

Your ref.
Our ref. 5126871/19.10/OC042/SO/EK

Date: 5 May 2015

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

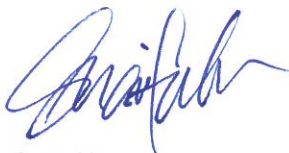
Attn: Mr. Donald Ip

Dear Mr. Ip,

**Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Certification of Quarterly EM&A Report No.2 (Revision 1)**

Atkins China Ltd. certifies, in the capacity of Environmental Team Leader, that the Quarterly EM&A Report No.2 (Revision 1), in principle, conforms the requirements provided in Section 16.4 of the Updated Environmental Monitoring and Audit Manual for HKBCF (Version1.0).

**Yours faithfully
for and on behalf of
Atkins China Ltd**



**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)

Ref.: HYDHZMBEEM00_0_2937L.14

5 May 2015

By Fax (3468 2076) and By Post

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

Attention: Mr. Darrel Paul 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/2013/01 – HZMB HKBCF – Passenger Clearance Building
Quarterly EM&A Report No. 2 for January 2015 to March 2015**

Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report No. 2 for January 2015 to March 2015 (Revision 1) certified by the ET Leader (ET's ref.: "5126871/19.10/OC042/SO/EK" dated 5 May 2015) and provided to us via e-mail on 5 May 2015.

We are pleased to inform you that we have no adverse comment on the captioned Quarterly EM&A Report for January 2015 to March 2015.

Thank you for your kind attention. Please do not hesitate to contact the undersigned should you have any queries.

Yours sincerely,



Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Matthew Fung	(By Fax: 3188 6614)
	HyD	Ms. Lowell Chiu	(By Fax: 3188 6614)
	Atkins	Ms. Sharifah Or	(By Fax: 2890 6343)
	LCWJV	Mr. Gary Wong	(By Fax: 3973 1188)

Internal: DY, YH, SL, JM, ENPO Site

Q:\Projects\HYDHZMBEEM00\02_Proj_Mgt\02_Corr\HYDHZMBEEM00_0_2937L.15.doc

Contract No. HY/2013/01

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

**Quarterly EM&A Report No.2
(Covering the Period from 1 January 2015 to 31 March 2015)**

5 May 2015

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.....	1
1.3	Construction Programme	1
1.4	Construction Works Undertaken During the Reporting Period	2
2	EM&A Requirement.....	3
2.1	Summary of EM&A Requirements.....	3
2.2	Monitoring Requirements	3
2.3	Action and Limit Levels	4
2.4	Event Action Plans	4
2.5	Mitigation Measures	4
3	Environmental Monitoring and Audit	5
3.1	Air Quality Monitoring Results.....	5
3.2	Noise Monitoring Results	5
3.3	Implementation of Environmental Measures	5
3.4	Advice on the Solid and Liquid Waste Management Status.....	5
3.5	Environmental Licenses and Permits	5
4	Summary of Exceedance, Complaint, Notification of Summons and Successful Prosecution	6
4.1	Summary of Exceedance of the Environmental Quality Performance Limit	6
4.2	Summary of Complaints, Notification of Summons and Successful Prosecution	6
5	Comments, Recommendations and Conclusion.....	7
5.1	Comments	7
5.2	Recommendations	7
5.3	Conclusions.....	8

Figures

- Figure 2.1 Location of Air Quality Monitoring Stations
 Figure 2.2 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 Implementation Schedule for Environmental Mitigation Measures (EMIS)
 Appendix F Site Audit Findings and Corrective Actions
 Appendix G Waste flow Table
 Appendix H Environmental Licenses and Permits
 Appendix I Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

Executive Summary

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Passenger Clearance Building (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/H for HKBCF was issued on 19 January 2015. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014.

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 second Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 January 2015 to 31 March 2015.

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/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, AMS7A 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 environmental site inspection during the reporting period are listed below:

Environmental Site Inspection Date		
January 2015	February 2015	March 2015
7, 14, 21 and 28	4, 11, 18 and 25	4, 11, 18 and 25

Breaches of Action and Limit Levels

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at station AMS6 shall be referred to the monthly EM&A Reports (for January, February and March 2015) 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/AMS7A 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.

Implementation of Environmental Measures

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. Potential environmental impacts due to the construction activities were monitored and reviewed.

Complaint Log

There was no complaint received in relation to the environmental impact during the reporting period.



Notifications of Summons and Successful Prosecutions

There was no notification of summon or prosecution received during this reporting period.

Reporting Change

The permission to carry out impact air monitoring work at AMS7 (Hong Kong SkyCity Marriott Hotel) was not granted after 31 January 2015. The impact air quality monitoring location (AMS7) was relocated to a nearby air sensitive receiver, Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A), from 5 February 2015. The alternative location was approved by EPD on 5 February 2015. The baseline and action/limit level for air quality as derived from the baseline monitoring data recorded at Hong Kong SkyCity Marriott Hotel was adopted for the alternative air quality location.

1 Introduction

1.1 Basic Project Information

- 1.1.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building (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/H for HKBCF was issued on 19 January 2015. These documents are available through the EIA Ordinance Register. Site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The works areas of the Contract are shown in **Appendix A**.
- 1.1.3 This is the second Quarterly EM&A Report for the Contract which summaries the audit findings of the EM&A programme during the reporting period from 1 January 2015 to 31 March 2015.

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 (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)	Project Manager	Gary Wong	3143 7013	3973 1188
	Environmental Officer	Donald Ip	6461 8635	3973 1188
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:

- Piling Works at WA1;
- Pre-drilling Works at WA1;
- Construction of Office, Welfare Facilities and Canteen Building at WA1;
- Construction of Socket H Piles at WA1;
- Pile Testing at WA1; and
- Cement Solidification/Stabilization Work for Excavated Marine Sediment at Portion B of Contract No. HY/2010/02.

2 EM&A Requirement

2.1 Summary of EM&A Requirements

- 2.1.1 The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1). 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 AMS7A 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.
- 2.1.2 The permission to carry out impact air monitoring work at AMS7 (Hong Kong SkyCity Marriott Hotel) was not granted after 31 January 2015. The impact air quality monitoring location (AMS7) was relocated to a nearby air sensitive receiver, Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A), from 5 February 2015. The alternative location was approved by EPD on 5 February 2015. The baseline and action/limit level for air quality as derived from the baseline monitoring data recorded at Hong Kong SkyCity Marriott Hotel (AMS7) was adopted for the alternative air quality location.
- 2.1.3 A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 2.1** and **Figure 2.2**, respectively.

Table 2.1 Summary of Impact EM&A Requirements

Environmental Monitoring	ID	Location Description
Air Quality	AMS 6 ⁽¹⁾	Dragonair/CNAC (Group) Building
	AMS 7 ⁽²⁾	Hong Kong SkyCity Marriott Hotel
	AMS 7A ^{(1),(2)}	Chu Kong Air-Sea Union Transportation Co. Ltd.
Noise	NMS2 ⁽³⁾	Seaview Crescent
	NMS3B ^{(3),(4)}	Site Boundary of Site Office Area at Works Area WA2

Remarks:

- (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) The original monitoring location was at Hong Kong SkyCity Marriott Hotel (AMS 7). As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after 31 January 2015, the monitoring location has been relocated to Chu Kong Air-Sea Union Transportation Co. Ltd. since 5 February 2015. The alternative monitoring location was approved by EPD on 5 February 2015.
- (3) 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.
- (4) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

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.

2.3 Action and Limit Levels

- 2.3.1 The Action and Limit Level 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	500
AMS 7A - Chu Kong Air-Sea Union Transportation Co. Ltd		

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	260
AMS 7A - Chu Kong Air-Sea Union Transportation Co. Ltd		

- 2.3.2 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 quarterly EM&A Report.
- 2.3.3 The Action and Limit Levels for construction noise are defined in **Table 2.4**.

Table 2.4 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.

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

- 2.3.4 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 quarterly EM&A Report.

2.4 Event Action Plans

- 2.4.1 The Event Actions Plans for air quality and noise are provided in **Appendix D**.

2.5 Mitigation Measures

- 2.5.1 Environmental mitigation measures for the contract were recommended in the approved EIA Report. **Appendix E** lists the recommended mitigation measures and the implementation status.

3 Environmental Monitoring and Audit

3.1 Air Quality Monitoring Results

- 3.1.1 The monitoring results for AMS6, AMS7/AMS7A are reported in the monthly EM&A Reports (for January, February and March 2015) prepared for Contract Nos. HY/2011/03 and HY/2010/02, respectively.
- 3.1.2 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 Reports (for January, February and March 2015) prepared by Contract No. HY/2011/03.
- 3.1.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7/AMS7A recorded by the ET of Contract No. HY/2010/02 during the reporting period.

3.2 Noise Monitoring Results

- 3.2.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports (for January, February and March 2015) prepared for Contract No. HY/2010/02.
- 3.2.2 No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2010/02 during the reporting period.

3.3 Implementation of Environmental Measures

- 3.3.1 In response to the site audit findings, the Contractor carried out corrective actions. Details of site audit findings and the corrective actions during the reporting period are presented in **Appendix F**.
- 3.3.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.
- 3.3.3 The Contractor waters 8 times per day on all exposed soil within the Contract site and associated works areas when construction activities are being undertaken.

