

28 March 2017

By Fax (3468 2076) and By Post

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

Attention: Mr. Darrel Kingan

Dear Sir,

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

**Contract No. HY/2013/01 – HZMB HKBCF – Passenger Clearance
Building
Quarterly EM&A Report No. 9 for October 2016 to December 2016**

Reference is made to the Environmental Team's submission of Quarterly Environmental Monitoring & Audit Report No. 9 for October 2016 to December 2016 (Revision 2) certified by the ET Leader (ET's ref.: "5126871/19.10/OC082/KC/EW" dated 28 March 2017) and provided to us via e-mail on 28 March 2017.

We are pleased to inform you that we have no adverse comment on the captioned Quarterly Environmental Monitoring & Audit Report for October 2016 to December 2016.

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

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



Raymond Dai
Independent Environmental Checker

c.c.	HyD	Mr. Vico Cheung	(By Fax: 3188 6614)
	HyD	Ms. Lowell Chiu	(By Fax: 3188 6614)
	Atkins	Mr. Keith Chau	(By Fax: 2890 6343)
	LCWJV	Mr. Owen Leung	(By Fax: 3621 0180)

Internal: DY, YH, ENPO Site

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Your ref.
Our ref. 5126871/19.10/OC082/KC/EW

Date: 28 March 2017

By Post and e-mail (Michael.Lee@lcwjv.com)

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

Attn: Mr. Michael Lee

Dear Mr. Lee,

**Contract No. HY/2013/01
Hong Kong – Zhuhai – Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
Certification of Quarterly EM&A Report No. 9 (Revision 2)**

Atkins China Limited certifies, in the capacity of Environmental Team Leader, that the Quarterly EM&A Report No. 9 (Revision 2) conforms the requirements provided in Section 16.4 of the Updated Environmental Monitoring and Audit Manual for HKBCF (Version 1.0).

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



**Keith Chau
Environmental Team Leader**

cc.

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

Contract No. HY/2013/01

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

**Quarterly EM&A Report No. 9
(Covering the Period from 1 October 2016 to 31 December 2016)**

22 March 2017

Revision 2

Main Contractor



Leighton - Chun Wo
Joint Venture

Environmental Team

ATKINS

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Executive Summary

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) – Passenger Clearance Building (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to Leighton – Chun Wo Joint Venture (hereafter referred to as “the Contractor”) and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of Hong Kong – Zhuhai – Macao Bridge HKBCF which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499) and Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/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.

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 ninth Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 October to 31 December 2016.

Environmental Monitoring and Audit Progress

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality, noise, water quality and dolphin monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6, AMS7, noise monitoring at NMS2 and NMS3B, water quality monitoring at twenty-one stations (nine Impact Stations, seven Sensitive Receiver Stations and five Control/Far Field Stations) and dolphin monitoring works at twenty-three transects as part of EM&A programme if these monitoring stations/ transects are no longer covered under Contract Nos. HY/2010/02 and HY/2011/03. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations/transects.

The dates of environmental site inspection during the reporting period are listed below:

Environmental Site Inspection Date		
October 2016	November 2016	December 2016
5, 12, 19 and 26	2, 9, 15, 23 and 30	7, 14, 21 and 28

Breaches of Action and Limit Levels

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at station AMS6 shall be referred to the monthly EM&A Reports (for October, November and December 2016) prepared by Contract No. HY/2011/03.

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

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

There were twelve Action Level exceedances and one Limit Level exceedance of suspended solids were recorded by the ET of Contract No. HY/2010/02 during the reporting period (for November and December 2016). Based on the information from the Contractor of this Contract, no marine transportation and marine works were undertaken during the relevant water quality monitoring period. Therefore, these exceedances were considered not likely to be caused by this Contract’s activities. No follow-up action is required.

Impact dolphin monitoring results at all transects are reported in the EM&A Report prepared for Contract No. HY/2010/02.

Implementation of Environmental Measures

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

Complaint Log

There were three complaints received in relation to the environmental impact during the reporting period.

A summary of environmental complaints for this reporting period is as follows:

Environmental Complaint No.	Date of Complaint Received	Description of Environmental Complaints
003	7 November 2016	Water Quality
004	5 December 2016	Dust
005	14 December 2016	Noise

Notifications of Summons and Successful Prosecutions

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

Reporting Change

There was no reporting change during the reporting period.

1 Introduction

1.1 Basic Project Information

- 1.1.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract HY/2013/01 Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Passenger Clearance Building (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region. The Contract was awarded to Leighton – Chun Wo Joint Venture (hereafter referred to as “the Contractor”) and Atkins China Limited was appointed as the Environmental Team (ET) by the Contractor.
- 1.1.2 The Contract is part of Hong Kong – Zhuhai – Macao Bridge Hong Kong Boundary Crossing Facilities (HKBCF) which is a “Designated Project”, under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap 499). An Environmental Impact Assessment (EIA) Report (Register No. AEIAR-145/2009) was prepared for the Project. The current Environmental Permit (EP) No. EP-353/2009/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 works areas of the Contract are shown in **Appendix A**.
- 1.1.3 This is the ninth Quarterly EM&A Report for the Contract which summarizes the audit findings of the EM&A programme during the reporting period from 1 October to 31 December 2016.

1.2 Project Organisation

- 1.2.1 The project organization structure and lines of communication with respect to the on-site environmental management structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)	Chief Resident Engineer	Darrel Kingan	3958 7339	3468 2076
Environmental Project Office / Independent Environmental Checker (Ramboll Environ Hong Kong Limited)	Environmental Project Office Leader	Y. H. Hui	3465 2888	3465 2899
	Independent Environmental Checker	Raymond Dai	3465 2888	3465 2899
Contractor (Leighton – Chun Wo Joint Venture)	Project Manager	Owen Leung	9232 5750	3621 0180
	Environmental Officer	Michael Lee	6461 8635	3621 0180
Environmental Team (Atkins China Limited)	Environmental Team Leader	Sharifah Or ⁽¹⁾	2972 1802	2890 6343
		Keith Chau	2972 1721	2890 6343
24 hours complaint hotline	---	---	3958 7300	---

Remarks:

- (1) Mr Keith Chau took up the role of the Environmental Team Leader from Ms Sharifah Or effective from 1 November 2016.

1.3 Construction Programme

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

1.4 Construction Works Undertaken During the Reporting Period

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

Land-Based Work

- Bulk Excavation at Seawater pump house (WA1);
- Seawater Pump House Excavation (WA1);
- Pile Cropping (WA1);
- Tie Beams (WA1);
- Pile Capping (WA1);
- Service Troughs construction (WA1);
- Waterproofing (WA1);
- Tower Crane Erection(WA1);
- Suspended Slab Construction (WA1);
- Ground floor Base Slab Construction (WA1);
- Backfilling (WA1);
- Mega Column Construction (WA1);
- Reinforced Concrete Structure Works at Common Utilities Enclosure (WA1);
- Formwork and falsework stripping (WA1);
- Column and Wall Construction (WA1);
- Blockwork walls (WA1);
- Pipework and ductwork (WA1);
- Footings for roof erection (WA1);
- Hanger rods for cable container (WA1);
- Wet trade works (WA1);
- Dry trade works (WA1);
- Launch Rail Installation/ Removal (WA1);
- Facade Bracket for Cabins (WA1);
- Segment Travelling works (WA1);
- Mechanical, Electrical and Plumbing High Level Containment (WA1);
- Steel Roof Erection works (WA1);
- Removal of Temporary works (WA1);
- Footing Demolition works (WA1);
- Post erection roofing works (WA1);
- Loading and Unloading of Steel Roof Segment at Temporary Loading and Unloading Point (WA1);
- Plinth construction (WA1);
- Seawater Pump House Excavation and Substructure (WA1);
- Steel Roof Segment Travelling Works (WA1);
- Mechanical, Electrical and Plumbing High Level Containment (WA1);
- Removal of Temporary Works (WA1);



- Sothern Drop off Deck Construction (WA1);
- 11 KV electric cable installation by China Light Power (CLP) (WA1);
- Underground ductwork (WA1);
- Heat exchanger installation (WA1);
- Heavy Mechanical, Electrical and Plumbing plant set up in basement (WA1);
- Seawater pump house Pile Cropping (WA1);
- District Cooling System Pipework installation (WA1);
- Window wall (WA1); and
- District Cooling System chilled water pipe installation (WA1).

Marine-based work

- Delivery of Steel Roof Segment by Marine Transportation (WA1); and
- District Cooling System (DCS) intake structure (WA1).

2 EM&A Requirement

2.1 Summary of EM&A Requirements

- 2.1.1 The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works and Contract No. HY/2011/03 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 and AMS7 and noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2010/02 and HY/2011/03. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.
- 2.1.2 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 impact air quality monitoring location (AMS7) was relocated to a nearby air sensitive receiver, Chu Kong Air-Sea Union Transportation Co. Ltd. (AMS7A), from 5 February 2015 to 30 December 2015. The alternative 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. 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.
- 2.1.3 A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 2.1** and **Figure 2.2**, respectively.

Table 2.1 Summary of Impact EM&A Requirements

Environmental Monitoring	ID	Location Description
Air Quality	AMS6 ⁽¹⁾	Dragonair/CNAC (Group) Building
	AMS7 ^{(1),(2)}	Hong Kong SkyCity Marriott Hotel
Noise	NMS2 ⁽³⁾	Seaview Crescent
	NMS3B ^{(3),(4)}	Site Boundary of Site Office Area at Works Area WA2

Remarks:

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

- 2.1.4 The water quality monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. A total of twenty-one stations (nine Impact Stations, seven Sensitive Receiver Stations and five Control/Far Field Stations) are covered by the current EM&A programme. The ET of the Contract or another ET of the HZMB project is required to conduct water quality at these stations as part of EM&A

programme if these monitoring stations are no longer covered under Contract No. HY/2010/02. However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

2.1.5 **Table 2.2** and **Figure 2.3** show the locations of water quality monitoring stations.

Table 2.2 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	Impact Station (Close to HKBCF construction site)	812577	820670
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3	Sensitive receivers (San Tau SSSI)	810525	816456
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5	Sensitive receivers (Artificial Reef in NE Airport)	811489	820455
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A ^[1]	Sensitive receivers (Ma Wan FCZ) 1	823741	823495
SR10B(N) ^[1]	Sensitive receivers (Ma Wan FCZ)2	823683	823187
CS(Mf)3	Control Station	809989	821117
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992
CSA ^[2]	Control Station	818103	823064

Note:

(1) Additional monitoring station for Ma Wan FCZ.

(2) Additional control monitoring station for Ma Wan FCZ.

2.1.6 The dolphin monitoring works for the Contract are covered by Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works. The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at the twenty-three transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2010/02. 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 co-ordinates for the transect lines and a layout map showing the transect lines have been provided by AFCD and are shown in **Table 2.3**. The co-ordinates for the transect lines and layout map are shown in **Figure 2.4**.

Table 2.3 Impact Dolphin Monitoring Line Transect Co-ordinates (Provided by AFCD)

Transect ID	HK Grid System		Long Lat in WGS84	
	X	Y	Long	Lat
1#	804671	815456	113.870287	22.277678
	804671	831404	113.869975	22.421696
2#	805475	815913	113.878079	22.281820
	805477	826654	113.877896	22.378814
3	806464	819435	113.887615	22.313643
	806464	822911	113.887550	22.345030
4	807518	819771	113.897833	22.316697
	807518	829230	113.897663	22.402113
5	808504	820220	113.907397	22.320761
	808504	828602	113.907252	22.396462
6	809490	820466	113.916965	22.323003
	809490	825352	113.916884	22.367128
7#	810499	820880	113.926749	22.326757
	810499	824613	113.926688	22.360464
8#	811508	821123	113.936539	22.328966
	811508	824254	113.936486	22.357241
9#	812516	821303	113.946320	22.330606
	812516	824254	113.946279	22.357255
10*	813525	820827	113.956112	22.326321
	813525	824657	113.956066	22.360908
11#	814556	818853	113.966155	22.304858
	814556	820992	113.966125	22.327820
12	815542	818807	113.975726	22.308109
	815542	824882	113.975647	22.362962
13	816506	819480	113.985072	22.314192
	816506	824859	113.985005	22.362771
14	817537	820220	113.995070	22.320883
	817537	824613	113.995018	22.360556
15	818568	820735	114.005071	22.325550
	818568	824433	114.005030	22.358947
16	819532	821420	114.014420	22.331747
	819532	824209	114.014390	22.356933
17	820451	822125	114.023333	22.338117
	820451	823671	114.023317	22.352084
18	821504	822371	114.033556	22.340353
	821504	823761	114.033544	22.352903
19	822513	823268	114.043340	22.348458
	822513	824321	114.043331	22.357971
20	823477	823402	114.052695	22.349680
	823477	824613	114.052686	22.360610
21	805476	827081	113.877878	22.382668
	805476	830562	113.877811	22.414103
22	806464	824033	113.887520	22.355164
	806464	829598	113.887416	22.405423
23	814559	821739	113.966142	22.334574
	814559	824768	113.966101	22.361920

Remarks:

- (a) *Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 2.4 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, 2, 7, 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.

2.2 Monitoring Requirements

- 2.2.1 The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2010/02 and HY/2011/03.

2.3 Action and Limit Levels

- 2.3.1 The Action and Limit Level for 1-hr TSP and 24-hr TSP are provided in **Table 2.4** and **Table 2.5**, respectively.

Table 2.4 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
AMS7 – Hong Kong SkyCity Marriott Hotel	370	

Table 2.5 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
AMS7 – Hong Kong SkyCity Marriott Hotel	183	

- 2.3.2 If exceedance(s) at these station(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the quarterly EM&A Report.
- 2.3.3 The Action and Limit Levels for construction noise are defined in **Table 2.6**.

Table 2.6 Action and Limit Level for Construction Noise

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

Notes :

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

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

- 2.3.4 If exceedance(s) at these station(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the quarterly EM&A Report.
- 2.3.5 The Action and Limit Levels for water quality are provided in **Table 2.7**.

Table 2.7 Action and Limit Levels for Water Quality

Parameters	Action	Limit
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.

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

2.3.7 The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.8** and **Table 2.9**, respectively.

Table 2.8 Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)

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

Table 2.9 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)]	

- 2.3.8 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.

2.4 Event Action Plans

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

2.5 Mitigation Measures

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

3 Environmental Monitoring and Audit

3.1 Air Quality Monitoring Results

- 3.1.1 The monitoring results for AMS6 and AMS7 are reported in the monthly EM&A Reports (for October, November and December 2016) prepared for Contract Nos. HY/2011/03 and HY/2010/02, respectively.
- 3.1.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for October, November and December 2016) prepared by Contract No. HY/2011/03.
- 3.1.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7 recorded by the ET of Contract No. HY/2010/02 during the reporting period.

3.2 Noise Monitoring Results

- 3.2.1 The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports (for October, November and December 2016) prepared for Contract No. HY/2010/02.
- 3.2.2 No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2010/02 during the reporting period.

3.3 Water Quality Monitoring Results

- 3.3.1 The monitoring results for these stations are reported in the monthly EM&A Reports (for November and December 2016) prepared for Contract No. HY/2010/02.
- 3.3.2 Twelve Action Level and one Limit Level exceedance of suspended solids at mid-flood tide were recorded at IS8, SR4(N), IS10, SR5, IS(Mf)9, IS(Mf)11, SR6, SR7, SR10A and SR10B(N) by the Environmental Team of Contract No. HY/2010/02 during reporting period (for November and December 2016). The detail of the exceedances are provided in **Table 3.1**.

Table 3.1 Action and Limit Levels exceedance for Water Quality

Monitoring Station	Monitoring Time	Measured depth averaged (in mg/L)	Level Exceeded	Monitoring Date
IS8	17:34	23.6	Action	14-Nov-2016
SR4(N)	17:26	25.6	Action	14-Nov-2016
IS10	08:38	31.4	Action	16-Nov-2016
	10:25	28.8	Action	18-Nov-2016
SR5	08:51	28.8	Action	16-Nov-2016
	10:33	33.4	Action	18-Nov-2016
SR6	09:47	35.8	Limit	16-Nov-2016
	11:22	25.1	Action	18-Nov-2016
IS(Mf)11	10:13	31.8	Action	18-Nov-2016
SR7	10:04	24.5	Action	18-Nov-2016
SR10A	07:16	25.9	Action	30-Nov-2016
SR10B(N)	07:07	24.5	Action	30-Nov-2016
IS(Mf)9	07:51	24.9	Action	14-Dec-2016

- 3.3.3 Exceedances were not due to operation of the works under Contract No. HY/2013/01. Because no marine works and marine transportation of roof segment were undertaken by the Contract on the relevant water quality monitoring period. The exceedances were not related to Contract No. HY/2013/01. The details of water quality exceedances can be made reference to the monthly EM&A report under Contract No. HY/2010/02.

3.4 Dolphins Monitoring Results

- 3.4.1 The monitoring results for dolphin monitoring are reported in the monthly EM&A Reports prepared for Contract No. HY/2010/02.

3.5 Implementation of Environmental Measures

- 3.5.1 In response to the site audit findings, the Contractor carried out corrective actions. Details of site audit findings and the corrective actions during the reporting period are presented in **Appendix F**.
- 3.5.2 The Contractor waters 8 times per day on all exposed soil within the Contract site and associated works areas when construction activities are being undertaken.
- 3.5.3 The marine traffic records and geographical plots of all the vessels tracks for the reporting month will be submitted by the Contractor to ER, ETL and IEC/ENPO within 3 weeks after the reporting month. The marine traffic records and geographical plots for August 2016, September 2016 was submitted by the Contractor to ER, ETL and IEC/ENPO on 14 October 2016 and 10 November 2016, respectively.
- 3.5.4 The marine traffic records and geographical plots for October 2016 were submitted by the Contractor to ER, ETL and IEC/ENPO on 17 November 2016 and 13 December 2016, respectively. For November 2016, they were submitted by Contractor to ER, ETL and IEC/ENPO on 13 December 2016 and 30 December 2016, respectively. And for December 2016, they were submitted by the Contractor to ER, ETL and IEC/ENPO on 17 January 2017. It was noted that the marine traffic records and geographical plots in October and November 2016 were submitted out of the allowed submission time frame (i.e. within 3 weeks after the reporting month). The Contractor has been reminded to submit these information to all relevant parties on time.
- 3.5.5 Regular marine travel route for marine vessels were implemented properly and training was provided for barge operators in accordance with the Regular Marine Travel Routes Plan and relevant records were kept properly.
- 3.5.6 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

3.6 Advice on the Solid and Liquid Waste Management Status

- 3.6.1 The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.
- 3.6.2 No marine sediment was generated/treated and no treated marine sediment was reused in the reporting period. As informed by the Contractor in March 2016, the transfer of treated marine sediment to Contract no. HY/2010/02 has been discontinued since July 2015.
- 3.6.3 The summary of waste flow table is detailed in **Appendix G**.
- 3.6.4 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*.



3.7 Environmental Licenses and Permits

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

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

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

- 4.1.1 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for October, November and December 2016) prepared by Contract No. HY/2011/03.
- 4.1.2 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 4.1.3 There was no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 4.1.4 There were twelve Action Level exceedances and one Limit Level exceedance of suspended solids were recorded by the ET of Contract No. HY/2010/02 during the reporting period (for November and December 2016). Action Level Exceedances of SS at IS8 and SR4(N) at Mid-Flood tide on 14 November 2016; Action Level Exceedance of SS at IS10 and SR5 & Limit Level Exceedance of SS at SR6 at Mid-Flood tide on 16 November 2016; Action Level Exceedance of SS at IS(Mf)11, IS10, SR5, SR6, SR7 at Mid-Flood tide on 18 November 2016. Action Level Exceedance of SS at SR10A and SR10B(N) at Mid-Flood tide on 30 November 2016. Action Level exceedance of SS recorded at IS(Mf)9 at mid-flood tide on 14 December 2016. The details of water quality exceedances can be made reference to the monthly EM&A report under Contract No. HY/2010/02. Based on the information from the Contractor of this Contact, no marine works or marine transportation were undertaken on the relevant dates. Therefore, these exceedances were considered not likely to be caused by this Contract's activities after investigation. No follow up action is required.
- 4.1.5 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2010/02.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

- 4.2.1 There were three complaints received in relation to the environmental impact during the reporting period. A summary of environmental complaints is presented in **Table 4.1**. The details of cumulative statistics of Environmental Complaints are provided in **Appendix I**.

