中國港灣工程有限責任公司
香港代表： 振華工程有限公司
CHINA HARBOUR ENGINEERING COMPANY LIMITED
HONG KONG REPRESENTATIVE: ZHEN HUA ENGINEERING CO., LTD.

Date : 03 November 2017
Our Ref. : CHEC300/OUT/2017/11/04.05/032879

By Hand

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

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

Dear Sir,

Contract No. HY/2013/03
Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities
EP Condition 5.4 – Monthly EM&A Report (September 2017)

Pursuant to the Condition 5.4 of the EP-353/2009/K, we are pleased to submit one soft copy and three hard copies of the certified Monthly EM&A Report (Rev.3) for September 2017 for your on-ward submission.

Thank you for your kind attention.

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

Paul PUI
Site Agent

PP/FH/MC/HSW/DW/mt

Encl.

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_5956L.17

3 November 2017

By Fax (3468 2076) and By Post

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

Attention: Mr. W.S. Ng

Dear Sir,

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

Contract No. HY/2013/03 – HZMB HKBCF – Vehicle Clearance Plazas and Ancillary Buildings and Facilities
Monthly Environmental Monitoring & Audit Report for September 2017

Reference is made to the Environmental Team's submission of Monthly Environmental Monitoring & Audit Report for September 2017 (Rev. 3) certified by the ET Leader (ET's ref.: "MCL/ED/0594/2017/C" dated 3 November 2017) and provided to us via e-mail on 3 November 2017.

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

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

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

Yours faithfully,
For and on behalf of
Ramboll 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)

Internal: DY, YH, ENPO Site

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Ramboll Environ Hong Kong Limited 英環香港有限公司
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MATERIALAB CONSULTANTS LIMITED

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Website : www.materialab-consultant.com

Date 3 November 2017
Our Ref. MCL/ED/0594/2017/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 September 2017 (Rev.3) 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

MATERIALAB CONSULTANTS LIMITED
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Hong Kong.
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MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT (Rev.3)

September 2017

Client: China Harbour Engineering Co., Ltd.

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

Report No.: 0165/15/ED/0927

Prepared by: Vincent Lu

Certified by: _____
Arthur Cheng
Environmental Team Leader

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APPENDICES

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EXECUTIVE SUMMARY

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

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

Commencement of Contract No. HY/2013/03 took place on 10 April 2015 while the construction works and the EM&A programme of Contract No. HY/2013/03 commenced on 29 August 2015 (commencement of Contract No. HY/2013/06 took place on 14 August 2015 while the construction works and the EM&A programme of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area commenced on 13 September 2016).

MateriaLab Consultants Limited (MCL) has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and will be providing environmental team services for the Contract.

This is the 25th Monthly EM&A Report for the Contract which summaries findings of the EM&A programme during the reporting period from 1 September 2017 to 30 September 2017 (includes the findings of the EM&A programme of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area during the reporting period from 1 September 2017 to 30 September 2017) (the "reporting period"). The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2013/01 "Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building" and Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF". The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7, noise monitoring at NMS2 and NMS3B, water quality monitoring at the locations shown in **Figure 3** and ecological monitoring as shown in **Figure 4** as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/01 and HY/2011/03. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

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

Environmental Site Inspection: 8, 15, 21 and 25 September 2017.

Breaches of Action and Limit Levels

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved oxygen recorded on twelve days by the Environmental Team of Contract No. HY/2013/01 during reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 4.1** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

Complaint Log

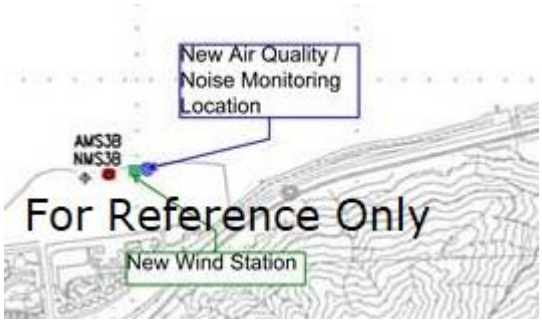
There were no complaints received in relation to the environmental impact during the reporting period.

Notifications of Summons and Successful Prosecutions

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

Reporting Changes

The implementation of environmental monitoring for air quality, noise, water quality and marine ecology (dolphin monitoring) have been conducting by the ET for Contract No. HY/2013/01 of which the noise monitoring station (NMS3B) and the meteorological station have been slightly re-located to AECOM PRE's Office without re-branding since 1 September 2017 as shown below:



Future Key Issues

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

<u>For Contract No. HY/2013/03</u>

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

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

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

1. INTRODUCTION

1.1 Background

1.1.1 MateriaLab Consultants Limited was commissioned by China Harbour Engineering Co. Limited (also referred to as "the Contractor") to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for Contract No. HY/2013/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities" (includes the construction works of Contract No. HY/2013/06 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System" within Contract No. HY/2013/03 works area) ("the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR).

1.1.2 Contract No. HY/2013/03 (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) is part of Hong Kong–Zhuhai–Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is "Designated Projects", under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and for which an EIA Report (Register No. AEIAR-145-2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP- 353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance. The general layout of the Project area is shown in **Appendix A**.

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

1.2 Project Description

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

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

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	--

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 (MateriaLab Consultants Limited)	Environmental Team Leader (ETL)	Mr. Arthur Cheng	3565 4115	2450 8032
24-hr Complaint Hotline	--	--	6509 0375	--

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

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

1.4 Construction Programme

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

1.5 Construction Works Undertaken during the Reporting Period

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

For Contract No. HY/2013/03

1. Building at Portion A1, B, G, N, J, STP & Pumping Stations;
2. CUE Construction at Portion B, C & J;
3. Drainage & Sewerage Work, Water Main & Cable Duct at Portion B, H1, H2, J, P, G & A1;
4. Radiation Screen Wall at Portion B, E P, N,M,C;
5. Sign Gantry Footing at Portion B;
6. Sewerage Pumping Station, High Mast Lighting Foundation & Box Culvert C at Portion G;

7. Bridge Works at A1 to A9;
8. Site Foundation Works at Portion K;
9. Cover Walkway at Portion H1 & H2;
10. Box Culvert B at Portion N; Shuttle kiosk & Subway at Portion E
11. Deployment, maintenance and inspection of silt curtain;
12. Construction of water outfall of box culvert; and
13. Marine sediment excavation activities from the land-based works and corresponding disposal at the designated disposal sites within Hong Kong as allocated by the Marine Fill Committee.

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

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

2. AIR QUAILITY 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)
1 hour TSP		
AMS6	360	500
AMS7	370	
24 hours TSP		
AMS6	173	260
AMS7	183	

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

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

2.3 Monitoring Results

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

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

2.3.3 There was no Action and Limit Level exceedances of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

3. NOISE MONITORING

3.1 Monitoring Locations

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

Table 3.1 Construction Noise Monitoring Location

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

3.2 Monitoring Requirements

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

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

Table 3.2 Action and Limit Level for Construction Noise

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

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

3.3 Monitoring Results

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

4. WATER QUALITY MONITORING

4.1 Monitoring Locations

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

Table 4.1 Water Quality Monitoring Stations

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

Note:
(1) Additional monitoring station for ma Wan FCZ
(2) Additional control monitoring station for Ma Wan FCZ

Remarks:
The ET of the Contract should conduct impact water quality monitoring at the WQMs listed in the table as part of EM&A programme according to latest notification from ENPO if water quality monitoring is no longer covered by another ET of the HZMB project. The ET of the Contract shall communicate and share the monitoring data to the ET(s) of the other contracts if the water quality monitoring station(s) is/are as part of EM&A programme.

4.2 Monitoring Requirements

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

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

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

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

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

4.3 Monitoring Results

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

Table 4.3 Action and Limit Levels for Water Quality

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

		(8 Sep, 11 Sep, 13 Sep, 22 Sep, 29 Sep)	(8 Sep, 11 Sep, 22 Sep)	(1 Sep, 15 Sep, 18 Sep, 22 Sep, 27 Sep, 29 Sep)	(1 Sep, 11 Sep, 15 Sep, 29 Sep)		(8 Sep)		
	Limit	0	0	0	0	0	0	0	1 (8 Sep)
IS(Mf)11	Action	3 (11 Sep, 15 Sep, 22 Sep)	5 (8 Sep, 11 Sep, 13 Sep, 15 Sep, 22 Sep)	4 (1 Sep, 11 Sep, 18 Sep, 29 Sep)	4 (1 Sep, 8 Sep, 11 Sep, 29 Sep)	0	2 (6 Sep, 8 Sep)	0	1 (8 Sep)
	Limit	0	0	0	0	0	0	0	0
IS(Mf)16	Action	1 (8 Sep)	3 (8 Sep, 11 Sep, 22 Sep)	5 (8 Sep, 11 Sep, 13 Sep, 18 Sep, 29 Sep)	2 (11 Sep, 13 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
IS17	Action	4 (8 Sep, 11 Sep, 13 Sep, 15 Sep)	3 (8 Sep, 11 Sep, 22 Sep)	7 (1 Sep, 6 Sep, 8 Sep, 11 Sep, 13 Sep, 15 Sep, 27 Sep)	4 (8 Sep, 11 Sep, 13 Sep, 29 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR3	Action	2 (8 Sep, 22 Sep)	1 (8 Sep)	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR4(N)	Action	0	2 (11 Sep, 22 Sep)	0	1 (8 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR5(N)	Action	3 (11 Sep, 13 Sep, 22 Sep)	2 (11 Sep, 22 Sep)	4 (1 Sep, 11 Sep, 27 Sep, 29 Sep)	3 (8 Sep, 11 Sep, 29 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR6	Action	3 (11 Sep, 18 Sep, 22 Sep)	7 (6 Sep, 8 Sep, 11 Sep, 15 Sep, 18 Sep, 20 Sep, 22 Sep)	1 (18 Sep)	5 (8 Sep, 11 Sep, 15 Sep, 18 Sep, 20 Sep)	0	1 (8 Sep)	0	1 (20 Sep)
	Limit	0	0	0	0	0	0	0	0
SR7	Action	1 (11 Sep)	2 (11 Sep, 22 Sep)	0	1 (8 Sep)	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
SR10A	Action	0	0	0	7 (6 Sep, 8 Sep, 11 Sep, 13 Sep, 15 Sep, 20 Sep, 27 Sep)	0	0	0	0
	Limit	4 (6 Sep, 8 Sep,	8 (6 Sep, 8 Sep,	0	0	0	0	0	0

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

Note: S&M: Surface & Middle

4.3.2 Regarding the exceedance on 1 September 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken in the current stage is the preparation work of precast installation which was suspended on the date of exceedance due to safety issues. But silt curtain was still maintained to enclose the work area of the outlet of the box culvert fully. All sea water flow into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 1 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 1 September 2017 was not related to Contract No. HY/2013/03.

4.3.3 Regarding the exceedance on 6 September 2017, there was 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. It was unlikely to consume any dissolved oxygen or generate suspended solid to cause the DO, turbidity and SS exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 6 September 2017. Besides, the concerned WQM stations where DO and SS exceedances recorded were far away from the works areas (i.e. box Culvert B), while there was only Action Level exceedance of turbidity but no notification of exceedance of DO and SS received at the WQM stations closer to the works areas, such as IS(Mf)11. Therefore, the exceedances on 6 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 6 September 2017 was not related to Contract No. HY/2013/03.

4.3.4 Regarding the exceedance on 8 September 2017, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03.Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 8 September 2017. For turbidity and SS exceedance recorded at the WQM station IS10(N) closer to the works area Box Culvert B, there was no turbidity and SS exceedance recorded at the same WQM station under similar work environment on 06 September 2017 and 11 September 2017. For turbidity and SS exceedance recorded at the WQM station IS(Mf)11 closer to the works area Box Culvert B, there was no turbidity and SS exceedance recorded at the same WQM station under similar work environment on 11 September 2017. For turbidity and SS exceedance recorded at the WQM station IS5 and SR6, the exceedance recorded at the concerned WQM station is far away from the marine works area of Contract No. HY/2013/03. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused turbidity or SS exceedance recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 8 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 8 September 2017 was not related to Contract No. HY/2013/03.

4.3.5 Regarding the exceedance on 11 September 2017, there was 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. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 11 September 2017. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed, while there was only Action Level exceedance of DO at the WQM stations closer to the works areas, such as IS(Mf)11. Therefore, the exceedances on 11 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 11 September 2017 was not related to Contract No. HY/2013/03.

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

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

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

4.3.9 Regarding the exceedance on 20 September 2017, there was 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. In addition, the exceedances recorded at the concerned WQM stations (i.e. SR6, SR10A and SR10B(N)) are far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 20 September 2017. Besides, the water quality mitigation measures as

mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 20 September 2017 was not related to Contract No. HY/2013/03.

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

4.3.11 Regarding the exceedance on 25 September 2017, there was 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. In addition, the concerned WQM station where exceedances were recorded (i.e. SR10B(N)) was far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 25 September 2017. For SS exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused SS exceedance recorded at the concerned WQM station during mid-flood tide on 25 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 25 September 2017 was not related to Contract No. HY/2013/03.

4.3.12 Regarding the exceedance on 27 September 2017, there was 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. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 27 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 27 September 2017 was not related to Contract No. HY/2013/03.

4.3.13 Regarding the exceedance on 29 September 2017, there was 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. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 29 September 2017. Besides, the water quality mitigation measures as mentioned in EM&A Manual and EP were fully implemented in Contract No. HY/2013/03. Hence, the exceedance on 29 September 2017 was not related to Contract No. HY/2013/03.

4.3.14 14After investigation, it was concluded that the exceedances were not related to Contract No. HY/2013/03 due to the above reasons. The investigation reports 002 & 003 (including the causes of exceedance, action taken and recommendation for mitigation) for Action or Limit Level Non-compliance were provided in **Appendix J**. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 4.1** by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

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

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.

6. DISPOSAL OF MARINE SEDIMENT EXTRACTED FROM BORED PILING WORKS

6.1 Background

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

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

6.2 Dumping Arrangements

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

6.2.2 During dumping, Contractor of Contract No. HY/2013/03 is responsible for transporting the marine sediment from the site area of Contract No. HY/2013/03 to the barge. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit. The disposal site allocated to this Project is the Mud Pit CMP Vd of the Confined Marine Sediment Disposal Facility to the East of Sha Chau (ESC) during this reporting period.

6.3 Quantity Disposed

6.3.1 No marine sediment extracted from bored piling from this Contract was disposed to allocated dumping site in September 2017. As confirmed by RSS, all marine sediments extracted from HY/2013/02, HY/2013/03 and HY/2013/04 have been completed with the last batch disposal on 30 August 2017. The summary of marine sediment disposed up to end August 2017 is shown in the following table:

Table 6.1 Summary of Marine Sediment Disposed to Dumping Site

Month/Year	Quantity disposed (in'000m^3)			
	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
Sub-Total	11.016	16.928	12.052	39.996
Jul 2016	0.728	10.728	3.690	15.146
Aug 2016	1.784	1.544	4.428	7.756
Sep 2016	2.328	6.816	3.888	13.032
Oct 2016	1.096	2.376	5.286	8.758
Nov 2016	0.000	0.000	0.000	0.000
Dec 2016	1.568	4.960	2.538	9.066
Cat L in Dec 2016	0.000	2.792	3.570	6.362
Sub-Total	18.520	46.144	35.452	100.116
Jan 2017	0.000	0.656	6.552	7.208
Feb 2017	0.088	0.264	1.380	1.732
Mar 2017	0.000	0.000	0.000	0.000
Apr 2017	0.624	1.288	0.000	1.912
May 2017	0.000	1.440	0.000	1.440
June 2017	1.432	0.000	0.000	1.432
July 2017	0.000	0.000	0.000	0.000
August 2017	0.000	0.248	0.000	0.248
Sep 2017	0.000	0.000	0.000	0.000
Total	20.664	50.040	43.384	114.088

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

7. ENVIRONMENTAL SITE INSPECTION AND AUDIT

7.1 Site Inspection

7.1.1 Site audits were carried out by ET on weekly basis to monitor the implementation of proper environmental management practices and mitigation measures in the Project site.

7.1.2 The joint site audits for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) were conducted on 8, 15, 21 and 25 September 2017 by the representatives of Engineer, Contractor, ET and IEC (IEC for 25 September 2017).

7.1.3 Particular observations during the site inspection and corrective actions undertaken by the Contractor are described below:

For Contract No. HY/2013/03

8 September 2017

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

15 September 2017

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

21 September 2017

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

25 September 2017

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

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

8 September 2017
1. Nil findings.

15 September 2017
1. Nil findings.

21 September 2017
1. Nil findings.

25 September 2017
1. Nil findings.

7.2 Advice on the Solid and Liquid Waste Management Status

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

7.2.2 The monthly summary of waste flow table for Contract No. HY/2013/03 (includes Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) are detailed in **Appendix E**.

7.2.3 Contract No. HY/2013/03 has been assigned to arrange for delivery of surplus filling materials from Contract No. HY/2013/03 to other projects, including Tuen Mun - Chek Lap Kok Link (TM-CLKL) project of HZMB, the Airport Authority Hong Kong's Three Runway (3RS) Project, Wan Chai Development Phase II project, Contract No. HY/2013/02 of HKBCF and Hong Kong Link Road (HKLR) project of HZMB. The estimated quantity of surplus filling materials is confirmed by Resident Site Staff of Contract No. HY/2013/03. The summary of surplus filling materials delivered to other projects up to the end of September 2017 is shown in **Table 7.1**.

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

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

Remarks:
- The variation in density is due to different compositions of surplus filling materials
- There may be discrepancies in the total quantities with the quantities of inert C&D materials stated in Appendix E and section 7.2.4, due to rounding errors

7.2.4 0.000 (in'000m^3) of excavated marine sediment (from Contract No. HY/2013/03), 83.814 (in'000m^3) of Inert C & D Wastes and 1.950 (in'000m^3) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/03) in this reporting period. 80.345 (in'000m^3) of Inert C & D Wastes were reused in other projects and 3.469 (in'000m^3) of Inert C & D Wastes was disposed as public fill. No Inert C & D Wastes and 0.050 (in tonnes) of Non-inert C & D Wastes were generated (from Contract No. HY/2013/06 within Contract No. HY/2013/03 works area) in

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

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

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

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

7.3 Environmental Licenses and Permits

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

7.4 Implementation Status of Environmental Mitigation Measures

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

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

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

7.4.4 With respect to condition 3.26A of EP-353/2009/K approved by EPD on 11 April 2016, the numbers and operating periods of floating grout production facilities and floating concrete batching plants on-site to review on the compliance to this EP condition were checked. Under Contract No. HY/2013/03, no floating concrete batching plant was operated on-site during the reporting period.

7.4.5 As silt curtain was installed since May 2017, Dolphin Watching Plan (DWP) should be implemented. The status of silt curtain was reviewed by ET and there was no change on the status of silt curtain during the reporting period. Implementation status of DWP was checked by ET. The records of dolphin watching training, regular inspection of the silt curtains and visual

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

7.5 Summary of Exceedance of the Environmental Quality Performance Limit

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

7.5.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

7.5.4 There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved oxygen recorded on twelve days by the Environmental Team of Contract No. HY/2013/01 during reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 4.1** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

7.6 Summary of Complaints, Notification of Summons and Successful Prosecution

7.6.1 There were no complaints received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

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

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

8. FUTURE KEY ISSUES

8.1 Construction Programme for the Coming Months

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

For Contract No. HY/2013/03

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

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

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

8.2 Environmental Site Inspection Schedule for the Coming Month

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

9. CONCLUSIONS

9.1 Commencement of Contract No. HY/2013/03 took place on 10 April 2015. The commencement date for construction works and the EM&A programme of Contract No. HY/2013/03 commenced on 29 August 2015 (commencement of Contract No. HY/2013/06 took place on 14 August 2015. The commencement date for construction works and the EM&A programme of Contract No. HY/2013/06 commenced on 13 September 2016 within Contract No. HY/2013/03 works area).

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

9.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

9.5 There were Action and Limit Level exceedances of suspended solids, turbidity and dissolved oxygen recorded on twelve days by the Environmental Team of Contract No. HY/2013/01 during reporting period. After investigation, it was concluded that all exceedances were not relevant to Contract No. HY/2013/03. There was no Action and Limit Level exceedance recorded on other monitoring dates at the monitoring stations shown as shown at **Table 4.1** by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

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

9.7 Environmental site inspections were carried out on 8, 15, 21 and 25 September 2017. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.

9.8 There were no complaints received in relation to the environmental impact during the reporting period.

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

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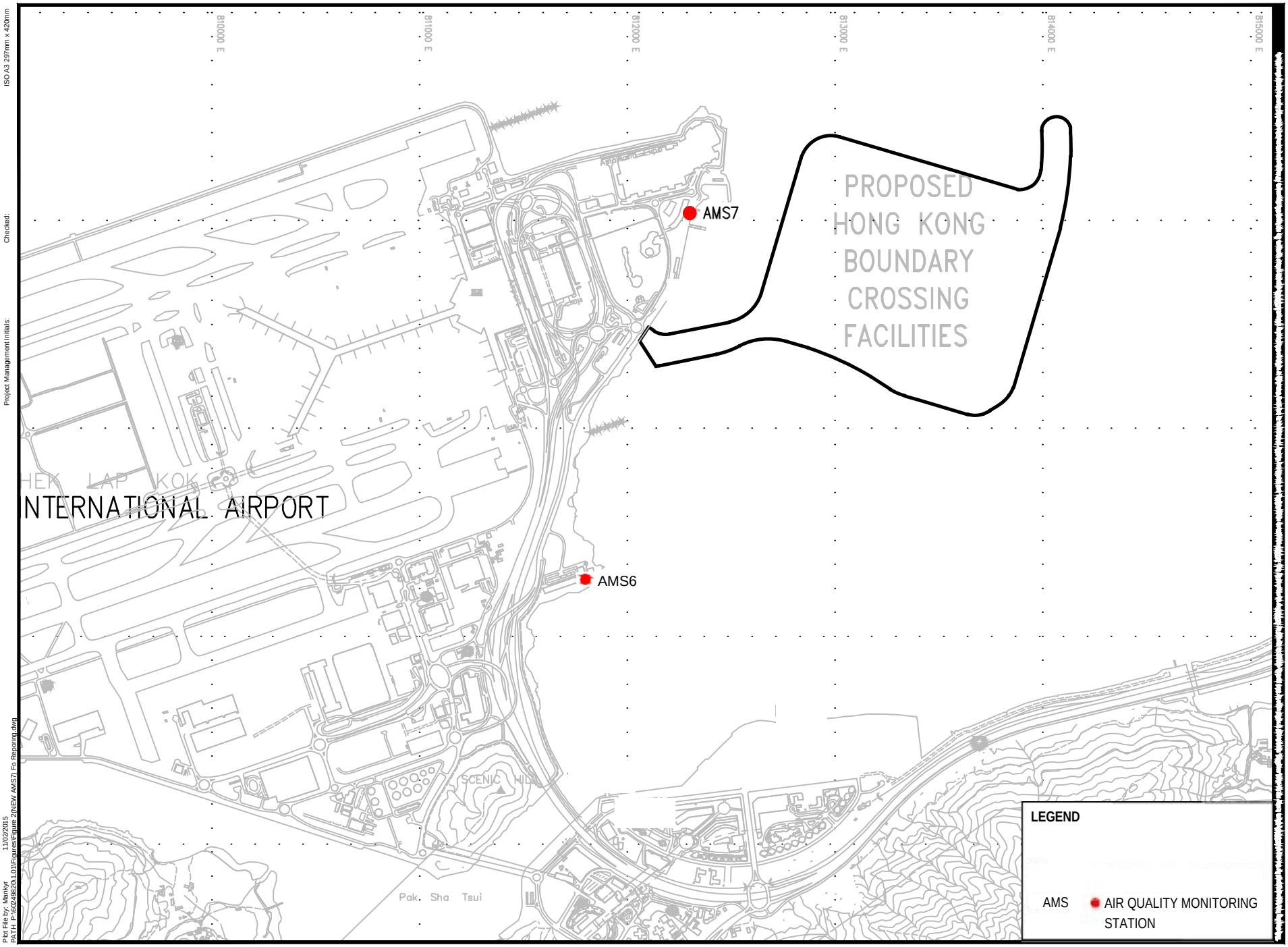
Figure 1

Air Quality Monitoring Stations



ISO A3 297mm x 420mm

Checked:

Project Management Initials:

Plot File by: Marklyn
PATH: P:\60249820\1.01\Figures\Figure 2\NEW AMS7) Fo Reporting.dwg
11/02/2015

AECOM

AIR QUALITY AND NOISE MONITORING STATIONS FOR HKBCF

HONG KONG - ZHUHAI - MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- RECLAMATION WORKS

Project No.: -

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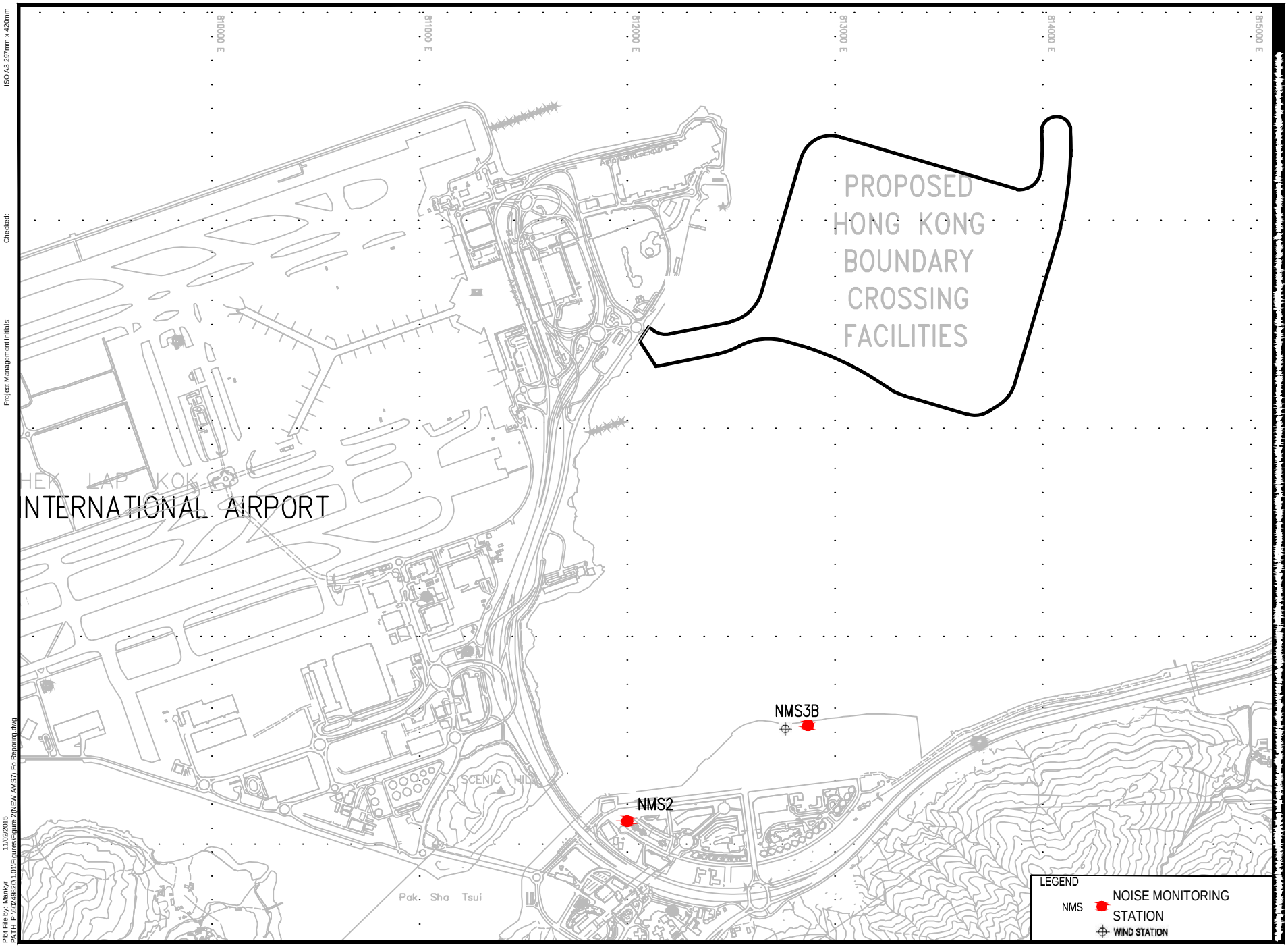
Figure 2

Noise Monitoring Stations



ISO A3 297mm x 420mm

Checked:

Project Management Initials:

Plot File by: Marklyn
PATH: P:\60249820\1.01\Figures\Figure 2\NEW AMS7) Fo Reporting.dwg
11/02/2015

AECOM

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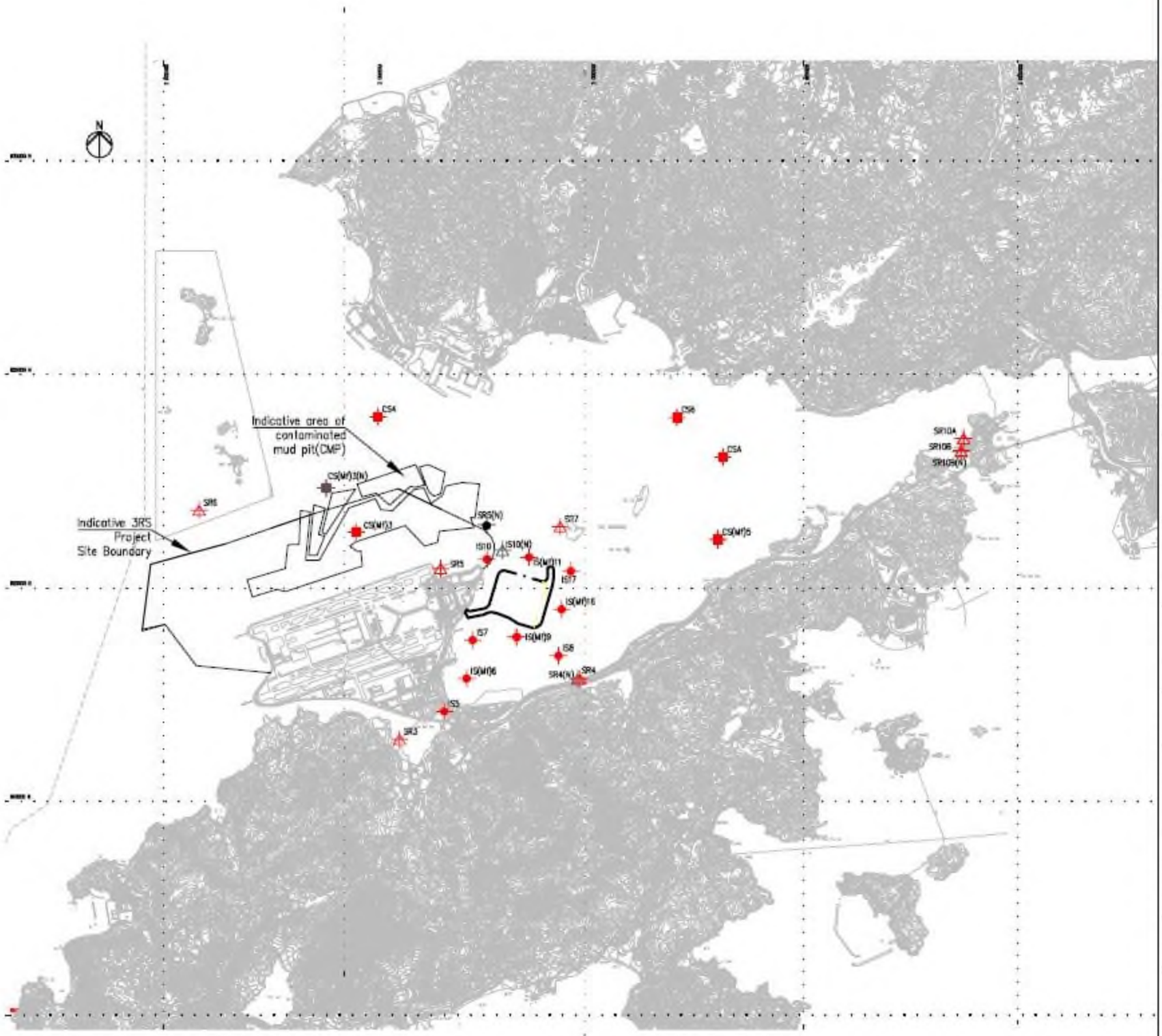
Figure 3

Water Quality Monitoring Stations



LEGEND

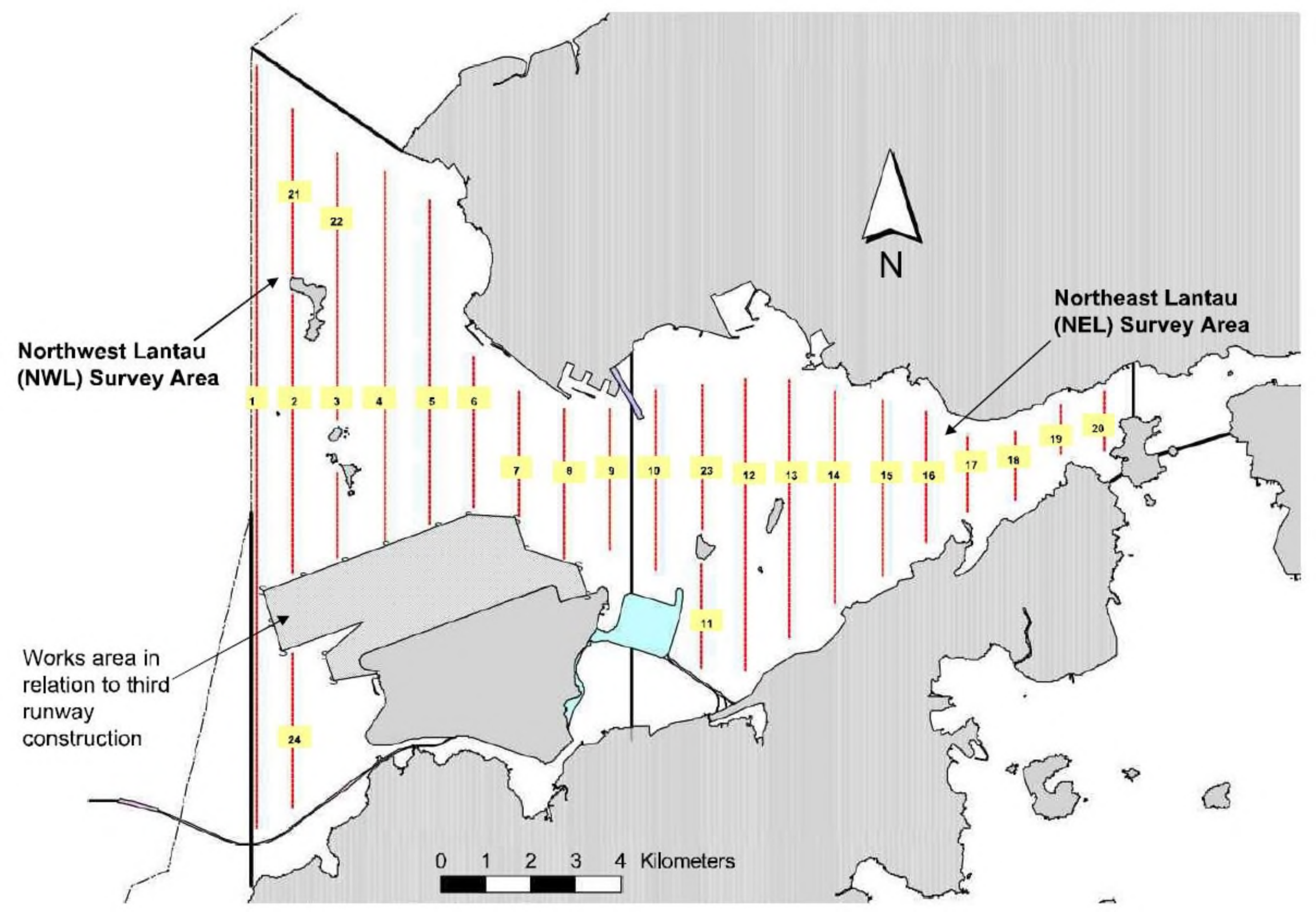
- IS — IMPACT STATIONS
- CS — CONTROL / FAR FIELD STATIONS
- SR — SENSITIVE RECEIVERS STATIONS
- IS — IMPACT STATIONS (RELOCATED)
- SR — SENSITIVE RECEIVERS STATIONS (RELOCATED)
- CS — CONTROL / FAR FIELD STATIONS (RELOCATED)

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817108
IS(M)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(M)9	813273	818850
SR5(N)	812569	821475
IS(M)11	813562	820716
IS(M)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
IS10(N)	812942	820881
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823187
CS(M)3(N)	808814	822355
CS(M)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823084
IS10	812577	820870
SR5	811489	820455
CS(M)3	809989	821117

Figure 4

Ecological Monitoring Transect Line and Layout Map


N
Northwest Lantau
(NWL) Survey Area
Northeast Lantau
(NEL) Survey Area
Works area in
relation to third
runway
construction
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
0 1 2 3 4 Kilometers

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Appendix A

Location of Works Areas

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

THE BROTHERS

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

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

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

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

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

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

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

N

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

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

p:\projects\60191048\drawing\contract\c3\1000\C3_000_C00_1000.dgn

813000 E

813500 E

814000 E

820500 N

820000 N

819500 N

N

PERIMETER SERVICE ROAD

INTERFACE BETWEEN HKBCF AND TM-CLKL RECLAMATION

PUBLIC TOILETS & PARKING BAYS FOR INBOUND PC

PUBLIC TOILETS & PARKING BAYS FOR INBOUND GV

DOG SWIMMING POOL & OUTDOOR AREA

DDH GV SECONDARY EXAMINATION BAYS OUTBOUND (3 NOS.)

