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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**  
TC/GC/bw/T355861/02/  
02/L089

**Monthly EM&A Report for January 2018**

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

20 February 2018

**By Email**

Dear Sir,

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F +852 2827 1823  
mottmac.hk

In accordance with Condition 5.4 of the Environmental Permit (EP-353/2009/K) covering the captioned contract, we are pleased to submit the certified Monthly EM&A Report for January 2018 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 / Mr. Billy Lao (By Email)

20 February 2018

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)  
Monthly Environmental Monitoring & Audit Report for January 2018**

Reference is made to the Environmental Team's submission of the Monthly Environmental Monitoring & Audit Report for January 2018 certified by the ET Leader (ET's ref.: "TC/GC/bw/T355861/02/02/L089" dated 20 February 2018) and provided to us via e-mail on 20 February 2018.

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

The ET Leader is reminded that it is the ET's responsibility to ensure the report be timely submitted to the Director of Environmental Protection and the reported information be true, valid and correct as per Conditions 5.4 and 5.5 of EP-353/2009/K.

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

Yours faithfully,  
For and on behalf of  
Ramboll 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)
	C SCE	Mr. Jason Chung	(By Fax: 2459 4336)

Internal: DY, YH, TM, HW, ENPO Site

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

Monthly EM&A Report for January 2018

February 2018

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# Executive summary

This Monthly 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 31<sup>st</sup> Monthly EM&A Report for the Contract which summaries findings of the EM&A works during the reporting period from 1 to 31 January 2018 (the “reporting period”).

## Environmental Monitoring and Audit Progress

The monthly EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). It should be noted that the air quality, noise, water quality and dolphin monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building” 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, noise monitoring at NMS2 and NMS3B, water quality monitoring at the twenty-one stations and dolphin monitoring works at the twenty-four transects as part of EM&A programme if these monitoring stations are no longer covered under Contract Nos. HY/2013/01 and HY/2011/03. However, this is subject to ENPO’s final decision on which ET should carry out the monitoring work at these stations.

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

- Environmental Site Inspection: 3, 10, 15, 24 and 31 January 2018

## Breaches of Action and Limit Levels

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 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/2013/01 during the reporting period.

A total of three Action Level exceedances, consisting of one Action Level exceedance of SS for water quality and two Action Level exceedances of 24-hour TSP for air quality, were recorded by the Environmental Team of Contract No. HY/2013/01 during the reporting period and investigated by the ET of the Contract.

It was concluded that the air quality exceedance and water quality exceedance were not due to HY/2013/04.

Impact dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Report (for the reporting period) prepared for Contract No. HY/2013/01.

### Complaint Log

The complaint received in relation to the environmental impact during December 2017 (as described below) was investigated by the ET of the Contract.

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
---------	----------------------------------	---------------------------	-------------

007	ENPO-C0129	29 December 2017	Air Quality and Water Quality
-----	------------	------------------	-------------------------------

The complaint was about effectiveness of mitigation measures for dust and mud on roads related to HZMB BCF Island site works.

ET conducted regular weekly site inspections on 10, 15 and 24 January 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. Water spray was provided for haul roads in the HY/2013/04 site area. Also, water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 towards HZMB BCF Island site exit; this was enhanced with a wheel wash facility which the Contractor completed and implemented on 27 January 2018.

After operation of the wheel wash facility, ET conducted weekly site inspections on 31 January, 9 and 12 February 2018 with continued extra focus on air quality and water quality mitigation measures as mentioned above. No specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed. On 12 February 2018, an air quality observation regarding fugitive dust generated when vehicles passed through the haul road between wheel washing facilities and Box Culvert C was observed. The Contractor was reminded to provide watering on haul road frequently.

The Contractor was reminded to properly implement all necessary air and water quality mitigation measures identified in the EM&A Manual. Proper implementation of the site watering plan should be maintained to prevent potential dust dispersion due to site vehicles. Also, all site vehicles leaving HY/2013/04 site should be properly washed at the wheel washing facilities at HY/2013/04 site exit to prevent muddy trail on the access roads and public roads thereafter.

### 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.

### **Future Key Issues**

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

- Pier column, retaining wall, pump house interior works with E&M works, segment erection, excavation with road and drainage works, outfall works (land-based), asphalt paving, in situ deck structure.

# 1 Introduction

## 1.1 Background

On 13 March 2015, Mott MacDonald Hong Kong Limited (MMHK) was commissioned by China State Construction Engineering (Hong Kong) Limited (also referred to as “the Contractor”) to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for Contract No. HY/2013/04 “Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)” (“the Contract”) for the Highways Department of Hong Kong Special Administrative Region (HKSAR).

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 31<sup>st</sup> Monthly EM&A Report summarising the findings of EM&A activities conducted under the Contract from 1 to 31 January 2018 (the “reporting period”) and is submitted to fulfil Condition 5.4 of the EP.

## 1.2 Project Description

The Proposed works under this Contract comprise the following:

- Construction of vehicular bridge and at-grade roads at the southern portion of Hong Kong Boundary Crossing Facilities;
- Construction of associated street lighting, street furniture, road marking, road signage, box culverts and outfalls, drainage, sewerage, fresh water and flushing water supply, irrigation, landscape, electrical and mechanical (E&M), utilities and services works;
- Provisioning of civil engineering works and power supply for Traffic Control and Surveillance System (TCSS); and
- Other works in accordance with the Contract.

## 1.3 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 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	Jason Chung	9127 8369	2459 4336
	Environmental Officer	Xavier Lam	9493 2944	2459 4336
		Billy Lao	6679 1950	2459 4336
Environmental Team (Mott MacDonald Hong Kong Limited)	Environmental Team Leader	Gary Chow	2828 5874	2827 1823
24-hour Complaint Hotline	-	-	5236 7111	-

## 1.4 Construction Programme

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

## 1.5 Construction Works undertaken during the Reporting Period

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

- Box Culvert D: no works
- Box Culvert C: Bay 2 base slab, roof and wall completed; Bay 1 and outfall base slab completed (all land-based works).
- Pier Column: no works
- Segment Erection: 69 no. completed
- Segment Delivery: delivery completed on 20 January 2018
- No generation of excavated marine sediment

Marine-based outfall works had not commenced during this reporting month.

## 2 Air Quality Monitoring

### 2.1 Monitoring Locations

The air quality monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building” 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 as part of EM&A programme if these air quality monitoring stations are no longer covered under Contract No. HY/2013/01 and HY/2011/03. **Figure 2.1** shows the locations of air monitoring stations.

**Table 2.1: Construction Dust Monitoring Locations**

Identification No.	Location Description
AMS6 <sup>(1)</sup>	Dragonair/CNAC (Group) Building
AMS7 <sup>(1)</sup>	Hong Kong SkyCity Marriot Hotel

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.

### 2.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology and monitoring schedule are detailed in the monthly EM&A Reports prepared for Contract Nos. HY/2013/01 and HY/2011/03.

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

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

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.

## 2.3 Monitoring Results and Exceedance Investigations

The monitoring results for AMS6 and AMS7 are reported in the monthly EM&A Reports prepared for Contract Nos. HY/2011/03 and HY/2013/01 respectively.

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 during the reporting period.

Also, two Action Level exceedances of 24-hour TSP level were recorded at stations AMS2 and AMS3B by the Environmental Team of Contract No. HY/2013/01 during the reporting period and investigated by the ET of the Contract.

Air quality exceedances recorded during the reporting period are summarised in **Table 2.4**.

**Table 2.4: Action and Limit Level Exceedance for Air Quality**

Date	Parameter	Station	Exceedance Recorded
17 Jan 2018	24-hour TSP	AMS2	Action Level
17 Jan 2018	24-hour TSP	AMS3B	Action Level

The details of the air quality exceedances can be referred to in the Monthly EM&A report under Contract No. HY/2013/01.

Investigations into the exceedances were conducted and the findings are summarised below.

### 17 January 2018 (at AMS2 and AMS3B)

According to the Contractor of HY/2013/04, the major construction activities conducted under the Contract during the monitoring period included bridge segment delivery and erection, and construction of Box Culvert D.

As informed by the Contractor of HY/2013/04, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan. This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the EM&A Manual and Environmental Permit.

During ET's regular weekly site inspection on 15 January 2018 (between 14:00 and 15:00), one air quality observation regarding a dry haul road at Bridge D1 was made; subsequently the Contractor provided water spray for this location and the observation was closed. The remaining haul roads were observed to be watered and no fugitive dust generation from HY/2013/04 works was observed during this inspection.

During the next ET regular weekly site inspection on 24 January 2018 (between 14:00 and 15:00), there was no air quality observation associated with watering of site areas.

Photos relating to the site inspections on 15 January 2018 and 24 January 2018 are presented in ET's investigation report.

The wind data collected at the AMS3B wind station at Works Area WA2 during the monitoring period on 17 and 18 January 2018 shows that winds were still (averaged wind speed 0 m/s) during the monitoring period. This indicates that it was unlikely that the source of exceedances could be attributed to HY/2013/04.

Information available on EPD's Air Quality Health Index (AQHI) website shows that the short-term health risk of air pollution between 08:00 a.m. on 17 January 2018 and 08:00 a.m. on 18 January 2018 was low to serious in Tung Chung (with maximum AQHI of 10+ at 13:00-19:00 on 17 January 2018). This, combined with the still winds recorded at the wind station, indicate that the background air pollution was relatively high during part of the monitoring period and may have contributed to the high level of TSP recorded. The AQHI data is available online at [http://www.aqhi.gov.hk/epd/ddata/html/history/2018/201801\\_Eng.csv](http://www.aqhi.gov.hk/epd/ddata/html/history/2018/201801_Eng.csv).