Table 4.1 A Summary of Environmental Complaints for the Reporting Month

Environmental Complaint No.	Date of Complaint Received	Description of Environmental Complaints
003	07 November 2016	Water Quality
004	05 December 2016	Dust
005	14 December 2016	Noise

Environmental Complaint No. 003 – Water Quality Nuisance

- 4.2.2 According to ENPO's email to the Environmental Team, Engineer's representative and Contractor on 10 November 2016, it is noted that EPD received a complaint lodged by a member of the public regarding sediment plume generated by a vessel named “長盛 308” during the vessel travelling from construction site of Hong Kong – Zhuhai – Macao Bridge near Scenic Hill to Tung Chung New Development Ferry Pier.
- 4.2.3 The Contractor confirmed that they do not have any derrick barge working for Contract No. HY/2013/01 and no works were conducted near the Tung Chung New Development Ferry Pier,

as such the complaint is considered not related to Contract No. HY/2013/01. Hence, no follow-up action is required for the complaint. However, the Contractor was nonetheless reminded by ET to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule (EMIS).

Environmental Compliant No. 004 – Dust Nuisance

- 4.2.4 According to ENPO's email to the Environmental Team, Engineer's Representative and Contractor on 5 December 2016, it is noted that EPD received a complaint lodged by a member of the public regarding the construction dust inside the basement of Passenger Clearance Building.
- 4.2.5 Based on the investigation results, it is suspected that potential dust emissions may be generated from the cutting and grinding activities.
- 4.2.6 During the weekly site inspection conducted by the ET, ER and Contractor on 7 December 2016, the worker is wearing the respirator and eye protector during drilling activities at the basement area. The dust container was adhered with the hand electric drill during the drilling activities to minimize the dust emission. The Contractor implemented the dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation.
- 4.2.7 The Contractor was reminded to implement all necessary mitigation as specified in EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project and provide the dust collector to collect dust during the drilling work in the basement area, provide the buckets of water for the dust disposal from dust collector and ensure the mixing process of plaster power are carried out in enclosed area. Additionally, the Contractor was suggested to keep watering record for checking at all time.

Environmental Compliant No. 005 – Noise Nuisance

- 4.2.8 According to ENPO's email to ET, Engineer's Representative and Contractor on 14 December 2016, it was noted that EPD had received a complaint regarding a noise complaint from a member of public. The complainant said that he/she was disturbed by hammering noise generated from construction sites in mid-night over the past month. He/She suspected that the noise was generated from HZMB Project. Based on further email from ENPO on 20 December 2016, it is noted that the complainant lives in Seaview Crescent (海堤灣畔). He sometimes hears noise created by impacting metals or metal/ground, particularly in December 2016.
- 4.2.9 According to the information provided by the Contractor, the construction works of concreting works in PCB building (more than 2.5 km from Seaview Crescent) and no hammering involved activities were being done after 11p.m. in November 2016 and December 2016. The Contractor has Construction Noise Permit No. GW-RS1193-16 to undertake construction works during the restricted hours. Based on the investigation results, it was found that the noise nuisance is not related to Contract No. HY/2013/01. No follow-up action is required.
- 4.2.10 No notification of summons and prosecution was received during the reporting period.
- 4.2.11 Statistics on notifications of summons and successful prosecutions are summarized in **Appendix I**.

5 Comments, Recommendations and Conclusion

5.1 Comments

- 5.1.1 According to the environmental site inspections undertaken during the reporting period, the following recommendations were provided:
- The Contractor was reminded to provide drip trays for the chemical containers and air compressor.
 - The Contractor was reminded to provide proper labels for the chemical containers and air compressor.
 - The Contractor was reminded to clear the rubbish on the ground.
 - The Contractor was reminded to clear the chemicals inside the drip tray.
 - The Contractor was reminded to cover the stockpiles properly to reduce dust impacts.
- 5.1.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

5.2 Recommendations

- 5.2.1 With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.
- 5.2.2 The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensure the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

5.3 Conclusions

- 5.3.1 The site preparation work of the Contract started on 26 September 2014 and the construction works of the Contract commenced on 6 October 2014. This is the ninth Quarterly EM&A Report summaries findings of the EM&A works during the reporting period from 1 October to 31 December 2016.
- 5.3.2 Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for October, November and December 2016) prepared by Contract No. HY/2011/03.
- 5.3.3 There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 5.3.4 There was no Action and Limit Level exceedance for noise recorded at NMS2 and NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.
- 5.3.5 There were twelve Action Level exceedances and one Limit Level exceedance of suspended solids were recorded by the ET of Contract No. HY/2010/02 during the reporting period (for November and December 2016). Action Level Exceedances of SS at IS8 and SR4(N) at Mid-Flood tide on 14 November 2016; Action Level Exceedance of SS at IS10 and SR5 & Limit Level Exceedance of SS at SR6 at Mid-Flood tide on 16 November 2016; Action Level Exceedance of SS at IS(Mf)11, IS10, SR5, SR6, SR7 at Mid-Flood tide on 18 November 2016. Action Level Exceedance of SS at SR10A and SR10B(N) at Mid-Flood tide on 30 November 2016. Action Level exceedance of SS recorded at IS(Mf)9 at mid-flood tide on 14 December 2016. The details of water quality exceedances can be made reference to the monthly EM&A report under Contract No. HY/2010/02. Based on the information from the Contractor of this Contact, no marine works or marine transportation were undertaken on the relevant dates. Therefore, these exceedances were considered not likely to be caused by this Contract's activities after investigation. No follow up action is required.
- 5.3.6 Impact dolphin monitoring results at all transects are reported in the EM&A Reports prepared for Contract No. HY/2010/02.
- 5.3.7 Environmental site inspections were carried out on 5, 12 19 and 26 October, 2, 9, 15, 23 and 30 November and 7, 14, 21 and 28 December 2016. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.
- 5.3.8 There were three complaints received in relation to the environmental impact during the reporting period. For water quality nuisance, it is found that the water quality nuisance is not related to Contract No. HY/2013/01 after investigation and no follow-up action is required. For dust nuisance, a series dust suppression measures were implemented and workers' health protectors were provided by the Contractor. The Contractor was reminded to implement all necessary mitigation as specified in EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project and provide the dust collector to collect dust during the drilling work in the basement area, provide the buckets of water for the dust disposal from dust collector and ensure the mixing process of plaster power are carried out in enclosed area. Additionally, the Contractor was suggested to keep watering record for checking at all time. For noise nuisance, it is found that the noise nuisance is not related to Contract No. HY/2013/01 after investigation and no follow-up action is required.
- 5.3.9 No notification of summons and successful prosecution was received during the reporting period.



FIGURES

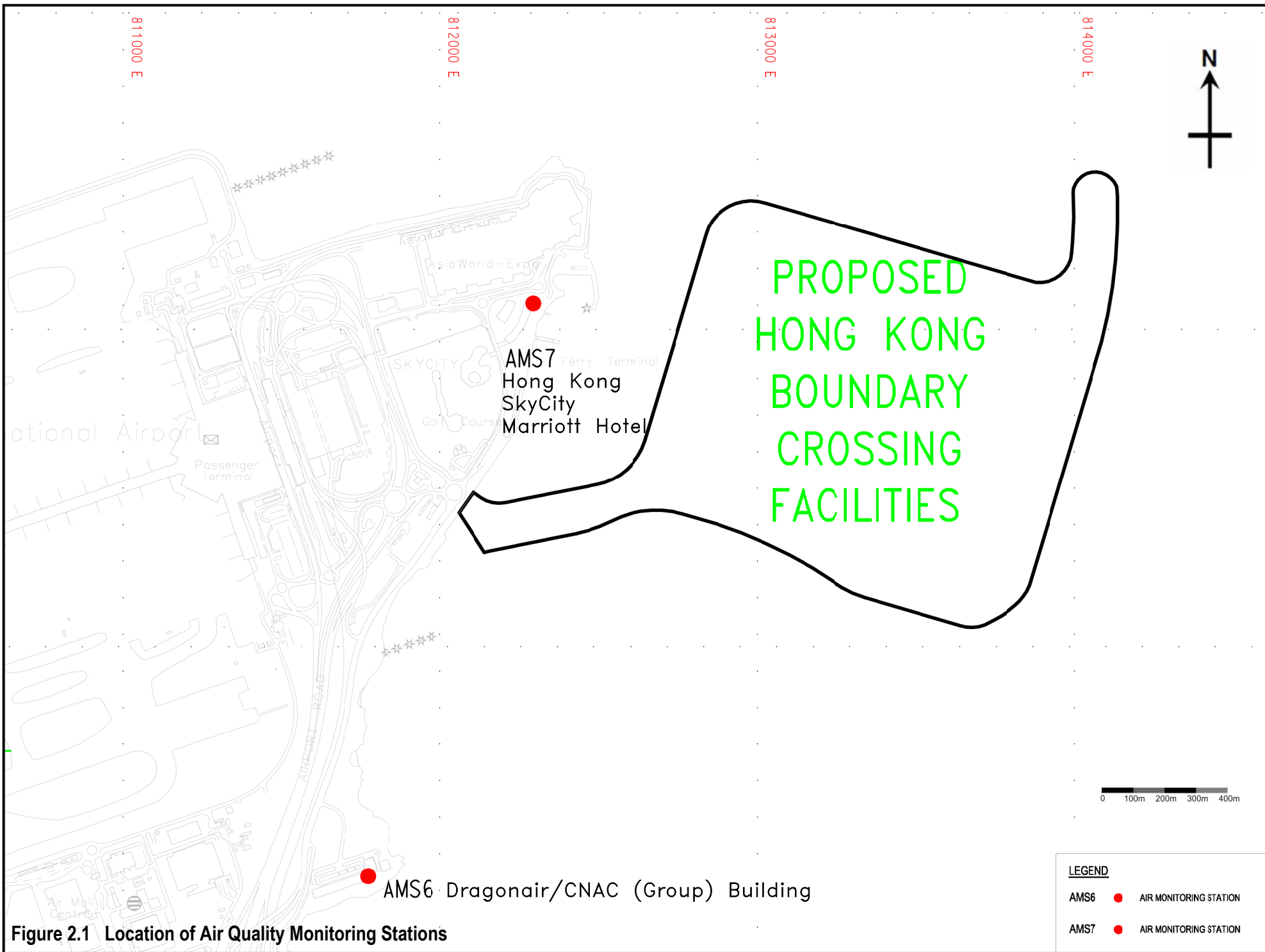


Figure 2.1 Location of Air Quality Monitoring Stations

LEGEND		
AMS6	●	AIR MONITORING STATION
AMS7	●	AIR MONITORING STATION

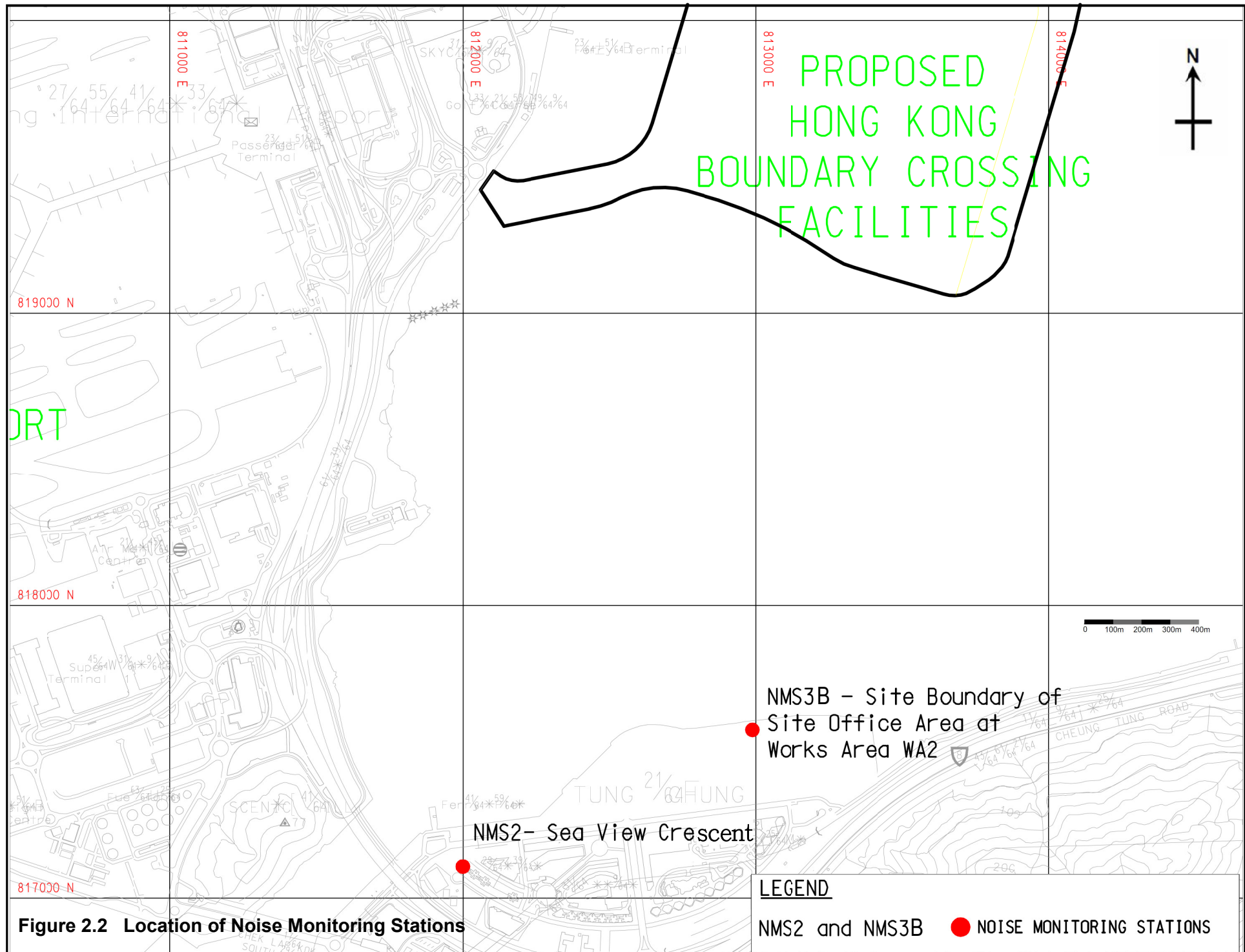
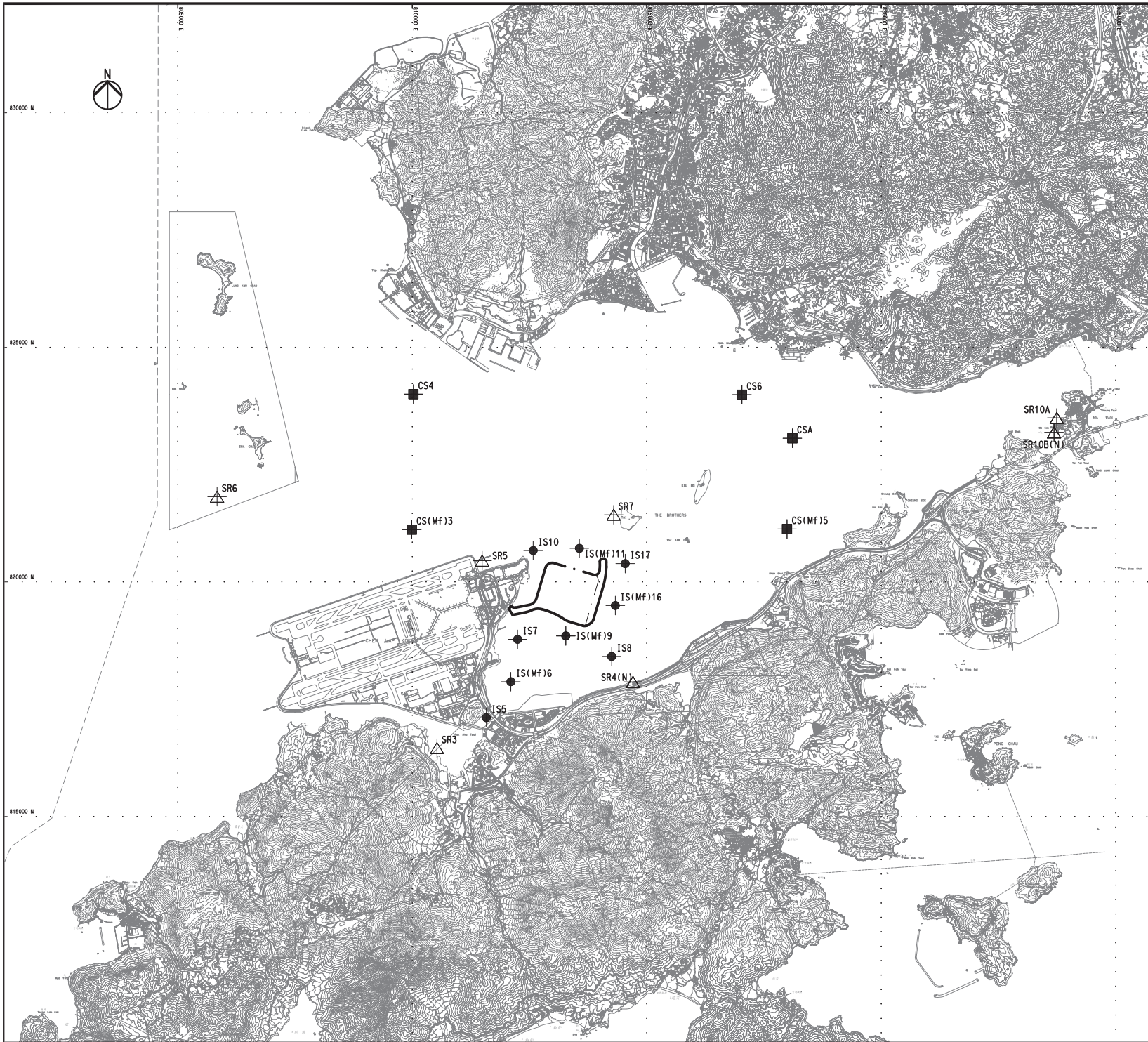


Figure 2.2 Location of Noise Monitoring Stations

LEGEND

NMS2 and NMS3B ● NOISE MONITORING STATIONS



LEGEND

●	IS	IMPACT STATIONS
■	CS	CONTROL / FAR FIELD STATIONS
▲	SR	SENSITIVE RECEIVERS STATIONS

**Figure 2.3 -
Location of Water
Quality Monitoring
Stations**

SETTING OUT SCHEDULE

MONITORING STATIONS	CO-ORDINATES	
	EASTING	NORTHING
IS5	811579	817106
IS(MF)6	812101	817873
IS7	812244	818777
IS8	814251	818412
IS(MF)9	813273	818850
IS10	812577	820670
IS(MF)11	813562	820716
IS(MF)16	814328	819497
IS17	814539	820391
SR3	810525	816456
SR4(N)	814705	817859
SR5	811489	820455
SR6	805837	821818
SR7	814293	821431
SR10A	823741	823495
SR10B(N)	823683	823187
CS(MF)3	809989	821117
CS(MF)15	817990	821129
CS4	810025	824004
CS6	817028	823992
CSA	818103	823064

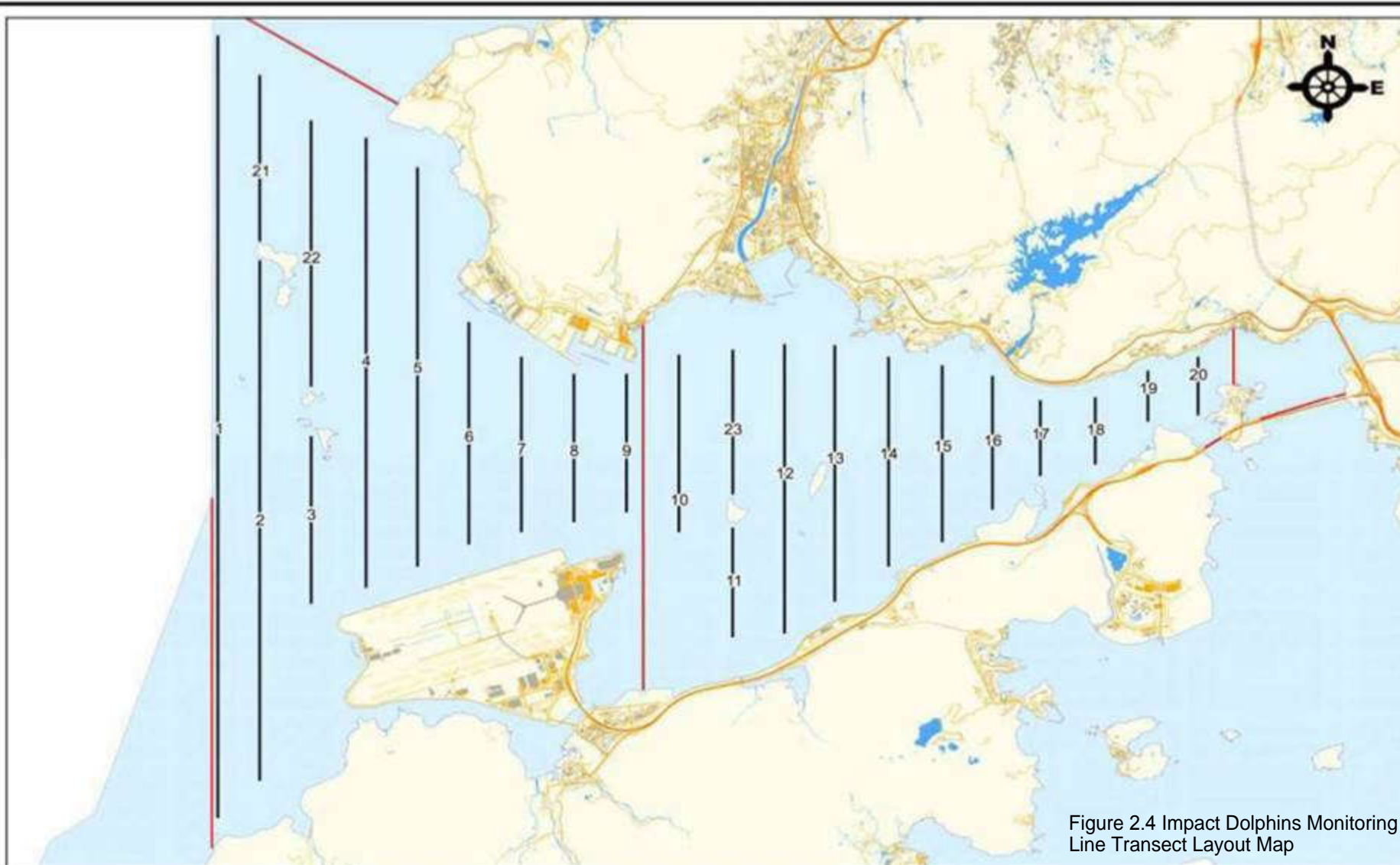


Figure 2.4 Impact Dolphins Monitoring Line Transect Layout Map

Remarks:

*Transect 10 is now 3.6km in length due to the HKBCF construction site.

