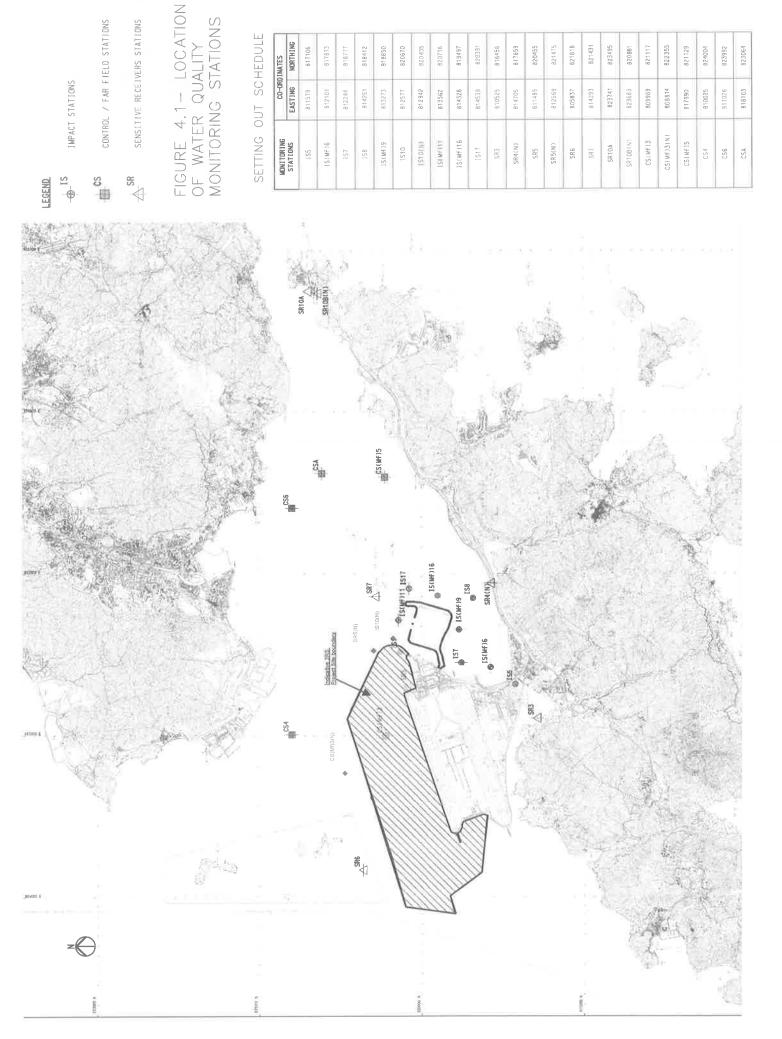
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Figure 1

The Location of WQM Stations



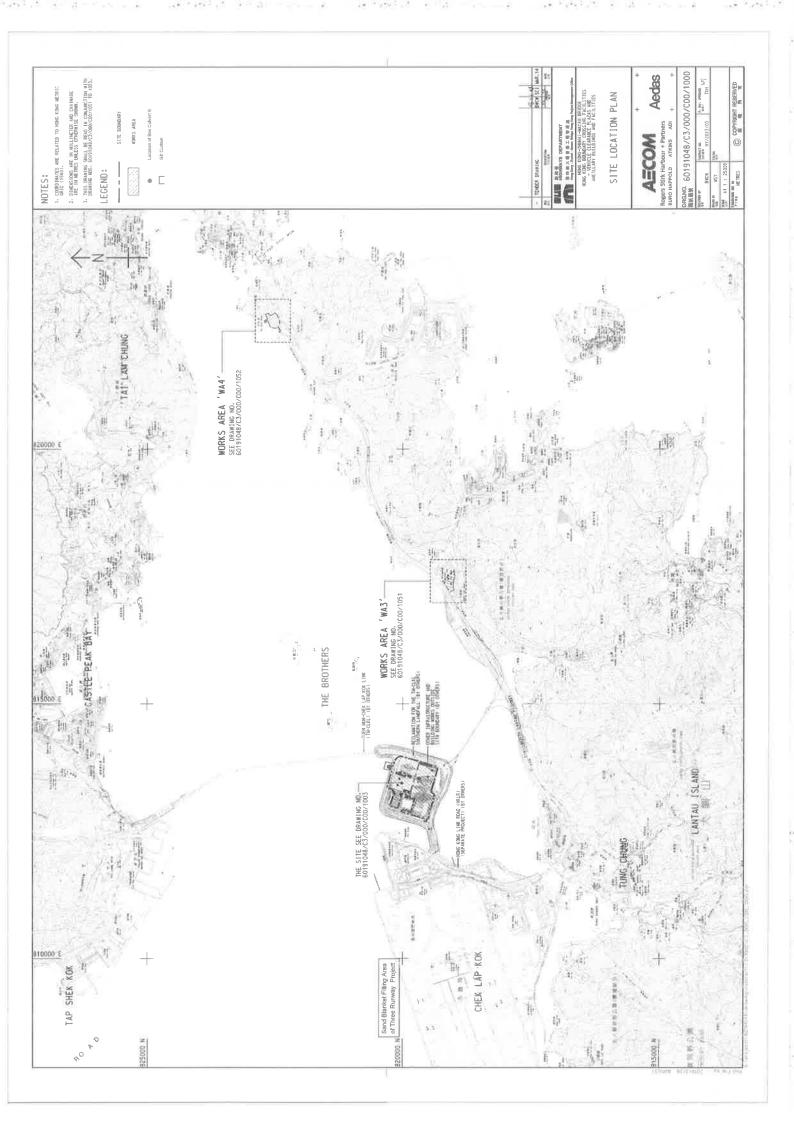
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171108 SS NOE)

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20171108 88 NOE

Date of Notification: 16 Nov 2017

Works Inspected: Data collected from water eampling works on 8 November 2017 and the results were issued on 16 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Disselved Oxygen (DO)/-Suspended Solid (SS)/-Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
33	IS(Mf)11	Depth Average	23.5 and 120% (Le.		10.2	24.3
SS	SR4(N)	Depth Average	19.7 for mid- sbb/13.2 for mid-	ebb/14.3 for mid- flood) of upstream control station's SS	18.5	<u>35.1</u>
33	SRS(N)	Depth Average	flood) of upstream control station's SS at the same tide of	at the same tide of		38.2
33	SR6	Depth Average	the same day	10mg/L for WSD Seawater intakes	27.9	18.9

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(MI)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
195	14:26:00	10:57:00
IS(Mf)6	14:33:00	10:51:00
137	14:39:00	10:42:00
138	14:55:00	10:26:00
IS(MI)9	14:46:00	10:34:00
IS10(N)	15:03:00	09:57:00
IS(MI)11	15:09:00	09:50:00
IS(MI)16	15:18:00	10:00:00
IS17	15:27:00	09:54:00
SR3	14:18:00	11:03:00
SR4(N)	15:02:00	10:21:00
SRS(N)	14:57:00	10:05:00
SR6	14:18:00	10:47:00
SR7	15:16:00	09:42:00
SR10A	16:20:00	06:55:00
SR10B(N)	16:14:00	09:08:00