ImmD PC SEARCH BAYS

ImmD GV SECONDARY EXAMINATION BAYS OUTBOUND (8 NOS.)

DDH AMBULANCE PICK-UP & PARKING 2no.

DROP OFF FOR PRIVATE CAR ANNEXURE

ImmD GV SEARCH BAYS

5 NO. PC KIOSKS @ 3.8m CLEAR

8 NO. GV KIOSKS

AT-GRADE LINKAGE

PRIVATE CAR KIOSKS

PICK UP BAYS FOR PRIVATE CAR ANNEXURE

DDH AMBULANCE PICK-UP

AFCD PARKING

AFCD SECONDARY BAY

HKPF PARKING

PUBLIC TOILETS & PARKING BAYS FOR OUTBOUND GV

PUBLIC TOILETS & PARKING BAYS FOR OUTBOUND PC

ImmD GV SECONDARY EXAMINATION BAYS INBOUND (8 NOS.)

RESTRICTED ACCESS

DDH PARKING

DDH AMBULANCE PICK-UP

POWER SUBSTATION

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

NOTE:

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

LEGEND:

SITE BOUNDARY

VIADUCT

BUILDING/FACILITIES

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

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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

Figure 1- 1
Current Layout Plan

SHEET 1 OF 2

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

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DRG.NO. 圖紙編號 60191048/C3/000/C00/1001

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 負責人
BWCW	HY/2013/03	TKH
DRAWN BY 繪圖 WSY	STATUS 階段	
SCALE 比例 A1 1 : 2500		
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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

817200 E

817400 E

817600 E

819200 N

819000 N

NORTH LANTAU HIGHWAY

N

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/03

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2011/09

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/02

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/01

10m WIDE COMMON ACCESS TO BE MAINTAINED BY CONTRACT NO. HY/2010/02

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/03

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2014/05

301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2010/02

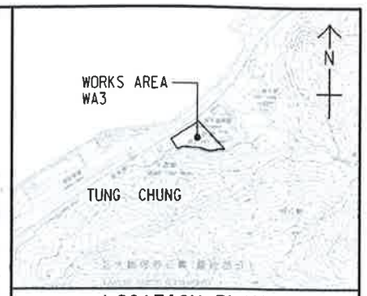
10m WIDE COMMON ACCESS TO BE CONSTRUCTED AND INITIALLY MAINTAINED BY CONTRACT NO. HY/2013/01. UPON COMMENCEMENT OF CONTRACT NO. HY/2013/03. THE MAINTENANCE RESPONSIBILITY SHALL BE TRANSFERRED FROM CONTRACT NO. HY/2013/01 TO CONTRACT NO. HY/2013/03.

WORKS AREA OCCUPIED BY CONTRACT NO. HY/2013/04

10m WIDE ACCESS TO BE CONSTRUCTED AND INITIALLY MAINTAINED BY CONTRACT No. HY/2013/01. UPON COMMENCEMENT OF CONTRACT No. HY/2013/03, THE MAINTENANCE RESPONSIBILITY SHALL BE TRANSFERRED FROM CONTRACT No. HY/2013/01 TO CONTRACT No. HY/2013/03.

10m WIDE ACCESS TO BE CONSTRUCTED AND MAINTAINED BY CONTRACT No. HY/2013/03.

CONTROLLED DOCUMENT 不受控制文件



LOCATION PLAN
SCALE 1 : 25000

NOTES:

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

LEGEND:

- WORKS AREA BOUNDARY
- PORTION 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 8200m² (WHOLE)

FOR CONSTRUCTION

REV. 版別	DESCRIPTION 內容摘要	DESIGNED 設計	CHECKED 核對	DATE 日期
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

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

WORKS AREA WA3

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

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

DESIGNED BY 設計 BWCW	CONTRACT NO. 合約編號 HY/2013/03	P. Dir. APPROVED 負責人 TKH
DRAWN BY 繪圖 WSY	STATUS 狀態 WORKING DRAWING	
SCALE 比例 A1 1 : 1000		
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SETTING OUT POINT

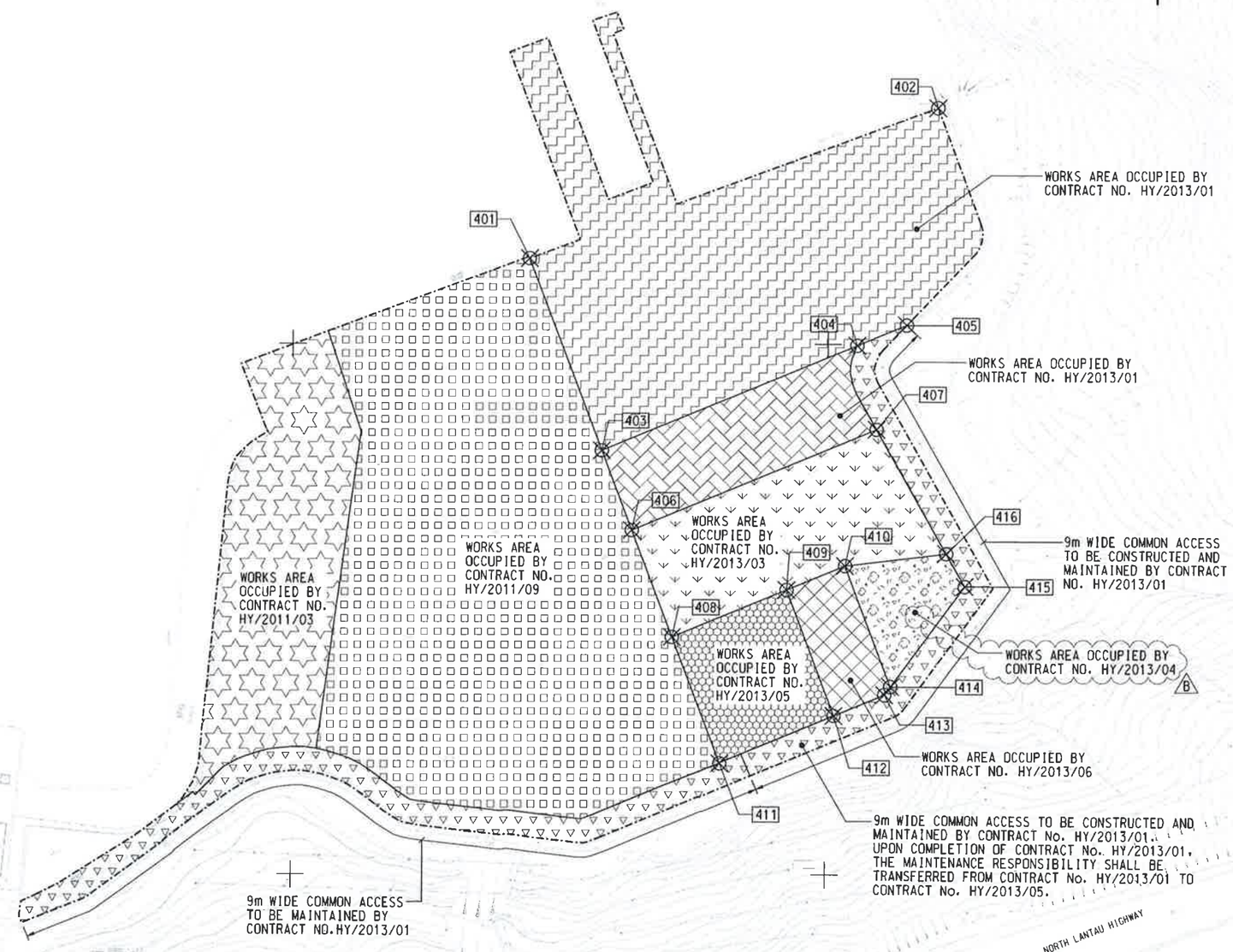
POINT	EASTING	NORTHING
401	822488.151	822632.315
402	822640.593	822689.415
403	822515.608	822559.848
404	822610.940	822599.642
405	822629.428	822607.359
406	822526.988	822529.813
407	822618.348	822567.950
408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822560.278	822441.956
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

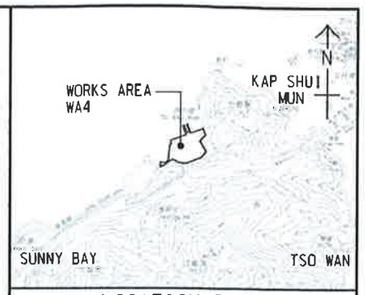
822400 E

822600 E

822600 N

822400 N





LOCATION PLAN
SCALE 1 : 25000

NOTES:

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

LEGEND:

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

CONTROLLED DOCUMENT 不未經准得控本許文走可件

FOR CONSTRUCTION

REV. 修訂	DESCRIPTION 內容摘要	DRAWN 繪圖	CHECKED 審核	DATE 日期
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

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

WORKS AREA WA4

AECOM
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI
Aedas

DRG.NO. 圖紙編號 60191048/C3/000/C00/1052C

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. Dir. APPROVED 核准人
BWCW	HY/2013/03	TKH
DRAWN BY 繪圖 WSY	STATUS 狀況	WORKING DRAWING
SCALE 比例 A1 1 : 1000		
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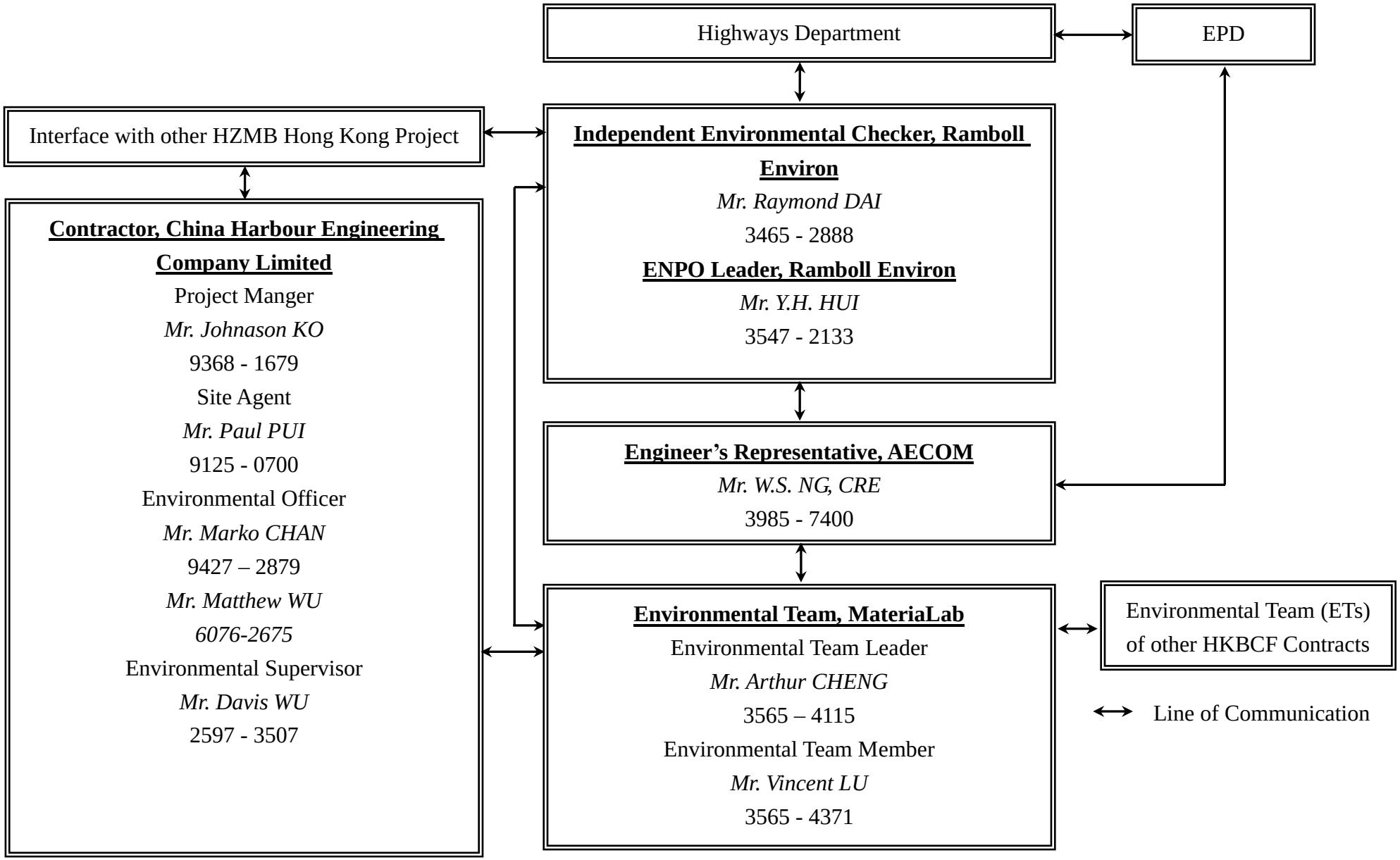
Appendix B

Project Organization for Environmental Works

CHINA HARBOUR ENGINEERING COMPANY LIMITED

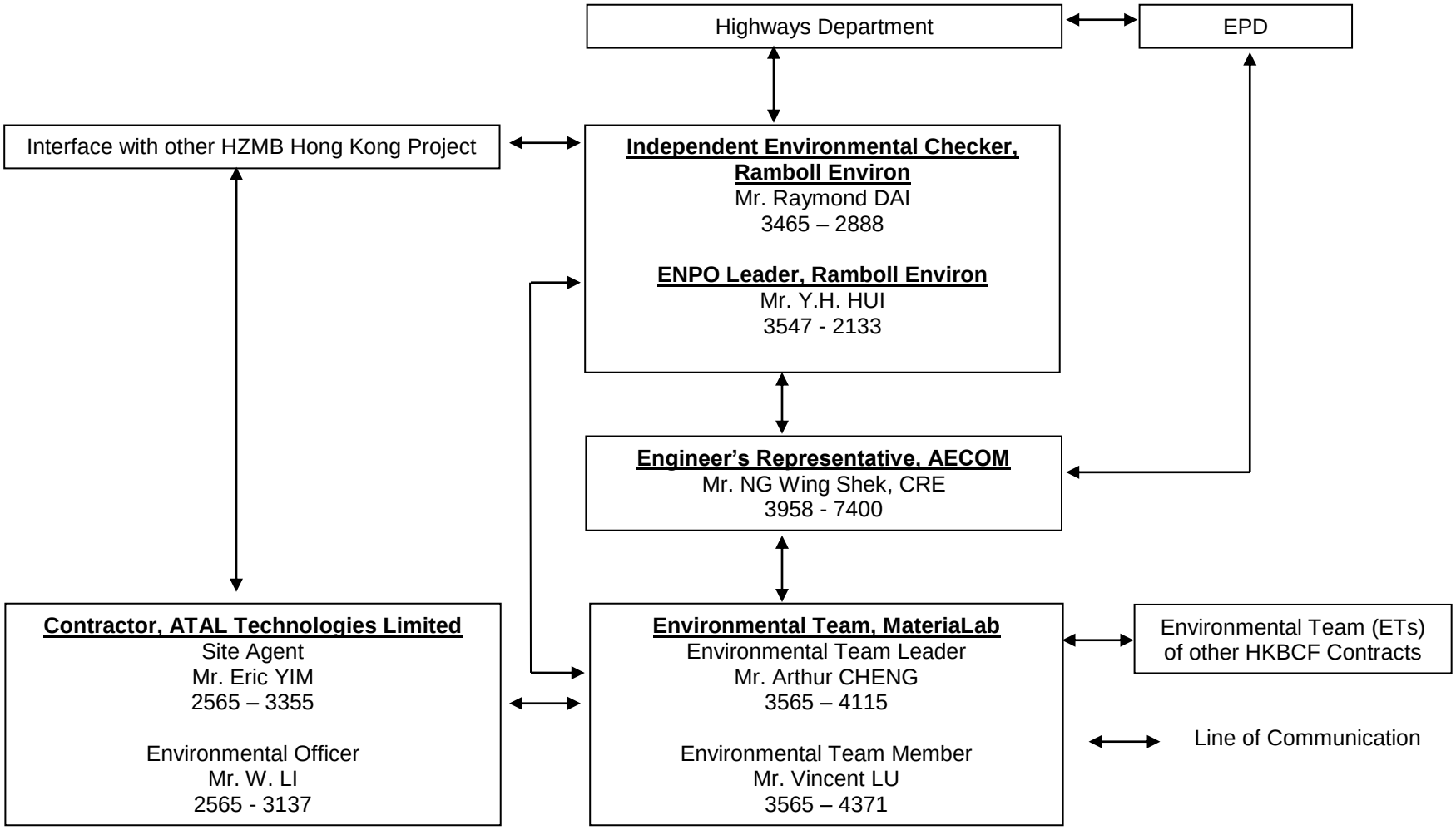
Contract No. HY/2013/03 Hong Kong-Zhuhai-Macao Bridge, Hong Kong Boundary Crossing Facilities – Vehicle Clearance Plazas and Ancillary Buildings and Facilities

Projects Organization for Environmental Works



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

Projects Organization for Environmental Works



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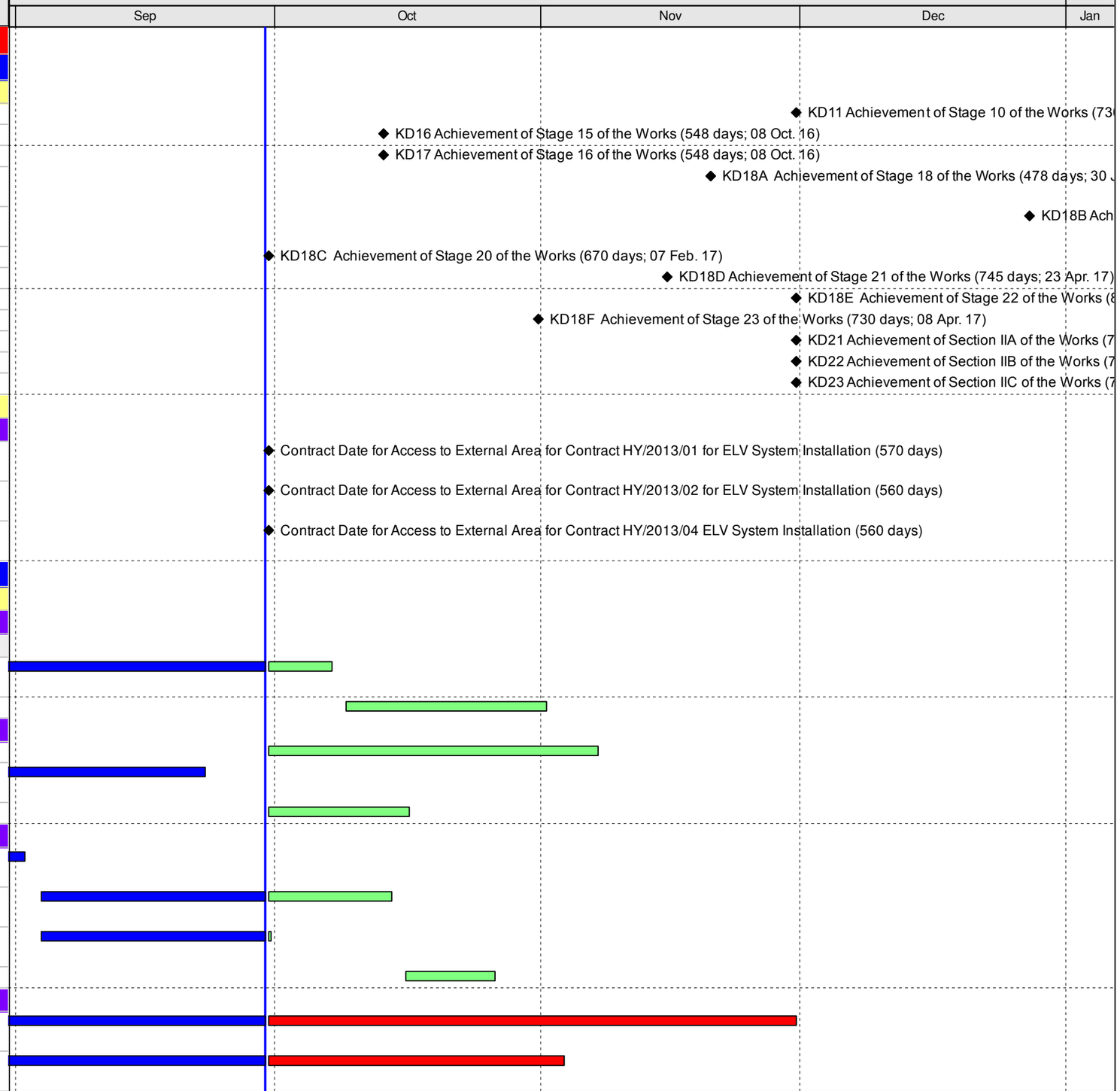
Appendix C

Construction Programme

HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities | **03-Oct-17**

Activity ID	Activity Name
	HKBCF - VCP & Ancillary Buildings and Facilities, DWP04 (+ DRMS 2)
	CONTRACT DATES
	Key Dates
A1110	KD11 Achievement of Stage 10 of the Works (730 days; 08 Apr. 17)
A1160	KD16 Achievement of Stage 15 of the Works (548 days; 08 Oct. 16)
A1170	KD17 Achievement of Stage 16 of the Works (548 days; 08 Oct. 16)
A1180A	KD18A Achievement of Stage 18 of the Works (478 days; 30 Jul. 16 EOT 1)
A1180B	KD18B Achievement of Stage 19 of the Works (558 days; 18 Oct. 16 EOT 1)
A1180C	KD18C Achievement of Stage 20 of the Works (670 days; 07 Feb. 17)
A1180D	KD18D Achievement of Stage 21 of the Works (745 days; 23 Apr. 17)
A1180E	KD18E Achievement of Stage 22 of the Works (835 days; 22 Jul. 17)
A1180F	KD18F Achievement of Stage 23 of the Works (730 days; 08 Apr. 17)
A1210	KD21 Achievement of Section IIA of the Works (770 days; 18 May 17)
A1220	KD22 Achievement of Section IIB of the Works (770 days; 18 May 17)
A1230	KD23 Achievement of Section IIC of the Works (770 days; 18 May 17)
	Site Access & Possession
	Access to Locations of the Site
A0330	Contract Date for Access to External Area for Contract HY/2013/01 for ELV System Installation (570 days)
A0340	Contract Date for Access to External Area for Contract HY/2013/02 for ELV System Installation (560 days)
A0350	Contract Date for Access to External Area for Contract HY/2013/04 ELV System Installation (560 days)
	PORTION A1
	Portion A1 Structures
	Bridge A9
	Structure Deck
SA9470	Parapet (38 pour) & E&M Works
SA9480	Bituminous Paving (492 ton) (KD25)
	Retaining Wall W8-1
SW8130	Parapet W8-1 (16 pour) & E&M Works
SW8140	RW8-1 Drainage system & Cable Laying
SW8150	Bltuminous Paving W8-1 (347 ton) (KD25)
	Retaining Wall W9-1
SW9120	Backfilling W9-1
SW9130	Parapet W9-1 (16 pour) & E&M Works
SW9140	Drainage System & Cable Laying
SW9150	Bituminous Paving W9-1 (347 ton)
	047 - Fresh Water Pumping Station, Portion A1 & A2
A04780	BS installation + E&M (Degree 3)
A04790	T&C for BS & Pumps



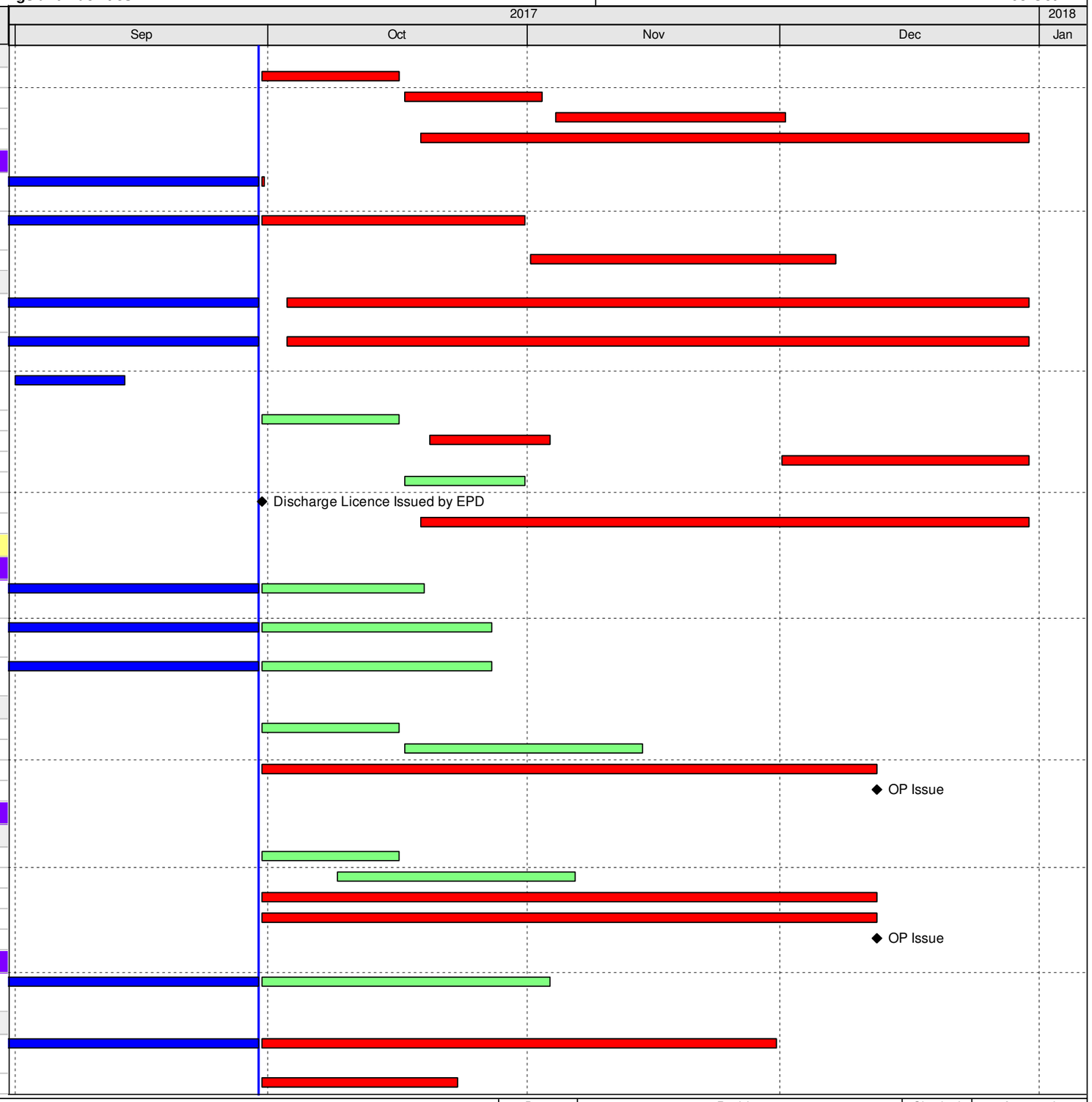
Actual Work
Remaining Work
Critical
Milestone

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

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

HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities — **03-Oct-17**

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



Actual Work
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HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities — **03-Oct-17**

Activity ID	Activity Name
B03770	WSD Inspection
B03780	FSD Inspection
B03790	Beam Plus Monthly Submission & Issue
C03710	BEEO Stage II & Assessor Certification Submission
C03720	OP Application & TPIDC Inspection
041 Fire Station Cum Ambulance Depot	
A04137	False Ceiling Installation
A04150	BS + E&M for Office Accommodation (Stage 9), Degree 3
A04160	Other BS + E&M Installation
A04170	External Finishing
A04180	C/S Plastering/Tiling
A04190	Cater Equipment Installation
Fuel Filling Station incl. BS & E/M	
B04100	All Works for Fuel Filling Station
Test & Commission	
B04110	T&C for BS & Pumps
B04130	Submission & Issue of WW046 IV, V (Inside Services & FS)
B04140	Form 314 & 501 submission
B04150	Form LE5 Submission to EMSD
B04170	WSD Inspection
B04180	FSD Inspection
C04110	Lift Inspection by EMSD
C04120	DG Inspection
C04130	Beam Plus Monthly Submission & Issue
C04140	BEEO Stage II & Assessor Certification Submission
C04170	OP Application & TPIDC Inspection
C04180	OP Issue
042 Drill Tower	
A04280	BS + E&M for Office Accommodation (Stage 9)
A04290	Other BS + E&M Installation
Test & Commission	
B04210	BEEO Stage II & Assessor Certification Submission
B04220	T&C for BS Pumps
B04230	WSD Inspection