^Coordinates for transect lines 1, 2, 7, 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. The total transect length for both NEL and NWL combined is 108km.



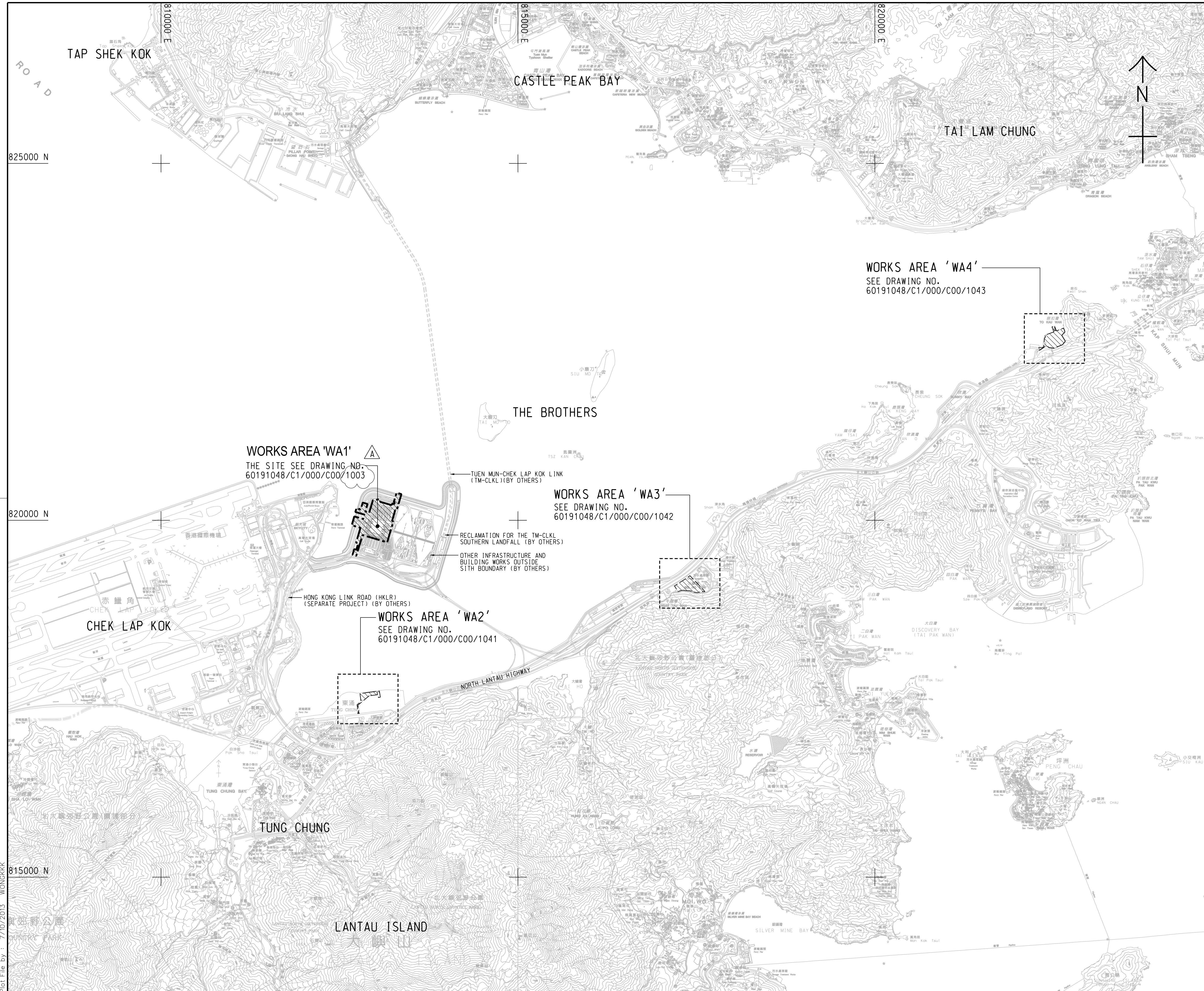
路政署
HIGHWAYS DEPARTMENT

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

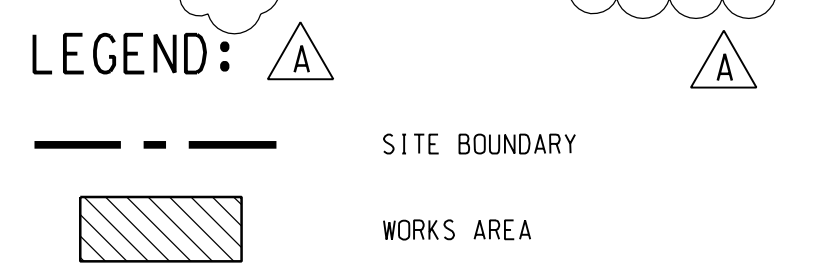
Contract No. HY/2013/01
Hong Kong-Zhuhai-Macao Bridge
Hong Kong Boundary Crossing Facilities – Passenger Clearance Building
9th Quarterly EM&A Report

APPENDIX A

Location of Works Areas



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



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

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

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

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

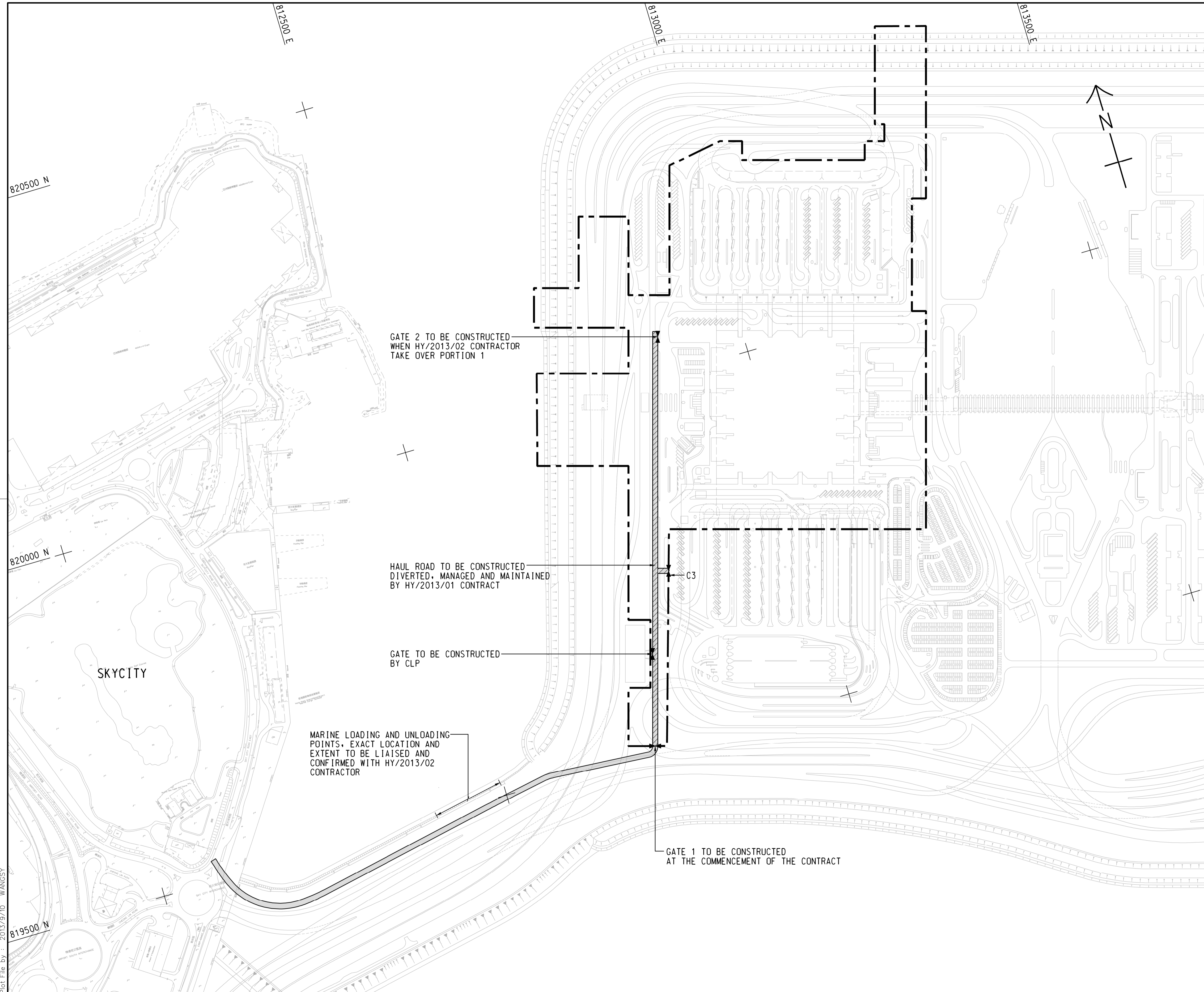
SITE LOCATION PLAN

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

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

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

Plot File by : 7/10/2013 WONGKKK



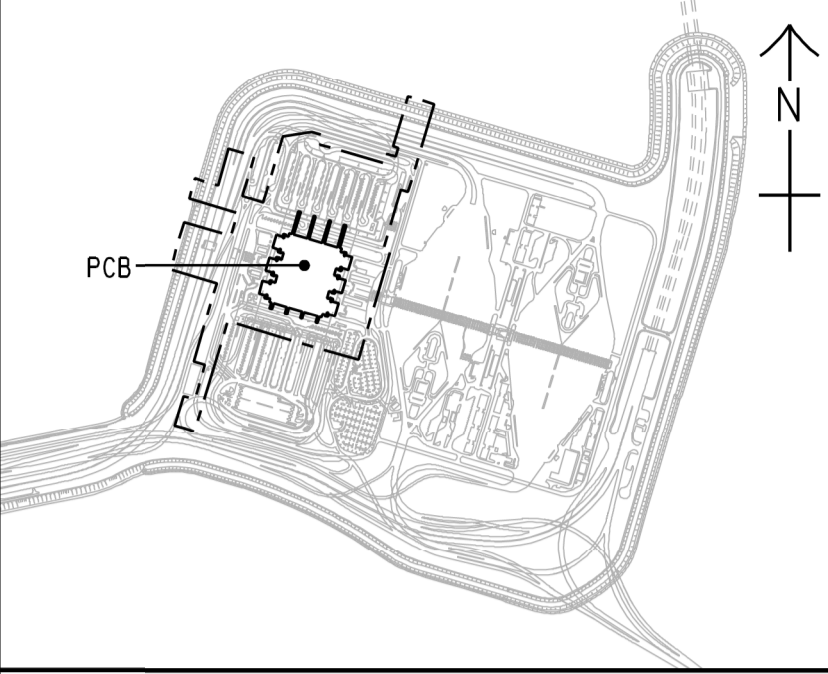
GATE 2 TO BE CONSTRUCTED WHEN HY/2013/02 CONTRACTOR TAKE OVER PORTION 1

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

GATE TO BE CONSTRUCTED BY CLP

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

GATE 1 TO BE CONSTRUCTED AT THE COMMENCEMENT OF THE CONTRACT



LOCATION PLAN
SCALE 1 : 20000

NOTES:

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

LEGEND:

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

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

路政署 HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理局
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 +

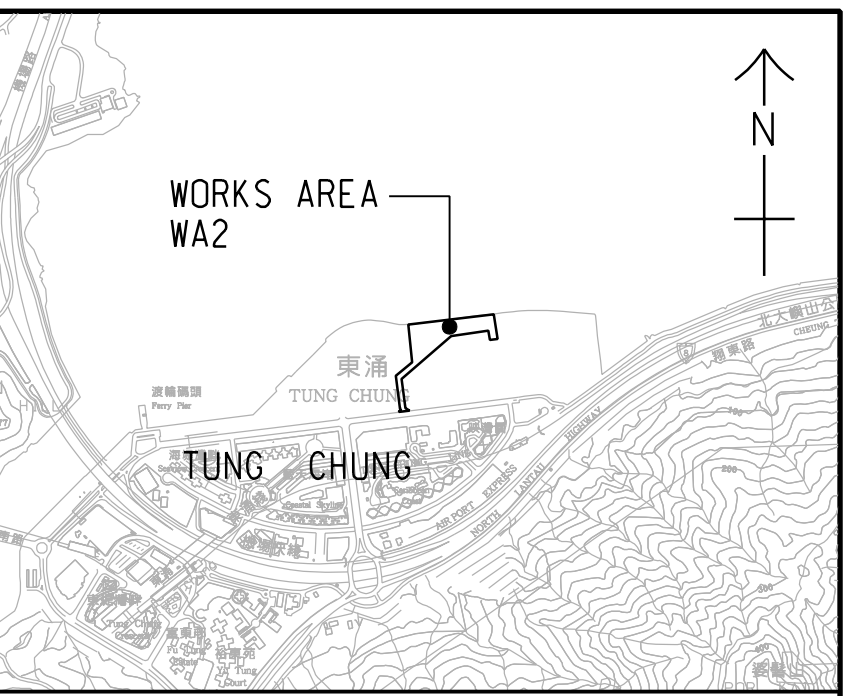
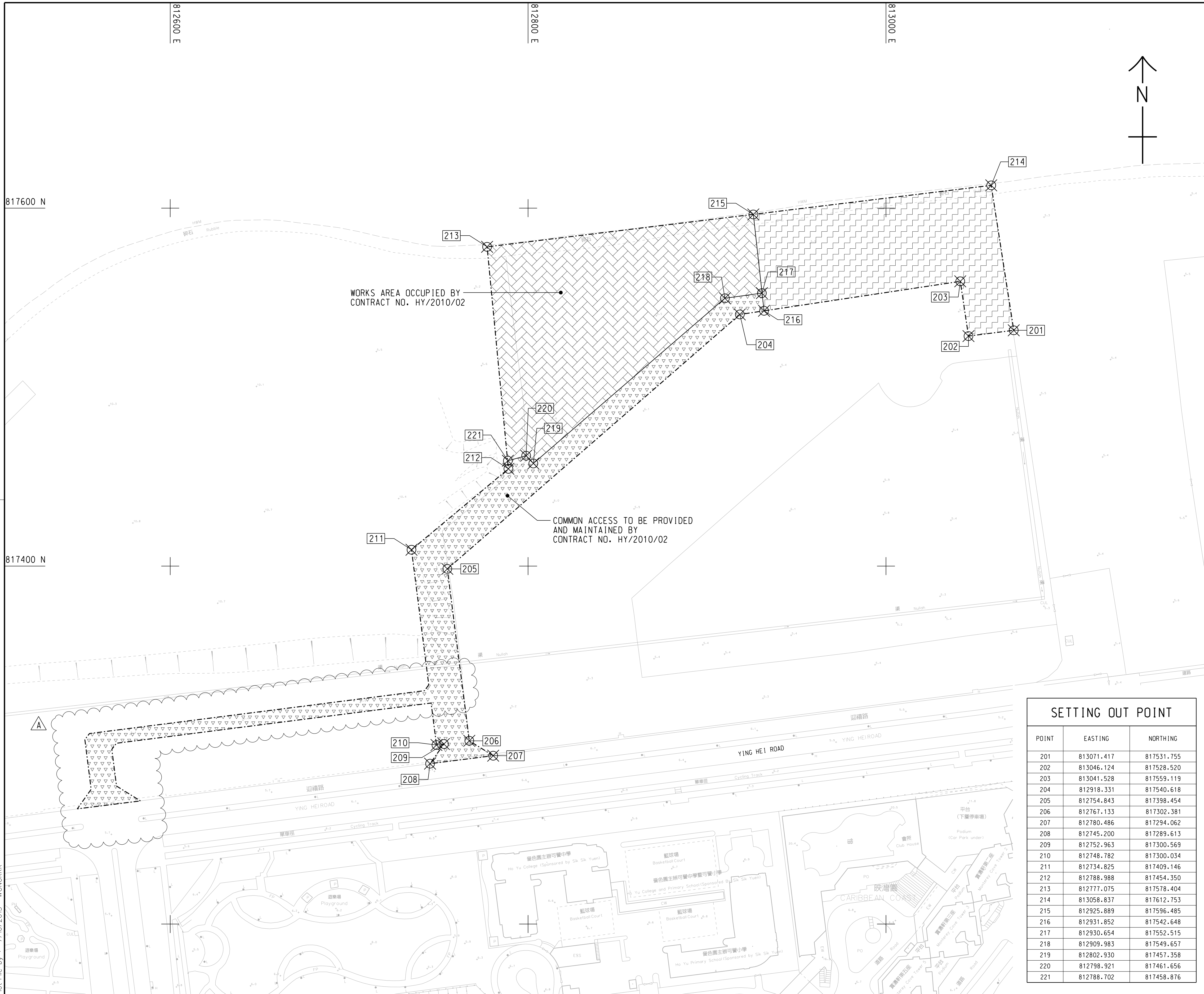
DRG.NO. 60191048/C1/000/C00/1044
圖紙編號

DESIGNED BY BWCW	CONTRACT NO. HY/2013/01	P. Dir. APPROVED EMSC
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DRAWN BY WSY	STATUS CHECKED
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SCALE 1 : 2500
DIMENSIONS ARE IN METRES

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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
- [Diagonal Hatching] PORTION 2.1
- [Cross-hatching] PORTION 2.2
- [Triangular Hatching] 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
01	內務圖	WONG	

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 RELEASE	WORKING DRAWING
SCALE A1 1 : 1000		
DIMENSIONS ARE IN METRES		© COPYRIGHT RESERVED 版 權 所 有