Prepared by :	Evan Wong	Title :	ET Representative	
	_4	Dale :	16-Nov-17	
Reviewed by :	Keith Chau	Title :	ET Leader	
	Keith	Date :	16-Nov-17	
	7			

Copied to: Contractor, Engineer Representative and IEC/ENPO

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0026

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 13/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0026

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171113 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 22 November 2017:

Monitoring Date: 13 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 7.6 for mid-ebb /9.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 8.2 for mid-ebb/9.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	IS8	Depth Average	16.6	29.1

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171113 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 13 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;

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- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16 and 23 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

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The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

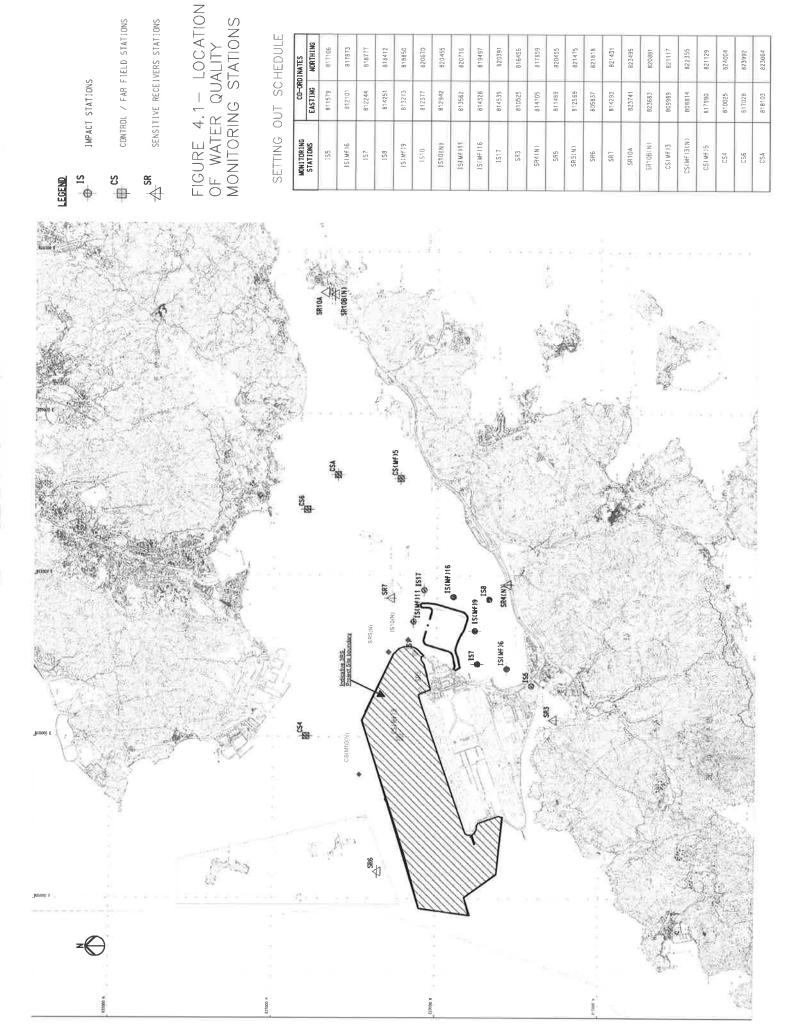
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Figure 1

The Location of WQM Stations



CD-ORDINATES
EASTING NORTHING

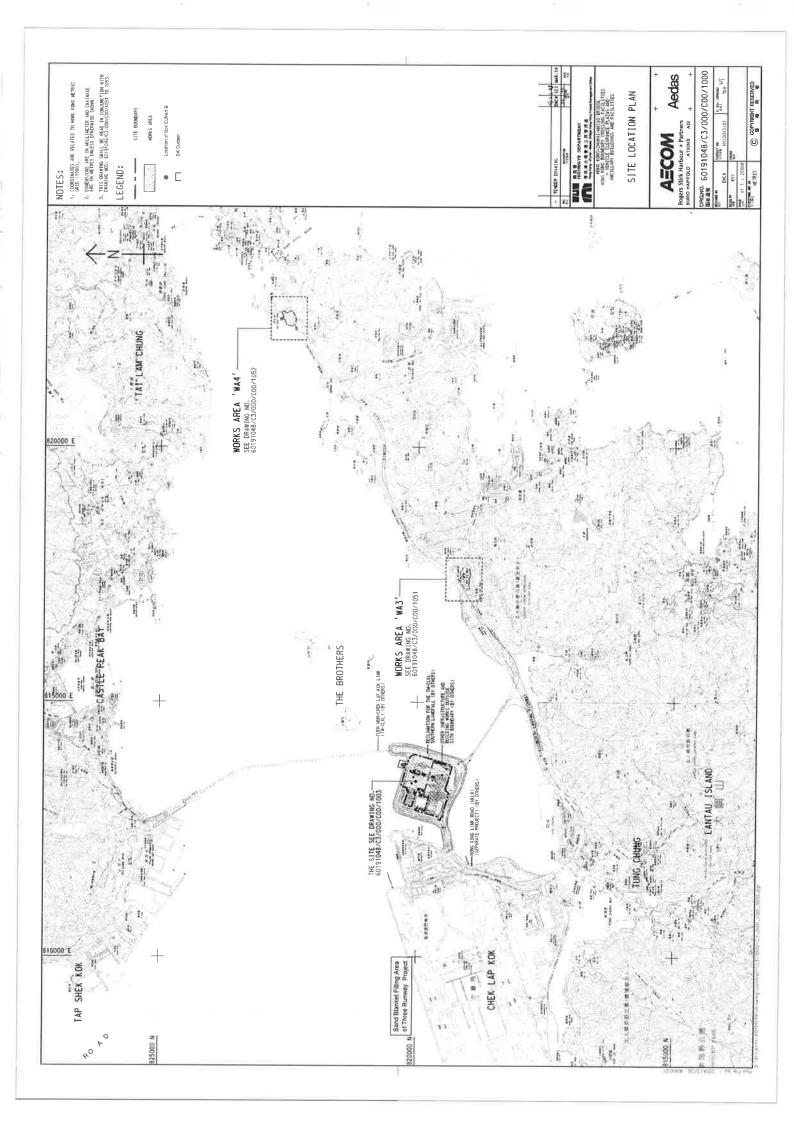
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171113 SS NOE)

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Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 22 Nov 2017

Notification No.: 20171113 SS NOE

Works Inspected: Data collected from water sampling works on 13 November 2017 and the results were Issued on 22 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	158	Depth Average	23.5 and 120% (i.e. 7.6 for mid-ebb/9.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 8.2 for mid-ebb/9.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes		29.1

