

Your ref.
Our ref. 5126871/19.10/OC158/KC/RL
Date: 24 October 2019

By Post and e-mail (Stephen.Tsang@lcwjb.com)

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

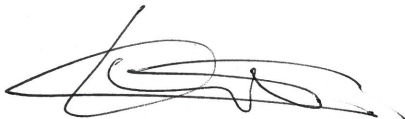
Attn: Mr. Stephen Tsang

Dear Mr. Tsang,

**Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Certification of Monthly EM&A Report No. 52**

Atkins China Limited certifies, in the capacity of Environmental Team Leader, that Monthly EM&A Report No. 52 (Revision 3) conforms the requirements provided in Condition 5.4 of the Environmental Permit No. EP-353/2009/K.

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



**Keith Chau
Environmental Team Leader**

cc.

1. AECOM – Mr. Joseph Yau (By Fax.: 3468 2076)
2. IEC / ENPO – Mr. Ray Yan & Mr. Y.H. Hui (By Fax.: 3465 2899)

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28 October 2019

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
550 Cheung Tung Road, Lantau, Hong Kong

Attention: Mr. Hugh Jennings

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
Monthly Environmental Monitoring & Audit Report for January 2019**

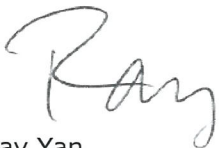
Reference is made to the Environmental Team's submission of the Monthly EM&A Report for January 2019 certified by the ET Leader (ET's ref.: "5126871/19.10/OC158/KC/RL" dated 24 October 2019) and provided to us via e-mail on 24 October 2019.

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

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

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

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



Ray Yan
Independent Environmental Checker
HZMB HKBCF

c.c.	HyD	Mr. Cheng Pan	(By Fax: 3188 6614)
	HyD	Ms. Iris Ng	(By Fax: 3188 6614)
	Atkins	Mr. Keith Chau	(By Fax: 2890 6343)
	LCWJV	Mr. Ian Kerswill	(By Fax: 3621 0180)

Internal: DY, YH, HW, ENPO Site

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Ramboll Hong Kong Limited 英環香港有限公司

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Contract No. HY/2013/01

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

**Monthly EM&A Report No. 52
(Covering the Period from 1 January 2019 to 31 January 2019)**

11 October 2019

Revision 3

Main Contractor



Leighton - Chun Wo
Joint Venture

Environmental Team



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Executive Summary

This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HZMB HKBCF) – Passenger Clearance Building (hereafter referred to as “the Contract”) (includes the construction works of Contract No. HY/2013/06 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System within Contract No. HY/2013/01 works area) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to Leighton – Chun Wo Joint Venture (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/01 works area) (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 HZMB HKBCF Project which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation works of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area commenced on 20 February 2018.

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 fifty-second monthly EM&A Report for the Contract which summarizes findings of the EM&A works during the reporting period from 1 to 31 January 2019. (includes the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area)

Landscape Checklist is shown in **Appendix A**. Reporting of landscape monitoring during 12-month establishment period after this reporting period shall be referred to monthly EM&A report prepared by Contract No. HY/2013/04.

Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). The air quality, noise, water quality and dolphin monitoring works under Contract HY/2013/01 “HZMB HKBCF – Passenger Clearance Building were suspended from 1 October 2018. The ET of Contract No. HY/2013/04 is required and continues the same implementation of environmental monitoring commencing on 1 October 2018. It should be noted that the air quality monitoring station (AMS6) is covered by Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. If the impact air quality monitoring at AMS6 is no longer covered under Contract No. HY/2011/03, it is required to continue such monitoring at AMS6 as part of EM&A programme. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area, no site inspection was conducted for the Contract HY/2013/01 during the reporting period.

Breaches of Action and Limit Levels

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7B by the Environmental Team of Contract No. HY/2013/04 during the reporting period.

There was no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3C by the ET of Contract No. HY/2013/04 during the reporting period.

There was no Action and Limit Level exceedance for water quality monitoring recorded by the ET of Contract No. HY/2013/04 during the reporting period.

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 notifications of summons or prosecutions received during the reporting period.

Reporting Change

There was no reporting change during the reporting period.

Future Key Issues

No construction works will be conducted by Contract No. HY/2013/01 in the upcoming month.

1 Introduction

1.1 Basic Project Information

- 1.1.1 This Monthly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building (hereafter referred to as “the Contract”) (includes the construction works of Contract No. HY/2013/06 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Automatic Vehicle Clearance Support System within Contract No. HY/2013/01 works area) for the Highways Department of Hong Kong Special Administrative Region. The Contract was awarded to Leighton – Chun Wo Joint Venture (construction works of Contract No. HY/2013/06 was awarded to ATAL Technologies Limited within Contract No. HY/2013/01 works area) (hereafter referred to as “the Contractor”) and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.
- 1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499). An Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/K for HKBCF was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contract No. HY/2013/01 works area commenced on 20 February 2018. The works areas of the Contract are shown in **Appendix B**.
- 1.1.3 The proposed works under this Contract comprise the following:
- For Contract No. HY/2013/01
- Construction of Passenger Clearance Building (PCB) including architectural and builders works, structural steel roof and reinforced concrete frames, basement, piled foundations, aluminium roof, curtain wall facades, building services and electrical and mechanical works;
 - Installation of district cooling system including seawater cooling intake pumping station, seawater intake and discharge water pipelines work; Installation of Chilled water cooling pipelines system, heat exchanger and chilled pumping system;
 - Construction of transport and associated facilities connecting to the PCB entailing the Emergency Vehicular Access, an at-grade mainland side drop-off area, an Hong Kong side elevated drop-off deck and 8 numbers of footbridge links;
 - Construction of a public toilet, 6 numbers of C&ED observation booths, a generator set building and a refuse storage & material recovery chamber;
 - Construction of a section of 70m common utilities enclosure and staff subway and civil provisions for associated electrical and mechanical works;
 - Construction of drainage, sewerage, fresh water & flushing water supply and utilities & service works;
 - Construction of civil provisions, including draw pits & ducting for Traffic Control and Surveillance System (TCSS) and Extra Low Voltage System (ELV);
 - Construction of box culvert A;
 - Construction of 2 numbers of vehicular bridge abutments at mainland side pickup area earthmound;
 - Construction of geotechnical works including top up the existing earth mound from +11.5mPD to the finished level as stated in the Contract, reinforced earth slope and fill slopes and special backdrop manhole at mainland side pickup area earthmound;
 - Landscape hardworks and softworks; and
 - Other works which are shown on the Drawings or specified in the Specification or which



may be ordered in accordance with the Contract.

For Contract No. HY/2013/06 within Contract No. HY/2013/01

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

1.1.4 This is the fifty-second monthly EM&A Report for the Contract No. HY/2013/01 which summarizes the audit findings of the EM&A programme during the reporting period from 1 to 31 January 2019 (included the construction works of Contract No. HY/2013/06 within Contract No. HY/2013/01 works area).

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 C**. 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
<u>For Contract No. HY/2013/01</u>				
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Malcolm Sage	3958 7330	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Ray Yan	3465 2836 5181 8401	3465 2899
Contractor (Leighton – Chun Wo Joint Venture)	Project Manager	Owen Leung	9232 5750	3621 0180
	Environmental Officer	Stephen Tsang	9686 0787	3621 0180
Environmental Team (Atkins China Limited)	Environmental Team Leader	Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	3958 7300	---
<u>For Contract No. HY/2013/06 within Contract No. HY/2013/01 works area</u>				
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Registered Architect	Malcolm Sage	3958 7330	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Hong Kong Limited)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Ray Yan	3465 2836 5181 8401	3465 2899



Contractor (ATAL Technologies Limited)	Site Agent	Mr. Eric Yim	2565 3355	3162 5217
	Environmental Officer	Mr. W. Li	2565 3137	3162 5217
Environmental Team (Atkins China Limited)	Environmental Team Leader	Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	6509 0375	---

1.3 Construction Programme

- 1.3.1 As all the sections under Contract No. HY/2013/01 and HY/2013/06 were handed over to the relevant authorities on 24 October 2018 and the site had been changed to closed area, no construction works undertaken during the reporting period.

1.4 Construction Works Undertaken During the Reporting Period

- 1.4.1 As all the sections under Contract No. HY/2013/01 and HY/2013/06 were handed over to the relevant authorities on 24 October 2018 and the site had been changed to closed area, no construction works undertaken during the reporting period.

2 Air Quality Monitoring

2.1 Monitoring Requirements

- 2.1.1 The monitoring requirements are detailed in the monthly EM&A Reports prepared by Contract Nos. HY/2011/03 and HY/2013/04.
- 2.1.2 The Action and Limit Level for the 1-hour and 24-hour TSP are provided in **Table 2.1** and **2.2** respectively.

Table 2.1 Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 - Dragonair / CNAC (Group) Building (HKIA)	360	500
AMS7B – 3RS Site Office	370	

Table 2.2 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragonair / CNAC (Group) Building (HKIA)	173	260
AMS7B – 3RS Site Office	183	

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

2.2 Monitoring Equipment

- 2.2.1 The monitoring equipment are detailed in the monthly EM&A Reports prepared by Contract Nos. HY/2011/03 and HY/2013/04.

2.3 Monitoring Locations

- 2.3.1 The air quality monitoring works for the Contract are covered by Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF.
- 2.3.2 The permission to carry out impact air quality monitoring work at AMS7 (Hong Kong SkyCity Marriott Hotel) was not granted after 31 January 2015. The air quality monitoring location (AMS7) was relocated to a nearby air sensitive receiver, Chu Kong Air-Sea Union Transportation Co. Ltd, from 5 February 2015. The alternative location was approved by EPD on 5 February 2015. However, AMS7A was relocated back to its original location (AMS7-Hong Kong SkyCity Marriott Hotel) on 30 December 2015. The relocation of air quality monitoring location, AMS7A, back to AMS7 was approved by EPD on 21 December 2015. As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after the end of January 2018, as such, a proposal for the monitoring location relocated to 3RS Site Office(AMS7B) was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018; and submitted to EPD on 30 January 2018, and the AQM has been carrying out at AMS7B with EPD's consent since 6 February 2018. 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 air quality monitoring location.

- 2.3.3 The ET of the Contract or another ET of the HZMB project is required to conduct air quality monitoring at AMS6 and AMS7B as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract Nos. HY/2011/03 and HY/2013/04.
- 2.3.4 **Table 2.3** describes the details of the monitoring stations and **Figure 2.1** shows the locations of the air quality monitoring stations.

Table 2.3 Construction Dust Monitoring Locations

ID	Location Description
AMS6	Dragonair/CNAC (Group) Building
AMS7B ⁽¹⁾	3RS Site Office

Remarks:

- (1) The original monitoring location was at Hong Kong SkyCity Marriott Hotel (AMS7). 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 was relocated to Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A) from 5 February 2015 to 30 December 2015. The alternative monitoring location at Chu Kong Air-Sea Union Transportation Co. Ltd. was approved by EPD on 5 February 2015. However, AMS7A was relocated back to its original location (AMS7-Hong Kong SkyCity Marriott Hotel) on 30 December 2015. The relocation of air quality monitoring location, AMS7A, back to AMS7 was approved by EPD on 21 December 2015. As the permission to carry out air quality monitoring at Hong Kong SkyCity Marriott Hotel was not granted after the end of January 2018, as such, a proposal for the monitoring location relocated to 3RS Site Office (AMS7B) was justified by the ET Leader for Contract No. HY/2013/01 on 22 January 2018; verified by the IEC on 24 January 2018; and submitted to EPD on 30 January 2018, and the AQM has been carrying out at AMS7B with EPD's consent since 6 February 2018.

2.4 Monitoring Parameters, Frequency and Duration

- 2.4.1 The monitoring parameters, frequency and duration are detailed in the monthly EM&A Reports prepared by Contract Nos. HY/2011/03 and HY/2013/04.

2.5 Monitoring Methodology

- 2.5.1 The monitoring methodology are detailed in the monthly EM&A Reports prepared by Contract Nos. HY/2011/03 and HY/2013/04.

2.6 Monitoring Schedule for the Reporting Month

- 2.6.1 The schedule for air quality monitoring in January 2019 are referred to the monthly EM&A report prepared by Contracts Nos. HY/2011/03 and HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) respectively.

2.7 Monitoring Results

- 2.7.1 The monitoring results for AMS6 and AMS7B are reported in the monthly EM&A Reports prepared for Contract Nos. HY/2011/03 and HY/2013/04, respectively.
- 2.7.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.
- 2.7.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7B recorded by the ET of Contract No. HY/2013/04 during the reporting period.
- 2.7.4 The event and action plan is provided in **Appendix D**.

3 Noise Monitoring

3.1 Monitoring Requirements

- 3.1.1 The monitoring requirements are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.
- 3.1.2 The Action and Limit Level for the noise monitoring is provided in **Table 3.1**.

Table 3.1 Action and Limit Levels for Noise during Construction Period

Monitoring Station	Time Period	Action Level	Limit Level
NMS2	0700-1900 hours on normal weekdays	When one documented complaint is received.	75 dB(A)
NMS3C ⁽ⁱ⁾			70/65 dB(A)*

Remark:

* Limit Level for schools will be applied for NMS3C. Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

(i) Noise monitoring at NMS3C has been undertaken by the ET for Contract No. HY/2013/04 since 20 August 2018.

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

3.2 Monitoring Equipment

- 3.2.1 The monitoring equipment are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.

3.3 Monitoring Locations

- 3.3.1 Monitoring location NMS2 was set up at the proposed locations in accordance with Contract Specific EM&A Manual. However, for monitoring location NMS3 (Ho Yu College), as proposed in the Contract Specific EM&A Manual, approval for carrying out impact monitoring could not be obtained from the principal of school. Permission on setting up and carry out impact monitoring works at nearby sensitive receivers, like Caribbean Coast and Coastal Skyline, was also sought. However, approvals for carrying out impact monitoring works within their premises were not obtained. Impact noise monitoring was conducted at site boundary of the site office area in Work Area WA2 (NMS3B) respectively. The noise monitoring station at NMS3B has been relocated and renamed as NMS3C and is covered by Contract No. HY/2013/04. Same baseline noise level (as derived from the baseline monitoring data recorded at Ho Yu College) and Limit Level were adopted for this alternative noise monitoring location.
- 3.3.2 The noise monitoring works for the Contract are covered by Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion). The ET of the Contract or another ET of the HZMB project is required to conduct impact noise monitoring at NMS2 and NMS3C as part of EM&A programme if these noise monitoring stations are no longer covered under Contract No. HY/2013/04.
- 3.3.3 **Figure 2.1** shows the locations of noise monitoring stations. **Table 3.2** describes the details of monitoring stations.

Table 3.2 Construction Noise Monitoring Locations

ID	Location Description
NMS2 ⁽¹⁾	Seaview Crescent
NMS3C ^{(1) (2) (3)}	Ying Tung Estate Refuse Collection Point



Remarks:

- (1) The ET of this Contract should conduct impact noise monitoring at the NMS listed in the table as part of EM&A programme according to the latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.
- (2) Limit Level for schools will be applied for NMS3C. Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.
- (3) Noise Monitoring at NMS3C has been undertaken by the ET for Contract No. HY/2013/04 since 20 August 2018.

