

15 July 2016

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. Darrel Kingan

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/2014/05 – HZMB HKBCF – Remaining Ancillary Buildings and
Facilities
Monthly Environmental Monitoring & Audit Report for June 2016**

Reference is made to the Environmental Team's submission of Monthly Environmental Monitoring & Audit Report for June 2016 (Rev. 1) certified by the ET Leader (ET's ref.: "5140819/18.30/OC013/SO/RC" dated 15 July 2016) and provided to us via e-mail on 15 July 2016.

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.

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. Matthew Fung	(By Fax: 3188 6614)
	HyD	Mr. Ken Woo	(By Fax: 3188 6614)
	Atkins	Ms. Sharifah Or	(By Fax: 2890 6343)
	LCWJV	Mr. Iain Hubert	(By Fax: 3621 0180)

Internal: DY, YH, ENPO Site

Q:\Projects\HYDZHMBEEM00\02_Proj_Mgt\02_Corr\HYDZHMBEEM00_0_4379L.16.doc

Your ref.
Our ref. 5140819/18.30/OC013/SO/RC

Date: 15 July 2016

By Post and e-mail (Donald.Ip@lcwjv.com)

Leighton – Chun Wo Joint Venture
39/F Sun Hung Kai Centre
30 Harbour Road
Hong Kong

Attn: Mr. Donald Ip

Dear Mr. Ip,

**Contract No. HY/2014/05
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities –
Remaining Ancillary Buildings and Facilities
Certification of Monthly EM&A Report No. 4**

Atkins China Limited certifies, in the capacity of Environmental Team Leader, that the Monthly EM&A Report No. 4 for June 2016 (Revision 1) conforms the requirements provided in Condition 5.4 of the Environmental Permit No. EP-353/2009/K.

**Yours faithfully,
for and on behalf of
Atkins China Limited**



**Sharifah OR
Environmental Team Leader**

cc.

1. AECOM – Mr. Darrel Kingan (By Fax.: 3468 2076)
2. ENPO/IEC – Mr. Raymond Dai & Mr. Y.H. Hui (By Fax.: 3465 2899)

Contract No. HY/2014/05

**Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Remaining Ancillary
Buildings and Facilities**

**Monthly EM&A Report No. 4
(Covering the Period from 1 June 2016 to 30 June 2016)**

14 Jul 2016

Revision 1

Main Contractor



Leighton - Chun Wo
Joint Venture

Environmental Team

ATKINS

Contents

Executive Summary

1	Introduction	1
1.1	Basic Project Information.....	1
1.2	Project Organisation.....	2
1.3	Construction Programme.....	2
1.4	Construction Works Undertaken During the Reporting Period.....	2
2	Air Quality Monitoring	3
2.1	Monitoring Locations.....	3
2.2	Monitoring Requirements.....	3
2.3	Monitoring Results.....	4
3	Noise Monitoring	5
3.1	Monitoring Locations.....	5
3.2	Monitoring Requirements.....	5
3.3	Monitoring Results.....	5
4	Environmental Site Inspection and Audit	6
4.1	Site Inspection.....	6
4.2	Advice on the Solid and Liquid Waste Management Status.....	6
4.3	Environmental Licenses and Permits.....	7
4.4	Implementation Status of Environmental Mitigation Measures.....	7
4.5	Summary of Exceedance of the Environmental Quality Performance Limit.....	7
4.6	Summary of Complaints, Notification of Summons and Successful Prosecution.....	7
5	Future Key Issues	8
5.1	Construction Programme for the Coming Months.....	8
5.2	Environmental Site Inspection Schedule for the Coming Month.....	8
6	Conclusions	9
6.1	Conclusions.....	9

Figures

Figure 2.1 Location of Air Quality Monitoring Stations

Figure 3.1 Location of Noise Monitoring Stations

Appendices

Appendix A Location of Works Areas

Appendix B Project Organization for Environmental Works

Appendix C Construction Programme

Appendix D Event and Action Plan

Appendix E Waste Flow Table

Appendix F Environmental Licenses and Permits

Appendix G Implementation Schedule for Environmental Mitigation Measures (EMIS)

Appendix H Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Appendix I Environmental Site Inspection Schedule

Executive Summary

This monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2014/05 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Remaining Ancillary Buildings and Facilities (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to Leighton – Chun Wo Joint Venture (hereafter referred to as “the Contractor”) and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. The construction works of the Contract commenced on 29 February 2016.

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

This is the fourth monthly EM&A Report for the Contract which summarizes findings of the EM&A works during the reporting period from 1 to 30 June 2016.

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7 and noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2010/02 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 during the reporting period are listed below:

Environmental Site Inspection: 1, 8, 15, 22 and 29 June 2016

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 AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

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

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 Change

There was no reporting change during the reporting period.

Future Key Issues

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

- Earth Works for Buildings Inbound Private Car Annexure (Building 025) and Inbound X-Ray Scan Tunnel (Building 058);
- Binding of Buildings 025 and 058; and
- Construction of Reinforced Concrete Structure of Outbound X-Ray Scan Building (Building 053), Building 058 and Inbound X-Ray Scan Building (Building 059).

1 Introduction

1.1 Basic Project Information

- 1.1.1 This monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2014/05 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region. The Contract was awarded to Leighton – Chun Wo Joint Venture (hereafter referred to as “the Contractor”) and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.
- 1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499). An Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. The construction works of the Contract commenced on 29 February 2016. The works areas of the Contract are shown in **Appendix A**.
- 1.1.3 The proposed works under this Contract comprise the following:
- (i) Construction of the following ancillary buildings and facilities including architectural and builder works, structural steel canopy, reinforced concrete frames, foundations, curtain wall facade, building services and electrical and mechanical works:
 - Public Toilets at Vehicle Clearance Plaza (VCP);
 - Customs and Excise Department (C&ED) Dangerous Good Store;
 - Customs Detective Dog Base Building;
 - C&ED Outbound Cargo Examination Building and Examination Platform;
 - Inbound Private Car Annexure;
 - Outbound Private Car Annexure;
 - E&M maintenance Building;
 - Highways Depot & Administration Building;
 - Outbound X-ray Building;
 - Outbound X-ray Scan Tunnel; and
 - Inbound X-ray Scan Tunnel.
 - (ii) Construction of civil provisions, cable containment and power supply for the following systems:
 - Extra Low Voltage (ELV) installed by Contract No. HY/2013/03;
 - Automatic Vehicle Clearance Support System (AVCSS) installed by Contract No. HY/2013/06; and
 - Gantry Type X-ray Vehicle Inspection System installed by Contract No. HY/2014/04.
 - (iii) Supply and installation of Mobile X-ray Vehicle Inspection System and other standalone equipment;
 - (iv) Construction of minor civil engineering works at the periphery of buildings;
 - (v) Construction of minor Landscape hardworks and softworks; and
 - (vi) Other works which are shown on Drawings or specified in the Specification or which may be ordered in accordance with the Contract.
- 1.1.4 This is the fourth Monthly EM&A Report for the Contract which summarizes the audit findings of the EM&A programme during the reporting period from 1 to 30 June 2016.

1.2 Project Organisation

1.2.1 The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1-1**.

Table 1-1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Darrel Kingan	3958 7339	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
Contractor (Leighton – Chun Wo Joint Venture)	Site Agent	Albert Chan	3973 0514	3621 0180
	Environmental Officer	Donald Ip	6461 8635	3621 0180
Environmental Team (Atkins China Limited)	Environmental Team Leader	Sharifah Or	2972 1802	2890 6343
24 hours complaint hotline	---	---	3958 7300	---

1.3 Construction Programme

1.3.1 A copy of the Contractor's construction programme is provided in **Appendix C**.

1.4 Construction Works Undertaken During the Reporting Period

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

- Earth Works for Earth Works for Inbound Private Car Annexure (Building 025), Outbound X-Ray Scan Building (Building 053) and Inbound X-Ray Scan Tunnel (Building 058);
- Binding of Buildings 025, 053 & 058;
- Construction of RC Structure of Inbound X-Ray Scan Building (Building 059); and
- Temporary Drainage System of WA3 Storage Area.

2 Air Quality Monitoring

2.1 Monitoring Locations

- 2.1.1 The air quality monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF.
- 2.1.2 The ET of the Contract or another ET of the HZMB project is required to conduct 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 Nos. HY/2010/02 and HY/2011/03. **Figure 2.1** shows the locations of the air monitoring stations.

Table 2-1 Construction Dust Monitoring Locations

ID	Location Description
AMS 6 ⁽¹⁾	Dragonair/CNAC (Group) Building
AMS 7 ⁽¹⁾	Hong Kong SkyCity Marriott Hotel

Remark:

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

2.2 Monitoring Requirements

- 2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2010/02 and HY/2011/03.
- 2.2.2 The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.2** and **Table 2.3**, respectively.

Table 2-2 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS 6 – Dragonair / CNAC (Group) Building (HKIA)	360	500
AMS 7 - Hong Kong SkyCity Marriott Hotel	370	

Table 2-3 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS 6 – Dragonair / CNAC (Group) Building (HKIA)	173	260
AMS 7 - Hong Kong SkyCity Marriott Hotel	183	

- 2.2.3 The event and action plan is provided in **Appendix D**.
- 2.2.4 If exceedance(s) at these station(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the 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 Nos. HY/2011/03 and HY/2010/02, 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 exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7 recorded by the ET of Contract No. HY/2010/02 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/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct impact noise monitoring at NMS2 and NMS3B as part of EM&A programme if these noise monitoring stations are no longer covered under Contract No. HY/2010/02. **Figure 3.1** shows the locations of noise monitoring stations.

Table 3-1 Construction Noise Monitoring Locations

ID	Location Description
NMS2 ⁽¹⁾	Seaview Crescent
NMS3B ⁽¹⁾⁽²⁾	Site Boundary of Site Office Area at Works Area WA2

Remarks:

- (1) The ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
- (2) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

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 Nos. HY/2010/02.
- 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

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

Notes :

If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

* Limit level is 70 dB(A) for schools and 65 dB(A) during school examination period.

- 3.2.3 The event and action plan is provided in **Appendix D**.
- 3.2.4 If exceedance(s) at these station(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

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/2010/02. No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2010/02 during the reporting period.

4 Environmental Site Inspection and Audit

4.1 Site Inspection

- 4.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Contract. During the reporting period, site inspections were carried out on 1, 8, 15, 22 and 29 June 2016.
- 4.1.2 Particular observations during the site inspections and corrective actions undertaken by the Contractor are described in **Table 4.1**.

Table 4-1 Summary of Environmental Site Inspections

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
1 June 2016	1. A chemical container was found without drip tray at Building 059 Area.	1. The chemical container was removed at Building 059 Area	8 June 2016
8 June 2016	1. The Environmental Permit and Construction Noise Permit of the Contract were not displayed near site entrance of Building 059 Area.	1. The Environmental Permit and Construction Noise Permit of the Contract were displayed near the site entrance of Building 059 Area.	15 June 2016
15 June 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
22 June 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
29 June 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL

- 4.1.3 The Contractor has rectified all observations as identified during environmental site inspections within this reporting month.

4.2 Advice on the Solid and Liquid Waste Management Status

- 4.2.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.
- 4.2.2 The monthly summary of waste flow table is detailed in **Appendix E**.
- 4.2.3 The Contractor was reminded that chemical waste should be properly treated and stored temporarily in designated chemical waste storage areas on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.



4.3 Environmental Licenses and Permits

- 4.3.1 The valid environmental licenses and permits during the reporting period are summarized in **Appendix F**.

4.4 Implementation Status of Environmental Mitigation Measures

- 4.4.1 In response to the site audit findings, the Contractors carried out corrective actions.
- 4.4.2 The Contractor conducts watering on all exposed soil within the Contract site and associated works areas 8 times per day when construction activities are being undertaken.
- 4.4.3 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix G**. Most of the necessary mitigation measures were implemented properly.