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
185	10:05:00	14:35:00
IS(Mf)6	09:52:00	14:44:00
IS7	09:45:00	14:53:00
IS8	09:26:00	15:11:00
IS(Mf)9	09:37:00	15:02:00
IS10(N)	08:59:00	15:34:00
IS(Mf)11	08:52:00	15:42:00
IS(Mf)16	09:00:00	15:38:00
IS17	08:53:00	15:45:00
SR3	10:14:00	14:26:00
SR4(N)	09:20:00	15:21:00
SR5(N)	09:06:00	15:26:00
SR6	09:50:00	14:33:00
SR7	08:44:00	15:51:00
SR10A	07:42:00	16:45:00
SR10B(N)	07:52:00	16:40:00

Prepared by :	Evan Wong	Title :	ET Representative	
		Date :	22-Nov-17	
Reviewed by :	Keith Chau	Title :	ET Leader	
	Keith	Date :	22-Nov-17	

Copied to: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0027

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 14/12/2017

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0027

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171115 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 22 November 2017:

Monitoring Date: 15 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 8.4 for mid-ebb /5.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 9.1 for mid-ebb/6.0 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	IS(Mf)6	Depth Average	8.9	24.8

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171115 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS(Mf)6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 15 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

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- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 2. 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:
- 3. 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:
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16 and 23 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

 Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

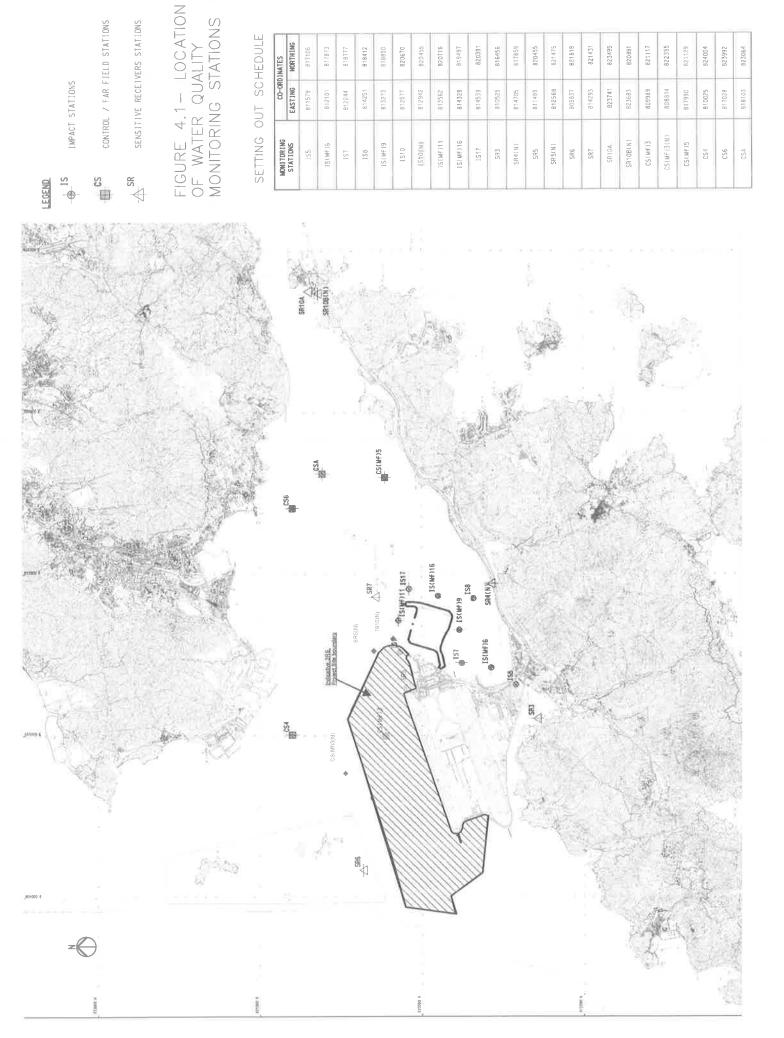
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Figure 1

The Location of WQM Stations



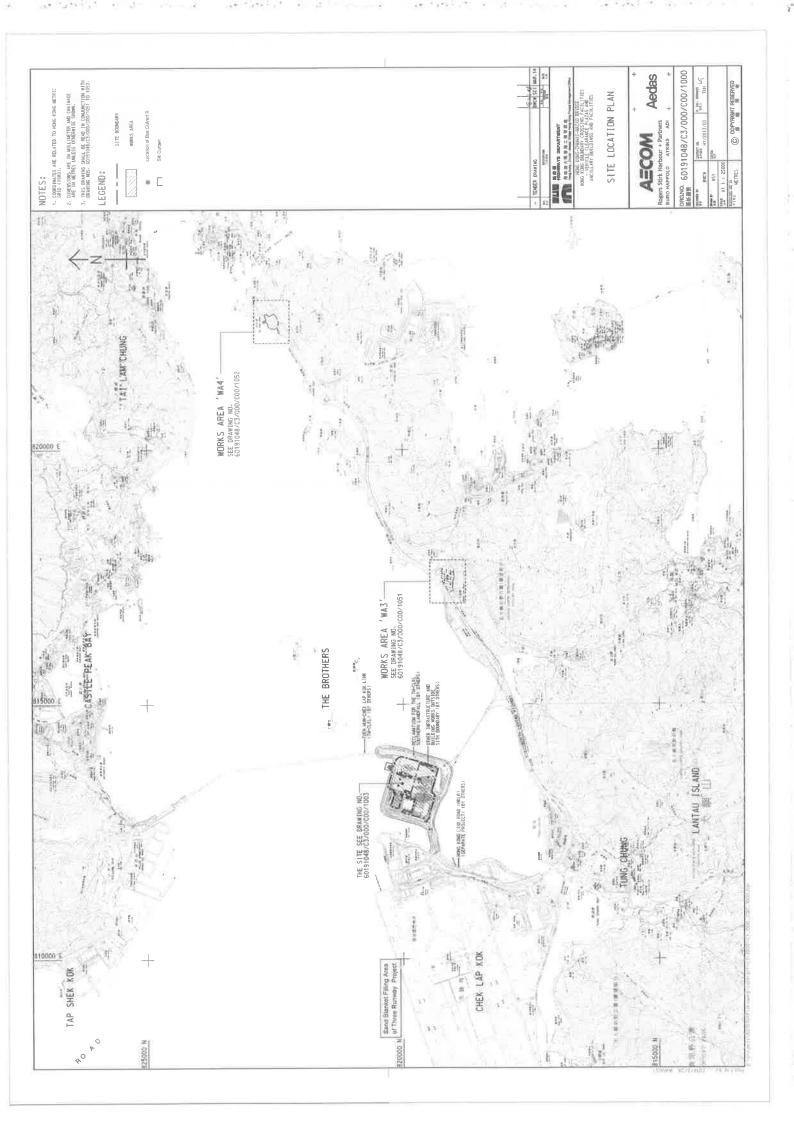
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171115 SS NOE)