3.4 Monitoring Parameters, Frequency and Duration

- 3.4.1 The monitoring parameters, frequency and duration are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.

3.5 Monitoring Methodology

- 3.5.1 The monitoring methodology are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.

3.6 Monitoring Schedule for the Reporting Month

- 3.6.1 The schedule for construction noise monitoring in January 2019 are referred to the monthly EM&A report prepared by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion).

3.7 Monitoring Results

- 3.7.1 The monitoring results for NMS2 and NMS3C are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04. No noise exceedances were recorded at stations NMS2 and NMS3C by the ET of Contract No. HY/2013/04 during the reporting period.

4 Water Quality Monitoring

4.1 Monitoring Requirements

- 4.1.1 The monitoring requirements are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.
- 4.1.2 If exceedance(s) at these survey transect(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.
- 4.1.3 **Table 4.1** shows the established Action and Limit Levels for the environmental monitoring works.

Table 4.1 Action and Limit Levels for Water Quality

Parameters	Action Level	Limit Level
DO in mg L ⁻¹ (Surface, Middle & Bottom)	Surface and Middle 5.0 Bottom 4.7	Surface and Middle 4.2 (except 5 mg/L for FCZ) Bottom 3.6
SS in mg L ⁻¹ (depth-averaged) at all monitoring stations and control stations	23.5 and 120% of upstream control station's SS at the same tide of the same day*	34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes*
Turbidity in NTU (depth-averaged)	27.5 and 120% of upstream control station's turbidity at the same tide of the same day*	47.0 and 130% of upstream control station's turbidity at the same tide of the same day*

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

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

4.2 Monitoring Equipment

- 4.2.1 The monitoring equipment are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.

4.3 Monitoring Parameters, Frequency and Duration

- 4.3.1 The monitoring parameters, frequency and duration are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.

4.4 Monitoring Location

- 4.4.1 In accordance with the Contract Specific EM&A Manual, a total of twenty-one stations (nine Impact Stations, seven Sensitive Receiver Stations and five Control/Far Field Stations) were designated for impact water quality monitoring. The nine Impact Stations (IS) were chosen on the basis of their proximity to the reclamation and thus the greatest potential for water quality impacts, the seven Sensitive Receiver Stations (SR) were chosen as they are close to the key sensitive receives and the five Control/ Far Field Stations (CS) were chosen to facilitate comparison of the water quality of the IS stations with less influence by the Project/ ambient water quality conditions
- 4.4.2 The water quality monitoring stations at CS(Mf)3 (Coordinate: 809989E, 821117N), IS10 (Coordinate: 812577E, 820670N) and SR5 (811489E, 820455N) have been occupied by the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). The alternative water quality monitoring station at CS(Mf)3(N) (Coordinate: 808814E, 822355N), IS10(N) (Coordinate: 812942E, 820881N) and SR5(N) (812569E, 8201475N) were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.
- 4.4.3 The water quality monitoring stations at SR3, SR10A and SR10B(N) were not available for water sampling due to safety reason, thus, monitoring stations were changed to SR3(N) (Coordinate: 810689E, 816591N); SR10A(N) (Coordinate: 823644E, 823484N) and SR10B(N2) (Coordinate: 823689E, 823159N) were justified by the ET Leader on 8 November 2017 and the IEC verified on 13 November 2017; and submitted to EPD on 29 November 2017 and it was approved by EPD on 22 December 2017.
- 4.4.4 The ET of the Contract or another ET of the HZMB project is required to conduct water quality monitoring at these stations as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/04.
- 4.4.5 **Table 4.2** and **Figure 4.1** shows the locations of water quality monitoring stations.

Table 4.2 Impact Water Quality Monitoring Stations

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10(N)*	Impact Station (Close to HKBCF construction site)	812942	820881
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3(N) ^	Sensitive receivers (San Tau SSSI)	810689	816591
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859

Station	Description	East	North
SR5(N)*	Sensitive receiver (Artificial Reef in NE Airport)	812569	821475
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A(N)^	Sensitive receivers (Ma Wan FCZ) 1	823644	823484
SR10B(N2)^	Sensitive receivers (Ma Wan FCZ) 2	823689	823159
CS(Mf)3(N)*	Control Station	808814	822355
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA	Control Station	818103	823064

Remarks:

*Alternative water quality monitoring stations at CS(Mf)3(N), SR5(N) and IS10(N) were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

^ Alternative water quality monitoring stations at SR3, SR10A and SR10B(N) were justified by the ET Leader on 8 November 2017 and verified by IEC on 13 November 2017; and submitted to EPD on 29 November 2017 and it was approved by EPD on 22 December 2017.

4.5 Monitoring Methodology

- 4.5.1 The monitoring methodology are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.

4.6 Monitoring Schedule for the Reporting Month

- 4.6.1 The schedule for water quality monitoring in January 2019 are referred to the monthly EM&A report prepared by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion).

4.7 Monitoring Result

- 4.7.1 The monitoring results for the monitoring stations are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/04.
- 4.7.2 No Action Level and Limit Level exceedances of dissolved oxygen were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during the reporting period.
- 4.7.3 No Action Level and Limit Level exceedances of turbidity were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during the reporting period.
- 4.7.4 No Action Level and Limit Level exceedances of suspended solids were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during the reporting period. The event and action plan is provided in **Appendix D**.

5 Dolphins Monitoring

5.1 Monitoring Requirement

- 5.1.1 The monitoring requirements are detailed in the monthly EM&A Reports prepared by Contract No. HY/2013/04.
- 5.1.2 The Action and Limit Level for dolphin monitoring are provided in **Table 5.1** and **5.2** respectively.

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

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

Remarks:

1. STG means no. of on-effort dolphin sightings per 100 km of survey effort
2. ANI means no. of dolphins from all on-effort sightings per 100 km of survey effort
3. For North Lantau Social Cluster, AL will be trigger if either NEL or NWL fall below the criteria; LL will be triggered if both NEL and NWL fall below the criteria.

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

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

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

5.2 Monitoring Methodology and Location

- 5.2.1 The dolphin monitoring works for the Contract are covered by Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion). The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at the twenty-four transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2013/04. The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau survey area; and Northwest Lantau survey area. The change of transect lines 2, 3, 4, 5, 6 and 7 and new vessel-based transect line 24 for dolphin monitoring have been proposed due to the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). It was justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017. **Figure 5.1** shows the for the layout map transect lines.
- 5.2.2 The co-ordinates for the transect lines and a layout map showing the transect lines have been provided by AFCD and are shown in **Table 5.3**.



Table 5.3 Impact Dolphin Monitoring Transect Line Co-ordinates

Transect Line No.	HK Grid System	
	Easting	Northing
1(#)	804671	815456
	804671	831404
2(#)	805476	820800
	805476	826654
3	806464	821150
	806464	822911
4	807518	821500
	807518	829230
5	808504	821850
	808504	828602
6	809490	822150
	809490	825352
7(#)	810499	822000
	810499	824613
8(#)	811508	821123
	811508	824254
9(#)	812516	821303
	812516	824254
10*	813525	820827
	813525	824657
11#	814556	818853
	814556	820992
12	815542	818807
	815542	824882
13	816506	819480
	816506	824859
14	817537	820220
	817537	824613
15	818568	820735
	818568	824433
16	819532	821420
	819532	824209
17	820451	822125
	820451	823671
18	821504	822371
	821504	823761
19	822513	823268
	822513	824321
20	823477	823402
	823477	824613
21	805476	827081
	805476	830562
22	806464	824033
	806464	829598
23	814559	821739
	814559	824768
24	805476	815900
	805476	819100

Remarks:
(a) * Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of



the transect lines could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore, the total transect length for both NEL and NWL combined is reduced to approximately 108km.

- (b) # Coordinates for transect lines 1, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.
- (c) Due to marine work of the Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project), original transect lines of dolphin monitoring 2, 3, 4, 5, 6 and 7 are enclosed by works boundary of 3RS Project. Alternative dolphin monitoring transect lines 2, 3, 4, 5, 6, 7 and 24 are adopted starting from 17 May 2017 to replace the original transect lines.
- (d) The change of transect lines 2, 3, 4, 5, 6 and 7 and new vessel-based transect line 24 for dolphin monitoring have been proposed due to the marine work of a designated project - Expansion of Hong Kong International Airport into a Three-Runway System (3RS Project). It was justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

5.3 Monitoring Schedule for the Reporting Month

- 5.3.1 The schedule for dolphin monitoring in January 2019 are referred to the monthly EM&A report prepared by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion).

5.4 Monitoring Result

- 5.4.1 Impact dolphin monitoring results at all transects in January 2019 are reported in the EM&A Reports prepared for Contract No. HY/2013/04.

6 Environmental Site Inspection and Audit

6.1 Site Inspection

- 6.1.1 The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site area was changed to closed area, no site inspection was conducted for the Contract No. HY/2013/01 during the reporting period.
- 6.1.2 The landscape works for Contract No. HY/2013/01 was commenced on 1 March 2018. As the works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site area was changed to closed area, no inspection for landscape works was conducted for Contract No. HY/2013/01 during the reporting period.

6.2 Advice on the Solid and Liquid Waste Management Status

- 6.2.1 The works site area of Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018 and no chemical waste and general refuse were generated during reporting period.

6.3 Environmental Licenses and Permits

- 6.3.1 The works site area of Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018, therefore, no environmental licenses and permits is required during reporting period.

6.4 Implementation Status of Environmental Mitigation Measures

- 6.4.1 The works site area of Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018, therefore, no environmental mitigation measure is recorded. The EMIS is shown in **Appendix E**.

6.5 Summary of Exceedance of the Environmental Quality Performance Limit

- 6.5.1 For air quality monitoring, summary of Action and Limit Level exceedance of 1-hour TSP level and 24-hour TSP level at AMS6 are referred to the monthly EM&A report prepared by Contract No. HY/2011/03. No Action and Limit level exceedance of 1-hr TSP level and 24-hr TSP level recorded AMS7B by the Environmental Team of Contract No. HY/2013/04 during the reporting period.
- 6.5.2 For construction noise, no Action and Limit Level exceedance for noise recorded NMS2 and NMS3C by the ET of Contract No. HY/2013/04 during the reporting period.
- 6.5.3 No Action and Limit Level exceedance for water quality monitoring recorded by the ET of Contract No. HY/2013/04 during the reporting period.
- 6.5.4 Impact dolphin monitoring results in January 2019 at all transects are reported in the EM&A Reports prepared for Contract No. HY/2013/04

6.6 Summary of Complaints, Notification of Summons and Successful Prosecution

- 6.6.1 There was no complaint received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provide in **Appendix F**.



- 6.6.2 No notification of summons and prosecution was received during the reporting period.
- 6.6.3 Statistics on environmental complaints, notifications of summons and successful prosecutions are summarized in **Appendix F**.



7 Future Key Issues

7.1 Construction Programme for the Coming Months

- 7.1.1 The Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018 and the works site area had been changed to a closed area. No construction programme will be provided.

7.2 Environmental Site Inspection and Monitoring Schedule for the Coming Month

- 7.2.1 The Contract No. HY/2013/01 was handed over to the relevant authorities since 24 October 2018 and the works site area had been changed to a closed area. No site inspection will be conducted.

8 Conclusions

8.1 Conclusions

- 8.1.1 The site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. The construction works of the Contract No. HY/2013/06 within Contractor No. HY/2013/01 works area commenced on 20 February 2018. The fifty-second Monthly EM&A Report summarizes findings of the EM&A works during the reporting period from 1 to 31 January 2019 (included the construction works of Contract No. HY/2013/06 within Contractor No. HY/2013/01 works area). The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the owner since 24 October 2018.
- 8.1.2 For air quality monitoring, summary of Action and Limit Level exceedance of 1-hour TSP level and 24-hour TSP level at AMS6 are referred to the monthly EM&A report prepared by Contract No. HY/2011/03. No Action and Limit level exceedance of 1-hr TSP level and 24-hr TSP level recorded AMS7B by the Environmental Team of Contract No. HY/2013/04 during the reporting period. Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS7B shall be referred to the monthly EM&A report prepared by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) since 1 October 2018.
- 8.1.3 For construction noise, no Action and Limit Level exceedance for noise recorded NMS2 and NMS3C by the ET of Contract No. HY/2013/04 during the reporting period. Summary of Action and Limit Level exceedance at NMS2 and NMS3C shall be referred to the monthly EM&A report prepared by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) since 1 October 2018.
- 8.1.4 For water quality monitoring, no Action Level and Limit Level exceedance of dissolved oxygen were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during the reporting period. No Action Level and Limit Level exceedances of turbidity was recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during the reporting period. No Action Level and Limit Level exceedances of suspended solids were recorded at mid-ebb tide and mid-flood tide by the ET of Contract No. HY/2013/04 during the reporting period. Summary of Action and Limit Level exceedance for water quality monitoring shall be referred to the monthly EM&A report prepared by Contract No. HY/2013/04 – Hong Kong-Zhuhai-Macao Bridge HKBCF - Infrastructure Works Stage II (Southern Portion) since 1 October 2018.
- 8.1.5 Impact dolphin monitoring results at all transects in January 2019 are reported in the EM&A Reports prepared for Contract No. HY/2013/04.
- 8.1.6 The works area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site area was changed to closed area, no site inspection was conducted for the Contract No. HY/2013/01 during the reporting period. Landscape Checklist is shown in **Appendix A**. Reporting of landscape monitoring during 12-month establishment period after this reporting period shall be referred to monthly EM&A report prepared by Contract No. HY/2013/04.
- 8.1.7 There was no complaint received in relation to the environmental impact during the reporting period.
- 8.1.8 No notification of summons and successful prosecution was received during the reporting period.