4.5 Summary of Exceedance of the Environmental Quality Performance Limit

- 4.5.1 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.
- 4.5.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 4.5.3 There was no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.6 Summary of Complaints, Notification of Summons and Successful Prosecution

- 4.6.1 There were no complaints received in relation to the environmental impact during the reporting period. No notification of summons and prosecution was received during the reporting period.
- 4.6.2 Statistics on environmental complaints, notifications of summons and successful prosecutions are summarized in **Appendix H**.

5 Future Key Issues

5.1 Construction Programme for the Coming Months

5.1.1 As informed by the Contractor, the major construction activities for July 2016 are summarized in **Table 5.1**.

Table 5.1 Construction Activities for July 2016

Site Area	Description of Activities
Buildings 025 and 058	Earth Works
Buildings 025 and 058	Binding
Buildings 053, 058 and 059	Construction of Reinforced Concrete Structure

5.2 Environmental Site Inspection Schedule for the Coming Month

5.2.1 The tentative schedule for weekly site inspections for July 2016 is provided in **Appendix I**.



6 Conclusions

6.1 Conclusions

- 6.1.1 The construction works of the Contract commenced on 29 February 2016. The fourth Monthly EM&A Report summarizes findings of the EM&A works during the reporting period from 1 to 30 June 2016.
- 6.1.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.
- 6.1.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 6.1.4 There was no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 6.1.5 Environmental site inspections were carried out on 1, 8, 15, 22 and 29 June 2016. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.
- 6.1.6 There were no complaints received in relation to the environmental impact during the reporting period.
- 6.1.7 No notification of summons and successful prosecution was received during the reporting period.



FIGURES

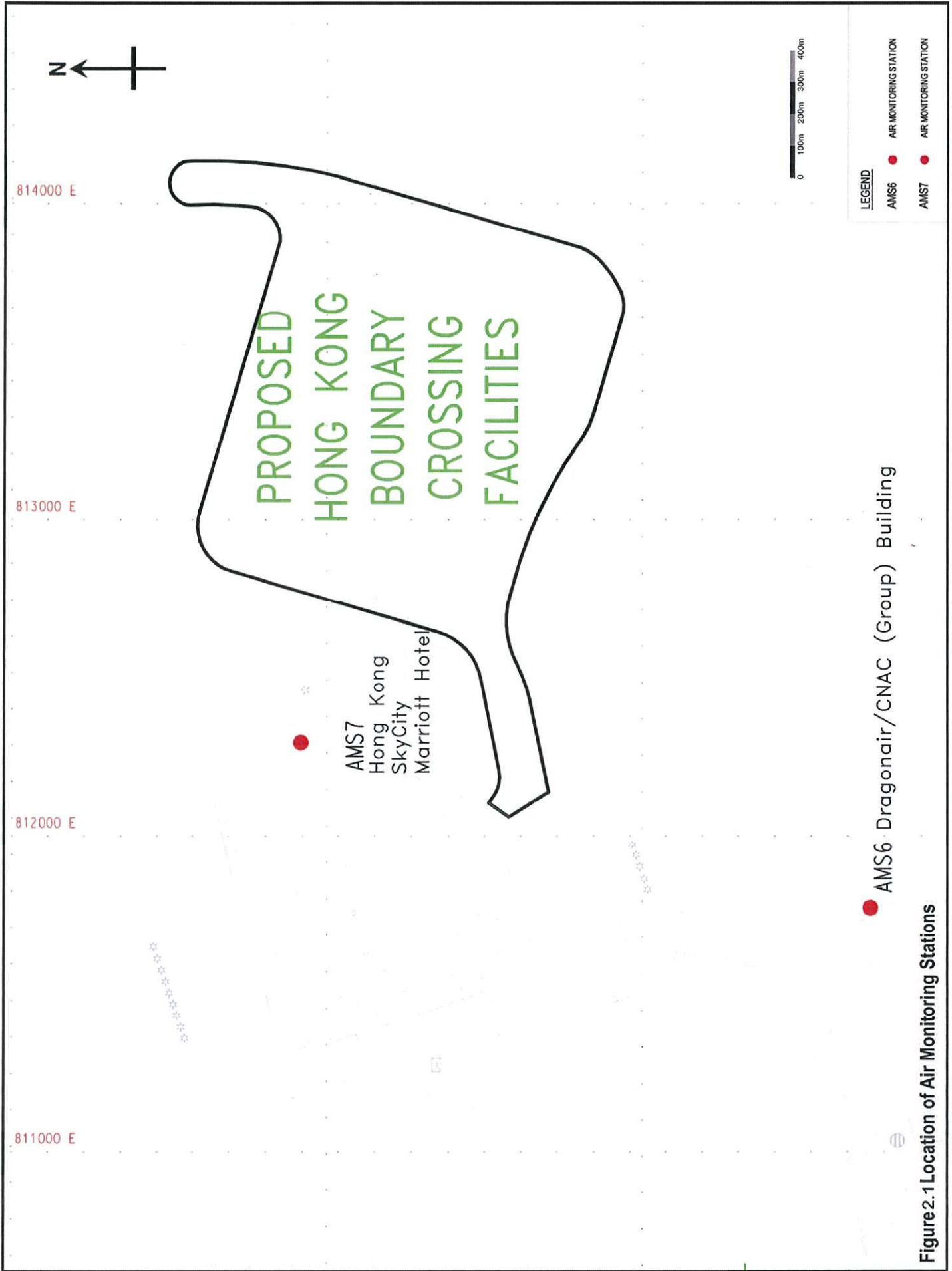


Figure 2.1 Location of Air Monitoring Stations

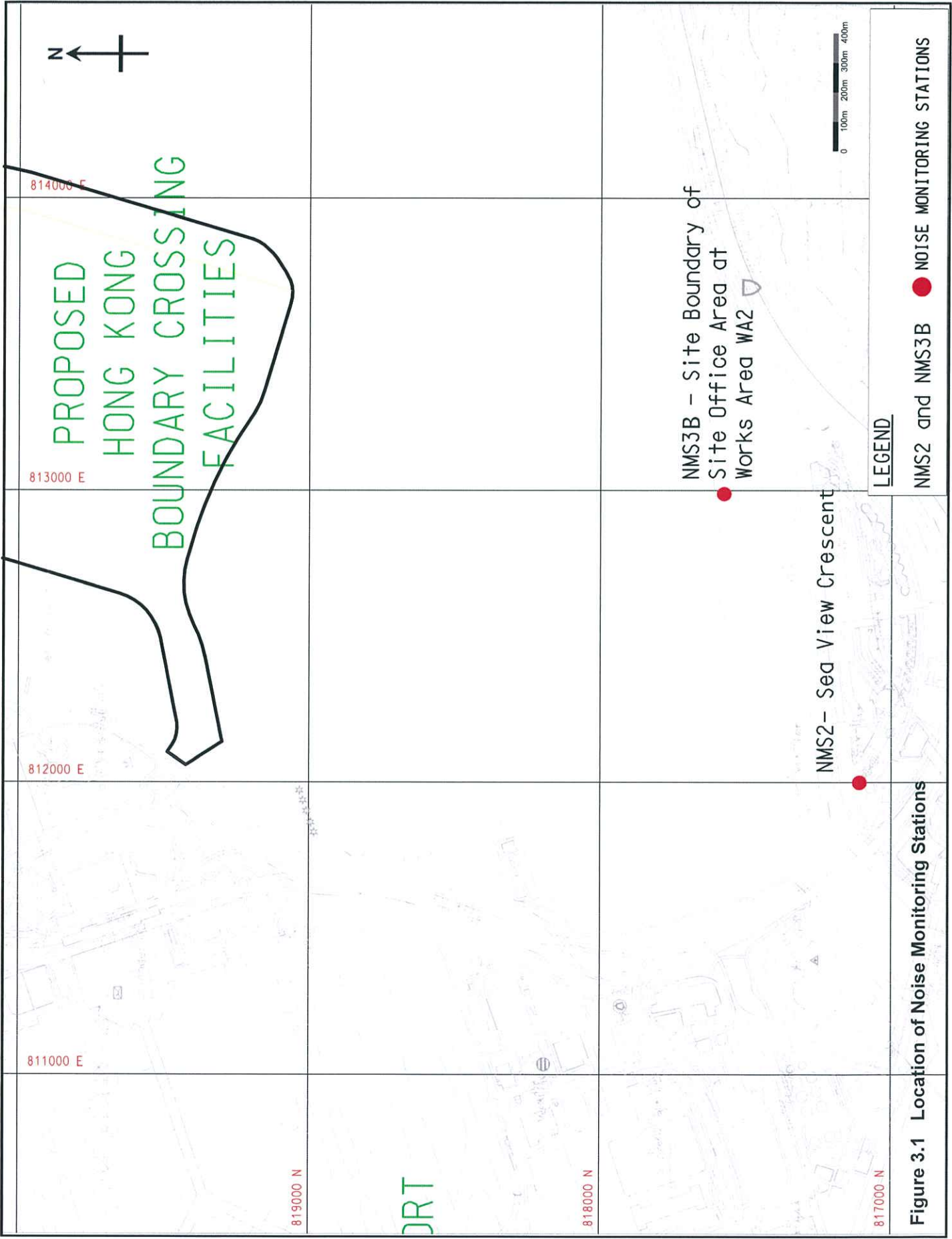
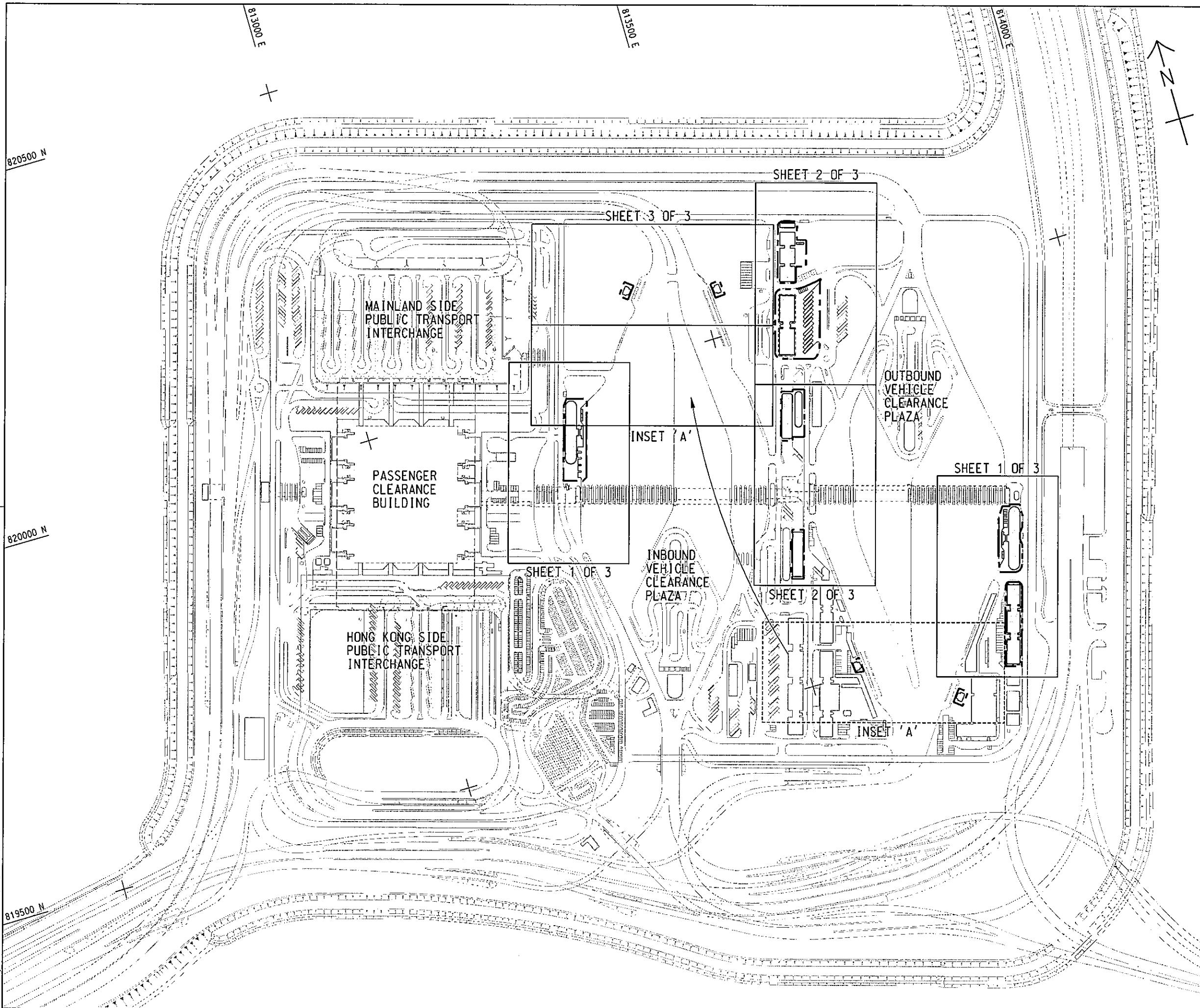


