

5 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 November 2017**

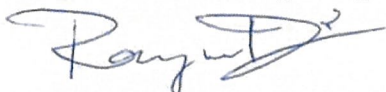
Reference is made to the Environmental Team's submission of Monthly Environmental Monitoring & Audit Report for November 2017 (Rev. 5) certified by the ET Leader (ET's ref.: "MCL/ED/0010/2018/C" dated 5 January 2018) and provided to us via e-mail on 5 January 2018.

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 implement the EM&A programme in accordance with the procedures and requirements as set out in the EM&A Manual of the approved EIA Report and to ensure the report be timely submitted to the Director of Environmental Protection as per Conditions 5.1 and 5.4 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 Environ 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)

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Date 5 January 2018  
Our Ref. MCL/ED/0010/2018/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, we are pleased to submit the certified Monthly EM&A Report for November 2017 (Rev.5) 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/0949

**MONTHLY ENVIRONMENTAL MONITORING & AUDIT  
REPORT (Rev. 5)**

**November 2017**

**Client:** China Harbour Engineering Co., Ltd.

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

**Report No.:** 0165/15/ED/0949

Prepared by: Vincent Lu

Certified by:   
Arthur Cheng  
Environmental Team Leader

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Report No.: 0165/15/ED/0949

## CONTENTS

### EXECUTIVE SUMMARY

1. INTRODUCTION
  - 1.1 Background
  - 1.2 Project Description
  - 1.3 Project Organisation
  - 1.4 Construction Programme
  - 1.5 Construction Works undertaken during the Reporting Period
2. AIR QUALITY MONITORING
  - 2.1 Monitoring Locations
  - 2.2 Monitoring Requirements
  - 2.3 Monitoring Results
3. NOISE MONITORING
  - 3.1 Monitoring Locations
  - 3.2 Monitoring Requirements
  - 3.3 Monitoring Results
4. WATER QUALITY MONITORING
  - 4.1 Monitoring Locations
  - 4.2 Monitoring Requirements
  - 4.3 Monitoring Results
5. ECOLOGY MONITORING
  - 5.1 Monitoring Locations
  - 5.2 Monitoring Requirements
  - 5.3 Monitoring Results
6. DISPOSAL OF MARINE SEDIMENT EXTRACTED FROM BORED PILING WORKS
  - 6.1 Background
  - 6.2 Dumping Arrangements
  - 6.3 Quantity Disposed
7. ENVIRONMENTAL SITE INSPECTION AND AUDIT
  - 7.1 Site Inspection
  - 7.2 Advice on the Solid and Liquid Waste Management Status
  - 7.3 Environmental Licenses and Permits
  - 7.4 Implementation Status of Environmental Mitigation Measures
  - 7.5 Summary of Exceedance of the Environmental Quality Performance Limit

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Report No.: 0165/15/ED/0949

7.6 Summary of Complaints, Notification of Summons and Successful Prosecution

### 8. FUTURE KEY ISSUES

8.1 Construction Programme for the Coming Months

8.2 Environmental Site Inspection Schedule for the Coming Month

### 9. CONCLUSIONS

## **APPENDICES**

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

## **FIGURES**

- Figure 1 Air Quality Monitoring Stations
- Figure 2 Noise Monitoring Stations
- Figure 3 Water Quality Monitoring Stations
- Figure 4 Ecological Monitoring Transect Line and Layout Map

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Report No.: 0165/15/ED/0949

### 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 27<sup>th</sup> Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 November 2017 to 30 November 2017 (includes the findings of the EM&A programme of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area during the reporting period from 1 November 2017 to 30 November 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: 2, 9, 16, 23 and 30 November 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 one Action and Limit Level exceedance of 24-hr TSP level recorded at station AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 2.1** 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 recorded on eight 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
014	ENPO-C0128	23 November 2017	Air pollution

### 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;



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11. 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

Report No.: 0165/15/ED/0949

## 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-seventh 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 November 2017 to 30 November 2017 (reporting period) under Contract No. HY/2013/03 (from 1 November 2017 to 30 November 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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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;
11. Shuttle kiosk & Subway at Portion E.

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.

Report No.: 0165/15/ED/0949

**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 (µg/m³)	Limit Level (µg/m³)
<b>1 hour TSP</b>		
AMS6	360	500
AMS7	370	
<b>24 hours TSP</b>		
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 AMS6 and AMS7 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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Report No.: 0165/15/ED/0949

- 2.3.4 There was one Action and Limit Level exceedances of 24-hr TSP level recorded at station AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 2.3.5 Regarding the exceedance on 28 November 2017, the mitigation measures according to Water Spraying Arrangement in November 2017 are implemented to avoid dust emission. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr. For 24-hr TSP exceedance recorded at the station AMS3B, the Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix C. The hourly AQHI of Tung Chung station ranged 3 to 8 (Low to Very High) on 28 and 29 November 2017 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The Vehicle Clearance Plazas and Ancillary Buildings and Facilities site of HKBCF is far away from AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS3B during the monitoring period. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused 24-hr TSP exceedance recorded at the station AMS3B on 28 November 2017.

Report No.: 0165/15/ED/0949

### 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
<b>For the Time Period 0700-1900 hrs. on Normal Weekdays</b>		
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.



Report No.: 0165/15/ED/0949

**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 <sup>(1)</sup>	Sensitive receivers(Ma Wan FCZ) 1	823741	823495
SR10B(N) <sup>(1)</sup>	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 <sup>(2)</sup>	Control Station	818103	823064

Note:

<sup>(1)</sup> Additional monitoring station for ma Wan FCZ

<sup>(2)</sup> 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**.

Report No.: 0165/15/ED/0949

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 eight days. The summary of water quality exceedances is 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(Mf)6	Action	0	0	0	0	0	0	0	2 (6 Nov, 15 Nov)
	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	2 (13 Nov, 24 Nov)
	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	2 (3 Nov, 8 Nov)
	Limit	0	0	0	0	0	0	0	0
IS(Mf)16	Action	0	0	0	0	0	0	0	1 (6 Nov)
	Limit	0	0	0	0	0	0	0	0
IS17	Action	0	0	0	0	0	0	0	0

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Report No.: 0165/15/ED/0949

Station	Exceedance Level	DO (S&M)		DO (Bottom)		Turbidity		SS	
		Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood
SR3	Limit	0	0	0	0	0	0	0	0
	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	1 (8 Nov)
SR5(N)	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	2 (3 Nov, 8 Nov)
SR6	Action	0	0	0	0	0	0	3 (3 Nov, 8 Nov, 22 Nov)	0
	Limit	0	0	0	0	0	0	0	1 (22 Nov)
SR7	Action	0	0	0	0	0	0	0	3 (3 Nov, 6 Nov, 20 Nov)
	Limit	0	0	0	0	0	0	0	0
SR10A	Action	0	0	0	0	0	0	0	1 (6 Nov)
	Limit	0	0	0	0	0	0	0	0
SR10B(N)	Action	0	0	0	0	0	0	0	1 (6 Nov)
	Limit	0	0	0	0	0	0	0	0

Note: S&M: Surface & Middle

4.3.2 Regarding the exceedance on 3 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the marine delivery route, there was no SS exceedance recorded at WQM station IS10(N) which also close to the marine delivery route. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 1 November 2017 and 6 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 3 November 2017.

4.3.3 Regarding the exceedance on 6 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that

Report No.: 0165/15/ED/0949

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

4.3.4 Regarding the exceedance on 8 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR4(N), SR5(N) and SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 6 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 8 November 2017.

4.3.5 Regarding the exceedance on 13 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 13 November 2017.

Report No.: 0165/15/ED/0949

- 4.3.6 Regarding the exceedance on 15 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS(Mf)6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 15 November 2017.
- 4.3.7 Regarding the exceedance on 20 November 2017, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. For SS exceedance recorded at the WQM station SR7, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR7, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 20 November 2017.
- 4.3.8 Regarding the exceedance on 22 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide and mid-ebb tide on 22 November 2017.
- 4.3.9 Regarding the exceedance on 24 November 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be

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

Report No.: 0165/15/ED/0949

treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 24 November 2017.

Report No.: 0165/15/ED/0949

**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.

Report No.: 0165/15/ED/0949

## **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'000m<sup>3</sup>). The summary of marine sediment disposed up to end August 2017 is shown in the following table:



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Report No.: 0165/15/ED/0949

Table 6.1 Summary of Marine Sediment Disposed to Dumping Site

Month/Year	Quantity disposed (in'000m <sup>3</sup> )			
	HY/2013/02	HY/2013/03	HY/2013/04	Total
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
<b>Sub-Total</b>	<b>11.016</b>	<b>16.928</b>	<b>12.052</b>	<b>39.996</b>
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
<b>Sub-Total</b>	<b>18.520</b>	<b>46.144</b>	<b>35.452</b>	<b>100.116</b>
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
<b>Total</b>	<b>20.664</b>	<b>50.040</b>	<b>43.384</b>	<b>114.088</b>

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

Report No.: 0165/15/ED/0949

## **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 2, 9, 16, 23 and 30 November 2017 by the representatives of Engineer, Contractor, ET and IEC (IEC for 23 November 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

##### 27 October 2017

- 1. The Contractor was reminded to remove general waste accumulated at Building 049. Subsequently, general waste was removed. The observation was closed on 2 November 2017.
- 2. The Contractor was reminded to provide NRMN label to the mobile crane at Box Culvert B. Subsequently, NRMN label d. The observation was closed on 2 November 2017.

##### 2 November 2017

- 1. The Contractor was reminded to remove general waste accumulated at Building 040. Subsequently, construction waste was removed. The observation was closed on 9 November 2017.

##### 9 November 2017

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

##### 16 November 2017

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

##### 23 November 2017

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

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Report No.: 0165/15/ED/0949

## 30 November 2017

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

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

## 2 October 2017

1. Nil findings.

## 9 October 2017

1. Nil findings.

## 16 October 2017

1. Nil findings.

## 23 October 2017

1. Nil findings.

## 30 October 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 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 <sup>3</sup> )	Quantity disposed (in '000m <sup>3</sup> )					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

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Report No.: 0165/15/ED/0949

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	45.92809	0	0	49.31209
November 2017	/	5.412		5.507			10.919
Total	/	14.82	31.812	228.26009	12.809	12.863	300.56409

### Remarks:

- The variation in density is due to different compositions of surplus filling materials
- There may be discrepancies in the total quantities with the quantities of inert C&D materials stated in Appendix 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'000m<sup>3</sup>) of excavated marine sediment (from Contract No. HY/2013/03), 12.476 (in'000m<sup>3</sup>) of Inert C & D Wastes and 1.750 (in'000m<sup>3</sup>) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/03) in this reporting period. 10.191 (in'000m<sup>3</sup>) of Inert C & D Wastes were reused in other projects and 1.557 (in'000m<sup>3</sup>) 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

Report No.: 0165/15/ED/0949

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 November 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of December 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 inspection of waters surrounded by the silt curtain in November 2017 would be provided to ER, ETL, IEC/ENPO for checking within the month of December 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 summary of environmental complaints is presented in **Table 7.2**. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

Table 7.2 Summary of Environmental Complaints for the Reporting Month

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
014	ENPO-C0128	23 November 2017	Air pollution

7.6.2 The complaint (ENPO-C0127) was received by EPD from a member of the public on 27 October 2017 and was referred by EPD to the ENPO. Then the ENPO forwarded the complaint

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by email to the ET (Materialab Consultants Ltd.) of the Contract No. HY/2013/03 on 27 October 2017.

### Details of Complaint

One complaint was received by EPD on 27 October 2017, with the following information provided by EPD:

The complainant complained about the construction site C3 of HZMB artificial island. The construction site discharged muddy water into open waters which lasted for a week. The complainant required EPD to follow up and reply.

### Investigation of Complaint

Date Complaint Investigated by Environmental Team: 30 October 2017

### Summary of Investigation

After liaising with CHEC and the operation team, it cannot be identified if the location mentioned in the complaint is under HY/2013/03 or not. As there are construction sites which under other contracts of HZMB.

Notwithstanding the above, interview was conducted on 30 October 2017 with Mr. Marko Chan, Environmental Officer of CHEC. Only the works area of Box Culvert B was adjoining open waters. There was no discharge activities during the complained period. Wastewater will be treated properly before discharge. Water sampling will also be conducted regularly to monitor water quality. There was SS exceedance recorded at the WQM station IS(Mf)11 close to the works area Box Culvert B during the complained period. During the site walk conducted on 27 October 2017, the discharge point located in the construction site of Box Culvert B has been visited. It was connected to two tanks in Sewage Treatment Plant which carried underground water pumped out. Water was being treated before discharge. By observation, the water discharged from the discharge point and water discharge to the tanks looked clear.

### Investigation Results

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

#### ● Water Quality:

W1-

1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;

Report No.: 0165/15/ED/0949

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.

#### Follow up status (complaints)

During weekly site audit on 6, 12, 19 and 27 October 2017, ET confirmed that the Contractor had provided workable and effective water quality mitigation measures on site.

#### Recommendations to the Contractor

The Contractor was reminded to continue to fully implement all water quality mitigation measures and comply with the requirements of Water Discharge License.

#### Follow up Status (Overall)

The captioned complaint is not considered valid and therefore, no additional follow up is needed. However, ET has proposed several recommendations to the Contractor, and reminded on complying with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual. According to site audit conducted recently, ET confirmed all mitigation measures stipulated in the EMIS had been implemented during site audit on 6, 12, 19 and 27 October 2017, in particular to the following aspect:

Water Quality:

W1:

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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.

W2:

- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
- silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
- 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.

7.6.3 The complaint (ENPO-C0128) was received by EPD from a member of the public on 23 November 2017 and was referred by EPD to the ENPO. Then the ENPO forwarded the complaint by email to the ET (Materialab Consultants Ltd.) of the Contract No. HY/2013/03 on 23 November 2017.

### Details of Complaint

One complaint was received by EPD on 23 November 2017, with the following information provided by EPD:

The complainant complained that the watering on the construction site is not evenly, resulting in a lot of dust spreading around, especially construction area near toll kiosks.

### Investigation of Complaint

Date Complaint Investigated by Environmental Team: 24 November 2017



Report No.: 0165/15/ED/0949

### Summary of Investigation

Interview was conducted on 24 November 2017 with Mr. Marko Chan, Environmental Officer of CHEC and site management. It was confirmed that watering was undertaken on all exposed spoil with at least 8 times per day except rainy days.

### Investigation Results

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

- Condition 3.23:

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

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

- Air Quality:

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

### Follow up status (complaints)

During weekly site audit on 2, 9 16 and 23 November 2017, ET confirmed that the Contractor had fulfilled the conditions set out in the EP including Condition 3.23 and provided workable and effective air quality mitigation measures on site including undertaking proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.

### Recommendations to the Contractor

The Contractor had been reminded to fully fulfil the conditions set out in the EP and implement all air quality mitigation measures. ET has also recommended the Contractor to remind workers to report dusty spots to contractor to ensure prompt response and necessary follow-up on dust suppression measures through the complaint hotline.

### Follow up Status (Overall)

The captioned complaint is not valid and therefore, no additional follow up is needed. However, ET has proposed recommendations to the Contractor, including reminding workers to report dusty spots to contractor to ensure prompt response and necessary follow-up on dust suppression measures through the complaint hotline, and reminded the Contractor on fulfilling the conditions in the EP and complying with the requirements stipulated in the Environmental Mitigation Implementation Schedule (EMIS) of the EM&A Manual to the Contractor. According to site audit conducted recently, ET confirmed all conditions of the EP had been fulfilled and all mitigation measures stipulated in the EMIS had been implemented during site audit on 2, 9 16

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Report No.: 0165/15/ED/0949

and 23 November 2017 and will keep checking their implementation status during the future site audit, in particular to the following aspect:

- Air Quality:

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

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

7.6.5 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 December 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;
11. 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 December 2017 is provided in **Appendix I**.

Report No.: 0165/15/ED/0949

## 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 one Action and Limit Level exceedances of 24-hr TSP level recorded at station AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period.
- 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 recorded on eight 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 2, 9, 16, 23 and 30 November 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 and air pollution. After investigation, the complaints were not related to Contract No. HY/2013/03 (including Contract No. HY/2013/06 within Contract No. HY/2013/03).
- 9.9 There were no notifications of summons or prosecutions received during the reporting period.

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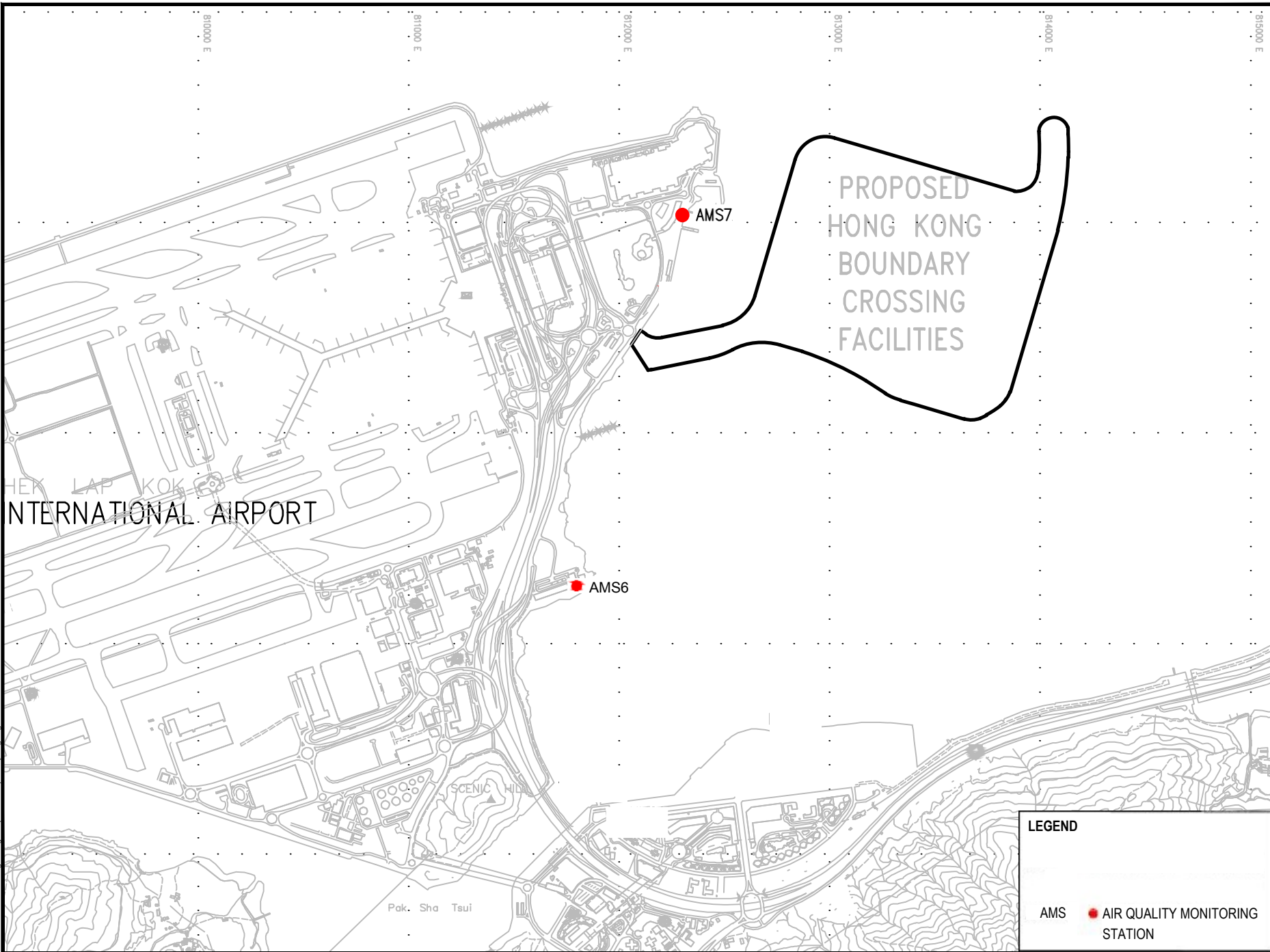
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Report No.: 0165/15/ED/0949

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## Figure 1

### Air Quality Monitoring Stations



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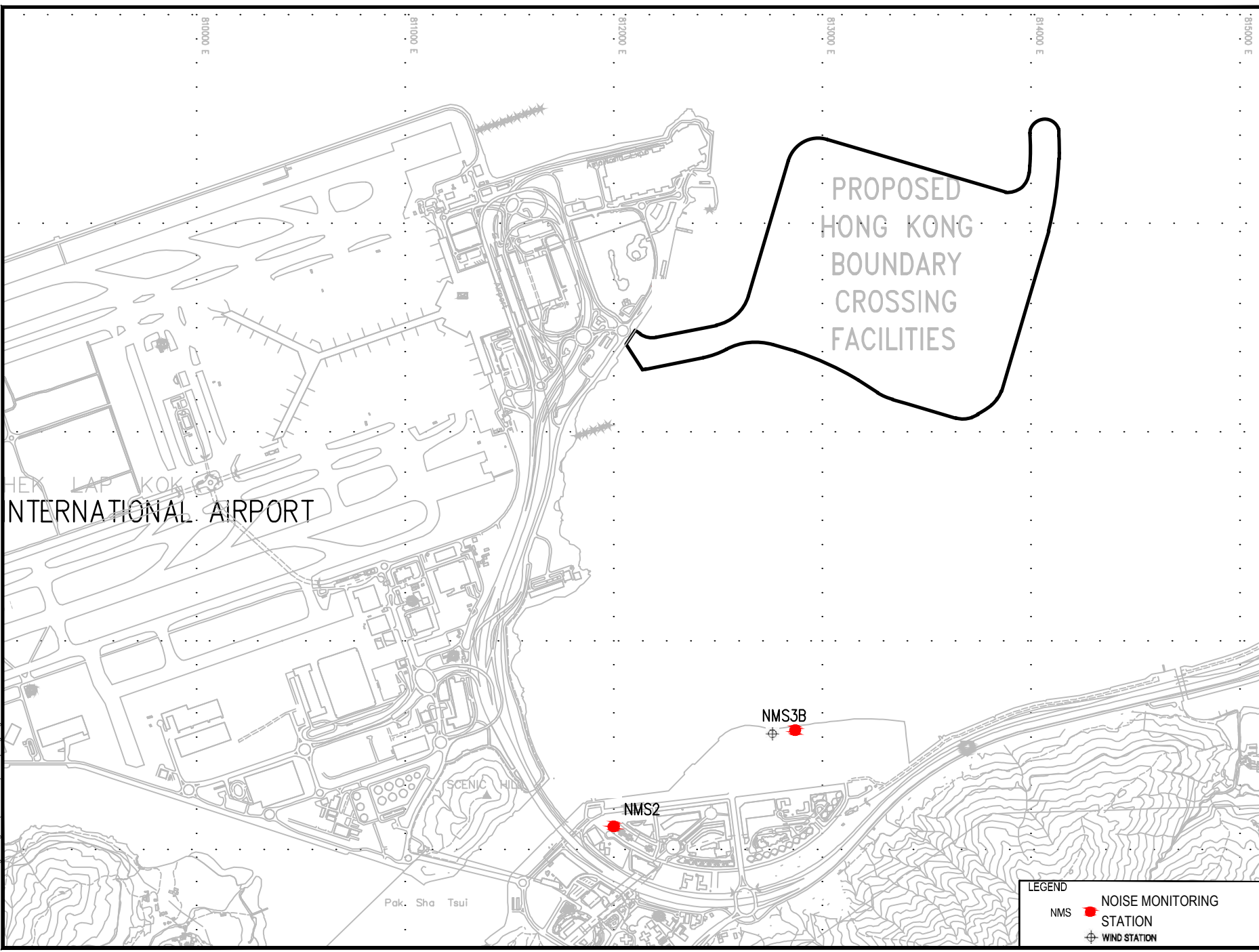
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Report No.: 0165/15/ED/0949

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### **Figure 2**

### **Noise Monitoring Stations**



LEGEND	
NMS	NOISE MONITORING STATION
(Cross-in-circle symbol)	WIND STATION



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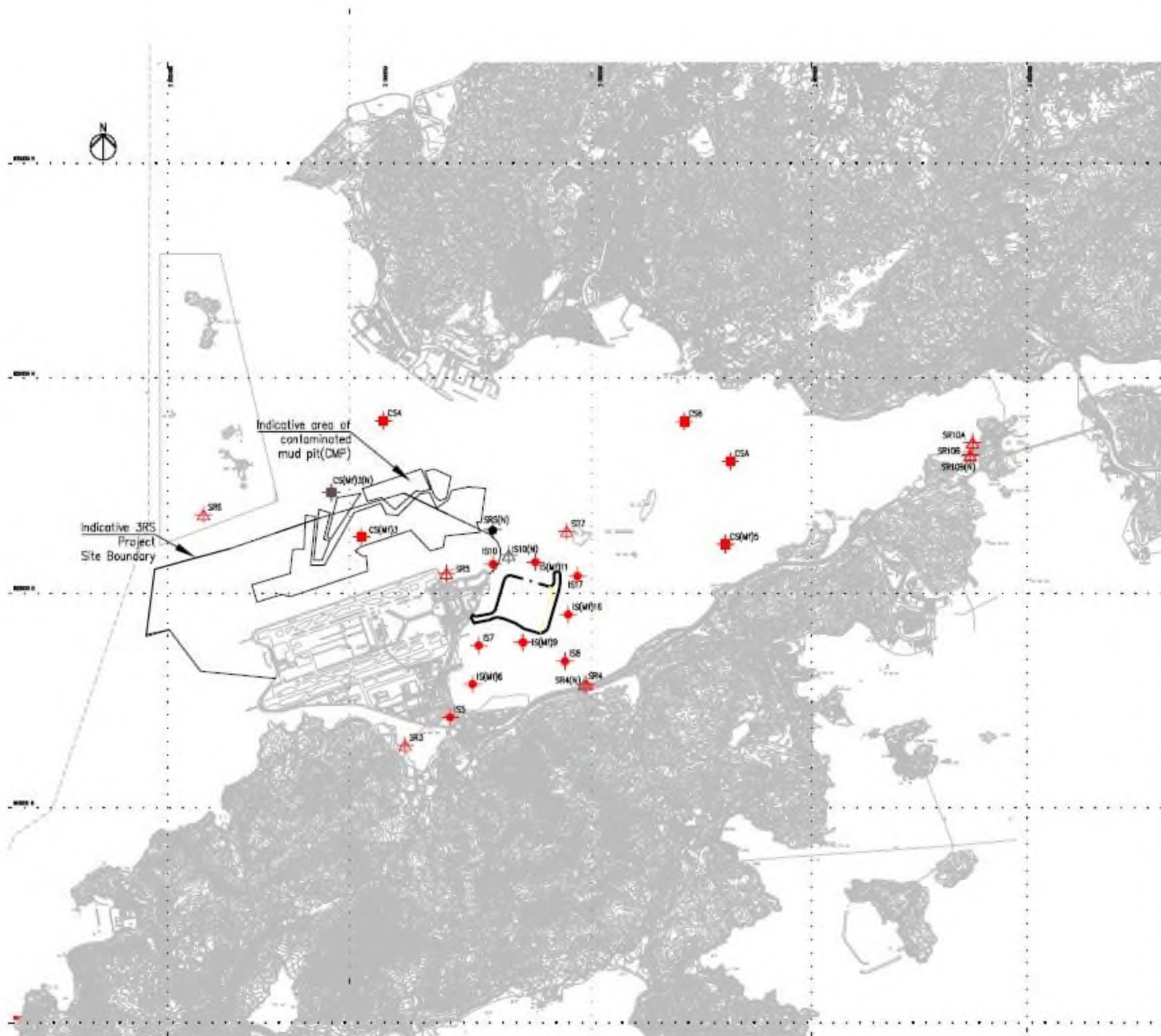
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Report No.: 0165/15/ED/0949

### **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	CD-COORNATES	
	EASTING	NORTHING
IS5	811578	817106
IS(M)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(M)9	813273	818850
SR5(N)	812589	821475
IS(M)11	813362	820716
IS(M)16	814328	819497
IS17	814539	820381
SR3	810525	816456
SR4(N)	814705	817859
IS10(N)	812942	820881
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823167
CS(M)3(N)	808814	822355
CS(M)5	817990	821129
CS4	810025	824004
CS6	817028	823982
CSA	818103	823064
IS10	812577	820670
SR5	811488	820455
CS(M)3	808989	821117

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1-15 Kwai Fung Crescent, Kwai Fong,  
Hong Kong.