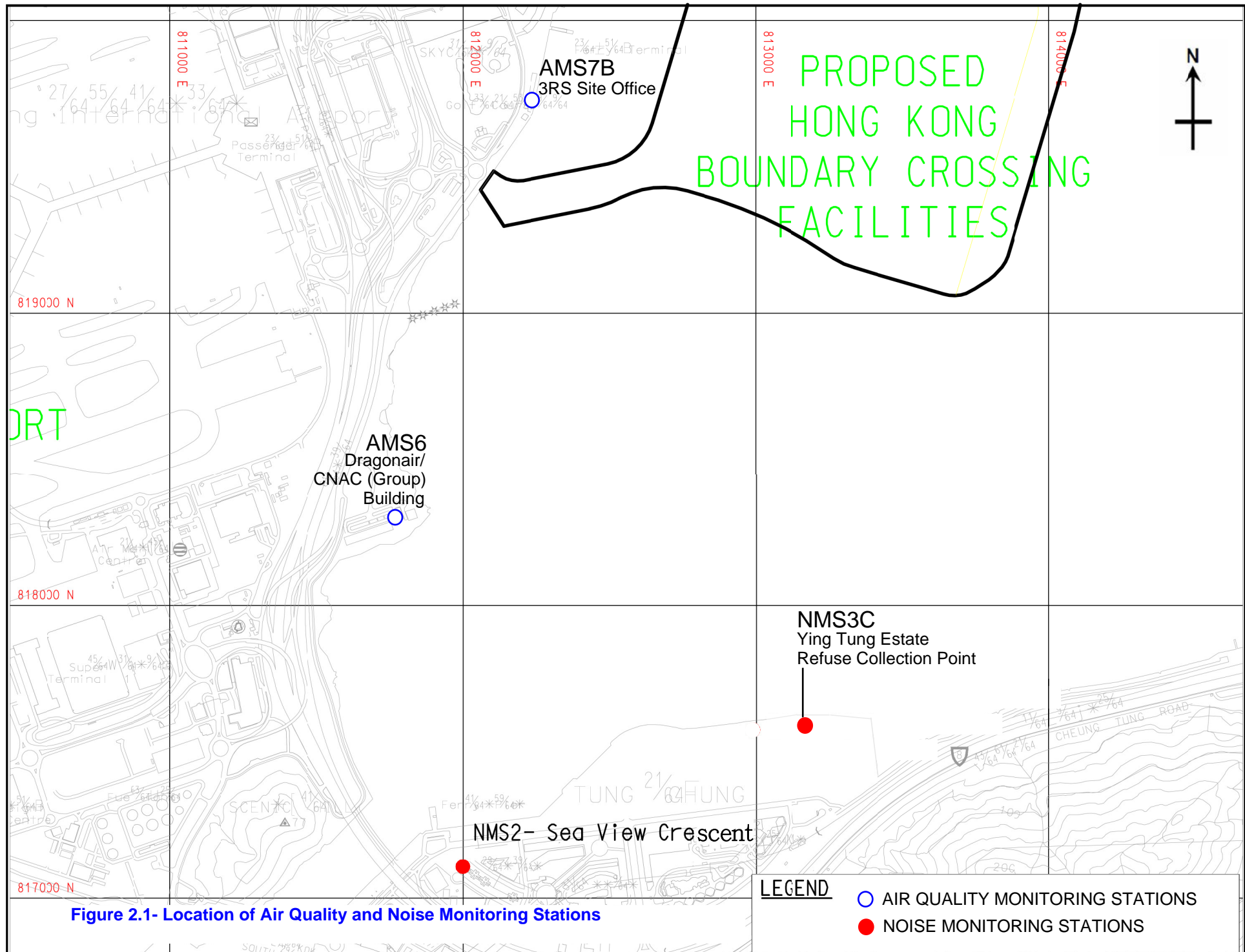


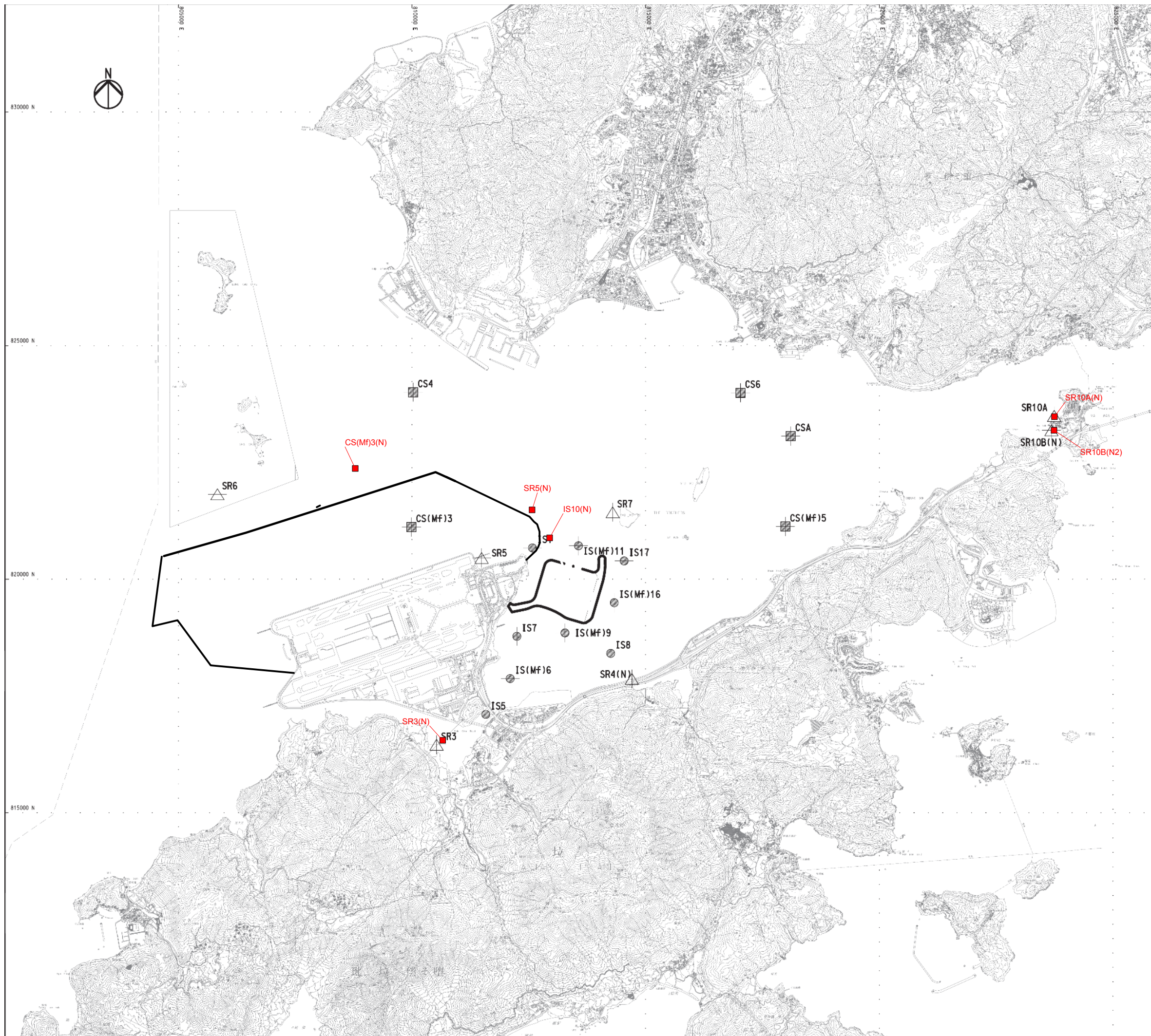
路政署
HIGHWAYS DEPARTMENT

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

Contract No. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
52nd Monthly EM&A Report

FIGURES





Station	East	North
IS5	811579	817106
IS(Mf)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(Mf)9	813273	818850
IS10(N)	812942	820881
IS(Mf)11	813562	820716
IS(Mf)16	814328	819497
IS17	814539	820391
SR3(N)	810689	816591
SR4(N)	814705	817859
SR5(N)	812569	821475
SR6	805837	821818
SR7	814293	821431
SR10A(N)	823644	823484
SR10B(N2)	823689	823159
CS(Mf)3(N)	808814	822355
CS(Mf)5	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

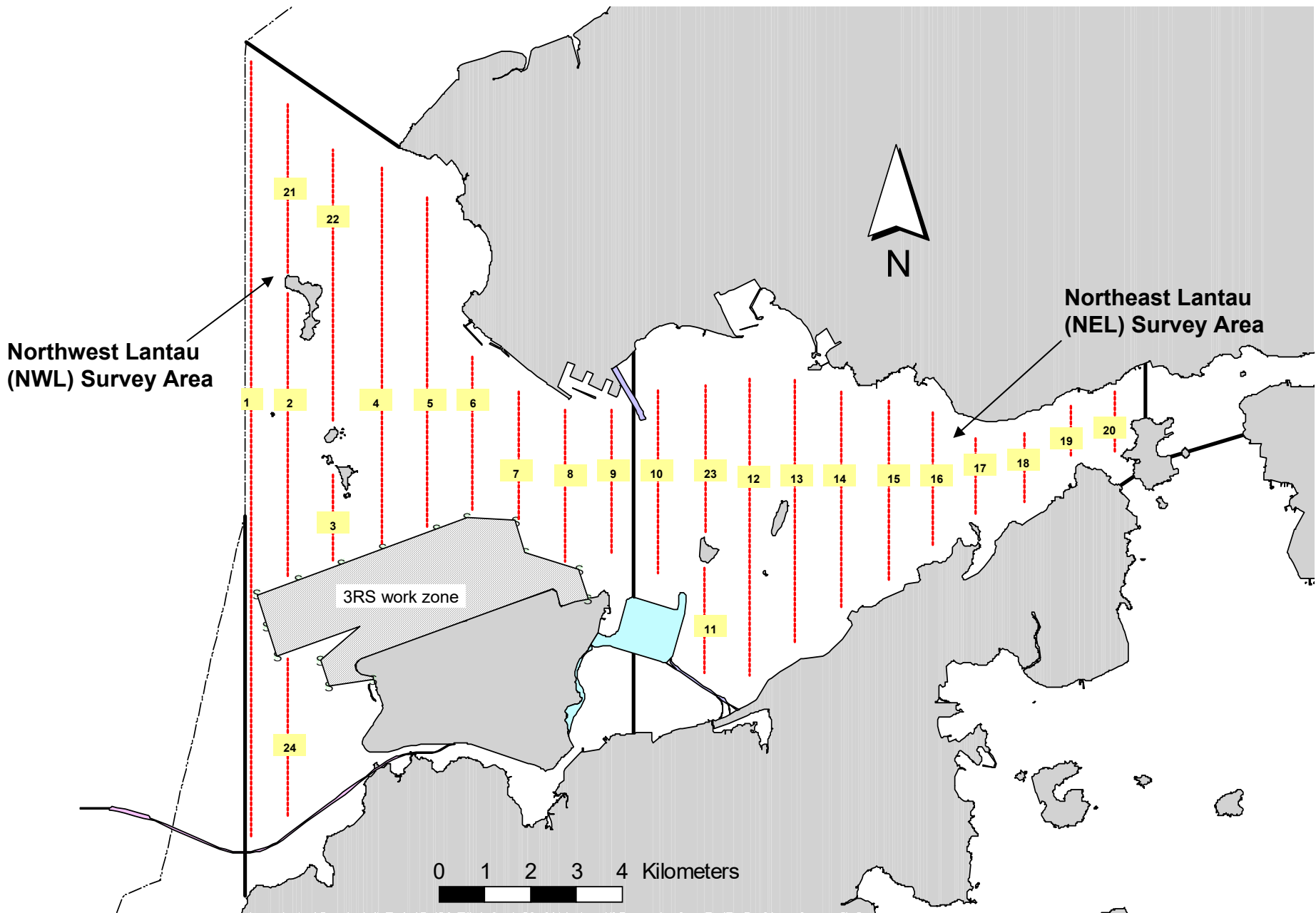


Figure 5.1 Transect Line Layout in Northwest and Northeast Lantau Survey Areas



APPENDIX A

Landscape Checklist

Covering Period: No.2: 24 Dec 2018 to 23 Feb 2019 **Reported By:** Keith Chau

Time: --- **Weather Condition:** ---





		N/A or not observed	Yes	No	Remarks / Photo
1	At-grade planting west of Passenger Clearance Building				
1.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.3	Are trees or limb overhanging branches pruned?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.5	Are litter and debris removed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.6	Are planting areas matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.7	Is planting pattern matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.8	Are planting locations and spacing matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
1.10	Are the plants in satisfied condition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2	At-grade planting east of Passenger Clearance Building				
2.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.3	Are trees or limb overhanging branches pruned?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.5	Are litter and debris removed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.6	Are planting areas matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.7	Is planting pattern matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.8	Are planting locations and spacing matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
2.10	Are the plants in satisfied condition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]

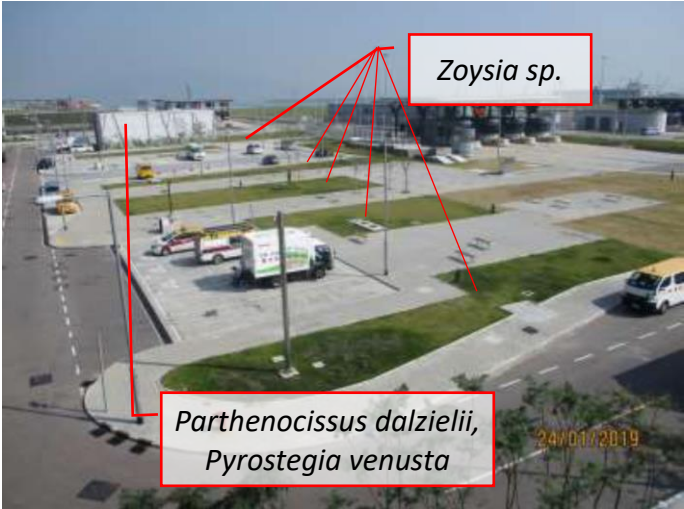
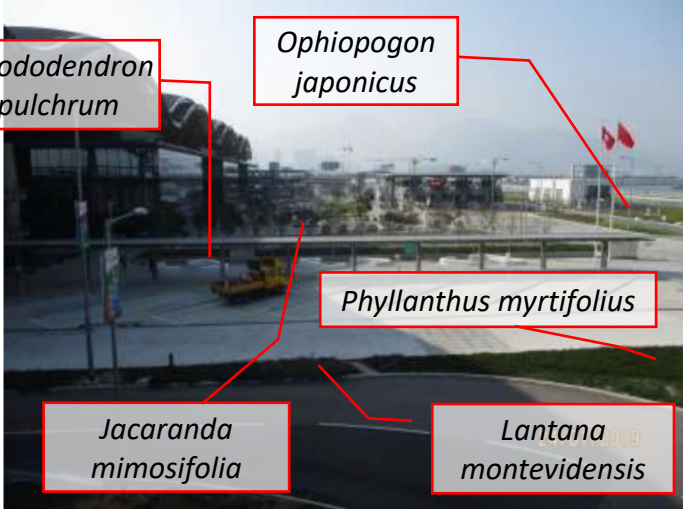


3	Planting in Outdoor Planters of Passenger Clearance Building	N/A or not observed	Yes	No	Remarks / Photo
3.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.3	Are trees or limb overhanging branches pruned?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.5	Are litter and debris removed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.6	Are planting areas matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.7	Is planting pattern matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.8	Are planting locations and spacing matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
3.10	Are the plants in satisfied condition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]