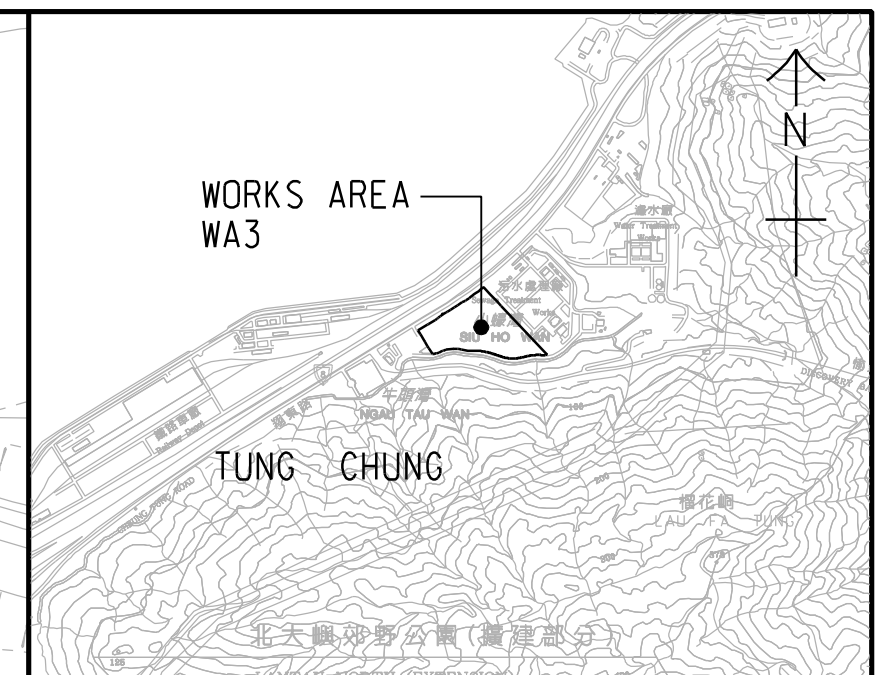
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205	812754.843	817398.454
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207	812780.486	817294.062
208	812745.200	817289.613
209	812752.963	817300.569
210	812748.782	817300.034
211	812734.825	817409.146
212	812788.988	817454.350
213	812777.075	817578.404
214	813058.837	817612.753
215	812925.889	817596.485
216	812931.852	817542.648
217	812930.654	817552.515
218	812909.983	817549.657
219	812802.930	817457.358
220	812798.921	817461.656
221	812788.702	817458.876

Plot File by : 7/10/2013 WONGKKK

SETTING OUT POINT

POINT	EASTING	NORTHING
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303	817327.338	819049.295
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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
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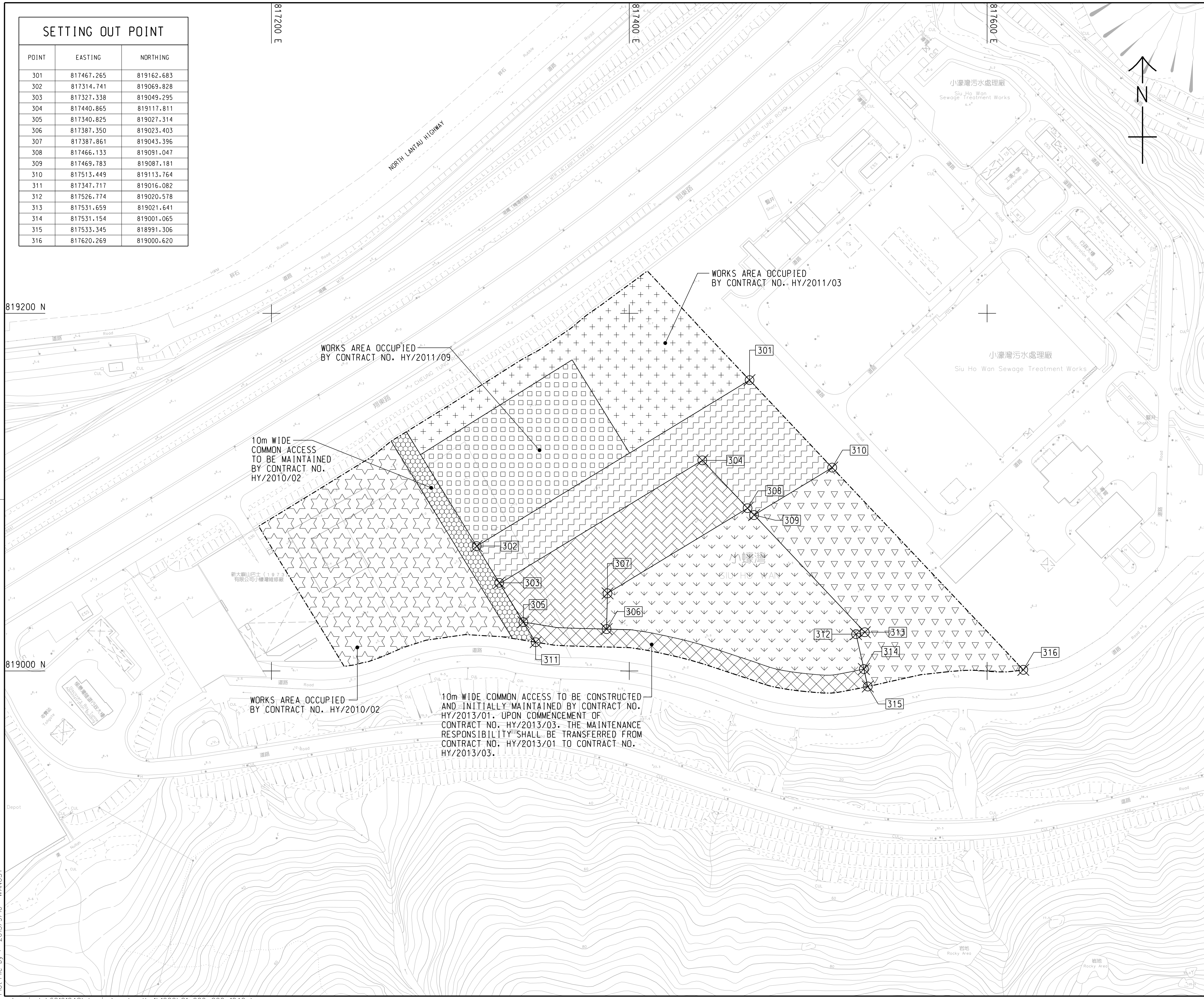


LOCATION PLAN
SCALE 1 : 25000

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

LEGEND:

	WORKS AREA BOUNDARY
	PORTION 3.1
	PORTION 3.2
	PORTION 3.3
	PORTION 3.4
	PORTION 3.5
	PORTION 3.6
	PORTION 3.7
	PORTION 3.8
	PORTION 3.9



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

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

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - 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			
SCALE 比例	A1 1 : 1000				
DIMENSIONS ARE IN 尺寸單位	METRES				

WORKING DRAWING
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Plot File by : 2013/9/10 WANGSY

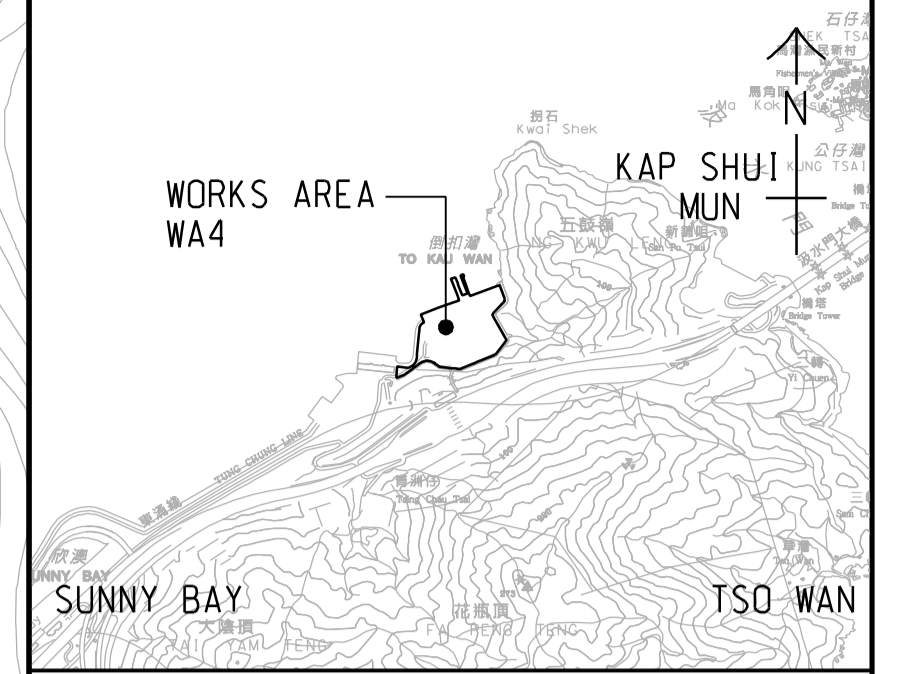
SETTING OUT POINT

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404	822610.940	822599.642
405	822629.428	822607.359
406	822526.988	822529.813
407	822618.348	822567.950
408	822542.232	822489.581
409	822584.983	822507.426
410	822606.866	822516.561
411	822560.278	822441.956
412	822602.949	822460.010
413	822621.914	822467.959
414	822624.130	822470.998
415	822651.725	822508.856

822400 E

822600 E

TO KAU WAN



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.

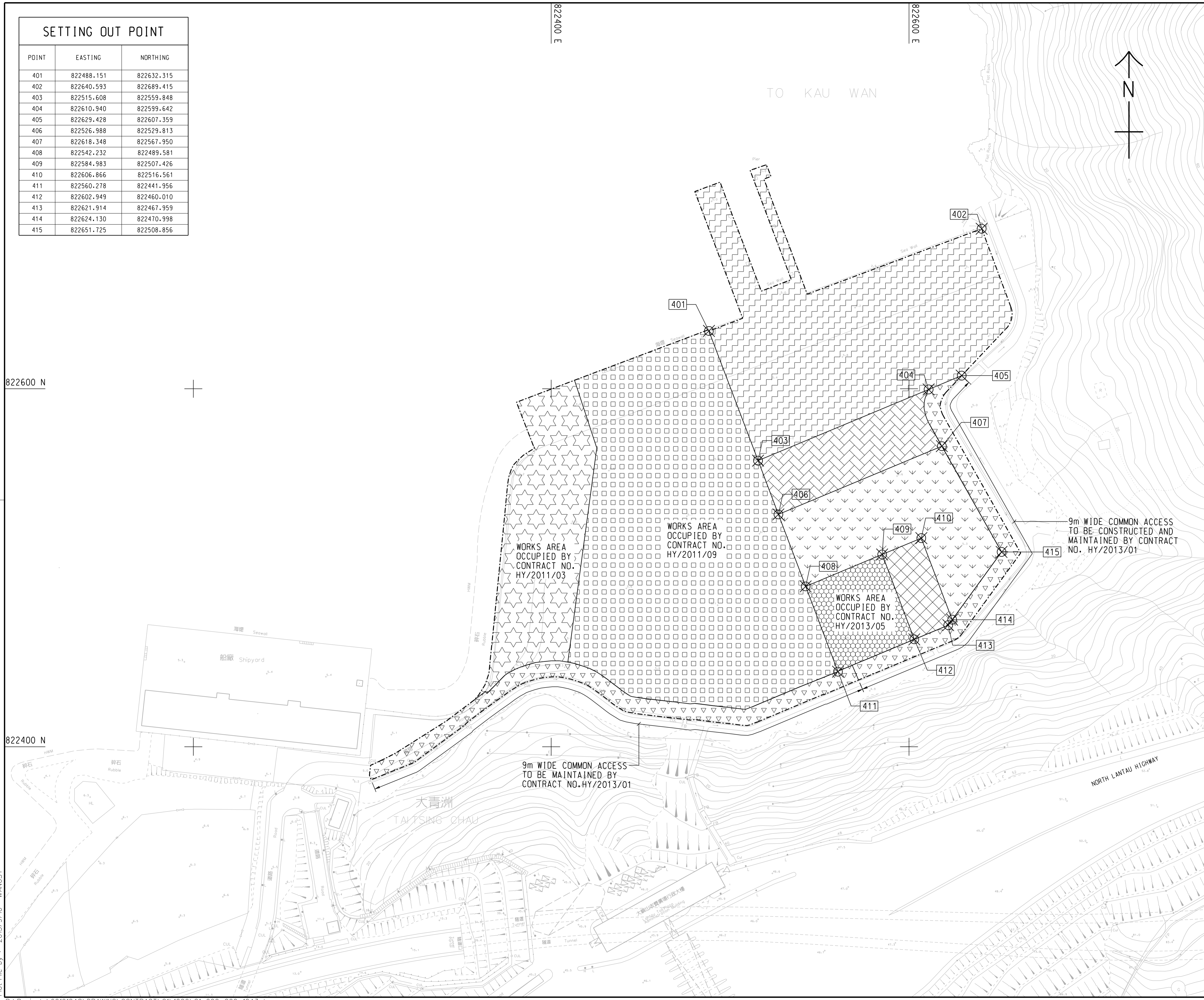
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- [Pattern 8] PORTION 4.8

822600 N

822400 N

Plot File by : 2013/9/10 WANGSY



REV.	DESCRIPTION	DATE
1	TENDER DRAWING	SEP.13

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

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

WORKS AREA WA4

AECOM Aedas
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

DRG.NO. 60191048/C1/000/C00/1043
圖紙編號

DESIGNED BY W.S.Y.	CONTRACT NO. HY/2013/01	P. Dir. APPROVED EMSC
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SCALE 1:1000
比例尺

DIMENSIONS ARE IN METRES
尺寸單位

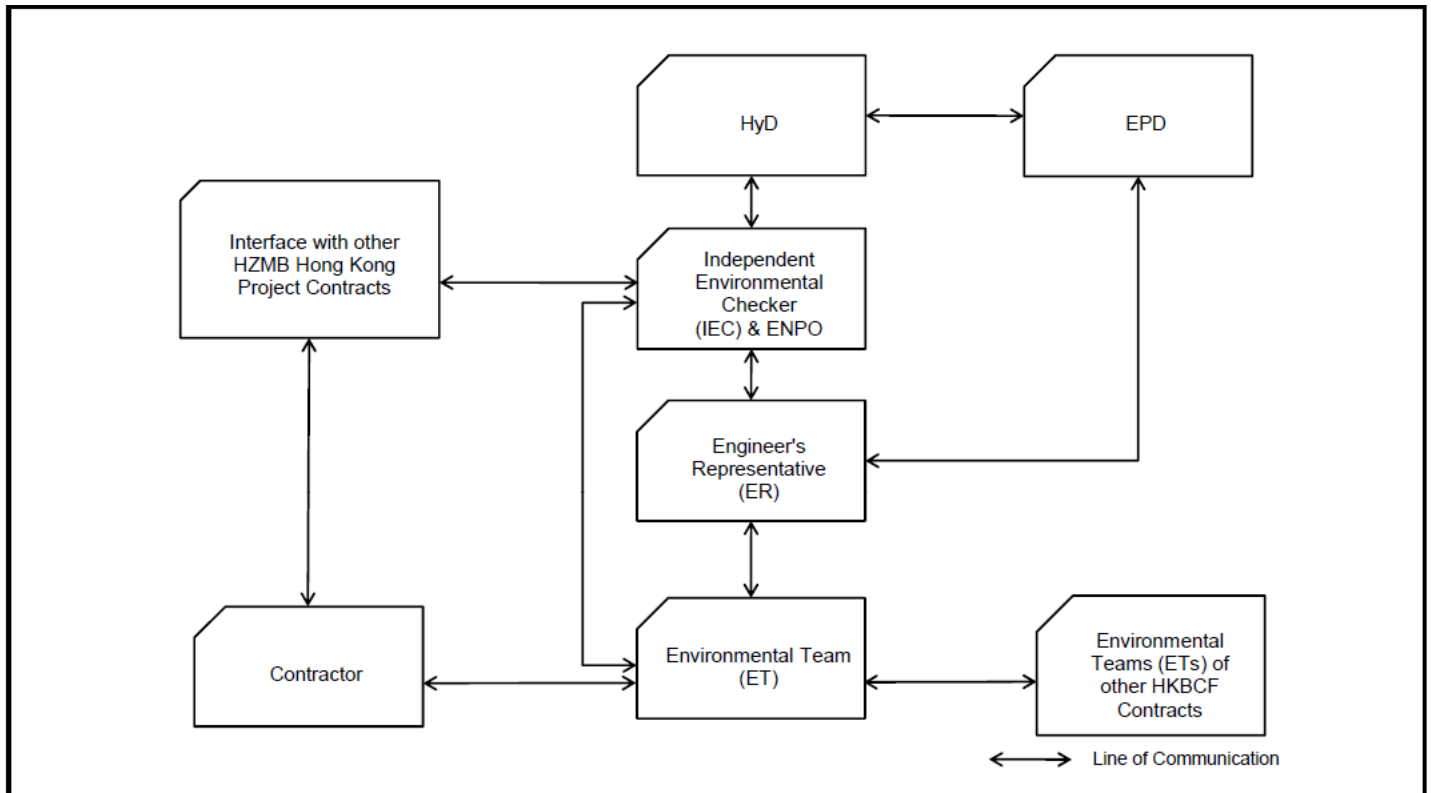
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APPENDIX B

Project Organization for Environmental Works

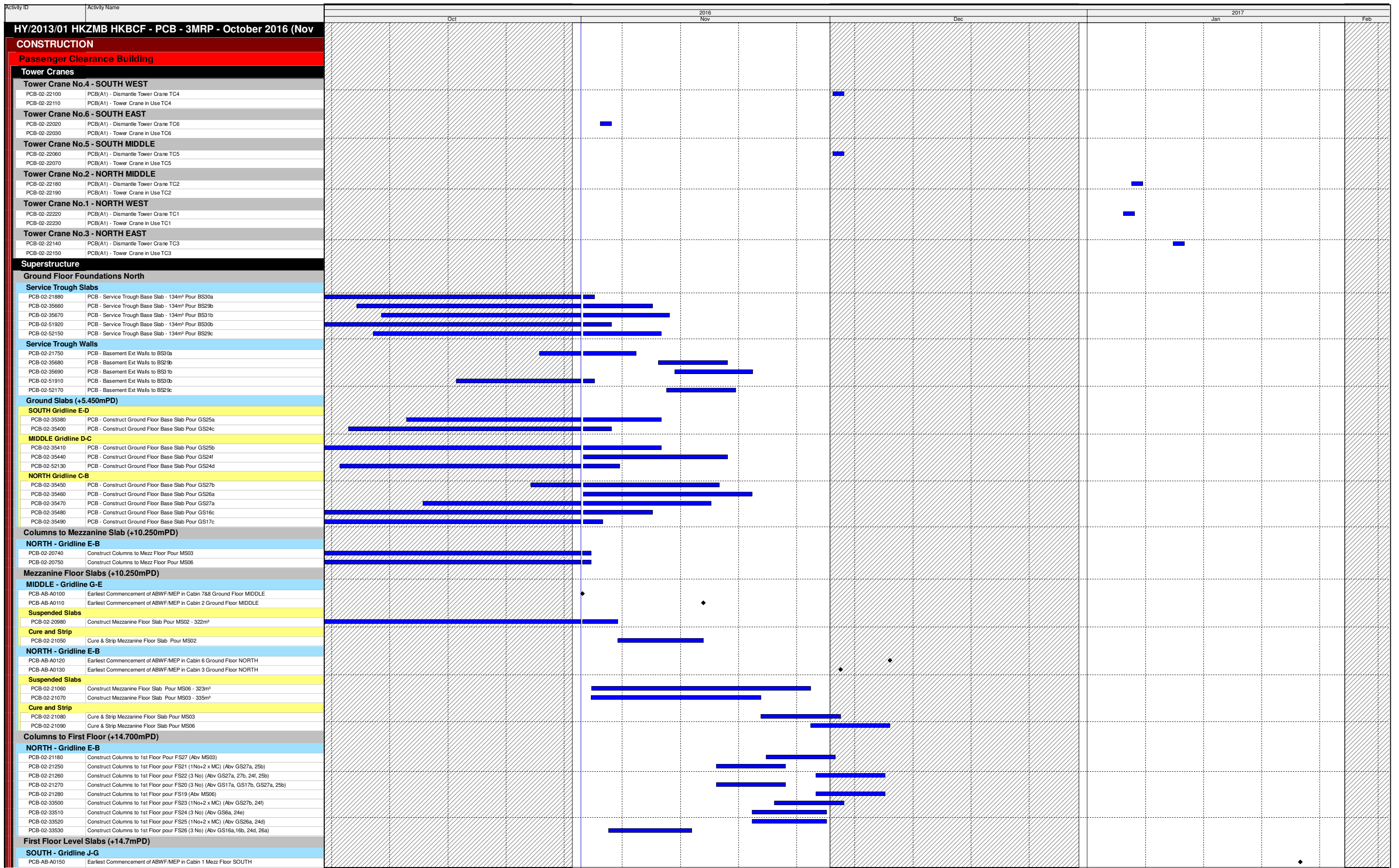
Project Organisation for Environmental Works





