



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 : 14 March 2018
Our Ref. : CHEC300/OUT/2018/03/04.05/036804

By Hand

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

Attn: **Mr. Ng Wang Shek**
The Engineer's Representative

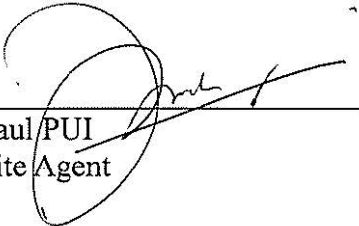
Dear Sir,

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 – Revised Monthly EM&A Report (September 2017 & October 2017)

Pursuant to the Condition 5.4 of the EP-353/2009/K, we are pleased to submit one soft copy and three hard copies of the revised Monthly EM&A Report (Rev.4) for September 2017 & revised Monthly EM&A Report (Rev.4) for October 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 PUI
Site Agent

PP/MG/mt

Encl.



Ref.: HYDHZMBEEM00_0_6133L.18

8 January 2018

By Fax (3468 2076) and By Post

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

Attention: Mr. W.S. Ng

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
Monthly Environmental Monitoring & Audit Report for September 2017**

Reference is made to the Environmental Team's submission of Monthly EM&A Report for September 2017 (Rev. 4) certified by the ET Leader (ET's ref.: "MCL/ED/0008/2018/C" dated 5 January 2018) provided to us via e-mail on 8 January 2018, and our letter (Ref.: HYDHZMBEEM00_0_6049L.17 dated 4 December 2017).

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

The ET Leader is reminded that it is the ET's responsibility to ensure the report be timely submitted to the Director of Environmental Protection and the reported information be true, valid and correct as per Conditions 5.4 and 5.5 of EP-353/2009/K respectively.

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

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

Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Vico Cheung	(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: 2887 3014)

Internal: DY, YH, ENPO Site

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Website : www.materialab-consultant.com

Date 5 January 2018
Our Ref. MCL/ED/0008/2018/C

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

BY HAND

Attn.: Mr. Raymond Dai, IEC

Dear Sir,

**EP Condition 5.4 – Revised Monthly EM&A Report for
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 Condition 5.4 of the Environmental Permit (EP-353/2009/K) for the captioned project and your letter (Ref.: HYDHZMBEEM00_0_6049L.17) dated 4 December 2017, the discrepancies in Investigation Reports for Water Quality Monitoring (WQM) exceedance and Monthly EM&A Report in September 2017 due to incorrect marine traffic statistics information provided through the Contractor had been rectified. We are pleased to submit the certified Monthly EM&A Report for September 2017 (Rev.4) for your verification.

Should you require further information, please do not hesitate to contact our Mr. Vincent Lu at 3565 4371 or the undersigned at 3565 4115.

Yours faithfully,
for and on behalf of
MATERIALAB CONSULTANTS LIMITED



Arthur Cheng
Environmental Team Leader

AC/vl

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

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Report No.: 0165/15/ED/0927

**MONTHLY ENVIRONMENTAL MONITORING & AUDIT
REPORT (Rev.4)**

September 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/0927

Prepared by: Vincent Lu

Certified by:



Arthur Cheng
Environmental Team Leader

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Report No.: 0165/15/ED/0927

EXECUTIVE SUMMARY

This Monthly 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). Contract No. HY/2013/03 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 MaterialLab 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).

MaterialLab 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 25th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 September 2017 to 30 September 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 1 September 2017 to 30 September 2017) (the "reporting period"). The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/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 No. 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: 8, 15, 21 and 25 September 2017.

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Breaches of Action and Limit Levels

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/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 of suspended solids, turbidity and dissolved oxygen recorded on twelve 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 4.1** 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 no complaints received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

There were no notifications of summons or prosecutions received during 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 1 September 2017 as shown below:



Future Key Issues

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

For Contract No. HY/2013/03

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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.

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

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

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1. INTRODUCTION

1.1 Background

- 1.1.1 MaterialLab Consultants Limited was commissioned by China Harbour Engineering Co. Limited (also referred to as "the Contractor") to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) 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) ("the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR).
- 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 Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is "Designated Projects", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (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. The general layout of the Project area is shown in **Appendix A**.
- 1.1.3 This is the twenty-fifth EM&A report to document the findings of site inspection activities and EM&A programme carried out by the Contractor of Contract No. HY/2013/03 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) from 1 September 2017 to 30 September 2017 (reporting period) under Contract No. HY/2013/03 (from 1 September 2017 to 30 September 2017 for the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) and is submitted to fulfil Condition 5.4 of the EP.

1.2 Project Description

- 1.2.1 The works to be executed under Contract No. HY/2013/03 include the following major items:
- a. Cargo clearance facilities including kiosks for clearance of good vehicles, customs inspection platforms, X-ray building, etc.;
 - b. Passenger related facilities including processing kiosks and examination facilities for private cars and coaches, annexure for examination of accompanying passengers of private cars, etc.;
 - c. Accommodation/offices for the facilities (like fire station, police station, buildings for Immigration Department [ImmD], Hong Kong Customs and Excise Department [C&ED], Agriculture, Fisheries and Conservation Department [AFCD], Food and Environmental Hygiene Department [FEHD], Department of Health [DofH] etc.) of the Government departments providing services in connection with the HKBCF;
 - d. Provision of transport and miscellaneous facilities inside the HKBCF including public transport interchange (PTI), transport drop-off and pick-up areas, vehicle holding areas, passenger queuing areas, road networks, footbridges, fencing, sewerage and drainage systems, sewage treatment plant and treated effluent disposal facilities, water supply system, building services works, electronic system, and traffic control and information

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system including traffic control and surveillance system (TCSS), etc.;

- e. Provision of roads connecting the BCF to the Hong Kong Link Road (HKLR), the Tuen Mun – Chek Lap Kok Link (TM-CLKL) and the Hong Kong International Airport (HKIA), except the part of road works in HKIA entrusted to the HKLR project; and
- f. Re-provisioning of the affected HKIA's facilities, except those affected by the Automated People Mover (APM) system such as the existing east rescue berth.

1.2.2 The works to be executed under Contract No. HY/2013/06 within Contract No. HY/2013/03 works area include the following major items:

- a. The Automatic Vehicle Clearance Support System aimed to increasing traffic flow for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities;
- b. Responsible for designs and develops a set of tailor-made computer monitoring and control systems to for daily security operation; and
- c. The Clearance Workstations at 72 vehicle clearance kiosks, Customs and Excise's inbound and outbound traffic control centers as well as a Vehicle Tracking System.

1.3 Project Organisation

1.3.1 The Project Organisation for Environmental Works of Contract No. HY/2013/03 is shown in **Appendix B**. The contact person and telephone numbers of key personnel for the captioned project are shown in **Table 1.1**:

Table 1.1 Contact Persons and Telephone Numbers 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 Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3547 2133	3465 2899
	Independent Environmental Checker (IEC)	Mr. Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Mr. Ray Yan	5181 8165	3465 2899
Contractor (China Harbour Engineering Co. Ltd)	Site Agent	Mr. Paul Pui	9125 0700	2512 0427
	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	--

1.3.2 The Project Organisation for Environmental Works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area is shown in **Appendix B**. The contact person and telephone numbers of key personnel for the captioned project are shown in **Table 1.2**:

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Table 1.2 Contact Persons and Telephone Numbers 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 Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3547 2133	3465 2899
	Independent Environmental Checker (IEC)	Mr. Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Mr. Ray Yan	5181 8165	3465 2899
Contractor (ATAL Technologies Limited)	Site Agent	Mr. Eric Yim	2565 3355	3162 5217
	Environmental Officer	Mr. W. Li	2565 3137	3162 5217
Environmental Team (MaterialLab Consultants Limited)	Environmental Team Leader (ETL)	Mr. Arthur Cheng	3565 4115	2450 8032
24-hr Complaint Hotline	--	--	6509 0375	--

1.3.3 The Contract HY/2013/03 has commenced on 10 April 2015. The commencement of construction works and the EM&A programme have commenced on 29 August 2015.

1.3.4 The Contract HY/2013/06 has commenced on 14 August 2015. The commencement of construction works and the EM&A programme have commenced on 13 September 2016 within Contract No. HY/2013/03 works area.

1.4 Construction Programme

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

1.5 Construction Works Undertaken during the Reporting Period

1.5.1 The construction works of Contract No. HY/2013/03 commenced on 29 August 2015 (includes the construction works of Contract No. HY/2013/06 commenced on 13 September 2016 within Contract No. HY/2013/03 works area). During this reporting period, the following major site activities were commenced:

For Contract No. HY/2013/03

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;

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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.

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

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

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2. AIR QUALITY MONITORING

2.1 Monitoring Locations

2.1.1 The air quality monitoring works for the Contract are covered by Contract No. HY/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 as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract No. HY/2013/01 and HY/2011/03. **Figure 1** shows the locations of air monitoring stations.

Table 2.1 Air Quality Monitoring Location

Air Monitoring Station	Location
AMS6	Dragonair/CNAC (Group) Building (A80)
AMS7	Hong Kong SkyCity Marriott Hotel

2.2 Monitoring Requirements

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

2.2.2 The Action and Limit levels for 1-hr TSP and 24-hr TSP are summarized in **Table 2.2**.

Table 2.2 Action and Limit Levels for Air Quality

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1 hour TSP		
AMS6	360	500
AMS7	370	
24 hours TSP		
AMS6	173	260
AMS7	183	

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

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

2.3 Monitoring Results

2.3.1 The monitoring results for AMS6 and AMS7 are reported in the monthly EM&A Reports prepared for Contract No. HY/2011/03 and HY/2013/01 respectively.

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

2.3.3 There was no Action and Limit Level exceedances 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.

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3. NOISE MONITORING

3.1 Monitoring Locations

3.1.1 The noise monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building". The ET of the Contract or another ET of the HZMB project is required to conduct noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/01. The noise monitoring station (NMS3B) had been slightly re-located to AECOM PRE's Office without re-branding since 1 September 2017. **Figure 2** shows the locations of noise monitoring stations.

Table 3.1 Construction Noise Monitoring Location

ID No.	Description
NMS2	Seaview Crescent
NMS3B	Site Boundary of Site Office Area at WA2

3.2 Monitoring Requirements

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

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

Table 3.2 Action and Limit Level for Construction Noise

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

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

3.3 Monitoring Results

3.3.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/01. No noise exceedance was recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2013/01 during the reporting period.

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4. WATER QUALITY MONITORING

4.1 Monitoring Locations

- 4.1.1 The water monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao-Bridge HKBCF – Passenger Clearance Building". The ET of the Contract or another ET of the HZMB project is required to conduct impact water quality monitoring at the stations shown in **Table 4.1** and **Figure 3**.

Table 4.1 Water Quality Monitoring Stations

Station	Description	Easting	Northing
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:

⁽¹⁾ Additional monitoring station for Ma Wan FCZ

⁽²⁾ Additional control monitoring station for Ma Wan FCZ

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.

4.2 Monitoring Requirements

- 4.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/01.
- 4.2.2 The event and action plan is provided in **Appendix D**.
- 4.2.3 The Action and Limit Levels for Water Quality are provided in **Table 4.2**.

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Table 4.2 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle = 4.2 (except 5 mg/L for FCZ) Bottom = 3.6
SS in mg/L (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)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

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

Notes:

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

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

4.3 Monitoring Results

4.3.1 The monitoring results for the monitoring stations showed in Table 4.1 are reported in the monthly EM&A Report prepared for Contract No. HY/2013/01. There was Action and Limit Level exceedance recorded at different WQM stations during mid-ebb and mid-flood tide on twelve days. The summary of water quality exceedances are shown in Table 4.3.

Table 4.3 Action and Limit Levels for Water Quality

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
IS5	Action	0	1 (8 Sep)	3 (1 Sep, 13 Sep, 18 Sep)	3 (1 Sep, 13 Sep, 29 Sep)	1 (8 Sep)	0	1 (8 Sep)	0
	Limit	0	0	0	0	0	0	0	0
IS(Mf6)	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS7	Action	1 (8 Sep)	0	2 (8 Sep, 29 Sep)	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS8	Action	0	3 (8 Sep, 11 Sep, 22 Sep)	1 (29 Sep)	1 (11 Sep)	0	0	0	2 (18 Sep, 25 Sep)
	Limit	0	0	0	0	0	1 (15 Sep)	0	0
IS(Mf)9	Action	0	3 (8 Sep, 11 Sep, 22 Sep)	0	1 (13 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS10(N)	Action	5	3	6	4	0	1	0	0

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		(8 Sep, 11 Sep, 13 Sep, 22 Sep, 29 Sep)	(8 Sep, 11 Sep, 22 Sep)	(1 Sep, 15 Sep, 18 Sep, 22 Sep, 27 Sep, 29 Sep)	(1 Sep, 11 Sep, 15 Sep, 29 Sep)		(8 Sep)		
	Limit	0	0	0	0	0	0	0	1 (8 Sep)
IS(Mf)11	Action	3 (11 Sep, 15 Sep, 22 Sep)	5 (8 Sep, 11 Sep, 13 Sep, 15 Sep, 22 Sep)	4 (1 Sep, 11 Sep, 18 Sep, 29 Sep)	4 (1 Sep, 8 Sep, 11 Sep, 29 Sep)	0	2 (6 Sep, 8 Sep)	0	1 (8 Sep)
	Limit	0	0	0	0	0	0	0	0
IS(Mf)16	Action	1 (8 Sep)	3 (8 Sep, 11 Sep, 22 Sep)	5 (8 Sep, 11 Sep, 13 Sep, 18 Sep, 29 Sep)	2 (11 Sep, 13 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS17	Action	4 (8 Sep, 11 Sep, 13 Sep, 15 Sep)	3 (8 Sep, 11 Sep, 22 Sep)	7 (1 Sep, 6 Sep, 8 Sep, 11 Sep, 13 Sep, 15 Sep, 27 Sep)	4 (8 Sep, 11 Sep, 13 Sep, 29 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR3	Action	2 (8 Sep, 22 Sep)	1 (8 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 (8 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR5(N)	Action	3 (11 Sep, 13 Sep, 22 Sep)	2 (11 Sep, 22 Sep)	4 (1 Sep, 11 Sep, 27 Sep, 29 Sep)	3 (8 Sep, 11 Sep, 29 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR6	Action	3 (11 Sep, 18 Sep, 22 Sep)	7 (6 Sep, 8 Sep, 11 Sep, 15 Sep, 18 Sep, 20 Sep, 22 Sep)	1 (18 Sep)	5 (8 Sep, 11 Sep, 15 Sep, 18 Sep, 20 Sep)	0	1 (8 Sep)	0	1 (20 Sep)
	Limit	0	0	0	0	0	0	0	0
SR7	Action	1 (11 Sep)	2 (11 Sep, 22 Sep)	0	1 (8 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR10A	Action	0	0	0	7 (6 Sep, 8 Sep, 11 Sep, 13 Sep, 15 Sep, 20 Sep, 27 Sep)	0	0	0	0
	Limit	4 (6 Sep, 8 Sep, 13 Sep, 22 Sep)	8 (6 Sep, 8 Sep, 11 Sep, 13 Sep)	0	0	0	0	0	0

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			15 Sep, 18 Sep, 20 Sep, 22 Sep)						
SR10B(N)	Action	0	0	3 (11 Sep, 27 Sep, 29 Sep)	7 (6 Sep, 11 Sep, 13 Sep, 15 Sep, 22 Sep, 25 Sep, 27 Sep)	0	0	0	0
	Limit	4 (6 Sep, 8 Sep, 11 Sep, 22 Sep)	10 (6 Sep, 8 Sep, 11 Sep, 13 Sep, 15 Sep, 18 Sep, 20 Sep, 22 Sep, 25 Sep, 27 Sep)	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0

Note: S&M: Surface & Middle

4.3.2 Regarding the exceedance on 1 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 oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 1 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 1 September 2017 was not related to Contract No. HY/2013/03.

4.3.3 Regarding the exceedance on 6 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 6 September 2017. Besides, the concerned WQM stations where

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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. 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 6 September 2017 was not related to Contract No. HY/2013/03.

4.3.4 Regarding the exceedance on 8 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 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. 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 8 September 2017 was not related to Contract No. HY/2013/03.

4.3.5 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 mid-flood 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.

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- 4.3.6 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 mid-flood 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.
- 4.3.7 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 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.
- 4.3.8 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

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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.

4.3.9 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 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.

4.3.10 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 mid-flood tide on 22 September 2017. Besides, the water quality mitigation measures as mentioned

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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.

- 4.3.11 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 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.
- 4.3.12 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.
- 4.3.13 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.

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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 mid-flood 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.

4.3.14 After investigation, it was concluded that the exceedances were not related to Contract No. HY/2013/03 due to the above reasons. The investigation reports 002 & 003 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix J**. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 4.1** by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.3.15 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.

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5. ECOLOGY MONITORING

5.1 Monitoring Locations

5.1.1 The ecological monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao-Bridge HKBCF – Passenger Clearance Building”. The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at 24 transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2013/01. The 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. **Figure 4** shows the co-ordinates for the transect lines and layout map.

Remarks:

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.

5.2 Monitoring Requirements

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

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

5.2.3 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 5.1(a) & Table 5.1(b)**.

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

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

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

Table 5.2(b) Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

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

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

5.3 Monitoring Result

5.3.1 The dolphin survey results for all transects are reported in the monthly EM&A Reports prepared by Contract No. HY/2013/01.

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6. DISPOSAL OF MARINE SEDIMENT EXTRACTED FROM BORED PILING WORKS

6.1 Background

6.1.1 After the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal site allocated to this Project is the Mud Pit CMP Vd of the Confined Marine Sediment Disposal Facility to the East of Sha Chau (ESC) during this reporting period.

6.1.2 No extracted marine sediment was treated using cement solidification/stabilisation (Cement S/S) techniques under Contract No. HY/2013/03 during this reporting period. The marine sediment extracted from this Contract was disposed to the MFC allocated disposal sites directly without treatment during this reporting period. As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from all three Contracts (Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04).

6.2 Dumping Arrangements

6.2.1 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.

6.2.2 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 is the Mud Pit CMP Vd of the Confined Marine Sediment Disposal Facility to the East of Sha Chau (ESC) during this reporting period.

6.3 Quantity Disposed

6.3.1 No marine sediment extracted from bored piling from this Contract was disposed to allocated dumping site in September 2017. 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 up to end August 2017 is shown in the following table:

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Table 6.1 Summary of Marine Sediment Disposed to Dumping Site

Month/Year	Quantity disposed (in'000m ³)			Total
	HY/2013/02	HY/2013/03	HY/2013/04	
Jan 2016	1.272	1.950	0.800	4.022
Feb 2016	2.816	2.328	0.704	5.848
Mar 2016	0.600	2.464	3.942	7.006
Apr 2016	5.128	5.602	5.028	15.758
May 2016	0.000	0.000	0.000	0.000
Jun 2016	1.200	4.584	1.578	7.362
Sub-Total	11.016	16.928	12.052	39.996
Jul 2016	0.728	10.728	3.690	15.146
Aug 2016	1.784	1.544	4.428	7.756
Sep 2016	2.328	6.816	3.888	13.032
Oct 2016	1.096	2.376	5.286	8.758
Nov 2016	0.000	0.000	0.000	0.000
Dec 2016	1.568	4.960	2.538	9.066
Cat L in Dec 2016	0.000	2.792	3.570	6.362
Sub-Total	18.520	46.144	35.452	100.116
Jan 2017	0.000	0.656	6.552	7.208
Feb 2017	0.088	0.264	1.380	1.732
Mar 2017	0.000	0.000	0.000	0.000
Apr 2017	0.624	1.288	0.000	1.912
May 2017	0.000	1.440	0.000	1.440
June 2017	1.432	0.000	0.000	1.432
July 2017	0.000	0.000	0.000	0.000
August 2017	0.000	0.248	0.000	0.248
Sep 2017	0.000	0.000	0.000	0.000
Total	20.664	50.040	43.384	114.088

Note: All sediments are in Type II disposal method except Cat L (in Type I)

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7. ENVIRONMENTAL SITE INSPECTION AND AUDIT

7.1 Site Inspection

- 7.1.1 Site audits were carried out by ET on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 7.1.2 The joint site audits for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) were conducted on 8, 15, 21 and 25 September 2017 by the representatives of Engineer, Contractor, ET and IEC (IEC for 25 September 2017).
- 7.1.3 Particular observations during the site inspection and corrective actions undertaken by the Contractor are described below:

For Contract No. HY/2013/03

8 September 2017

1. The Contractor was reminded to remove construction waste accumulated at 006. Subsequently, construction waste was removed. The observation was closed on 8 September 2017.
2. The Contractor was reminded to remove stagnant water accumulated at 006. Subsequently, stagnant water accumulated was removed. The observation was closed on 8 September 2017.

15 September 2017

1. 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.
3. 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

1. 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

1. The Contractor was reminded to remove general waste accumulated at Building 038 and Building 039. Follow-up actions for outstanding observation will be checked in the upcoming site inspections and reported in the coming reporting period.
2. The Contractor was reminded to provide watering for dust suppression on site. Follow-up actions for outstanding observation will be checked in the upcoming site inspections and reported in the coming reporting period.

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

8 September 2017

1. Nil findings.

15 September 2017

1. Nil findings.

21 September 2017

1. Nil findings.

25 September 2017

1. Nil findings.

7.2 Advice on the Solid and Liquid Waste Management Status

7.2.1 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.

7.2.2 The monthly 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) are detailed in **Appendix E**.

7.2.3 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 September 2017 is shown in **Table 7.1**.

Table 7.1 Summary of Surplus Filling Materials Delivered from Contract No. HY/2013/03 to other projects

Month/Year	Density (in tonnes/m ³)	Quantity disposed (in '000m ³)					Total
		To HY/2013/02	To TM-CLKL Project	To 3RS Project	To WDII Project	To HKLR Project	
May 2017	2.3	0	12.637	0	0	0	12.637
June 2017	2.63925	0	14.769	11.238	0	0	26.007
July 2017	1.9	0	4.406	34.875	10.048	0.760	50.089
August 2017	1.9	0.480	0	67.942	2.761	7.455	78.638
September 2017	1.9	5.544	0	62.770	0	4.648	72.962
Total	/	6.024	31.812	176.825	12.809	12.863	240.333

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 E and section 7.2.4, due to rounding errors

7.2.4 0.000 (in'000m³) of excavated marine sediment (from Contract No. HY/2013/03), 83.814 (in'000m³) of Inert C & D Wastes and 1.950 (in'000m³) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/03) in this reporting period. 80.345 (in'000m³) of Inert C & D Wastes were reused in other projects and 3.469 (in'000m³) of Inert C & D Wastes was disposed as public fill. No Inert C & D Wastes and 0.050 (in tonnes) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) in

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this reporting period. 0.030 (in tonnes) metals were generated and recycled (from Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) in this reporting period.

- 7.2.5 The excavated marine mud from the land-based works was disposed of at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee. The Contractor of Contract No. HY/2013/03 shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.
- 7.2.6 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.
- 7.2.7 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.

7.3 Environmental Licenses and Permits

- 7.3.1 The valid environmental licenses 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 F**. 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).

7.4 Implementation Status of Environmental Mitigation Measures

- 7.4.1 In response to the site audit findings, the Contractor carried out corrective actions.
- 7.4.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix G**. All necessary mitigation measures at this stage of works were implemented properly.
- 7.4.3 Implementation status of Regular Marine Travel Route Plan (RMTRP) was checked by ET. Training of marine travel route for marine vessels operator was given to relevant staff and relevant records were kept properly. 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 would be provided to ER, ETL, IEC/ENPO for checking within the month of October 2017.
- 7.4.4 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.
- 7.4.5 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

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inspection of waters surrounded by the silt curtain in September 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of October 2017.

7.5 Summary of Exceedance of the Environmental Quality Performance Limit

- 7.5.1 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.
- 7.5.2 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.
- 7.5.3 There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 7.5.4 There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved oxygen recorded on twelve 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 4.1** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 7.5.5 Ecological monitoring results at all transects are reported in the EM&A report prepared by Contract No. HY/2013/01.

7.6 Summary of Complaints, Notification of Summons and Successful Prosecution

- 7.6.1 There were no complaints received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.
- 7.6.2 There was no notification for summons or prosecutions received in relation to the environmental impact during this reporting period.
- 7.6.3 Statistics on environmental complaints, notifications of summons and successful prosecutions are provided in **Appendix H**.

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8. FUTURE KEY ISSUES

8.1 Construction Programme for the Coming Months

8.1.1 As informed by the Contractor, the following are the major construction activities anticipated in September 2017:

For Contract No. HY/2013/03

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.

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

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

8.2 Environmental Site Inspection Schedule for the Coming Month

8.2.1 The tentative schedule for weekly site inspections for October 2017 is provided in **Appendix I**.

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9. CONCLUSIONS

- 9.1 Commencement of Contract No. HY/2013/03 took place on 10 April 2015. The commencement date for 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. The commencement date for construction works and the EM&A programme of Contract No. HY/2013/06 commenced on 13 September 2016 within Contract No. HY/2013/03 works area).
- 9.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.
- 9.3 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.
- 9.4 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.
- 9.5 There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved oxygen recorded on twelve 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 4.1** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 9.6 Ecological monitoring results at all transects are reported in the EM&A report prepared by Contract No. HY/2013/01.
- 9.7 Environmental site inspections were carried out on 8, 15, 21 and 25 September 2017. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.
- 9.8 There were no complaints received in relation to the environmental impact during the reporting period.
- 9.9 There were no notifications of summons or prosecutions received during the reporting period.

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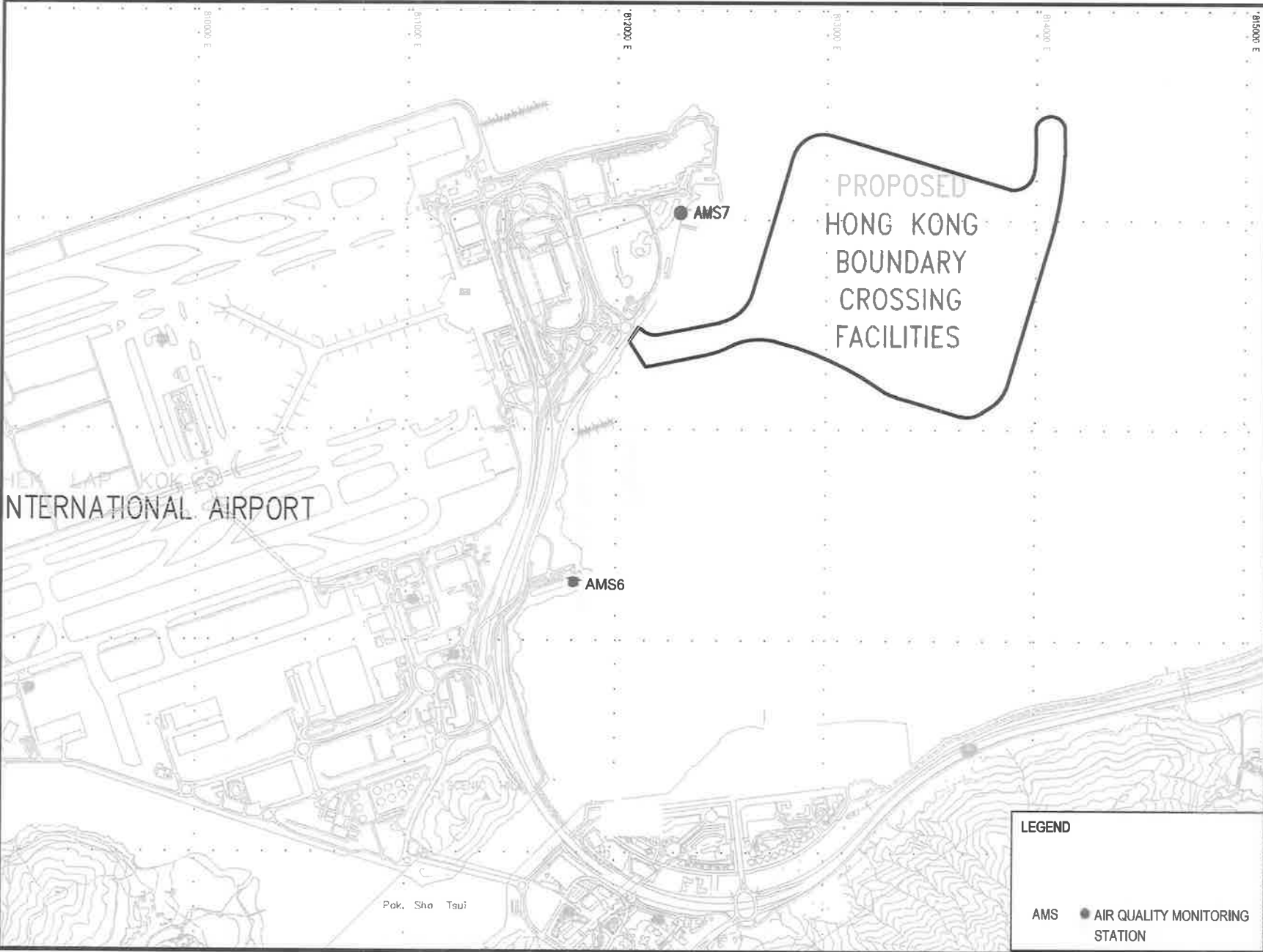
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Figure 1

Air Quality Monitoring Stations



MATERIALAB CONSULTANTS LIMITED

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Profit Industrial Building,
1-15 Kwai Fung Crescent, Kwai Fong,
Hong Kong.

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Figure 2

Noise Monitoring Stations

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Hong Kong.

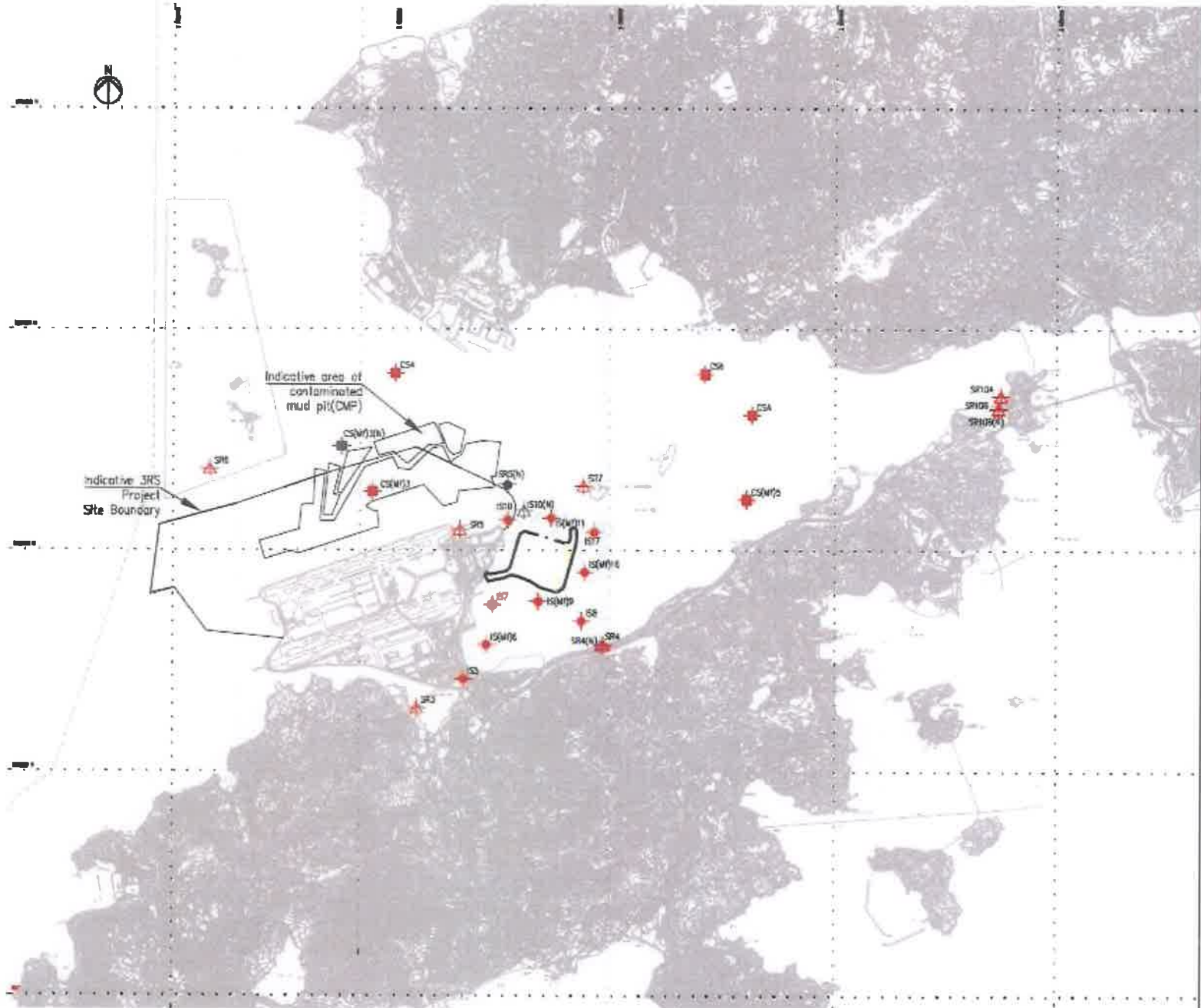
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Figure 3

Water Quality Monitoring Stations



- LEGEND**
- IS IMPACT STATIONS
 - CS CONTROL / FAR FIELD STATIONS
 - SR SENSITIVE RECEIVERS STATIONS
 - IS IMPACT STATIONS (RELOCATED)
 - CS CONTROL / FAR FIELD STATIONS (RELOCATED)
 - SR SENSITIVE RECEIVERS STATIONS (RELOCATED)

SETTING OUT SCHEDULE

MONITORING STATIONS	OO-COORDINATES	
	EASTING	NORTHING
IS1	011576	017166
IS(M)1	012101	017673
IS7	012044	017377
IS8	014251	018012
IS(M)8	013273	018050
SR5(M)	012580	021475
IS(M)11	013002	020716
IS(M)16	014320	018497
IS17	014530	020280
SR3	010925	018466
SR(M)4	014705	017850
IS(M)9	012942	020081
SR6	005037	020281
SR7	014293	021431
SR10A	023791	023465
SR10B(M)	023983	023067
CS(M)2(M)	008014	022306
CS(M)3	017900	021129
CS4	010025	024004
CS8	017028	023002
CSA	018013	023004
IS10	010577	020670
SR5	011288	020455
CS(M)3	008000	021117

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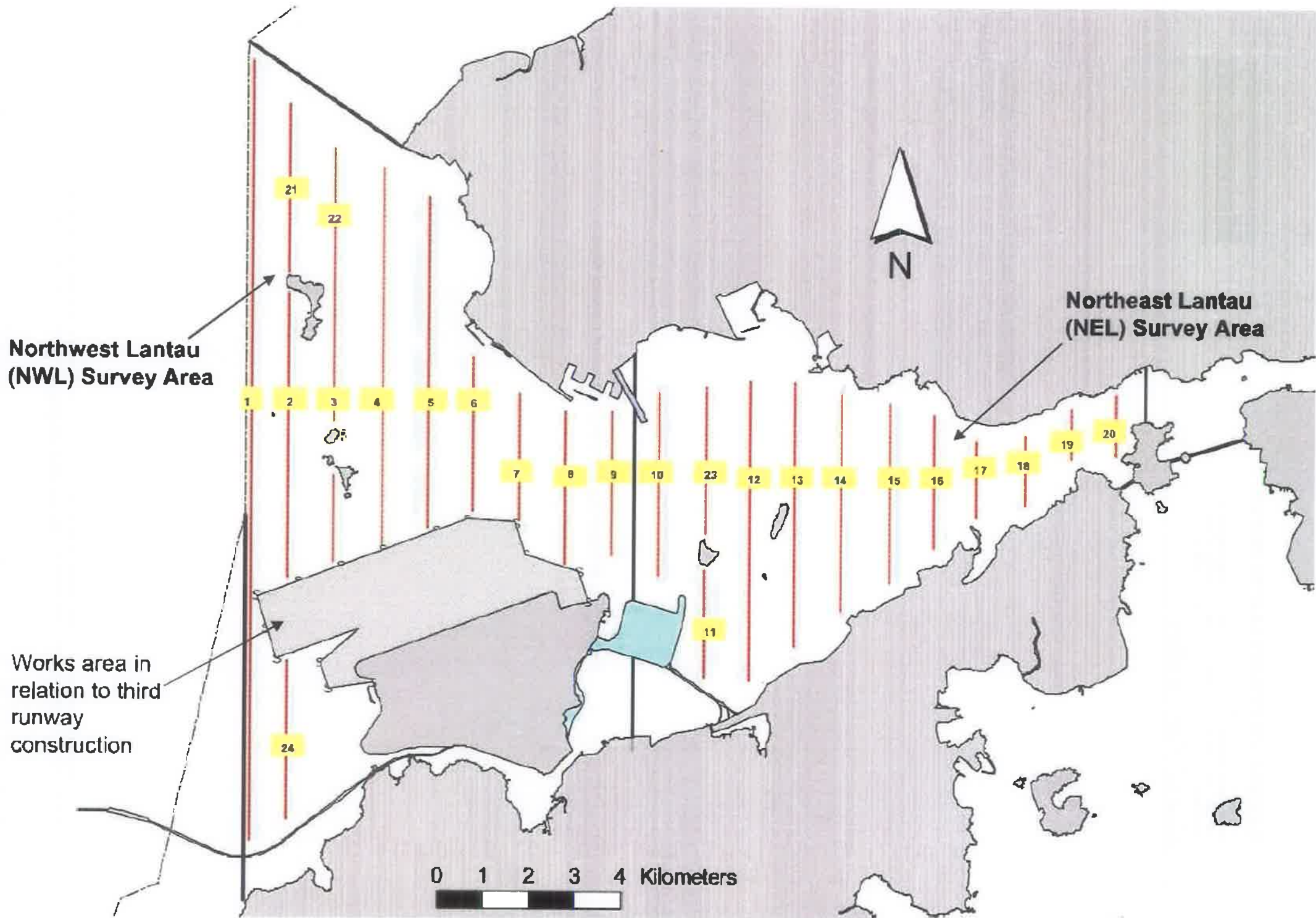
Tel : (852)-24508238
Fax : (852)-24508032
Email : mcl@fugro.com



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Figure 4

Ecological Monitoring Transect Line and Layout Map



Northwest Lantau (NWL) Survey Area

Northeast Lantau (NEL) Survey Area

Works area in relation to third runway construction

0 1 2 3 4 Kilometers

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Appendix A

Location of Works Areas

SETTING OUT POINT

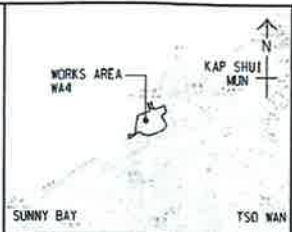
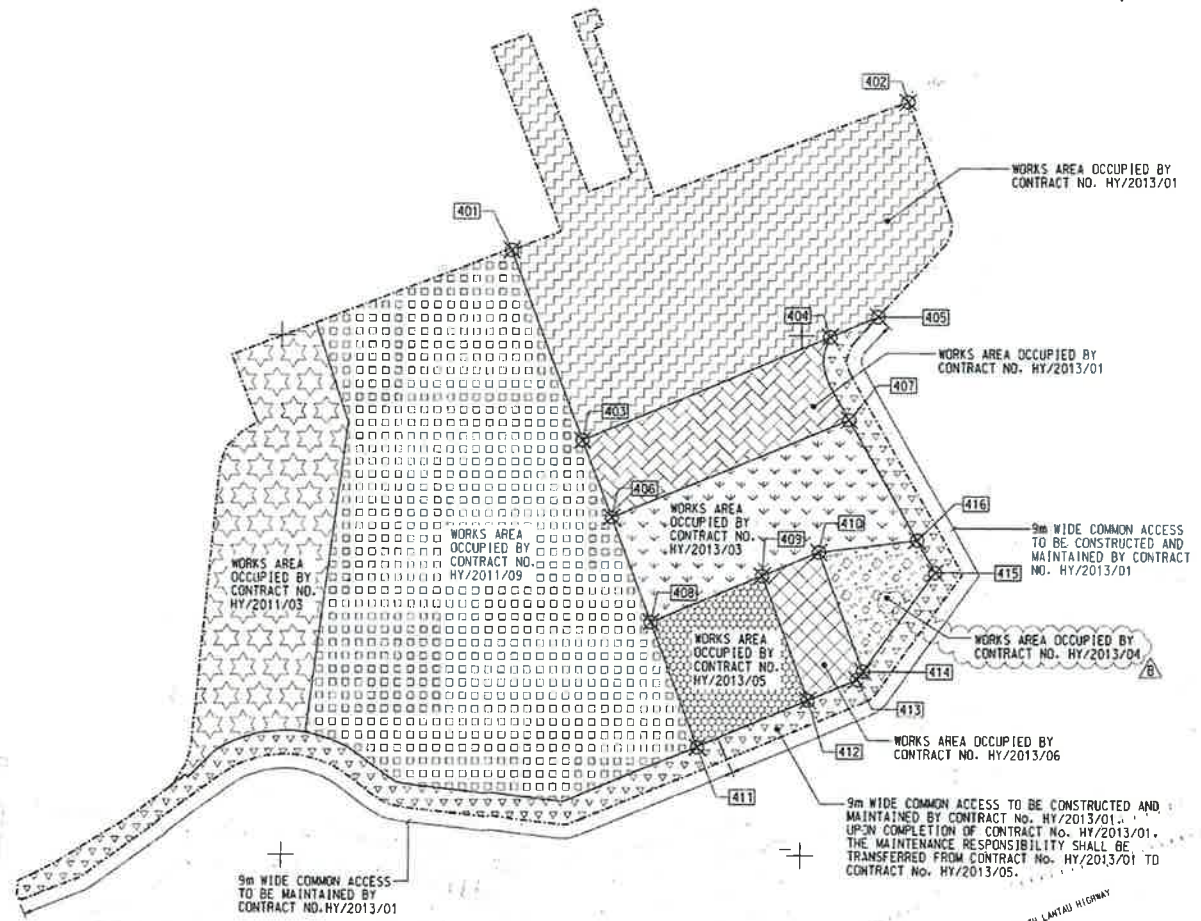
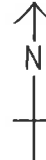
POINT	EASTING	NORTHING
401	822488.151	822632.315
402	822440.593	822649.415
403	822315.608	822559.848
404	822610.340	822599.642
405	822629.428	822607.359
406	822526.988	822529.613
407	822616.348	822567.950
408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822540.378	822441.936
412	822602.949	822460.010
413	822621.514	822467.359
414	822624.130	822470.398
415	822651.725	822508.856
416	822644.758	822521.192

822400 E

822600 E

822500 N

822400 N



LOCATION PLAN
SCALE 1 : 25000

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

LEGEND:

	WORKS AREA BOUNDARY
	PORTION 4.1
	PORTION 4.2
	PORTION 4.3
	PORTION 4.4
	PORTION 4.5
	PORTION 4.6
	PORTION 4.7
	PORTION 4.8
	PORTION 4.9

CONTROLLED DOCUMENT

FOR CONSTRUCTION

C	WORKING DRAWING	REVISED	10 JUN 14	15
B	TENDER ADDENDUM NO. 2	REVISED	14 MAY 14	14
A	TENDER ADDENDUM NO. 1	REVISED	14 APR 14	14
-	TENDER DRAWING	REVISED	14 MAR 14	14

HA HIGHWAYS DEPARTMENT
 香港公路局
 HONG KONG HIGHWAYS DEPARTMENT
 HONG KONG HIGHWAY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

WORKS AREA WA4

AECOM + **Aedas**
 Rogers Stirk Harbour + Partners
 BURRO HAPFOLD ATKINS ADI

DRG. NO. 60191048/C3/000/C00/1052C

PROJECT NO. HY/2013/03
 DRAWN BY: HSY
 CHECKED BY: TKN
 SCALE: AT 1 : 1000
 UNIT: METRES

WORKING DRAWING
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Appendix B

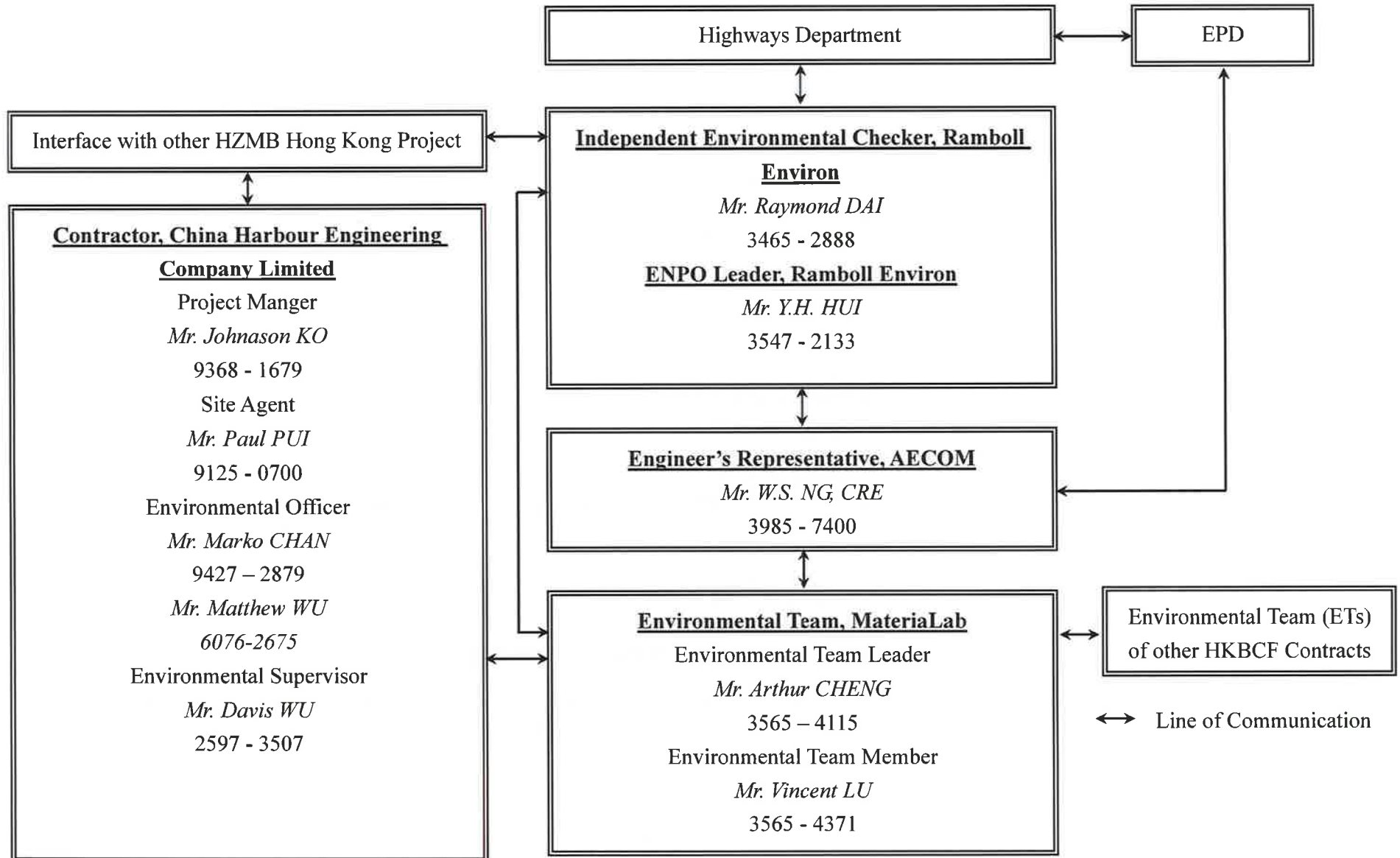
Project Organization for Environmental Works

CHINA HARBOUR ENGINEERING COMPANY LIMITED



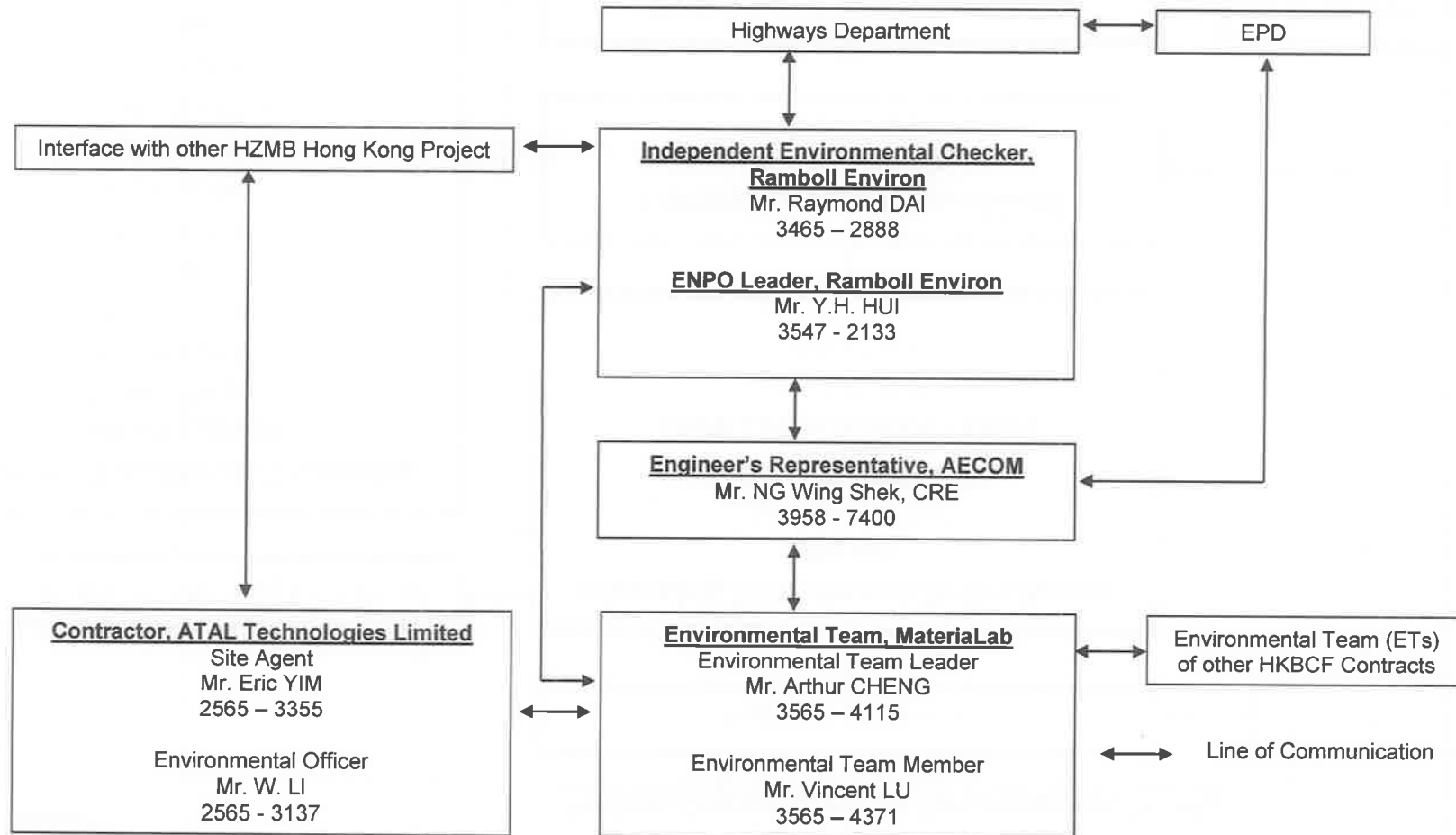
Contract No. HY/2013/03 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing
Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Projects Organization for Environmental Works



Contract No. HY/2013/06 (within Contract No. HY/2013/03 works area)
Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System

Projects Organization for Environmental Works



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Appendix C

Construction Programme

Activity ID	Activity Name	2017				
		Sep	Oct	Nov	Dec	Jan
HKBCF - VCP & Ancillary Buildings and Facilities, DWP04 (+ DRMS 2)						
CONTRACT DATES						
Key Dates						
A1110	KD11 Achievement of Stage 10 of the Works (730 days; 08 Apr. 17)					◆ KD11 Achievement of Stage 10 of the Works (730 days; 08 Apr. 17)
A1160	KD16 Achievement of Stage 15 of the Works (548 days; 08 Oct. 16)		◆ KD16 Achievement of Stage 15 of the Works (548 days; 08 Oct. 16)			
A1170	KD17 Achievement of Stage 16 of the Works (548 days; 08 Oct. 16)		◆ KD17 Achievement of Stage 16 of the Works (548 days; 08 Oct. 16)			
A1180A	KD18A Achievement of Stage 18 of the Works (478 days; 30 Jul. 16 EOT 1)					◆ KD18A Achievement of Stage 18 of the Works (478 days; 30 Jul. 16 EOT 1)
A1180B	KD18B Achievement of Stage 19 of the Works (558 days; 18 Oct. 16 EOT 1)					◆ KD18B Achievement of Stage 19 of the Works (558 days; 18 Oct. 16 EOT 1)
A1180C	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)			
A1180D	KD18D Achievement of Stage 21 of the Works (745 days; 23 Apr. 17)					◆ KD18D Achievement of Stage 21 of the Works (745 days; 23 Apr. 17)
A1180E	KD18E Achievement of Stage 22 of the Works (835 days; 22 Jul. 17)					◆ KD18E Achievement of Stage 22 of the Works (835 days; 22 Jul. 17)
A1180F	KD18F Achievement of Stage 23 of the Works (730 days; 08 Apr. 17)			◆ KD18F Achievement of Stage 23 of the Works (730 days; 08 Apr. 17)		
A1210	KD21 Achievement of Section IIA of the Works (770 days; 18 May 17)					◆ KD21 Achievement of Section IIA of the Works (770 days; 18 May 17)
A1220	KD22 Achievement of Section IIB of the Works (770 days; 18 May 17)					◆ KD22 Achievement of Section IIB of the Works (770 days; 18 May 17)
A1230	KD23 Achievement of Section IIC of the Works (770 days; 18 May 17)					◆ KD23 Achievement of Section IIC of the Works (770 days; 18 May 17)
Site Access & Possession						
Access to Locations of the Site						
A0330	Contract Date for Access to External Area for Contract HY/2013/01 for ELV System Installation (570 days)		◆ Contract Date for Access to External Area for Contract HY/2013/01 for ELV System Installation (570 days)			
A0340	Contract Date for Access to External Area for Contract HY/2013/02 for ELV System Installation (560 days)		◆ Contract Date for Access to External Area for Contract HY/2013/02 for ELV System Installation (560 days)			
A0350	Contract 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 (560 days)			
PORTION A1						
Portion A1 Structures						
Bridge A9						
Structure Deck						
SA9470	Parapet (38 pour) & E&M Works					
SA9480	Bituminous Paving (492 ton) (KD25)					
Retaining Wall W8-1						
SW8130	Parapet W8-1 (16 pour) & E&M Works					
SW8140	RW8-1 Drainage system & Cable Laying					
SW8150	Bituminous Paving W8-1 (347 ton) (KD25)					
Retaining Wall W9-1						
SW9120	Backfilling W9-1					
SW9130	Parapet W9-1 (16 pour) & E&M Works					
SW9140	Drainage System & Cable Laying					
SW9150	Bituminous Paving W9-1 (347 ton)					
047 - Fresh Water Pumping Station, Portion A1 & A2						
A04780	BS installation + E&M (Degree 3)					
A04790	T&C for BS & Pumps					

