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Wan Chai, Hong Kong

Attn:
Mr. Raymond Dai – Independent Environmental Checker

**Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge (HZMB)
Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II
(Southern Portion)**

Our Reference
JFP/GC/bw/T355861/02/
02/L068

Quarterly EM&A Report for October 2016 to December 2016

20/F AIA Kowloon Tower
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100 How Ming Street
Kwun Tong
Kowloon
Hong Kong

15 March 2017

By Email

Dear Sir,

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mottmac.hk

In accordance with Section 16.4 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities (Version 1.0) covering the captioned contract, we are pleased to submit the certified Quarterly EM&A Report for October 2016 to December 2016 for your verification.

Yours faithfully
For MOTT MACDONALD HONG KONG LIMITED



Gary Chow
Environmental Team Leader

Encl.

cc.
AECOM – Mr. Alfred Cheng (By Email)
China State Construction Engineering (Hong Kong) Ltd. – Mr. Xavier Lam (By Email)

15 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. Alfred Cheng

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/2013/04 – HZMB HKBCF – Infrastructure Works Stage II
(Southern Portion)
Quarterly EM&A Report for October 2016 to December 2016**

Reference is made to the Environmental Team's submission of the Quarterly Environmental Monitoring & Audit Report for October 2016 to December 2016 certified by the ET Leader (ET's ref.: "JFP/GC/bw/T355861/02/02/L068" dated 15 March 2017) and provided to us via e-mail on 15 March 2017.

We are pleased to inform you that we have no adverse comment on the captioned Quarterly EM&A 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	Mr. Horace Hong	(By Fax: 3188 6614)
	MMHK	Mr. Gary Chow	(By Fax: 2827 1823)
	CSCE	Mr. Eddie Tang	(By Fax: 2459 4336)

Internal: DY, YH, ENPO Site

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Contract No. HY/2013/04 HZMB HKBCF –
Infrastructure Works Stage II (Southern Portion)

Quarterly EM&A Report for October 2016 to
December 2016

February 2017

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Executive summary

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as “the Contractor”) and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of the “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities” (HZMB HKBCF) Project which is a “Designated Project” under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015.

Mott MacDonald Hong Kong 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 for the Contract. This is the 6th Quarterly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 October 2016 to 31 December 2016 (the “reporting period”).

Environmental Monitoring and Audit Progress

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

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

- 4, 11, 18 and 24 October, 1, 8, 15, 21 and 29 November and 6, 13, 19 and 28 December 2016

Breaches of Action and Limit Levels

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

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

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

Complaint Log

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

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
003	ENPO-C0102	10 November 2016	Water Quality
004	ENPO-C0107	14 December 2016	Noise

After investigation, it was concluded that the complaints were not related to Contract No. HY/2013/04.

Notifications of Summons and Successful Prosecutions

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

Reporting Changes

There was no reporting change during the reporting period.

1 Introduction

1.1 Basic Project Information

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (hereafter referred to as “the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as “the Contractor”) and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of the “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities” (HZMB HKBCF) Project which is a “Designated Project” under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015. The works areas of the contract are shown in **Appendix A**.

This is the 6th Quarterly EM&A Report summarising the findings of EM&A activities conducted under the Contract from 1 October 2016 to 31 December 2016 (the “reporting period”).

1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are 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	Alfred Cheng	3958 7471	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
	Environmental Site Supervisor	Ray Yan	5181 8165	3465 2899
Contractor (China State Construction Engineering (Hong Kong) Limited)	Site Agent	Eddie Tang	9863 7686	2459 4336
	Environmental Officer	Ricky Hon	9100 7509	2459 4336
Environmental Team (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Gary Chow	2828 5874	2827 1823
24-hour Complaint Hotline	-	-	5236 7111	-

1.3 Construction Programme

The Construction Works Programme of the Project is provided in **Appendix C**.

1.4 Construction Works undertaken during the Reporting Period

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

- Pre-drilling: 13 no. completed
- Bored Pile: 62 no. completed
- Driven H Pile: 99 no. completed
- Box Culvert: 3 bays started
- Pile Cap: 18 no. completed
- Pier Column: 21 no. completed
- Pier Head: 18 no. completed
- Segment Erection: 3 completed
- Segment Delivery: 69 no. completed (marine-based)
- Generation of excavated marine sediment and transport to HKBCF Contract No. HY/2013/03 for disposal.

2 EM&A Requirements

2.1 Summary of EM&A Requirements

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality and noise monitoring works for the Contract are covered by Contract No. HY/2010/02 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Reclamation Works” and Contract No. HY/2011/03 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between Scenic Hill and HKBCF”. The ET of the Contract or another ET of the HZMB project is required to conduct impact air quality monitoring at AMS6 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.

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 1** and **Figure 2**, respectively.

Table 2.1: Construction Dust and Noise Monitoring Locations

Environmental Monitoring	Identification No.	Location Description
Air Quality	AMS6 ⁽¹⁾	Dragonair/CNAC (Group) Building
	AMS7 ⁽¹⁾	Hong Kong SkyCity Marriot Hotel
Noise	NMS2 ⁽²⁾	Seaview Crescent
	NMS3B ^{(2) (3)}	Site Boundary of Site Office Area at Works Area WA2

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

(2) 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.

(3) The Action and Limit Levels for schools will be applied for this alternative monitoring location.

2.2 Monitoring Requirements

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

The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.2** and **Table 2.3** respectively.

Table 2.2: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragonair / SNAC (Group) Building (HKIA)	360	500
AMS7 – Hong Kong SkyCity Marriot Hotel	370	500

Table 2.3: Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS6 – Dragonair / SNAC (Group) Building (HKIA)	173	260
AMS7 – Hong Kong SkyCity Marriot Hotel	183	260

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

The Action and Limit Levels for construction noise are defined in **Table 2.4**.

Table 2.4: Action and Limit Level for Construction Noise

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

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

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

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

2.4 Event and Action Plans

The event and action plans for air quality and noise are provided in **Appendix D**.

2.5 Mitigation Measures

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

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.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in 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 station AMS7 by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

3.2 Noise Monitoring Results

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.

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

3.3 Implementation of Environmental Measures

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**.

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.

Implementation status of the Regular Marine Travel Route Plan (RMTRP) was checked by ET. Training of marine travel route for marine vessel operator was given to relevant staff and relevant records were kept properly. Marine traffic records which indicated the number of trips data for crane barge, flat top barge and tug boat on the implementation of RMTRP from October 2016 to December 2016 were checked by ET. There was no contract-related marine traffic during October 2016. Marine traffic records of November 2016 were provided by Contractor to ER, ETL and IEC/ENPO for checking within the month of December 2016. The checking of marine traffic records of December 2016 will be reported in the next Quarterly EM&A Report. The implementation of marine traffic follows the Regular Marine Travel Route Plan with respect to ET's checking on the marine traffic records for the reporting period.

3.4 Advice on the Solid and Liquid Waste Management Status

The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting. As a practical means, the disposal operation is managed by a single HKBCF contractor who is also responsible for

applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from this Contract.

There was no generation of excavated sediment for treatment during this reporting period. Any treatment of excavated marine sediment will be conducted using cement solidification / stabilization (Cement S/S) techniques and the treated sediment will be reused onsite for either backfilling or landscaping (e.g. berm material).

The summary of waste flow table is detailed in **Appendix G**.

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

3.4.1 Disposal of Marine Sediment Extracted from Bored Piling Works

3.4.1.1 Background

After the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal sites allocated to this Project are the Mud Pit CMP2 of the Confined Marine Sediment Disposal Facility to the South of The Brothers (or at the East of Sha Chau). As advised by CEDD in the memo dated 19 February 2016, from 00:00 on 22 March 2016 onward, the disposal space at CMP2 of the South of The Brothers is closed and all disposal of contaminated sediment is to be carried out at CMP Vd to the East of Sha Chau (ESC).

As Contract No. HY/2013/01 has commenced treatment of the extracted marine sediment, treatment will continue and the treated marine sediment will be re-used within the HKBCF Island. On the other hand, Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04 have not commenced the treatment of extracted marine sediment. Therefore the marine sediment extracted from these three Contracts will be disposed to the allocated disposal sites directly without treatment. As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from all three Contracts.

The SQR was further reviewed in mid-2016. EPD has no comment to extend the validity of the SQR to August 2017 under letter dated 18 August 2016.

Based on the actual piling operation, the estimated quantity of marine sediment to be extracted has been revised from 85,000 m³ to 126,000 m³ (bulk volume). EPD has no comments on the request as in the letter dated 20 October 2016. The Secretary of Marine Fill Committee, CEDD approved the increasing quantity in the memo dated 10 November 2016.

During the course of reviewing the SQR, it was noted that the contamination level of the marine sediment extracted from the inner part of the HKBCF Island was not identified during the previous sampling and testing. As requested by EPD, sampling and testing are required. The Sediment Sampling and Testing Proposal (SSTP) for the inner area of the HKBCF Island was approved by EPD on 2 June 2016.

As in the agreed SSTP for the inner area of the HKBCF Island, samples were taken from the seventeen batches of stockpiled marine sediments and from five boreholes each in one of the five sampling grids. After conducting chemical tests on samples, six batches of stockpiled samples under Contract No. HY/2013/03 and all eight batches of stockpiled samples under Contract No. HY/20013/04 are classified as Category L sediment. The Secretary of Marine Fill Committee of CEDD allocated disposal sites under memo dated 24 October 2016 and dated 22 November 2016 for disposal of a total of 9,500 m³ in-situ volume of Category L sediment (using a bulk factor of 1.3). The Category L sediment was disposed in December 2016.

One sample from the batch of stockpiled marine sediment under Contract No. HY/2013/03 and samples from all five sampling grids had contamination levels exceeding the Lower Chemical Exceedance Levels (LCEL) and biological screenings were carried out. All samples passed the biological screenings and are classified as Category Mp sediment and to be disposed off site using Type II confined marine disposal method the same method used for marine sediment extracted from other part of the HKBCF Island.

3.4.1.2 Dumping Arrangements

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

During dumping, each Contractor is responsible for transporting the marine sediment from his site area to the barge. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of each Contract. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit.

3.4.1.3 Reporting

Marine sediment extracted from bored piling in this Contract was disposed to allocated dumping site via Contract No. HY/2013/03 on 3, 4, 5, 11, 12, 13, 14, 17, 26 and 27 October and 3, 5, 6, 9, 10, 13, 14, 23, 24, 30 and 31 December 2016. The quantities disposed up to end of December 2016 are in following table (**Table 3.1**):

Table 3.1: Summary of Marine Sediment disposed to Dumping Site via Contract No. HY/2013/03

Month/Year	Quantity Disposed (m ³)
Up to end September 2016	24,058
October 2016	5,286
November 2016	0
December 2016	2,538
Cat. L in December 2016	3,570
Total =	35,452

Note: All sediments are in Type II disposal method except Cat L (in Type I)
For monthly breakdown of these quantities, please refer to the waste flow table in **Appendix G**.

3.5 Environmental Licences and Permits

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

4 Summary of Exceedances, Complaints, Notification of Summons and Successful Prosecution

4.1 Summary of Exceedance of the Environmental Quality Performance Limit

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in 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 station 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 station NMS2 and station NMS3B by the Environmental Team of Contract No. HY/2010/02 during the reporting period.

4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

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

Table 4.1: Summary of Environmental Complaints for the Reporting Month

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
003	ENPO-C0102	10 November 2016	Water Quality
004	ENPO-C0107	14 December 2016	Noise

Environmental Complaint Ref. No. ENPO-C0102

The complaint was about muddy water being observed as a works barge “長盛 308” was travelling east from the HZMB Scenic Hill site area to open waters opposite Tung Chung Ferry Pier on 7 November 2016. According to the complainant, the barge was carrying muddy water. A photo of the observation was also provided by the complainant.

As informed by the Contractor of HY/2013/04, no marine barges were operated and no marine works from HKBCF contract site were conducted under this contract on 7 November 2016.

Based on the investigation findings above, the complaint is considered invalid under HY/2013/04. Nevertheless, the Contractor is reminded to avoid vessels travelling in open waters during low tide, and more generally to implement all water quality mitigation measures identified in the EM&A Manual.

Environmental Complaint Ref. No. ENPO-C0107

The complaint was about hammering noise during night-time period from unidentified sources possibly from construction sites of HZMB. According to the complainant, in the preceding month hammering noise was heard during the early morning hours possibly from nearby construction sites. While the complainant was not sure about the exact source of this noise, he suspected that it was most likely from HZMB site works.