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

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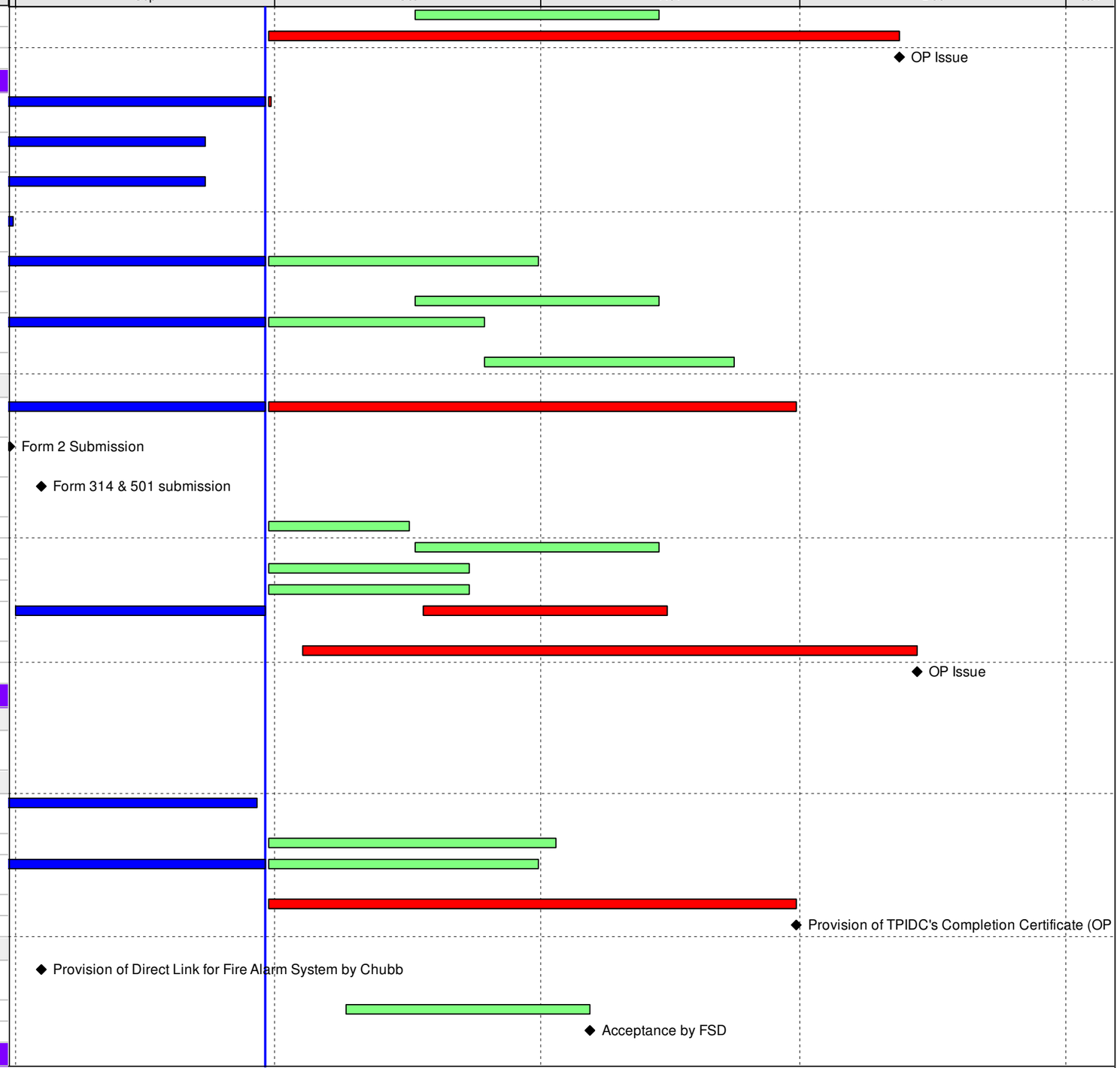
HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities — **03-Oct-17**

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



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

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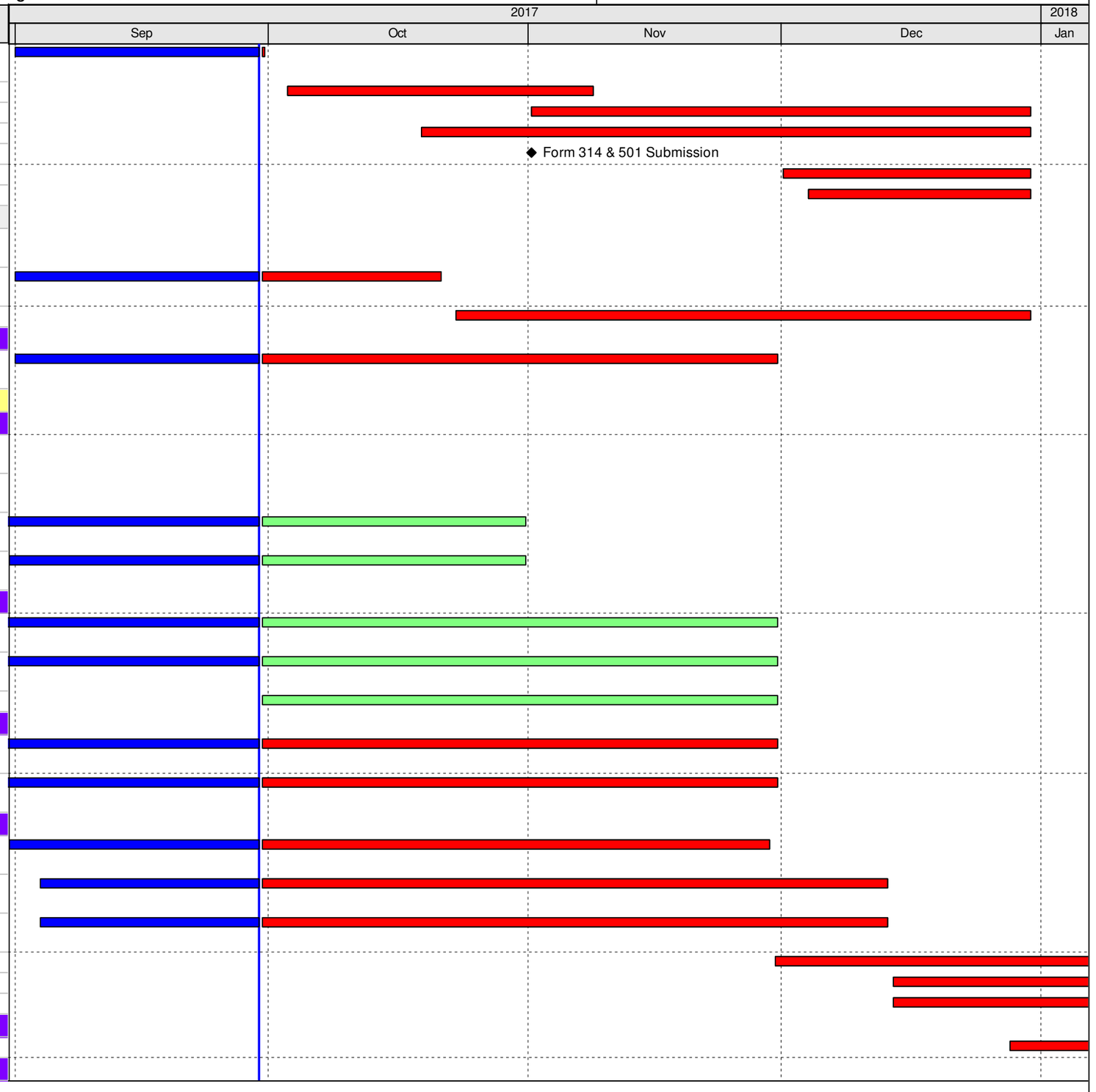
HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities — **03-Oct-17**

Activity ID	Activity Name
B10550	BS for Office Accommodations (KD9)
B10560	BS + E&M for Office Accommodation (KD10)
B10570	Other BS + E & M Installation
C10540	T&C for BS & Pumps
C10550	Form 314 & 501 Submission
C10560	FS Inspection by FSD
C10570	OP Application & TPIDC Inspection
	Facade Envelop Structure Installation
B10590	Fabrication of F/C System
C10520	Steel Frame Installation
C10530	Envelop Cladding and Roofing Panel Installation
	210 - ImmD GV Secondary Examination Bays Inbound
ER5830	Construction of the Area and Access to the Interface Contractor
	External Works for Portion A1
	Drainage Works
ED5590	Drainage Works (774m & 35MHs), Stage 2
ED5600	Sewerage (300m & 9MHs), Stage 2
ED5610	Drainage Works (773m & 34MHs), Stage 3
ED5620	Sewerage (269m & 7MHs), Stage 3
	Waterpipe Laying
EW5010	Fresh Water Main Laying (1660 m)
EW6010	Flushing Water Main Laying (967 m)
EW6180	Chilled Water Pipe Laying in Portion A1 (external)
	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting
EU5260	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
EU5270	Duct & Cable Laying for TCSS & Lighting
	Roadworks
ER1520	Subbase (8500 ton), Stage 1
ER3540	Bitumen Pavement (10000 ton), Stage 1
ER3550	Rigid Pavement (900 m3), Footpath & EVA, Stage 1
ER5530	Subbase (8829 ton), Stage 2 (Remaining)
ER5540	Bitumen Pavement (10056 ton), Stage 2 (Remaining)
ER5550	Rigid Pavement (957 m3), Footpath & EVA, Stage 2 (Remaining)
	Railing
ER0820	Railing
	Road Furniture



Actual Work
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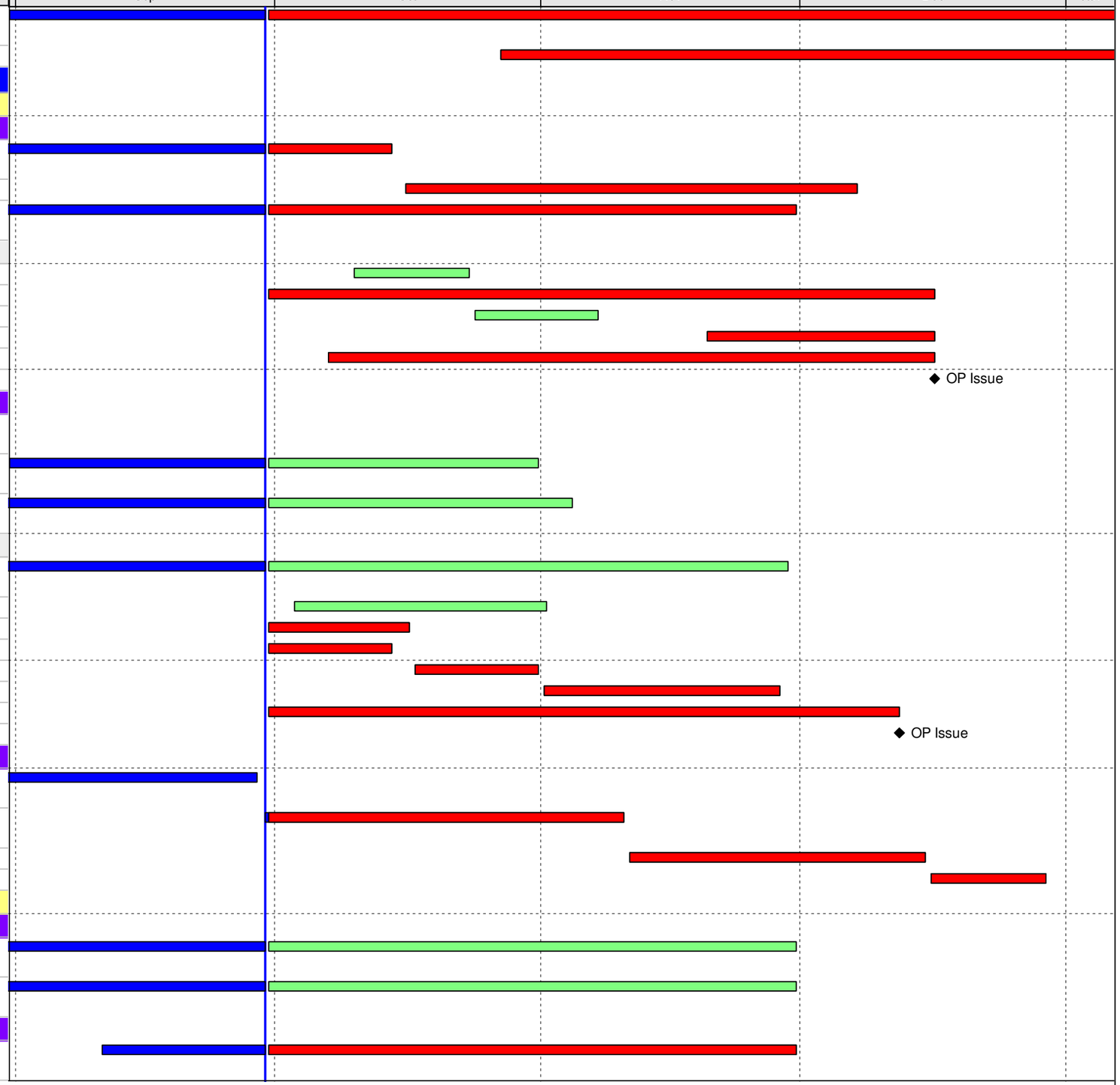
THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

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

HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities | **03-Oct-17**

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



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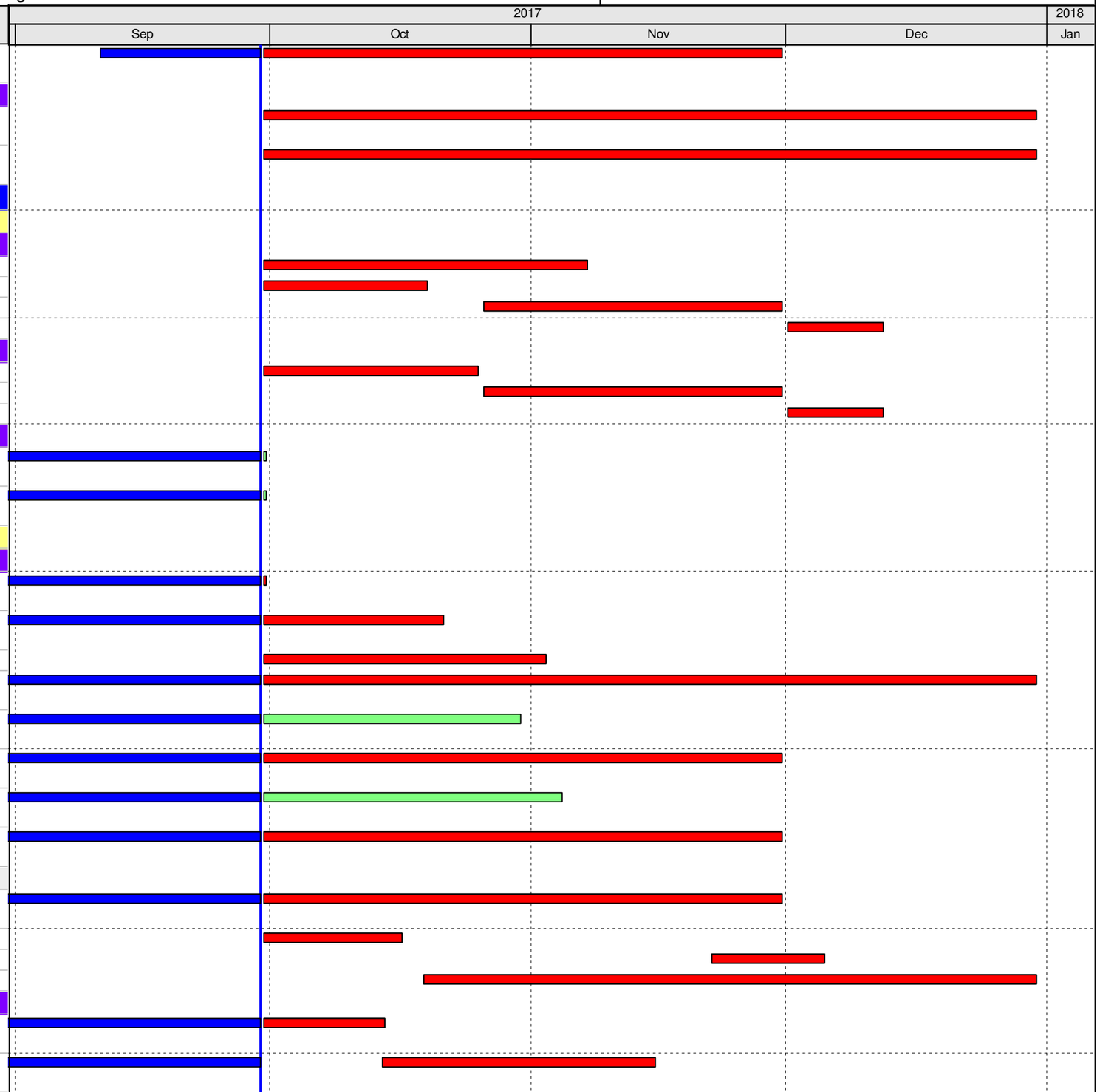
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

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

Activity ID	Activity Name
EW2300	Flushing Water Main Laying (91m)
	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting
EU5280	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
EU5290	Duct & Cable Laying for TCSS & Lighting
	PORTION B
	Portion B Structures
	Retaining Wall W7-2
S70910	C3-S6 Slopeworks
S70970	Retaining Wall W7-2 Parapet (2 pour) & E&M Works
S70980	Retaining Wall W7-2 Drainage System & Cable Laying
S70990	Retaining Wall W7-2 Bituminous Paving (79 ton) (KD25)
	Retaining Wall W6-1
S62070	Retaining Wall W6-1 Parapet (8 pour) & E&M Works
S62080	Retaining Wall W6-1 Drainage System & Cable Laying
S62210	Retaining Wall W6-1 Bituminous Paving (347 ton) (KD25)
	Bay 25 - 29 of CUE/Staff Subway
C02960	Internal Finishes & Cable Containment
C02970	BS + E&M Installation for AVCSS
	Portion B Buildings
	027/028 Inbound Kiosks & 029 Outbound Kiosks
A02720	Superstructure
A02730	Construction of Subway Entrance
A02740	Construction of Subway Toilets
A02750	Finishing
A02760	BS for Office Accommodation
A02770	BS + E&M for office accommodation (Stage 9)
A02790	BS + E&M for AVCSS Cabling (KD18B)
B02720	Other BS + E&M Installation
	Test & Commission
B02810	T&C for BS & Pumps
B02830	Submission & Issue of WW046 IV, V (Inside Services & FS)
B02840	WSD Inspection
B02860	OP Application & TPIDC Inspection
	027/028 Inbound Kiosks & 029 Outbound Kiosks, Section IX, Subject to Excision
B02750	Superstructure
B02770	BS + E&M for AVCSS Works (KD18D)



Actual Work
Remaining Work
Critical
Milestone

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

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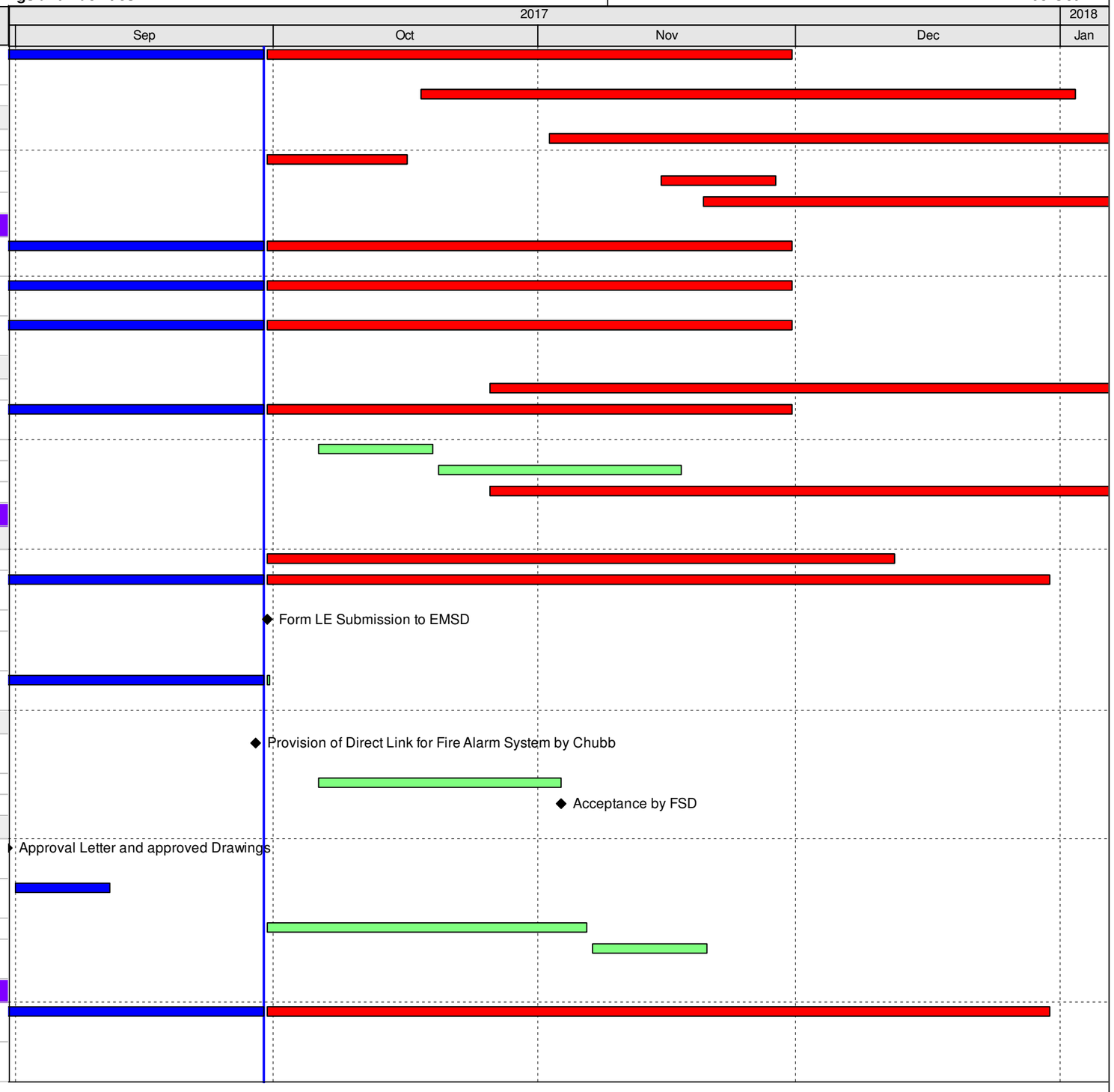
30-Sep-17	3MRP updated as of 30 Sept 2017	ZJ	

HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities — **03-Oct-17**

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



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Activity ID	Activity Name
A03880	BS + E&M for Office Accommodation (Stage 9)
A03890	Other BS + E&M Installation
	Test & Commission
B03810	T&C for BS & Pumps
B03840	Submission & Issue of WW046 IV, V (Inside Services & FS)
B03850	WSD Inspection
B03880	Form 314 & 501 submission
C03820	Form 2 Submission
C03830	Lift Inspection by EMSD
C03850	FSD Inspection
C03860	BEEO Stage II & Assessor Certification Submission
C03870	OP Application & TPIDC Inspection
	039 Police Main Building
A03940	Finishing + Curtain Wall Installation
A03950	BS for Office Accommodation (Stage 8), & for TCSS works (KD14)
A03960	BS + E&M for Office Accommodation (Stage 9)
A03970	Other BS + E&M Installation
	Fuel Filling Station incl. BS & E/M
B03910	All Works for Fuel Filling Station
	Test & Commission
B03930	Submission & Issue of WW046 IV, V (Inside Services & FS)
B03940	BEEO Stage II & Assessor Certification Submission
B03950	Beam Plus Monthly Submission & Issue
B03960	Form 314 & 501 submission
C03920	DG Inspection
C03960	Lift Inspection by EMSD
C03970	T&C for BS & Pumps
C03980	WSD Inspection
C03990	FSD Inspection
D03930	OP Application & TPIDC Inspection
	040 Incident Control Tower
A04050	Finishing (KD9)
A04060	BS for Office Accommodation (Stage 8), & for TCSS works (KD14)
A04070	BS + E&M for Office Accommodation (Stage 9)

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

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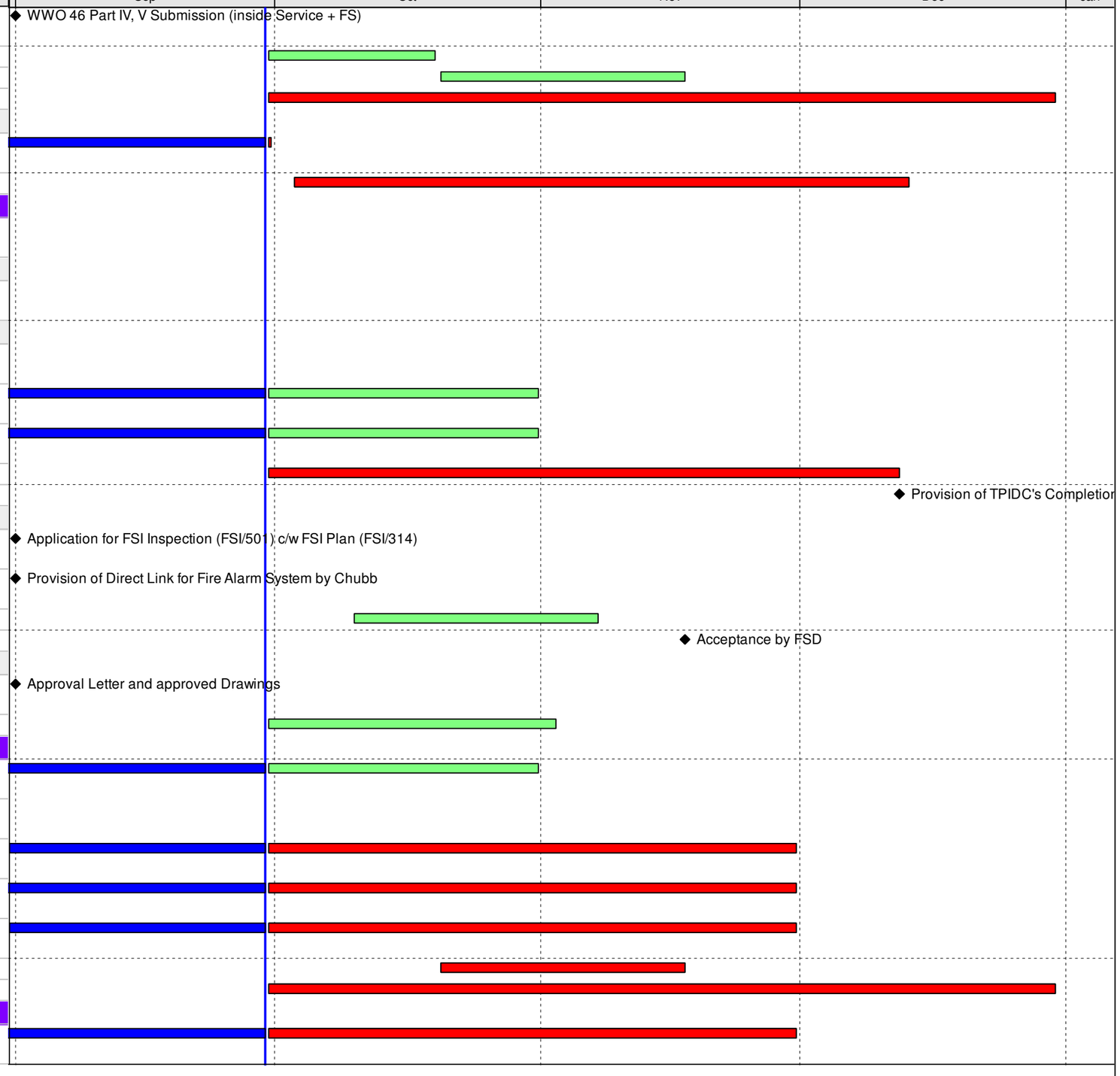
Activity ID	Activity Name
C10330	WWO 46 Part IV, V Submission (inside Service + FS)
C10340	WSD inspection
C10350	FS inspection by FSD
C10360	TPIDC Inspection
	HPL Composite Panel Cladding System
B10340	Steel Frame Installation
B10350	HPL Cladding Panel Installation
	057 Transformers (Zone 2)
A05755	Energisation by CLP
	Fuel Filling Station incl. BS & E/M
A05790	All Works for Fuel Filling Station
	T&C and Statutory Inspection for Zone 2a & 2b
C05700	T&C for BS & Pumps
F05700	Essential T&C (FSI)
F05710	Non-Essential T&C (Non-FSI)
F05720	OP Application & TPIDC Inspection
F05730	Provision of TPIDC's Completion Certificate
	Completion of Fire Services Installation and Equipment (FCD)
F05750	Application for FSI Inspection (FSI/501) c/w FSI Plan (FSI/314)
F05760	Provision of Direct Link for Fire Alarm System by Chubb
F05770	FSI Inspection (2 Trials)
F05780	Acceptance by FSD
	DG License & EPD Generator Approval
G05710	Approval Letter and approved Drawings
G05730	DG Inspection
	107 - C&ED Mobile X-ray Operation Office (Cargo), Portion B
C10740	Finishing
C10750	BS for Office Accommodation (Stage 8)
C10760	BS + E&M for Office Accommodation (Stage 9)
C10770	Other BS + E&M Installation
C10780	T&C for BS & Pumps
C10784	FS inspection by FSD
C10790	TPIDC Inspection
	113 - Field Kiosk for Access Control, Portion B
B11340	Finishing



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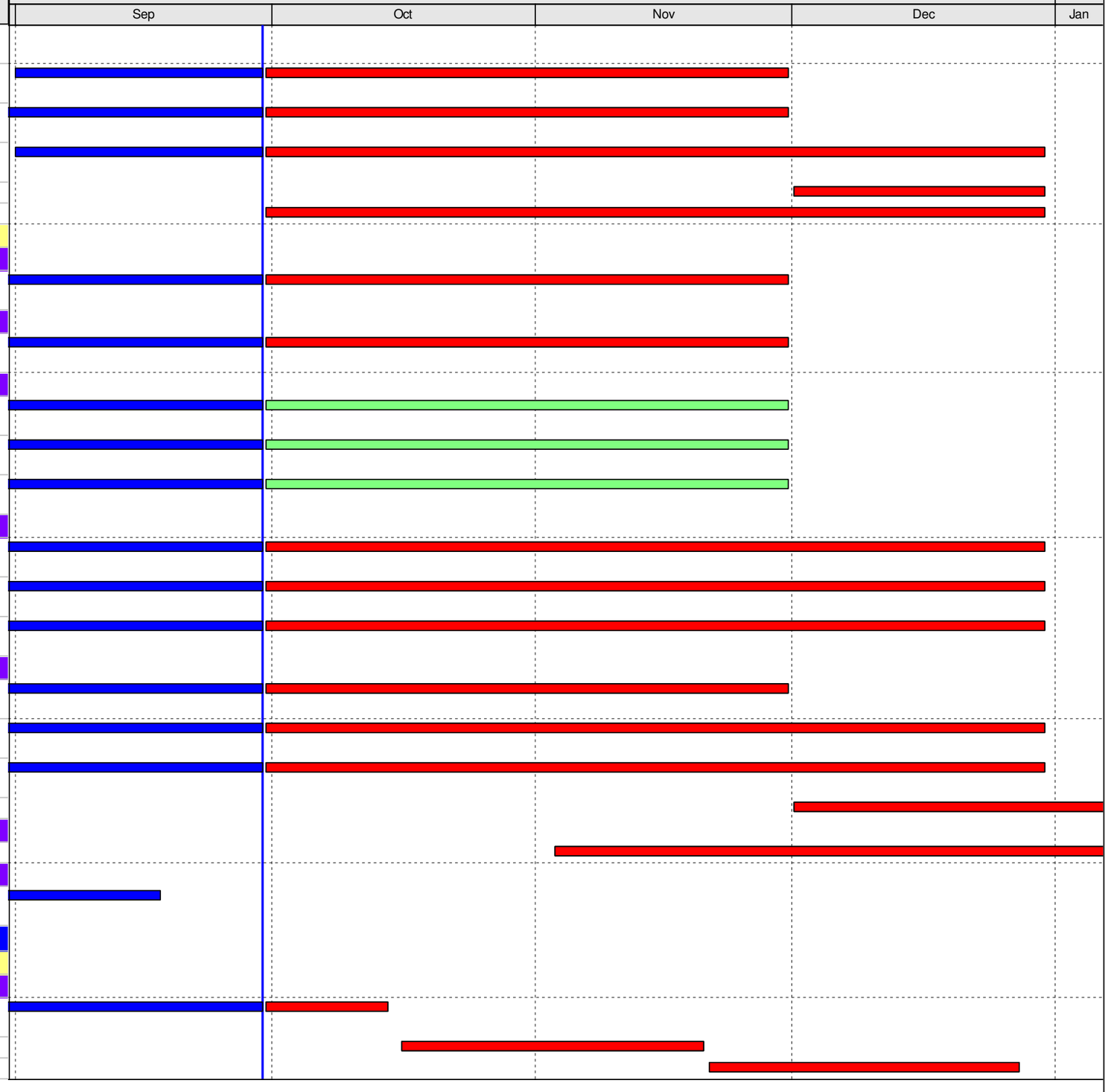
Activity ID	Activity Name
B11350	BS for Office Accommodation (Stage 8)
B11360	BS + E&M for Office Accommodation (Stage 9)
B11370	Other BS + E&M Installation
B11380	T&C for BS & Pumps
B11384	FS inspection by FSD
B11390	TPIDC Inspection
External Works for Portion B	
Works in Location 1.7A	
BB1480	ELV Works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