- Actual Work
- Remaining Work
- Critical
- ◆ Milestone

**THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

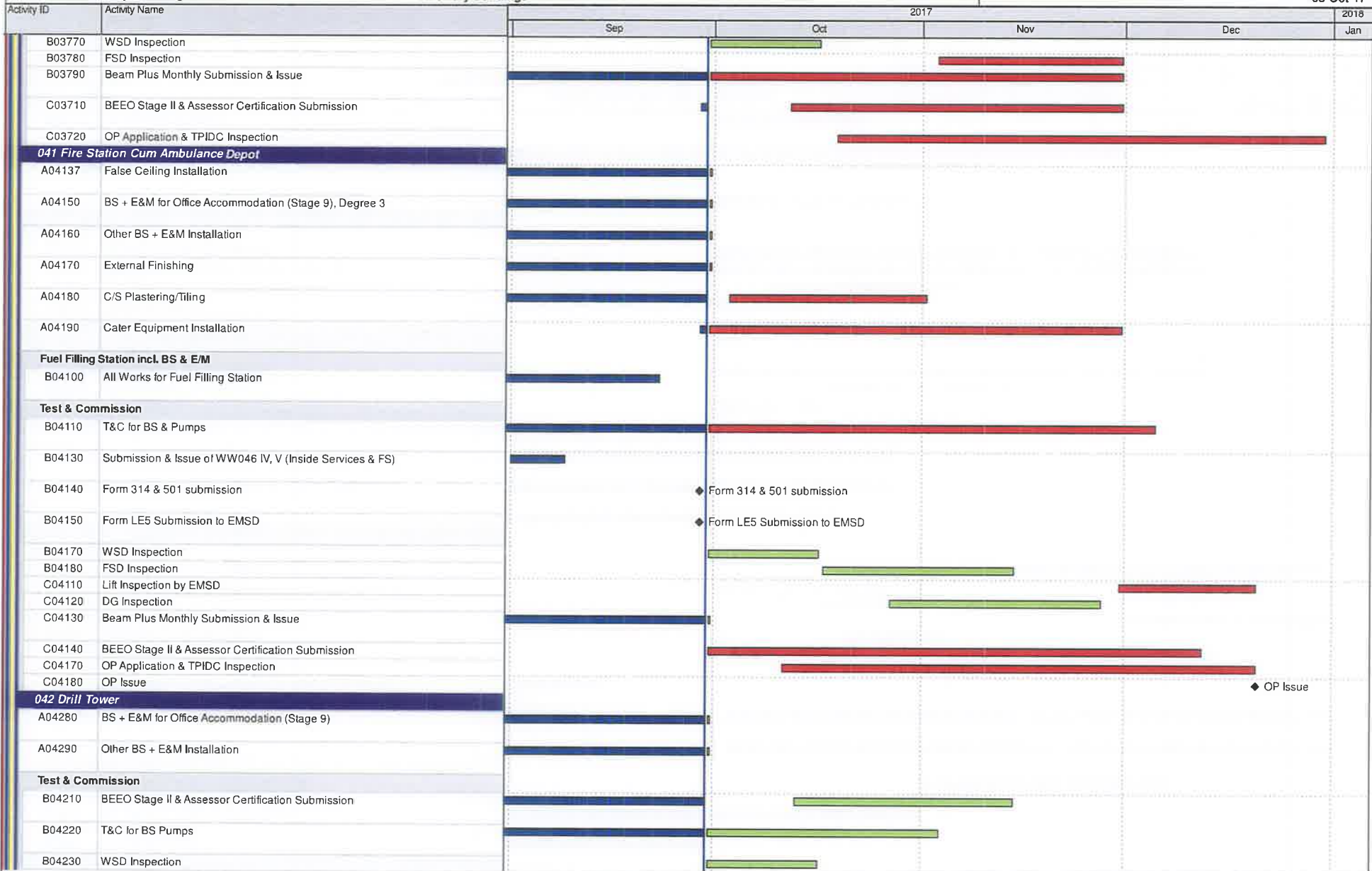
Date	Revision	Checked	Approved
31-Aug-17	3MRP updated as of 31 Aug 2017	ZJ	
30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
Test & Commission							
B04740	WSD Inspection		█				
B04745	Submission of FS 314 & Form 501		█				
B04750	FSD Inspection			█			
B04760	OP Application & TPIDC Inspection		█	█	█		
049 - Sewage Treatment Plant, Portion A1 & A2							
D04985	Energisation by CLP	█					
E04940	BS + E&M Installation (KD9) (Degree 2)		█				
E04950	BS + E&M Installation (KD10) (Degree 3)			█			
T&C and Statutory Inspection							
F04910	Essential T&C (FSI)		█	█	█		
F04920	Non-Essential T&C (Non-FSI)		█	█	█		
F04950	Submission & Issue of WW046 IV, V (Inside Services & FS)	█					
F04960	WSD Inspection		█				
F04965	Submission of FS314 & Form 501			█			
F04970	FSD Inspection				█		
G04920	DG Inspection		█				
G04930	Discharge Licence Issued by EPD			◆ Discharge Licence Issued by EPD			
G04940	OP Application & TPIDC Inspection		█	█	█		
Portion A1 Buildings							
012 - DOH Disinsection Area and Store Room 1, at Portion A1							
A01250	Finishing		█				
A01270	BS + E&M for Office Accommodation (Stage 9) (Degree 3)		█				
A01280	Other BS + E&M Installation		█				
Test & Commission							
C01230	WSD Inspection		█				
C01240	FSD Inspection			█			
C01250	OP Application & TPIDC Inspection		█	█	█		
C01260	OP Issue					◆ OP Issue	
036 - Weigh Station							
Test & Commission							
B03650	WSD Inspection		█				
B03660	FSD Inspection		█				
B03670	BEE0 Stage II & Assessor Certification Submission		█	█	█		
B03680	OP Application & TPIDC Inspection		█	█	█		
B03690	OP Issue					◆ OP Issue	
037 C&ED Tower Cum Inbound Cargo Examination Building (Portion A1 & B)							
A03758	Paint Finish		█				
Test & Commission							
B03710	T&C for BS & Pumps		█	█	█		
B03760	Lift Inspection by EMSD		█				

█ Actual Work
█ Remaining Work
█ Critical
◆ Milestone

THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES
 Page 2 of 32

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31-Aug-17	3MRP updated as of 31 Aug 2017	ZJ	
30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	



- █ Actual Work
- █ Remaining Work
- █ Critical
- ◆ Milestone

**THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

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HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

03-Oct-17

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
B04240	FSD Inspection						
B04250	OP Application & TPIDC Inspection						
B04260	OP Issue						◆ OP Issue
043 DOH Office + Store Room							
A04370	Cladding & Curtain Wall Installation (incl. steel & metal works)						
A04390	BS + E&M for Office Accommodation (Stage 9)						
B04310	Other BS + E&M Installation						
B04370	Floor Screeding/Tiling						
B04380	False Ceiling Installation & Painting						
B04390	Carpentry (Wooden Doors/Partition/Lockers/Etc.)						
C04310	C/S Wall Plastering						
C04320	Paint Finishing to Walls						
Test & Commission							
C04330	T&C for BS & Pumps						
C04360	Form 2 Submission						
C04370	Form 314 & 501 submission						◆ Form 314 & 501 submission
D04310	WSD Inspection						
D04320	FSD Inspection						
D04330	Lift Inspection by EMSD						
D04340	DG Inspection						
D04350	BEE0 Stage II & Assessor Certification Submission						
D04380	OP Application & TPIDC Inspection						
D04390	OP Issue						◆ OP Issue
052 - Transforms (Zone 4)							
Fuel Filling Station incl. BS & E/M							
A05290	All Works for Fuel Filling Station						
T&C and Statutory Inspection							
B05210	T&C for BS & Pumps						
B05230	DG Inspection						
B05270	Non-Essential T&C (Non-FSI)						
B05280	OP Application & TPIDC Inspection						
B05290	Provision of TPIDC's Completion Certificate (OP Issue)						◆ Provision of TPIDC's Completion Certificate (OP
Completion of Fire Services Installation and Equipment (FCD)							
C05230	Provision of Direct Link for Fire Alarm System by Chubb						◆ Provision of Direct Link for Fire Alarm System by Chubb
C05240	FSI Inspection						
C05250	Acceptance by FSD						◆ Acceptance by FSD
105 IMMD Guard Booth, Portion A1(Mock Up)							

- Actual Work
- Remaining Work
- Critical
- ◆ Milestone

**THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

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HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

03-Oct-17

Activity ID	Activity Name	2017					2018
		Sep	Oct	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						
C10560	FS Inspection by FSD						
C10570	OP Application & TPIDC Inspection						
Facade Envelop Structure Installation							
B10590	Fabrication of F/C System						
C10520	Steel Frame Installation						
C10530	Envelop Cladding and Roofing Panel Installation						
210 - ImmD GV Secondary Examination Bays Inbound							
ER5830	Construction of the Area and Access to the Interface Contractor						
External Works for Portion A1							
Drainage 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						
Waterpipe Laying							
EW5010	Fresh Water Main Laying (1660 m)						
EW6010	Flushing Water Main Laying (967 m)						
EW6180	Chilled Water Pipe Laying in Portion A1 (external)						
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							
ER1520	Subbase (6500 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	Bitumen Pavement (10056 ton), Stage 2 (Remaining)						
ER5550	Rigid Pavement (957 m3), Footpath & EVA, Stage 2 (Remaining)						
Railing							
ER0820	Railing						
Road Furniture							

- Actual Work
- Remaining Work
- Critical
- Milestone

**THREE MONTH ROLLING PROGRAMME
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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
ER0800	ELV Installation						
ER0830	Road Furniture						
PORTION A2							
Portion A2 Structures							
046 - Refuse Collection Point, Portion A2							
A04630	BS for Office Accommodations (Stage 8) (KD9)						
A04640	BS + E&M for Office Accommodations (Stage 9) (KD10)						
A04660	Other BS + E&M Installation						
Test & Commission							
B04630	Submission & issue of WW046 IV, V (Inside Services & FS)						
B04650	T&C for BS & Pumps						
B04660	WSD Inspection						
B04670	FSD Inspection						
B04680	OP Application & TPIDC Inspection						
B04690	OP Issue						◆ OP Issue
048 - Reclaimed Water Pumping Station, Portion A2							
B04820	BS for Office Accommodations (Stage 8) (KD9)						
B04830	BS + E&M for Office Accommodation (Stage 9) (KD10)						
B04840	Other BS + E&M Installation						
Test & Commission							
B04850	T&C for BS & Pumps & SWT						
B04870	DG Inspection						
B04890	Submission & issue of WW046 IV, V (Inside Services & FS)						
C04810	Form 314 & 501 submission						
C04840	WSD Inspection						
C04850	FSD Inspection						
C04860	OP Application & TPIDC Inspection						
C04870	OP Issue						◆ OP Issue
Retaining Wall W9-2							
SW9220	Backfilling for Retaining Wall W9-2						
SW9230	Parapet for Retaining Wall W9-2 (22 pour) & E&M Works						
SW9240	Retaining Wall W9-2 Drainage System & Cable Laying						
SW9250	Bituminous Paving for Retaining Wall W9-2 (521 ton) (KD13)						
External Works for Portion A2							
Drainage Works							
ED2280	Drainage Works (228m & 15MHs)						
ED3560	Sewerage (322m & 9MHs)						
Waterpipe Laying							
EW2290	Fresh Water Main Laying (236m)						

- Actual Work
- Remaining Work
- Critical
- ◆ Milestone

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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
EW2300	Flushing Water Main Laying (91m)						
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
EU5280	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
EU5290	Duct & Cable Laying for TCSS & Lighting						
PORTION B							
Portion B Structures							
Retaining Wall W7-2							
S70910	C3-S6 Slopeworks						
S70970	Retaining Wall W7-2 Parapet (2 pour) & E&M Works						
S70980	Retaining Wall W7-2 Drainage System & Cable Laying						
S70990	Retaining Wall W7-2 Bituminous Paving (79 ton) (KD25)						
Retaining Wall W6-1							
S62070	Retaining Wall W6-1 Parapet (8 pour) & E&M Works						
S62080	Retaining Wall W6-1 Drainage System & Cable Laying						
S62210	Retaining Wall W6-1 Bituminous Paving (347 ton) (KD25)						
Bay 25 - 29 of CUE/Staff Subway							
C02960	Internal Finishes & Cable Containment						
C02970	BS + E&M Installation for AVCSS						
Portion B Buildings							
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							
B02810	T&C for BS & Pumps						
B02830	Submission & Issue of WW046 IV, V (Inside Services & FS)						
B02840	WSD Inspection						
B02860	OP Application & TPIDC Inspection						
027 028 Inbound Kiosks & 029 Outbound Kiosks, Section IX, Subject to Excision							
B02750	Superstructure						
B02770	BS + E&M for AVCSS Works (KD18D)						

- Actual Work
- Remaining Work
- Critical
- Milestone

**THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

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30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
B02780	BS + E&M for allowing users to move in furniture (KD18E)						
B02790	Pavement & Drainage (KD30)						
Test & Commission							
D02710	T&C for BS & Pumps						
D02730	Submission & Issue of WW046 IV, V (Inside Services & FS)						
D02740	WSD Inspection						
D02760	OP Application & TPIDC Inspection						
026 Inbound IMMD and DOH Secondary Screening Building							
A02640	Finishing						
A02680	BS + E&M for Office Accommodation (Stage 9)						
A02690	Other BS + E&M Installation						
Test & Commission							
B02640	BEE0 Stage II & Assessor Certification Submission						
B02650	TC for BS & Pumps						
B02660	WSD Inspection						
B02670	FSD Inspection						
C02610	OP Application & TPIDC Inspection						
054 Inbound Fixed X-ray Building							
T&C and Statutory Inspection for Zone 4a							
B05400	BEE0 Stage II & Assessor Certification Submission						
B05420	T&C for BS & Pumps						
B05430	Form LE Submission to EMSD						
B05440	Lift Inspection by EMSD						
B05460	DG Inspection						
Completion of Fire Services Installation and Equipment (FCD)							
F05460	Provision of Direct Link for Fire Alarm System by Chubb						
F05470	FSI Inspection (2 Trials)						
F05480	Acceptance by FSD						
Waterworks Ordinance (WSD)							
G05410	Approval Letter and approved Drawings						
G05430	Submission of WWO46 - Part IV (Inside Services)						
G05440	WSD Inspection & Issue of WWO46 - Part V (Inside Services)						
G05450	Water Connection & Water Supplies Certificate issued by WSD (Inside Services)						
038 AFCD Office							
A03850	Finishing + Curtain Wall Installation						
A03870	BS for Office Accommodation (Stage 8)						

- █ Actual Work
- █ Remaining Work
- █ Critical
- ◆ Milestone

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31-Aug-17	3MRP updated as of 31 Aug 2017	ZJ	
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Activity ID	Activity Name	2017				2018
		Sep	Oct	Nov	Dec	Jan
A03880	BS + E&M for Office Accommodation (Stage 9)	[Red bar from Sep to Nov]				
A03890	Other BS + E&M Installation	[Red bar from Sep to Nov]				
Test & Commission						
B03810	T&C for BS & Pumps	[Red bar from Sep to Nov]				
B03840	Submission & Issue of WW046 IV, V (Inside Services & FS)	[Green bar in Oct]				
B03850	WSD Inspection	[Red bar in Dec]				
B03880	Form 314 & 501 submission	[Blue bar in Sep]				
C03820	Form 2 Submission	◆ Form 2 Submission				
C03830	Lift Inspection by EMSD	[Blue bar in Sep]				
C03850	FSD Inspection	[Green bar in Oct]				
C03860	BEEC Stage II & Assessor Certification Submission	[Red bar from Oct to Dec]				
C03870	OP Application & TPIDC Inspection	[Red bar from Oct to Dec]				
039 Police Main Building						
A03940	Finishing + Curtain Wall Installation	[Red bar from Sep to Nov]				
A03950	BS for Office Accommodation (Stage 8), & for TCSS works (KD14)	[Red bar from Sep to Nov]				
A03960	BS + E&M for Office Accommodation (Stage 9)	[Red bar from Sep to Nov]				
A03970	Other BS + E&M Installation	[Red bar from Sep to Nov]				
Fuel Filling Station incl. BS & E/M						
B03910	All Works for Fuel Filling Station	[Red bar from Sep to Nov]				
Test & Commission						
B03930	Submission & Issue of WW046 IV, V (Inside Services & FS)	[Blue bar in Sep]				
B03940	BEEC Stage II & Assessor Certification Submission	[Red bar from Oct to Dec]				
B03950	Beam Plus Monthly Submission & Issue	[Red bar from Sep to Nov]				
B03960	Form 314 & 501 submission	[Blue bar in Sep]				
C03920	DG Inspection	[Green bar in Oct]				
C03960	Lift Inspection by EMSD	[Blue bar in Sep]				
C03970	T&C for BS & Pumps	[Red bar from Sep to Nov]				
C03980	WSD Inspection	[Green bar in Oct]				
C03990	FSD Inspection	[Green bar in Oct]				
D03930	OP Application & TPIDC Inspection	[Red bar from Oct to Dec]				
040 Incident Control Tower						
A04050	Finishing (KD9)	[Red bar from Sep to Nov]				
A04060	BS for Office Accommodation (Stage 8), & for TCSS works (KD14)	[Red bar from Sep to Nov]				
A04070	BS + E&M for Office Accommodation (Stage 9)	[Red bar from Sep to Nov]				

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Activity ID	Activity Name	2017				2018
		Sep	Oct	Nov	Dec	Jan
Facade Cladding System						
B04040	Steel Frame Installation					
B04050	Cladding Panel Installation					
Glass Wall						
C04040	Steel Frame Installation					
C04050	Glass Panel Installation					
Test & Commission						
D04010	Form 314 & 501 submission					
D04030	T&C for BS & Pumps					
D04040	Form 2 Submission					
D04050	Lift Inspection by EMSD					
D04070	FSD Inspection					
D04080	OP Application & TPIDC Inspection					
102 HKPF UVSS Monitor Room						
A10230	Finishing (False Ceiling) (KD9)					
A10240	BS for Office Accommodation (Stage 8)					
A10260	BS + E&M for Office Accommodation (Stage 9)					
A10270	Other BS + E&M Installation					
A10290	T&C for BS & Pumps					
C10220	WVO 46 Part IV, V Submission (inside Service + FS)					
C10230	Plumbing Inspection by WSD					
C10240	FSI Form 314 & 501 Submission					
C10250	FS inspection by FSD					
C10260	TPIDC Inspection					
Metal Canopy and Roof Installation						
B10230	Steel Frame Installation					
B10240	Glass panel, metal cladding panel installation					
103 Police Inspection Post						
A10350	Finishing (False Ceiling) (KD9)					
A10360	BS for Office Accommodation (Stage 8)					
A10370	BS + E&M for Office Accommodation (Stage 9)					
A10380	Other BS + E&M Installation					
C10310	T&C for BS & Pumps					

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		Sep	Oct	Nov	Dec	Jan	
C10330	WVO 46 Part IV, V Submission (inside Service + FS)	◆ WVO 46 Part IV, V Submission (inside Service + FS)					
C10340	WSD inspection		[Green Bar]				
C10350	FS inspection by FSD		[Green Bar]				
C10360	TPIDC Inspection		[Red Bar]				
HPL Composite Panel Cladding System							
B10340	Steel Frame Installation	[Blue Bar]					
B10350	HPL Cladding Panel Installation		[Red Bar]				
057 Transformers (Zone 2)							
A05755	Energisation by CLP						
Fuel Filling Station incl. BS & E/M							
A05790	All Works for Fuel Filling Station						
T&C and Statutory Inspection for Zone 2a & 2b							
C05700	T&C for BS & Pumps						
F05700	Essential T&C (FSI)	[Blue Bar]	[Green Bar]				
F05710	Non-Essential T&C (Non-FSI)	[Blue Bar]	[Green Bar]				
F05720	OP Application & TPIDC Inspection						
F05730	Provision of TPIDC's Completion Certificate					◆ Provision of TPIDC's Completion	
Completion of Fire Services Installation and Equipment (FCD)							
F05750	Application for FSI Inspection (FSI/501) c/w FSI Plan (FSI/314)	◆ Application for FSI Inspection (FSI/501) 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)		[Green Bar]				
F05780	Acceptance by FSD					◆ Acceptance by FSD	
DG License & EPD Generator Approval							
G05710	Approval Letter and approved Drawings	◆ Approval Letter and approved Drawings					
G05730	DG Inspection		[Green Bar]				
107 - C&ED Mobile X-ray Operation Office (Cargo), Portion B							
C10740	Finishing		[Green Bar]				
C10750	BS for Office Accommodation (Stage 8)						
C10760	BS + E&M for Office Accommodation (Stage 9)	[Blue Bar]	[Red Bar]				
C10770	Other BS + E&M Installation	[Blue Bar]	[Red Bar]				
C10780	T&C for BS & Pumps	[Blue Bar]	[Red Bar]				
C10784	FS inspection by FSD			[Red Bar]			
C10790	TPIDC Inspection					[Red Bar]	
113 - Field Kiosk for Access Control, Portion B							
B11340	Finishing	[Blue Bar]	[Red Bar]				

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HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

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		Sep	Oct	Nov	Dec	Jan	
B11350	BS for Office Accommodation (Stage 8)						
B11360	BS + E&M for Office Accommodation (Stage 9)						
B11370	Other BS + E&M Installation						
B11380	T&C for BS & Pumps						
B11384	FS inspection by FSD						
B11390	TPIDC Inspection						
External Works for Portion B							
<i>Works in Location 1.7A</i>							
BB1480	ELV Works & T&C in Location 1.7A						
<i>Works in Location 1.7B</i>							
BB1490	ELV Works & T&C in Location 1.7B						
<i>Waterpipe Laying</i>							
EW6100	Fresh Water Main Laying (1000m), Stage 3						
EW6110	Flushing Water Main Laying (931m), Stage 3						
EW6190	Chilled Water Pipe Laying in Portion B (external)						
<i>Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting</i>							
EU5300	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
EU5310	Duct & Cable Laying for TCSS & Lighting						
EU5550	ELV Installation						
<i>Roadworks</i>							
ER1640	Subbase (21000 ton), Stage 1						
ER3590	Bitumen Pavement (30000 ton), Stage 1						
ER3600	Rigid Pavement (1188 m3), Footpath & EVA, Stage 1						
ER5590	Subbase (22152 ton), Stage 2 (Remaining)						
<i>Road Furniture</i>							
ER1620	Road Furniture						
<i>Sign Gantry ADS 306A & ADS 306B</i>							
ES5250	Erection of Sign Gantry						
PORTION C							
Portion C Buildings							
<i>010 - Inbound Coach Kiosk & Staff Subway Entrance (Subway Deleted)</i>							
A01020	Base Slab & Kiosk superstructure						
A01030	BS + Finishing + E&M for AVCSS works (KD18A)						
A01040	BS + + Finishing E&M for AVCSS Cabling (KD18B)						

- Actual Work
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Activity ID	Activity Name	2017					2018
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A01050	BS + Finishing + E&M for Office Accommodation (Stage 9) (KD10)						
A01060	Other BS + Finishing + E&M Installation						
009 - Staff Subway Entrance (Bay 0 - 3) & Shuttle Bus Kiosks							
B00930	BS + E&M & Fiishing for AVCSS works (KD18A)						
B00940	BS + E&M & Finishing for AVCSS Cabling (KD18B)						
B00970	BS + E&M & Finishing for Office Accommodation (Stage 9) (KD10)						
C00920	T&C for BS & Pumps						
C00940	TPIDC Inspection						
012 - DOH Disinsection Area and Store Room 1, at Portion C							
B01220	Raft Foundation						
B01230	Supersructure						
B01240	Finishing						
B01270	BS for Office Accommodation (KD 9)						
B01280	BS + E&M for Office Accommodation (KD 10)						
B01290	Other BS + E&M Installation						
Test & Commission							
E01210	Submission of WWO46 - Part I, II, III (Inside Services + FS)						
E01220	Submission of WWO46 - Part IV, V (Inside Services + FS)						
E01240	WSD Inspection						
E01250	FS inspection by FSD						
E01260	TPIDC Inspection						
104 - DOH Secondary Screening Station, at Portion C							
A10430	Substructure						
A10435	Finishing						
A10440	BS for Office Accommodation (Stage 8)						
A10450	BS + E&M for Office Accommodation (Stage 9)						
B10410	Other BS + E&M Installation						
B10420	T&C for BS & Pumps						
B10430	FS inspection by FSD						
B10440	TPIDC Inspection						
Facade Cladding System							
A10465	Fabrication of F/C System						
A10470	Casted-in Items Installation						
A10480	Steel Frame Installation						
A10490	Envelop Cladding and Roof Panel Installation						

█ Actual Work
█ Remaining Work
█ Critical
◆ Milestone

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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
108 C&ED Mobile X-ray Machine Operation Office, Portion C							
A10850	Finishing		█				
A10860	BS for Office Accommodation (Stage 8)	█					
A10870	BS + E&M for Office Accommodation (Stage 9)		█				
A10890	Other BS + E&M Installation		█	█			
F10830	T&C for BS & Pumps	█	█	█			
F10840	FS inspection by FSD			█			
F10850	TPIDC Inspection			█	█		
HPL Composite Panel Cladding System							
A10830	Steel Frame Installation	█					
A10880	HPL Cladding Panel Installation		█	█			
110 IMMDD Guard Booth (Type 2) East							
A11080	Finishing		█	█			
A11090	BS for Office Accommodation (Stage 8)						
B11010	BS + E&M for Office Accommodation (Stage 9)		█				
B11020	Other BS + E&M Installation		█	█			
B11030	T&C for BS & Pumps		█	█			
B11040	FS inspection by FSD			█			
B11050	TPIDC Inspection			█	█		
Facade Envelop Structure Installation							
A11060	Steel Frame Installation		█				
A11070	Envelop Cladding and Roofing Panel Installation		█	█	█		
110 IMMDD Guard Booth (Type 2) West							
C11020	Substructure	█					
C11030	Finishing		█	█	█		
C11040	BS for Office Accommodation		█				
C11050	BS + E&M for Office Accommodation			█	█		
C11060	Other BS + E&M Installation		█	█	█		
C11070	T&C for BS & Pumps		█	█	█		
C11080	FS inspection by FSD				█		
C11090	TPIDC Inspection			█	█		
Facade Envelop Structure Installation							
D11010	Casted-in Items Installation	█					
D11020	Steel Frame Installation		█				
D11030	Envelop Cladding and Roofing Panel Installation				█		

- █ Actual Work
- █ Remaining Work
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HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

03-Oct-17

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
111 Field Kiosk for Carpark Operator							
A11120	Excavation & Blinding						
A11130	Raft Foundation	█					
A11140	Superstructure (Roof beams & Slabs)	█	█				
A11150	Finishing						
A11160	BS for Office Accommodation (Stage 8)		█	█			
A11170	BS + E&M for Office Accommodation (Stage 9)		█	█			
A11180	Other BS + E&M Installation		█	█	█		
B11160	T&C for BS & Pumps		█	█	█		
B11170	FS inspection by FSD				█		
B11180	TPIDC Inspection				█		
HPL Composite Panel Cladding System							
B11130	Casted-in Items Installation	█	█				
B11140	Steel Frame Installation		█				
B11150	HPL Cladding Panel Installation			█	█		
113 - Field Kiosk for Access Control, Portion C							
C11330	Superstructure (Roof Beams & Slabs)	█					
C11340	Finishing	█	█	█	█		
D11310	BS for Office Accommodation (Stage 8)	█	█				
D11320	BS + E&M for Office Accommodation (Stage 9)			█			
D11330	Other BS + E&M Installation	█	█	█			
F11310	T&C for BS & Pumps		█	█	█		
F11320	FS inspection by FSD				█		
F11330	TPIDC Inspection				█		
204 - Inbound Coach Exam Area & Mobile X-ray Operation							
ER5760	Radiation Screen Wall Construction		█				
ER5880	Construction of the Area and Access to the Interface Contractor		█	█	█		
External Works for Portion C							
<i>Works in Location 1.2, 1.8 & 011 - Emergency Generator Building</i>							
BB1440	Works & T&C in Location 1.2	█	█	█	█		
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)	█	█	█	█		
Waterpipe Laying							
SW2410	Fresh Water Main Laying (272m)	█	█	█	█		

- █ Actual Work
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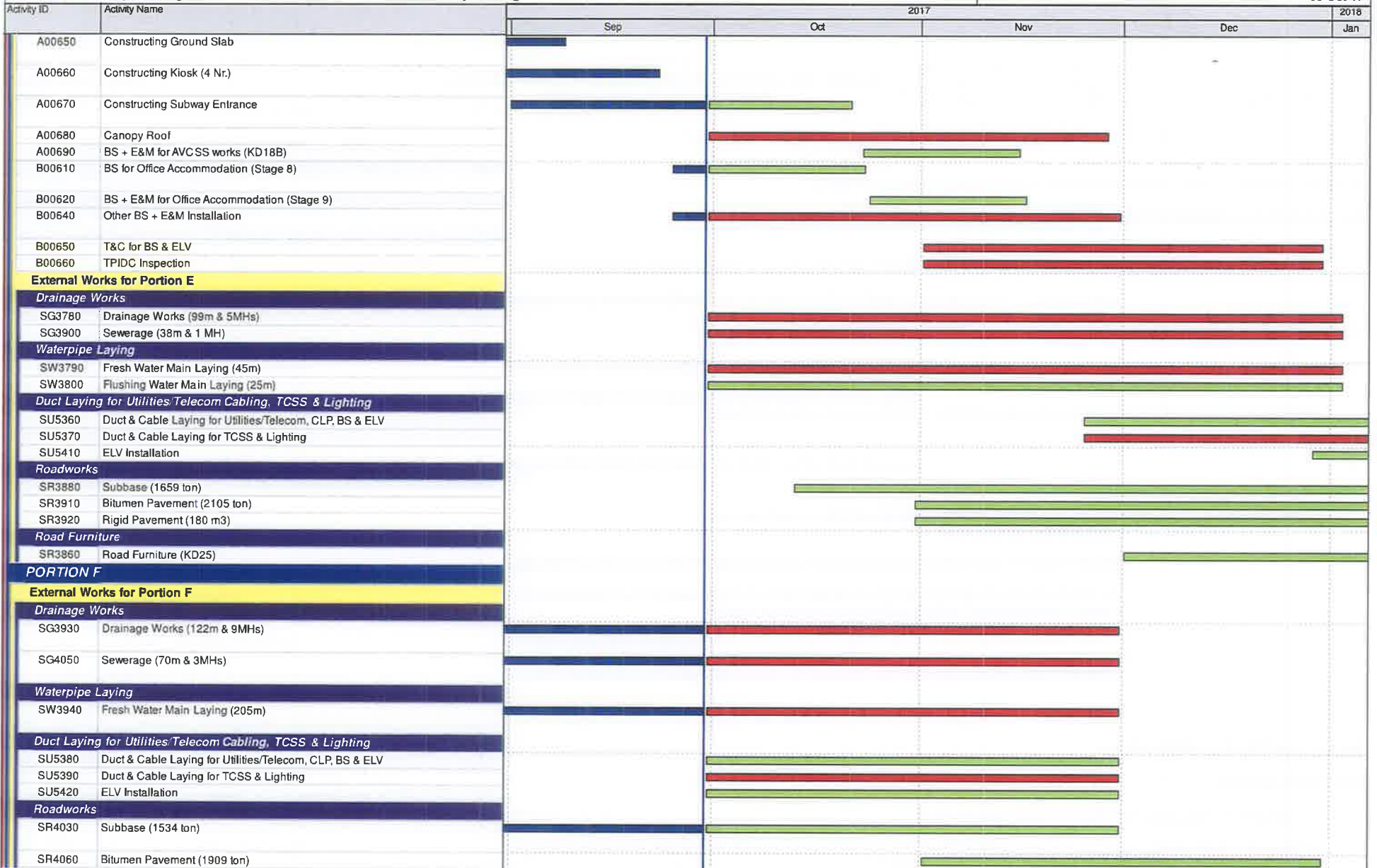
03-Oct-17

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
SW2420	Flushing Water Main Laying (105m)		[Red bar]				
SW9280	Chilled Water Pipe Laying in Portion C (external)			[Red bar]			
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
SU5320	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV		[Green bar]				
SU5330	Duct & Cable Laying for TCSS & Lighting		[Red bar]				
SU5400	ELV Installation			[Green bar]			
Roadworks							
SR2500	Subbase (4201 ton)				[Red bar]		
Road Furniture							
SR2480	Road Furniture				[Red bar]		
PORTION D							
Portion D Building							
114 - Field Kiosk for Access Control, Portion D							
C11380	Finishing		[Red bar]				
D11340	BS for Office Accommodation (Stage 8)	[Blue bar]					
D11350	BS + E&M for Office Accommodation (Stage 9)		[Red bar]				
D11360	Other BS + E&M Installation		[Red bar]				
F11350	T&C for BS & Pumps		[Red bar]				
F11360	FS inspection by FSD			[Red bar]			
F11370	TPIDC Inspection		[Red bar]				
External Works for Portion D							
Waterpipe Laying							
SW3650	Fresh Water Main Laying (108m)		[Green bar]				
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
B11480	ELV System Installation for Contract HY/2013/02		[Red bar]				
SU5340	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV		[Green bar]				
SU5350	Duct & Cable Laying for TCSS & Lighting		[Green bar]				
SU5640	Access date to Telephone Companies			◆ Access date to Telephone Companies			
Roadworks							
SR3740	Subbase (261 ton)		[Green bar]				
SR3770	Bitumen Pavement (619 ton)	[Blue bar]	[Green bar]				
Railing							
SR3710	Railing			[Green bar]			
Road Furniture							
SR3720	Road Furniture (KD25)		[Green bar]				
PORTION E							
006 - Shuttle Bus Kiosk & Staff Subway Entrance, at Portion E & M							

- Actual Work
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03-Oct-17

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
Railing							
SR4000	Railing						
Road Furniture							
SR4010	Road Furniture (KD25)						
PORTION G, H1 & H2							
Portion G Structures							
Bridge A1							
Structure Deck							
SA1520	Parapet (42 pour), E&M works & installation of DS38 & DS39	█					
SA1530	Bituminous Paving (751 ton) (KD25)		█				
Bridge A2							
Structure Deck							
SA2470	Parapet (36 pour), E&M Works & installation of DS49	█					
SA2480	Bituminous Paving (KD25)		█				
Bridge A3							
Structure Deck							
SA3520	Bituminous Paving (580 ton) (KD25)			█			
Bridge A4							
Structure Deck							
SA4470	Parapet (35 pour), E&M Works	█					
SA4480	Bituminous Paving (232 ton) (KD25)		█				
Bridge A5							
Structure Deck							
SA5570	MJ Installation (KD16 & KD17)	█	█				
SA5580	Parapet (65 pour), E&M Works installation of ADS 304A	█	█	█			
SA5590	Bituminous Paving (1125 ton) (KD25)				█		
Bridge A6							
Structure Deck							
SA6550	Bituminous Paving (600 ton) (KD25)		█				
Bridge A7a, A7b, A7c							
Structure Deck							
SA7960	Parapet for Bridge A7a (48 pour) & E&M Works	█					
SA7970	Bituminous Paving for A7b (571 ton) (KD25)		█				
SA7980	Bituminous Paving for A7c (400 ton)(KD25)		█				
SA7990	Bituminous Paving for A7a (400 ton) (KD25)		█				
Bridge A8							
Structure Deck							

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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
SA8480	Bituminous Paving (348 ton) (KD25)						
Retaining Walls W1-1, W3-1, W5-1 & W7-1							
Retaining Wall W1-1							
SW1122	Slope C3-S3 Construction						
SW1130	Retaining Wall W1-1 Parapet (8 pour) & E&M Works						
SW1150	Retaining Wall W1-1 Drainage System & Cable Laying						
SW1160	Retaining Wall W1-1 Bituminous Paving (726 ton) (KD25)						
Retaining Wall W3-1							
SW3150	Construction of Retaining Wall W3-1 (U-shape, 4 bays)						
SW3160	Backfilling W3-1						
SW3165	Slope C3-S4 Construction						
SW3170	Parapet W3-1 (8 pours) & E&M Works						
SW3180	W3-1 Drainage System & Cable Laying						
SW3190	Bituminous Paving W3-1 (362 ton) (KD25)						
Retaining Wall W5-1							
SW5010	Construction of Retaining Wall W5-1 (L-shape, 5 bays)						
SW5020	Retaining Wall W5-1 Backfilling to Retaining Wall						
SW5024	Slope C3-S5 Construction						
SW5030	Retaining Wall W5-1 Parapet (9 pour) & E&M Works						
SW5040	Retaining Wall W5-1 Drainage System & Cable Laying						
SW5140	Retaining Wall W5-1 Bituminous Paving (554 ton)						
Retaining Wall W7-1							
SW7120	Backfilling to Retaining Wall W7-1						
SW7130	Parapet for Retaining Wall W7-1 (16 pours) & E&M Works						
SW7140	Retaining Wall W7-1 Drainage System & Cable Laying						
SW7150	Bituminous Paving for Retaining Wall W7-1 (348 ton) (KD25)						
Portion G Buildings							
002 - C&ED Observation Guard Booth No. 1, Portion H1							
C00250	Finishing						
C00260	BS for Office Accommodations (KD9)						
C00270	BS + E&M for Office Accommodation (KD10)						
C00280	Other BS + E & M Installation						
C00290	T&C for BS						
C00294	FS inspection by FSD						
002 - C&ED Observation Guard Booth No. 2, Portion H1							
E00240	Finishing						
E00250	BS for Office Accommodations (KD9)						
E00260	BS + E&M for Office Accommodation (KD10)						

■ Actual Work
■ Remaining Work
■ Critical
◆ Milestone

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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
E00270	Other BS + E & M Installation						
E00280	T&C for BS						
E00290	FS inspection by FSD						
E00295	OP Application & TPIDC Inspection						
033 Inbound Private Car Exam Building							
A03360	External Works						
A03380	BS + E&M for Office Accommodation (Stage 9)						
A03390	Other BS + E&M Installation						
C03320	Submission & Issue of WW046 IV, V (Inside Services & FS)						
C03330	BEE0 Stage II & Assessor Certification Submission						
C03340	Form 314 & 501 submission		◆ Form 314 & 501 submission				
C03350	Plumbing Inspection by WSD						
C03360	T&C for BS & Pumps						
C03370	WSD Inspection						
C03380	FSD Inspection						
C03390	OP Application & TPIDC Inspection						
Aluminium Metal Canopy							
B03340	Aluminium Cladding Installation						
034 Satellite RCP South							
A03470	BS + E&M for Office Accommodation (Stage 9)						
A03480	Other BS + E&M Installation						
Test & Commission							
C03430	Form 314 & 501 submission		◆ Form 314 & 501 submission				
C03440	T&C for BS & Pumps						
C03450	WSD Inspection						
C03460	FSD Inspection						
C03470	OP Application & TPIDC Inspection						
S S Facade Greenery System							
B03430	Steel Frame Installation						
B03440	Greenery Cladding Installation						
035 - Sewage Pumping Station, Portion G							
B03580	BS for Office Accommodations (KD9)						
B03590	BS + E&M for Office Accommodation (KD10)						
C03510	Other BS + E & M Installation						
Test & Commission							

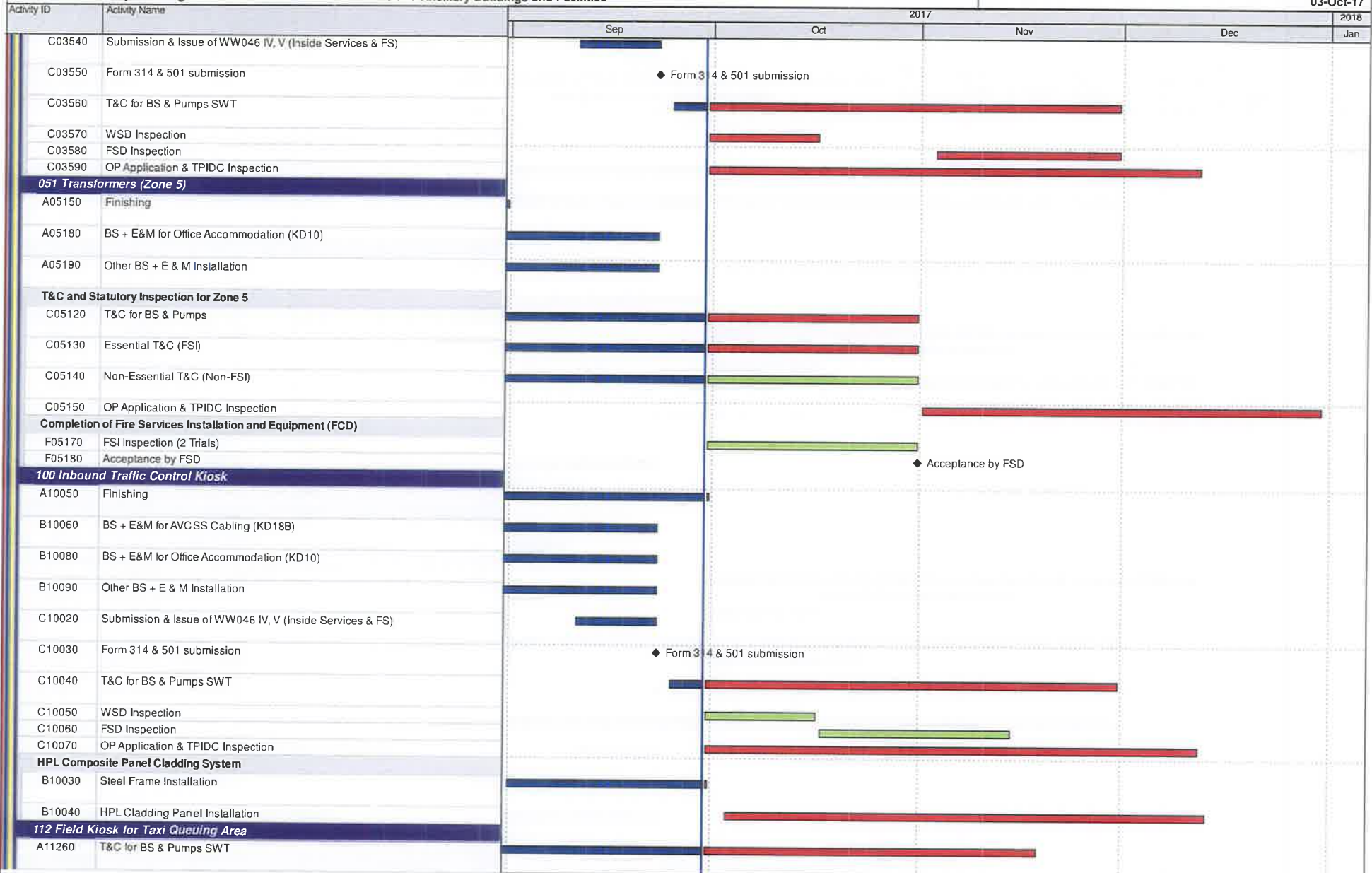
■ Actual Work
■ Remaining Work
■ Critical
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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
A11270	FSD Inspection						
A11280	OP Application & TPIDC Inspection						
External Works for Portion G, H1 & H2							
<i>ELV Works within Portion H2 in the Hong Kong Side PTI</i>							
EU1550	ELV Works within Portion H2 in the Hong Kong Side PTI (KD19)						
<i>Works within Portion H1 & H2 except the ELV Works in the Hong Kong Side PTI</i>							
EU1560	Drainage & Sewerage Works within Portion H1 & H2 in the Hong Kong Side PTI (KD20)						
EU5520	Roadworks (+ Footpath) & Canopy Erection within Portion H1 & H2 in the Hong Kong Side PTI (KD20)						
<i>All Works within the Boundary defined in Drawing No. 60191048/C3/000/C00/1050</i>							
BEU1570	Drainage & Sewerage Works (incl. CLP) within the Boundary defined in Drawing No. 60191048/C3/000/1050						
BEU1580	Roadworks within the Boundary defined in Drawing No. 60191048/C3/000/1050, excluding Portion H1 & H2 & Bridges (KD24)						
<i>Drainage Works</i>							
ED4070	Drainage Works (6954m & 393MHs)						
ED4190	Sewerage (437m & 12MHs)						
<i>Waterpipe Laying</i>							
EW4080	Fresh Water Main Laying (1689m)						
EW4090	Flushing Water Main Laying (411m)						
<i>Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting</i>							
EU5400	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
EU5410	Duct & Cable Laying for TCSS & Lighting						
EU5560	ELV Installation						
<i>Roadworks</i>							
ER4170	Subbase (17045 ton)						
ER4200	Bitumen Pavement (24549 ton)						
ER4210	Rigid Pavement (514 m3), Footpath & EVA						
<i>Railing</i>							
ER4140	Railing						
<i>Road Furniture</i>							
ER4150	Road Furniture						
<i>Sign Gantry DS40, DS41 & DS75</i>							
ES0190	Erection of Sign Gantry						
<i>Canopy and Covered Walkway</i>							
CC1330	Steel Frame Installation						
CC1340	Panel Installation						
PORTION J							

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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
Portion J Structure							
Bay 30 - 41 of CUE/Staff Subway (Portion J)							
B03260	Internal Finishes & Cable Containment (KD2)						
B03270	BS + E&M Installation for AVCSS (Stage 2) (KD2)						
030 Outbound Private Car & GV Kiosks							
A03030	Superstructure (Incl. Entrance & Toilet)						
A03050	Finishing						
A03060	BS + E&M for AVCSS Works (KD18B)						
A03070	BS for Office Accommodations (KD9)						
A03080	BS + E&M for Office Accommodation (KD10)						
A03090	Other BS + E & M Installation						
B03010	T&C for BS & Pumps SWT						
B03030	OP Application & TPIDC Inspection						
030 Outbound Kiosks, Section IX, Subject to Excision							
C03030	Superstructure						
C03040	BS + E&M for AVCSS Works (KD18C) & Finishing						
C03050	BS + E&M for AVCSS Works (KD18D) & Finishing						
C03060	BS + E&M for allowing users to move in furniture (KD18E)						
C03070	Pavement & Drainage (KD30)						
Portion J Buildings							
024 Outbound Private Car Exam Building							
A02430	Finishing (KD9)						
A02440	BS for Office Accommodations (KD18F)						
A02450	BS + E&M for Office Accommodation (KD18G)						
A02460	Other BS + E & M Installation (KD31)						
Test & Commission							
D02420	Submission & Issue of WW046 IV, V (Inside Services & FS)						
D02430	BEE0 Stage II & Assessor Certification Submission						
D02440	WSD Inspection						
D02450	FSD Inspection						
D02460	T&C for BS & Pumps						
D02470	OP Application & TPIDC Inspection						
Glass Canopy Installation							
B02440	Glass Panel Installation						
Aluminium Metal Canopy							
B02480	Aluminium Cladding Installation (KD31)						
031 Outbound IMM and DOH Secondary Screen Building							
A03150	Finishing (KD31)						

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A03160	BS for Office Accommodations (KD18F)						
A03170	BS + E&M for Office Accommodation (KD18G)						
A03180	Other BS + E & M Installation (KD31)						
Test & Commission							
C03130	Submission & Issue of WW046 IV, V (Inside Services & FS)						
C03140	BEE0 Stage II & Assessor Certification Submission						
C03150	Form LE5 Submission to EMSD						
C03160	Lift Inspection by EMSD						
C03170	T&C for BS & Pumps						
C03180	WSD Inspection						
C03190	FSD Inspection						
D03110	OP Application & TPIDC Inspection						
060 - Single Storey Support Building Associated with Buildings 044 & 045							
A06025	Finishing						
A06055	Energisation by CLP						
A06060	BS for Office Accommodation (Stage 10) (KD11)						
A06070	BS + E&M for Office Accommodations (Stage 11) (KD12)						
A06080	Other BS + E&M Installation						
Fuel Filling Station incl. BS & E/M							
A06090	All Works for Fuel Filling Station						
T&C and Statutory Inspection for Zone 3a							
B06020	BEE0 Stage II & Assessor Certification Submission						
B06030	T&C for BS & Pumps						
B06060	Essential T&C (FSI)						
B06070	Non-Essential T&C (Non-FSI)						
B06080	OP Application & TPIDC Inspection						
Completion of Fire Services Installation and Equipment (FCD)							
F06050	Application for FSI Inspection (FSI/501) c/w FSI Plan (FSI/314)						
F06060	Provision of Direct Link for Fire Alarm System by Chubb						
F06070	FSI Inspection (2 Trials)						
F06080	Acceptance by FSD						
Waterworks Ordinance (WSD)							
G06030	Submission of WWO46 - Part IV (Inside Services)						
G06040	WSD Inspection & Issue of WWO46 - Part V (Inside Services)						
G06050	Water Connection & Water Supplies Certificate issued by WSD (Inside Services)						
DG License & EPD Generator Approval							
G06000	DG Application						

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		Sep	Oct	Nov	Dec	Jan	
G06060	DG Inspection						
061 Telecom Building							
A06170	BS + E&M for Office Accommodation (KD10)						
A06180	Other BS + E & M Installation						
A06190	T&C for BS						
B06160	FSD Inspection						
B06170	OP Application & TPIDC Inspection						
Aluminium Metal Canopy							
B06140	Aluminium Cladding Installation						
101 Outbound Traffic Control Kiosk							
A10140	Finishing						
A10150	BS + E&M for AVCSS Works (KD18A)						
A10160	BS + E&M for AVCSS Cabling (KD18B)						
A10170	BS for Office Accommodations (KD9)						
A10180	BS + E&M for Office Accommodation (KD10)						
A10190	Other BS + E & M Installation						
C10120	Submission of WWO46 - Part IV (Inside Services)						
C10130	T&C for BS & Pumps						
C10140	WSD Inspection						
C10150	FSD Inspection						
C10160	OP Application & TPIDC Inspection						
HPL Composite Panel Cladding System							
B10140	Steel Frame Installation						
B10150	HPL Cladding Panel Installation (KD25)						
206 - Outbound Private Car Mobile X-ray Operation Area							
ER5780	Radiation Screen Wall Construction						
ER5800	Construction of the Area and Access to the Interface Contractor						
External Works for Portion J							
Works in Location 1.7B							
EU1500	ELV Works & T&C in Location 1.7B						
Works in Location 1.7C							
EU1530	ELV Works & T&C in Location 1.7C						
Waterpipe Laying							
EW4230	Fresh Water Main Laying (1541m)						
EW4240	Flushing Water Main Laying (862m)						

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Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
SW9290	Chilled Water Pipe Laying in Portion J (external)			[Green bar]			
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
EU5420	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV		[Red bar]				
EU5430	Duct & Cable Laying for TCSS & Lighting		[Green bar]				
EU5570	ELV Installation		[Red bar]				
Roadworks							
ER4320	Subbase (15400 ton), Stage 1		[Red bar]				
ER4350	Bitumen Pavement (20000 ton), Stage 1		[Red bar]				
ER4360	Rigid Pavement (173 m3), Footpath & EVA, Stage 1		[Red bar]				
Road Furniture							
ER4300	Road Furniture			[Red bar]			
Sign Gantry DS104							
ES5160	Erection of Sign Gantry		[Green bar]				
PORTION K, L, M, S & T							
Portion K Building							
002 - C&ED Observation Guard Booth No. 1, Portion K							
A00230	Superstructure						
A00240	Finishing		[Green bar]				
A00250	BS for Office Accommodations (Degree of Completion 2)		[Red bar]				
A00260	BS + E&M for Office Accommodation (Degree of Completion 3)			[Red bar]			
A00270	Other BS + E & M Installation		[Red bar]				
A00280	T&C for BS & Pumps		[Red bar]				
A00290	FSD Inspection			[Red bar]			
A00295	OP Application & TPIDC Inspection		[Red bar]				
002 - C&ED Observation Guard Booth No. 2, Portion K							
B00230	Superstructure						
B00240	Finishing		[Red bar]				
B00250	BS for Office Accommodations (Degree of Completion 2)		[Red bar]				
B00260	BS + E&M for Office Accommodation (Degree of Completion 3)			[Red bar]			
B00270	Other BS + E & M Installation		[Red bar]				
B00280	T&C for BS & Pumps		[Red bar]				
B00290	FSD Inspection			[Red bar]			
B00295	OP Application & TPIDC Inspection		[Red bar]				
Portion M Buildings							
108 - C&ED Mobile X-ray Operation Office, Portion M							
B10850	Finishing		[Red bar]				

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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						
C10800	FSD Inspection						
D10800	OP Application & TPIDC Inspection						
HPL Composite Panel Cladding System							
C10840	Steel Frame Installation						
C10850	HPL Cladding Panel Installation						
104 DOH Screening Station, at Portion M							
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 & TPIDC Inspection						
Facade Envelop Structure Installation							
D10470	Steel Frame Installation						
D10480	Envelop Cladding and Roofing Panel Installation						
203 - Outbound Coach/Shuttle Bus Exam Area & Mobile X-ray Operation Area							
ER5870	Construction of the Area and Access to the Interface Contractor						
External Works							
Additional Works (Filling & RE Slope), SA1							
ED3236	Removal of temp. access at north slope						
ED3237	Reinstatement and constructing of north slope						
ED3336	Construct Rock Fill Slope near PCB (South East)						
ED3338	Consolidation of fill at the Platform (South West)						
ED3350	Remove surcharge at the Platform (South West)						
ED3355	Construct RE slope near PCB (South West)						
ED3360	Construct Rock Fill Slope near PCB (South West)						
ED3410	C2 Contractor to complete abutment at the North (2 nos.)						
ED3420	Fill Slope around C2 abutments						
Construction of Slopes							
ED3440	Construction of fill slope (East)						
ED3520	Construct RE slope (West)						
ED3550	Construction of fill slope (North)						

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Drainage Works							
ED4370	Drainage Works (2129m & 102MHs)						
Waterpipe Laying							
EW4380	Fresh Water Main Laying (1216m)						
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
EU5440	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
EU5450	Duct & Cable Laying for TCSS & Lighting						
EU5580	ELV Installation						
Roadworks							
ER5710	Subbase (9225 ton)						
ER5720	Bitumen Pavement (9102 ton)						
ER5730	Rigid Pavement (1525 m3) & Footpath						
Canopy and Covered Walkway							
CC1410	Footing						
CC1420	Steel Frame Installation						
CC1430	Panel Installation						
Railing							
ER4440	Railing						
Road Furniture							
ER4450	Road Furniture (KD25)						
PORTION N							
Portion N Structure							
Box Culvert B							
Box Culvert Structure							
SB0720	Box B - Construction (Stage 2)						
SB0730	Box B - Outfall Structure						
SB0740	Box B - Reinstatement of Sloping Seawall						
SB0750	Box B - Backfilling						
Portion N Buildings							
104 DOH Screening Station, at Portion N							
C10410	Structure (Raft Foundation)						
C10420	Finishing						
E10410	BS for Office Accommodations (KD9)						
E10420	BS + E&M for Office Accommodation (KD10)						

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E10430	Other BS + E & M Installation						
E10440	T&C for BS & Pumps						
E10450	FSD Inspection						
E10460	OP Application & TPIDC Inspection						
Facade Envelop Structure Installation							
D10430	Steel Frame Installation						
D10440	Envelop Cladding and Roofing Panel Installation						
106 C&ED Detention Area Guard Booth							
E10640	BS for Office Accommodations (KD9)						
E10650	BS + E&M for Office Accommodation (KD10)						
E10660	Other BS + E & M Installation						
E10670	T&C for BS & Pumps						
E10680	FSD Inspection						
E10690	OP Application & TPIDC Inspection						
Facade Envelop Structure Installation							
B10630	Steel Frame Installation						
B10640	Envelop Cladding and Roofing Panel Installation						
107 C&ED Mobile X-ray Operation Office, Portion N							
A10760	Other BS + E & M Installation (KD10)						
A10770	T&C for BS & Pumps						
A10780	FSD Inspection						
A10790	OP Application & TPIDC Inspection						
HPL Composite Panel Cladding System							
B10740	Steel Frame Installation						
B10750	HPL Cladding Panel Installation						
200 - Inbound/Outbound Vehicle Detection Area							
ER5810	Construction of the Area and Access to the Interface Contractor						
202 - Outbound Cargo Mobile X-ray Operation Area							
ER5820	Construction of the Area and Access to the Interface Contractor						
211 - ImmD GV Secondary Examination Bays Outbound							
ER5840	Construction of the Bays and Access to the Interface Contractor						
External Works for Portion N							
Works in Location 1.7A							
EU1540	ELV Works & T&C in Location 1.7A						
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							

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SW9300	Chilled Water Pipe Laying in Portion N (external)						
Roadworks							
ER4620	Subbase (6475 ton)						
ER4650	Bitumen Pavement (10144ton)						
ER4660	Rigid Pavement (183 m3), Footpath & EVA						
Road Furniture							
ER4600	Road Furniture						
PORTION P							
Portion Structure							
Retaining Wall RW1							
RW1140	Backfilling RW1						
RW1150	Parapet RW1 (20 pours)						
RW1160	RW1 Drainage System						
Portion P Buildings							
105 IMMDD Guard Booth, Portion P							
A10540	Finishing						
E10500	BS for Office Accommodations (KD9)						
E10510	BS + E&M for Office Accommodation (KD10)						
E10520	Other BS + E & M Installation						
E10530	Form 314 Submission						
E10540	Form 501 Submission						
E10550	T&C for BS & Pumps						
E10560	FS Inspection by FSD						
E10570	OP Application & TPIDC Inspection						
Facade Envelop Structure Installation							
A10560	Shop Drawing Submission and Approval						
A10580	Steel Frame Installation						
A10590	Envelop Cladding and Roofing Panel Installation						
External Works for Portion P							
Drainage Works							
ED4670	Drainage Works (2957m & 128MHs)						
ED4790	Sewerage (269m & 7MHs)						
Waterpipe Laying							
EW4680	Fresh Water Main Laying (1270m)						
EW4690	Flushing Water Main Laying (455m)						
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
EU5480	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
EU5490	Duct & Cable Laying for TCSS & Lighting (KD15)						
EU5600	ELV Installation						