It was concluded that the exceedances were not due to HY/2013/04.

## 3 Noise Monitoring

### 3.1 Monitoring Locations

The noise monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”. The ET of the Contract or another ET of the HZMB project is required to conduct noise monitoring at NMS2 and NMS3B as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/01. **Figure 3.1** shows the locations of noise monitoring stations.

**Table 3.1: Construction Noise Monitoring Locations**

Identification No.	Location Description
NMS2 <sup>(1)</sup>	Seaview Crescent
NMS3B <sup>(1) (2)</sup>	AECOM PRE's Office

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

### 3.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology and monitoring schedule are detailed in the monthly EM&A Reports prepared for Contract No. HY/2013/01.

The Action and Limit Levels for construction noise are defined in **Table 3.2**.

**Table 3.2: Action and Limit Level for Construction Noise**

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

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

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

### 3.3 Monitoring Results

The monitoring results for NMS2 and NMS3B are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/01. No noise exceedances were recorded at stations NMS2 and NMS3B by the ET of Contract No. HY/2013/01 during the reporting period.

## 4 Water Quality Monitoring

### 4.1 Monitoring Locations

The water quality monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”. A total of twenty-one stations (nine Impact Stations, seven Sensitive Receiver Stations and five Control/Far Field Stations) are covered by the current EM&A programme. The ET of the Contract or another ET of the HZMB project is required to conduct water quality monitoring at these stations as part of EM&A programme if these monitoring stations are no longer covered under Contract No. HY/2013/01. **Table 4.1** and **Figure 4.1** shows the locations of water quality monitoring stations.

**Table 4.1: Impact Water Quality Monitoring Stations**

Station	Description	East	North
IS5	Impact Station (Close to HKBCF construction site)	811579	817106
IS(Mf)6	Impact Station (Close to HKBCF construction site)	812101	817873
IS7	Impact Station (Close to HKBCF construction site)	812244	818777
IS8	Impact Station (Close to HKBCF construction site)	814251	818412
IS(Mf)9	Impact Station (Close to HKBCF construction site)	813273	818850
IS10(N)	Impact Station (Close to HKBCF construction site)	812942	820881
IS(Mf)11	Impact Station (Close to HKBCF construction site)	813562	820716
IS(Mf)16	Impact Station (Close to HKBCF construction site)	814328	819497
IS17	Impact Station (Close to HKBCF construction site)	814539	820391
SR3(N)	Sensitive receivers (San Tau SSSI)	810689	816591
SR4(N)	Sensitive receivers (Tai Ho)	814705	817859
SR5(N)	Sensitive receivers (Artificial Reef in NE Airport)	812569	821475
SR6	Sensitive receivers (Sha Chau and Lung Kwu Chau Marine Park)	805837	821818
SR7	Sensitive receivers (Tai Mo Do)	814293	821431
SR10A(N)	Sensitive receivers (Ma Wan FCZ) 1	823644	823484
SR10B(N2)	Sensitive receivers (Ma Wan FCZ) 2	823689	823159
CS(Mf)3(N)	Control Station	808814	822355
CS(Mf)5	Control Station	817990	821129
CS4	Control Station	810025	824004
CS6	Control Station	817028	823992

### 4.2 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 No. HY/2013/01.

The Action and Limit Levels for water quality are provided in **Table 4.2**.



**Table 4.2: Action and Limit Levels for Water Quality**

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

**Remarks:**

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

**Notes:**

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

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.

### 4.3 Monitoring Results and Exceedance Investigations

The monitoring results for the twenty-one monitoring stations are reported in the monthly EM&A Reports prepared for Contract No. HY/2013/01.

One Action Level exceedance of SS was recorded by the Environmental Team of Contract No. HY/2013/01 during the reporting period and investigated by the ET of the Contract.

Water quality exceedances recorded during the reporting period are summarised in **Table 4.3**.

**Table 4.3: Action and Limit Level Exceedance for Water Quality**

Date	Parameter	Station	Depth	Exceedance Recorded during Mid-ebb Tide	Exceedance Recorded during Mid-flood Tide
31 Jan 2018	SS	SR6	Depth Average	Action Level	-

The details of water quality exceedances can be referred to in the Monthly EM&A report under Contract No. HY/2013/01.

Investigation into the exceedance was conducted and the findings are summarised below.

#### 31 January 2018

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in December 2017 and no marine-based works were conducted under the contract on 31 January 2018. Furthermore, no discharge originating from any HY/2013/04 site works on 31 January 2018 was identified.

While SS exceedance was recorded at SR6, no exceedance was recorded at IS(Mf)9 which is the nearest monitoring location to HY/2013/04 loading and unloading point and the shoreline interfacing with open waters.

During ET's regular weekly site inspection on 31 January 2018, HY/2013/04 site shoreline interfacing with open waters was inspected between 14:25 and 15:00 (i.e. shortly after the recorded exceedance at SR6 during mid-ebb tide). There were no observations referring to water quality mitigation measures associated with that shoreline.

It was concluded that the exceedance was not due to HY/2013/04.

## 5 Dolphin Monitoring

### 5.1 Monitoring Locations

The dolphin monitoring works for the Contract are covered by Contract No. HY/2013/01 “Hong Kong-Zhuhai-Macao Bridge HKBCF – Passenger Clearance Building”. The ET of the Contract or another ET of the HZMB project is required to conduct dolphin monitoring at the twenty-four transects as part of EM&A programme if these transects are no longer covered under Contract No. HY/2013/01. The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau survey area; and Northwest Lantau survey area.

**Table 5.1** shows the co-ordinates for the transect lines and layout map.

The revised layout map showing the transect lines have been provided by AFCD and are shown in **Figure 5.1**.

**Table 5.1: Impact Dolphin Monitoring Line Transect Co-ordinates (Provided by AFCD)**

Transect	HK Grid System		Long Lat in WGS84	
	X	Y	Long	Lat
1 <sup>#</sup>	804671	815456	113.870287	22.277678
	804671	831404	113.869975	22.421696
2 <sup>#^</sup>	805476	820800	113.877995	22.325951
	805476	826654	113.877882	22.378815
3 <sup>^</sup>	806464	821150	114.030267	22.196697
	806464	822911	114.047344	22.196712
4 <sup>^</sup>	807518	821500	114.033651	22.206219
	807518	829230	114.108618	22.206267
5 <sup>^</sup>	808504	821850	114.037037	22.215126
	808504	828602	114.102523	22.215169
6 <sup>^</sup>	809490	822150	114.039938	22.224033
	809490	825352	114.070995	22.224056
7 <sup>#^</sup>	810499	822000	114.038474	22.233143
	810499	824613	114.063820	22.233163
8 <sup>#</sup>	811508	821123	113.936539	22.328966
	811508	824254	113.936486	22.357241
9 <sup>#</sup>	812516	821303	113.946320	22.330606
	812516	824254	113.946279	22.357255
10 <sup>*</sup>	813525	820827	113.956112	22.326321
	813525	824657	113.956066	22.360908
11 <sup>#</sup>	814556	818853	113.966155	22.304858
	814556	820992	113.966125	22.327820
12	815542	818807	113.975726	22.308109
	815542	824882	113.975647	22.362962

Transect	HK Grid System		Long Lat in WGS84	
13	816506	819480	113.985072	22.314192
	816506	824859	113.985005	22.362771
14	817537	820220	113.995070	22.320883
	817537	824613	113.995018	22.360556
15	818568	820735	114.005071	22.325550
	818568	824433	114.005030	22.358947
16	819532	821420	114.014420	22.331747
	819532	824209	114.014390	22.356933
17	820451	822125	114.023333	22.338117
	820451	823671	114.023317	22.352084
18	821504	822371	114.033556	22.340353
	821504	823761	114.033544	22.352903
19	822513	823268	114.043340	22.348458
	822513	824321	114.043331	22.357971
20	823477	823402	114.052695	22.349680
	823477	824613	114.052686	22.360610
21	805476	827081	113.877878	22.382668
	805476	830562	113.877811	22.414103
22	806464	824033	113.887520	22.355164
	806464	829598	113.887416	22.405423
23	814559	821739	113.966142	22.334574
	814559	824768	113.966101	22.361920
24 <sup>^</sup>	805476	815900	113.979368	22.187721
	805476	819100	114.010398	22.187756

## Remarks:

- (a) \* Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 5.1 could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore the total transect length for both NEL and NWL combined is reduced to approximately 108km.
- (b) # Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.
- (c) <sup>^</sup> The change of transect lines 2, 3, 4, 5, 6 and 7 and new transect line 24 were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

## 5.2 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 No. HY/2013/01.

The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 5.2** and **Table 5.3**, respectively.

**Table 5.2: Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)**

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

**Table 5.3: Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring**

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

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

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

### 5.3 Monitoring Results

The monitoring results for dolphin monitoring during the reporting period are reported in the monthly EM&A Report (for the reporting period) prepared for Contract No. HY/2013/01.

## 6 Environmental Site and Audit

### 6.1 Site Inspection

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 3, 10, 15, 24 and 31 January 2018.

Particular observations during the site inspections and corrective actions undertaken by the Contractor are described below.

#### 29 December 2017

- a. A stockpile of C&D material was observed near P105 (Bridge D1). Subsequently, the C&D material was cleared. The observation was closed on 3 January 2018.