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

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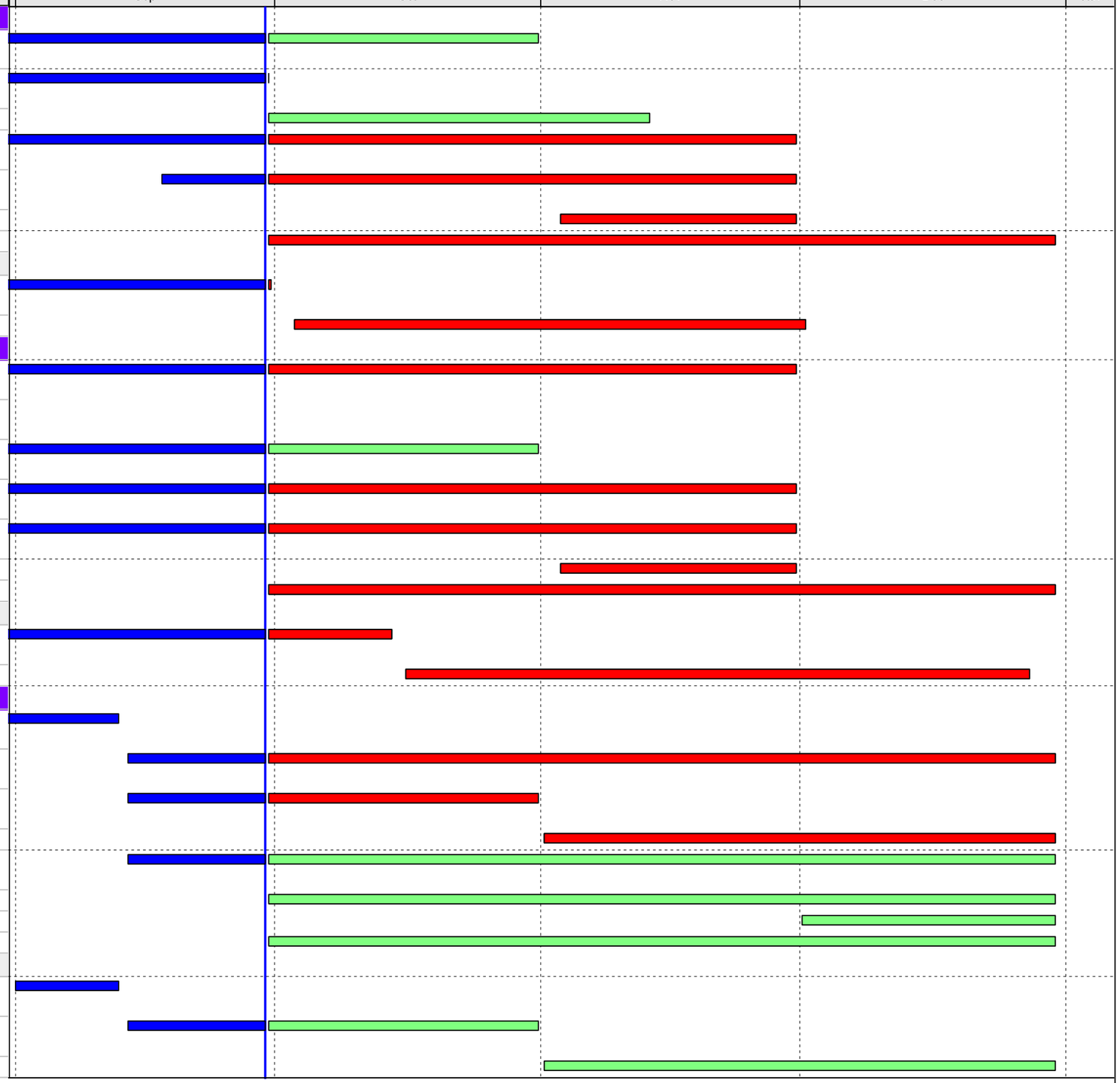
Activity ID	Activity Name
	108 C&ED Mobile X-ray Machine Operation Office, Portion C
A10850	Finishing
A10860	BS for Office Accommodation (Stage 8)
A10870	BS + E&M for Office Accommodation (Stage 9)
A10890	Other BS + E&M Installation
F10830	T&C for BS & Pumps
F10840	FS inspection by FSD
F10850	TPIDC Inspection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



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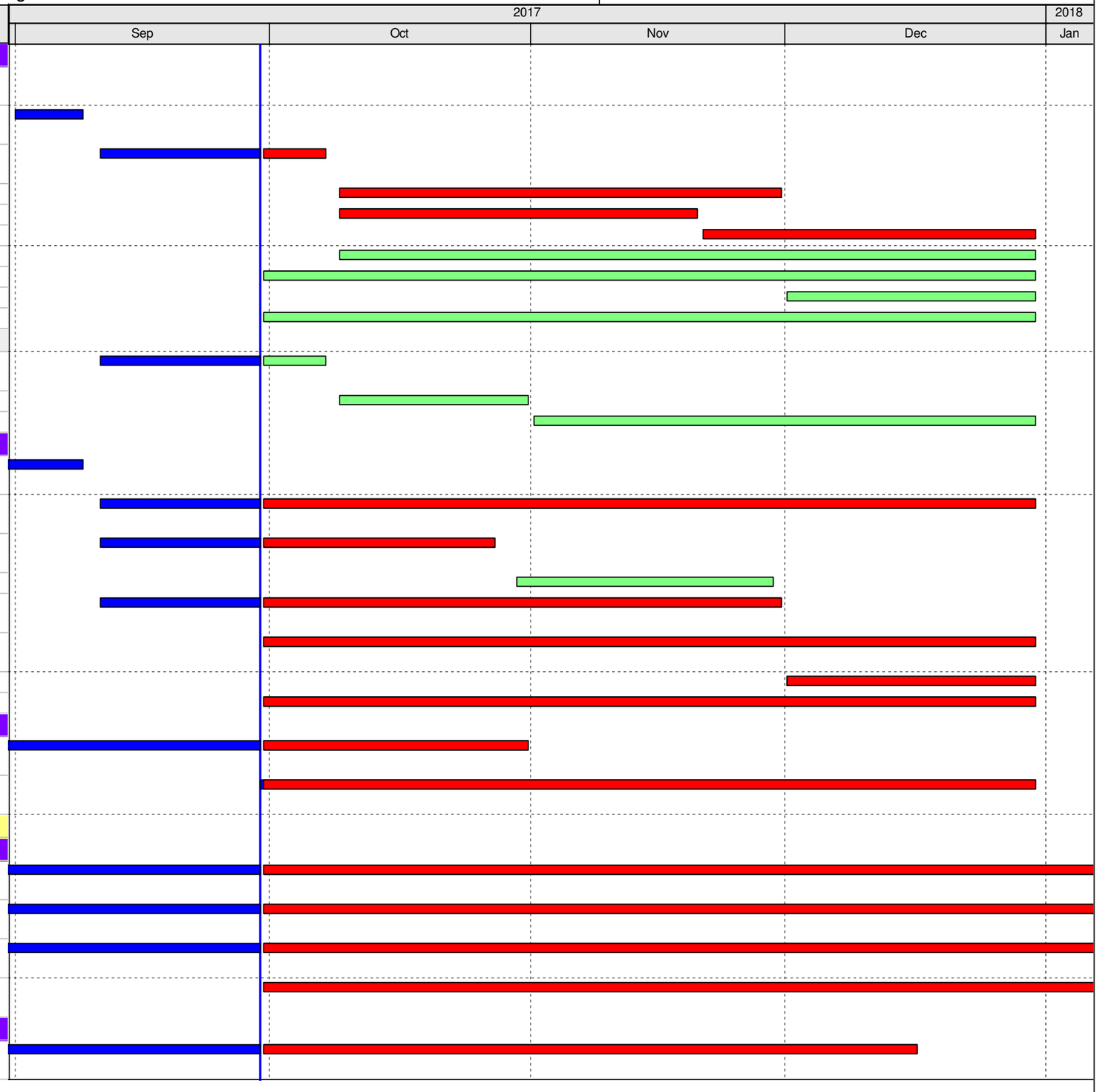
Activity ID	Activity Name
	111 Field Kiosk for Carpark Operator
A11120	Excavation & Blinding
A11130	Raft Foundation
A11140	Superstructure (Roof beams & Slabs)
A11150	Finishing
A11160	BS for Office Accommodation (Stage 8)
A11170	BS + E&M for Office Accommodation (Stage 9)
A11180	Other BS + E&M Installation
B11160	T&C for BS & Pumps
B11170	FS inspection by FSD
B11180	TPIDC Inspection
	HPL Composite Panel Cladding System
B11130	Casted-in Items Installation
B11140	Steel Frame Installation
B11150	HPL Cladding Panel Installation
	113 - Field Kiosk for Access Control, Portion C
C11330	Superstructure (Roof Beams & Slabs)
C11340	Finishing
D11310	BS for Office Accommodation (Stage 8)
D11320	BS + E&M for Office Accommodation (Stage 9)
D11330	Other BS + E&M Installation
F11310	T&C for BS & Pumps
F11320	FS inspection by FSD
F11330	TPIDC Inspection
	204 - Inbound Coach Exam Area & Mobile X-ray Operation
ER5760	Radiation Screen Wall Construction
ER5880	Construction of the Area and Access to the Interface Contractor
	External Works for Portion C
	Works in Location 1.2, 1.8 & 011 - Emergency Generator Building
BB1440	Works & T&C in Location 1.2
BB1450	Works & T&C in Location 1.8
BB1460	ELV System Installations and T&C for Contract HY/2013/01
BB1470	Provisioning of Civil Engineering Works for 011-Emergency Generator Building (KD18)
	Waterpipe Laying
SW2410	Fresh Water Main Laying (272m)



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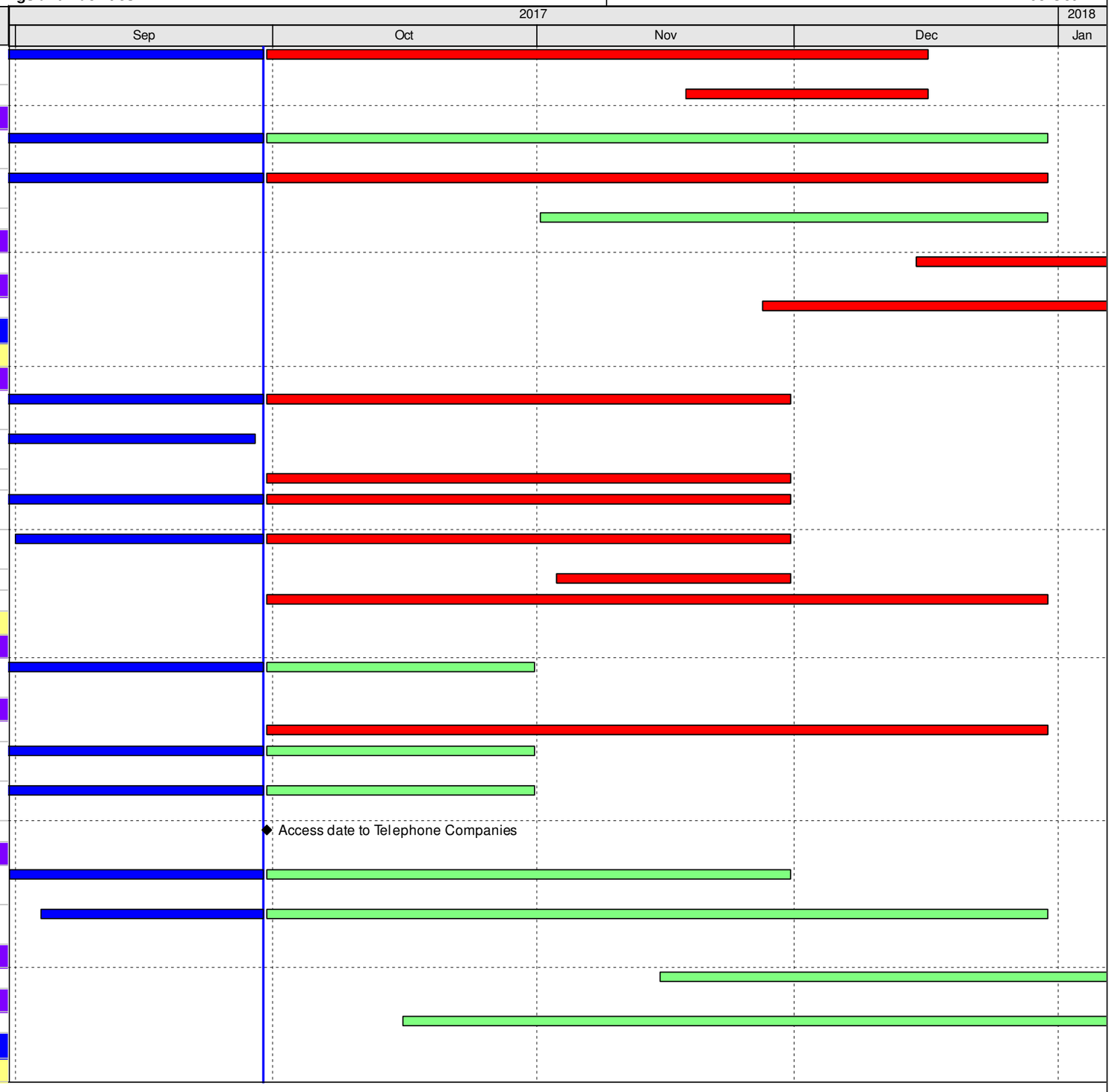
Activity ID	Activity Name
SW2420	Flushing Water Main Laying (105m)
SW9280	Chilled Water Pipe Laying in Portion C (external)
	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting
SU5320	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
SU5330	Duct & Cable Laying for TCSS & Lighting
SU5400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



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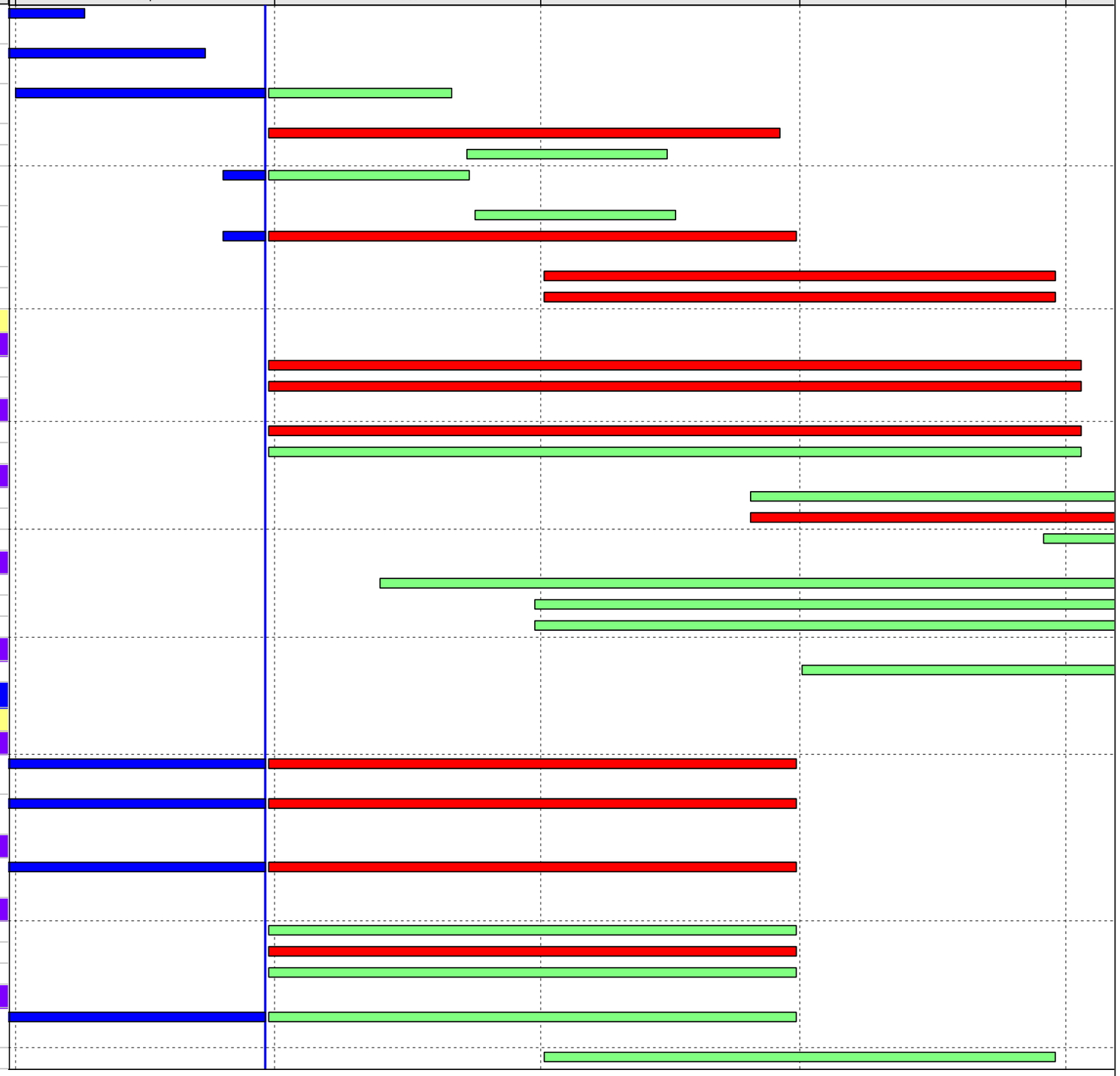
Activity ID	Activity Name
A00650	Constructing Ground Slab
A00660	Constructing Kiosk (4 Nr.)
A00670	Constructing Subway Entrance
A00680	Canopy Roof
A00690	BS + E&M for AVCSS works (KD18B)
B00610	BS for Office Accommodation (Stage 8)
B00620	BS + E&M for Office Accommodation (Stage 9)
B00640	Other BS + E&M Installation
B00650	T&C for BS & ELV
B00660	TPIDC Inspection
	External Works for Portion E
	Drainage Works
SG3780	Drainage Works (99m & 5MHs)
SG3900	Sewerage (38m & 1 MH)
	Waterpipe Laying
SW3790	Fresh Water Main Laying (45m)
SW3800	Flushing Water Main Laying (25m)
	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting
SU5360	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
SU5370	Duct & Cable Laying for TCSS & Lighting
SU5410	ELV Installation
	Roadworks
SR3880	Subbase (1659 ton)
SR3910	Bitumen Pavement (2105 ton)
SR3920	Rigid Pavement (180 m3)
	Road Furniture
SR3860	Road Furniture (KD25)
	PORTION F
	External Works for Portion F
	Drainage Works
SG3930	Drainage Works (122m & 9MHs)
SG4050	Sewerage (70m & 3MHs)
	Waterpipe Laying
SW3940	Fresh Water Main Laying (205m)
	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting
SU5380	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
SU5390	Duct & Cable Laying for TCSS & Lighting
SU5420	ELV Installation
	Roadworks
SR4030	Subbase (1534 ton)
SR4060	Bitumen Pavement (1909 ton)



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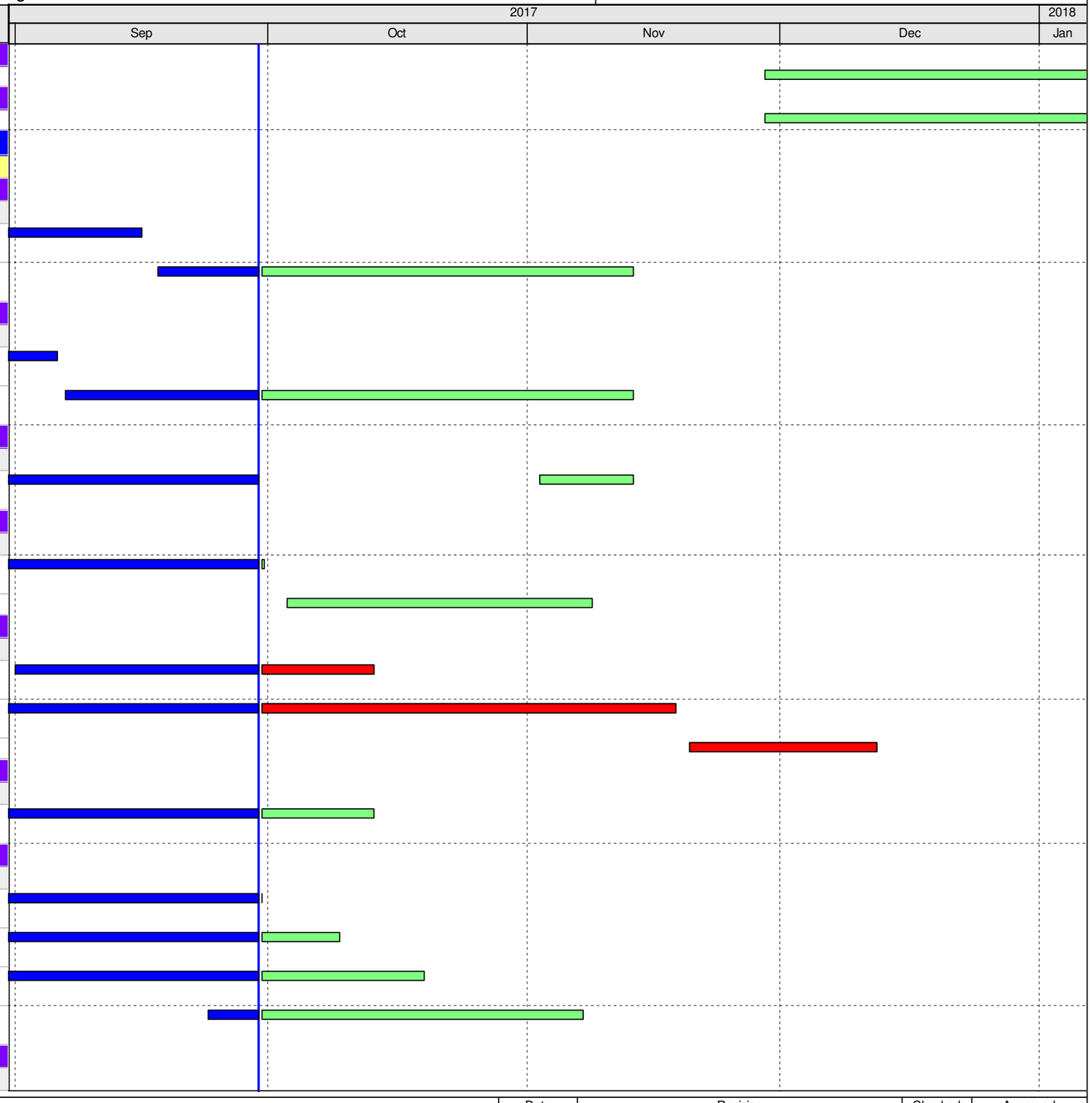
Activity ID	Activity Name
	Railing
SR4000	Railing
	Road Furniture
SR4010	Road Furniture (KD25)
	PORTION G, H1 & H2
	Portion G Structures
	Bridge A1
	Structure Deck
SA1520	Parapet (42 pour), E&M works & installation of DS38 & DS39
SA1530	Bituminous Paving (751 ton) (KD25)
	Bridge A2
	Structure Deck
SA2470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



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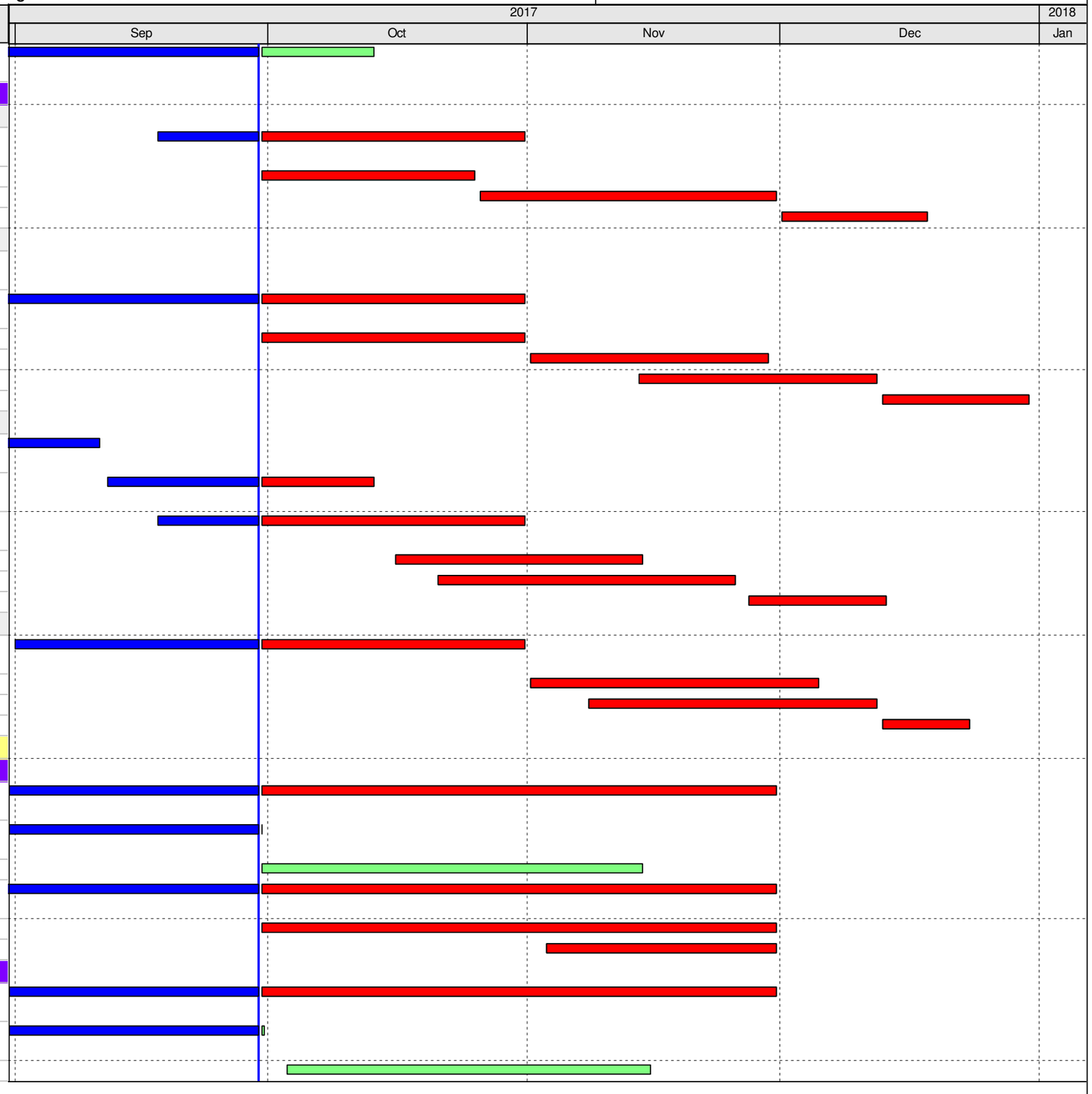
Activity ID	Activity Name
SA8480	Bituminous Paving (348 ton) (KD25)
Retaining Walls W1-1, W3-1, W5-1 & W7-1	
Retaining Wall W1-1	
SW1122	Slope C3-S3 Construction
SW1130	Retaining Wall W1-1 Parapet (8 pour) & E&M Works
SW1150	Retaining Wall W1-1 Drainage System & Cable Laying
SW1160	Retaining Wall W1-1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



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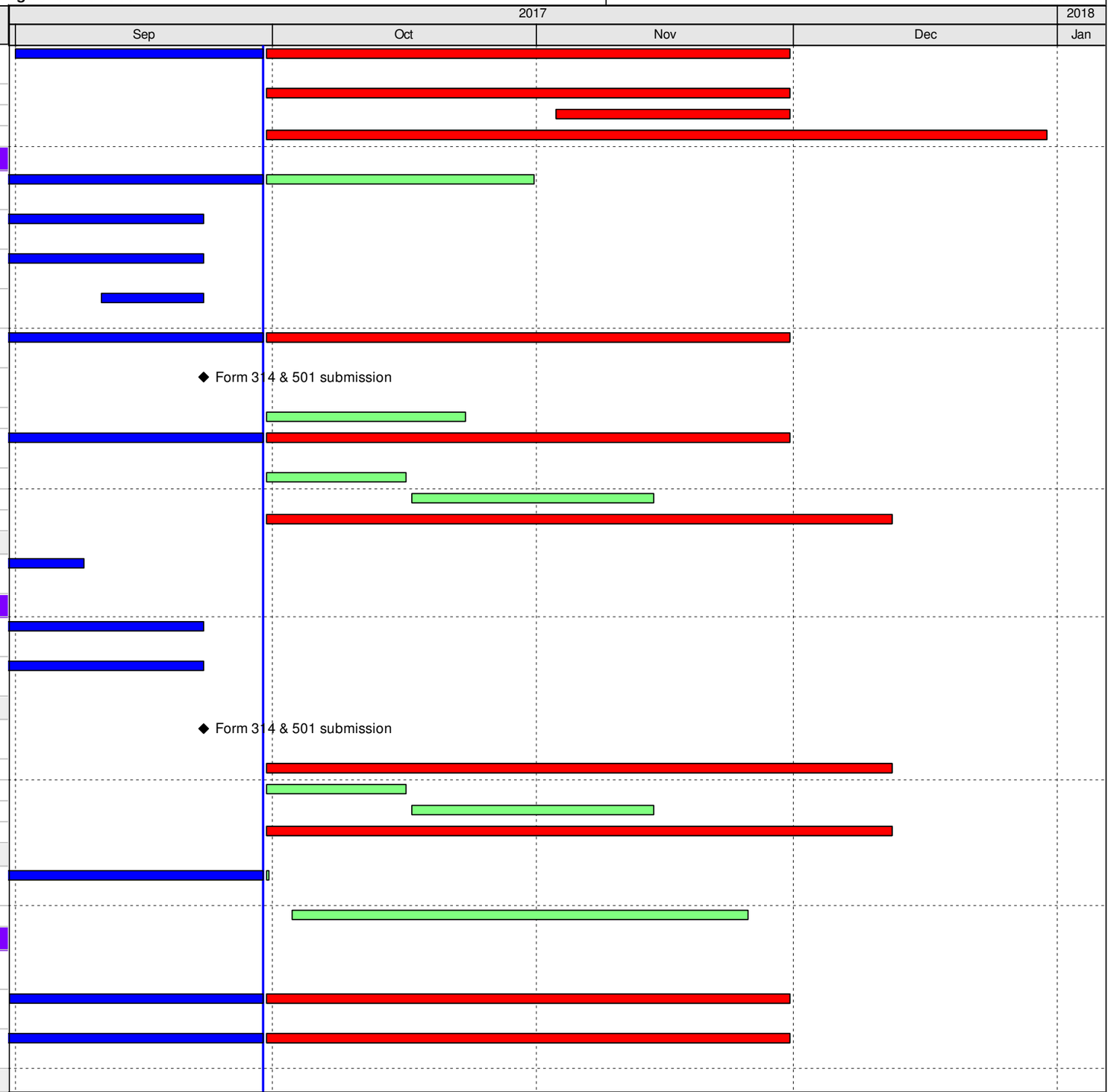
HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities | **03-Oct-17**

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



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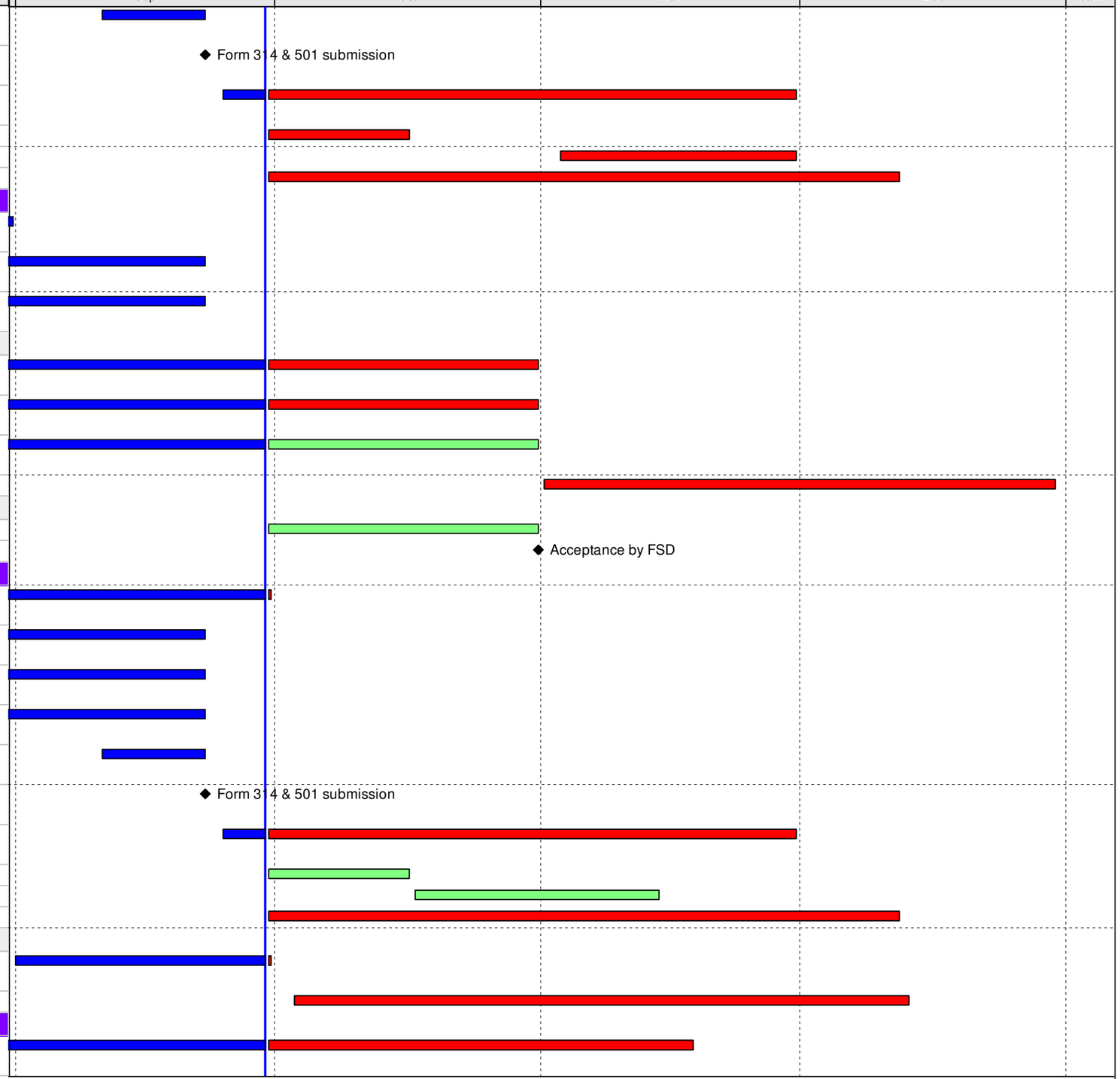
Activity ID	Activity Name
C03540	Submission & Issue of WW046 IV, V (Inside Services & FS)
C03550	Form 314 & 501 submission
C03560	T&C for BS & Pumps SWT
C03570	WSD Inspection
C03580	FSD Inspection
C03590	OP Application & TPIDC Inspection
051 Transformers (Zone 5)	
A05150	Finishing
A05180	BS + E&M for Office Accommodation (KD10)
A05190	Other BS + E & M Installation
T&C and Statutory Inspection for Zone 5	
C05120	T&C for BS & Pumps
C05130	Essential T&C (FSI)
C05140	Non-Essential T&C (Non-FSI)
C05150	OP Application & TPIDC Inspection
Completion of Fire Services Installation and Equipment (FCD)	
F05170	FSI Inspection (2 Trials)
F05180	Acceptance by FSD
100 Inbound Traffic Control Kiosk	
A10050	Finishing
B10060	BS + E&M for AVCSS Cabling (KD18B)
B10080	BS + E&M for Office Accommodation (KD10)
B10090	Other BS + E & M Installation
C10020	Submission & Issue of WW046 IV, V (Inside Services & FS)
C10030	Form 314 & 501 submission
C10040	T&C for BS & Pumps SWT
C10050	WSD Inspection
C10060	FSD Inspection
C10070	OP Application & TPIDC Inspection
HPL Composite Panel Cladding System	
B10030	Steel Frame Installation
B10040	HPL Cladding Panel Installation
112 Field Kiosk for Taxi Queuing Area	
A11260	T&C for BS & Pumps SWT