Figure 3.1 Location of Noise Monitoring Stations



APPENDIX A

Location of Works Areas



REV.	DESCRIPTION	DATE
01	TENDER DRAWING	BWCW SCT MAR. 15

HIGHWAYS DEPARTMENT
 港珠澳大橋香港邊境口岸管理處
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - REMAINING ANCILLARY BUILDINGS AND FACILITIES

KEY PLAN

Rogers Stirk Harbour + Partners
 BURO HAPPOLD ATKINS ADI

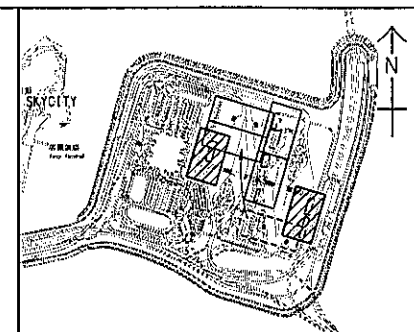
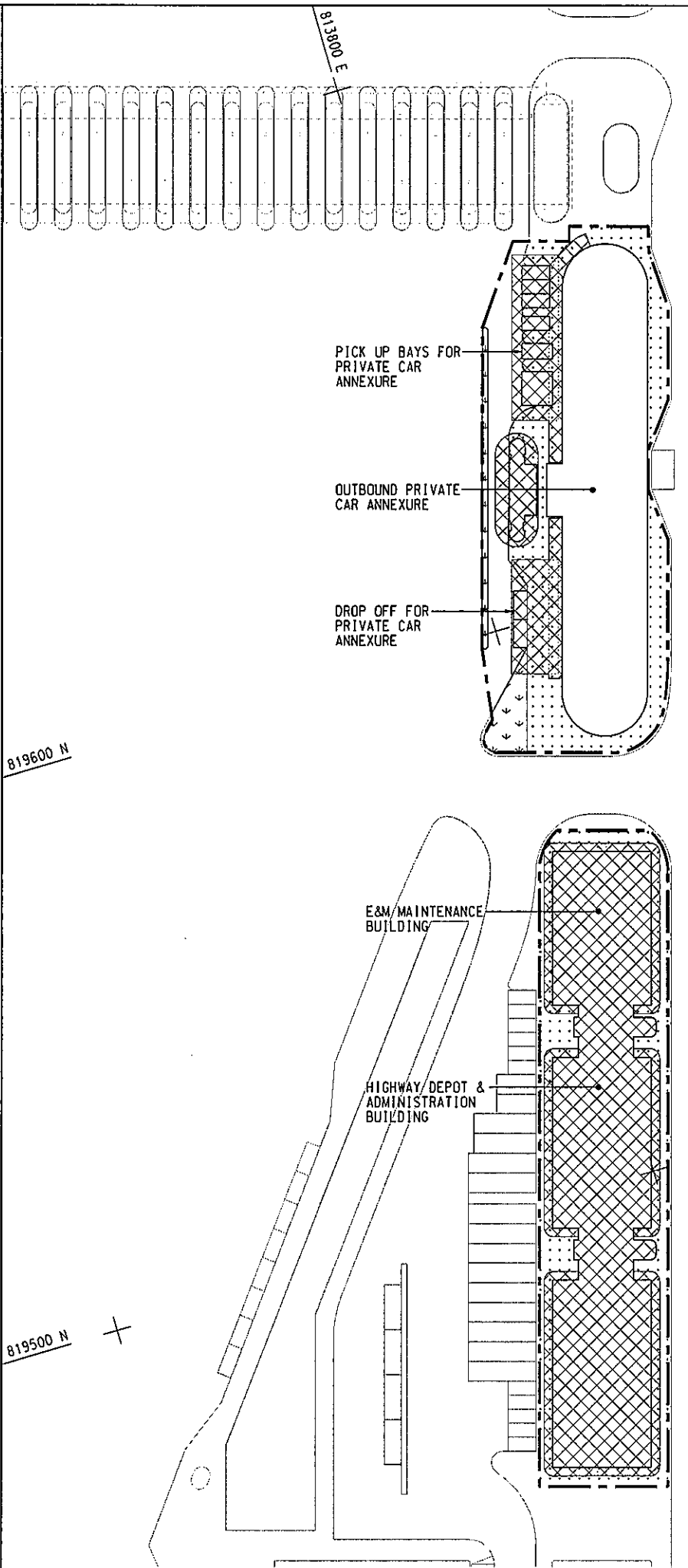
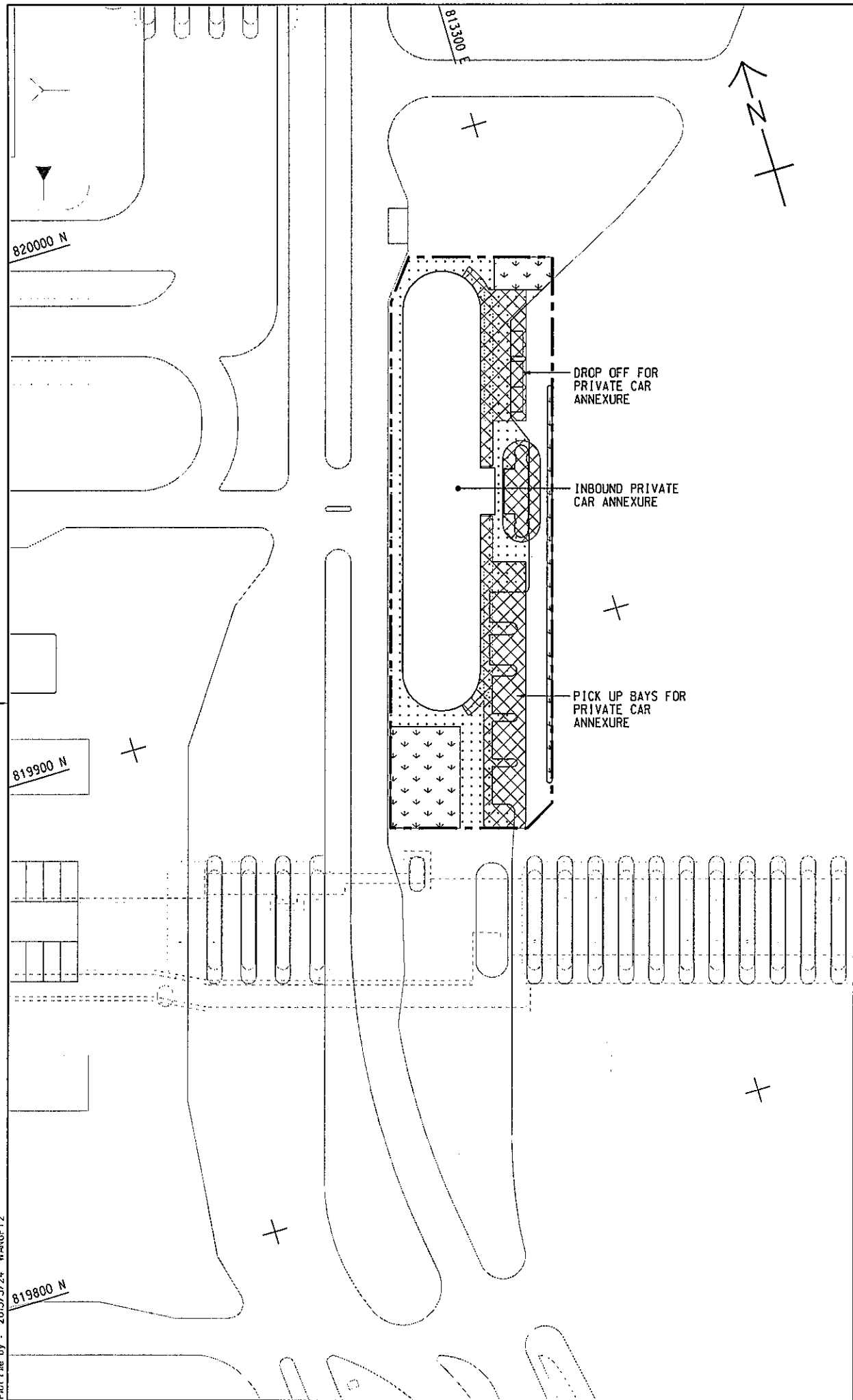
DRG. NO. 60191048/C8/000/C00/1010
 圖紙編號

DESIGNED BY	CONTRACT NO.	P. BY / APPROVED
BWCW	HY/2014/05	R.R.A. / TRH

DRAWN BY	STATUS
WSY	PREPARED
SCALE	DATE
A1 : 2500	
DIMENSIONS ARE IN METRES	

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Plot File by : 2015/3/24 WANGFY2



KEY PLAN
SCALE 1 : 20000

NOTE:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C8/000/C00/1012 AND 1013.