#### 3 January 2018

- a. Spreading of dust was observed at haul road near P104 (Bridge D1). Subsequently, the haul road near P104 (Bridge D1) has been water spray to ensure wet surface. The observation was closed on 10 January 2018.
- b. Loose general refuse was observed near the pump house area. Subsequently, the general refuse was cleared. The observation was closed on 10 January 2018.

#### 10 January 2018

- a. Uncovered C&D waste was observed near the bridge D8. Subsequently, the C&D waste was cleared. The observation was closed on 15 January 2018.

#### 15 January 2018

- a. The Contractor was reminded to display a sign of temporary stop in the vicinity of wheel washing facilities. Subsequently, the sign of temporary stop in the vicinity of wheel washing area was provided. The observation was closed on 24 January 2018.
- b. The Contractor was reminded to provide watering on road at Bridge D1. Subsequently, water spray was provided. The observation was closed on 24 January 2018.
- c. The Contractor was reminded to clear the general refuse inside the gully on the deck of Bridge D1. Subsequently, the general refuse was cleared. The observation was closed on 24 January 2018.
- d. C&D materials were accumulated on the deck of Bridge D1. Subsequently, the C&D materials were sorted and enclosed. The observation was closed on 24 January 2018.
- e. The Contractor was reminded to provide chemical container with drip tray at Box Culvert C. Subsequently, the chemical container was removed. The observation was closed on 24 January 2018.
- f. The Contractor was reminded to display the appropriate NRMM label affixed on the generator at Box Culvert C. Subsequently, the appropriate NRMM label was affixed. The observation was closed on 24 January 2018.

#### 24 January 2018

- a. Poor house keeping was observed near pump house area. The Contractor was reminded to clear the general refuse as soon as possible. Follow-up actions for the outstanding

observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

- b. Loose general refuse was observed at Box Culvert C area. The Contractor was reminded to clear the general refuse as soon as possible. Subsequently, the general refuse was cleared. The observation was closed on 31 January 2018.

### 31 January 2018

- a. Loose general refuse was observed near A801 area. The Contractor was reminded to clear the general refuse as soon as possible. Follow-up actions for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.
- b. Loose general refuse was observed near pump house area at P805. The Contractor was reminded to clear the general refuse as soon as possible. Follow-up actions for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

## 6.2 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 monthly summary of waste flow table is detailed in **Appendix E**.

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.

### 6.2.1 Disposal of Marine Sediment Extracted from Bored Piling Works

#### 6.2.1.1 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 m<sup>3</sup> to 126,000 m<sup>3</sup> (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/2013/04 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 m<sup>3</sup> 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.

#### 6.2.1.2 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.



### 6.2.1.3 Reporting

AECOM has confirmed that the disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017. The total quantities disposed are presented in the following table (**Table 6.1**):

**Table 6.1: Summary of Marine Sediment disposed to Dumping Site via Contract No. HY/2013/03**

	Type of Sediment and Quantity Disposed (m <sup>3</sup> )	
	Cat. L (in Type I)	Type II
Total	3,570	39,814

Note: For monthly breakdown of these quantities, please refer to the waste flow table in **Appendix E**.

## 6.3 Environmental Licenses and Permits

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

## 6.4 Implementation Status of Environmental Mitigation Measures

In response to the site audit findings, the Contractor carried out corrective actions.

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

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. The marine traffic records and geographical plots of all the vessel tracks to demonstrate the conformance of the vessel to the proposed route in January 2018 would be provided to ER, ETL and IEC/ENPO for checking within the month of February 2018.

The localised silt curtains under this Contract were deployed on 15 July 2017. No dolphins were observed by the trained MMOs during the reporting month. Regarding the implementation of dolphin monitoring and protection measures (i.e. implementation of Dolphin Watching Plan, Dolphin Exclusion Zone and Silt Curtain Integrity Check), regular checking was conducted by the experienced MMOs within the works area to ensure no dolphin was trapped by the enclosed silt curtain systems. Any dolphin spotted within the enclosed silt curtain systems was reported and recorded. Relevant procedures were followed and measures were well implemented. Silt curtain systems were also inspected timely in accordance to the submitted plan. All inspection records were kept properly.

## 6.5 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 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 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/2013/01 during the reporting period.

Water quality monitoring exceedances were recorded by the ET of Contract No. HY/2013/01 during the reporting period. The investigation findings are presented in Section 4.3 of this report.

Impact dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Report (for the reporting period) prepared for Contract No. HY/2013/01.

## 6.6 Summary of Complaints, Notification of Summons and Successful Prosecution

### Complaints

The complaint received in relation to the environmental impact during December 2017 was investigated by the ET of the Contract. The summary of environmental complaints is presented in **Table 6.2**. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

**Table 6.2: Summary of Environmental Complaints for the Reporting Month**

Log No.	Environmental Complaint Ref. No.	Date of Complaint Receipt	Description
007	ENPO-C0129	29 December 2017	Air Quality and Water Quality

The complaint was about effectiveness of mitigation measures for dust and mud on roads related to HZMB BCF Island site works.

The complaint was investigated by the ET of the Contract.

This investigation reviewed the effectiveness of mitigation measures implemented by the Contractor of HY/2013/04 to control any potential dust or mud nuisance attributed to vehicles leaving the HY/2013/04 site boundary.

The relevant mitigation measures for access roads for the HZMB BCF Island site, as required in the EMIS and statutory requirements in the Air Pollution Control (Construction Dust) Regulations and other applicable environmental legislation, are consolidated as follows:

- Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels and to ensure that no earth, mud or debris is deposited by them on roads.
- 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.
- Every main haul road shall be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials, or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.
- 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.
- The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.

In early January 2018 RE had requested the Contractor of HY/2013/04 to provide a wheel washing facility at the HY/2013/04 site boundary exit for vehicles to adjacent HKBCF contract site. A map showing the general location of the HKBCF contract sites is presented in Attachment 1 of ET's investigation report.

As informed by the Contractor of HY/2013/04, water spray was provided by site workers as an interim measure at the HY/2013/04 site boundary entrance/exit for vehicles leaving HY/2013/04 site in the direction of HZMB BCF Island site exit. The wheel washing facility was subsequently completed and implemented on 27 January 2018. Contractor's photos showing the operation of the wheel wash facility on that day are presented in Attachment 2 of ET's investigation report.

Also, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan (as presented in Attachment 3 of ET's investigation report). This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the EM&A Manual and Environmental Permit.

Before operation of the wheel wash facility, ET conducted regular weekly site inspections on 10, 15 and 24 January 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. The following observations were made:

- 10 January 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB BCF Island site exit. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.
- 15 January 2018 (14:30-15:30): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB BCF Island site exit. An air quality observation regarding effectiveness of water spray was made; subsequently the Contractor displayed a temporary stop sign to ensure vehicles were being properly washed at this location and the observation was closed. Also, an air quality observation regarding dry haul road at Bridge D1 was observed; subsequently, the Contractor provide water spray.
- 24 January 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB BCF Island site exit. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.

Following commencement of operation of the wheel wash facility, ET conducted regular weekly site inspections on 31 January, 9 and 12 February 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. The following observations were made:

- 31 January 2018 (14:30-15:00): Water spray provided for haul roads in the HY/2013/04 site area. Wheel wash facility was in operation. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.
- 9 February 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Wheel wash facility was in operation. No specific observation referring to air or water quality mitigation measures associated with wheel washing facility and access roads was observed.
- 12 February 2018 (14:00-15:00): Wheel wash facility was in operation; no specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed. Water spray was provided for haul roads in the HY/2013/04 site area. An air quality observation regarding fugitive dust generated when vehicles passed

through the haul road between wheel washing facilities and Box Culvert C was observed. The Contractor was reminded to provide watering on haul road frequently.

Relevant photos for each abovementioned site inspection are presented in Attachment 4 of ET's investigation report.

The ET's investigation report for the abovementioned complaint is presented in **Appendix J**.

#### **Notification of Summons and Successful Prosecution**

No notification of summons or prosecutions was received during the reporting period.

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

## 7 Future Key Issues

### 7.1 Construction Programme for the Coming Months

As informed by the Contractor, the major construction activities for February 2018 are summarized in **Table 7.1**.

**Table 7.1: Construction Activities for February 2018**

Site Area	Description of Activities
HKBCF	<ul style="list-style-type: none"> <li>Pier column, retaining wall, pump house interior works with E&amp;M works, segment erection, excavation with road and drainage works, outfall works (land-based), asphalt paving, in situ deck structure.</li> </ul>

### 7.2 Environmental Site Inspection Schedule for the Coming Month

The tentative schedule for weekly site inspections for February 2018 is provided in **Appendix I**.

## 8 Conclusions

### 8.1 Conclusions

Commencement of the Contract took place on 13 March 2015 and the construction works of the Contract commenced on 13 July 2015.

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

There was no Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level recorded at station AMS7 by the Environmental Team of Contract No. HY/2013/01 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/2013/01 during the reporting period.

A total of three Action Level exceedances, consisting of one Action Level exceedance of SS for water quality and two Action Level exceedances of 24-hour TSP for air quality, were recorded by the Environmental Team of Contract No. HY/2013/01 during the reporting period and investigated by the ET of the Contract.

It was concluded that the air quality exceedance and water quality exceedance were not due to HY/2013/04.

Impact dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Report (for the reporting period) prepared for Contract No. HY/2013/01.

Environmental site inspections were carried out on 3, 10, 15, 24 and 31 January 2018. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.

The complaint received in relation to the environmental impact during December 2017 was investigated by the ET of the Contract.