APPENDIX C

Construction Programme

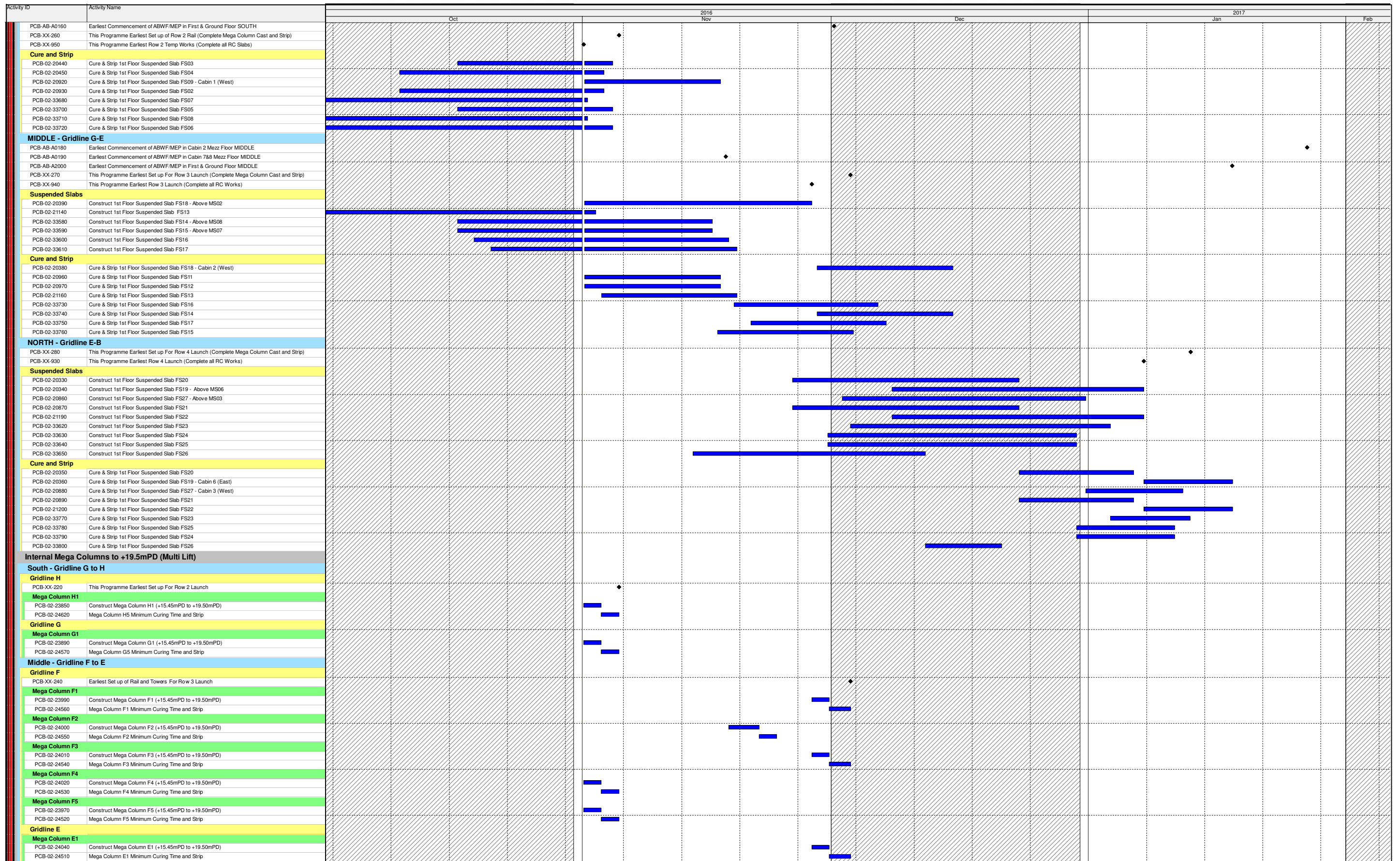


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

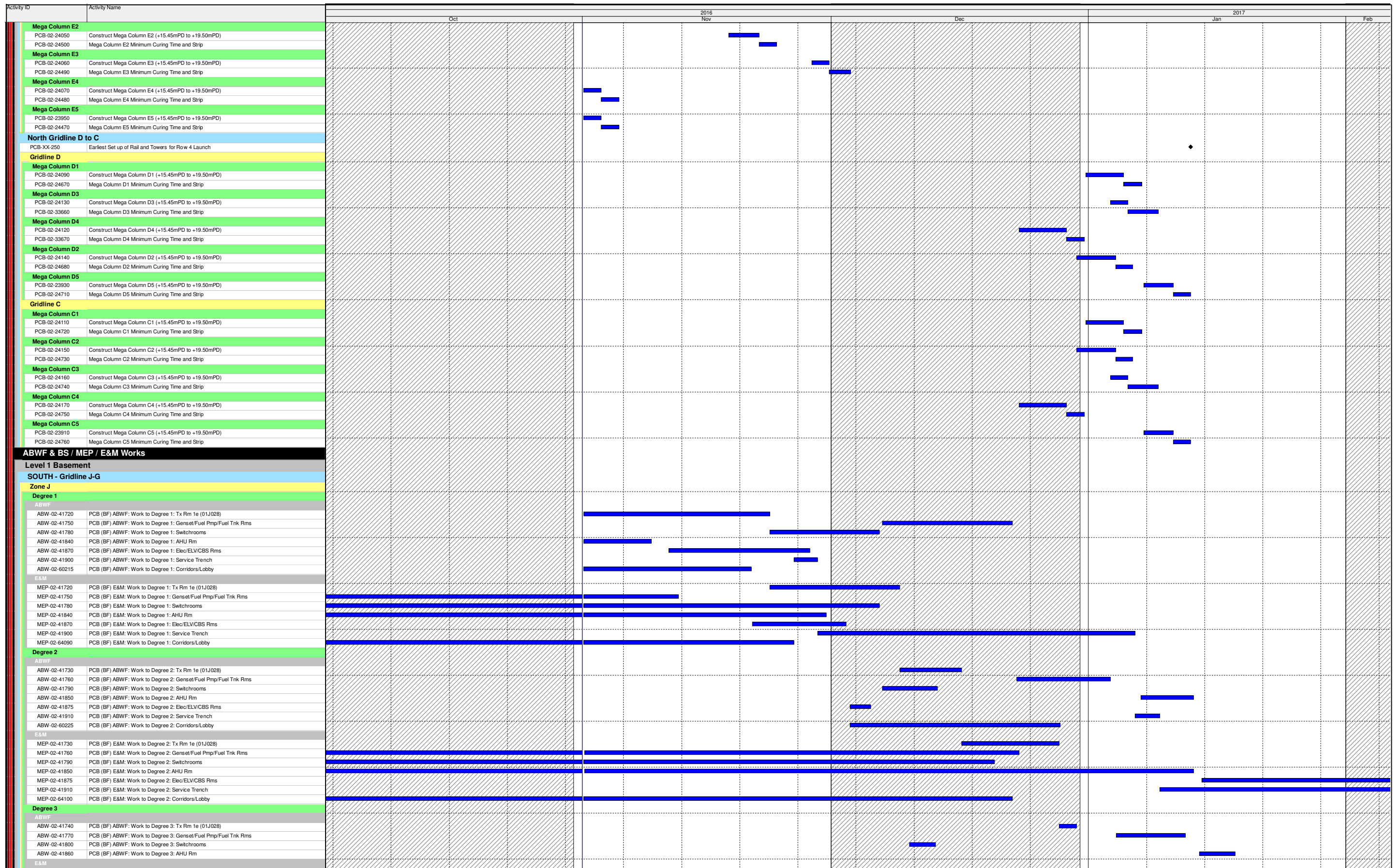
Date	Revision	Checked	Approved
	Three Month Rolling Programme		



Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		

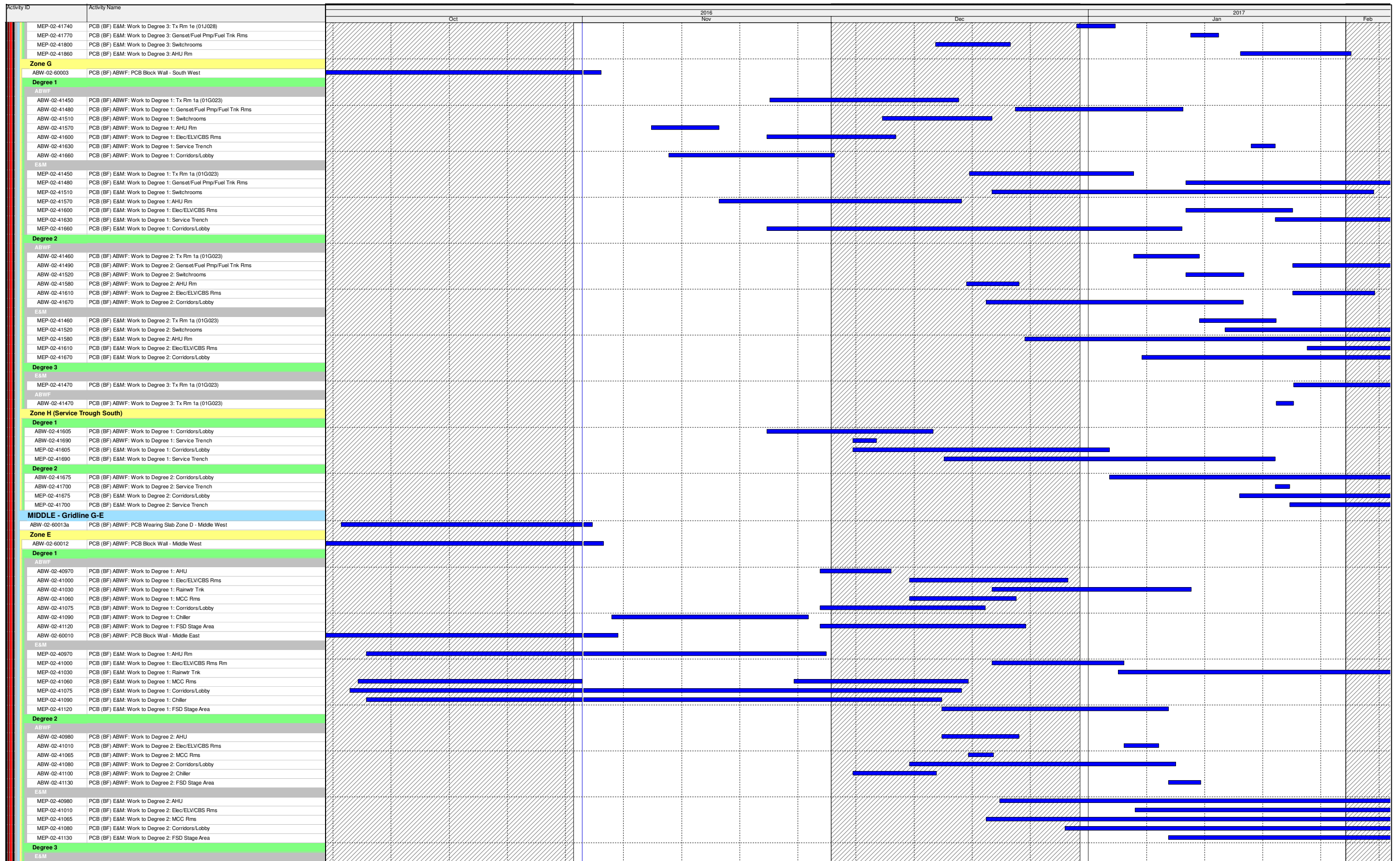


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

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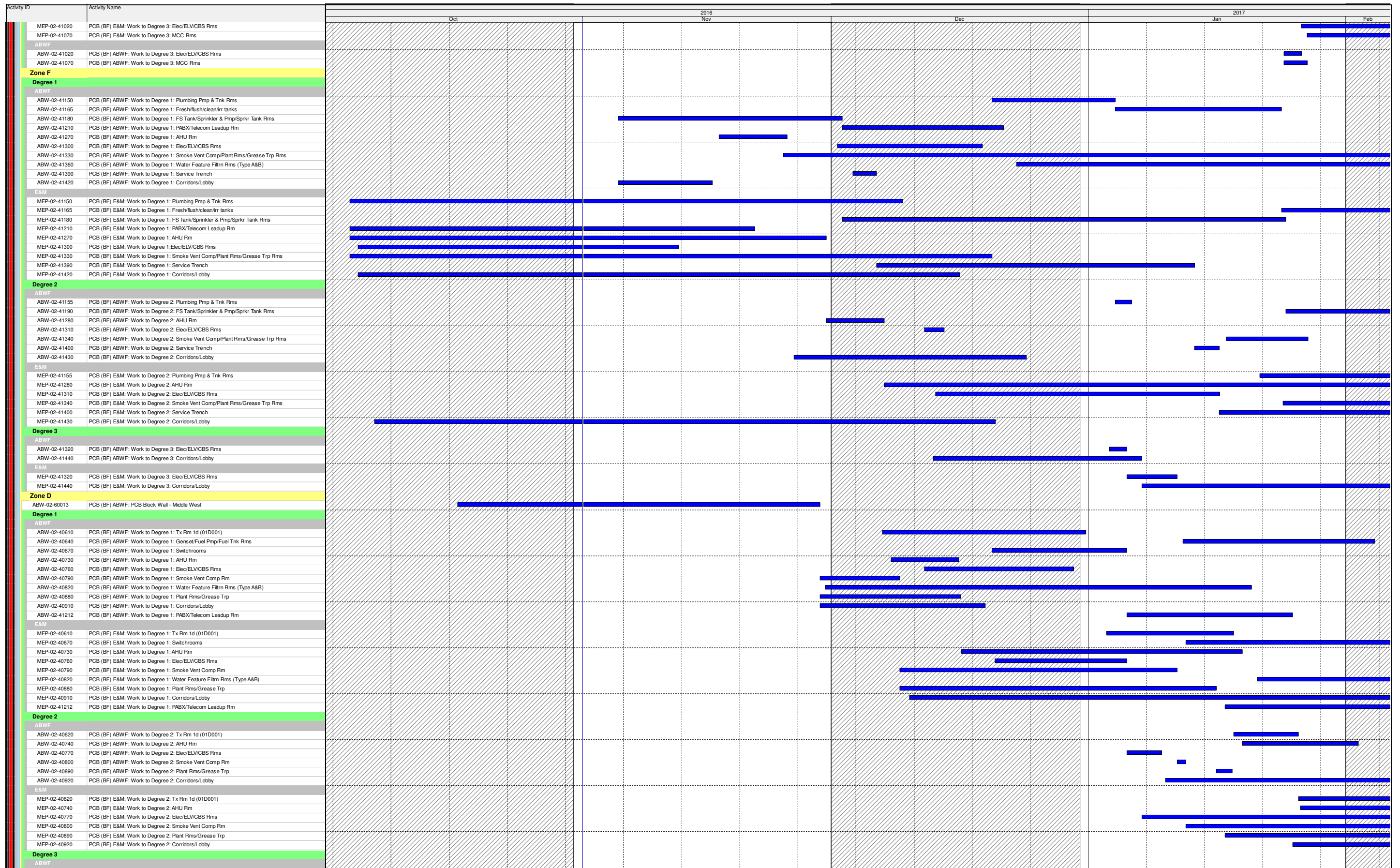


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		

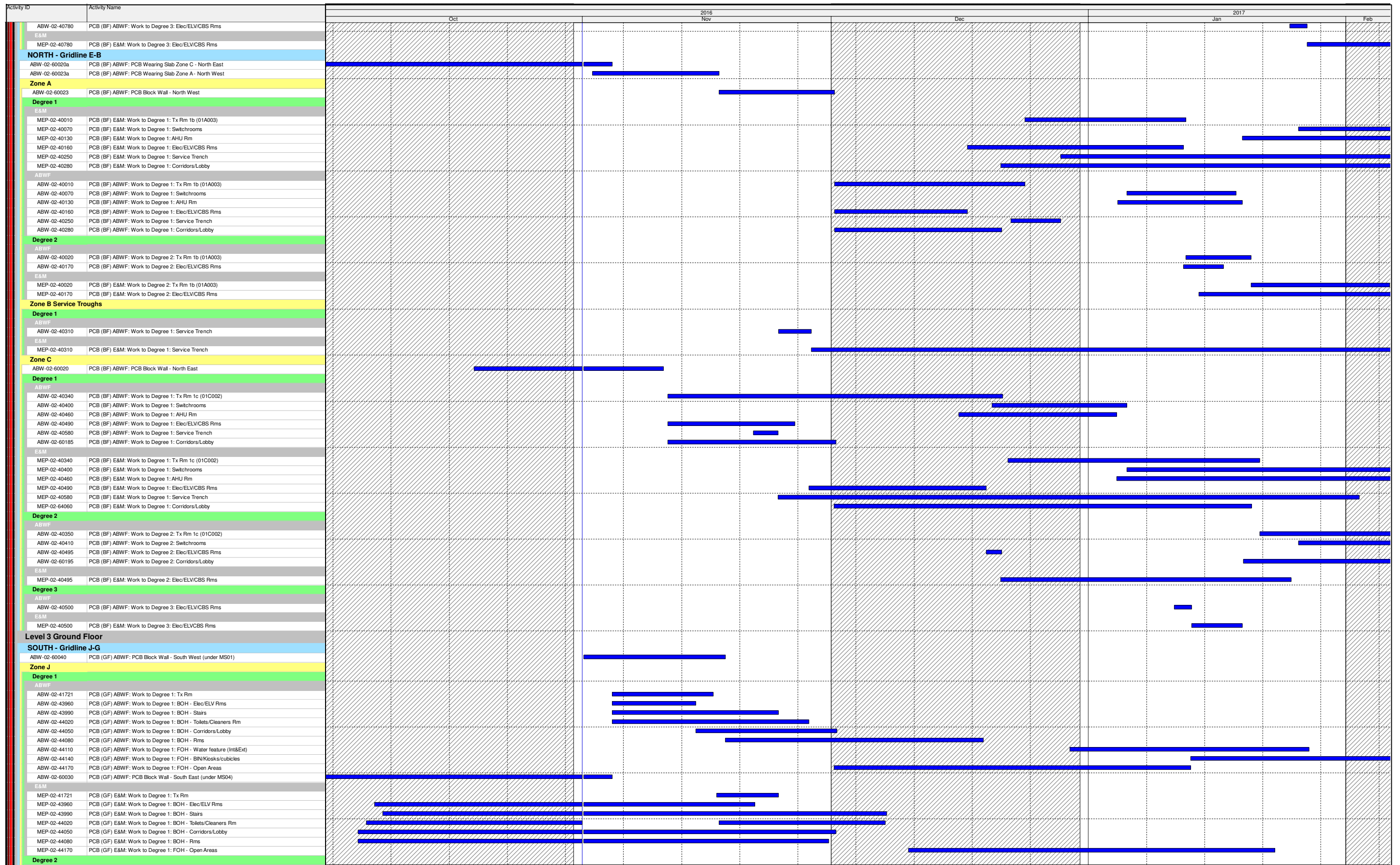


- Actual Work
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- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		