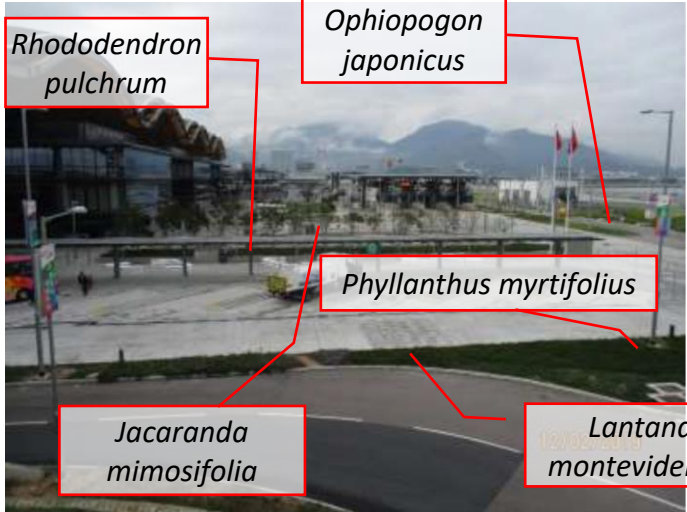

4	Planting in Indoor Planters of Passenger Clearance Building	N/A or not observed	Yes	No	Remarks / Photo
4.1	Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.2	Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.3	Are trees or limb overhanging branches pruned?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.4	After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.5	Are litter and debris removed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.6	Are planting areas matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.7	Is planting pattern matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.8	Are planting locations and spacing matched with the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.9	Are the planting species on site matched with Figure 3.6 of the approved landscape plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]
4.10	Are the plants in satisfied condition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]


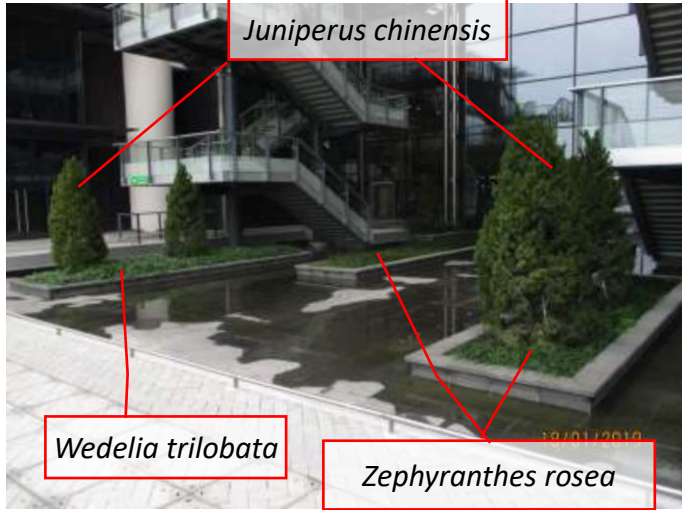

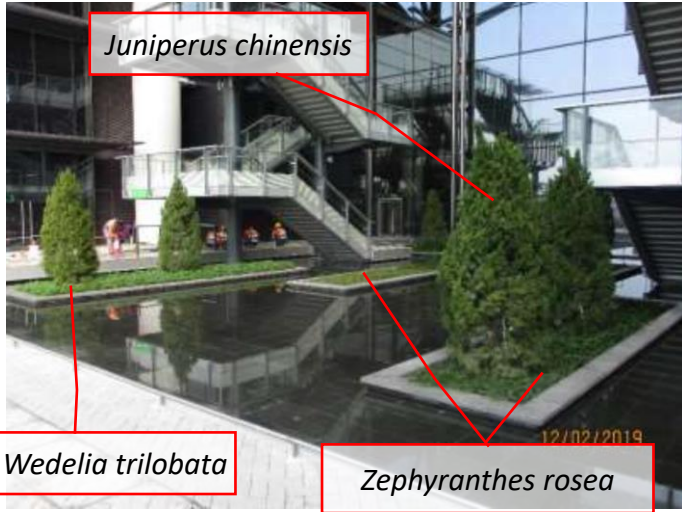
10	General Document	N/A or not observed	Yes	No	Remarks / Photo
11.1	Are the records of watering, fertilizing, weeding, pruning and mowing kept for checking?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remark [1]

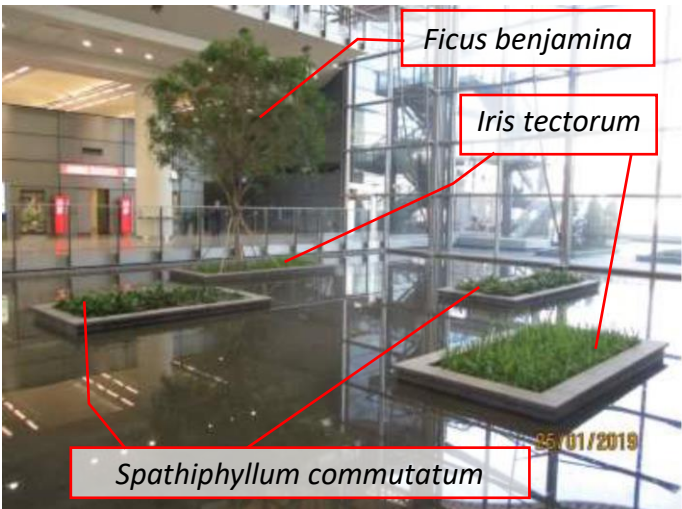
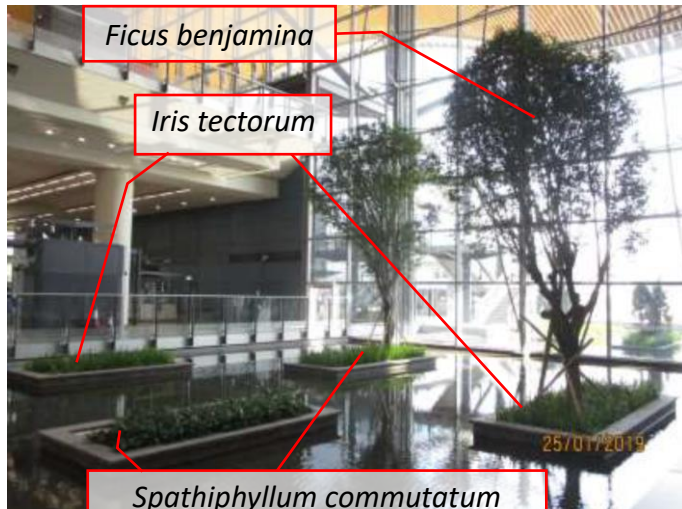
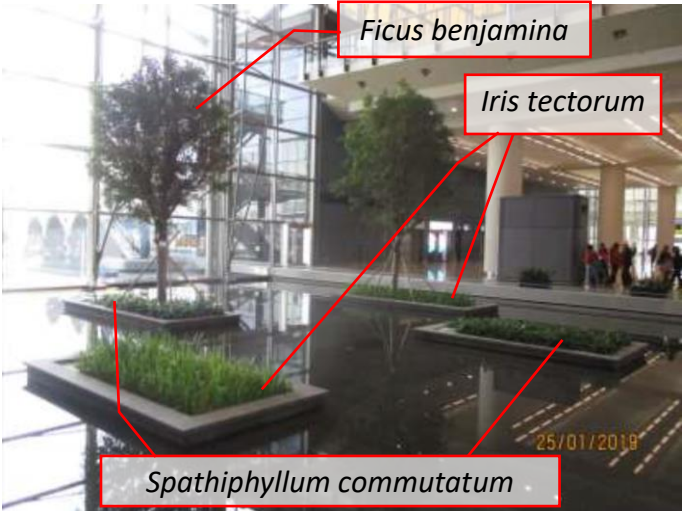
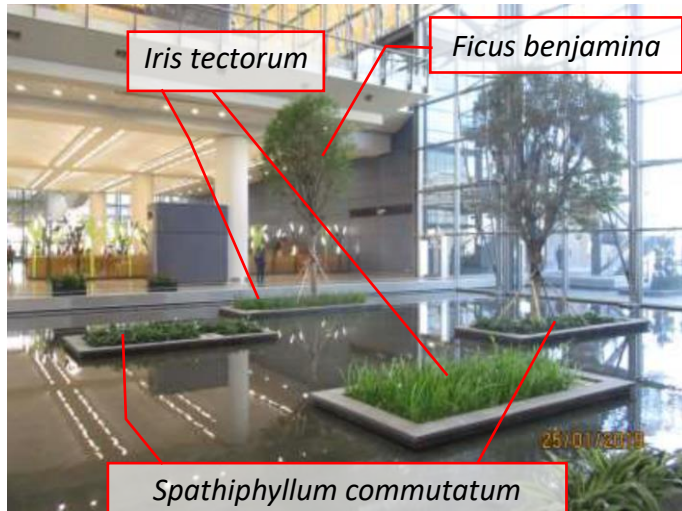
<p>Follow up actions for previous Site Audit: N/A</p>
<p>Observations: N/A</p>
<p>Corrective Actions (if any): N/A</p>
<p>Remark: [1] This Checklist is prepared based on the information from "Soft Landscape works – Monthly Maintenance Report (16 December 2018 to 15 January 2019)" (CSF No.: H2620-CSF-LCJ-CON-007675) and "Soft Landscape works – Monthly Maintenance Report (16 January 2019 to 15 February 2019)" (CSF No.: H2620-CSF-LCJ-CON-007678), which prepared by Contractor and submitted to Engineer's Representative.</p>
<p>General Conclusion:</p> <ol style="list-style-type: none"> 1. No typhoon signal was issued during the reporting period. 2. All trees in reasonably good condition. 3. All plants (shrubs, ground cover and turf) were in reasonably good condition. 4. The establishment works followed the maintenance programme.

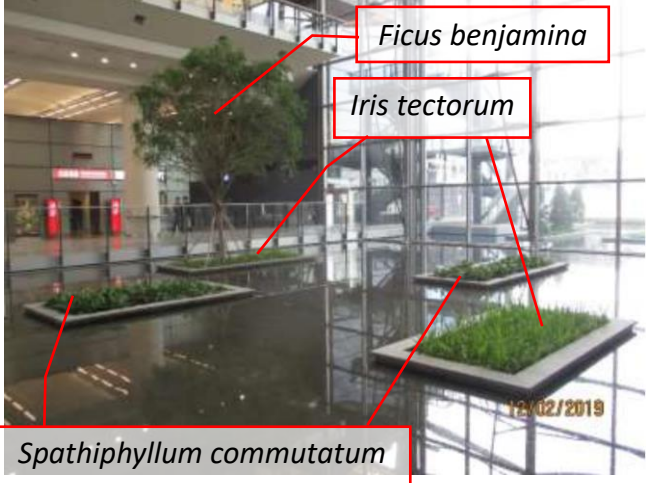
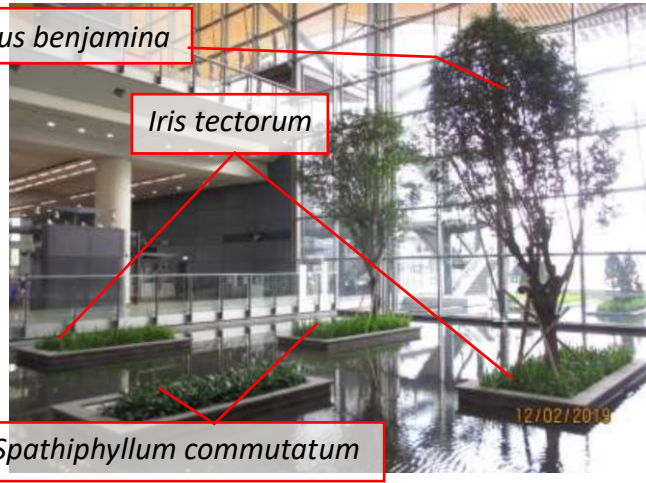
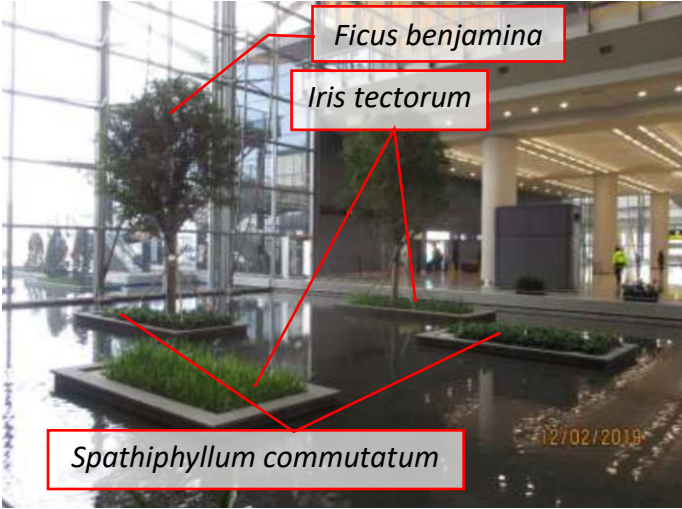
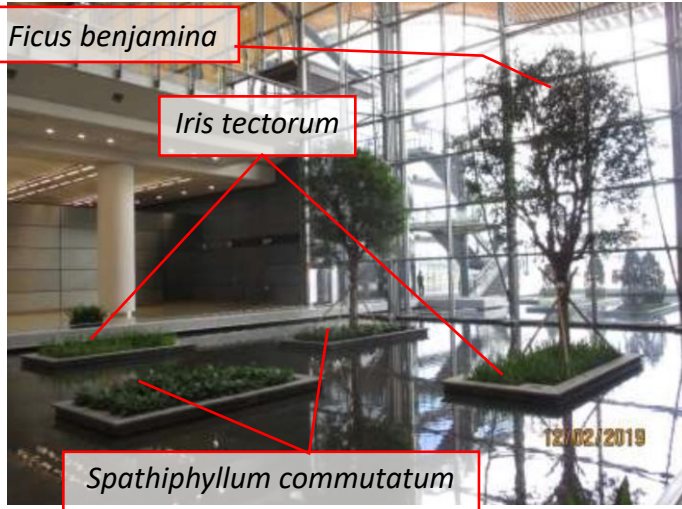
Reported by (ET's Representative):	Keith Chau	Title:	ET Leader
Signature:		Date:	15 July 2019
Reviewed by (AECOM Landscape Representative):	CHAN Pak Kin	Title:	RSF2(2)
Signature:		Date:	15 JUL 2019
Contractor's Representative:	Stephen Tsang	Title:	Environmental Officer
Signature:		Date:	15 July 2019
Checked by (IEC's Representative):	Harris Wong	Title:	ESS
Signature:		Date:	30 July 2019

Location	Photo Record ^[1]							
<p>At-grade planting of Passenger Clearance Building</p> <table border="1" data-bbox="206 435 441 584"> <tr> <td>Photo 1</td> <td>Photo 2</td> </tr> <tr> <td>Photo 3</td> <td>Photo 4</td> </tr> <tr> <td>Photo 5</td> <td>Photo 6</td> </tr> </table>	Photo 1	Photo 2	Photo 3	Photo 4	Photo 5	Photo 6	 <p><i>Zoysia sp.</i></p> <p><i>Parthenocissus dalzielii,</i> <i>Pyrostegia venusta</i></p>	 <p><i>Rhododendron pulchrum</i></p> <p><i>Ophiopogon japonicus</i></p> <p><i>Phyllanthus myrtifolius</i></p> <p><i>Jacaranda mimosifolia</i></p> <p><i>Lantana montevidensis</i></p>
Photo 1	Photo 2							
Photo 3	Photo 4							
Photo 5	Photo 6							
	 <p><i>Rhododendron pulchrum</i></p> <p><i>Bauhinia variegata</i></p>	 <p><i>Zoysia sp.</i></p> <p><i>Parthenocissus dalzielii,</i> <i>Pyrostegia venusta</i></p>						