The complaint was about effectiveness of mitigation measures for dust and mud on roads related to HZMB BCF Island site works.

ET conducted regular weekly site inspections on 10, 15 and 24 January 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. Water spray was provided for haul roads in the HY/2013/04 site area. Also, water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 towards HZMB BCF Island site exit; this was enhanced with a wheel wash facility which the Contractor completed and implemented on 27 January 2018.

After operation of the wheel wash facility, ET conducted weekly site inspections on 31 January, 9 and 12 February 2018 with continued extra focus on air quality and water quality mitigation measures as mentioned above. No specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed. On 12 February

2018, an air quality observation regarding fugitive dust generated when vehicles passed through the haul road between wheel washing facilities and Box Culvert C was observed. The Contractor was reminded to provide watering on haul road frequently.

The Contractor was reminded to properly implement all necessary air and water quality mitigation measures identified in the EM&A Manual. Proper implementation of the site watering plan should be maintained to prevent potential dust dispersion due to site vehicles. Also, all site vehicles leaving HY/2013/04 site should be properly washed at the wheel washing facilities at HY/2013/04 site exit to prevent muddy trail on the access roads and public roads thereafter.

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

# Figures



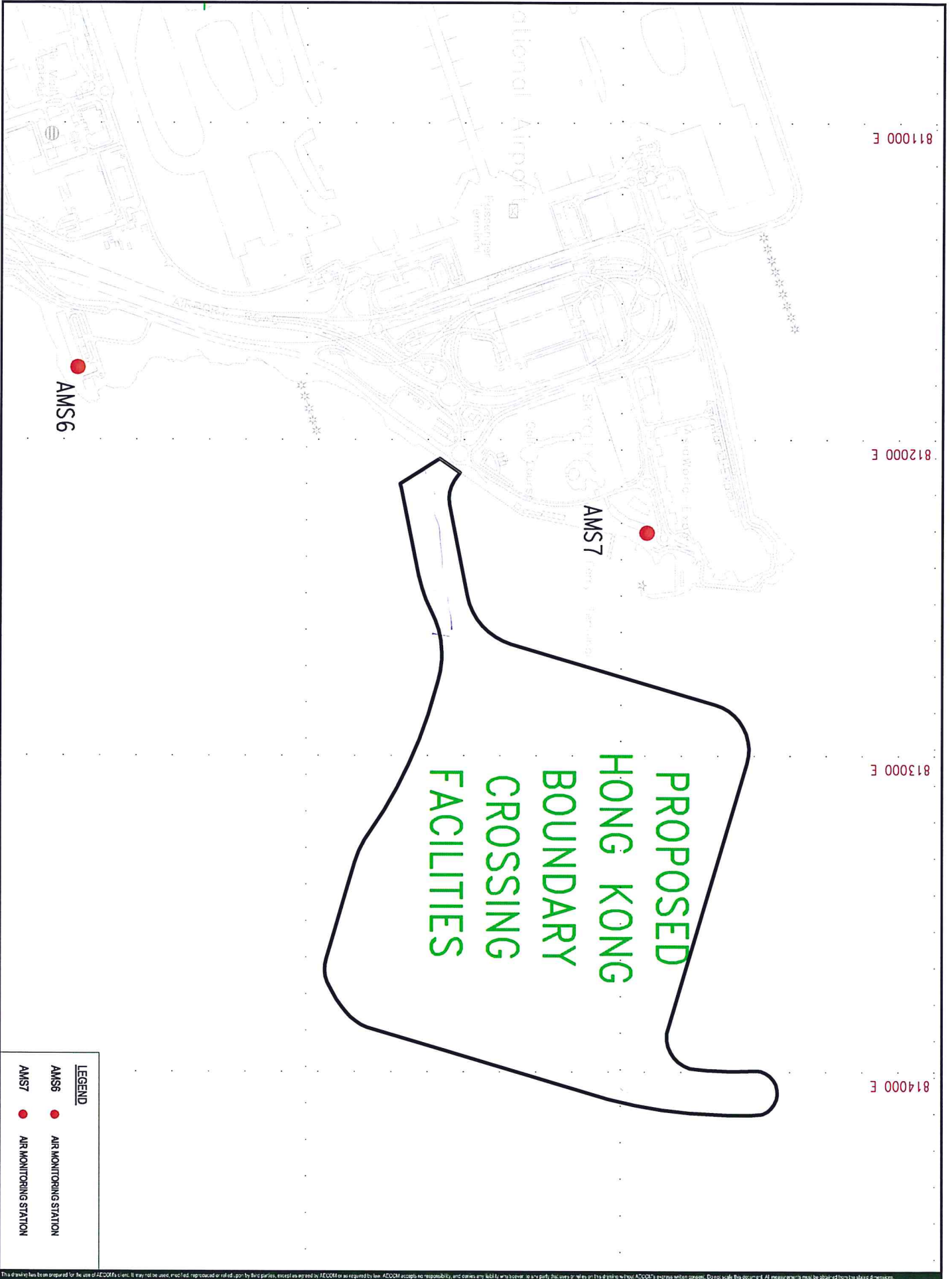
**Figure 2.1 Location of Air Quality Monitoring Stations**

Plot File by: Manky 19/08/2013  
 PATH: P:\602498201\01\Figures\Figure 2(15mar) Cad Revised 19 August 13.dwg

Project Management Initials:

Checked:

ISO A3 297mm x 420mm



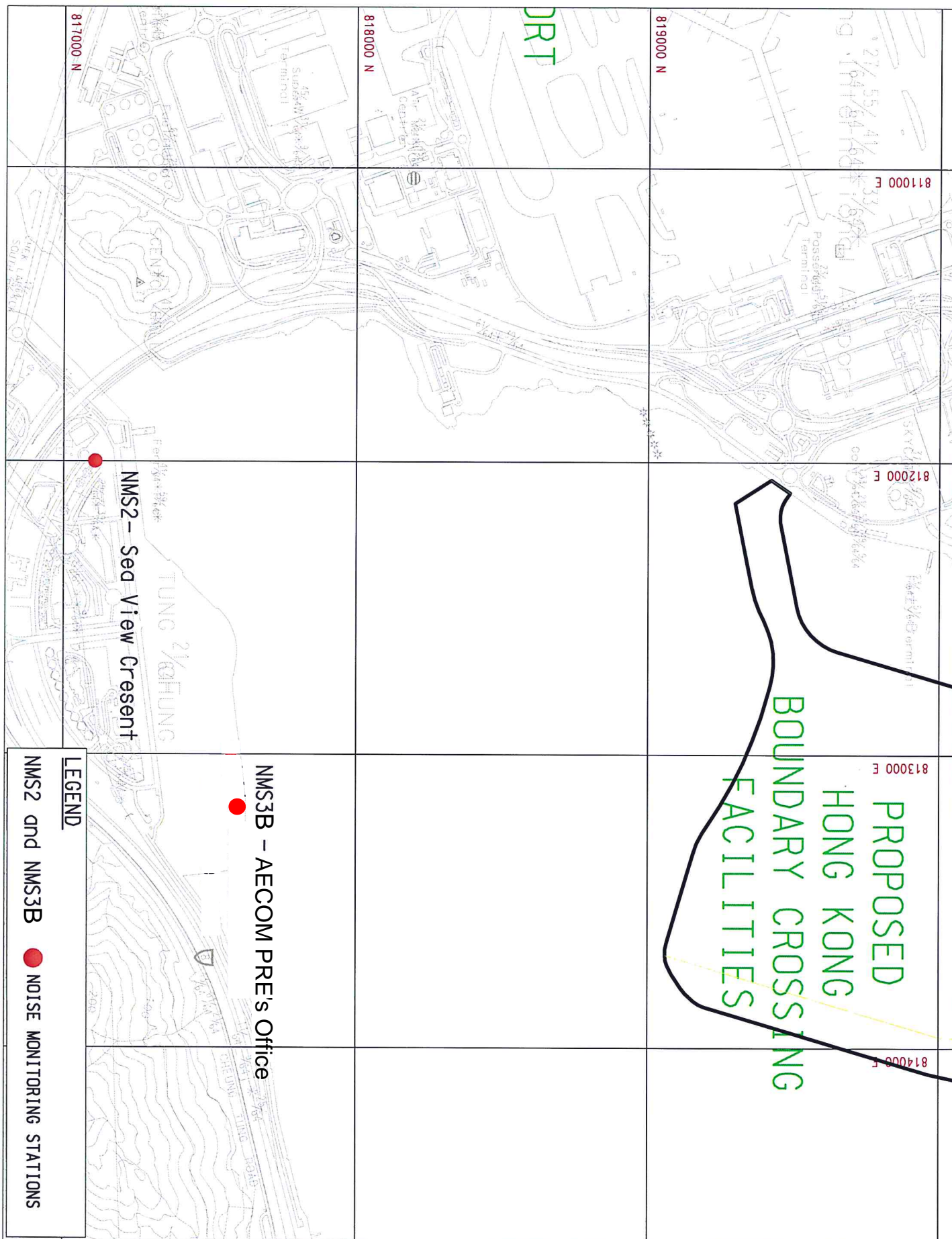
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**Figure 3.1 Location of Noise Quality Monitoring Stations**

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Project Management Initials: Checked:

ISO A3 297mm x 420mm





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

FIGURE 4.1— LOCATION OF WATER QUALITY MONITORING STATIONS

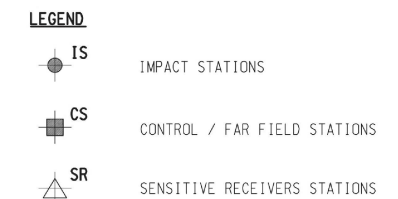
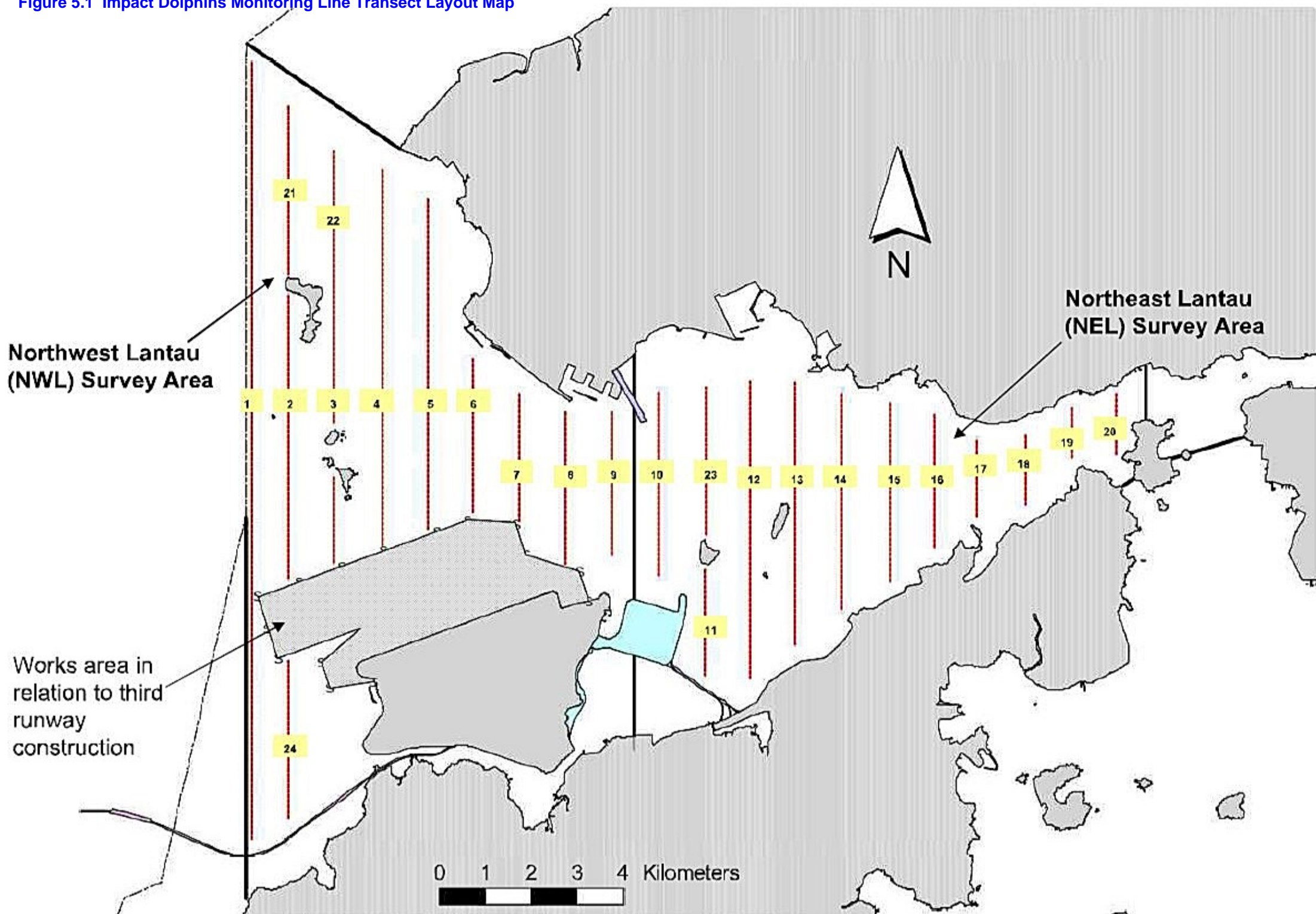
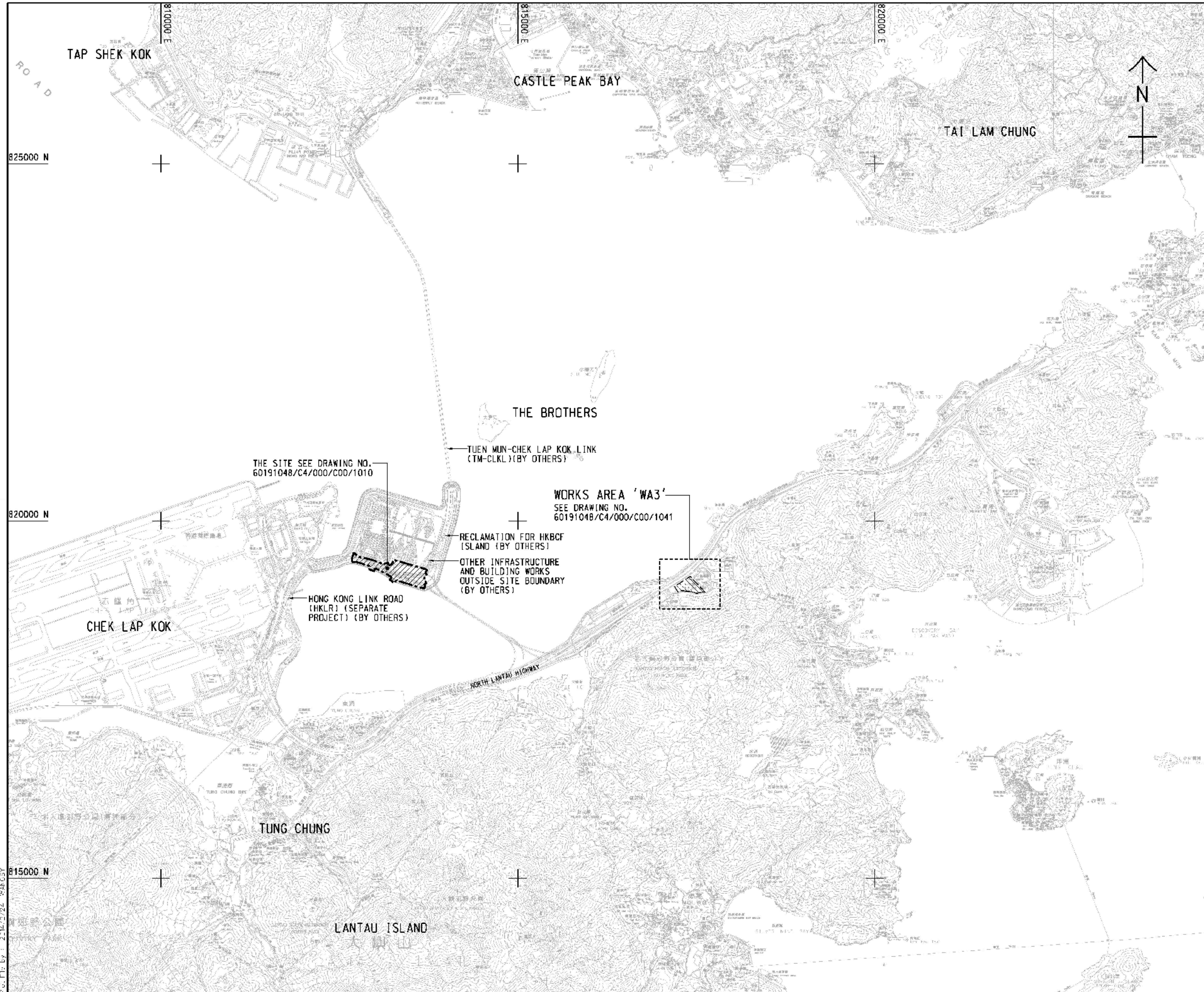


Figure 5.1 Impact Dolphins Monitoring Line Transect Layout Map



# 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

THE SITE SEE DRAWING NO. 60191048/C4/000/C00/1010

WORKS AREA 'WA3' SEE DRAWING NO. 60191048/C4/000/C00/1041

RECLAMATION FOR HKBCF (ISLAND) (BY OTHERS)  
OTHER INFRASTRUCTURE AND BUILDING WORKS OUTSIDE SITE BOUNDARY (BY OTHERS)