As informed by the Contractor of HY/2013/04, works conducted under Contract No. HY/2013/04 during restricted hours between mid-November and mid-December 2016 involved transport of concrete segments to HZMB HY/2013/04 site using tug boat and barge (marine-based) and crane and tractor with trailer (land-based). Such activity commenced after 1:30am in the morning. No hammering works were conducted by the Contract during restricted hours.

It was noted that the Contractor obtained valid Construction Noise Permits (CNP nos. GW-RS1064-16 and GW-RS1192-16) permitting the use of certain powered mechanical equipment (PME) during restricted hours including the period of mid-November to mid-December 2016. The abovementioned activity was permitted in these CNPs.

Based on the investigation findings above, the complaint is considered invalid under HY/2013/04. Nevertheless, the Contractor is reminded to observe all conditions stated in the relevant valid CNPs and implement all necessary noise mitigation measures identified in the EM&A Manual.

Notifications of Summons and Successful Prosecutions

Statistics on notifications of summons and successful prosecutions are summarized in **Appendix I**.

5 Comments, Recommendations and Conclusions

5.1 Comments

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

- The Contractor was reminded to clarify the intended use of the skip and remove any incompatible materials from it.
- The Contractor was reminded to provide drip tray for the container.
- The Contractor was reminded to ensure that all portions of haul road are provided with water spray.
- The Contractor was reminded to ensure that the NRMM label for a generator meets the regulatory requirements.
- The Contractor was reminded to collect and dispose of the general refuse properly.
- The Contractor was reminded to provide the necessary drip trays and/or bunded storage areas for oil drums.
- The Contractor should remove the suspected chemical container to avoid potential contamination of such runoff.
- The Contractor was reminded to turn on the pump to ensure that the stagnant water is sent to sedimentation tank or similar facility.
- The Contractor was reminded to improve the arrangement of the stockpile of used C&D construction materials.
- The Contractor was reminded to place all general refuse properly in the bin.
- The Contractor was reminded to ensure water spray is provided for haul roads behind a box culvert area and outside site office.

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

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.

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

Commencement of the Contract took place on 13 March 2015 and the construction works of the Contract commenced on 13 July 2015. This is the 6th Quarterly EM&A Report summarising the findings of EM&A activities conducted under the Contract from 1 October 2016 to 31 December 2016.

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.

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

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

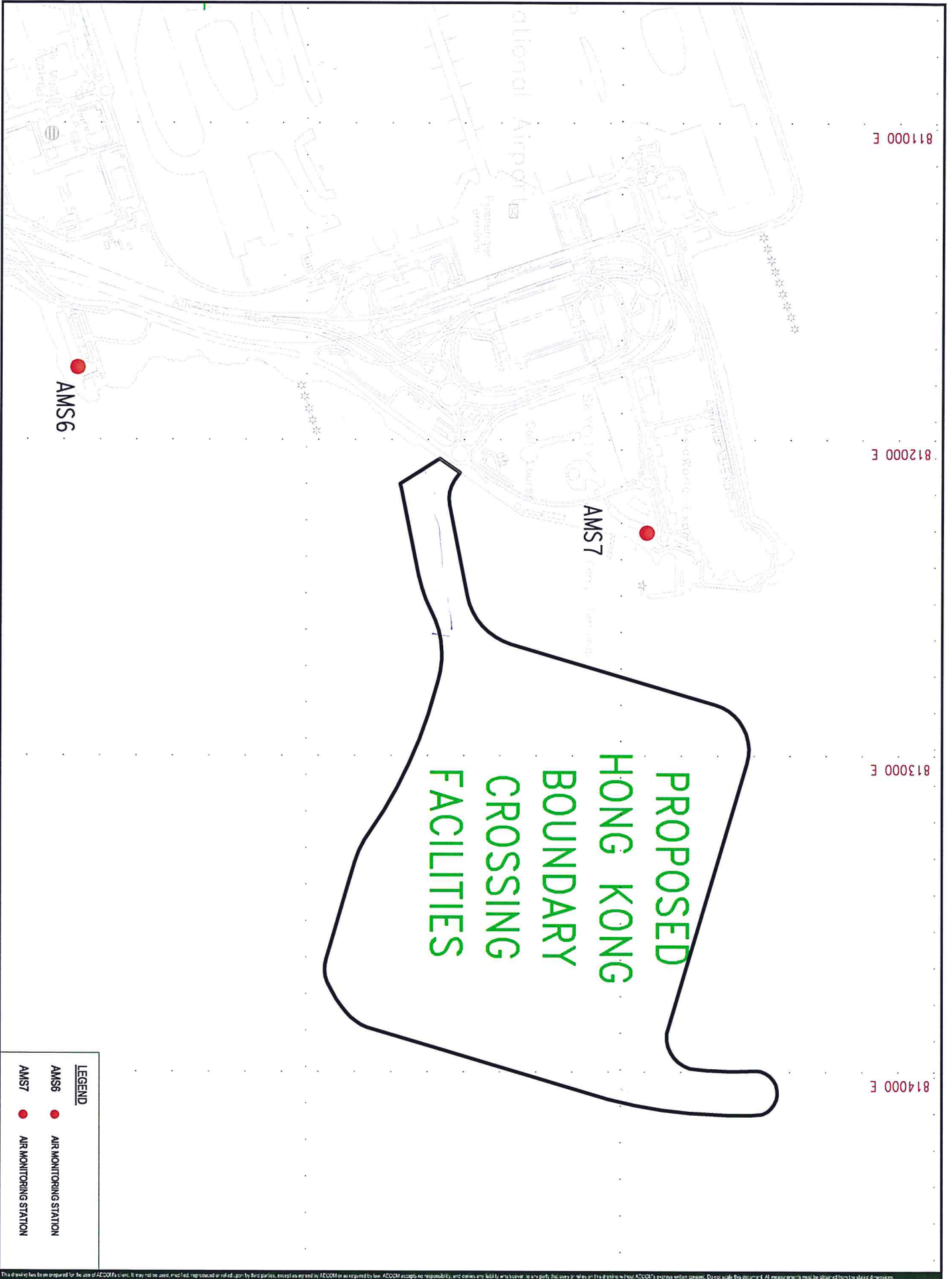
Environmental site inspection was carried out on 4, 11, 18 and 24 October, 1, 8, 15, 21 and 29 November and 6, 13, 19 and 28 December 2016. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

There were two complaints received in relation to the environmental impact during the reporting period. After investigation, it was found that the complaints were not related to the Contract.

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

Figures

Figure 1 Location of Air Quality Monitoring Stations



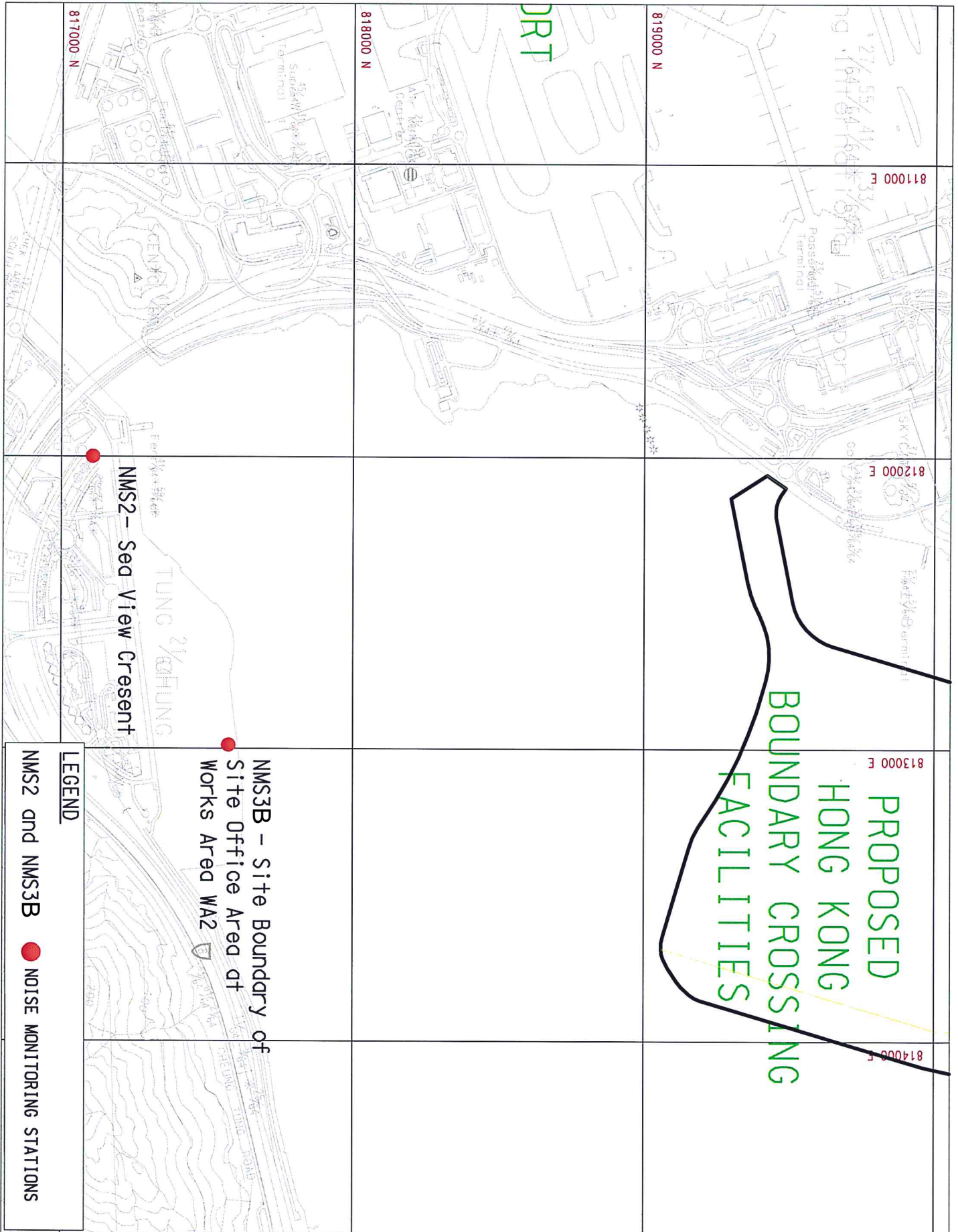
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Figure 2 Location of Noise Quality Monitoring Stations

Plot File by: LAMMCL 15/03/2012
 PATH P:\0249820\1.01\CAD\Drawing\Figure\Figure 2(15mar).dwg

Project Management Initials: Checked:

ISO A3 297mm x 420mm



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.