3.4 Advice on the Solid and Liquid Waste Management Status

- 3.4.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.
- 3.4.2 Excavated marine sediment is generated and treated using cement solidification/stabilization (Cement S/S) techniques and is reused onsite for either backfilling or landscaping (e.g. berm material) during the reporting period.
- 3.4.3 The summary of waste flow table is detailed in **Appendix G**.
- 3.4.4 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

3.5 Environmental Licenses and Permits

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

4 Summary of Exceedance, Complaint, Notification of Summons and Successful Prosecution

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

- 4.1.1 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for January, February and March 2015) prepared by Contract No. HY/2011/03.
- 4.1.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7/AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 4.1.3 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.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

- 4.2.1 There were no complaints received during the reporting period.
- 4.2.2 No notification of summons and prosecution was received during the reporting period.
- 4.2.3 Statistics on environmental complaints, notifications of summons and successful prosecutions are summarized in **Appendix I**.

5 Comments, Recommendations and Conclusion

5.1 Comments

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

- The Contractor was recommended to provide maintenance to the generator.
- The Contractor was recommended to remove the water filled barrier wall.
- The Contractor was recommended to segregate different kinds of waste and stored them separately.
- The Contractor was recommended to replace a new water hose.
- The Contractor was recommended to clear the stagnant water/contaminated water and disposed of as chemical waste.
- The Contractor was recommended to clear the stagnant water as soon as possible.
- The Contractor was recommended to clean up the rubbish on the ground.
- The Contractor was recommended to clear the drip tray and disposed of the contaminated water and sand as chemical waste
- The Contractor was recommended to remove the empty chemical containers properly.
- The Contractor was recommended to provide a drip tray for the chemical drum.
- The Contractor was reminded to provide properly cover for the untreated marine sediment.
- The Contractor was recommended to clear the refuse on the pathway.
- The Contractor was recommended to provide an enclosure (sheltered on the top and 3 sides) for the cement mixing unit.
- The Contractor was recommended to provide maintenance for the power pack and air compressor.
- The Contractor was recommended to clear the stagnant water.
- The Contractor was recommended to clear and dispose of the containers regularly.

5.1.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

5.2 Recommendations

5.2.1 With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

5.2.2 The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

5.3 Conclusions

- 5.3.1 The site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. This is the second Quarterly EM&A Report summaries findings of the EM&A works during the reporting period from 1 January 2015 to 31 March 2015.
- 5.3.2 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 Reports (for January, February and March 2015) prepared by Contract No. HY/2011/03.
- 5.3.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7/AMS7A by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 5.3.4 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.
- 5.3.5 An environmental site inspection was carried out on 7, 14, 21 and 28 January 2015, 4, 11, 18 and 25 February 2015 and 4, 11, 18 and 25 March 2015. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.
- 5.3.6 There were no complaints received during the reporting period.
- 5.3.7 No notification of summons and successful prosecution was received during the reporting period.