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Notification No.: 20171115 SS NOE

Date of Notification: 22 Nov 2017

Works impected: Data collected from water sampling works on 15 November 2017 and the results were issued on 22 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DOY Suspended Solid (SS)/ Turbidity (TURE)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-E66 TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS(Mf)6	Depth Average	23.5 and 120% (i.e. 8.4 for mid-sbb/5.5 for mid-flood) of upatream control station's SS at the same tide of the same day		8.9	24.8

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances:

Upstream control stations of mid-ebb tide: CS(MI)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
195	11:44:00	15:34:00
IS(Mf)6	11:37:00	15:42:00
137	11:29:00	15:49:00
138	11:13:00	16:05:00
IS(Mf)9	11:21:00	15:57:00
IS10(N)	10:48:00	16:34:00
IS(MI)11	10:41:00	16:42:00
IS(MI)16	10:49:00	16:26:00
IS17	10:43:00	16:36:00
SR3	11:52:00	15:27:00
3R4(N)	11:09:00	16:12:00
SRS(N)	10:55:00	16:27:00
SR6	11:38:00	15:42:00
SR7	10:34:00	16:50:00
SR10A	09:39:00	17:34:00
SR10B(N)	09:49:00	17:30:00

Prepared by:	Evan Wong	Title :	ET Representative	
	4	Date :	22-Nov-17	
Reviewed by :	Keith Chau	Title :	ET Leader	
	Keith	Date :	22-Nov-17	
	1			

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0028

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 13/12/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0028

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171120 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 28 November 2017:

Monitoring Date: 20 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 19.7 for mid-ebb /14 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 21.4 for mid-ebb/15.2 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Levels

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	SR7	Depth Average	11.7	24.1

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171120 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure 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. For SS exceedance recorded at the WQM station SR7, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR7, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 20 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;

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- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16 and 23 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

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The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

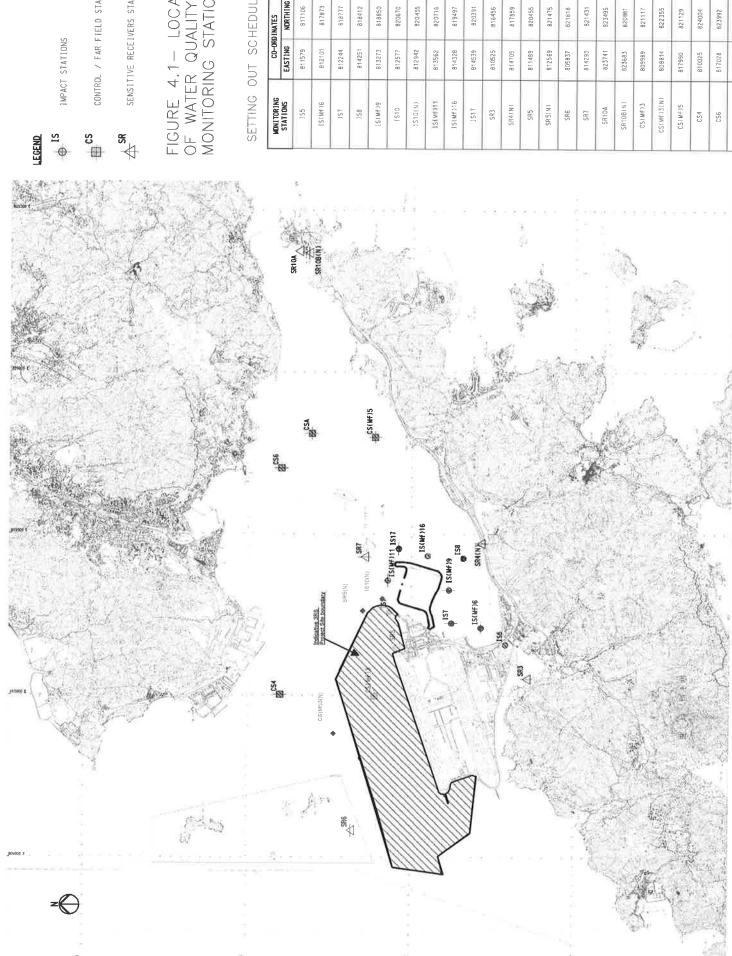
- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

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Figure 1 The Location of WQM Stations



IMPACT STATIONS

CONTROL / FAR FIELD STATIONS

SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

CTATIONS		
201141	EAS LING	NORTHING
155	811579	817106
ISCMF16	812101	817873
157	B12244	818777
158	814251	818412
IS(Mf)9	813273	818850
1510	812577	820670
[S10(N)	812942	820455
15(MF111	813562	820716
15(Mf)16	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(Mf)3	809888	821117
CS(MF)3(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
950	817028	823992

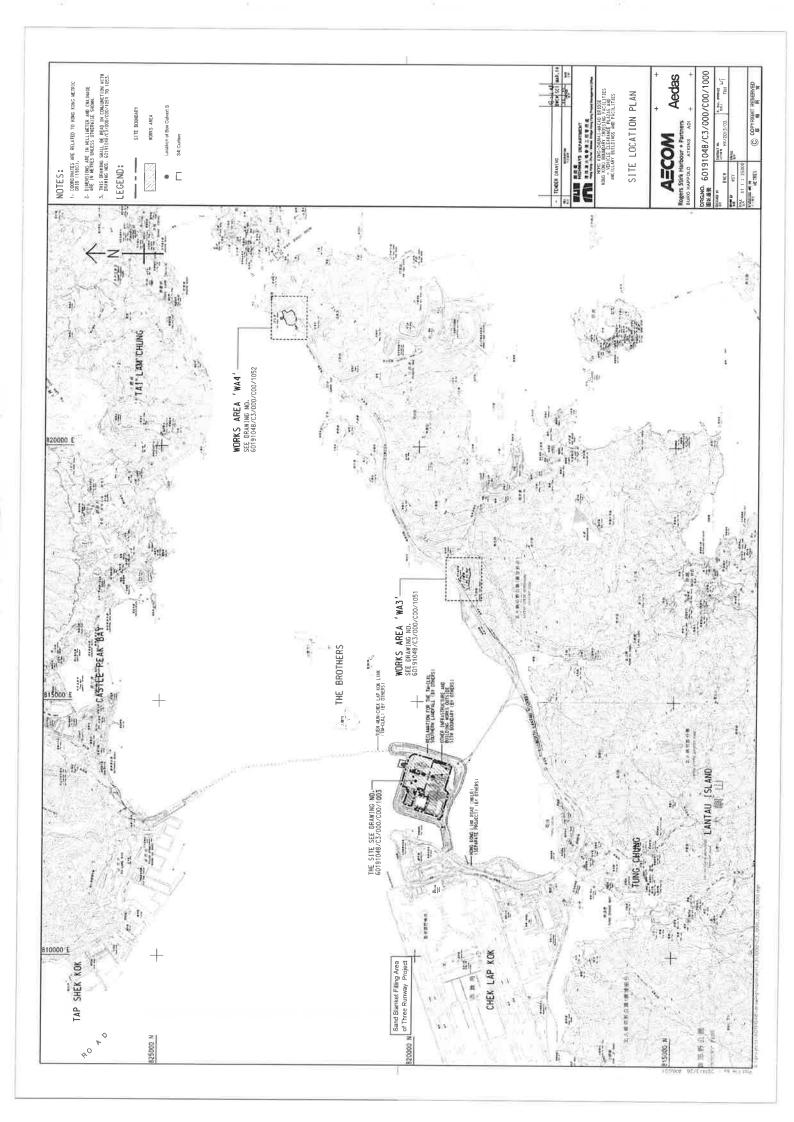
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171120 SS NOE)