■ Actual Work
■ Remaining Work
■ Critical
◆ Milestone

THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES
 Page 30 of 32

Date	Revision	Checked	Approved
31-Aug-17	3MRP updated as of 31 Aug 2017	ZJ	
30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
Roadworks							
ER4770	Subbase (16519 ton)						
ER4800	Bitumen Pavement (23958 ton)						
ER4810	Rigid Pavement (220 m3), Footpath & EVA						
Road Furniture							
ER4750	Road Furniture						
PORTION Q							
External Works for Portion Q							
<i>Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting</i>							
ED5570	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
ED5580	Duct & Cable Laying for TCSS & Lighting						
EU1490	ELV System Installation for Contract HY/2013/04						
Roadworks							
AS1810	C3-S1 Slope Construction						
AS1820	C3-S2 Slope Construction						
ER4920	Subbase (104 ton)						
ER4950	Bitumen Pavement (215 ton)						
Railing							
ER4890	Railing						
Road Furniture							
ER4900	Road Furniture						
PORTION R							
Portion R Building							
<i>002 - C&ED Observation Guard Booth, Portion R</i>							
D00220	Raft Foundation						
D00230	Superstructure						
D00240	Finishing						
D00250	BS for Office Accommodations (KD9)						
D00260	BS + E&M for Office Accommodation (KD10)						
D00270	Other BS + E & M Installation						
D00280	T&C for BS & Pumps						
D00290	FSD Inspection						
D00295	OP Application & TPIDC Inspection						
External Works for Portion R							
Drainage Works							
ED4960	Drainage Works (1040m & 70MHs)						
ED5080	Sewerage (272m & 7MHs)						
Waterpipe Laying							
EW4970	Fresh Water Main Laying (614m)						

- █ Actual Work
- █ Remaining Work
- █ Critical
- ◆ Milestone

**THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

Date	Revision	Checked	Approved
31-Aug-17	3MRP updated as of 31 Aug 2017	ZJ	
30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	

HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities

03-Oct-17

Activity ID	Activity Name	2017					2018
		Sep	Oct	Nov	Dec	Jan	
EW4980	Flushing Water Main Laying (222m)						
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting							
EU5500	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV						
EU5510	Duct & Cable Laying for TCSS & Lighting						
EU5610	ELV Installation						
Roadworks							
ER5060	Subbase (1734 ton)						
ER5090	Bitumen Pavement (812ton)						
ER5100	Rigid Pavement (487 m3)						
Railing							
ER5030	Railing						
Road Furniture							
ER5040	Road Furniture (KD25)						
Landscape Works							
A5170	Design and Procurement for Irrigation System						
A5180	Installation of Irrigation System						
A5190	All landscape Soft & Hard Works						

- Actual Work
- Remaining Work
- Critical
- Milestone

**THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

Date	Revision	Checked	Approved
31-Aug-17	3MRP updated as of 31 Aug 2017	ZJ	
30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	

Activity ID	Activity Name
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing F	
Key Dates	
Interface Activities	
Site and Facility Inspection	
JS1200	Pre Site and Facility Inspection by Contractor at Location 4 - Deg2
JS1210	Joint Site and Facility Inspection with Interface Contractor at Location 4 - Deg2
JS1620	Pre Site and Facility Inspection by Contractor at Location 14 - Deg2
JS1630	Joint Site and Facility Inspection with Interface Contractor at Location 14 - Deg2
JS1760	Pre Site and Facility Inspection by Contractor at Location 18 - Deg1
JS1770	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg1
JS1780	Pre Site and Facility Inspection by Contractor at Location 18 - Deg2
JS1790	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg2
Access Dates	
AD1000	Location 1(PCB (001) Basement)-Deg1 (270d)
AD1010	Location 1(PCB (001) Basement)-Deg2 (380d)
AD1020	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (270d)
AD1030	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg2 (380d)
AD1040	Location 2(PCB (001) First Floor Main Server Room)-Deg1 (330d)
AD1050	Location 2(PCB (001) First Floor Main Server Room)-Deg2 (380d)
AD1060	Location 2(PCB (001) First Floor Main Server Room) - For Server Installation - Deg2 (
AD1070	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3)) - Deg1 (330d)
AD1080	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1090	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1130	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)-Deg2 (500d)
AD1150	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
AD1170	Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)-Deg2 (480d)
AD1190	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)-Deg2 (480d)
AD1200	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room) - For Server installation -
AD1220	Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (680d)
AD1240	Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 (630d)
AD1270	Location 6(Common Utility Enclosure & Staff Subway)-Deg1 (400d)
AD1290	Location 7(Common Utility Enclosure & Staff Subway)-Deg1 (270d)
AD1300	Location 8(Inbd Private Car Annex (025))-Deg1 (430d)
AD1310	Location 8(Inbd Private Car Annex (025))-Deg2 (580d)
AD1320	Location 8(Inbd Private Car Annex (025) Canopy)-Deg1 (430d)
AD1330	Location 8(Inbd Private Car Annex (025) Canopy)-Deg2 (580d)
AD1340	Location 9(Outbd Private Car Annex (032))-Deg1 (520d)
AD1350	Location 9(Outbd Private Car Annex (032))-Deg2 (660d)
AD1360	Location 9(Outbd Private Car Annex (032) Canopy)-Deg1 (520d)
AD1370	Location 9(Outbd Private Car Annex (032) Canopy)-Deg2 (660d)
AD1501	Location 12(Inbd Private Car Kiosks(027))-Deg1 (400d) Phase 2
AD1510	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 1
AD1511	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 2
AD1521	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg1 (400d) Phase 2

2015				2016				2017				2018				2019		
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
22-Oct-17, Hong Kong-Zhuhai-Macao Bridge																		
23-Jun-17, Site and Facility Inspection																		
Pre Site and Facility Inspection by Contractor at Location																		
Joint Site and Facility Inspection with Interface Contractor at Location																		
Pre Site and Facility Inspection by Contractor at Location																		
Joint Site and Facility Inspection with Interface Contractor at Location																		
Pre Site and Facility Inspection by Contractor at Location																		
Joint Site and Facility Inspection with Interface Contractor at Location																		
Pre Site and Facility Inspection by Contractor at Location																		
Joint Site and Facility Inspection with Interface Contractor at Location																		
24-Aug-17, Access Dates																		
Location 1(PCB (001) Basement)-Deg1 (270d), 31-May-																		
Location 1(PCB (001) Basement)-Deg2 (380d), 15-J																		
Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (
Location 1(PCB (001) ELV Room (Grid Line E3))-De																		
Location 2(PCB (001) First Floor Main Server Room)-De																		
Location 2(PCB (001) First Floor Main Server Room)																		
Location 2(PCB (001) First Floor Main Server Room)																		
Location 2(PCB (001) Ground Floor ELV Room (Grid Lin																		
Location 2(PCB (001) Ground Floor DOH Port Health C																		
Location 2(PCB (001) Ground Floor DOH Port Health																		
Location 3(Inbd Cargo Exam Bldg (037) Platform Cont																		
Location 3(Inbd Cargo Exam Bldg (037) Inspector Offi																		
Location 3a(Inbd Cargo Exam Bldg (037) ROCARS R																		
Location 3a(Inbd Cargo Exam Bldg (037) Main Server																		
Location 3a(Inbd Cargo Exam Bldg (037) Main Server																		
Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (68																		
Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 (6																		
Location 6(Common Utility Enclosure & Staff Subway)-D																		
Location 7(Common Utility Enclosure & Staff Subway)-D																		
Location 8(Inbd Private Car Annex (025))-Deg1 (430																		
Location 8(Inbd Private Car Annex (025))-Deg2 (580																		
Location 8(Inbd Private Car Annex (025) Canopy)-De																		
Location 8(Inbd Private Car Annex (025) Canopy)-De																		
Location 9(Outbd Private Car Annex (032))-Deg1 (52																		
Location 9(Outbd Private Car Annex (032))-Deg2 (66																		
Location 9(Outbd Private Car Annex (032) Canopy)-D																		
Location 9(Outbd Private Car Annex (032) Canopy)-D																		
Location 12(Inbd Private Car Kiosks(027))-Deg1 (400																		
Location 12(Inbd Private Car Kiosks(027))-Deg2 (480																		
Location 12(Inbd Private Car Kiosks(027) Canopy)-De																		

Programme No.: HZMB-DWP
Data Date: 14-Aug-15








- Actual Level of Effort
- Primary Baseline
- Actual Work
- Remaining Work
- Critical Remaining Work
- ◇ Baseline Milestone
- ◆ Milestone

**Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)**

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

Activity ID	Activity Name	2015			2016				2017				2018				2019			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)																				
EM1240	L3a(037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a																			
EM1260	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling																			
EM1280	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation																			
EM1300	L3a(037) ROCARS Rm - VTS WS Installation																			
EM1320	L3a(037) ROCARS Rm - VID WS Installation																			
EM1340	L3a(037) ROCARS Rm - SURCON and SYSCON and WS Tuning																			
Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)																				
EM2120	L3a(037)Main Server Rm - Cable Laying and termination in Location 3 and Location 3a																			
EM2140	L3a(037)Main Server Rm - Cable Splicing and Testing and Labeling																			
EM2160	L3a(037)Main Server Rm - AVCSS Server Installation																			
EM2180	L3a(037)Main Server Rm - VTS Server Installation																			
EM2200	L3a(037)Main Server Rm - Servers Tuning																			
Location 4(Outbd Cargo Exam Bldg (023) MDF Room)																				
Location 4a(Outbd Cargo Exam Bldg (023) ROCARS Room)																				
EM2240	L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling																			
EM2260	L4a(023)ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation																			
EM2280	L4a(023)ROCARS Rm - VTS WS Installation																			
EM2300	L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning																			
Location 5(Common Utility Enclosure & Staff Subway)																				
EM2341	L5(CUE) - Cable Laying between Location 5 and Location 6																			
EM2361	L5(CUE) - Cable Laying between Location 5 and Location 7																			
EM2380	L5(CUE) - Cable Splicing and Testing and Labeling																			
Location 6(Common Utility Enclosure & Staff Subway)																				
EM2400	L6(CUE) - Cable Laying between Location 5 and Location 6																			
EM2420	L6(CUE) - Cable Splicing and Testing and Labeling																			
Location 7(Common Utility Enclosure & Staff Subway)																				
EM2440	L7(CUE) - Cable Laying between Location 5 and Location 7																			
EM2460	L7(CUE) - Cable Splicing and Testing and Labeling																			
Location 12(Inbd Private Car Kiosks,GV Kiosks (027,028,029))																				
Inbd Private Car Kiosks(027) - 9 nos (Phase 1)																				
EM1500	L12(027)(9nos P1) - Cable Splicing and Testing and Labeling																			
EM1520	L12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)																			
EM1541	L12(027)(9nos P1) - XDB installation (18 nos)																			
EM1542	L12(027)(9nos P1) - ODB installation (5 nos)																			
EM1543	L12(027)(9nos P1) - ODB installation (2 nos)																			
EM1544	L12(027)(9nos P1) - ODB installation (2 nos)																			
EM1560	L12(027)(9nos P1) - Loop installation (45 nos)																			
Inbd Goods Vehicle Kiosks(028) - 5 nos (Phase 1)																				
EM1620	L12(028)(5nos P1) - Cable Laying and termination																			
EM1640	L12(028)(5nos P1) - Cable Splicing and Testing and Labeling																			
EM1660	L12(028)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)																			
EM1681	L12(028)(5nos P1) - XDB installation (10 nos)																			
EM1682	L12(028)(5nos P1) - ODB installation (3 nos)																			
EM1683	L12(028)(5nos P1) - ODB installation (2 nos)																			

Programme No.: HZMB-DWP
Data Date: 14-Aug-15

-  Actual Level of Effort
-  Primary Baseline
-  Actual Work
-  Remaining Work
-  Critical Remaining Work
-  Baseline Milestone
-  Milestone

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

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

Activity ID	Activity Name	Original Duration	Start	Finish	Free Float	Total Float	Calendar	2015			2016				2017				2018				2019						
								Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3				
EM1700	L12(028)(5nos P1) - AIOP Installation (5 nos)																												
EM1720	L12(028)(5nos P1) - Loop installation (25 nos)																												
Outbd Goods Vehicle Kiosks(028) - 5 nos (Phase 1)																													
EM1740	L12(029)(5nos P1) - Cable Containment in Kiosks																												
EM1760	L12(029)(5nos P1) - Cable Laying and termination																												
EM1780	L12(029)(5nos P1) - Cable Splicing and Testing and Labeling																												
EM1800	L12(029)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)																												
EM1821	L12(029)(5nos P1) - XDB installation (5 nos)																												
EM1822	L12(029)(5nos P1) - ODB installation (4 nos)																												
EM1823	L12(029)(5nos P1) - ODB installation (1 nos)																												
EM1840	L12(029)(5nos P1) - AIOP Installation (5 nos)																												
Location 13(Outbd Private Car Kiosks (030)) - 9 nos (Phase 1)																													
EM2520	L13(030)(9nos P1) - Cable Containment in Kiosks																												
EM2540	L13(030)(9nos P1) - Cable Laying and termination																												
EM2560	L13(030)(9nos P1) - Cable Splicing and Testing and Labeling																												
EM2580	L13(030)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)																												
EM2601	L13(030)(9nos P1) - XDB installation (9 nos)																												
EM2602	L13(030)(9nos P1) - ODB installation (7 nos)																												
Location 14(Future-Outbd/Inbd Private Car Kiosks) - 6+6 nos																													
EM1440	L14 - Cable Laying and termination at ELV Room in CUE																												
Location 15(Inbd Traffic Control Kiosk (100))																													
Location 16(Outbd Traffic Control Kiosk (101))																													
EM2760	L16(101) - Cable Laying and termination																												
EM2780	L16(101) - Cable Splicing and Testing and Labeling																												
EM2800	L16(101) - AVCSS SYSCON and SURCON Installation																												
EM2820	L16(101) - VTS WS and 55" LCD Installation																												
Location 17(Inbd Private Car Exam Bldg(033) Operational Office)																													
Location 18 (Outbd Private Car Exam Bldg(024) Operational Office)																													
EM2940	L18(024) - Cable Laying and termination																												
EM2960	L18(024) - Cable Splicing and Testing and Labeling																												
EM2980	L18(024) - AVCSS SURCON and 55" LCD Installation																												
EM3000	L18(024) - SURCON Tuning																												
Location 19 (DOH Cargo Clearance Bldg(043))																													
EM1360	L19(043) - Cable Laying and termination																												
EM1380	L19(043) - Cable Splicing and Testing and Labeling																												
EM1400	L19(043) - PA and Intercom Installation																												
EM1420	L19(043) - PA and Intercom Tuning																												
Inbd Vehicle Clearance Plaza - 8 nos VID, 7 nos VTS, 4 nos TLS																													
EM3020	Inbound VID cabling from pillar box to VID field equipment																												
EM3040	Inbound VTS cabling from pillar box to VTS field equipment																												
EM3060	Inbound TLS cabling from pillar box to TLS field equipment																												
EM3080	Inbound VID field equipment installation (8 VID)																												
EM3100	Inbound VTS field equipment installation (4 RFID + 3 Cameras)																												
EM3120	Inbound TLS field equipment installation (4 TLS)																												
EM3140	Inbound VID and VTS and TLS field equipment tuning																												

Programme No.: HZMB-DWP
Data Date: 14-Aug-15

Actual Level of Effort summary
 Primary Baseline
 Actual Work
 Remaining Work
 Critical Remaining Work
 Baseline Milestone
 Milestone

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev: 0	WC	LC
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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

Report No.: 0165/15/ED/0927

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	Action			
	ET	IEC	ER	Contractor
Action Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.

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

Event	Action			
	ET	IEC	ER	Contractor
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
	ET	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedances abated.

Event / Action Plan for Construction Noise Monitoring

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.

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

Event / Action Plan for Water Quality

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

Event	ET Leader	IEC	ER	Contractor
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, Contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly 4. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Ensure mitigation measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the noncompliance in writing 2. Rectify unacceptable practice 3. Check all plant and equipment and consider changes of working methods 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 5. Implement the agreed mitigation measures 6. Amend working methods if appropriate
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Make agreement on the mitigation measures to be implemented 5. Ensure mitigation measures are properly implemented 6. Assess the effectiveness of the implemented mitigation measures 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the noncompliance in writing 2. Take immediate action to avoid further exceedance 3. Rectify unacceptable practice 4. Check all plant and equipment and consider changes of working methods 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 6. Implement the agreed mitigation measures 7. Resubmit proposals of mitigation measures if problem still not under control 8. As directed by the engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level

Event / Action Plan for Ecological Monitoring

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

Event	ET Leader	IEC	ER	Contractor
Limit Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly. 	<ol style="list-style-type: none"> 1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

Report No.: 0165/15/ED/0927

Appendix E

Waste Flow Table



Monthly Summary of Waste Flow Table for 2017 (year)

Name of Person completing the Record: Marko Chan

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
		(see Note 1)						(see Note 2)		
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000m ³)
Jan	0.000	0	0	0	0.000	0	0	0	0	0.580
Feb	0.000	0	0	0	0.000	0	0	0	0	0.585
Mar	0.000	0	0	0	0.000	0	0	0	0	0.999
Apr	0.043	0	0	0	0.043	0	0	0	0	1.073
May	12.682	0	0	12.637	0.045	0	0	0	0	1.321
Jun	27.129	0	0	26.007	1.122	0	0	0	0	2.023
Jul	54.710	0	0	54.224	0.486	0	0	0	0	1.448
Aug	67.927	0	0	64.331	3.596	0	0	0	0	1.656
Sept	83.814	0	0	80.345	3.469	0	0	0	0	1.950
Oct										
Nov										
Dec										
Total	246.305	0.000	0.000	237.544	8.761	0.000	0.000	0.000	0.000	11.635

Notes:

- (1) Broken concrete for recycling into aggregates.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Monthly Summary of Excavated Marine Sediment for 2017 (year)

Month	Total Quantity of Excavated Marine Sediment Generated in '000m ³	Reused in this contract in '000m ³	Reused in other Projects in '000m ³	Disposed of at CMP in '000m ³
Jan	0.656	0.000	0.000	0.656
Feb	0.264	0.000	0.000	0.264
Mar	0.000	0.000	0.000	0.000
Apr	1.288	0.000	0.000	1.288
May	1.440	0.000	0.000	1.440
Jun	0.000	0.000	0.000	0.000
Jul	0.000	0.000	0.000	0.000
Aug	0.248	0.000	0.000	0.248
Sep	0.000	0.000	0.000	0.000
Oct				
Nov				
Dec				
Total	3.896	0.000	0.000	3.896

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Report No.: 0165/15/ED/0927

Appendix F

Environmental Licenses and Permits

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

(update: 03/10/2017)

Item	Permit/Licence Registration	Permit No.	Work Area	Application Date	Issue Date	Valid Date		Status	Remark
						From	To		
1	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/H	HKBCF	16-Jan-15	19 Jan 15	19 Jan 15	Nil	Superseded	
2	Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	Ref No. 387703	Main Site Area	15-Apr-15	15-Apr-15	15-Apr-15	Nil	Valid	
3	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	
6	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	
8	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	
9	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	
11	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	Nil	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	

16	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1203-15	CUE	20-Oct-15	03-Nov-15	02-Nov-15	31-Jan-16	Superseded	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	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	
24	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/J	HKBCF	18-Feb-16	25-Feb-16	25-Feb-16	Nil	Superseded	
25	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	
26	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	
27	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0249-16	Main Site Area	03-Mar-16	17-Mar-16	19-Mar-16	18-Jun-16	Superseded	
28	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	
29	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	
30	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/K	HKBCF	24-Mar-16	11-Apr-16	11-Apr-16	Nil	Valid	
31	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	
32	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	
33	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	

34	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	
35	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	
36	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	
37	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-Oct-16	Superseded	
38	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	
39	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	
40	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	
41	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	
42	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0933-16	Main Site Area	18-Aug-16	01-Sep-16	05-Sep-16	31-Dec-16	Expired	
43	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	
44	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	
45	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	
46	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	
47	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	
48	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	
49	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	
50	Construction Noise Permit	GW-RS1267-16	Main Site Area	02-Dec-16	16-Dec-16	19-Dec-16	18-Mar-17	Expired	

	Pursuant to Section 8(6) of the Noise Control Ordinance								
51	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-Feb-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	
60	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	
66	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	Valid	

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Appendix G

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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Appendix G – 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	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> • 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
S5.5.6.2	A2	<ul style="list-style-type: none"> • 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 area sheltered on the top 	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> • Cement or dry PFA delivered in bulk should be 	All construction	N/A

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		<p>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;</p> <ul style="list-style-type: none"> • 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 	sites	
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected Representative dust monitoring station	V (Conducted by Contract No. HY/2013/01 and HY/2011/03)
S5.5.7.1	A6	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant;</p> <ul style="list-style-type: none"> • 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
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> • 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
Construction Nose (Air borne)				
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following:	All construction sites	V

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		<ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; mobile plant should be sited as far away from NSRs as possible and practicable; material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 		
S6.4.11	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	3) 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				
S7.3	S1	1) 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
Waste Management (Construction Waste)				
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> 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 	All construction sites	V

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		<p>similar to E7WBTC (Works) No. 19/2005 - "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.</p> <ul style="list-style-type: none"> 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	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> 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	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 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	<u>Sewage</u>	All construction sites	V

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		<ul style="list-style-type: none"> Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly. 	sites	
S8.3.17	WM5	<p>General Refuse</p> <ul style="list-style-type: none"> 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 concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. 	All construction sites	V
Water Quality (Construction Phase)				
S9.11.1.1- S9.11.1.2	W1	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 	Marine-based works area	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>backfilling below -2.5mPD for the southern reclamation of TMCLKL, HKBCF and HKLR projects;</p> <ul style="list-style-type: none"> • where public fill is proposed for filling below - 2.5mPD, the fine content in the public fill will be 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. <p>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.</p> <ul style="list-style-type: none"> • 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 		

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		<ul style="list-style-type: none"> 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. 		
S9.11.1.3	W2	<p><u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; temporary access roads should be surfaced with crushed stone or gravel; rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; 	Land-based works area	V
S9.11.1.7	W2	<ul style="list-style-type: none"> all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located 	Land-based works area	V

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		<p>under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal;</p> <ul style="list-style-type: none"> the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 		
S9.14	W3	Implement a water quality monitoring programme	Selected representative WQM stations	V (Conducted by Contract No. HY/2013/01)
Ecology (Construction Phase)				
S10.7	E4	<ul style="list-style-type: none"> Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater 	Land-based works areas	V
S10.7	E5	<ul style="list-style-type: none"> Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time 	Land-based works areas	V
S10.7	E6	<ul style="list-style-type: none"> Dolphin Exclusion Zone Dolphin watching plan 	Marine works	V
S10.7	E7	<ul style="list-style-type: none"> Decouple compressors and other equipment on working vessels Proposal on design and implementation of acoustic decoupling measures applied during dredging and reclamation works Avoidance of percussive piling 	Marine works	V
S10.7	E8	<ul style="list-style-type: none"> Control vessel speed Skipper training Predefined and regular routes for working vessels; avoid Brother Islands. 	Marine Traffic	V
S10.10	E9	Vessel based dolphin monitoring	Northeast and Northwest Lantau	V (Conducted by Contract No. HY/2013/01)
Fisheries				
S11.7	F4	<ul style="list-style-type: none"> Maritime Oil Spill Response Plan (MOSRP); Contingency plan. 	HKBCF	V
Landscape & Visual (Detailed Design Phase)				
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> 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 	HKBCF	V

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		<p>avoid visually-sensitive locations;</p> <ul style="list-style-type: none"> • 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 materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • 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. 		
Landscape & Visual (Construction Phase)				
S14.3.3.3	LV2	<p>Mitigate both Landscape and Visual Impacts</p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p> <p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;</p> <p>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.</p> <p>G9. Reserve of loose natural granite rocks for re-use, Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.</p>	HKBCF	N/A
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <p>V1. Minimize time for construction activities during construction period.</p> <p>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.</p>	HKBCF	N/A
EM&A				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	All construction sites	V
S15.5 – S15.6	EM2	<p>1) An Environmental Team needs to be employed as per the EM&A Manual.</p> <p>2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures.</p> <p>3) An environmental impact monitoring needs to be implementing by the Environmental Team to</p>	All construction sites	V

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		ensure all the requirements given in the EM&A Manual are fully complied with.		

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

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Appendix H

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

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Appendix H –

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

For Contract No. HY/2013/03

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	0	0	0
From commencement date of construction to end of reporting month	11	0	0

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

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

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Report No.: 0165/15/ED/00927

Appendix I

Environmental Site Inspection Schedule

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Report No.: 0165/15/ED/00927

**Contract No. HY/2013/03
HZMB HKBCF – Vehicle Clearance Plazas and Ancillary Buildings and Facilities
Weekly Environmental Site Inspection Schedule**

Environmental Site Inspection Schedule for September 2017

September-2017						
Sun	Sun	Sun	Sun	Sun	Sun	Sun
					1	2
3	3	3	3	7	8 Environmental Site Inspection	3
10	10	10	10	14 Environmental Site Inspection	15	10
17	17	17	17	21	22 Environmental Site Inspection	17
24	24	24	24	28 Environmental Site Inspection	29	24

Tentative Environmental Site Inspection Schedule for October 2017

October-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6 Environmental Site Inspection	7
8	9	10	11	12 Environmental Site Inspection	13	14
15	16	17	18	19	20 Environmental Site Inspection	21
22	23	24	25	26 Environmental Site Inspection	27	28
29	30	31				

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Report No.: 0165/15/ED/00927

**Contract No. HY/2013/06 (within Contract No. HY/2013/03 works area)
 HZMB HKBCF – Automatic Vehicle Clearance Support System
 Weekly Environmental Site Inspection Schedule**

Environmental Site Inspection Schedule for September 2017

September-2017						
Sun	Sun	Sun	Sun	Sun	Sun	Sun
					1	2
3	3	3	3	7	8 Environmental Site Inspection	3
10	10	10	10	14 Environmental Site Inspection	15	10
17	17	17	17	21	22 Environmental Site Inspection	17
24	24	24	24	28 Environmental Site Inspection	29	24

Tentative Environmental Site Inspection Schedule for October 2017

October-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6 Environmental Site Inspection	7
8	9	10	11	12 Environmental Site Inspection	13	14
15	16	17	18	19	20 Environmental Site Inspection	21
22	23	24	25	26 Environmental Site Inspection	27	28
29	30	31				

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Appendix J

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

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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**.

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;
 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.

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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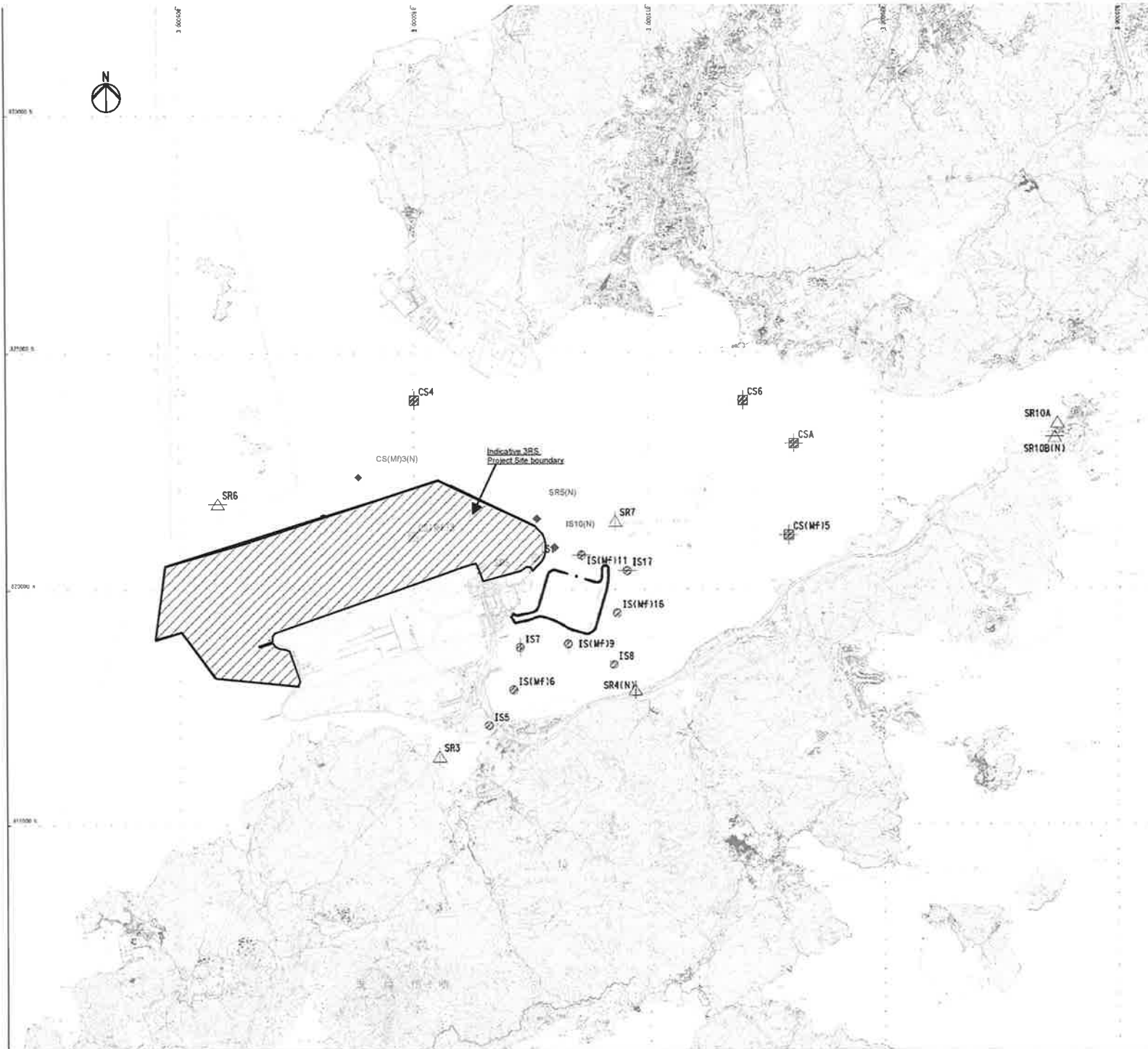
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Figure 1

The Location of WQM Stations



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)19	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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)15	817980	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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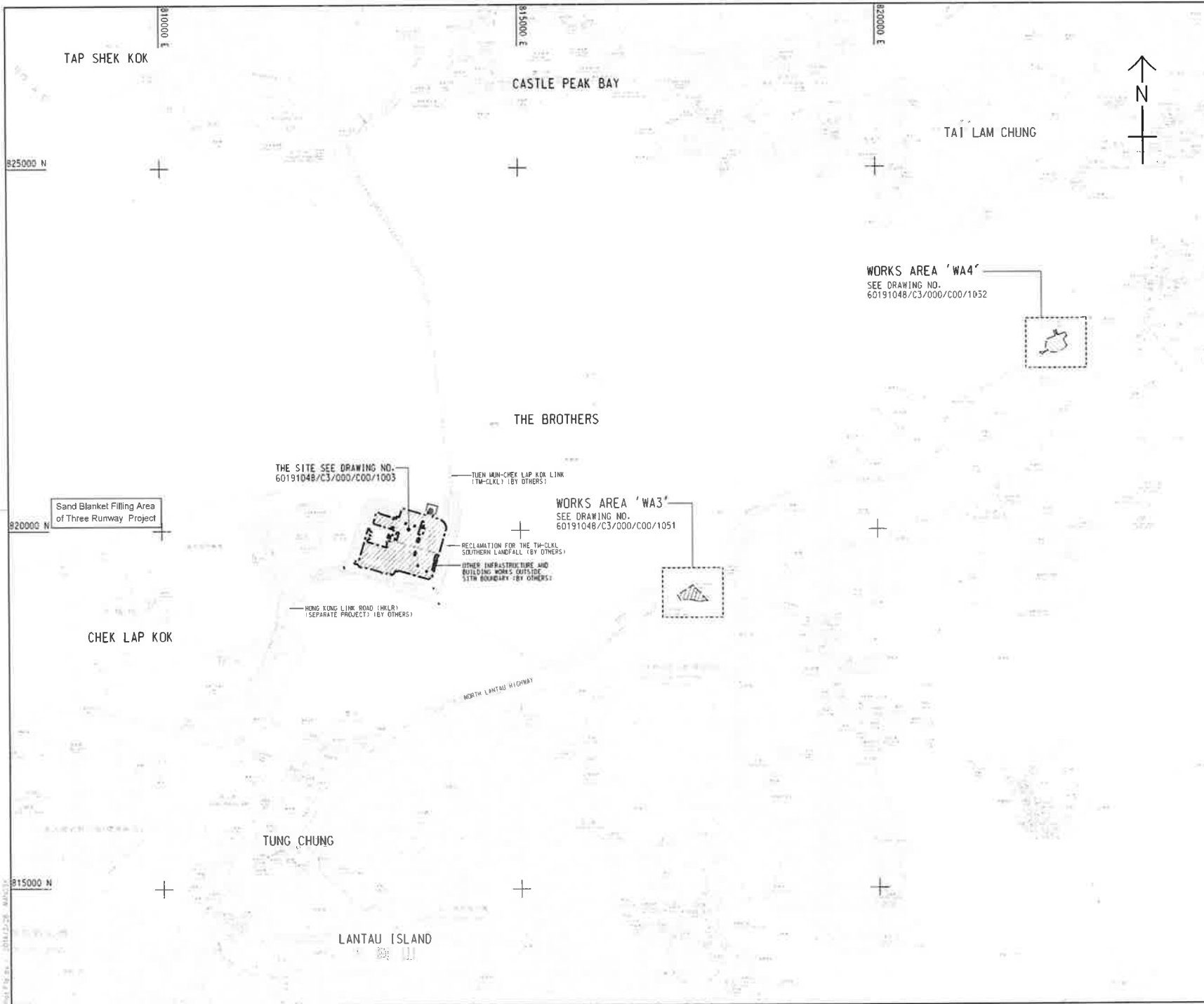
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



NOTES:

- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
- DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

- SITE BOUNDARY
- ▭ WORKS AREA
- Location of Box Culvert B
- Site Curtain

WORKS AREA 'WA4'
SEE DRAWING NO.
60191048/C3/000/C00/1052

THE SITE SEE DRAWING NO.
60191048/C3/000/C00/1003

WORKS AREA 'WA3'
SEE DRAWING NO.
60191048/C3/000/C00/1051

Sand Blanket Filling Area
of Three Runway Project

TENDER DRAWING		REV	DATE
NO.	DESCRIPTION	BY	CHKD

港務局
HIGHWAYS DEPARTMENT
港務局大橋管理工程署
Hong Kong Road and Bridge Engineering Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- VEHICLE CLEARANCE PLASAS AND
ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRGNO. 圖紙編號	60191048/C3/000/C00/1000
DESIGNED BY 設計	BNCM
CHECKED BY 校核	WY
SCALE 比例	A1 : 25000
DATE 日期	11/03/2013
APPROVED BY 核准	WY
DATE 日期	11/03/2013

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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:						
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	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
Notes: AL means Action Level. LL means Limit Level. Bold means AL exceedances. <u>Bold with underline</u> means LL exceedances.						

Reviewed by : Keith Chau  Title : ET Leader
 Date : 27 September 2017
 Copied to: Contractor and Engineer Representative

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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:

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)
DO	IS17	Bottom	4.6	4.9
	SR6	Surface & Middle	5.7	4.8
	SR10A	Surface & Middle	<u>4.9</u>	<u>4.6</u>
		Bottom	4.8	4.5
	SR10B(N)	Surface & Middle	<u>4.8</u>	<u>4.6</u>
		Bottom	4.8	4.5
Turbidity	IS(Mf)11	Depth average	14.6 NTU	27.9 NTU
SS	IS8	Depth average	8.1	26.4
	SR4(N)		9.4	25.3
	SR6		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

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;
 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;

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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



LEGEND




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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817673
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818650
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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)	808614	822355
CS(MF)15	817990	821129
CS4	810025	824004
CS6	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.: 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)
DO	IS17	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.6	4.9
	SR6	Surface and Middle			5.7	4.8
	SR10A	Surface and Middle			4.9	4.6
		Bottom			4.8	4.5
	SR10B(N)	Surface and Middle			4.8	4.6
		Bottom			4.8	4.5
TURB	IS(Mf)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

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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)
SS	IS8	Depth Average	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	8.1	26.4
	SR4(N)				9.4	25.3
	SR6				6.2	23.6

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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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
	IS7	Surface & Middle	4.8	5.1
		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	Depth average	34.4	6.6
	IS10(N)		25.2	31.6
	IS(Mf)11		17.8	29.0
	SR6		12.2	35.3
SS	IS5	Depth average	28.4	8.7
	IS10(N)		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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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.

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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Figure 1

The Location of WQM Stations



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CD-COORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(Mf)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)19	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	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
CS6	817028	823992
CSA	818103	823064

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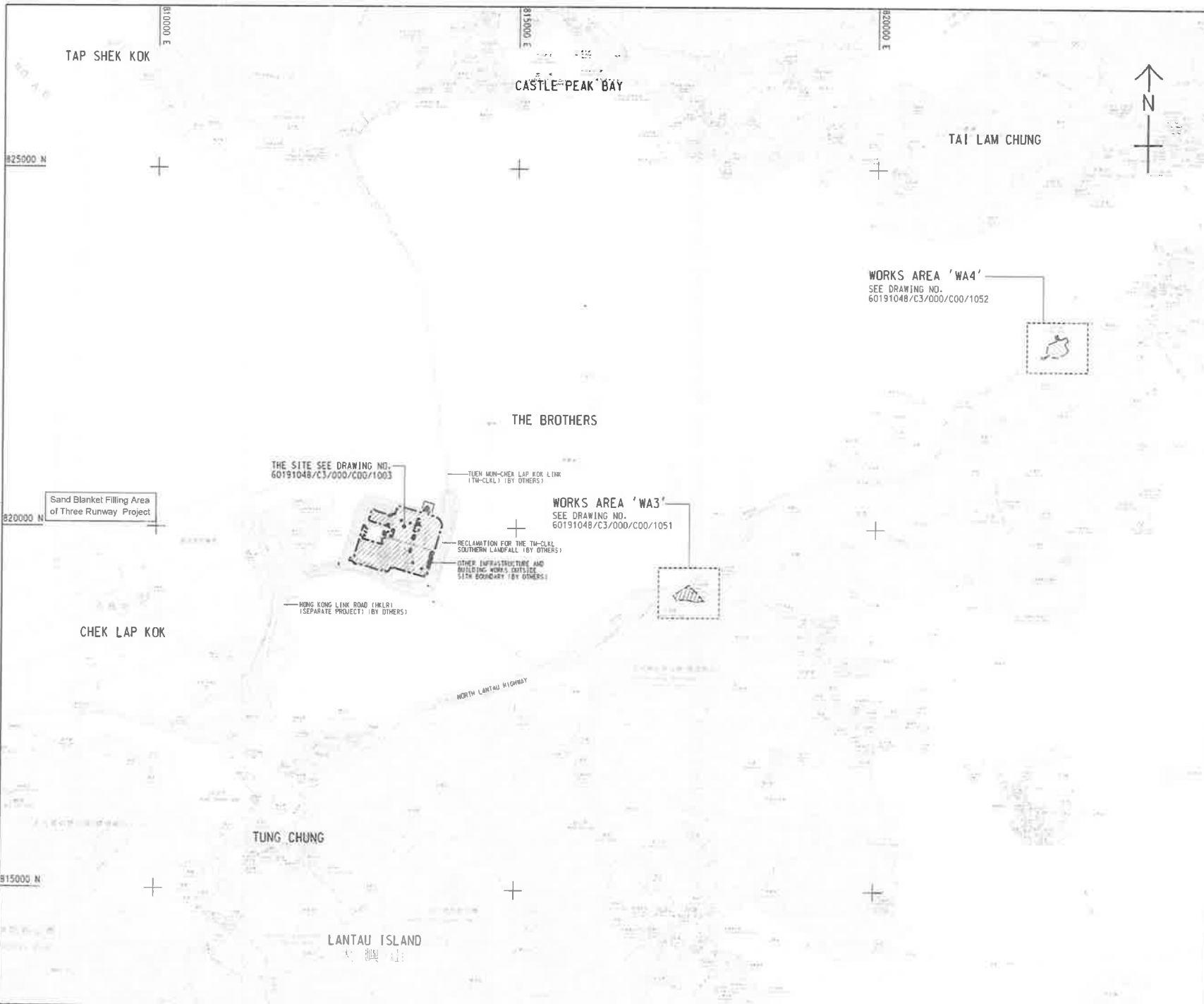
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1055.

- LEGEND:**
- SITE BOUNDARY
 - [Hatched Box] WORKS AREA
 - Location of Box Culvert B
 - [Square with X] SB Curtain



TENDER DRAWING	HWK/SC/1000/14
DATE	DATE
SCALE	SCALE

香港路政署
HIGHWAYS DEPARTMENT
 香港路政署工程管理部
 Hong Kong Roadworks and Bridge Management Office

HONG KONG-ZHONGHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLEASERS AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

AECOM +
Aedas
 Rogers Strick Harbour + Partners
 BURO HAPPOLD ATKINS ADI +

DRG. NO. 60191048/C3/000/C00/1000		PROJECT NO. HY/2013/03	
DESIGNED BY BCKN	CHECKED BY MSY	DATE 08/07/13	SCALE 1:25000
DRAWN BY MSY		DATE 08/07/13	
SCALE 1:25000		UNIT METRES	

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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.: 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)	
DO	IS5	Surface and Middle	Surface and Middle 4.2 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	5.0	4.9	
	IS7	Surface and Middle			4.8	5.1	
		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	
		Bottom			5.0	4.7	
	IS(Mf)11	Surface and Middle			4.8	4.6	
		Bottom			4.6	4.9	
	IS(Mf)16	Surface and Middle			4.3	5.0	
		Bottom			4.9	4.7	
	IS17	Surface and Middle			4.3	4.5	
		Bottom			4.7	4.9	
	SR3	Surface and Middle			5.2	4.9	
	SR4(N)	Surface and Middle			5.0	4.8	
	SR5(N)	Surface and Middle			4.9	4.9	
SR6	Surface and Middle	5.1	4.9				
SR7	Surface and Middle	4.9	4.3				
	Bottom	4.8	4.3				
SR10A	Surface and Middle	4.8	4.7				
TURB	IS5	Depth Average	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	34.4	6.6	
			IS10(N)	25.2	31.6		
			IS(Mf)11	17.8	29.0		
			SR6	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

 Copied to : Contractor, Engineer Representative and IEC/ENPO Date : 26 September 2017

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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.: 20170908SS						
Date of Notification: 19 September 2017						
Works Inspected: Data collected from water sampling works on 8 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)
SS	IS5	Depth Average	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	26.4	8.7
	IS10(N)				19.5	<u>35.5</u>
	IS(Mf)11				15.4	33.2

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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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

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-IR0007

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-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 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)
DO	IS8	Surface & Middle	5.2	4.8
		Bottom	5.0	4.6
	IS(Mf)9	Surface & Middle	5.3	4.8
		Bottom	4.9	4.6
	IS10(N)	Surface & Middle	4.9	4.6
		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
		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
	SR5(N)	Surface & Middle	4.7	4.6
Bottom		4.6	4.6	
SR6	Surface & Middle	4.7	4.7	
	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	<u>4.5</u>
		Bottom	5.1	<u>4.1</u>
	SR10B(N)	Surface & Middle	4.8	<u>4.2</u>
		Bottom	4.6	<u>4.0</u>

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 mid-flood 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:

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.

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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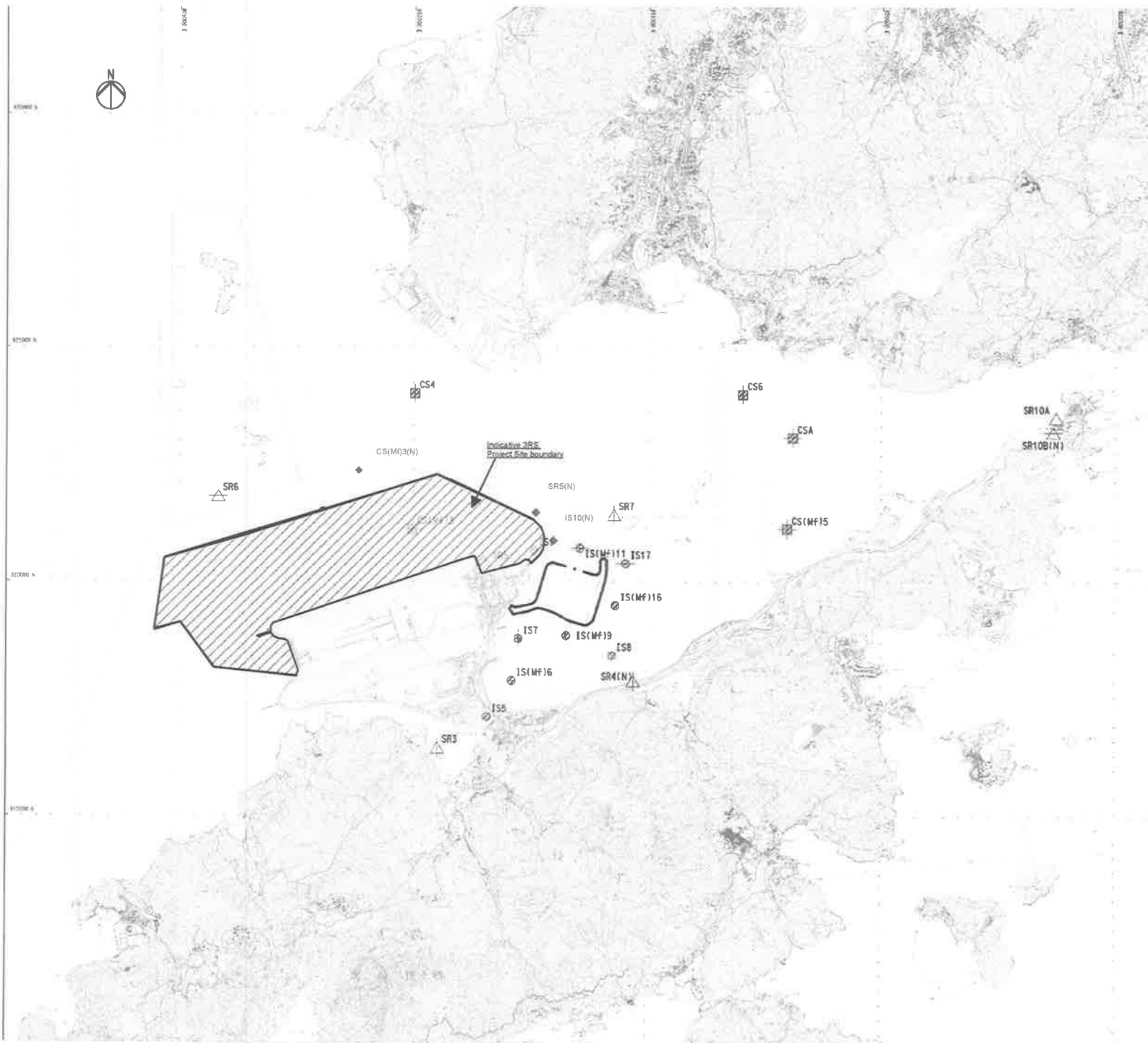
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Figure 1

The Location of WQM Stations



LEGEND




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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
ISS	811579	817106
IS(MF)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811469	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
CS6	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.: 20170911DO_v1
Date of Notification: 15 September 2017							
Works Inspected: Data collected from water sampling works on 11 September 2017 and the results were issued 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)	
DO	IS8	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	4.8	
		Bottom			5.0	4.6	
	IS(M)9	Surface and Middle			5.3	4.8	
		Bottom			4.9	4.6	
	IS10(N)	Surface and Middle			4.8	4.4	
		Bottom			4.8	4.4	
	IS(M)11	Surface and Middle			4.9	4.6	
		Bottom			4.6	4.5	
	IS(M)16	Surface and Middle			5.2	4.7	
		Bottom			4.3	4.6	
	IS17	Surface and Middle			4.8	4.5	
		Bottom			4.2	4.2	
	SR4(N)	Surface and Middle			5.3	4.8	
		Bottom			4.7	4.6	
	SR5(N)	Surface and Middle			4.6	4.6	
		Bottom			4.7	4.7	
	SR6	Surface and Middle			4.7	4.6	
		Bottom			4.7	4.6	
	SR7	Surface and Middle			4.9	4.7	
		Bottom			4.8	4.7	
SR10A	Surface and Middle	5.2	4.5				
	Bottom	5.1	4.1				
SR10B(N)	Surface and Middle	4.8	4.2				
	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

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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-IR0008

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-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)
DO	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
	IS17	Surface & Middle	5.0	4.9
			3.8	4.1
	SR5(N)	Surface & Middle	4.8	5.5
	SR10A	Surface & Middle	4.9	4.4
			5.2	3.9
	SR10B(N)	Surface & Middle	5.2	4.4
5.4			4.1	

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 (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;
 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

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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;
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)

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:

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- 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
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Figure 1

The Location of WQM Stations

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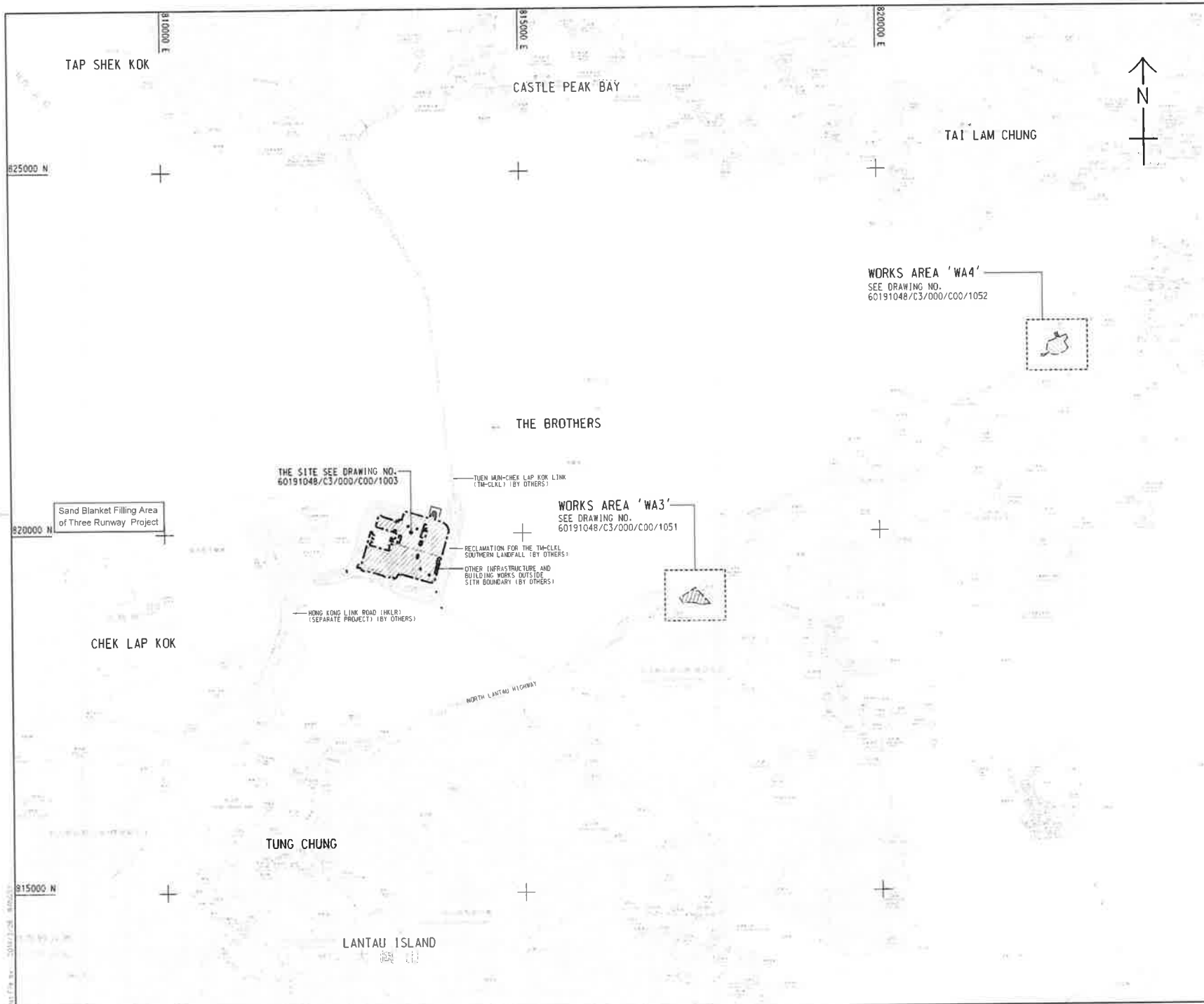
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1055.
- LEGEND:**
- SITE BOUNDARY
 - ▨ WORKS AREA
 - Location of Box Culvert B
 - Salt Curtain

WORKS AREA 'WA4'
SEE DRAWING NO.
60191048/C3/000/C00/1052

WORKS AREA 'WA3'
SEE DRAWING NO.
60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO.
60191048/C3/000/C00/1003

RECLAMATION FOR THE TM-CKL
SOUTHERN LANDFALL (BY OTHERS)

OTHER INFRASTRUCTURE AND
BUILDING WORKS OUTSIDE
SITE BOUNDARY (BY OTHERS)

Sand Blanket Filling Area
of Three Runway Project

TENDER DRAWING		REV. 1	DATE	BY
NO.		DESCRIPTION	DATE	BY
路政處 HIGHWAYS DEPARTMENT 運輸及房屋局轄下路政處 <small>Head Office: 2/F, 4/F, 6/F, 8/F, 10/F, 12/F, 14/F, 16/F, 18/F, 20/F, 22/F, 24/F, 26/F, 28/F, 30/F, 32/F, 34/F, 36/F, 38/F, 40/F, 42/F, 44/F, 46/F, 48/F, 50/F, 52/F, 54/F, 56/F, 58/F, 60/F, 62/F, 64/F, 66/F, 68/F, 70/F, 72/F, 74/F, 76/F, 78/F, 80/F, 82/F, 84/F, 86/F, 88/F, 90/F, 92/F, 94/F, 96/F, 98/F, 100/F</small>		HONG KONG-CHINA BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES - VEHICLE CLEARANCE PILES AND ANCILLARY BUILDINGS AND FACILITIES		
SITE LOCATION PLAN				
AECOM		Aedas		
Rogers Stirk Harbour + Partners		BURO HAPPOLD ATKINS ADI		
DRGNO. 圖區編號	60191048/C3/000/C00/1000			
DESIGNED BY 設計人	ENCK	CHECKED BY 校核人	DATE 日期	APPROVED BY 核准人
	WSY		01/2013/03	TKM
SCALE 縮尺	A1 : 1 : 25000			
UNIT 單位	METRES			
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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)		
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.1	4.1		
	IS(M)9	Bottom			6.5	4.2		
	IS10(N)	Surface and Middle			4.7	5.0		
	IS(M)11	Surface and Middle			5.1	4.9		
	IS(M)16	Bottom			4.1	4.2		
	IS17	Surface and Middle			5.0	4.9		
		Bottom			3.8	4.1		
	SR5(N)	Surface and Middle			4.8	5.5		
		Bottom			4.9	4.4		
	SR10A	Surface and Middle			5.2	3.9		
		Bottom			5.2	4.4		
	SR10B(N)	Surface and Middle			5.2	4.4		
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

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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 mid-ebb/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)
DO	IS10(N)	Bottom	4.2	4.5
	IS(Mf)11	Surface & Middle	4.1	4.7
		Bottom	3.9	4.7
	IS17	Surface & Middle	4.9	5.7
		Bottom	3.9	4.7
	SR6	Surface & Middle	5.5	4.8
		Bottom	4.7	4.5
	SR10A	Surface & Middle	5.5	4.7
Bottom		5.4	3.9	

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

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.