- LEGEND:**
- SITE BOUNDARY
 - WORKS AREA

ROAD
 825000 N
 820000 N
 815000 N
 810000 E
 815000 E
 820000 E
 825000 E
 P.S. [1] By : 22/12/24 W4/C3Y
 P:\PROJECTS\SYSTEMS\DRAWING\GEN\FACTORY\0000\0001\0001.DWG

REV.	DESCRIPTION	DATE
1	TENDER DRAWING	FEB.14

路政處 HIGHWAYS DEPARTMENT
 港珠澳跨境通道工程營地處
 Heng Kong-Zhuhai-Macao Bridge Hong Kong Project Management Office

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - INFRASTRUCTURE WORKS STAGE 1 (SOUTHERN PORTION)

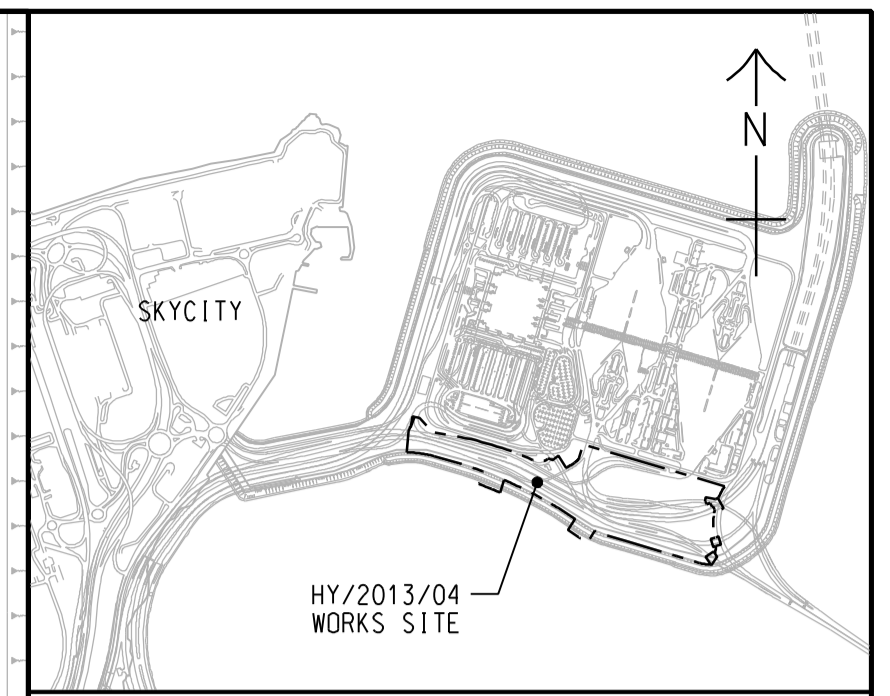
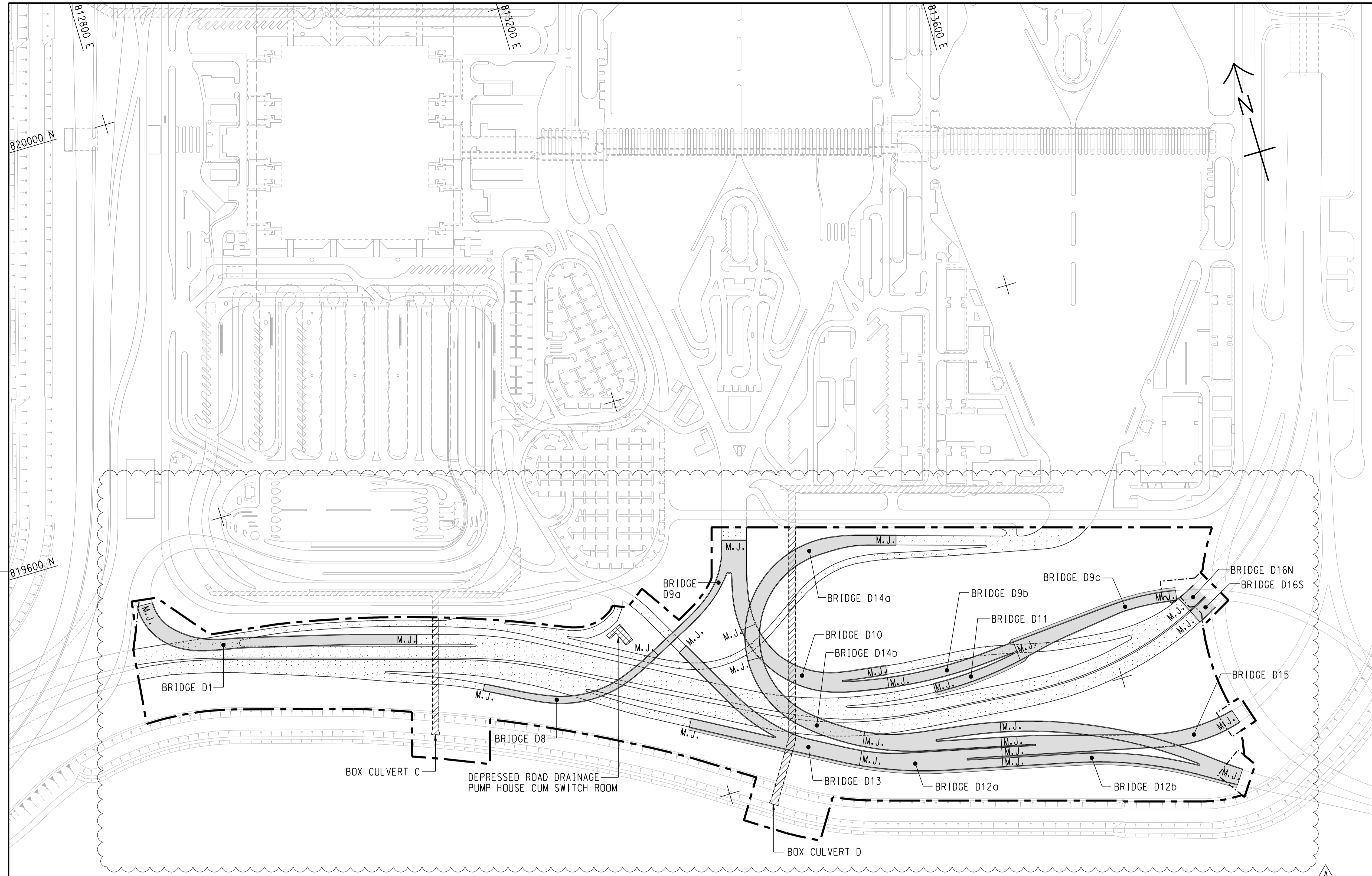
SITE LOCATION PLAN

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

DRG. NO. 60191048/C4/000/C00/1000
 圖紙編號

DESIGNED BY	CONTRACT NO.	SCALE
BWCW	HY/2013/04	A1 : 25000
DRAWN BY	STATUS	
MSY	REV.	

DIMENSIONS ARE IN METRES
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LOCATION PLAN
SCALE 1 : 25000

LEGEND:

	SITE BOUNDARY
	AT-GRADE WORKS LIMIT
	MOVEMENT JOINT
	BRIDGE
	BUILDING/FACILITIES
	AT-GRADE ROAD
	BOX CULVERT

B	WORKING DRAWING	BWCW SCI	APR. 15
A	TENDER ADDENDUM NO. 3	BWCW SCI	MAY. 14
-	TENDER DRAWING	BWCW SCI	FEB. 14

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

HONG KONG-ZHUHAI-MACAO BRIDGE
 HONG KONG BOUNDARY CROSSING FACILITIES
 - INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

GENERAL ARRANGEMENT

AECOM
 Rogers Stirk Harbour + Partners
 BURO HAPPOLD ATKINS ADI +

Aedas

DRG.NO. 60191048/C4/000/C00/1002B
 圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/04	P. Dir. APPROVED 批核人	TKH
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DRAWN BY
繪圖
WSY
STATUS
階段
WORKING DRAWING

SCALE
比例
A1 1 : 2000
DIMENSIONS ARE IN
尺寸單位
METRES
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Plot File by : 2014/5/7 WANGSY

SETTING OUT POINT

POINT	EASTING	NORTHING
301	817467.265	819162.683
302	817314.741	819069.828
303	817327.338	819049.295
304	817440.865	819117.811
305	817340.825	819027.314
306	817387.350	819023.403
307	817387.861	819043.396
308	817466.133	819091.047
309	817469.783	819087.181
310	817513.449	819113.764
311	817347.717	819016.082
312	817620.269	819000.620
313	817445.362	819013.131
314	817450.595	819032.307
315	817495.828	819059.595
316	817522.110	819075.388
317	817566.404	819028.472
318	817568.506	819008.526
319	817531.155	819001.066
320	817533.346	818991.306

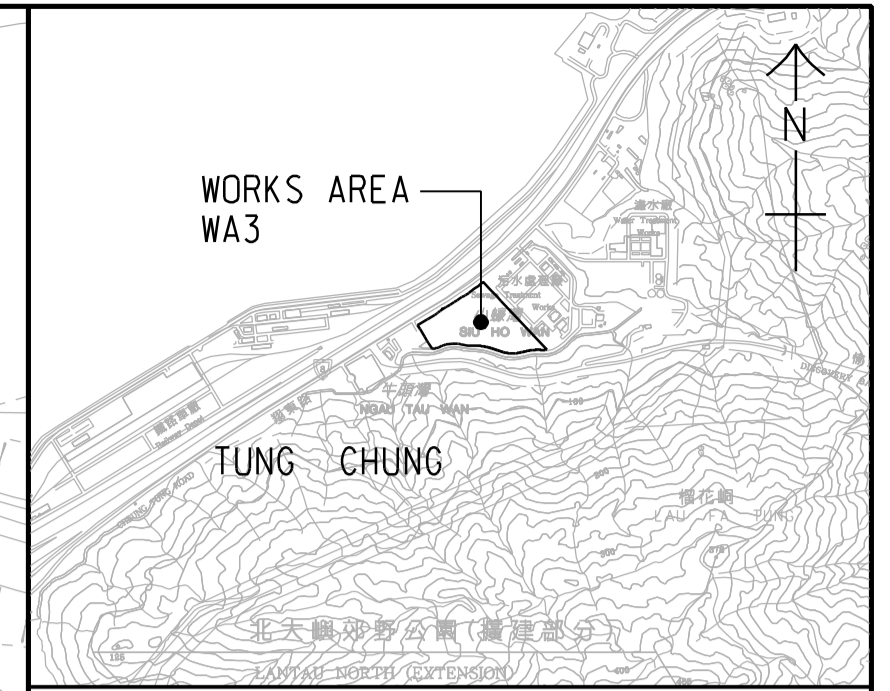
81200 E

81400 E

81600 E

819200 N

819000 N



LOCATION PLAN
SCALE 1 : 25000

NOTES:

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

LEGEND:

	WORKS AREA BOUNDARY
	PORTION 3.1
	PORTION 3.2
	PORTION 3.3
	PORTION 3.4
	PORTION 3.5
	PORTION 3.6
	PORTION 3.7
	PORTION 3.8
	PORTION 3.9
	PORTION 3.10

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

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

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

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

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

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

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

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

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

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

Plot File by : 2014/4/11 WANGSY

B	WORKING DRAWING	BWCW SCI	APR. 15
A	TENDER ADDENDUM NO. 2	BWCW SCI	APR. 14
-	TENDER DRAWING	BWCW SCI	FEB. 14
REV.	DESCRIPTION	CHKD.	DATE
01	ISSUED FOR TENDER	BWCW	14/04/14

HONG KONG-ZHUHAI-MACAO BRIDGE
HONG KONG-BOUNDARY CROSSING FACILITIES
- INFRASTRUCTURE WORKS STAGE II (SOUTHERN PORTION)

WORKS AREA WA3

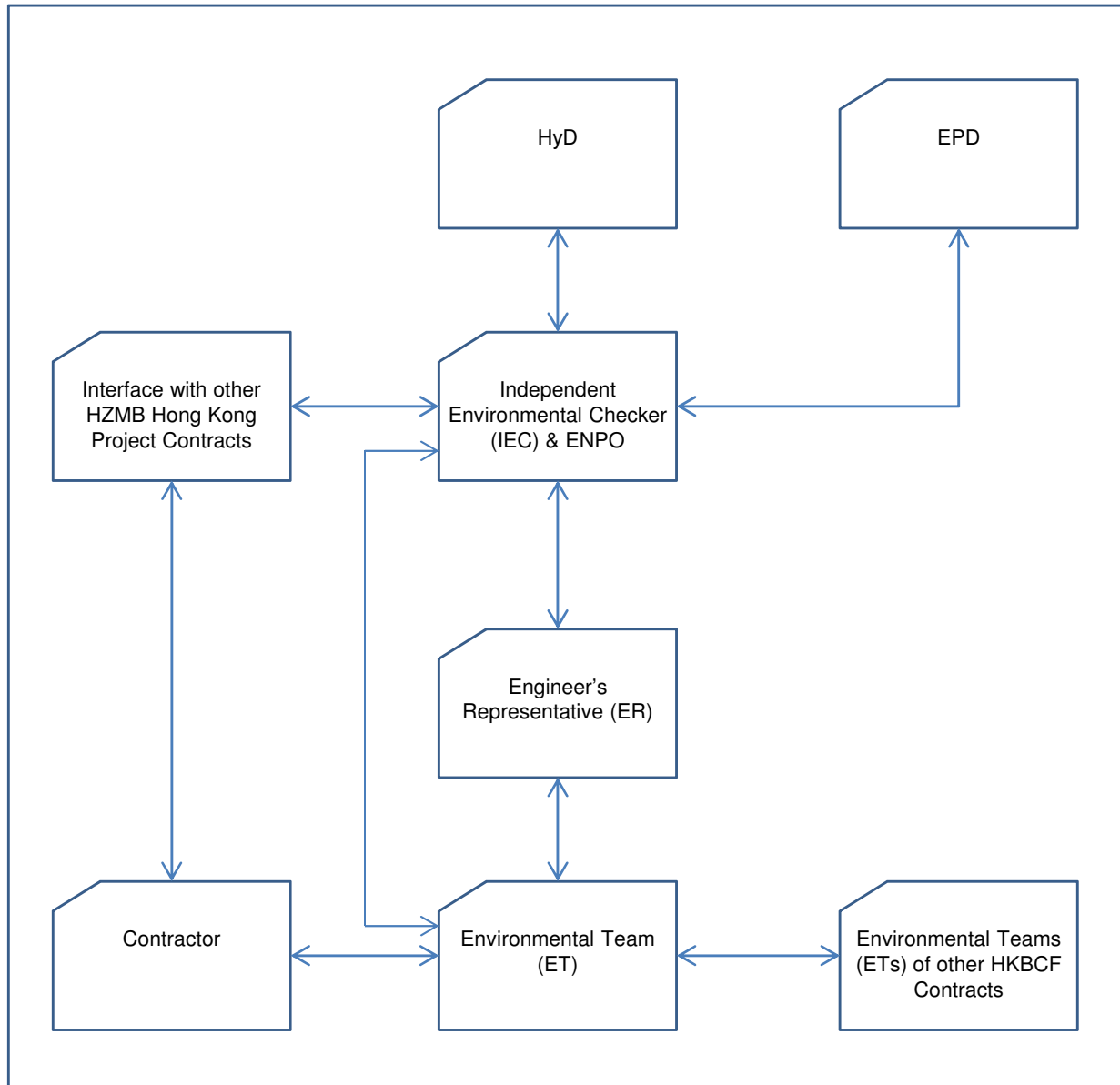
AECOM **Aedas**
Rogers Stirk Harbour + Partners
BURO HAPPOLD ATKINS ADI