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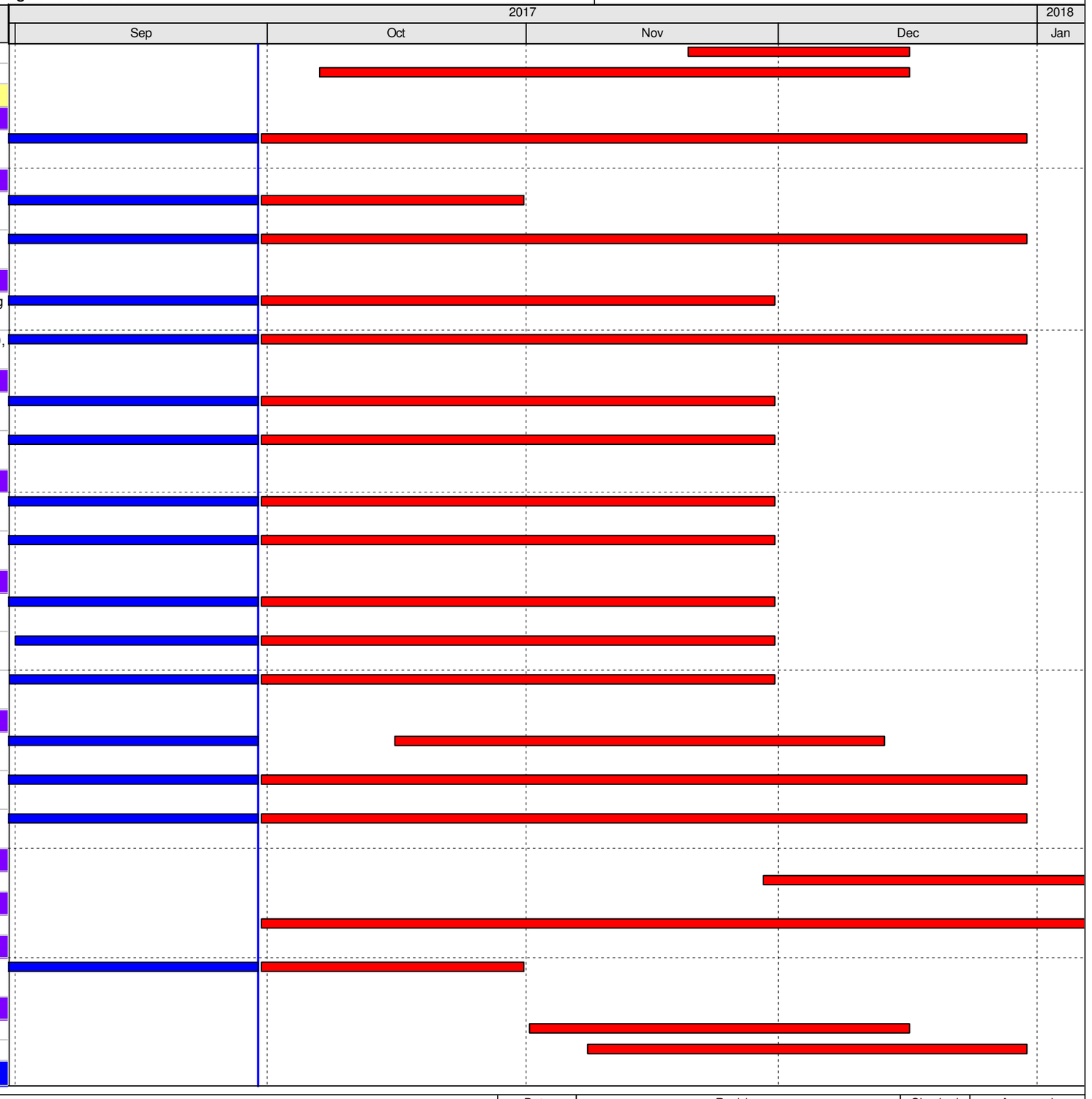
Activity ID	Activity Name
A11270	FSD Inspection
A11280	OP Application & TPIDC Inspection
External Works for Portion G, H1 & H2	
ELV Works within Portion H2 in the Hong Kong Side PTI	
EU1550	ELV Works within Portion H2 in the Hong Kong Side PTI (KD19)
Works within Portion H1 & H2 except the ELV Works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



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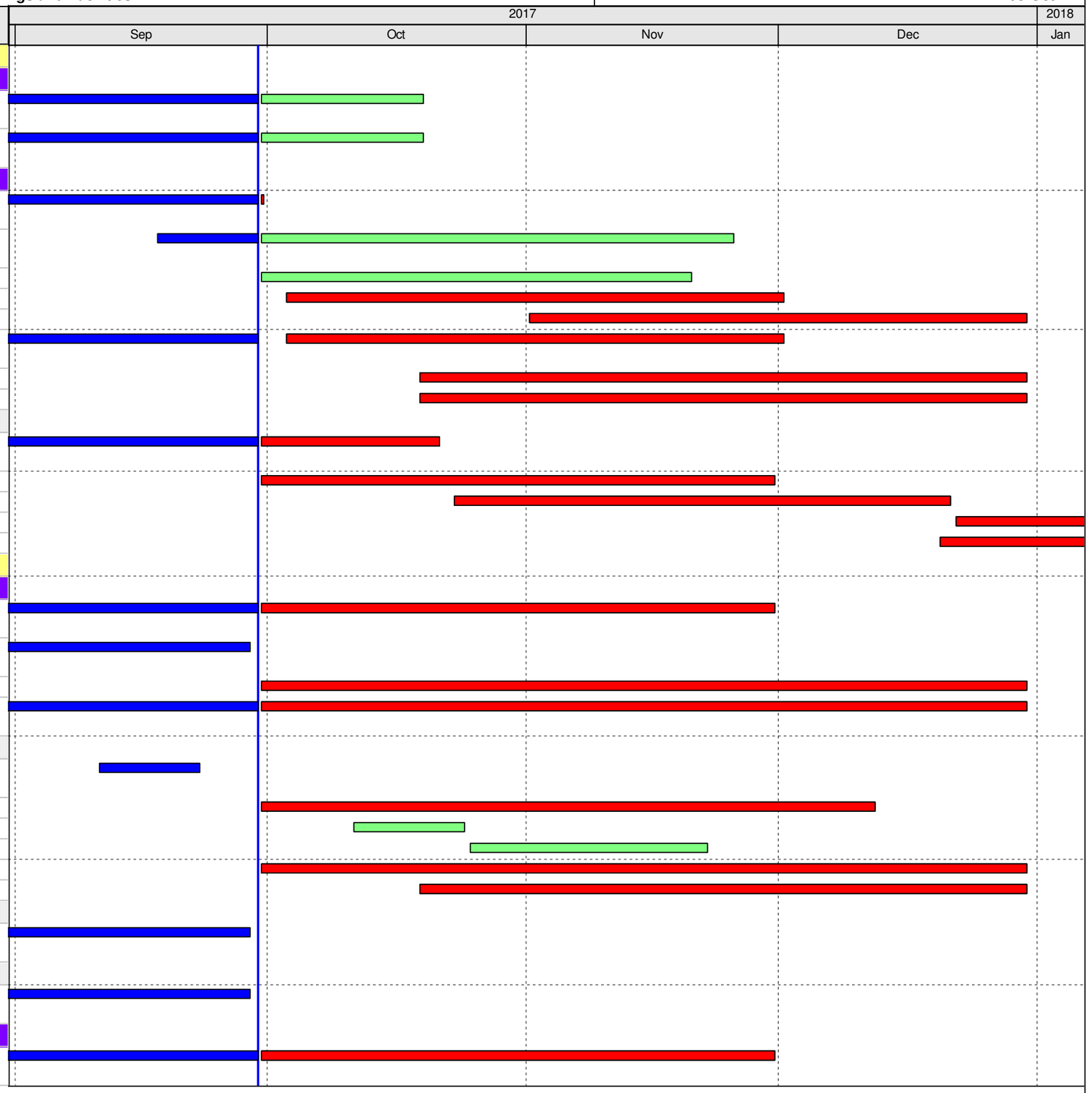
Activity ID	Activity Name
	Portion J Structure
	Bay 30 - 41 of CUE/Staff Subway (Portion J)
B03260	Internal Finishes & Cable Containment (KD2)
B03270	BS + E&M Installation for AVCSS (Stage 2) (KD2)
	030 Outbound Private Car & GV Kiosks
A03030	Superstructure (Incl. Entrance & Toilet)
A03050	Finishing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



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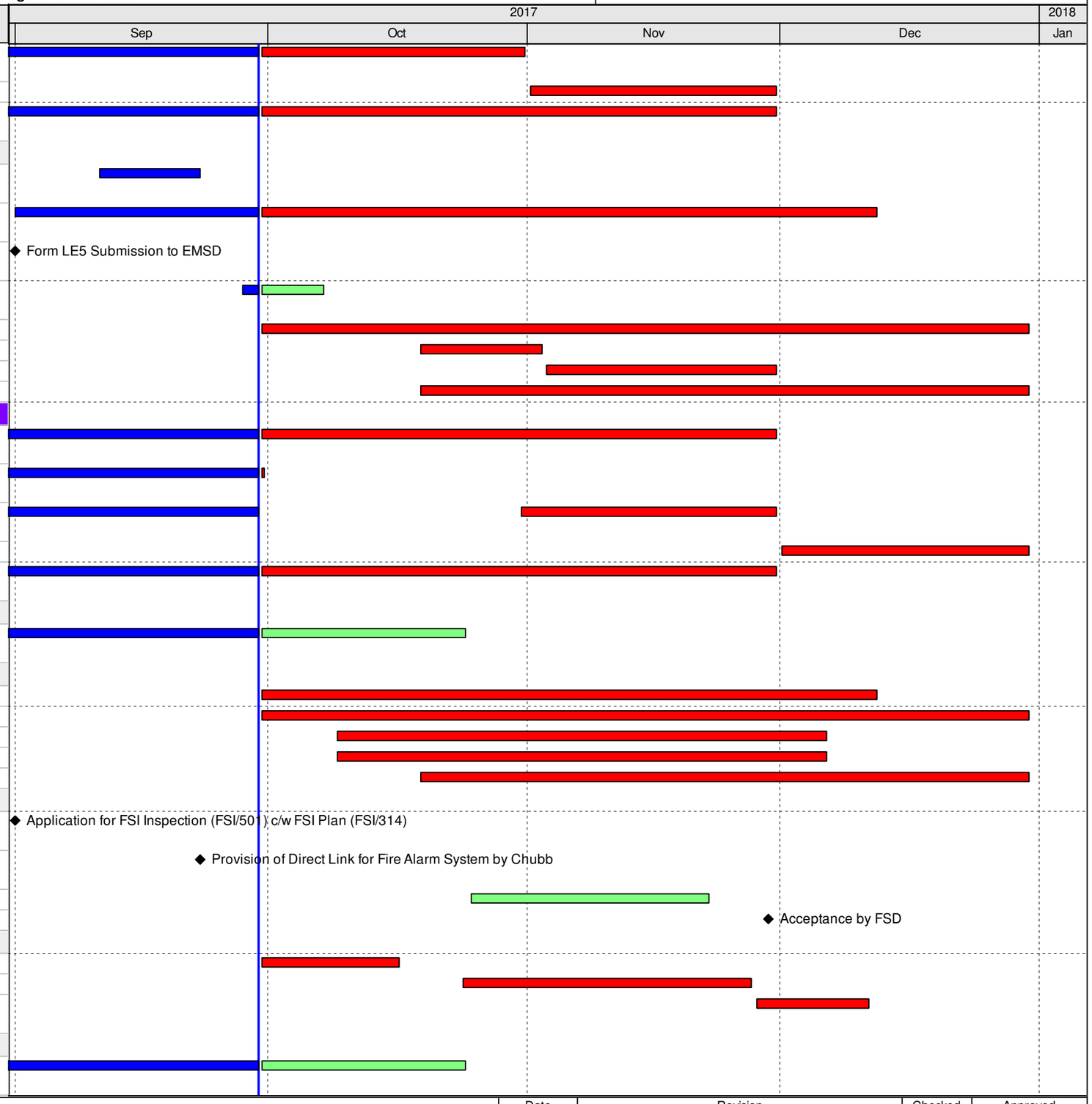
Activity ID	Activity Name
A03160	BS for Office Accommodations (KD18F)
A03170	BS + E&M for Office Accommodation (KD18G)
A03180	Other BS + E & M Installation (KD31)
	Test & Commission
C03130	Submission & Issue of WW046 IV, V (Inside Services & FS)
C03140	BEEO Stage II & Assessor Certification Submission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



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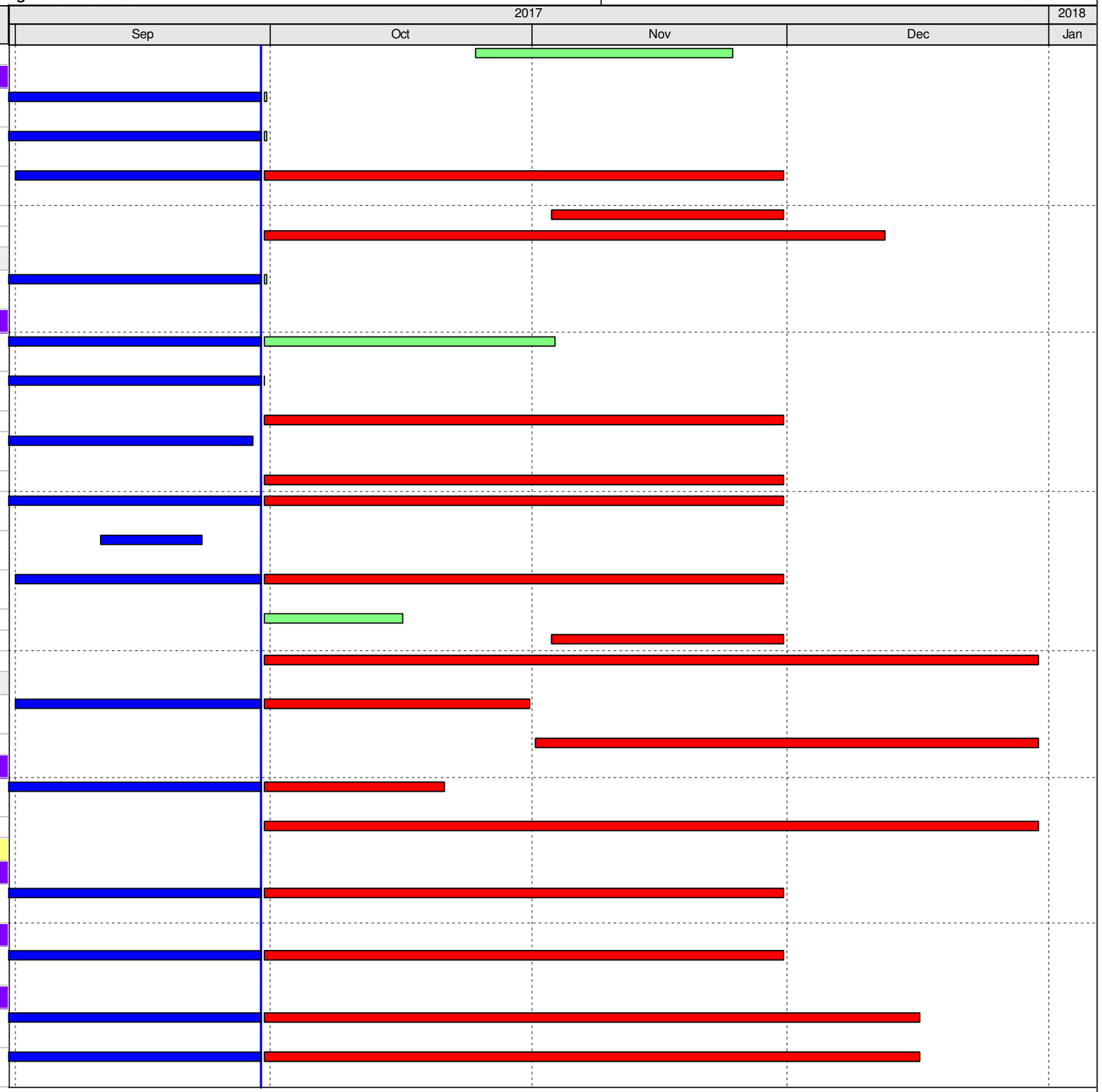
Activity ID	Activity Name
G06060	DG Inspection
061 Telecom Building	
A06170	BS + E&M for Office Accommodation (KD10)
A06180	Other BS + E & M Installation
A06190	T&C for BS
B06160	FSD Inspection
B06170	OP Application & TPIDC Inspection
Aluminium Metal Canopy	
B06140	Aluminium Cladding Installation
101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



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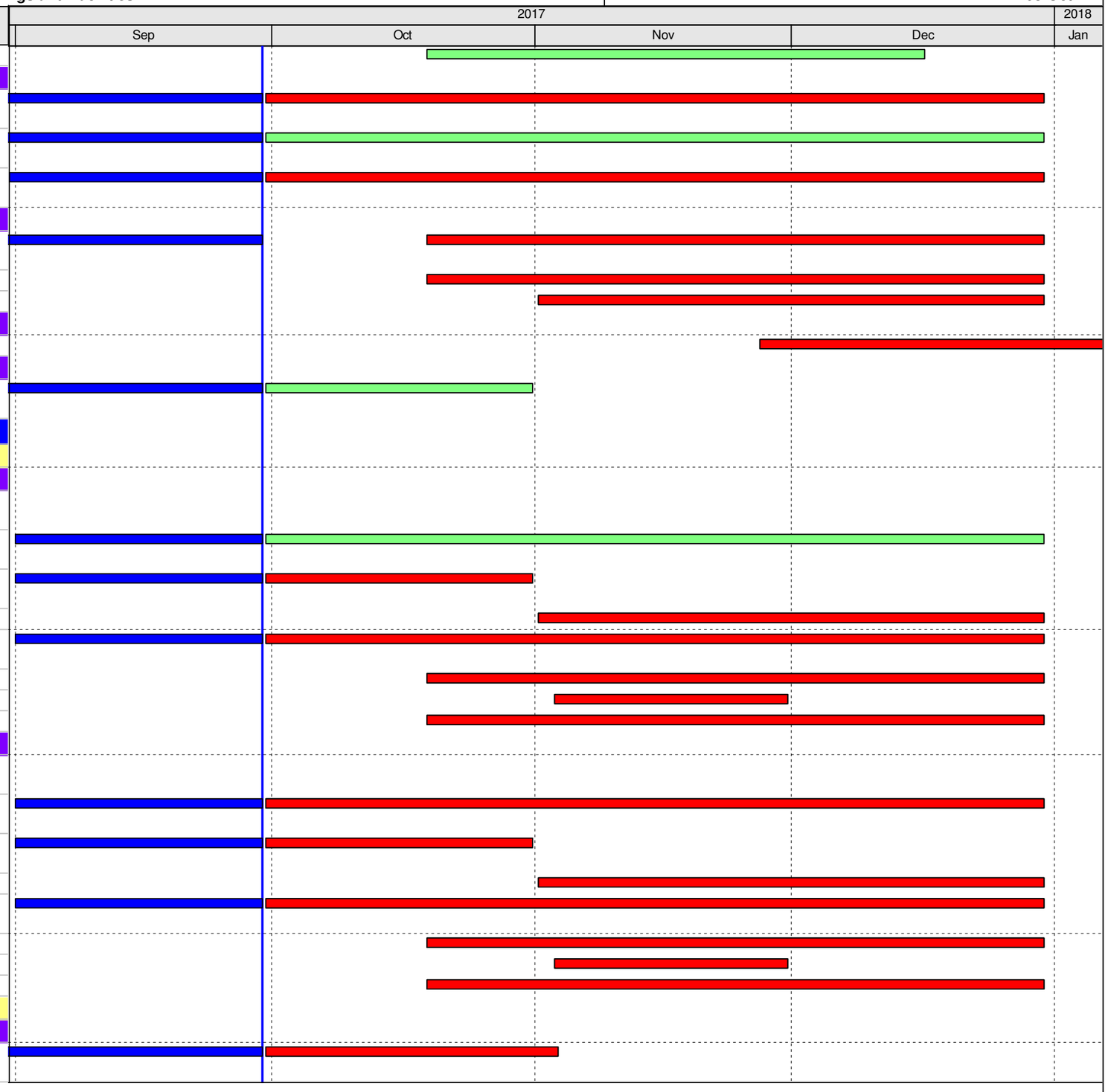
Activity ID	Activity Name
SW9290	Chilled Water Pipe Laying in Portion J (external)
Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting	
EU5420	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
EU5430	Duct & Cable Laying for TCSS & Lighting
EU5570	ELV Installation
Roadworks	
ER4320	Subbase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



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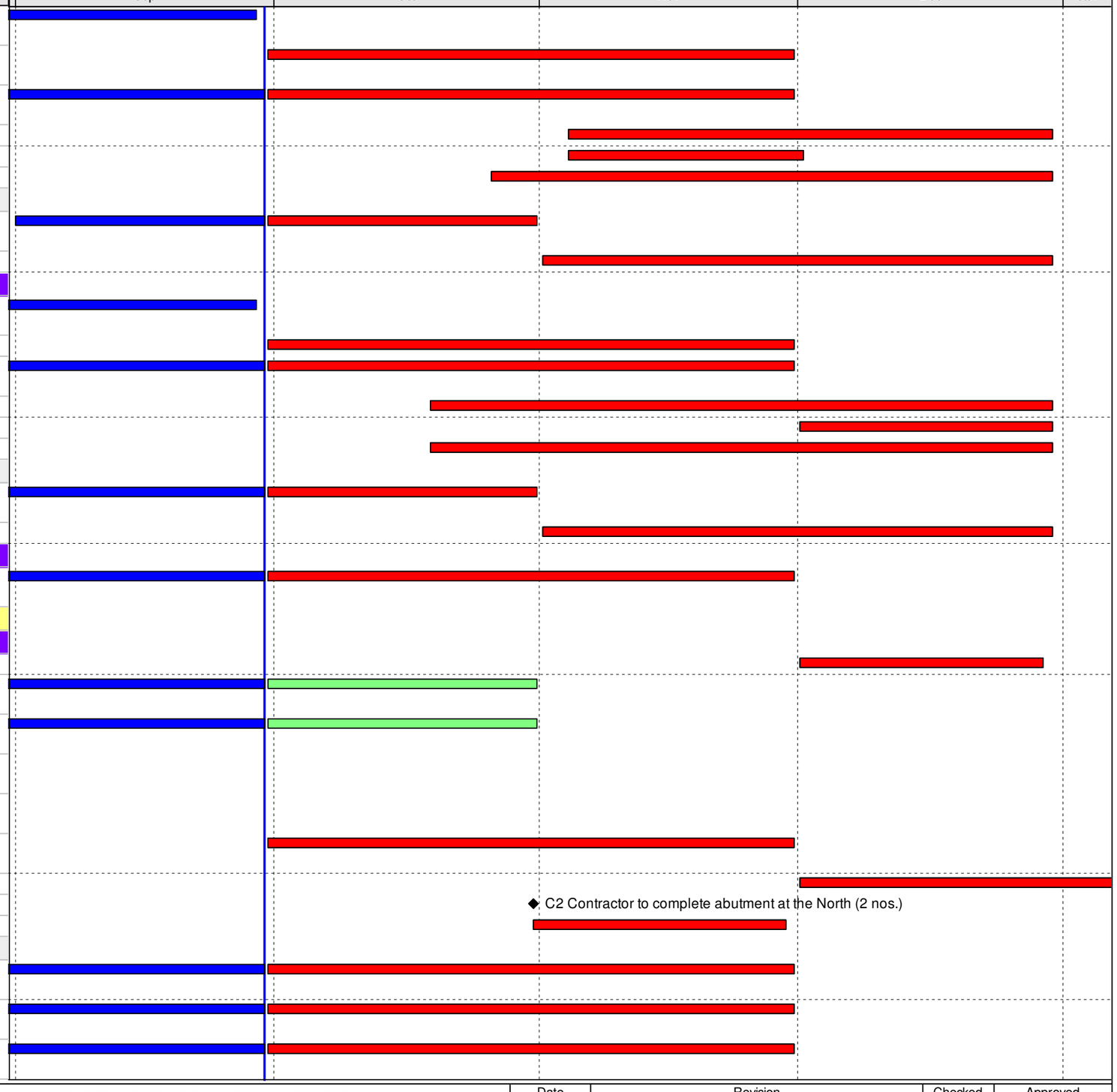
Activity ID	Activity Name
B10860	BS for Office Accommodations (KD9)
B10870	BS + E&M for Office Accommodation (KD10)
B10880	Other BS + E & M Installation
B10890	T&C for BS & Pumps
C10800	FSD Inspection
D10800	OP Application & TPIDC Inspection
	HPL Composite Panel Cladding System
C10840	Steel Frame Installation
C10850	HPL Cladding Panel Installation
	104 DOH Screening Station, at Portion M
C10450	BS for Office Accommodations (KD9)
C10460	BS + E&M for Office Accommodation (KD10)
C10470	Other BS + E & M Installation
C10480	T&C for BS & Pumps
C10490	FSD Inspection
D10490	OP Application & TPIDC Inspection
	Facade Envelop Structure Installation
D10470	Steel Frame Installation
D10480	Envelop Cladding and Roofing Panel Installation
	203 - Outbound Coach/Shuttle Bus Exam Area & Mobile X-ray Operation Area
ER5870	Construction of the Area and Access to the Interface Contractor
	External Works
	Additional Works (Filling & RE Slope), SA1
ED3236	Removal of temp. access at north slope
ED3237	Reinstatement and constructing of north slope
ED3336	Construct Rock Fill Slope near PCB (South East)
ED3338	Consolidation of fill at the Platform (South West)
ED3350	Remove surcharge at the Platform (South West)
ED3355	Construct RE slope near PCB (South West)
ED3360	Construct Rock Fill Slope near PCB (South West)
ED3410	C2 Contractor to complete abutment at the North (2 nos.)
ED3420	Fill Slope around C2 abutments
	Construction of Slopes
ED3440	Construction of fill slope (East)
ED3520	Construct RE slope (West)
ED3550	Construction of fill slope (North)



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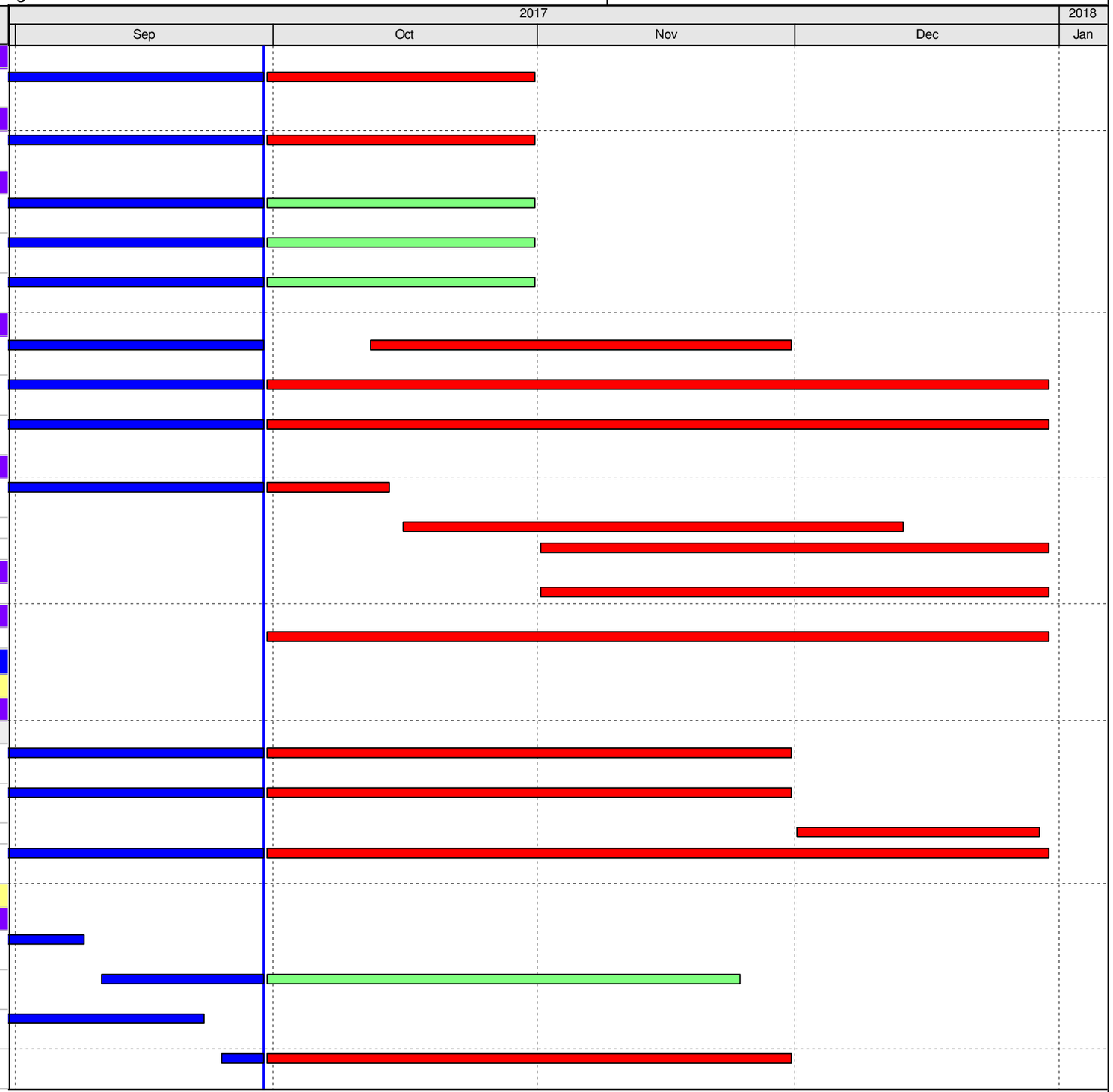
Activity ID	Activity Name
	Drainage Works
ED4370	Drainage Works (2129m & 102MHs)
	Waterpipe Laying
EW4380	Fresh Water Main Laying (1216m)
	Duct Laying for Utilities/Telecom Cabling, TCSS & Lighting
EU5440	Duct & Cable Laying for Utilities/Telecom, CLP, BS & ELV
EU5450	Duct & Cable Laying for TCSS & Lighting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