FIGURES

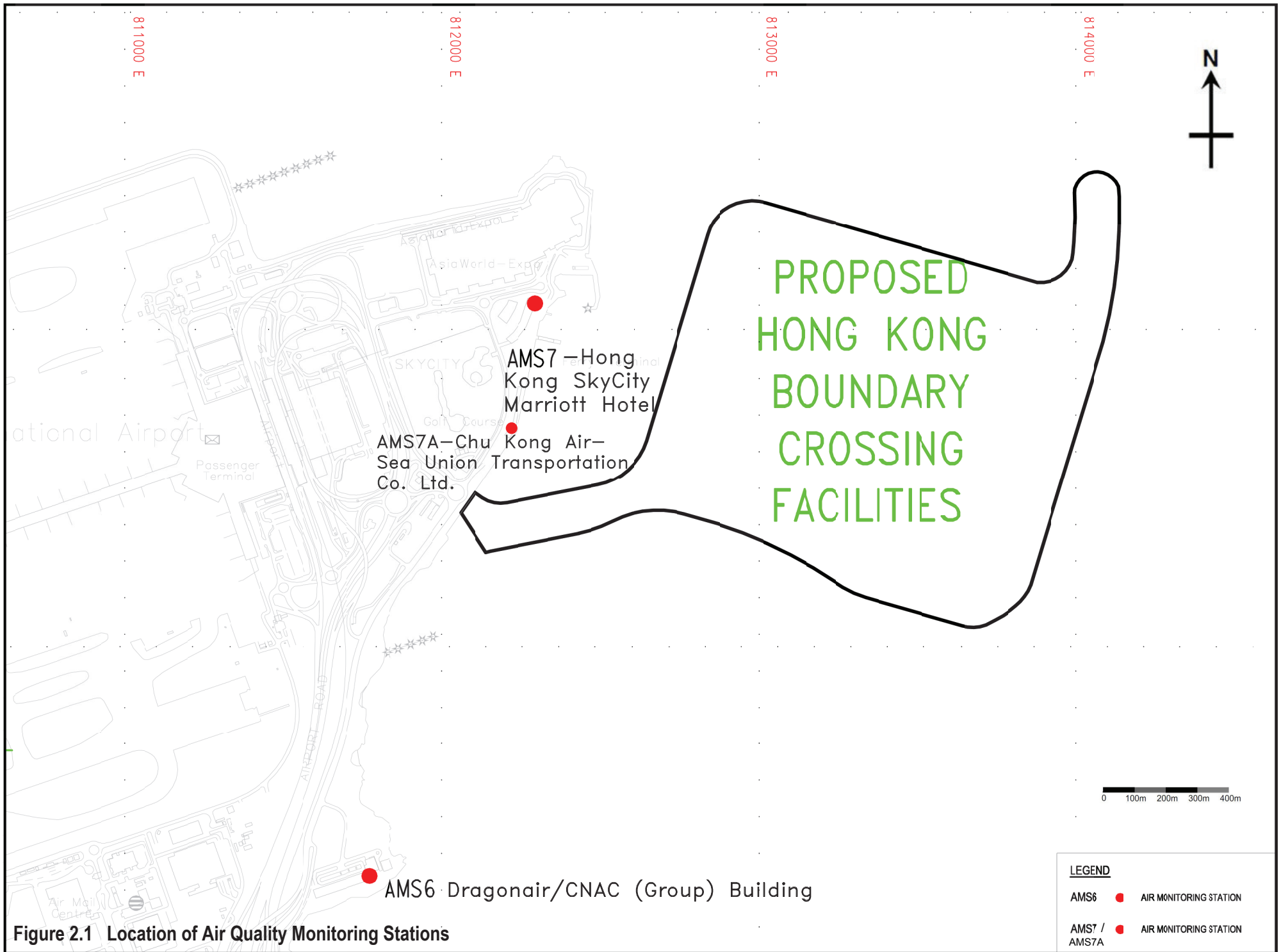


Figure 2.1 Location of Air Quality Monitoring Stations

LEGEND		
AMS6	●	AIR MONITORING STATION
AMS7 / AMS7A	●	AIR MONITORING STATION

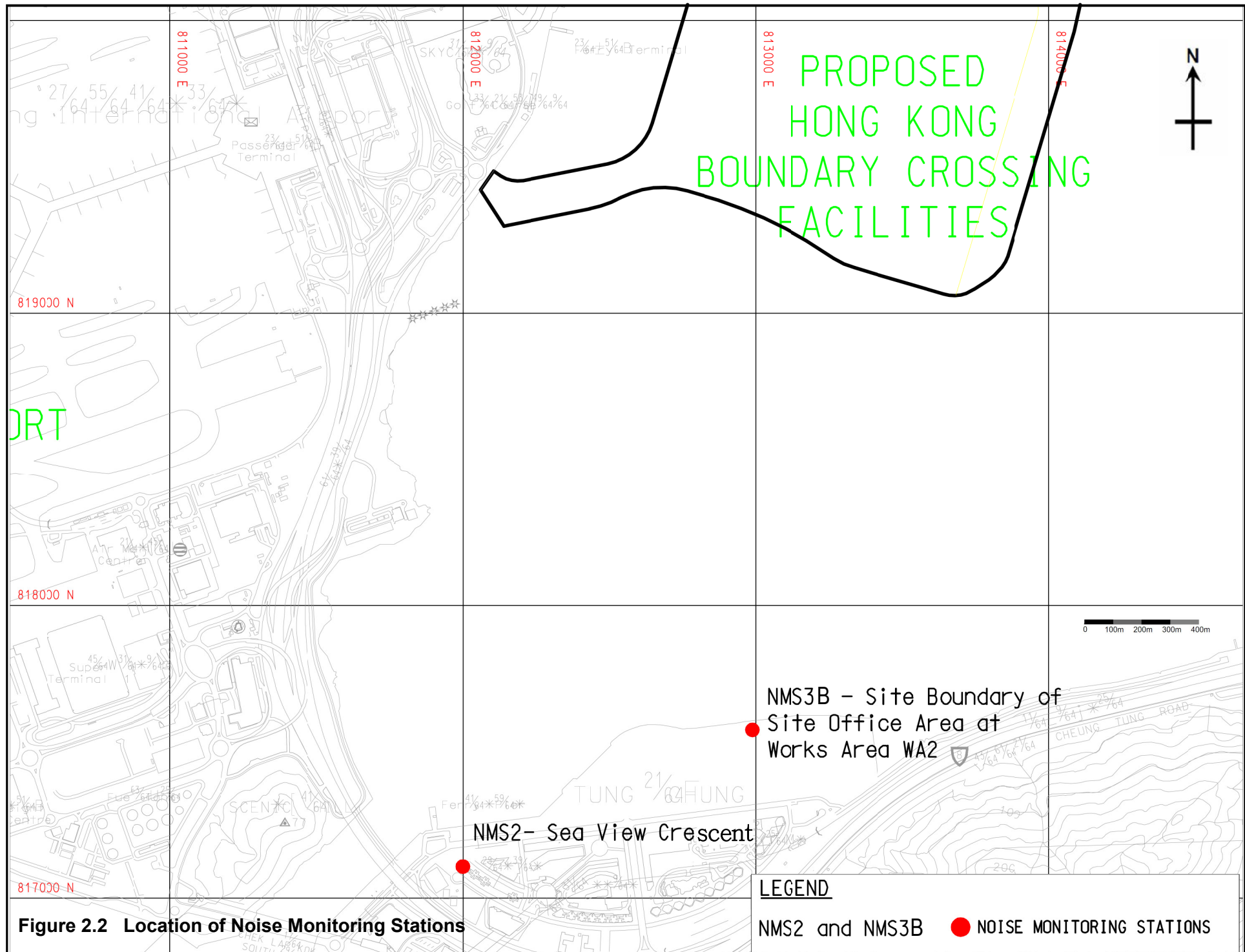


Figure 2.2 Location of Noise Monitoring Stations

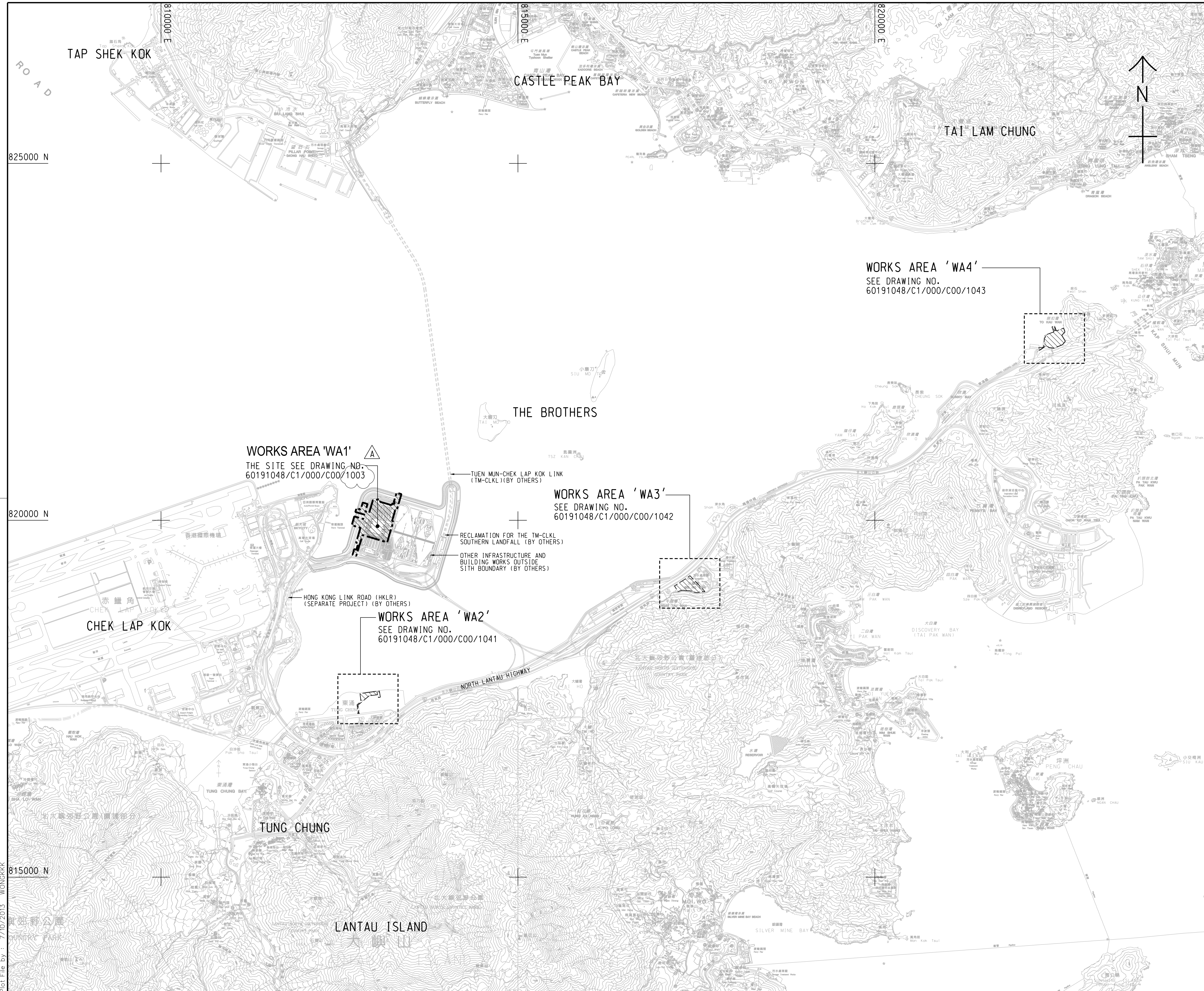
LEGEND

NMS2 and NMS3B ● NOISE MONITORING STATIONS

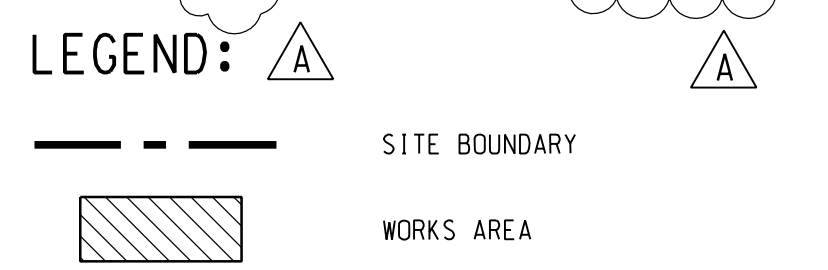


APPENDIX A

Location of Works Areas



- NOTES:**
- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
 - DIMENSIONS ARE IN MILLIMETER AND CHAINAGE ARE IN METRES UNLESS OTHERWISE SHOWN.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C1/000/C00/1041 TO 1043.



WORKS AREA 'WA1'
THE SITE SEE DRAWING NO. 60191048/C1/000/C00/1003

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

WORKS AREA 'WA3'
SEE DRAWING NO. 60191048/C1/000/C00/1042

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

WORKS AREA 'WA2'
SEE DRAWING NO. 60191048/C1/000/C00/1041

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

WORKS AREA 'WA4'
SEE DRAWING NO. 60191048/C1/000/C00/1043

B	WORKING DRAWING	BWCW SCI JUN.14
A	TENDER ADDENDUM NO. 1	BWCW SCI OCT.13
-	TENDER DRAWING	BWCW SCI SEP.13
REV. 修改	DESCRIPTION 內容摘要	DATE 日期

路政署 HIGHWAYS DEPARTMENT
香港機場管理局
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