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 28 Nov 2017

Notification No.: 20171120 SS NOE

Works Inspected: Data collected from water sampling works on 20 November 2017 and the results were Issued on 28 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Disselved Oxygen (DO)/-Suspended Solid (SS)/-Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR7	Depth Average	23.5 and 120% (i.e. 19.7 for mid-ebb/14 for mid-flood) of upstream control station's SS at the same tide of the same day		11.7	24.1

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Mid-Ebb		Mid-Flood
135	12:33:00	09:09:00
IS(Mf)6	12:40:00	08:58:00
187	12:46:00	08:50:00
138	13:09:00	08:35:00
IS(Mf)9	12:52:00	08:42:00
IS10(N)	13:19:00	08:10:00
IS(Mf)11	13:25:00	08:04:00
IS(Mf)16	13:24:00	08:11:00
IS17	13:31:00	08:05:00
SR3	12:28:00	09:16:00
SR4(N)	13:06:00	08:30:00
SR5(N)	13:14:00	08:16:00
SR6	12:29:00	08:59:00
SR7	13:33:00	07:56:00
SR10A	14:24:00	07:04:00
SR10B(N)	14:18:00	07:14:00

Evan Wong	Title :	ET Representative	
4	Date :	28-Nov-17	
Keith Chau	Title :	ET Leader	
Keith	Date :	28-Nov-17	
	4	Date : Keith Chau Title :	Date: 28-Nov-17 Keith Chau Title: ET Leader

Copied to: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0029

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 15/11/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0029

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171122 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 30 November 2017:

Monitoring Date: 22 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 12.5 for mid-ebb /7.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 13.5 for mid-ebb/8.2 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	SR6	Depth Average	26.6	<u>36.1</u>

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171122 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during midflood tide and mid-ebb tide on 22 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.

W2-

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.



- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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:
- 3. 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16, 23 and 30 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 23 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

 Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

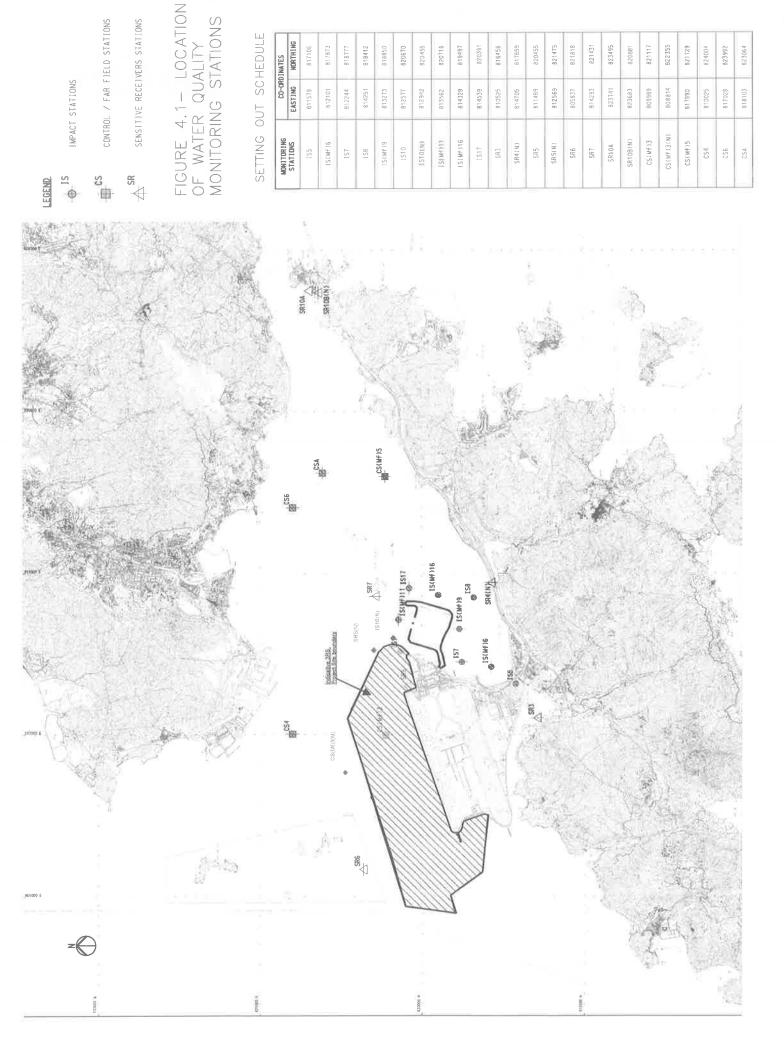
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Figure 1