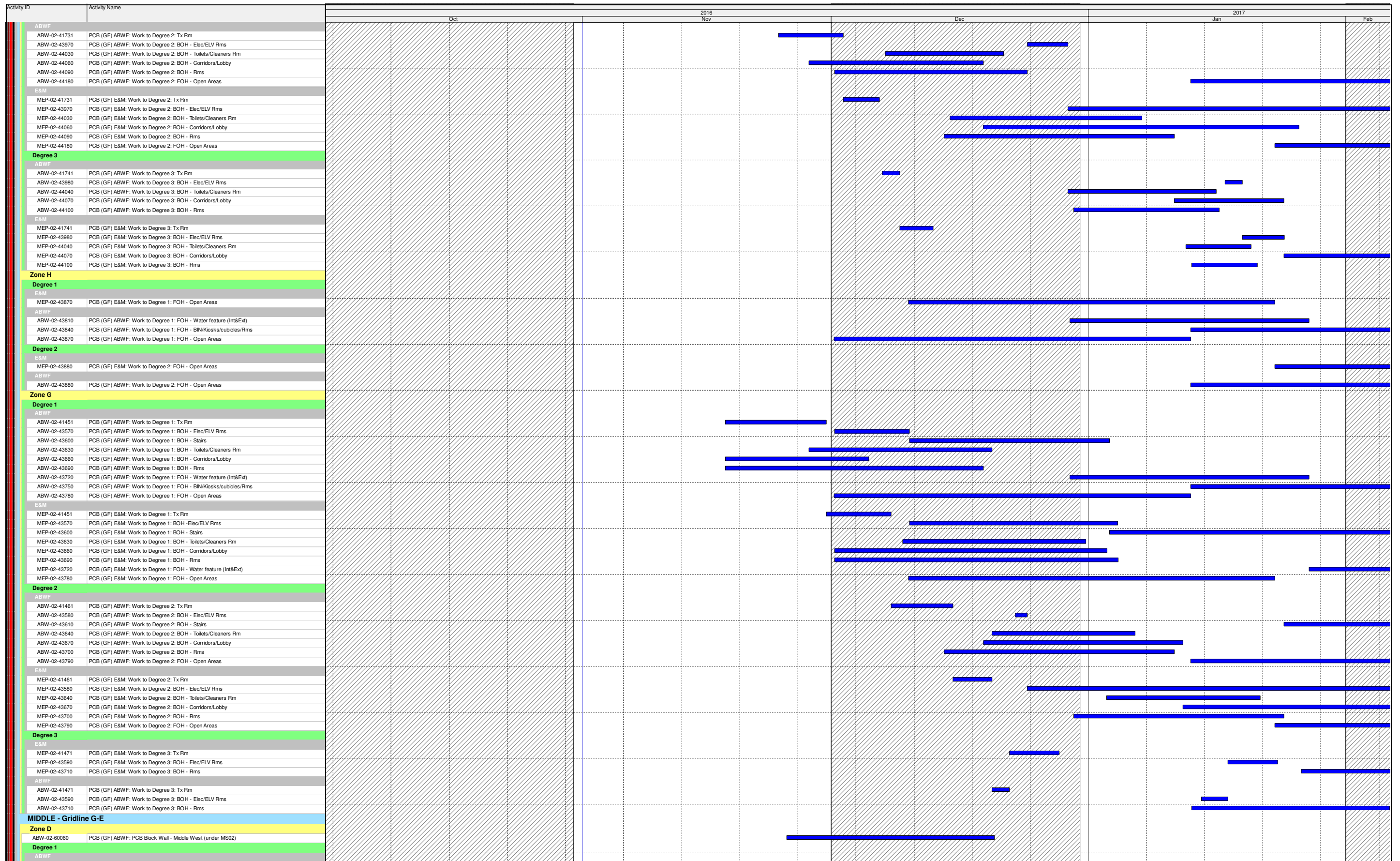


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		

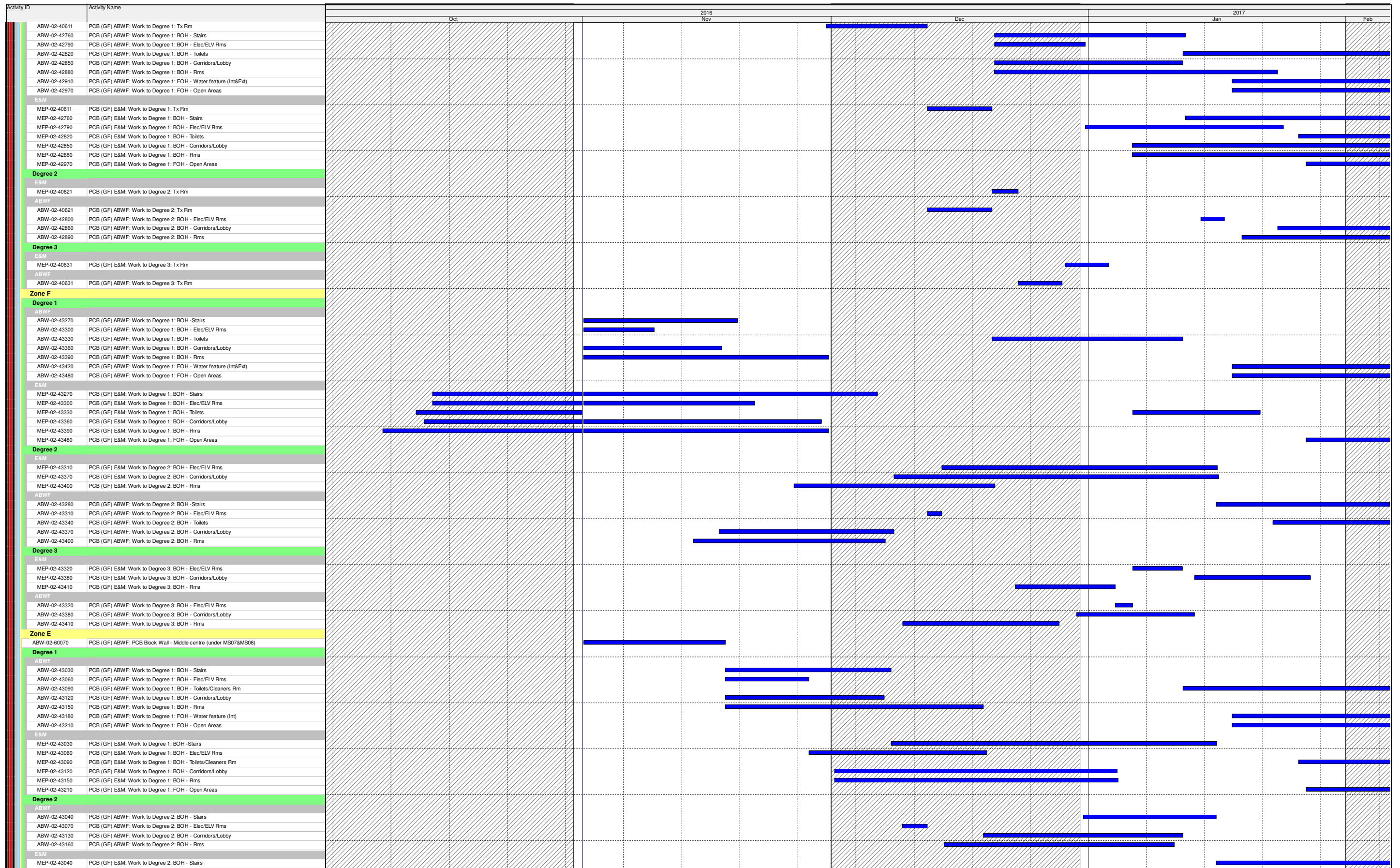


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

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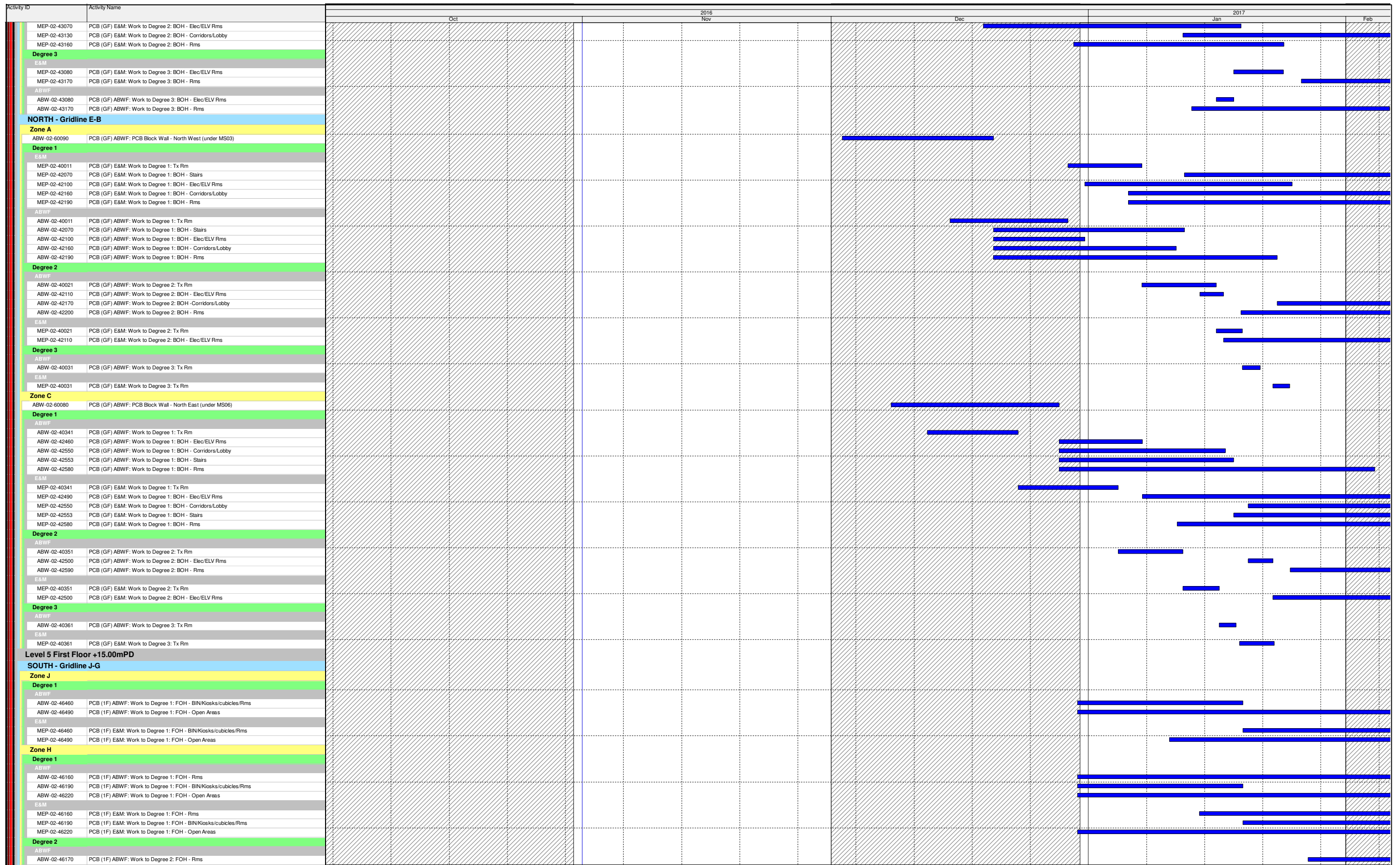


- Actual Work
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- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

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	Three Month Rolling Programme		

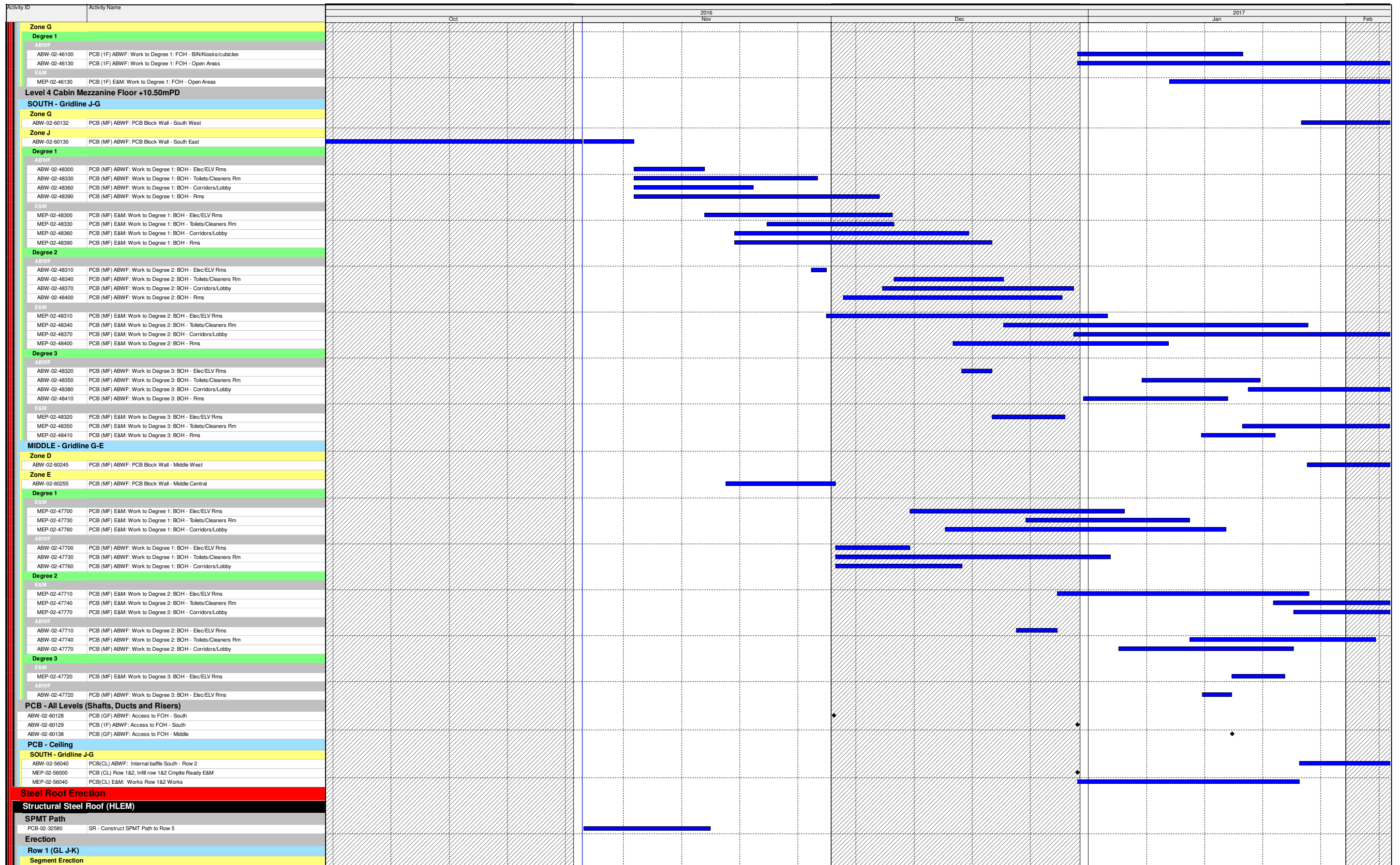


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		

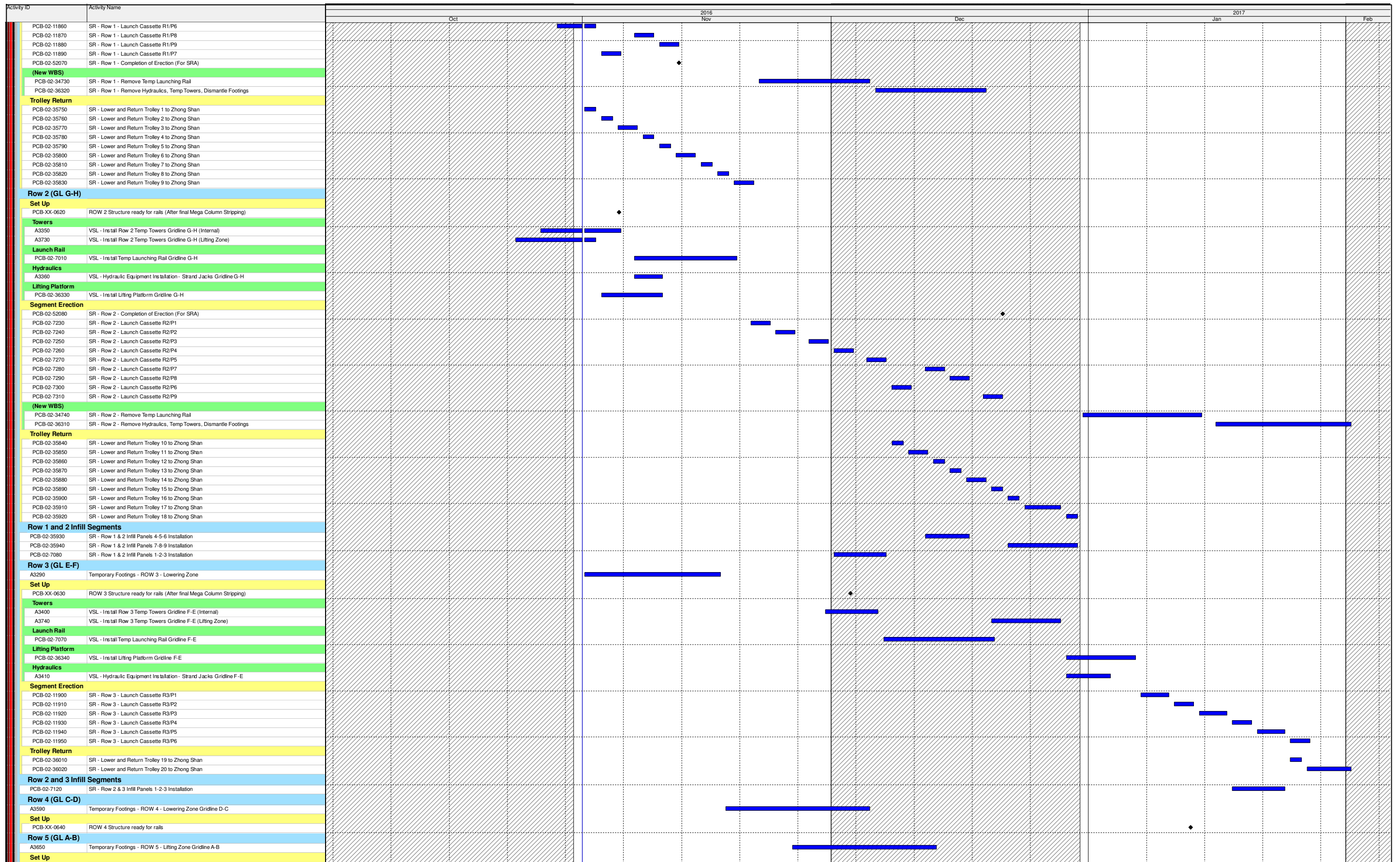


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
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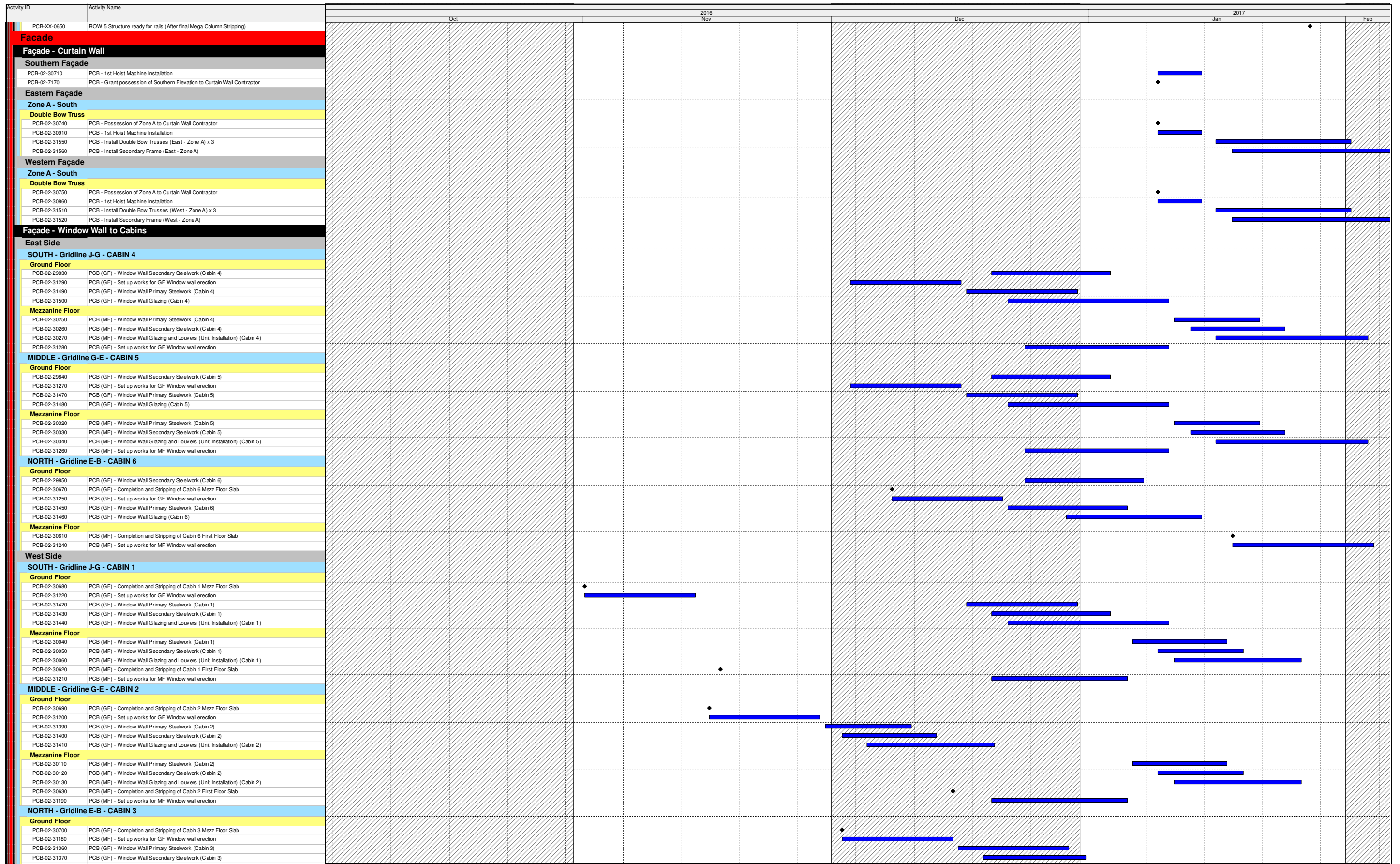