Location	Photo Record ^[1]	
	 <p><i>Rhododendron pulchrum</i></p> <p><i>Ophiopogon japonicus</i></p> <p><i>Phyllanthus myrtifolius</i></p> <p><i>Jacaranda mimosifolia</i></p> <p><i>Lantana montevidensis</i></p>	 <p><i>Rhododendron pulchrum</i></p> <p><i>Bauhinia variegata</i></p>

Location	Photo Record ^[1]					
<p>Planting in Outdoor Planters of Passenger Clearance Building</p> <table border="1" data-bbox="208 387 439 488"> <tr> <td>Photo 7</td> <td>Photo 8</td> </tr> <tr> <td>Photo 9</td> <td>Photo 10</td> </tr> </table>	Photo 7	Photo 8	Photo 9	Photo 10		
Photo 7	Photo 8					
Photo 9	Photo 10					
						

Location	Photo Record ^[1]									
<p>Planting in Indoor Planters of Passenger Clearance Building</p> <table border="1" data-bbox="208 387 439 587"> <tr> <td>Photo 11</td> <td>Photo 12</td> </tr> <tr> <td>Photo 13</td> <td>Photo 14</td> </tr> <tr> <td>Photo 15</td> <td>Photo 16</td> </tr> <tr> <td>Photo 17</td> <td>Photo 18</td> </tr> </table>	Photo 11	Photo 12	Photo 13	Photo 14	Photo 15	Photo 16	Photo 17	Photo 18		
Photo 11	Photo 12									
Photo 13	Photo 14									
Photo 15	Photo 16									
Photo 17	Photo 18									
										

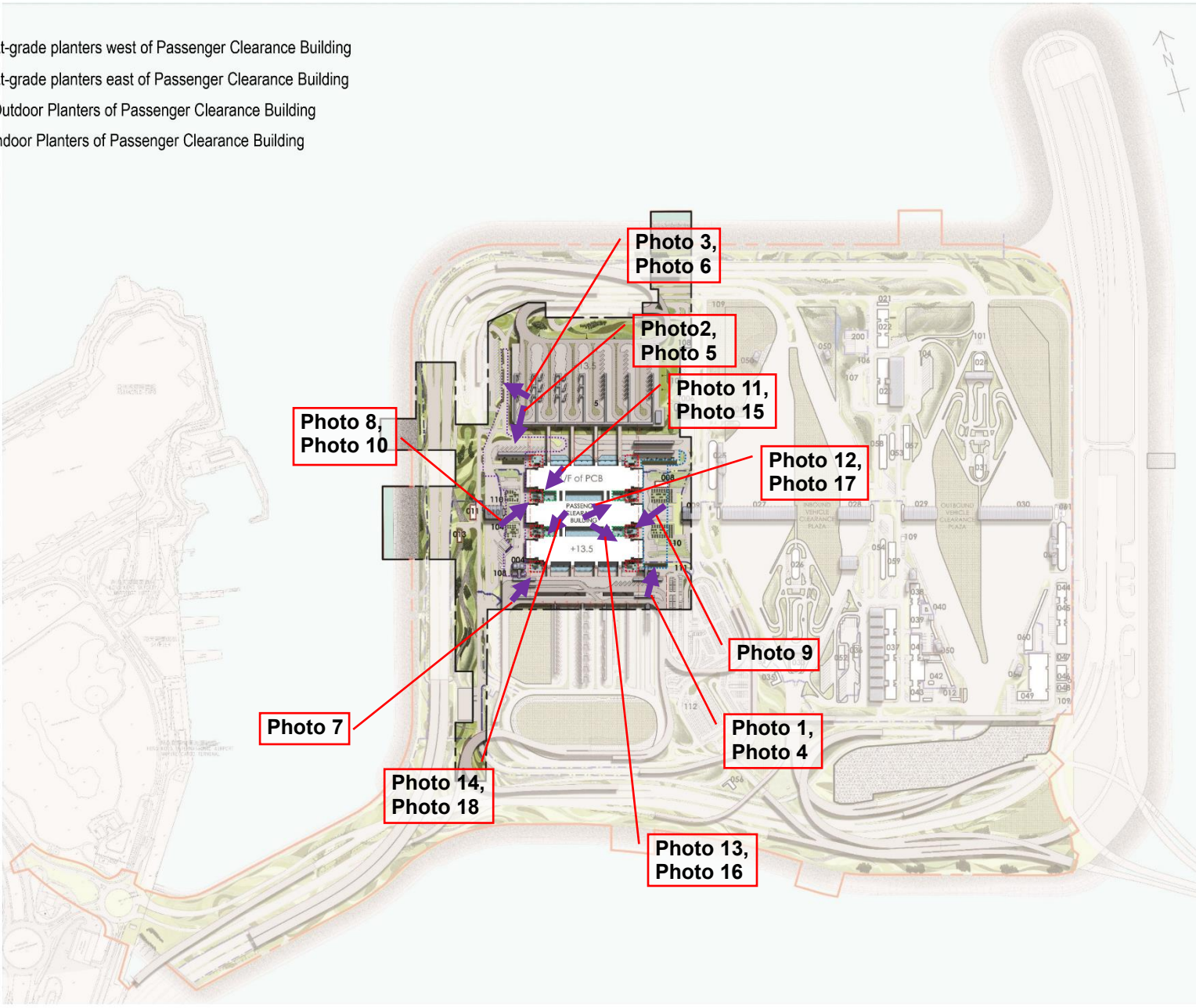
Location	Photo Record ^[1]	
		
		

Note: [1] Extract from “Soft Landscape works – Monthly Maintenance Report (16 December 2018 to 15 January 2019)” (CSF No.: H2620-CSF-LCJ-CON-007675) and “Soft Landscape works – Monthly Maintenance Report (16 January 2019 to 15 February 2019)” (CSF No.: H2620-CSF-LCJ-CON-007678), which prepared by Contractor and submitted to Engineer’s Representative.

- At-grade planters west of Passenger Clearance Building
- At-grade planters east of Passenger Clearance Building
- Outdoor Planters of Passenger Clearance Building
- Indoor Planters of Passenger Clearance Building

- LEGEND:**
- HKSBC site boundary
 - Elevated bridges with bridge pier/decks/footbridges
 - Boundary fence (1m maintenance path on both sides of fence)
 - Planting (shrubs & groundcover)
 - Hydroseeding
 - Multi-purpose Areas (Footpath/ At Grade Carriageway/ Amenity Area)
 - Multi-purpose Areas with Granite finish (Footpath/ At Grade Carriageway/ Amenity Area)
 - Green roof
 - Gentle landscape berm
 - Tree planting
 - Water features (around and inside PCB area)
 - Attenuation pond and bioswale
 - Stone swathe feature
 - Stone gravel finish (for future development)
 - Ancillary building
 - Vertical greening

- KEY LOCATION:**
- 001 PASSENGER CLEARANCE BUILDING
 - 002 CAFE OBSERVATION GUARD ROOM
 - 003 SHEN FAR ROAD PUBLIC TRANSPORT INTERCHANGE PUBLIC TOILET
 - 004 SHUTTLE BUS KIOSK
 - 005 WASTE STORAGE AND MATERIAL RECOVERY CHAMBER
 - 006 DEPARTURE COACH KIOSK
 - 007 ARRIVAL COACH KIOSK
 - 008 EMERGENCY GENERATOR ROOM
 - 009 DSH GENERATION CHAMBER
 - 010 SEAWATER PUMP HOUSE
 - 011 CAFE DANERGENESIS GOODS STORE
 - 012 CAFE CUSTOMER DETECTION DOGS DIVISION K2M DOG BASE
 - 013 CAFE OUTBOUND CARGO EXAMINATION BUILDING
 - 014 CAFE OUTBOUND PRIVATE CAR EXAMINATION BUILDING
 - 015 ARRIVAL PRIVATE CAR PASSENGER CLEARANCE ANNEX
 - 016 IMMIGRATION BUILDING (ARRIVAL)
 - 017 ARRIVAL PRIVATE CAR KIOSK
 - 018 ARRIVAL GOODS VEHICLE KIOSK
 - 019 DEPARTURE GOODS VEHICLE KIOSK
 - 020 DEPARTURE PRIVATE CAR KIOSK
 - 021 IMMIGRATION BUILDING (DEPARTURE)
 - 022 DEPARTURE PRIVATE CAR PASSENGER CLEARANCE ANNEX
 - 023 CAFE INBOUND PRIVATE CAR EXAMINATION BUILDING
 - 024 SHUTTLE BUS COLLECTION POINT
 - 025 SEWAGE PUMPING STATION
 - 026 POLICE WREST STATION
 - 027 CAFE INBOUND CARGO EXAMINATION BUILDING
 - 028 ACCESS BUILDING
 - 029 POLICE BASE
 - 030 AIR STATION CLAM AMBULANCE DEPOSIT
 - 031 DSH GUARANTEE BUILDING
 - 032 SEM MAINTENANCE BUILDING
 - 033 HIGHWAYS DEPOT AND ADMINISTRATION BUILDING
 - 034 VEHICLE CLEARANCE PLAZA WASTE COLLECTION POINT
 - 035 FRESH WATER PUMPING STATION
 - 036 RECLAIMED WATER PUMPING STATION
 - 037 SEWAGE TREATMENT PLANT
 - 038 ARRIVAL PRIVATE CAR CLEARANCE PLAZA PUBLIC TOILET
 - 039 ARRIVAL GOODS VEHICLE CLEARANCE PLAZA PUBLIC TOILET
 - 040 DEPARTURE PRIVATE CAR VEHICLE CLEARANCE PLAZA PUBLIC TOILET
 - 041 DEPARTURE GOODS VEHICLE CLEARANCE PLAZA PUBLIC TOILET
 - 042 ZONE 1 TRANSFORMER BUILDING
 - 043 ZONE 4 TRANSFORMER BUILDING
 - 044 CAFE OUTBOUND VEHICLE RAY EXAMINATION BUILDING
 - 045 CAFE INBOUND VEHICLE RAY EXAMINATION BUILDING
 - 046 REFINISHED ROAD DRAINAGE PUMP HOUSE CONTROL ROOM
 - 047 ZONE 2 TRANSFORMER BUILDING
 - 048 CAFE INBOUND VEHICLE RAY SCANNING SYSTEM BUILDING
 - 049 CAFE INBOUND VEHICLE RAY SCANNING SYSTEM BUILDING
 - 050 SEM AND HIGHWAYS MAINTENANCE SUPPORT BUILDING
 - 051 ELEC TRON BUILDING
 - 052 CAFE INBOUND TRAFFIC CONTROL KIOSK
 - 053 CAFE OUTBOUND TRAFFIC CONTROL KIOSK
 - 054 POLICE ENHANCED UNDER VEHICLE SURVEILLANCE SYSTEM (ANCHORING ROOM)
 - 055 POLICE INSPECTION POST
 - 056 DSH SECONDARY SCREENING STATIONS
 - 057 IMMIGRATION GUARD ROOMS
 - 058 CAFE VEHICLE DETENTION AREA GUARD ROOM
 - 059 CAFE MOBILE RAY OPERATION OFFICE (INBOUND CARGO)
 - 060 CAFE MOBILE RAY OPERATION OFFICE (OUTBOUND CARGO)
 - 061 CAFE MOBILE RAY OPERATION OFFICE (INBOUND COACH)
 - 062 CAFE MOBILE RAY OPERATION OFFICE (OUTBOUND COACH / SHUTTLE BUS)
 - 063 CAFE MOBILE RAY OPERATION AREA (INBOUND CARGO)
 - 064 CAFE MOBILE RAY OPERATION AREA (OUTBOUND CARGO)
 - 065 CAFE MOBILE RAY OPERATION AREA (INBOUND COACH)
 - 066 CAFE MOBILE RAY OPERATION AREA (OUTBOUND PRIVATE CAR)
 - 067 CAFE MOBILE RAY OPERATION AREA (INBOUND PRIVATE CAR)
 - 068 H2H GOODS VEHICLE PARKING BAYS (ARRIVAL)
 - 069 H2H GOODS VEHICLE PARKING BAYS (DEPARTURE)



SCALE	NA	DATE	APR 2018
CHECK	ELK	DRAWN	TRT
JOB No.	AECMP01	DRAWING No.	B.1b
		REV	-

TREE PLANTING ⁽¹⁾				
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [m]
AL **	<i>Albizia lebeck</i>	大葉合歡	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
BV	<i>Bauhinia variegata</i>	宮粉羊蹄甲	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
CV	<i>Callistemon viminalis</i>	串錢柳	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
CS **	<i>Cassia siamea</i>	鐵刀木	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
GR	<i>Grevillea robusta</i>	銀樺	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
JA	<i>Jacaranda mimosifolia</i>	藍花楸	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
JC **	<i>Juniperus chinensis</i>	龍柏	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4
TP **	<i>Thespesia populnea</i>	恒春黃槿	4000-5000(H) x 3000(SP) x 100(DBH)	3 - 4

SHRUB PLANTING ⁽¹⁾				
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Aod	<i>Aglaiia odorata</i>	米仔蘭	700(H) x 500(SP)	400
Cha	<i>Calliandra haematocephala</i>	紅絨球	700(H) x 500(SP)	400
Fmi **	<i>Ficus microcarpa 'golden leaves'</i>	黃金榕	1000(H) x 700(SP)	600
Ite	<i>Iris tectorum</i>	鳶尾	300(H) x 200(SP)	150
Ich *	<i>Ixora chinensis</i>	龍船花	500(H) x 400(SP)	350
Mar	<i>Malva viscus arboreus</i>	大紅袍	700(H) x 500(SP)	450
Mfi	<i>Michelia figo</i>	含笑	800(H) x 500(SP)	400
Pmy	<i>Phyllanthus myrtifolius</i>	瘤腺葉下珠	400(H) x 300(SP)	250
Rpu	<i>Rhododendron pulchrum</i>	錦繡杜鵑	600(H) x 400(SP)	300
Rsi *	<i>Rhododendron simsii</i>	紅杜鵑	600(H) x 400(SP)	300
Sco	<i>Spathiphyllum commutatum</i>	白掌	300(H) x 300(SP)	200
Sre	<i>Strelitzia reginae</i>	天堂鳥蕉	500(H) x 400(SP)	350

GREEN ROOF GROUND COVER PLANTING ⁽¹⁾				
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Zan	<i>Zephyranthes candida</i>	蔥蓮	100(H) x 100(SP)	100

CLIMBER PLANTING ⁽¹⁾				
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Pda	<i>Parthenocissus dalzielii</i>	異葉爬山虎	300(H) x 250(SP)	250
Pve **	<i>Pyrostegia venusta</i>	炮仗花	300(H) x 250(SP)	250

NOTES:

⁽¹⁾ All proposed plant species and specifications are subject to change during construction to suit the site conditions.