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;
 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;

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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



LEGEND




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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)19	813273	818850
IS10	812577	820670
IS10(N)	812342	820455
IS(MF)11	813562	820716
IS(MF)116	814328	819497
IS17	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)13	809989	821117
CS(MF)13(N)	808814	822355
CS(MF)15	817950	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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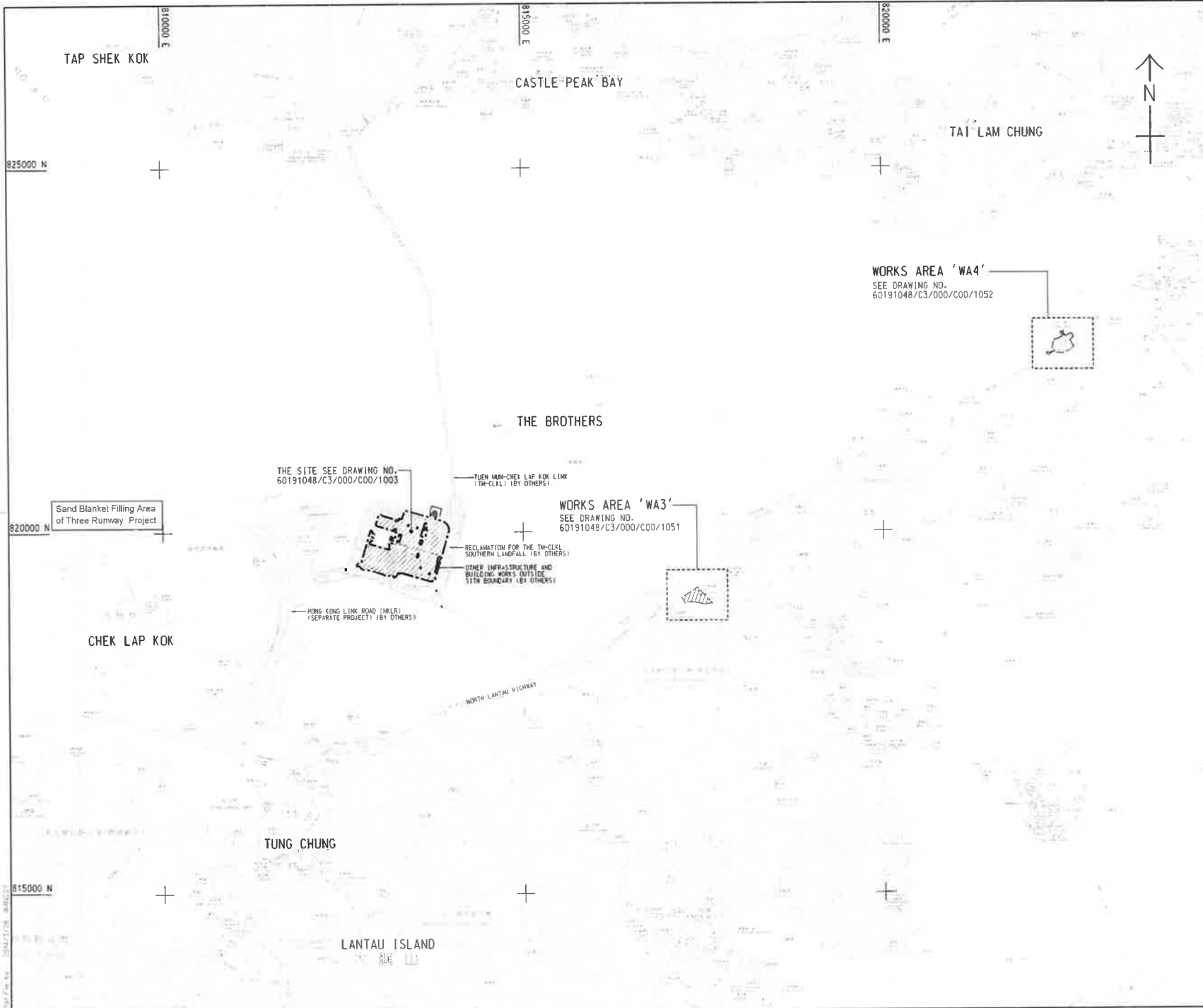
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS: 60191048/C3/000/C00/1051 TO 1053.
- LEGEND:**
- SITE BOUNDARY
 - ▨ WORKS AREA
 - Location of Box Culvert B
 - Site Curtain

Sand Blanket Filling Area of Three Runway Project

THE SITE SEE DRAWING NO. 60191048/C3/000/C00/1003

TUEN MUN-CHEK LAP KOK LINK (TM-CKL) (BY OTHERS)

WORKS AREA 'WA3'
SEE DRAWING NO. 60191048/C3/000/C00/1051

RECLAMATION FOR THE TM-CKL SOUTHERN LANDFILL (BY OTHERS)
OTHER INFRASTRUCTURE AND BUILDING WORKS OUTSIDE SITE BOUNDARY (BY OTHERS)

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

WORKS AREA 'WA4'
SEE DRAWING NO. 60191048/C3/000/C00/1052

TENDER DRAWING	REVISED	DATE
	1	MAR. 14

HA HIGHWAYS DEPARTMENT
 港務局 道路工程處
 Hong Kong Highway Authority / Highway Department
 Hong Kong Highway Project Management Office

HONG KONG-TAIWAN MAI-KO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLAZAS AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRGNO. 圖紙編號	60191048/C3/000/C00/1000		
DESIGNED BY 設計	BWCH	FORWKT NO. 圖號	NY/2013/03
DRAWN BY 繪圖	BSY	DATE 日期	TKH UT
SCALE 比例	A1 1 : 25000		
DATE 日期	METRES		

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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)		
DO	IS10(N)	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.2	4.5		
	IS(Mf)11	Surface and Middle			4.1	4.7		
	IS17	Surface and Middle			4.9	5.7		
		Bottom			3.8	4.7		
	SR6	Surface and Middle			5.5	4.8		
		Bottom			4.7	4.5		
	SR10A	Surface and Middle			5.5	4.7		
		Bottom			5.4	3.9		
SR10B(N)	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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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

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 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

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
	SR6	Surface & Middle	4.7	4.4
		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 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. 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

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.

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



LEGEND

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

FIGURE 4.1– LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	819412
IS(MF)19	813273	816850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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	809969	821117
CS(MF)3(N)	809814	822355
CS(MF)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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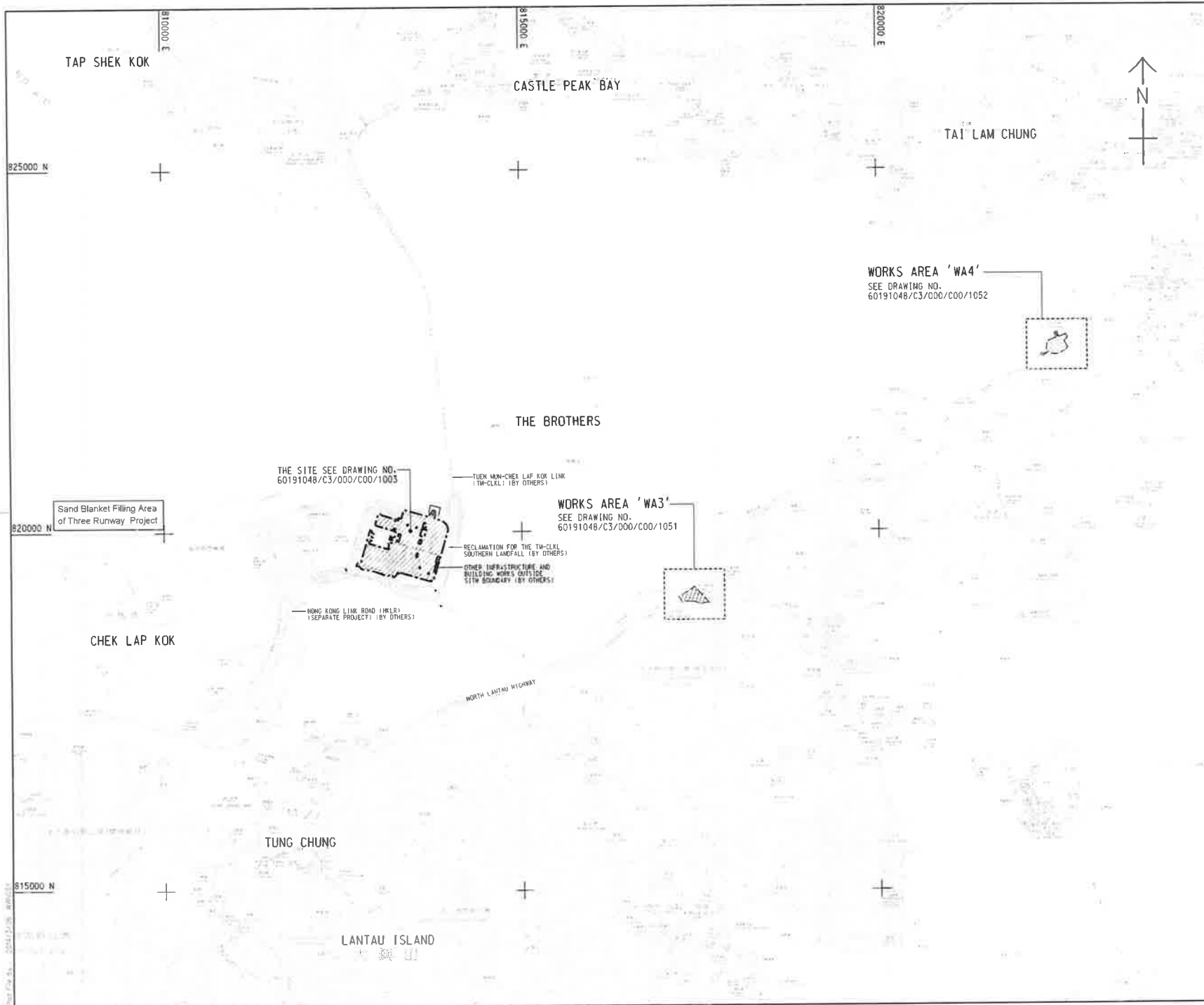
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1960).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

- SITE BOUNDARY
- WORKS AREA
- Location of Box Culvert B
- SA Curtain

WORKS AREA 'WA4'
SEE DRAWING NO.
60191048/C3/000/C00/1052

WORKS AREA 'WA3'
SEE DRAWING NO.
60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO.
60191048/C3/000/C00/1003

Sand Blanket Filling Area
of Three Runway Project

TUEN MUN-CHEK LAP KOK LINK
(TM-CLKL) (BY OTHERS)

RECLAMATION FOR THE TM-CLKL
SOUTHERN LAMFALL (BY OTHERS)

OTHER INFRASTRUCTURE AND
BUILDING WORKS OVERSIDE
SITE BOUNDARY (BY OTHERS)

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

NORTH LANTAU HIGHWAY

TENDER DRAWING		REV. NO.	DATE
		01	MAR. 14

HIGHWAYS DEPARTMENT
香港公路局
Roads Engineering and Project Management Office

HONG KONG-ZHONGJIA-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- VEHICLE CLEARANCE PLAZAS AND
ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRG. NO. 60191048/C3/000/C00/1000
圖號

DESIGNED BY BHCN	CHECKED BY NSY	DATE 04/2012/01	APPROVED BY TKH
SCALE AS 1 : 25000		DRAWING UNIT METRES	

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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:							
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

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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)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	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
	SR6	Surface and Middle			4.7	4.4
		Bottom			4.5	4.3
	SR10A	Surface and Middle			5.5	<u>4.7</u>
SR10B(N)	Surface and Middle	5.4	<u>4.9</u>			

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

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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	4.5
SS	SR6	Depth average	10.4	25.4

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

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-complianceSummary 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;
 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.

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**.

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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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

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

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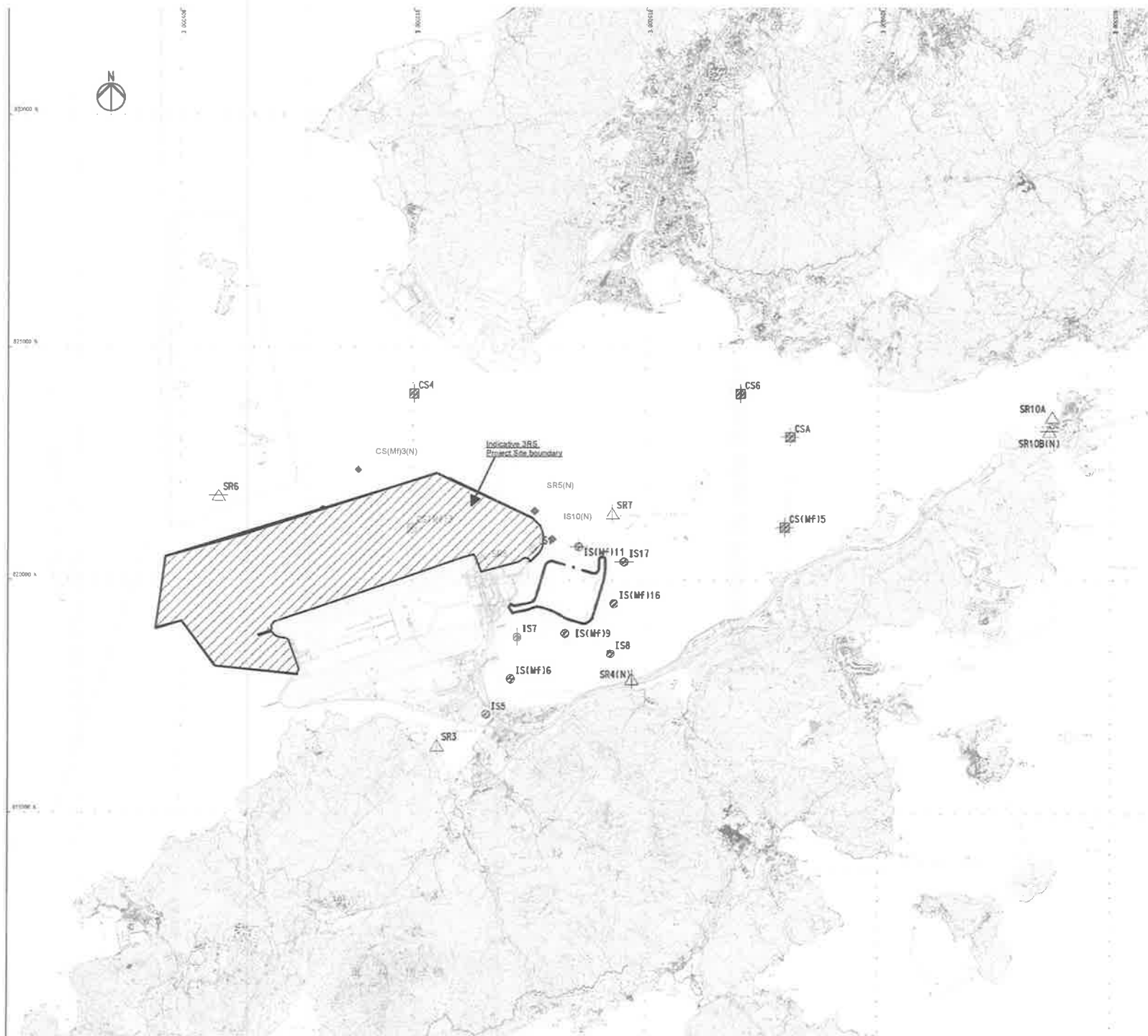
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Figure 1

The Location of WQM Stations



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811469	820455
SR5(N)	812569	821475
SR6	805837	821816
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(MF)13	809989	821117
CS(MF)13(N)	808814	822355
CS(MF)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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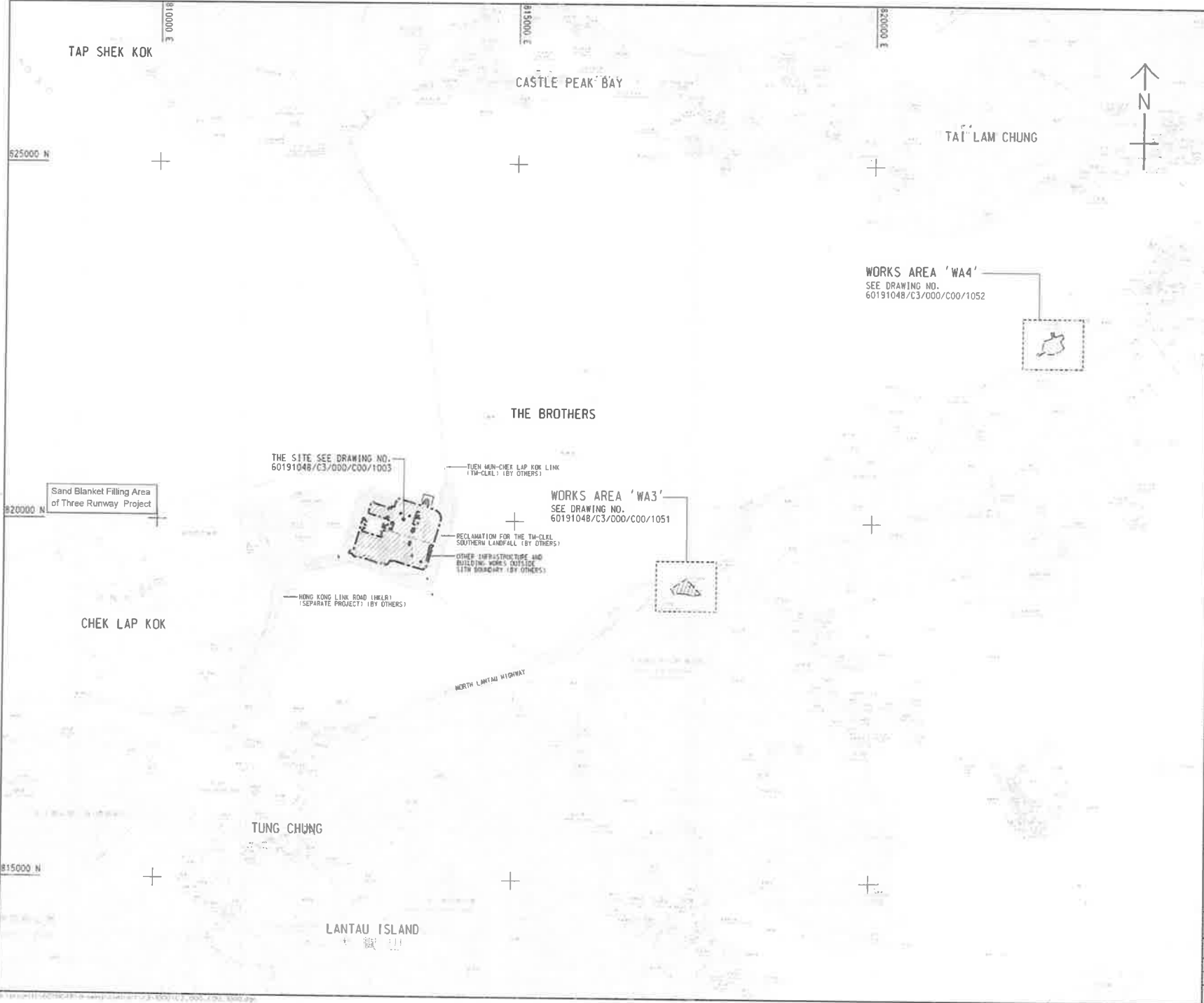
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1983).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

- LEGEND:**
- SITE BOUNDARY
 - WORKS AREA
 - Location of Box Culvert B
 - Site Curbin

THE SITE SEE DRAWING NO. 60191048/C3/000/C00/1005

TUEN MUN-CHEK LAP KOK LINK (TM-CLRL) (BY OTHERS)

WORKS AREA 'WA3' SEE DRAWING NO. 60191048/C3/000/C00/1051

RECLAMATION FOR THE TM-CLRL SOUTHERN LANDFALL (BY OTHERS)

OTHER INFRASTRUCTURE AND BUILDING WORKS OUTSIDE SITE BOUNDARY (BY OTHERS)

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

WORKS AREA 'WA4' SEE DRAWING NO. 60191048/C3/000/C00/1052

Sand Blanket Filling Area of Three Runway Project

TENDER DRAWING		Sheet No. 14
Scale	1:1000	Scale

香港路政署
ROADS DEPARTMENT
 香港路政署工程管理處
 Road Management Unit

WORKS AREA 'WA3' (Hatched) BRIDGE
 HONG KONG BRIDGE, CROSSING FACILITIES
 + VEHICLE CLEARANCE PLAZAS AND
 AUXILIARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRAWING NO. 60191048/C3/000/C00/1000		PROJECT NO. 60191048	
DATE	11/2013/03	DATE	11/2013/03
SCALE	A1 1 : 25000	SCALE	A1 1 : 25000
DRAWING NO. 60191048/C3/000/C00/1000		COPYRIGHT RESERVED	

Small text at the bottom left corner, likely a reference or version number.

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Appendix A

Notification of Limit Level Exceedance

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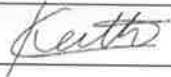
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Contract No. HY/2013/01 - Hong Kong- Zhuhai- Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building Notifications of Environmental Quality Limits Exceedances							Notification No.: 20170920DO
Date of Notification: 25 September 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)	
DO	SR6	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	5.1	4.5	
		Bottom			5.0	4.6	
	SR10A	Surface and Middle			5.0	<u>4.5</u>	
		Bottom			4.7	4.5	
	SR10B(N)	Surface and Middle			5.0	<u>4.5</u>	

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:							
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 mid-ebb/20.6 for mid-flood) 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

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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-IR0012

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-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)
DO	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
	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	<u>4.8</u>	<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

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.

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



LEGEND




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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS6	814251	818412
IS(MF)19	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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
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CS(MF)3(N)	808814	822355
CS(MF)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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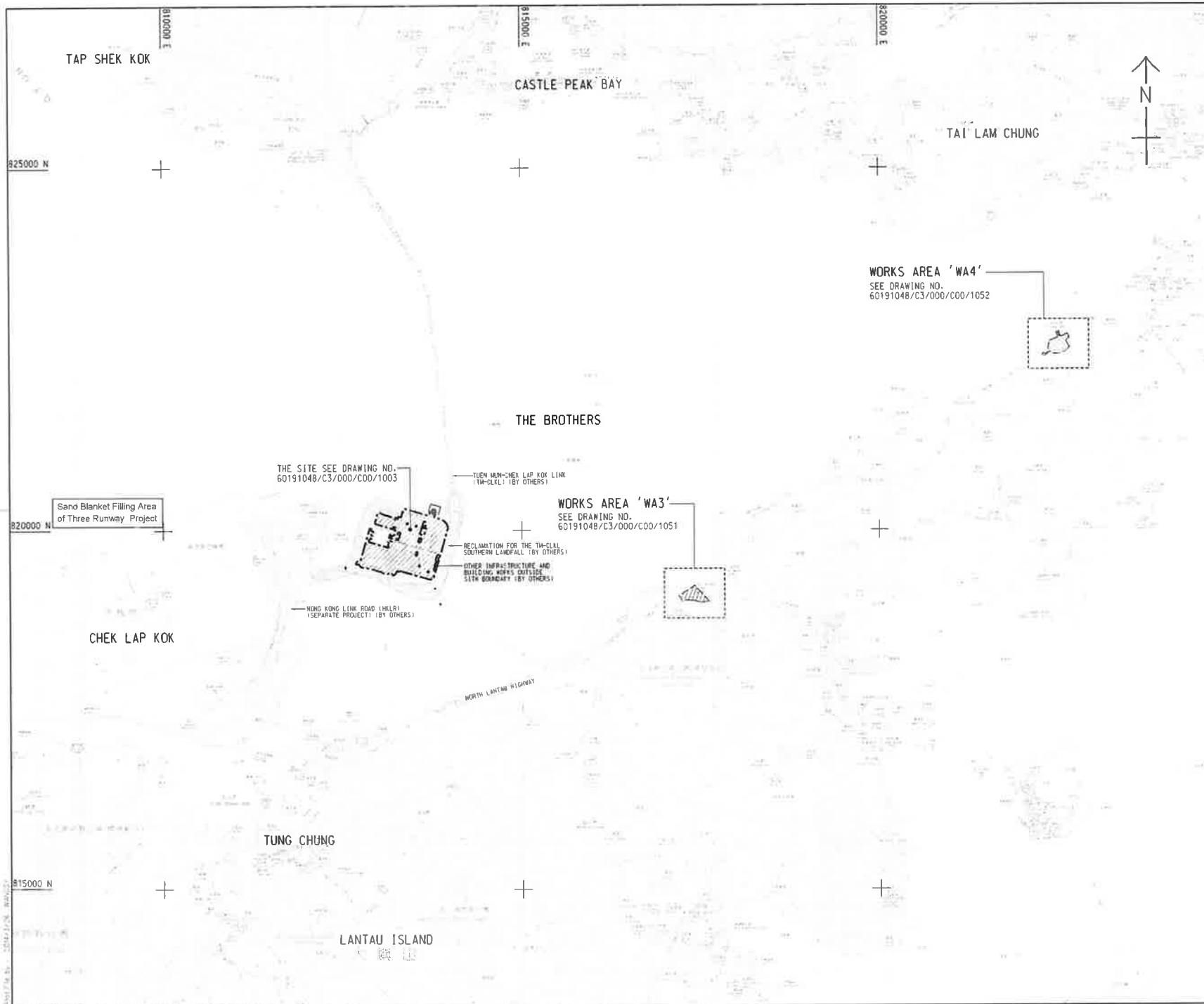
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

- LEGEND:**
- SITE BOUNDARY
 - WORKS AREA
 - Location of Box Culvert B
 - Silt Cylinder

TENDER DRAWING		REVISED	DATE
NO.	DESCRIPTION	BY	DATE

香港路政署
HIGHWAYS DEPARTMENT
 港珠澳大桥管理工程处
 Hong Kong-Zhuhai-Macau Bridge Hong Kong Project Management Office

HONG KONG-ZHUMAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLAZAS AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRAWING NO. 圖號		60191048/C3/000/C00/1000	
DESIGNED BY	CHECKED BY	DATE	SCALE
BWE	WY	2013/03	1/1
DRAWN BY	DATE		
BSY	2013		
SCALE	1:25000		
PROJECTION	UTM		
UNIT	METRES		

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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)
DO	IS8	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	4.8
	IS(M)9	Surface and Middle			5.3	4.9
	IS10(N)	Surface and Middle			4.8	4.8
		Bottom			4.6	4.8
	IS(M)11	Surface and Middle			4.7	4.9
	IS(M)16	Surface and Middle			5.1	4.8
	IS17	Surface and Middle			5.0	4.8
	SR3	Surface and Middle			4.9	5.0
	SR4(N)	Surface and Middle			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
	SR10B(N)	Surface and Middle			4.8	4.6
Bottom		4.9	4.5			

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

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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	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:

- 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.

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



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817659
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)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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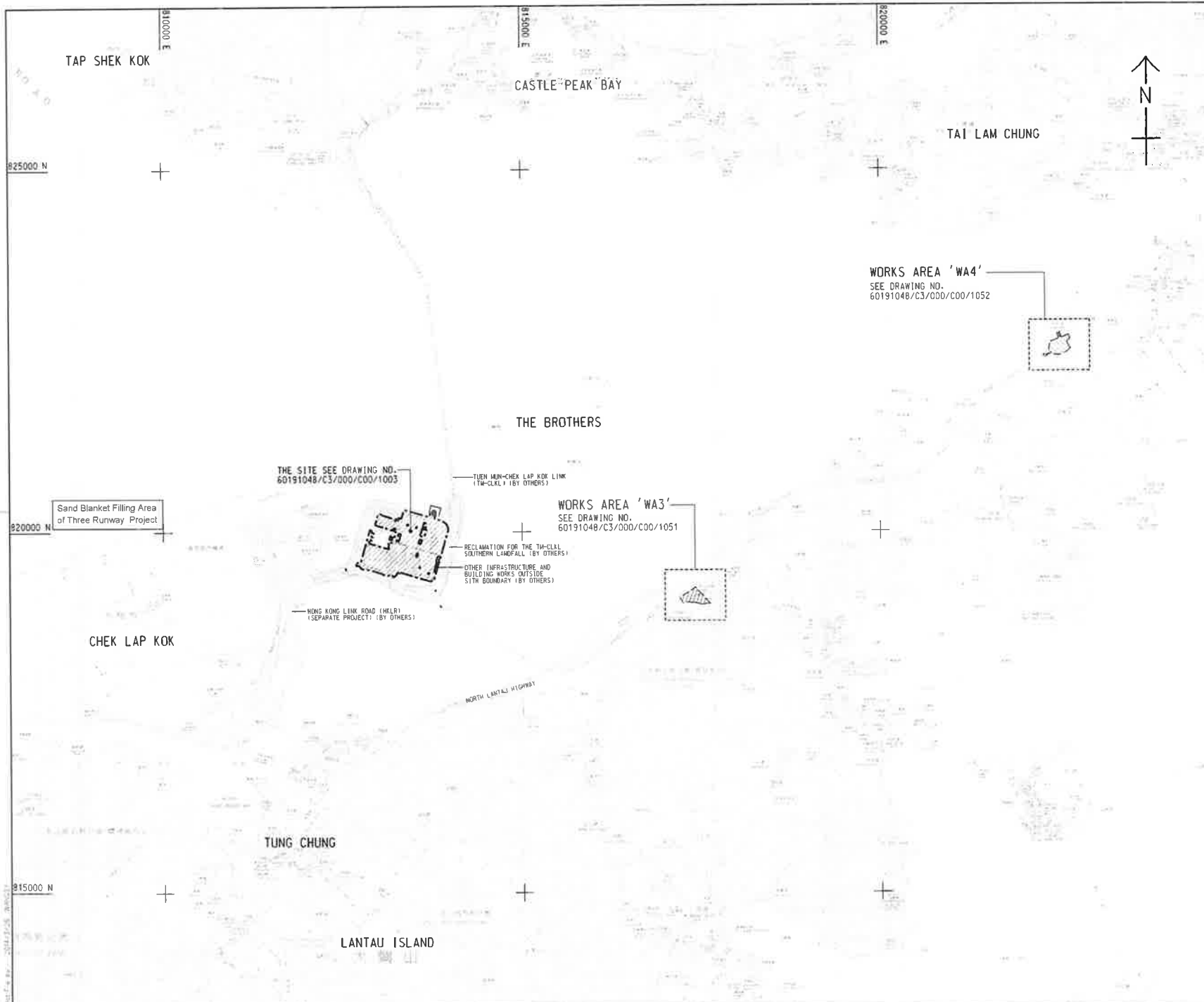
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

- SITE BOUNDARY
- WORKS AREA
- Location of Box Culvert B
- S/R Curtain



WORKS AREA 'WA4'
SEE DRAWING NO. 60191048/C3/000/C00/1052

WORKS AREA 'WA3'
SEE DRAWING NO. 60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO. 60191048/C3/000/C00/1003

Sand Blanket Filling Area of Three Runway Project

TUEN MUN-CHEK LAP KOK LINK (TM-CKL) (BY OTHERS)

RECLAMATION FOR THE TM-CKL SIXTHEN LAMPFILL (BY OTHERS)

OTHER INFRASTRUCTURE AND BUILDING WORKS OUTSIDE SITE BOUNDARY (BY OTHERS)

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

TENDER DRAWING		REVISED	
NO.	DATE	BY	CHK

HIGHWAYS DEPARTMENT
運輸及房屋局 道路管理處
Hong Kong Roads and Highways Engineering and Planning Office

HONG KONG-ZHANJI-ALICAD BRIDGE
HONG KONG BORDER CROSSING FACILITIES
- VEHICLE CLEARANCE PILEUPS AND
ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRAWING NO. 60191048/C3/000/C00/1000		PROJECT NO. HY/2013/03		P. NO. 10040	
DESIGNED BY	CHK'D BY	DATE	SCALE	PROJECT	DATE
BY	BY	11/2013/03	1:25000	TM	11
DRAWING UNIT: METRES			COPYRIGHT RESERVED		

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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	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	5.1	<u>4.7</u>	
		Bottom			5.0	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

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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.: 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:						
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

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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-IR0014

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-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 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)
DO	IS10(N)	Bottom	4.6	5.0
	IS17	Bottom	4.6	4.8
	SR5(N)	Bottom	4.6	5.0
	SR10A	Bottom	5.3	4.6
	SR10B(N)	Surface & Middle	5.0	<u>4.7</u>
		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**.

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;
 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

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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;
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 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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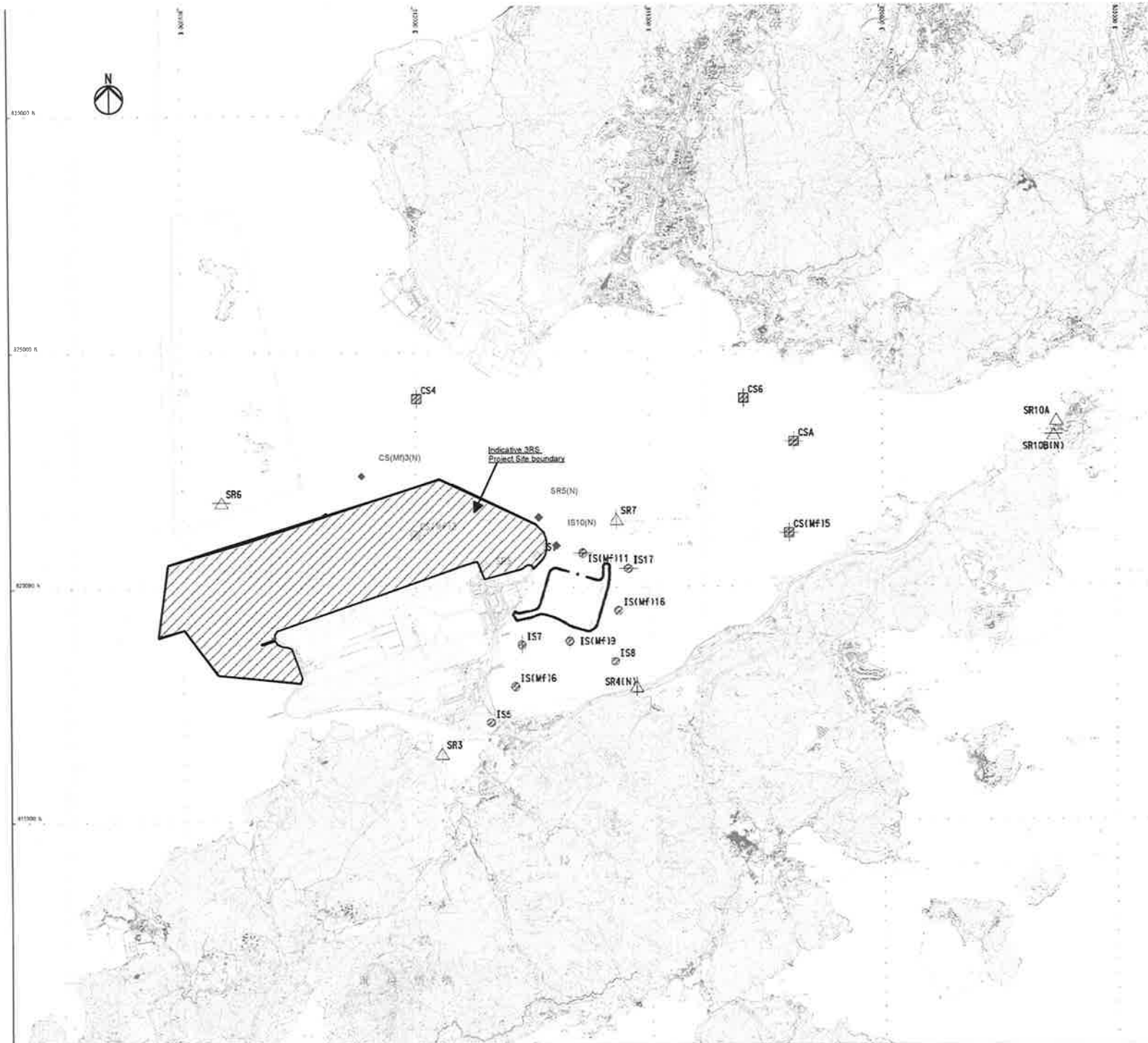
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Figure 1

The Location of WQM Stations



LEGEND

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

FIGURE 4.1– LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
ISS	811579	817106
IS(MF#16)	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF#19)	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF#11)	813562	820716
IS(MF#16)	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821618
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(MF#3)	809989	821117
CS(MF#13(N))	808814	822355
CS(MF#15)	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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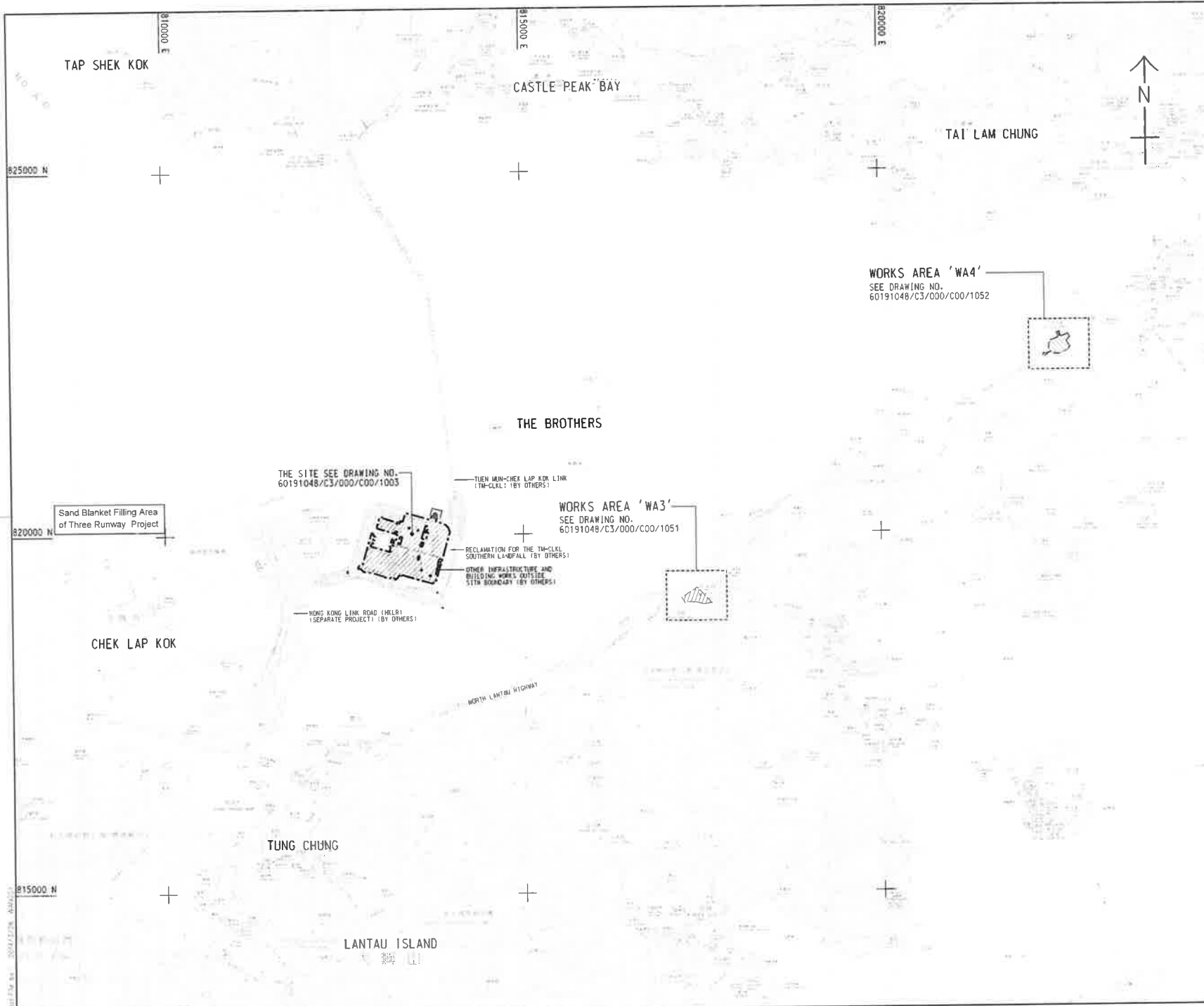
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1983).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

- LEGEND:**
- SITE BOUNDARY
 - WORKS AREA
 - Location of Box Culvert B
 - SR Curtain

WORKS AREA 'WA4'
SEE DRAWING NO.
60191048/C3/000/C00/1052

WORKS AREA 'WA3'
SEE DRAWING NO.
60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO.
60191048/C3/000/C00/1003

Sand Blanket Filling Area
of Three Runway Project

TUU MAN-CHEE LAP KOK LINK
(TM-CLKL) (BY OTHERS)

RECLAMATION FOR THE TM-CLKL
SOUTHERN LANDFALL (BY OTHERS)

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

TENDER DRAWING		SCALE	DATE
NO.	REVISION	DATE	BY

HA 香港
HIGHWAYS DEPARTMENT
香港公路處
Hong Kong Highway Department
Project Management Office

HONG KONG-SHENZHEN BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- VEHICLE CLEARANCE PLAZAS AND
ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

PROJECT NO. 圖則編號	60191048/C3/000/C00/1000
DESIGNED BY 設計	CHKW
CHECKED BY 校核	HY/2013/03
DATE 日期	11/11/13
SCALE 比例尺	AS SHOWN
PROJECT NO. 圖則編號	60191048/C3/000/C00/1000
UNIT 單位	METRES

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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

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.: 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-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS10(N)	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.6	5.0
DO	IS17	Bottom			4.6	4.8
DO	SRS(N)	Bottom			4.6	5.0
DO	SR10A	Bottom			5.3	4.6
DO	SR10B(N)	Surface and Middle			5.0	4.7
DO	SR10B(N)	Bottom			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 : Keith Chau

Title : ET Leader

Date : 04-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-IR0015

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-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)
DO	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
		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
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 mid-flood 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;
 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.

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



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	816777
IS8	814251	818412
IS(MF)19	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)116	814328	819497
IS17	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)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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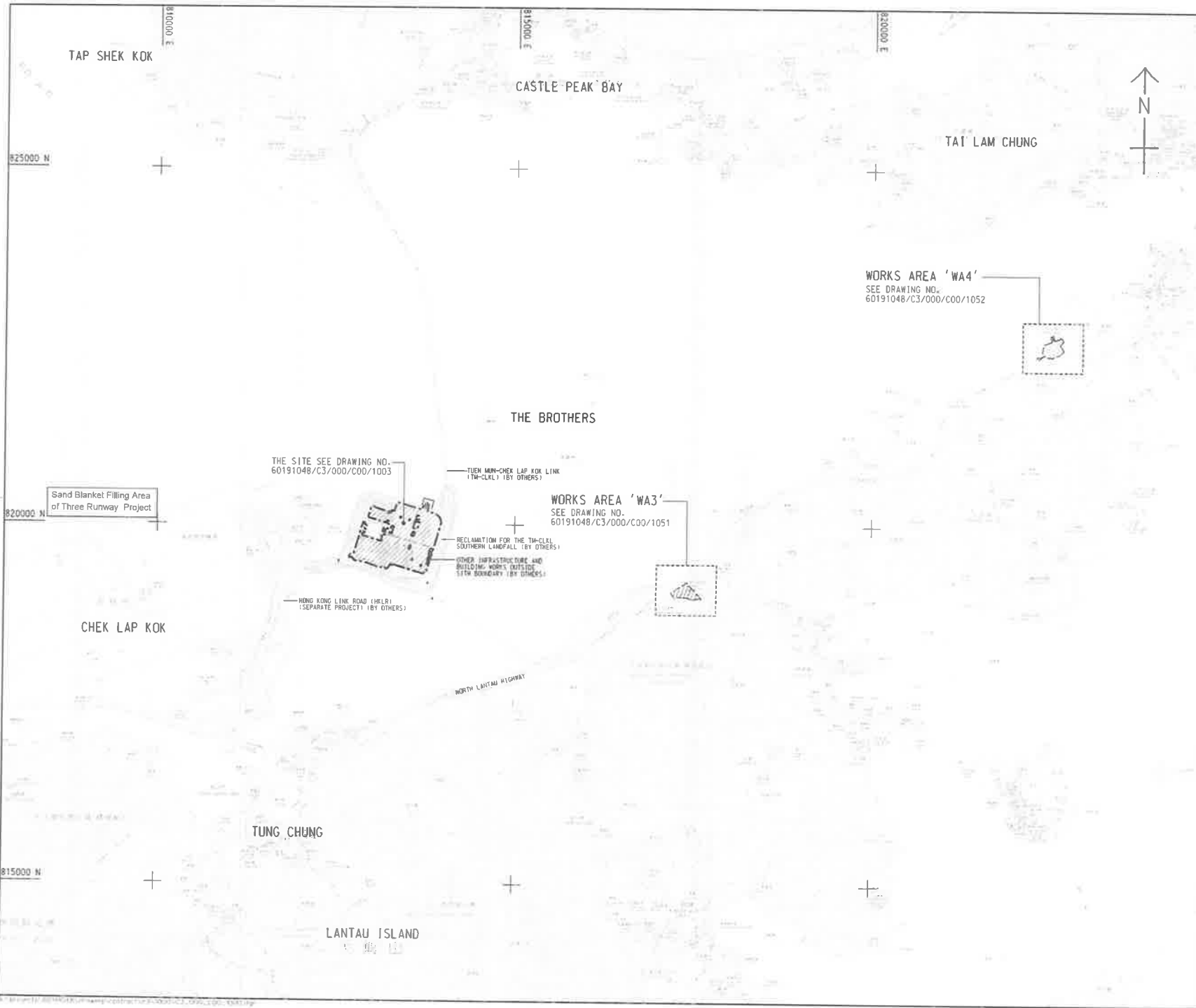
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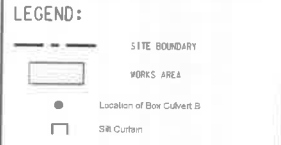


Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHANGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.



WORKS AREA 'WA4'
SEE DRAWING NO.
60191048/C3/000/C00/1052

WORKS AREA 'WA3'
SEE DRAWING NO.
60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO.
60191048/C3/000/C00/1003

Sand Blanket Filling Area
of Three Runway Project

TUEN MUN-CHEK LAP KOK LINK
(TM-CKL) (BY OTHERS)

RECLAMATION FOR THE TM-CKL
SOUTHERN LANDFALL (BY OTHERS)

OTHER INFRASTRUCTURE AND
BUILDING WORKS OUTSIDE
SITE BOUNDARY (BY OTHERS)

HONG KONG LINK ROAD (HKL.R.)
(SEPARATE PROJECT) (BY OTHERS)

TENDER DRAWING		60191048	60191048	60191048	60191048
NO.	REVISION	DATE	BY	CHECKED	APP'D

MTR MIDWAYS DEPARTMENT
港鐵九龍管理工程署
MTR Kowloon Management Engineering Department

HONG KONG-CROSS-BORDER BRIDGE
HONG KONG-BORDER CROSSING FACILITIES
- VEHICLE CLEARANCE PLAZAS AND
ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRAWING NO. 60191048/C3/000/C00/1000		PROJECT NO. #6/2013-03		DATE APPROVED 1/1
DESIGNED BY SMC	CHECKED BY	DATE 1/1	BY TSH	
DRAWN BY VSY	SCALE 1:1 = 25000			
DRAWING UNIT METRES		© COPYRIGHT RESERVED		

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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.: 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)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.8	4.4
	IS7	Bottom			4.3	15.0
	IS8	Bottom			4.4	5.7
	IS10(N)	Surface and Middle			4.8	6.2
		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
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

Date : 9 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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Ref.: HYDHZMBEEM00_0_6134L.18

8 January 2018

By Fax (3468 2076) and By Post

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

Attention: Mr. W.S. Ng

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
Monthly Environmental Monitoring & Audit Report for October 2017**

Reference is made to the Environmental Team's submission of Monthly EM&A Report for October 2017 (Rev. 4) certified by the ET Leader (ET's ref.: "MCL/ED/0009/2018/C" dated 5 January 2018) provided to us via e-mail on 8 January 2018, and our letter (Ref.: HYDHZMBEEM00_0_6049L.17 dated 4 December 2017).

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

The ET Leader is reminded that it is the ET's responsibility to ensure the report be timely submitted to the Director of Environmental Protection and the reported information be true, valid and correct as per Conditions 5.4 and 5.5 of EP-353/2009/K respectively.

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

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



Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Vico Cheung	(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: 2887 3014)

Internal: DY, YH, ENPO Site

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Date 5 January 2018
Our Ref. MCL/ED/0009/2018/C

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

BY HAND

Attn.: Mr. Raymond Dai, IEC

Dear Sir,

**EP Condition 5.4 – Monthly EM&A Report for
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 Condition 5.4 of the Environmental Permit (EP-353/2009/K) for the captioned project and your letter (Ref.: HYDHZMBEEM00_0_6049L.17) dated 4 December 2017, the discrepancies in Investigation Reports for Water Quality Monitoring (WQM) exceedance and Monthly EM&A Report in October 2017 due to incorrect marine traffic statistics information provided through the Contractor had been rectified. We are pleased to submit the certified Monthly EM&A Report for October 2017 (Rev.4) for your verification.

Should you require further information, please do not hesitate to contact our Mr. Vincent Lu at 3565 4371 or the undersigned at 3565 4115.

Yours faithfully,
for and on behalf of
MATERIALAB CONSULTANTS LIMITED



Arthur Cheng
Environmental Team Leader

AC/vl

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

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Report No.: 0165/15/ED/0944

**MONTHLY ENVIRONMENTAL MONITORING & AUDIT
REPORT (Rev. 4)**

October 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/0944

Prepared by: Vincent Lu

Certified by:

A blue ink signature of Arthur Cheng, consisting of stylized, cursive letters.

Arthur Cheng
Environmental Team Leader

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EXECUTIVE SUMMARY

This Monthly 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). Contract No. HY/2013/03 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 26th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 October 2017 to 31 October 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 1 October 2017 to 31 October 2017) (the "reporting period"). The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/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 No. 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: 6, 12, 19 and 27 October 2017.

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Breaches of Action and Limit Levels

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/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 of suspended solids and dissolved oxygen recorded on 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 4.1** 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 was one complaint 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

Notifications of Summons and Successful Prosecutions

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

Reporting Changes

There was no reporting change during the reporting period.

Future Key Issues

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

For Contract No. HY/2013/03

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)

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

1. CUE, Kiosk & Building 037

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1. INTRODUCTION

1.1 Background

1.1.1 MaterialLab Consultants Limited was commissioned by China Harbour Engineering Co. Limited (also referred to as "the Contractor") to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) 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) ("the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR).

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 Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is "Designated Projects", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (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. The general layout of the Project area is shown in **Appendix A**.

1.1.3 This is the twenty-sixth EM&A report to document the findings of site inspection activities and EM&A programme carried out by the Contractor of Contract No. HY/2013/03 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) from 1 October 2017 to 30 October 2017 (reporting period) under Contract No. HY/2013/03 (from 1 October 2017 to 30 October 2017 for the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) and is submitted to fulfil Condition 5.4 of the EP.

1.2 Project Description

1.2.1 The works to be executed under Contract No. HY/2013/03 include the following major items:

- a. Cargo clearance facilities including kiosks for clearance of good vehicles, customs inspection platforms, X-ray building, etc.;
- b. Passenger related facilities including processing kiosks and examination facilities for private cars and coaches, annexure for examination of accompanying passengers of private cars, etc.;
- c. Accommodation/offices for the facilities (like fire station, police station, buildings for Immigration Department [ImmD], Hong Kong Customs and Excise Department [C&ED], Agriculture, Fisheries and Conservation Department [AFCD], Food and Environmental Hygiene Department [FEHD], Department of Health [DofH] etc.) of the Government departments providing services in connection with the HKBCF;
- d. Provision of transport and miscellaneous facilities inside the HKBCF including public transport interchange (PTI), transport drop-off and pick-up areas, vehicle holding areas, passenger queuing areas, road networks, footbridges, fencing, sewerage and drainage

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systems, sewage treatment plant and treated effluent disposal facilities, water supply system, building services works, electronic system, and traffic control and information system including traffic control and surveillance system (TCSS), etc.;

- e. Provision of roads connecting the BCF to the Hong Kong Link Road (HKLR), the Tuen Mun – Chek Lap Kok Link (TM-CLKL) and the Hong Kong International Airport (HKIA), expect the part of road works in HKIA entrusted to the HKLR project; and
- f. Reprovisioning of the affected HKIA's facilities, expect those affected by the Automated People Mover (APM) system such as the existing east rescue berth.

1.2.2 The works to be executed under Contract No. HY/2013/06 within Contract No. HY/2013/03 works area include the following major items:

- a. The Automatic Vehicle Clearance Support System amid to increasing traffic flow for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities;
- b. Responsible for designs and develops a set of tailor-made computer monitoring and control systems to for daily security operation; and
- c. The Clearance Workstations at 72 vehicle clearance kiosks, Customs and Excise's inbound and outbound traffic control centers as well as a Vehicle Tracking System.

1.3 Project Organisation

1.3.1 The Project Organisation for Environmental Works of Contract No. HY/2013/03 is shown in **Appendix B**. The contact person and telephone numbers of key personnel for the captioned project are shown in **Table 1.1**:

Table 1.1 Contact Persons and Telephone Numbers 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 Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3547 2133	3465 2899
	Independent Environmental Checker (IEC)	Mr. Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Mr. Ray Yan	5181 8165	3465 2899
Contractor (China Harbour Engineering Co. Ltd)	Site Agent	Mr. Paul Pui	9125 0700	2512 0427
	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	--

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- 1.3.2 The Project Organisation for Environmental Works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area is shown in **Appendix B**. The contact person and telephone numbers of key personnel for the captioned project are shown in **Table 1.2**:

Table 1.2 Contact Persons and Telephone Numbers 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 Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Mr. Y. H. Hui	3547 2133	3465 2899
	Independent Environmental Checker (IEC)	Mr. Raymond Dai	3465 2888	3465 2899
	Environmental Site Supervisor	Mr. Ray Yan	5181 8165	3465 2899
Contractor (ATAL Technologies Limited)	Site Agent	Mr. Eric Yim	2565 3355	3162 5217
	Environmental Officer	Mr. W. Li	2565 3137	3162 5217
Environmental Team (MaterialLab Consultants Limited)	Environmental Team Leader (ETL)	Mr. Arthur Cheng	3565 4115	2450 8032
24-hr Complaint Hotline	--	--	6509 0375	--

- 1.3.3 The Contract HY/2013/03 has commenced on 10 April 2015. The commencement of construction works and the EM&A programme have commenced on 29 August 2015.
- 1.3.4 The Contract HY/2013/06 has commenced on 14 August 2015. The commencement of construction works and the EM&A programme have commenced on 13 September 2016 within Contract No. HY/2013/03 works area.

1.4 Construction Programme

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

1.5 Construction Works Undertaken during the Reporting Period

- 1.5.1 The construction works of Contract No. HY/2013/03 commenced on 29 August 2015 (includes the construction works of Contract No. HY/2013/06 commenced on 13 September 2016 within Contract No. HY/2013/03 works area). During this reporting period, the following major site activities were commenced:

For Contract No. HY/2013/03

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;

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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is white and set against a black rectangular background that has a horizontal bar above and below it.

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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.

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

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

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2. AIR QUALITY MONITORING

2.1 Monitoring Locations

2.1.1 The air quality monitoring works for the Contract are covered by Contract No. HY/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 as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract No. HY/2013/01 and HY/2011/03. **Figure 1** shows the locations of air monitoring stations.

Table 2.1 Air Quality Monitoring Location

Air Monitoring Station	Location
AMS6	Dragonair/CNAC (Group) Building (A80)
AMS7	Hong Kong SkyCity Marriott Hotel

2.2 Monitoring Requirements

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

2.2.2 The Action and Limit levels for 1-hr TSP and 24-hr TSP are summarized in **Table 2.2**.

Table 2.2 Action and Limit Levels for Air Quality

Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1 hour TSP		
AMS6	360	500
AMS7	370	
24 hours TSP		
AMS6	173	260
AMS7	183	

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

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

2.3 Monitoring Results

2.3.1 The monitoring results for AMS6 and AMS7 are reported in the monthly EM&A Reports prepared for Contract No. HY/2011/03 and HY/2013/01 respectively.

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

2.3.3 There was no Action and Limit Level exceedances 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.

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3. NOISE MONITORING

3.1 Monitoring Locations

3.1.1 The noise monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building". The ET of the Contract or another ET of the HZMB project is required to conduct noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/01. **Figure 2** shows the locations of noise monitoring stations.