DRG.NO. 60191048/C4/000/C00/1041B
圖紙編號

DESIGNED BY 設計	BWCW	CONTRACT NO. 合約編號	HY/2013/04	P. Dir. 批准人	APPROVED 日期	TKH
DRAWN BY 繪圖	WSY	STATUS 階段	WORKING DRAWING			
SCALE 比例	A1 1 : 1000					
DIMENSIONS ARE IN 尺寸單位	METRES		© COPYRIGHT RESERVED 版權所 有			

Appendix B. Project Organization for Environmental Works

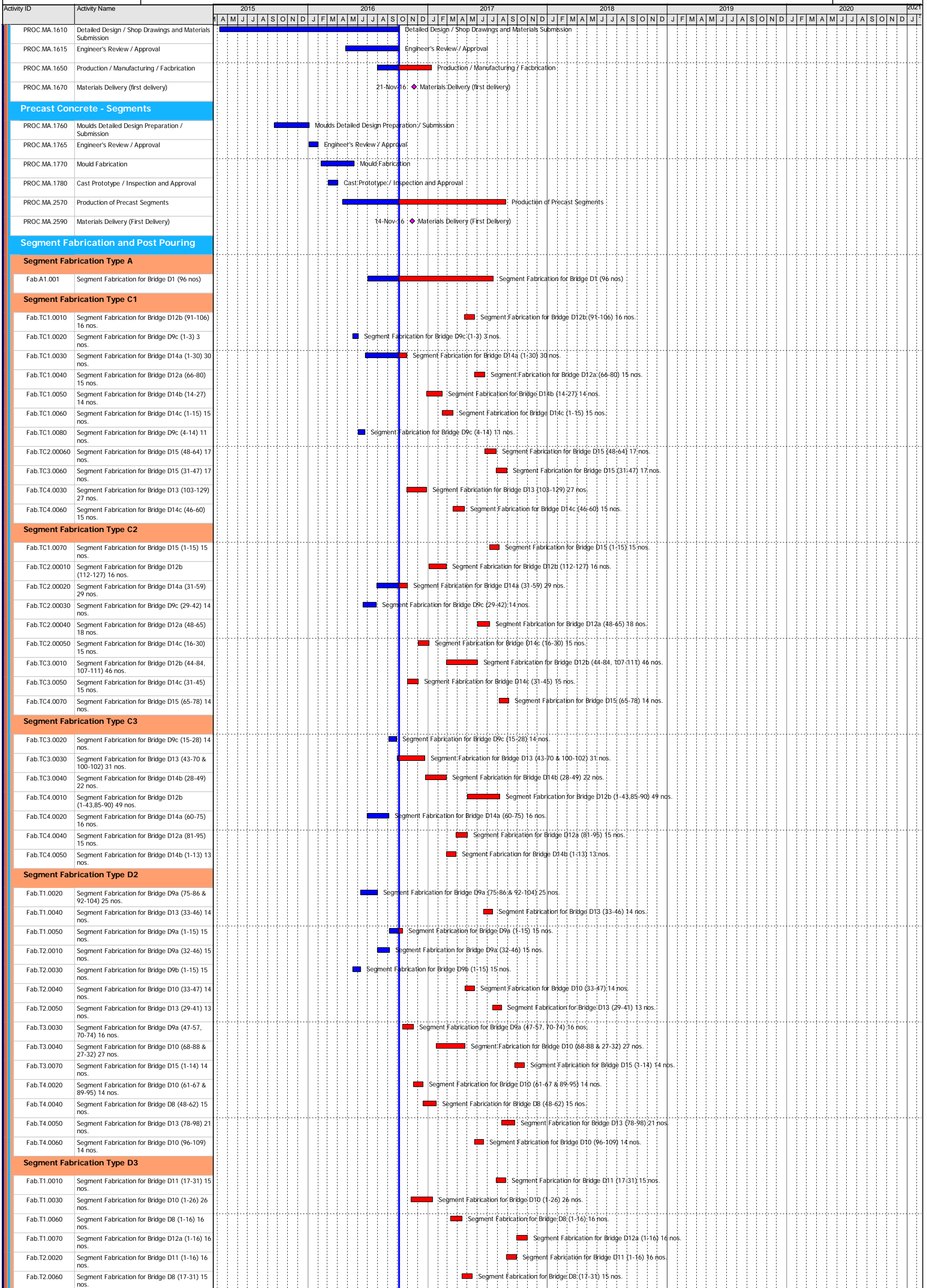
Project Organisation for Environmental Works