⁽²⁾ Minimum requirement of grass seed mix for hydroseeding shall follow General Specification for Civil Engineering Works Clause 3.26(3).

* Species native to Hong Kong according to the Hong Kong Herbarium website <<http://www.herbarium.gov.hk>>

** Species which is salt spray tolerant

GROUND COVER PLANTING ⁽¹⁾				
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [mm]
Aag	<i>Agave angustifolia</i>	狹葉龍舌蘭	200(H) x 300(SP)	200
Aam	<i>Agave americana</i>	龍舌蘭	100(H) x 100(SP)	100
Asl	<i>Aglaonema 'Silver King'</i>	銀王粗肋草	150(H) x 150(SP)	100
Ave	<i>Alternanthera versicolor</i>	錦繡莧 紅草	100(H) x 100(SP)	100
Ite	<i>Iris tectorum</i>	鳶尾	100(H) x 100(SP)	100
Lmo	<i>Lantana montevidensis</i>	鋪地臭金鳳	200(H) x 300(SP)	200
Lsp *	<i>Liriope spicata</i>	山麥冬	100(H) x 100(SP)	100
Nex *	<i>Nephrolepis hirsutula</i>	毛葉腎蕨	150(H) x 200(SP)	150
Oja *	<i>Ophiopogon japonicus</i>	麥冬	150(H) x 150(SP)	100
Rds	<i>Rhoeo discolor</i>	紫背萬年青	150(H) x 200(SP)	100
Spo **	<i>Synгонium podophyllum</i>	合果芋	200(H) x 200(SP)	150
Wtr **	<i>Wedelia trilobata</i>	蟛蜞菊	100(H) x 100(SP)	100
Zan	<i>Zephyranthes candida</i>	蔥蓮	100(H) x 100(SP)	100
Zro	<i>Zephyranthes rosea</i>	玫瑰蔥蓮	150(H) x 200(SP)	100

TURFING ⁽¹⁾			
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]
Zja **	<i>Zoysia sp.</i>	朝鮮草	25(H)

HYDROSEEDING ^{(1),(2)}		
SPECIES CODE	BOTANICAL NAME	CHINESE NAME
Cda * **	<i>Cynodon dactylon</i>	百慕達草
Pno	<i>Paspalum notatum</i>	百喜草
Eop * / Lpe	<i>Eremochloa ophiuroides / Lolium perenne</i>	假儉草 / 黑麥草

INDOOR PLANTING IN PASSENGER CLEARANCE BUILDING ⁽¹⁾				
SPECIES CODE	BOTANICAL NAME	CHINESE NAME	SIZE [mm]	SPACING [m]
TREE				
FB **	<i>Ficus benjamina</i>	垂榕	5000(H) x 4000(SP) x 150(DBH)	N.A.
SHRUB				
Ite	<i>Iris tectorum</i>	鳶尾	300(H) x 200(SP)	150
Sco	<i>Spathiphyllum commutatum</i>	白掌	300(H) x 300(SP)	200



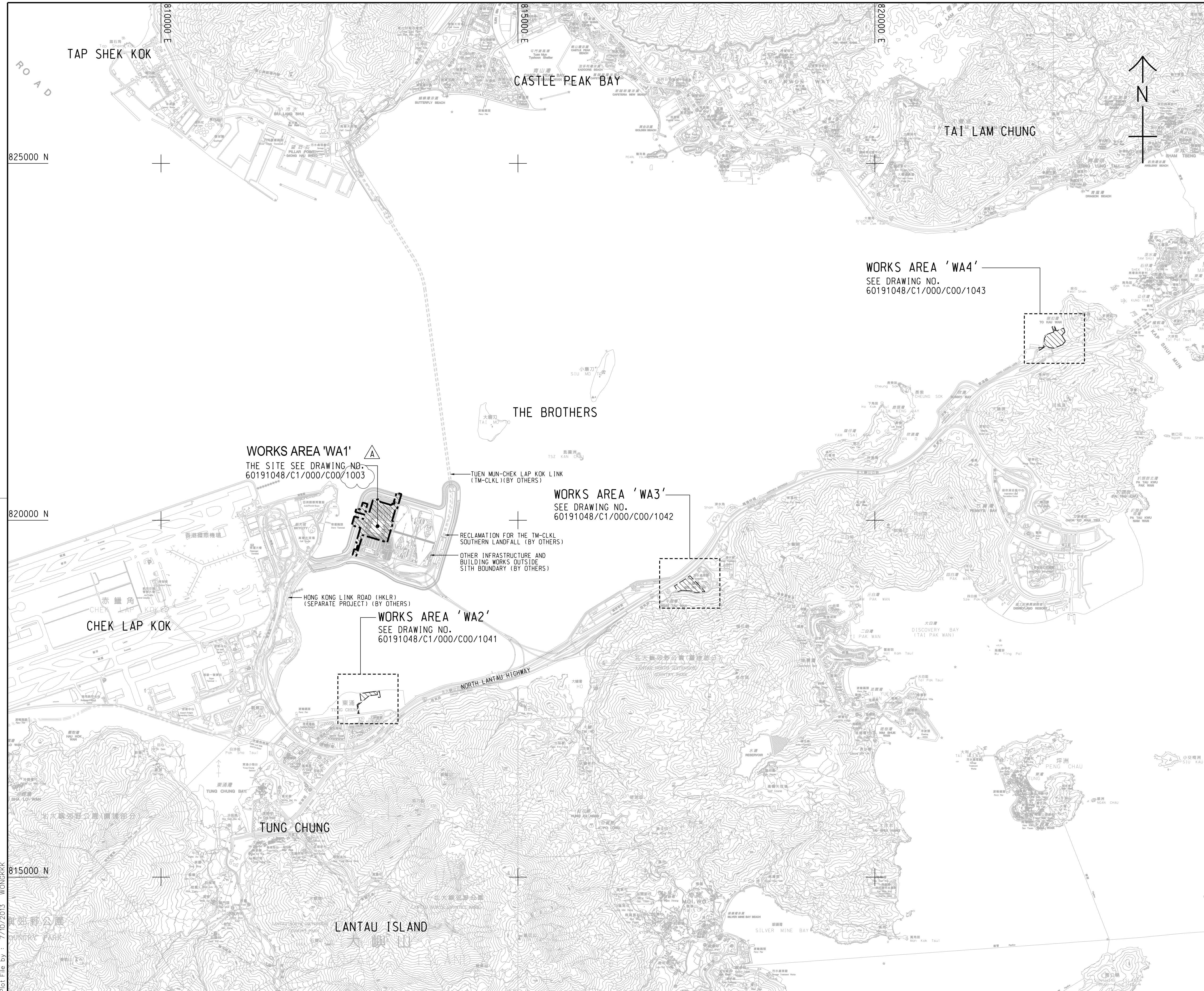
路政署
HIGHWAYS DEPARTMENT

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

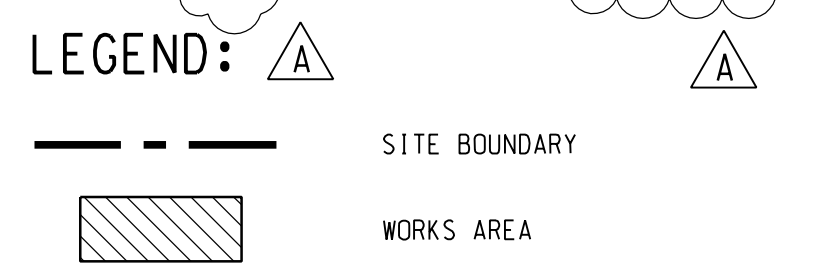
Contract No. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
52nd Monthly EM&A Report

APPENDIX B

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 SITH 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

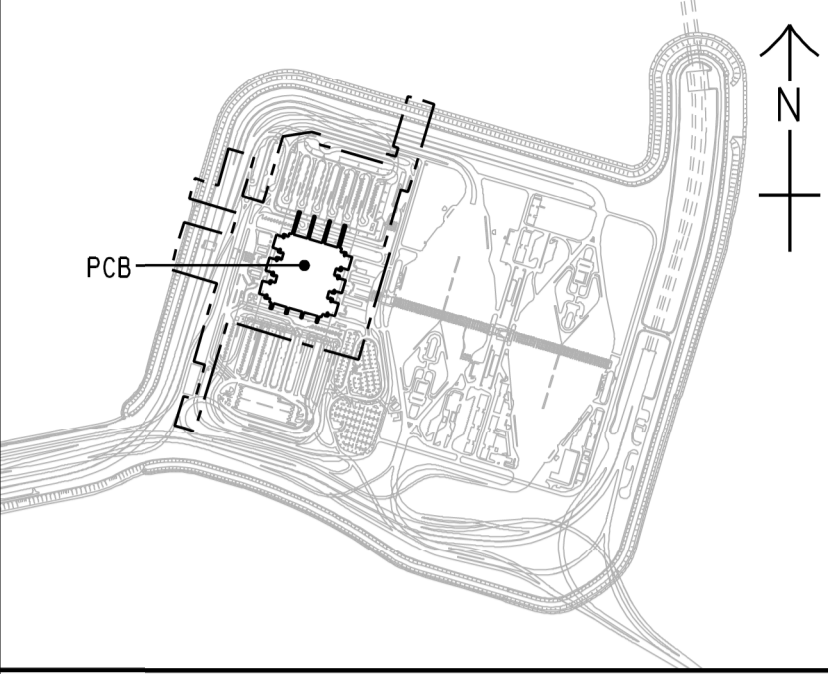
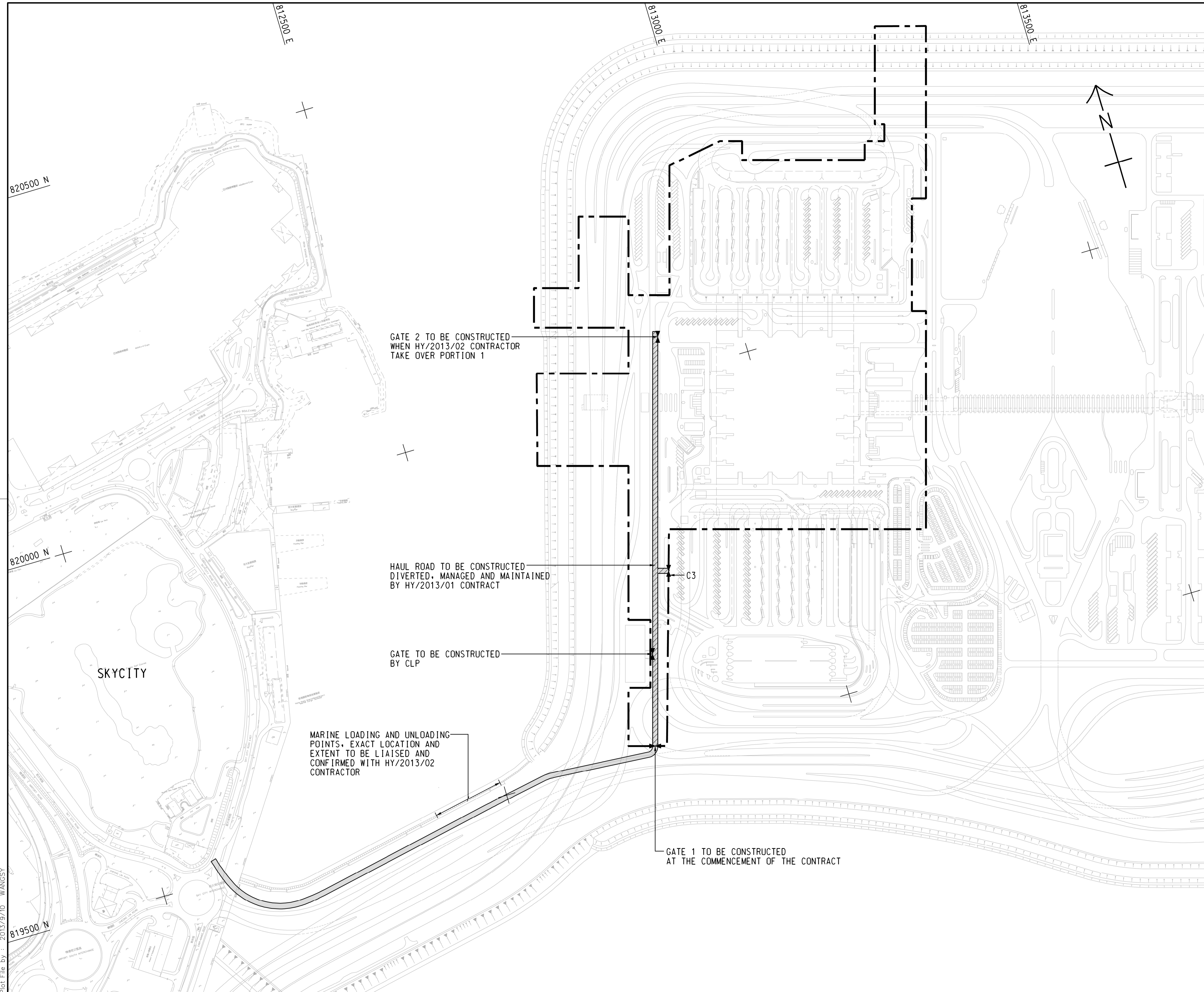
SITE LOCATION PLAN

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

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 WT
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



- 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

- TENDER DRAWING		BWCW SCI	SEP.13
REV. 修改	DESCRIPTION 工程描述	CHECKED 審核	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 WA1