- LEGEND:
- SITE BOUNDARY
 - FOOTPATH (DETAILS REFER TO LANDSCAPE DETAIL DRAWINGS)
 - CANOPY
 - PLANTING AREA

- TENDER DRAWING		BWCY SCI	MAR. 15
NO.	DESCRIPTION	DATE	DATE

HONG KONG HIGHWAYS DEPARTMENT
 香港公路局
 港珠澳大桥香港二邊管理處
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - REMAINING ANCILLARY BUILDINGS AND FACILITIES

GENERAL LAYOUT PLAN

SHEET 1 OF 3

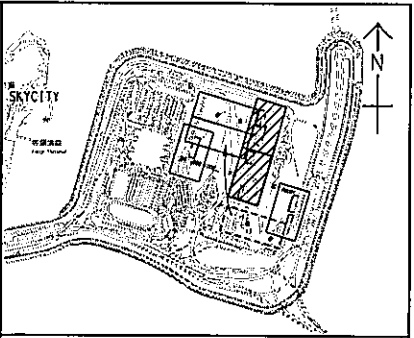
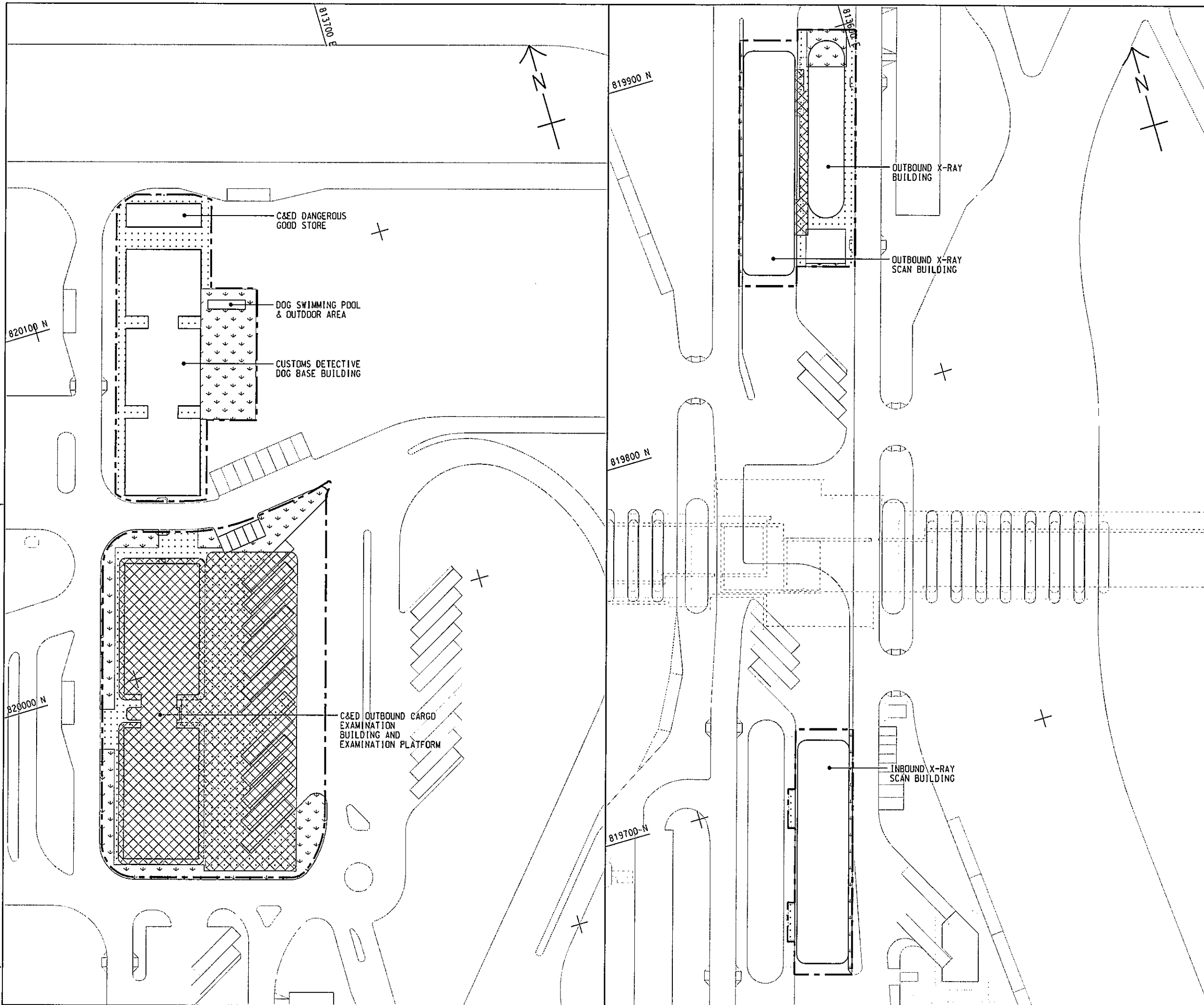
AECOM **Aedas**
 Rogers Stirk Harbour + Partners
 BURO HAPPOLD ATKINS ADI

DRG. NO. 60191048/C8/000/C00/1011
 圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約號	APPROVED BY 核准
BWCY	HY/2014/05	TKH
DRAWN BY 繪圖	STATUS 狀態	
WSY		

SCALE
比例
1 : 500
DIMENSIONS ARE IN
尺寸單位
METRES
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Plot File by : 2015/3/24 WANGFY2



KEY PLAN
SCALE 1 : 20000

- NOTES:
- FOR NOTES AND LEGEND REFER TO DRAWING NO. 60191048/C8/000/C00/1011.
 - THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C8/000/C00/1011 AND 1013.

NO.	DESCRIPTION	DATE
-	TENDER DRAWING	BVCW SCI MAR. 15

HONG KONG-ZHUIHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - REMAINING ANCILLARY BUILDINGS AND FACILITIES

GENERAL LAYOUT PLAN

SHEET 2 OF 3

Rogers Stirk Harbour + Partners
 BURO HAPPOLD ATKINS ADI

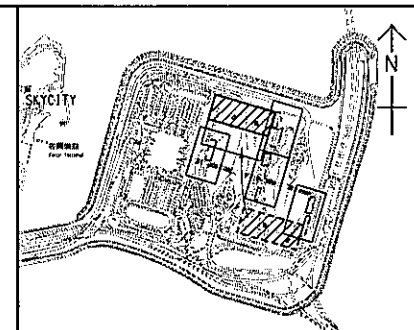
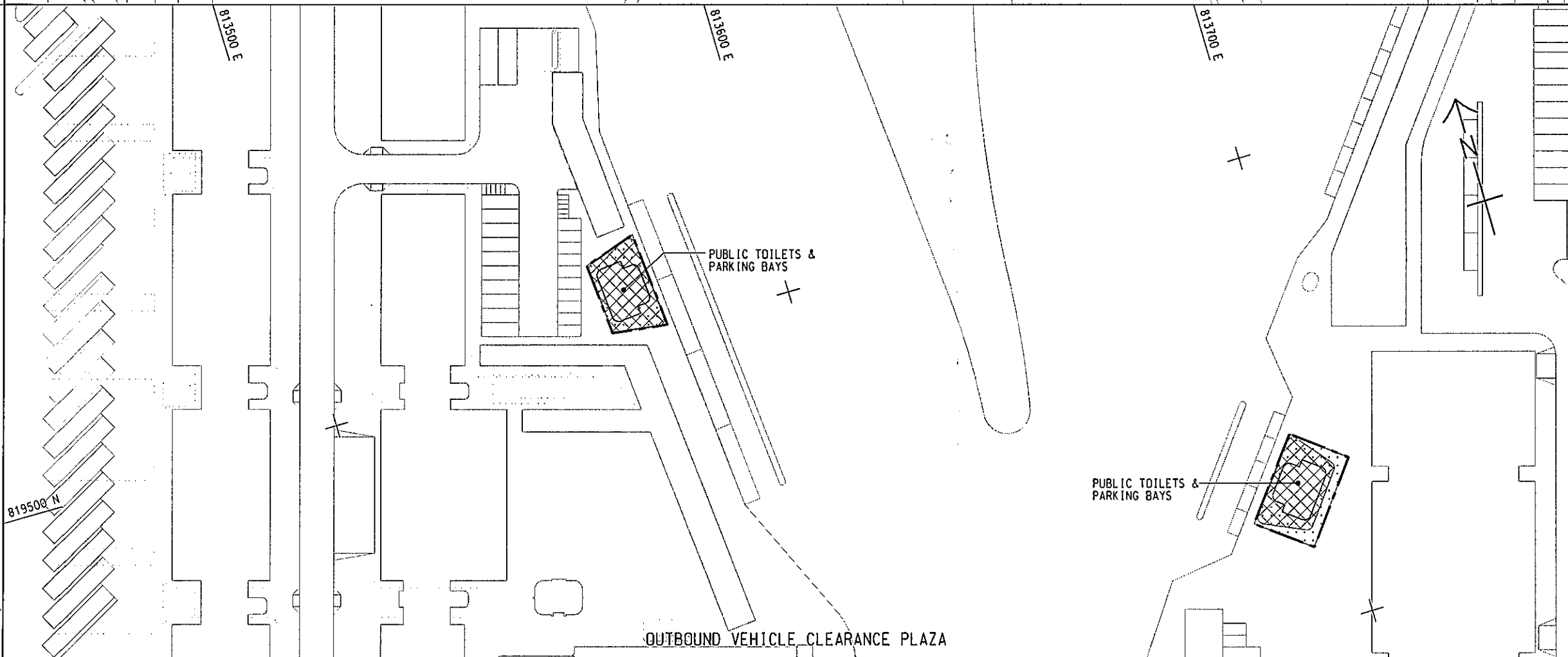
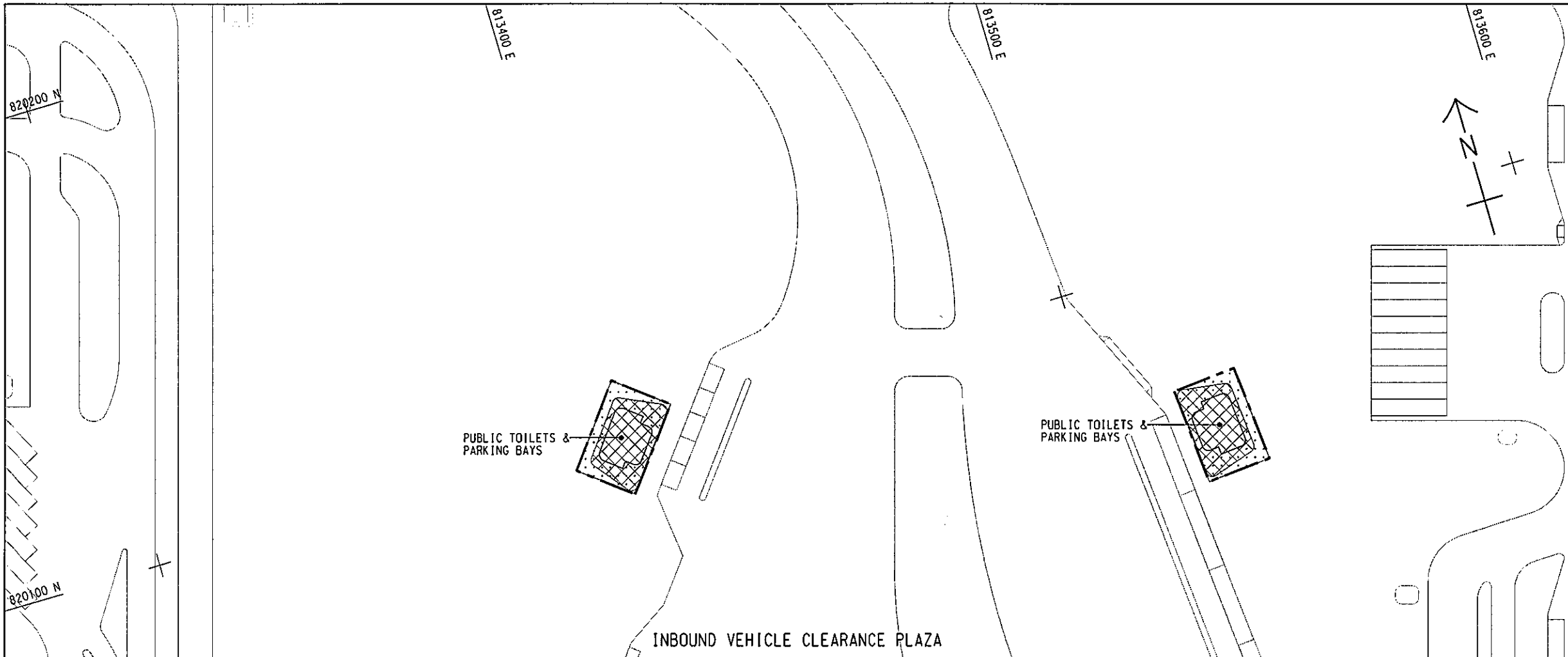
DRG. NO. 60191048/C8/000/C00/1012

DESIGNED BY BVCW	CONTRACT NO. HY/2014/05	P. BY / APPROVED TKH
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DRAWN BY WSY	STATUS REVISED
SHEET A1 1 : 500	
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KEY PLAN
SCALE 1 : 20000

NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60191048/C8/000/C00/1011.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C8/000/C00/1011 AND 1012.