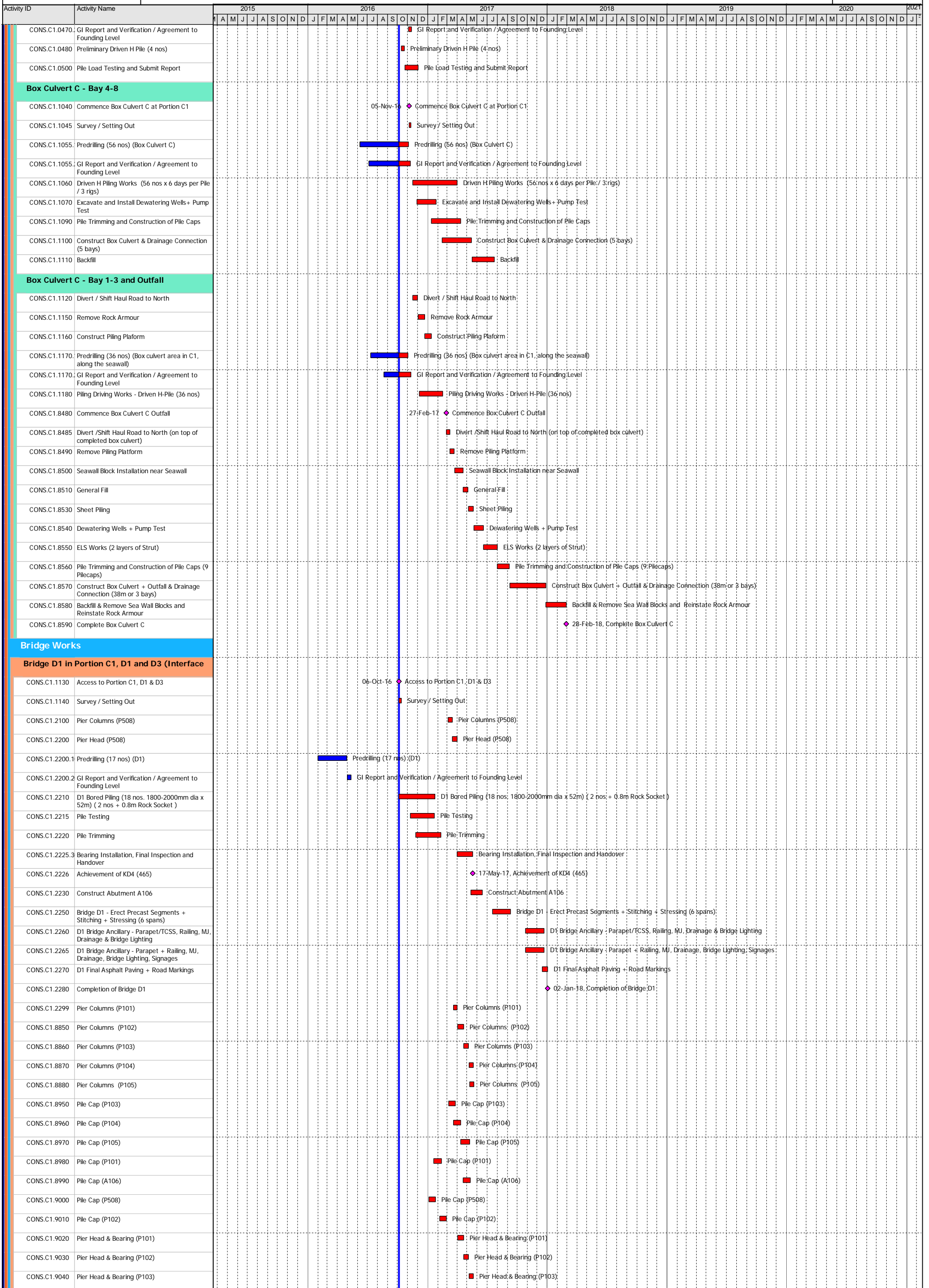
↔ Line of Communication

Appendix C. Construction Programme

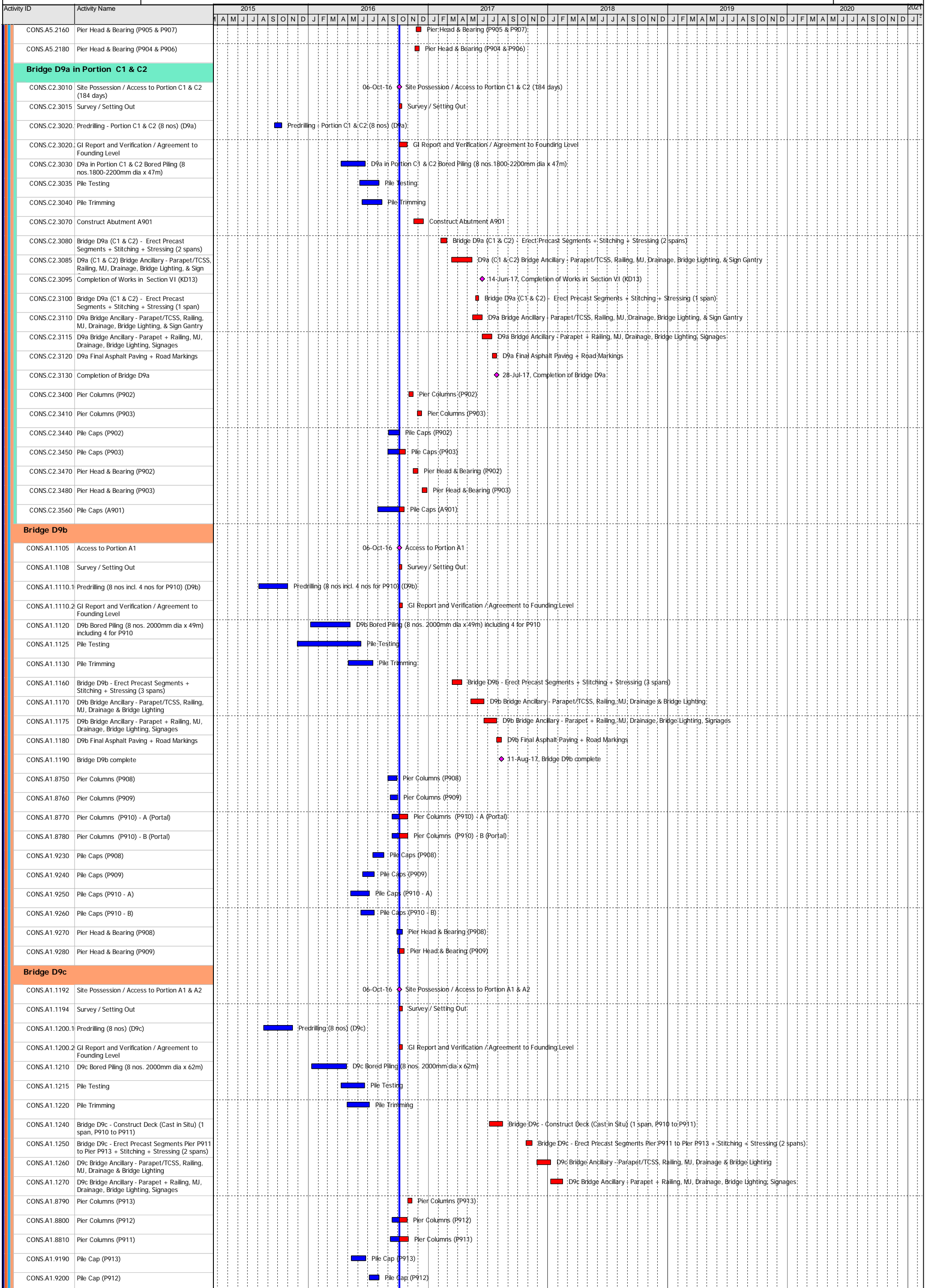
Activity ID	Activity Name	2015					2016					2017					2018					2019					2020					2021																																																
		A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
Essential Works Updates - Tier 1 - 26 C																																																																																
Contract Key Dates																																																																																
CON.KD.0005	Letter of Acceptance (LOA)	Letter of Acceptance (LOA)																																																																														
CON.KD.0010	Commencement Date	Commencement Date																																																																														
CON.KD.0020	Completion of the whole of the Works (1520)	◆ 11-May-19, Completion of the whole of the Works (1520)																																																																														
Possession Dates																																																																																
CON.PD.1010	Site Possession of Portion A1 (61) - 8	◆ Site Possession of Portion A1 (61) - 8																																																																														
CON.PD.1020	Site Possession of Portion A2 (61)	◆ Site Possession of Portion A2 (61)																																																																														
CON.PD.1050	Site Possession of Portion A5 (61)	◆ Site Possession of Portion A5 (61)																																																																														
CON.PD.1060	Site Possession of Portion A6 (61)	◆ Site Possession of Portion A6 (61)																																																																														
CON.PD.1070	Site Possession of Portion B1-5 (92)	◆ Site Possession of Portion B1-5 (92)																																																																														
CON.PD.1080	Site Possession of Portion B2 (123)	◆ Site Possession of Portion B2 (123)																																																																														
CON.PD.1130	Site Possession of Portion B5 (123)	◆ Site Possession of Portion B5 (123)																																																																														
CON.PD.1140	Site Possession of Portion C1 (184)	06-Oct-16 ◆ Site Possession of Portion C1 (184)																																																																														
CON.PD.1150	Site Possession of Portion C2 (184)	◆ Site Possession of Portion C2 (184)																																																																														
CON.PD.1160	Site Possession of Portion D1 (183)	◆ Site Possession of Portion D1 (183)																																																																														
CON.PD.1180	Site Possession of Portion D3 (183)	◆ Site Possession of Portion D3 (183)																																																																														
CON.PD.1190	Site Possession of Portion A1 (61) - 2	◆ Site Possession of Portion A1 (61) - 2																																																																														
CON.PD.1200	Site Possession of Portion A1 (61) - 5	◆ Site Possession of Portion A1 (61) - 5																																																																														
CON.PD.1210	Site Possession of Portion A1 (61) - 1	◆ Site Possession of Portion A1 (61) - 1																																																																														
CON.PD.1220	Site Possession of Portion C1 -1 (184)	◆ Site Possession of Portion C1 -1 (184)																																																																														
CON.PD.1230	Site Possession of Portion C1 -2 (184)	◆ Site Possession of Portion C1 -2 (184)																																																																														
CON.PD.1240	Site Possession of Portion B1 -1 (92)	◆ Site Possession of Portion B1 -1 (92)																																																																														
CON.PD.1250	Site Possession of Portion B1 -2 (92)	◆ Site Possession of Portion B1 -2 (92)																																																																														
CON.PD.1260	Site Possession of Portion A1 (61) - 7	◆ Site Possession of Portion A1 (61) - 7																																																																														
CON.PD.1270	Site Possession of Portion B1-3 (92)	◆ Site Possession of Portion B1-3 (92)																																																																														
CON.PD.1280	Site Possession of Portion B1-4 (92)	◆ Site Possession of Portion B1-4 (92)																																																																														
CON.PD.1290	Site Possession of Portion C1 -3 (184)	◆ Site Possession of Portion C1 -3 (184)																																																																														
Site Access Dates																																																																																
CON.PD.1030	Site Access of Portion A3 (476)	06-Oct-16 ◆ Site Access of Portion A3 (476)																																																																														
CON.PD.1040	Site Access of Portion A4 (627)	29-Nov-16 ◆ Site Access of Portion A4 (627)																																																																														
CON.PD.1090	Site Access of Portion B3 (476)	06-Oct-16 ◆ Site Access of Portion B3 (476)																																																																														
CON.PD.1100	Site Access of Portion B4 (627)	29-Nov-16 ◆ Site Access of Portion B4 (627)																																																																														
CON.PD.1170	Site Access of Portion D2 (488)	06-Oct-16 ◆ Site Access of Portion D2 (488)																																																																														
Contractual Key Dates - Stage / Section I																																																																																
CON.FOT.KD01	KD01 - Achievement of Stage 1A (525)	06-Oct-16, KD01 - Achievement of Stage 1A (525)																																																																														
CON.FOT.KD02	KD02 - Achievement of Stage 1B (650)	22-Dec-16, KD02 - Achievement of Stage 1B (650)																																																																														
CON.FOT.KD03	KD03 - Achievement of Stage 2 (525)	06-Oct-16, KD03 - Achievement of Stage 2 (525)																																																																														
CON.FOT.KD04	KD04 - Achievement of Stage 3 (465)	06-Oct-16, KD04 - Achievement of Stage 3 (465)																																																																														
CON.FOT.KD05	KD05 - Achievement of Stage 4 (615)	17-Nov-16, KD05 - Achievement of Stage 4 (615)																																																																														
CON.FOT.KD06	KD06 - Achievement of Stage 5 (615)	17-Nov-16, KD06 - Achievement of Stage 5 (615)																																																																														
CON.FOT.KD07	KD07 - Achievement of Stage 6 (270)	06-Oct-16, KD07 - Achievement of Stage 6 (270)																																																																														
CON.FOT.KD08	KD08 - Completion of Section I of the Works (795)	16-May-17, KD08 - Completion of Section I of the Works (795)																																																																														
CON.FOT.KD09	KD09 - Completion of Section II of the Works (803)	24-May-17, KD09 - Completion of Section II of the Works (803)																																																																														
CON.FOT.KD10	KD10 - Completion of Section III of the Works (803)	24-May-17, KD10 - Completion of Section III of the Works (803)																																																																														
CON.FOT.KD11	KD11 - Completion of Section IV of the Works (565)	06-Oct-16, KD11 - Completion of Section IV of the Works (565)																																																																														
CON.FOT.KD12	KD12 - Completion of Section V of the Works (803)	24-May-17, KD12 - Completion of Section V of the Works (803)																																																																														
CON.FOT.KD13	KD13 - Completion of Section VI of the Works (465)	06-Oct-16, KD13 - Completion of Section VI of the Works (465)																																																																														
CON.FOT.KD14	KD14 - Completion of Section VII of the Works (1155)	11-May-18, KD14 - Completion of Section VII of the Works (1155)																																																																														
CON.FOT.KD15	KD15 - Completion of Section VIIIA of the Works (795)	16-May-17, KD15 - Completion of Section VIIIA of the Works (795)																																																																														
CON.FOT.KD16	KD16 - Completion of Section VIIIB of the Works (1155)	11-May-18, KD16 - Completion of Section VIIIB of the Works (1155)																																																																														
CON.FOT.KD17	KD17 - Achievement of Stage 7 (718)	28-Feb-17, KD17 - Achievement of Stage 7 (718)																																																																														
CON.FOT.KD17A	KD17A - Completion of Section VIIIC of the Works (795)	16-May-17, KD17A - Completion of Section VIIIC of the Works (795)																																																																														
CON.FOT.KD18	KD18 - Completion of Section VIID of the Works (1155)	11-May-18, KD18 - Completion of Section VIID of the Works (1155)																																																																														
CON.FOT.KD19	KD19 - Completion of Section IXA of the Works (1160)	16-May-18, KD19 - Completion of Section IXA of the Works (1160)																																																																														
CON.FOT.KD20	KD20 - Completion of Section IXB of the Works (1520)	11-May-19, KD20 - Completion of Section IXB of the Works (1520)																																																																														
Contractual Handover Dates to Employer																																																																																
CON.HD.1190	Handover of Portion A1 (KD8+28 days)	13-Jun-17, Handover of Portion A1 (KD8+28 days)																																																																														
CON.HD.1200	Handover of Portion A2 (KD8+28 days)	13-Jun-17, Handover of Portion A2 (KD8+28 days)																																																																														
CON.HD.1210	Handover of Portion A3 (KD9+28 days)	21-Jun-17, Handover of Portion A3 (KD9+28 days)																																																																														
CON.HD.1220	Handover of Portion A4 (KD10+28 days)	21-Jun-17, Handover of Portion A4 (KD10+28 days)																																																																														
CON.HD.1240	Handover of Portion A5 (KD13+0 days)	06-Oct-16, Handover of Portion A5 (KD13+0 days)																																																																														