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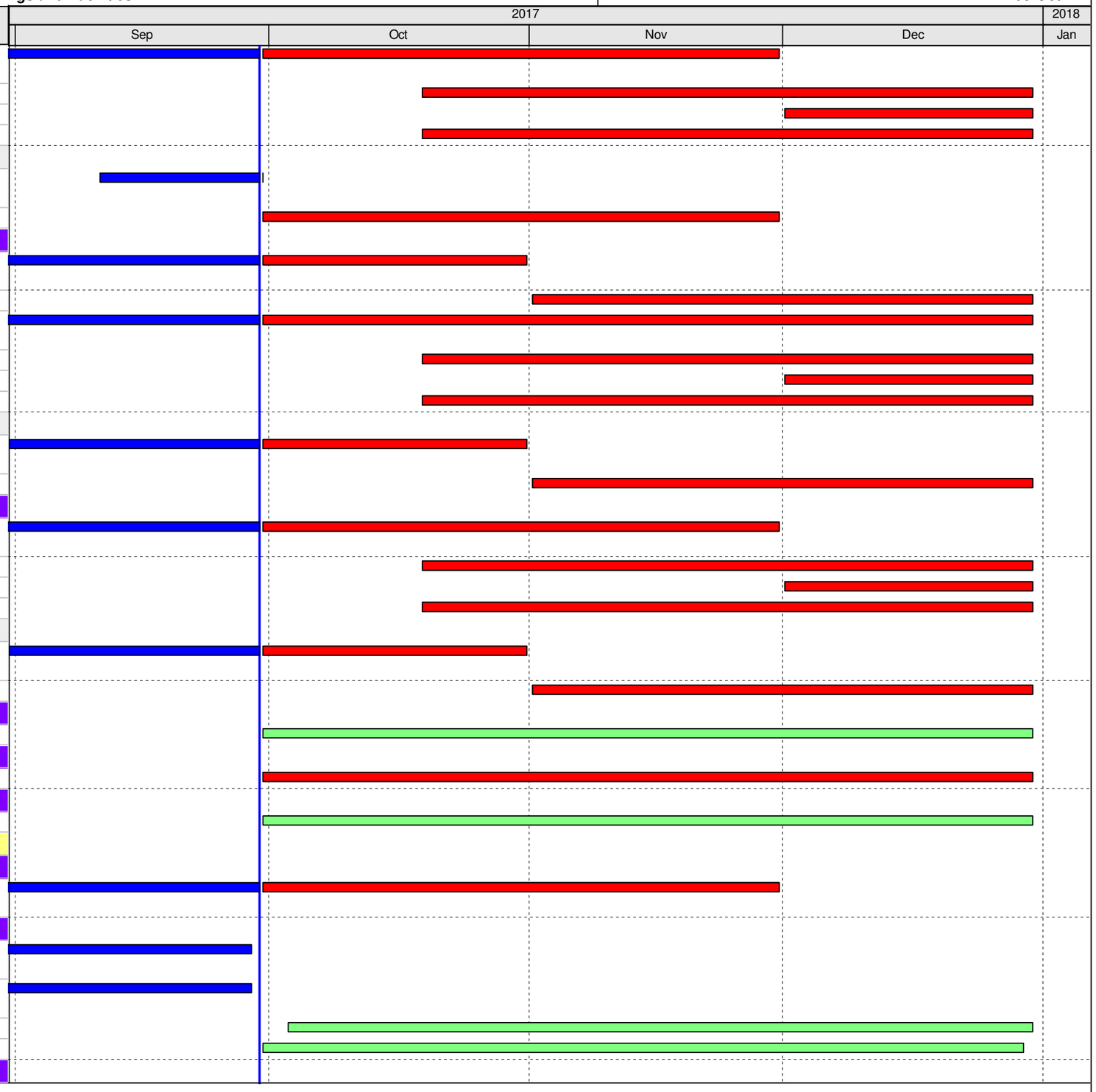
Activity ID	Activity Name
E10430	Other BS + E & M Installation
E10440	T&C for BS & Pumps
E10450	FSD Inspection
E10460	OP Application & TPIDC Inspection
	Facade Envelop Structure Installation
D10430	Steel Frame Installation
D10440	Envelop Cladding and Roofing Panel Installation
	106 C&ED Detention Area Guard Booth
E10640	BS for Office Accommodations (KD9)
E10650	BS + E&M for Office Accommodation (KD10)
E10660	Other BS + E & M Installation
E10670	T&C for BS & Pumps
E10680	FSD Inspection
E10690	OP Application & TPIDC Inspection
	Facade Envelop Structure Installation
B10630	Steel Frame Installation
B10640	Envelop Cladding and Roofing Panel Installation
	107 C&ED Mobile X-ray Operation Office, Portion N
A10760	Other BS + E & M Installation (KD10)
A10770	T&C for BS & Pumps
A10780	FSD Inspection
A10790	OP Application & TPIDC Inspection
	HPL Composite Panel Cladding System
B10740	Steel Frame Installation
B10750	HPL Cladding Panel Installation
	200 - Inbound/Outbound Vehicle Dectection Area
ER5810	Construction of the Area and Access to the Interface Contractor
	202 - Outbound Cargo Mobile X-ray Opeartion Area
ER5820	Construction of the Area and Access to the Interface Contractor
	211 - ImmD GV Secondary Examination Bays Outbound
ER5840	Construction of the Bays and Access to the Interface Contractor
	External Works for Portion N
	Works in Location 1.7A
EU1540	ELV Works & T&C in Location 1.7A
	Drainage Works
ED4620	Drainage Works (964m & 56MHs), Stage 1
ED4650	Sewerage (383m & 12MHs), Stage 1
ED5750	Drainage Works (963m & 55MHs), Stage 2 (Remaining)
ED5760	Sewerage (383m & 12MHs), Stage 2 (Remaining)
	Waterpipe Laying



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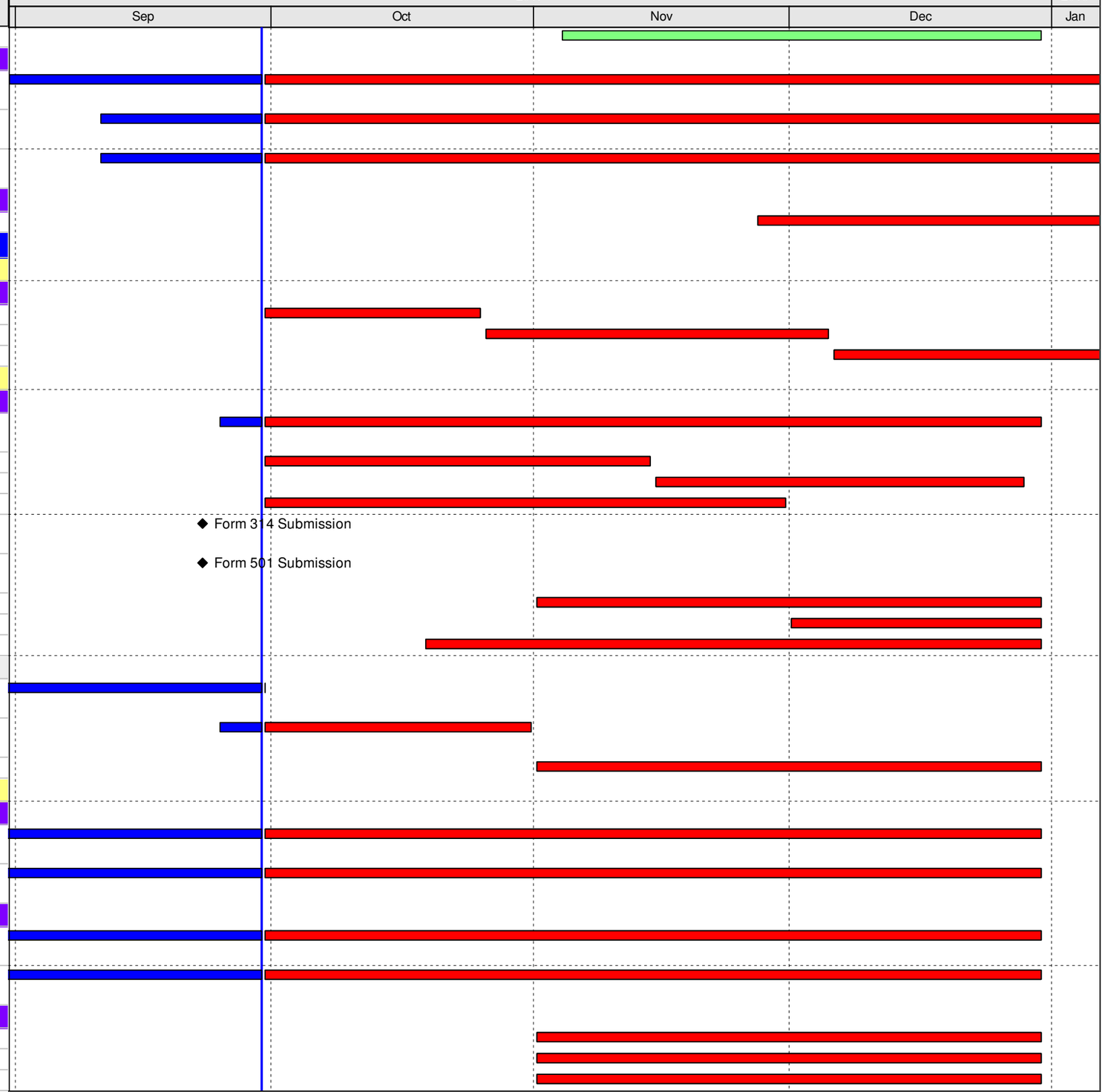
THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

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

HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities — **03-Oct-17**

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



Actual Work
Remaining Work
Critical
◆ Milestone

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

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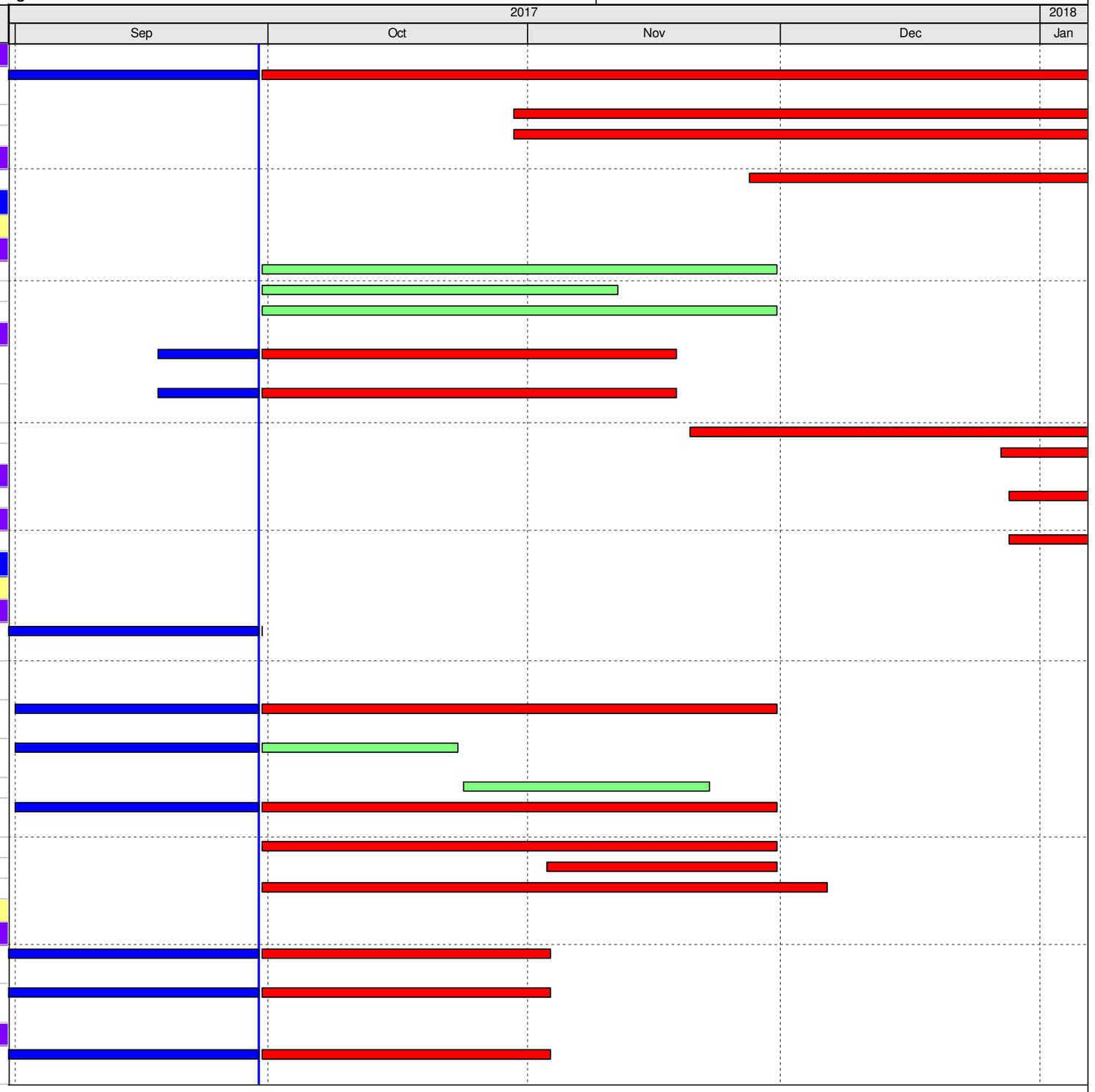
HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities | **03-Oct-17**

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



Actual Work
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THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

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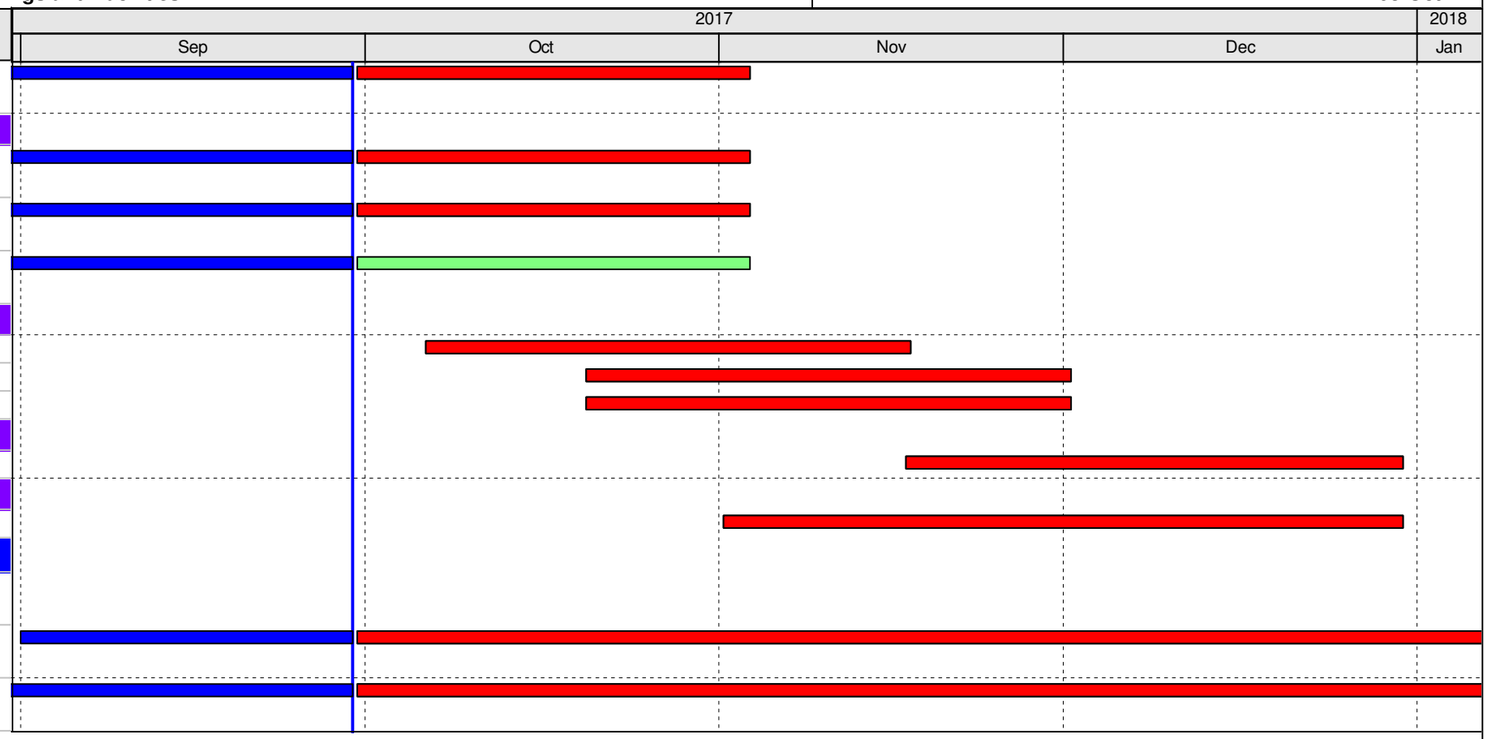
HZMB HK Boundary Crossing Facilities - Vehicle Clearance Plazas and Ancillary Buildings and Facilities | **03-Oct-17**

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



Actual Work
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THREE MONTH ROLLING PROGRAMME
VEHICLE CLEARANCE PLAZAS AND ANCILLARY BUILDINGS AND FACILITIES

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

Programme No.: HZMB-DWP
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Actual Level of Effort
Primary Baseline
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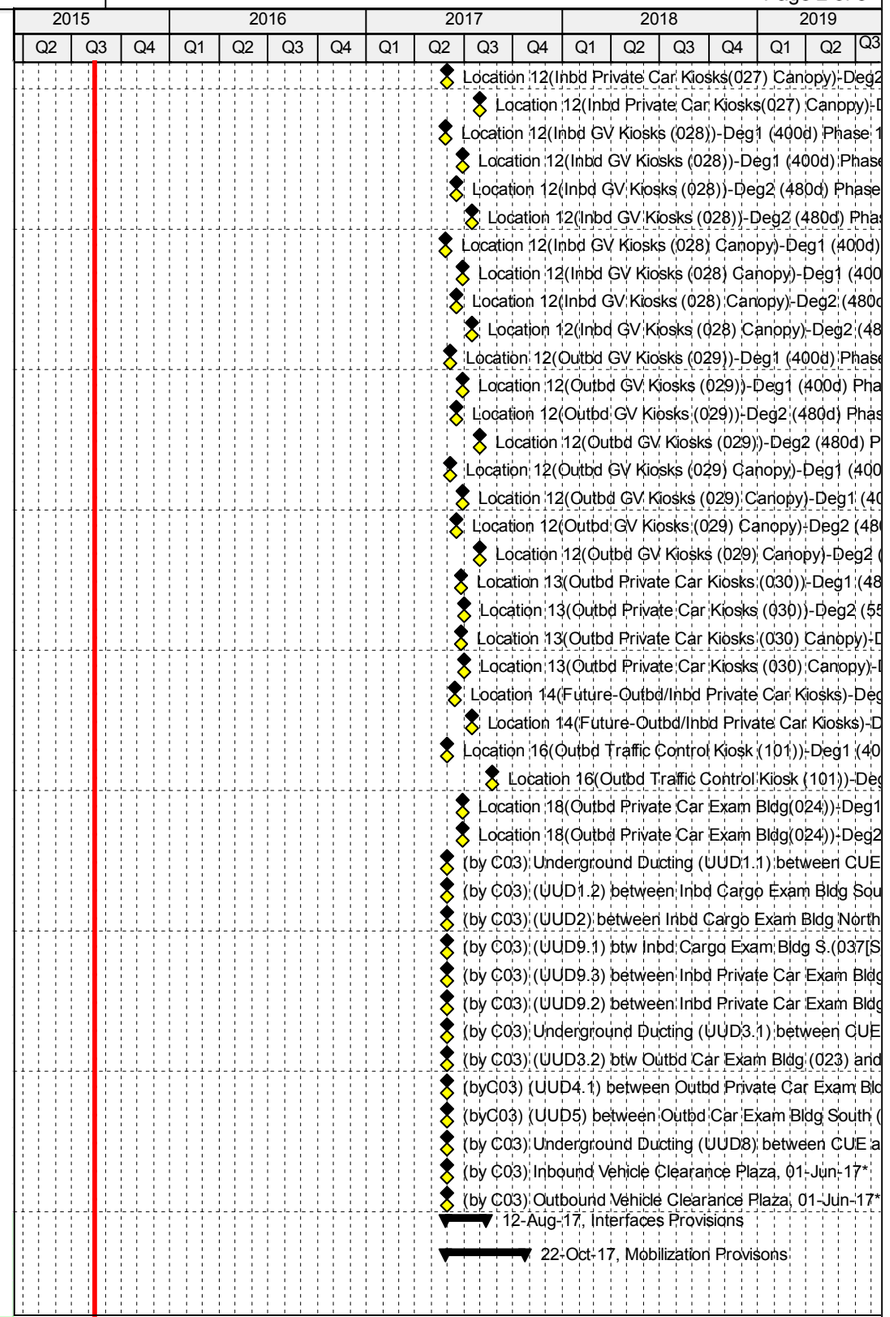
summary

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
AD1530	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 1
AD1531	Location 12(Inbd Private Car Kiosks(027) Canopy)-Deg2 (480d) Phase 2
AD1540	Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 1
AD1541	Location 12(Inbd GV Kiosks (028))-Deg1 (400d) Phase 2
AD1550	Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 1
AD1551	Location 12(Inbd GV Kiosks (028))-Deg2 (480d) Phase 2
AD1560	Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 1
AD1561	Location 12(Inbd GV Kiosks (028) Canopy)-Deg1 (400d) Phase 2
AD1570	Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (480d) Phase 1
AD1571	Location 12(Inbd GV Kiosks (028) Canopy)-Deg2 (480d) Phase 2
AD1580	Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 1
AD1581	Location 12(Outbd GV Kiosks (029))-Deg1 (400d) Phase 2
AD1590	Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 1
AD1591	Location 12(Outbd GV Kiosks (029))-Deg2 (480d) Phase 2
AD1600	Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 1
AD1601	Location 12(Outbd GV Kiosks (029) Canopy)-Deg1 (400d) Phase 2
AD1610	Location 12(Outbd GV Kiosks (029) Canopy)-Deg2 (480d) Phase 1
AD1611	Location 12(Outbd GV Kiosks (029) Canopy)-Deg2 (480d) Phase 2
AD1620	Location 13(Outbd Private Car Kiosks (030))-Deg1 (480d) Phase 1
AD1630	Location 13(Outbd Private Car Kiosks (030))-Deg2 (550d) Phase 1
AD1640	Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg1 (480d) Phase 1
AD1650	Location 13(Outbd Private Car Kiosks (030) Canopy)-Deg2 (550d) Phase 1
AD1660	Location 14(Future-Outbd/Inbd Private Car Kiosks)-Deg1 (610d)
AD1670	Location 14(Future-Outbd/Inbd Private Car Kiosks)-Deg2 (680d)
AD1700	Location 16(Outbd Traffic Control Kiosk (101))-Deg1 (400d)
AD1710	Location 16(Outbd Traffic Control Kiosk (101))-Deg2 (480d)
AD1740	Location 18(Outbd Private Car Exam Bldg(024))-Deg1 (-)
AD1750	Location 18(Outbd Private Car Exam Bldg(024))-Deg2 (670d)
AD1780	(by C03) Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (0
AD1790	(by C03) (UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo C
AD1800	(by C03) (UUD2) between Inbd Cargo Exam Bldg North (037[N]) and Inbd Vehicle Cle
AD1810	(by C03) (UUD9.1) btw Inbd Cargo Exam Bldg S.(037[S]) & Inbd PC Exam Bldg(033) &
AD1820	(by C03) (UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clear
AD1830	(by C03) (UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clear
AD1840	(by C03) Underground Ducting (UUD3.1) between CUE to Outbd Cargo Exam Bldg (0
AD1850	(by C03) (UUD3.2) btw Outbd Car Exam Bldg (023) and Outbd PC Exam Bldg (024) an
AD1860	(byC03) (UUD4.1) between Outbd Private Car Exam Bldg (024) and Outbd Vehicle Cle
AD1870	(byC03) (UUD5) between Outbd Car Exam Bldg South (023[S]) and Outbd Vehicle Cle
AD1880	(by C03) Underground Ducting (UUD8) between CUE and Outbd PCA (032)
AD1910	(by C03) Inbound Vehicle Clearance Plaza
AD1920	(by C03) Outbound Vehicle Clearance Plaza
Interfaces Provisions	
Mobilization Provisons	
WA4 Site Erection & Servicing	



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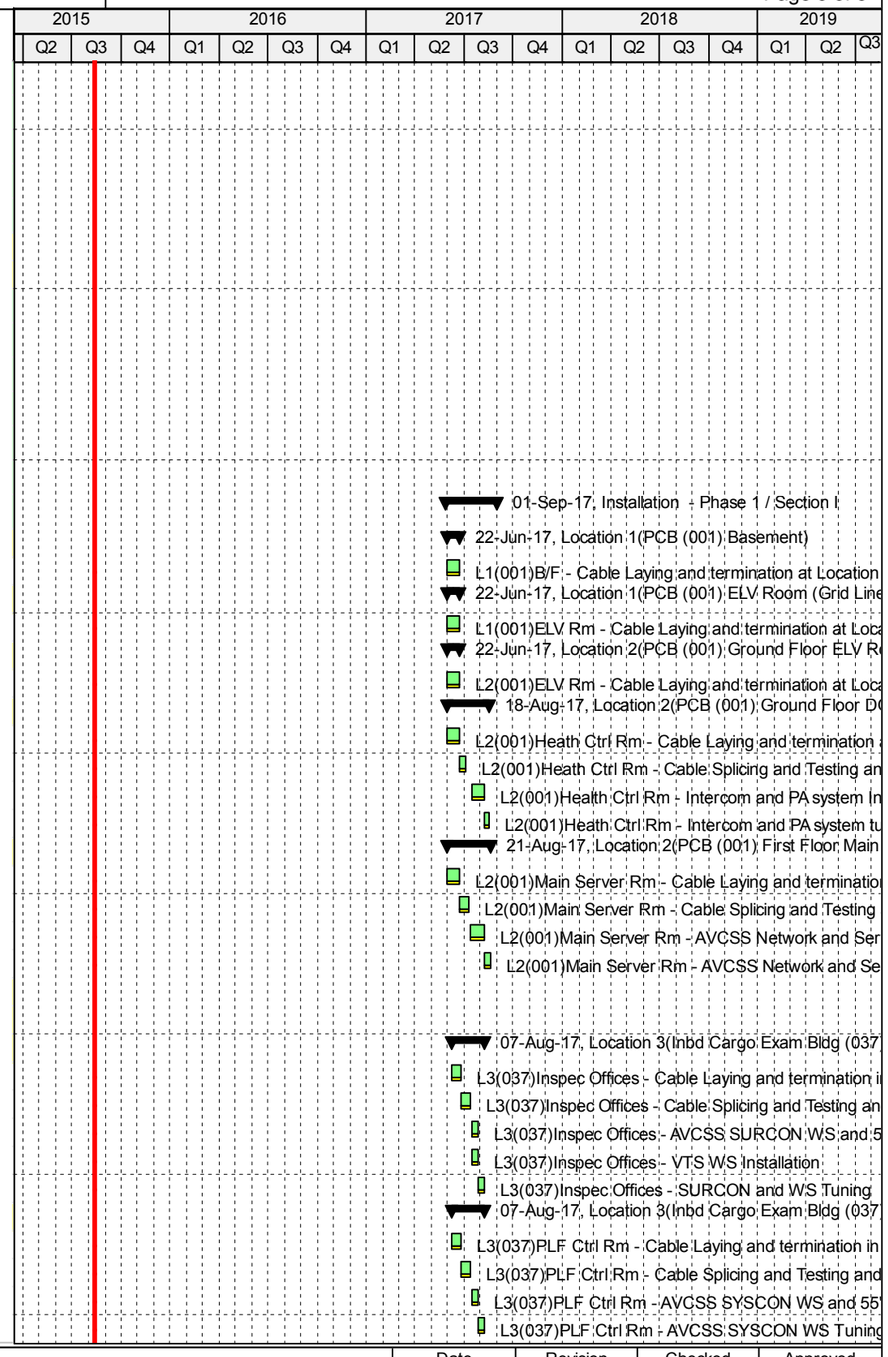
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing
Facilities - Automatic Vehicle
Clearance Support System (AVCSS)

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
	Detailed Design Specification
	Contruction Design and Management
	Supply/Manufacture Mock-up items
	Supply/Manufacture prototypes
	Software Design, Coding and Testing
	Coding
	Software System Inetgration
	Prototype & Software Simulation Tests
	Procurement - Phase 1 / Section I
	Supply/Manufacture products for FAT
	Factory Acceptance Test (FAT)
	Supply/Manufacture Equipment
	Delivery and Bench Acceptance Test for Phase 1/ Section I
	Installation - Phase 1 / Section I
	Location 1(PCB (001) Basement)
EM1920	L1(001)B/F - Cable Laying and termination at Location 1 and Location 2
	Location 1(PCB (001) ELV Room (Grid Line E3))
EM1940	L1(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2
	Location 2(PCB (001) Ground Floor ELV Room (Grid Line E3))
EM1960	L2(001)ELV Rm - Cable Laying and termination at Location 1 and Location 2
	Location 2(PCB (001) Ground Floor DOH Port Health Control Room (Grid Line BD5))
EM1080	L2(001)Heath Ctrl Rm - Cable Laying and termination at Location 1 and Location 2
EM1100	L2(001)Heath Ctrl Rm - Cable Splicing and Testing and Labeling
EM1120	L2(001)Health Ctrl Rm - Intercom and PA system Installation
EM1140	L2(001)Heath Ctrl Rm - Intercom and PA system tuning
	Location 2(PCB (001) First Floor Main Server Room)
EM1000	L2(001)Main Server Rm - Cable Laying and termination at Location 1 and Location 2
EM1020	L2(001)Main Server Rm - Cable Splicing and Testing and Labeling
EM1040	L2(001)Main Server Rm - AVCSS Network and Server Installation
EM1060	L2(001)Main Server Rm - AVCSS Network and Server Tuning
	Location 3(Inbd Cargo Exam Bldg (037) MDF Room)
	Location 3(Inbd Cargo Exam Bldg (037) ELV Room)
	Location 3(Inbd Cargo Exam Bldg (037) Inspector Offices 128,129,130,131,128,129,14
EM2020	L3(037)Inspec Offices - Cable Laying and termination in Location 3 and Location 3a
EM2040	L3(037)Inspec Offices - Cable Splicing and Testing and Labeling
EM2060	L3(037)Inspec Offices - AVCSS SURCON WS and 55" LCD Installation
EM2080	L3(037)Inspec Offices - VTS WS Installation
EM2100	L3(037)Inspec Offices - SURCON and WS Tuning
	Location 3(Inbd Cargo Exam Bldg (037) Platform Control Room)
EM1160	L3(037)PLF Ctrl Rm - Cable Laying and termination in Location 3 and Location 3a
EM1180	L3(037)PLF Ctrl Rm - Cable Splicing and Testing and Labeling
EM1200	L3(037)PLF Ctrl Rm - AVCSS SYSCON WS and 55" TV Wall Installation
EM1220	L3(037)PLF Ctrl Rm - AVCSS SYSCON WS Tuning



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

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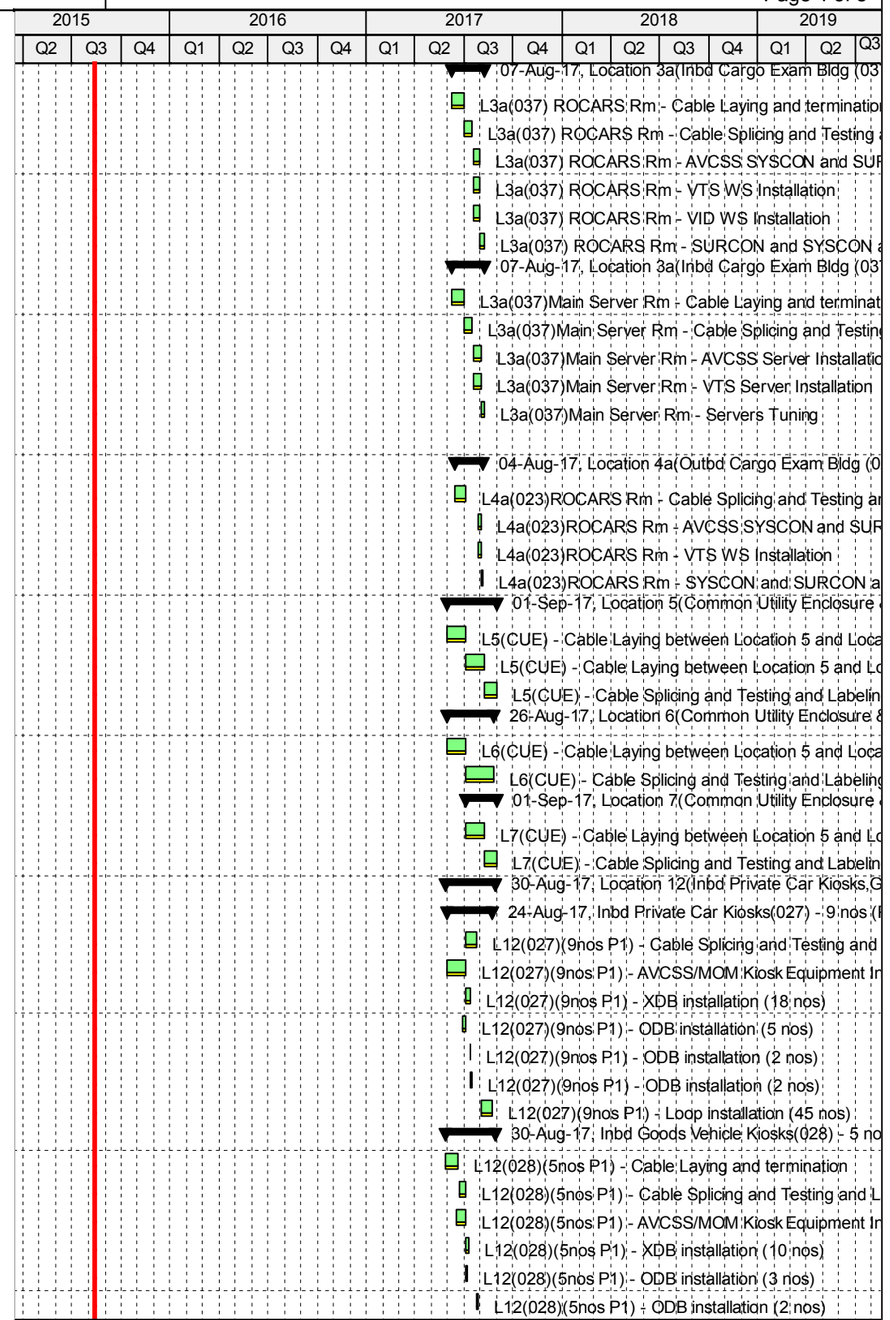
Activity ID	Activity Name
	Location 3a(Inbd Cargo Exam Bldg (037) ROCARS Room)
EM1240	L3a(037) ROCARS Rm - Cable Laying and termination in Location 3 and Location 3a
EM1260	L3a(037) ROCARS Rm - Cable Splicing and Testing and Labeling
EM1280	L3a(037) ROCARS Rm - AVCSS SYSCON and SURCON and Intercom Installation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