Table 3.1 Construction Noise Monitoring Location

ID No.	Description
NMS2	Seaview Crescent
NMS3B	Site Boundary of Site Office Area at WA2

3.2 Monitoring Requirements

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

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

Table 3.2 Action and Limit Level for Construction Noise

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

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

3.3 Monitoring Results

3.3.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/01. No noise exceedance was recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2013/01 during the reporting period.

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4. WATER QUALITY MONITORING

4.1 Monitoring Locations

4.1.1 The water monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao-Bridge HKBCF – Passenger Clearance Building". The ET of the Contract or another ET of the HZMB project is required to conduct impact water quality monitoring at the stations shown in **Table 4.1** and **Figure 3**.

Table 4.1 Water Quality Monitoring Stations

Station	Description	Easting	Northing
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:

⁽¹⁾ Additional monitoring station for Ma Wan FCZ

⁽²⁾ Additional control monitoring station for Ma Wan FCZ

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.

4.2 Monitoring Requirements

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

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

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4.2.3 The Action and Limit Levels for Water Quality are provided in Table 4.2.

Table 4.2 Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle = 4.2 (except 5 mg/L for FCZ) Bottom = 3.6
SS in mg/L (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)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

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

Notes:

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

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

4.3 Monitoring Results

4.3.1 The monitoring results for the monitoring stations showed in Table 4.1 are reported in the monthly EM&A Report prepared for Contract No. HY/2013/01. There was Action and Limit Level exceedance recorded at different WQM stations during mid-ebb and mid-flood tide on twelve days. The summary of water quality exceedances are shown in Table 4.3.

Table 4.3 Action and Limit Levels for Water Quality

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
IS5	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS(Mf6)	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS7	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS8	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS(Mf)9	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS10(N)	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS(Mf)11	Action	0	0	0	0	0	0	0	1 (20 Oct)
	Limit	0	0	0	0	0	0	0	0
IS(Mf)16	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS17	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR3	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR4(N)	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0

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Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
SR5(N)	Action	0	0	0	0	0	0	0	3 (18 Oct, 20 Oct, 23 Oct)
	Limit	0	0	0	0	0	0	0	0
SR6	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR7	Action	0	0	0	0	0	0	0	1 (20 Oct)
	Limit	0	0	0	0	0	0	0	0
SR10A	Action	0	0	2 (2 Oct, 4 Oct)	2 (2 Oct, 4 Oct)	0	0	0	0
	Limit	1 (4 Oct)	1 (4 Oct)	0	0	0	0	0	0
SR10B(N)	Action	0	0	0	3 (2 Oct, 4 Oct, 6 Oct)	0	0	0	0
	Limit	2 (4 Oct, 6 Oct)	4 (2 Oct, 4 Oct, 6 Oct, 9 Oct)	0	0	0	0	0	0

Note: S&M: Surface & Middle

- 4.3.2 Regarding the exceedance on 2 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 2 October 2017.
- 4.3.3 Regarding the exceedance on 4 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

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cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 4 October 2017.

- 4.3.4 Regarding the exceedance on 6 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 6 October 2017.
- 4.3.5 Regarding the exceedance on 9 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 on 9 October 2017.
- 4.3.6 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

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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.

- 4.3.7 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 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.
- 4.3.8 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.

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5. ECOLOGY MONITORING

5.1 Monitoring Locations

5.1.1 The ecological monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao-Bridge HKBCF – Passenger Clearance Building". The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at 24 transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2013/01. The 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. **Figure 4** shows the co-ordinates for the transect lines and layout map.

Remarks:

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.

5.2 Monitoring Requirements

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

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

5.2.3 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 5.1(a)** & **Table 5.1(b)**.

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

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

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

Table 5.2(b) Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

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

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

5.3 Monitoring Result

5.3.1 The dolphin survey results for all transects are reported in the monthly EM&A Reports prepared by Contract No. HY/2013/01.

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6. DISPOSAL OF MARINE SEDIMENT EXTRACTED FROM BORED PILING WORKS

6.1 Background

- 6.1.1 After the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal site allocated to this Project is the Mud Pit CMP Vd of the Confined Marine Sediment Disposal Facility to the East of Sha Chau (ESC) during this reporting period.
- 6.1.2 No extracted marine sediment was treated using cement solidification/stabilisation (Cement S/S) techniques under Contract No. HY/2013/03 during this reporting period. The marine sediment extracted from this Contract was disposed to the MFC allocated disposal sites directly without treatment during this reporting period. As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from all three Contracts (Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04).

6.2 Dumping Arrangements

- 6.2.1 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.
- 6.2.2 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 is the Mud Pit CMP Vd of the Confined Marine Sediment Disposal Facility to the East of Sha Chau (ESC) during this reporting period.

6.3 Quantity Disposed

- 6.3.1 No marine sediment extracted from bored piling from this Contract was disposed to allocated dumping site in September 2017. 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 total disposed quantity up to the last batch is 114.088 (in'000m³). The summary of marine sediment disposed up to end August 2017 is shown in the following table:

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Table 6.1 Summary of Marine Sediment Disposed to Dumping Site

Month/Year	Quantity disposed (in'000m ³)			Total
	HY/2013/02	HY/2013/03	HY/2013/04	
Jan 2016	1.272	1.950	0.800	4.022
Feb 2016	2.816	2.328	0.704	5.848
Mar 2016	0.600	2.464	3.942	7.006
Apr 2016	5.128	5.602	5.028	15.758
May 2016	0.000	0.000	0.000	0.000
Jun 2016	1.200	4.584	1.578	7.362
Sub-Total	11.016	16.928	12.052	39.996
Jul 2016	0.728	10.728	3.690	15.146
Aug 2016	1.784	1.544	4.428	7.756
Sep 2016	2.328	6.816	3.888	13.032
Oct 2016	1.096	2.376	5.286	8.758
Nov 2016	0.000	0.000	0.000	0.000
Dec 2016	1.568	4.960	2.538	9.066
Cat L in Dec 2016	0.000	2.792	3.570	6.362
Sub-Total	18.520	46.144	35.452	100.116
Jan 2017	0.000	0.656	6.552	7.208
Feb 2017	0.088	0.264	1.380	1.732
Mar 2017	0.000	0.000	0.000	0.000
Apr 2017	0.624	1.288	0.000	1.912
May 2017	0.000	1.440	0.000	1.440
June 2017	1.432	0.000	0.000	1.432
July 2017	0.000	0.000	0.000	0.000
August 2017	0.000	0.248	0.000	0.248
Total	20.664	50.040	43.384	114.088

Note: All sediments are in Type II disposal method except Cat L (in Type I)

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7. ENVIRONMENTAL SITE INSPECTION AND AUDIT

7.1 Site Inspection

- 7.1.1 Site audits were carried out by ET on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.
- 7.1.2 The joint site audits for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) were conducted on 6, 12, 19 and 27 October 2017 by the representatives of Engineer, Contractor, ET and IEC (IEC for 27 October 2017).
- 7.1.3 Particular observations during the site inspection and corrective actions undertaken by the Contractor are described below:

For Contract No. HY/2013/03

25 September 2017

1. 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 6 October 2017.
2. The Contractor was reminded to provide watering for dust suppression on site. Subsequently, watering was provided. The observation was closed on 6 October 2017.

6 October 2017

1. 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

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

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- The Contractor was reminded to provide NRMN label to the mobile crane at Box Culvert B. 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

6 October 2017

- Nil findings.

12 October 2017

- Nil findings.

19 October 2017

- Nil findings.

27 October 2017

- Nil findings.

7.2 Advice on the Solid and Liquid Waste Management Status

- 7.2.1 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.
- 7.2.2 The monthly 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) are detailed in **Appendix E**.
- 7.2.3 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 October 2017 is shown in **Table 7.1**.

Table 7.1 Summary of Surplus Filling Materials Delivered from Contract No. HY/2013/03 to other projects

Month/Year	Density (in tonnes/m ³)	Quantity disposed (in '000m ³)					Total
		To HY/2013/02	To TM-CLKL Project	To 3RS Project	To WDII Project	To HKLR Project	
May 2017	2.3	0	12.637	0	0	0	12.637
June 2017	2.63925	0	14.769	11.238	0	0	26.007
July 2017	1.9	0	4.406	34.875	10.048	0.760	50.089
August 2017	1.9	0.480	0	67.942	2.761	7.455	78.638
September 2017	1.9	5.544	0	62.770	0	4.648	72.962
October 2017	/	3.384	0	40.599	0	0	43.983
Total	/	9.408	31.812	217.424	12.809	12.863	284.316

Remarks:

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

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- There may be discrepancies in the total quantities with the quantities of inert C&D materials stated in Appendix E and section 7.2.4, due to rounding errors
- No density was given for October 2017 due to the direct volume figures as provided and confirmed by the RSS

7.2.4 0.000 (in'000m³) of excavated marine sediment (from Contract No. HY/2013/03), 45.010 (in'000m³) of Inert C & D Wastes and 1.750 (in'000m³) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/03) in this reporting period. 43.983 (in'000m³) of Inert C & D Wastes were reused in other projects and 1.027 (in'000m³) of Inert C & D Wastes was disposed as public fill. Non Inert C & D Wastes and 0.050 (in tonnes) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) in this reporting period. 0.030 (in tonnes) metals were generated and recycled (from Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) in this reporting period.

7.2.5 The excavated marine mud from the land-based works was disposed of at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee. The Contractor of Contract No. HY/2013/03 shall ensure no spilling and overflowing of materials during loading / unloading / transportation is allowed.

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

7.2.7 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.

7.3 Environmental Licenses and Permits

7.3.1 The valid environmental licenses 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 F**. 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).

7.4 Implementation Status of Environmental Mitigation Measures

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

7.4.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix G**. All necessary mitigation measures at this stage of works were implemented properly.

7.4.3 Implementation status of Regular Marine Travel Route Plan (RMTRP) was checked by ET. Training of marine travel route for marine vessels operator was given to relevant staff and relevant records were kept properly. The marine traffic records and geographical plots of all the vessels tracks to demonstrate the conformance of the vessel to the proposed route in October 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of November 2017.

7.4.4 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

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Contract No. HY/2013/03, no floating concrete batching plant was operated on-site during the reporting period.

7.4.5 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 October 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of November 2017.

7.5 Summary of Exceedance of the Environmental Quality Performance Limit

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

7.5.2 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.

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

7.5.4 There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved oxygen recorded on 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 4.1 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

7.6 Summary of Complaints, Notification of Summons and Successful Prosecution

7.6.1 There was one complaint received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

7.6.2 There was no notification for summons or prosecutions received in relation to the environmental impact during this reporting period.

7.6.3 Statistics on environmental complaints, notifications of summons and successful prosecutions are provided in **Appendix H**.

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8. FUTURE KEY ISSUES

8.1 Construction Programme for the Coming Months

8.1.1 As informed by the Contractor, the following are the major construction activities anticipated in Octoberber 2017:

For Contract No. HY/2013/03

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)

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

1. CUE, Kiosk & Building 037

8.2 Environmental Site Inspection Schedule for the Coming Month

8.2.1 The tentative schedule for weekly site inspections for November 2017 is provided in **Appendix I**.

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9. CONCLUSIONS

- 9.1 Commencement of Contract No. HY/2013/03 took place on 10 April 2015. The commencement date for 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. The commencement date for construction works and the EM&A programme of Contract No. HY/2013/06 commenced on 13 September 2016 within Contract No. HY/2013/03 works area).
- 9.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.
- 9.3 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.
- 9.4 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.
- 9.5 There were Action and Limit Level exceedances of suspended solids and dissolved oxygen recorded on 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 4.1** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 9.6 Ecological monitoring results at all transects are reported in the EM&A report prepared by Contract No. HY/2013/01.
- 9.7 Environmental site inspections were carried out on 6, 12, 19 and 27 October 2017. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.
- 9.8 There was one complaint received in relation to in relation to water pollution. The complaint was still under investigation. Details will be reported in the coming reporting period.
- 9.9 There were no notifications of summons or prosecutions received during the reporting period.

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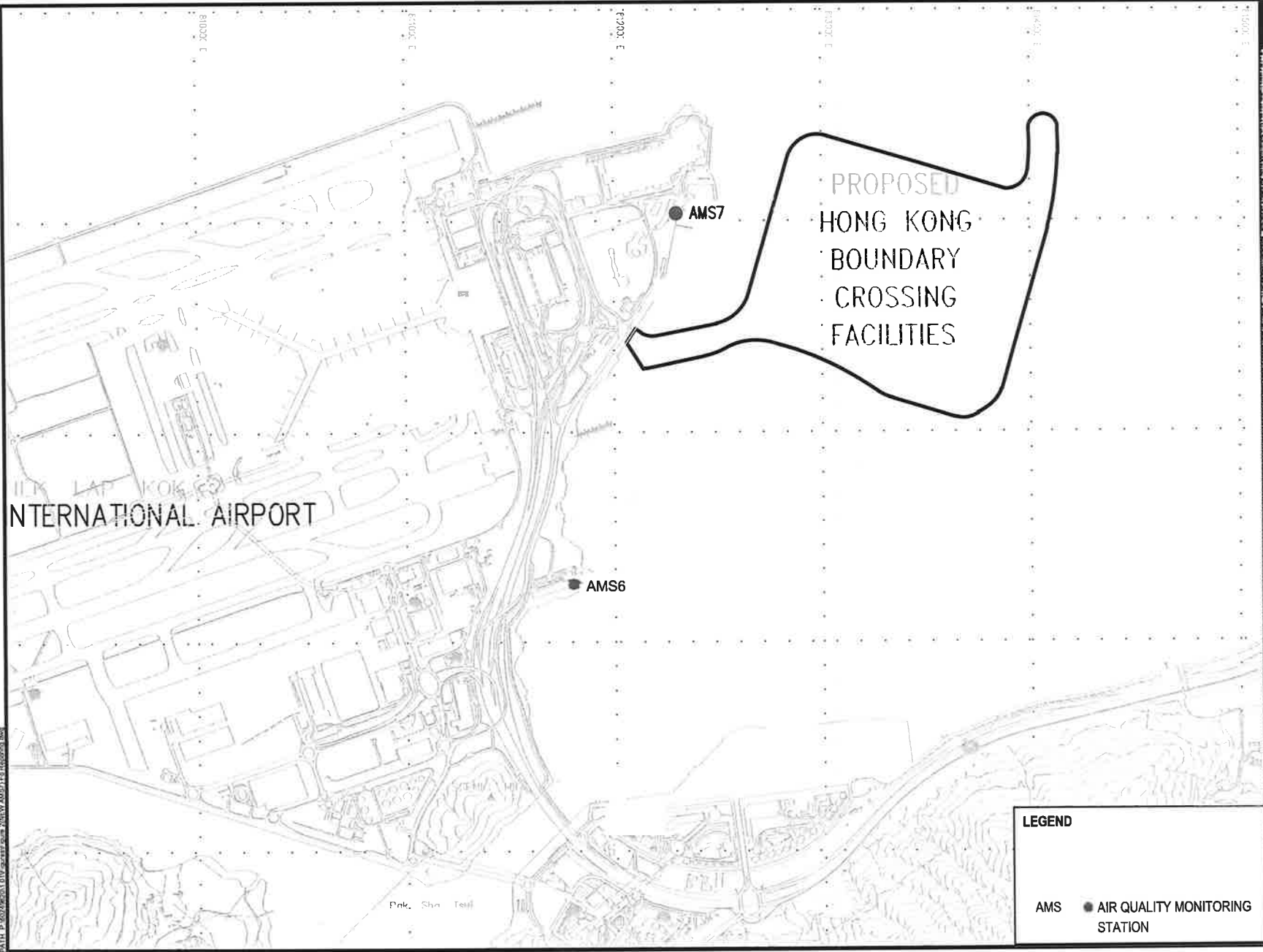
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Figure 1

Air Quality Monitoring Stations



LEGEND

AMS ● AIR QUALITY MONITORING STATION

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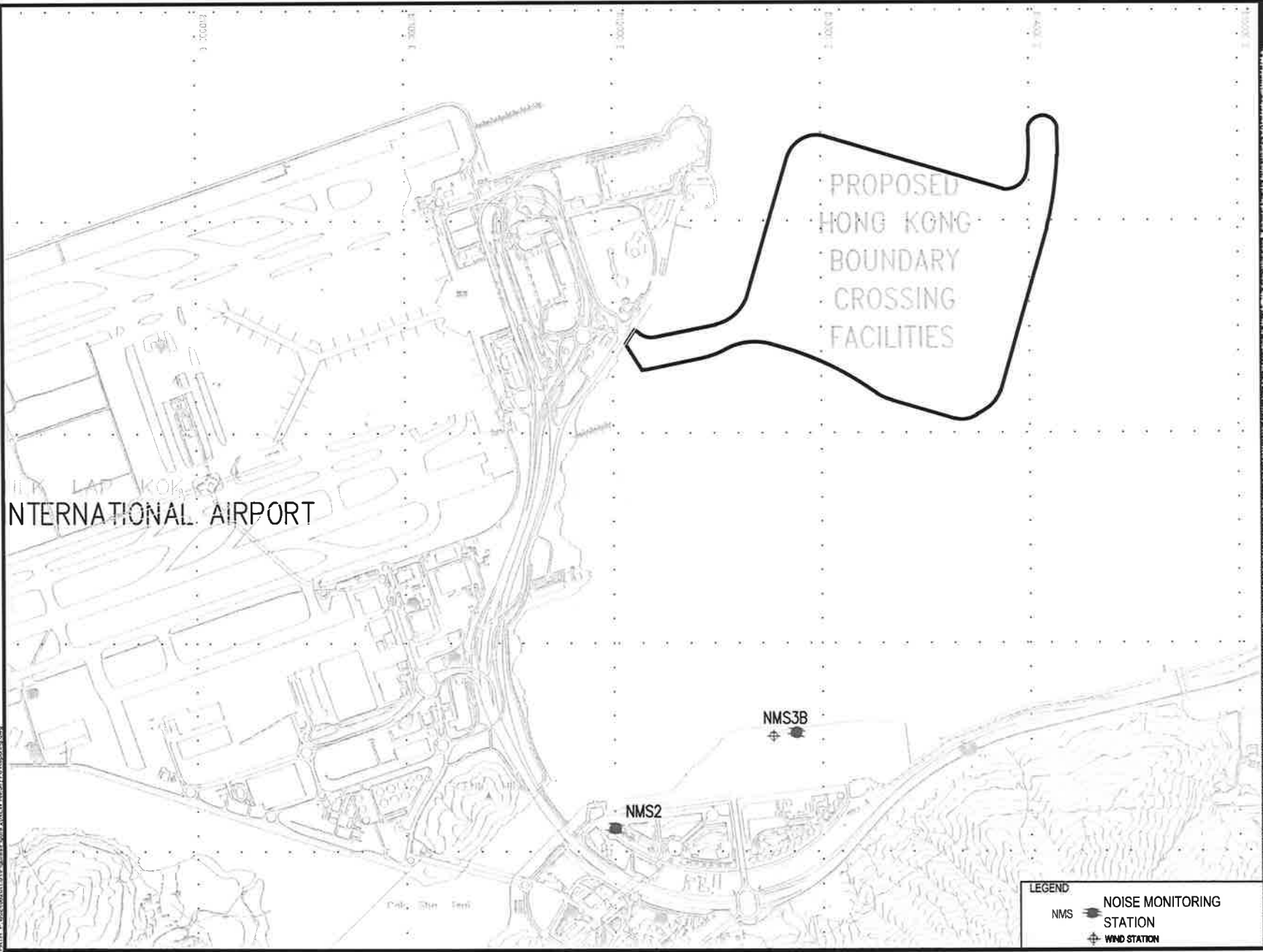
Figure 2
Noise Monitoring Stations

ISO A3 297mm x 420mm

Checked:

Project Management, Inbatic

Prepared by: Manly
Date: 12/05/2023
11007016
2023 12/05/2023 09:16 AM S11.6 (Export.dwg)



LEGEND

- NMS NOISE MONITORING STATION
- WIND STATION

AECOM

**AIR QUALITY AND NOISE
MONITORING STATIONS
FOR HKBCF**

**HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS**
Project No.:

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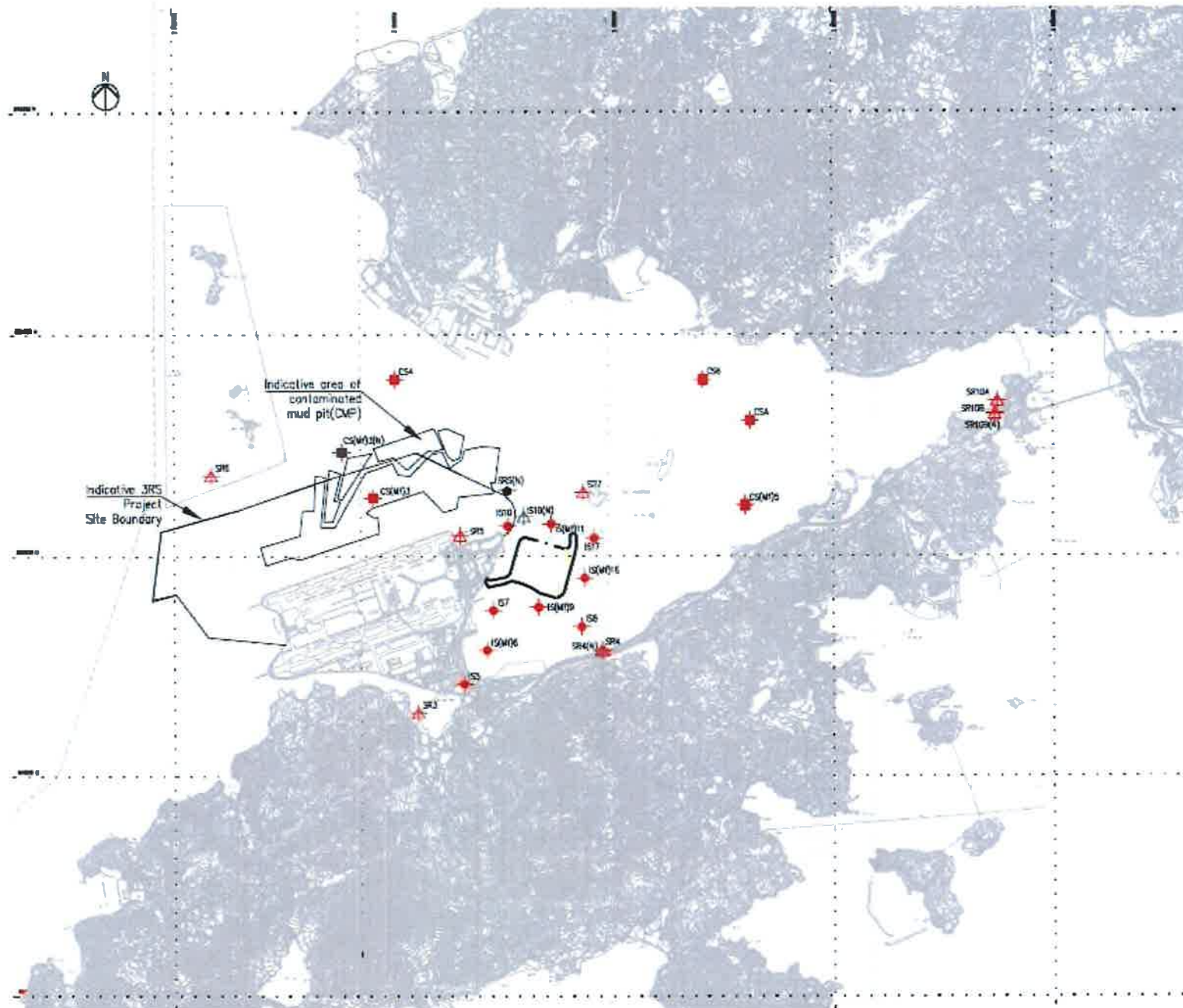
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Figure 3
Water Quality Monitoring Stations



LEGEND

- IS IMPACT STATIONS
- CS CONTROL / FAR FIELD STATIONS
- ▲ SR SENSITIVE RECEIVERS STATIONS
- ▲ IS IMPACT STATIONS (RELOCATED)
- ◆ SR SENSITIVE RECEIVERS STATIONS (RELOCATED)
- CS CONTROL / FAR FIELD STATIONS (RELOCATED)

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
CS3	011870	017908
IS(W)8	012101	017873
IS7	012044	018777
IS8	014231	018012
IS(W)9	013273	018050
SR5(N)	012580	021475
IS(W)11	013002	020740
IS(W)16	014320	019467
IS17	014530	020300
SR3	010920	016406
SR(N)	014705	017000
IS(N)	012942	020001
SR6	008037	020208
SR7	014200	021431
SR10A	023741	023085
SR(W)(N)	023003	023007
CS(W)(N)	008014	022300
CS(W)5	017900	020120
CS4	010020	024004
CS8	017020	023002
CSA	010103	023004
IS10	022577	020070
SR5	014000	020400
CS(W)3	008000	020117

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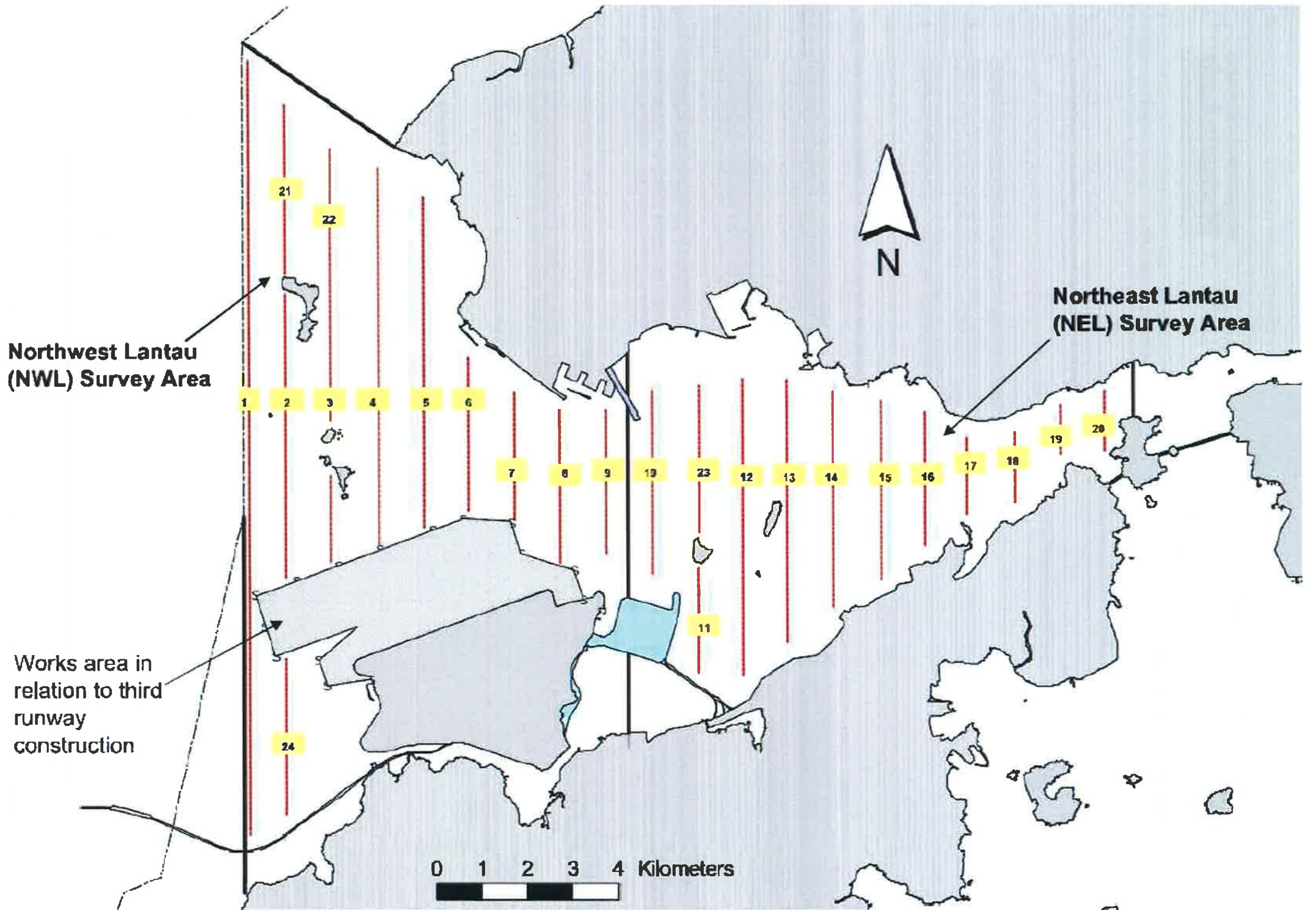
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Figure 4

Ecological Monitoring Transect Line and Layout Map



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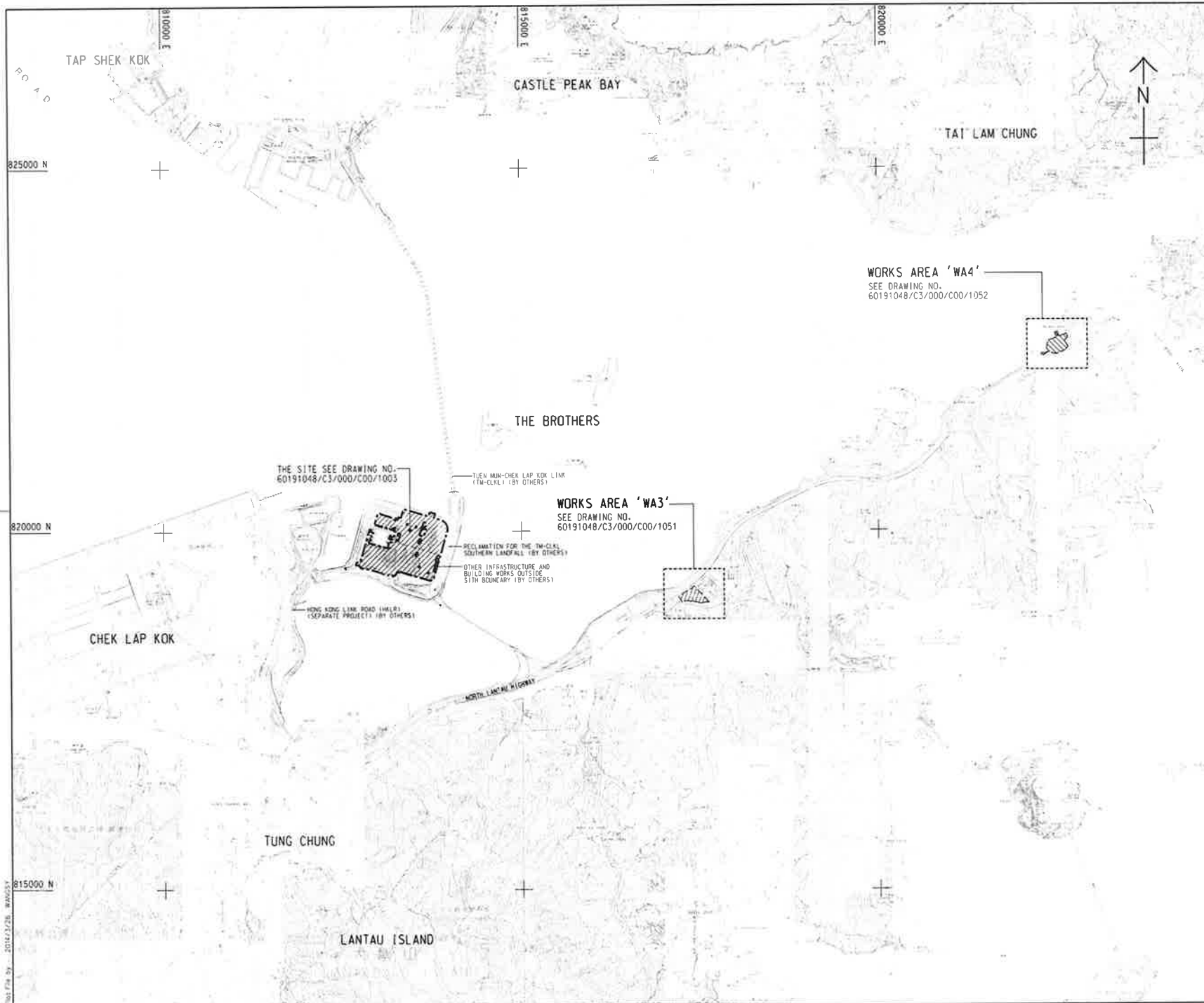
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Appendix A

Location of Works Areas



NOTES:

1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

-  SITE BOUNDARY
-  WORKS AREA

TENDER DRAWING		8-4-11	8-4-11	8-4-11
DATE	SCALE	DATE	SCALE	DATE

香港路政處
HIGHWAYS DEPARTMENT
 港珠澳跨境管理工程署
 Hong Kong, Zhuhai, Macao Cross-Border Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLACES AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRGNO. 圖紙編號	60191048/C3/000/C00/1000
PROJECT NO. 項目編號	HY/2013/03
SCALE 比例尺	A1 : 25000
DATE 日期	11/03/2014
UNIT 單位	METRES

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SETTING OUT POINT

POINT	EASTING	NORTHING
301	817487.285	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.665	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.336
308	817456.133	819091.047
309	817409.783	819081.181
310	817513.448	819113.764
311	817347.717	819016.082
312	817450.595	819032.307
313	817445.368	819015.157
314	817531.154	819061.665
315	817533.245	818991.206
316	817620.298	819000.820
317	817498.837	819058.596
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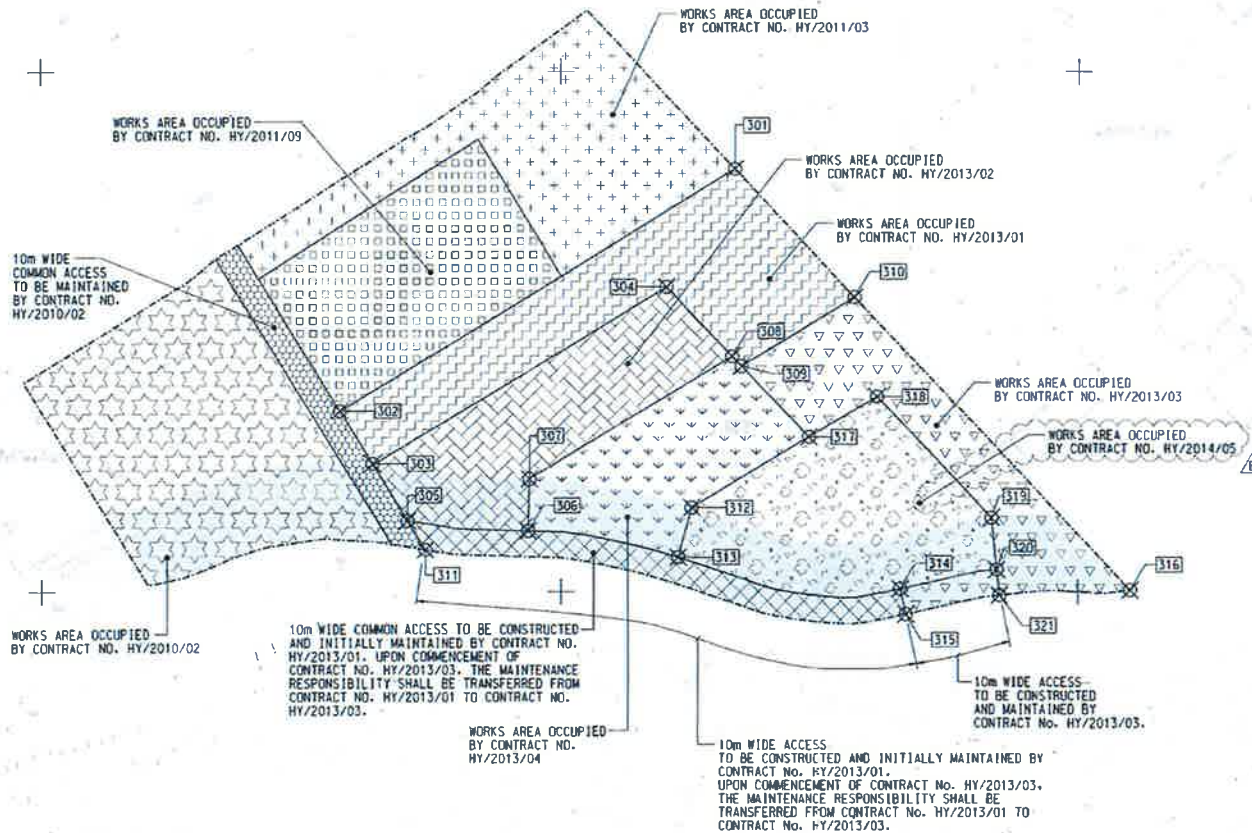
817400 E

817600 E

819200 N

819000 N

WONG LANTAU HIGHWAY



LOCATION PLAN
SCALE 1 : 25000

NOTES:

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

LEGEND:

WORKS AREA BOUNDARY	
[Hatched pattern]	PORTION 3.1
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[Hatched pattern]	PORTION 3.3
[Hatched pattern]	PORTION 3.4
[Hatched pattern]	PORTION 3.5
[Hatched pattern]	PORTION 3.6
[Hatched pattern]	PORTION 3.7
[Hatched pattern]	PORTION 3.8
[Hatched pattern]	PORTION 3.9
[Hatched pattern]	PORTION 3.10
[Blue shaded area]	NON-BUILDING AREA 8200m ² (1/4000:1)

FOR CONSTRUCTION

C	WORKING DRAWING	2014/05/14	2014/05/14	2014/05/14	2014/05/14
B	TENDER ADDENDUM NO. 2	2014/05/14	2014/05/14	2014/05/14	2014/05/14
A	TENDER ADDENDUM NO. 1	2014/05/14	2014/05/14	2014/05/14	2014/05/14
-	TENDER DRAWING	2014/05/14	2014/05/14	2014/05/14	2014/05/14

HONGKONG DEPARTMENT OF HIGHWAYS
香港道路工程處
Hong Kong - Zhuhai - Hainan Bridge Project Management Office

HONG KONG-ZHUHAI-HAINAN BRIDGE
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- VEHICLE CLEARANCE PLAZAS AND
- ACCESSORY BUILDINGS AND FACILITIES

WORKS AREA WA3

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

DRG. NO. 60191048/C3/000/C00/1051C

DATE: 05/14	SCALE: 1:1000	PROJECT NO. HY/2013/03	DATE: 05/14
BY: [Signature]	DATE: 05/14	BY: [Signature]	DATE: 05/14
WORKING DRAWING			
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File No: 2014/05/14

SETTING OUT POINT

POINT	EASTING	NORTHING
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404	822510.942	822529.642
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406	822526.988	822529.813
407	822518.348	822587.192
408	822542.232	822489.581
409	822584.983	822507.426
410	822506.866	822516.561
411	822460.238	822441.156
412	822602.949	822460.010
413	822621.914	822467.359
414	822628.120	822470.198
415	822631.725	822500.856
416	822644.758	822521.192

822600 E

822600 E



LOCATION PLAN
SCALE 1 : 25000

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

LEGEND:

WORKS AREA BOUNDARY	PORTION 4.1	PORTION 4.2	PORTION 4.3	PORTION 4.4	PORTION 4.5	PORTION 4.6	PORTION 4.7	PORTION 4.8	PORTION 4.9
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CONTROLLED DOCUMENT

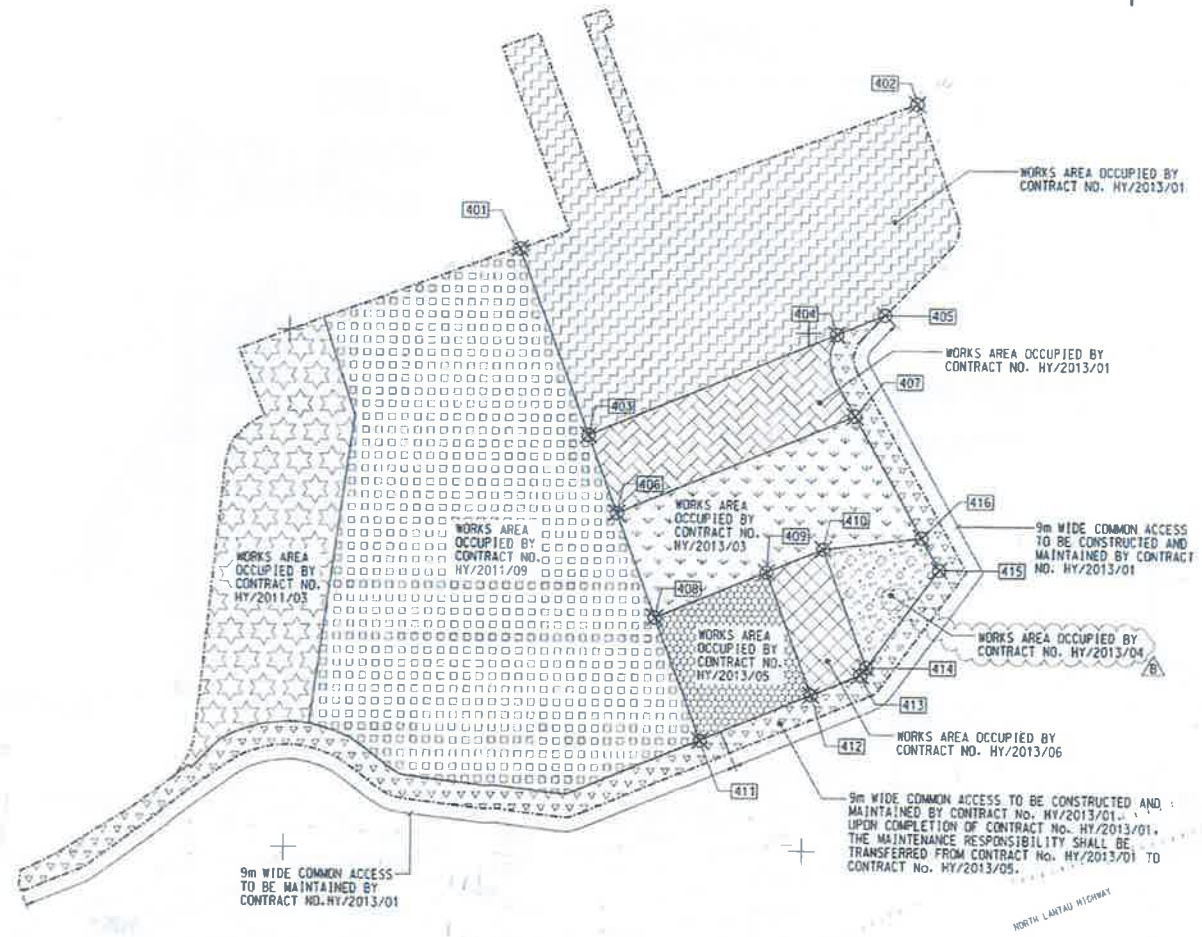
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-	TENDER DRAWING	ENCR	SC1	MAR 14

WORKS AREA WA4
HONG KONG-ZHANJI-MACAO BRIDGE
HONG KONG TOWNHALL CROSSING FACILITIES
VEHICLE CLEARANCE PLAZAS AND
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DRG. NO.	60191048/C3/000/C00/1052C
SCALE	A1 : 1 : 1000
DATE	15 MAY 2013
PROJECT	HONG KONG-ZHANJI-MACAO BRIDGE
DISCIPLINE	HYDRAULICS
STATUS	WORKING DRAWING



822500 N

822400 N

DATE PLOTTED: 2013/05/15 10:00:00 AM

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Appendix B

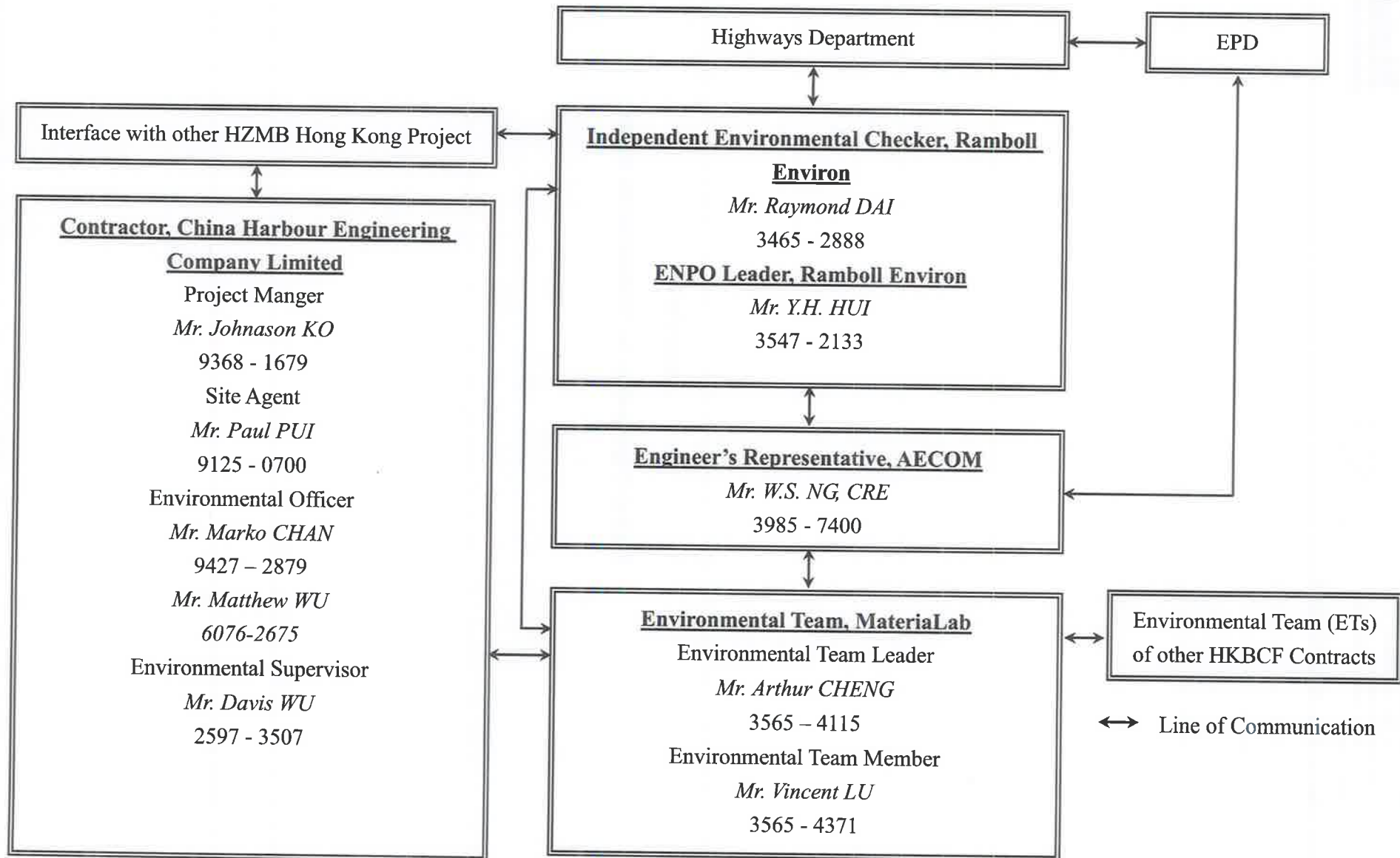
Project Organization for Environmental Works

CHINA HARBOUR ENGINEERING COMPANY LIMITED



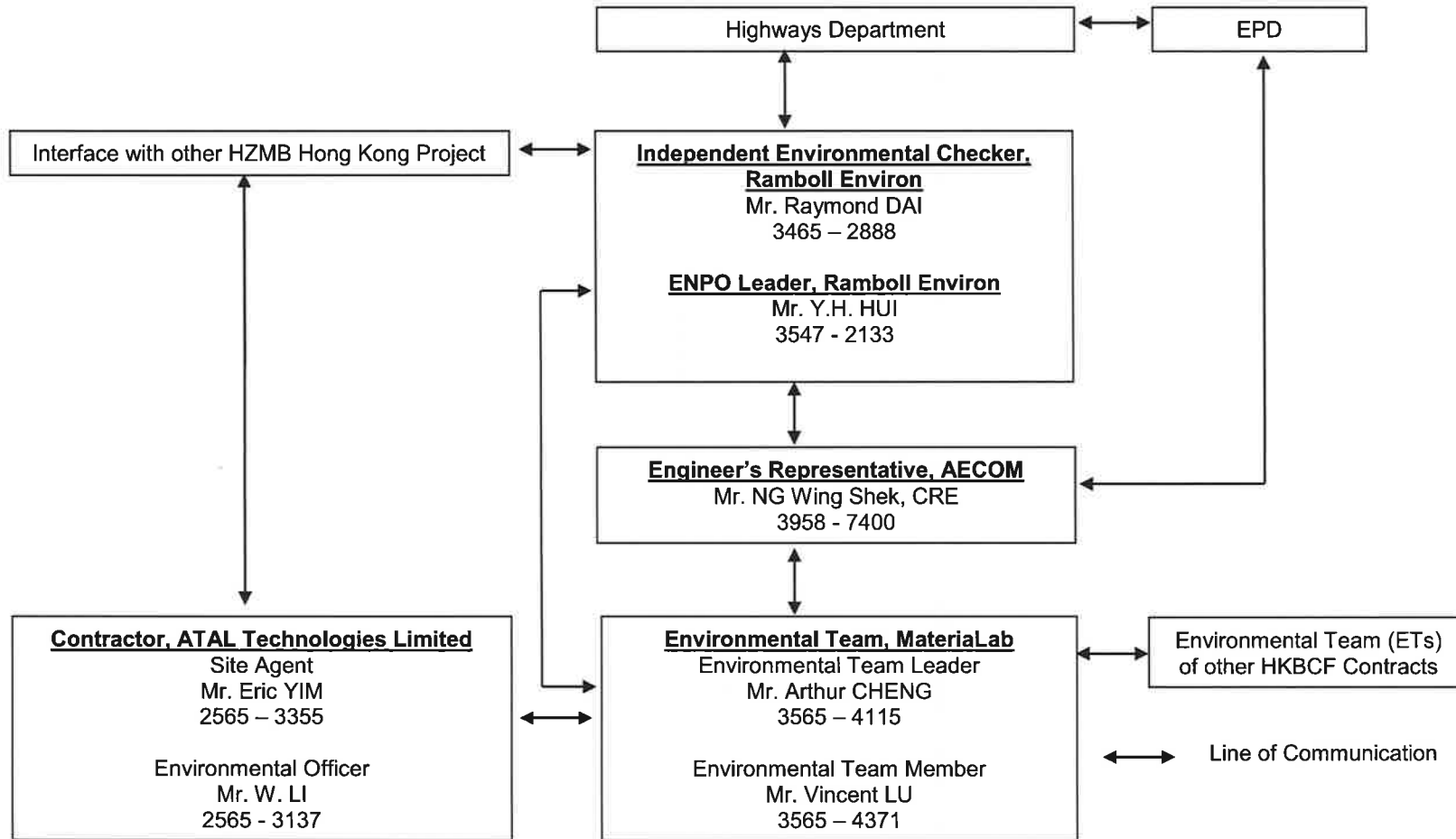
Contract No. HY/2013/03 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing
Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Projects Organization for Environmental Works



Contract No. HY/2013/06 (within Contract No. HY/2013/03 works area)
 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System

Projects Organization for Environmental Works



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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is contained within a rectangular frame consisting of two horizontal lines above and below the text.