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

NORTH LANTAU HIGHWAY

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

REV.	DESCRIPTION	DATE
1	TENDER DRAWING	BWCW SCI FEB.14

**路政處 HIGHWAYS DEPARTMENT**  
**港珠澳大橋粵港工程署**  
 Hong Kong-Zhuhai-Macao Bridge Hong Kong Project Management Office

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

**SITE LOCATION PLAN**

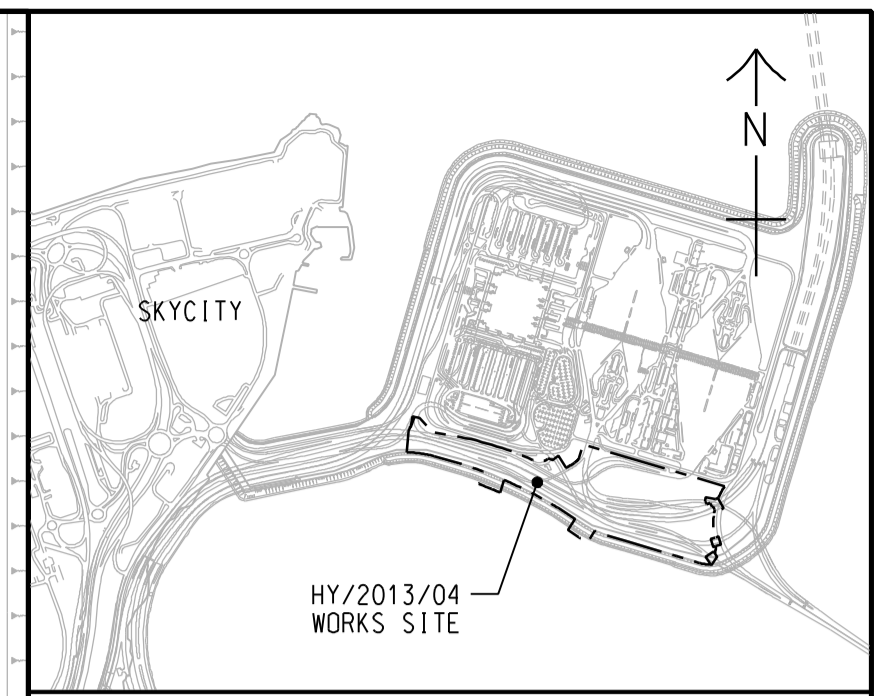
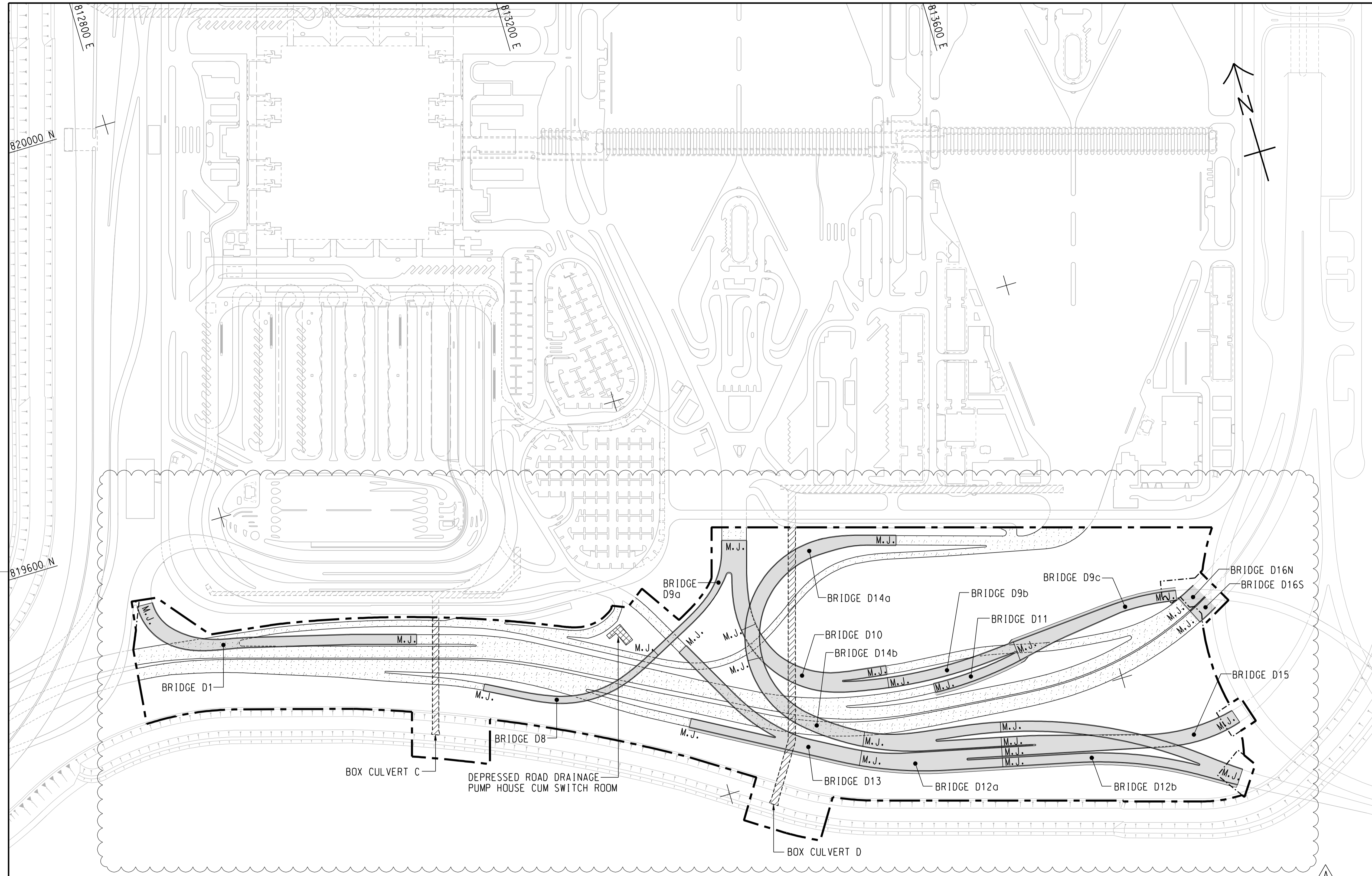
**AECOM** +  
 Rogers Stirk Harbour + Partners  
 BURO HAPPOLD ATKINS ADI +  
**Aedas**

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

DESIGNED BY BWCW	CONTRACT NO. HY/2013/04	APPROVED BY TKH
DRAWN BY MSY	STATUS REV.	

SCALE 1 : 25000  
 DIMENSIONS ARE IN METRES  
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P.S. [1] : 2.14.2024 14:03:51



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處  
 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  
**Aedas**  
 BURO HAPPOLD ATKINS ADI

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. O. APPROVED 批准人	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