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
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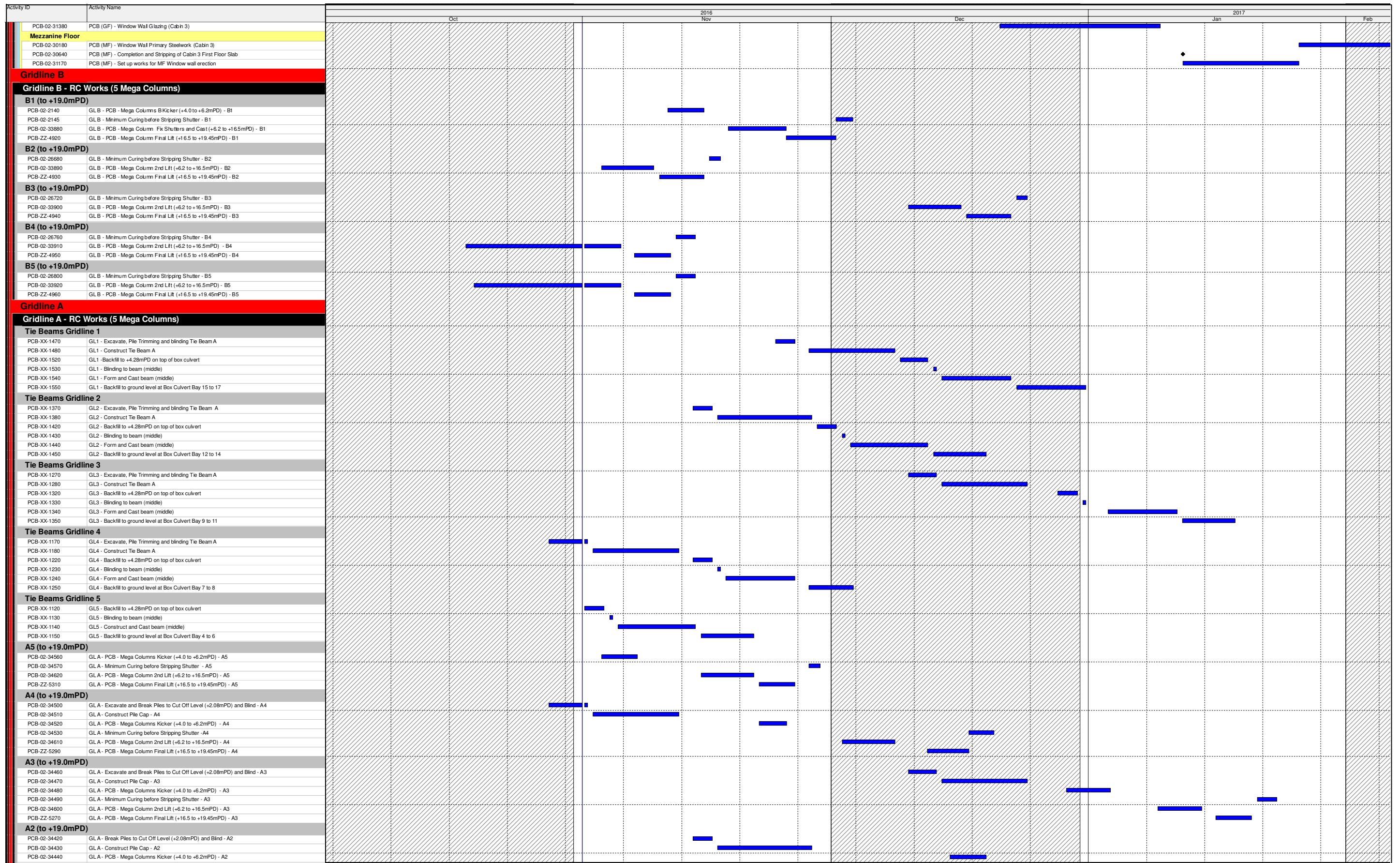


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

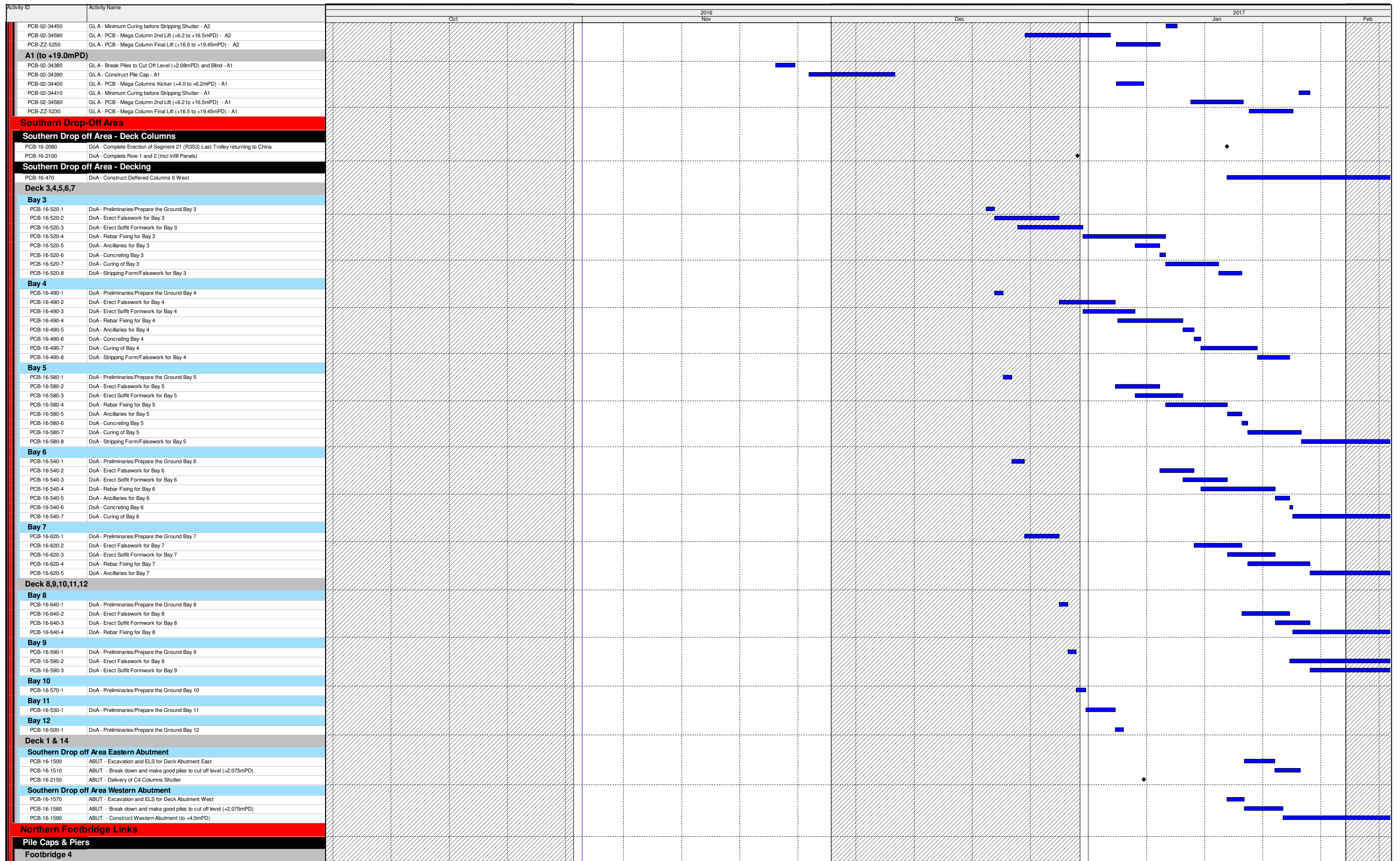
Date	Revision	Checked	Approved
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Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

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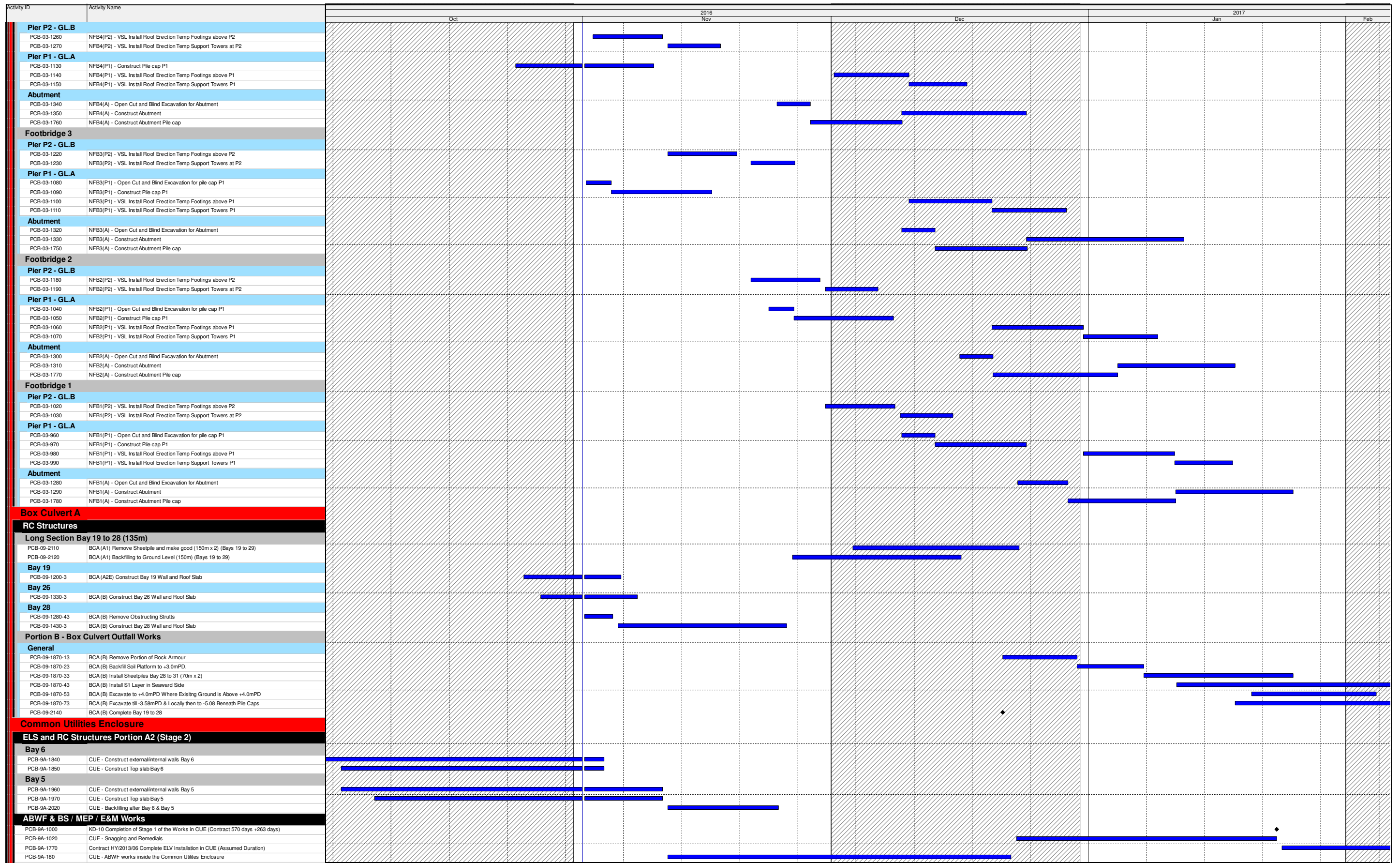


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
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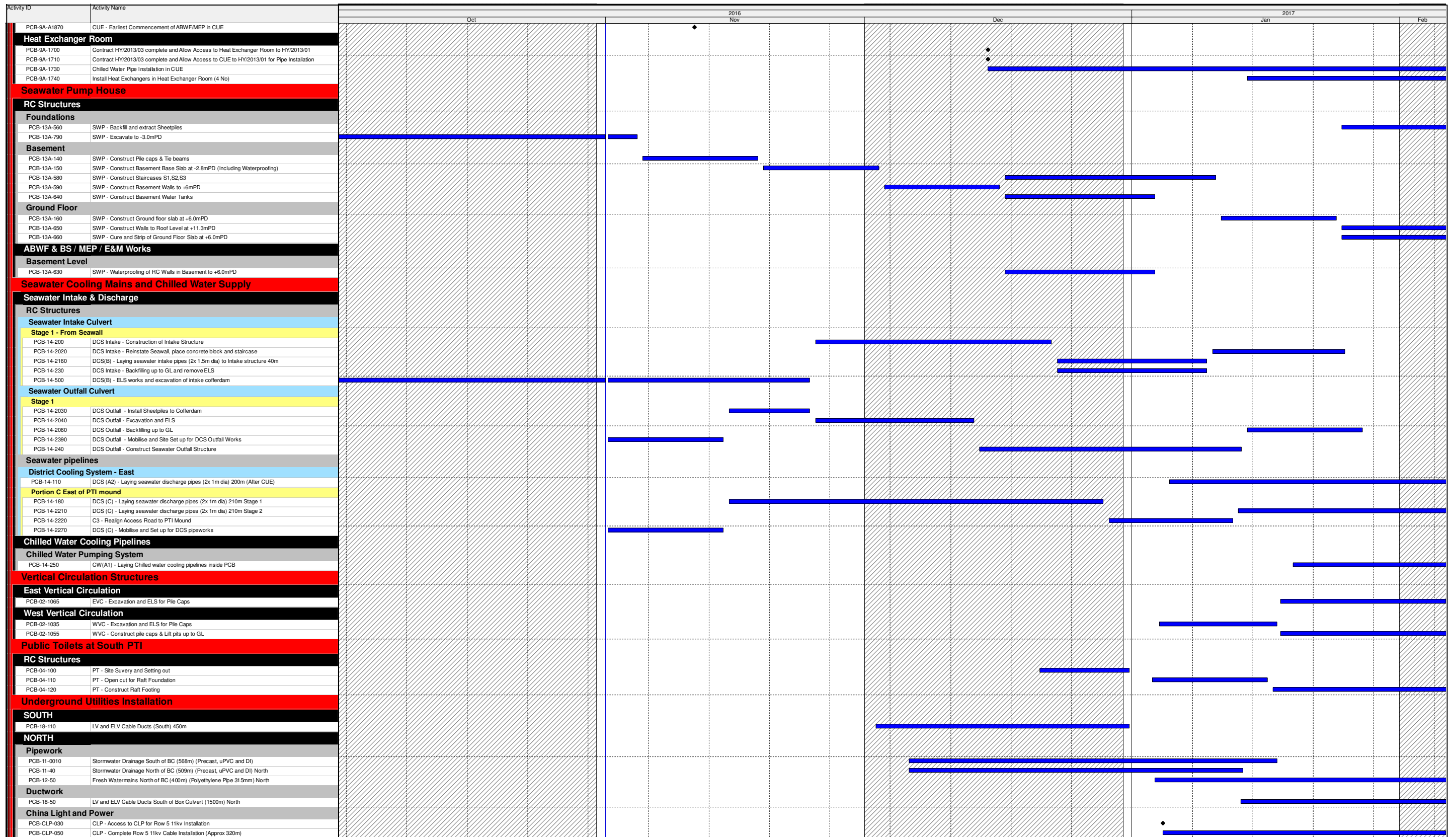


- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		



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

Three Month Rolling Programme

HKMZB HKBCF - Passenger Clearance Building

Date	Revision	Checked	Approved
	Three Month Rolling Programme		



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.

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 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively)	√
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; 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 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively)	√ √ √ √ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.2	A2	<ul style="list-style-type: none"> 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 µgm ⁻³ and 260 µgm ⁻³ , respectively)	<p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p>
S5.5.6.4	A3	The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	To control the dust impact	√
S5.5.6.5	A4	Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the contractor's attention to the relevant latest Practice Notes issued by EPD.	Control construction dust	Engineer	All construction sites	Design Stage	Air Pollution Control (Construction Dust) Regulation	√

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S5.5.6.5	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) 	√ (The dust monitoring works under EM&A programme for the Contract are covered by Contract No. HY/2010/02 and Contract No. HY/2011/03.)
S5.5.7.1	A6	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:</p> <ul style="list-style-type: none"> Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP; Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; The materials which may generate airborne dusty emissions should be wetted by water spray system; All receiving hoppers should be enclosed on three sides up to 3m above unloading point; All conveyor transfer points should be totally enclosed; All access and route roads within the premises should be paved and wetted; and Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body. 	Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	<ul style="list-style-type: none"> Air Pollution Control (Construction Dust) Regulation To control the dust impact to within the HKAQO and TM-EIA criteria (Ref. 1- hr and 24hr TSP levels are 500 $\mu\text{g}\text{m}^{-3}$ and 260 $\mu\text{g}\text{m}^{-3}$, respectively) 	N/A
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> All road surface within the barging facilities will be paved; Dust enclosures will be provided for the loading ramp; Vehicles will be required to pass through designated wheels wash facilities; and Continuous water spray at the loading points. 	Control construction dust	Contractor	All construction sites	Construction stage	Air Pollution Control (Construction Dust) Regulation	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Construction Noise (Air borne)								
S6.4.10	N1	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	 √ √ √ √ √ √
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
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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.	Reduce the noise levels of plant items	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance & its TM Annex 5, TM-EIA 	√
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	<ul style="list-style-type: none"> Noise Control Ordinance Annex 5, TM-EIA 	√
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 	√ (The noise monitoring works under EM&A programme for the Contract are covered by Contract No. HY/2010/02.)
Sediment								
S7.3	S1	1) The requirements as recommended in ETWB TC 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.	Develop sediment disposal arrangement	Engineer	All construction sites	Design stage	<ul style="list-style-type: none"> Waste Disposal Ordinance ETW B TC 34/2002 	N/A
Waste Management (Construction Waste)								
S8.3.8	WM1	<u>Construction and Demolition Material</u> The following mitigation measures should be implemented in handling the waste: <ul style="list-style-type: none"> Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; Carry out on-site sorting; Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and 	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 	√ √ √ √

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
S8.3.8	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"> 	<p>√</p> <p>√</p>
S8.3.9- S8.3.11	WM2	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage. 	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	<ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TC 19/2005 	<p>√</p> <p>√</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>√</p> <p>√</p> <p>√</p>

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

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Water Quality (Construction Phase)								
S.9.11.1.7	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	√
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	√ √ √ √ √ √ √ √ √ √ √ √ √

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
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	<p>√</p> <p>√</p>
S.9.11.1.7	W2	<p><u>Land Works</u></p> <p>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; 	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	<p>√</p>
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) on site should be covered with tarpaulin or similar fabric during rainstorms; manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; 	To control construction water quality	Contractor	Land-based works areas	Construction stage	TM-EIAO	<p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p> <p>√</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
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	<ul style="list-style-type: none"> √ √ √ √ √ √ √ √
S.9.14	W3	<ul style="list-style-type: none"> Implement a water quality monitoring programme. 	To control water quality	Contractor of Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works	Selected representative water quality monitoring station	Construction stage	<ul style="list-style-type: none"> TM-EIAO Water Pollution Control Ordinance 	(The water quality monitoring works under EM&A programme for the Contract are covered by Contract No. HY/2010/02.)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to implement the measures?	What requirements or standards for the measures to achieve?	Implementation Status
Ecology (Construction Phase)								
S10.7	E1	<ul style="list-style-type: none"> Install silt curtain 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	<ul style="list-style-type: none"> √ √ √ √ √ √
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	<ul style="list-style-type: none"> √
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	<ul style="list-style-type: none"> √
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	<ul style="list-style-type: none"> √ √
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	<ul style="list-style-type: none"> √ √ √
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	<ul style="list-style-type: none"> √ √ √
S10.7	E7	<ul style="list-style-type: none"> Vessel based dolphin monitoring 	Minimise marine traffic disturbance on dolphins	Contractor of Contract No. HY/2010/02 Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works	Northeast and Northwest Lantau	During construction	TM-Water	(The vessel based dolphin monitoring works under EM&A programme for the Contract are covered by Contract No. HY/2010/02.)
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		<ul style="list-style-type: none"> √ √ √ √ √
S11.7	F2	<ul style="list-style-type: none"> Install silt-grease trap in the drainage system collecting surface runoff 	Minimise impacts on marine water quality impacts	Marine Department	Reclamation area	During operation		<ul style="list-style-type: none"> √

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
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	<p>General design measures include:</p> <ul style="list-style-type: none"> Roadside planting and planting along the edge of the HKBCF Island is proposed; Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; Protection measures for the trees to be retained during construction activities; Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; Providing planting area around peripheral of HKBCF for tree planting screening effect; Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline; 	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 coastline. 	Minimise visual & landscape impact	Contractor	HKBCF	Construction stage		N/A
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. V2.Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction. 						√ N/A
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 	<p>√</p> <p>√</p> <p>√</p>

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



APPENDIX F

Site Audit Findings and Corrective Actions

Appendix F – Site Audit Findings and Corrective Actions

1.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. During the reporting period, thirteen site inspections were carried out on 5, 12, 19 and 26 October, 2, 9, 15, 23 and 30 November and 7, 14, 21 and 28 December 2016.