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

Aedas

DRG.NO. 60191048/C1/000/C00/1044
 圖紙編號

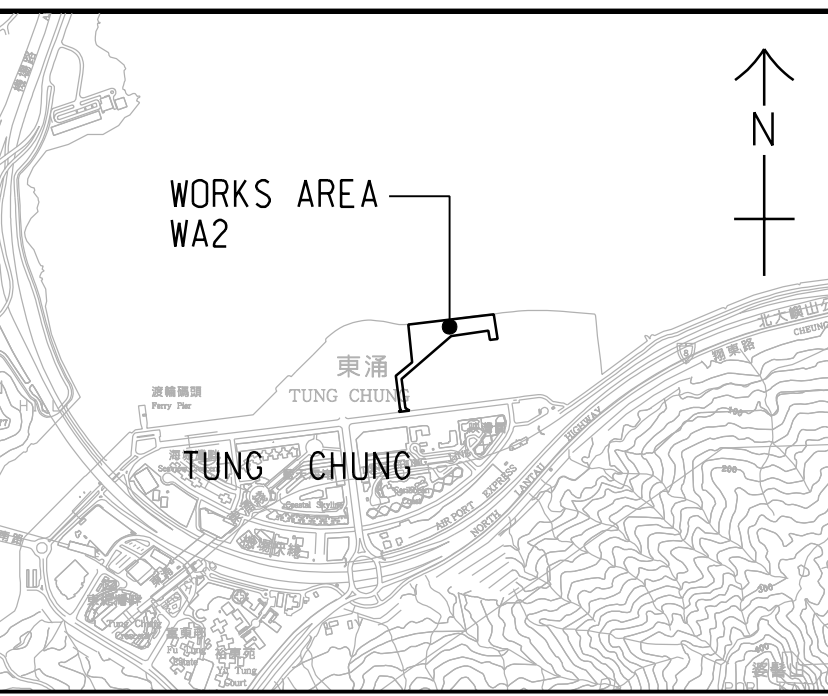
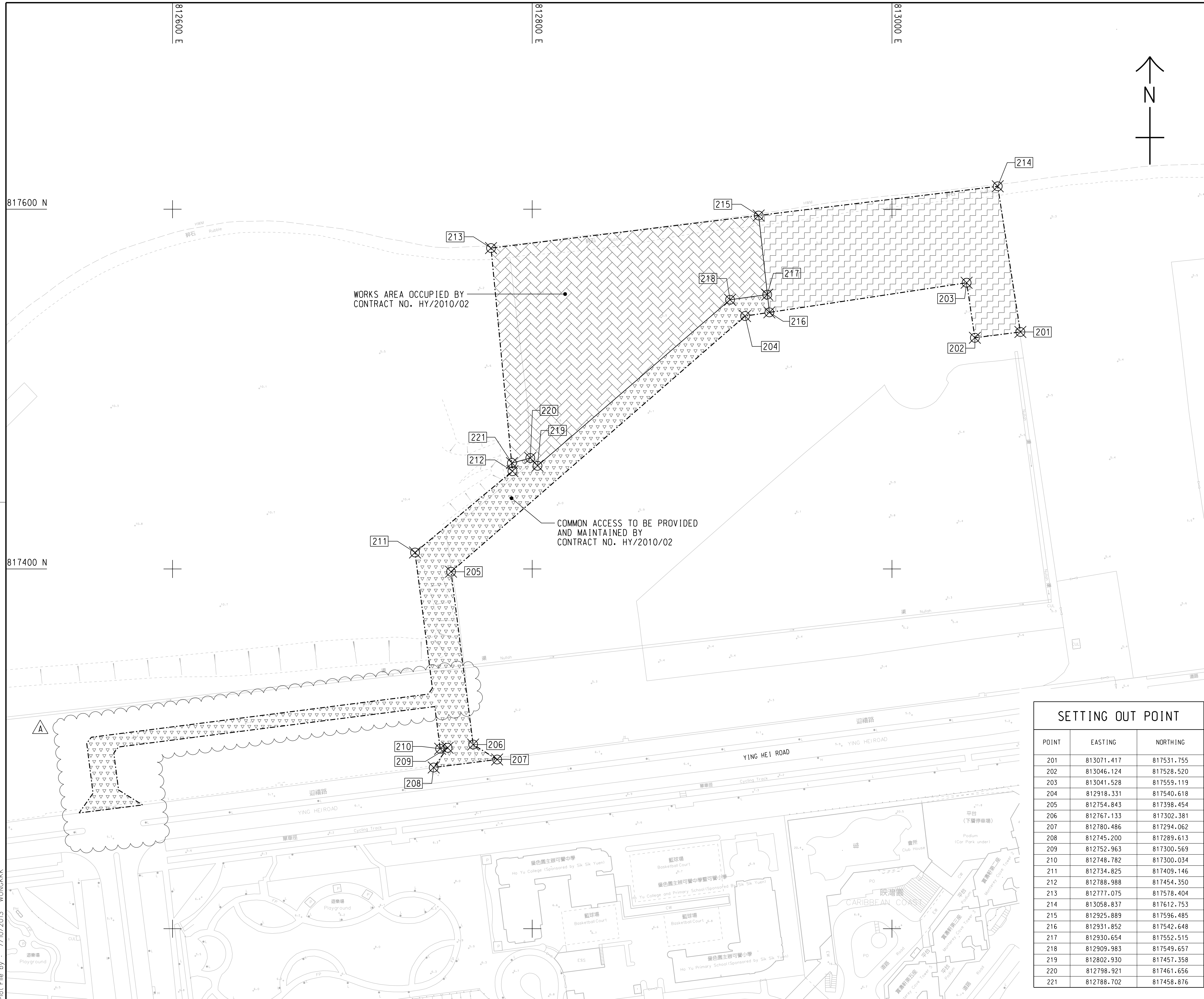
DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/01	P. Dir. APPROVED 批准人	EMSC
DRAWN BY 繪圖	WSY	STATUS 階段			

SCALE 比例
A1 1 : 2500

DIMENSIONS ARE IN 尺寸單位
METRES

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LOCATION PLAN
SCALE 1 : 25000

NOTES:

- COORDINATES ARE RELATED TO HONG KONG METRIC GRID (1980).
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LEGEND:

- WORKS AREA BOUNDARY
- [Hatched Pattern] PORTION 2.1
- [Cross-hatched Pattern] PORTION 2.2
- [Dotted Pattern] PORTION 2.3

B	WORKING DRAWING	BWCW SCI	JUN. 14
A	TENDER ADDENDUM NO. 1	BWCW SCI	OCT. 13
-	TENDER DRAWING	BWCW SCI	SEP. 13
REV.	DESCRIPTION	CHECKED	DATE
修訂	內容摘要	審核	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 WA2

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

DRG. NO. 60191048/C1/000/C00/1041B
 圖紙編號

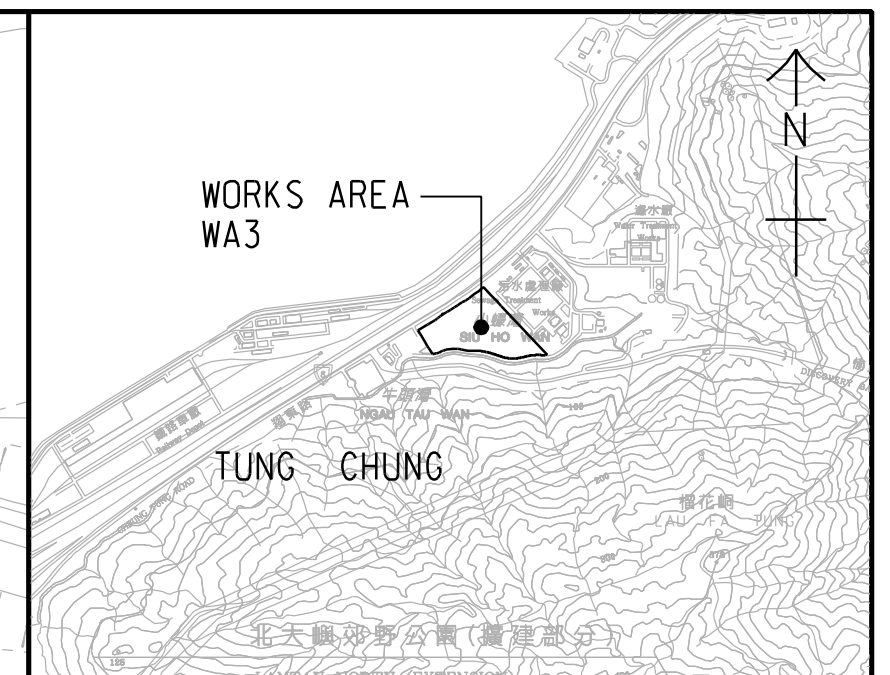
DESIGNED BY BWCW	CONTRACT NO. HY/2013/01	P. DIR. APPROVED TKH
DRAWN BY WSY	STATUS FOR ISSUE	WORKING DRAWING
SCALE A1 1 : 1000	DIMENSIONS ARE IN METRES	
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SETTING OUT POINT

POINT	EASTING	NORTHING
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203	813041.528	817559.119
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207	812780.486	817294.062
208	812745.200	817289.613
209	812752.963	817300.569
210	812748.782	817300.034
211	812734.825	817409.146
212	812788.988	817454.350
213	812777.075	817578.404
214	813058.837	817612.753
215	812925.889	817596.485
216	812931.852	817542.648
217	812930.654	817552.515
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SETTING OUT POINT

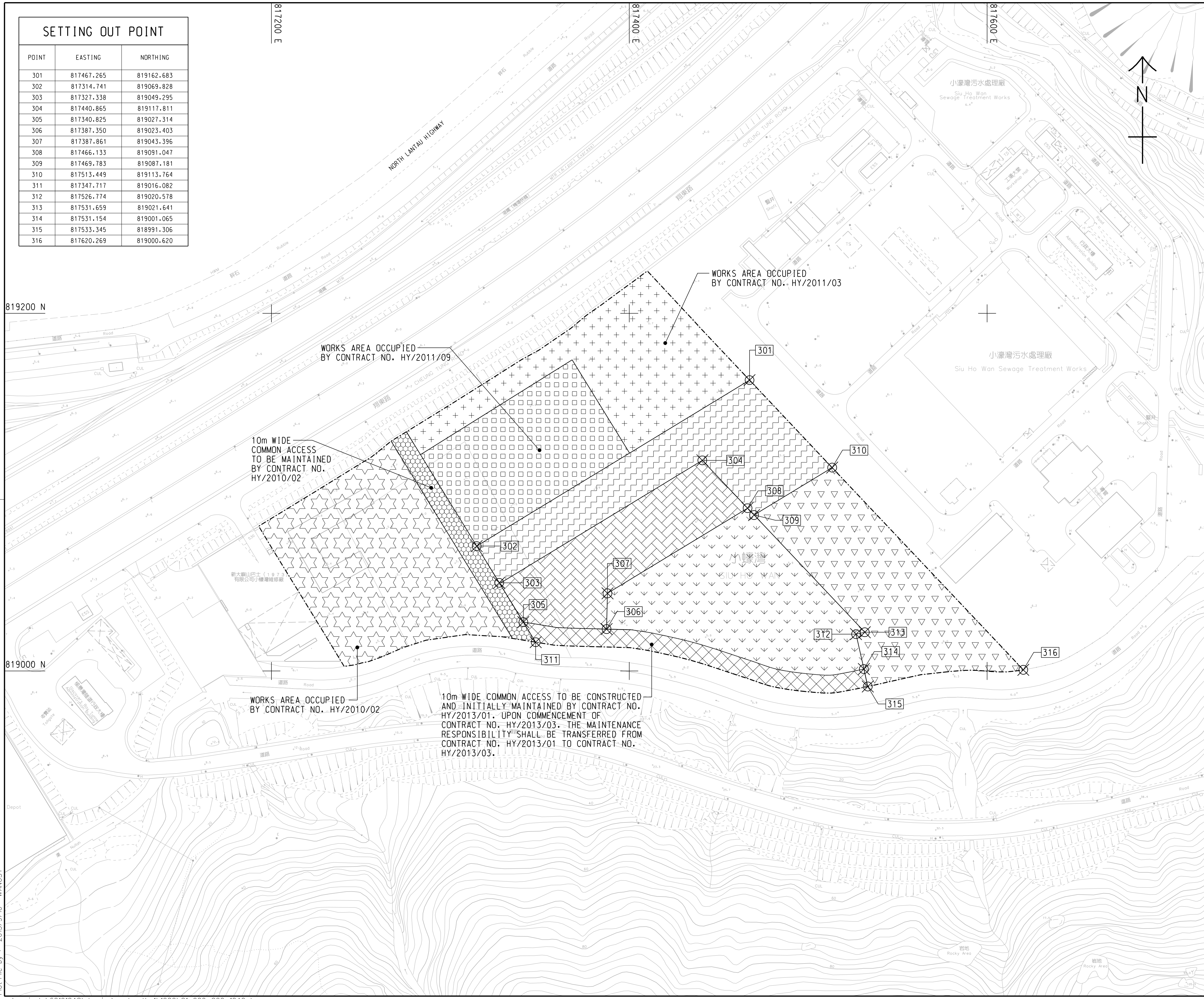
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305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817526.774	819020.578
313	817531.659	819021.641
314	817531.154	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. 修訂	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 尺寸單位 METRES			
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Plot File by : 2013/9/10 WANGSY

SETTING OUT POINT

POINT	EASTING	NORTHING
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402	822640.593	822689.415
403	822515.608	822559.848
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408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822560.278	822441.956
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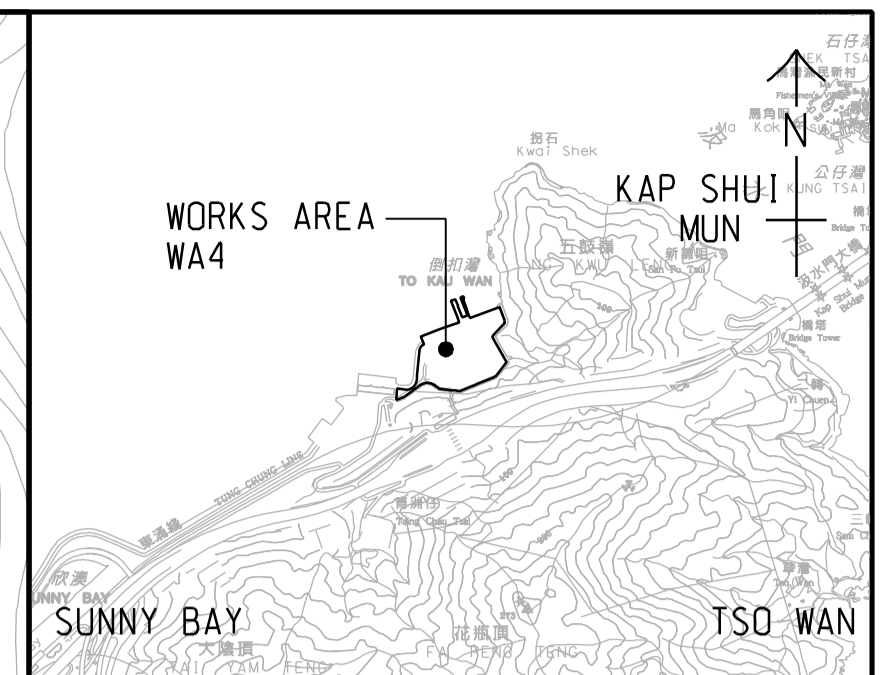
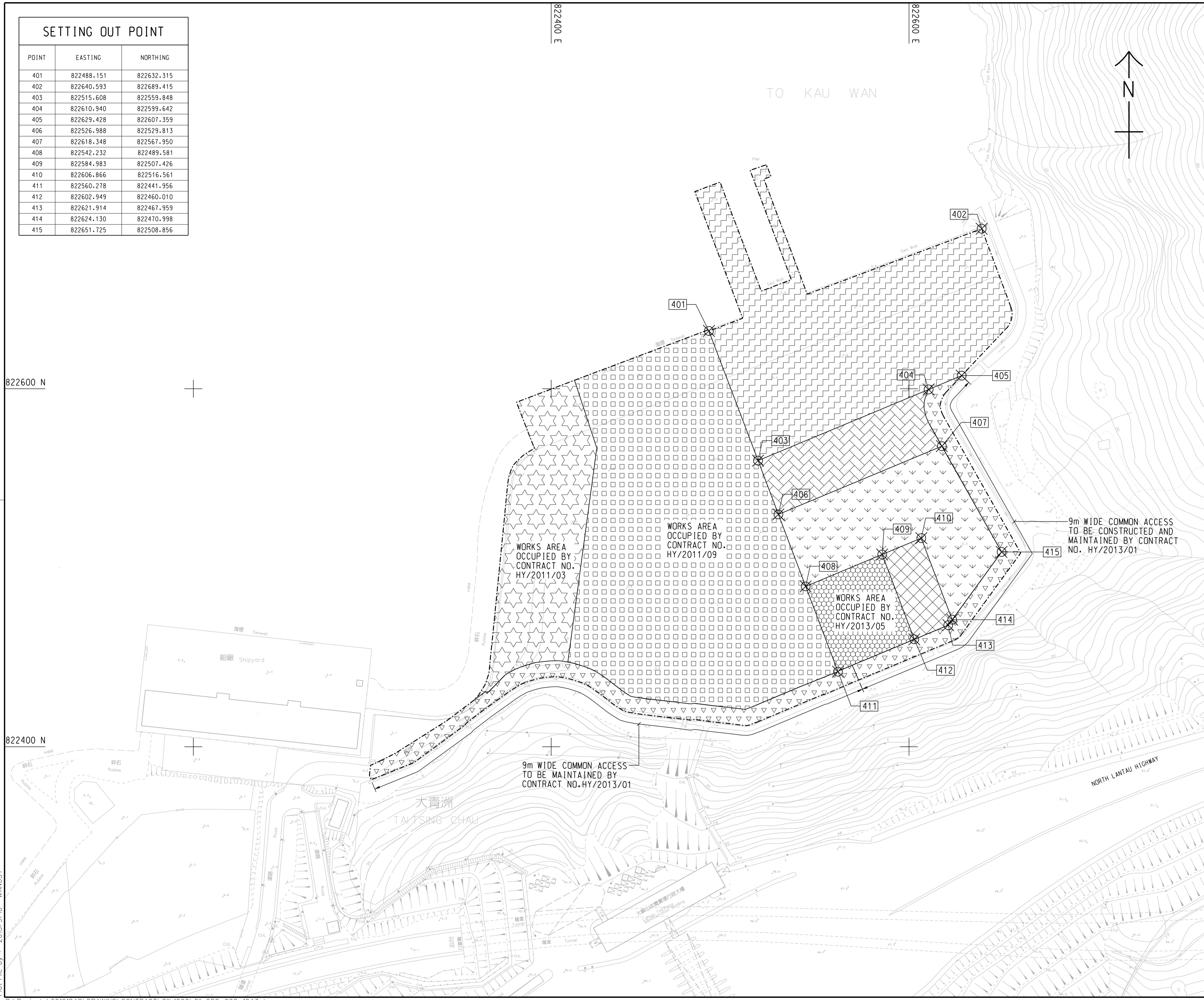
822400 E