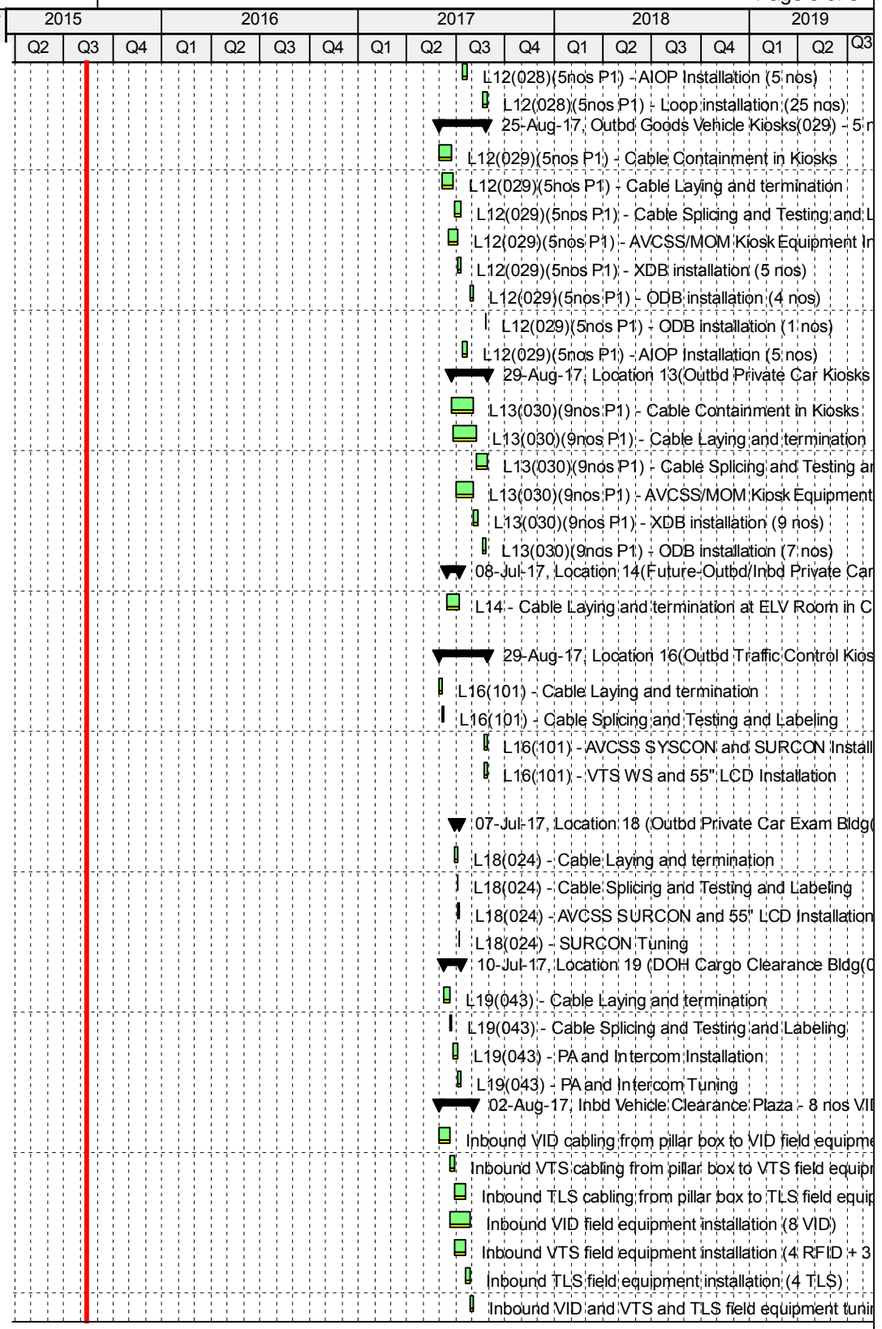
Programme No.: HZMB-DWP
Data Date: 14-Aug-15

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



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

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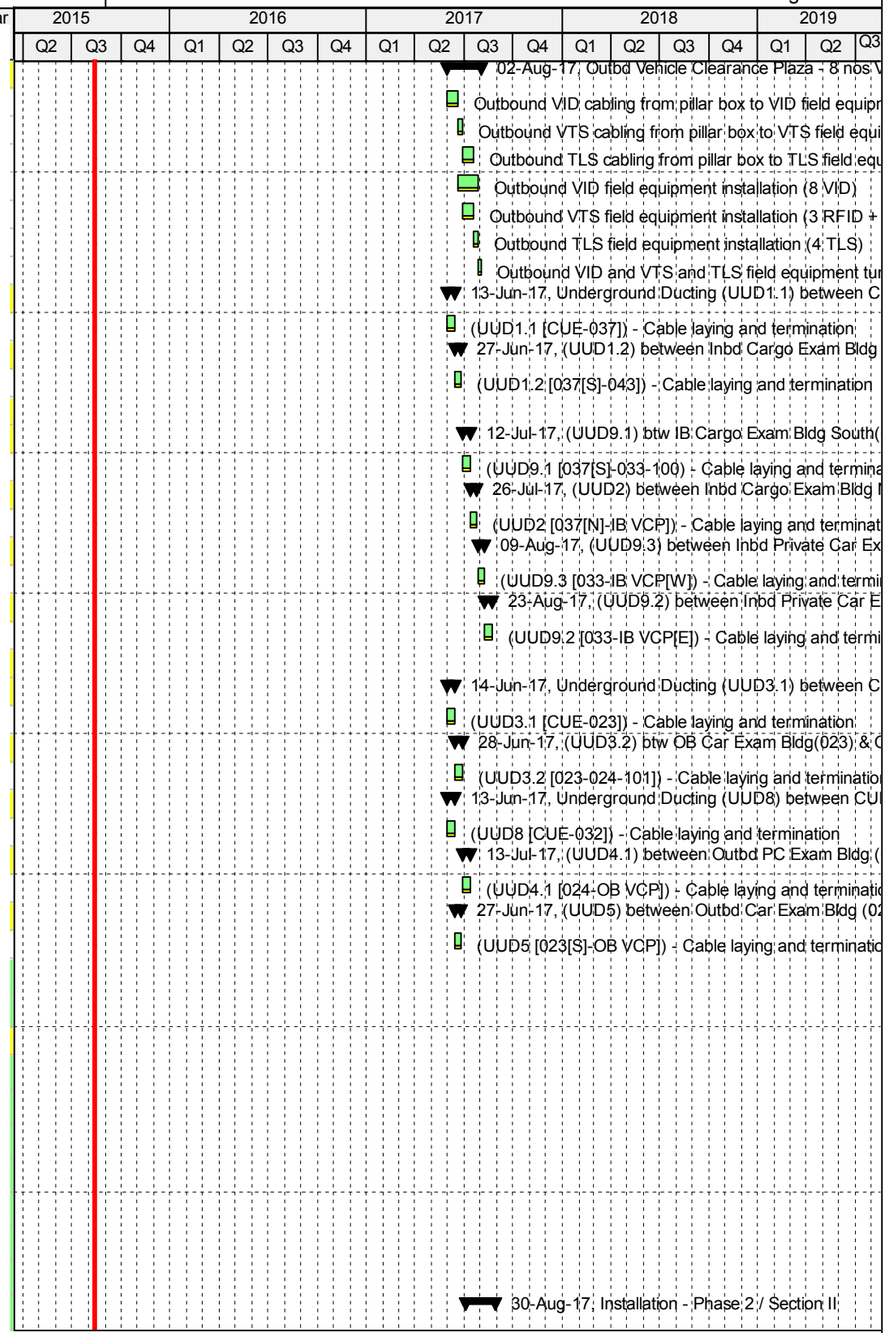
- Baseline Milestone
- Milestone
- summary

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	Original	Start	Finish	Free	Total	Calendar
	Outbd Vehicle Clearance Plaza - 8 nos VID, 6 nos VTS, 4 nos TLS						
EM3160	Outbound VID cabling from pillar box to VID field equipment						
EM3180	Outbound VTS cabling from pillar box to VTS field equipment						
EM3200	Outbound TLS cabling from pillar box to TLS field equipment						
EM3220	Outbound VID field equipment installation (8 VID)						
EM3240	Outbound VTS field equipment installation (3 RFID + 3 Cameras)						
EM3260	Outbound TLS field equipment installation (4 TLS)						
EM3280	Outbound VID and VTS and TLS field equipment tuning						
	Underground Ducting (UUD1.1) between CUE and Inbd Cargo Exam Bldg (037)						
UD1000	(UUD1.1 [CUE-037]) - Cable laying and termination						
	(UUD1.2) between Inbd Cargo Exam Bldg South (037[S]) and DOH Cargo Clearance Bl						
UD1060	(UUD1.2 [037[S]-043]) - Cable laying and termination						
	Underground Ducting (UUD6) between CUE and Shuttle Bus Kiosk (006) and Inbd Priv						
	(UUD9.1) btw IB Cargo Exam Bldg South(037[S]) & IB PC Exam Bldg(033) & IB Traffic						
UD1040	(UUD9.1 [037[S]-033-100) - Cable laying and termination						
	(UUD2) between Inbd Cargo Exam Bldg North (037[N]) to Inbd VCP						
UD1010	(UUD2 [037[N]-IB VCP]) - Cable laying and termination						
	(UUD9.3) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza						
UD1070	(UUD9.3 [033-IB VCP[W]) - Cable laying and termination						
	(UUD9.2) between Inbd Private Car Exam Bldg (033) and Inbd Vehicle Clearance Plaza						
UD1020	(UUD9.2 [033-IB VCP[E]) - Cable laying and termination						
	Underground Ducting (UUD7) between PCB(001) and Inbd Coach Kiosks(010)						
	Underground Ducting (UUD3.1) between CUE and Outbd Cargo Exam Bldg (023)						
UD1030	(UUD3.1 [CUE-023]) - Cable laying and termination						
	(UUD3.2) btw OB Car Exam Bldg(023) & OB PC Exam Bldg(024) & OB Traffic Control I						
UD1050	(UUD3.2 [023-024-101]) - Cable laying and termination						
	Underground Ducting (UUD8) between CUE and Outbd PCA (032)						
UD1100	(UUD8 [CUE-032]) - Cable laying and termination						
	(UUD4.1) between Outbd PC Exam Bldg (024) and Outbd Vehicle Clearance Plaza						
UD1080	(UUD4.1 [024-OB VCP]) - Cable laying and termination						
	(UUD5) between Outbd Car Exam Bldg (023[S]) and Outbd Vehicle Clearance Plaza						
UD1090	(UUD5 [023[S]-OB VCP]) - Cable laying and termination						
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 1 / Section I)						
	Site Acceptance Test (Phase 1 / Section I)						
	Security Risk Assessment and Audit						
	Operability Period Test (Phase 1 / Section I)						
	Completion (Phase 1 /Section I)						
	Training and Document (Phase 1 /Section I)						
	Operation (Phase 1 /Section I)						
	Engineering Support for Phase 1 / Section I						
	Procurement - Phase 2 / Section II						
	Delivery and Bench Acceptance Test for Phase 2/Section II						
	Installation - Phase 2 / Section II						



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

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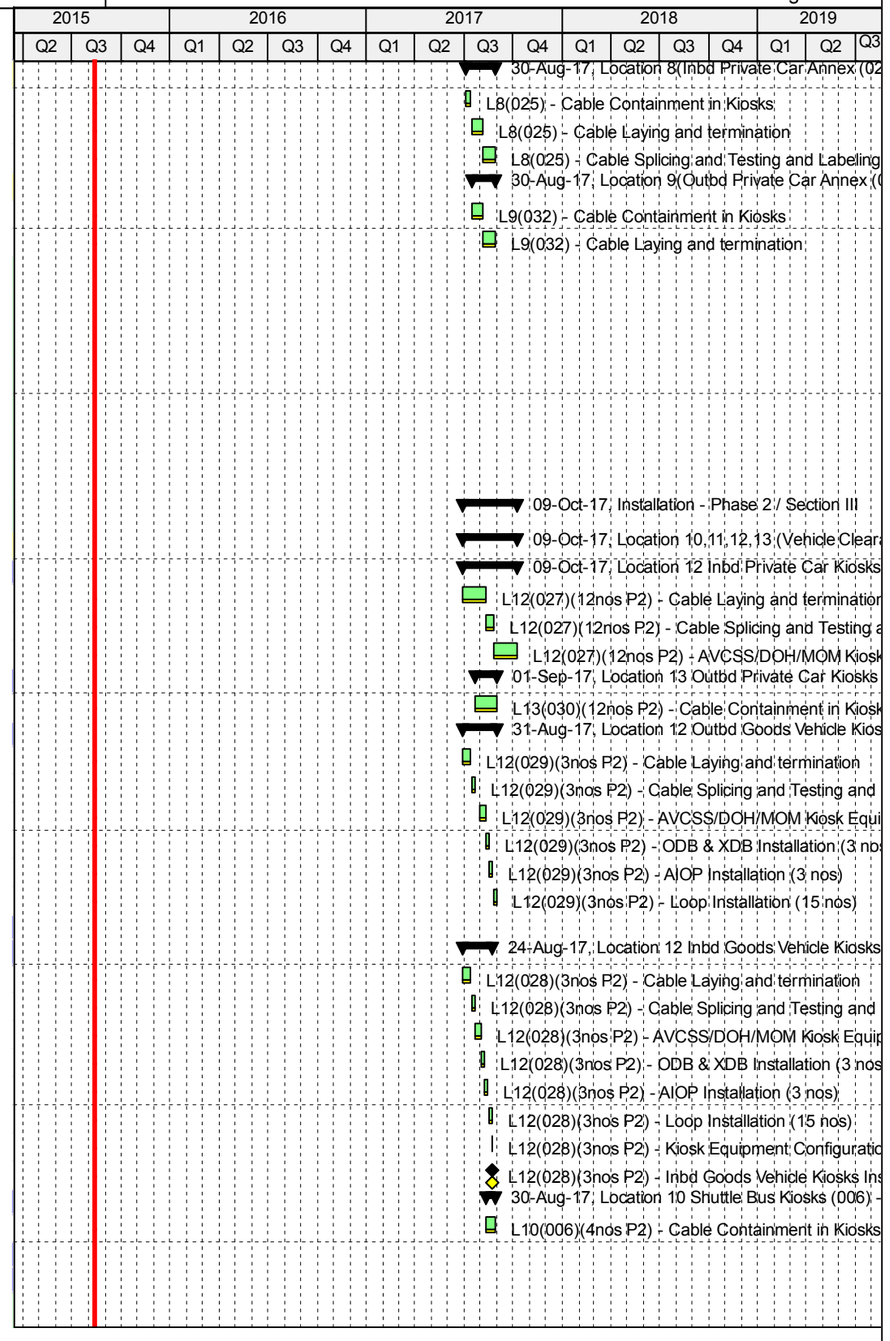
Activity ID	Activity Name
	Location 8(Inbd Private Car Annex (025)) (Phase 2)
EM3370	L8(025) - Cable Containment in Kiosks
EM3380	L8(025) - Cable Laying and termination
EM3400	L8(025) - Cable Splicing and Testing and Labeling
	Location 9(Outbd Private Car Annex (032)) (Phase 2)
EM3500	L9(032) - Cable Containment in Kiosks
EM3520	L9(032) - Cable Laying and termination
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section II)
	Site Acceptance Test (Phase 2 / Section II)
	Operability Period Test (Phase 2 / Section II)
	Completion (Phase 2 / Section II)
	Engineering Support for Phase 2 / Section II
	Procurement for Phase2 / Section III
	Delivery and Bench Acceptance Test for Phase2 / Section III
	Installation - Phase 2 / Section III
	Location 10,11,12,13 (Vehicle Clearance Kiosks)
	Location 12 Inbd Private Car Kiosks (027) - 12 nos (Phase 2)
EM4440	L12(027)(12nos P2) - Cable Laying and termination
EM4460	L12(027)(12nos P2) - Cable Splicing and Testing and Labeling
EM4480	L12(027)(12nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (12 nos)
	Location 13 Outbd Private Car Kiosks (030) - 12 nos (Phase 2)
EM4560	L13(030)(12nos P2) - Cable Containment in Kiosks
	Location 12 Outbd Goods Vehicle Kiosks (029) - 3 nos (Phase 2)
EM4880	L12(029)(3nos P2) - Cable Laying and termination
EM4900	L12(029)(3nos P2) - Cable Splicing and Testing and Labeling
EM4920	L12(029)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)
EM4940	L12(029)(3nos P2) - ODB & XDB Installation (3 nos)
EM4960	L12(029)(3nos P2) - AIOP Installation (3 nos)
EM4980	L12(029)(3nos P2) - Loop Installation (15 nos)
	Location 11 Outbd Coach Kiosks (009) - 4 nos (Phase 2)
	Location 12 Inbd Goods Vehicle Kiosks (028) - 3 nos (Phase 2)
EM4720	L12(028)(3nos P2) - Cable Laying and termination
EM4740	L12(028)(3nos P2) - Cable Splicing and Testing and Labeling
EM4760	L12(028)(3nos P2) - AVCSS/DOH/MOM Kiosk Equipment Installation (3 nos)
EM4780	L12(028)(3nos P2) - ODB & XDB Installation (3 nos)
EM4800	L12(028)(3nos P2) - AIOP Installation (3 nos)
EM4820	L12(028)(3nos P2) - Loop Installation (15 nos)
EM4840	L12(028)(3nos P2) - Kiosk Equipment Configuration (3 nos)
EM5120	L12(028)(3nos P2) - Inbd Goods Vehicle Kiosks Installation Complete
	Location 10 Shuttle Bus Kiosks (006) - 4 nos (Phase 2)
EM4000	L10(006)(4nos P2) - Cable Containment in Kiosks
	Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-1
	Location 11 Inbd Coach Kiosks (010) - 2 nos (Phase 2)-2
	Initial On-Site Test and Commissioning / Pre-SAT (Phase 2 / Section III)



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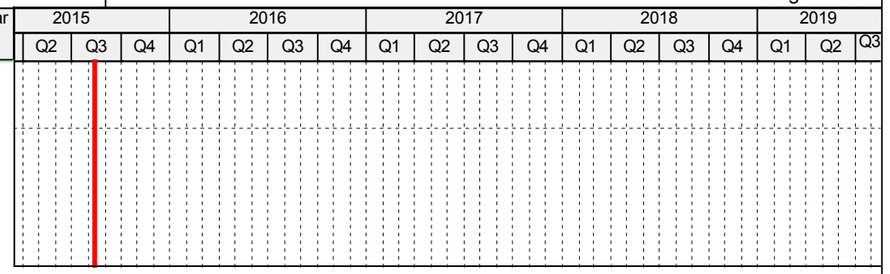
Activity ID	Activity Name	Original Duration	Start	Finish	Free Float	Total Float	Calendar
	Site Acceptance Test (Phase 2 / Section III)						
	Operability Period Test (Phase 2 / Section III)						
	Completion (Phase 2 / Section III)						
	Operation (Phase 2 / Section III)						
	Defect Liability Period (DLP)						
	Document Submission (Phase 2 / Section III)						



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Appendix D

Event / Action Plan

Appendix D –

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

Event / Action Plan for Air Quality

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

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

Event	Action			
	ET	IEC	ER	Contractor
Limit Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance a nd propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementatio n of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

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

Event / Action Plan for Construction Noise Monitoring

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Report the results of investigation to the IEC,ER and Contractor; 4. Discuss with th e Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.

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

Event / Action Plan for Water Quality

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

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

Event / Action Plan for Ecological Monitoring

Event	ET Leader	IEC	ER	Contractor
Action Level	1. Repeat statistical data analysis to confirm findings; 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences; 3. Identify source(s) of impact; 4. Inform the IEC, ER/SOR and Contractor; 5. Check monitoring data. 6. Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.	1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and finding with the ET and the Contractor.	1. Discuss monitoring with the IEC and any other measures proposed by the ET; 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented.	1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Discuss with the ET and the IEC and propose measures to the IEC and the ER/SOR; 3. Implement the agreed measures.

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

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

Notes:

(1) Broken concrete for recycling into aggregates.

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

Monthly Summary of Excavated Marine Sediment for 2017 (year)

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

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Appendix F

Environmental Licenses and Permits

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

(update: 03/10/2017)

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

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

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

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

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Appendix G

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Air Quality				
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;	All construction sites	V
S5.5.6.2	A2	• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials, • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top	All construction sites	V
S5.5.6.2	A2	• Cement or dry PFA delivered in bulk should be	All construction	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site r part of the construction site where the exposed earth lies	sites	
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected Representative dust monitoring station	V (Conducted by Contract No. HY/2013/01 and HY/2011/03)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant; • Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; • All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; • Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; • The materials which may generate airborne dusty emissions should be wetted by water spray system; • All receiving hoppers should be enclosed on three sides up to 3m above unloading point; • All conveyor transfer points should be totally enclosed; • All access and route roads within the premises should be paved and wetted; and • Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body	Selected Representative dust monitoring station	N/A
S5.5.2.7	A7	The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point: • All road surface within the barging facilities will be paved; • Dust enclosures will be provided for the loading ramp; • Vehicles will be required to pass through designated wheels wash facilities; and • Continuous water spray at the loading points	All construction sites	V
Construction Nose (Air borne)				
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following:	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.		
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	All construction sites	V
S6.4.12	N3	3) Install movable noise barriers (typically density@14kg/m acoustic mat or full enclosure close to noisy plants including compressor, generators, saw.	For plant items listed in Appendix 6D of the EIA report at all construction sites	N/A
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	For plant items listed in Appendix 6D of the EIA report at all construction site	V
S6.4.14	N5	5) Sequencing operation of construction plants where practicable	All construction sites where practicable	V
S5.1	N6	6) Implement a noise monitoring under EM&A programme.	Selected representative noise monitoring station	V (Conducted by Contract No. HY/2013/01)
Sediment				
S7.3	S1	1) The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	All construction sites	V
Waste Management (Construction Waste)				
S8.3.8	WM1	<u>Construction and Demolition Material</u> The following mitigation measures should be implemented in handling the waste: • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		similar to E7WBTC (Works) No. 19/2005 - "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation		
S8.3.9-S8.3.11	WM2	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	All construction sites	V
S8.2.12-S8.3.15	WM3	<u>Chemical Waste</u> • Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. • The storage area for chemical wastes should be clearly labeled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. • Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	All construction sites	V
S8.3.16	WM4	<u>Sewage</u>	All construction	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		• Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.	sites	
S8.3.17	WM5	General Refuse • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.	All construction sites	V
Water Quality (Construction Phase)				
S9.11.1.1-S9.11.1.2	W1	• Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below and summarised in the Environmental Mitigation Implementation Schedule in EM&A Manual • Construction of seawalls to be advanced by at least 100-200m before the main reclamation dredging and filling can commence. It should be noted that the protection by advanced seawall is a dynamic process depending on the progress of the construction activities and the stage when such protection could be realised is illustrated in Figure 9.2 and detailed in Appendix 9D6 of the EIA Report. The part of the works where such measures can be undertaken for the majority of the time includes the following locations: - TMCLKL northern reclamation; - TMCLKL southern reclamation (after formation of the nips); - Reclamation dredging and filling for Portion B of HKBCF; - Reclamation filling for Portion C of HKBCF;- Reclamation filling for Portion D of HKBCF; Reclamation filling for FSD berth of HKBCF; and - Reclamation dredging and filling for Portion 1 of HKLR; • Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts; • For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing; • A maximum of 30% public fill shall be used for all	Marine-based works area	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		backfilling below -2.5mPD for the southern reclamation of TMCLKL, HKBCF and HKLR projects; • where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be controlled to 25%; • silt curtains (cage type) will be applied round all grab dredgers during the HKBCF, HKLR and TMCLKL southern reclamation works; • single layer silt curtains will be applied around all works; • when constructing Portion D of the HKBCF, one side of the seawall crossing the channel should be constructed first and prior to the other works. This would reduce the maximum flow speed across the channel and enhance the effectiveness of other mitigation measures such as silt curtain system; • during the first two months of dredging work for HKBCF and HKLR, the silt-removal efficiency of the silt-curtains shall be verified by examining the results of water quality monitoring points. The water quality monitoring points to be selected for the above shall be those close to the locations of the initial period of dredging work. Details in this regard shall be determined by the ENPO to be established, taking account of the Contractor's proposed actual locations of his initial period of dredging work. • a sheet piled wall shall be constructed north of the HKBCF island ,in order to allow the use of silt curtains during Phase 2 works; and • silt curtain shall be fully maintained throughout the works. In addition, dredging operations should be undertaken in such a manner as to minimise resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging contract. • trailer suction hopper dredgers shall not allow mud to overflow; • use of Lean Material Overboard (LMOB) systems shall be prohibited; • mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted; • barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material; • any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; • loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; • excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; • adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; • all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence		

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		from vessel movement or propeller wash; and • the works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.		
S9.11.1.3	W2	Land Works General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include: • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; • sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; • storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; • silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; • temporary access roads should be surfaced with crushed stone or gravel; • rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; • open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; • manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;	Land-based works area	V
S9.11.1.7	W2	• all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, Internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located	Land-based works area	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; • waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; • all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and • surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.		
S9.14	W3	Implement a water quality monitoring programme	Selected representative WQM stations	V (Conducted by Contract No. HY/2013/01)
Ecology (Construction Phase)				
S10.7	E4	• 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)
Fisheries				
S11.7	F4	• Maritime Oil Spill Response Plan (MOSRP); • Contingency plan.	HKBCF	V
Landscape & Visual (Detailed Design Phase)				
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	HKBCF	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		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 buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.		
Landscape & Visual (Construction Phase)				
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts G1. Grass-hydroseed bare soil surface and stock pile areas. G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. G3. Not applicable as this is for HKLR. G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF G5. Vegetation reinstatement and upgrading to disturbed areas G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed G7. Providing planting area around peripheral of HKBCF for tree planting screening effect; G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. G9. Reserve of loose natural granite rocks for re-use, Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.	HKBCF	N/A
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> V1. Minimize time for construction activities during construction period. V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.	HKBCF	N/A
EM&A				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	All construction sites	V
S15.5 – S15.6	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		ensure all the requirements given in the EM&A Manual are fully complied with.		

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

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Appendix H

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

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Appendix H –

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

For Contract No. HY/2013/03

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

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

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

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Appendix I

Environmental Site Inspection Schedule

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Report No.: 0165/15/ED/00927

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

Environmental Site Inspection Schedule for September 2017

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

Tentative Environmental Site Inspection Schedule for October 2017

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

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Report No.: 0165/15/ED/00927

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

Environmental Site Inspection Schedule for September 2017

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

Tentative Environmental Site Inspection Schedule for October 2017

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

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Appendix J

Investigation Reports on Action Level or Limit Level Non-compliance

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR004

Prepared by: Ms. Jamie Tam

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 4/10/2017
Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 1 September 2017

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

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

Measured Level: Mid-flood tide

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

Bold means AL exceedance.

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

3. Investigation of Non-compliance

Summary of Investigation

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

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

Investigation Results

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

- Water Quality:
  W1-
  1. Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
  3. Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
  4. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
  5. Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
  6. All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

4. Follow up Status (Exceedance)

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

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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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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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

p:\projects\60191048\drawing\contract\c3\1000\C3_000_C00_1000.dgn

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Appendix A

Notification of Limit Level Exceedance (20170901DO_v1)

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170901DO_v1

Date of Notification: 5 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	**4.4**	**4.4**
DO	IS10(N)	Bottom			**4.5**	**4.5**
DO	IS(Mf)11	Bottom			**4.6**	**4.5**
DO	IS17	Bottom			**4.5**	5.2
DO	SR5(N)	Bottom			**4.5**	4.7

Notes:
AL means Action Level.
LL means Limit Level.
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 27 September 2017

Copied to: Contractor and Engineer Representative

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR005

Prepared by: Ms. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 17/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 6 September 2017

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

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

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

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

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

3. Investigation of Non-compliance

Summary of Investigation

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

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
  3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
  4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
  5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
  6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

  W2-
  1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
  2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
  3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
  4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
  5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;

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

4. Follow up Status (Exceedance)

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- 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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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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

p:\projects\60191048\drawing\contract\c3\1000\C3_000_C00_1000.dgn

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170906DO_TURB_v3

Date of Notification: 11 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

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

Reviewed by : Keith Chau Title : ET Leader

Date : 26 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170906SS_v1

Date of Notification: 19 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 21 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR006

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 25/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 8 September 2017

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

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

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

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

Notes:
Bold means AL exceedances
Bold with underline means LL exceedances
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
* The unit for turbidity is nephelometric turbidity unit (NTU)

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

3. Investigation of Non-compliance

Summary of Investigation

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

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

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;

3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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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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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170908DO_TURB_v2

Date of Notification: 13 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	5.0	**4.9**
	IS7	Surface and Middle			**4.8**	5.1
		Bottom			**4.6**	5.2
	IS8	Surface and Middle			5.0	**4.9**
	IS(Mf)9	Surface and Middle			5.3	**4.8**
	IS10(N)	Surface and Middle			**4.9**	**4.7**
	IS(Mf)11	Surface and Middle			5.0	**4.7**
		Bottom			4.8	**4.6**
	IS(Mf)16	Surface and Middle			**4.6**	**4.9**
		Bottom			**4.3**	5.0
	IS17	Surface and Middle			**4.9**	**4.7**
		Bottom			**4.3**	**4.5**
	SR3	Surface and Middle			**4.7**	**4.9**
	SR4(N)	Surface and Middle			5.2	**4.9**
	SR5(N)	Surface and Middle			5.0	**4.8**
	SR6	Surface and Middle			**4.9**	**4.9**
	SR7	Surface and Middle			5.1	**4.9**
	SR10A	Surface and Middle			**4.9**	**4.3**
		Bottom			4.8	**4.3**
	SR10B(N)	Surface and Middle			**4.8**	**4.7**
TURB	IS5	Depth Average	27.5 and 120% (i.e. 20.2 for mid-ebb/13.7 for mid-flood) of upstream control station's turbidity at the same tide of the same day	47.0 and 130% (i.e. 21.9 for mid-ebb/14.9 for mid-flood) of upstream control station's turbidity at the same tide of the same day	**34.4**	6.6
	IS10(N)				25.2	**31.6**
	IS(Mf)11				17.8	**29.0**
	SR6				12.2	**35.3**

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

Reviewed by : Keith Chau Title : ET Leader

Date : 26 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170908SS

Date of Notification: 19 September 2017

Works Inspected: Data collected from water sampling works on 8 September 2017 and the results were issued on 18 September 2017

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS5	Depth Average	23.5 and 120% (i.e. 20.4 for mid-ebb/10.5 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 22.1 for mid-ebb/11.4 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	**28.4**	8.7
	IS10(N)				19.5	**35.5**
	IS(Mf)11				15.4	**33.2**

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 21 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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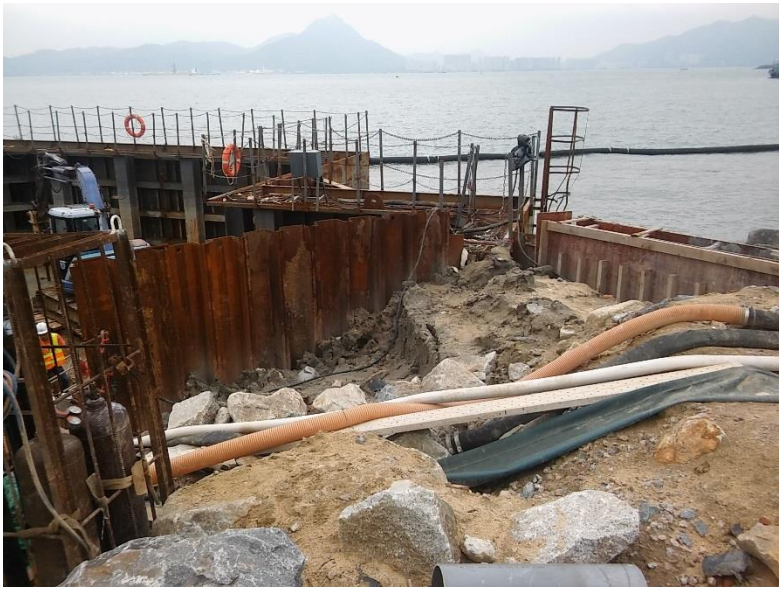

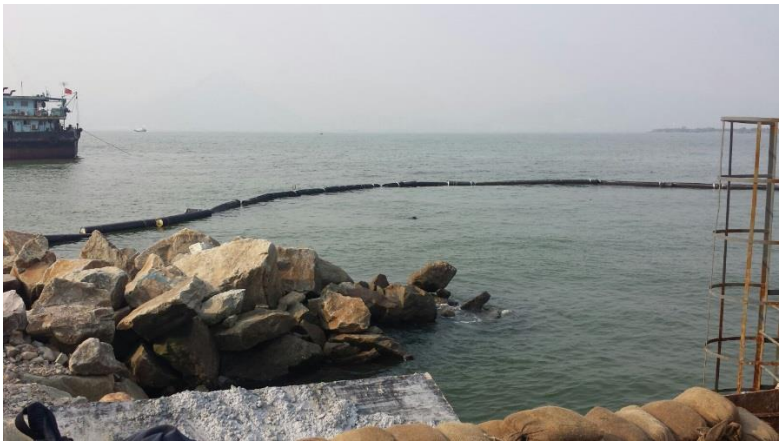

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INVESTIGATION REPORT ON

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-IR007

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 11 September 2017

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

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

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

		Bottom	4.8	4.7
	SR10A	Surface & Middle	5.2	**4.5**
		Bottom	5.1	**4.1**
	SR10B(N)	Surface & Middle	**4.8**	**4.2**
		Bottom	**4.6**	**4.0**

Notes:
Bold means AL exceedances
Bold with underline means LL exceedances

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

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was 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. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 11 September 2017. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed, while there was only Action Level exceedance of DO at the WQM stations closer to the works areas, such as IS(Mf)11. Therefore, the exceedances on 11 September 2017 was considered not related to construction site activities of Contract No. HY/2013/03.