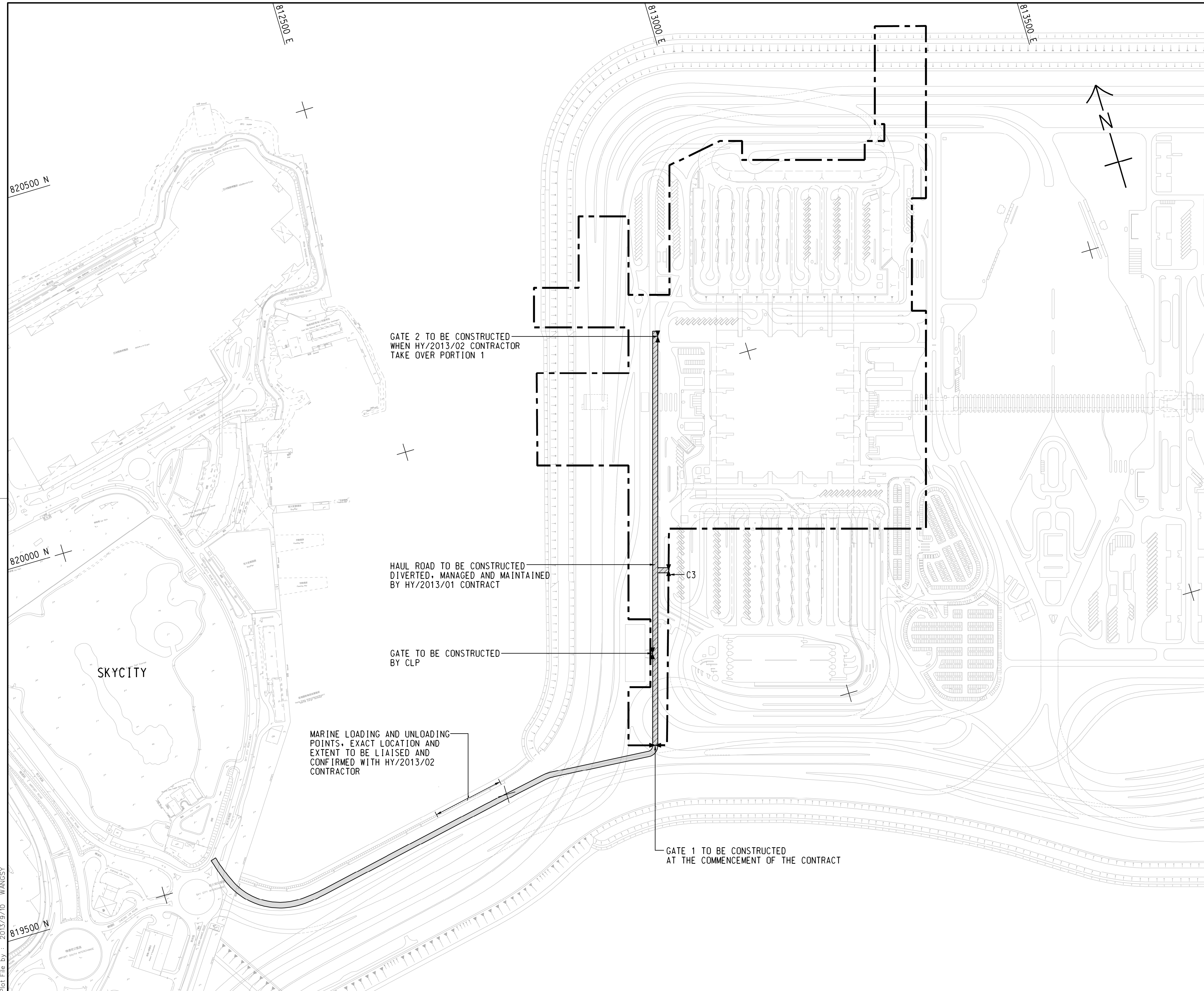
SITE LOCATION PLAN

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

DRG.NO. 60191048/C1/000/C00/1000B
圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/01	P. DIR. APPROVED 批准人	TKH
DRAWN BY 繪圖	WSY	STATUS 階段	WORKING DRAWING		
SCALE 比例	A1 1 : 25000	DIMENSIONS ARE IN 尺寸單位 METRES			
				COPYRIGHT RESERVED 版權所 有	

Plot File by : 7/10/2013 WONGKKK



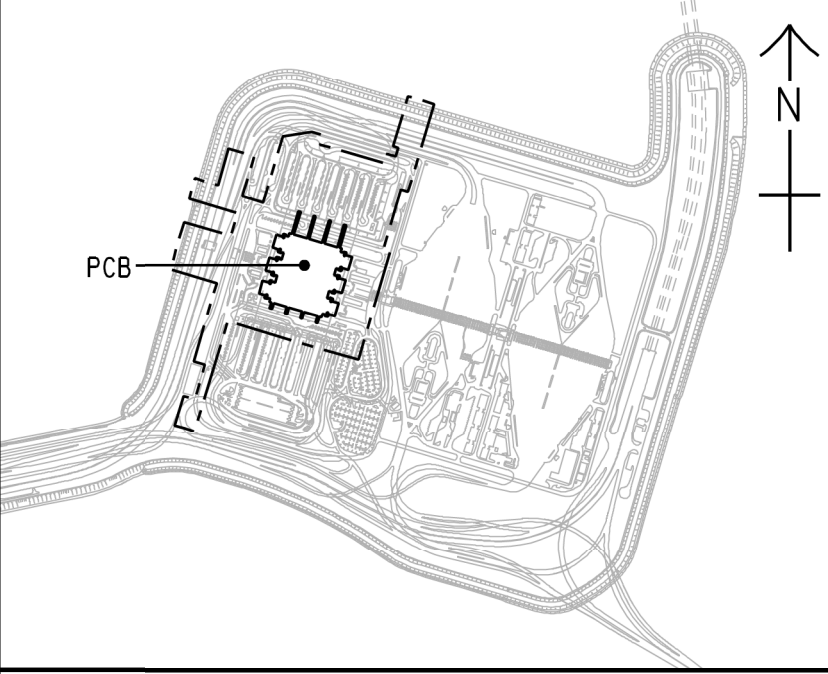
GATE 2 TO BE CONSTRUCTED WHEN HY/2013/02 CONTRACTOR TAKE OVER PORTION 1

HAUL ROAD TO BE CONSTRUCTED DIVERTED, MANAGED AND MAINTAINED BY HY/2013/01 CONTRACT

GATE TO BE CONSTRUCTED BY CLP

MARINE LOADING AND UNLOADING POINTS, EXACT LOCATION AND EXTENT TO BE LIAISED AND CONFIRMED WITH HY/2013/02 CONTRACTOR

GATE 1 TO BE CONSTRUCTED AT THE COMMENCEMENT OF THE CONTRACT



LOCATION PLAN
SCALE 1 : 20000

NOTES:

- COORDINATES ARE BASED ON HONG KONG METRIC GRID (1980) UNLESS OTHERWISE NOTED.
- LEVELS ARE IN METRES RELATIVE TO HONG KONG PRINCIPAL DATUM (mPD) UNLESS OTHERWISE NOTED.
- DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
- SETTING OUT, DIMENSIONS, LEVELS, COORDINATES ARE TO BE CALCULATED BY THE CONTRACTOR. NO INFORMATION SHOULD BE SCALED PHYSICALLY OR ELECTRONICALLY FROM THE DRAWINGS OR FILES.
- SITE ACCESS SHALL BE HARD PAVED WITH PROPER DRAINAGE PROVIDED. IT SHALL BE KEPT UNOBSTRUCTED AND UNDISRUPTED AT ALL TIMES.

LEGEND:

- SITE BOUNDARY
- 7.3m CLEAR WIDTH CONSTRUCTION HAUL ROAD
- INDICATIVE 20m WIDE VEHICULAR ACCESS BY RECLAMATION CONTRACT HY/2010/02

REV.	DESCRIPTION	CHK'D	DATE
-	TENDER DRAWING	BWCW SCI	SEP.13

路政署 HIGHWAYS DEPARTMENT
港珠澳大桥香港工程管理处
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA1

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

DRG.NO. 60191048/C1/000/C00/1044
圖紙編號

DESIGNED BY BWCW	CONTRACT NO. HY/2013/01	P. Dir. APPROVED EMSC
---------------------	----------------------------	--------------------------

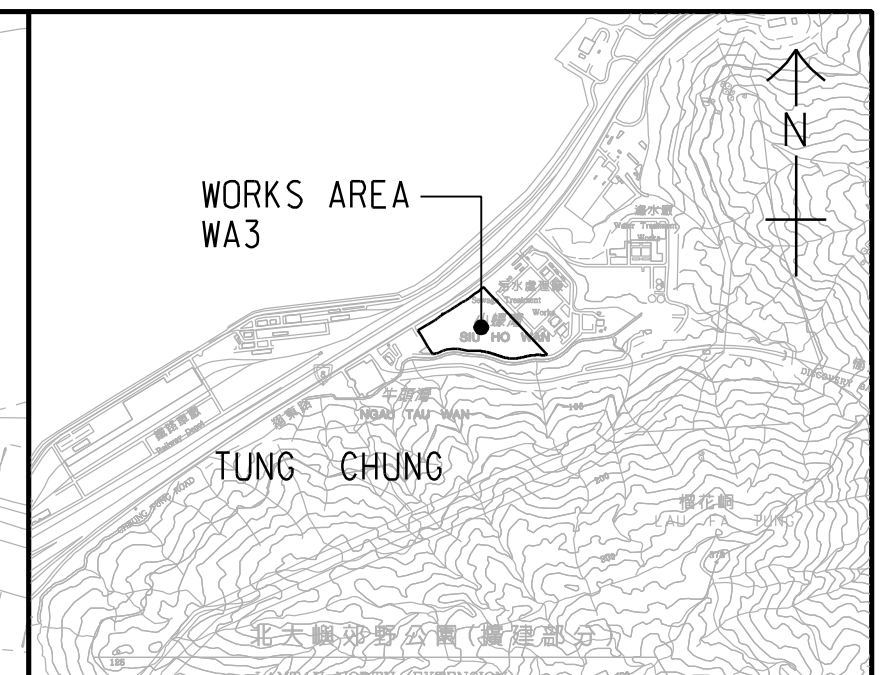
DRAWN BY WSY	STATUS CHECKED
-----------------	-------------------

SCALE 1 : 2500
DIMENSIONS ARE IN METRES
© COPYRIGHT RESERVED
版權所有

Plot File by : 2013/9/10 WANGSY

SETTING OUT POINT

POINT	EASTING	NORTHING
301	817467.265	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.865	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817526.774	819020.578
313	817531.659	819021.641
314	817531.154	819001.065
315	817533.345	818991.306
316	817620.269	819000.620