Report No.: 0165/15/ED/0944

Appendix C

Construction Programme

Activity ID	Activity Name	2017				2018	
		Oct	Nov	Dec	Jan	Feb	
HKBCF - VCP & Ancillary Buildings and Facilities, DWP5 (+ DRM 2)							
Stages of the Project Completion							
Stage 1: 31st Dec. 2017							
A2010	All Kiosk 006, 009, 010, 027, 028, 029 & 030						◆ All Kiosk 006, 009, 010, 027, 028, 029 & 030
A2020	Road Pavement: Traffic Lanes through Kiosk 4-2-2-4						◆ Road Pavement: Traffic Lanes through Kiosk 4-2-2-4
A2030	Northern PTI (Except SW Corner)						◆ Northern PTI (Except SW Corner)
A2040	Southern PTI						◆ Southern PTI
A2050	All Carpark Area surrounded by A2, A6 & A7						◆ All Carpark Area surrounded by A2, A6 & A7
A2060	Bridge A1 - 9						◆ Bridge A1 - 9
A2070	Road Pavement: 2 Traffic Lanes through Kiosk 006, 009 & 010						◆ Road Pavement: 2 Traffic Lanes through Kiosk 006, 009
A2080	Internal Road (up to TTA)						◆ Internal Road (up to TTA)
A2090	Boundary Road (up to subbase) (Half Lane)						◆ Boundary Road (up to subbase) (Half Lane)
A2100	Security Fencing						◆ Security Fencing
A2200	Completion of Buildings						◆ Completion of Buildings
Completion of Works							
Stage 1: Kiosks of 006, 009, 010, 027, 028, 029 & 030							
Kiosks of 027							
K010	9-Kiosks: RC Wall & Roof	Actual Work					
K020	9-Kiosks: Finishing, Glass Window & Door	Actual Work					
K030	9-Kiosks: Degree 3 Handover						◆ 9-Kiosks: Degree 3 Handover
K032	Remaining 12-Kiosks: RC Wall & Roof	Actual Work					
K034	Remaining 12-Kiosks: Finishing, Glass Window & Door	Actual Work					
K036	Remaining 12-Kiosks: Degree 3 Handover						◆ Remaining 12-Kiosks: Degree 3 Handover
K040	Installation of Steel Y-Junction, remaining	Actual Work					
K050	Installation of Cladding, remaining	Actual Work					
Kiosks of 028							
K150	5-Kiosks: RC Wall & Roof	Actual Work					
K160	5-Kiosks: Finishing, Glass Window & Door	Actual Work					
K170	5-Kiosks: Degree 3 Handover						◆ 5-Kiosks: Degree 3 Handover
K172	Remaining 5-Kiosks: RC Wall & Roof	Actual Work					
K174	Remaining 5-Kiosks: Finishing, Glass Window & Door	Actual Work					
K176	Remaining 5-Kiosks: Degree 3 Handover						◆ Remaining 5-Kiosks: Degree 3 Handover
K180	Installation of Steel Y-Junction, remaining	Actual Work					
K190	Installation of Cladding, remaining	Actual Work					
Kiosks of 029							
K100	5-Kiosks: RC Wall & Roof	Actual Work					
K110	5-Kiosks: Finishing, Glass Window & Door	Actual Work					
K120	5-Kiosks: Degree 3 Handover						◆ 5-Kiosks: Degree 3 Handover
K122	Remaining 5-Kiosks: RC Wall & Roof	Actual Work					
K124	Remaining 5-Kiosks: Finishing, Glass Window & Door	Actual Work					
K126	Remaining 5-Kiosks: Degree 3 Handover						◆ Remaining 5-Kiosks: Degree 3 Handover
K130	Installation of Steel Y-Junction, remaining	Actual Work					
K140	Installation of Cladding, remaining	Actual Work					
Kiosks of 030							
K200	9-Kiosks: RC Wall & Roof	Actual Work					
K210	9-Kiosks: Finishing, Glass Window & Door	Actual Work					
K220	9-Kiosks: Degree 3 Handover						◆ 9-Kiosks: Degree 3 Handover
K222	Remaining 12-Kiosks: RC Wall & Roof	Actual Work					
K224	Remaining 12-Kiosks: Finishing, Glass Window & Door	Actual Work					
K226	Remaining 12-Kiosks: Degree 3 Handover						◆ Remaining 12-Kiosks: Degree 3 Handover
K230	Installation of Steel Y-Junction, remaining	Actual Work					
K240	Installation of Cladding, remaining	Actual Work					
Kiosk 006 (All)							
K250	RC Wall & Roof	Actual Work					
K260	Finishing, Glass Window & Door	Actual Work					
K270	Degree 3 Handover						◆ Degree 3 Handover

█ Actual Work ◆ Milestone
█ Remaining Work
█ Critical

WORKS PROGRAMME, AS OF 31 OCTOBER 2017
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES
 Page 1 of 8

Date	Revision	Checked	Appro...
31-Oct-17	Works Programme (+DRM2), updated as of 31 Oct. 2017	ZJ	

Activity ID	Activity Name	2017				2018	
		Oct	Nov	Dec	Jan	Feb	
K280	Installation of Steel Y-Junction						
K290	Installation of Cladding						
Kiosk 009 (All)							
K300	RC Wall & Roof						
K310	Finishing, Glass Window & Door						
K320	Degree 3 Handover						
K330	Installation of Steel Y-Junction						
K340	Installation of Cladding						
Kiosk 010 (All)							
K350	RC Wall & Roof						
K360	Finishing, Glass Window & Door						
K370	Degree 3 Handover						
K380	Installation of Steel Y-Junction						
K390	Installation of Cladding						
Stage 1: Traffic Lanes through Kiosk 4-2-2-4 & 006, 009 & 010							
Inbound West: Through 4 Kiosk of 027							
D010	Drainage						
D020	Sewerage						
D030	Watermains & Flush Watering						
D040	UU Ducts Laying						
R010	Subbase & Bitumen Pavement						
R020	Kerb/Edges						
R025	U-channel						
R030	Street lighting						
R035	High Mast Lighting						
R040	concrete Pavement						
R050	Road Marking						
Inbound East: Through 2 Kiosk of 028							
D050	Drainage						
D060	UU Ducts Laying						
R060	Subbase & Bitumen Pavement						
R070	Kerb/Edges						
R075	U-channel						
R080	Street lighting						
R090	High Mast Lighting						
R100	Concrete Pavement						
R110	Road Marking						
Outbound West: Through 2 Kiosk of 029							
D110	Drainage						
D120	Sewerage						
D130	Watermains & Flush Watering						
D140	UU Ducts Laying						
R210	Subbase & Bitumen Pavement						
R220	Kerb/Edges						
R225	U-channel						
R230	Street lighting						
R235	High Mast Lighting						
R240	Concrete Pavement						
R250	Road Marking						
R260	Security Fencing						
Outbound East: Through 4 Kiosk of 030							
D150	Drainage						
D160	Sewerage						
D170	UU Ducts Laying						
R310	Subbase & Bitumen Pavement						
R320	Kerb/Edges						
R325	U-channel						

■ Actual Work ◆ Milestone
■ Remaining Work
■ Critical

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VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

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Activity ID	Activity Name	2017			2018	
		Oct	Nov	Dec	Jan	Feb
R330	Street lighting					
R335	High Mast Lighting					
R340	Concrete Pavement					
R350	Road Marking					
R360	Security Fencing					
Through 2x2 Kiosks of 006, 009						
D210	Drainage					
D220	Sewerage					
D230	Watermains & Flush Watering					
D240	UU Ducts Laying					
R420	Kerb/Edges					
R425	U-channel					
R430	Street lighting					
R445	Concrete Pavement					
R450	Road Marking					
Through 2 Kiosks of 010, include Portion D						
D250	Drainage					
D260	Sewerage					
D270	Watermains & Flush Watering					
D280	UU Ducts Laying					
R1430	Kerb/Edges					
R1435	U-channel					
R1440	Street lighting					
R1450	Bitumen Pavement					
R1455	Concrete Pavement					
R1460	Road Marking					
Stage 1: Internal Road around Buildings and Boundary Road						
Internal Road - South of CUE, West Side (026-033)						
D310	Drainage					
D320	Sewerage					
D330	Watermains & Flush Watering					
D340	UU (LV & ELV etc.) Ducts Laying					
R510	Subbase & 1st RB, as TTA for Internal Road					
R520	Kerb/Edges					
R522	U-channel					
R540	Street lighting					
Internal Road - South of CUE, East Side (037-054)						
D350	Drainage					
D360	Sewerage					
D370	Watermains & Flush Watering					
D380	UU (LV & ELV etc.) Ducts Laying					
R470	Subbase & 1st RB, as TTA for Internal Road					
R490	Kerb/Edges					
R580	U-channel					
R980	Street lighting					
Internal Road - South of CUE, S/W Corner (049)						
D450	Drainage					
D460	Sewerage					
D470	Watermains & Flush Watering					
D480	UU (LV & ELV etc.) Ducts Laying					
R1990	Subbase & 1st RB, as TTA for Internal Road					
R2010	Kerb/Edges					
R2020	U-channel					
R2990	Street lighting					
Internal Road - North of CUE, West Side (023-057)						
D410	Drainage					
D420	Sewerage					

■ Actual Work ◆ Milestone
■ Remaining Work
■ Critical

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Activity ID	Activity Name	2017												2018	
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
D430	Watermains & Flush Watering	[Actual Work]													
D440	UU (LV & ELV etc.) Ducts Laying	[Actual Work]													
R1110	Subbase & 1st RB, as TTA for Internal Road	[Actual Work]													
R1140	Kerb/Edges	[Actual Work]													
R1150	U-channel	[Actual Work]													
R1160	Street lighting	[Actual Work]													
Internal Road - North of CUE, East Side (024-031)															
D500	Drainage	[Actual Work]													
D520	Sewerage	[Actual Work]													
D530	Watermains & Flush Watering	[Actual Work]													
D540	UU (LV & ELV etc.) Ducts Laying	[Actual Work]													
R1500	Subbase & 1st RB, as TTA for Internal Road	[Actual Work]													
R1510	Kerb/Edges & U-channel	[Actual Work]													
R3000	Street lighting	[Actual Work]													
Stage 1: Bridges (All), include W7-W															
R1280	Installation of Movement Joint	[Actual Work]													
R1290	Backfilling to Retaining Walls and Embankment	[Actual Work]													
R1300	Parapet	[Actual Work]													
R1303	Railing	[Actual Work]													
R1330	Remaining Pavement on Bridges & Retaining Walls	[Actual Work]													
R1340	Lighting, Signages & Gantry	[Actual Work]													
R2170	Road Marking	[Actual Work]													
Stage 1: Boundary Road (Half Lane)															
North Boundary Road															
D510	Drainage	[Actual Work]													
D610	UU (LV & ELV etc.) Ducts Laying	[Actual Work]													
R770	Subbase & half lane with 1st RB	[Actual Work]													
R790	Kerb/Edges	[Actual Work]													
R810	U-channel	[Actual Work]													
R910	Security Fence	[Actual Work]													
R920	Street lighting	[Actual Work]													
East Boundary Road															
D620	Drainage	[Actual Work]													
D630	Sewerage	[Actual Work]													
D650	UU (LV & ELV etc.) Ducts Laying	[Actual Work]													
R2090	Subbase & half lane with 1st RB	[Actual Work]													
R2100	Kerb/Edges	[Actual Work]													
R2110	U-channel	[Actual Work]													
R2890	Security Fence	[Actual Work]													
R3010	Street lighting	[Actual Work]													
West Boundary Road															
D710	Drainage	[Actual Work]													
D720	UU (LV & ELV etc.) Ducts Laying	[Actual Work]													
R2120	Subbase & half lane with 1st RB	[Actual Work]													
R2130	Kerb/Edges	[Actual Work]													
R2140	U-channel	[Actual Work]													
R2930	Security Fence	[Actual Work]													
R3020	Street lighting	[Actual Work]													
South Boundary Road, include W7-W															
D660	Drainage	[Actual Work]													
D670	UU (LV & ELV etc.) Ducts Laying	[Actual Work]													
R2900	Subbase & half lane with 1st RB	[Actual Work]													
R2910	Kerb/Edges	[Actual Work]													
R2920	U-channel	[Actual Work]													
R2940	Security Fence	[Actual Work]													
R3030	Street lighting	[Actual Work]													
Stage 1: North of CUE, North Coast Road															

█ Actual Work ◆ Milestone
█ Remaining Work
█ Critical

WORKS PROGRAMME, AS OF 31 OCTOBER 2017
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES
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Date	Revision	Checked	Appro...
31-Oct-17	Works Programme (+DRM2), updated as of 31 Oct. 2017	ZJ	

Activity ID	Activity Name	2017			2018	
		Oct	Nov	Dec	Jan	Feb
D730	Drainage					
D740	Sewerage					
D750	Watermains & Flush Watering					
D760	UU (LV & ELV etc.) Ducts Laying					
R2030	Subbase & 1st RB, as TTA for Internal Road					
R2040	Kerb/Edges & U-channel					
R2950	Security Fence					
R3040	Street lighting					
Stage 1: Public Transport Interchange						
South Public Transport Interchange						
D770	Drainage					
D780	UU (LV & ELV etc.) Ducts Laying					
R1260	Subbase & Pavement					
R1350	Canopy for Covered Walkway					
R3050	Street lighting					
Around Horse Track						
D11560	Drainage					
D11570	Sewerage					
R1550	Subbase & Pavement					
R1570	Kerb/Edges					
R1600	U-channel					
R2150	Street Lighting					
R2160	Road Marking					
R3130	Security Fence					
North Public Transport Interchange (Except SW Corner)						
D810	Drainage					
D820	UU (LV & ELV etc.) Ducts Laying					
R1310	Subbase & Pavement					
R1360	Canopy for Covered Walkway					
R3060	Street lighting					
R3090	Road Marking					
Stage 1: Carpark & Taxi Queuing						
Carparks						
D830	Drainage					
D840	UU (LV & ELV etc.) Ducts Laying					
R1520	Subbase & pavement					
R1540	Kerb/Edges					
R1590	U-channel					
R2960	Fencing					
R3070	Street lighting					
R3100	Road Marking					
South Taxi Queuing						
D850	Drainage					
D860	UU (LV & ELV etc.) Ducts Laying					
R2050	Subbase & Pavement					
R2070	Kerb/Edges					
R2080	U-channel					
R2970	Fencing					
R3080	Street lighting					
R3110	Road Marking					
Link Road West						
D12020	Drainage					
D12030	UU (LV & ELV etc.) Ducts Laying					
R3370	Subbase & Pavement					
R3390	Kerb/Edges					
R3400	U-channel					
R3410	Fencing					

■ Actual Work ◆ Milestone
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■ Critical

**WORKS PROGRAMME, AS OF 31 OCTOBER 2017
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

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Activity ID	Activity Name	2017				2018	
		Oct	Nov	Dec	Jan	Feb	
R3420	Street lighting						
R3430	Road Marking						
Stage 1: Security Fencing outside Boundary Roads (Exclude E&M)							
D11930	Security Fence, within internal road						
D11940	Security Fence, adjacent Kiosks						
D11950	Security Fence, other place						
Stage 1: FSD Inspection of Buildings (Access to Users)							
A00290	002 - C&ED Observation Guard Booth, Portion K No.1						
B00290	002 - C&ED Observation Guard Booth, Portion K No. 2						
B00294	002 - C&ED Observation Guard Booth, Portion H1 No. 1						
B00296	002 - C&ED Observation Guard Booth, Portion H1 No. 2						
B00298	002 - C&ED Observation Guard Booth, Portion R						
B00610	006 - Shuttle Bus Kiosk & Staff Subway						
B00910	009 - Outbound Coach Kiosk & Staff Subway						
B01010	010 - Inbound Coach Kiosk & Staff Subway						
C01240	012 - DOH Disinsection Area and Store, Portion A1						
C01252	012 - DOH Disinsection Area, Portion C, FSD inspection						
C02450	024 - Outbound Private Car Exam Building, FSD Inspection						
C02670	026 - Inbound IMMD and DOH Secondary Screening Building						
C02710	027 - Inbound VCP private Car Kiosks & Inbound Staff Subway						
C02810	028 - Inbound GV Kiosks & Inbound Staff subway						
C02910	029 - Outbound GV Kiosks & Outbound Staff subway						
C03010	030 - Outbound VCP Private Kiosk & Outbound Staff Subway						
C03190	031 - Outbound IMMD and DOH Secondary Screen Building						
C03380	033 - Inbound Private Car Exam Building, FSD Inspection						
C03460	034 - Satellite RCP South, FSD Inspection						
C03580	035 - Sewage Pumping Station, FSD Inspection						
C03660	036 - Weigh Station, FSD Inspection						
C03780	037 C&ED Tower & Inbound Cargo Examination Building						
C03850	038 - AFCD Office, FSD Inspection						
C03990	039 - Police Main Building, FSD Inspection						
D04070	040 - Incident Control Tower, FSD Inspection						
D04180	041 Fire Station & Ambulance Depot, FSD Inspection						
D04240	042 - Drill Tower, FSD Inspection						
D04320	043 - DOH Office + Store Room, FSD Inspection						
D04670	046 - Refuse Collection Point, FSD Inspection						
D04750	047 - Fresh Water Pumping Station, FSD Inspection						
D04850	048 - Reclaimed Water Pumping Station, FSD Inspection						
D04972	049 - Sewerage Treatment Plant, FSD Inspection						
D05170	051 - Transformers (Zone 5), FSD Inspection						
D05240	052 - Transformers (Zone 4), FSD Inspection						
D05470	054 - Inbound Fixed X-ray, FSD Inspection						
D05770	057 - Transformers (Zone 2), FSD Inspection						
D06070	060 - Single Storey Support Buildingm FSD Inspection						
D06160	061 - Telecom Building, FSD Inspection						
D10060	100 - Inbound Traffic Control Kiosk, FSD Inspection						
D10150	101 - Outbound Traffic Control Kiosk, FSD Inspection						
D10250	102 - HKPF UVSS Monitor Room, FSD inspection						
D10350	103 - Police Inspection Post, Portion B, FSD inspection						
D10400	104 - DOH Secondary Screening Station, Portion C						
D10425	104 - DOH Screening Station, Portion M, FSD Inspection						
D10435	104 - DOH Screening Station, Portion N, FSD Inspection						
D10560	105 - IMMD Guard Booth, Portion A1, FS Inspection by FSD						
D10565	105 - IMMD Guard Booth, Portion P, FSD Inspection						
D10680	106 - C&ED Detention Area Guard Booth, FSD Inspection						
D10784	107 - C&ED Mobile Operation Office, Portion B, FSD inspection						
D10786	107 - C&ED Mobile X-ray Operation Office, Portion N						

- ◆ 006 - Shuttle Bus Kiosk & Staff Subway
- ◆ 009 - Outbound Coach Kiosk & Staff Subway
- ◆ 010 - Inbound Coach Kiosk & Staff Subway
- ◆ 027 - Inbound VCP private Car Kiosks & Inbound Staff Subway
- ◆ 028 - Inbound GV Kiosks & Inbound Staff subway
- ◆ 029 - Outbound GV Kiosks & Outbound Staff subway
- ◆ 030 - Outbound VCP Private Kiosk & Outbound Staff Subway

■ Actual Work ◆ Milestone
■ Remaining Work
■ Critical

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31-Oct-17	Works Programme (+DRM2), updated as of 31 Oct. 2017	ZJ	

Activity ID	Activity Name	2017			2018	
		Oct	Nov	Dec	Jan	Feb
D10840	108 - C&ED Mobile X-ray Machine Operation Office, Portion C		██████████	██████████		
D10890	108 - C&ED Mobile X-Ray Operation Office, portion M		██████████	██████████		
D11040	110 - IMMD Guard Booth, Portion C-East, FS inspection		██████████	██████████		
E11080	110 - IMMD Guard Booth, Portion C-West, FSD inspection		██████████	██████████		
E11170	111 - Field Kiosk for Carpark Operator, FSD inspection			██████████		
E11270	112 - Field Kiosk for Taxi Queuing Area, FSD Inspection			██████████		
F11320	113 - Field Kiosk for Access Control, Portion C, FSD inspection			██████████		
F11324	113 - Field Kiosk for Access Control, Portion B, FSD inspection			██████████		
F11360	114 - Field Kiosk for Access Control, Portion D, FS inspection			██████████		
Stage 2: Traffic Lanes through Kiosk 9-5-5-9 & 006, 009 & 010						
D550	Remaining Drainage				██████████	██████████
R1120	Remaining Subbase				██████████	██████████
Inbound West: Through 5 Kiosk of 027						
R1620	U-channel				██████████	██████████
R1630	Kerb/Edges				██████████	██████████
R1640	Street lighting				██████████	██████████
R1650	Bitumen Pavement				██████████	██████████
Inbound East: Through 3 Kiosk of 028						
R2180	U-channel				██████████	██████████
R2190	Kerb/Edges				██████████	██████████
R2200	Street lighting				██████████	██████████
R2210	Bitumen Pavement				██████████	██████████
Outbound West: Through 3 Kiosk of 029						
R2230	U-channel				██████████	██████████
R2240	Kerb/Edges				██████████	██████████
R2250	Street lighting				██████████	██████████
R2260	Bitumen Pavement				██████████	██████████
Outbound East: Through 5 Kiosk of 030						
R2280	U-channel				██████████	██████████
R2290	Kerb/Edges				██████████	██████████
R2300	Street lighting				██████████	██████████
R2310	Bitumen Pavement				██████████	██████████
Through 2+2 Kiosks of 006, 009						
R1820	U-channel				██████████	██████████
R1830	Kerb/Edges				██████████	██████████
R1840	Street lighting				██████████	██████████
R1850	Bitumen Pavement				██████████	██████████
Through 2 Kiosks of 010						
R1870	U-channel				██████████	██████████
R1880	Kerb/Edges				██████████	██████████
R1890	Street lighting				██████████	██████████
R1900	Bitumen Pavement				██████████	██████████
Internal Road - South of CUE, West Side (026-033)						
R2330	1st Layer RB				██████████	██████████
Internal Road - South of CUE, East Side (037-054)						
R2420	1st Layer RB				██████████	██████████
Internal Road - North of CUE, West Side (023-057)						
R2430	1st Layer RB				██████████	██████████
Internal Road - North of CUE, East Side (024-031)						
R2440	1st Layer RB				██████████	██████████
Remaining North PTI (SW Corner)						
R3140	Remaining North PTI (SW Corner)				██████████	██████████
South Boundary Road						
R3150	South Boundary Road, up to WC				██████████	██████████
Stage 3						
North Boundary Road						

█ Actual Work ◆ Milestone
█ Remaining Work
█ Critical

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Activity ID	Activity Name	2017				2018	
		Oct	Nov	Dec	Jan	Feb	
R2600	Pavement with street lighting up to 1st Layer RB						
	<i>East Boundary Road</i>						
R2530	Pavement with street lighting up to 1st Layer RB						
	<i>West Boundary Road</i>						
R2610	Pavement with street lighting up to 1st Layer RB						

Actual Work ◆ Milestone
 Remaining Work
 Critical

WORKS PROGRAMME, AS OF 31 OCTOBER 2017
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

Date	Revision	Checked	Appro...
31-Oct-17	Works Programme (+DRM2), updated as of 31 Oct. 2017	ZJ	

Activity ID	Activity Name
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing F	
Key Dates	
Interface Activities	
Site and Facility Inspection	
JS1200	Pre Site and Facility Inspection by Contractor at Location 4 - Deg2
JS1210	Joint Site and Facility Inspection with Interface Contractor at Location 4 - Deg2
JS1620	Pre Site and Facility Inspection by Contractor at Location 14 - Deg2
JS1630	Joint Site and Facility Inspection with Interface Contractor at Location 14 - Deg2
JS1760	Pre Site and Facility Inspection by Contractor at Location 18 - Deg1
JS1770	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg1
JS1780	Pre Site and Facility Inspection by Contractor at Location 18 - Deg2
JS1790	Joint Site and Facility Inspection with Interface Contractor at Location 18 - Deg2
Access Dates	
AD1000	Location 1(PCB (001) Basement)-Deg1 (270d)
AD1010	Location 1(PCB (001) Basement)-Deg2 (380d)
AD1020	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (270d)
AD1030	Location 1(PCB (001) ELV Room (Grid Line E3))-Deg2 (380d)
AD1040	Location 2(PCB (001) First Floor Main Server Room)-Deg1 (330d)
AD1050	Location 2(PCB (001) First Floor Main Server Room)-Deg2 (380d)
AD1060	Location 2(PCB (001) First Floor Main Server Room) - For Server Installation - Deg2 (
AD1070	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3)) - Deg1 (330d)
AD1080	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1090	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5)) -
AD1130	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)-Deg2 (500d)
AD1150	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
AD1170	Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)-Deg2 (480d)
AD1190	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)-Deg2 (480d)
AD1200	Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room) - For Server installation -
AD1220	Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (680d)
AD1240	Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 (630d)
AD1270	Location 6(Common Utility Enclosure & Staff Subway)-Deg1 (400d)
AD1290	Location 7(Common Utility Enclosure & Staff Subway)-Deg1 (270d)
AD1300	Location 8(Inbd Private Car Annex (025))-Deg1 (430d)
AD1310	Location 8(Inbd Private Car Annex (025))-Deg2 (580d)
AD1320	Location 8(Inbd Private Car Annex (025) Canopy)-Deg1 (430d)
AD1330	Location 8(Inbd Private Car Annex (025) Canopy)-Deg2 (580d)
AD1340	Location 9(Outbd Private Car Annex (032))-Deg1 (520d)
AD1350	Location 9(Outbd Private Car Annex (032))-Deg2 (660d)
AD1360	Location 9(Outbd Private Car Annex (032) Canopy)-Deg1 (520d)
AD1370	Location 9(Outbd Private Car Annex (032) Canopy)-Deg2 (660d)
AD1501	Location 12(Inbd Private Car Kiosks(027))-Deg1 (400d) Phase 2
AD1510	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 1
AD1511	Location 12(Inbd Private Car Kiosks(027))-Deg2 (480d) Phase 2
AD1521	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg1 (400d) Phase 2

2015			2016				2017				2018				2019		
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
22-Oct-17, Hong Kong-Zhuhai-Macao Bridge																	
▼ 23-Jun-17, Site and Facility Inspection Pre Site and Facility Inspection by Contractor at Location Joint Site and Facility Inspection with Interface Contract Pre Site and Facility Inspection by Contractor at Location Joint Site and Facility Inspection with Interface Contract Pre Site and Facility Inspection by Contractor at Location Joint Site and Facility Inspection with Interface Contract Pre Site and Facility Inspection by Contractor at Location Joint Site and Facility Inspection with Interface Contract ▼ 24-Aug-17, Access Dates ♦ Location 1(PCB (001) Basement)-Deg1 (270d), 31-May- ♦ Location 1(PCB (001) Basement)-Deg2 (380d), 15-J ♦ Location 1(PCB (001) ELV Room (Grid Line E3))-Deg1 (270d) ♦ Location 1(PCB (001) ELV Room (Grid Line E3))-De ♦ Location 2(PCB (001) First Floor Main Server Room)-De ♦ Location 2(PCB (001) First Floor Main Server Room) ♦ Location 2(PCB (001) First Floor Main Server Room) ♦ Location 2(PCB (001) Ground Floor ELV Room (Grid Lin ♦ Location 2(PCB (001) Ground Floor DOH Port Health C ♦ Location 2(PCB (001) Ground Floor DOH Port Health C ♦ Location 2(PCB (001) Ground Floor DOH Port Health ♦ Location 3(Inbd Cargo Exam Bldg (037) Platform Cont ♦ Location 3(Inbd Cargo Exam Bldg (037) Inspector Offi ♦ Location 3a(Inbd Cargo Exam Bldg (037) ROCARS R ♦ Location 3a(Inbd Cargo Exam Bldg (037) Main Server ♦ Location 3a(Inbd Cargo Exam Bldg (037) Main Server ♦ Location 4(Outbd Cargo Exam Bldg (023))-Deg2 (68 ♦ Location 4a(Outbd Cargo Exam Bldg (023))-Deg2 (6 ♦ Location 6(Common Utility Enclosure & Staff Subway)-D ♦ Location 7(Common Utility Enclosure & Staff Subway)-D ♦ Location 8(Inbd Private Car Annex (025))-Deg1 (430 ♦ Location 8(Inbd Private Car Annex (025))-Deg2 (580 ♦ Location 8(Inbd Private Car Annex (025) Canopy)-De ♦ Location 8(Inbd Private Car Annex (025) Canopy)-De ♦ Location 9(Outbd Private Car Annex (032))-Deg1 (52 ♦ Location 9(Outbd Private Car Annex (032))-Deg2 (66 ♦ Location 9(Outbd Private Car Annex (032) Canopy)-D ♦ Location 9(Outbd Private Car Annex (032) Canopy)-D ♦ Location 12(Inbd Private Car Kiosks(027))-Deg1 (400 ♦ Location 12(Inbd Private Car Kiosks(027))-Deg2 (480 ♦ Location 12(Inbd Private Car Kiosks(027))-Deg2 (48 ♦ Location 12(Inbd Private Car Kiosks(027) Canopy)-De																	

Programme No.: HZMB-DWP
 Data Date: 14-Aug-15

█ Actual Level of Effort ▼ summary
▬ Primary Baseline
█ Actual Work
█ Remaining Work
█ Critical Remaining Work
◇ Baseline Milestone
◆ Milestone

Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Boundary Crossing
 Facilities - Automatic Vehicle
 Clearance Support System (AVCSS)

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

Activity ID	Activity Name	2015												2016				2017				2018				2019		
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3					
	Detailed Design Specification																											
	Construction Design and Management																											
	Supply/Manufacture Mock-up items																											
	Supply/Manufacture prototypes																											
	Software Design, Coding and Testing																											
	Coding																											
	Software System Integration																											
	Prototype & 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 I																											
	Location 1(PCB (001) Basement)																											
	EM1920 L1(001)B/F - Cable Laying and termination at Location 1 and Location 2																											
	Location 1(PCB (001) ELV Room (Grid Line E3))																											
	EM1940 L1(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2																											
	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3))																											
	EM1960 L2(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2																											
	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5))																											
	EM1080 L2(001)Heath Ctrl Rm - Cable Laying and termination at Location 1 and Location 2																											
	EM1100 L2(001)Heath Ctrl Rm - Cable Splicing and Testing and Labeling																											
	EM1120 L2(001)Health Ctrl Rm - Intercom and PA system Installation																											
	EM1140 L2(001)Heath Ctrl Rm - Intercom and PA system tuning																											
	Location 2(PCB (001) First Floor Main Server Room)																											
	EM1000 L2(001)Main Server Rm - Cable Laying and termination at Location 1 and Location 2																											
	EM1020 L2(001)Main Server Rm - Cable Splicing and Testing and Labeling																											
	EM1040 L2(001)Main Server Rm - AVCSS Network and Server Installation																											
	EM1060 L2(001)Main Server Rm - AVCSS Network and Server Tuning																											
	Location 3(Inbd Cargo Exam Bldg (037) MDF Room)																											
	Location 3(Inbd Cargo Exam Bldg (037) ELV Room)																											
	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14)																											
	EM2020 L3(037)Inspec Offices - Cable Laying and termination in Location 3 and Location 3a																											
	EM2040 L3(037)Inspec Offices - Cable Splicing and Testing and Labeling																											
	EM2060 L3(037)Inspec Offices - AVCSS SURCON WS and 55" LCD Installation																											
	EM2080 L3(037)Inspec Offices - VTS WS Installation																											
	EM2100 L3(037)Inspec Offices - SURCON and WS Tuning																											
	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)																											
	EM1160 L3(037)PLF Ctrl Rm - Cable Laying and termination in Location 3 and Location 3a																											
	EM1180 L3(037)PLF Ctrl Rm - Cable Splicing and Testing and Labeling																											
	EM1200 L3(037)PLF Ctrl Rm - AVCSS SYSCON WS and 55" TV Wall Installation																											
	EM1220 L3(037)PLF Ctrl Rm - AVCSS SYSCON WS Tuning																											

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14-Nov-16	Rev: 0	WC	LC
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 Data Date: 14-Aug-15

■ Actual Level of Effort ▼ summary
— Primary Baseline
■ Actual Work
■ Remaining Work
■ Critical Remaining Work
◇ Baseline Milestone
◆ Milestone


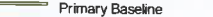






Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Boundary Crossing
 Facilities - Automatic Vehicle
 Clearance Support System (AVCSS)

Activity ID	Activity Name
Location 3a(Inbnd Cargo Exam Bldg (037) ROCARS Room)	
EM1240	L3a(037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a
EM1260	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling
EM1280	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation
EM1300	L3a(037) ROCARS Rm - VTS WS Installation
EM1320	L3a(037) ROCARS Rm - VID WS Installation
EM1340	L3a(037) ROCARS Rm - SURCON and SYSCON and WS Tuning
Location 3a(Inbnd Cargo Exam Bldg (037) Main Server Room)	
EM2120	L3a(037)Main Server Rm - Cable Laying and termination in Location 3 and Location 3a
EM2140	L3a(037)Main Server Rm - Cable Splicing and Testing and Labeling
EM2160	L3a(037)Main Server Rm - AVCSS Server Installation
EM2180	L3a(037)Main Server Rm - VTS Server Installation
EM2200	L3a(037)Main Server Rm - Servers Tuning
Location 4(Outbd Cargo Exam Bldg (023) MDF Room)	
Location 4a(Outbd Cargo Exam Bldg (023) ROCARS Room)	
EM2240	L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling
EM2260	L4a(023)ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation
EM2280	L4a(023)ROCARS Rm - VTS WS Installation
EM2300	L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning
Location 5(Common Utility Enclosure & Staff Subway)	
EM2341	L5(CUE) - Cable Laying between Location 5 and Location 6
EM2361	L5(CUE) - Cable Laying between Location 5 and Location 7
EM2380	L5(CUE) - Cable Splicing and Testing and Labeling
Location 6(Common Utility Enclosure & Staff Subway)	
EM2400	L6(CUE) - Cable Laying between Location 5 and Location 6
EM2420	L6(CUE) - Cable Splicing and Testing and Labeling
Location 7(Common Utility Enclosure & Staff Subway)	
EM2440	L7(CUE) - Cable Laying between Location 5 and Location 7
EM2460	L7(CUE) - Cable Splicing and Testing and Labeling
Location 12(Inbnd Private Car Kiosks,GV Kiosks (027,028,029))	
Inbnd Private Car Kiosks(027) - 9 nos (Phase 1)	
EM1500	L12(027)(9nos P1) - Cable Splicing and Testing and Labeling
EM1520	L12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)
EM1541	L12(027)(9nos P1) - XDB installation (18 nos)
EM1542	L12(027)(9nos P1) - ODB installation (5 nos)
EM1543	L12(027)(9nos P1) - ODB installation (2 nos)
EM1544	L12(027)(9nos P1) - ODB installation (2 nos)
EM1560	L12(027)(9nos P1) - Loop installation (45 nos)
Inbnd Goods Vehicle Kiosks(028) - 5 nos (Phase 1)	
EM1620	L12(028)(5nos P1) - Cable Laying and termination
EM1640	L12(028)(5nos P1) - Cable Splicing and Testing and Labeling
EM1680	L12(028)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)
EM1681	L12(028)(5nos P1) - XDB installation (10 nos)
EM1682	L12(028)(5nos P1) - ODB installation (3 nos)
EM1683	L12(028)(5nos P1) - ODB installation (2 nos)

2015			2016				2017			2018				2019			
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3

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

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

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Activity ID	Activity Name
EM1700	L12(028)(5nos P1) - ALOP Installation (5 nos)
EM1720	L12(028)(5nos P1) - Loop installation (25 nos)
Outbd Goods Vehicle Kiosks(029) - 5 nos (Phase 1)	
EM1740	L12(029)(5nos P1) - Cable Containment in Kiosks
EM1760	L12(029)(5nos P1) - Cable Laying and termination
EM1780	L12(029)(5nos P1) - Cable Splicing and Testing and Labeling
EM1800	L12(029)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)
EM1821	L12(029)(5nos P1) - XDB installation (5 nos)
EM1822	L12(029)(5nos P1) - ODB installation (4 nos)
EM1823	L12(029)(5nos P1) - ODB installation (1 nos)
EM1840	L12(029)(5nos P1) - ALOP Installation (5 nos)
Location 13(Outbd Private Car Kiosks (030)) - 9 nos (Phase 1)	
EM2520	L13(030)(9nos P1) - Cable Containment in Kiosks
EM2540	L13(030)(9nos P1) - Cable Laying and termination
EM2560	L13(030)(9nos P1) - Cable Splicing and Testing and Labeling
EM2580	L13(030)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)
EM2601	L13(030)(9nos P1) - XDB installation (9 nos)
EM2602	L13(030)(9nos P1) - ODB installation (7 nos)
Location 14(Future-Outbd/Inbd Private Car Kiosks) - 6+6 nos	
EM1440	L14 - Cable Laying and termination at ELV Room in CUE
Location 15(Inbd Traffic Control Kiosk (100))	
Location 16(Outbd Traffic Control Kiosk (101))	
EM2760	L16(101) - Cable Laying and termination
EM2780	L16(101) - Cable Splicing and Testing and Labeling
EM2800	L16(101) - AVCSS SYSCON and SURCON Installation
EM2820	L16(101) - VTS WS and 55" LCD Installation
Location 17(Inbd Private Car Exam Bldg(033) Operational Office)	
Location 18 (Outbd Private Car Exam Bldg(024) Operational Office)	
EM2940	L18(024) - Cable Laying and termination
EM2960	L18(024) - Cable Splicing and Testing and Labeling
EM2980	L18(024) - AVCSS SURCON and 55" LCD Installation
EM3000	L18(024) - SURCON Tuning
Location 19 (DOH Cargo Clearance Bldg(043))	
EM1360	L19(043) - Cable Laying and termination
EM1380	L19(043) - Cable Splicing and Testing and Labeling
EM1400	L19(043) - PA and Intercom Installation
EM1420	L19(043) - PA and Intercom Tuning
Inbd Vehicle Clearance Plaza - 8 nos VID, 7 nos VTS, 4 nos TLS	
EM3020	Inbound VID cabling from pillar box to VID field equipment
EM3040	Inbound VTS cabling from pillar box to VTS field equipment
EM3060	Inbound TLS cabling from pillar box to TLS field equipment
EM3080	Inbound VID field equipment installation (8 VID)
EM3100	Inbound VTS field equipment installation (4 RFID + 3 Cameras)
EM3120	Inbound TLS field equipment installation (4 TLS)
EM3140	Inbound VID and VTS and TLS field equipment tuning

2015			2016			2017			2018			2019					
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3

Programme No.: HZMB-DWP
Data Date: 14-Aug-15

- Actual Level of Effort summary
- Primary Baseline
- Actual Work
- Remaining Work
- Critical Remaining Work
- Baseline Milestone
- Milestone

**Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)**

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

Activity ID	Activity Name	2015												2016				2017				2018				2019		
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3					
Location 8(Inbd Private Car Annex (025)) (Phase 2)		<ul style="list-style-type: none"> EM3370 L8(025) - Cable Containment In Kiosks EM3380 L8(025) - Cable Laying and termination EM3400 L8(025) - Cable Splicing and Testing and Labeling 																										
Location 9(Outbd Private Car Annex (032)) (Phase 2)		<ul style="list-style-type: none"> EM3500 L9(032) - Cable Containment in Kiosks EM3520 L9(032) - Cable Laying and termination 																										
Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section II)																												
Site Acceptance Test (Phase 2 / Section II)																												
Operability Period Test (Phase 2 / Section II)																												
Completion (Phase 2 / Section II)																												
Engineering Support for Phase 2 / Section II																												
Procurement for Phase2 / Section III																												
Delivery and Bench Acceptance Test for Phase2 / Section III																												
Installation - Phase 2 / Section III																												
Location 10,11,12,13 (Vehicle Clearance Kiosks)		<ul style="list-style-type: none"> Location 12 Inbd Private Car Kiosks (027) - 12 nos (Phase 2) <ul style="list-style-type: none"> EM4440 L12(027)(12nos P2) - Cable Laying and termination EM4460 L12(027)(12nos P2) - Cable Splicing and Testing and Labeling EM4480 L12(027)(12nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos) Location 13 Outbd Private Car Kiosks (030) - 12 nos (Phase 2) <ul style="list-style-type: none"> EM4560 L13(030)(12nos P2) - Cable Containment in Kiosks Location 12 Outbd Goods Vehicle Kiosks (029) - 3 nos (Phase 2) <ul style="list-style-type: none"> EM4880 L12(029)(3nos P2) - Cable Laying and termination EM4900 L12(029)(3nos P2) - Cable Splicing and Testing and Labeling EM4920 L12(029)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos) EM4940 L12(029)(3nos P2) - ODB & XDB Installation (3 nos) EM4960 L12(029)(3nos P2) - AIOP Installation (3 nos) EM4980 L12(029)(3nos P2) - Loop Installation (15 nos) Location 11 Outbd Coach Kiosks (009) - 4 nos (Phase 2) Location 12 Inbd Goods Vehicle Kiosks (028) - 3 nos (Phase 2) <ul style="list-style-type: none"> EM4720 L12(028)(3nos P2) - Cable Laying and termination EM4740 L12(028)(3nos P2) - Cable Splicing and Testing and Labeling EM4760 L12(028)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos) EM4780 L12(028)(3nos P2) - ODB & XDB Installation (3 nos) EM4800 L12(028)(3nos P2) - AIOP Installation (3 nos) EM4820 L12(028)(3nos P2) - Loop Installation (15 nos) EM4840 L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos) EM5120 L12(028)(3nos P2) - Inbd Goods Vehicle Kiosks Installation Complete Location 10 Shuttle Bus Kiosks (006) - 4 nos (Phase 2) <ul style="list-style-type: none"> EM4000 L10(006)(4nos P2) - Cable Containment in Kiosks Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-1 Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-2 																										
Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section III)																												

2015												2016				2017				2018				2019		
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3					
<ul style="list-style-type: none"> 30-Aug-17, Location 8(Inbd Private Car Annex (025)) - Cable Containment in Kiosks 30-Aug-17, Location 8(Inbd Private Car Annex (025)) - Cable Laying and termination 30-Aug-17, Location 8(Inbd Private Car Annex (025)) - Cable Splicing and Testing and Labeling 30-Aug-17, Location 9(Outbd Private Car Annex (032)) - Cable Containment in Kiosks 30-Aug-17, Location 9(Outbd Private Car Annex (032)) - Cable Laying and termination 																										
<ul style="list-style-type: none"> 09-Oct-17, Installation - Phase 2 / Section III 09-Oct-17, Location 10,11,12,13 (Vehicle Clearance Kiosks) 09-Oct-17, Location 12 Inbd Private Car Kiosks (027) - Cable Laying and termination 09-Oct-17, Location 12 Inbd Private Car Kiosks (027) - Cable Splicing and Testing and Labeling 09-Oct-17, Location 12 Inbd Private Car Kiosks (027) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos) 01-Sep-17, Location 13 Outbd Private Car Kiosks (030) - Cable Containment in Kiosks 31-Aug-17, Location 12 Outbd Goods Vehicle Kiosks (029) - Cable Laying and termination 31-Aug-17, Location 12 Outbd Goods Vehicle Kiosks (029) - Cable Splicing and Testing and Labeling 31-Aug-17, Location 12 Outbd Goods Vehicle Kiosks (029) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos) 31-Aug-17, Location 12 Outbd Goods Vehicle Kiosks (029) - ODB & XDB Installation (3 nos) 31-Aug-17, Location 12 Outbd Goods Vehicle Kiosks (029) - AIOP Installation (3 nos) 31-Aug-17, Location 12 Outbd Goods Vehicle Kiosks (029) - Loop Installation (15 nos) 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - Cable Laying and termination 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - Cable Splicing and Testing and Labeling 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos) 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - ODB & XDB Installation (3 nos) 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - AIOP Installation (3 nos) 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - Loop Installation (15 nos) 24-Aug-17, Location 12 Inbd Goods Vehicle Kiosks (028) - Kiosk Equipment Configuration (3 nos) 30-Aug-17, Location 10 Shuttle Bus Kiosks (006) - Cable Containment in Kiosks 																										

Programme No.: HZMB-DWP
Data Date: 14-Aug-15

- █ Actual Level of Effort
- █ Primary Baseline
- █ Actual Work
- █ Remaining Work
- █ Critical Remaining Work
- ◇ Baseline Milestone
- ◆ Milestone








Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

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

Activity ID	Activity Name
5	Site Acceptance Test (Phase 2 / Section III)
5	Operability Period Test (Phase 2 / Section III)
5	Completion (Phase 2 / Section III)
5	Operation (Phase 2 / Section III)
5	Defect Liability Period (DLP)
5	Document Submission (Phase 2 / Section III)

2015			2016				2017				2018				2019		
Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3

Programme No.: HZMB-DWP
Data Date: 14-Aug-15

-  Actual Level of Effort
-  Primary Baseline
-  Actual Work
-  Remaining Work
-  Critical Remaining Work
-  Baseline Milestone
-  Milestone

Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

Date	Revision	Checked	Approved
14-Nov-16	Rev: 0	JWC	ILC
10-Mar-17	Rev: 1.0a	JWC	ILC
5-May-17	Rev: 1.0b	JWC	ILC

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Report No.: 0165/15/ED/0944

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	Action			
	ET	IEC	ER	Contractor
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.

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

Event	Action			
	ET	IEC	ER	Contractor
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
	ET	IEC	ER	Contractor
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedances abated.

Event / Action Plan for Construction Noise Monitoring

Event	Action			
	ET	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC,ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.

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

Event / Action Plan for Water Quality

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

Event	ET Leader	IEC	ER	Contractor
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, Contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly 4. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Ensure mitigation measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the noncompliance in writing 2. Rectify unacceptable practice 3. Check all plant and equipment and consider changes of working methods 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 5. Implement the agreed mitigation measures 6. Amend working methods if appropriate
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat in-situ measurement to confirm findings 2. Identify source(s) of impact 3. Inform IEC, contractor, ER and EPD 4. Check monitoring data, all plant, equipment and Contractor's working methods 5. Discuss mitigation measures with IEC, ER and Contractor 6. Ensure mitigation measures are implemented 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor's working method 2. Discuss with ET and Contractor on possible remedial actions 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures 3. Request Contractor to critically review the working methods 4. Make agreement on the mitigation measures to be implemented 5. Ensure mitigation measures are properly implemented 6. Assess the effectiveness of the implemented mitigation measures 7. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the noncompliance in writing 2. Take immediate action to avoid further exceedance 3. Rectify unacceptable practice 4. Check all plant and equipment and consider changes of working methods 5. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER 6. Implement the agreed mitigation measures 7. Resubmit proposals of mitigation measures if problem still not under control 8. As directed by the engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level

Event / Action Plan for Ecological Monitoring

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

Event	ET Leader	IEC	ER	Contractor
Limit Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor of findings; 5. Check monitoring data; 6. Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary. 7. If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly. 	<ol style="list-style-type: none"> 1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with the proposals for additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is centered between two thick, horizontal black bars.

Report No.: 0165/15/ED/0944

Appendix E

Waste Flow Table



Monthly Summary of Waste Flow Table for 2017 (year)

Name of Person completing the Record: Marko Chan

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of Non-inert C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
		(see Note 1)						(see Note 2)		
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000m ³)
Jan	0.000	0	0	0	0.000	0	0	0	0	0.580
Feb	0.000	0	0	0	0.000	0	0	0	0	0.585
Mar	0.000	0	0	0	0.000	0	0	0	0	0.999
Apr	0.043	0	0	0	0.043	0	0	0	0	1.073
May	12.682	0	0	12.637	0.045	0	0	0	0	1.321
Jun	27.129	0	0	26.007	1.122	0	0	0	0	2.023
Jul	50.575	0	0	50.089	0.486	0	0	0	0	1.448
Aug	82.234	0	0	78.638	3.596	0	0	0	0	1.656
Sept	76.431	0	0	72.962	3.469	0	0	0	0	1.950
Oct	45.010	0	0	43.983	1.027	0	0	0	0	1.750
Nov										
Dec										
Total	294.104	0.000	0.000	284.316	9.788	0.000	0.000	0.000	0.000	13.385

Notes:

- (1) Broken concrete for recycling into aggregates.
- (2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

Monthly Summary of Excavated Marine Sediment for 2017 (year)

Month	Total Quantity of Excavated Marine Sediment Generated in '000m ³	Reused in this contract in '000m ³	Reused in other Projects in '000m ³	Disposed of at CMP in '000m ³
Jan	0.656	0.000	0.000	0.656
Feb	0.264	0.000	0.000	0.264
Mar	0.000	0.000	0.000	0.000
Apr	1.288	0.000	0.000	1.288
May	1.440	0.000	0.000	1.440
Jun	0.000	0.000	0.000	0.000
Jul	0.000	0.000	0.000	0.000
Aug	0.248	0.000	0.000	0.248
Sep	0.000	0.000	0.000	0.000
Oct	0.000	0.000	0.000	0.000
Nov				
Dec				
Total	3.896	0.000	0.000	3.896

Remark: 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



ATAL Technologies Ltd.

Contract: HY/2013/06 HKBCF- Automatic Vehicle Clearance Support System

Location: Artificial Island of HKBCF (C3 Area)

Ver: 1st
Date: Jan 2017

Monthly Summary Waste Flow Table for 2017

Month	Inert C&D Waste disposal / 墮性廢物 (in tonnes) (see Note 1)						Non-inert C&D Waste disposal 非墮性廢物 (in tonnes)		Waste to be recycled and returned / 可再循環利用或回收的廢物								Total Quantity Generated 總生產量	
	Reused in the Work Package (e.g. backfilling) 再用於工程 (如回填)		Reused in other Projects 再用於其他工程		Inert Waste (e.g. soil, broken concrete, rubble, fill material etc.) 墮性廢物 (如泥, 石, 磚, 瓦, 填料等)		Others (e.g. general refuse, broken formwork etc) 其他 (如垃圾, 廢板枋等)		Metals 金屬		Plastic 塑膠		Paper/cardboard packaging 廢紙/包裝紙類		Chemical Waste 化學廢物			(a)= (b+c+d+e)
	(b)		(c)		(d)		(e)		(in tonnes)		(in tonnes)		(in tonnes)		(in litre)			
	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量		
January	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.000
February	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.000	0.000	0.000	0.000
March	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002
April	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005
May	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020	0.020	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020
June	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020	0.020	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020
July	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020	0.020	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.020
August	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.030	0.030	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.030
September	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050	0.030	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050
October	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050	0.030	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.050
November																		
December																		
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.197	0.197	0.160	0.160	0.000	0.000	0.004	0.004	0.000	0.000	0.197	0.197

Notes: (1) The quantities 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 gcr-3.



ATAL Technologies Ltd.
 Contract No. HY/2013/06 HKBCF Automatic Vehicle Clearance Support System
 Location: Artificial Island of HKIAP

Ver: 1st
 Date: Dec 2016

Monthly Summary Waste Flow Table for 2016

Month	Inert C&D Waste disposal / 惰性廢物 (in tonnes) (see Note 1)						Non-inert C&D Waste disposal 非惰性廢物 (in tonnes)		Waste to be recycled and returned / 可再循環利用或回收的廢物								Total Quantity Generated 總生產量		
	Reused in the Work Package (e.g. backfilling) 再用於工程 (如回填)		Reused in other Projects 再用於其他工程		Inert Waste (e.g. soil, broken concrete, rubble, fill material etc.) 鹽性廢物 (如泥, 石矢頭, 石, 填料等)		Others (e.g. general refuse, broken formwork etc) 其他 (如垃圾, 廢板枋等)		Metals 金屬		Plastic 塑膠		Paper/cardboard packaging 廢紙/包裝紙類		Chemical Waste 化學廢物				
	(b)		(c)		(d)		(e)		(in tonnes)		(in tonnes)		(in tonnes)		(in litre)		(a)=(b+c+d+e)		
	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	Est. Qty. 估計數量	Act. Qty. 實際數量	
January																			
February																			
March																			
April																			
May																			
June																			
July																			
August																			
September	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.002	0.002	N/A	N/A	0.002	0.002
October	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.002	0.002	N/A	N/A	0.002	0.002
November	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.002	0.002	N/A	N/A	0.002	0.002
December	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.002	0.002	N/A	N/A	0.002	0.002
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.008	0.000	0.000	0.008	0.008

Notes: (1) The quantiles 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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Report No.: 0165/15/ED/0944

Appendix F

Environmental Licenses and Permits

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

(update: 03/11/2017)

Item	Permit/Licence Registration	Permit No.	Work Area	Application Date	Issue Date	Valid Date		Status	Remark
						From	To		
1	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/H	HKBCF	16-Jan-15	19 Jan 15	19 Jan 15	Nil	Superseded	
2	Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	Ref No. 387703	Main Site Area	15-Apr-15	15-Apr-15	15-Apr-15	Nil	Valid	
3	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	
6	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	
8	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	
9	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	
11	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	Nil	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	

16	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS1203-15	CUE	20-Oct-15	03-Nov-15	02-Nov-15	31-Jan-16	Superseded	
17	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	
18	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	
19	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	
20	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	
21	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	
22	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	
23	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	
24	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/J	HKBCF	18-Feb-16	25-Feb-16	25-Feb-16	Nil	Superseded	
25	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	
26	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	
27	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0249-16	Main Site Area	03-Mar-16	17-Mar-16	19-Mar-16	18-Jun-16	Superseded	
28	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	
29	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	
30	Environmental Permit Pursuant to Environmental Impact Assessment Ordinance	EP-353/2009/K	HKBCF	24-Mar-16	11-Apr-16	11-Apr-16	Nil	Valid	
31	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	
32	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	
33	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	

34	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	
35	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	
36	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	
37	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-Oct-16	Superseded	
38	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	
39	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	
40	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	
41	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	
42	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0933-16	Main Site Area	18-Aug-16	01-Sep-16	05-Sep-16	31-Dec-16	Expired	
43	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	
44	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	
45	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	
46	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	
47	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	
48	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	
49	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	
50	Construction Noise Permit	GW-RS1267-16	Main Site Area	02-Dec-16	16-Dec-16	19-Dec-16	18-Mar-17	Expired	

	Pursuant to Section 8(6) of the Noise Control Ordinance								
51	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-Feb-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	
60	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	
66	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	
68	Construction Noise Permit Pursuant to Section 8(6) of the Noise Control Ordinance	GW-RS0901-17	Main Site Area	25-Sep-17	11-Oct-17	13-Oct-17	12-Apr-18	Valid	

Summary Record of Non-road Mobile Machinery on Site

Date in	Company	Sub-Con Code	Machinery Type	QPME No.	Brand	Model	EPD's Permit No.	CHEC Permit No.	Remarks
24/08/15	CHEC	00	Vehicle	Nil	Mitsubishi	Pajero	EPD-EE-030502-2015	V0001	
24/08/15	CHEC	00	Vehicle	Nil	Mitsubishi	Pajero	EPD-EE-030501-2015	V0002	
24/08/15	CHEC	00	Vehicle	Nil	Mitsubishi	Pajero	EPD-EE-030499-2015	V0003	
09/09/15	Luen Hing	01	Excavator	Nil	Komatsu	PC228US-3NO	EPD-EE-014032-2015	E0101	
10/09/15	Milestone	02	Excavator	Nil	Kato	HD308USV	EPD-A-022844-2015	E0201	
10/09/15	Milestone	02	Roller	Nil	Bomag	BW110AC	EPD-EE-013655-2015	R0201	
22/09/15	Milestone	02	Generator	Nil	Denyo	DCA400SPM	EPD-EE-013452-2015	G0201	
05/10/15	Milestone	02	Excavator	Nil	Komatsu	PC228US-3NO	EPD-EE-020096-2015	E0203	
05/10/15	Milestone	02	Excavator	Nil	Komatsu	PC138US-2E1	EPD-EE-028471-2015	E0204	
05/10/15	Milestone	02	Excavator	Nil	Komatsu	PC30	EPD-EE-002807-2016	E0205	
05/10/15	Milestone	02	Roller	Nil	Ingersoll Rand	SD-100D-TF	EPD-EE-013532-2015	R0202	
07/10/15	CHEC	00	Mobile generator	Nil	Airman	SDG-100S	EPD-EE-013506-2015	G0004	
08/10/15	CHEC	00	Vehicle	Nil	Mitsubishi	Pajero	EPD-EE-032462-2015	V0004	
08/10/15	Hin Sum	05	Excavator	Nil	Doosan	DX340LC	EPD-A-017285-2015	E0501	
08/10/15	Hin Sum	05	Excavator	Nil	Doosan	DX340LC	EPD-A-017282-2015	E0502	
27/10/15	CHEC	00	Vehicle	Nil	Mitsubishi	Pajero	EPD-EE-030985-2015	V0005	
28/10/15	CHEC	00	Mobile generator	Nil	Denyo	DCA-45SPI	EPD-EE-015339-2015	G0005	
30/10/15	Luen Hing	01	Generator	EPD-01276	Airman	SDG150S	EPD-EE-015610-2015	G0101	
02/11/15	Milestone	02	Crawler Crane	Nil	Hitachi	SCX1000A-3	EPD-A-018963-2015	C0203	
02/11/15	Luen Hing	01	Excavator	Nil	Kato	HD1250VII	EPD-EE-016375-2015	E0103	
02/11/15	Luen Hing	01	Roller	Nil	Derrupe	CD400L	EPD-EE-033204-2015	R0101	
02/11/15	Luen Hing	01	Excavator	Nil	Kato	HD1430V	EPD-A-029987-2015	E0104	
03/11/15	Milestone	02	Generator	Nil	Mcwel	MGC310S	EPD-EE-019446-2015	G0202	
09/11/15	Milestone	02	Crawler Crane	Nil	Kobelco	BM700	EPD-EE-022291-2015	C0204	
10/11/15	CHEC	00	Mobile generator	Nil	Denyo	DCA-45SPI	EPD-EE-034887-2015	G0006	
12/11/15	Hin Sum	05	Excavator	Nil	Caterpillar	CAT308B	EPD-EE-031895-2015	E0503	
13/11/15	CHEC	00	Mobile generator	Nil	Nippon	NES220EM	EPD-EE-013415-2015	G0007	
13/11/15	CHEC	00	Mobile generator	Nil	Nippon	NES220SH	EPD-EE-035046-2015	G0008	
18/11/15	Hin Sum	05	Excavator	Nil	Komatsu	PC128US	EPD-EE-034970-2015	E0504	
18/11/15	Hin Sum	05	Roller	Nil	Dynapac	CA402D	EPD-EE-001636-2016	R0501	
18/11/15	Hin Sum	05	Dump Truck	Nil	Mitsubishi	M26B	EPD-EE-000307-2016	V0501	
18/11/15	Hin Sum	05	Dump Truck	Nil	Mitsubishi	M26B	EPD-EE-001482-2016	V0502	
18/11/15	Hin Sum	05	Dump Truck	Nil	Mitsubishi	M26B	EPD-EE-000308-2016	V0503	
18/11/15	Hin Sum	05	Dump Truck	Nil	Mitsubishi	M26B	EPD-EE-002299-2016	V0504	
20/11/15	Luen Hing	01	Crawler Crane	Nil	IHI	CCH500III	EPD-EE-012599-2015	C0101	
23/11/15	Milestone	02	Vehicle	Nil	MAN	15.255 LRC	EE/048316/2015 (Application Ref)	V0201	
25/11/15	Luen Hing	01	Excavator	Nil	Hitachi	ZX330LC-3	EPD-EE-033445-2015	E0106	
25/11/15	Luen Hing	01	Generator	EPD-03248	Nippon	NES125TI	EPD-A-032493-2015	G0102	
30/11/15	Hing Fu	08	Excavator	Nil	Caterpillar	305SR	EPD-EE-028130-2015	E0801	
30/11/15	Hing Fu	08	Excavator	Nil	Komatsu	PC228US-LC3	EPD-EE-028132-2015	E0802	
01/12/15	Hing Fu	08	Mobile Generator	Nil	Airman	SDG100S	EPD-EE-026598-2015	G0801	
04/12/15	Luen Hing	01	Generator	Nil	Nippon Sharyo	EDW300S-2	EPD-EE-016380-2015	G0103	
05/12/15	Luen Hing	01	Excavator	Nil	Sumitomo	SH450LHD	EPD-EE-011610-2015	E0107	
07/12/15	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017065-2015	E0505	