The Location of WQM Stations



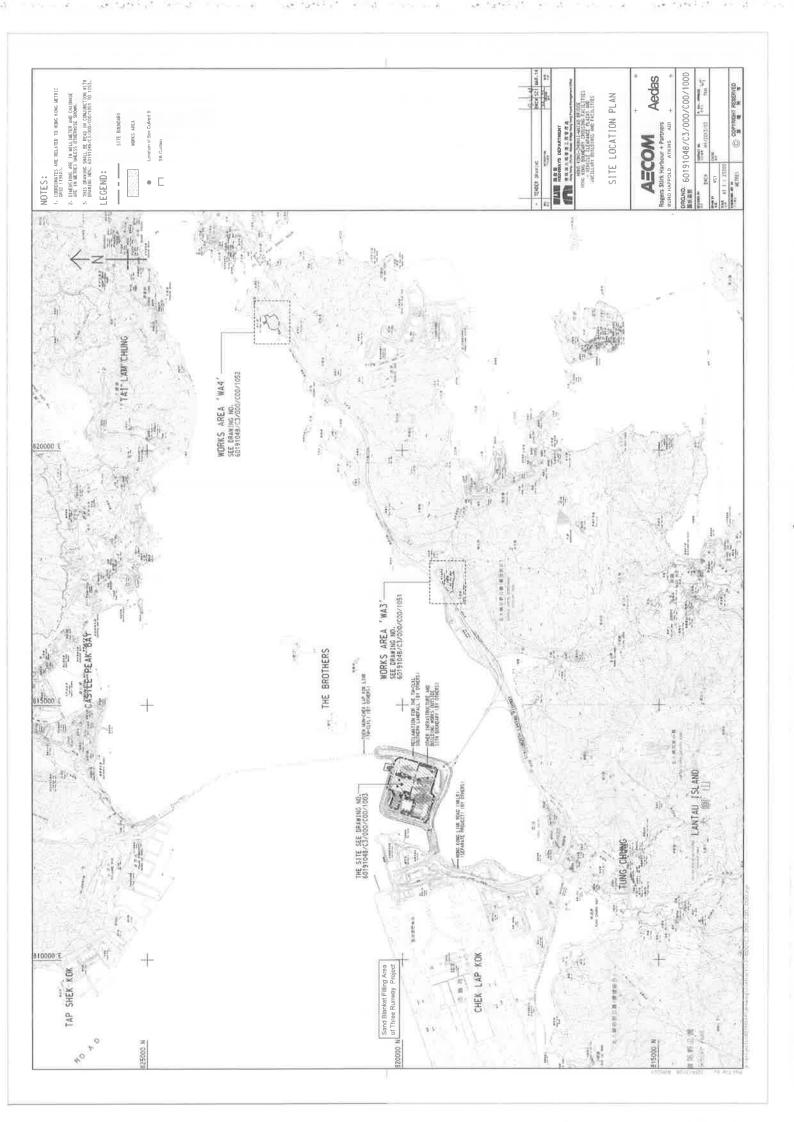
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171122 SS NOE)

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Notification No.: 20171122 SS NOE

Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 30 Nov 2017

Works inspected: Data collected from water sampling works on 22 November 2017 and the results were issued on 29 November 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/ Suspended Solid (SS)/ Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 12.5 for mid- ebb/7.5 for mid- flood) of upstream control station's SS at the same tide of the same day	ebb/8.2 for mid- flood) of upstream control station's SS at the same tide of	26.6	<u>36.1</u>

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4

Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Mid-Ebb		Mid-Flood	
i35	13:42:00	10:15:00	
IS(Mr)6	13:49:00	10:10:00	
187	13:55:00	10:03:00	
IS8	14:10:00	09:47:00	
IS(Mf)9	14:02:00	09:55:00	
IS10(N)	14:21:00	09:17:00	
IS(MI)11	14:26:00	09:11:00	
IS(Mr)16	14:32:00	09:22:00	
1817	14:41:00	09:14:00	
SR3	13:36:00	10:23:00	
SR4(N)	14:16:00	09:42:00	
SR5(N)	14:16:00	09:24:00	
SR6	13:35:00	10:05:00	
SR7	14:34:00	09:03:00	
SR10A	15:34:00	08:17:00	
SR10B(N)	15:29:00	08:25:00	

Prepared by :	Evan Wong	Title :	ET Representative	
	4	Date :	30-Nov-17	
Reviewed by:	Keith Chau	Title :	ET Leader	
	Keith	Date :	30-Nov-17	

Copied to: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0030

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 15/11/2017

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0030

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171124 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 1 December 2017:

Monitoring Date: 24 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline

monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 16.8 for mid-ebb /12.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 18.2 for mid-ebb/13.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid- ebb tide (mg/L)	Measured at mid- flood tide (mg/L)
SS	IS8	Depth Average	10.6	29.9

Bold means AL exceedance.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4 Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171124 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during midflood tide on 24 November 2017.

The location of the WQM station where exceedances were recorded and all relevant WQM stations are shown in **Figure 1** and the location of marine-based construction works are shown in **Figure 2**.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Water Quality:

W1-

- 1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- 2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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;
- 4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- 5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 6. 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.

W2-

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- 1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- 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;
- 4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- 5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- 6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- 7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- 8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16, 23 and 30 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 23 November 2017 are shown in **Appendix B**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all water quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

Water Quality:

 Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- 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:
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- 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.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
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- 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;
- 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;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

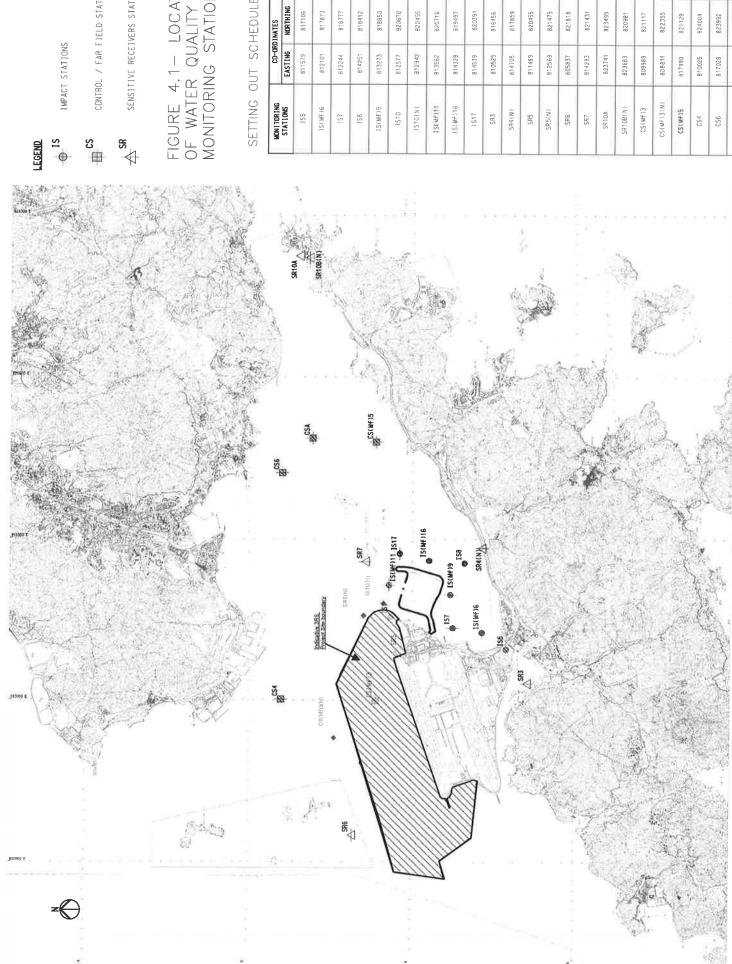
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Figure 1

The Location of WQM Stations



CONTROL / FAR FIELD STATIONS IMPACT STATIONS

SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MUNI I DIKING	3	LINKIES
STATIONS	EASTING	NORTHING
155	811579	817105
1S(MF)6	812101	817873
157	812244	818777
158	814251	818412
1S(MF)9	813273	818850
1510	812577	820670
1510(N)	812942	820455
ISI WF111	813562	820716
15(Mf)16	814328	819497
1517	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(Mf)3	809989	821117
CS(Mf)3(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
950	817028	823992
400	210401	10000