Activity ID	Activity Name	2015				2016				2017				2018				2019				2020				2021																																																																																																																																					
		A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
Mobilisation and Site Establishment																																																																																																																																																															
CONS.A1.0100	Site Possession / Access to Portion A1, A2, A5 & A6																																																																																																																																																														
CONS.A1.0110	Mobilisation, Site Clearing and Site Set-up																																																																																																																																																														
CONS.A1.0120	Install Temporary Facilities / Hygiene Facilities																																																																																																																																																														
Gates and Haul Road Construction (as per DW)																																																																																																																																																															
CONS.A1.1010	Site Possession / Access to Portion A1																																																																																																																																																														
CONS.A1.1020	Survey/ Setting Out																																																																																																																																																														
CONS.A1.1030	Construct Gate 1 at Haul Road																																																																																																																																																														
CONS.B1.1010	Site Possession / Access to Portion B1																																																																																																																																																														
CONS.B1.1020	Mobilisation, Site Survey and Setting Out																																																																																																																																																														
CONS.B1.1030	Construct Gate 3 and Temporary Haul Road																																																																																																																																																														
CONS.B2.1010	Site Possession / Access to Portion B2 & B5																																																																																																																																																														
CONS.B2.1020	Site Survey / Setting out																																																																																																																																																														
CONS.B2.1030	Construct Temporary Haul Road																																																																																																																																																														
Preliminary Bored Pile with Additional Instru																																																																																																																																																															
CONS.A1.0180	Commence Preliminary Bored Pile at Abutment A1101																																																																																																																																																														
CONS.A1.0190	Mobilise Plant & Set-up Support																																																																																																																																																														
CONS.A1.0195.1	Predrilling to Preliminary Bored Pile (D11)																																																																																																																																																														
CONS.A1.0195.2	GI Report and Verification / Agreement to Founding Level																																																																																																																																																														
CONS.A1.0200	Preliminary Bored Piling with Additional Instrumentation at Abutment A1101 (1 no.																																																																																																																																																														
CONS.A1.0210	Pile Curing																																																																																																																																																														
CONS.A1.0220	Pile Load Testing & Submit Report																																																																																																																																																														
Replacement Preliminary Bored Pile and Load																																																																																																																																																															
CONS.A1.0195.6	GI Report and Verification / Agreement to Founding Level																																																																																																																																																														
CONS.A1.0195.7	Engineer's Representative confirmed the replacement bored pile at Pier P908-P1																																																																																																																																																														
CONS.A1.0280	Commence Replacement Preliminary Bored Pile at Abutment A1004																																																																																																																																																														
CONS.A1.0290	Mobilise Plant & Set-up Support																																																																																																																																																														
CONS.A1.0300	Replacement Preliminary Bored Piling - Pier P908																																																																																																																																																														
CONS.A1.0310	Pile Curing																																																																																																																																																														
CONS.A1.0320	Pile Load Testing & Submit Report																																																																																																																																																														
Preliminary Bored Pile and Load Testing at Abi																																																																																																																																																															
CONS.C1.0400	Commence Preliminary Bored Pile at Abutment A106																																																																																																																																																														
CONS.C1.0410	Mobilise Plant & Set-up Support																																																																																																																																																														
CONS.C1.0415.1	Predrilling to Preliminary Bored Pile (D1)																																																																																																																																																														
CONS.C1.0415.2	GI Report and Verification / Agreement to Founding Level																																																																																																																																																														
CONS.C1.0420	Preliminary Bored Piling - Abutment A106 (1 no. 2000mm dia x 52m)																																																																																																																																																														
CONS.C1.0430	Pile Curing																																																																																																																																																														
CONS.C1.0440	Pile Load Testing and Submit Report																																																																																																																																																														
Preliminary Driven H Piles and Load Testing																																																																																																																																																															
CONS.A1.4360	Test Pile approved, commence permanent driven h-pile																																																																																																																																																														
CONS.C1.0510	Engineer select Preliminary Test Pile (Driven H Pile)																																																																																																																																																														
CONS.C1.0520	Mobilise Plant & Set-up Support																																																																																																																																																														
CONS.C1.0530.1	Pre-drilling (2 nos) (Sign Gantry - Preliminary Pile)																																																																																																																																																														
CONS.C1.0530.2	GI Report and Verification / Agreement to Founding Level																																																																																																																																																														
CONS.C1.0540	Preliminary Driven H Pile (2 nos)																																																																																																																																																														
CONS.C1.0550	Pile Load Testing and Submit Report																																																																																																																																																														
Preliminary Pre-Bored H-Pile and Load Testing																																																																																																																																																															
CONS.A1.0195.3	Predrilling to Preliminary Pre-Bored H-Pile - 1 no.																																																																																																																																																														
CONS.A1.0195.4	GI Report and Verification / Agreement to Founding Level																																																																																																																																																														
CONS.A1.0230	Engineer select Preliminary Test Pile (Pre-Bored H-Pile)																																																																																																																																																														
CONS.A1.0240	Mobilise Plant & Set-up Support																																																																																																																																																														
CONS.A1.0250	Preliminary Pre-Bored H-Piling - 1 no.																																																																																																																																																														
CONS.A1.0270	Pile Load Testing & Submit Report																																																																																																																																																														
Treatment for Bored Piling Excavated Materials																																																																																																																																																															
CONS.EX.1010	Set-up Stockpile for Excavated Marine Mud																																																																																																																																																														
CONS.EX.1020	Pilot Test for Marine Mud Treatment																																																																																																																																																														
CONS.EX.1030	Solidification / Stabilisation / Approval Method																																																																																																																																																														
CONS.EX.1040	Set-up Treatment Facilities and Storage Yard																																																																																																																																																														
CONS.EX.1050	Full Scale Solidification / Stabilization Treatment and Verification Testing																																																																																																																																																														
CONS.EX.1060	Decommissioning of Treatment Facilities																																																																																																																																																														
Site Set Up at Portion C1																																																																																																																																																															
CONS.C1.1010	Site Possession / Access to Portion C1 and C2																																																																																																																																																														
CONS.C1.1020	Site Possession / Access to Portion D1 and D3																																																																																																																																																														
CONS.C1.1030	Site Set-Up																																																																																																																																																														
Pump House cum Switch Room																																																																																																																																																															
CONS.C1.5110	Commence Pump House Cum Switch Room (2B+ GF)																																																																																																																																																														



Activity ID	Activity Name	2015				2016				2017				2018				2019				2020				2021																																					
		A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M
CONS.C1.9050	Pier Head & Bearing (P104)									■ Pier Head & Bearing (P104)																																																					
CONS.C1.9060	Pier Head & Bearing (P105)									■ Pier Head & Bearing (P105)																																																					
RW1 (51m / 4 bays)																																																															
CONS.C2.3140	Commence RW1 Retaining Wall									06-Jul-17 ◆ Commence RW1 Retaining Wall																																																					
CONS.C2.3150	Survey / Setting Out									■ Survey/ Setting Out																																																					
CONS.C2.3160	Excavate to formation level (open cut / slope)									■ Excavate to formation level (open cut / slope)																																																					
CONS.C2.3170	Cast Base & Wall Stem 4 bays (ribbed finish to 1m below F.G.L)									■ Cast Base & Wall Stem 4 bays (ribbed finish to 1m below F.G.L)																																																					
CONS.C2.3180	Backfill to final ground level and Reinststate Roads									■ Backfill to final ground level and Reinststate Roads																																																					
CONS.C2.3250	Install Railing for RW1 and RW1a									■ Install Railing for RW1 and RW1a																																																					
RW1a (176m / 11 bays)																																																															
CONS.C2.3200	Commence RW1a Retaining Wall					05-Nov-16 ◆ Commence RW1a Retaining Wall																																																									
CONS.C2.3210	Survey / Setting Out					■ Survey/ Setting Out																																																									
CONS.C2.3220	Excavate to formation level (open cut / slope) - Bay 4 to Bay 11					■ Excavate to formation level (open cut / slope) - Bay 4 to Bay 11																																																									
CONS.C2.3230	Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 4 to Bay 11					■ Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 4 to Bay 11																																																									
CONS.C2.3240	Backfill to final ground level and Reinststate Roads - Bay 4 to Bay 11					■ Backfill to final ground level and Reinststate Roads - Bay 4 to Bay 11																																																									
CONS.C2.3370	Excavate to formation level (open cut / slope) - Bay 1 to Bay 3					■ Excavate to formation level (open cut / slope) - Bay 1 to Bay 3																																																									
CONS.C2.3380	Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 1 to Bay 3					■ Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 1 to Bay 3																																																									
CONS.C2.3390	Backfill to final ground level and Reinststate Roads - Bay 1 to Bay 3					■ Backfill to final ground level and Reinststate Roads - Bay 1 to Bay 3																																																									
Bridge D8																																																															
CONS.C1.2285	Site Possession / Access to Portion C1					06-Oct-16 ◆ Site Possession / Access to Portion C1																																																									
CONS.C1.2288	Survey / Setting Out					■ Survey / Setting Out																																																									
CONS.C1.2290.1	Pre-drilling (10 nos) (D8)	■				■				■				■				■				■																																									
CONS.C1.2290.2	GI Report and Verification / Agreement to Founding Level	■				■				■				■				■				■																																									
CONS.C1.2300	D8 Bored Piling (10 nos.2000mm dia x 52m)	■				■				■				■				■				■																																									
CONS.C1.2305	Pile Testing					■				■				■				■				■																																									
CONS.C1.2310	Pile Trimming					■				■				■				■				■																																									
CONS.C1.2320	Construct Abutment A801					■				■				■				■				■																																									
CONS.C1.2322	Pier Columns (P805)					■				■				■				■				■																																									
CONS.C1.2340	Bridge D8 - Erect Precast Segments + Stitching + Stressing (4 spans)					■				■				■				■				■																																									
CONS.C1.2350	D8 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting					■				■				■				■				■																																									
CONS.C1.2355	D8 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages					■				■				■				■				■																																									
CONS.C1.2360	D8 Final Asphalt Paving + Road Markings					■				■				■				■				■																																									
CONS.C1.2370	Completion of Bridge D8					02-Nov-17 ◆ Completion of Bridge D8																																																									
CONS.C1.8820	Pier Columns (P804)					■				■				■				■				■																																									
CONS.C1.8830	Pier Columns (P803)					■				■				■				■				■																																									
CONS.C1.8900	Pile Cap (A801)					■				■				■				■				■																																									
CONS.C1.8910	Pile Cap (P805)					■				■				■				■				■																																									
CONS.C1.8920	Pile Cap (P804)					■				■				■				■				■																																									
CONS.C1.8930	Pile Cap (P802)					■				■				■				■				■																																									
CONS.C1.9070	Pier Head & Bearing (P805)					■				■				■				■				■																																									
CONS.C1.9080	Pier Head & Bearing (P804)					■				■				■				■				■																																									
CONS.C1.9090	Pier Head & Bearing (P803)					■				■				■				■				■																																									
CONS.C2.3420	Pier Columns (P802)					■				■				■				■				■																																									
CONS.C2.3460	Pile Cap (P803)					■				■				■				■				■																																									
CONS.C2.3490	Pier Head & Bearing (P802)					■				■				■				■				■																																									
RW8 (35m / 3 bays)																																																															
CONS.C2.3320	Commence RW8 Retaining Wall									08-Aug-17 ◆ Commence RW8 Retaining Wall																																																					
CONS.C2.3330	Survey / Setting Out									■ Survey/ Setting Out																																																					
CONS.C2.3340	Excavate to formation level (open cut / slope)									■ Excavate to formation level (open cut / slope)																																																					
CONS.C2.3350	Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L)									■ Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L)																																																					
CONS.C2.3360	Backfill to final ground level & Reinststate Road									■ Backfill to final ground level & Reinststate Road																																																					
Bridge D9a in Portion A1 & A5																																																															
CONS.A5.2010	Site Possession / Access to Portion A1 & A5 (61 days)					06-Oct-16 ◆ Site Possession / Access to Portion A1 & A5 (61 days)																																																									
CONS.A5.2015	Survey / Setting out					■ Survey / Setting out																																																									
CONS.A5.2020.1	Pre-drilling - Portion A1 & A5 (12 nos) (D9a)	■				■				■				■				■				■																																									
CONS.A5.2020.2	GI Report and Verification / Agreement to Founding Level	■				■				■				■				■				■																																									
CONS.A5.2030	D9a Bored Piling (12 nos.1800-2200mm dia x 47m)	■				■				■				■				■				■																																									
CONS.A5.2035	Pile Testing					■				■				■				■				■																																									
CONS.A5.2040	Pile Trimming					■				■				■				■				■																																									
CONS.A5.2065	Bridge D9a - Erect Precast Segments + Stitching + Stressing (4 spans)					■				■				■				■				■																																									
CONS.A5.2070	D9a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry					■				■				■				■				■																																									
CONS.A5.2080	D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages					■				■				■				■				■																																									
CONS.A5.2090	Pier Columns (P905 & P907)					■				■				■				■				■																																									
CONS.A5.2110	Pier Columns (P904 & P906)					■				■				■				■				■																																									
CONS.A5.2140	Pile Caps (P904)					■				■				■				■				■																																									
CONS.A5.2150	Pile Caps (P905)					■				■				■				■				■																																									