07/12/15	Luen Hing	01	Crawler Crane	Nil	Manitowoc	8500-1	EPD-EE-007945-2015	C0102	
08/12/15	Hin Sum	05	Excavator	Nil	Doosan	DX480LC	EPD-EE-035837-2015	E0506	
08/12/15	Hin Sum	05	Roller	Nil	Dynapac	CA2500D	EPD-EE-000309-2016	R0502	
08/12/15	Hing Fu	08	Roller	Nil	Bomag	BW123AD	EPD-EE-031542-2015	R0801	
12/12/15	Luen Hing	01	Air Compressor	Nil	Komatsu	EC25SSB-6	EPD-EE-015876-2015	A0101	
12/12/15	Luen Hing	01	Air Compressor	Nil	Airman	PDS185S	EPD-EE-015627-2015	A0102	
12/12/15	Luen Hing	01	Air Compressor	Nil	Airman	PDS185S	EPD-EE-015871-2015	A0103	
17/12/15	Milestone	02	Air Compressor	Nil	Airman	PDS175S	EPD-EE-017205-2015	A0201	
21/12/15	Luen Hing	01	Crawler Crane	Nil	Hitachi	EX100T	EPD-EE-015582-2015	C0103	
23/12/15	Luen Hing	01	Crawler Crane	Nil	Kobelco	CKE1100G	EPD-A-029170-2015	C0104	
28/12/15	Milestone	02	Generator	Nil	Mcwel	MGC400S	EPD-EE-019443-2015	G0203	
28/12/15	Luen Hing	01	Generator	EPD-03249	Nippon	NES125TI	EPD-A-032497-2015	G0104	
29/12/15	CHEC	00	Light Tower	Nil	Atlas Copco	QLT M10	Excluded (<19KW)	T0001	
29/12/15	CHEC	00	Light Tower	Nil	Atlas Copco	QLT M10	Excluded (<19KW)	T0002	
29/12/15	CHEC	00	Light Tower	Nil	Atlas Copco	QLT M10	Excluded (<19KW)	T0003	
29/12/15	CHEC	00	Light Tower	Nil	Atlas Copco	QLT M10	Excluded (<19KW)	T0004	
29/12/15	CHEC	00	Light Tower	Nil	Atlas Copco	QLT M10	Excluded (<19KW)	T0005	
30/12/15	Luen Hing	01	Excavator	Nil	Hitachi	ZX225USR3	EPD-EE-001193-2015	E0108	
02/01/16	Luen Hing	01	Crawler Crane	Nil	Manitowoc	11000-1	EPD-A-011824-2015	C0106	
04/01/16	Luen Hing	01	Excavator	Nil	Yanmar	Vi030-5B	Excluded (<19KW)	E0109	
04/01/16	Hing Fu	08	Excavator	Nil	Kobelco	SK310	EPD-EE-022781-2015	E0803	
06/01/16	Luen Hing	01	Generator	EPD-02979	Airman	SDG125S-3B1	EPD-A-004746-2015	G0105	
12/01/16	Milestone	02	Roller	Nil	Bomag	BW212D-3	EPD-EE-008317-2015	R0203	
13/01/16	Luen Hing	01	Excavator	Nil	Komatsu	PC228USLC-3EO	EPD-A-027417-2015	E0110	
13/01/16	Luen Hing	01	Generator	EPD-00875	Airman	SDG100S	EPD-EE-008065-2015	G0106	
14/01/16	Luen Hing	01	Air Compressor	Nil	Airman	PDS390S-5C1	EPD-A-020929-2015	A0104	
18/01/16	CHEC	00	Mobile generator	Nil	Airman	SDG-150SJ	EPD-EE-014252-2015	G0009	
26/01/16	Milestone	02	Tower Crane	Nil	Zoomlion	TCT7527	Excluded (>560kW)	C0205	
01/02/16	Hing Fu	08	Excavator	Nil	Kobelco	SK-300	EPD-EE-027600-2015	E0804	
01/02/16	Hing Fu	08	Excavator	Nil	Kato	HD800NVII	EPD-EE-033850-2015	E0805	
01/02/16	Luen Hing	01	Excavator	Nil	Sumitomo	SH-300	EPD-EE-016377-2015	E0112	
04/02/16	Milestone	02	Generator	Nil	Mcwel	MGC310S	EPD-EE-028924-2015	G0204	
05/02/16	Luen Hing	01	Generator	Nil	Denyo	DCA-45SPI	EPD-EE-015630-2015	G0107	
16/02/16	Luen Hing	01	Mobile Crane	Nil	Kato	KR-25H-V8	EPD-A-006354-2016	C0107	
16/02/16	Luen Hing	01	Excavator	Nil	Kobelco	SK115SR-1E	EPD-EE-015641-2015	E0113	
17/02/16	Hing Fu	08	Excavator	Nil	Kobelco	SK-310	EPD-EE-029070-2015	E0806	
17/02/16	CHEC	00	Mobile generator	Nil	Denyo	DCA-45SPI	EPD-EE-013419-2015	G0010	
19/02/16	CHEC	00	Mobile generator	Nil	Nippon Sharyo	NES220SHE	EPD-EE-036463-2015	G0011	
22/02/16	Luen Hing	01	Crawler Crane	Nil	Manitowoc	11000-1	EPD-A-011805-2015	C0108	
25/02/16	Luen Hing	01	Excavator	Nil	Hitachi	ZX200-3	EPD-A-002204-2016	E0114	
25/02/16	Luen Hing	01	Mobile Crane	Nil	Kato	KR-35H-V2	EPD-EE-015608-2015	C0109	
26/02/16	ATAL	12	Mobile Generator	Nil	Top One Power	TOP110	EPD-EE-012989-2015	G1202	
27/02/16	Hing Fu	08	Mobile Generator	EPD-03072	Denyo	DCA-150ESK	EPD-EE-006793-2015	G0802	
29/02/16	Luen Hing	01	Excavator	Nil	Kobelco	SK350LC	EPD-EE-007211-2015	E0115	
02/03/16	Luen Hing	01	Excavator	Nil	Kobelco	SK60SR	EPD-EE-014034-2015	E0116	
03/03/16	Luen Hing	01	Excavator	Nil	Komatsu	PC228US-3E0	EPD-A-027401-2015	E0117	
04/03/16	Hing Fu	08	Roller	Nil	Sakai	SV90	EPD-EE-012317-2015	R0803	
05/03/16	CHEC	00	Mobile generator	Nil	Nippon Sharyo	NES210SH	EPD-EE-022043-2015	G0012	
05/03/16	CHEC	00	Mobile generator	Nil	Nippon Sharyo	NES220SHE	EPD-EE-015305-2015	G0013	

05/03/16	CHEC	00	Mobile generator	Nil	Nippon Sharyo	NES220SHE	EPD-EE-034366-2015	G0014
05/03/16	CHEC	00	Mobile generator	Nil	Nippon Sharyo	NES220SHE	EPD-EE-023505-2015	G0015
08/03/16	Luen Hing	01	Mobile Generator	EPD-00387	Airman	SDG45S-3A6	EPD-EE-004631-2015	G0108
08/03/16	Luen Hing	01	Mobile Generator	EPD-01063	Airman	SDG150S	EPD-EE-008083-2015	G0109
11/03/16	Luen Hing	01	Crawler Crane	Nil	Manitowoc	11000-1	EPD-A-008975-2015	C0110
11/03/16	CHEC	00	Mobile generator	Nil	Saonon	S220JSPS	EPD-A-004256-2016	G0016
11/03/16	CHEC	00	Mobile generator	Nil	Saonon	S220JSPS	EPD-A-004257-2016	G0017
11/03/16	Luen Hing	01	Excavator	Nil	SUMITOMO	SH-300	EPD-EE-016377-2015	E0118
12/03/16	Milestone	02	Vehicle	Nil	Volvo	FM400 84RB	EPD-EE-034591-2015	V0202
21/03/16	Luen Hing	01	Roller	Nil	Sakai	SW502S-1	EPD-A-014928-2015	R0102
21/03/16	Luen Hing	01	Roller	Nil	PACLITE	VR6500KE	Excluded (<19kw)	R0103
21/03/16	Luen Hing	01	Roller	Nil	HEAVY INDUSTRIE	EY15D	Excluded (<19kw)	R0104
23/03/16	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-60SPI	EPD-EE-013497-2015	G0803
23/03/16	Hing Fu	08	Mobile Generator	Nil	Airman	SDG-100	EPD-EE-036104-2015	G0804
23/03/16	Luen Hing	01	Excavator	Nil	Komatsu	PC78US-5	EPD-EE-000369-2015	E0119
31/03/16	Hing Fu	08	Excavator	Nil	Kobelco	SK350D-6E	EPD-EE-011607-2015	E0808
05/04/16	Luen Hing	01	Excavator	Nil	Komatsu	PC228US-3E0	EPD-A-027401-2015	E0120
06/04/16	Luen Hing	01	Roller	Nil	struction machinery M	TMR55KD	Excluded (<19kw)	R0105
08/04/16	Luen Hing	01	Crawler Crane	Nil	Hitachi	ZX135UST	EPD-EE-020284-2015	C0111
12/04/16	Luen Hing	01	Mobile Generator	Nil	N.A	N.A	Excluded (<19kw)	G0110
12/04/16	Luen Hing	01	Mobile Generator	Nil	N.A	N.A	Excluded (<19kw)	G0111
13/04/16	Luen Hing	01	Excavator	EPD-03513	YANMAR	VIO30-6B	EPD-A-005175-2016	E0121
15/04/16	Hing Fu	08	Excavator	Nil	Kobelco	SK300	EPD-EE-028218-2015	E0809
18/04/16	CHEC	00	Drilling rig	Nil	核工業部二一〇廠	HXY-500	EPD-EE-003277-2016	B0001
19/04/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017074-2015	E0507
19/04/16	Hin Sum	05	Roller	Nil	Vibromax	W1103D	EPD-EE-000294-2016	R0503
19/04/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017073-2015	E0508
19/04/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017076-2015	E0509
22/04/16	Luen Hing	01	Mobile Generator	Nil	Denyo	DCA-60SPH	EPD-EE-015611-2015	G0112
23/04/16	Hing Fu	08	Excavator	Nil	Caterpillar	336D	EPD-EE-003548-2015	E0810
25/04/16	Luen Hing	01	Mobile generator	EPD-03435	Nippon Sharyo	NES100TI	EPD-A-036973-2015	G0113
25/04/16	Luen Hing	01	Excavator	Nil	Komatsu	PC78US-6N0	EPD-EE-031118-2015	E0122
03/05/16	Luen Hing	01	Crawler Crane	Nil	Kobelco	PS90	EPD-EE-009201-2015	C0112
07/05/16	Hing Fu	08	Excavator	Nil	Kobelco	SK350LC	EPD-EE-008671-2015	E0811
09/05/16	Hing Fu	08	Mobile Generator	EPD-00577	DENYO	DCA-60ESH	EPD-EE-001329-2015	G0805
09/05/16	Luen Hing	01	Mobile Generator	EPD-03150	Nippon Sharyo	NES45TY2	EPD-A-023911-2015	G0114
11/05/16	Hang Tong	15	Excavator	Nil	Hitachi	EX450H-5	EPD-EE-022970-2015	E1501
11/05/16	Luen Hing	01	Excavator	Nil	YANMAR	Vio30-5B	Excluded (<19KW)	E0124
11/05/16	Hang Tong	15	Crawler Crane	Nil	Manitowoc	11000-1	EPD-A-027630-2015	C1501
11/05/16	CHEC	00	Excavator	Nil	Caterpillar	320C	EPD-EE-003051-2015	E0001
11/05/16	CHEC	00	Loader	Nil	Caterpillar	CAT-966G	EPD-EE-002812-2015	L0001
16/05/16	Hang Tong	15	Excavator	Nil	Doosan	DX340LV	EPD-EE-031303-2015	E1502
16/05/16	Yeung Kong	16	Excavator	Nil	Airman	AX40U-S	EPD-EE-002653-2016	E1601
18/05/16	Hang Tong	15	Mobile Generator	Nil	Huadong Power Mach	HDV125-S	EPD-EE-011647-2015	G1501
18/05/16	Hang Tong	15	Mobile Generator	Nil	Huadong Power Mach	HDVS1305043	EPD-EE-011671-2015	G1502
19/05/16	Luen Hing	01	Lifting Platform	Nil	Hitachi	HX120B	EPD-EE-015613-2015	L0101
20/05/16	Luen Hing	01	Vehicle	Nil	SANY	SY5255THB-37	EPD-EE-006058-2015	V0101
20/05/16	Luen Hing	01	Vehicle	Nil	SANY	SY5418THB-560C-8	EPD-EE006423-2015	V0102
23/05/16	Hang Tong	15	Excavator	Nil	Doosan	DX480LC	EPD-A-017622-2015	E1505

23/05/16	Hang Tong	15	Excavator	Nil	Doosan	DX480LC	EPD-A-024514-2015	E1506	
24/05/16	Luen Hing	01	Crawler Crane	Nil	Kobelco	7065	EPD-EE-009255-2015	C0113	
24/05/16	Luen Hing	01	Excavator	Nil	Kobelco	SK135SR-1E	EPD-EE-015642-2015	E0125	
25/05/16	Luen Hing	01	Mobile Generator	EPD-03452	Nippon Sharyo	NES220TI	EPD-A-002667-2016	G0115	
30/05/16	Luen Hing	01	Excavator	Nil	Kobelco	SK300-1	EPD-EE-011324-2015	E0126	
31/05/16	Luen Hing	01	Mobile Generator	Nil	Nissha	NES125TI	EPD-A-032499-2015	G0116	
31/05/16	Yeung Kong	16	Excavator	Nil	Caterpillar	312B	EPD-EE-034794-2015	E1602	
01/06/16	Hing Fu	08	Excavator	Nil	Kobelco	SK350LC-8	EPD-A-000915-2015	E0812	
02/06/16	Hang Tong	15	Crawler Crane	Nil	SANY	SCC600E	EPD-EE-033342-2015	C1502	
02/06/16	Hang Tong	15	Mobile Generator	Nil	ICE	335E	EPD-EE-024104-2015	G1503	
10/06/16	ATAL	12	Mobile Generator	Nil	Top One Power	TOP110	EPD-EE-012994-2015	G1203	
15/06/16	Hing Fu	08	Roller	Nil	Sakai	HV60ST	Excluded (<19KW)	R0804	
15/06/16	Hing Fu	08	Roller	Nil	Wacker Neuson	N.A	Excluded (<19KW)	R0805	
15/06/16	Hing Fu	08	Vibrator Plate	Nil	N.A	N.A	Excluded (<19KW)	VP0801	
15/06/16	Hing Fu	08	Vibrator Plate	Nil	Wacker Neuson	N.A	Excluded (<19KW)	VP0802	
16/06/16	DSI	18	Mobile Generator	Nil	Nissha	NES150SHE	EPD-EE-009824-2015	G1801	
21/06/16	Hin Sum	05	Excavator	Nil	Doosan	DX340LC	EPD-A-017484-2015	E0510	
21/06/16	Hang Tong	15	Excavator	Nil	Kobelco	SK350LC	EPD-EE-002905-2015	E1507	
21/06/16	Hang Tong	15	Excavator	Nil	Komatsu	PC78US-6NO	EPD-EE-007116-2015	E1508	
22/06/16	Hing Fu	08	Excavator	Nil	Kobelco	SK220LC-3	EPD-EE-029755-2015	E0813	
23/06/16	Hing Fu	08	Excavator	EPD-02827	Kobelco	SK350LC-8	EPD-A-013626-2015	E0814	
24/06/16	Hang Tong	15	Excavator	Nil	Hitachi	ZX520LCH-3	EPD-EE-011649-2015	E1509	
27/06/16	Hang Tong	15	Excavator	Nil	Hitachi	ZX75US-A	EPD-EE-002873-2015	E1510	
27/06/16	Luen Hing	01	Roller	Nil	Bomag	BW121AC	EPD-EE-015552-2015	R0106	
27/06/16	Luen Hing	01	Excavator	Nil	Kobelco	SK235SR	EPD-EE-014036-2015	E0127	
04/07/16	Hang Tong	15	Excavator	Nil	Doosan	DX340LC	EPD-A-017320-2015	E1511	
04/07/16	Hang Tong	15	Excavator	Nil	Sumitomo	SH60	EPD-EE-008311-2015	E1512	
04/07/16	Hin Sum	05	Excavator	Nil	Caterpillar	320D	EPD-EE-035145-2015	E0511	
04/07/16	Hin Sum	05	Loader	Nil	Caterpillar	963	EPD-EE-001836-2016	L0501	
04/07/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017087-2015	E0512	
05/07/16	Hing Fu	08	Lifting Platform	Nil	Tadano	AC-120-1-80104	EPD-EE-029460-2015	L0801	
05/07/16	Hing Fu	08	Excavator	Nil	Doosan	DX300LC	EPD-EE-020560-2015	E0815	
07/07/16	Hang Tong	15	Excavator	Nil	Komatsu	PC78US-6NO	EPD-EE-002824-2015	E1513	
11/07/16	Hang Tong	15	Air Compressor	Nil	Airman	PDS390S	EPD-EE-002736-2015	A1501	
11/07/16	Hang Tong	15	Air Compressor	Nil	Airman	PDS390S	EPD-EE-002737-2015	A1502	
18/07/16	Hing Fu	08	Mobile Generator	Nil	Sharyo	NES-150SH-2	EPD-EE-015382-2015	G0806	
18/07/16	Hing Fu	08	Air Compressor	Nil	Airman	PDS-175S	EPD-EE-015320-2015	A0801	
18/07/16	Hoi Cheung	19	Mobile Generator	Nil	KUETSU INDUSTR	SDG60G	EPD-EE-000297-2015	G1901	
19/07/16	Milestone	02	Mobile generator	Nil	Nippon Sharyo	NES200EM	EPD-EE-013492-2015	G0205	
19/07/16	Hin Sum	05	Excavator	Nil	Doosan	DX480LC	EPD-A-000593-2016	E0513	
20/07/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017084-2015	E0514	
20/07/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-004452-2015	E0515	
20/07/16	Hin Sum	05	Loader	Nil	Caterpillar	980H	EPD-EE-001638-2016	L0502	
20/07/16	Hin Sum	05	Loader	Nil	Caterpillar	973C	EPD-EE-002295-2016	L0503	
21/07/16	Hang Tong	15	Roller	Nil	Ingersoll Rand	DD24	EPD-EE-002879-2015	R1501	
25/07/16	Luen Hing	01	Mobile Crane	Nil	Kato	KR-25H-V8	EPD-A-006218-2016	C0114	
25/07/16	Milestone	02	Crawler Crane	Nil	Kobelco	7055	EPD-EE-032995-2015	C0206	
25/07/16	Milestone	02	Vehicle	Nil	TCM	FD25T3	EPD-EE-005934-2015	V0203	
25/07/16	Hang Tong	15	Roller	Nil	KASA SANGYO CO.	MVH-150 DA	Excluded (<19kw)	R1502	

26/07/16	DSI	18	Mobile Generator	EPD-02389	Nippon Sharyo	NES25TI	EPD-A-009417-2015	G1802	
26/07/16	DSI	18	Air Compressor	Nil	Airman	PDS175S	EPD-EE-002538-2015	A1801	
27/07/16	ATAL	12	Mobile Generator	Nil	Top One Power	TOP110	EPD-EE-013029-2015	G1205	
28/07/16	Hang Tong	15	Excavator	Nil	Doosan	DX340LC	EPD-A-017259-2015	E1514	
29/07/16	Hin Sum	05	Roller	Nil	Dynapac	CA511D	EPD-EE-001634-2016	R0504	
06/08/16	Milestone	02	Vehicle	Nil	Sany	JAI Y9FFY4C7009797	EPD-EE-036056-2015	V0204	
09/08/16	Luen Hing	01	Vehicle	Nil	SANY	SY5360THB-45V	EPD-EE-008717-2015	V0103	
10/08/16	Luen Hing	01	Mobile Crane	Nil	Kato	KR-75H	EPD-A-005905-2016	C0115	
11/08/16	Hoi Cheung	19	Vehicle	Nil	Mitsubishi	FD25NT	EPD-A-004526-2016	V1901	
11/08/16	Hang Tong	15	Excavator	Nil	Sumitomo	SH200-3	EPD-EE-011606-2015	E1515	
11/08/16	Luen Hing	01	Excavator	Nil	Kato	HD513MRIII	EPD-EE-006001-2015	E0128	
11/08/16	Milestone	02	Air Compressor	Nil	KUETSU INDUSTR	PDS175S	EPD-EE-000793-2015	A0202	
12/08/16	Hing Fu	08	Vibro Hammer	Nil	Ice	416L	EPD-EE-023014-2015	VH0801	
15/08/16	Hang Tong	15	Excavator	Nil	Komatsu	PC200-8	EPD-EE-007995-2015	E1516	
17/08/16	Hang Tong	15	Excavator	Nil	Hitachi	ZX225USR-3	EPD-A-002241-2016	E1517	
17/08/16	Hin Sum	05	Dump Truck	Nil	Volvo BM	A20	EPD-EE-030946-2015	V0505	
17/08/16	Hin Sum	05	Mobile Generator	Nil	Nippon Sharyo	NES150SH-3	EPD-EE-002699-2016	G0501	
17/08/16	Hin Sum	05	Mobile Generator	Nil	Denyo	DCA-45SPI	EPD-EE-002729-2016	G0502	
18/08/16	Hin Sum	05	Dump Truck	Nil	Doosan	DA40	EPD-EE-015526-2015	V0506	
18/08/16	CHEC	00	Excavator	Nil	Kobelco	sk200	EPD-EE-002895-2015	E0002	
20/08/16	Hing Fu	08	Mobile Generator	Nil	Ice	400rf	EPD-A-006545-2016	G0808	
20/08/16	Hing Fu	08	Crawler Crane	Nil	Kobelco	7055	EPD-EE-013848-2015	C0801	
22/08/16	Hang Tong	15	Air Compressor	Nil	Airman	PDS175S	EPD-EE-002506-2015	A1503	
25/08/16	Hing Fu	08	Mobile Generator	Nil	Goto	DLW-300SDK	Excluded (<19KW)	G0809	
25/08/16	Hing Fu	08	Mobile Generator	Nil	Goto	DLW-300SDK	Excluded (<19KW)	G0810	
29/08/16	Hing Fu	08	Roller	Nil	DYNAPAC	CA2500D	EPD-A-001622-2016	R0806	
29/08/16	Hang Tong	15	Excavator	EPD-03514	Yanmar	VIO30-6B	EPD-A-001540-2016	E1518	
29/08/16	Hang Tong	15	Mobile Generator	Nil	Denyo	DCA-45ESH	EPD-EE-006776-2015	G1507	
29/08/16	Hang Tong	15	Mobile Generator	EPD-01164	Denyo	DCA-45ESH	EPD-EE-006244-2015	G1508	
29/08/16	Hang Tong	15	Mobile Generator	EPD-02513	Denyo	DCA-100ESI	EPD-EE-006191-2015	G1509	
29/08/16	Hang Tong	15	Excavator	Nil	Kato	HD513MRV	EPD-A-005172-2016	E1519	
29/08/16	Luen Hing	01	Vehicle	Nil	Sany	SY5313THB-46W	EPD-EE-007790-2015	V0104	
30/08/16	Hoi Cheung	19	Excavator	Nil	kato	HD513MR III	EPD-EE-019254-2015	E1901	
31/08/16	Luen Hing	01	Mobile Generator	EPD-03428	Nissha	NES125TI	EPD-A-036978-2015	G0117	
31/08/16	Luen Hing	01	Mobile Generator	EPD-03427	Nissha	NES125TI	EPD-A-036979-2015	G0118	
01/09/16	Hin Sum	05	Dump Truck	Nil	Volvo BM	A20	EPD-EE-030951-2015	V0507	
01/09/16	Hin Sum	05	Dump Truck	Nil	Volvo BM	A20	EPD-EE-030942-2015	V0508	
01/09/16	Luen Hing	01	Mobile Generator	EPD-03261	Nippon Sharyo	NES150TI	EPD-A-031767-2015	G0119	
02/09/16	Hin Sum	05	Excavator	Nil	Doosan	DX225LC	EPD-A-017082-2015	E0516	
03/09/16	Hing Fu	08	Excavator	Nil	IHI	50Z	EPD-EE-032985-2015	E0817	
03/09/16	Hing Fu	08	Loader	Nil	Caterpillar	910H	EPD-A-005207-2016	L0801	
05/09/16	Luen Hing	01	Excavator	Nil	Kobelco	SK350LC	EPD-EE-026297-2015	E0130	
05/09/16	Hang Tong	15	Excavator	Nil	Komatsu	PC78US-5	EPD-EE-001192-2015	E1520	
05/09/16	Hing Fu	08	Mobile Generator	EPD-01784	Denyo	DCA-150ESK	EPD-EE-004388-2015	G0811	
05/09/16	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-150ESK	EPD-EE-006795-2015	G0812	
09/09/16	Milestone	02	Excavator	Nil	Komatsu	PC128US-2E1	EPD-EE-035465-2015	E0206	
09/09/16	Hang Tong	15	Excavator	Nil	Komatsu	PC228US-3	EPD-EE-014031-2015	E1521	
12/09/16	CHEC	00	Mobile generator	Nil	Denyo	DCA 45 SPH	EPD-EE-000454-2015	G0018	
12/09/16	Luen Hing	01	Excavator	Nil	Kubota	U-30-3	EPD-EE-015645-2015	E0131	

12/09/16	Hing Fu	08	Excavator	Nil	Kobelco	SK330	EPD-A-005749-2016	E0818	
13/09/16	Hoi Cheung	19	Mobile Generator	Nil	Denyo	DCA60SPH	EPD-EE-000509-2015	G1902	
13/09/16	Hin Sum	05	Excavator	Nil	Caterpillar	329D	EPD-EE-034975-2015	E0517	
14/09/16	Hing Fu	08	Excavator	Nil	Kobelco	SK350D	EPD-A-006578-2016	E0819	
14/09/16	Luen Hing	01	Mobile Generator	EPD-03151	Nippon Sharyo	NES45TY2	EPD-A-023913-2015	G0120	
19/09/16	CHEC	00	Mobile Generator	EPD-01808	Denyo	DCA-60ESI2	EPD-EE-004268-2015	G0019	
19/09/16	CHEC	00	Mobile Generator	EPD-02207	Denyo	DCA-60ESI2	EPD-EE-006402-2015	G0020	
21/09/16	Hing Fu	08	Crawler Crane	Nil	Manitowoc	8500-1	EPD-A-003361-2015	C0802	
22/09/16	Hin Sum	05	Excavator	Nil	Doosan	DX235LCR	EPD-A-017237-2015	E0518	
22/09/16	Hing Fu	08	Mobile Generator	Nil	Ice	350G	EPD-A-036722-2015	G0813	
23/09/16	CHEC	00	Mobile Generator	Nil	Denyo	DCA-150SPM	EPD-A-015401-2015	G0021	
26/09/16	Hang Tong	15	Crawler Crane	Nil	Manitowoc	11000-1	EPD-A-011738-2015	C1504	
27/09/16	Hing Fu	08	Excavator	Nil	Komatsu	PC228U3LC-3EO	EPD-A-001871-2016	E0820	
27/09/16	Hing Fu	08	Excavator	Nil	Komatsu	PC228USLC-3N0	EPD-EE-001129-2015	E0821	
28/09/16	ATAL	12	Mobile Generator	Nil	Top One Power	TOP200	EPD-EE-013084-2015	G1206	
29/09/16	Kin Kay	23	Excavator	Nil	Kato	HD550SEV	EPD-EE-015602-2015	E2301	
29/09/16	Milestone	02	Mobile Generator	Nil	Denyo	DCA125SPM	EPD-EE-000568-2015	G0206	
30/09/16	Hang Tong	15	Excavator	Nil	Kobelco	SK330	EPD-EE-027424-2015	E1522	
03/10/16	Milestone	02	Mobile Generator	Nil	Denyo	DCA125SPM	EPD-EE-000573-2015	G0207	
04/10/16	Luen Hing	01	Mobile Generator	EPD-00877	Airman	SDG100S	EPD-EE-015609-2015	G0121	
04/10/16	Milestone	02	Mobile Generator	Nil	Denyo	DCA220SPMII	EPD-EE-000752-2015	G0208	
04/10/16	Hing Fu	08	Roller	Nil	Hitachi	RC45-3	EPD-EE-005098-2015	R0807	
06/10/16	Hang Tong	15	Excavator	Nil	Doosan	DX300LC	EPD-A-005985-2016	E1523	
07/10/16	Kin Kay	23	Mobile Generator	Nil	Airman	SDG60S	EPD-EE-015595-2015	G2301	
07/10/16	Hing Fu	08	Excavator	Nil	Kobelco	SK135SR	EPD-EE-007168-2015	E0822	
08/10/16	Kin Kay	23	Welding Machine	Nil	N/A	DLW-300ES	Excluded (<19kw)	G2302	
11/10/16	Kin Kay	23	Excavator	Nil	Kato	HD823MR-6	EPD-A-004447-2016	E2302	
11/10/16	Hing Fu	08	Excavator	Nil	Komatsu	PC07FR-1	EPD-EE-008383-2015	E0823	
11/10/16	Hing Fu	08	Excavator	Nil	Kato	HD900 VII	EPD-EE-024870-2015	E0824	
11/10/16	Luen Hing	01	Excavator	Nil	Komatsu	PC228US-3EO	EPD-EE-015644-2015	E0133	
18/10/16	Hing Fu	08	Excavator	Nil	Kato	HD1250V2	EPD-EE-014786-2015	E0825	
18/10/16	Hing Fu	08	Excavator	Nil	Komatsu	PC228US-3-AC	EPD-A-006323-2016	E0826	
20/10/16	Luen Hing	01	Roller	Nil	BITELLI	DTV325	EPD-EE-015550-2015	R0107	
20/10/16	Luen Hing	01	Roller	Nil	Caterpillar	CS-531	EPD-EE-015558-2015	R0108	
24/10/16	Milestone	02	Mobile Crane	Nil	Kato	KR-25H-V8	EPD-A-004726-2015	C0207	
24/10/16	Luen Hing	01	Excavator	Nil	Kato	HD512-6	EPD-A-006093-2015	E0134	
25/10/16	Hing Fu	08	Excavator	Nil	Kato	HD800VII	EPD-EE-011350-2015	E0827	
26/10/16	Hing Fu	08	Excavator	Nil	Caterpillar	345C	EPD-A-001657-2016	E0828	
26/10/16	Hing Fu	08	Excavator	Nil	Komatsu	PC228USLC-3NO	EPD-EE-013660-2015	E0829	
27/10/16	Hing Fu	08	Mobile Generator	Nil	Ice	570	EPD-EE-033488-2015	G0814	
31/10/16	Hing Fu	08	Excavator	Nil	Hitachi	ZX330LC-5G	EPD-EE-022473-2015	E0830	
04/11/16	Hing Fu	08	Excavator	Nil	Kobelco	SK-350	EPD-EE-018095-2015	E0831	
07/11/16	Luen Hing	01	Air Compressor	EPD-03801	Airman	PDS390S-5C1	EPD-A-035992-2015	A0105	
07/11/16	Luen Hing	01	Mobile Generator	EPD-03429	NISSHA	NES125TI	EPD-A-036982-2015	G0122	
07/11/16	Hing Fu	08	Excavator	Nil	Komatsu	PC78US-6NO	EPD-EE-008622-2015	E0832	
10/11/16	Hing Fu	08	Excavator	Nil	Caterpillar	336D	EPD-EE-027209-2015	E0833	
10/11/16	Hing Fu	08	Excavator	Nil	Caterpillar	336D	EPD-EE-027212-2015	E0834	
10/11/16	CHEC	00	Air Compressor	Nil	KUETSU INDUSTR	PDS175S	EPD-EE-000775-2015	A0001	
12/11/16	Hing Fu	08	Lifting Platform	Nil	Aichi	SR210	EPD-EE-012002-2015	L0802	

15/11/16	ATAL	12	Mobile Generator	Nil	Top One Power	TOP42	EPD-EE-012712-2015	G1207	
21/11/16	ATAL	12	Mobile Generator	Nil	Top One Power	TOP42	EPD-EE-012717-2015	G1208	
22/11/16	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA90SPH	EPD-EE-000165-2015	G0815	
22/11/16	Hang Tong	15	Excavator	Nil	Doosan	DX60R	EPD-EE-029125-2015	E1525	
22/11/16	Hang Tong	15	Excavator	Nil	Kobelco	SK70SR-1ES	EPD-EE-007956-2015	E1526	
28/11/16	CHEC	00	Mobile Generator	Nil	Denyo	DCA60SPH	EPD-EE-000531-2015	G0022	
28/11/16	CHEC	00	Mobile Generator	Nil	Denyo	DCA60SPH	EPD-EE-000536-2015	G0023	
28/11/16	Hing Fu	08	Mobile Generator	Nil	Ice	1200E	EPD-EE-008777-2015	G0817	
01/12/16	CHEC	00	Mobile generator	Nil	Denyo	DCA-150SPM	EPD-EE-013403-2015	G0024	
01/12/16	Hang Tong	15	Vehicle	Nil	Supergreat	城市石矢泵有限公司	EPD-EE-024904-2015	V1504	
01/12/16	Hang Tong	15	Vehicle	Nil	Hyundai	HP1530 M43	EPD-EE-022841-2015	V1505	
02/12/16	Luen Hing	01	Excavator	Nil	Hitachi	ZX225USRK	EPD-EE-015634-2015	E0135	
03/12/16	Hang Tong	15	Excavator	Nil	Komatsu	PC128US-2	EPD-EE-027442-2015	E1527	
03/12/16	Luen Hing	01	Excavator	Nil	Kato	HD820VK	EPD-A-006809-2016	E0136	
03/12/16	Hang Tong	15	Crawler Crane	Nil	Sany	SCC800C	EPD-EE-013727-2015	C1505	
06/12/16	Hing Fu	08	Excavator	Nil	Hitachi	ZX350H-3	EPD-A-017500-2015	E0835	
07/12/16	Luen Hing	01	Excavator	Nil	Kobelco	SK-320	EPD-EE-016601-2015	E0137	
13/12/16	Hing Fu	08	Excavator	Nil	Hydraulic Soil	HD1250VII	EPD-EE-019535-2015	E0836	
13/12/16	Hing Fu	08	Excavator	Nil	Kobelco	SK200	EPD-EE-015536-2015	E0837	
15/12/16	Luen Hing	01	Mobile Crane	Nil	Kato	NK500E-III	EPD-EE-001661-2015	C0116	
16/12/16	Hing Fu	08	Excavator	Nil	Caterpillar	314C	EPD-EE-012101-2015	E0838	
17/12/16	Excel	25	Mobile Crane	Nil	Kato	NK450B-V	EPD-EE-024106-2015	C2501	
17/12/16	Luen Hing	01	Excavator	Nil	Kobelco	SK135SR	EPD-EE-006000-2015	E0138	
17/12/16	Luen Hing	01	Excavator	Nil	Yanmar	vio30-5	EPD-EE-025840-2015	E0139	
17/12/16	Hing Fu	08	Air Compressor	Nil	Airman	PDS175S	EPD-EE-016240-2015	A0803	
20/12/16	Luen Hing	01	Excavator	Nil	Hitachi	ZX330-3	EPD-A-007378-2016	E0140	
20/12/16	Hing Fu	08	Mobile Generator	Nil	Nippon Sharyo	NES220TI	EPD-A-006998-2016	G0818	
20/12/16	Hing Fu	08	Mobile Generator	Nil	Nippon Sharyo	NES60TK	EPD-A-005370-2016	G0819	
20/12/16	Luen Hing	01	Mobile Generator	EPD-04555	Nippon Sharyo	NES45TY3	EPD-A-007452-2016	G0123	
20/12/16	Luen Hing	01	Mobile Generator	EPD-04556	Nippon Sharyo	NES45TY3	EPD-A-007453-2016	G0124	
29/12/16	Hing Fu	08	Excavator	Nil	Komatsu	PC228	EPD-EE-022085-2015	E0839	
30/12/16	Luen Hing	01	Crawler Crane	Nil	Kobelco	BM900HK-2F	EPD-A-018070-2015	C0117	
30/12/16	Hang Tong	15	Mobile Generator	Nil	Denyo	DCA-150ESM	EPD-EE-005795-2015	G1510	
30/12/16	ATAL	12	Mobile Crane	Nil	Liebherr	LTM1250-6.1	EPD-EE-009226-2015	C1201	
30/12/16	ATAL	12	Mobile Crane	Nil	Liebherr	LTM1090/2	EPD-EE-009539-2015	C1202	
30/12/16	Excel	25	Lifting Platform	Nil	Construction Machine	GTBZ18	EPD-A-016404-2016	L2501	
30/12/16	Excel	25	Mobile Generator	Nil	DENYO	DCA-400ESM	EPD-EE-006138-2015	G2501	
31/12/16	Excel	25	Lifting Platform	Nil	XCMG	GKS22	EPD-A-004057-2015	L2502	
31/12/16	Hing Fu	08	Excavator	Nil	Komatsu	PC138US-2	EPD-EE-007635-2015	E0840	
31/12/16	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-125SPM	EPD-EE-013477-2015	G0820	
31/12/16	Hing Fu	08	Excavator	Nil	Kobelco	SK125SR	EPD-A-004306-2015	E0841	
31/12/16	Hing Fu	08	Mobile Generator	Nil	Nippon Sharyo	NES60TK	EPD-A-005369-2016	G0821	
06/01/17	Luen Hing	01	Excavator	Nil	Hitachi	ZX135US-3	EPD-A-005891-2016	E0141	
06/01/17	Wai Fung Yee	26	Excavator	Nil	Hitachi	ZX330LC-3	EPD-A-000378-2016	E2601	
06/01/17	Wai Fung Yee	26	Excavator	Nil	Kato	HD1250 VII	EPD-EE-001201-2015	E2602	
06/01/17	Wai Fung Yee	26	Excavator	Nil	Kobelco	SK235SR	EPD-EE-012128-2015	E2603	
06/01/17	Wai Fung Yee	26	Excavator	Nil	Sumitomo	SH125X-3	EPD-EE-016015-2015	E2604	
09/01/17	Hing Fu	08	Crawler Crane	Nil	Manitowoc	11000-1U	EPD-A-007051-2016	C0804	
09/01/17	Milestone	02	Crawler Crane	Nil	Kobelco	7055-2	EPD-EE-028184-2015	C0208	

10/01/17	Goldford	27	Mobile Generator	Nil	Denyo	DCA60USH	EPD-EE-000859-2015	G2701	
10/01/17	Hin Sum	05	Roller	Nil	DYNAPAC	CC1300	EPD-EE-001834-2016	R0505	
16/01/17	Hoi Cheung	19	Mobile Generator	Nil	Denyo	DCA60SPH	EPD-EE-000505-2015	G1903	
16/01/17	Milestone	02	Air Compressor	Nil	Airman	PDS185S	EPD-EE-019481-2015	A0203	
16/01/17	Goldford	27	Crawler Crane	EPD-02379	Manitowoc	11000-1	EPD-A-011739-2015	C2701	
16/01/17	Milestone	02	Mobile Generator	Nil	Airman	SDG250S	EPD-EE-002655-2015	G0209	
17/01/17	Excel	25	Mobile Generator	EPD-00835	Denyo	DCA-220SPM II	EPD-EE-005895-2015	G2502	
19/01/17	Luen Hing	01	Excavator	Nil	Kato	HD820-6	EPD-A-000133-2017	E0142	
20/01/17	Milestone	02	Excavator	Nil	Yanmar	B7-3	EPD-EE-017930-2015	E0207	
23/01/17	Milestone	02	Mobile Generator	Nil	Denyo	DCA150SPM	EPD-EE-016589-2015	G0210	
25/01/17	CHEC	00	Mobile Generator	Nil	Airman	SDG-150SJ	EPD-EE-014249-2015	G0025	
25/01/17	CHEC	00	Mobile Generator	Nil	Denyo	DCA-125SPM	EPD-EE-013503-2015	G0026	
04/02/17	Hin Sum	05	Excavator	Nil	Doosan	DX480LC	EPD-A-017609-2015	E0519	
04/02/17	Hin Sum	05	Mobile Generator	Nil	Denyo	DCA-90SPH	EPD-EE-002731-2016	G0503	
06/02/17	Goldford	27	Lifting Platform	Nil	Hitachi	HX120B	EPD-EE-034222-2015	L2701	
09/02/17	Luen Hing	01	Excavator	Nil	Kato	HD820-6	EPD-A-000141-2017	E0143	
10/02/17	Luen Hing	01	Excavator	Nil	Kato	HD820-6	EPD-A-000302-2017	E0144	
10/02/17	Hin Sum	05	Excavator	Nil	Caterpillar	320D	EPD-EE-035146-2015	E0520	
13/02/17	Hing Fu	08	Crawler Crane	Nil	SENNEBOGEN	2200	EPD-EE-003510-2015	C0805	
13/02/17	Hin Sum	05	Excavator	Nil	Doosan	DX480LC	EPD-A-017576-2015	E0521	
13/02/17	Milestone	02	Mobile Crane	Nil	Kato	KR-50 H-V	EPD-EE-003951-2015	C0209	
13/02/17	Toko	28	Excavator	Nil	Kato	HD800NVII	EPD-EE-009024-2015	E2801	
13/02/17	Toko	28	Excavator	Nil	Komatsu	PC138US-2EO	EPD-EE-008944-2015	E2802	
13/02/17	Toko	28	Excavator	Nil	Kobelco	SK350LC-8	EPD-A-012016-2015	E2803	
15/02/17	Hang Tong	15	Mobile Generator	EPD-02128	Denyo	DCA-100ESI	EPD-EE-005385-2015	G1511	
16/02/17	Luen Hing	01	Roller	Nil	DYNAPAC	CA252STD	EPD-EE-015768-2015	R0109	
16/02/17	Hin Sum	05	Excavator	Nil	Hitachi	ZX330LC-5G	EPD-EE-034993-2015	E0522	
16/02/17	Hin Sum	05	Mobile Generator	EPD-00687	NISSHA	NES150EH	EPD-EE-000113-2015	G0504	
16/02/17	Hin Sum	05	Mobile Generator	EPD-01103	Denyo	DCA150ESH	EPD-EE-009856-2015	G0505	
18/02/17	Hing Fu	08	Excavator	Nil	Komatsu	PC228US-3E0	EPD-A-000541-2017	E0842	
22/02/17	Hing Fu	08	Excavator	Nil	Kato	HD820v	EPD-A-022984-2015	E0843	
24/02/17	Toko	28	Excavator	Nil	Kato	HD550VII	EPD-EE-009021-2015	E2804	
24/02/17	Toko	28	Excavator	Nil	Kobelco	SK350LC-8	EPD-A-000906-2015	E2805	
24/02/17	Kin Kay	23	Excavator	Nil	Hitachi	EX120-1	EPD-EE-019774-2015	E2303	
27/02/17	Hin Sum	05	Mobile Generator	Nil	Miller	Big Blue 600X	EPD-EE-002092-2016	G0506	
27/02/17	Hoi Cheung	19	Mobile Generator	Nil	Nippon Sharyo	68	EPD-EE-003033-2016	G1904	
28/02/17	Hing Fu	08	Crawler Crane	Nil	Manitowoc	8500	EPD-A-014949-2015	C0806	
28/02/17	Toko	28	Excavator	Nil	Kato	HD900VII	EPD-EE-009043-2015	E2806	
01/03/17	Luen Hing	01	Excavator	Nil	Hitachi	ZX225USR-3	EPD-A-007070-2016	E0145	
04/03/17	Hing Fu	08	Excavator	Nil	Komatsu	PC228US-3NO	EPD-EE-003995-2015	E0844	
04/03/17	Hing Fu	08	Excavator	Nil	Airman	AX22-2	Excluded (<19kw)	E0845	
07/03/17	CHEC	00	Mobile Generator	Nil	Denyo	DCA150	EPD-EE-021936-2015	G0027	
07/03/17	CHEC	00	Mobile Generator	Nil	Denyo	DCA-150SPK	EPD-EE-013490-2015	G0028	
07/03/17	CHEC	00	Excavator	Nil	Komatsu	PC228US-3E0	EPD-A-027414-2015	E0003	
08/03/17	Excel	25	Loader	Nil	Xiagong	XG953H	EPD-EE-000665-2015	L2503	
09/03/17	Hin Sum	05	Excavator	Nil	Doosan	DX340LC	EPD-A-017293-2015	E0523	
10/03/17	Goldford	27	Air Compressor	Nil	Airman	PDS-175S	EPD-EE-015319-2015	A2701	
13/03/17	Wai Fung Yee	26	Excavator	Nil	Kobelco	SK200	EPD-EE-028191-2015	E2605	
13/03/17	Wai Fung Yee	26	Excavator	Nil	Kobelco	SK350	EPD-EE-030580-2015	E2606	

17/03/17	Hang Tong	15	Excavator	Nil	Komatsu	PC480-7	EPD-EE-008028-2015	E1528	
17/03/17	Hang Tong	15	Excavator	Nil	Komatsu	PC480-6B	EPD-EE-013508-2015	E1529	
17/03/17	Wai Fung Yee	26	Excavator	Nil	Yanmar	VIO30-1	Excluded (<19kw)	E2607	
20/03/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-002232-2015	G0822	
20/03/17	Luen Hing	01	Excavator	Nil	Hitachi	EX100T	EPD-EE-015582-2015	E0146	
20/03/17	Hang Tong	15	Air Compressor	Nil	Airman	PDS175SC	EPD-EE-006822-2015	A1504	
27/03/17	Luen Hing	01	Excavator	Nil	Hitachi	ZX330-3	EPD-A-005485-2016	E0147	
27/03/17	Luen Hing	01	Mobile Generator	Nil	Denyo	DCA-25ESI	EPD-EE-015629-2015	G0125	
27/03/17	Hang Tong	15	Excavator	Nil	Kobelco	SK330	EPD-A-003642-2016	E1530	
27/03/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-150LSKE	EPD-A-000681-2017	G0823	
27/03/17	Hin Sum	05	Excavator	Nil	Hitachi	ZX850LC-3-DH	EPD-A-000207-2017	E0524	
27/03/17	Excel	25	Loader	Nil	Caterpillar (Qing Aho	SEM630B	EPD-EE-000662-2015	L2504	
27/03/17	Kin Kay	23	Excavator	Nil	Kato	HD820R	EPD-EE-001178-2015	E2304	
27/03/17	Excel	25	Roller	Nil	Dynapac	CC222HF	EPD-EE-019891-2015	R2503	
27/03/17	Excel	25	Roller	Nil	DYNAPAC	CC222HF	EPD-EE-019845-2015	R2504	
27/03/17	Excel	25	Roller	Nil	DYNAPAC	CC222HF	EPD-EE-019895-2015	R2505	
27/03/17	Excel	25	Roller	EPD-00072	DYNAPAC	CP201W	EPD-EE-019896-2015	R2506	
27/03/17	Excel	25	Asphalt Paver	Nil	DYNAPAC	F121 W/D	EPD-EE-019898-2015	P2502	
27/03/17	Excel	25	Milling machine	Nil	Bitelli	SF200R	EPD-EE-019892-2015	M2501	
27/03/17	Excel	25	Milling machine	Nil	WIRTGEN	W350	EPD-EE-019893-2015	M2502	
27/03/17	Excel	25	Asphalt Paver	Nil	Bitelli	255	EPD-EE-019894-2015	P2503	
27/03/17	Toko	28	Excavator	Nil	Kobelco	SK200	EPD-EE-009213-2015	E2807	
29/03/17	Hang Tong	15	Mobile Generator	Nil	Denyo	DCA-150ESK	EPD-EE-002300-2015	G1512	
29/03/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA90SPH	EPD-EE-000128-2015	G0824	
31/03/17	Hang Tong	15	Excavator	Nil	Caterpillar	330C	EPD-EE-026284-2015	E1531	
31/03/17	Hang Tong	15	Crawler Crane	Nil	Kobelco	7055	EPD-EE-032995-2015	C1506	
31/03/17	Luen Hing	01	Excavator	Nil	Kato	HD513MRIII	EPD-EE-015638-2015	E0148	
31/03/17	Luen Hing	01	Mobile Generator	Nil	Nippon Sharyo	NES125TI	EPD-A-006990-2016	G0126	
10/04/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 110	EPD-EE-012967-2015	G1209	
10/04/17	Hing Fu	08	Excavator	Nil	Caterpillar	308BSR	EPD-EE-029093-2015	E0846	
10/04/17	Milestone	02	Excavator	Nil	Komatsu	PC78US-8	EPD-EE-017927-2015	E0208	
11/04/17	Hin Sum	05	Air Compressor	Nil	Atlas Copco	XAS97DD	EPD-EE-001025-2016	A0501	
11/04/17	Hin Sum	05	Roller	Nil	Dynapac	CA602D	EPD-EE-001635-2016	R0506	
11/04/17	Excel	25	Roller	Nil	XCMG	LW400FV	EPD-A-001118-2017	R2501	
11/04/17	Excel	25	Lifting Platform	Nil	XCMG	GKS22	EPD-A-004069-2015	L2505	
11/04/17	Excel	25	Lifting Platform	Nil	Construction Machine	GTBZ18	EPD-A-016407-2015	L2506	
25/04/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 110	EPD-EE-013037-2015	G1210	
25/04/17	Excel	25	Generator	Nil	Yasada	YAS-LDG6500S-GR	Excluded (<19kw)	G2503	
27/04/17	CHBC	00	Mobile Generator	Nil	Denyo	DCA-100	EPD-EE-015304-2015	G0029	
28/04/17	Hin Sum	05	Mobile Generator	Nil	Nippon Sharyo	NES150SH-3	EPD-EE-002701-2016	G0507	
02/05/17	Hoi Cheung	19	Mobile Generator	Nil	Denyo	DCA-60ESH	EPD-EE-015063-2015	G1905	
04/05/17	Hing Fu	08	Excavator	Nil	Komatsu	PC138US-8	EPD-A-030282-2015	E0847	
04/05/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-005450-2015	G0825	
08/05/17	Milestone	02	Loader	Nil	Bobcat	753	EPD-EE-017745-2015	L0201	
08/05/17	Milestone	02	Lifting Platform	Nil	Genie	TH842C	EPD-EE-009701-2015	LP0201	
08/05/17	Milestone	02	Lifting Platform	Nil	JLG	660SJC	EPD-A-005654-2016	LP0202	
11/05/17	Hin Sum	05	Excavator	Nil	Doosan	DX60R	EPD-EE-000031-2016	E0525	
11/05/17	Hin Sum	05	Excavator	Nil	Hitachi	ZX670LCH-3	EPD-A-000888-2017	E0526	
12/05/17	Yee Sun	29	Excavator	Nil	Komatsu	PC210-7	EPD-EE-005003-2016	E2901	

17/05/17	Hing Fu	08	Crawler Crane	Nil	Manitowoc	11000-1	EPD-A-034817-2015	C0807	
24/05/17	Toko	28	Excavator	Nil	Komatsu	PC40MR-3	EPD-EE-034466-2015	E2808	
29/05/17	CHEC	00	Loader	Nil	Komatsu	WA470-6	EPD-EE-011654-2015	L0002	
02/06/17	Hang Tong	15	Excavator	Nil	Hitachi	ZX450LC-3	EPD-EE-031419-2015	E1532	
02/06/17	Hang Tong	15	Excavator	Nil	Hitachi	ZX-450LCH	EPD-EE-031428-2015	E1533	
05/06/17	Hin Sum	05	Dump Truck	Nil	Volvo BM	A20	EPD-EE-030944-2015	V0509	
05/06/17	Hin Sum	05	Dump Truck	Nil	Caterpillar	725	EPD-EE-006426-2015	V0510	
06/06/17	Milestone	02	Excavator	Nil	Yanmar	B7	EPD-EE-002497-2016	E0209	
06/06/17	Luen Hing	01	Excavator	Nil	Kobelco	SK350LC	EPD-EE-002905-2015	E0149	
06/06/17	Luen Hing	01	Excavator	Nil	Sumitomo	SH200-3	EPD-EE-012354-2015	E0150	
07/06/17	Hin Sum	05	Mobile Generator	Nil	Denyo	DCA-45SPI	EPD-EE-002730-2016	G0508	
10/06/17	CHEC	00	Mobile Generator	Nil	Nissha	NES-220SH	EPD-EE-015301-2015	G0030	
12/06/17	Hin Sum	05	Loader	Nil	Caterpillar	953D	EPD-EE-001637-2016	L0504	
12/06/17	Talford	30	Lifting Platform	Nil	Aichi	SR12B	EPD-A-000739-2017	LP3001	
16/06/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 110	EPD-EE-013025-2015	G1211	
16/06/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 110	EPD-EE-012722-2015	G1212	
16/06/17	Hang Tong	15	Roller	Nil	Ingersoll Rand	DD24	EPD-A-033189-2015	R1503	
21/06/17	Toko	28	Excavator	Nil	Doosan	DX225LC	EPD-A-017086-2015	E2809	
26/06/17	Milestone	02	Mobile Generator	Nil	Nippon Sharyo	NES100SM	EPD-EE-033671-2015	G0211	
26/06/17	Milestone	02	Mobile Generator	Nil	Nippon Sharyo	NES200SH	EPD-EE-013401-2015	G0212	
26/06/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 110	EPD-EE-013033-2015	G1213	
27/06/17	Toko	28	Excavator	Nil	Kato	HD1430V	EPD-EE-002858-2015	E2810	
28/06/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-000987-2015	G0826	
28/06/17	Hing Fu	08	Excavator	Nil	Komatsu	PC138US-8	EPD-A-006658-2016	E0848	
28/06/17	Hing Fu	08	Excavator	Nil	Yanmar	VIO70-3A	EPD-A-001414-2017	E0849	
28/06/17	Hing Fu	08	Excavator	Nil	Komatsu	PC138US-8	EPD-A-001171-2017	E0850	
30/06/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-002230-2015	G0827	
30/06/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-002231-2015	G0828	
06/07/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-005455-2015	G0829	
06/07/17	Kin Kay	23	Excavator	Nil	Kato	HD820-6	EPD-A-001523-2017	E2305	
06/07/17	ATAL	12	Mobile Generator	Nil	Top One Power	TOP200	EPD-EE-013061-2015	G1214	
06/07/17	Hin Sum	05	Excavator	Nil	Doosan	DX235LCR	EPD-A-017190-2015	E0527	
13/07/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-006331-2015	G0830	
13/07/17	Hing Fu	08	Roller	Nil	Kanto Tekko	KV40D	EPD-A-001028-2017	R0808	
17/07/17	Ken Shing	31	Roller	Nil	Dynapac	CA402D	EPD-A-007842-2015	R3101	
17/07/17	Toko	28	Excavator	Nil	Komatsu	PC350LC-7EO	EPD-EE-008276-2015	E2811	
19/07/17	Toko	28	Excavator	Nil	Kato	HD550VII	EPD-EE-009021-2015	E2812	
21/07/17	Toko	28	Excavator	Nil	Komatsu	PC228US-3N0	EPD-EE-034709-2015	E2813	
22/07/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top110	EPD-EE-013225-2015	G1216	
22/07/17	Hoi Cheung	19	Mobile Generator	Nil	Denyo	DCA-45LSK	EPD-A-000216-2015	G1906	
24/07/17	Hing Fu	08	Excavator	Nil	Kobelco	SK200-8	EPD-A-001813-2017	E0851	
26/07/17	Toko	28	Mobile Generator	EPD-05213	Airman	SDG100S-3B1	EPD-A-00126-2017	G2801	
26/07/17	Toko	28	Welding Machine	Nil	Denyo	TLW-300SSK	Excluded (<19kw)	W2801	
26/07/17	Toko	28	Welding Machine	Nil	Denyo	TLW-300SSK	Excluded (<19kw)	W2802	
26/07/17	Toko	28	Welding Machine	Nil	Denyo	TLW-300SSK	Excluded (<19kw)	W2803	
26/07/17	Hing Fu	08	Excavator	Nil	Kobelco	SK07	EPD-EE-017430-2015	E0852	
26/07/17	Hing Fu	08	Excavator	Nil	Sumitomo	SH135	EPD-EE-013963-2015	E0853	
26/07/17	Hing Fu	08	Mobile Generator	Nil	Nissha	NES25TK	EPD-A-009297-2015	G0831	
26/07/17	Excel	25	Roller	Nil	XCMG	XMR40S	EPD-EE-006205-2015	R2502	