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
香港大橋香港工程管理有限公司
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 W.S.Y.	CONTRACT NO. HY/2013/01	P. Dir. APPROVED EMSC
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SCALE 1 : 1000	STATUS Final
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路政署
HIGHWAYS DEPARTMENT

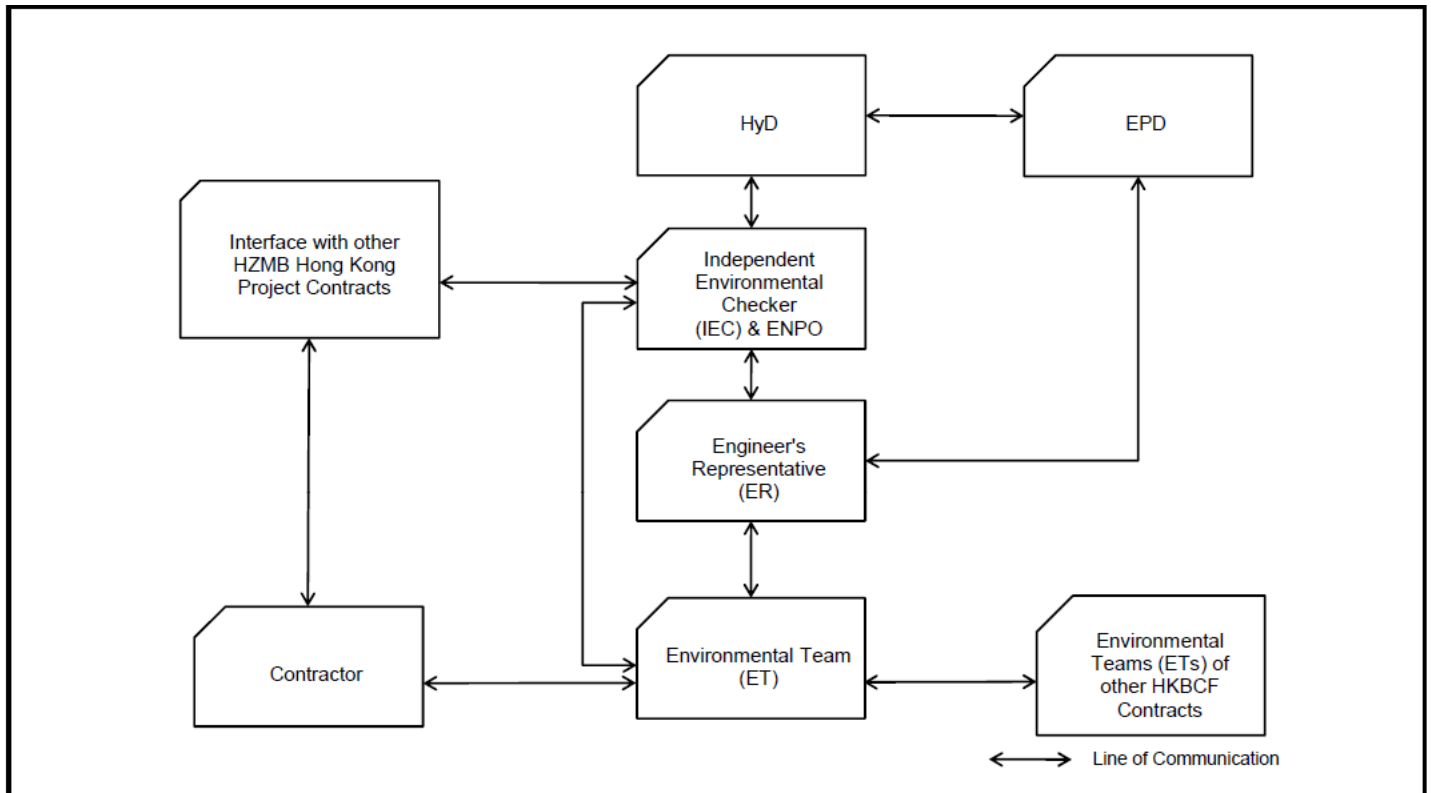
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

Contract No. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
52nd Monthly EM&A Report

APPENDIX C

Project Organization for Environmental Works

Project Organisation for Environmental Works





APPENDIX D

Event and Action Plan

Event/Action Plan for Air Quality Monitoring

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 Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Event / Action Plan for Water Quality Monitoring

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

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

Event / Action Plan for Dolphin Monitoring

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

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



路政署
HIGHWAYS DEPARTMENT

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

Contract No. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
52nd Monthly EM&A Report

APPENDIX E

Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

Implementation Schedule for Environmental Mitigation Measures

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Air Quality								
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 µgm ⁻³ and 260 µgm ⁻³ , respectively)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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; 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; 	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 µgm ⁻³ and 260 µgm ⁻³ , respectively)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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S5.5.6.2	A2	<ul style="list-style-type: none"> 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; 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)	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S5.5.6.4	A3	The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	N/A
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area

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S5.5.6.5	A5	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the 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) 	<p>✓</p> <p>(Dust monitoring station AMS6 is covered by Contract No. HY/2011/03. And dust monitoring station AMS7B is covered by Contract No. HY/2013/04)</p>
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 spraysystem; 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) 	<p>N/A</p> <p>The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.</p>

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	<p>N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.</p>
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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Construction Noise (Air borne)								
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the following: <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	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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) 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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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 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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 	N/A The works site was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S6.4.14	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 	✓ (Noise monitoring stations NMS2 and NMS3C are covered by Contract No. HY/2013/04.)
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 ETW B TC 34/2002 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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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; 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 ETW BTC 19/2005 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S8.3.8	WM1	<ul style="list-style-type: none"> 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"> 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
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 	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 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant

		<p>materials will be carefully planned in order to avoid over ordering and wastage.</p> <ul style="list-style-type: none"> 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. 					<ul style="list-style-type: none"> ETWB TC 19/2005 	<p>authorities since 24 October 2018 and the site had been changed to a closed area.</p>
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 	<p>N/A</p> <p>The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.</p>

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S8.2.12- S8.3.15	WM3	<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. 	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage		N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S8.3.16	WM4	<p><u>Sewage</u></p> <ul style="list-style-type: none"> Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly. 	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal Ordinance 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S8.3.17	WM5	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible. Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a 	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Waste Disposal Ordinance 	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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.

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Water Quality (Construction Phase)								
S.9.11.1.7	W1	<p>Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of backfilling, as well as protection measures. Details of the measures are provided below:</p> <ul style="list-style-type: none"> Reclamation filling for the Project shall not proceed until at least 200m of leading seawall at the reclamation area formed above +2.2mPD, unless otherwise agreement was obtained from EPD, except for the 300m gaps for marine access. All underwater filling works shall be carried out behind seawalls to avoid dispersion of suspended solids outside the Project limit; 	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.11.1.7	W1	<ul style="list-style-type: none"> Except for the filling of the cellular structures, not more than 15% public fill shall be used for reclamation filling below +2.5mPD during construction of the seawall; After the seawall is completed except for the 300m marine access as indicated in the EPs, not more than 30% public fill shall be used for reclamation filling below +2.5mPD, unless otherwise agreement from EPD was obtained; Upon completion of 200m leading seawall, no more than a total of 60 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 60,000 m3 for HKBCF and TMCLKL southern landfall reclamation during the filling operation; and Upon completion of the whole section of seawall except for the 300m marine access as indicated in the EPs, no more than a total of 190 filling barge trips per day shall be made with a cumulative maximum daily filling rate of 190,000 m3 for the remaining filling operations for HKBCF and TMCLKL southern landfall reclamation. Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works. Staggered layers of silt curtain shall be provided to prevent sediment loss at navigation accesses. The length of each staggered layers shall be at least 200m; Single layer silt curtain to be applied around the North-east airport water intake; The silt-curtains should be maintained in good condition to ensure the sediment plume generated from filling be confined effectively within the site boundary; The filling works shall be scheduled to spread the works evenly over a working day; Cellular structure shall be used for seawall construction; A layer of geotextile shall be placed on top of the seabed before any filling activities take place inside the cellular structures to form the seawall; 	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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S.9.11.1.7	W1	<ul style="list-style-type: none"> The conveyor belts shall be fitted with windboards and conveyor release points shall be covered with curtain to prevent any spillage of filling materials onto the surrounding waters; and An additional layer of silt curtain shall be installed near the active stone column installation points. A layer of geotextile with stone blanket on top shall be placed on the seabed prior to stone column installation works. 	To control construction water quality	Contractor	During filling	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.11.1.7	W2	<p><u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; 	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.11.1.7	W2	<ul style="list-style-type: none"> 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) 	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

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;

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S9.11.1.7	W2	<ul style="list-style-type: none"> all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a 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	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S.9.14	W3	<ul style="list-style-type: none"> Implement a water quality monitoring programme. 	To control water quality	Contractor	Selected representative water quality monitoring station	Construction stage	<ul style="list-style-type: none"> TM-EIAO Water Pollution Control Ordinance 	✓ (Water quality monitoring are covered by Contract No. HY/2013/04.)

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Ecology (Construction Phase)								
S10.7	E1	<ul style="list-style-type: none"> • Install siltcurtain during the construction • Limit works fronts • Construct seawall prior to reclamation filling where practicable • Good site practices • Strict enforcement of no marine dumping • Site runoff control • Spill response plan 	Prevent Sedimentation from Land-based works areas	Contractor	Seawall, reclamation area	During construction	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S10.7	E2	<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	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S10.7	E3	<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	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S10.7	E4	<ul style="list-style-type: none"> Dolphin Exclusion Zone Dolphin Watching plan 	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to area.
S10.7	E5	<ul style="list-style-type: none"> Decouple compressors and other equipment on working vessels Proposal on design and implementation of acoustic decoupling measures applied during reclamation works Avoidance of percussive piling 	Minimise marine traffic disturbance on dolphins	Contractor	Marine Works	During construction	TM-Water	N/A The works site area in Hong Kong-Zhuhai-Macao Bridge was handed over to the relevant authorities since 24 October 2018 and the site had been changed to a closed area.
S10.7	E6	<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	TM-Water	√ √ √
S10.7	E7	Vessel based dolphin monitoring	Minimise marine traffic disturbance on dolphins	Contractor	Northeast and Northwest Lantau	During construction	TM-Water	√ (Dolphins monitoring are covered by Contract No. HY/2013/04.)
Fisheries								

S11.7	F1	<ul style="list-style-type: none"> Reduce re-suspension of sediments Limit works fronts Good site practices Strict enforcement of no marine dumping Spill response plan	Minimise impacts on marine water quality impacts	Marine Department	Seawall, reclamation area	During operation		✓ ✓ ✓ ✓
S11.7	F2	Install silt-grease trap in the drainage system collecting surface runoff	Minimise impacts on marine water quality impacts	Marine Department	Reclamation area	During operation		✓
S11.7	F4	<ul style="list-style-type: none"> Maritime Oil Spill Response Plan (MOSRP); Contingency plan. 	Minimise impacts on marine water quality impacts	Marine Department	HKBCF	During operation		N/A
Landscape & Visual (Detailed Design Phase)								
S14.3.3.1	LV1	General design measures include: <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; 	Minimise visual & landscape impact	Detailed designer	HKBCF	Design Stage		N/A
S14.3.3.1	LV1	<ul style="list-style-type: none"> 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		N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Landscape & Visual (Construction Phase)								
S14.3.3.3	LV2	<p>Mitigate both Landscape and Visual Impacts</p> <ul style="list-style-type: none"> Grass-hydroseed bare soil surface and stock pile areas. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic. Not applicable as this is for HKLR. 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. Vegetation reinstatement and upgrading to disturbed areas 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; Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. 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 	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		<p>N/A</p> <p>√</p> <p>N/A</p> <p>√</p> <p>N/A</p> <p>√</p> <p>√</p> <p>N/A</p> <p>N/A</p>
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <ul style="list-style-type: none"> V1.Minimize time for construction activities during construction period. Not applicable to the Project HKBCF 						<p>√</p> <p>N/A</p>
EM&A								
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites		<ul style="list-style-type: none"> EIAO Guidance Note No.4/2002 TM-EIAO 	√

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

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



路政署
HIGHWAYS DEPARTMENT

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

Contract No. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
52nd Monthly EM&A Report

APPENDIX F

Statistics on Environmental Complaints, Notification of Summons and
Successful Prosecutions

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

For Contract No. HY/2013/01

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

For Contract No. HY/2013/06 within Contract No. HY/2013/01 works area

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