Activity ID	Activity Name	2015					2016					2017					2018					2019					2020					2021																									
		A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
Bridge D12a																																																									
CONS.B1.1835	Site Possession / Access to Portion B1																									06-Oct-16	◆	Site Possession / Access to Portion B1																													
CONS.B1.1837	Site Survey and Setting Out																									06-Oct-16	■	Site Survey and Setting Out																													
CONS.B1.1840.1	Predrilling (17 nos) (D12a)	■																													06-Oct-16	■	Predrilling (17 nos) (D12a)																								
CONS.B1.1840.2	GI Report and Verification / Agreement to Founding Level																									06-Oct-16	■	GI Report and Verification / Agreement to Founding Level																													
CONS.B1.1850	D12a Bored Piling (17 nos. 2000mm dia x 60m + 1.0m Rock Socket)																									06-Oct-16	■	D12a Bored Piling (17 nos. 2000mm dia x 60m + 1.0m Rock Socket)																													
CONS.B1.1855	Pile Testing																									06-Oct-16	■	Pile Testing																													
CONS.B1.1860	Pile Trimming																									06-Oct-16	■	Pile Trimming																													
CONS.B1.1890	Bridge D12a - Erect Precast Segments + Stitching + Stressing (6 spans)																									06-Oct-16	■	Bridge D12a - Erect Precast Segments + Stitching + Stressing (6 spans)																													
CONS.B1.1900	D12a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry																									06-Oct-16	■	D12a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry																													
CONS.B1.1905	D12a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages																									06-Oct-16	■	D12a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages																													
CONS.B1.1910	D12a Final Asphalt Paving + Road Markings																									06-Oct-16	■	D12a Final Asphalt Paving + Road Markings																													
CONS.B1.1920	Bridge D12a complete																									04-Jul-18	◆	Bridge D12a complete																													
CONS.B1.2020	Pier Columns (P1201 & P1204)																									06-Oct-16	■	Pier Columns (P1201 & P1204)																													
CONS.B1.2040	Pier Columns (P1202 & P1205)																									06-Oct-16	■	Pier Columns (P1202 & P1205)																													
CONS.B1.2050	Pier Columns (P1203 & P1414)																									06-Oct-16	■	Pier Columns (P1203 & P1414)																													
CONS.B1.2070	Pier Columns (P1206)																									06-Oct-16	■	Pier Columns (P1206)																													
CONS.B1.2440	Pile Caps (P1206)																									06-Oct-16	■	Pile Caps (P1206)																													
CONS.B1.2450	Pile Caps (P1201)																									06-Oct-16	■	Pile Caps (P1201)																													
CONS.B1.2460	Pile Caps (P1202)																									06-Oct-16	■	Pile Caps (P1202)																													
CONS.B1.2470	Pile Caps (P1203)																									06-Oct-16	■	Pile Caps (P1203)																													
CONS.B1.2480	Pier Head & Bearing (P1201 & P1204)																									06-Oct-16	■	Pier Head & Bearing (P1201 & P1204)																													
CONS.B1.2500	Pier Head & Bearing (P1202 & P1205)																									06-Oct-16	■	Pier Head & Bearing (P1202 & P1205)																													
CONS.B1.2520	Pier Head & Bearing (P1203 & P1414)																									06-Oct-16	■	Pier Head & Bearing (P1203 & P1414)																													
CONS.B1.2530	Pier Head & Bearing (P1206)																									06-Oct-16	■	Pier Head & Bearing (P1206)																													
Bridge D12b																																																									
CONS.B2.2015	Site Possession / Access to Portion B2 & B5																									06-Oct-16	◆	Site Possession / Access to Portion B2 & B5																													
CONS.B2.2018	Site Survey / Setting out																									06-Oct-16	■	Site Survey / Setting out																													
CONS.B2.2020.1	Predrilling (18 nos) (D12b)	■																													06-Oct-16	■	Predrilling (18 nos) (D12b)																								
CONS.B2.2020.2	GI Report and Verification / Agreement to Founding Level																									06-Oct-16	■	GI Report and Verification / Agreement to Founding Level																													
CONS.B2.2030	D12b Bored Piling (18 nos. 2000mm dia x 64m + 3.3m Rock Socket)																									06-Oct-16	■	D12b Bored Piling (18 nos. 2000mm dia x 64m + 3.3m Rock Socket)																													
CONS.B2.2035	Pile Testing																									06-Oct-16	■	Pile Testing																													
CONS.B2.2040	Pile Trimming																									06-Oct-16	■	Pile Trimming																													
CONS.B2.2070	Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans)																									06-Oct-16	■	Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans)																													
CONS.B2.2080	D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry																									06-Oct-16	■	D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry																													
CONS.B2.2085	D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages																									06-Oct-16	■	D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages																													
CONS.B2.2090	Final Paving, Road Markings and Signages																									06-Oct-16	■	Final Paving, Road Markings and Signages																													
CONS.B2.2100	Pier Columns (P1211)																									06-Oct-16	■	Pier Columns (P1211)																													
CONS.B2.2110	Pier Columns (P1212)																									06-Oct-16	■	Pier Columns (P1212)																													
CONS.B2.2120	Pier Columns (P1214)																									06-Oct-16	■	Pier Columns (P1214)																													
CONS.B2.2130	Pier Columns (P1213) - A (Portal)																									06-Oct-16	■	Pier Columns (P1213) - A (Portal)																													
CONS.B2.2140	Pier Columns (P1210)																									06-Oct-16	■	Pier Columns (P1210)																													
CONS.B2.2150	Pier Columns (P1213) - B (Portal)																									06-Oct-16	■	Pier Columns (P1213) - B (Portal)																													
CONS.B2.2160	Pier Columns (P1208)																									06-Oct-16	■	Pier Columns (P1208)																													
CONS.B2.2170	Pier Columns (P1209)																									06-Oct-16	■	Pier Columns (P1209)																													
CONS.B2.2190	Pile Caps (P1211)																									06-Oct-16	■	Pile Caps (P1211)																													
CONS.B2.2200	Pile Caps (P1212)																									06-Oct-16	■	Pile Caps (P1212)																													
CONS.B2.2210	Pile Caps (P1213 - A)																									06-Oct-16	■	Pile Caps (P1213 - A)																													
CONS.B2.2220	Pile Caps (P1213 - B)																									06-Oct-16	■	Pile Caps (P1213 - B)																													
CONS.B2.2230	Pile Caps (P1214)																									06-Oct-16	■	Pile Caps (P1214)																													
CONS.B2.2240	Pile Caps (P1207)																									06-Oct-16	■	Pile Caps (P1207)																													
CONS.B2.2250	Pile Caps (P1208)																									06-Oct-16	■	Pile Caps (P1208)																													
CONS.B2.2260	Pile Caps (P1209)																									06-Oct-16	■	Pile Caps (P1209)																													
CONS.B2.2270	Pile Caps (P1210)																									06-Oct-16	■	Pile Caps (P1210)																													
CONS.B2.2280	Pier Columns (P1207)																									06-Oct-16	■	Pier Columns (P1207)																													
CONS.B2.2290	Pier Head & Bearing (P1211)																									06-Oct-16	■	Pier Head & Bearing (P1211)																													
CONS.B2.2300	Pier Head & Bearing (P1214)																									06-Oct-16	■	Pier Head & Bearing (P1214)																													
CONS.B2.2320	Pier Head & Bearing (P1212)																									06-Oct-16	■	Pier Head & Bearing (P1212)																													
CONS.B2.2340	Pier Head & Bearing (P1207)																									06-Oct-16	■	Pier Head & Bearing (P1207)																													
CONS.B2.2350	Pier Head & Bearing (P1210)																									06-Oct-16	■	Pier Head & Bearing (P1210)																													
CONS.B2.2360	Pier Head & Bearing (P1208)																									06-Oct-16	■	Pier Head & Bearing (P1208)																													
CONS.B2.2370	Pier Head & Bearing (P1209)																									06-Oct-16	■	Pier Head & Bearing (P1209)																													
CONS.B2.2380	Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans)																									06-Oct-16	■	Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans)																													
Bridge D12b (cast in-situ) in Portion B3 (Inter)																																																									
CONS.B3.2110	Site Possession/Access to Portion B3																									06-Oct-16	◆	Site Possession/Access to Portion B3																													
CONS.B3.2120	Survey / Setting Out																									06-Oct-16	■	Survey / Setting Out																													

Activity ID	Activity Name	2015					2016					2017					2018					2019					2020					2021																																																	
		A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N
Stage 1 - Depressed Road RC Structure (Bay 9)																																																																																	
CONS.C1.8670	Commence Works on Depressed Road (after removal of falsework D10, D14a)	07-Jun-17 ◆ Commence Works on Depressed Road (after removal of falsework D10, D14a)																																																																															
CONS.C1.8699	Excavate to formation level (open cut)	■ Excavate to formation level (open cut)																																																																															
CONS.C1.8720	Construct - base slab	■ Construct - base slab																																																																															
CONS.C1.8730	Construct - wall (Plan ad Ribbed Finishes)	■ Construct - wall (Plan ad Ribbed Finishes)																																																																															
CONS.C1.8740	Backfill and Compaction	■ Backfill and Compaction																																																																															
Stage 2 - Depressed Road RC Structure (Bay 1)																																																																																	
CONS.C1.8671	Commence Works on Depressed Road (after removal of falseworks D13, D8, D9a)	19-Aug-17 ◆ Commence Works on Depressed Road (after removal of falseworks D13, D8, D9a)																																																																															
CONS.C1.8690	Excavate to formation level (open cut)	■ Excavate to formation level (open cut)																																																																															
CONS.C1.8721	Construct - base slab	■ Construct - base slab																																																																															
CONS.C1.8731	Construct - wall (Plan ad Ribbed Finishes)	■ Construct - wall (Plan ad Ribbed Finishes)																																																																															
CONS.C1.8741	Backfill and Compaction	■ Backfill and Compaction																																																																															
Sign Gantry																																																																																	
Sign Gantry Footings at Grade in Portion A1																																																																																	
DS303 (Driven H Pile)																																																																																	
CONS.A1.4380	Predrilling (12 nos) (DS303)	■ Predrilling (12 nos) (DS303)																																																																															
CONS.A1.4380	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.A1.4390	Piling Works - Driven H Pile (12 nos)	■ Piling Works - Driven H Pile (12 nos)																																																																															
CONS.A1.4410	Excavation, Pile Trimming + Cast Pile Caps (3 nos)	■ Excavation, Pile Trimming + Cast Pile Caps (3 nos)																																																																															
CONS.A1.4420	Backfill Foundation	■ Backfill Foundation																																																																															
Sign Gantry Footing at Grade in Portion C1 & P																																																																																	
DS302 (610mm dia. Prebored H Pile)																																																																																	
CONS.D1.3380	Commence Foundation / Footing for Sign Gantry	06-Oct-16 ◆ Commence Foundation / Footing for Sign Gantry																																																																															
CONS.D1.3390	Mobilisation/ Survey / Setting Out	■ Mobilisation/ Survey / Setting Out																																																																															
CONS.D1.3400	Predrilling for Prebored H Pile (8 nos) (DS302)	■ Predrilling for Prebored H Pile (8 nos) (DS302)																																																																															
CONS.D1.3400	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.D1.3410	Pre-bored Socket H-Pile (8 nos)	■ Pre-bored Socket H-Pile (8 nos)																																																																															
CONS.D1.3420	Pile Testing	■ Pile Testing																																																																															
CONS.D1.3430	Excavation, Pile Trimming + Pile Caps (2 nos)	■ Excavation, Pile Trimming + Pile Caps (2 nos)																																																																															
CONS.D1.3440	Backfill Foundation	■ Backfill Foundation																																																																															
GT408 (Driven H Pile)																																																																																	
CONS.C1.4030	Predrilling (8 nos) (GT408)	■ Predrilling (8 nos) (GT408)																																																																															
CONS.C1.4030	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.C1.4040	Piling Works - Driven H Pile (8 nos)	■ Piling Works - Driven H Pile (8 nos)																																																																															
CONS.C1.4060	Excavation, Pile Trimming + Cast Pile Caps (2 nos)	■ Excavation, Pile Trimming + Cast Pile Caps (2 nos)																																																																															
CONS.C1.4070	Backfill Foundation	■ Backfill Foundation																																																																															
DS44 (Driven H Pile)																																																																																	
CONS.C1.4100	Predrilling (8 nos) (DS44)	■ Predrilling (8 nos) (DS44)																																																																															
CONS.C1.4100	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.C1.4110	Piling Works - Driven H Pile (8 nos)	■ Piling Works - Driven H Pile (8 nos)																																																																															
CONS.C1.4130	Excavation, Pile Trimming + Cast Pile Caps (2 nos)	■ Excavation, Pile Trimming + Cast Pile Caps (2 nos)																																																																															
CONS.C1.4140	Backfill Foundation	■ Backfill Foundation																																																																															
DS261 (Driven H Pile)																																																																																	
CONS.C1.4170	Predrilling (8 nos) (DS261)	■ Predrilling (8 nos) (DS261)																																																																															
CONS.C1.4170	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.C1.4180	Piling Works - Driven H Pile (8 nos)	■ Piling Works - Driven H Pile (8 nos)																																																																															
CONS.C1.4200	Excavation, Pile Trimming + Cast Pile Caps (2 nos)	■ Excavation, Pile Trimming + Cast Pile Caps (2 nos)																																																																															
CONS.C1.4210	Backfill Foundation	■ Backfill Foundation																																																																															
ADS301 (Driven H Pile)																																																																																	
CONS.C1.4240	Predrilling (12 nos) (ADS301)	■ Predrilling (12 nos) (ADS301)																																																																															
CONS.C1.4240	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.C1.4250	Piling Works - Driven H Pile (12 nos)	■ Piling Works - Driven H Pile (12 nos)																																																																															
CONS.C1.4270	Excavation, Pile Trimming + Cast Pile Caps (3 nos)	■ Excavation, Pile Trimming + Cast Pile Caps (3 nos)																																																																															
CONS.C1.4280	Backfill Foundation	■ Backfill Foundation																																																																															
FADS303 (Driven H Pile)																																																																																	
CONS.C1.4310	Predrilling (8 nos) (FADS303)	■ Predrilling (8 nos) (FADS303)																																																																															
CONS.C1.4310	GI Report and Verification / Agreement to Founding Level	■ GI Report and Verification / Agreement to Founding Level																																																																															
CONS.C1.4320	Piling Works - Driven H Pile (8 nos)	■ Piling Works - Driven H Pile (8 nos)																																																																															
CONS.C1.4340	Excavation, Pile Trimming + Cast Pile Caps (2 nos)	■ Excavation, Pile Trimming + Cast Pile Caps (2 nos)																																																																															
CONS.C1.4350	Backfill Foundation	■ Backfill Foundation																																																																															
Erection of Sign Gantry and High Mast for TCSS																																																																																	
CONS.C1.4360	Erection of Sign Gantry & High Mast Structure and Associated Conduits for TCSS Works	■ Erection of Sign Gantry & High Mast Structure and Associated Conduits for TCSS Works																																																																															
Drainage and U/G Utilities																																																																																	
CONS.RW.2300	Handover area to CLP for HV Cable Laying	◆ 14-Nov-17, Handover area to CLP for HV Cable Laying																																																																															
CONS.RW.3870	Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion C)	■ Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion C)																																																																															
CONS.RW.3880	Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion A and C)	■ Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion A and C)																																																																															