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

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**Materialab**

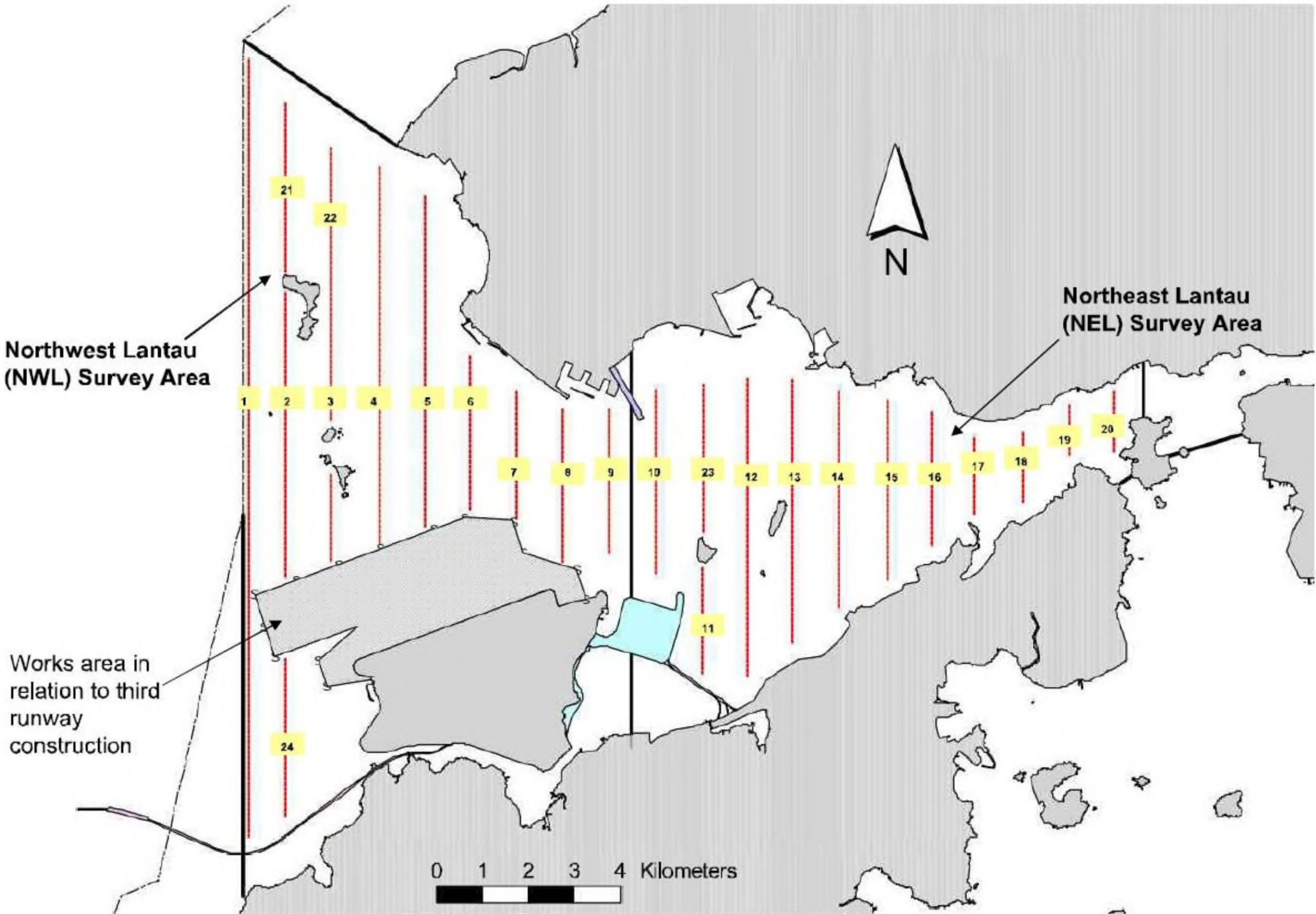
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Report No.: 0165/15/ED/0949

### **Figure 4**

#### **Ecological Monitoring Transect Line and Layout Map**



## **MATERIALAB CONSULTANTS LIMITED**

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Email : mcl@fugro.com

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**MaterialLab**

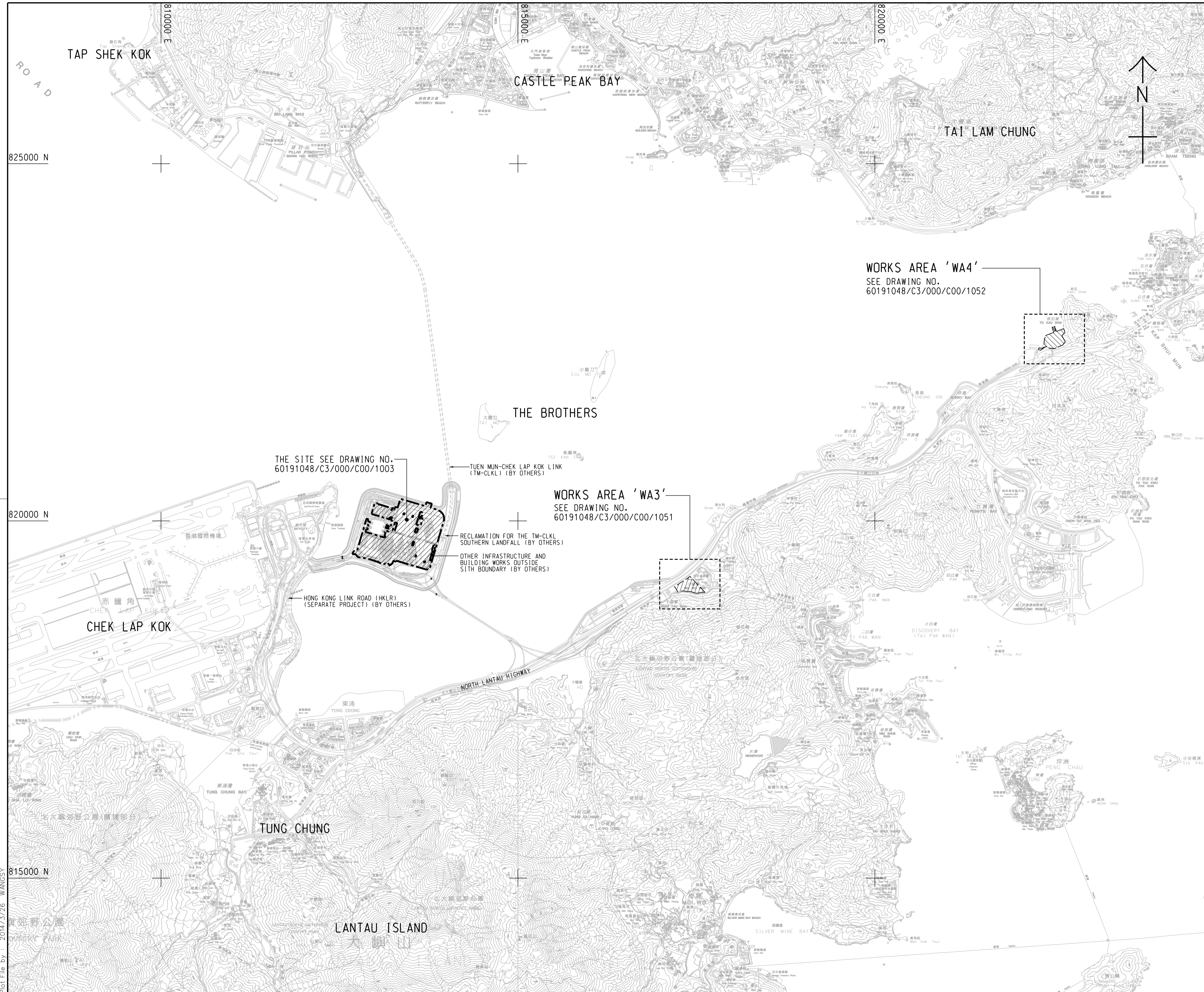
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Report No.: 0165/15/ED/0949

### **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

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

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

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

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

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

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

- TENDER DRAWING		BSC	SCI	MAR. 14
REV. 修改	DESCRIPTION 內容摘要	D.C. 審核	C.C. 校對	DATE 日期

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

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

**SITE LOCATION PLAN**

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

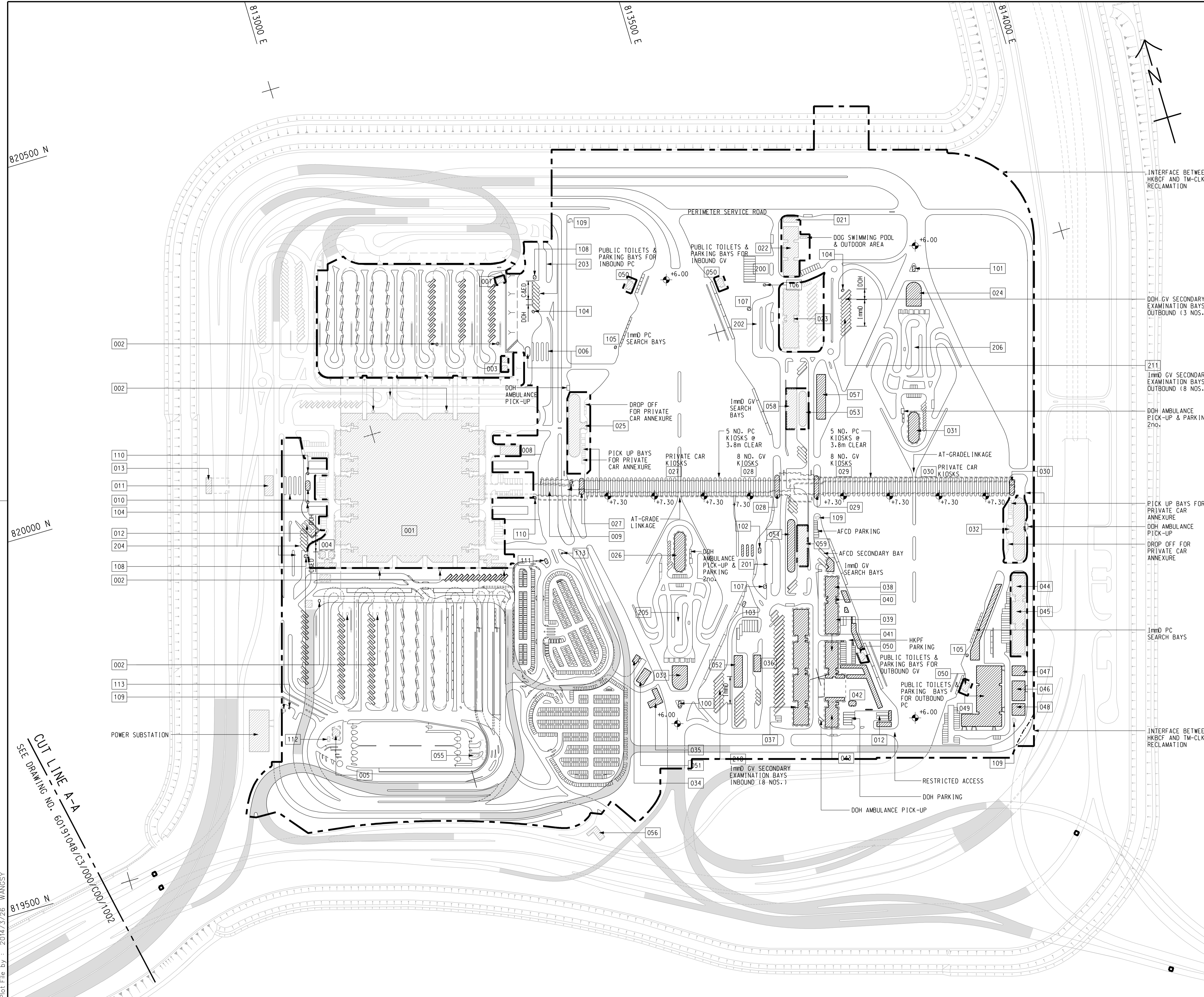
DRG. NO. 60191048/C3/000/C00/1000  
 圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	

SCALE 比例 A1 1 : 25000  
 DIMENSIONS ARE IN 尺寸單位 METRES  
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Plot File by : 2014/3/26 WANGSY



**NOTE :**

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 60191048/C3/000/C00/1003.

**LEGEND :**

- SITE BOUNDARY
- VIADUCT
- BUILDING/FACILITIES

INTERFACE BETWEEN HKBCF AND TM-CLKL RECLAMATION

DOH GV SECONDARY EXAMINATION BAYS OUTBOUND (3 NOS.)

211 Immd GV SECONDARY EXAMINATION BAYS OUTBOUND (8 NOS.)

DOH AMBULANCE PICK-UP & PARKING 2no.

PICK UP BAYS FOR PRIVATE CAR ANNEXURE

DOH AMBULANCE PICK-UP

Immd PC SEARCH BAYS

INTERFACE BETWEEN HKBCF AND TM-CLKL RECLAMATION

- TENDER DRAWING		BWC SCI	MAR. 14
REV. 修改	DESCRIPTION 內容摘要	D.C. 校核	DATE 日期

**路政署 HIGHWAYS DEPARTMENT**  
 港珠澳大桥香港工程管理处  
 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

**Figure 1- 1**  
**Current Layout Plan**

SHEET 1 OF 2

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

DRG.NO. 60191048/C3/000/C00/1001  
 圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. DIR. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	初步

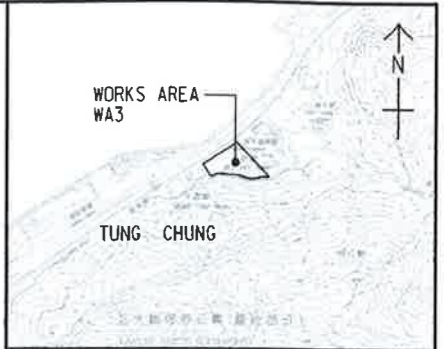
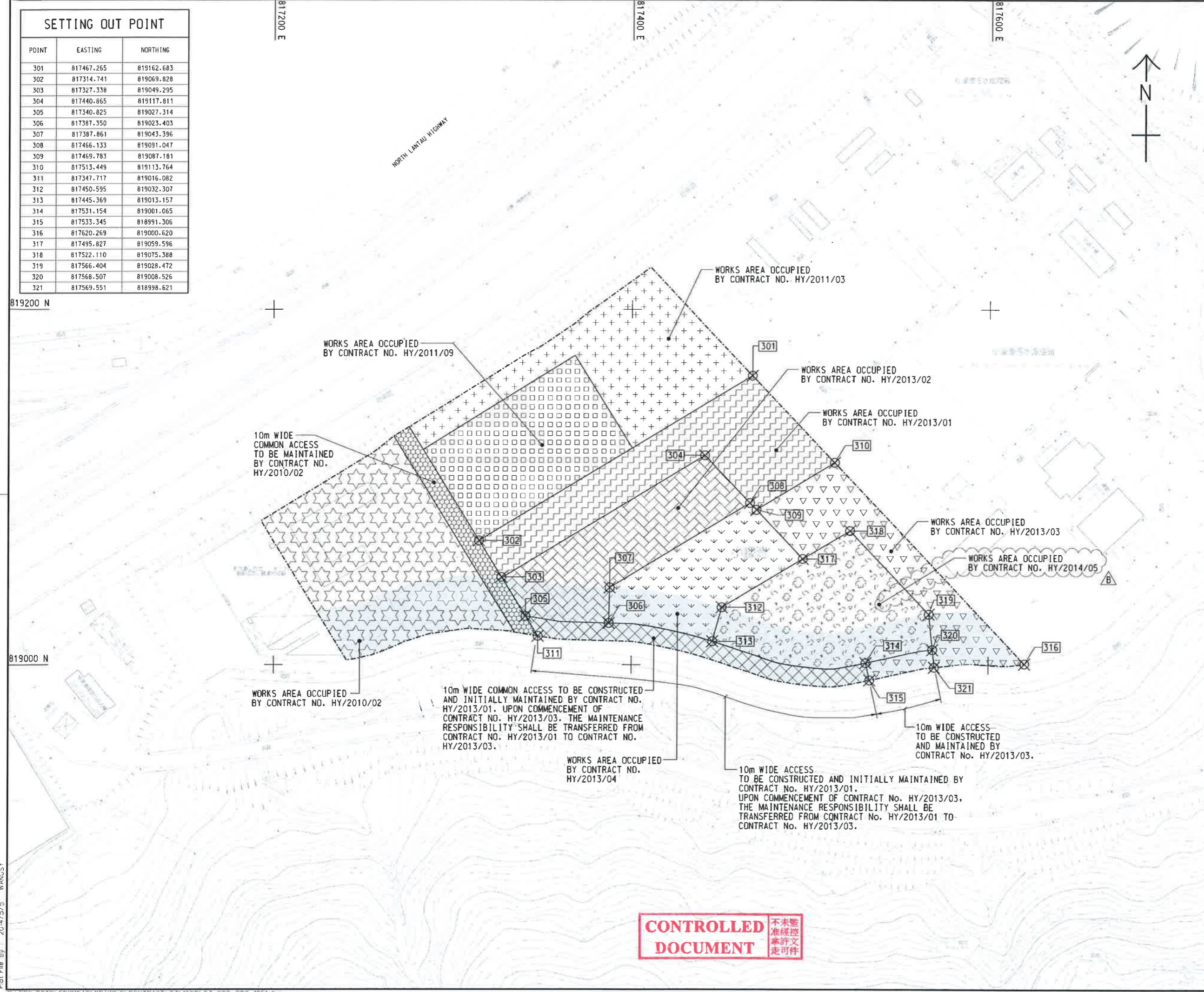
SCALE 比例 A1 1 : 2500  
 DIMENSIONS ARE IN 尺寸單位 METRES

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CUT LINE A-A  
 SEE DRAWING NO. 60191048/C3/000/C00/1002

Plot File by : 2014/3/26 WANGSY

SETTING OUT POINT		
POINT	EASTING	NORTHING
301	817467.265	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.865	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817450.595	819032.307
313	817445.369	819013.157
314	817531.154	819001.065
315	817533.345	818991.306
316	817620.269	819000.620
317	817495.827	819059.596
318	817522.110	819075.388
319	817566.404	819028.472
320	817568.507	819008.526
321	817569.551	818998.621



LOCATION PLAN  
SCALE 1 : 25000

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

LEGEND:

	WORKS AREA BOUNDARY
	PORTION 3.1
	PORTION 3.2
	PORTION 3.3
	PORTION 3.4
	PORTION 3.5
	PORTION 3.6
	PORTION 3.7
	PORTION 3.8
	PORTION 3.9
	PORTION 3.10
	NON-BUILDING AREA 8200m <sup>2</sup> (WHOLE)

**FOR CONSTRUCTION**

C	WORKING DRAWING	BWCW SCI	MAY. 15
B	TENDER ADDENDUM NO. 2	BWCW SCI	MAY. 14
A	TENDER ADDENDUM NO. 1	BWCW SCI	APR. 14
-	TENDER DRAWING	BWCW SCI	MAR. 14
REV.	DESCRIPTION	REV. NO.	DATE

HONG KONG HIGHWAYS DEPARTMENT  
 香港路政處  
 港珠澳大橋香港工程管理局  
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office  
 HONG KONG-ZHUHAI-MACAO BRIDGE  
 HONG KONG BOUNDARY CROSSING FACILITIES  
 - VEHICLE CLEARANCE PLAZAS AND  
 ANCILLARY BUILDINGS AND FACILITIES

WORKS AREA WA3

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

DRG. NO. 60191048/C3/000/C00/1051C  
 圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	A. BY APPROVED 審核人
BWCW	HY/2013/03	TKH
DRAWN BY 圖則	STATUS 圖則	
WSY		
SCALE 比例		
A1 : 1000		
DIMENSIONS ARE IN 尺寸單位		
METRES		

**WORKING DRAWING**  
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**CONTROLLED DOCUMENT**  
 不准隨意  
 准經檢  
 拿許文  
 走可伴



SETTING OUT POINT

POINT	EASTING	NORTHING
401	822488.151	822632.315
402	822640.593	822689.415
403	822515.608	822559.848
404	822610.940	822599.642
405	822629.428	822607.359
406	822526.988	822529.813
407	822618.348	822567.950
408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822560.278	822441.956
412	822602.949	822460.010
413	822621.914	822467.959
414	822624.130	822470.998
415	822651.725	822508.856
416	822644.758	822521.192



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

CONTROLLED DOCUMENT  
不准隨意  
准許文  
本許文  
走可作

FOR CONSTRUCTION

C	WORKING DRAWING	BWCW SCI	MAY.15
B	TENDER ADDENDUM NO. 2	BWCW SCI	MAY.14
A	TENDER ADDENDUM NO. 1	BWCW SCI	APR.14
-	TENDER DRAWING	BWCW SCI	MAR.14
REV. NO.	DESCRIPTION	DATE	BY

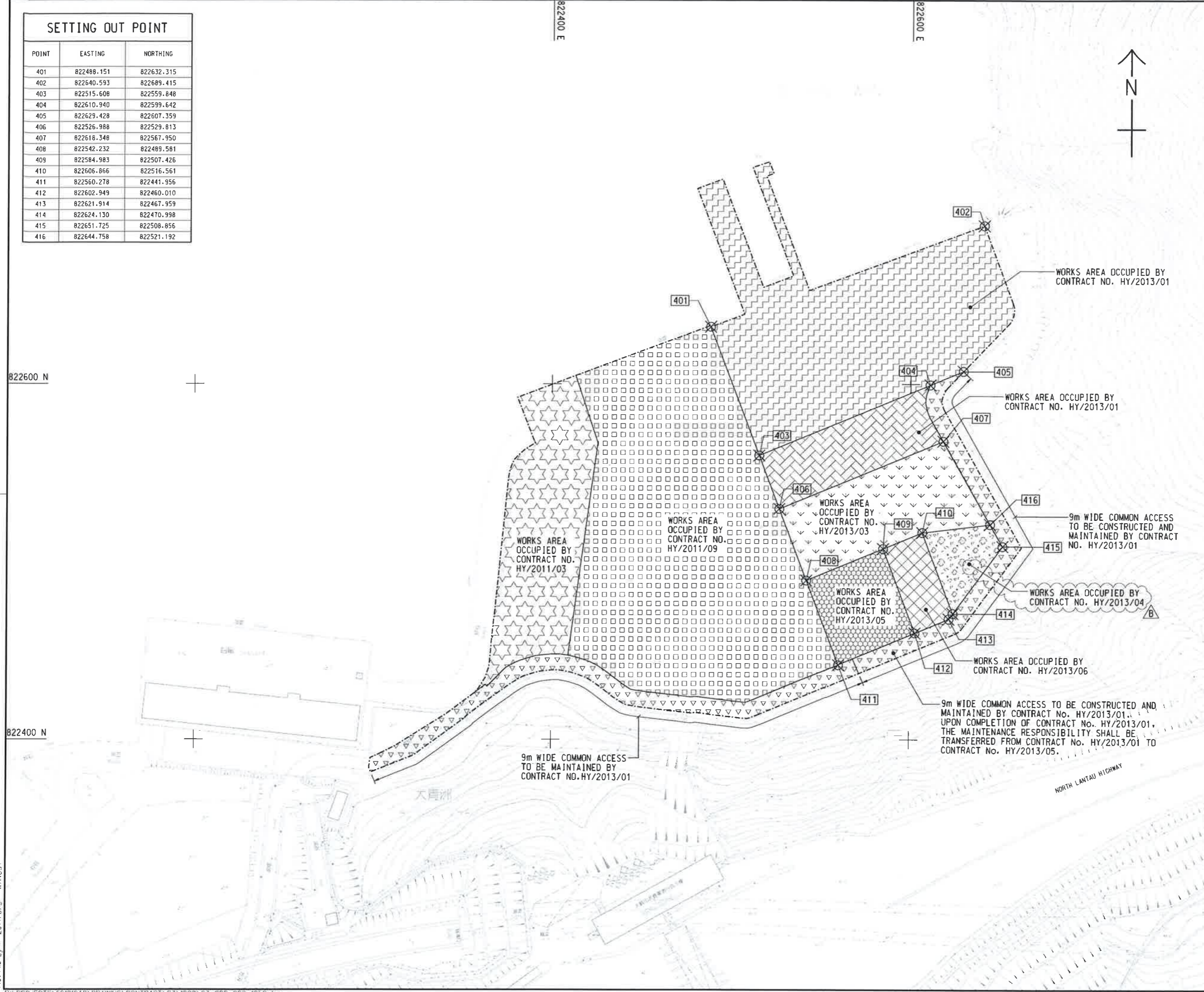
HONG KONG-HIGHWAYS DEPARTMENT  
港珠澳大橋香港工程管理局  
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office  
HONG KONG-ZHUHAI-MACAO BRIDGE  
HONG KONG BOUNDARY CROSSING FACILITIES  
- VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

WORKS AREA WA4

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

DRGNO. 圖紙編號 60191048/C3/000/C00/1052C

DESIGNED BY 設計人	BWCW	CONTRACT NO. 合約編號	HY/2013/03	APPROVED BY 校核人	TKH
DRAWN BY 繪圖人	WSY	STATUS 圖則	WORKING DRAWING		
SCALE 比例	A1 1 : 1000	COPYRIGHT RESERVED 版權所有			



Plot File by 2014/5/5 WANGSY

## **MATERIALAB CONSULTANTS LIMITED**

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

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 horizontal bars extending from the top and bottom edges.