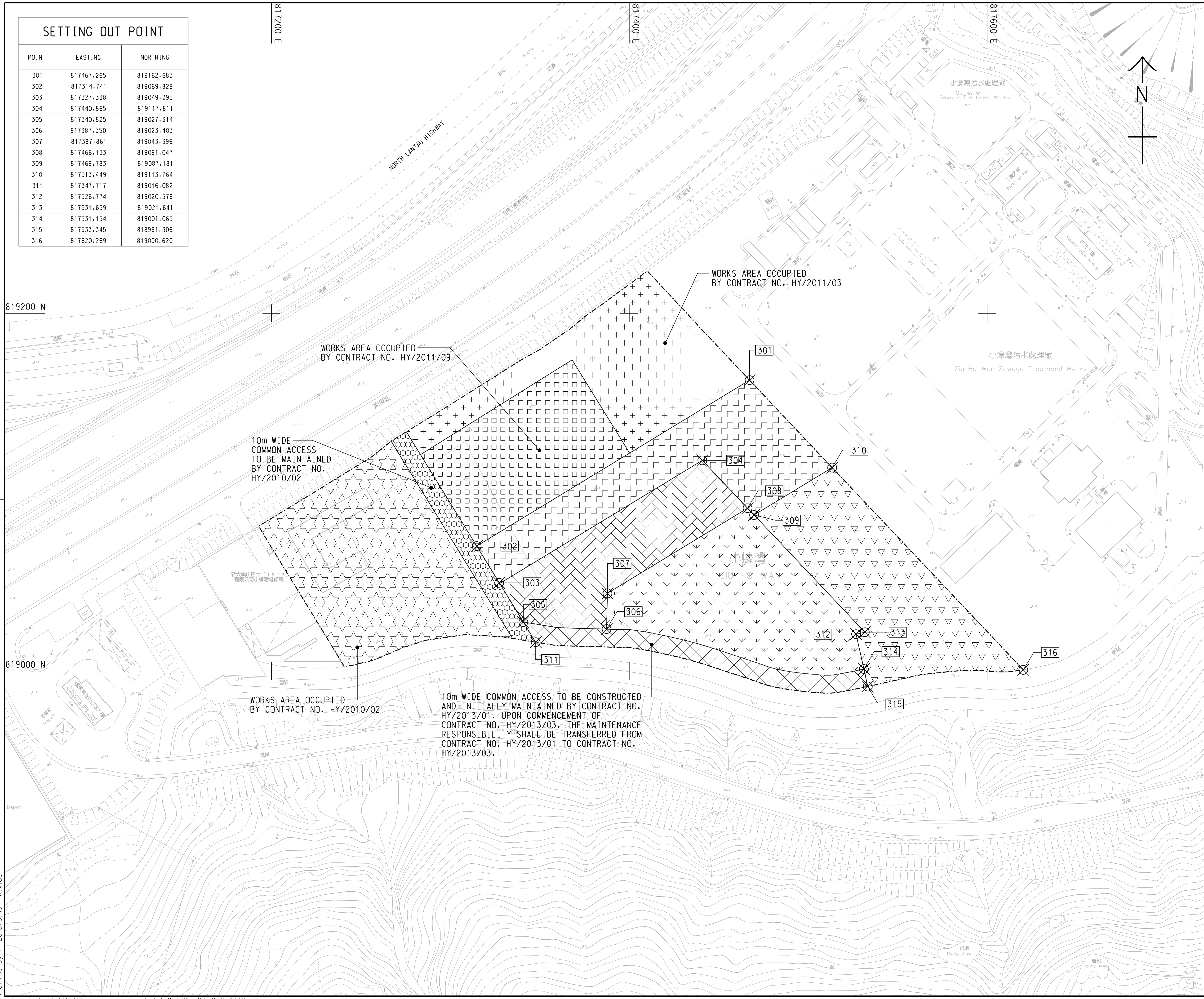
LOCATION PLAN
SCALE 1 : 25000

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



A	WORKING DRAWING	BWCW SCI JUN. 14
-	TENDER DRAWING	BWCW SCI SEP. 13
REV. 修改	DESCRIPTION 內容摘要	CHECKED 查核 DATE 日期

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

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - PASSENGER CLEARANCE BUILDING

WORKS AREA WA3

AECOM Aedas
 Rogers Stirk Harbour + Partners
 BURO HAPPOLD ATKINS ADI

DRG.NO. 60191048/C1/000/C00/1042A
 圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/01	P. DIR. APPROVED 批准人	TKH
DRAWN BY 繪圖	WSY	STATUS 階段	WORKING DRAWING		
SCALE 比例	A1 1 : 1000	DIMENSIONS ARE IN METRES			
COPYRIGHT RESERVED 版權所 有					

SETTING OUT POINT

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

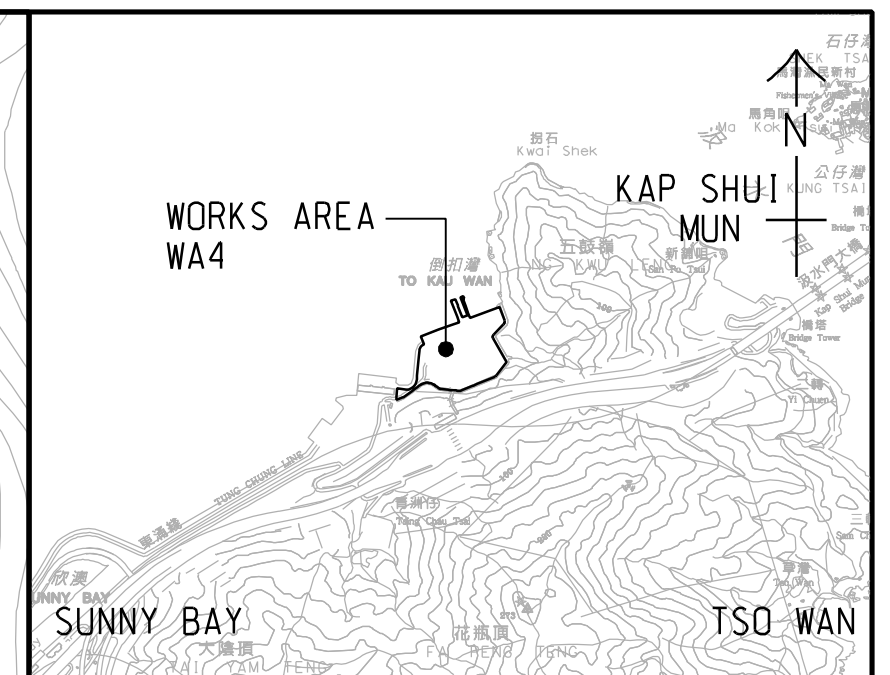
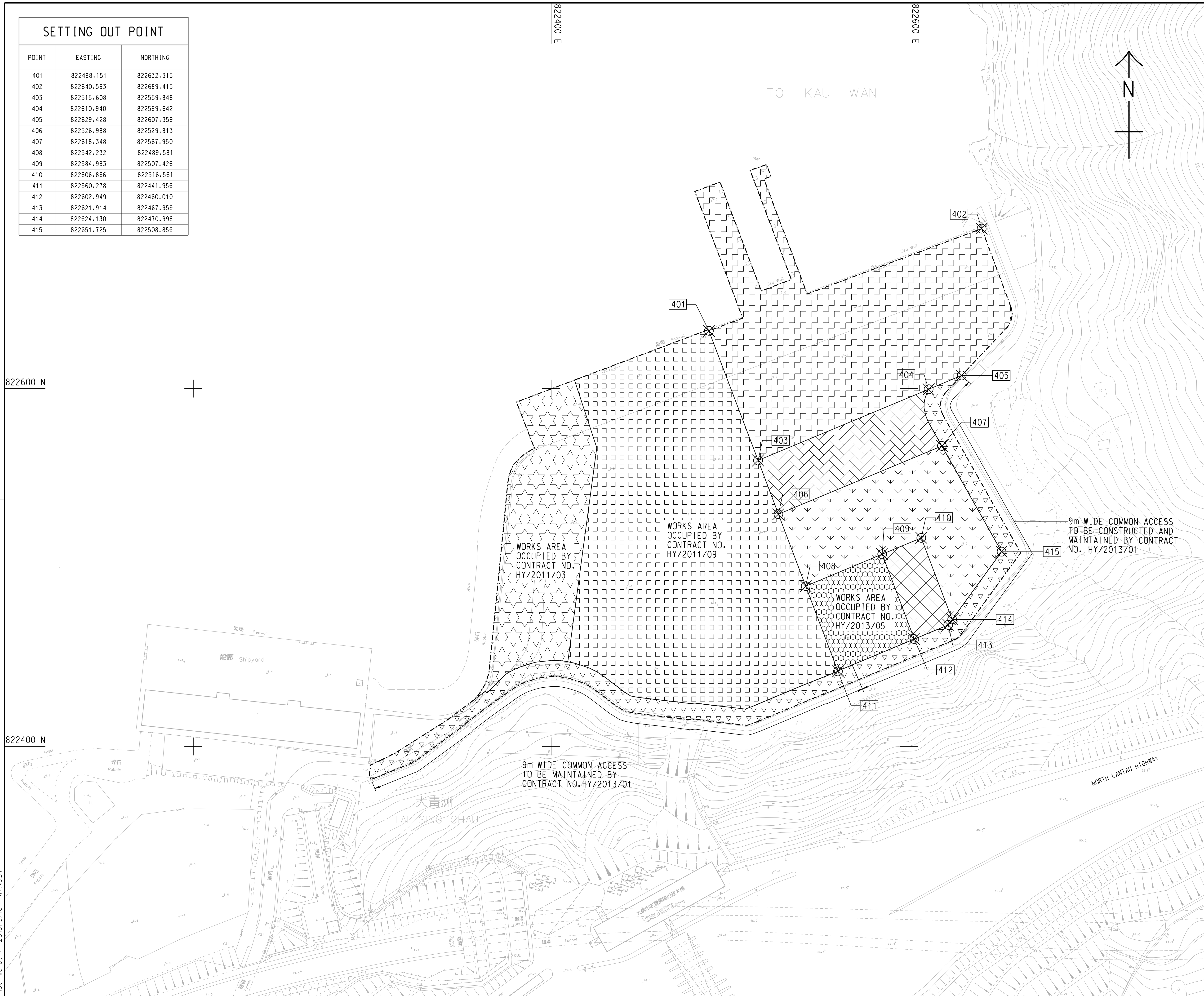
822400 E

822600 E

822600 N

822400 N

Plot File by : 2013/9/10 WANGSY



LOCATION PLAN
SCALE 1 : 25000

NOTES:

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

LEGEND:

- WORKS AREA BOUNDARY
- [Hatched Pattern 1] PORTION 4.1
- [Hatched Pattern 2] PORTION 4.2
- [Hatched Pattern 3] PORTION 4.3
- [Hatched Pattern 4] PORTION 4.4
- [Hatched Pattern 5] PORTION 4.5
- [Hatched Pattern 6] PORTION 4.6
- [Hatched Pattern 7] PORTION 4.7
- [Hatched Pattern 8] PORTION 4.8

REV.	DESCRIPTION	DATE
1	TENDER DRAWING	SEP.13

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

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG BOUNDARY CROSSING FACILITIES
- PASSENGER CLEARANCE BUILDING

WORKS AREA WA4

AECOM Aedas
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

DRG.NO. 60191048/C1/000/C00/1043
圖紙編號

DESIGNED BY Wangsy	CONTRACT NO. HY/2013/01	P. Dir. APPROVED EMSC
-----------------------	----------------------------	--------------------------

DRAWN BY WSY	STATUS Final
-----------------	-----------------

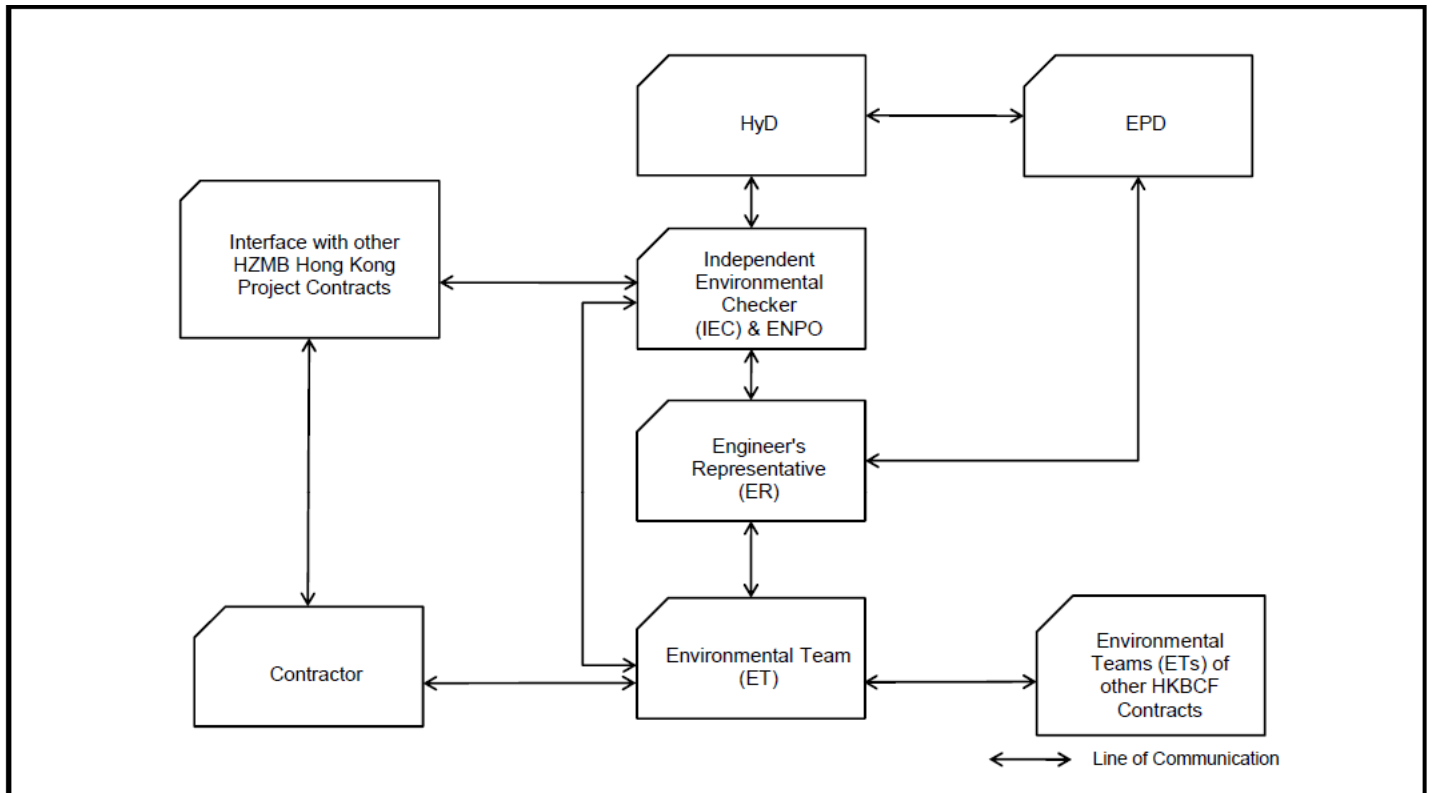
SCALE 1:1000
DIMENSIONS ARE IN METRES
© COPYRIGHT RESERVED