Appendix D. Event and Action Plan

Event/Action Plan for Air Quality

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

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

Event / Action Plan for Construction Noise Monitoring

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

Appendix E. Implementation Schedule for Environmental Mitigation Measures (EMIS)

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

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
Air Quality				
S5.5.6.1	A1	1) The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	All construction sites	V
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <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; 	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides 	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 	All construction sites	V
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	All construction sites	V
S5.5.6.4	A4	4) Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the Contractor's attention to the relevant latest Practice Notes issued by EPD.	All construction sites	V
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Selected representative dust monitoring station	V (covered by Contract No. HY/2010/02 & HY/2011/03)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: <ul style="list-style-type: none"> Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system; 	Selected representative dust monitoring station	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> • 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. 		
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. 	All construction sites	N/A
Construction Noise (Air borne)				
S6.4.10	N1	<p>1) Use of good site practices to limit noise emissions by considering the following:</p> <ul style="list-style-type: none"> • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 	All construction sites	V
S6.4.11	N2	<p>2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.</p>	All construction sites	N/A
S6.4.12	N3	<p>3) Install movable noise barriers (typically density @ 14kg/m²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.</p>	For plant items listed in Appendix 6D of the EIA report at all construction sites	N/A
S6.4.13	N4	<p>4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.</p>	For plant items listed in Appendix 6D of the EIA report at all construction sites	
S6.4.14	N5	<p>5) Sequencing operation of construction plants where practicable.</p>	All construction sites	V where practicable
	N6	<p>6) Implement a noise monitoring under EM&A programme.</p>	Selected representative noise monitoring station	V (covered by Contract No. HY/2010/02)
Sediment				
S7.3	S1	<p>1) The requirements as recommended in ETWB TC(W) 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.</p>	All construction sites	V
Waste Management (Construction Noise)				
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; 	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and • Implement an enhanced Waste Management Plan similar to ETWB TC(W) No. 19/2005 – “Environmental Management on Construction Sites” to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction. • In addition, disposal of the C&D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation. 		
S8.3.9- S8.3.11	WM2	<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. 	All construction sites	V
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. • 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. 	All construction sites	V
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. 	All construction sites	V
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, aluminium 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. 	All construction sites	V
Water Quality (Construction Phase)				
S9.11.1.7	W2	<p><u>Land Works</u></p> <p>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should</p>	Land-based works areas	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>include:</p> <ul style="list-style-type: none"> wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the W PCO 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; 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 W PCO 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. 		
Ecology (Construction Phase)				
S10.7	E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Land-based works areas	V
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Land-based works areas	V
S10.7	E8	<ul style="list-style-type: none"> Control vessel speed Skipper training Predefined and regular routes for working vessels; avoid Brother Islands. 	Marine Traffic	V
Fisheries				
S11.7	F4	<ul style="list-style-type: none"> Maritime Oil Spill Response Plan (MOSRP); Contingency plan. 	HKBCF	V
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; 	HKBCF	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> • Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydro-seeding and planting; • Protection measures for the trees to be retained during construction activities; • Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations; • Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed; • Providing planting area around peripheral of HKBCF for tree planting screening effect; • Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline; • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF. 		
Landscape & Visual (Construction Phase)				
S14.3.3.3	LV2	<p><u>Mitigate both Landscape and Visual Impacts</u></p> <p>G1. Grass-hydroseed bare soil surface and stock pile areas.</p> <p>G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge footbridge to screen bridge and traffic.</p> <p>G3. Not applicable as this is for HKLR.</p> <p>G4. For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF</p> <p>G5. Vegetation reinstatement and upgrading to disturbed areas</p> <p>G6. Maximizing new tree shrub and other vegetation planting to compensate tree felled and vegetation removed</p> <p>G7. Providing planting area around peripheral of HKBCF for tree planting screening effect;</p> <p>G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall.</p> <p>G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt "natural-look" by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance "natural-look" of the new coastline.</p>	HKBCF	N/A
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <p>V1. Minimize time for construction activities during construction period.</p> <p>V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.</p>		N/A
EM&A				
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	All construction sites	V
S15.5 - S15.6	EM2	<ol style="list-style-type: none"> 1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with. 	All construction sites	V
Legend: V = implemented; x = not implemented; N/A = not applicable				

Appendix F. Site Audit Findings and Corrective Actions

Appendix F – Site Audit Findings and Corrective Actions

Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 4, 11, 18 and 24 October, 1, 8, 15, 21 and 29 November and 6, 13, 19 and 28 December 2016.

Particular observations during the site inspections are described below.

4 October 2016

- a. No new observations were made.

11 October 2016

- a. Some general refuse and stagnant water were observed in a skip but the intended use of the skip was not clear. Subsequently, the skip was designated for C&D material storage and cleared of general refuse and stagnant water. Tarpaulin covering was also provided to minimise further accumulation of stagnant water. The observation was closed on 18 October 2016.
- b. Oil container was observed on the ground. The Contractor was reminded to provide drip tray for the container. Subsequently, the oil container was removed and no longer observed. The observation was closed on 24 October 2016.

18 October 2016

- a. No new observations were made.

24 October 2016

- a. A small portion of haul road outside the HKBCF site office was dry. Subsequently, water spray was provided for haul roads include those outside the HKBCF site office. The observation was closed on 8 November 2016.
- b. NRMM label for a generator outside the HKBCF site office did not appear to be shown in the correct colour. Subsequently, a new NRMM label complying with the regulatory requirements was provided for the generator. The observation was closed on 8 November 2016.

1 November 2016

- a. No new observations were made.

8 November 2016

- a. No new observations were made.

15 November 2016

- a. Loose items of general refuse were observed at a workers' rest area. Subsequently, these were cleared. The observation was closed on 21 November 2016.
- b. Oil drums without drip tray were observed. The Contractor was reminded to provide the necessary drip trays and/or bunded storage areas. Subsequently, drip trays were provided for the oil drums. The observation was closed on 6 December 2016.
- c. A suspected chemical container was observed in a temporary bunded holding area for site runoff. Subsequently, this was removed. The observation was closed on 21 November 2016.

21 November 2016

- a. No new observations were made.

29 November 2016

- a. No new observations were made.

6 December 2016

- a. Some stagnant water in an excavation area was observed, however the pump provided was not in operation. Subsequently, the pump was turned on the pump stagnant water from the excavation area to sedimentation facility. The observation was closed on 13 December 2016.

13 December 2016

- a. No new observations were made.

19 December 2016

- a. A stockpile of used C&D construction materials was untidy. Subsequently, the stockpile was cleared. The observation was closed on 28 December 2016.
- b. Loose general refuse was observed next to a waste bin. Subsequently, the loose general refuse was placed in the waste bin. The observation was closed on 28 December 2016.
- c. Haul roads behind a box culvert works area and outside site office were dry and dusty. Subsequently, water spray was provided for the haul roads. The observation was closed on 28 December 2016.

28 December 2016

- a. No new observations were made.

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				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Transported to other Projects (Note 2 & 3)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (Note 1)	Chemical Waste	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)
Jan	0.8	0	0	0.8	0	0	0	0	0	0	0.04
Feb	0.704	0	0	0.704	0	0	0	0	0	0	0.04
Mar	3.942	0	0	3.942	0	0	0	0	0	0	0.033
Apr	5.028	0	0	5.028	0	0	0	0	0	0	0.0186
May	0	0	0	0	0	0	0	0	0	0	0.0533
Jun	1.578	0	0	1.578	0	0	0	0	0	0	0.0829
Sub-total	12.052	0	0	12.052	0	0	0	0	0	0	0.2678
Jul	3.69	0	0	3.69	0	0	0	0	0	0	0.0837
Aug	4.428	0	0	4.428	0	0	0	0	0	0	0.0514
Sep	3.888	0	0	3.888	0	0	0	0	0	0	0.0483
Oct	5.286	0	0	5.286	0	0	0	0	0	0	0.0521
Nov	0	0	0	0	0	0	0	0	0	0	0.1169
Dec	3.570 (Cat. L)	0	0	3.570 (Cat. L)	0	0	0	0	0	0	0.081
	2.538			2.538							
Total	35.452	0	0	35.452	0	0	0	0	0	0	0.7012

Note: (1) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

(2) "Other Projects" refers to HKBCF Contract No. HY/2013/03

(3) All sediments are in Type II disposal method except Cat. L (in Type I)

Monthly Summary of Excavated Marine Sediment for 2016

Month	a. Estimated Volume of Excavated Marine Sediment Generated	b. Estimate Volume of Accumulated Excavated Marine Sediment Treated	c. Reused in the Contract	d. Estimated Volume of Excavated Marine Sediment Transported to Other Projects (Note 1 & 2)	e. Estimated Volume of Treated Excavated Marine Sediment Stored on Site (Unused)
	(in m ³)	(in m ³)	(in m ³)	(in m ³)	(in m ³)
Jan	800	0	0	800	0
Feb	704	0	0	704	0
Mar	3942	0	0	3942	0
Apr	5028	0	0	5028	0
May	0	0	0	0	0
Jun	1578	0	0	1578	0
Sub-total	12052	0	0	12052	0
Jul	3690	0	0	3690	0
Aug	4428	0	0	4428	0
Sep	3888	0	0	3888	0
Oct	5286	0	0	5286	0
Nov	0	0	0	0	0
Dec	3570 (Cat. L)	0	0	3570 (Cat. L)	0
	2538	0	0	2538	0
Total	35452	0	0	35452	0

Note: (1) "Other Projects" refers to HKBCF Contract No. HY/2013/03
(2) All sediments are in Type II disposal method except Cat. L (in Type I)

Appendix H. Environmental Licenses and Permits

Environmental Licences and Permits

Item No.	Type of Permit / Licence	Reference No.	Application Date	Valid from	Valid until	Remark
1	Environmental Permit under EIAO	EP-353/2009/K	24 Mar 2016	11 Apr 2016	N/A	Issued
2	Construction Dust Notification (HKBCF Southern Portion)	387156	26 Mar 2015	1 Apr 2015	N/A	Notified
3	Construction Waste Disposal Account	7022038	16 Mar 2015	1 Apr 2015	N/A	Account approved
4	Registration as a Chemical Waste Producer (HKBCF Southern Portion)	Waste Producer Number (WPN): 5213-951-C3952-01	27 Mar 2015	27 Apr 2015	N/A	Registration completed
5	Discharge Licence under WPCO (Works Area WA3)	WT00022316-2015	1 Jun 2015	14 Aug 2015	31 Aug 2020	Issued
6	Construction Noise Permit	GW-RS0665-16	14 Jun 2016	1 Jul 2016	31 Oct 2016	Expired during reporting period
7	Construction Noise Permit	PP-RS0022-16	25 July 2016	1 Sep 2016	28 Feb 2017	Issued
8	Construction Noise Permit	GW-RS1064-16	28 Sep 2016	1 Nov 2016	30 Apr 2017	Issued
9	Construction Noise Permit	GW-RS1192-16	11 Nov 2016	28 Nov 2016	27 Feb 2017	Issued

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

Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Complaints	Notifications of Summons	Successful Prosecutions
This reporting period	2	0	0
From commencement date of construction to end of reporting month	4	0	0