Report No.: 0165/15/ED/0949

---

### **Appendix B**

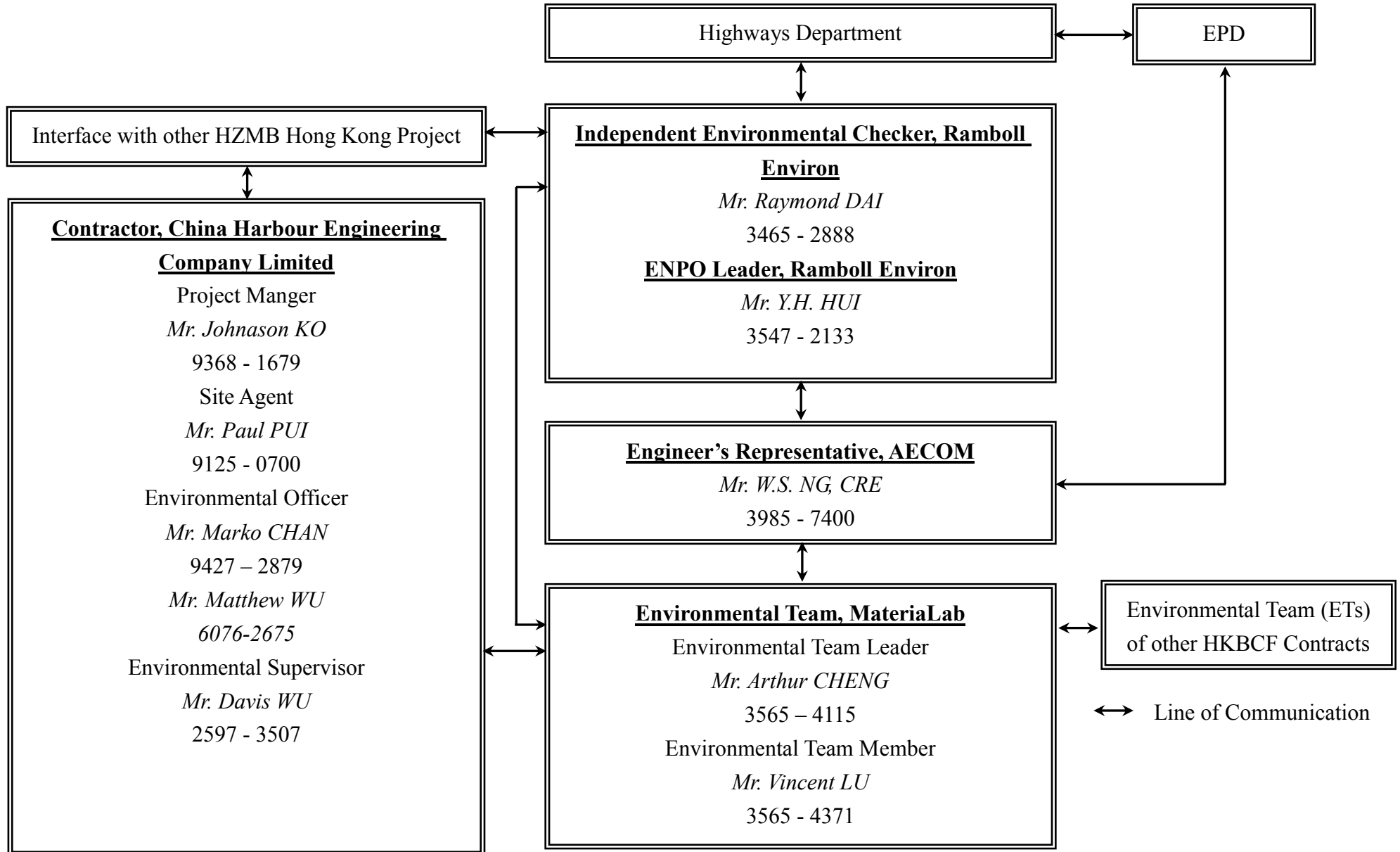
#### **Project Organization for Environmental Works**

# CHINA HARBOUR ENGINEERING COMPANY LIMITED



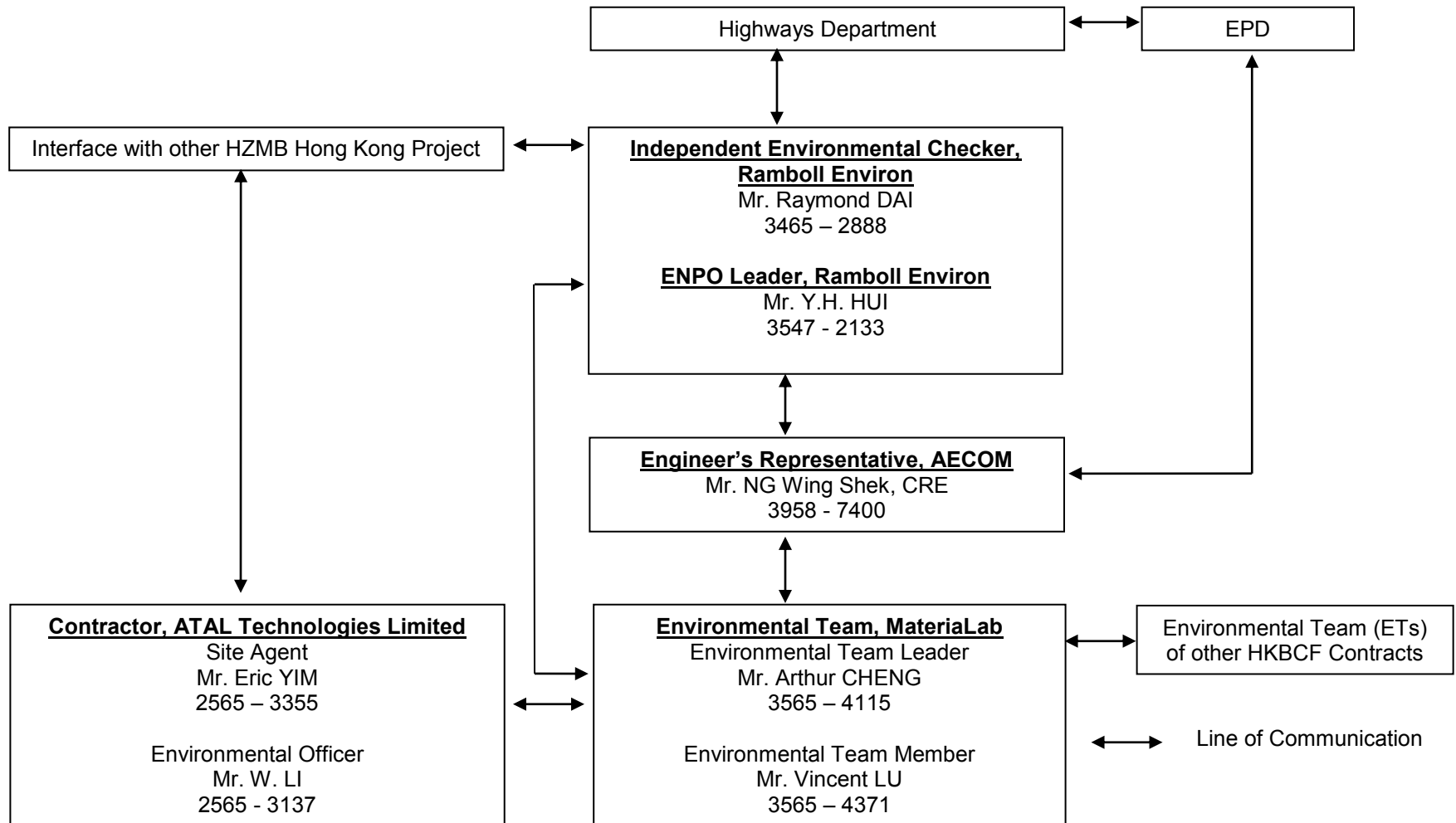
Contract No. HY/2013/03 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

## 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**



## **MATERIALAB CONSULTANTS LIMITED**

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Email : mcl@fugro.com

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/0949

### **Appendix C**

### **Construction Programme**

Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
<b>HKBCF - VCP &amp; Ancillary Buildings and Facilities, DWP5 (+ DRM 2)</b>						
<b>Stages of the Project Completion</b>						
<b>Stage 1: 31st Dec. 2017</b>						
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 & 010		
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		
<b>Stage 2: 15th Feb. 2018</b>						
A2110	Road Pavement: Traffic Lanes through Kiosk 9-5-5-9				◆ Road Pavement: Traffic Lanes through Kiosk 9-5-5-9	
A2120	Road Pavement: 4 Traffic Lanes through Kiosk 006, 009 & 010				◆ Road Pavement: 4 Traffic Lanes through Kiosk 006, 009 & 010	
A2130	Security Fencing (E&M Works)				◆ Security Fencing (E&M Works)	
A2140	North PTI (SW Corner)				◆ North PTI (SW Corner)	
A2150	Topsoil for Landscape Works				◆ Topsoil for Landscape Works	
A2160	Internal Road (Rings up to RB 1st Layer)				◆ Internal Road (Rings up to RB 1st Layer)	
A2170	Boundary Roads (Rings up to RB, half lane)				◆ Boundary Roads (Rings up to RB, half lane)	
<b>Completion of Works</b>						
<b>Stage 1: Kiosks of 006, 009, 010, 027, 028, 029 &amp; 030</b>						
<b>Kiosks of 027</b>						
K020	9-Kiosks: Finishing, Glass Window & Door	[Actual Work Bar]				
K030	9-Kiosks: Degree 3 Handover		◆ 9-Kiosks: Degree 3 Handover			
K040	Installation of Steel Y-Junction, remaining	[Remaining Work Bar]				
K050	Installation of Cladding, remaining	[Remaining Work Bar]				
<b>Kiosks of 028</b>						
K160	5-Kiosks: Finishing, Glass Window & Door	[Actual Work Bar]				
K170	5-Kiosks: Degree 3 Handover		◆ 5-Kiosks: Degree 3 Handover			
K174	Remaining 5-Kiosks: Finishing, Glass Window & Door	[Actual Work Bar]		[Critical Work Bar]		
K176	Remaining 5-Kiosks: Degree 3 Handover					◆ Remaining 5-Kiosks: Deg
K180	Installation of Steel Y-Junction, remaining	[Remaining Work Bar]				
K190	Installation of Cladding, remaining	[Remaining Work Bar]				
<b>Kiosks of 029</b>						
K100	5-Kiosks: RC Wall & Roof	[Actual Work Bar]				
K110	5-Kiosks: Finishing, Glass Window & Door	[Actual Work Bar]				
K120	5-Kiosks: Degree 3 Handover		◆ 5-Kiosks: Degree 3 Handover			
K122	Remaining 5-Kiosks: RC Wall & Roof	[Actual Work Bar]				
K130	Installation of Steel Y-Junction, remaining	[Remaining Work Bar]				
K140	Installation of Cladding, remaining	[Remaining Work Bar]				
<b>Kiosks of 030</b>						
K200	9-Kiosks: RC Wall & Roof	[Actual Work Bar]				
K210	9-Kiosks: Finishing, Glass Window & Door	[Actual Work Bar]				
K220	9-Kiosks: Degree 3 Handover		◆ 9-Kiosks: Degree 3 Handover			
K222	Remaining 12-Kiosks: RC Wall & Roof	[Actual Work Bar]				
K230	Installation of Steel Y-Junction, remaining	[Remaining Work Bar]				
K240	Installation of Cladding, remaining	[Remaining Work Bar]				
<b>Kiosk 006 (All)</b>						

■ Actual Work    ◆ Milestone  
■ Remaining Work  
■ Critical

**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 1 of 9

Date	Revision	Checked	Approv...
31-Oct-17	3MRP, updated as of 31 Oct. 2017	ZJ	
30-Nov-17	3MRP updated as of 30 Nov. 2017	ZJ	

Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
K250	RC Wall & Roof	[Actual Work]	[Remaining Work]			
K260	Finishing, Glass Window & Door	[Actual Work]	[Remaining Work]			
K270	Degree 3 Handover		◆ Degree 3 Handover			
K280	Installation of Steel Y-Junction	[Actual Work]	[Remaining Work]			
K290	Installation of Cladding	[Actual Work]	[Remaining Work]			
<b>Kiosk 009 (All)</b>						
K300	RC Wall & Roof	[Actual Work]	[Remaining Work]			
K310	Finishing, Glass Window & Door	[Actual Work]	[Remaining Work]			
K320	Degree 3 Handover		◆ Degree 3 Handover			
K330	Installation of Steel Y-Junction	[Actual Work]	[Remaining Work]			
K340	Installation of Cladding	[Actual Work]	[Remaining Work]			
<b>Kiosk 010 (All)</b>						
K350	RC Wall & Roof	[Actual Work]	[Remaining Work]			
K360	Finishing, Glass Window & Door	[Actual Work]	[Remaining Work]			
K370	Degree 3 Handover		◆ Degree 3 Handover			
K380	Installation of Steel Y-Junction	[Actual Work]	[Remaining Work]			
K390	Installation of Cladding	[Actual Work]	[Remaining Work]			
<b>Stage 1: Traffic Lanes through Kiosk 4-2-2-4 &amp; 006, 009 &amp; 010</b>						
<b>Inbound West: Through 4 Kiosk of 027</b>						
D010	Drainage	[Actual Work]	[Remaining Work]			
D020	Sewerage	[Actual Work]	[Remaining Work]			
D030	Watermains & Flush Watering	[Actual Work]	[Remaining Work]			
D040	UU Ducts Laying	[Actual Work]	[Remaining Work]			
R010	Subbase & Bitumen Pavement	[Actual Work]	[Remaining Work]			
R020	Kerb/Edges	[Actual Work]	[Remaining Work]			
R025	U-channel	[Actual Work]	[Remaining Work]			
R030	Street lighting	[Actual Work]	[Remaining Work]			
R035	High Mast Lighting	[Actual Work]	[Remaining Work]			
R040	concrete Pavement	[Actual Work]	[Remaining Work]			
R050	Road Marking		[Remaining Work]			
<b>Inbound East: Through 2 Kiosk of 028</b>						
D050	Drainage	[Actual Work]	[Remaining Work]			
D060	UU Ducts Laying	[Actual Work]	[Remaining Work]			
R060	Subbase & Bitumen Pavement	[Actual Work]	[Remaining Work]			
R070	Kerb/Edges	[Actual Work]	[Remaining Work]			
R075	U-channel	[Actual Work]	[Remaining Work]			
R080	Street lighting	[Actual Work]	[Remaining Work]			
R090	High Mast Lighting	[Actual Work]	[Remaining Work]			
R100	Concrete Pavement		[Remaining Work]			
R110	Road Marking		[Remaining Work]			
<b>Outbound West: Through 2 Kiosk of 029</b>						
D110	Drainage	[Actual Work]	[Remaining Work]			
D120	Sewerage	[Actual Work]	[Remaining Work]			
D130	Watermains & Flush Watering	[Actual Work]	[Remaining Work]			
D140	UU Ducts Laying	[Actual Work]	[Remaining Work]			
R210	Subbase & Bitumen Pavement	[Actual Work]	[Remaining Work]			
R220	Kerb/Edges	[Actual Work]	[Remaining Work]			
R225	U-channel	[Actual Work]	[Remaining Work]			
R230	Street lighting	[Actual Work]	[Remaining Work]			
R235	High Mast Lighting	[Actual Work]	[Remaining Work]			
R240	Concrete Pavement		[Remaining Work]			
R250	Road Marking		[Remaining Work]			

■ Actual Work    ◆ Milestone  
■ Remaining Work  
■ Critical

**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

Date	Revision	Checked	Approv...
31-Oct-17	3MRP, updated as of 31 Oct. 2017	ZJ	
30-Nov-17	3MRP updated as of 30 Nov. 2017	ZJ	

Activity ID	Activity Name	2017		2018																																																																																					
		Nov	Dec	Jan	Feb	Mar																																																																																			
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**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 3 of 9

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31-Oct-17	3MRP, updated as of 31 Oct. 2017	ZJ	
30-Nov-17	3MRP updated as of 30 Nov. 2017	ZJ	



Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
		R980	Street lighting	[Actual Work]	[Remaining Work]	
<b>Internal Road - South of CUE, S/W Corner (049)</b>						
D450	Drainage	[Actual Work]	[Remaining Work]			
D460	Sewerage	[Actual Work]	[Remaining Work]			
D470	Watermains & Flush Watering	[Actual Work]	[Remaining Work]			
D480	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R1990	Subbase & 1st RB, as TTA for Internal Road		[Actual Work]	[Remaining Work]		
R2010	Kerb/Edges		[Actual Work]	[Remaining Work]		
R2020	U-channel		[Actual Work]	[Remaining Work]		
R2990	Street lighting	[Actual Work]	[Remaining Work]			
<b>Internal Road - North of CUE, West Side (023-057)</b>						
D410	Drainage	[Actual Work]	[Remaining Work]			
D420	Sewerage	[Actual Work]	[Remaining Work]			
D430	Watermains & Flush Watering	[Actual Work]	[Remaining Work]			
D440	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R1110	Subbase & 1st RB, as TTA for Internal Road		[Actual Work]	[Remaining Work]		
R1140	Kerb/Edges		[Actual Work]	[Remaining Work]		
R1150	U-channel		[Actual Work]	[Remaining Work]		
R1160	Street lighting	[Actual Work]	[Remaining Work]			
<b>Internal Road - North of CUE, East Side (024-031)</b>						
D500	Drainage	[Actual Work]	[Remaining Work]			
D520	Sewerage	[Actual Work]	[Remaining Work]			
D530	Watermains & Flush Watering	[Actual Work]	[Remaining Work]			
D540	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R1500	Subbase & 1st RB, as TTA for Internal Road		[Actual Work]	[Remaining Work]		
R1510	Kerb/Edges & U-channel		[Actual Work]	[Remaining Work]		
R3000	Street lighting	[Actual Work]	[Remaining Work]			
<b>Stage 1: Bridges (All), include W7-W</b>						
R1280	Installation of Movement Joint	[Actual Work]				
R1290	Backfilling to Retaining Walls and Embankment	[Actual Work]	[Remaining Work]			
R1300	Parapet	[Actual Work]				
R1303	Railling	[Actual Work]				
R1330	Remaining Pavement on Bridges & Retaing Walls	[Actual Work]	[Remaining Work]			
R1340	Lighting, Signages & Gantry	[Actual Work]	[Remaining Work]			
R2170	Road Marking		[Actual Work]	[Remaining Work]		
<b>Stage 1: Boundary Road (Half Lane)</b>						
<b>North Boundary Road</b>						
D510	Drainage	[Actual Work]	[Remaining Work]			
D610	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R770	Subbase & half lane with 1st RB	[Actual Work]	[Remaining Work]			
R790	Kerb/Edges	[Actual Work]	[Remaining Work]			
R810	U-channel	[Actual Work]	[Remaining Work]			
R910	Security Fence	[Actual Work]	[Remaining Work]			
R920	Street lighting	[Actual Work]	[Remaining Work]			
<b>East Boundary Road</b>						
D620	Drainage	[Actual Work]	[Remaining Work]			
D630	Sewerage	[Actual Work]	[Remaining Work]			
D650	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R2090	Subbase & half lane with 1st RB	[Actual Work]	[Remaining Work]			
R2100	Kerb/Edges	[Actual Work]	[Remaining Work]			
R2110	U-channel	[Actual Work]	[Remaining Work]			
R2890	Security Fence	[Actual Work]	[Remaining Work]			

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**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 4 of 9

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Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
R3010	Street lighting	[Actual Work]	[Remaining Work]			
<b>West Boundary Road</b>						
D710	Drainage	[Actual Work]	[Remaining Work]			
D720	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R2120	Subbase & half lane with 1st RB	[Actual Work]	[Remaining Work]			
R2130	Kerb/Edges	[Actual Work]	[Remaining Work]			
R2140	U-channel	[Actual Work]	[Remaining Work]			
R2930	Security Fence	[Actual Work]	[Remaining Work]			
R3020	Street lighting	[Actual Work]	[Remaining Work]			
<b>South Boundary Road, include W7-W</b>						
D660	Drainage	[Actual Work]	[Remaining Work]			
D670	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R2900	Subbase & half lane with 1st RB	[Actual Work]	[Remaining Work]			
R2910	Kerb/Edges	[Actual Work]	[Remaining Work]			
R2920	U-channel	[Actual Work]	[Remaining Work]			
R2940	Security Fence	[Actual Work]	[Remaining Work]			
R3030	Street lighting	[Actual Work]	[Remaining Work]			
<b>Stage 1: North of CUE, North Coast Road</b>						
D730	Drainage	[Actual Work]	[Remaining Work]			
D740	Sewerage	[Actual Work]	[Remaining Work]			
D750	Watermains & Flush Watering	[Actual Work]	[Remaining Work]			
D760	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R2030	Subbase & 1st RB, as TTA for Internal Road	[Actual Work]	[Remaining Work]			
R2040	Kerb/Edges & U-channel	[Actual Work]	[Remaining Work]			
R2950	Security Fence	[Actual Work]	[Remaining Work]			
R3040	Street lighting	[Actual Work]	[Remaining Work]			
<b>Stage 1: Public Transport Interchange</b>						
<b>South Public Transport Interchange</b>						
D770	Drainage	[Actual Work]	[Remaining Work]			
D780	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R1260	Subbase & Pavement	[Actual Work]	[Remaining Work]			
R1350	Canopy for Covered Walkway	[Actual Work]	[Remaining Work]			
R3050	Street lighting	[Actual Work]	[Remaining Work]			
<b>Around Horse Track</b>						
D11560	Drainage	[Actual Work]	[Remaining Work]			
D11570	Sewerage	[Actual Work]	[Remaining Work]			
R1550	Subbase & Pavement	[Actual Work]	[Remaining Work]			
R1570	Kerb/Edges	[Actual Work]	[Remaining Work]			
R1600	U-channel	[Actual Work]	[Remaining Work]			
R2150	Street Lighting	[Actual Work]	[Remaining Work]			
R2160	Road Marking		[Remaining Work]			
R3130	Security Fence	[Actual Work]	[Remaining Work]			
<b>North Public Transport Interchange (Except SW Corner)</b>						
D810	Drainage	[Actual Work]	[Remaining Work]			
D820	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R1310	Subbase & Pavement	[Actual Work]	[Remaining Work]			
R1360	Canopy for Covered Walkway	[Actual Work]	[Remaining Work]			
R3060	Street lighting	[Actual Work]	[Remaining Work]			
R3090	Road Marking		[Remaining Work]			
<b>Stage 1: Carpark &amp; Taxi Queuing</b>						
<b>Carparks</b>						
D830	Drainage	[Actual Work]	[Remaining Work]			

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**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 5 of 9