APPENDIX B

Project Organization for Environmental Works

Project Organisation for Environmental Works





APPENDIX C

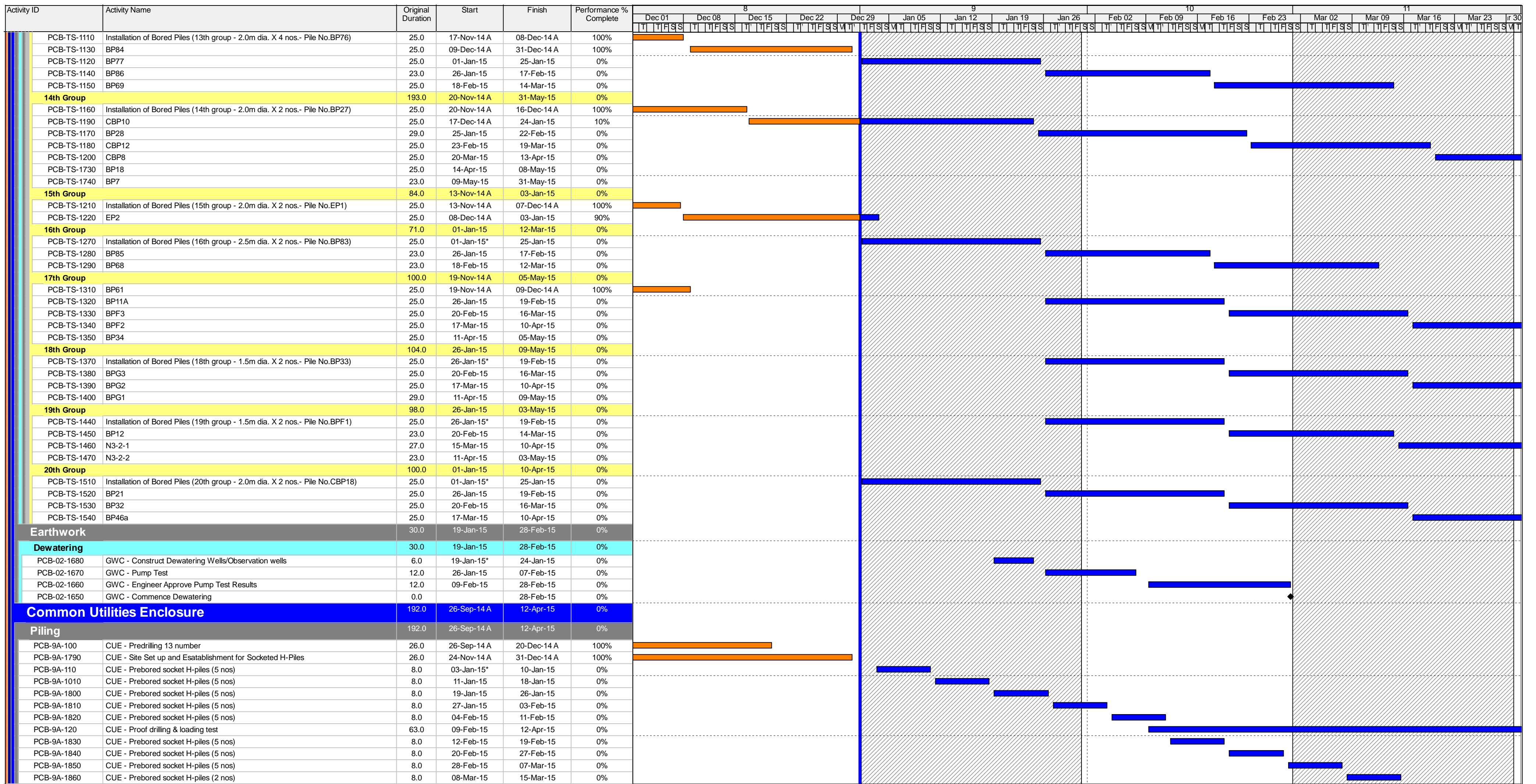
Construction Programme





Activity ID	Activity Name	Original Duration	Start	Finish	Performance % Complete	8							9				10				11												
						Dec 01	Dec 08	Dec 15	Dec 22	Dec 29	Jan 05	Jan 12	Jan 19	Jan 26	Feb 02	Feb 09	Feb 16	Feb 23	Mar 02	Mar 09	Mar 16	Mar 23	Mar 30										
HY/2013/01 HKZMB HKBCF - PCB - Initial 3MRP - Dec 2014						[Gantt Chart Grid]																											
GENERAL/PRELIMINARIES						[Gantt Chart Grid]																											
Submissions and Approvals						[Gantt Chart Grid]																											
Initial General Submission						[Gantt Chart Grid]																											
PCB-1610	Submit an Interface Management Plan	60.0	23-Jun-14 A	21-Jan-15	90%	[Gantt Chart Grid]																											
PROCUREMENT, MANUFACTURING & DELIVERIES						[Gantt Chart Grid]																											
Procurement, Manufacturing; Deliveries						[Gantt Chart Grid]																											
Major Sub-Contractor Procurement						[Gantt Chart Grid]																											
S/C - Concrete Placing - Structure						[Gantt Chart Grid]																											
PCB-XX-1720	Structure - JV Issue Award Recommendation/Process Engineer to ENG	30.0	16-Oct-14 A	15-Jan-15	0%	[Gantt Chart Grid]																											
PCB-XX-1730	Structure - ENG Subcontractor Approval	14.0	16-Jan-15	29-Jan-15	0%	[Gantt Chart Grid]																											
PCB-XX-1740	Structure - Subcontractor Award	0.0		29-Jan-15	0%	[Gantt Chart Grid]																											
S/C - Reinforcement Fixing - Structure						[Gantt Chart Grid]																											
PCB-XX-1780	Rebar - JV Issue Award Recommendation/Process Engineer to ENG	30.0	25-Oct-14 A	09-Jan-15	0%	[Gantt Chart Grid]																											
PCB-XX-1790	Rebar - ENG Subcontractor Approval	14.0	09-Jan-15	23-Jan-15	0%	[Gantt Chart Grid]																											
PCB-XX-1800	Rebar - Subcontractor Award	0.0		23-Jan-15	0%	[Gantt Chart Grid]																											
S/C - Formwork and Carpentry - Structure						[Gantt Chart Grid]																											
PCB-XX-1840	Formwork - JV Issue Award Recommendation/Process Engineer to ENG	30.0	25-Oct-14 A	10-Jan-15	0%	[Gantt Chart Grid]																											
PCB-XX-1850	Formwork - ENG Subcontractor Approval	14.0	11-Jan-15	24-Jan-15	0%	[Gantt Chart Grid]																											
PCB-XX-1860	Formwork - Subcontractor Award	0.0		24-Jan-15	0%	[Gantt Chart Grid]																											
Structural Steel Roof						[Gantt Chart Grid]																											
Structural Steelwork (Materials)						[Gantt Chart Grid]																											
PCB-1060	Award sub-contractor (Steel Roof)	90.0	15-May-14 A	06-Jan-15	100%	[Gantt Chart Grid]																											
CONSTRUCTION						[Gantt Chart Grid]																											
Passenger Clearance Building						[Gantt Chart Grid]																											
Site Establishment Works						[Gantt Chart Grid]																											
PCB-2470	PCB(A1) - Site Hoarding and Fencing	36.0	13-Jun-14 A	19-Jan-15	10%	[Gantt Chart Grid]																											
Piling						[Gantt Chart Grid]																											
Portion A1						[Gantt Chart Grid]																											
Pre-Drilling						[Gantt Chart Grid]																											
PCB-2260	PCB - Pre-Drilling 112	112.0	12-Jun-14 A	03-Oct-14 A	100%	[Gantt Chart Grid]																											
PCB-02-12541	BCA(A1) - Pre-Drilling 40 number	42.0	05-Aug-14 A	03-Oct-14 A	100%	[Gantt Chart Grid]																											
PCB-2280	GL B - Pre-Drilling 6 number	36.0	12-Aug-14 A	03-Oct-14 A	100%	[Gantt Chart Grid]																											
PCB-02-12551	BCA(A2) - Pre-Drilling 10 number	24.0	25-Aug-14 A	03-Oct-14 A	100%	[Gantt Chart Grid]																											
PCB-02-12521	WVC (A1) - Pre-Drilling 7 number	12.0	27-Aug-14 A	03-Oct-14 A	100%	[Gantt Chart Grid]																											
Bored Piling						[Gantt Chart Grid]																											
Chun Wo						[Gantt Chart Grid]																											
Sam Wo Contractor						[Gantt Chart Grid]																											
PLANT F1 - 1.5m pile use 2.5 casing at Drop off area and 2.0m Pile Use 3.0m Casing						[Gantt Chart Grid]																											
PCBCW-0410	DC36 (DS220)	29.0	01-Nov-14 A	26-Jan-15	10%	[Gantt Chart Grid]																											
PCBCW-0090	P1-2 (1500(DS190))	26.0	11-Nov-14 A	05-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-0130	BP125(T) (2000(3000))	29.0	01-Dec-14 A	20-Jan-15	30%	[Gantt Chart Grid]																											
PCBCW-0210	BP149(T)(2000(3000))	29.0	08-Dec-14 A	24-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-0250	DC7 (DS220)	29.0	27-Dec-14 A	26-Jan-15	10%	[Gantt Chart Grid]																											
PCBCW-0170	BP150(T) (2000(3000))	29.0	02-Jan-15	30-Jan-15	0%	[Gantt Chart Grid]																											
PCBCW-0290	DC20 (DS220)	29.0	08-Jan-15	05-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0450	DC38 (DS220)	29.0	08-Jan-15	05-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0330	DC6 (DS220)	29.0	18-Jan-15	15-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0490	DC21 (DS220)	29.0	18-Jan-15	15-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0370	DC22 (DS220)	29.0	28-Jan-15	25-Feb-15	0%	[Gantt Chart Grid]																											
PLANT F2 - 1.5m pile use 2.5 casing at Drop off area and 2.0m Pile Use 3.0m Casing						[Gantt Chart Grid]																											
PCBCW-0530	DC37 (DS220)	28.0	01-Jan-15*	28-Jan-15	0%	[Gantt Chart Grid]																											
PCBCW-0570	BPR1(1500(2250))	26.0	13-Jan-15	07-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0610	BPS1(1500(2250))	26.0	23-Jan-15	17-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0650	BPR2(1500(2250))	26.0	02-Feb-15	27-Feb-15	0%	[Gantt Chart Grid]																											
PCBCW-0690	BPS2(1500(2250))	26.0	12-Feb-15	09-Mar-15	0%	[Gantt Chart Grid]																											
PLANT E1 - 1.5m pile use 2.5 casing at drop off area and 2.0m Pile Use 2.5m Casing						[Gantt Chart Grid]																											
PCBCW-0940	BP136(T)(2000(3000))	29.0	24-Nov-14 A	10-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-0900	CBP20(2000(3000))	29.0	26-Nov-14 A	09-Jan-15	70%	[Gantt Chart Grid]																											
PCBCW-0780	BP147(T)(2000(3000))	28.0	18-Dec-14 A	20-Jan-15	30%	[Gantt Chart Grid]																											
PLANT E2 - 1.5m pile use 2.5 casing at drop off area and 2.0m Pile Use 2.5m Casing						[Gantt Chart Grid]																											
PCBCW-1380	BPR3(1500(2250))	26.0	01-Nov-14 A	11-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-1300	CBP23(2000(3000))	29.0	17-Nov-14 A	03-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-1220	BP137(T)(2000(3000))	29.0	04-Dec-14 A	17-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-1340	BP121a (2000(3000))	23.0	11-Dec-14 A	29-Dec-14 A	100%	[Gantt Chart Grid]																											
PCBCW-1420	BPS3(1500(2250))	26.0	12-Dec-14 A	08-Jan-15	70%	[Gantt Chart Grid]																											

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

THREE MONTH ROLLING PROGRAMME

Date	Revision	Checked	Approved
01-Jan-15	3 Month Rolling Programme - 1st January 2015	SGJ	



 Actual Work
 Remaining Work
 Critical Remaining Work
 Milestone

THREE MONTH ROLLING PROGRAMME

Date	Revision	Checked	Approved
01-Jan-15	3 Month Rolling Programme - 1st January 2015	SGJ	



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

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



APPENDIX E

Implementation Schedule for Environmental Mitigation Measures (EMIS)

Environmental Mitigation Implementation Schedule – Hong Kong Boundary Crossing Facilities (Superstructures and Infrastructures)

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?
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 $500 \mu\text{g m}^{-3}$ and $260 \mu\text{g m}^{-3}$, 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 $500 \mu\text{g m}^{-3}$ and $260 \mu\text{g m}^{-3}$, 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?
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?
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. 	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)
S5.5.6.3	A3	3) 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
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the representative dust 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)

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?
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. 	Monitor the 24 hr and 1hr TSP levels at the representative dust 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)
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	Air Pollution Control (Construction Dust) Regulation

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?
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 office 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	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.	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
S6.4.12	N3	3) Install movable noise barriers (typically density @14kg/m ²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	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 designed to achieve 10dB(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?
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
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

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?
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. 	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	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> • Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TC 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?
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. 	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	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. 	Control the chemical waste and ensure proper storage, handling and disposal.	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?
		<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	<u>Sewage</u> <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	Waste Disposal Ordinance
S8.3.17	WM5	<u>General Refuse</u> <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	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?
Water Quality (Construction Phase)							
S9.11.1.7	W2	<p><u>Land Works</u></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

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?
S9.11.1.7	W2	<ul style="list-style-type: none"> • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; • wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; • vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal; • the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up 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?
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	
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	

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?
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 subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF. 	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage	

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?
Landscape & Visual (Construction Phase)							
S14.3.3.3	LV2	<p>Mitigate both Landscape and Visual Impacts</p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p> <p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;</p> <p>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.</p> <p>G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.</p>	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage	
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>					

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?
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	Construction stage	<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	Construction stage	<ul style="list-style-type: none"> • EIAO Guidance Note No.4/2002 • TM-EIAO



APPENDIX F

Site Audit Findings and Corrective Actions

Appendix F – Site Audit Findings and Corrective Actions

1.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. During the reporting period, thirteen site inspections were carried out on 7, 14, 21 and 28 January 2015, 11, 18 and 25 February 2015 and 4, 11, 18 and 25 March 2015.