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

Investigation Results

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

Water Quality:
W1-
1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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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Figure 1

The Location of WQM Stations

LEGEND

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FIGURE 4.1– LOCATION OF WATER QUALITY MONITORING STATIONS

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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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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works

NOTES:

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LEGEND:

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170911DO_v1

Date of Notification: 15 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS8	Surface and Middle	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	5.2	**4.8**
		Bottom			5.0	**4.6**
	IS(Mf)9	Surface and Middle			5.3	**4.8**
	IS10(N)	Surface and Middle			**4.9**	**4.6**
		Bottom			4.8	**4.4**
	IS(Mf)11	Surface and Middle			**4.9**	**4.6**
		Bottom			**4.6**	**4.5**
	IS(Mf)16	Surface and Middle			5.2	**4.7**
		Bottom			**4.3**	**4.6**
	IS17	Surface and Middle			**4.8**	**4.5**
		Bottom			**4.2**	**4.2**
	SR4(N)	Surface and Middle			5.3	**4.8**
	SR5(N)	Surface and Middle			**4.7**	**4.6**
		Bottom			**4.6**	**4.6**
	SR6	Surface and Middle			**4.7**	**4.7**
		Bottom			4.7	**4.6**
	SR7	Surface and Middle			**4.9**	**4.7**
		Bottom			4.8	4.7
	SR10A	Surface and Middle			5.2	**4.5**
		Bottom			5.1	**4.1**
	SR10B(N)	Surface and Middle			**4.8**	**4.2**
		Bottom			**4.6**	**4.0**

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 27 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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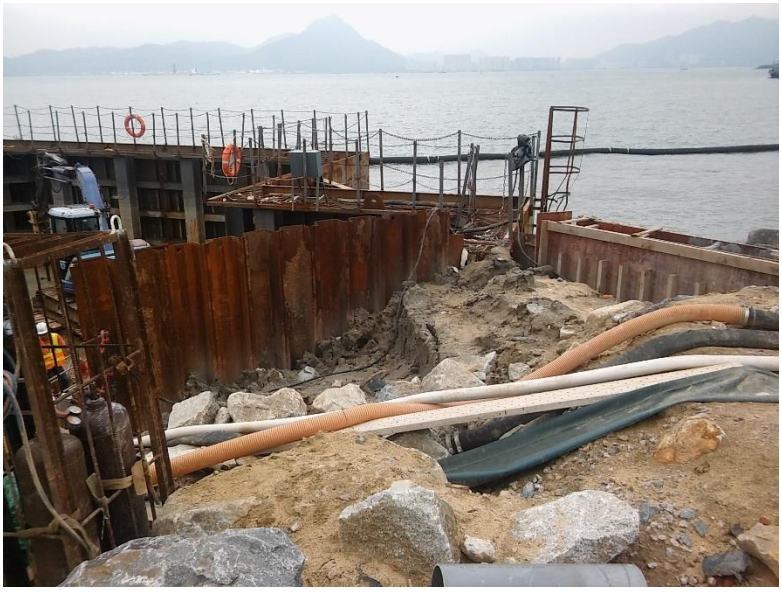

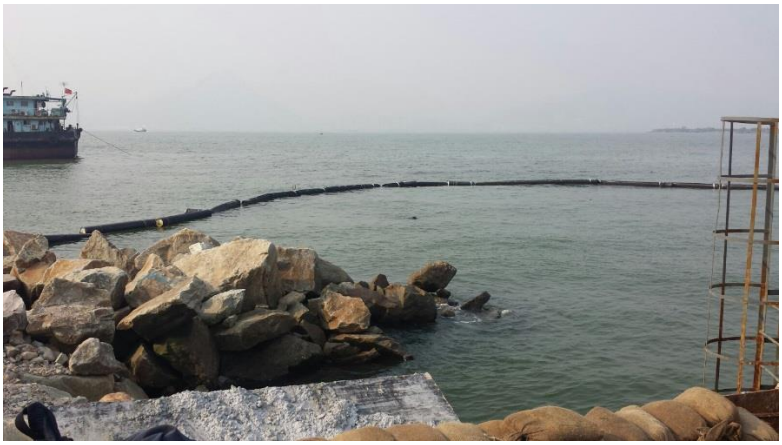

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INVESTIGATION REPORT ON

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-IR008

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 13 September 2017

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

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

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

Notes:
Bold means AL exceedances
Bold with underline means LL exceedances

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

3. Investigation of Non-compliance

Summary of Investigation

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

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
  3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
  4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
  5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
  6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

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

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

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Figure 1

The Location of WQM Stations

LEGEND

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

FIGURE 4.1– LOCATION OF WATER QUALITY MONITORING STATIONS

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10	812577	820670
IS10(N)	812942	820455
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	820881
CS(Mf)3	809989	821117
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

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Figure 2

The Locations of Marine Transportation and Marine-based Construction Works

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170913DO_v2

Date of Notification: 19 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	**4.1**	**4.1**
	IS(Mf)9	Bottom			6.5	**4.2**
	IS10(N)	Surface and Middle			**4.7**	5.0
	IS(Mf)11	Surface and Middle			5.1	**4.9**
	IS(Mf)16	Bottom			**4.1**	**4.2**
	IS17	Surface and Middle			5.0	**4.9**
		Bottom			**3.8**	**4.1**
	SR5(N)	Surface and Middle			**4.8**	5.5
	SR10A	Surface and Middle			**4.9**	**4.4**
		Bottom			5.2	**3.9**
	SR10B(N)	Surface and Middle			5.2	**4.4**
		Bottom			5.4	**4.1**

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 4 October 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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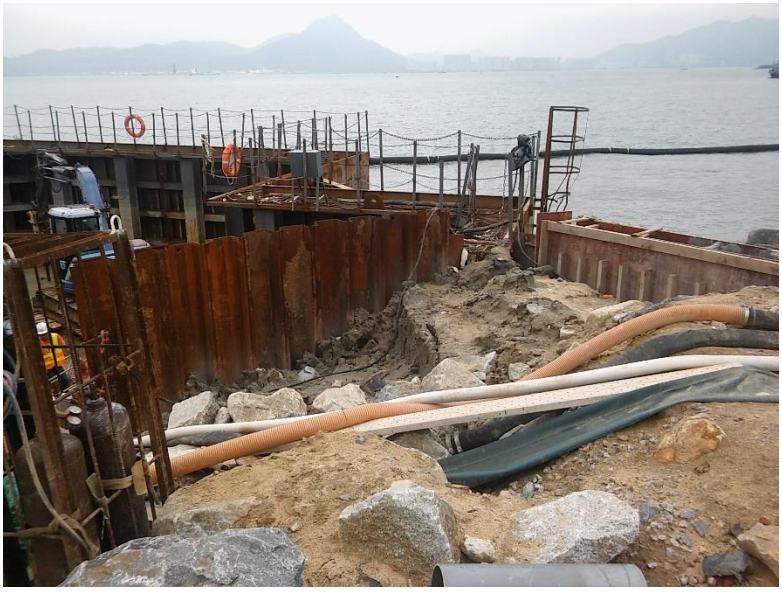

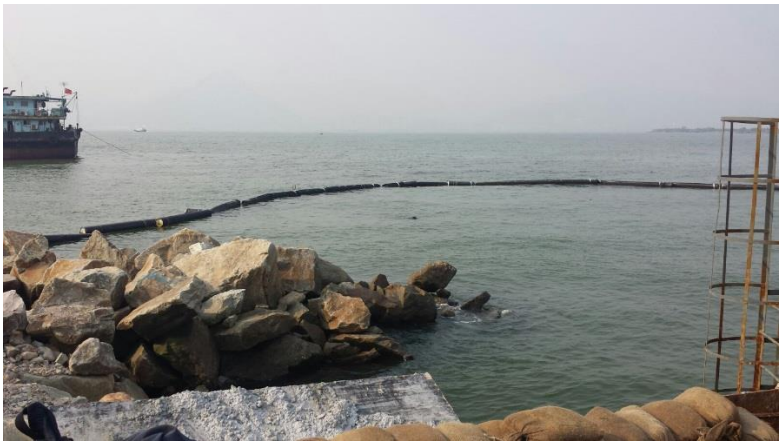

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INVESTIGATION REPORT ON

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-IR009

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 15 September 2017

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

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

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

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

Notes:
Bold means AL exceedances
Bold with underline means LL exceedances
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
*The muddy water was observed due to 3 fast boats were moving around near the monitoring location during measurement period.

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

3. Investigation of Non-compliance

<u>Summary of Investigation</u>

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely that the works undertaken by Contract No. HY/2013/03 consumed any dissolved oxygen to cause DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 15 September 2017.

For turbidity exceedance, the exceedance recorded at the concerned WQM station (i.e. IS8) is far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. Besides, fast boats moving around near the monitoring location during measurement period as mentioned in Notification of Action/Limit Level Exceedance may be one of the reason for turbidity exceedance. It was unlikely that the works undertaken by Contract No. HY/2013/03 caused turbidity exceedance recorded at the concerned WQM stations during mid-flood tide on 15 September 2017.

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
  3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
  4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
  5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
  6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

  W2-
  1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
  2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
  3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
  4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
  5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
  6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
  7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
  8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

- Barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
- Any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
- Loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
- Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
- Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
- All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.
- wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
- storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on 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;

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170915DO_TURB_v3

Date of Notification: 21 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS10(N)	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	**4.2**	**4.5**
	IS(Mf)11	Surface and Middle			**4.1**	**4.7**
	IS17	Surface and Middle			**4.9**	5.7
		Bottom			**3.9**	4.7
	SR6	Surface and Middle			5.5	**4.8**
		Bottom			4.7	**4.5**
	SR10A	Surface and Middle			5.5	**4.7**
		Bottom			5.4	**3.9**
	SR10B(N)	Surface and Middle			5.4	**4.6**
		Bottom			5.0	**4.3**
TURB	IS8	Depth Average	27.5 and 120% (i.e. 19.6 for mid-ebb/15.4 for mid-flood) of upstream control station's turbidity at the same tide of the same day	47.0 and 130% (i.e. 21.2 for mid-ebb/16.7 for mid-flood) of upstream control station's turbidity at the same tide of the same day	10.6	**95.4***

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.
Upstream control stations of mid-ebb tide: CS(Mf)3(N) and CS4
Upstream control stations of mid-flood tide: CS(Mf)5, CS6 and CSA
*The muddy water was observed due to 3 fast boats were moving around near the monitoring location during measurement period.

Reviewed by : Keith Chau Title : ET Leader

Date : 27 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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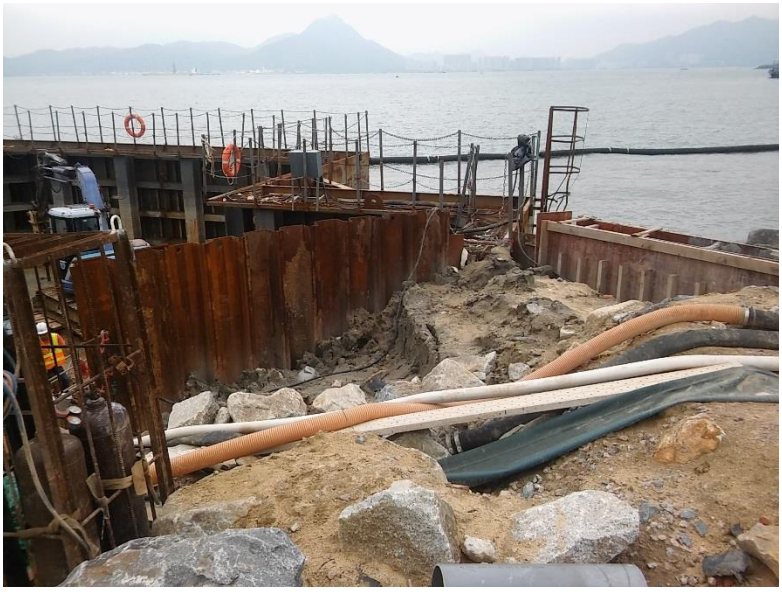

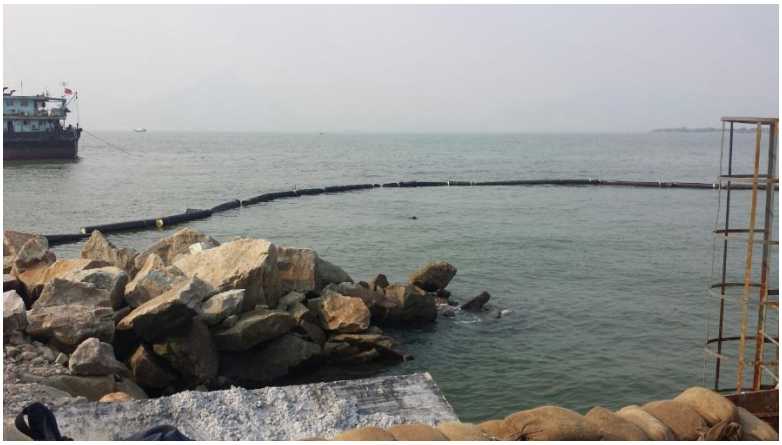

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR0010

Prepared by: Ms. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 18 September 2017

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

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

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

Notes:
Bold means AL exceedances

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

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

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was no marine transportation on the date of exceedance. Regarding marine-based works in Box Culvert B, the work undertaken at the date of exceedance was preparation work of precast installation which had a cofferdam to separate seawater and works area. Silt curtain was also maintained to enclose the work area of the outlet of the box culvert fully. All sea water flows into the work area of box culvert B will be treated by desilting facilities before discharge in accordance with the discharge license approved by EPD for Contract No. HY/2013/03. Besides, no organic matter discharge from the works areas (i.e. box Culvert B) was observed. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 18 September 2017.

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

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;

2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170918SS

Date of Notification: 27 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
SS	IS8	Depth Average	23.5 and 120% (i.e. 9.9 for mid-ebb/13.4 for mid-flood) of upstream control station's SS at the same tide of the same day	34.4 and 130% (i.e. 10.8 for mid-ebb/14.5 for mid-flood) of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes	6.3	**25.0**

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

Reviewed by : Keith Chau Title : ET Leader

Date : 27 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170918DO

Date of Notification: 21 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	**4.5**	5.8
	IS10(N)	Bottom			**4.6**	5.0
	IS(Mf)11	Bottom			**4.6**	5.0
	IS(Mf)16	Bottom			**4.4**	5.0
	SR6	Surface and Middle			**4.7**	**4.4**
		Bottom			**4.5**	**4.3**
	SR10A	Surface and Middle			5.5	**4.7**
	SR10B(N)	Surface and Middle			5.4	**4.9**

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 21 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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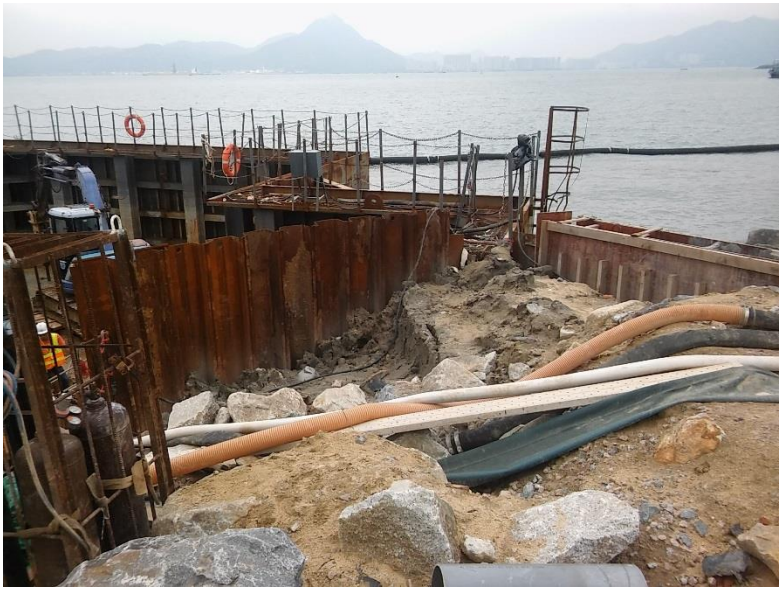

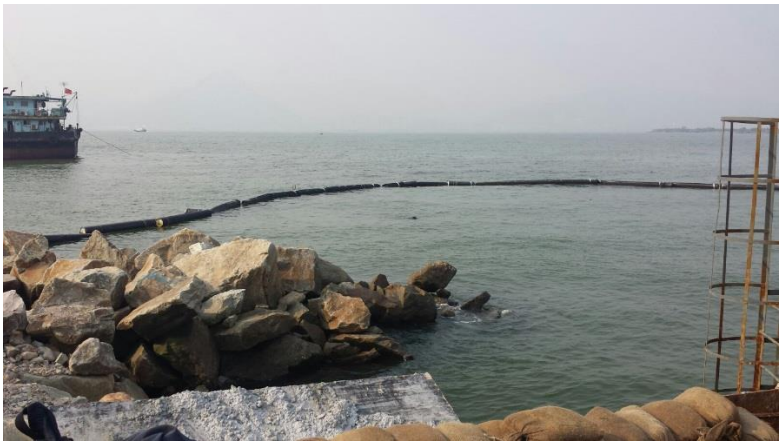

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR0011

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 20 September 2017

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

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

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

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

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

3. Investigation of Non-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. In addition, the exceedances recorded at the concerned WQM stations (i.e. SR6, SR10A and SR10B(N)) are far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 20 September 2017.

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

Investigation Results

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

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

filled to a level which will cause overflow of materials or pollution of water during loading or transportation;

4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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HIGHWAYS DEPARTMENT
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Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

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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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170920DO

Date of Notification: 25 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 25 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170920SS

Date of Notification: 6 October 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

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

Reviewed by : Keith Chau Title : ET Leader

Date : 6 October 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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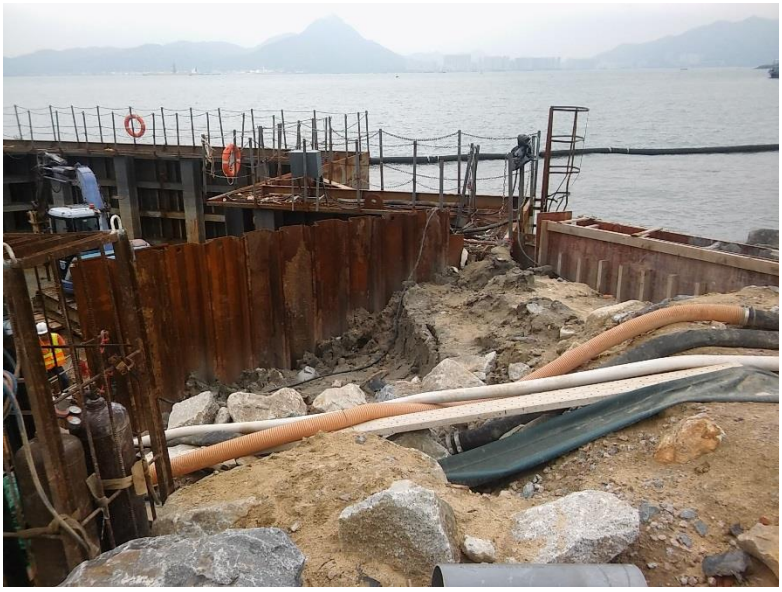
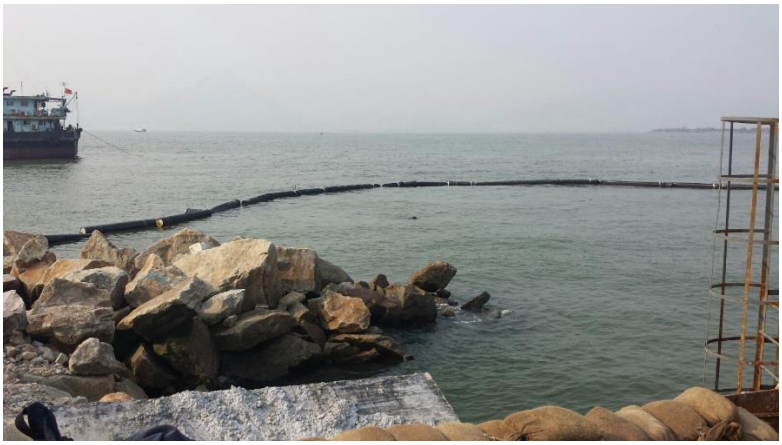
Email : mcl@fugro.com





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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR0012

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 22 September 2017

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

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

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

	SR5(N)	Surface & Middle	**4.9**	**4.8**
	SR6	Surface & Middle	**4.8**	**4.8**
	SR7	Surface & Middle	5.0	**4.8**
	SR10A	Surface & Middle	**4.9**	**4.7**
	SR10B(N)	Surface & Middle	**4.8**	**4.6**
		Bottom	4.9	**4.5**

Notes:
Bold means AL exceedances
Bold with underline means LL exceedances

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

3. Investigation of Non-compliance

Summary of Investigation

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

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

Investigation Results

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

- Water Quality:

W1-

1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170922DO

Date of Notification: 27 September 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 27 September 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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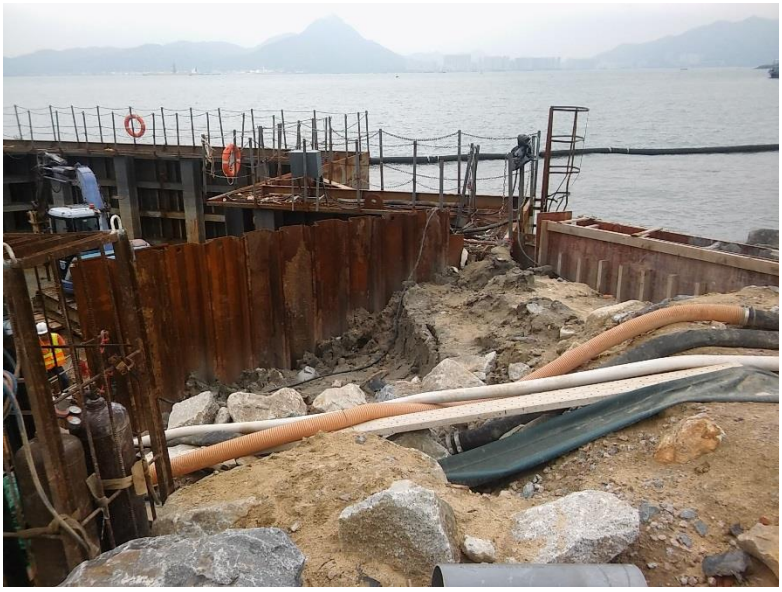

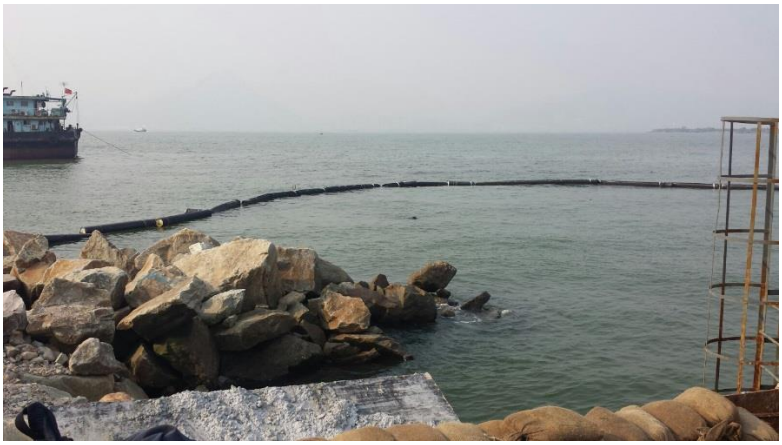

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR0013

Prepared by: Ms. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 25 September 2017

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

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

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

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

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

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was 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. In addition, the concerned WQM station where exceedances were recorded (i.e. SR10B(N)) was far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood and mid-ebb tide on 25 September 2017.

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

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;

3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

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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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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170925DO

Date of Notification: 3 October 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

Remarks:
Bold means AL exceedances.
<u>Bold with underline</u> means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 3 October 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building

Notifications of Environmental Quality Limits Exceedances Notification No.: 20170925SS

Date of Notification: 9 October 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

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

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

Reviewed by : Keith Chau Title : ET Leader

Date : 9 October 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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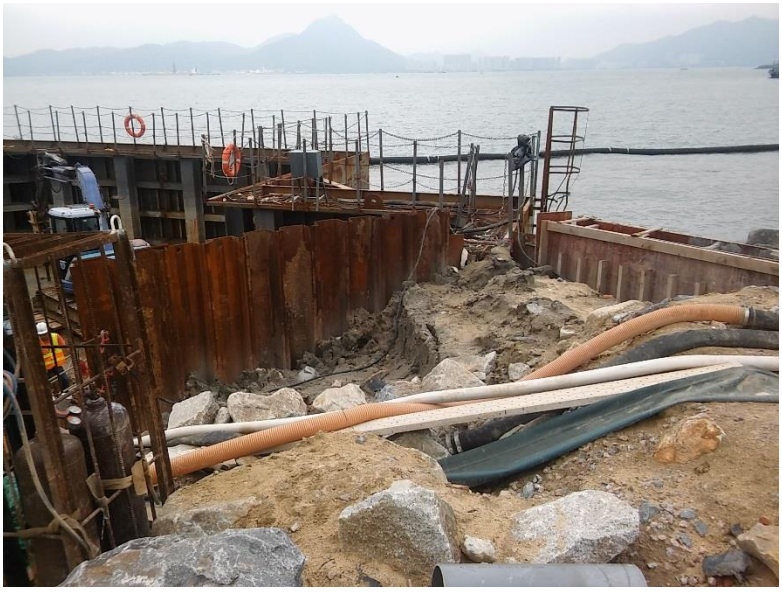

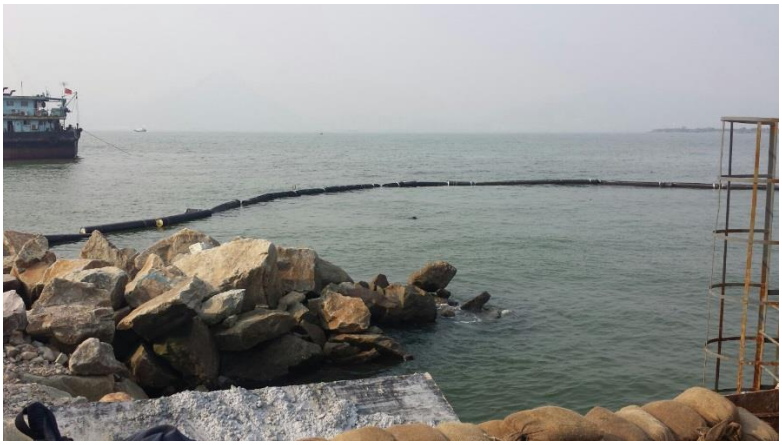

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR0014

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 20/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 27 September 2017

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

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

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

Notes:
Bold means AL exceedances
Bold with underline means LL exceedances

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

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. In addition, the concerned WQM stations where the exceedances were recorded were far away from the marine works area of Contract No. HY/2013/03, while there was no notification of exceedance received at the WQM stations closer to the works areas, such as IS(Mf)11. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 27 September 2017.

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
  3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
  4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
  5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
  6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

  W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

路政署
HIGHWAYS DEPARTMENT
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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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

MATERIALAB CONSULTANTS LIMITED

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances **Notification No.: 20170927_DO_NOE_v1**

Date of Notification: 4 October 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS10(N)	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	**4.6**	5.0
DO	IS17	Bottom			**4.6**	4.8
DO	SR5(N)	Bottom			**4.6**	5.0
DO	SR10A	Bottom			5.3	**4.6**
DO	SR10B(N)	Surface and Middle			5.0	**4.7**
DO	SR10B(N)	Bottom			**4.4**	**4.4**

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

Reviewed by : Keith Chau Title : ET Leader

Date : 04-Oct-17

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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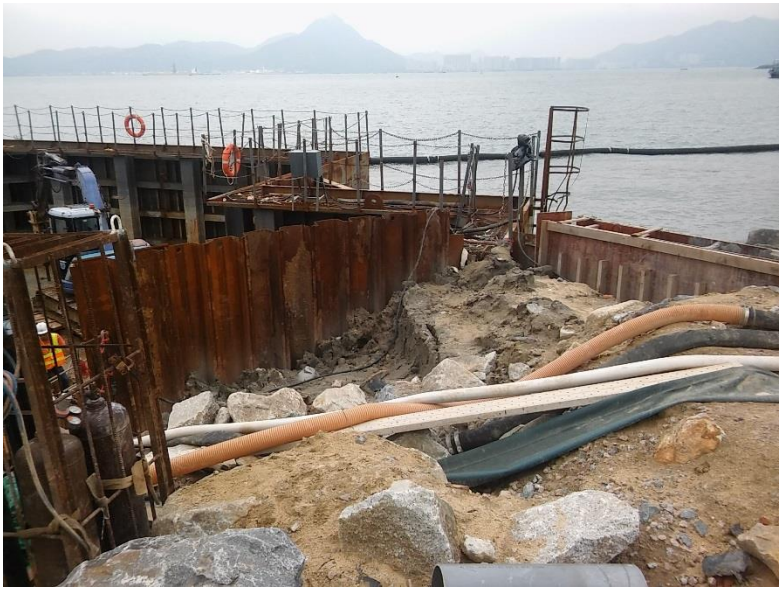

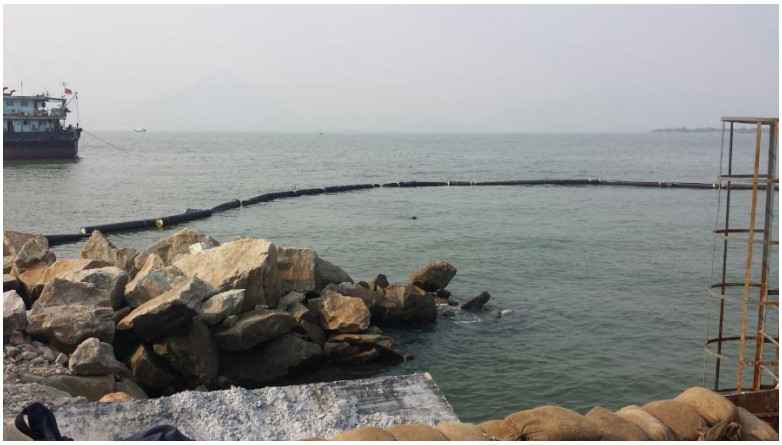

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INVESTIGATION REPORT ON

ACTION AND LIMIT LEVEL NON-COMPLIANCE

FOR

CONTRACT NO. HY/2013/03

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

Report No. Ref.: 0165-15-IR0015

Prepared by: Mr. Vincent Lu

Reviewed by: Mr. Bong Yu

Certified by: _____ Date: 24/10/2017

Mr. Arthur Cheng
Environmental Team Leader

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

1. Project Details

Contract No.: HY/2013/03

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

Project Proponent: Highways Department

Main Contractor: China Harbour Engineering Co. Ltd.

2. Details of Non-compliance

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

Monitoring Date: 29 September 2017

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

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

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

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

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

3. Investigation of Non-compliance

Summary of Investigation

As confirmed with Mr. Marko Chan, Environmental Officer, and operation team of Contract No. HY/2013/03, there was 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. It was unlikely to consume any dissolved oxygen to cause the DO exceedances recorded at the concerned WQM stations during mid-flood tide on 29 September 2017.

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

Investigation Results

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

- Water Quality:
  W1-
  1. barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material;
  2. any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes;
  3. loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;
  4. excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved;
  5. adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; and
  6. all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.

  W2-

1. wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;
2. storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;
3. silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm;
4. rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;
5. measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;
6. open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;
7. discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;
8. surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.

4. Follow up Status (Exceedance)

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

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

5. Recommendation to the Contractor

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

6. Follow up Status (Overall)

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

Water Quality:

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

TAP SHEK KOK

CASTLE PEAK BAY

TAI LAM CHUNG

ROAD

810000 E

815000 E

820000 E

825000 N

820000 N

815000 N

N

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

THE BROTHERS

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

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

Sand Blanket Filling Area
of Three Runway Project

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
SITH BOUNDARY (BY OTHERS)

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

CHEK LAP KOK

TUNG CHUNG

LANTAU ISLAND

NORTH LANTAU HIGHWAY

REV. 修訂	DESCRIPTION 內容摘要	D.C.	P.C. CHECKED 復核	DATE 日期
-	TENDER DRAWING	BWCW	SCT	MAR.14

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. 圖紙編號 60191048/C3/000/C00/1000

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

Plot File by : 2014/3/26 WANGSY

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Appendix A

Notification of Limit Level Exceedance

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Contract No. HY/2013/01 -
Hong Kong- Zhuhai- Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Notifications of Environmental Quality Limits Exceedances Notification No.: 20170929DO

Date of Notification: 9 October 2017

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

Monitoring Location: Water Quality Monitoring Station

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

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

PARAM	STATION	DEPTH	AL (mg/L)	LL (mg/L)	MEASURED AT MID-EBB TIDE (mg/L)	MEASURED AT MID-FLOOD TIDE (mg/L)
DO	IS5	Bottom	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6	4.8	**4.4**
	IS7	Bottom			**4.3**	15.0
	IS8	Bottom			**4.4**	5.7
	IS10(N)	Surface and Middle			**4.8**	6.2
		Bottom			**4.2**	**4.2**
	IS(Mf)11	Bottom			**4.6**	**4.1**
	IS(Mf)16	Bottom			**4.4**	5.5
	IS17	Bottom			4.7	**4.2**
	SR5(N)	Bottom			**4.3**	**4.2**
	SR10B(N)	Bottom			**4.5**	5.0

Remarks:
Bold means AL exceedances.
Bold with underline means LL exceedances.

Reviewed by : Keith Chau Title : ET Leader

Date : 9 October 2017

Copied to : Contractor, Engineer Representative and IEC/ENPO

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Appendix B

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

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