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D835	Sewerage	[Actual Work]	[Remaining Work]			
D840	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R1520	Subbase & pavement	[Actual Work]	[Remaining Work]			
R1540	Kerb/Edges	[Actual Work]	[Remaining Work]			
R1590	U-channel	[Actual Work]	[Remaining Work]			
R2960	Fencing	[Actual Work]	[Remaining Work]			
R3070	Street lighting	[Actual Work]	[Remaining Work]			
R3100	Road Marking		[Remaining Work]			
<b>South Taxi Queuing</b>						
D850	Drainage	[Actual Work]	[Remaining Work]			
D860	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R2050	Subbase & Pavement	[Actual Work]	[Remaining Work]			
R2070	Kerb/Edges	[Actual Work]	[Remaining Work]			
R2080	U-channel	[Actual Work]	[Remaining Work]			
R2970	Fencing	[Actual Work]	[Remaining Work]			
R3080	Street lighting	[Actual Work]	[Remaining Work]			
R3110	Road Marking		[Remaining Work]			
<b>Link Road West</b>						
D12020	Drainage	[Actual Work]	[Remaining Work]			
D12030	UU (LV & ELV etc.) Ducts Laying	[Actual Work]	[Remaining Work]			
R3370	Subbase & Pavement	[Actual Work]	[Remaining Work]			
R3390	Kerb/Edges	[Actual Work]	[Remaining Work]			
R3400	U-channel	[Actual Work]	[Remaining Work]			
R3410	Fencing	[Actual Work]	[Remaining Work]			
R3420	Street lighting	[Actual Work]	[Remaining Work]			
R3430	Road Marking		[Remaining Work]			
<b>Stage 1: Security Fencing outside Boundary Roads (Exclude E&amp;M)</b>						
D11930	Security Fence, within internal road	[Actual Work]	[Remaining Work]			
D11940	Security Fence, adjacent Kiosks	[Actual Work]	[Remaining Work]			
D11950	Security Fence, other place	[Actual Work]	[Remaining Work]			
<b>Stage 1: FSD Inspection of Buildings (Access to Users)</b>						
A00290	002 - C&ED Observation Guard Booth, Portion K No.1		[Remaining Work]			
B00290	002 - C&ED Observation Guard Booth, Portion K No. 2		[Remaining Work]			
B00294	002 - C&ED Observation Guard Booth, Portion H1 No. 1		[Remaining Work]			
B00296	002 - C&ED Observation Guard Booth, Portion H1 No. 2		[Remaining Work]			
B00298	002 - C&ED Observation Guard Booth, Portion R		[Remaining Work]			
B00610	006 - Shuttle Bus Kiosk & Staff Subway			[Milestone]		
B00910	009 - Outbound Coach Kiosk & Staff Subway			[Milestone]		
B01010	010 - Inbound Coach Kiosk & Staff Subway			[Milestone]		
C01240	012 - DOH Disinsection Area and Store , Portion A1	[Actual Work]	[Remaining Work]			
C01252	012 - DOH Disinsection Area, Portion C, FSD inspection	[Actual Work]	[Remaining Work]			
C02450	024 - Outbound Private Car Exam Building, FSD Inspection		[Remaining Work]			
C02670	026 - Inbound IMMD and DOH Secondary Screening Building	[Actual Work]	[Remaining Work]			
C02710	027 - Inbound VCP private Car Kiosks & Inbound Staff Subway			[Milestone]		
C02810	028 - Inbound GV Kiosks & Inbound Staff subway			[Milestone]		
C02910	029 - Outbound GV Kiosks & Outbound Staff subway			[Milestone]		
C03010	030 - Outbound VCP Private Kiosk & Outbound Staff Subway			[Milestone]		
C03190	031 - Outbound IMMD and DOH Secondary Screen Building		[Remaining Work]			
C03380	033 - Inbound Private Car Exam Building, FSD Inspection	[Actual Work]	[Remaining Work]			
C03460	034 - Satellite RCP South, FSD Inspection	[Actual Work]	[Remaining Work]			
C03580	035 - Sewage Pumping Station, FSD Inspection		[Remaining Work]			
C03660	036 - Weigh Station, FSD Inspection		[Remaining Work]			

■ Actual Work    ◆ Milestone  
■ Remaining Work  
■ Critical

**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 6 of 9

Date	Revision	Checked	Approv...
31-Oct-17	3MRP, updated as of 31 Oct. 2017	ZJ	
30-Nov-17	3MRP updated as of 30 Nov. 2017	ZJ	

Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
C03780	037 C&ED Tower & Inbound Cargo Examination Building	Actual Work	Remaining Work			
C03850	038 - AFCD Office, FSD Inspection		Remaining Work			
C03990	039 - Police Main Building, FSD Inspection		Remaining Work			
D04070	040 - Incident Control Tower, FSD Inspection		Remaining Work			
D04180	041 Fire Station & Ambulance Depot, FSD Inspection	Actual Work	Remaining Work			
D04240	042 - Drill Tower, FSD Inspection	Actual Work	Remaining Work			
D04320	043 - DOH Office + Store Room, FSD Inspection	Actual Work				
D04670	046 - Refuse Collection Point, FSD Inspection		Remaining Work			
D04750	047 - Fresh Water Pumping Station, FSD Inspection	Actual Work	Remaining Work			
D04850	048 - Reclaimed Water Pumping Station, FSD Inspection		Remaining Work			
D04972	049 - Sewerage Treatment Plant, FSD Inspection		Remaining Work			
D05170	051 - Transformers (Zone 5), FSD Inspection	Actual Work				
D05240	052 - Tran forms (Zone 4), FSD Inspection	Actual Work				
D05470	054 - Inbound Fixed X-ray, FSD Inspection	Actual Work				
D05770	057 - Transformers (Zone 2), FSD Inspection	Actual Work				
D06070	060 - Single Storey Support Buildingm FSD Inspection		Remaining Work			
D06160	061 - Telecom Building, FSD Inspection		Remaining Work			
D10060	100 - Inbound Traffic Control Kiosk, FSD Inspection	Actual Work				
D10150	101 - Outbound Traffic Control Kiosk, FSD Inspection	Actual Work	Remaining Work			
D10250	102 - HKPF UVSS Monior Room, FSD inspection		Remaining Work			
D10350	103 - Police Inspection Post, Portion B, FSD inspection	Actual Work	Remaining Work			
D10400	104 - DOH Secondary Screening Station, Portion C		Remaining Work			
D10425	104 - DOH Screening Station, Portion M, FSD Inspection		Remaining Work			
D10435	104 - DOH Screening Station, Portion N, FSD Inspection		Remaining Work			
D10560	105 - IMMD Guard Booth, Portion A1, FS Inspection by FSD		Remaining Work			
D10565	105 - IMMD Guard Booth, Portion P, FSD Inspection		Remaining Work			
D10680	106 - C&ED Detention Area Guard Booth, FSD Inspection		Remaining Work			
D10784	107 - C&ED Mobile Operation Office, Portion B, FSD inspection	Actual Work	Remaining Work			
D10786	107 - C&ED Mobile X-ray Operation Office, Portion N	Actual Work	Remaining Work			
D10840	108 - C&ED Mobile X-ray Machine Operation Office, Portion C	Actual Work	Remaining Work			
D10890	108 - C&ED Mobile X-Ray Operation Office, portion M	Actual Work	Remaining Work			
D11040	110 - IMMD Guard Booth, Portion C-East, FS inspection	Actual Work	Remaining Work			
E11080	110 - IMMD Guard Booth, Portion C-West, FSD inspection	Actual Work	Remaining Work			
E11170	111 - Field Kiosk for Carpark Operator, FSD inspection		Remaining Work			
E11270	112 - Field Kiosk for Taxi Queuing Area, FSD Inspection		Remaining Work			
F11320	113 - Field Kiosk for Access Control, Portion C, FSD inspection		Remaining Work			
F11324	113 - Field Kiosk for Access Control, Portion B, FSD inspection		Remaining Work			
F11360	114 - Field Kiosk for Access Control, Portion D, FS inspection		Remaining Work			
<b>Stage 2: Traffic Lanes through Kiosk 9-5-5-9 &amp; 006, 009 &amp; 010</b>						
D550	Remaining Drainage			Remaining Work		
R1120	Remaining Subbase			Remaining Work		
<b>Inbound West: Through 5 Kiosk of 027</b>						
R1620	U-channel			Remaining Work		
R1630	Kerb/Edges			Remaining Work		
R1640	Street lighting			Remaining Work		
R1650	Bitumen Pavement			Remaining Work		
R1660	Road Marking			Remaining Work		
<b>Inbound East: Through 3 Kiosk of 028</b>						
R2180	U-channel			Remaining Work		
R2190	Kerb/Edges			Remaining Work		
R2200	Street lighting			Remaining Work		
R2210	Bitumen Pavement			Remaining Work		

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■ Critical

**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**

Date	Revision	Checked	Approv...
31-Oct-17	3MRP, updated as of 31 Oct. 2017	ZJ	
30-Nov-17	3MRP updated as of 30 Nov. 2017	ZJ	

Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
R2220	Road Marking				██████████	
<b>Outbound West: Through 3 Kiosk of 029</b>						
R2230	U-channel			██████████		
R2240	Kerb/Edges			██████████		
R2250	Street lighting			██████████		
R2260	Bitumen Pavement			██████████		
R2270	Road Marking				██████████	
<b>Outbound East: Through 5 Kiosk of 030</b>						
R2280	U-channel			██████████		
R2290	Kerb/Edges			██████████		
R2300	Street lighting			██████████		
R2310	Bitumen Pavement			██████████		
R2320	Road Marking				██████████	
<b>Through 2+2 Kiosks of 006, 009</b>						
R1820	U-channel			██████████		
R1830	Kerb/Edges			██████████		
R1840	Street lighting			██████████		
R1850	Bitumen Pavement			██████████		
R1860	Road Marking				██████████	
<b>Through 2 Kiosks of 010</b>						
R1870	U-channel			██████████		
R1880	Kerb/Edges			██████████		
R1890	Street lighting			██████████		
R1900	Bitumen Pavement			██████████		
R1910	Road Marking				██████████	
<b>Internal Road - South of CUE, West Side (026-033)</b>						
R2330	1st Layer RB			██████████		
<b>Internal Road - South of CUE, East Side (037-054)</b>						
R2420	1st Layer RB			██████████		
<b>Internal Road - North of CUE, West Side (023-057)</b>						
R2430	1st Layer RB			██████████		
<b>Internal Road - North of CUE, East Side (024-031)</b>						
R2440	1st Layer RB			██████████		
<b>Remaining North PTI (SW Corner)</b>						
R3140	Remaining North PTI (SW Corner)			██████████		
<b>South Boundary Road</b>						
R3150	South Boundary Road, up to WC			██████████		
<b>Landscape Works</b>						
R2620	Laying of Top Soil			██████████		
<b>Stage 3</b>						
<b>Internal Road - South of CUE, West Side (026-033)</b>						
R2450	Completion of Pavement with Street lighting & Road Marking					██████████
<b>Internal Road - South of CUE, East Side (037-054)</b>						
R2460	Completion of Pavement with Street lighting & Road Marking					██████████
<b>Internal Road - North of CUE, West Side (023-057)</b>						
R2470	Completion of Pavement with Street lighting & Road Marking					██████████
<b>Internal Road - North of CUE, East Side (024-031)</b>						
R2480	Completion of Pavement with Street lighting & Road Marking					██████████
<b>Internal Road - North of CUE, North Coast Road</b>						
R2490	Completion of Pavement with Street lighting & Road Marking					██████████
<b>North Boundary Road</b>						
R2600	Pavement with street lighting up to 1st Layer RB			██████████		

█ Actual Work    ◆ Milestone  
█ Remaining Work  
█ Critical

**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 8 of 9

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Activity ID	Activity Name	2017		2018		
		Nov	Dec	Jan	Feb	Mar
<b>East Boundary Road</b>						
R2530	Pavement with street lighting up to 1st Layer RB			[Red bar]		
<b>West Boundary Road</b>						
R2610	Pavement with street lighting up to 1st Layer RB			[Red bar]		
<b>Stage 5</b>						
<b>Landscape Works</b>						
R2860	Completion of Landscape Works					[Red bar]
<b>Stage 6: Roadworks through Remaining Kiosks (027, 028, 029 &amp; 030)</b>						
<b>Inbound West: Through 12 Kiosk of 027</b>						
R2660	Kerb/Edges					[Red bar]
R2665	U-channel					[Red bar]
R2670	Street lighting					[Red bar]
R2680	Bitumen Pavement					[Red bar]
<b>Inbound East: Through 5 Kiosk of 028</b>						
R2710	Kerb/Edges					[Red bar]
R2715	U-channel					[Red bar]
R2720	Street lighting					[Red bar]
R2730	Bitumen Pavement					[Red bar]
<b>Outbound West: Through 5 Kiosk of 029</b>						
R2750	U-channel					[Red bar]
R2760	Kerb/Edges					[Red bar]
R2770	Street lighting					[Red bar]
R2780	Bitumen Pavement					[Red bar]
<b>Outbound East: Through 12 Kiosk of 030</b>						
R2800	U-channel					[Red bar]
R2810	Kerb/Edges					[Red bar]
R2820	Street lighting					[Red bar]

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**WORKS PROGRAMME, AS OF 30 NOVEMBER 2017**  
**VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES**  
 Page 9 of 9

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Activity ID	Activity Name	2015		2016				2017				2018				2019		
		Q2	Q3	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
<b>Detailed Design Specification</b>																		
<b>Construction Design and Management</b>																		
<b>Supply/Manufacture Mock-up items</b>																		
<b>Supply/Manufacture prototypes</b>																		
<b>Software Design, Coding and Testing</b>																		
<b>Coding</b>																		
<b>Software System Integration</b>																		
<b>Prototype &amp; Software Simulation Tests</b>																		
<b>Procurement - Phase 1 / Section I</b>																		
<b>Supply/Manufacture products for FAT</b>																		
<b>Factory Acceptance Test (FAT)</b>																		
<b>Supply/Manufacture Equipment</b>																		
<b>Delivery and Bench Acceptance Test for Phase 1/ Section I</b>																		
<b>Installation - Phase 1 / Section I</b>																		
<b>Location 1(PCB (001) Basement)</b>																		
EM1920	L1(001)B/F - Cable Laying and termination at Location 1 and Location 2																	
<b>Location 1(PCB (001) ELV Room (Grid Line E3))</b>																		
EM1940	L1(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2																	
<b>Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3))</b>																		
EM1960	L2(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2																	
<b>Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5))</b>																		
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																	
<b>Location 2(PCB (001) First Floor Main Server Room)</b>																		
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																	
<b>Location 3(Inbd Cargo Exam Bldg (037) MDF Room)</b>																		
<b>Location 3(Inbd Cargo Exam Bldg (037) ELV Room)</b>																		
<b>Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,140)</b>																		
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																	
<b>Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)</b>																		
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																	

01-Sep-17, Installation - Phase 1 / Section I  
 22-Jun-17, Location:1(PCB (001),Basement)  
 L1(001)B/F - Cable Laying and termination at Location  
 22-Jun-17, Location:1(PCB (001),ELV Room (Grid Line  
 L1(001)ELV Rm - Cable Laying and termination at Loca  
 22-Jun-17, Location:2(PCB (001),Ground Floor ELV R  
 L2(001)ELV Rm - Cable Laying and termination at Loca  
 18-Aug-17, Location:2(PCB (001),Ground Floor DO  
 L2(001)Heath Ctrl Rm - Cable Laying and termination  
 L2(001)Heath Ctrl Rm - Cable Splicing and Testing and  
 L2(001)Health Ctrl Rm - Intercom and PA system In  
 L2(001)Health Ctrl Rm - Intercom and PA system tu  
 21-Aug-17, Location:2(PCB (001),First Floor Main  
 L2(001)Main Server Rm - Cable Laying and terminatio  
 L2(001)Main Server Rm - Cable Splicing and Testing  
 L2(001)Main Server Rm - AVCSS Network and Ser  
 L2(001)Main Server Rm - AVCSS Network and Se  
 07-Aug-17, Location:3(Inbd Cargo,Exam,Bldg (037  
 L3(037)Inspec Offices - Cable Laying and termination i  
 L3(037)Inspec Offices - Cable Splicing and Testing and  
 L3(037)Inspec Offices - AVCSS SURCON WS and 5  
 L3(037)Inspec Offices - VTS WS Installation  
 L3(037)Inspec Offices - SURCON and WS Tuning  
 07-Aug-17, Location:3(Inbd Cargo,Exam,Bldg (037  
 L3(037)PLF Ctrl Rm - Cable Laying and termination in  
 L3(037)PLF Ctrl Rm - Cable Splicing and Testing and  
 L3(037)PLF Ctrl Rm - AVCSS SYSCON WS and 55  
 L3(037)PLF Ctrl Rm - AVCSS SYSCON WS Tuning

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

summary

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
<b>Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)</b>		07-Aug-17, Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a																	
EM1240	L3a(037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a	L3a(037) ROCARS Rm - Cable Laying and termination																	
EM1260	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling																	
EM1280	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation																	
EM1300	L3a(037) ROCARS Rm - VTS WS Installation	L3a(037) ROCARS Rm - VTS WS Installation																	
EM1320	L3a(037) ROCARS Rm - VID WS Installation	L3a(037) ROCARS Rm - VID WS Installation																	
EM1340	L3a(037) ROCARS Rm - SURCON and SYSCON and WS Tuning	L3a(037) ROCARS Rm - SURCON and SYSCON and WS Tuning																	
<b>Location 3a(Inbd Cargo Exam Bldg (037) Main Server Room)</b>		07-Aug-17, Location 3a(Inbd Cargo Exam Bldg (037) Main Server Rm - Cable Laying and termination in Location 3 and Location 3a																	
EM2120	L3a(037)Main Server Rm - Cable Laying and termination in Location 3 and Location 3a	L3a(037)Main Server Rm - Cable Laying and termination																	
EM2140	L3a(037)Main Server Rm - Cable Splicing and Testing and Labeling	L3a(037)Main Server Rm - Cable Splicing and Testing and Labeling																	
EM2160	L3a(037)Main Server Rm - AVCSS Server Installation	L3a(037)Main Server Rm - AVCSS Server Installation																	
EM2180	L3a(037)Main Server Rm - VTS Server Installation	L3a(037)Main Server Rm - VTS Server Installation																	
EM2200	L3a(037)Main Server Rm - Servers Tuning	L3a(037)Main Server Rm - Servers Tuning																	
<b>Location 4(Outbd Cargo Exam Bldg (023) MDF Room)</b>																			
<b>Location 4a(Outbd Cargo Exam Bldg (023) ROCARS Room)</b>		04-Aug-17, Location 4a(Outbd Cargo Exam Bldg (023) ROCARS Rm - Cable Splicing and Testing and Labeling																	
EM2240	L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling	L4a(023)ROCARS Rm - Cable Splicing and Testing and Labeling																	
EM2260	L4a(023)ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation	L4a(023)ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation																	
EM2280	L4a(023)ROCARS Rm - VTS WS Installation	L4a(023)ROCARS Rm - VTS WS Installation																	
EM2300	L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning	L4a(023)ROCARS Rm - SYSCON and SURCON and WS Tuning																	
<b>Location 5(Common Utility Enclosure &amp; Staff Subway)</b>		01-Sep-17, Location 5(Common Utility Enclosure & Staff Subway) - Cable Laying between Location 5 and Location 6																	
EM2341	L5(CUE) - Cable Laying between Location 5 and Location 6	L5(CUE) - Cable Laying between Location 5 and Location 6																	
EM2361	L5(CUE) - Cable Laying between Location 5 and Location 7	L5(CUE) - Cable Laying between Location 5 and Location 7																	
EM2380	L5(CUE) - Cable Splicing and Testing and Labeling	L5(CUE) - Cable Splicing and Testing and Labeling																	
<b>Location 6(Common Utility Enclosure &amp; Staff Subway)</b>		26-Aug-17, Location 6(Common Utility Enclosure & Staff Subway) - Cable Laying between Location 5 and Location 6																	
EM2400	L6(CUE) - Cable Laying between Location 5 and Location 6	L6(CUE) - Cable Laying between Location 5 and Location 6																	
EM2420	L6(CUE) - Cable Splicing and Testing and Labeling	L6(CUE) - Cable Splicing and Testing and Labeling																	
<b>Location 7(Common Utility Enclosure &amp; Staff Subway)</b>		01-Sep-17, Location 7(Common Utility Enclosure & Staff Subway) - Cable Laying between Location 5 and Location 7																	
EM2440	L7(CUE) - Cable Laying between Location 5 and Location 7	L7(CUE) - Cable Laying between Location 5 and Location 7																	
EM2460	L7(CUE) - Cable Splicing and Testing and Labeling	L7(CUE) - Cable Splicing and Testing and Labeling																	
<b>Location 12(Inbd Private Car Kiosks,GV Kiosks (027,028,029))</b>		30-Aug-17, Location 12(Inbd Private Car Kiosks,GV Kiosks (027,028,029)) - Cable Splicing and Testing and Labeling																	
<b>Inbd Private Car Kiosks(027) - 9 nos (Phase 1)</b>		24-Aug-17, Inbd Private Car Kiosks(027) - 9 nos (Phase 1) - Cable Splicing and Testing and Labeling																	
EM1500	L12(027)(9nos P1) - Cable Splicing and Testing and Labeling	L12(027)(9nos P1) - Cable Splicing and Testing and Labeling																	
EM1520	L12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)	L12(027)(9nos P1) - AVCSS/MOM Kiosk Equipment Installation (9 nos)																	
EM1541	L12(027)(9nos P1) - XDB installation (18 nos)	L12(027)(9nos P1) - XDB installation (18 nos)																	
EM1542	L12(027)(9nos P1) - ODB installation (5 nos)	L12(027)(9nos P1) - ODB installation (5 nos)																	
EM1543	L12(027)(9nos P1) - ODB installation (2 nos)	L12(027)(9nos P1) - ODB installation (2 nos)																	
EM1544	L12(027)(9nos P1) - ODB installation (2 nos)	L12(027)(9nos P1) - ODB installation (2 nos)																	
EM1560	L12(027)(9nos P1) - Loop installation (45 nos)	L12(027)(9nos P1) - Loop installation (45 nos)																	
<b>Inbd Goods Vehicle Kiosks(028) - 5 nos (Phase 1)</b>		30-Aug-17, Inbd Goods Vehicle Kiosks(028) - 5 nos (Phase 1) - Cable Laying and termination																	
EM1620	L12(028)(5nos P1) - Cable Laying and termination	L12(028)(5nos P1) - Cable Laying and termination																	
EM1640	L12(028)(5nos P1) - Cable Splicing and Testing and Labeling	L12(028)(5nos P1) - Cable Splicing and Testing and Labeling																	
EM1660	L12(028)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)	L12(028)(5nos P1) - AVCSS/MOM Kiosk Equipment Installation (5 nos)																	
EM1681	L12(028)(5nos P1) - XDB installation (10 nos)	L12(028)(5nos P1) - XDB installation (10 nos)																	
EM1682	L12(028)(5nos P1) - ODB installation (3 nos)	L12(028)(5nos P1) - ODB installation (3 nos)																	
EM1683	L12(028)(5nos P1) - ODB installation (2 nos)	L12(028)(5nos P1) - ODB installation (2 nos)																	

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

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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
EM1700	L12(028)(5nos P1) - AIOP Installation (5 nos)																		
EM1720	L12(028)(5nos P1) - Loop installation (25 nos)																		
<b>Outbd Goods Vehicle Kiosks(029) - 5 nos (Phase 1)</b>																			
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)																		
<b>Location 13(Outbd Private Car Kiosks (030)) - 9 nos (Phase 1)</b>																			
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)																		
<b>Location 14(Future-Outbd/Inbd Private Car Kiosks) - 6+6 nos</b>																			
EM1440	L14 - Cable Laying and termination at ELV Room in CUE																		
<b>Location 15(Inbd Traffic Control Kiosk (100))</b>																			
<b>Location 16(Outbd Traffic Control Kiosk (101))</b>																			
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																		
<b>Location 17(Inbd Private Car Exam Bldg(033) Operational Office)</b>																			
<b>Location 18 (Outbd Private Car Exam Bldg(024) Operational Office)</b>																			
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																		
<b>Location 19 (DOH Cargo Clearance Bldg(043))</b>																			
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																		
<b>Inbd Vehicle Clearance Plaza - 8 nos VID, 7 nos VTS, 4 nos TLS</b>																			
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	<ul style="list-style-type: none"> <li><span style="color: blue;">█</span> Actual Level of Effort</li> <li><span style="color: green;">█</span> Primary Baseline</li> <li><span style="color: red;">█</span> Actual Work</li> <li><span style="color: yellow;">█</span> Remaining Work</li> <li><span style="color: orange;">█</span> Critical Remaining Work</li> <li><span style="color: blue;">◆</span> Baseline Milestone</li> <li><span style="color: red;">◆</span> Milestone</li> </ul>	<b>Hong Kong-Zhuhai-Macao Bridge</b> <b>Hong Kong Boundary Crossing</b> <b>Facilities - Automatic Vehicle</b> <b>Clearance Support System (AVCSS)</b>	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
<b>Outbd Vehicle Clearance Plaza - 8 nos VID, 6 nos VTS, 4 nos TLS</b>		<ul style="list-style-type: none"> <li>EM3160 Outbound VID cabling from pillar box to VID field equipment</li> <li>EM3180 Outbound VTS cabling from pillar box to VTS field equipment</li> <li>EM3200 Outbound TLS cabling from pillar box to TLS field equipment</li> <li>EM3220 Outbound VID field equipment installation (8 VID)</li> <li>EM3240 Outbound VTS field equipment installation (3 RFID + 3 Cameras)</li> <li>EM3260 Outbound TLS field equipment installation (4 TLS)</li> <li>EM3280 Outbound VID and VTS and TLS field equipment tuning</li> </ul>																	
<b>Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (037)</b>		<ul style="list-style-type: none"> <li>UD1000 (UUD1.1 [CUE-037]) - Cable laying and termination</li> </ul>																	
<b>(UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo Clearance Bldg (023)</b>		<ul style="list-style-type: none"> <li>UD1060 (UUD1.2 [037[S]-043]) - Cable laying and termination</li> </ul>																	
<b>Underground Ducting (UUD6) between CUE and Shuttle Bus Kiosk (006) and Inbd Private Car Exam Bldg (033)</b>		<ul style="list-style-type: none"> <li>UD1040 (UUD9.1 [037[S]-033-100]) - Cable laying and termination</li> </ul>																	
<b>(UUD9.1) btw IB Cargo Exam Bldg South(037[S]) &amp; IB PC Exam Bldg(033) &amp; IB Traffic Control Bldg (023)</b>		<ul style="list-style-type: none"> <li>UD1010 (UUD2 [037[N]-IB VCP]) - Cable laying and termination</li> </ul>																	
<b>(UUD2) between Inbd Cargo Exam Bldg North (037[N]) to Inbd VCP</b>		<ul style="list-style-type: none"> <li>UD1070 (UUD9.3 [033-IB VCP[W]]) - Cable laying and termination</li> </ul>																	
<b>(UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza</b>		<ul style="list-style-type: none"> <li>UD1020 (UUD9.2 [033-IB VCP[E]]) - Cable laying and termination</li> </ul>																	
<b>(UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza</b>		<ul style="list-style-type: none"> <li>UD1030 (UUD3.1 [CUE-023]) - Cable laying and termination</li> </ul>																	
<b>Underground Ducting (UUD7) between PCB(001) and Inbd Coach Kiosks(010)</b>		<ul style="list-style-type: none"> <li>UD1050 (UUD3.2 [023-024-101]) - Cable laying and termination</li> </ul>																	
<b>Underground Ducting (UUD3.1) between CUE and Outbd Cargo Exam Bldg (023)</b>		<ul style="list-style-type: none"> <li>UD1100 (UUD8 [CUE-032]) - Cable laying and termination</li> </ul>																	
<b>(UUD3.2) btw OB Car Exam Bldg(023) &amp; OB PC Exam Bldg(024) &amp; OB Traffic Control Bldg (023)</b>		<ul style="list-style-type: none"> <li>UD1080 (UUD4.1 [024-OB VCP]) - Cable laying and termination</li> </ul>																	
<b>Underground Ducting (UUD8) between CUE and Outbd PCA (032)</b>		<ul style="list-style-type: none"> <li>UD1090 (UUD5 [023[S]-OB VCP]) - Cable laying and termination</li> </ul>																	
<b>(UUD4.1) between Outbd PC Exam Bldg (024) and Outbd Vehicle Clearance Plaza</b>		<ul style="list-style-type: none"> <li>UD1080 (UUD4.1 [024-OB VCP]) - Cable laying and termination</li> </ul>																	
<b>(UUD5) between Outbd Car Exam Bldg (023[S]) and Outbd Vehicle Clearance Plaza</b>		<ul style="list-style-type: none"> <li>UD1090 (UUD5 [023[S]-OB VCP]) - Cable laying and termination</li> </ul>																	
<b>Initial On-Site Test and Commissioning / Pre-SAT (Phase 1 / Section I)</b>																			
<b>Site Acceptance Test (Phase 1 / Section I)</b>																			
<b>Security Risk Assessment and Audit</b>																			
<b>Operability Period Test (Phase 1 / Section I)</b>																			
<b>Completion (Phase 1 /Section I)</b>																			
<b>Training and Document (Phase 1 /Section I)</b>																			
<b>Operation (Phase 1 /Section I)</b>																			
<b>Engineering Support for Phase 1 / Section I</b>																			
<b>Procurement - Phase 2 / Section II</b>																			
<b>Delivery and Bench Acceptance Test for Phase 2/Section II</b>																			
<b>Installation - Phase 2 / Section II</b>		<ul style="list-style-type: none"> <li>30-Aug-17; Installation -Phase 2/ Section II</li> </ul>																	