1.1.2 Particular observations during the site inspections are described below.

7 January 2015

- (a) Black smoke was observed from an air compressor. The Contractor stopped using the air compressor on 7 January 2015. This observation was found on 31 December 2014 and closed on 7 January 2015.
- (b) Water ponding was observed near Chun Wo work area. The water ponding was cleared. This observation was found on 31 December 2014 and closed on 7 January 2015.
- (c) Black smoke was observed from a generator. Maintenance was provided for the generator and no black smoke was observed. This observation was closed on 14 January 2015.
- (d) A water filled barrier wall was placed on the top of recycle bins. The water filled barrier wall was removed. This observation was closed on 14 January 2015.
- (e) Different kinds of waste including steel and general refuse were stored in a container. Steel and general refuse was segregated. The steel was stored in a container for recycle. This observation was closed on 14 January 2015.
- (f) Contaminated water was found inside a drip tray. The contaminated water was removed from the drip tray. This observation was closed on 14 January 2015.

14 January 2015

- (a) Water was leaking from a water hose. The water hose with holes was replaced and no water leakage was observed. This observation was closed on 21 January 2015.
- (b) Stagnant water/contaminated water was found inside a drip tray. The stagnant water inside a drip tray was cleared. This observation was closed on 21 January 2015.

21 January 2015

- (a) Stagnant water was found near the site office at WA1. The stagnant water was cleared near the site office at WA1. This observation was closed on 28 January 2015.

28 January 2015

No particular environmental issue was recorded during the site inspection.

4 February 2015

- (a) General refuse was found on the ground. The general refuse was removed. This observation was closed on 11 February 2015.
- (b) Contaminated water and sand were accumulated inside a drip tray. The contaminated water and sand were cleared and disposed of as chemical waste. This observation was closed on 11 February 2015.

- (c) Empty chemical containers were placed on the ground. The empty chemical containers were removed. This observation was closed on 11 February 2015.

11 February 2015

- (a) Black smoke was observed from a power pack generator. No dark smoke emission was observed from the power pack generator during the site inspection undertaken on 18 February 2015. This observation was closed on 18 February 2015.
- (b) A chemical drum was placed on the ground without drip tray. The chemical drum was removed. This observation was closed on 18 February 2015.

18 February 2015

- (a) Chemical containers were placed on the ground without drip trays within Chun Wo work area and Tysan work area. The chemical containers were removed. This observation was closed on 25 February 2015.
- (b) Untreated marine sediment was not covered by tarpaulin sheet within Chun Wo work area. The untreated marine sediment was removed. This observation was closed on 25 February 2015.

25 February 2015

- (a) Water was leaking from a water hose. The water hose was replaced and no leakage was observed during site inspection on 4 March 2015. This observation was closed on 4 March 2015.

4 March 2015

- (a) Refuse was found on a pathway. The refuse was cleared on the pathway. This observation was closed on 11 March 2015.
- (b) No drip trays were provided for chemical containers. The chemical containers were removed. This observation was closed on 11 March 2015.

11 March 2015

- (a) A cement mixing unit was not sheltered on the top. An enclosure (sheltered on the top and three sides) was provided for cement mixing unit. This observation was closed on 18 March 2015.
- (b) Stagnant water was found inside a drip tray provided for a generator. The stagnant water inside the drip tray was cleared. This observation was closed on 18 March 2015.
- (c) Refuse was found on the ground. The refuse was cleared on the ground. This observation was closed on 18 March 2015.
- (d) No drip trays were provided for chemical containers. The chemical containers were removed. This observation was closed on 18 March 2015.

18 March 2015

- (a) Black smoke was observed from a power pack and an air compressor. Maintenance was provided for the power pack and the air compressor. No black smoke was observed during the site inspection on 25 March 2015. This observation was closed on 25 March 2015.
- (b) Stagnant water was found on a pathway. The stagnant water on the pathway was cleared. This observation was closed on 25 March 2015.



25 March 2015

- (a) Empty chemical containers were accumulated on the ground. The Contractor is recommended to clear and dispose of the containers regularly.

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



APPENDIX G

Waste Flow Table

Name of Department: Highways Department

Contract No.: HY/2013/01

Monthly Summary Waste Flow Table for 2015



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)	b. Hard Rock and Large Broken Concrete (see Note 9)	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
January	24.799	0.000	0.000	12.018	12.781	0.000	29.910	0.314	0.000	1.440	0.044
February	12.073	0.000	0.000	5.159	6.914	0.000	20.870	0.473	0.003	0.000	0.022
March	15.990	0.000	0.000	4.489	11.501	0.000	90.810	0.673	0.000	2.400	0.047
April											
May											
June											
Sub-total	52.862	0.000	0.000	21.666	31.196	0.000	141.590	1.460	0.003	3.840	0.113
July											
August											
September											
October											
November											
December											
Total	52.862	0.000	0.000	21.666	31.196	0.000	141.590	1.460	0.003	3.840	0.113

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 generated - Total C&D waste recycled) / Total C&D waste generated



Forecast of Total Quantities of C&D Materials to be Generated from the Contract*										
a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete (see Note 9)	c. Reused in the Contract	d. Reused in Other Projects	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)

- 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
 Diesel density: 0.8kg/l
 - (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) The "Hard Rock and Large Broken Concrete" were disposed as public fill
 - (10) The amount in "Disposed as Public Fill" included the "Hard Rock and Large Broken Concrete" disposed as public fill



APPENDIX H

Environmental Licenses and Permits

Environmental License/ Permits /Notification Register

LCAL H2620

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

Date : Mar 2015

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
1.	All Areas	29 Jul 13	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/G	06 Aug 13	N/A	EPD	Superseded by EP-353/2009/H
2.	All Areas	16 Jan 15	N/A	Environmental Permit to construct the Passenger Clearance Building and associated works of the Hong Kong Zhuhai and Macao Bridge Boundary Crossing Facilities	EP-353/2009/H	19 Jan 15	N/A	EPD	
3.	All Areas	29 Apr 14	H2620-LTR-EPD-AU-000006	Billing Account for disposal of construction waste	Billing Account No.: 7019944	16 May 14	N/A	EPD	
4.	PCB	30 Apr 14	H2620-LTR- EPD-000002	Notification that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373961	05 May 14	N/A	EPD	
5.	WA2	30 Apr 14	H2620-LTR- EPD-000003	Notification that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373956	05 May 14	N/A	EPD	

Environmental License/ Permits /Notification Register

LCAL H2620

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

Date : Mar 2015								Remark	
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date		Issuing Office
	Work Area	Date	Reference						
6.	WA3	30 Apr 14	H2620-LTR-EPD-AU-000001	Notification that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373962	05 May 14	N/A	EPD	
7.	PCB	30 May 14	H2620-LTR-EPD-AU-000020	Registration as Chemical Waste Producer for disposal of spent batteries, used lubrication oil and surplus paint at PCB area	WPN: 5213-951-L2846-01	08 Jul 14	N/A	EPD	
8.	PCB	23 Jun 14	In H2620-LTR-EPD-000017	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0683-14	03 Jul 14	29 Dec 14	EPD	Superseded by GW-RS0908-14
9.	WA2	02 Jul 14	H2620-LTR-LCJ-AU-000280	CNP for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS0715-14	17 Jul 14	15 Jan 15	EPD	Superseded by GW-RS1034-14

Environmental License/ Permits /Notification Register

LCAL H2620

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

Date : Mar 2015

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
10.	WA3	02 Jul 14	H2620-LTR-LCJ-AU-000324	CNP for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0716-14	17 Jul 14	15 Jan 15	EPD	Expired
11.	PCB	23 Jun 14	H2620-LTR-EPD-000527	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0908-14	03 Sep 14	22 Dec 14	EPD	Superseded by GW-RS1044-14
12.	PCB	15 Sep 14	H2620-LTR-EPD-AU-000034	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1044-14	29 Sep 14	24 Dec 14	EPD	Superseded by GW-RS1300-14

Environmental License/ Permits /Notification Register

LCAL H2620

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

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
13.	WA2	12 Sep 14	H2620-LTR-EPD-AU-000032	CNP for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS1034-14	29 Sep 14	28 Mar 15	EPD	Expired
14.	WA4	17 Oct 14	H2620-LTR-EPD-AU-000036	CNP for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0814-14	20 Oct 14	19 Apr 15	EPD	
15.	PCB	03 Nov 14	H2620-LTR-EPD-AU-000040	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1300-14	17 Nov 14	16 Feb 15	EPD	Superseded by GW-RS0087-15
16.	PCB	12 Jan 15	H2620-LTR-EPD-AU-000046	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0087-15	26 Jan 15	25 Apr 15	EPD	Superseded by GW-RS0308-15

Environmental License/ Permits /Notification Register

LCAL H2620

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

Date : Mar 2015								Remark	
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date		Issuing Office
	Work Area	Date	Reference						
17.	PCB	12 Mar 15	H2620-LTR-EPD-AU-000051	<u>CNP</u> for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0308-15	26 Mar 15	25 Jun 15	EPD	
18.	PCB	31 Jul 2014	H2620-LTR-EPD-AU-000038	<u>Water Discharge License</u> for construction works on PCB island	WT00020335-2014	13 Nov 2014	30 Nov 2019	EPD	



APPENDIX I

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 construction to end of reporting month	0	0	0