1.1.2 Particular observations during the site inspections are described in the table below.

Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
28 September 2016	1. Chemical containers were not placed inside a drip tray.	1. The chemical containers were removed.	12 October 2016
	2. No chemical labels were provided for chemical containers.	2. The chemical containers were placed inside a tray and chemical labels were provided for the chemical containers.	
5 October 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
12 October 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
19 October 2016	1. Rubbish was found inside a sump pit at WA1.	1. The rubbish was removed from the sump pit at WA1.	26 October 2016
26 October 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
2 November 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
9 November 2016	1. Noise label was not provided for an air compressor near district cooling system intake at WA1.	1. The air compressor was removed of site at WA1.	15 November 2016
	2. Chemical containers were not placed inside drip tray near district cooling system intake at WA1.	2. The chemical containers were removed at WA1.	
15 November 2016	1. Stockpiles were not covered by impervious sheeting.	1. The stockpiles of sand were removed.	23 November 2016



Date of Audit	Observations	Actions Taken by Contractor / Recommendation	Date of Observations Closed
	2. Chemical containers were not placed inside drip tray	2. The chemical containers were removed.	
23 November 2016	1. Chemical labels were not provided for chemical drums near western side of PCB building of WA1.	1. Chemical labels were provided for the chemical drums near western side of PCB building of WA1.	30 November 2016
	2. An air compressor and a chemical container were not placed inside drip tray near western side of PCB building of WA1.	2. The air compressor and the chemical containers were removed near western side of PCB building of WA1.	
30 November 2016	No particular environmental issue was recorded during the site inspection.	NIL	NIL
7 December 2016	1. No drip tray and proper chemical label were provided for a chemical container near the northern footbridge area.	1. The chemical container near the northern footbridge area was removed.	14 December 2016
14 December 2016	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
21 December 2016	No particular environmental issue was recorded during the site inspection.	Nil.	Nil.
28 December 2016	1. No drip tray was provided for a chemical container near rebar bending yard.	1. The Contractor was reminded to provide a drip tray for the chemical container near rebar bending yard.	Follow-up actions undertaken by the Contractor will be inspected during the site inspection to be undertaken in January 2017.



APPENDIX G

Waste Flow Table

Monthly Summary Waste Flow Table for 2016



Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	a.Total Quantity Generated (see Note 8)	b. Hard Rock and Large Broken Concrete (see Note 9)	c. Reused in the Contract	d. Reused in Other Projects (see Note 11)	e. Disposed as Public Fill (see Note 10)	f. Imported Fill	g. Metals (see Note 5)	h. Paper / Cardboard Packaging (see Note 5)	i. Plastics (see Note 3) (see Note 5)	j. Chemical Waste	k. Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
January	3.209	0.233	0.000	2.079	1.130	0.000	145.240	0.935	0.000	1.200	0.123
February	1.526	0.025	0.000	0.000	1.526	0.000	74.800	0.000	0.000	0.000	0.125
March	3.698	0.364	0.000	0.099	3.599	0.036	100.720	1.908	0.000	0.000	0.170
April	3.300	0.605	0.000	0.198	3.102	0.000	102.030	0.000	0.000	0.000	0.169
May	1.016	0.264	0.000	0.000	1.016	0.000	88.010	1.062	0.000	2.600	0.278
June	0.903	0.038	0.000	0.000	0.903	5.382	139.740	1.197	0.000	0.000	0.262
Sub-total	13.652	1.529	0.000	2.376	11.276	5.418	650.540	5.102	0.000	3.800	1.127
July	1.863	0.220	0.000	1.238	0.625	21.896	16.520	0.000	0.000	0.600	0.445
August	4.056	0.000	4.056	0.000	0.000	9.290	15.930	1.344	0.000	0.000	0.390
September	0.806	0.000	0.806	0.000	0.000	2.591	30.360	1.290	0.000	0.000	0.469
October	1.629	0.075	1.554	0.000	0.075	4.851	28.220	0.000	0.000	0.000	0.472
November	0.898	0.023	0.875	0.000	0.023	0.000	38.370	1.838	0.000	0.000	0.745
December	0.982	0.107	0.875	0.000	0.107	0.000	53.770	0.000	0.000	0.000	0.770
Total	23.886	1.954	8.166	3.614	12.106	44.046	833.710	9.574	0.000	4.400	4.418

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

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

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

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

- Notes:
- (1) The performance target are given in PS Clause 6(14)
 - (2) The waste flow table shall also include C&D materials that are not specified in the Contract to be imported for use at the Site.
 - (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 - (4) The Contractor shall also submit the latest forecast of the amount of C&D materials expected to be generated from the Works, together with a break down of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m³.
 - (5) All recyclable materials, including metals, paper / cardboard packaging, plastics, etc. will be collected by registered collector for recycling.
 - (6) Conversion factors for reporting purpose:
 - in-situ: rock = 2.5 tonnes/m³; soil = 2.0 tonnes/m³
 - excavated: rock = 2.0 tonnes/m³; soil = 1.8 tonnes/m³; broken concrete and bitumen = 2.4 tonnes/m³
 - C&D Waste = 0.9 tonnes/m³; bentonite slurry = 2.8 tonnes/m³
 - Diesel density: 0.8kg/l
 - (7) Numbers are rounded off to the nearest three decimal places.
 - (8) The "Total Quantity Generated" equals to the sum of "Reuse in the Contract", "Reuse in Other Projects" and "Disposed as Public Fill".
 - (9) The "Hard Rock and Large Broken Concrete" were disposed as public fill.
 - (10) The amount in "Disposed as Public Fill" included the "Hard Rock and Large Broken Concrete" disposed as public fill.
 - (11) The item d "Reused in Other Projects" includes sand only. Other projects refer to Contracts No. HY/2010/02 and HY/2014/05. Inert C&D Materials were transferred to Contract No. HY/2010/02 in January 2016 and to Contract No. HY/2014/05 in March and April 2016.

Monthly Summary of Excavated Marine Sediment for 2016

Month	a. Estimated Volume of Excavated Marine Sediment Generated (m³)	b. Estimated Volume of Accumulated Excavated Marine Sediment Treated (m³)	c. Reused in the Contract (m³)	d. Estimated Volume of Excavated Marine Sediment Reused in Other Project (m³)⁽²⁾	e. Estimated Volume of Treated Excavated Marine Sediment Stored on Site (Unused) (m³)
Year 2016					
Jan 2016	511	400	0	0	2155
Feb 2016	693	275	0	0	2430
Mar 2016	672	1,363	1215	0	2578
Apr 2016	259	756	700	0	2634
May 2016	287	402	0	0	3036
Jun 2016	240	336	2836	0	536
Jul 2016	331	464	1000	0	0
Aug 2016	0	0	0	0	0
Sep 2016	0	0	0	0	0
Oct 2016	0	0	0	0	0
Nov 2016	0	0	0	0	0
Dec 2016	0	0	0	0	0
Total	2,993	3,996	5,751	0	0⁽¹⁾

Notes: (1) This presents the total quantity of unused treated excavated marine sediment stored on site during the reporting month. This figure includes 1,755 m³ of treated excavated marine sediment from 2015.



APPENDIX H

Environmental Licenses and Permits

Environmental License/ Permits /Notification Register

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

Date : December 2016									
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
1.	All Areas	29 Jul 2013	N/A	Environmental Permit for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities	EP-353/2009/G	6 Aug 2013	N/A	EPD	Superseded by EP-353/2009/H
2.	All Areas	16 Jan 2015	N/A	Environmental Permit for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities	EP-353/2009/H	19 Jan 2015	N/A	EPD	Superseded by EP-353/2009/I
3.	All Areas	30 Jun 2015	N/A	Environmental Permit for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities	EP-353/2009/I	17 Jul 2015	N/A	EPD	Superseded by EP-353/2009/J
4.	All Areas	18 Feb 2016	N/A	Environmental Permit for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities	EP-353/2009/J	25 Feb 2016	N/A	EPD	Superseded by EP-353/2009/K
5.	All Areas	24 Mar 2016	N/A	Environmental Permit for Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities	EP-353/2009/K	11 Apr 2016	N/A	EPD	
6.	All Areas	29 Apr 2014	H2620-LTR-EPD-AU-000006	Billing Account for disposal of construction waste	Billing Account No.: 7019944	16 May 2014	N/A	EPD	

Environmental License/ Permits /Notification Register

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

Date : December 2016									
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
7.	PCB	30 Apr 2014	H2620-LTR- EPD-000002	Notification that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373961	5 May 2014	N/A	EPD	
8.	WA2	30 Apr 2014	H2620-LTR- EPD-000003	Notification that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373956	5 May 2014	N/A	EPD	
9.	WA3	30 Apr 2014	H2620-LTR-EPD-AU-000001	Notification that notifiable works are anticipated to commence (Form NA).	Acknowledge Receipt Ref. No. 373962	5 May 2014	N/A	EPD	
10.	PCB	30 May 2014	H2620-LTR-EPD-AU-000020	Registration as Chemical Waste Producer for disposal of spent batteries, used lubrication oil and surplus paint at PCB area	WPN: 5213-951-L2846-01	8 Jul 2014	N/A	EPD	
11.	PCB	23 Jun 2014	In H2620-LTR-EPD-000017	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0683-14	3 Jul 2014	29 Dec 2014	EPD	Superseded by GW-RS0908-14

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

Date : December 2016									
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
12.	WA2	2 Jul 2014	H2620-LTR-LCJ-AU-000280	CNP for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS0715-14	17 Jul 2014	15 Jan 2015	EPD	Superseded by GW-RS1034-14
13.	WA3	2 Jul 2014	H2620-LTR-LCJ-AU-000324	CNP for the use of powered mechanical equipment for the purpose of carry out construction of JV site office from 19:00 to 23:00. (Non-designated)	GW-RS0716-14	17 Jul 2014	15 Jan 2015	EPD	Expired
14.	PCB	23 Jun 2014	H2620-LTR- EPD-000527	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0908-14	3 Sep 2014	22 Dec 2014	EPD	Superseded by GW-RS1044-14
15.	PCB	29 Sep 2014	H2620-LTR-EPD-AU-000034	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1044-14	29 Sep 2014	24 Dec 2014	EPD	Superseded by GW-RS1300-14

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

Date : December 2016								Remark	
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date		Issuing Office
	Work Area	Date	Reference						
16.	WA2	12 Sep 2014	H2620-LTR-EPD-AU-000032	CNP for the use of powered mechanical equipment for the purpose of carry out ER Office construction works from 19:00 to 23:00. (Non-designated area)	GW-RS1034-14	29 Sep 2014	28 Mar 2015	EPD	Expired
17.	WA4	17 Oct 2014	H2620-LTR-EPD-AU-000036	CNP for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0814-14	20 Oct 2014	19 Apr 2015	EPD	Expired and replaced by GW-RW0171-15
18.	PCB	3 Nov 2014	H2620-LTR-EPD-AU-000040	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1300-14	17 Nov 2014	16 Feb 2015	EPD	Superseded by GW-RS0087-15
19.	PCB	12 Jan 2015	H2620-LTR-EPD-AU-000046	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0087-15	26 Jan 2015	25 Apr 2015	EPD	Superseded by GW-RS0308-15

Environmental License/ Permits /Notification Register

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

Date : December 2016								Remark	
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date		Issuing Office
	Work Area	Date	Reference						
20.	PCB	12 Mar 2015	H2620-LTR-EPD-AU-000051	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0308-15	26 Mar 2015	25 Jun 2015	EPD	Superseded by GW-RS0476-15
21.	PCB	31 Jul 2014	H2620-LTR-EPD-AU-000038	Water Discharge License for construction works on PCB island	WT00020335-2014	13 Nov 2014	30 Nov 2019	EPD	
22.	WA4	27 Mar 2015	H2620-LTR-EPD-AU-000054	CNP for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0171-15	20 Apr 2015	19 Oct 2015	EPD	Superseded by GW-RW0351-15
23.	PCB	15 Apr 2015	H2620-LTR-EPD-AU-000057	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0476-15	1 May 2015	31 Jul 2015	EPD	Superseded by GW-RS0685-15

Environmental License/ Permits /Notification Register

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

Date : December 2016								Remark	
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date		Issuing Office
	Work Area	Date	Reference						
24.	PCB	9 Jun 2015	H2620-LTR-EPD-AU-000063	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0685-15	1 Jul 2015	30 Sep 2015	EPD	Superseded by GW-RS0877-15
25.	WA4	29 Jun 2015	H2620-LTR-EPD-AU-000066	CNP for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0351-15	17 Jul 2015	12 Jan 2016	EPD	Expired. Replaced by GW-RW0003-16
26.	PCB	27 Jul 2015	H2620-LTR-EPD-AU-000069	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0877-15	10 Aug 2015	09 Nov 2015	EPD	Superseded by GW-RS1016-15
27.	PCB	2 Sep 2015	H2620-LTR-EPD-AU-000072	CNP for the use of powered mechanical equipment for the purpose of carry out pre-drill and bore piling works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1016-15	18 Sep 2015	17 Dec 2015	EPD	Superseded by GW-RS1195-15

Environmental License/ Permits /Notification Register

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

Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date	Issuing Office	Remark
	Work Area	Date	Reference						
28.	PCB	22 Oct 2015	H2620-LTR-EPD-AU-000075	CNP for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1195-15	9 Nov 2015	8 Feb 2016	EPD	Superseded by GW-RS1444-15
29.	PCB	17 Dec 2015	H2620-LTR-EPD-AU-000076	CNP for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1444-15	31 Dec 2015	30 Mar 2016	EPD	Superseded by GW-RS0191-16
30.	WA4	24 Dec 2015	H2620-LTR-EPD-AU-000080	CNP for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0003-16	13 Jan 2016	6 Jul 2016	EPD	Superseded by GW-RW0394-16
31.	PCB	17 Feb 2016	H2620-LTR-EPD-AU-000083	CNP for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0191-16	3 Mar 2016	2 Jun 2016	EPD	Superseded by GW-RS0543-16

Environmental License/ Permits /Notification Register

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

Date : December 2016								Remark	
Item No.	Permit/License or Registration Application			Permit/License/ Notification/ Registration Description	Permit/License/ Registration Number	Issue/Start Date	Expiry Date		Issuing Office
	Work Area	Date	Reference						
32.	PCB	18 May 2016	H2620-LTR-EPD-AU-000086	CNP for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0543-16	2 Jun 2016	1 Sep 2016	EPD	Superseded by GW-RS0879-16
33.	WA4	20 Jun 2016	H2620-LTR-EPD-AU-000089	CNP for the use of powered mechanical equipment from 19:00 to 23:00. (Non-designated area)	GW-RW0394-16	07 Jul 2016	06 Jan 2017	EPD	
34.	PCB	09 Aug 2016	H2620-LTR-EPD-AU-000092	CNP for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS0879-16	23 Aug 2016	22 Dec 2016	EPD	Superseded by GW-RS1193-16
35.	PCB	16 Nov 2016	H2620-LTR-EPD-AU-000094	CNP for the use of powered mechanical equipment for the purpose of carry out works from 19:00 to 23:00 and 23:00 to 07:00. (Non-designated area)	GW-RS1193-16	30 Nov 2016	29 May 2017	EPD	-



APPENDIX I

Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions



Complaint Register

Complaint No.	Complaint Received Date	Category	Complaint Details	Follow up Action /Recommendation	Status
003	07 November 2016	Water Quality	According to ENPO's email to the Environmental Team, Engineer's Representative and Contractor on 10 November 2016, it is noted that EPD received a complaint lodged by a member of the public regarding sediment plume generated by a vessel named "長盛 308" during the vessel travelling from construction site of Hong Kong-Zhuhai-Macao Bridge near Scenic Hill to Tung Chung New Development Ferry Pier.	The Contractor confirmed that they do not have any derrick barge working for the Contract No. HY/2013/01 and no works were conducted near the Tung Chung New Development Ferry Pier. No immediate mitigation measures are required as the complaint is not related to Contract No. HY/2013/01. However, the Contractor was also reminded to implement environmental mitigation measures in accordance with Environmental Mitigation Implementation Schedule (EMIS).	Closed.
004	05 December 2016	Dust	According to ENPO's email to the Environmental Team, Engineer's Representative and Contractor on 5 December 2016, it is noted that EPD received a complaint lodged by a member of the public regarding the construction dust inside the basement of Passenger Clearance Building. The complaint content as extracted below: • "投訴禮頓俊和联形盈公司, 港珠澳大橋人工島旅檢大樓地窖; 港珠澳大橋人工島旅檢地盤, 地窖, 有很多微粒飄浮物, 粉塵, 大判未有提供口罩, 又沒有切實方法防止飛塵, 工人健康受害。(現在有間牆, 噴漆, 打磨牆面進行)"	Based on the investigation results, it is suspected that potential dust emissions may be generated from the cutting and grinding activities. According to the information provided by the Contractor and the joint site investigation with RSS on 7 December 2016, the following mitigation measures were found implemented properly to mitigate the dust emissions: • The main contractor had deployed a team to clean the entire basement area thoroughly, and provided water hose for dust suppression at some hotspots in order to enhance dust suppression during drilling, cutting works. • The main contractor also conducted specific toolbox talk training on 7 December 2016 to enhance the workers' awareness of using proper PPE, and good practice of drilling to minimize dust emission.	Closed



Complaint No.	Complaint Received Date	Category	Complaint Details	Follow up Action /Recommendation	Status
				<ul style="list-style-type: none">• For dust removal during cutting and grinding, the contractor had already been ordered (i.e. dust collector and vacuum cleaner). The main contractor will following the supplier to provide the cleaner as soon as possible.• Before the implementation of the above measures, water spraying will be applied during cutting and grinding as effective dust suppression measures.• Dust collector was being used to collect dust from drilling works, the dust was subsequently properly collected in the drum and disposed of.• Stockpiles of pre-bagged plaster powder was being covered by tarpaulin, mixing of plaster powder was being done in enclosed area in the basement to prevent the production of fugitive dust during mixing process.• The main contractor briefed the workers to use respirator at work when carry on grinding, cutting and drilling. The LCWJV supervisors and foremen also distributed new N95 respirator to the workers after the pre-work briefing on 7 December 2016. Sufficient stock of mask was in place (NIOSH approved 3M N95 respirator) <p>During the weekly site inspection conducted by the ET, ER and Contractor on 7 December 2016, the worker is wearing the respirator and eye protector during drilling activities at the basement area. The dust container was adhered with the hand electric drill during the</p>	



Complaint No.	Complaint Received Date	Category	Complaint Details	Follow up Action /Recommendation	Status
				<p>drilling activities to minimize the dust emission. The Contractor implemented the dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation.</p> <p>The Contractor was reminded to implement all necessary mitigation as specified in EIA, EM&A Manual, EMP, Method Statements, General and Particular Specifications of this Project.</p> <p>The Contractor was also reminded to provide the dust collector to collect dust during the drilling work in the basement area, provide the buckets of water for the dust disposal from dust collector and ensure the mixing process of plaster power are carried out in enclosed area. Additionally, the Contractor was suggested to keep watering record for checking at all time.</p>	
005	14 December 2016	Noise	<p>According to ENPO's email to ET, Engineer's Representative and Contractor on 14 December 2016, it was noted that EPD had received a complaint regarding a noise complaint from a member of public. The complainant said that he/she was disturbed by hammering noise generated from construction sites in mid-night over the past month. He/She suspected that the noise was generated from HZMB Project. Based on further email from ENPO on 20 December 2016, it is noted that the</p>	<p>According to the information provided by the Contractor, the following activities were carried out at construction site after 11 p.m. in November 2016 and December 2016:</p> <p>From 23:00 hrs to 07:00 hrs on next day</p> <ul style="list-style-type: none"> • Concreting works in PCB building (more than 2.5 km from Seaview Crescent) • No hammering activities were involved <p>The Contractor has Construction Noise Permit No. GW-RS1193-16 to undertake construction works</p>	Closed



Complaint No.	Complaint Received Date	Category	Complaint Details	Follow up Action /Recommendation	Status
			complainant lives in Seaview Crescent (海堤灣畔). He sometimes hears noise created by impacting metals or metal/ground, particularly in December 2016.	during restricted hours. Based on the investigation results, it was found that the noise nuisance is not related to Contract No. HY/2013/01. No follow-up action is required.	

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting period	3	0	0
From commencement date of contract to end of reporting period	5	0	0