Programme No.: HZMB-DWP Data Date: 14-Aug-15	<ul style="list-style-type: none"> <li>Actual Level of Effort</li> <li>Primary Baseline</li> <li>Actual Work</li> <li>Remaining Work</li> <li>Critical Remaining Work</li> <li>Baseline Milestone</li> <li>Milestone</li> </ul>	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
<b>Location 8(Inbd Private Car Annex (025)) (Phase 2)</b>		30-Aug-17; Location 8(Inbd Private Car Annex (025)) (Phase 2)																	
EM3370	L8(025) - Cable Containment in Kiosks	L8(025) - Cable Containment in Kiosks																	
EM3380	L8(025) - Cable Laying and termination	L8(025) - Cable Laying and termination																	
EM3400	L8(025) - Cable Splicing and Testing and Labeling	L8(025) - Cable Splicing and Testing and Labeling																	
<b>Location 9(Outbd Private Car Annex (032)) (Phase 2)</b>		30-Aug-17; Location 9(Outbd Private Car Annex (032)) (Phase 2)																	
EM3500	L9(032) - Cable Containment in Kiosks	L9(032) - Cable Containment in Kiosks																	
EM3520	L9(032) - Cable Laying and termination	L9(032) - Cable Laying and termination																	
<b>Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section II)</b>																			
<b>Site Acceptance Test (Phase 2 / Section II)</b>																			
<b>Operability Period Test (Phase 2 / Section II)</b>																			
<b>Completion (Phase 2 / Section II)</b>																			
<b>Engineering Support for Phase 2 / Section II</b>																			
<b>Procurement for Phase2 / Section III</b>																			
<b>Delivery and Bench Acceptance Test for Phase2 / Section III</b>																			
<b>Installation - Phase 2 / Section III</b>		09-Oct-17; Installation - Phase 2 / Section III																	
<b>Location 10,11,12,13 (Vehicle Clearance Kiosks)</b>		09-Oct-17; Location 10,11,12,13 (Vehicle Clearance Kiosks)																	
<b>Location 12 Inbd Private Car Kiosks (027) - 12 nos (Phase 2)</b>		09-Oct-17; Location 12 Inbd Private Car Kiosks (027) - 12 nos (Phase 2)																	
EM4440	L12(027)(12nos P2) - Cable Laying and termination	L12(027)(12nos P2) - Cable Laying and termination																	
EM4460	L12(027)(12nos P2) - Cable Splicing and Testing and Labeling	L12(027)(12nos P2) - Cable Splicing and Testing and Labeling																	
EM4480	L12(027)(12nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos)	L12(027)(12nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos)																	
<b>Location 13 Outbd Private Car Kiosks (030) - 12 nos (Phase 2)</b>		01-Sep-17; Location 13 Outbd Private Car Kiosks (030) - 12 nos (Phase 2)																	
EM4560	L13(030)(12nos P2) - Cable Containment in Kiosks	L13(030)(12nos P2) - Cable Containment in Kiosks																	
<b>Location 12 Outbd Goods Vehicle Kiosks (029) - 3 nos (Phase 2)</b>		31-Aug-17; Location 12 Outbd Goods Vehicle Kiosks (029) - 3 nos (Phase 2)																	
EM4880	L12(029)(3nos P2) - Cable Laying and termination	L12(029)(3nos P2) - Cable Laying and termination																	
EM4900	L12(029)(3nos P2) - Cable Splicing and Testing and Labeling	L12(029)(3nos P2) - Cable Splicing and Testing and Labeling																	
EM4920	L12(029)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)	L12(029)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)																	
EM4940	L12(029)(3nos P2) - ODB & XDB Installation (3 nos)	L12(029)(3nos P2) - ODB & XDB Installation (3 nos)																	
EM4960	L12(029)(3nos P2) - AIOP Installation (3 nos)	L12(029)(3nos P2) - AIOP Installation (3 nos)																	
EM4980	L12(029)(3nos P2) - Loop Installation (15 nos)	L12(029)(3nos P2) - Loop Installation (15 nos)																	
<b>Location 11 Outbd Coach Kiosks (009) - 4 nos (Phase 2)</b>																			
<b>Location 12 Inbd Goods Vehicle Kiosks (028) - 3 nos (Phase 2)</b>		24-Aug-17; Location 12 Inbd Goods Vehicle Kiosks (028) - 3 nos (Phase 2)																	
EM4720	L12(028)(3nos P2) - Cable Laying and termination	L12(028)(3nos P2) - Cable Laying and termination																	
EM4740	L12(028)(3nos P2) - Cable Splicing and Testing and Labeling	L12(028)(3nos P2) - Cable Splicing and Testing and Labeling																	
EM4760	L12(028)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)	L12(028)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)																	
EM4780	L12(028)(3nos P2) - ODB & XDB Installation (3 nos)	L12(028)(3nos P2) - ODB & XDB Installation (3 nos)																	
EM4800	L12(028)(3nos P2) - AIOP Installation (3 nos)	L12(028)(3nos P2) - AIOP Installation (3 nos)																	
EM4820	L12(028)(3nos P2) - Loop Installation (15 nos)	L12(028)(3nos P2) - Loop Installation (15 nos)																	
EM4840	L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos)	L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos)																	
EM5120	L12(028)(3nos P2) - Inbd Goods Vehicle Kiosks Installation Complete	L12(028)(3nos P2) - Inbd Goods Vehicle Kiosks Installation Complete																	
<b>Location 10 Shuttle Bus Kiosks (006) - 4 nos (Phase 2)</b>		30-Aug-17; Location 10 Shuttle Bus Kiosks (006) - 4 nos (Phase 2)																	
EM4000	L10(006)(4nos P2) - Cable Containment in Kiosks	L10(006)(4nos P2) - Cable Containment in Kiosks																	
<b>Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-1</b>																			
<b>Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-2</b>																			
<b>Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section III)</b>																			

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

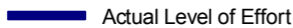

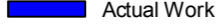

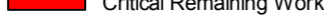


Hong Kong-Zhuhai-Macao Bridge  
Hong Kong Boundary Crossing  
Facilities - Automatic Vehicle  
Clearance Support System (AVCSS)

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

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	WC	LC
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5-May-17	Rev.: 1.0b	WC	LC

## **MATERIALAB CONSULTANTS LIMITED**

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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.

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Report No.: 0165/15/ED/0949

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

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

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

Event / Action Plan for Construction Noise Monitoring

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

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

## Event / Action Plan for Water Quality

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

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

## Event / Action Plan for Ecological Monitoring

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



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

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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/0949

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## 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
		<i>(see Note 1)</i>						<i>(see Note 2)</i>		
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000 Kg)	(in '000m <sup>3</sup> )
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	50.339	0	0	49.312	1.027	0	0	0	0	1.750
Nov	12.476	0	0	10.919	1.557	0	0	0	0	1.750
Dec										
<b>Total</b>	<b>309.120</b>	<b>0.000</b>	<b>0.000</b>	<b>297.775</b>	<b>11.345</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>15.135</b>

Notes:

(1) Broken concrete for recycling into aggregates.

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

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

(update: 04/12/2017)

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	

**Environmental License/ Permits /Notification Register**

LCAL H2642

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

Date: 30 November 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	





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	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	0.002	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	0.000	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	0.000	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	0.000	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	0.000	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	0.000	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	0.000	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	0.000	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	0.000	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	0.000	0.050	0.050
<b>November</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.050</b>	<b>0.050</b>	<b>0.030</b>	<b>0.030</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.050</b>	<b>0.050</b>
December																			
<b>Total</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.247</b>	<b>0.247</b>	<b>0.190</b>	<b>0.190</b>	<b>0.000</b>	<b>0.000</b>	<b>0.004</b>	<b>0.004</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.247</b>	<b>0.247</b>

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 gcm<sup>-3</sup>.

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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.

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Report No.: 0165/15/ED/0949

### **Appendix F**

#### **Environmental Licenses and Permits**

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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
<b>Air Quality</b>				
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> <li>• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;</li> <li>• Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;</li> </ul>	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;</li> <li>• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials,</li> <li>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;</li> <li>• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;</li> <li>• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</li> <li>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top</li> </ul>	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high</li> </ul>	All construction sites	N/A

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		level alarm which is interlocked with the material filling line and no overfilling is allowed; <ul style="list-style-type: none"> <li>• Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and</li> <li>• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies</li> </ul>		
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	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant; <ul style="list-style-type: none"> <li>• Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;</li> <li>• All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP;</li> <li>• Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;</li> <li>• The materials which may generate airborne dusty emissions should be wetted by water spray system;</li> <li>• All receiving hoppers should be enclosed on three sides up to 3m above unloading point;</li> <li>• All conveyor transfer points should be totally enclosed;</li> <li>• All access and route roads within the premises should be paved and wetted; and</li> <li>• Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body</li> </ul>	Selected Representative dust monitoring station	N/A
S5.5.2.7	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: <ul style="list-style-type: none"> <li>• All road surface within the barging facilities will be paved;</li> <li>• Dust enclosures will be provided for the loading ramp;</li> <li>• Vehicles will be required to pass through designated wheels wash facilities; and</li> <li>• Continuous water spray at the loading points</li> </ul>	All construction sites	V
<b>Construction Noise (Air borne)</b>				
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following: <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during</li> </ul>	All construction sites	V

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EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>the construction programme;</p> <ul style="list-style-type: none"> <li>• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>		
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)
<b>Sediment</b>				
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
<b>Waste Management (Construction Waste)</b>				
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> <li>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>• Carry out on-site sorting;</li> <li>• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>• Implement an enhanced Waste Management Plan similar to E7WBTC (Works) No. 19/2005 - "Environmental Management on Construction Sites" to encourage on-site sorting of C&amp;D</li> </ul>	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"> <li>In addition, disposal of the C&amp;D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation</li> </ul>		
S8.3.9- S8.3.11	WM2	<p><u>C&amp;D Waste</u></p> <ul style="list-style-type: none"> <li>Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.</li> <li>The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.</li> </ul>	All construction sites	V
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.</li> <li>The storage area for chemical wastes should be clearly 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.</li> <li>Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.</li> </ul>	All construction sites	V
S8.3.16	WM4	<p><u>Sewage</u></p> <ul style="list-style-type: none"> <li>Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state which will not deter the workers from utilizing these portable</li> </ul>	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"> <li>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>• A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.</li> <li>• Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible.</li> <li>• Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.</li> <li>• Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.</li> </ul>	All construction sites	V
<b>Water Quality ( Construction Phase)</b>				
S9.11.1.1- S9.11.1.2	W1	<ul style="list-style-type: none"> <li>• 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&amp;A Manual</li> <li>• 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"> <li>- TMCLKL northern reclamation;</li> <li>- TMCLKL southern reclamation (after formation of the nips);</li> <li>- Reclamation dredging and filling for Portion B of HKBCF;</li> <li>- Reclamation filling for Portion C of HKBCF;</li> <li>- Reclamation filling for Portion D of HKBCF;</li> <li>- Reclamation filling for FSD berth of HKBCF; and</li> <li>- Reclamation dredging and filling for Portion 1 of HKLR;</li> </ul> </li> <li>• Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts;</li> <li>• For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing;</li> <li>• 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;</li> <li>• where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be</li> </ul>	Marine-based works area	V



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Report No.: 0165/15/ED/0949

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"> <li>• silt curtains (cage type) will be applied round all grab dredgers during the HKBCF, HKLR and TMCLKL southern reclamation works;</li> <li>• single layer silt curtains will be applied around all works;</li> <li>• 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;</li> <li>• 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.</li> <li>• 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</li> <li>• silt curtain shall be fully maintained throughout the works.</li> </ul> <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"> <li>• trailer suction hopper dredgers shall not allow mud to overflow;</li> <li>• use of Lean Material Overboard (LMOB) systems shall be prohibited;</li> <li>• mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted;</li> <li>• barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>• any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;</li> <li>• 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;</li> <li>• excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;</li> <li>• adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;</li> <li>• 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</li> <li>• 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.</li> </ul>		
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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Report No.: 0165/15/ED/0949

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

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		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)
<b>Ecology (Construction Phase)</b>				
S10.7	E4	• Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Land-based works areas	V
S10.7	E5	• Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Land-based works areas	V
S10.7	E6	• Dolphin Exclusion Zone • Dolphin watching plan	Marine works	V
S10.7	E7	• Decouple compressors and other equipment on working vessels • Proposal on design and implementation of acoustic decoupling measures applied during dredging and reclamation works • Avoidance of percussive piling	Marine works	V
S10.7	E8	• 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)
<b>Fisheries</b>				
S11.7	F4	• Maritime Oil Spill Response Plan (MOSRP); • Contingency plan.	HKBCF	V
<b>Landscape &amp; Visual (Detailed Design Phase)</b>				
S14.3.3.1	LV1	General design measures include: • 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
		<p>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</p> <ul style="list-style-type: none"> <li>• Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.</li> </ul>		
<b>Landscape &amp; Visual (Construction Phase)</b>				
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
<b>EM&amp;A</b>				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	All construction sites	V
S15.5 – S15.6	EM2	<p>1) An Environmental Team needs to be employed as per the EM&amp;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 ensure all the requirements given in the EM&amp;A Manual are fully complied with.</p>	All construction sites	V

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

<b>Cumulative Statistics</b>			
<b>Reporting Period</b>	<b>Complaints</b>	<b>Notifications of Summons</b>	<b>Successful Prosecutions</b>
This reporting period	1	0	0
From commencement date of construction to end of reporting month	14	0	0

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

<b>Cumulative Statistics</b>			
<b>Reporting Period</b>	<b>Complaints</b>	<b>Notifications of Summons</b>	<b>Successful Prosecutions</b>
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 November 2017**

November-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 Environmental Site Inspection	24	25
26	27	28	29	30 Environmental Site Inspection		

**Tentative Environmental Site Inspection Schedule for December 2017**

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



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Report No.: 0165/15/ED/00949

**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 November 2017**

November-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 Environmental Site Inspection	24	25
26	27	28	29	30 Environmental Site Inspection		

**Tentative Environmental Site Inspection Schedule for December 2017**

December-2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7 Environmental Site Inspection	8	9
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24	25	26	27	28 Environmental Site Inspection	29	30

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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-IR0023**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:   
Mr. Arthur Cheng  
Environmental Team Leader

Date: 13/12/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0023**

**1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171103 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 10 November 2017:

Monitoring Date: 3 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 15.7 for mid-ebb /13.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 17.0 for mid-ebb/14.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	IS(Mf)11	Depth Average	10.8	<b>26.6</b>
	SR5(N)		14.8	<b><u>37.8</u></b>
	SR6		<b>25.9</b>	14.1
	SR7		13.6	<b>33.7</b>

**Bold** means AL exceedance.

**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171103 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the marine delivery route, there was no SS exceedance recorded at WQM station IS10(N) which also close to the marine delivery route. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, SR7 and SR5(N), the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 1 November 2017 and 6 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 3 November 2017.

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

#### Investigation Results

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

- Water Quality:
  - W1-
    1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
    2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
    3. Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level

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 2, 9 and 16 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

#### **5. Recommendation to the Contractor**

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

## 6. Follow up Status (Overall)

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

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
- silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;

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



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### **Figure 1**

#### **The Location of WQM Stations**



**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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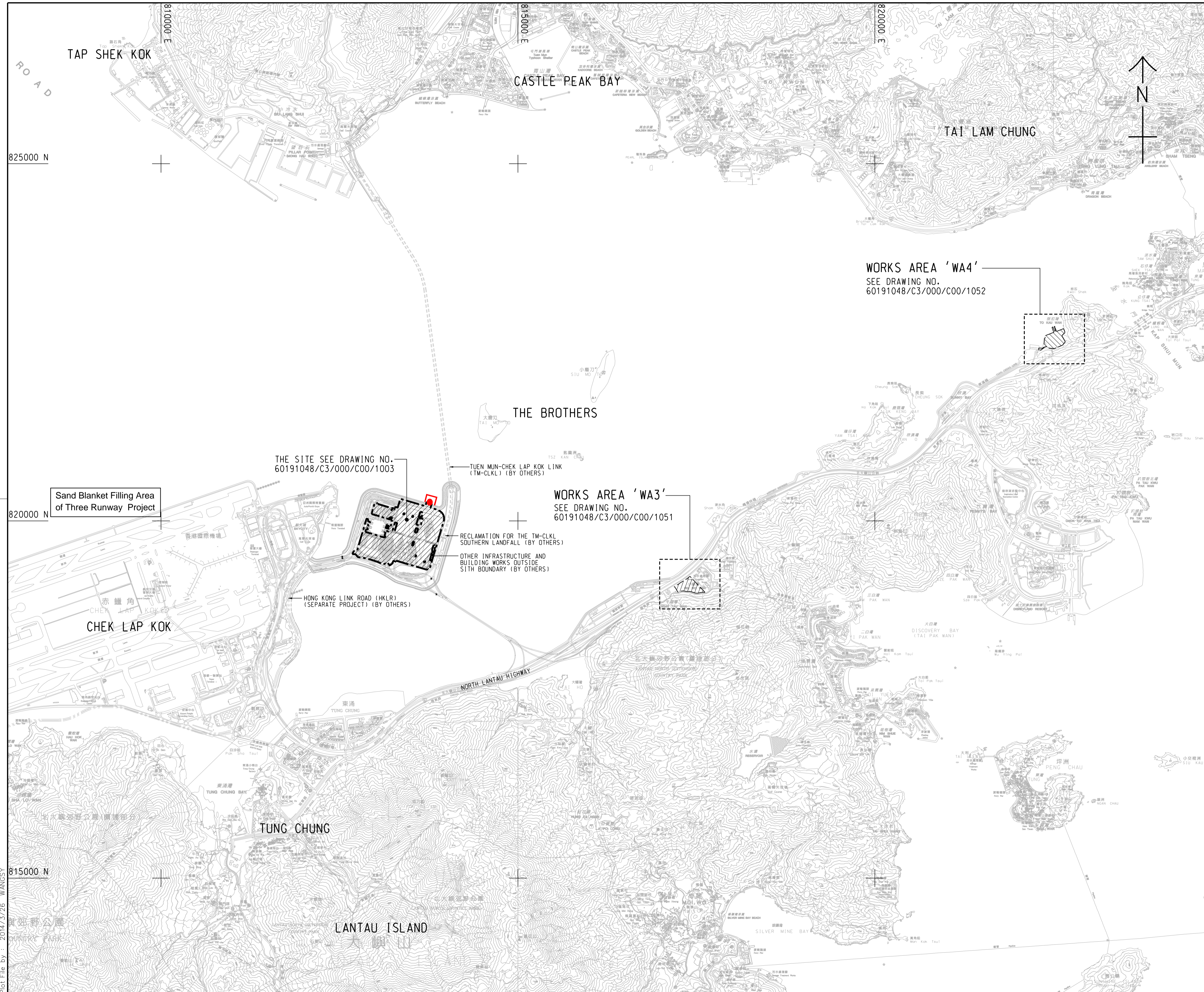
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### **Figure 2**

#### **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
  - 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-CKLK) (BY OTHERS)

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

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

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

- TENDER DRAWING		BSCW SCI	MAR. 14
REV. 修訂	DESCRIPTION 內容摘要	D.C. 查核	DATE 日期

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

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

**SITE LOCATION PLAN**

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

DRG.NO. 60191048/C3/000/C00/1000  
圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/03	P. Dir. 批准人	APPROVED 日期	TKH
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DRAWN BY 繪圖	WSY	STATUS 階段	
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SCALE 比例 A1 1 : 25000  
DIMENSIONS ARE IN 尺寸單位 METRES

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Plot File by : 2014/3/26 WANGSY

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## **Appendix A**

### **Notification of Limit Level Exceedance (20171103 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171103 SS NOE</b></span> <b>Date of Notification: 10 Nov 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 3 November 2017 and the results were issued on 10 November 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> Dissolved-Oxygen (DO)-Suspended Solid (SS)-Turbidity (TURB) <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS(Mf)11	Depth Average	23.5 and 120% (i.e. 15.7 for mid-ebb/13.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 17.0 for mid-ebb/14.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	10.8	<b>26.6</b>
SS	SR5(N)	Depth Average			14.8	<u><b>37.8</b></u>
SS	SR6	Depth Average			<b>25.9</b>	14.1
SS	SR7	Depth Average			13.6	<b>33.7</b>

Remarks:

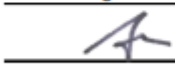
**Bold** means AL exceedances.