26/07/17	Excel	25	Asphalt Paver	Nil	Atlas Copco	SD2500CS	EPD-A-001916-2017	P2501	
31/07/17	Toko	28	Excavator	Nil	Hitachi	EX55UR-3	EPD-EE-008984-2015	E2814	
31/07/17	Toko	28	Roller	Nil	Dynapac	CA2500D	EPD-A-007828-2015	R2801	
01/08/17	Toko	28	Mobile Generator	Nil	Nippon Sharyo	NES100SM	EPD-EE-036538-2015	G2802	
01/08/17	Toko	28	Excavator	Nil	Kobelco	SK210LC-6ES	EPD-EE-002900-2015	E2815	
01/08/17	Toko	28	Excavator	Nil	Doosan	DX340LC	EPD-A-017332-2015	E2816	
03/08/17	Hin Sum	05	Excavator	Nil	Caterpillar	330BL	EPD-EE-031903-2015	E0528	
04/08/17	Hin Sum	05	Lifting Platform	Nil	Doosan	HX99B	Excluded (<19kw)	LP0501	
04/08/17	Ken Shing	31	Excavator	Nil	Komatsu	PC228US-3EO	EPD-A-006078-2016	E3101	
10/08/17	Toko	28	Excavator	Nil	Kato	HD800NVII	EPD-EE-009024-2015	E2817	
10/08/17	CHEC	00	Mobile Generator	Nil	Denyo	DCA60SPM	EPD-EE-000504-2015	G0031	
11/08/17	Hin Sum	05	Excavator	Nil	Caterpillar	329D	EPD-EE-034975-2015	E0529	
11/08/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 200	EPD-EE-013042-2015	G1217	
16/08/17	Milestone	02	Excavator	Nil	Komatsu	PC128US-2E1	EPD-EE-004351-2015	E0210	
16/08/17	Toko	28	Mobile Generator	Nil	Denyo	DCA-25SPI II	Excluded (<19kw)	G2803	
16/08/17	Toko	28	Excavator	Nil	Kobelco	SK330	A/002586/2017	E2818	
16/08/17	Hing Fu	08	Excavator	Nil	Kobelco	SK350D-8	EPD-A-006488-2016	E0854	
16/08/17	Hing Fu	08	Excavator	Nil	Kato	HD823MR	EPD-EE-013254-2015	E0855	
16/08/17	Hing Fu	08	Excavator	Nil	Komatsu	PC138US-8	EPD-A-000750-2017	E0856	
16/08/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100LSIE	EPD-A-006330-2016	G0832	
18/08/17	Toko	28	Private Car	Nil	Mitsubishi	Y-V46WG	EPD-EE-001649-2015	V2801	
18/08/17	Hing Fu	08	Excavator	Nil	Komatsu	PC128US-2E1	EPD-EE-019677-2015	E0857	
18/08/17	Hing Fu	08	Excavator	Nil	Sumitomo	SH215U	EPD-EE-014913-2015	E0858	
18/08/17	Hing Fu	08	Excavator	Nil	Kobelco	SK60	EPD-EE-008518-2015	E0859	
25/08/17	Toko	28	Excavator	Nil	Kobelco	SK330	A/002608/2017	E2819	
25/08/17	Toko	28	Excavator	Nil	Komatsu	PC138US-2	EPD-EE-008950-2015	E2820	
25/08/17	Talford	30	Mobile Generator	EPD-04513	Nippon Sharyo	NES25TK	EPD-A-007322-2016	G3001	
25/08/17	Kin Kay	23	Welding Machine	Nil	AMECO	6.5GFD-4	Excluded (<19kw)	G2303	
25/08/17	Kin Kay	23	Welding Machine	Nil	WACMER NEUSON	MG5	Excluded (<19kw)	G2304	
25/08/17	Kin Kay	23	Welding Machine	Nil	N/A	DLW-300-ES	Excluded (<19kw)	G2305	
25/08/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 400	EPD-EE-015429-2015	G1218	
25/08/17	ATAL	12	Mobile Generator	Nil	Top One Power	Top 200	EPD-EE-013271-2015	G1219	
08/09/17	Excel	25	Asphalt Paver	Nil	XCMG	RP603	EPD-A-002271-2017	P2504	
08/09/17	Excel	25	Roller	Nil	XCMG	XD102	EPD-A-002272-2017	R2507	
08/09/17	Excel	25	Roller	Nil	Dynapac	CC4200VI	EPD-A-002421-2017	R2508	
09/09/17	Luen Hing	01	Roller	Nil	Bomag	BW100ADM-2	EPD-EE-015646-2015	R0110	
11/09/17	Hoi Cheung	19	Excavator	EPD-03694	Yanmar	Vi080-1	EPD-A-005420-2016	E1902	
11/09/17	Hoi Cheung	19	Excavator	EPD-03794	Doosan	DX225LC	EPD-A-017628-2015	E1903	
11/09/17	Milestone	02	Excavator	Nil	Kobelco	SK100	EPD-EE-027592-2015	E0211	
11/09/17	Toko	28	Excavator	Nil	Komatsu	PC228US-8	EPD-A-000624-2017	E2821	
14/09/17	Talford	30	Lifting Platform	Nil	Aichi	SR182	EPD-EE-011998-2015	LP3002	
19/09/17	Hing Fu	08	Mobile Generator	EPD-02072	Denyo	DCA-100ESI	EPD-EE-001312-2015	G0833	
20/09/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-60ESI2	EPD-EE-004275-2015	G0834	
21/09/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100LSIE	EPD-A-006459-2016	G0835	
21/09/17	Kin Kay	23	Excavator	Nil	Caterpillar	E120B	EPD-EE-015771-2015	E2306	
22/09/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100LSIE	EPD-A-006243-2016	G0836	
25/09/17	Luen Hing	01	Excavator	Nil	Kobelco	SK310LC-3	EPD-EE-012931-2015	E0151	
25/09/17	Luen Hing	01	Mobile Generator	EPD-01304	Aiman	SDG100S	EPD-EE-008068-2015	G0127	
25/09/17	Hing Fu	08	Excavator	Nil	Kato	HD820-6	EPD-A-000390-2017	E0860	

25/09/17	Hing Fu	08	Excavator	Nil	Kobelco	SK200-8	EPD-A-001213-2017	E0861	
25/09/17	Hing Fu	08	Excavator	Nil	Kobelco	SK135SR-2	EPD-A-002099-2017	E0862	
25/09/17	Hing Fu	08	Roller	Nil	Dynapac	CA252D	EPD-A-005179-2016	R0809	
26/09/17	Ken Shing	31	Excavator	Nil	Hitachi	Ex35U	EPD-EE-035437-2015	E3102	
26/09/17	Ken Shing	31	Excavator	Nil	Kobelco	SK210LC-8	EPD-A-001425-2015	E3103	
26/09/17	Ken Shing	31	Excavator	Nil	Kobelco	SK235SR-2	EPD-A-002019-2017	E3104	
03/10/17	Hing Fu	08	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-001338-2015	G0837	
03/10/17	Goldford	27	Mobile Generator	EPD-01281	Denyo	DCA-220ESM	EPD-EE-005890-2015	G2702	
03/10/17	Goldford	27	Mobile Generator	Nil	Denyo	DCA-100ESI	EPD-EE-005442-2015	G2703	
09/10/17	Hang Tong	15	Roller	Nil	Bomag	BW211D-5	EPD-A-007366-2016	R1504	
06/10/17	Ming Suen	32	Excavator	Nil	Kobelco	SK100	EPD-EE-016791-2015	E3201	
06/10/17	Ming Suen	32	Excavator	Nil	Kobelco	SK235SR	EPD-EE-016784-2015	E3202	
09/10/17	Kin Kay	23	Welding Machine	Nil	HARD GEAR	SGB7001Ha	Excluded (<19kw)	G2306	
11/10/17	China Profit	20	Excavator	Nil	Sumitomo	SH225X-3	EPD-EE-008510-2015	E2001	
11/10/17	Luen Hing	01	Roller	Nil	Ammann	ASC110	EPD-A-001942-2017	R0111	
17/10/17	Talford	30	Mobile Generator	EPD-03197	Nippon Sharyo	NES25TK	EPD-A-031427-2015	G3002	
24/10/17	Goldford	27	Mobile Generator	Nil	Nissha	NES25TK	EPD-A-009297-2015	G2704	
30/10/17	Milestone	02	Mobile Generator	EPD-01392	Airman	SDG60S-3A6	EPD-EE-004632-2015	G0213	

Environmental License/ Permits /Notification Register

LCAL H2642

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

Date: 29 September 2017									
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
1	HZMB-HK Boundary Crossing Facilities	31 July 2015	WFG14980	Disposal of Construction Waste Billing Account	7023015	20 August 2015	---	EPD	
2	HZMB-HK Boundary Crossing Facilities	4 May 2017	---	Construction Noise Permit	GW-RS0452-17	1 June 2017	30 Nov 2017	EPD	

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Report No.: 0165/15/ED/0944

Appendix G

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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Appendix G – 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	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> • 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
S5.5.6.2	A2	<ul style="list-style-type: none"> • 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 area sheltered on the top 	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> • 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
		<p>level alarm which is interlocked with the material filling line and no overfilling is allowed;</p> <ul style="list-style-type: none"> • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies 		
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected Representative dust monitoring station	V (Conducted by Contract No. HY/2013/01 and HY/2011/03)
S5.5.7.1	A6	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant;</p> <ul style="list-style-type: none"> • 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
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> • 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
Construction Noise (Air borne)				
S6.4.10	N1	<p>1) Use of good site practices to limit noise emissions by considering the following:</p> <ul style="list-style-type: none"> • only well-maintained plant should be operated on-site and plant should be serviced regularly during 	All construction sites	V

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		<p>the construction programme;</p> <ul style="list-style-type: none"> • 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; • 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	3) 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				
S7.3	S1	1) 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
Waste Management (Construction Waste)				
S8.3.8	WM1	<p><u>Construction and Demolition Material</u> The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • 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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		<p>materials and to minimize their generation during the course of construction.</p> <ul style="list-style-type: none"> 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	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> 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	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 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	<p><u>Sewage</u></p> <ul style="list-style-type: none"> Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state which will not deter the workers from utilizing these portable 	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 collectors regularly.		
S8.3.17	WM5	<p>General Refuse</p> <ul style="list-style-type: none"> 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 concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. 	All construction sites	V
Water Quality (Construction Phase)				
S9.11.1.1- S9.11.1.2	W1	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 - 2.5mPD, the fine content in the public fill will be 	Marine-based works area	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>controlled to 25%;</p> <ul style="list-style-type: none"> 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. <p>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.</p> <ul style="list-style-type: none"> 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. 		
S9.11.1.3	W2	<p><u>Land Works</u> General construction activities on land should also be governed by standard good working practice.</p>	Land-based works area	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; • sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; • storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; • silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; • temporary access roads should be surfaced with crushed stone or gravel; • rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; • open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; • manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; 		
S9.11.1.7	W2	<ul style="list-style-type: none"> • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up 	Land-based works area	V

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		<p>immediately;</p> <ul style="list-style-type: none"> waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 		
S9.14	W3	Implement a water quality monitoring programme	Selected representative WQM stations	V (Conducted by Contract No. HY/2013/01)
Ecology (Construction Phase)				
S10.7	E4	<ul style="list-style-type: none"> Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater 	Land-based works areas	V
S10.7	E5	<ul style="list-style-type: none"> Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time 	Land-based works areas	V
S10.7	E6	<ul style="list-style-type: none"> Dolphin Exclusion Zone Dolphin watching plan 	Marine works	V
S10.7	E7	<ul style="list-style-type: none"> Decouple compressors and other equipment on working vessels Proposal on design and implementation of acoustic decoupling measures applied during dredging and reclamation works Avoidance of percussive piling 	Marine works	V
S10.7	E8	<ul style="list-style-type: none"> Control vessel speed Skipper training Predefined and regular routes for working vessels; avoid Brother Islands. 	Marine Traffic	V
S10.10	E9	Vessel based dolphin monitoring	Northeast and Northwest Lantau	V (Conducted by Contract No. HY/2013/01)
Fisheries				
S11.7	F4	<ul style="list-style-type: none"> Maritime Oil Spill Response Plan (MOSRP); Contingency plan. 	HKBCF	V
Landscape & Visual (Detailed Design Phase)				
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> 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 materials for PCB building facade to Airport 	HKBCF	V

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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.		
Landscape & Visual (Construction Phase)				
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 re-use, Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.	HKBCF	N/A
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> V1. Minimize time for construction activities during construction period. V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.	HKBCF	N/A
EM&A				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	All construction sites	V
S15.5 – S15.6	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	All construction sites	V

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

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The logo for MaterialLab, featuring the word "MaterialLab" in a bold, sans-serif font. The text is white and is set against a black rectangular background that has a thin white border.

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Appendix H

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

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Appendix H –

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

For Contract No. HY/2013/03

Cumulative Statistics			
Reporting Period	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	1	0	0
From commencement date of construction to end of reporting month	13	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 month	0	0	0

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Appendix I

Environmental Site Inspection Schedule

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Contract No. HY/2013/03
HZMB HKBCF – Vehicle Clearance Plazas and Ancillary Buildings and Facilities
Weekly Environmental Site Inspection Schedule

Tentative Environmental Site Inspection Schedule for October 2017

October-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6 Environmental Site Inspection	7
8	9	10	11	12 Environmental Site Inspection	13	14
15	16	17	18	19	20 Environmental Site Inspection	21
22	23	24	25	26 Environmental Site Inspection	27	28
29	30	31				

Tentative Environmental Site Inspection Schedule for November 2017

October-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Environmental Site Inspection	3	4
5	6	7	8	9 Environmental Site Inspection	10	11
12	13	14	15	16 Environmental Site Inspection	17	18
19	20	21	22	23	24 Environmental Site Inspection	25
26	27	28	29	30 Environmental Site Inspection		

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Report No.: 0165/15/ED/00944

**Contract No. HY/2013/06 (within Contract No. HY/2013/03 works area)
 HZMB HKBCF – Automatic Vehicle Clearance Support System
 Weekly Environmental Site Inspection Schedule**

Tentative Environmental Site Inspection Schedule for October 2017

October-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6 Environmental Site Inspection	7
8	9	10	11	12 Environmental Site Inspection	13	14
15	16	17	18	19	20 Environmental Site Inspection	21
22	23	24	25	26 Environmental Site Inspection	27	28
29	30	31				

Tentative Environmental Site Inspection Schedule for November 2017

October-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Environmental Site Inspection	3	4
5	6	7	8	9 Environmental Site Inspection	10	11
12	13	14	15	16 Environmental Site Inspection	17	18
19	20	21	22	23	24 Environmental Site Inspection	25
26	27	28	29	30 Environmental Site Inspection		

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Appendix J

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-IR0016

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-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	<u>4.7</u>
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;
 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-

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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;
- 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



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)19	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)116	814328	819497
IS17	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)13(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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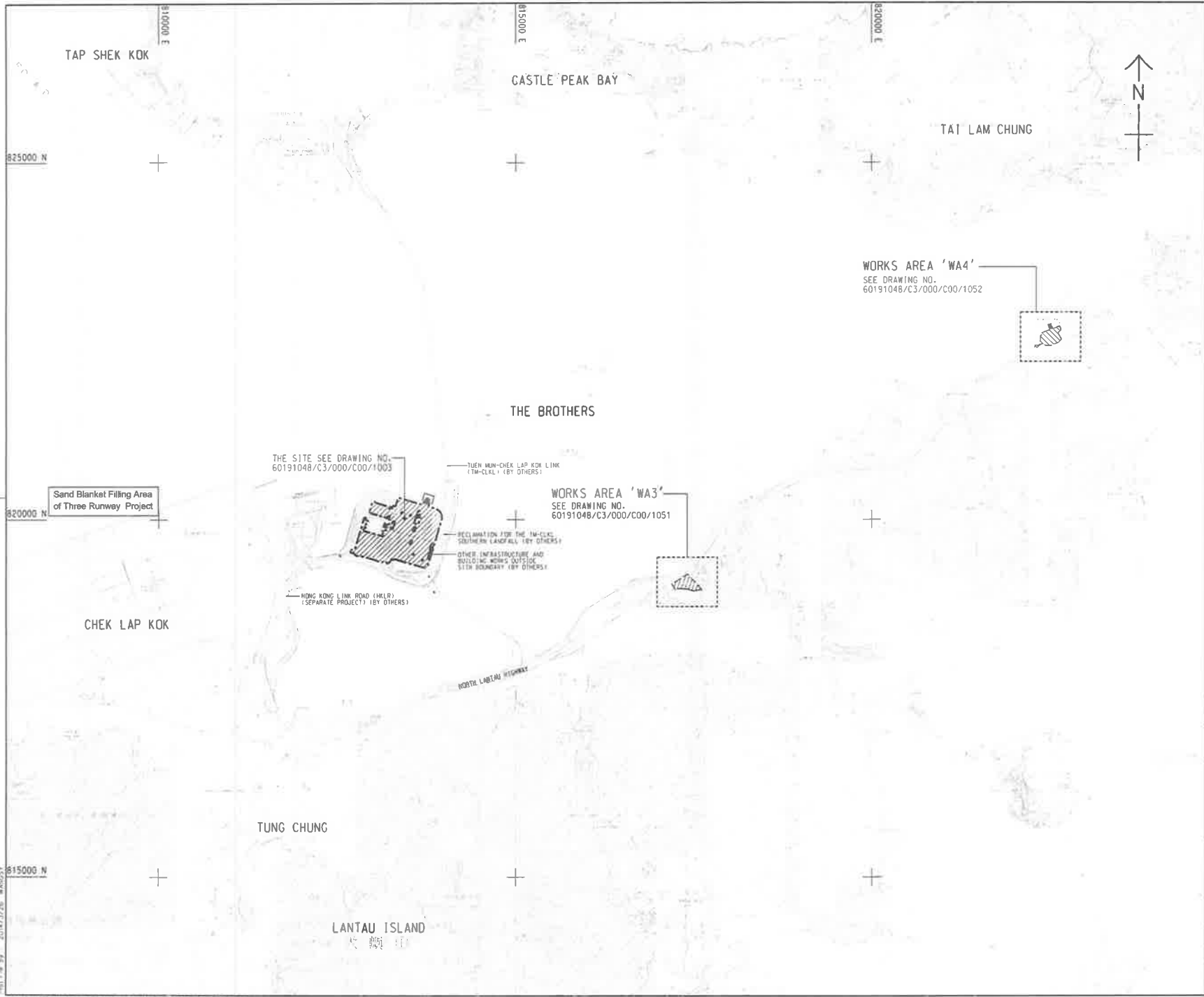
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
1. COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 2. DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 3. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.
- LEGEND:**
-  SITE BOUNDARY
 -  WORKS AREA
 -  Location of Box Culvert B
 -  Silt Curtain

TENDER DRAWING	REV. NO.	DATE
	01	MAR. 14

HONG KONG HIGHWAYS DEPARTMENT
 香港公路局
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLAZAS AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

AECOM **Aedas**
 Rogers Stirk Harbour + Partners
 BUNO HARPOLD ATKINS ADI

DRGNO. 60191048/C3/000/C00/1000
 圖紙編號

DESIGNED BY: BWCW	CHECKED BY: HX/2013/03	APPROVED BY: TRH
DRAWN BY: WSY	SCALE: A1 1 : 25000	UNIT: METRES
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Appendix A

Notification of Limit Level Exceedance (20171002DO)

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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.: 20171002 DO NOE 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) 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	SR10A	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.6	4.5
DO	SR10B(N)	Surface and Middle			5.4	<u>4.7</u>
DO	SR10B(N)	Bottom			5.1	4.6

Sampling Time

IS5	11:44:00	16:12:00
IS(M)6	11:34:00	16:19:00
IS7	11:25:00	16:29:00
IS8	11:02:00	16:52:00
IS(M)9	11:13:00	16:40:00
IS10(N)	10:19:00	17:10:00
IS(M)11	10:10:00	17:19:00
IS(M)16	10:30:00	17:22:00
IS17	10:21:00	17:32:00
SR3	11:54:00	15:59:00
SR4(N)	10:55:00	17:02:00
SR5(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
SR10B(N)	09:14:00	18:31:00

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

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

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

Reviewed by : Keith Chau



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

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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

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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	<u>4.7</u>	<u>4.5</u>
DO	SR10A*	Bottom	4.6	4.3
DO	SR10B(N)	Surface and Middle	<u>4.8</u>	<u>4.5</u>
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**.

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;
 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-

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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;
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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;
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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



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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818650
IS10	812577	820670
IS10(E)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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)	823693	820881
CS(MF)3	809989	821117
CS(MF)3(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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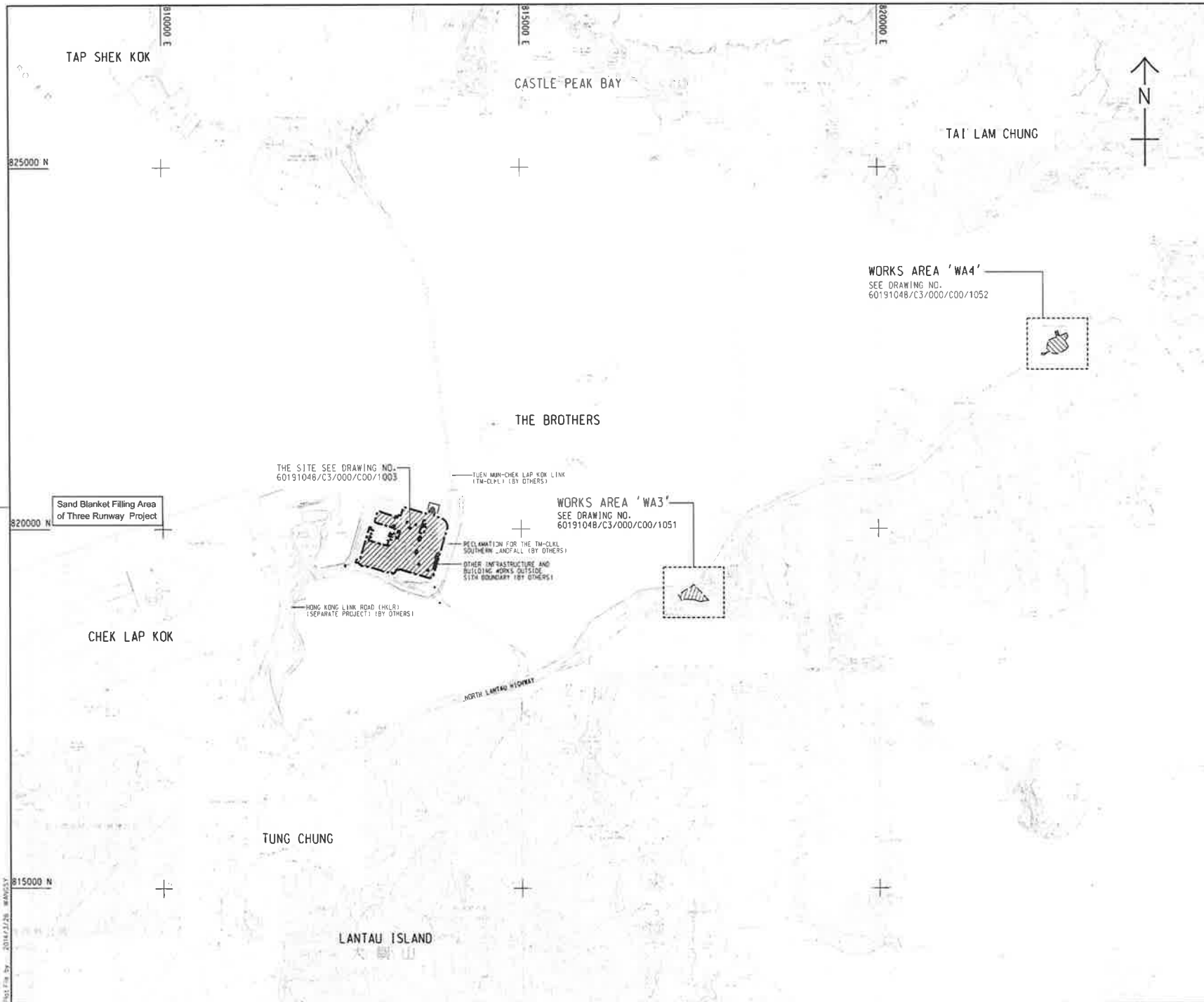
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



NOTES:

- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
- DIMENSIONS ARE IN MILLIMETER AND CHANGE ARE IN METRES UNLESS OTHERWISE SHOWN.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

- SITE BOUNDARY
- ▨ WORKS AREA
- Location of Box Culvert B
- Silt Curtain

TENDER DRAWING		2-11-14		2014 MAR 14	
NO.	DATE	BY	CHKD.	APPD.	REV.

HSINWAY'S DEPARTMENT
 港珠澳大橋香港工務管理處
 Hong Kong-Zhuhai-Macau Bridge Hong Kong Project Management Office

HONG KONG-ZHUAHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLAZAS AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

PROJECT NO. 項目編號		60191048/C3/000/C00/1000			
DESIGNED BY 設計	DATE 日期	APPROVED BY 核對	DATE 日期	APPROVED BY 核對	SCALE 比例
SHEET NO. 圖號		A1 1 : 25000			
SHEET TOTAL 圖張總數		1			
UNIT 單位		METRES			
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Appendix A

Notification of Limit Level Exceedance (20171004DONOEv1)

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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.: 20171004 NOE v1	
Date of Notification: 12 Oct 2017						
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:						
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*	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	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

Sampling Time

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	17:28:00
IS(Mf)9	12:38:00	17:17:00
IS10(N)	12:15:00	17:51:00
IS(Mf)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	16:48:00
SR4(N)	12:23:00	17:33:00
SR5(N)	12:22:00	17:44:00
SR6	13:17:00	16:48:00
SR7	12:00:00	18:04:00
SR10A	10:38:00	19:06:00
SR10B(N)	10:47:00	18:58:00

Photo 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

* 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

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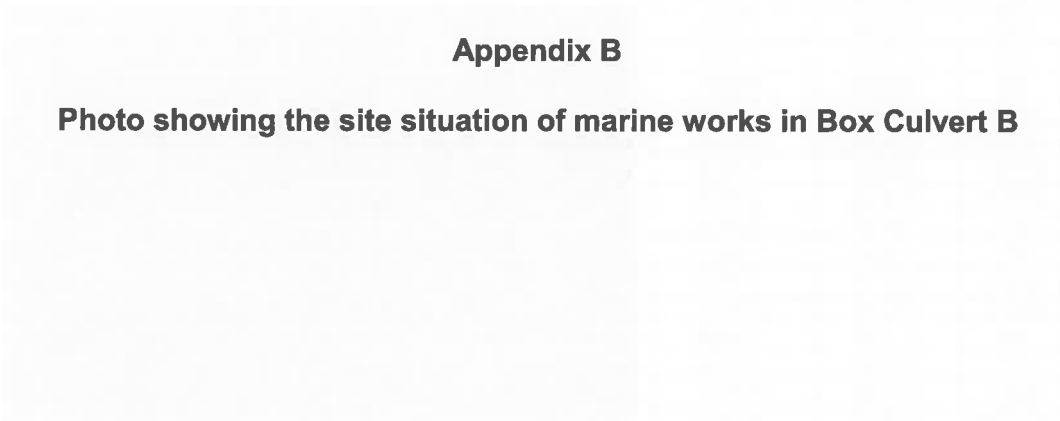
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Appendix B

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-IR0018

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-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	<u>4.9</u>	<u>4.5</u>
DO	SR10B(N)	Bottom	5.0	<u>4.6</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 (20171006DO) provided by the ET of
Contract No. HY/2013/01 of HKBCF is 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. 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.
- W2-

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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, 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



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821476
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(MF)13	809989	821117
CS(MF)13(N)	808814	822355
CS(MF)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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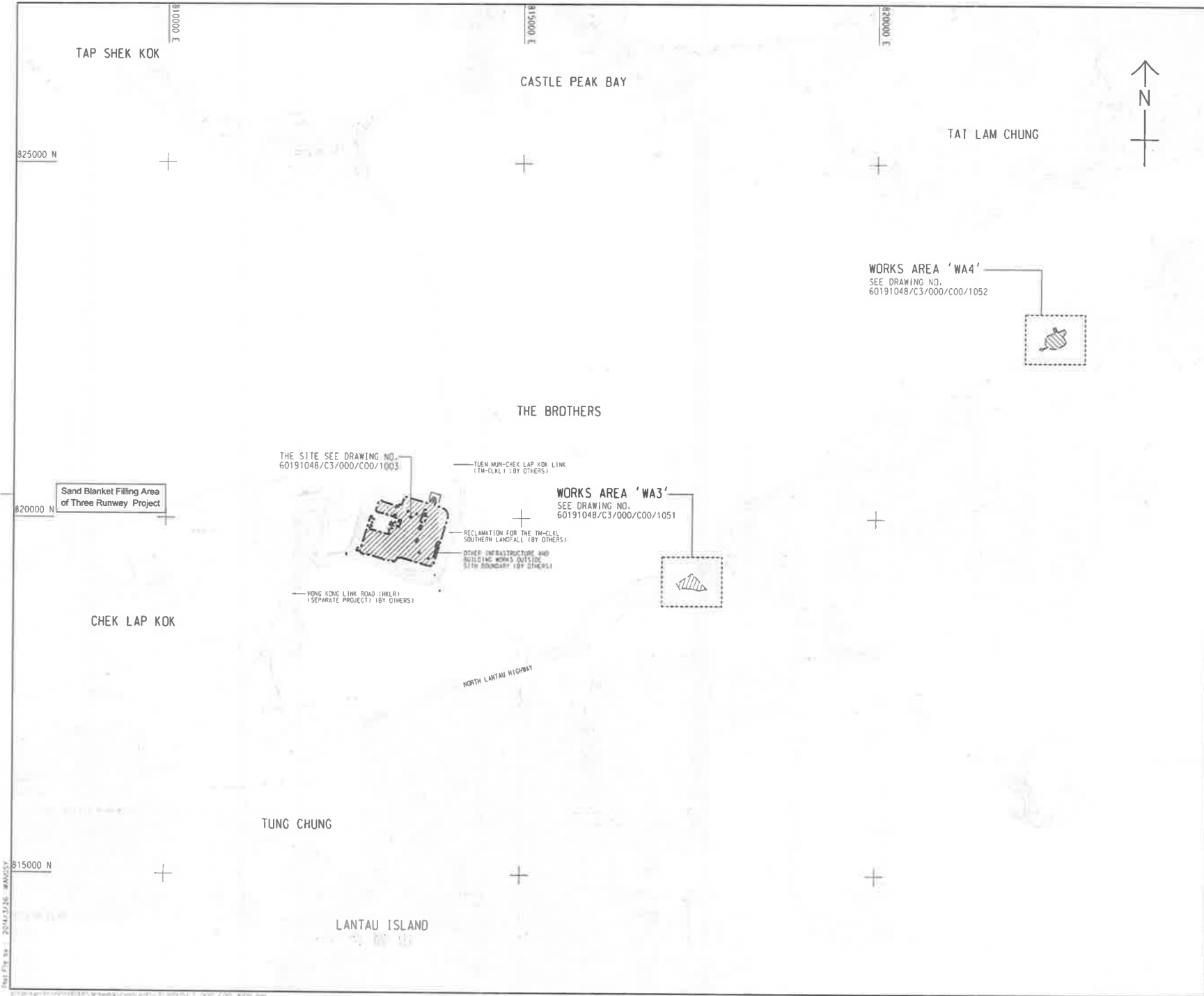
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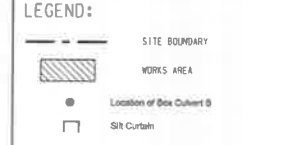


Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.



WORKS AREA 'WA4'
 SEE DRAWING NO.
 60191048/C3/000/C00/1052

WORKS AREA 'WA3'
 SEE DRAWING NO.
 60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO.
 60191048/C3/000/C00/1003

TUEN MAN-CHEK LAP KOK LINK
 (TM-CLKL) (BY OTHERS)

RECLAMATION FOR THE TM-CLKL
 SOUTHERN LANDFILL (BY OTHERS)

OTHER INFRASTRUCTURE AND
 BUILDING WORKS OUTSIDE
 SITE BOUNDARY (BY OTHERS)

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

REVISION	DATE	BY	CHECKED
1	2014.03.14	JWCW	SCJ

香港路政署
ROADS DEPARTMENT
 路政署 大橋及邊境工程管理處
 Hong Kong Roadworks Project Management Office

HONG KONG-ZHUKAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 VEHICLE CLEARANCE PLAZAS AND
 ANCILLARY BUILDINGS AND FACILITIES

SITE LOCATION PLAN

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

DRG NO. 60191048/C3/000/C00/1000
圖紙編號

SCALE	DATE	PROJECT NO.	REV. NO.
A1 : 1 : 25000	17/2013-03	HY2013-03	1/1

UNIT: METRES
 單位: 公尺
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Appendix A

Notification of Limit Level Exceedance (20171006DO)

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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.: 20171008 NOE 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-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	SR10B(N)	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	<u>4.9</u>	<u>4.5</u>
DO	SR10B(N)	Bottom			5.0	4.6

Sampling Time

IS5	11:33:00	07:50:00
IS(M)6	11:40:00	07:43:00
IS7	11:47:00	07:38:00
IS8	12:03:00	07:18:00
IS(M)9	11:54:00	07:25:00
IS10(N)	12:24:00	08:50:00
IS(M)11	12:30:00	08:45:00
IS(M)16	12:24:00	08:51:00
IS17	12:34:00	08:44:00
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	08:36:00
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(M)3(N) and CS4

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

Reviewed by : Keith Chau



Title : ET Leader

Date : 11-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-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:

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	5.2	<u>4.8</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 (20171009DO) provided by the ET of
Contract No. HY/2013/01 of HKBCF is 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. 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;
 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-

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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;
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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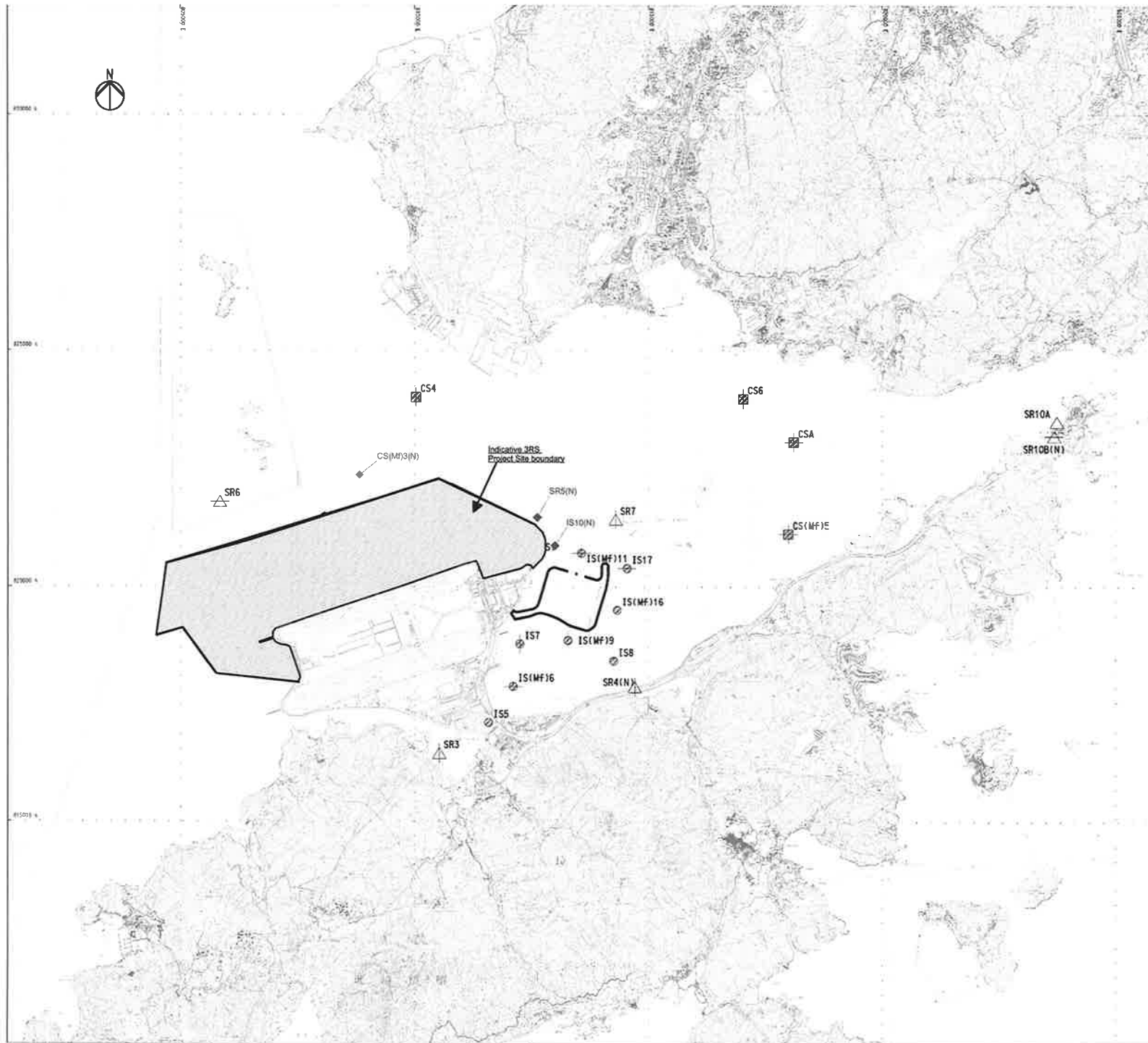
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Figure 1

The Location of WQM Stations



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

FIGURE 4.1– LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)16	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)19	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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)	823663	820881
CS(MF)3	809989	821117
CS(MF)13(N)	808814	822355
CS(MF)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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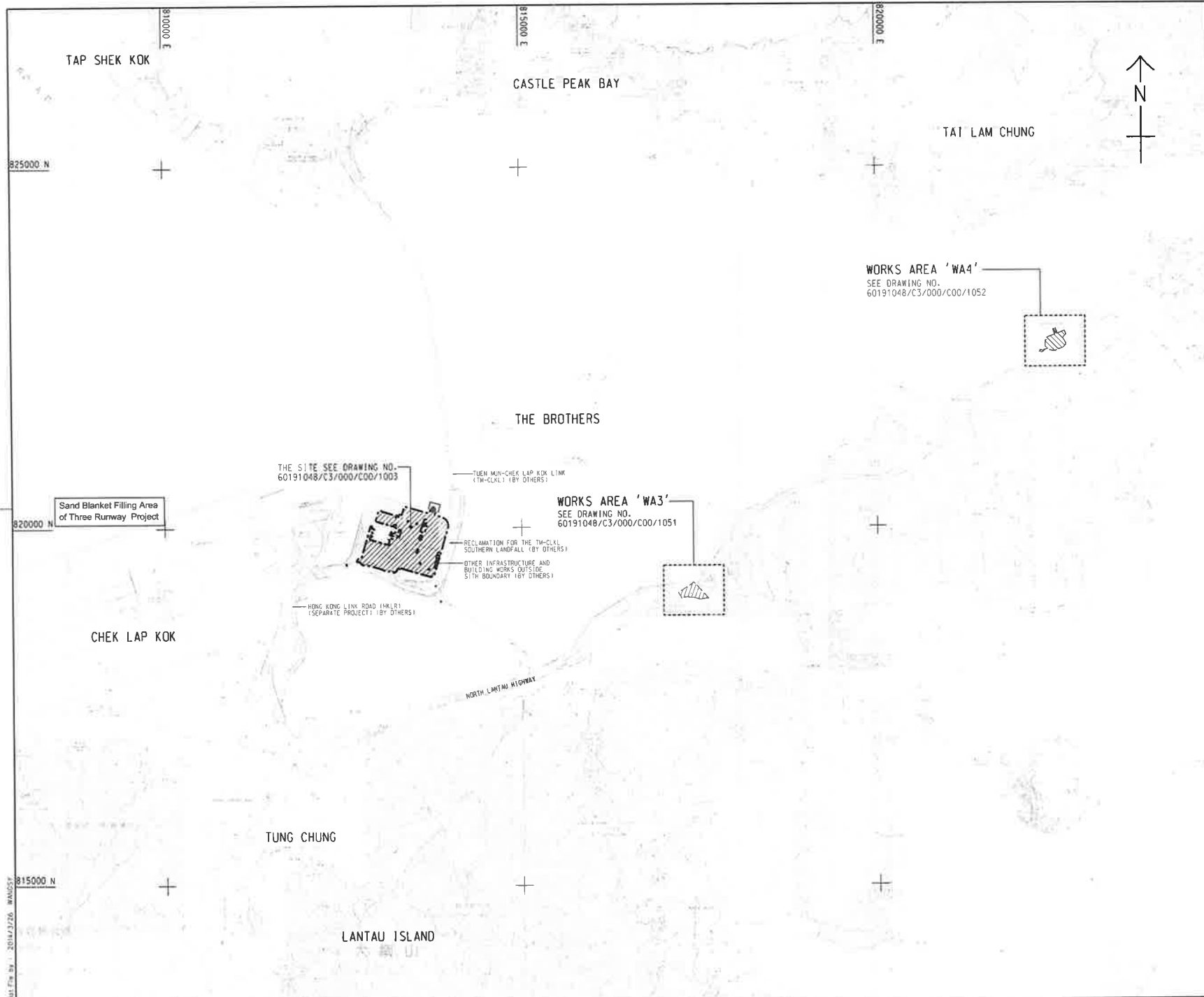
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



NOTES:

- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
- DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

- SITE BOUNDARY
- ▨ WORKS AREA
- Location of Box Culvert B
- Silt Curtain

WORKS AREA 'WA4'
SEE DRAWING NO.
60191048/C3/000/C00/1052

WORKS AREA 'WA3'
SEE DRAWING NO.
60191048/C3/000/C00/1051

THE SITE SEE DRAWING NO.
60191048/C3/000/C00/1003

Sand Blanket Filling Area
of Three Runway Project

TUEN MUN-CHEK LAP KOK LINK
(TM-CKL) (BY OTHERS)

RECLAMATION FOR THE TM-CKL
SOUTHERN LANDFILL (BY OTHERS)

OTHER INFRASTRUCTURE AND
BUILDING WORKS OUTSIDE
SITE BOUNDARY (BY OTHERS)

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

TENDER DRAWING		2014	
DRAWING NO.		DGM/SCI/MAR/14	
HIGHWAYS DEPARTMENT 香港特別行政區運輸及房屋局 Hong Kong Special Administrative Region Transport Management Office			
HONG KONG-TWIKAI-MAKAO BRIDGE HONG KONG BORDER CROSSING FACILITIES - VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES			
SITE LOCATION PLAN			
AECOM		Aedas	
Rogers Stirk Harbour + Partners		BURO HAPPOLD ATKINS ADI	
DRG NO. 圖紙編號 60191048/C3/000/C00/1000			
繪圖人 繪圖號 WSK	校核人 校核號 WSY	日期 2013/03	比例 1:25000
圖則 A1		比例 1:25000	
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Appendix A

Notification of Limit Level Exceedance (20171009DO)

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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.: 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:						
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	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(M)6	13:48:00	09:59:00
IS7	13:58:00	09:51:00
IS8	14:13:00	09:35:00
IS(M)9	14:04:00	09:43:00
IS10(N)	14:47:00	09:06:00
IS(M)11	15:11:00	08:58:00
IS(M)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(M)3(N) and CS4

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

Reviewed by : Keith Chau



Title : ET Leader

Date : 12-Oct-17

Copied to : EPD, 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-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**.

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;
 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

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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;
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, 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



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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)13	809989	821117
CS(MF)13(N)	808814	822355
CS(MF)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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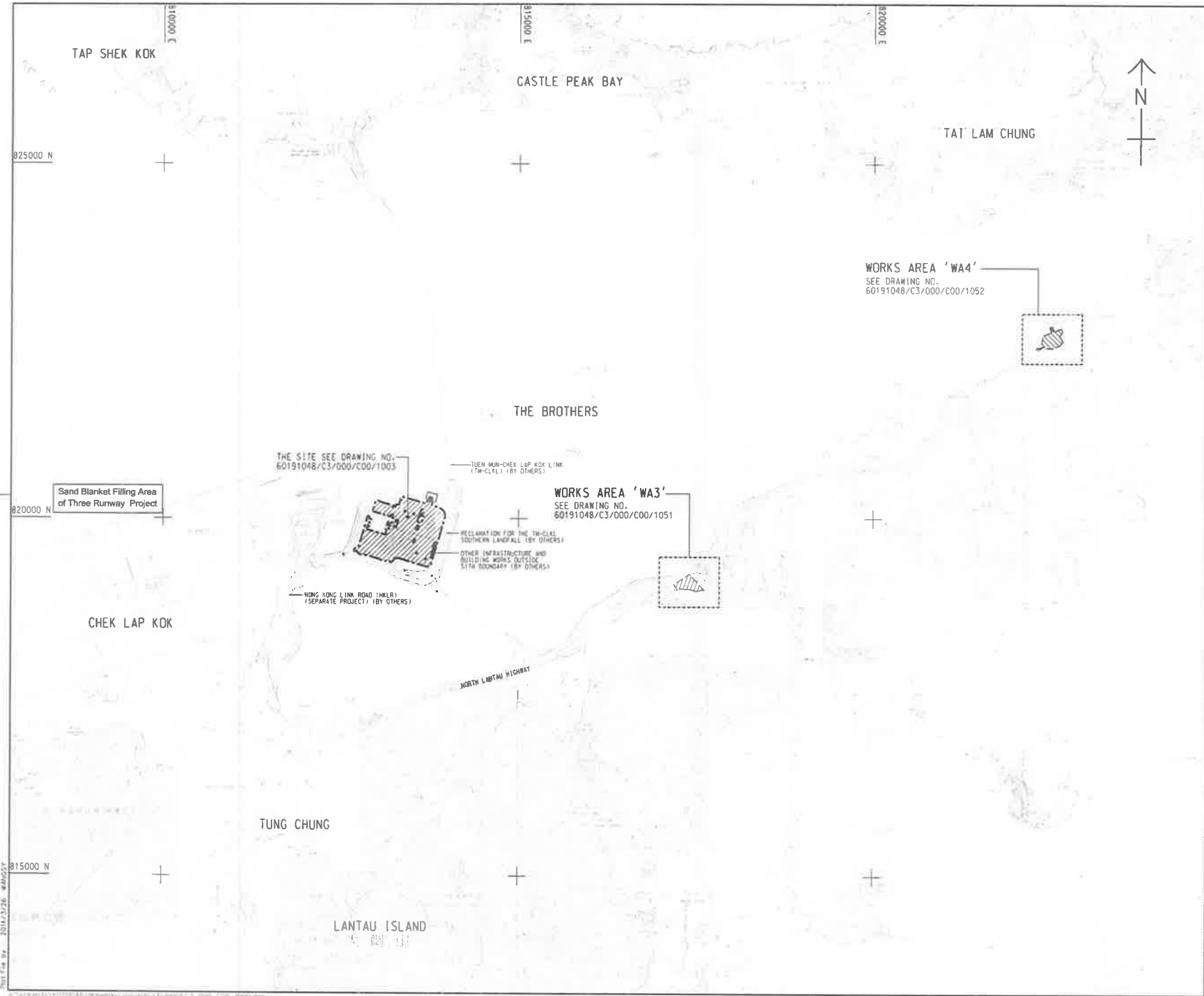
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.
- LEGEND:**
- SITE BOUNDARY
 - WORKS AREA
 - Location of Box Culvert III
 - Site Curbin

NO.	REVISION	DATE	BY	CHECKED	DATE
1	ISSUED FOR TENDER	2013/03	WY	WY	2013/03

HA HONG KONG HIGHWAYS DEPARTMENT
 香港特别行政区路政署
 Hong Kong Special Administrative Region Highways Department

HONG KONG-TUNNELL-MEADOW BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - VEHICLE CLEARANCE PLATES AND
 ANGLAMP BUILDINGS AND FACILITIES

SITE LOCATION PLAN

AECOM + **Aedas**
 Rogers Stirk Harbour + Partners
 BURRO HAPPELO ATKINS ADI

DRGNO 60191048/C3/000/C00/1000
 圖紙編號

DESIGNED BY WY	CHECKED BY WY	DESIGNED DATE HY/2013/03	SCALE 1:25000
DATE 2013/03	SCALE 1:25000	UNIT METRES	SCALE 1:25000

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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: 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	SR5(N)	Depth Average	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	9.5	30.1

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

Prepared by : Evan Wong Title : ET Representative

 Date : 30-Oct-17

Reviewed by : Keith Chau Title : ET Leader

 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:

A handwritten signature in black ink, appearing to be "AR", written over a horizontal line.

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)
SS	IS(Mf)11	Depth Average	11.9	26.1
	SR5(N)		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**.

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
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;
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;
- 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 (20171020 SS NOE)

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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.: 20171020 SS NOE 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 (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	IS(Mf)11	Depth Average	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	11.9	26.1
SS	SR5(N)	Depth Average			8.0	24.4
SS	SR7	Depth Average			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

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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

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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**.

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;
 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;
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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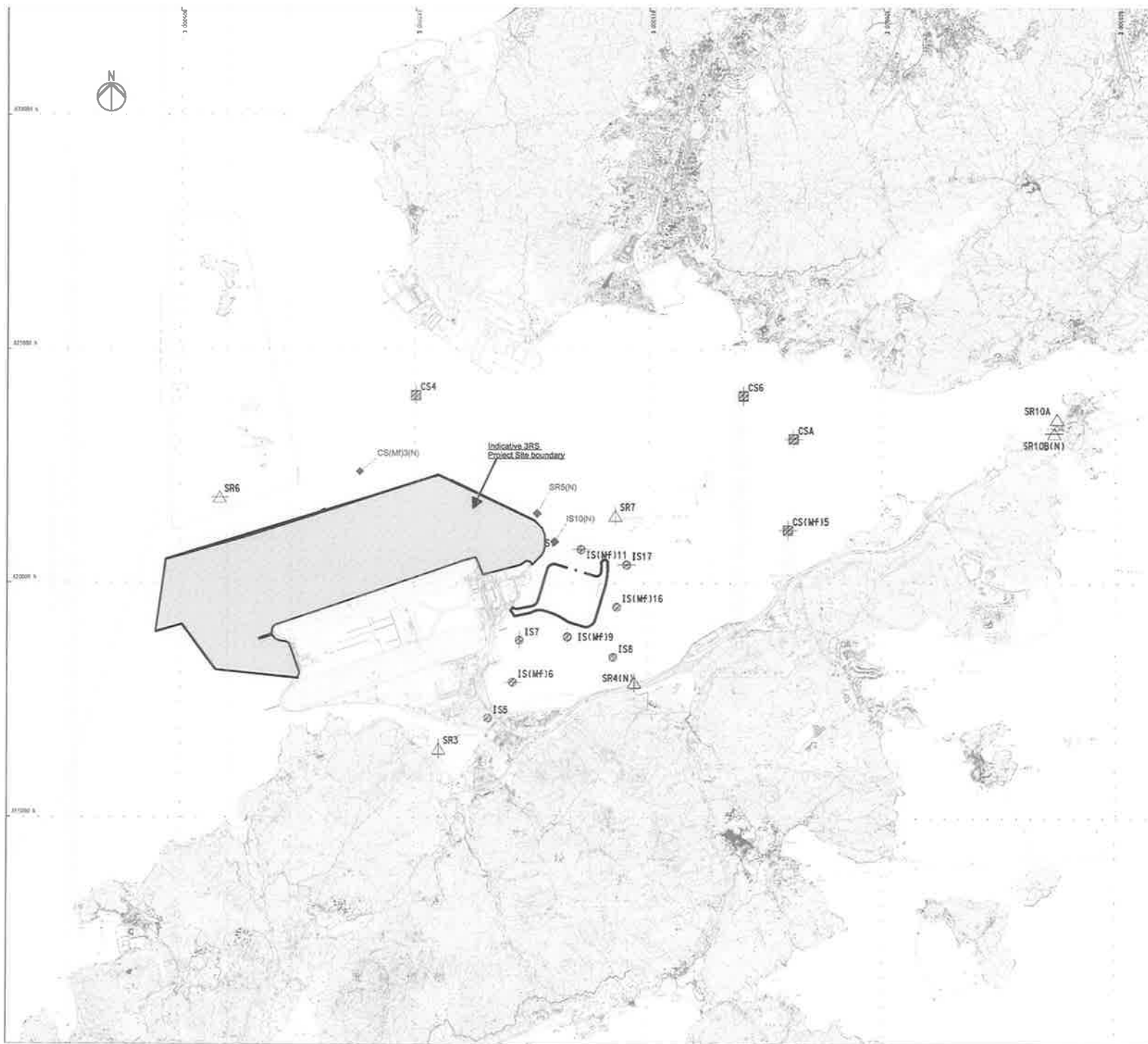
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Figure 1

The Location of WQM Stations



LEGEND

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	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
CS6	817028	823992
CSA	818103	823064

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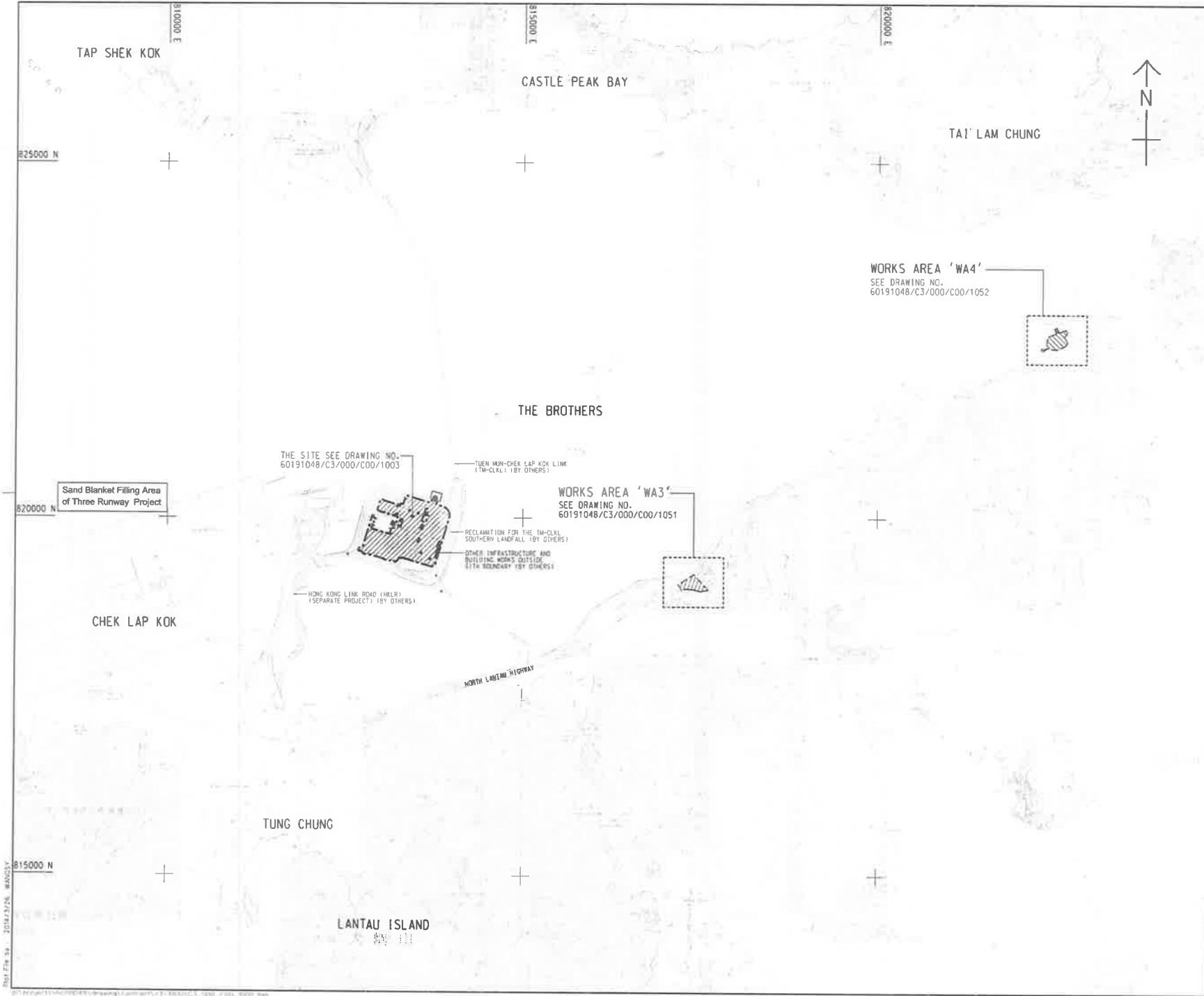
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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C3/000/C00/1051 TO 1053.

LEGEND:

- SITE BOUNDARY
- [Hatched Box] WORKS AREA
- Location of Box Culvert B
- [Square with Diagonal Line] Silk Curtain

TENDER DRAWING	6-4
DATE	2013/03/14

ROADWAYS DEPARTMENT
 道路及交通工程處
 Highways Department
 香港特別行政區政府
 HONG KONG GOVERNMENT

SITE LOCATION PLAN

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

PROJECT NO. 圖則編號	60191048/C3/000/C00/1000
DATE 日期	03/14/2013
SCALE 比例尺	AS 1 : 25000
UNIT 單位	METRES

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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.: <u>20171023 SS NOE</u> 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: 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	SR5(N)	Depth Average	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	10.4	26.3

Remarks:

Bold means AL exceedances.

Bold with underline means LL exceedances.

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

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

Sampling Time

	Mid-Ebb	Mid-Flood
IS5	13:26:00	09:55:00
IS(M)6	13:36:00	09:50:00
IS7	13:45:00	09:42:00
IS8	14:05:00	09:24:00
IS(M)9	13:52:00	09:32:00
IS10(N)	14:18:00	08:45:00
IS(M)11	14:24:00	08:39:00
IS(M)16	14:36:00	08:59:00
IS17	14:48:00	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	08:04:00

Prepared by : Ruby Law Title : ET Representative
 Date : 06-Nov-17

Reviewed by : Keith Chau Title : ET Leader
 Date : 06-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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