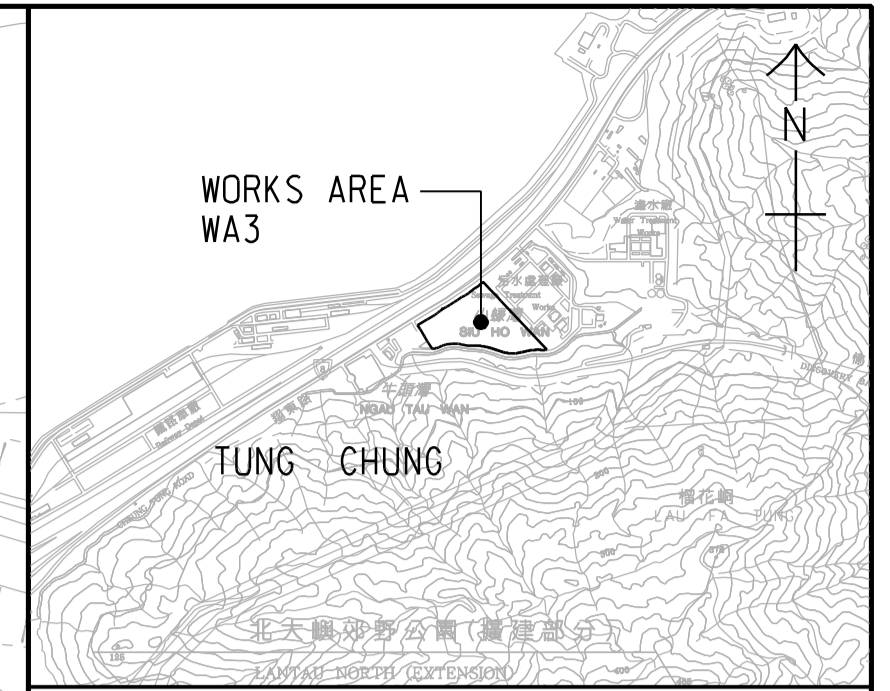
81200 E

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

p:\projects\60191048\drawing\contract\c4\1000\C4\_000\_C00\_1041.dgn

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

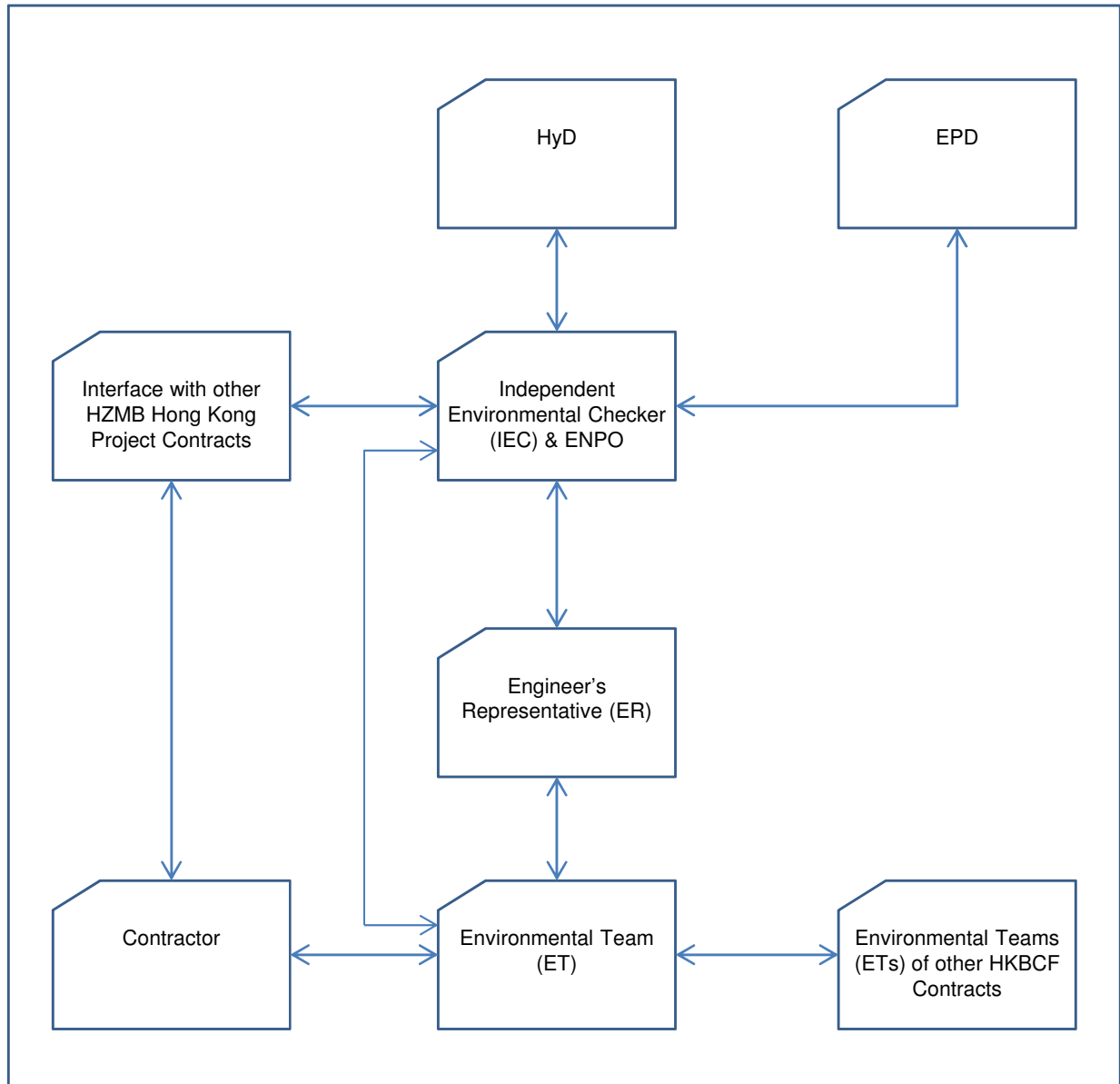
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圖紙編號

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	<b>WORKING DRAWING</b>			
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
<b>Essential Works Updates - Tier 1 - 26 C</b>																																																									
<b>Contract Key Dates</b>																																																									
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)																																																							
<b>Possession Dates</b>																																																									
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)																																																							
<b>Site Access Dates</b>																																																									
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)																																																							
<b>Contractual Key Dates - Stage / Section</b>																																																									
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)																																																							
<b>Contractual Handover Dates to Employer</b>																																																									
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
PROC.MA.1610	Detailed Design / Shop Drawings and Materials Submission	Detailed Design / Shop Drawings and Materials Submission																																											
PROC.MA.1615	Engineer's Review / Approval	Engineer's Review / Approval																																											
PROC.MA.1650	Production / Manufacturing / Fabrication	Production / Manufacturing / Fabrication																																											
PROC.MA.1670	Materials Delivery (first delivery)	21-Nov-16 ♦ Materials Delivery (first delivery)																																											
<b>Precast Concrete - Segments</b>																																													
PROC.MA.1760	Moulds Detailed Design Preparation / Submission	Moulds Detailed Design Preparation / Submission																																											
PROC.MA.1765	Engineer's Review / Approval	Engineer's Review / Approval																																											
PROC.MA.1770	Mould Fabrication	Mould Fabrication																																											
PROC.MA.1780	Cast Prototype / Inspection and Approval	Cast Prototype / Inspection and Approval																																											
PROC.MA.2570	Production of Precast Segments	Production of Precast Segments																																											
PROC.MA.2590	Materials Delivery (First Delivery)	14-Nov-16 ♦ Materials Delivery (First Delivery)																																											
<b>Segment Fabrication and Post Pouring</b>																																													
<b>Segment Fabrication Type A</b>																																													
Fab.A1.001	Segment Fabrication for Bridge D1 (96 nos)	Segment Fabrication for Bridge D1 (96 nos)																																											
<b>Segment Fabrication Type C1</b>																																													
Fab.TC1.0010	Segment Fabrication for Bridge D12b (91-106) 16 nos.	Segment Fabrication for Bridge D12b (91-106) 16 nos.																																											
Fab.TC1.0020	Segment Fabrication for Bridge D9c (1-3) 3 nos.	Segment Fabrication for Bridge D9c (1-3) 3 nos.																																											
Fab.TC1.0030	Segment Fabrication for Bridge D14a (1-30) 30 nos.	Segment Fabrication for Bridge D14a (1-30) 30 nos.																																											
Fab.TC1.0040	Segment Fabrication for Bridge D12a (66-80) 15 nos.	Segment Fabrication for Bridge D12a (66-80) 15 nos.																																											
Fab.TC1.0050	Segment Fabrication for Bridge D14b (14-27) 14 nos.	Segment Fabrication for Bridge D14b (14-27) 14 nos.																																											
Fab.TC1.0060	Segment Fabrication for Bridge D14c (1-15) 15 nos.	Segment Fabrication for Bridge D14c (1-15) 15 nos.																																											
Fab.TC1.0080	Segment Fabrication for Bridge D9c (4-14) 11 nos.	Segment Fabrication for Bridge D9c (4-14) 11 nos.																																											
Fab.TC2.00060	Segment Fabrication for Bridge D15 (48-64) 17 nos.	Segment Fabrication for Bridge D15 (48-64) 17 nos.																																											
Fab.TC3.0060	Segment Fabrication for Bridge D15 (31-47) 17 nos.	Segment Fabrication for Bridge D15 (31-47) 17 nos.																																											
Fab.TC4.0030	Segment Fabrication for Bridge D13 (103-129) 27 nos.	Segment Fabrication for Bridge D13 (103-129) 27 nos.																																											
Fab.TC4.0060	Segment Fabrication for Bridge D14c (46-60) 15 nos.	Segment Fabrication for Bridge D14c (46-60) 15 nos.																																											
<b>Segment Fabrication Type C2</b>																																													
Fab.TC1.0070	Segment Fabrication for Bridge D15 (1-15) 15 nos.	Segment Fabrication for Bridge D15 (1-15) 15 nos.																																											
Fab.TC2.00010	Segment Fabrication for Bridge D12b (112-127) 16 nos.	Segment Fabrication for Bridge D12b (112-127) 16 nos.																																											
Fab.TC2.00020	Segment Fabrication for Bridge D14a (31-59) 29 nos.	Segment Fabrication for Bridge D14a (31-59) 29 nos.																																											
Fab.TC2.00030	Segment Fabrication for Bridge D9c (29-42) 14 nos.	Segment Fabrication for Bridge D9c (29-42) 14 nos.																																											
Fab.TC2.00040	Segment Fabrication for Bridge D12a (48-65) 18 nos.	Segment Fabrication for Bridge D12a (48-65) 18 nos.																																											
Fab.TC2.00050	Segment Fabrication for Bridge D14c (16-30) 15 nos.	Segment Fabrication for Bridge D14c (16-30) 15 nos.																																											
Fab.TC3.0010	Segment Fabrication for Bridge D12b (44-84, 107-111) 46 nos.	Segment Fabrication for Bridge D12b (44-84, 107-111) 46 nos.																																											
Fab.TC3.0050	Segment Fabrication for Bridge D14c (31-45) 15 nos.	Segment Fabrication for Bridge D14c (31-45) 15 nos.																																											
Fab.TC4.0070	Segment Fabrication for Bridge D15 (65-78) 14 nos.	Segment Fabrication for Bridge D15 (65-78) 14 nos.																																											
<b>Segment Fabrication Type C3</b>																																													
Fab.TC3.0020	Segment Fabrication for Bridge D9c (15-28) 14 nos.	Segment Fabrication for Bridge D9c (15-28) 14 nos.																																											
Fab.TC3.0030	Segment Fabrication for Bridge D13 (43-70 & 100-102) 31 nos.	Segment Fabrication for Bridge D13 (43-70 & 100-102) 31 nos.																																											
Fab.TC3.0040	Segment Fabrication for Bridge D14b (28-49) 22 nos.	Segment Fabrication for Bridge D14b (28-49) 22 nos.																																											
Fab.TC4.0010	Segment Fabrication for Bridge D12b (1-43, 85-90) 49 nos.	Segment Fabrication for Bridge D12b (1-43, 85-90) 49 nos.																																											
Fab.TC4.0020	Segment Fabrication for Bridge D14a (60-75) 16 nos.	Segment Fabrication for Bridge D14a (60-75) 16 nos.																																											
Fab.TC4.0040	Segment Fabrication for Bridge D12a (81-95) 15 nos.	Segment Fabrication for Bridge D12a (81-95) 15 nos.																																											
Fab.TC4.0050	Segment Fabrication for Bridge D14b (1-13) 13 nos.	Segment Fabrication for Bridge D14b (1-13) 13 nos.																																											
<b>Segment Fabrication Type D2</b>																																													
Fab.T1.0020	Segment Fabrication for Bridge D9a (75-86 & 92-104) 25 nos.	Segment Fabrication for Bridge D9a (75-86 & 92-104) 25 nos.																																											
Fab.T1.0040	Segment Fabrication for Bridge D13 (33-46) 14 nos.	Segment Fabrication for Bridge D13 (33-46) 14 nos.																																											
Fab.T1.0050	Segment Fabrication for Bridge D9a (1-15) 15 nos.	Segment Fabrication for Bridge D9a (1-15) 15 nos.																																											
Fab.T2.0010	Segment Fabrication for Bridge D9a (32-46) 15 nos.	Segment Fabrication for Bridge D9a (32-46) 15 nos.																																											
Fab.T2.0030	Segment Fabrication for Bridge D9b (1-15) 15 nos.	Segment Fabrication for Bridge D9b (1-15) 15 nos.																																											
Fab.T2.0040	Segment Fabrication for Bridge D10 (33-47) 14 nos.	Segment Fabrication for Bridge D10 (33-47) 14 nos.																																											
Fab.T2.0050	Segment Fabrication for Bridge D13 (29-41) 13 nos.	Segment Fabrication for Bridge D13 (29-41) 13 nos.																																											
Fab.T3.0030	Segment Fabrication for Bridge D9a (47-57, 70-74) 16 nos.	Segment Fabrication for Bridge D9a (47-57, 70-74) 16 nos.																																											
Fab.T3.0040	Segment Fabrication for Bridge D10 (68-88 & 27-32) 27 nos.	Segment Fabrication for Bridge D10 (68-88 & 27-32) 27 nos.																																											
Fab.T3.0070	Segment Fabrication for Bridge D15 (1-14) 14 nos.	Segment Fabrication for Bridge D15 (1-14) 14 nos.																																											
Fab.T4.0020	Segment Fabrication for Bridge D10 (61-67 & 89-95) 14 nos.	Segment Fabrication for Bridge D10 (61-67 & 89-95) 14 nos.																																											
Fab.T4.0040	Segment Fabrication for Bridge D8 (48-62) 15 nos.	Segment Fabrication for Bridge D8 (48-62) 15 nos.																																											
Fab.T4.0050	Segment Fabrication for Bridge D13 (78-98) 21 nos.	Segment Fabrication for Bridge D13 (78-98) 21 nos.																																											
Fab.T4.0060	Segment Fabrication for Bridge D10 (96-109) 14 nos.	Segment Fabrication for Bridge D10 (96-109) 14 nos.																																											
<b>Segment Fabrication Type D3</b>																																													
Fab.T1.0010	Segment Fabrication for Bridge D11 (17-31) 15 nos.	Segment Fabrication for Bridge D11 (17-31) 15 nos.																																											
Fab.T1.0030	Segment Fabrication for Bridge D10 (1-26) 26 nos.	Segment Fabrication for Bridge D10 (1-26) 26 nos.																																											
Fab.T1.0060	Segment Fabrication for Bridge D8 (1-16) 16 nos.	Segment Fabrication for Bridge D8 (1-16) 16 nos.																																											
Fab.T1.0070	Segment Fabrication for Bridge D12a (1-16) 16 nos.	Segment Fabrication for Bridge D12a (1-16) 16 nos.																																											
Fab.T2.0020	Segment Fabrication for Bridge D11 (1-16) 16 nos.	Segment Fabrication for Bridge D11 (1-16) 16 nos.																																											
Fab.T2.0060	Segment Fabrication for Bridge D8 (17-31) 15 nos.	Segment Fabrication for Bridge D8 (17-31) 15 nos.																																											