**Bold with underline** means LL exceedances.

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

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

	Mid-Ebb	Mid-Flood
IS5	10:26:00	06:54:00
IS(Mf)6	10:34:00	06:38:00
IS7	10:40:00	06:30:00
IS8	10:57:00	06:13:00
IS(Mf)9	10:48:00	06:21:00
IS10(N)	11:08:00	05:42:00
IS(Mf)11	11:14:00	05:36:00
IS(Mf)16	11:21:00	05:49:00
IS17	11:30:00	05:40:00
SR3(N)	10:19:00	07:02:00
SR4(N)	11:04:00	06:08:00
SR5(N)	11:02:00	05:50:00
SR6	10:19:00	06:35:00
SR7	11:23:00	05:27:00
SR10A(N)	12:22:00	04:38:00
SR10B(N2)	12:17:00	04:53:00

Prepared by : Evan Wong Title : ET Representative  
  
 Date : 10-Nov-17

Reviewed by : Keith Chau Title : ET Leader  
  
 Date : 10-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

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

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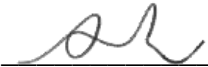
**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0024**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:   
Mr. Arthur Cheng  
Environmental Team Leader

Date: 21/12/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0024****1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171106 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 15 November 2017:

Monitoring Date: 6 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 15.9 for mid-ebb /19.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 17.2 for mid-ebb/21.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	IS(Mf)6	Depth Average	10.0	<b>27.2</b>
	IS(Mf)16		11.5	<b>25.1</b>
	SR7		10.3	<b>25.5</b>
	SR10A		15.0	<b>26.0</b>
	SR10B(N)		7.9	<b>25.2</b>

**Bold** means AL exceedance.**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171106 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

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

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9 and 16 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

**5. Recommendation to the Contractor**

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

**6. Follow up Status (Overall)**

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

### Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
- silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

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### **Figure 1**

#### **The Location of WQM Stations**



**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
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CS(Mf)5	817990	821129
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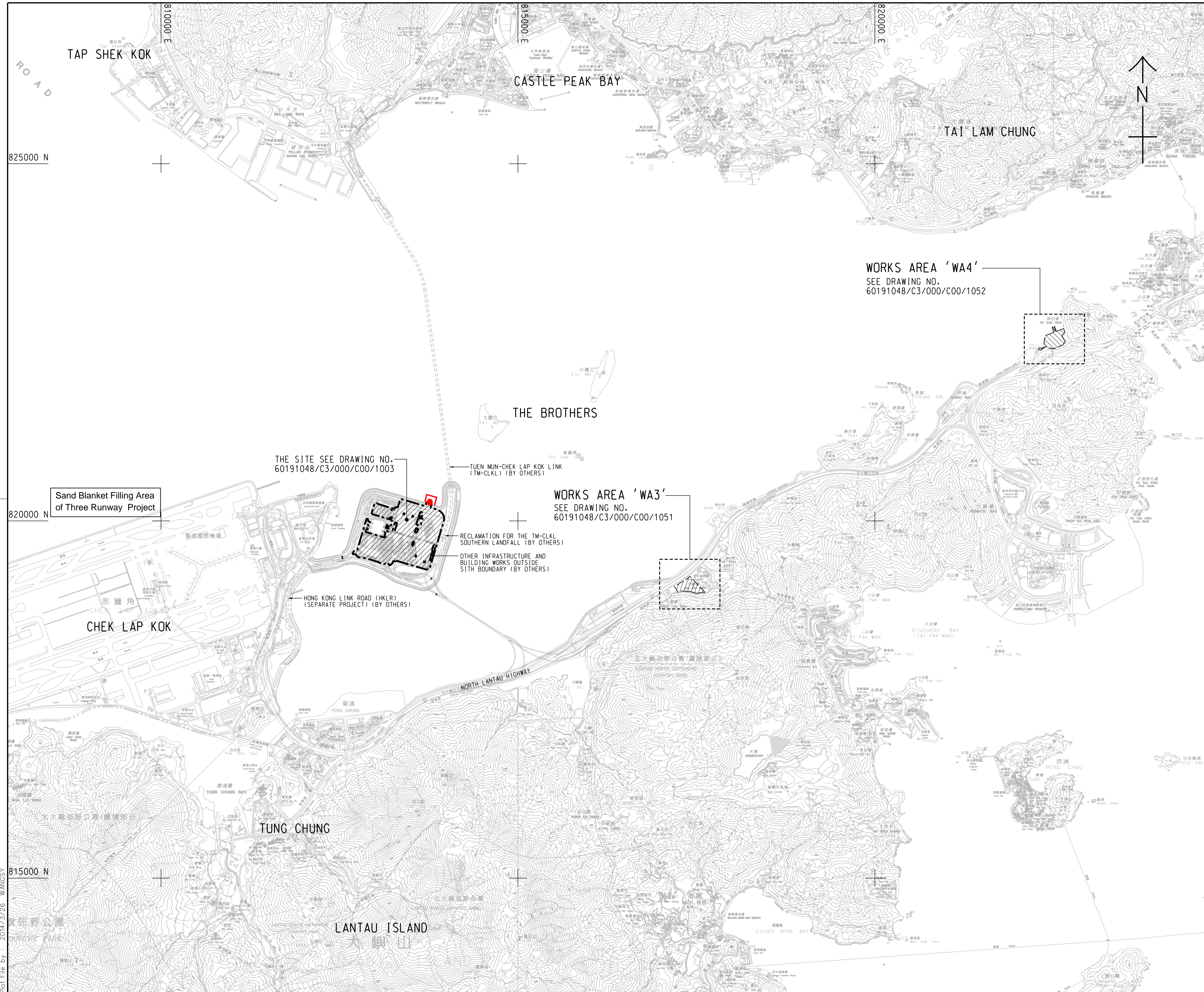
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### **Figure 2**

#### **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-CKLK) (BY OTHERS)

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

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

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

- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	BY	CHECKED	DATE

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

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

**SITE LOCATION PLAN**

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

DRG.NO. 60191048/C3/000/C00/1000  
圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	

SCALE 比例 A1 1 : 25000  
DIMENSIONS ARE IN 尺寸單位 METRES

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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171106 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171106 SS NOE</b></span> <b>Date of Notification: 15 Nov 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 6 November 2017 and the results were issued on 14 November 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> Dissolved-Oxygen (DO)-Suspended Solid (SS)-Turbidity (TURB) <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
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)6	Depth Average	23.5 and 120% (i.e. 15.9 for mid-ebb/19.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 17.2 for mid-ebb/21.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	10.0	<b>27.2</b>
SS	IS(Mf)16	Depth Average			11.5	<b>25.1</b>
SS	SR7	Depth Average			10.3	<b>25.5</b>
SS	SR10A	Depth Average			15.0	<b>26.0</b>
SS	SR10B(N)	Depth Average			7.9	<b>25.2</b>

**Remarks:**


**Bold** means AL exceedances.


**Bold with underline** means LL exceedances.

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

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

	Mid-Ebb	Mid-Flood
IS5	12:42:00	09:27:00
IS(Mf)6	12:50:00	09:20:00
IS7	12:55:00	09:14:00
IS8	13:09:00	08:58:00
IS(Mf)9	13:02:00	09:06:00
IS10(N)	13:22:00	08:40:00
IS(Mf)11	13:28:00	08:34:00
IS(Mf)16	13:31:00	08:27:00
IS17	13:39:00	08:19:00
SR3	12:37:00	09:34:00
SR4(N)	13:15:00	08:53:00
SR5(N)	13:16:00	08:47:00
SR6	12:36:00	09:33:00
SR7	13:35:00	08:25:00
SR10A	14:30:00	07:25:00
SR10B(N)	14:26:00	07:35:00

Prepared by : Evan Wong Title : ET Representative  
  
 Date : 15-Nov-17

Reviewed by : Keith Chau Title : ET Leader  
  
 Date : 15-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

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

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**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0025**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:   
Mr. Arthur Cheng  
Environmental Team Leader

Date: 14/12/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0025**

**1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171108 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 17 November 2017:

Monitoring Date: 8 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 19.7 for mid-ebb /13.2 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 21.3 for mid-ebb/14.3 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	IS(Mf)11	Depth Average	10.2	<b>24.3</b>
	SR4(N)		18.5	<b>35.1</b>
	SR5(N)		14.9	<b>38.2</b>
	SR6		<b>27.9</b>	18.9

**Bold** means AL exceedance.

**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171108 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR4(N), SR5(N) and SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS10(N). For SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no SS exceedance recorded at the same WQM station under similar work environment on 6 November 2017. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 8 November 2017.

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9 and 16 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

#### **5. Recommendation to the Contractor**

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

## 6. Follow up Status (Overall)

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	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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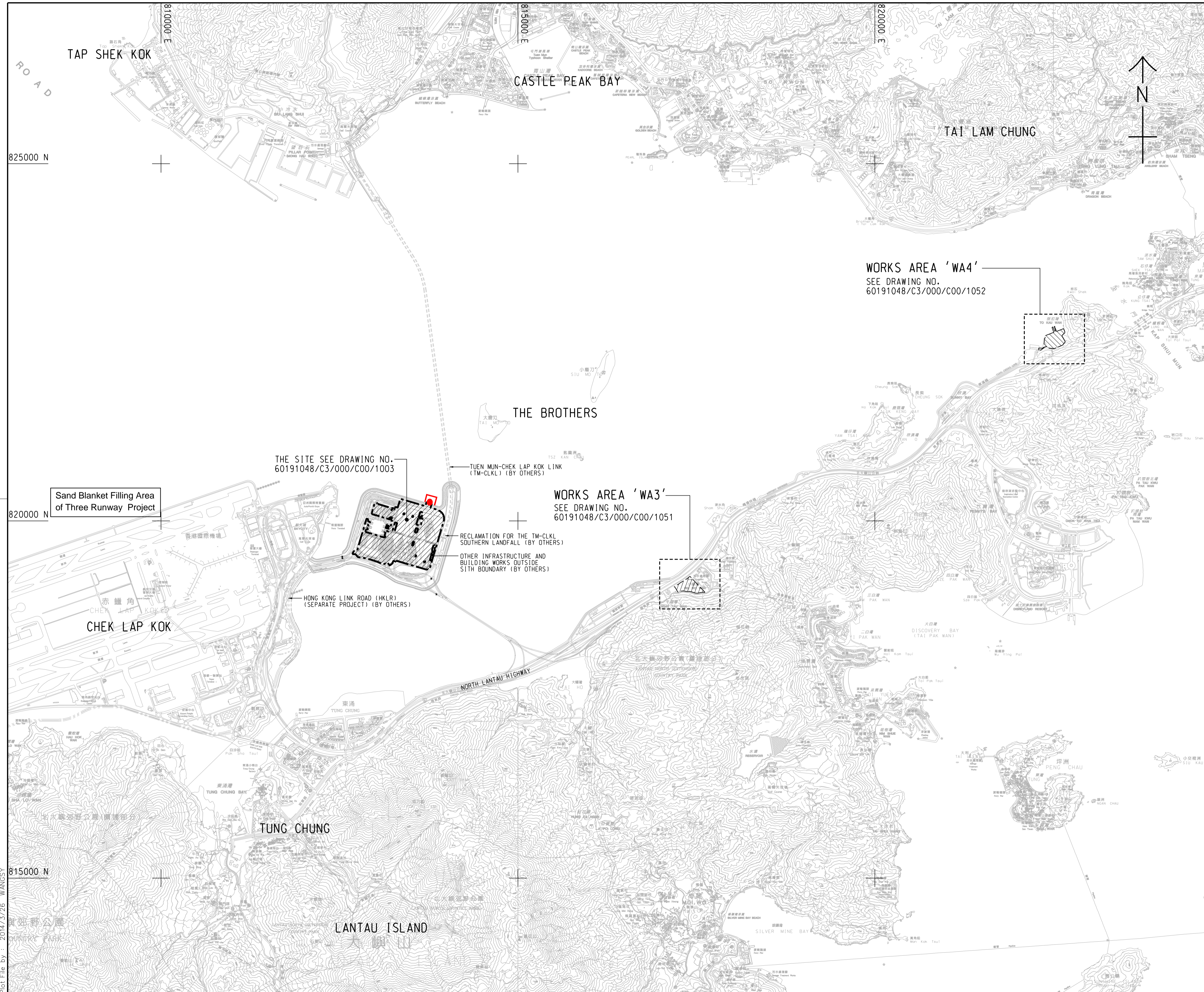
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### **Figure 2**

#### **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
  - ▨ 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-CKLK) (BY OTHERS)

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

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

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

- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	BY	CHECKED	DATE

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

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

**SITE LOCATION PLAN**

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

DRG.NO. 60191048/C3/000/C00/1000  
圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	

SCALE 比例 A1 1 : 25000  
DIMENSIONS ARE IN 尺寸單位 METRES

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Plot File by : 2014/3/26 WANGSY

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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171108 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171108 SS NOE</b></span> <b>Date of Notification: 16 Nov 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 8 November 2017 and the results were issued on 16 November 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> Dissolved-Oxygen-(DO)-Suspended Solid (SS)-Turbidity-(TURB) <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
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. 19.7 for mid-ebb/13.2 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 21.3 for mid-ebb/14.3 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	10.2	<b>24.3</b>
SS	SR4(N)	Depth Average			18.5	<b><u>35.1</u></b>
SS	SR5(N)	Depth Average			14.9	<b><u>38.2</u></b>
SS	SR6	Depth Average			<b>27.9</b>	18.9

Remarks:


**Bold** means AL exceedances.


**Bold with underline** means LL exceedances.

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

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

	Mid-Ebb	Mid-Flood
IS5	14:26:00	10:57:00
IS(Mf)6	14:33:00	10:51:00
IS7	14:39:00	10:42:00
IS8	14:55:00	10:26:00
IS(Mf)9	14:46:00	10:34:00
IS10(N)	15:03:00	09:57:00
IS(Mf)11	15:09:00	09:50:00
IS(Mf)16	15:18:00	10:00:00
IS17	15:27:00	09:54:00
SR3	14:18:00	11:03:00
SR4(N)	15:02:00	10:21:00
SR5(N)	14:57:00	10:05:00
SR6	14:18:00	10:47:00
SR7	15:16:00	09:42:00
SR10A	16:20:00	08:55:00
SR10B(N)	16:14:00	09:08:00

Prepared by : Evan Wong Title : ET Representative  
  
 Date : 16-Nov-17

Reviewed by : Keith Chau Title : ET Leader  
  
 Date : 16-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO



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### **Appendix B**

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

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**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0026**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:   
Mr. Arthur Cheng  
Environmental Team Leader

Date: 13/12/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0026****1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171113 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 22 November 2017:

Monitoring Date: 13 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 7.6 for mid-ebb /9.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 8.2 for mid-ebb/9.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	IS8	Depth Average	16.6	<b>29.1</b>

**Bold** means AL exceedance.**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171113 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was marine transportation on the date of exceedance. Regarding marine transportation, the vessels was sized to make sure adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine delivery route of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the marine delivery route, such as IS10(N). Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station IS8, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 13 November 2017.

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9, 16 and 23 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

#### **5. Recommendation to the Contractor**

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

#### **6. Follow up Status (Overall)**

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

### Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
- silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

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### **Figure 1**

#### **The Location of WQM Stations**





**LEGEND**


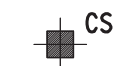

-  IS      IMPACT STATIONS
-  CS      CONTROL / FAR FIELD STATIONS
-  SR      SENSITIVE RECEIVERS STATIONS

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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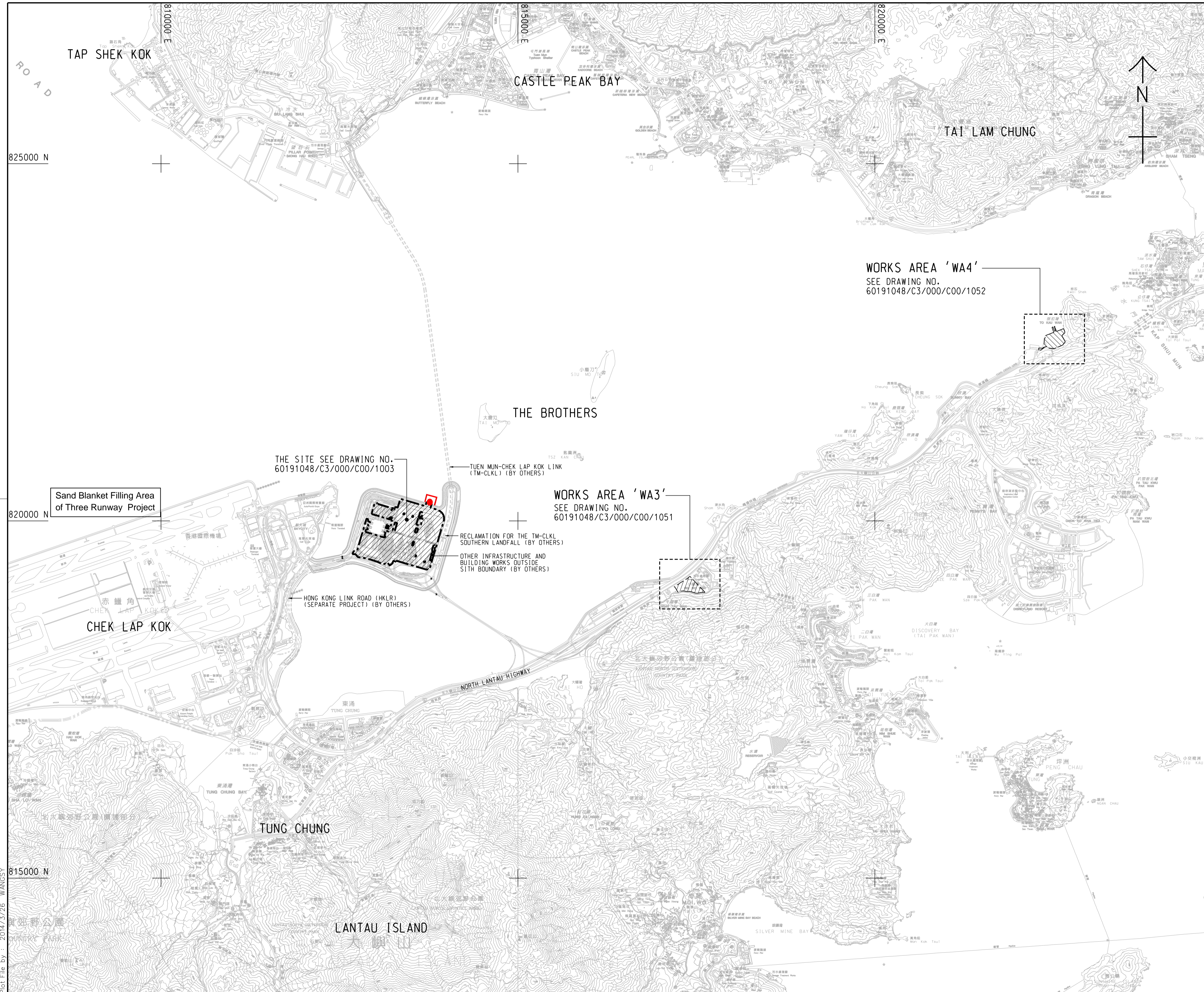
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### **Figure 2**

#### **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
  - ▨ 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-CKLK) (BY OTHERS)

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

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

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

- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	BY	CHECKED	DATE

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

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

**SITE LOCATION PLAN**

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

DRG.NO. 60191048/C3/000/C00/1000  
圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	

SCALE 比例 A1 1 : 25000  
DIMENSIONS ARE IN 尺寸單位 METRES

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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171113 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171113 SS NOE</b></span> <b>Date of Notification: 22 Nov 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 13 November 2017 and the results were issued on 22 November 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> <del>Dissolved Oxygen (DO)</del> Suspended Solid (SS) Turbidity (TURB) <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
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. 7.6 for mid-ebb/9.1 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 8.2 for mid-ebb/9.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	16.6	29.1

Remarks:

**Bold** means AL exceedances.

**Bold with underline** means LL exceedances.

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


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

	Mid-Ebb	Mid-Flood
IS5	10:05:00	14:35:00
IS(Mf)6	09:52:00	14:44:00
IS7	09:45:00	14:53:00
IS8	09:26:00	15:11:00
IS(Mf)9	09:37:00	15:02:00
IS10(N)	08:59:00	15:34:00
IS(Mf)11	08:52:00	15:42:00
IS(Mf)16	09:00:00	15:38:00
IS17	08:53:00	15:45:00
SR3	10:14:00	14:26:00
SR4(N)	09:20:00	15:21:00
SR5(N)	09:06:00	15:26:00
SR6	09:50:00	14:33:00
SR7	08:44:00	15:51:00
SR10A	07:42:00	16:45:00
SR10B(N)	07:52:00	16:40:00

Prepared by : Evan Wong Title : ET Representative

 Date : 22-Nov-17

Reviewed by : Keith Chau Title : ET Leader

 Date : 22-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

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

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**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0027**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:



Mr. Arthur Cheng  
Environmental Team Leader

Date: 14/12/2017



**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0027**

**1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171115 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 22 November 2017:

Monitoring Date: 15 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 8.4 for mid-ebb /5.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 9.1 for mid-ebb/6.0 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	IS(Mf)6	Depth Average	8.9	<b>24.8</b>

**Bold** means AL exceedance.

**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171115 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

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

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9, 16 and 23 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

#### **5. Recommendation to the Contractor**

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

#### **6. Follow up Status (Overall)**

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

Water Quality:

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

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

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

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## Figure 1

### The Location of WQM Stations



**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
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SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
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SR7	814293	821431
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CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
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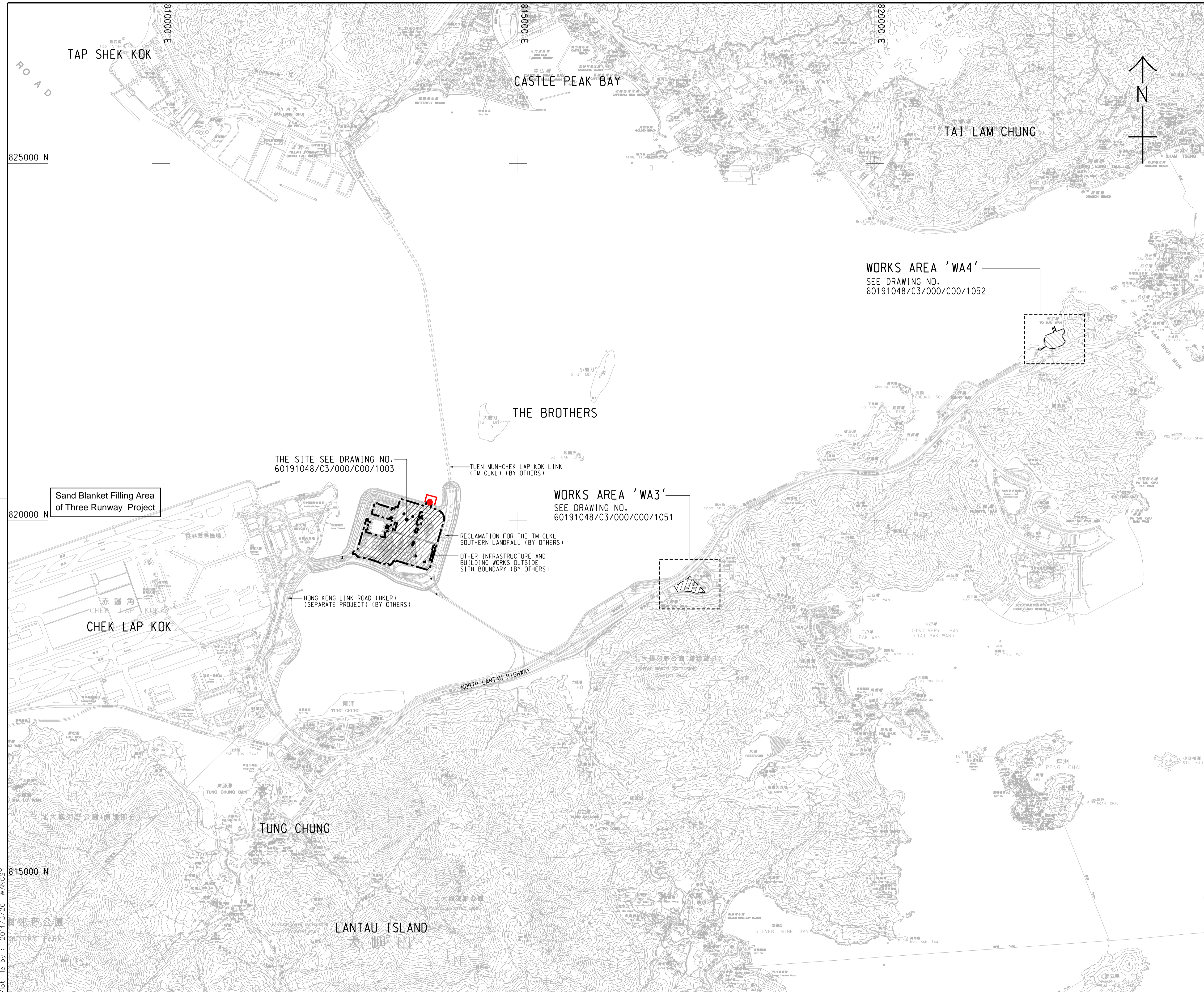
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### **Figure 2**





#### **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

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 (HKLR)  
(SEPARATE PROJECT) (BY OTHERS)

- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	DATE	BY	CHECKED

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**港珠澳大桥香港工程管理处**  
 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** +  
 Rogers Stirk Harbour + Partners  
**Aedas**  
 BURO HAPPOLD ATKINS ADI +

DRG.NO. 60191048/C3/000/C00/1000  
 圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/03	P. Dir. APPROVED 批准人	TKH
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DRAWN BY 繪圖	WSY	STATUS 階段	
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SCALE 比例 A1 1 : 25000  
 DIMENSIONS ARE IN 尺寸單位 METRES

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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171115 SS NOE)**

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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)6	Depth Average	23.5 and 120% (i.e. 8.4 for mid-ebb/5.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 9.1 for mid-ebb/6.0 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	8.9	<b>24.8</b>

Remarks:

**Bold** means AL exceedances.


**Bold with underline** means LL exceedances.

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

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


	Mid-Ebb	Mid-Flood
IS5	11:44:00	15:34:00
IS(Mf)6	11:37:00	15:42:00
IS7	11:29:00	15:49:00
IS8	11:13:00	16:05:00
IS(Mf)9	11:21:00	15:57:00
IS10(N)	10:48:00	16:34:00
IS(Mf)11	10:41:00	16:42:00
IS(Mf)16	10:49:00	16:26:00
IS17	10:43:00	16:36:00
SR3	11:52:00	15:27:00
SR4(N)	11:09:00	16:12:00
SR5(N)	10:55:00	16:27:00
SR6	11:38:00	15:42:00
SR7	10:34:00	16:50:00
SR10A	09:39:00	17:34:00
SR10B(N)	09:49:00	17:30:00

Prepared by : Evan Wong Title : ET Representative



Date : 22-Nov-17

Reviewed by : Keith Chau Title : ET Leader



Date : 22-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

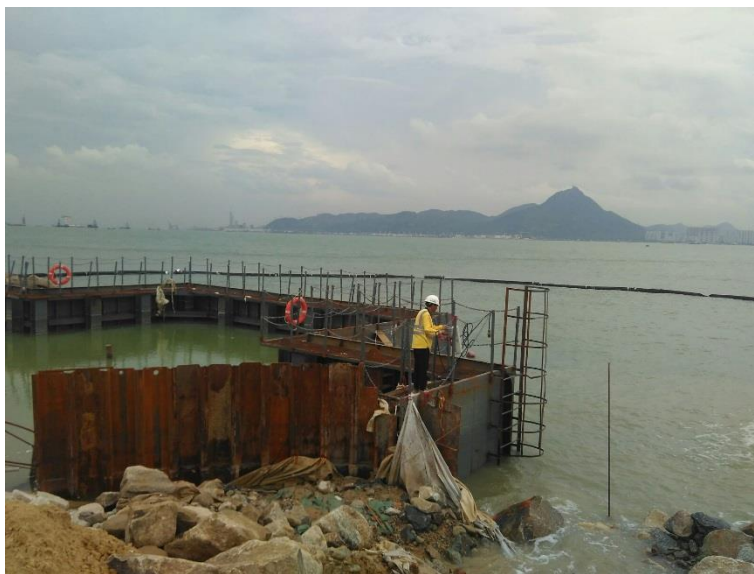
**Photo showing the site situation of marine works in Box Culvert B**

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**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0028**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:



Mr. Arthur Cheng  
Environmental Team Leader

Date: 13/12/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0028**

**1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171120 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 28 November 2017:

Monitoring Date: 20 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 19.7 for mid-ebb /14 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 21.4 for mid-ebb/15.2 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	SR7	Depth Average	11.7	<b>24.1</b>

**Bold** means AL exceedance.

**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171120 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

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

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9, 16 and 23 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 16 November 2017 are shown in **Appendix B**.