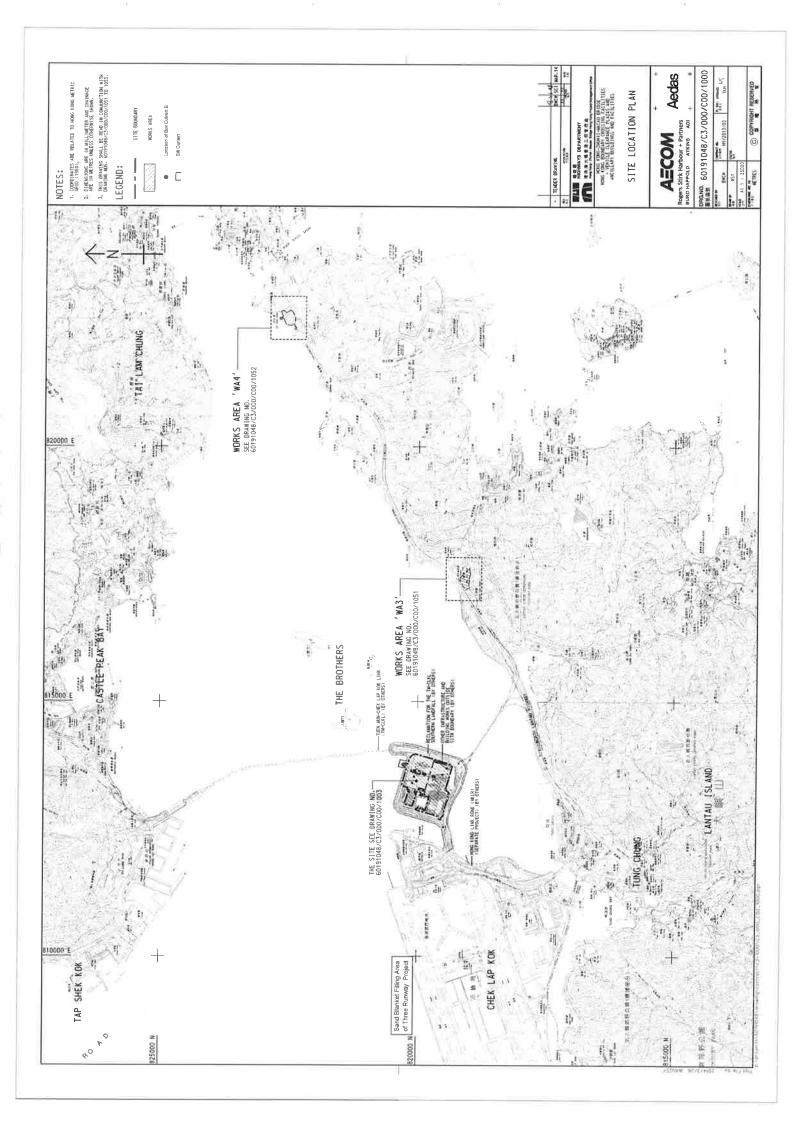
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



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Appendix A

Notification of Limit Level Exceedance (20171124 SS NOE)

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Contract No. HY/2013/01 -

Hong Kong- Zhuhal- Macao Bridge

Hong Kong Boundary Crossing Facilities - Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances

Date of Notification: 01 Dec 2017

Notification No.: 20171124 SS NOE

Works Inspected: Data collected from water sampling works on 24 November 2017 and the results were issued on 1 December 2017

Monitoring Location: Water Quality Monitoring Station

Parameter: Dissolved Oxygen (DO)/-Suspended Solid (SS)/-Turbidity (TURB)

Action & Limit Level (AL & LL) / Measured Level:

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (i.e. 16.8 for mid- ebb/12.8 for mid- flood) of upstream control station's SS at the same tide of the same day	ebb/13.9 for mid- flood) of upstream control station's SS at the same tide of	10.6	29.9

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

Mid-Flob
Mid-Flood

	Mid-Ebb	Mid-Flood
135	15:23:00	12:31:00
IS(Mf)6	15:30:00	12:22:00
IS7	15:38:00	12:14:00
IS8	15:52:00	11:53:00
IS(Mf)9	15:44:00	12:03:00
IS10(N)	16:06:00	10:41:00
IS(Mf)11	16:13:00	10:34:00
IS(Mf)16	16:16:00	11:25:00
IS17	16:25:00	11:16:00
SR3	15:16:00	12:39:00
SR4(N)	16:00:00	11:47:00
SR5(N)	16:00:00	10:48:00
SR6	15:16:00	11:27:00
SR7	16:21:00	10:27:00
SR10A	17:22:00	10:00:00
SR10B(N)	17:17:00	10:23:00

Prepared by :	Evan Wong	Title :	ET Representative	
		Date :	01-Dec-17	
Reviewed by	Keith Chau	Title :	ET Leader	
	Keith	Date :	01-Dec-17	

Copied to: Contractor, Engineer Representative and IEC/ENPO

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Appendix B

Photo showing the site situation of marine works in Box Culvert B

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INVESTIGATION REPORT ON ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

Hong Kong Zhuhai Macao Bridge
Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and
Ancillary Buildings and Facilities

Report No. Ref.: 0165-15-IR0031

Prepared by:

Mr. Vincent Lu

Reviewed by:

Mr. Bong Yu

Certified by:

Mr. Arthur Cheng

Environmental Team Leader

Date: 05/01/2018

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NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0031

1. Project Details

Contract No.: HY/2013/03

Contract Title: Hong Kong Zhuhai Macao Bridge Hong Kong Boundary Crossing Facilities

- Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

Notification of Action/Limit Level Exceedance (20171128 24h) was forwarded by the ET of Contract No. HY/2013/01 on 6 December 2017:

Monitoring Date: 28 November 2017

The Action and Limit Levels of 24-hr TSP at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (µg/m³)	Limit Level (µg/m³)
24-hr TSP	167	260

Measured Level:

Parameter	Station	Measured level (µg/m³)
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	168

Bold Italic means AL exceedance.

Bold Italic with underline means LL exceedances.

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171128 24h) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

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3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, the mitigation measures according to Water Spraying Arrangement in November 2017 (**Appendix B**) are implemented to avoid dust emission. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr.

For 24-hr TSP exceedance recorded at the station AMS3B, the Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix C. The hourly AQHI of Tung Chung station ranged 3 to 8 (Low to Very High) on 28 and 29 November 2017 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The Vehicle Clearance Plazas and Ancillary Buildings and Facilities site of HKBCF is far away from AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS3B during the monitoring period.

It was unlikely that the works undertaken by Contract No. HY/2013/03 caused 24-hr TSP exceedance recorded at the station AMS3B on 28 November 2017.