NO.	DESCRIPTION	DATE
1	TENDER DRAWING	2014/03/15

HIGHWAYS DEPARTMENT
 香港路政處
 HONG KONG - ZHUSHI - MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - REMAINING ANCILLARY BUILDINGS AND FACILITIES
 Hong Kong - Zhushai - Macao Bridge Hong Kong Project Management Office

GENERAL LAYOUT PLAN

SHEET 3 OF 3

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

DRG. NO. 60191048/C8/000/C00/1013
圖紙編號

DESIGNED BY 設計	CONTRACT NO. 合約編號	P. D. APPROVED 審核
DWCW	HY/2014/05	WT

DRAWN BY 繪圖	STATUS 狀態
WSY	MR

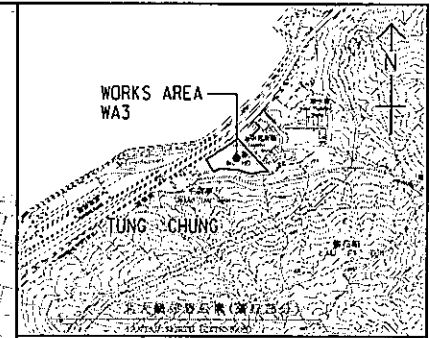
SCALE 1:500
尺寸比例

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Plot File by : 2015/3/24 WANGFY2

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	819043.356
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
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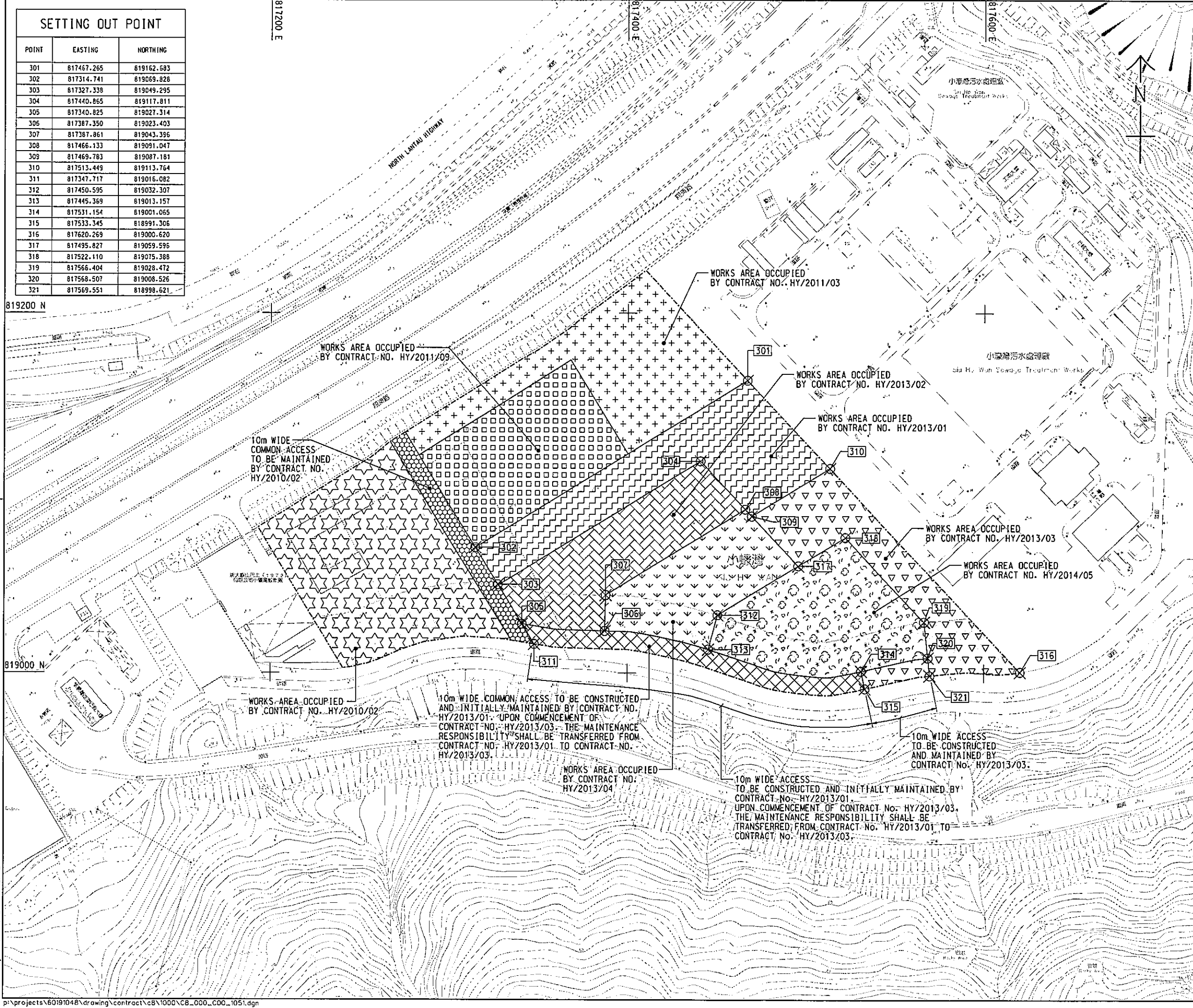
LOCATION PLAN
SCALE 1 : 25000

NOTES:

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

LEGEND:

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



NO.	DESCRIPTION	DATE
1	TENDER DRAWING	BWCW SCI MAR. 15

HONG KONG HIGHWAYS DEPARTMENT
 香港公路局
 港珠澳大橋香港工程管理局
 Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - REMAINING ANCILLARY BUILDINGS AND FACILITIES

WORKS AREA WA3

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

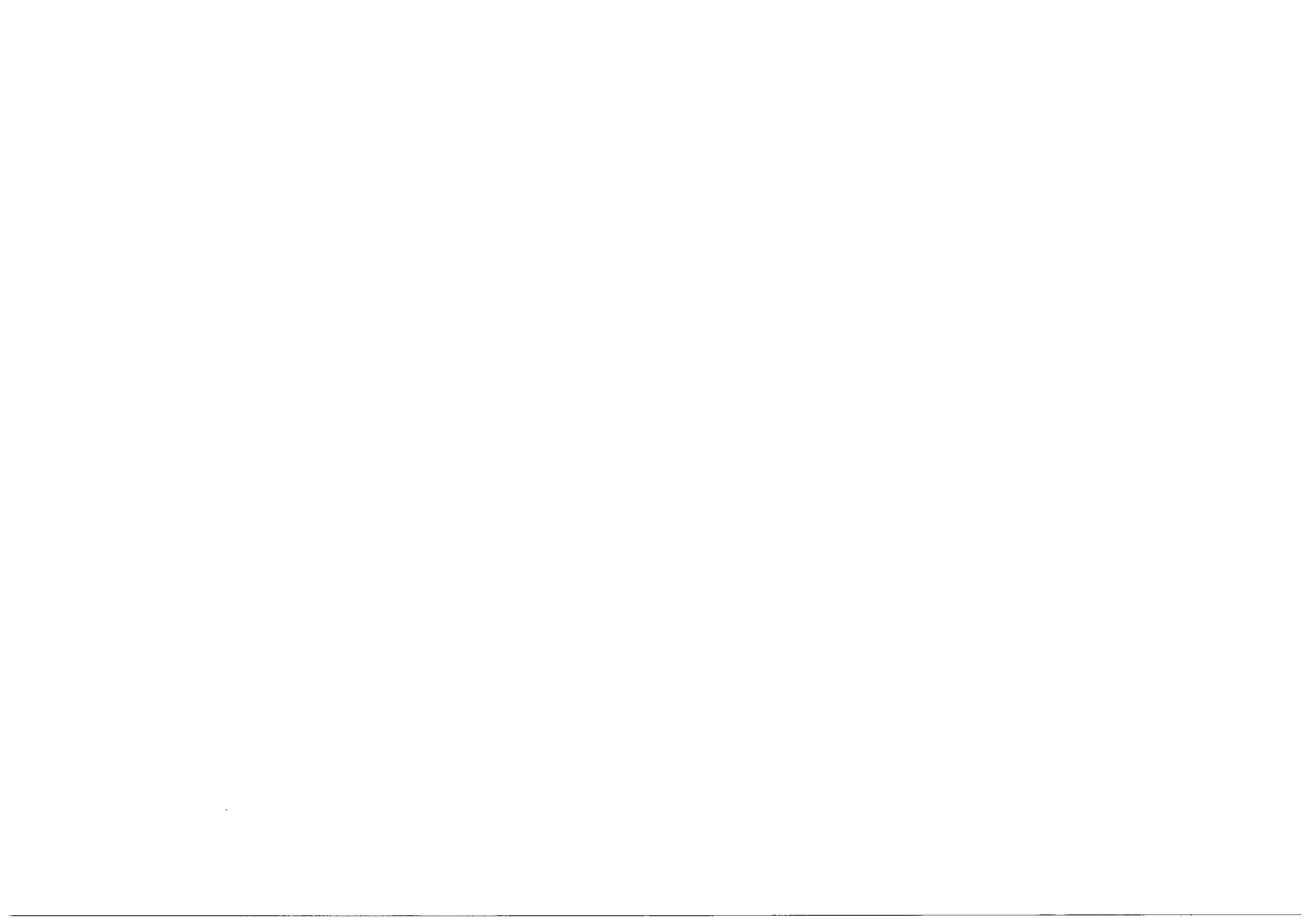
DRG. NO. 60191048/C8/000/C00/1051
 圖紙編號

DESIGNED BY BWCW	CONTRACT NO. HY/2014/05	P. Dir. APPROVED TKH
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SCALE 1:1000
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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

Contract No. HY/2014/05

Hong Kong-Zhuhai-Macao Bridge

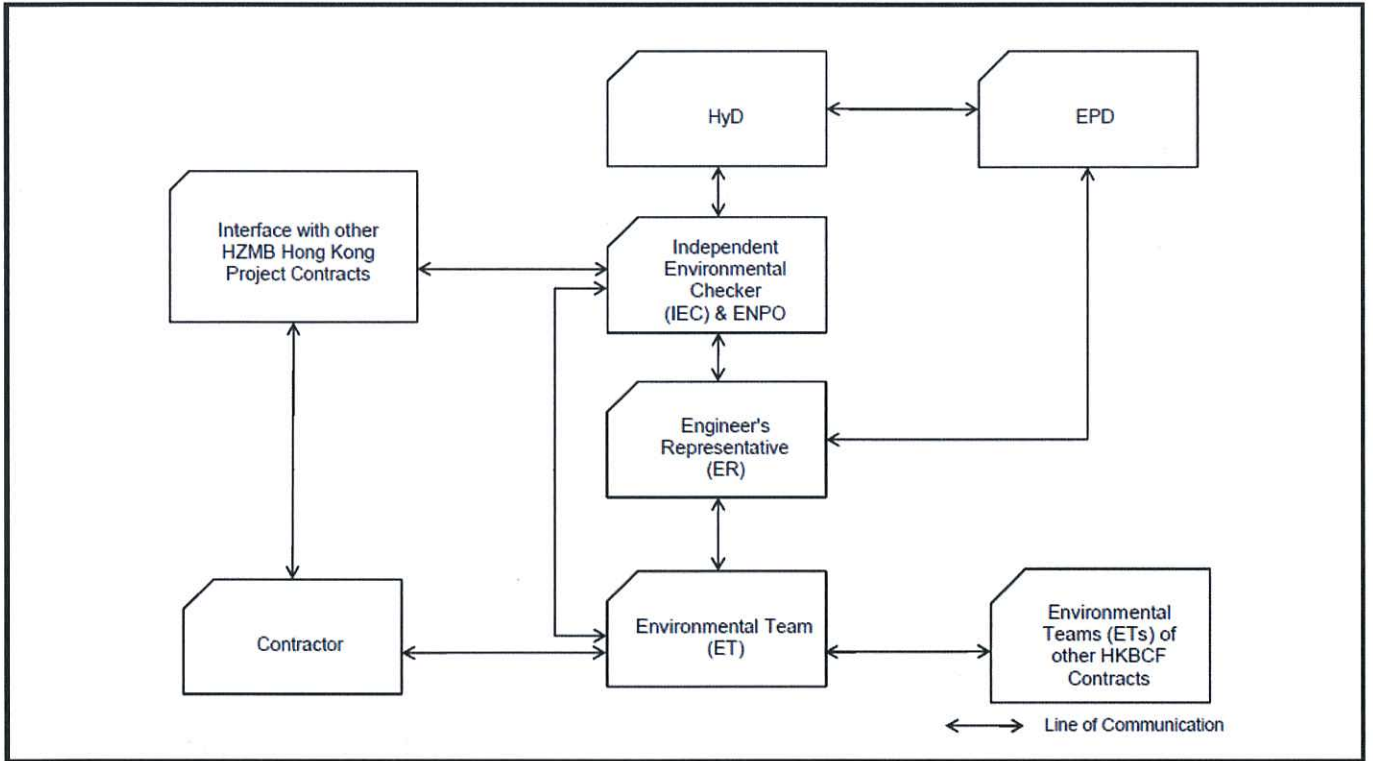
Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities

Monthly EM&A Report No. 4

APPENDIX B

Project Organization for Environmental Works

Project Organisation for Environmental Works





APPENDIX C

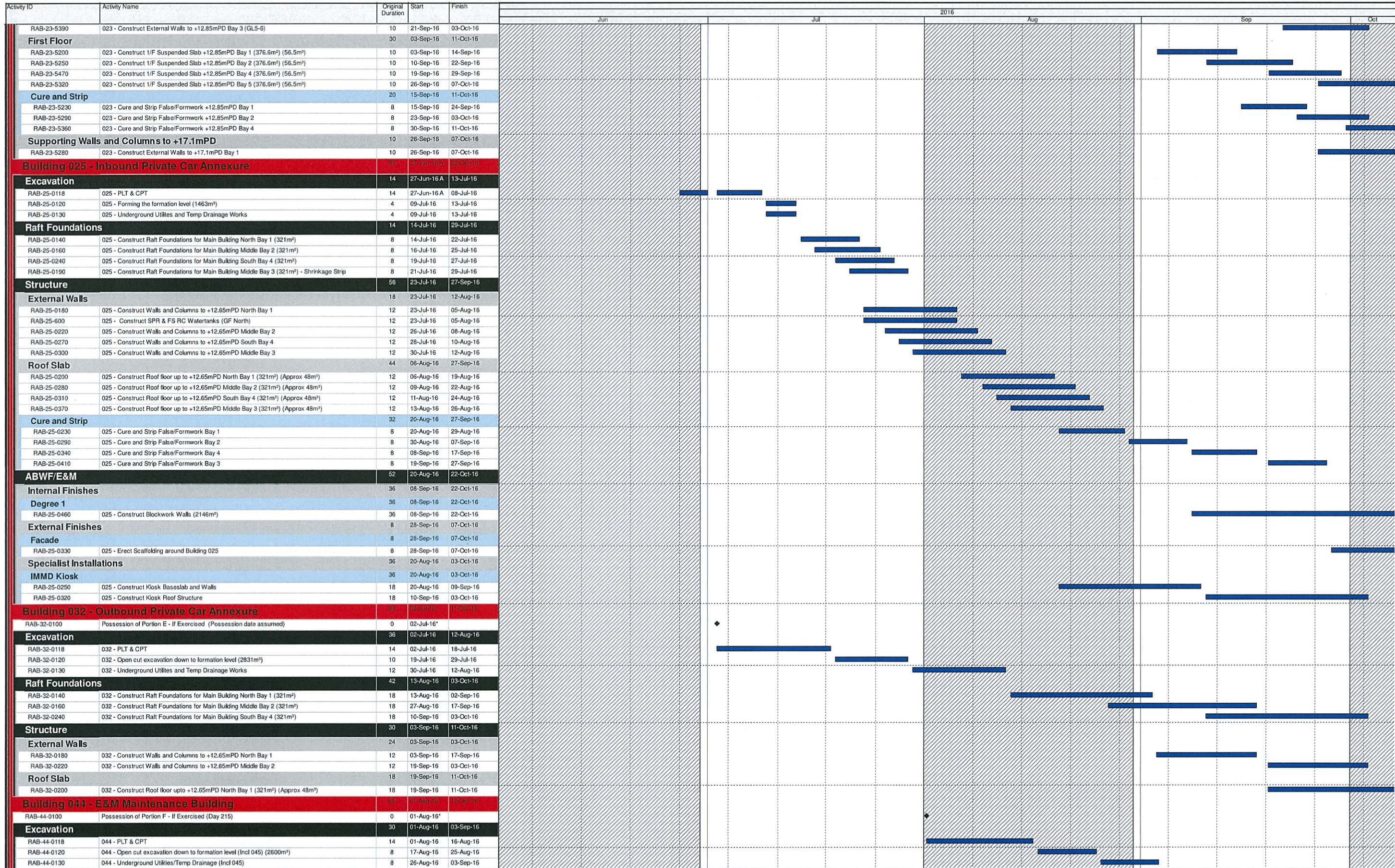
Construction Programme

Activity ID	Activity Name	Original Duration	Start	Finish	Jun	Jul	2016	Aug	Sep	Oct
HY/2014/05 HKMZB HKBCF - Remaining Ancillary Buildings ar										
GENERAL/PRELIMINARIES										
Salient Key Dates and Milestones										
Commencement										
SECTION VIII	Section subject to Excision Section VIII - (Day 200) Building 044 and 045	0	17-Jul-16*	17-Jul-16*						
SECTION IX	Section subject to Excision Section IX - (Day 200) Building 050 (H1)	0	17-Jul-16*	17-Jul-16*						
SECTION X	Section subject to Excision Section X - (Day 200) Building 050 (H2)	0	17-Jul-16*	17-Jul-16*						
SECTION XI	Section subject to Excision Section XI - (Day 200) Building 050 (A1)	0	17-Jul-16*	17-Jul-16*						
SECTION XII	Section subject to Excision Section XII - (Day 200) Building 050 (A2)	0	17-Jul-16*	17-Jul-16*						
SECTION XIII	Section subject to Excision Section XIII - (Day 230) Landscaping Works	0	16-Aug-16*	16-Aug-16*						
CONSTRUCTION										
Building 021 - C&ED Dangerous Goods Store										
RAB-21-0100	Possession of Portion G2 - If Exercised (Possession date assumed)	0	02-Jul-16*	02-Jul-16*						
Raft										
RAB-21-0118	021 - PLT & CPT	14	02-Jul-16	18-Jul-16						
RAB-21-0120	021 - Construct Raft Foundations and Base Slab	18	29-Aug-16	19-Sep-16						
Structure										
RAB-21-0140	021 - Construct Supporting Columns to +11mPD GL3-4	8	20-Sep-16	28-Sep-16						
RAB-21-2230	021 - Construct External Wall to +11mPD GL3-4	8	29-Sep-16	08-Oct-16						
RAB-21-2260	021 - Construct Supporting Columns to +11mPD GL1-2	8	29-Sep-16	08-Oct-16						
Building 022 - Customs Detective Dog Base Building										
RAB-22-0100	Possession of Portion G3 - If Exercised	0	02-Jul-16*	02-Jul-16*						
Excavation										
RAB-22-0118	022 - PLT & CPT	14	02-Jul-16	18-Jul-16						
RAB-22-0120	022 - Open cut excavation down to formation level (1047m²) (incl 021)	5	19-Jul-16	23-Jul-16						
RAB-22-0130	022 - Underground Utilities/Temp Drainage (Incl 021)	12	25-Jul-16	06-Aug-16						
Raft Foundations										
RAB-22-0140	022 - Construct Raft Foundation and Baseslab North	18	08-Aug-16	27-Aug-16						
RAB-22-0260	022 - Construct Raft Foundations and Baseslab South	18	22-Aug-16	10-Sep-16						
RAB-22-0190	022 - Construct Raft Foundations and Baseslab Middle - Shrinkage Pour	18	20-Sep-16	12-Oct-16						
Structure										
External Walls										
RAB-22-0230	022 - Construct External Walls and Support Columns to +11.00mPD (N)	16	29-Aug-16	15-Sep-16						
RAB-22-0390	022 - Construct External Walls and Support Columns to +11.00mPD (S)	16	12-Sep-16	30-Sep-16						
Roof Slab										
North Structure										
RAB-22-0270	022 - Construct R/F Suspended Slab at +11.00mPD Bay 1 (240m²) (Approx 36m³)	18	17-Sep-16	08-Oct-16						
South Structure										
RAB-22-0430	022 - Construct R/F Suspended Slab at +11.00mPD Bay 1 (240m²) (Approx 36m³)	18	17-Sep-16	08-Oct-16						
ABWF/E&M										
Specialist Installations										
Window Wall										
RAB-23-7090	022 - Install Window Wall Cast In Items (North)	8	29-Aug-16	06-Sep-16						
Dog Swimming Pool										
RAB-22-0160	022 - Setting out of Dog Swimming Pool	2	12-Sep-16	13-Sep-16						
RAB-22-0170	022 - Excavate for Dog Swimming Pool	2	14-Sep-16	15-Sep-16						
RAB-22-0200	022 - RC Structure	12	17-Sep-16	30-Sep-16						
Building 023 - C&ED Outbound Cargo Examination Building and Ex										
RAB-23-5000	Possession of Portion G1	0	27-Jun-16 A	27-Jun-16 A						
Excavation										
RAB-23-5018	023 - PLT & CPT	14	02-Jul-16	18-Jul-16						
RAB-23-5020	023 - Open cut excavation down to formation level (GL 1-10) (2295m²)	8	30-Jul-16	08-Aug-16						
Raft Foundations - Inspection Platform										
RAB-23-5050	023 - Construct Raft Foundations for Platform Bay 1	12	09-Aug-16	22-Aug-16						
RAB-23-5090	023 - Construct Raft Foundations for Platform Bay 2	12	16-Aug-16	29-Aug-16						
RAB-23-5150	023 - Construct Raft Foundations for Platform Bay 3	12	23-Aug-16	05-Sep-16						
RAB-23-5190	023 - Construct Raft Foundations for Platform Bay 4	12	30-Aug-16	12-Sep-16						
Raft Foundations - Main Building										
RAB-23-5040	023 - Construct Raft Foundations for Main Building Bay 1 (GL8-10) (376.6m²)	12	09-Aug-16	22-Aug-16						
RAB-23-5080	023 - Construct Raft Foundations for Main Building Bay 2 (GL6-8) (376.6m²)	12	16-Aug-16	29-Aug-16						
RAB-23-5180	023 - Construct Raft Foundations for Main Building Bay 4 (GL3-5) (376.6m²)	12	23-Aug-16	05-Sep-16						
RAB-23-5240	023 - Construct Raft Foundations for Main Building Bay 5 (GL1-3) (376.6m²)	12	30-Aug-16	12-Sep-16						
RAB-23-5140	023 - Construct Raft Foundations for Main Building Bay 3 (GL5-6) (87.8m²)	12	06-Sep-16	20-Sep-16						
Structure										
Supporting Walls and Columns to +12.85mPD										
RAB-23-5110	023 - Construct External Walls to +12.85mPD Bay 1 (GL8-10)	10	23-Aug-16	02-Sep-16						
RAB-23-5160	023 - Construct External Walls to +12.85mPD Bay 2 (GL6-8)	10	30-Aug-16	09-Sep-16						
RAB-23-2180	023 - Install FS and SPR RC Water Tanks (GF North)	10	30-Aug-16	09-Sep-16						
RAB-23-5270	023 - Construct External Walls to +12.85mPD Bay 4 (GL3-5)	10	06-Sep-16	17-Sep-16						
RAB-23-5300	023 - Construct External Walls to +12.85mPD Bay 5 (GL1-3)	10	13-Sep-16	24-Sep-16						

- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme
 HKMZB HKBCF - Remaining Ancillary Buildings and Facilities

Date	Revision	Checked	Approved
01-Jul-16	Three Month Rolling Programme	AS	



- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme
HKMZB HKBCF - Remaining Ancillary Buildings and Facilities

Date	Revision	Checked	Approved
01-Jul-16	Three Month Rolling Programme	AS	

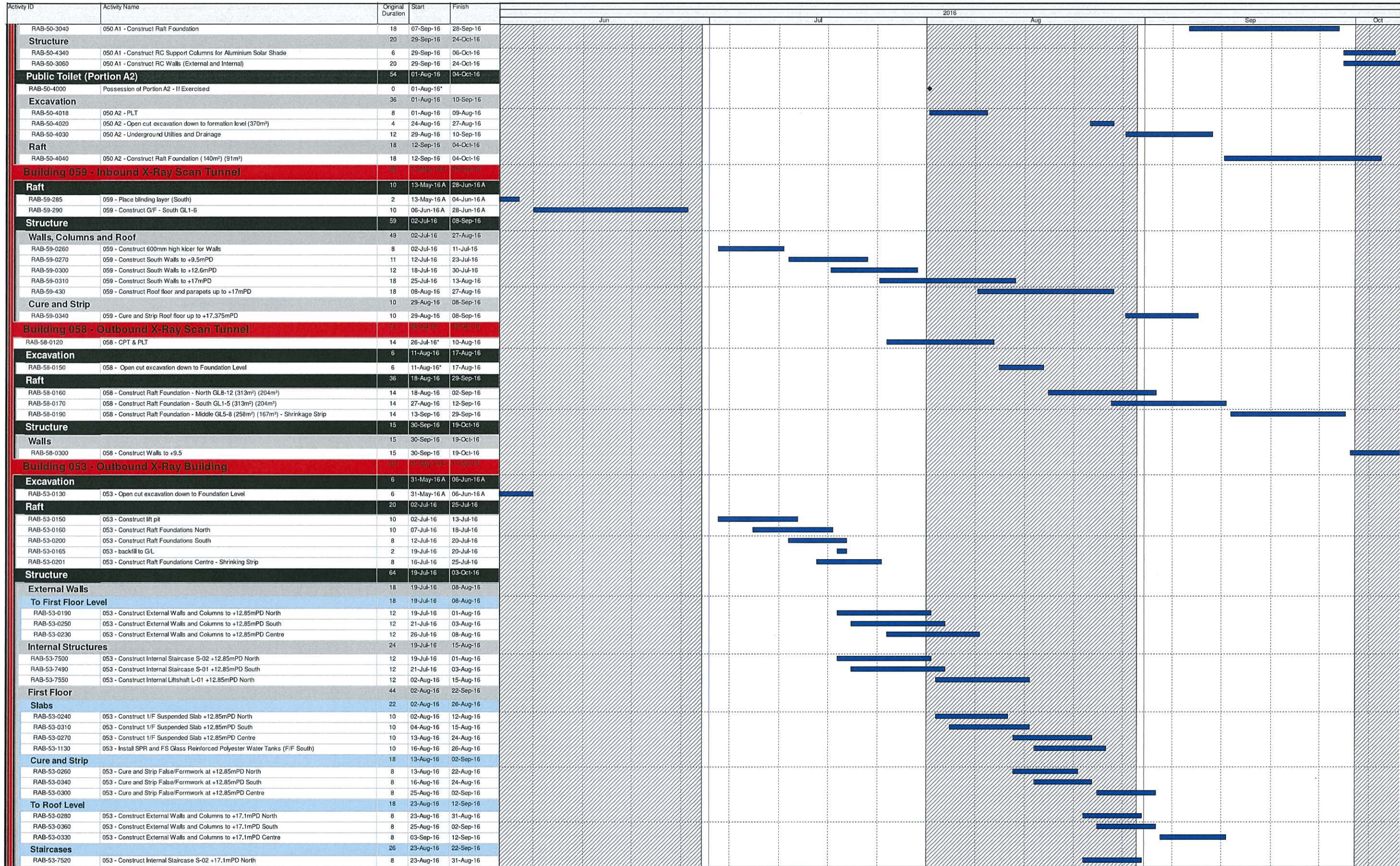
Activity ID	Activity Name	Original Duration	Start	Finish	Jun	Jul	2016	Aug	Sep	Oct	
Raft											
RAB-44-1140	044 - Construct lift pit for L-01	8	26-Aug-16	03-Sep-16							
RAB-44-0140	044 - Construct Raft Foundations for Main Building Bay 1 (North)(242m²)	12	05-Sep-16	19-Sep-16							
RAB-44-0160	044 - Construct Raft Foundations for Main Building Bay 2 (South)(242m²)	12	12-Sep-16	26-Sep-16							
Structure											
External Walls											
Ground to First Floor											
RAB-44-0170	044 - Construct External Walls to +12.15mPD Bay 1 (North)	12	20-Sep-16	04-Oct-16							
RAB-44-0200	044 - Construct External Walls to +12.15mPD Bay 2 (South)	12	27-Sep-16	12-Oct-16							
ABWF/E&M											
North Section											
Specialist Installations											
Window Wall											
RAB-23-7110	044 - Install Window Wall Cast in Items Base slab	6	20-Sep-16	26-Sep-16							
Building 045 - Highways Depot & Administration Building											
RAB-45-0100	Possession of Portion F - If Exercised (Day 215)	0	01-Aug-16*								
RAB-45-0110	Possession of Portion B - If Exercised (Day 215)	0	01-Aug-16*								
Raft											
RAB-45-0125	PLT & CPT	14	01-Aug-16	16-Aug-16							
RAB-45-0130	045 - Construct lift pit for L-01	8	17-Aug-16	25-Aug-16							
RAB-45-0140	045 - Construct Raft Foundations for Main Building Bay 6 (428m²)	12	17-Aug-16	30-Aug-16							
RAB-45-0145	045 - Construct Raft Foundations for Main Building Bay 5 (428m²)	12	24-Aug-16	06-Sep-16							
RAB-45-0150	045 - Construct Raft Foundations for Main Building Bay 3 (428m²)	12	31-Aug-16	13-Sep-16							
RAB-45-0170	045 - Construct Raft Foundations for Main Building Bay 4 (419m²)	12	07-Sep-16	21-Sep-16							
Structure											
Ground to First Floor											
RAB-45-0260	045 - Construct External Walls and Support Columns to +12.15mPD Bay 6	12	31-Aug-16	13-Sep-16							
RAB-45-1170	045 - Construct External Walls and Support Columns to +12.15mPD Bay 5	12	07-Sep-16	21-Sep-16							
RAB-45-1180	045 - Construct External Walls and Support Columns to +12.15mPD Bay 3	12	14-Sep-16	28-Sep-16							
RAB-45-0180	045 - Construct External Walls and Support Columns to +12.15mPD Bay 4	12	22-Sep-16	06-Oct-16							
First Floor											
RAB-45-0290	045 - Construct 1/F Suspended Slab at +12.15mPD Bay 6 (South) (285m²) (approx 86m³)	12	14-Sep-16	28-Sep-16							
RAB-45-0320	045 - Construct 1/F Suspended Slab at +12.15mPD Bay 5 (South) (285m²) (approx 86m³)	12	22-Sep-16	06-Oct-16							
RAB-45-0250	045 - Construct 1/F Suspended Slab at +12.15mPD Bay 3 (North) (263m²) (approx 79m³)	12	29-Sep-16	14-Oct-16							
Cure and Strip											
RAB-45-0310	045 - Cure and Strip False/Formwork +12.15mPD Bay 6 (South)	8	29-Sep-16	08-Oct-16							
ABWF/E&M											
Specialist Installations											
Window Wall											
RAB-23-7120	045 - Install Window Wall Cast in Items G/F	6	31-Aug-16	06-Sep-16							
RAB-23-7190	045 - Install Window Wall Cast in Items F/F	6	29-Sep-16	06-Oct-16							
Building 050 - Public Toilets Type 2											
RAB-50-1000	Possession of Portion H1 - If Exercised	0	01-Aug-16*								
Public Toilet (Portion H1)											
Excavation											
RAB-50-1015	050 H1 - PLT	8	01-Aug-16	09-Aug-16							
RAB-50-1020	050 H1 - Open cut excavation down to formation level (370m³)	4	10-Aug-16*	13-Aug-16							
RAB-50-1030	050 H1 - Underground Utilities and Drainage	12	15-Aug-16	27-Aug-16							
Raft											
RAB-50-1040	050 H1 - Construct Raft Foundation (140m²) (91m³)	18	29-Aug-16	19-Sep-16							
Structure											
RAB-50-4310	050 H1 - Construct RC Support Columns for Aluminium Sdqr Shade	6	20-Sep-16	26-Sep-16							
RAB-50-1060	050 H1 - Construct RC Walls (External and Internal)	20	20-Sep-16	14-Oct-16							
Public Toilet (Portion H2)											
RAB-50-2000	Possession of Portion H2 - If Exercised	0	01-Aug-16*								
Excavation											
RAB-50-2018	050 H2 - PLT	8	01-Aug-16	09-Aug-16							
RAB-50-2020	050 H2 - Open cut excavation down to formation level (370m³)	4	15-Aug-16	18-Aug-16							
RAB-50-2030	050 H2 - Underground Utilities and Drainage	12	19-Aug-16	01-Sep-16							
Raft											
RAB-50-2040	050 H2 - Construct Raft Foundation(140m²) (91m³)	18	02-Sep-16	23-Sep-16							
Structure											
RAB-50-4330	050 H2 - Construct RC Support Columns for Aluminium Sdqr Shade	6	24-Sep-16	30-Sep-16							
RAB-50-2060	050 H2 - Construct RC Walls (External and Internal)	20	24-Sep-16	19-Oct-16							
Public Toilet (Portion A1)											
RAB-50-3000	Possession of Portion A1 - If Exercised	0	01-Aug-16*								
Excavation											
RAB-50-3018	050 A1 - PLT	8	01-Aug-16	09-Aug-16							
RAB-50-3020	050 A1 - Open cut excavation down to formation level (370m³)	4	19-Aug-16	23-Aug-16							
RAB-50-3030	050 A1 - Underground Utilities and Drainage	12	24-Aug-16	06-Sep-16							
Raft											
RAB-50-3030	050 A1 - Underground Utilities and Drainage	18	07-Sep-16	28-Sep-16							

■ Actual Work
■ Remaining Work
■ Critical Remaining Work
◆ Milestone

Three Month Rolling Programme

HKMZB HKBCF - Remaining Ancillary Buildings and Facilities

Date	Revision	Checked	Approved
01-Jul-16	Three Month Rolling Programme	AS	



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

Three Month Rolling Programme

HKMZB HKBCF - Remaining Ancillary Buildings and Facilities

Date	Revision	Checked	Approved
01-Jul-16	Three Month Rolling Programme	AS	

Activity ID	Activity Name	Original Duration	Start	Finish	2016				
					Jun	Jul	Aug	Sep	Oct
RAB-53-7510	053 - Construct Internal Staircase S-01 +17.1mPD South	8	25-Aug-16	02-Sep-16					
RAB-53-7560	053 - Construct Internal Liftshaft L-01 +17.1mPD North	8	13-Sep-16	22-Sep-16					
Roof Floor									
Slabs									
RAB-53-0320	053 - Construct R/F Suspended Slab at +17.1mPD North	8	01-Sep-16	09-Sep-16					
RAB-53-0430	053 - Construct R/F Suspended Slab at +17.1mPD South	8	03-Sep-16	12-Sep-16					
RAB-53-0370	053 - Construct R/F Suspended Slab at +17.1mPD Centre	8	13-Sep-16	22-Sep-16					
Cure and Strip									
RAB-53-0350	053 - Cure and Strip False/Formwork at +17.1mPD North	8	10-Sep-16	20-Sep-16					
RAB-53-0480	053 - Cure and Strip False/Formwork at +17.1mPD South	8	13-Sep-16	22-Sep-16					
RAB-53-0400	053 - Cure and Strip False/Formwork at +17.1mPD Centre	8	23-Sep-16	03-Oct-16					
ABWF/E&M									
Ground Floor									
Degree 1									
RAB-53-0390	053 - Construct Blockwork Walls to G/F Rooms (706m²)	16	21-Sep-16	11-Oct-16					
External Finishes									
RAB-53-0410	053 - Erect External Scaffolding	10	23-Sep-16	05-Oct-16					
Statutory Submissions & Approvals (Day 420 Completion)									
EMSD - Building 053 Lift Inspection									
RAB-FSD-140	053 - Submit EMSD Form 3 (Commencement of Lift Installation)	0	10-Sep-16	10-Sep-16					

- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Remaining Ancillary Buildings and Facilities

Date	Revision	Checked	Approved
01-Jul-16	Three Month Rolling Programme	AS	



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

Contract No. HY/2014/05

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities

Monthly EM&A Report No. 4

APPENDIX D

Event and Action Plan

Event/Action Plan for Air Quality

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

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

Event / Action Plan for Construction Noise Monitoring

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



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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

Contract No. HY/2014/05

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities

Monthly EM&A Report No. 4

APPENDIX E

Waste Flow Table

Monthly Summary Waste Flow Table for 2016



Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					
	a. Total Quantity Generated (see Note 8) (in '000m ³)	b. Hard Rock and Large Broken Concrete (in '000m ³)	c. Reused in the Contract (in '000m ³)	d. Reused in Other Projects (see Note 9) (in '000m ³)	e. Disposed as Public Fill (see Note 10) (in '000m ³)	f. Imported Fill (in '000m ³)	g. Metals (see Note 5) (in '000kg)	h. Paper / Cardboard Packaging (see Note 5) (in '000kg)	i. Plastics (see Note 3) (see Note 5) (in '000kg)	j. Chemical Waste (in '000kg)	k. Others, e.g. general refuse (in '000m ³)	
January												
February	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
March	0.036	0.000	0.000	0.036	0.000	0.270	0.000	0.000	0.000	0.000	0.000	
April	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.000	0.000	
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.004	
June	0.049	0.049	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.002	
Sub-total	0.085	0.049	0.049	0.036	0.000	0.297	0.000	0.000	0.000	0.006	0.006	
July												
August												
September												
October												
November												
December												
Total	0.085	0.049	0.049	0.036	0.000	0.297	0.000	0.000	0.000	0.006	0.006	

Total C&D waste generated = a+b+f+g+h+i+j+k

Total C&D waste generated (excluded excavated material) = g+h+i+j+k

Total C&D waste recycled = c+d+g+h+i

% of recycled C&D waste = (Total C&D waste recycled - Total C&D waste generated - Total C&D waste recycled) / Total C&D waste generated

Notes:

- (1) The performance target are given in PS Clause 6(14)
- (2) The waste flow table shall also include C&D materials that are not specified in the Contract to be imported for use at the Site
- (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material
- (4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m³.
- (5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
- (6) Conversion factors for reporting purpose:
 - in-situ: rock = 2.5 tonnes/m³; soil = 2.0 tonnes/m³
 - excavated: rock = 2.0 tonnes/m³; soil = 1.8 tonnes/m³; broken concrete and bitumen = 2.4 tonnes/m³
 - C&D Waste = 0.9 tonnes/m³; bentonite slurry = 2.8 tonnes/m³
- (7) Numbers are rounded off to the nearest three decimal places
- (8) The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill"
- (9) Inert C&D Materials (as sand only) were transferred to Contract No. HY/2013/01 in March 2016.
- (10) The amount in "Disposed as Public Fill" included the "Hard Rock and Large Broken Concrete" disposed as public fill



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Monthly EM&A Report No. 4

APPENDIX F

Environmental Licenses and Permits

Environmental License/ Permits /Notification Register

Contract No. HY/2014/05 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities

Item No.	Permit/License or Registration Application		Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date						
1	All Areas	30 Jun 2015	N/A	EP-353/2009/I	17 Jul 2015	N/A	EPD	Superseded by EP-353/2009/J
2	All Areas	18 Feb 2016	N/A	EP-353/2009/J	25 Feb 2016	N/A	EPD	Superseded by EP-353/2009/K
3	All Areas	24 Mar 2016	N/A	EP-353/2009/K	11 Apr 2016	N/A	EPD	-
4	All Areas	30 Dec 2015	N/A	7024342	16 Feb 2016	N/A	EPD	-
5	All Areas	30 Dec 2015	RABF-LTR- EPD-000001	Acknowledge Receipt Ref. No. 397571	6 Jan 2016	N/A	EPD	-
6	All Areas	04 Jan 2016	RABF-LTR- EPD-000002	Registration as Chemical Waste Producer for disposal of spent batteries, used lubrication oil and surplus paint at RABF area	19 Feb 2016	N/A	EPD	-

Date: June 2016

Environmental License/ Permits /Notification Register

Contract No. HY/2014/05 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities

Item No.	Permit/License or Registration Application		Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date						
7	All Areas	25 Jan 2016	RABF-LTR- EPD- 000003	GW-RS0106-16	11 Feb 2016	10 Aug 2016	EPD	Superseded by GW-RS0476-16
8	All Areas	08 May 2016	RABF-LTR- EPD- 000012	GW-RS0476-16	19 May 2016	18 Nov 2016	EPD	-

Date: June 2016



APPENDIX G

Implementation Schedule for Environmental Mitigation Measures (EMIS)

**Contract No. HY/2014/05 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities
Implementation Schedule for Environmental Mitigation Measures**

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	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	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM- EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively)	√
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; 	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM- EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively)	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.2	A2	<ul style="list-style-type: none"> • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; 	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}/\text{m}^3$ and 260 $\mu\text{g}/\text{m}^3$ respectively)	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.2	A2	<ul style="list-style-type: none"> Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 	<p>Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.</p>	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively)	√
S5.5.6.4	A3	The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	√
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	√
S5.5.6.5	A5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the dust representative monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	<ul style="list-style-type: none"> Air Pollution Control (Construction Dust) Regulation To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively) 	<ul style="list-style-type: none"> (The dust monitoring works under EM&A programme for the Contract are covered by Contract No. HY/2010/02 and Contract No. HY/2011/03.)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.7.1	A6	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:</p> <ul style="list-style-type: none"> Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; The materials which may generate airborne dusty emissions should be wetted by water spray system; All receiving hoppers should be enclosed on three sides up to 3m above unloading point; All conveyor transfer points should be totally enclosed; All access and route roads within the premises should be paved and wetted; and Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body. 	<p>Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.</p>	Contractor	Selected representative dust monitoring station	Construction stage	<ul style="list-style-type: none"> Air Pollution Control (Construction Dust) Regulation To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}/\text{m}^3$ and 260 $\mu\text{g}/\text{m}^3$, respectively) 	N/A
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> All road surface within the barging facilities will be paved; Dust enclosures will be provided for the loading ramp; Vehicles will be required to pass through designated wheels wash facilities; and Continuous water spray at the loading points. 	Control construction dust	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Air Pollution Control (Construction Dust) Regulation 	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Construction Noise (Air borne)								
S6.4.10	N1	<p>1) Use of good site practices to limit noise emissions by considering the following:</p> <ul style="list-style-type: none"> only well-maintained plant should be operated on-site and plant should be serviced regularly during 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. 	Control construction airborne noise by means of good site practices	Contractor	All construction sites	Construction stage	Noise Control Ordinance	√
S6.4.11	N2	<p>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.</p>	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance Annex 5, TM-EIA 	N/A
S6.4.12	N3	<p>3) Install movable noise barriers (typically density @14kg/m²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.</p>	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance Annex 5, TM-EIA 75dB(A) for residential premises The movable barrier should achieve at least 5dB(A) and the full enclosure should be 	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to Implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance & its TM Annex 5, TM-EIA 	√
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance Annex 5, TM-EIA 	√
/	N6	6) Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance Annex 5, TM-EIA 75dB(A) for residential premises 	√ (The noise monitoring works under EM&A programme for the Contract are covered by Contract No. HY/2010/02.)
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.	Develop sediment disposal arrangement	Engineer	All construction sites	Design stage	<ul style="list-style-type: none"> Waste Disposal Ordinance ETWB TC 34/2002 	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Waste Management (Construction Waste)								
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETW BTC (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. 	<p>Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETW BTC 19/2005 	✓

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to Implement the measures?	Location of the measures	When to Implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S8.3.9- S8.3.11	WM2	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. 	<p>Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TC 19/2005 	√
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation. The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated. 	<p>Control the chemical waste and ensure proper storage, handling and disposal.</p>	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste 	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
		<ul style="list-style-type: none"> Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD. 						√
S8.3.16	WM4	<p><u>Sewage</u></p> <ul style="list-style-type: none"> Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly. 	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal Ordinance 	√
S8.3.17	WM5	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans, plastic bottles etc., should be provided. Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal Ordinance 	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)								
S.9.11.1.7	W2	<p>Land Works</p> <p>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided; storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks; silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm; temporary access roads should be surfaced with crushed stone or gravel; rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; 	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	✓

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S9.11.1.7	W2	<ul style="list-style-type: none"> • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a patrol 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. 	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)								
S10.7	E4	<ul style="list-style-type: none"> Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater 	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	TM-Water	√
S10.7	E5	<ul style="list-style-type: none"> Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time 	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction		√
S10.7	E8	<ul style="list-style-type: none"> Control vessel speed Skipper training Predefined and regular routes for working vessels; avoid Brother Islands. 	Minimise marine traffic disturbance on dolphins	Contractor	Marine Traffic	During construction		N/A
Fisheries								
S11.7	F4	<ul style="list-style-type: none"> Maritime Oil Spill Response Plan (MOSRP); Contingency plan. 	Minimise impacts on marine water quality impacts	Marine Department	HKBCF	During operation		N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> Roadside planting and planting along the edge of the HKBCF Island is proposed; Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; Protection measures for the trees to be retained during construction activities; Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; Providing planting area around peripheral of HKBCF for tree planting screening effect; 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 subtile 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. 	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
<i>Landscape & Visual (Construction Phase)</i>								
S14.3.3.3	LV2	<p>Mitigate both Landscape and Visual Impacts</p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p> <p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;</p> <p>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.</p> <p>G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.</p>	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		N/A
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <p>V1. Minimize time for construction activities during construction period.</p> <p>V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.</p>						√ for V1. N/A for V2.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
EM&A								
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites		<ul style="list-style-type: none"> • EIAO Guidance Note No.4/2002 • TM-EIAO 	√
S15.5 - S15.6	EM2	<ol style="list-style-type: none"> 1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with. 	Perform environmental monitoring & auditing	Contractor	All construction sites		<ul style="list-style-type: none"> • EIAO Guidance Note No.4/2002 • TM-EIAO 	√

Legends: √ = implemented; X = Not implemented; N/A = Not applicable

APPENDIX H

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

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



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

Contract No. HY/2014/05

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Boundary Crossing Facilities – Remaining Ancillary Buildings and Facilities

Monthly EM&A Report No. 4

APPENDIX I

Environmental Site Inspection Schedule

July 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Jul	2-Jul
3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	8-Jul	9-Jul
			Site Inspection			
10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul	16-Jul
			Site Inspection			
17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	22-Jul	23-Jul
			Site Inspection			
24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul	30-Jul
			Site Inspection			
31-Jul						