**5. Recommendation to the Contractor**

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

**6. Follow up Status (Overall)**



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

### Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
- silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
- rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
- measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
- open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
- discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
- surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

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### **Figure 1**

#### **The Location of WQM Stations**



**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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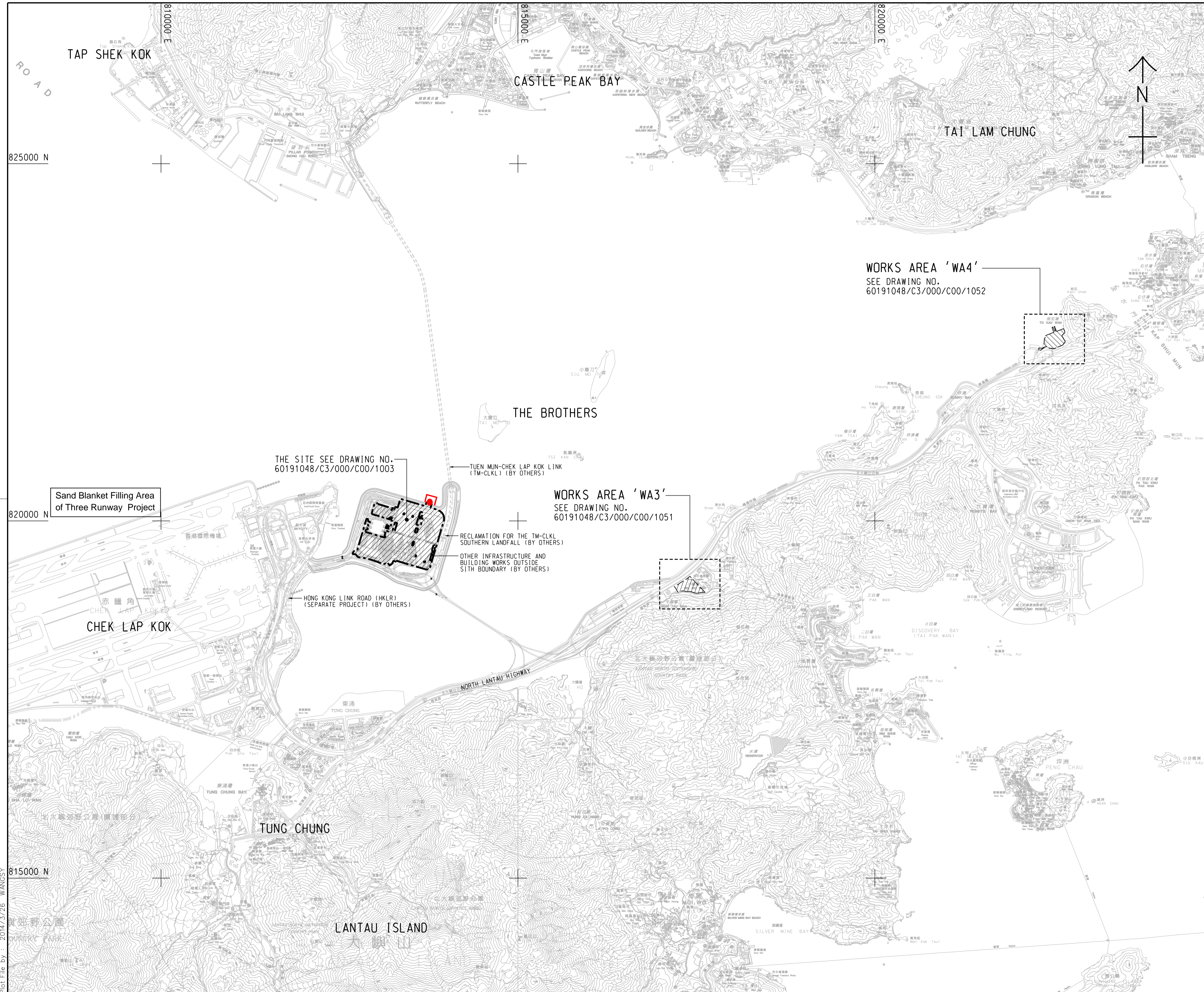
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### **Figure 2**

#### **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
  - [Red Box] 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-CKLK) (BY OTHERS)

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

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

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

NORTH LANTAU HIGHWAY

- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	BY	CHECKED	DATE

**路政署 HIGHWAYS DEPARTMENT**  
**港珠澳大桥香港工程管理处**  
 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** +  
 Rogers Stirk Harbour + Partners  
**Aedas**  
 BURO HAPPOLD ATKINS ADI +

DRG.NO. 60191048/C3/000/C00/1000  
 圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	

SCALE 比例  
A1 1 : 25000

DIMENSIONS ARE IN 尺寸單位  
METRES

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Plot File by : 2014/3/26 WANGSY

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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171120 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171120 SS NOE</b></span> <b>Date of Notification: 28 Nov 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 20 November 2017 and the results were issued on 28 November 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> <del>Dissolved Oxygen (DO)</del> Suspended Solid (SS) <del>Turbidity (TURB)</del> <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR7	Depth Average	23.5 and 120% (i.e. 19.7 for mid-ebb/14 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 21.4 for mid-ebb/15.2 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	11.7	24.1

Remarks:

**Bold** means AL exceedances.

**Bold with underline** means LL exceedances.

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

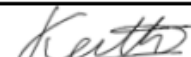
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
IS5	12:33:00	09:09:00
IS(Mf)6	12:40:00	08:58:00
IS7	12:46:00	08:50:00
IS8	13:09:00	08:35:00
IS(Mf)9	12:52:00	08:42:00
IS10(N)	13:19:00	08:10:00
IS(Mf)11	13:25:00	08:04:00
IS(Mf)16	13:24:00	08:11:00
IS17	13:31:00	08:05:00
SR3	12:28:00	09:16:00
SR4(N)	13:06:00	08:30:00
SR5(N)	13:14:00	08:16:00
SR6	12:29:00	08:59:00
SR7	13:33:00	07:56:00
SR10A	14:24:00	07:04:00
SR10B(N)	14:18:00	07:14:00

Prepared by : Evan Wong Title : ET Representative

 Date : 28-Nov-17

Reviewed by : Keith Chau Title : ET Leader

 Date : 28-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

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



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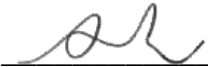
**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0029**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:   
Mr. Arthur Cheng  
Environmental Team Leader

Date: 15/11/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0029****1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171122 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 30 November 2017:

Monitoring Date: 22 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 12.5 for mid-ebb /7.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 13.5 for mid-ebb/8.2 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	SR6	Depth Average	<b>26.6</b>	<b><u>36.1</u></b>

**Bold** means AL exceedance.**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171122 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.

### 3. Investigation of Non-compliance

#### Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. For SS exceedance recorded at the WQM station SR6, the concerned WQM stations where the exceedances were recorded were not close to the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide and mid-ebb tide on 22 November 2017.

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9, 16, 23 and 30 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 23 November 2017 are shown in **Appendix B**.

#### **5. Recommendation to the Contractor**

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

#### **6. Follow up Status (Overall)**

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

Water Quality:

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

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- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
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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**


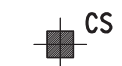

-  IS      IMPACT STATIONS
-  CS      CONTROL / FAR FIELD STATIONS
-  SR      SENSITIVE RECEIVERS STATIONS

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)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
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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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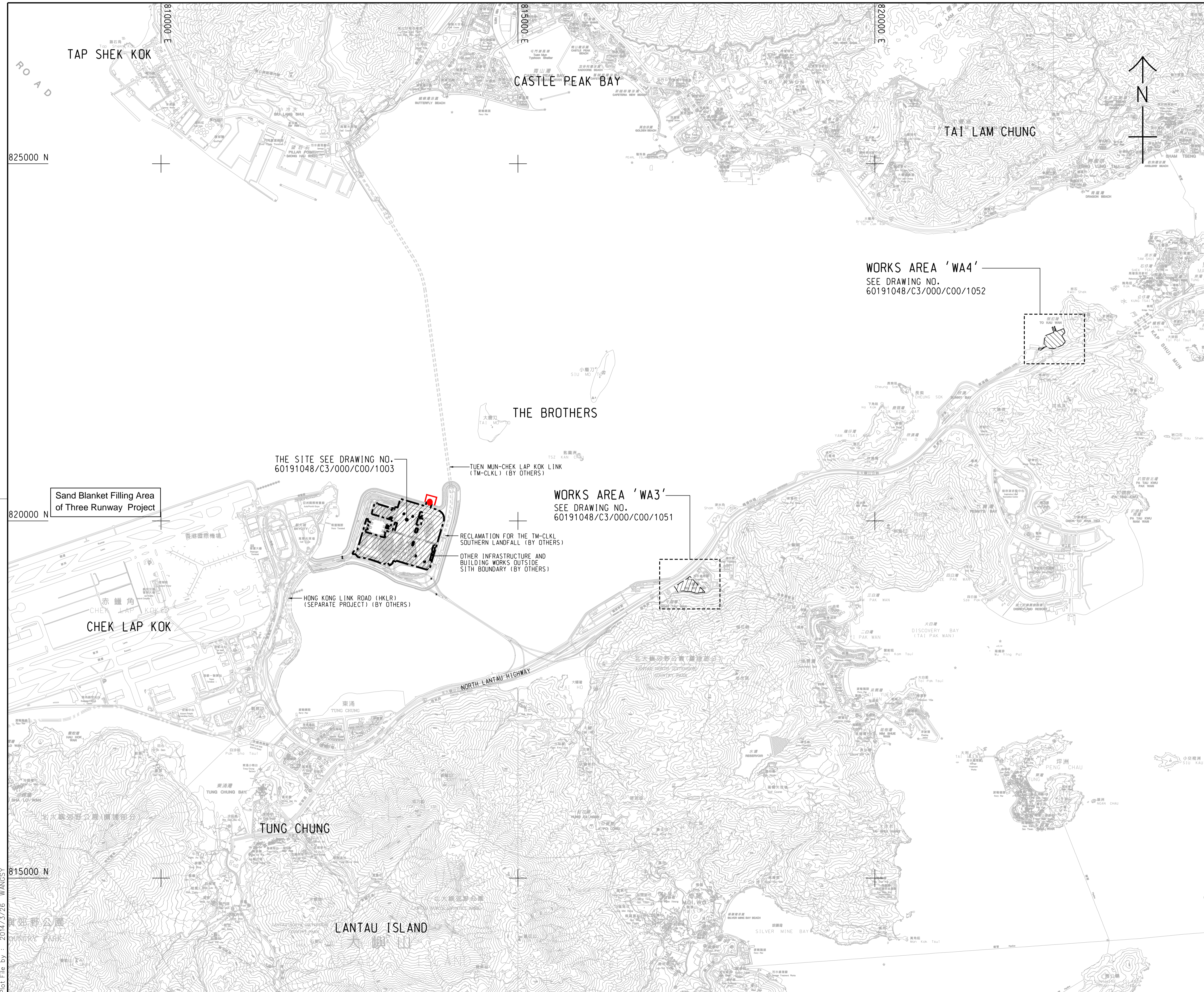
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### **Figure 2**

#### **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
  - WORKS AREA
  - Location of Box Culvert B
  - Silt 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 LANDFALL (BY OTHERS)  
OTHER INFRASTRUCTURE AND BUILDING WORKS OUTSIDE SITE BOUNDARY (BY OTHERS)

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

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

- TENDER DRAWING		BSC	SCI	MAR.14
REV. 修改	DESCRIPTION 內容摘要	D.C. 審核	C.C. 校對	DATE 日期

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

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

**SITE LOCATION PLAN**

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

DRG.NO. 60191048/C3/000/C00/1000  
 圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	預校

SCALE 比例 A1 1 : 25000  
 DIMENSIONS ARE IN 尺寸單位 METRES  
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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171122 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171122 SS NOE</b></span> <b>Date of Notification: 30 Nov 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 22 November 2017 and the results were issued on 29 November 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> Dissolved Oxygen (DO) / Suspended Solid (SS) / Turbidity (TURB) <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	SR6	Depth Average	23.5 and 120% (i.e. 12.5 for mid-ebb/7.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 13.5 for mid-ebb/8.2 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	<b>26.6</b>	<b><u>36.1</u></b>

Remarks:

**Bold** means AL exceedances.

**Bold with underline** means LL exceedances.

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

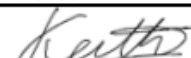
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
IS5	13:42:00	10:15:00
IS(Mf)6	13:49:00	10:10:00
IS7	13:55:00	10:03:00
IS8	14:10:00	09:47:00
IS(Mf)9	14:02:00	09:55:00
IS10(N)	14:21:00	09:17:00
IS(Mf)11	14:26:00	09:11:00
IS(Mf)16	14:32:00	09:22:00
IS17	14:41:00	09:14:00
SR3	13:36:00	10:23:00
SR4(N)	14:16:00	09:42:00
SR5(N)	14:16:00	09:24:00
SR6	13:35:00	10:05:00
SR7	14:34:00	09:03:00
SR10A	15:34:00	08:17:00
SR10B(N)	15:29:00	08:25:00

Prepared by : Evan Wong Title : ET Representative

 Date : 30-Nov-17

Reviewed by : Keith Chau Title : ET Leader

 Date : 30-Nov-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

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

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**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0030**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:



Mr. Arthur Cheng  
Environmental Team Leader

Date: 15/11/2017

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0030**

**1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171124 SS NOE) was forwarded by the ET of Contract No. HY/2013/01 on 1 December 2017:

Monitoring Date: 24 November 2017

The Action and Limit Levels of Suspended Solid (SS) at determined from baseline monitoring data are listed below:

Monitoring Parameter	Action Level (mg/L)	Limit Level (mg/L)
SS	23.5 and 120% (i.e. 16.8 for mid-ebb /12.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 18.2 for mid-ebb/13.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes

Measured Level:

Parameter	Station	Depth	Measured at mid-ebb tide (mg/L)	Measured at mid-flood tide (mg/L)
SS	IS8	Depth Average	10.6	<b>29.9</b>

**Bold** means AL exceedance.

**Bold with underline** means LL exceedances.

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

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

Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171124 SS NOE) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.



### 3. Investigation of Non-compliance

#### Summary of Investigation

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

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

#### Investigation Results

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

- Water Quality:

W1-

1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
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 2, 9, 16, 23 and 30 November 2017, ET confirmed the Contractor had provided workable and effective water quality mitigation measures. ET will take relevant photo records of the marine-based works for Contract No. HY/2013/03 via the on-going site inspections to support the necessary review of the effectiveness of site mitigation measures specific to the exceedance investigation.

Photos showing the site situation of marine works in Box Culvert B which was taken during the site audit at 23 November 2017 are shown in **Appendix B**.

#### **5. Recommendation to the Contractor**

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

#### **6. Follow up Status (Overall)**

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

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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

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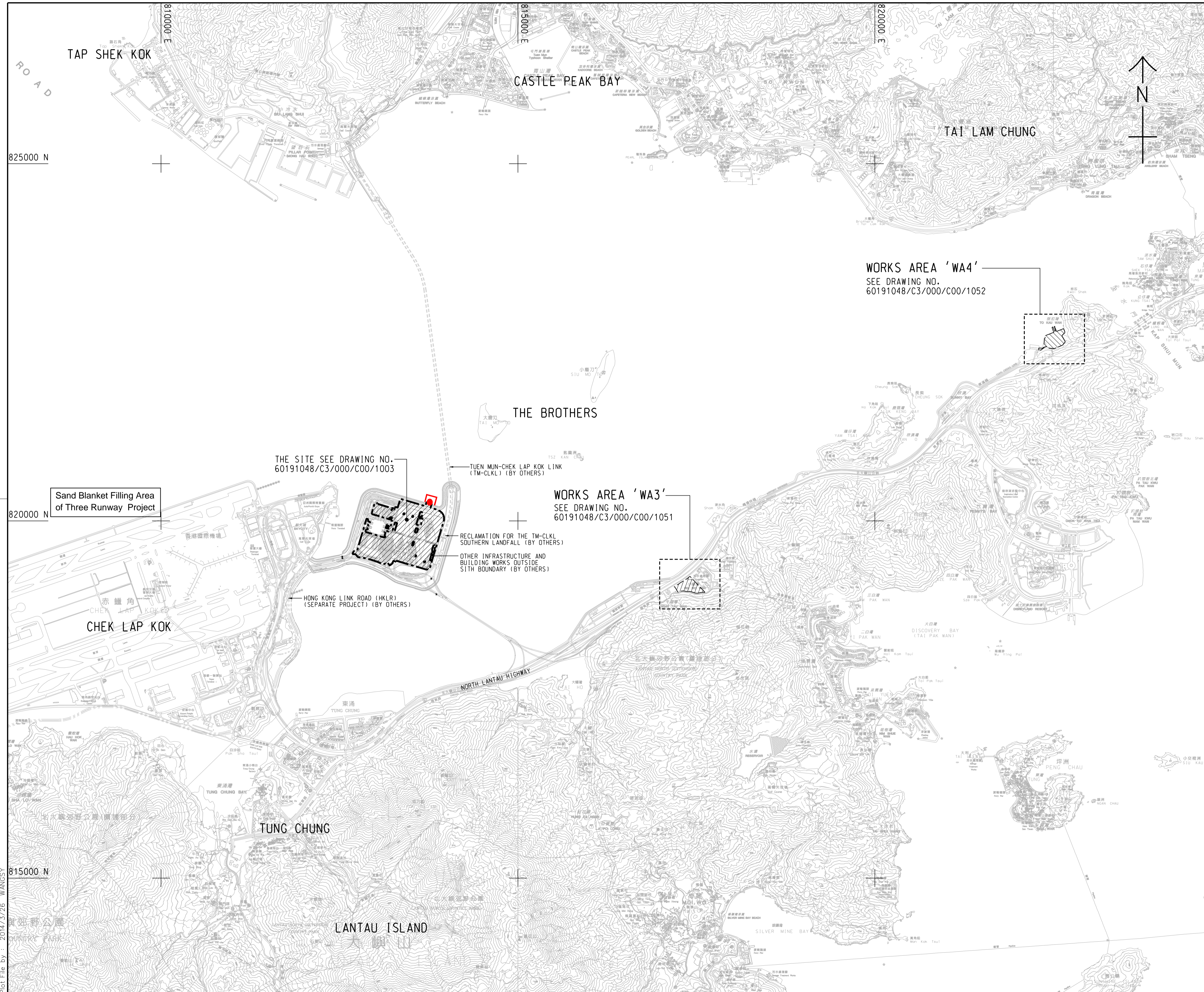
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### **Figure 2**

#### **The Locations of Marine Transportation and Marine-based Construction Works**



- NOTES:**
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- LEGEND:**
- SITE BOUNDARY
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  - Location of Box Culvert B
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**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  
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TUEN MUN-CHEK LAP KOK LINK  
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RECLAMATION FOR THE TM-CKLK  
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- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	BY	CHECKED	DATE

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香港機場管理局  
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE  
HONG KONG BOUNDARY CROSSING FACILITIES  
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**AECOM** +  
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BURO HAPPOLD ATKINS ADI +  
**Aedas**

DRG.NO. 60191048/C3/000/C00/1000  
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DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	

SCALE 比例 A1 1 : 25000  
DIMENSIONS ARE IN 尺寸單位 METRES

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**LEGEND**

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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

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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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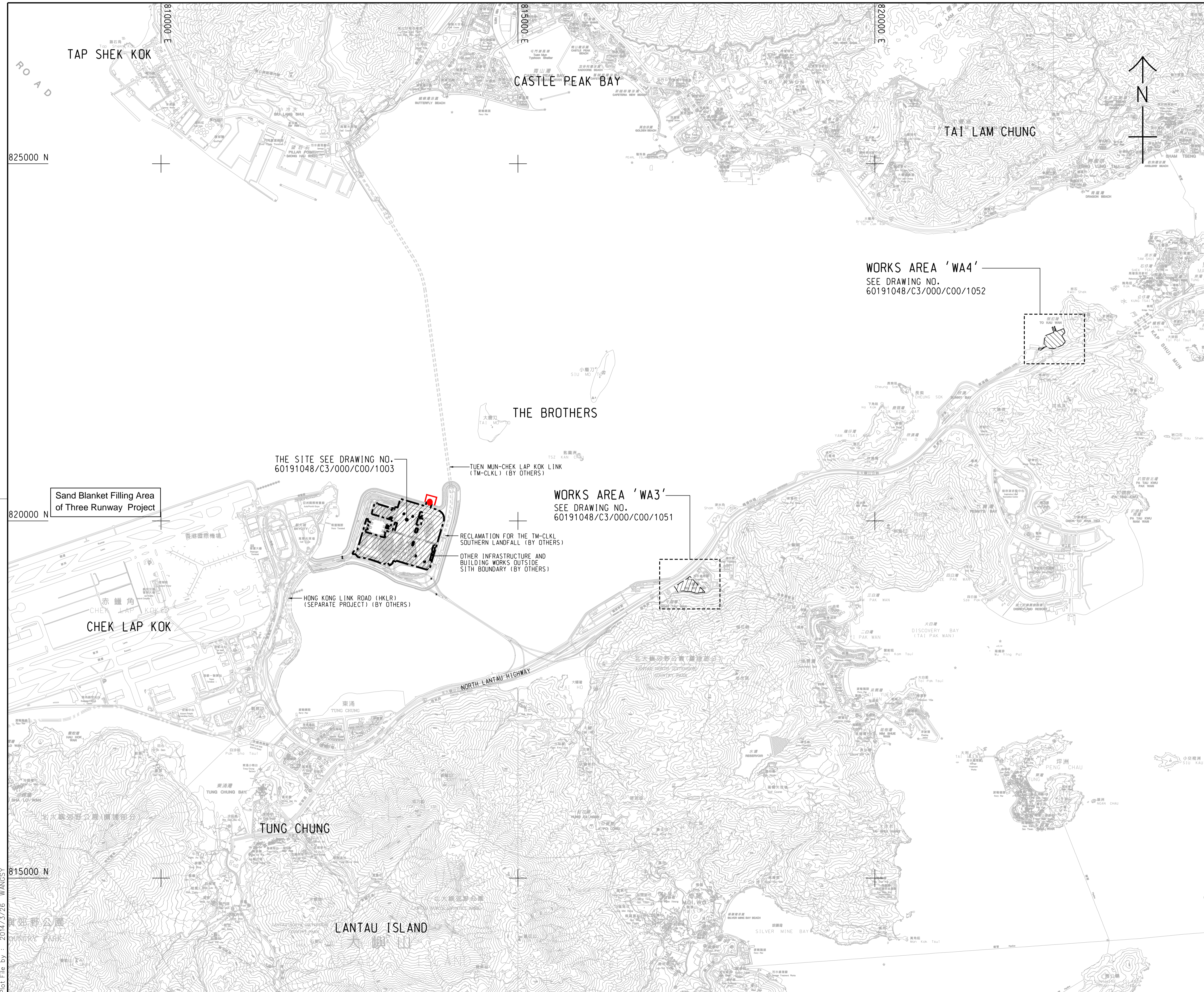
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### **Figure 2**

#### **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
  - ▨ 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-CKLK) (BY OTHERS)

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

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

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

- TENDER DRAWING		BSC	SCI	MAR.14
REV.	DESCRIPTION	D.C.	C.C.	DATE
修改	內容摘要	查核	校核	日期

**路政署 HIGHWAYS DEPARTMENT**  
香港機場管理局  
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** +  
Rogers Stirk Harbour + Partners  
BURO HAPPOLD ATKINS ADI +  
**Aedas**

DRG.NO. 60191048/C3/000/C00/1000  
圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
BWCW	HY/2013/03	TKH

DRAWN BY 繪圖	STATUS 階段
WSY	預校

SCALE 比例 A1 1 : 25000  
DIMENSIONS ARE IN 尺寸單位 METRES

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Plot File by : 2014/3/26 WANGSY

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### **Appendix A**

#### **Notification of Limit Level Exceedance (20171124 SS NOE)**

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<b>Contract No. HY/2013/01 -</b> <b>Hong Kong- Zhuhai- Macao Bridge</b> <b>Hong Kong Boundary Crossing Facilities – Passenger Clearance Building</b> <b>Notifications of Environmental Quality Limits Exceedances</b> <span style="float: right;"><b>Notification No.: 20171124 SS NOE</b></span> <b>Date of Notification: 01 Dec 2017</b> <b>Works Inspected:</b> Data collected from water sampling works on 24 November 2017 and the results were issued on 1 December 2017 <b>Monitoring Location:</b> Water Quality Monitoring Station <b>Parameter:</b> Dissolved Oxygen (DO) / Suspended Solid (SS) / Turbidity (TURB) <b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>						
PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (i.e. 16.8 for mid-ebb/12.8 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 18.2 for mid-ebb/13.9 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	10.6	29.9

Remarks:

**Bold** means AL exceedances.


**Bold with underline** means LL exceedances.

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

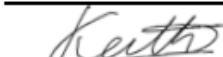
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA

	Mid-Ebb	Mid-Flood
IS5	15:23:00	12:31:00
IS(Mf)6	15:30:00	12:22:00
IS7	15:38:00	12:14:00
IS8	15:52:00	11:53:00
IS(Mf)9	15:44:00	12:03:00
IS10(N)	16:06:00	10:41:00
IS(Mf)11	16:13:00	10:34:00
IS(Mf)16	16:16:00	11:25:00
IS17	16:25:00	11:16:00
SR3	15:16:00	12:39:00
SR4(N)	16:00:00	11:47:00
SR5(N)	16:00:00	10:48:00
SR6	15:16:00	11:27:00
SR7	16:21:00	10:27:00
SR10A	17:22:00	10:00:00
SR10B(N)	17:17:00	10:23:00

Prepared by : Evan Wong Title : ET Representative

 Date : 01-Dec-17

Reviewed by : Keith Chau Title : ET Leader

 Date : 01-Dec-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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### **Appendix B**

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

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**INVESTIGATION REPORT ON**  
**ACTION AND LIMIT LEVEL NON-COMPLIANCE**  
**FOR**  
**CONTRACT NO. HY/2013/03**

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

**Report No. Ref.: 0165-15-IR0031**

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by:



Mr. Arthur Cheng  
Environmental Team Leader

Date: 05/01/2018

**NON-COMPLIANCE INVESTIGATION REPORT No.: 0165-15-IR0031****1. Project Details**

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

**2. Details of Non-compliance**

Notification of Action/Limit Level Exceedance (20171128 24h) was forwarded by the ET of Contract No. HY/2013/01 on 6 December 2017:

Monitoring Date: 28 November 2017

The Action and Limit Levels of 24-hr TSP at determined from baseline monitoring data are listed below:

<b>Monitoring Parameter</b>	<b>Action Level (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Limit Level (<math>\mu\text{g}/\text{m}^3</math>)</b>
24-hr TSP	167	260

Measured Level:

<b>Parameter</b>	<b>Station</b>	<b>Measured level (<math>\mu\text{g}/\text{m}^3</math>)</b>
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	<b>168</b>

**Bold Italic** means AL exceedance.**Bold Italic with underline** means LL exceedances.Monitoring was undertaken by the ET of Contract No. HY/2013/01 of HKBCF. The Notification of Action/Limit Level Exceedance (20171128 24h) provided by the ET of Contract No. HY/2013/01 of HKBCF is shown in **Appendix A**.