Investigation Results

The ET of Contract No. HY/2013/03 concluded that the captioned exceedance was not related to the construction site activities of the contract. Nevertheless, the Contractor had been reminded to comply with the requirements stipulated in the Environmental Permit and the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual, in particular:

Air Quality:

The Permit Holder shall undertake watering at least 8 times per day on all exposed soil within the Project site and associated work areas throughout the construction phase.

A2-

- 1. Proper watering of exposed spoil should be undertaken throughout the construction phase:
 - Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;
 - Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;
 - A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.
 - The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;

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- Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores:
- 2. 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;
- 3. 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;
- 5. 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:
- 6. 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;
- 7. Any skip hoist for material transport should be totally enclosed by impervious sheeting;
- 8. 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;
- 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;
- 10. 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
- 11. 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 r part of the construction site where the exposed earth lies

A3-

1. The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.

A4-

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 Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.

A6-

- 1. 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;
- 3. Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;
- 4. The materials which may generate airborne dusty emissions should be wetted by water spray system;
- 5. All receiving hoppers should be enclosed on three sides up to 3m above unloading point;
- 6. All conveyor transfer points should be totally enclosed;
- 7. All access and route roads within the premises should be paved and wetted; and
- 8. 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

A7-

- 1. All road surface within the barging facilities will be paved;
- 2. Dust enclosures will be provided for the loading ramp;
- 3. Vehicles will be required to pass through designated wheels wash facilities; and
- 4. Continuous water spray at the loading points

4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16, 23 and 30 November 2017, ET confirmed the Contractor had provided workable and effective air quality mitigation measures.

Photos showing the mitigation measures were taken during the site audit at 30 November 2017 are shown in **Appendix C**.

5. Recommendation to the Contractor

The Contractor was reminded to continue to fully maintain all air quality mitigation measures.

6. Follow up Status (Overall)

The captioned exceedance was not related to the Contract and therefore, no additional follow-up action is needed. However, ET proposed recommendations to Contractor in particular to the following aspects when there are marine construction activities.

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Air Quality:

The Permit Holder shall undertake watering at least 8 times per day on all exposed soil within the Project site and associated work areas throughout the construction phase.

A2-

- 1. 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;
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- 7. Any skip hoist for material transport should be totally enclosed by impervious sheeting;

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4. Continuous water spray at the loading points

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Appendix A

Notification of Limit Level Exceedance (20171128 24h)

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Copied to

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com



Contract No. H	V10040104				
Hong Kong- Zh	uhai- Ma	cao Bridge			
Notification of	undary C Environ n	rossing Facilities – Passenger Clea ental Quality Limit Exceedance	rance Building	Notificati	on No.: <u>20171128_Air_24</u> hr
Date of Notifica	ition: 6 D	ecember 2017			
Date of Environm	nental Qua	lity Limit Exceedance: 28 November 201	7 and the results w	vere issued on (6 December 2017
Monitoring Loc	ation: AM	IS3B – Site Boundary of Site Office A	rea at Works Are	a WA2	
Monitoring Date	e: 28 Nove	mber 2017	Start Time: 08	3:00	
Parameter: 24-1	nour TSP	monitoring			
Action & Limit I	Level (AL	& LL) / Measured Level:			
PARAMETER		STATION	AL (μg/m³)	LL (µg/m³)	MEASURED LEVEL, µg/m³
24-hr TSP		AMS3B – Site Boundary of Site Office Area at Works Area WA2	167	260	168
		ns AL exceedance underline means LL exceedance			
Prepared by:	Evan	Wong	Title:	ET Repr	esentative
	4		Date:	6 Decem	ber 2017
Reviewed by:	Keith	Chau	Title:	ET Lead	or.
,		ethi			
	que	West C	Date	6 Decem	ber 2017

: IEC/ENPO, Contractor and Engineer Representative

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel (852)-24508238 Fax (852)-24508032 Email mcl@fugro.com



Appendix B

Water Spraying Arrangement

* Fresh water Supply white Took 6
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Liste Track 2
Liste Track 3
Liste Track 3
Liste Track 5
Liste Track 5 PAVED AREA Site boundary CHEC
HY/2013/03
MAIN HAUL ROAD ARRANGEMENT
DATE: 2 NOV 2017



中國港灣工程有限責任公司 China Harbour Engineering Company Limited 合約編號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛適關廣場,輔助建築物及設施 Hong Kong-Zhubai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

月份____11/2017

人工島 C3

位置

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工址濯水紀錄表

人工島 C3

位置

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中國港灣工程有限責任公司 China Harbour Engineering Company Limited 合約鐘號 Contract No. HY/2013/03 港珠濱大橋香港口岸。車輛通關廣場,輔助建築物及設施 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

工地灑水紀錄表

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中國港灣工程有限責任公司 China Harbour Engineering Company Limited 合约編號 Contract No. HY/2013/03 港珠澳大橋香港口岸,車輛通關廣場,輔助建築物及設施 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

月份 11,2017 位置 人工島 C3 製富

工址潛水紀錄表

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月份<u>11/2017</u> 位置 人工島 C3

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合约编號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛通關廣場,輔助建築物及設施 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities 中國港灣工程有限責任公司 China Harbour Engineering Compant Limited

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中國港灣工程有限責任公司 China Harbour Engineering Compant Limited合約編號 Contract No. HYZ013/03 港珠澳大橋香港口岸-車輛通關廣場,輔助建築物及設施Hong Kong-Zhubai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

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工址潛水紀錄表

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中國港灣工程有限責任公司 China Harbour Engineering Compant Limited 合約編號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛通關廣場,輔助建築物及設施 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

工址濯水紀錄表一

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中國港灣工程有限責任公司 China Harbour Engineering Compant Limited 合约編號 Contract No. HY/2013/03 港珠邊大橋香港口岸-車輛通關廣場,輔助建築物及設施 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Pacilities

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工地灌水紀錄表

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合约编號 Contract No. HY72013/03 港珠澳大橋香港口岸-車輛通關廣場,輔助建築物及設施 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plazas and Ancillary Buildings and Pacilities 中國港灣工程有限責任公司 China Harbour Engineering Compant Limited

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Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong.

Tel (852)-24508238 Fax (852)-24508032 Email mcl@fugro.com



Appendix C

Photos showing the mitigation measures

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong,

Tel : (852)-24508238 Fax : (852)-24508032 Email : mcl@fugro.com







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Email

Report No.: 0165/15/ED/1043



Appendix J

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Room 723 & 725, 7/F, Block B, Profit Industrial Building, 1-15 Kwai Fung Crescent, Kwai Fong, Hong Kong

(852)-24508238 (852)-24508032 Tel Email mcl@fugro.com



Report No.: 0165/15/ED/1043

Appendix J -

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

For Contract No. HY/2013/03

THE RESERVE OF THE PARTY OF THE		Cumulative Statistics	
Reporting Period	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	2	0	0
From commencement date of construction to end of reporting period	14	0	0

For Contract No. HY/2013/06 within Contract No. HY/2013/03 works area

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