### 3. Investigation of Non-compliance

#### Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, the mitigation measures according to Water Spraying Arrangement in November 2017 (**Appendix B**) are implemented to avoid dust emission. The Contractor has provided the guideline to remind the site vehicles travel within speed limit of 8km/hr.

For 24-hr TSP exceedance recorded at the station AMS3B, the Air Quality Health Index (AQHI) of Tung Chung station with the wind data from the on-site wind station are shown in Appendix C. The hourly AQHI of Tung Chung station ranged 3 to 8 (Low to Very High) on 28 and 29 November 2017 during monitoring period. According to the wind data at on-site wind station, no prevailing wind direction was found in the monitoring period. The Vehicle Clearance Plazas and Ancillary Buildings and Facilities site of HKBCF is far away from AMS3B (more than 1km). No potential dust source was observed near the monitoring station at AMS3B during the monitoring period.

It was unlikely that the works undertaken by Contract No. HY/2013/03 caused 24-hr TSP exceedance recorded at the station AMS3B on 28 November 2017.

#### Investigation Results

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

- Air Quality:

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

A2-

1. Proper watering of exposed spoil should be undertaken throughout the construction phase:

- Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;
- Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;
- A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.
- The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;

- Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;
- 2. When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;
- 3. The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials,
- 4. Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;
- 5. Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;
- 6. Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;
- 7. Any skip hoist for material transport should be totally enclosed by impervious sheeting;
- 8. Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top;
- 9. Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;
- 10. Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and
- 11. Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site r part of the construction site where the exposed earth lies

**A3-**

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

**A4-**

1. Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.

#### A6-

1. Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;
2. All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP;
3. Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;
4. The materials which may generate airborne dusty emissions should be wetted by water spray system;
5. All receiving hoppers should be enclosed on three sides up to 3m above unloading point;
6. All conveyor transfer points should be totally enclosed;
7. All access and route roads within the premises should be paved and wetted; and
8. Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body

#### A7-

1. All road surface within the barging facilities will be paved;
2. Dust enclosures will be provided for the loading ramp;
3. Vehicles will be required to pass through designated wheels wash facilities; and
4. Continuous water spray at the loading points

#### 4. Follow up Status (Exceedance)

During weekly site audit on 2, 9, 16, 23 and 30 November 2017, ET confirmed the Contractor had provided workable and effective air quality mitigation measures.

Photos showing the mitigation measures were taken during the site audit at 30 November 2017 are shown in **Appendix C**.

#### 5. Recommendation to the Contractor

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

#### 6. Follow up Status (Overall)

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

- Air Quality:

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

A2-

1. Proper watering of exposed spoil should be undertaken throughout the construction phase:
  - Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;
  - Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;
  - A stockpile of dusty material should not 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;
2. When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;
3. The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials,
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5. Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;
6. Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;
7. Any skip hoist for material transport should be totally enclosed by impervious sheeting;

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8. Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top;
9. Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;
10. Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and
11. Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies

### A3-

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

### A4-

1. Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.

### A6-

1. Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;
2. All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP;
3. Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;
4. The materials which may generate airborne dusty emissions should be wetted by water spray system;
5. All receiving hoppers should be enclosed on three sides up to 3m above unloading point;
6. All conveyor transfer points should be totally enclosed;
7. All access and route roads within the premises should be paved and wetted; and
8. Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body

### A7-

1. All road surface within the barging facilities will be paved;
2. Dust enclosures will be provided for the loading ramp;
3. Vehicles will be required to pass through designated wheels wash facilities; and

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

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#### 4. Continuous water spray at the loading points

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## **Appendix A**

### **Notification of Limit Level Exceedance (20171128 24h)**

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<b>Contract No. HY/2013/01 -                  Hong Kong- Zhuhai- Macao Bridge                  Hong Kong Boundary Crossing Facilities – Passenger Clearance Building                  Notification of Environmental Quality Limit Exceedance</b>					Notification No.: 20171128 Air 24hr
<b>Date of Notification:</b> 6 December 2017					
<b>Date of Environmental Quality Limit Exceedance:</b> 28 November 2017 and the results were issued on 6 December 2017					
<b>Monitoring Location:</b> AMS3B – Site Boundary of Site Office Area at Works Area WA2					
<b>Monitoring Date:</b> 28 November 2017			<b>Start Time:</b> 08:00		
<b>Parameter:</b> 24-hour TSP monitoring					
<b>Action &amp; Limit Level (AL &amp; LL) / Measured Level:</b>					
<u>PARAMETER</u>	<u>STATION</u>	<u>AL (µg/m<sup>3</sup>)</u>	<u>LL (µg/m<sup>3</sup>)</u>	<u>MEASURED LEVEL, µg/m<sup>3</sup></u>	
24-hr TSP	AMS3B – Site Boundary of Site Office Area at Works Area WA2	167	260	<b>168</b>	
Notes: <b><i>Bold Italic</i></b> means AL exceedance <b><i><u>Bold Italic with underline</u></i></b> means LL exceedance					

Prepared by: Evan Wong Title: ET Representative  
  
 Date: 6 December 2017

Reviewed by: Keith Chau Title: ET Leader  
  
 Date : 6 December 2017

Copied to : IEC/ENPO, Contractor and Engineer Representative



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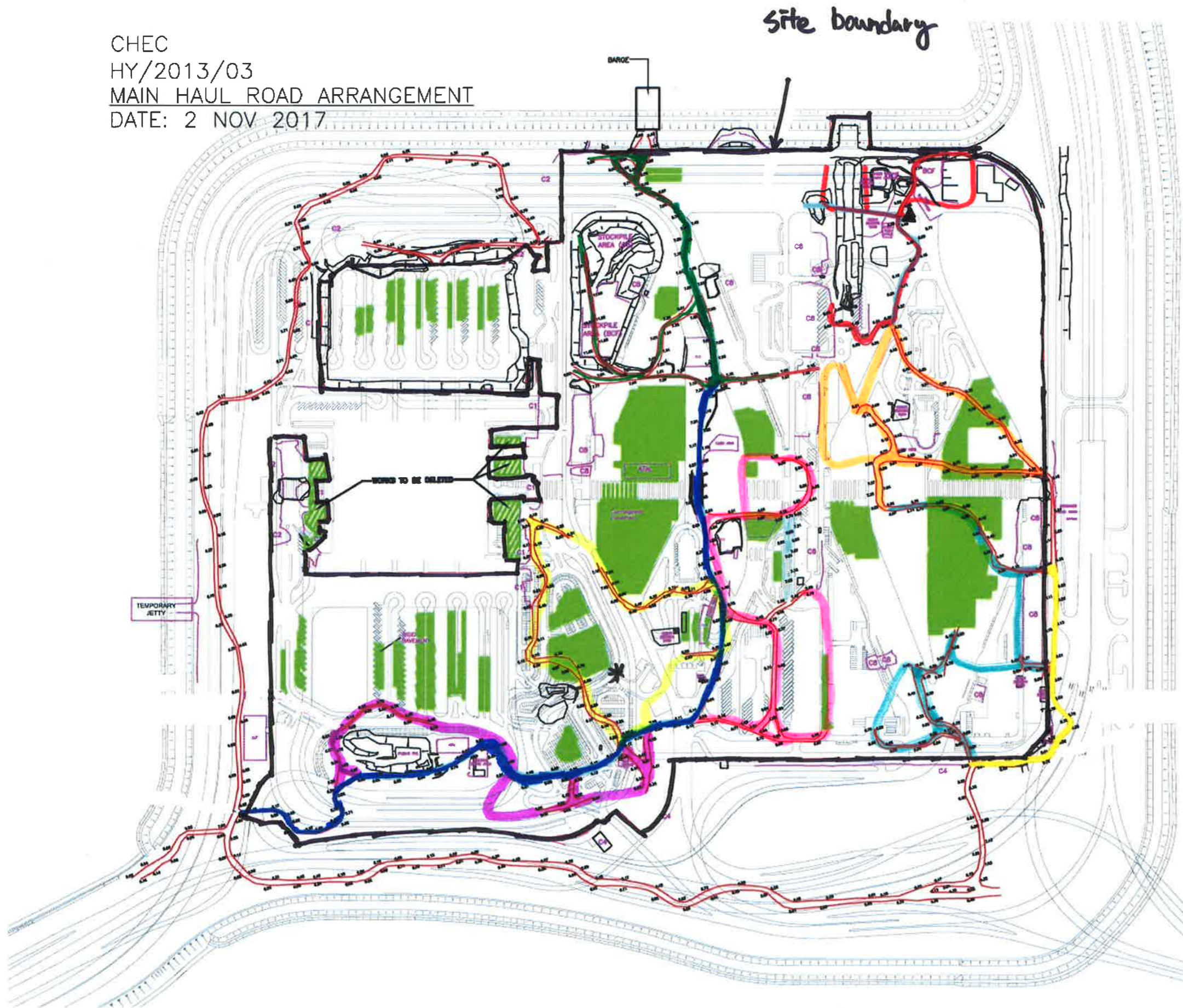
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### **Appendix B**

#### **Water Spraying Arrangement**

CHEC  
HY/2013/03  
MAIN HAUL ROAD ARRANGEMENT  
DATE: 2 NOV 2017



Site boundary

- PAVED AREA
- Site boundary
- Water Truck 1
- Water Truck 2
- Water Truck 3
- Water Truck 4
- Water Truck 5
- Water Truck 6
- Water Truck 7
- Water Truck 8
- \* Fresh water Supply
- ▲ Sea water Supply





中國港灣工程有限公司 China Harbour Engineering Company Limited  
 合約編號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛通關廣場 輔助建築物及設施  
 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plaza and Ancillary Buildings and Facilities

月份 11/2017

位置 人工島 C3

興富

工地灑水紀錄表

日期	6 星期一				7 星期二				8 星期三				9 星期四			
次數	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	0815	ℓ	~		0816	ℓ	~	○	0815	ℓ	~	○	0815	ℓ	~	○
2	0919	ℓ	~		0920	ℓ	~	○	0922	ℓ	~	○	0922	ℓ	~	○
3	1013	ℓ	~	○	1022	ℓ	~	○	1024	ℓ	~	○	1024	ℓ	~	○
4	1108	ℓ	~	○	1028	ℓ	~	○	1029	ℓ	~	○	1029	ℓ	~	○
5	1315	ℓ	~		1315	ℓ	~	○	1315	ℓ	~	○	1315	ℓ	~	○
6	1411	ℓ	~	○	1420	ℓ	~	○	1421	ℓ	~	○	1421	ℓ	~	○
7	1518	ℓ	~		1518	ℓ	~	○	1517	ℓ	~	○	1517	ℓ	~	○
8	1630	ℓ	~		1635	ℓ	~	○	1624	ℓ	~	○	1624	ℓ	~	○
9	1710	ℓ	~		1715	ℓ	~	○	1715	ℓ	~	○	1715	ℓ	~	○
10																

日期	10 星期五				11 星期六				12 星期日			
次數	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	0815	ℓ	~		0815	ℓ	~					
2	0920	ℓ	~	○	0922	ℓ	~					
3	1014	ℓ	~		1015	ℓ	~	○				
4	1118	ℓ	~		1114	ℓ	~					
5	1316	ℓ	~	○	1315	ℓ	~					
6	1412	ℓ	~	○	1423	ℓ	~					
7	1523	ℓ	~		1504	ℓ	~	○				
8	1618	ℓ	~		1618	ℓ	~	○				
9	1709	ℓ	~		1710	ℓ	~					
10												

休息



中國港灣工程有限公司 China Harbour Engineering Company Limited  
 合約編號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛通關廣場 輔助建築物及設施  
 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plaza and Ancillary Buildings and Facilities

月份 11/2017

位置 人工島 C3

興富

工地灑水紀錄表

日期	13	14	15	16
星期	星期一	星期二	星期三	星期四
1				
2				
3				
4				
5	雨			
6				
7				
8				
9				
10				

日期	17	18	19
星期	星期五	星期六	星期日
1			
2			
3			
4			
5			休息
6			
7			
8			
9			
10			



中國港灣工程有限公司 China Harbour Engineering Company Limited  
 合約編號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛通關廣場 輔助建築物及設施  
 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plaza and Ancillary Buildings and Facilities

月份 11/2017

位置 人工島 C3

興富

工地灑水紀錄表

日期	20 星期一				21 星期二				22 星期三				23 星期四			
次數	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	0816	E	~		0815	E	~		0815	E	~		0815	E	~	
2	0923	E	~		0924	E	~		0923	E	~		0924	E	~	
3	1024	E	~		1024	E	~		1022	E	~		1024	E	~	
4	1124	E	~		1123	E	~		1124	E	~		1115	E	~	
5	1316	E	~		1315	E	~		1316	E	~		1309	E	~	
6	1424	E	~		1423	E	~		1421	E	~		1407	E	~	
7	1518	E	~		1518	E	~		1517	E	~		1508	E	~	
8	1621	E	~		1620	E	~		1621	E	~		1620	E	~	
9	1714	E	~		1713	E	~		1708	E	~		1710	E	~	
10																

日期	24 星期五				25 星期六				26 星期日			
次數	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	0816	E	~		0815	E	~					
2	0921	E	~		0917	E	~					
3	1019	E	~		1016	E	~					
4	1122	E	~		1121	E	~					
5	1316	E	~		1315	E	~					
6	1418	E	~		1417	E	~					
7	1521	E	~		1502	E	~					
8	1623	E	~		1621	E	~					
9	1717	E	~		1716	E	~					
10												

休息



中國港灣工程有限責任公司 China Harbour Engineering Company Limited  
 合約編號 Contract No. HY/2013/03 港珠澳大橋香港口岸-車輛通關廣場, 輔助建築物及設施  
 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plaza and Ancillary Buildings and Facilities

月份 11/2017

位置 人工島 C3

興奮

工地灑水紀錄表

日期	27 星期一				28 星期二				29 星期三				30 星期四			
次數	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	0815	C	~		0817	C	~		0815	C	~		0816	C	~	
2	0921	C	~		0922	C	~	☉	0921	C	~		0922	C	~	☉
3	1022	C	~	☉	1023	C	~	☉	1022	C	~		1023	C	~	
4	1116	C	~		1117	C	~	☉	1117	C	~	☉	1121	C	~	
5	1317	C	~		1315	C	~		1316	C	~	☉	1315	C	~	☉
6	1421	C	~	☉	1422	C	~	☉	1422	C	~	☉	1423	C	~	☉
7	1523	C	~		1523	C	~		1523	C	~		1521	C	~	☉
8	1620	C	~	☉	1621	C	~		1621	C	~		1622	C	~	
9	1716	C	~		1715	C	~		1715	C	~		1716	C	~	
10																

日期	星期五				星期六				星期日			
次數	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

休息







中國港灣工程有限公司 China Harbour Engineering Company Limited  
 合約編號 Contract No. HY2013/03 港珠澳大橋香港口岸-車輛通關廣場, 輔助建築物及設施  
 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plaza and Ancillary Buildings and Facilities

月份 11月  
 位置 CHEC

工地灑水紀錄表

6-11-2017 星期一				7-11-2017 星期二				12-11-2017 星期三				星期四				
日期	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	8:00	She	✓	✓	8:00	She	✓	✓	8:00	She	✓	✓	8:00	She	✓	✓
2	9:00	She	✓	✓	9:00	She	✓	✓	9:00	She	✓	✓	9:00	She	✓	✓
3	10:00	She	✓	✓	10:00	She	✓	✓	10:00	She	✓	✓	10:00	She	✓	✓
4	11:00	She	✓	✓	11:00	She	✓	✓	11:00	She	✓	✓	11:00	She	✓	✓
5	13:00	She	✓	✓	13:00	She	✓	✓	13:00	She	✓	✓	13:00	She	✓	✓
6	14:00	She	✓	✓	14:00	She	✓	✓	14:00	She	✓	✓	14:00	She	✓	✓
7	15:00	She	✓	✓	15:00	She	✓	✓	15:00	She	✓	✓	15:00	She	✓	✓
8	16:00	She	✓	✓	16:00	She	✓	✓	16:00	She	✓	✓	16:00	She	✓	✓
9	17:00	She	✓	✓	17:00	She	✓	✓	17:00	She	✓	✓	17:00	She	✓	✓

星期五				星期六				星期日				
日期	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄	時間	員工簽署	管工簽署	抽查紀錄
1	8:00	She	✓	✓	8:00	She	✓	✓				
2	9:00	She	✓	✓	9:00	She	✓	✓				
3	10:00	She	✓	✓	10:00	She	✓	✓				
4	11:00	She	✓	✓	11:00	She	✓	✓				
5	13:00	She	✓	✓	13:00	She	✓	✓				
6	14:00	She	✓	✓	14:00	She	✓	✓				
7	15:00	She	✓	✓	15:00	She	✓	✓				
8	16:00	She	✓	✓	16:00	She	✓	✓				
9	17:00	She	✓	✓	17:00	She	✓	✓				





中國港灣工程有限公司 China Harbour Engineering Company Limited  
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 Hong Kong-Zhuhai-Macao Bridge HKBCF - Vehicle Clearance Plaza and Ancillary Buildings and Facilities

月份 11月  
 位置 CHEC

工地灑水紀錄表

日期	時間	員工簽署	管工簽署	抽查紀錄	日期	時間	員工簽署	管工簽署	抽查紀錄	日期	時間	員工簽署	管工簽署	抽查紀錄
20-11-2017	星期一				21-11-2017	星期二				22-11-2017	星期三			
1	8:00	[Signature]	[Signature]	[Signature]	1	8:00	[Signature]	[Signature]	[Signature]	1	8:00	[Signature]	[Signature]	[Signature]
2	9:00	[Signature]	[Signature]	[Signature]	2	9:00	[Signature]	[Signature]	[Signature]	2	9:00	[Signature]	[Signature]	[Signature]
3	10:00	[Signature]	[Signature]	[Signature]	3	10:00	[Signature]	[Signature]	[Signature]	3	10:00	[Signature]	[Signature]	[Signature]
4	11:00	[Signature]	[Signature]	[Signature]	4	11:00	[Signature]	[Signature]	[Signature]	4	11:00	[Signature]	[Signature]	[Signature]
5	12:00	[Signature]	[Signature]	[Signature]	5	12:00	[Signature]	[Signature]	[Signature]	5	12:00	[Signature]	[Signature]	[Signature]
6	14:00	[Signature]	[Signature]	[Signature]	6	14:00	[Signature]	[Signature]	[Signature]	6	14:00	[Signature]	[Signature]	[Signature]
7	15:00	[Signature]	[Signature]	[Signature]	7	15:00	[Signature]	[Signature]	[Signature]	7	15:00	[Signature]	[Signature]	[Signature]
8	16:00	[Signature]	[Signature]	[Signature]	8	16:00	[Signature]	[Signature]	[Signature]	8	16:00	[Signature]	[Signature]	[Signature]
9	17:00	[Signature]	[Signature]	[Signature]	9	17:00	[Signature]	[Signature]	[Signature]	9	17:00	[Signature]	[Signature]	[Signature]

日期	時間	員工簽署	管工簽署	抽查紀錄	日期	時間	員工簽署	管工簽署	抽查紀錄
24-11-2017	星期五				25-11-2017	星期六			
1	8:00	[Signature]	[Signature]	[Signature]	1	8:00	[Signature]	[Signature]	[Signature]
2	9:00	[Signature]	[Signature]	[Signature]	2	9:00	[Signature]	[Signature]	[Signature]
3	10:00	[Signature]	[Signature]	[Signature]	3	10:00	[Signature]	[Signature]	[Signature]
4	11:00	[Signature]	[Signature]	[Signature]	4	11:00	[Signature]	[Signature]	[Signature]
5	12:00	[Signature]	[Signature]	[Signature]	5	13:00	[Signature]	[Signature]	[Signature]
6	14:00	[Signature]	[Signature]	[Signature]	6	14:00	[Signature]	[Signature]	[Signature]
7	15:00	[Signature]	[Signature]	[Signature]	7	15:00	[Signature]	[Signature]	[Signature]
8	16:00	[Signature]	[Signature]	[Signature]	8	16:00	[Signature]	[Signature]	[Signature]
9	17:00	[Signature]	[Signature]	[Signature]	9	17:00	[Signature]	[Signature]	[Signature]

日期	時間	員工簽署	管工簽署	抽查紀錄
26-10-2017	星期日			
1		[Signature]	[Signature]	[Signature]
2		[Signature]	[Signature]	[Signature]
3		[Signature]	[Signature]	[Signature]
4		[Signature]	[Signature]	[Signature]
5		[Signature]	[Signature]	[Signature]
6		[Signature]	[Signature]	[Signature]
7		[Signature]	[Signature]	[Signature]
8		[Signature]	[Signature]	[Signature]
9		[Signature]	[Signature]	[Signature]



## **MATERIALAB CONSULTANTS LIMITED**

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

### **Appendix C**

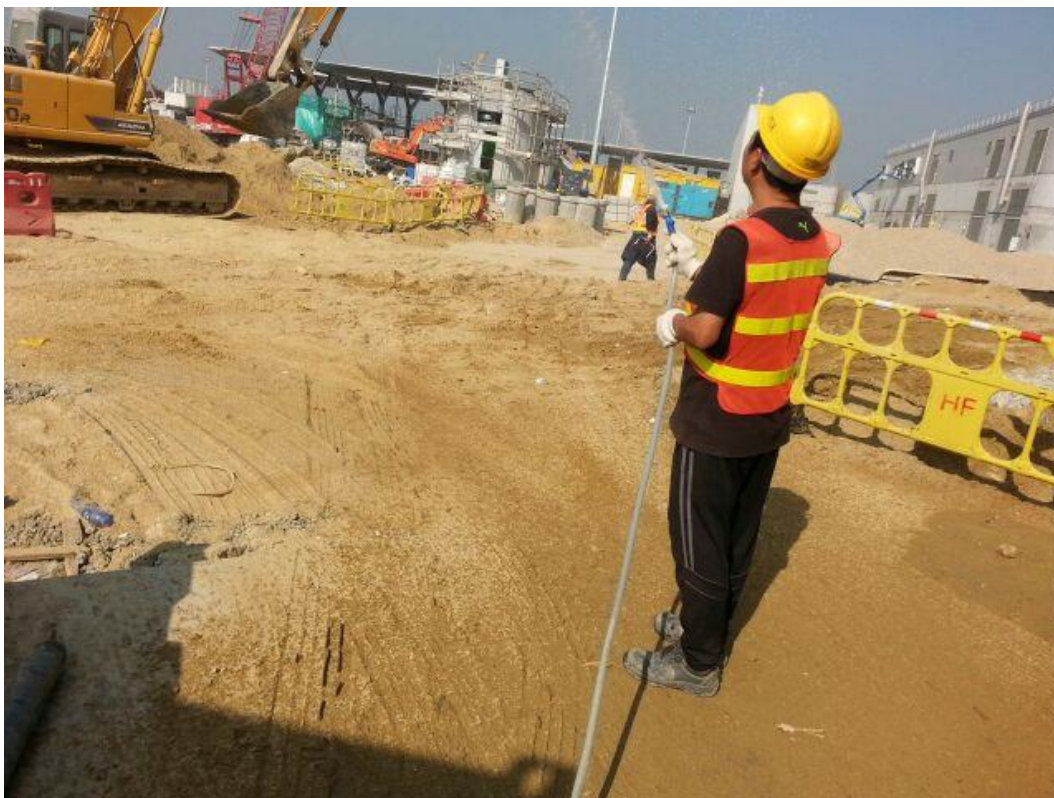
#### **Photos showing the mitigation measures**

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# **MaterialLab**



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# **Materialab**