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
<b>Mobilisation and Site Establishment</b>																																																																																												
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	Install Temporary Facilities / Hygiene Facilities																																																																																										
<b>Gates and Haul Road Construction (as per DW)</b>																																																																																												
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	06-Oct-16																																																																																										
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																																																																																											
<b>Preliminary Bored Pile with Additional Instrumentation</b>																																																																																												
CONS.A1.0180	Commence Preliminary Bored Pile at Abutment A1101	06-Oct-16																																																																																										
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. 2000mm dia x 42m)																																																																																											
CONS.A1.0210	Pile Curing																																																																																											
CONS.A1.0220	Pile Load Testing & Submit Report																																																																																											
<b>Replacement Preliminary Bored Pile and Load Testing</b>																																																																																												
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																																																																																											
<b>Preliminary Bored Pile and Load Testing at Abutment A106</b>																																																																																												
CONS.C1.0400	Commence Preliminary Bored Pile at Abutment A106	06-Oct-16																																																																																										
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																																																																																											
<b>Preliminary Driven H Piles and Load Testing</b>																																																																																												
CONS.A1.4360	Test Pile approved, commence permanent driven h-pile	15-Oct-16																																																																																										
CONS.C1.0510	Engineer select Preliminary Test Pile (Driven H Pile)	06-Oct-16																																																																																										
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																																																																																											
<b>Preliminary Pre-Bored H-Pile and Load Testing</b>																																																																																												
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)	06-Oct-16																																																																																										
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																																																																																											
<b>Treatment for Bored Piling Excavated Materials</b>																																																																																												
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																																																																																											
<b>Site Set Up at Portion C1</b>																																																																																												
CONS.C1.1010	Site Possession / Access to Portion C1 and C2	06-Oct-16																																																																																										
CONS.C1.1020	Site Possession / Access to Portion D1 and D3	06-Oct-16																																																																																										
CONS.C1.1030	Site Set-Up																																																																																											
<b>Pump House cum Switch Room</b>																																																																																												
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
CONS.B3.2130	Bridge D12b (Portion B3) - Construct Deck (cast-in-situ) Pier P1210/P1214 interface with													■ Bridge D12b (Portion B3) - Construct Deck (cast-in-situ) Pier P1210/P1214 interface with Other Contract																															
CONS.B3.2140	D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry													■ D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry																															
CONS.B3.2145	D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages													■ D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages																															
CONS.B3.2150	D12b Final Paving, Road Markings and Signages													■ D12b Final Paving, Road Markings and Signages																															
CONS.B3.2160	Completion of Section IV (KD11) Works within Portion B3 including Bridge D12b													◆ 10-Apr-18; Completion of Section IV (KD11) Works within Portion B3 including Bridge D12b																															
<b>Bridge D13 in Portion B1 and Portion C1</b>																																													
CONS.B1.1925	Site Possession / Access to Portion B1													◆ 06-Oct-16; Site Possession / Access to Portion B1																															
CONS.B1.1926	Site Possession / Access to Portion C1													◆ 06-Oct-16; Site Possession / Access to Portion C1																															
CONS.B1.1928	Site Survey / Setting out Portion B1													■ Site Survey / Setting out Portion B1																															
CONS.B1.1929	Site Survey / Setting out Portion C1													■ Site Survey / Setting out Portion C1																															
CONS.B1.1930.1	Predrilling (15 nos) in Portion B1 (D13)	■												■ Predrilling (15 nos) in Portion B1 (D13)																															
CONS.B1.1930.2	GI Report and Verification / Agreement to Founding Level - B1													■ GI Report and Verification / Agreement to Founding Level - B1																															
CONS.B1.1932.1	Predrilling (6 nos) in Portion C1 (D13)	■												■ Predrilling (6 nos) in Portion C1 (D13)																															
CONS.B1.1932.2	GI Report and Verification / Agreement to Founding Level - C1													■ GI Report and Verification / Agreement to Founding Level - C1																															
CONS.B1.1940	D13 Bored Piling (15 nos. 1800-2000mm dia x 52m) 4nos + 0.8m Rock Socket - Portion B1													■ D13 Bored Piling (15 nos. 1800-2000mm dia x 52m) 4nos + 0.8m Rock Socket - Portion B1																															
CONS.B1.1942	Pile Testing B1													■ Pile Testing B1																															
CONS.B1.1946	D13 Bored Piling (6 nos. 1800-2000mm dia x 47m-52m) - Portion C1	■												■ D13 Bored Piling (6 nos. 1800-2000mm dia x 47m-52m) - Portion C1																															
CONS.B1.1948	Pile Testing C1	■												■ Pile Testing C1																															
CONS.B1.1950	Pile Trimming - Portion B1													■ Pile Trimming - Portion B1																															
CONS.B1.1952	Pile Trimming - Portion C1													■ Pile Trimming - Portion C1																															
CONS.B1.1960	Construct Abutment A1301 + A1307 - Portion C1													■ Construct Abutment A1301 + A1307 - Portion C1																															
CONS.B1.1980	Bridge D13 - Erect Precast Segments + Stitching + Stressing (9 spans)													■ Bridge D13 - Erect Precast Segments + Stitching + Stressing (9 spans)																															
CONS.B1.1990	D13 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry													■ D13 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry																															
CONS.B1.1995	D13 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages													■ D13 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages																															
CONS.B1.2000	D13 Final Asphalt Paving, Road Markings & Signages													■ D13 Final Asphalt Paving, Road Markings & Signages																															
CONS.B1.2010	Completion of Bridge D13													◆ 24-Feb-18; Completion of Bridge D13																															
CONS.B1.2190	Pier Columns (P1303)													■ Pier Columns (P1303)																															
CONS.B1.2200	Pier Columns (P1308)													■ Pier Columns (P1308)																															
CONS.B1.2210	Pier Columns (P1311 & P1306)													■ Pier Columns (P1311 & P1306)																															
CONS.B1.2220	Pier Columns (P1310 & P1305)													■ Pier Columns (P1310 & P1305)																															
CONS.B1.2230	Pier Columns (P1309 & P1304)													■ Pier Columns (P1309 & P1304)																															
CONS.B1.2330	Pile Caps (P1311)													■ Pile Caps (P1311)																															
CONS.B1.2340	Pier Columns (P1302)													■ Pier Columns (P1302)																															
CONS.B1.2350	Pile Caps (P1310)													■ Pile Caps (P1310)																															
CONS.B1.2360	Pile Caps (P1309)													■ Pile Caps (P1309)																															
CONS.B1.2370	Pile Caps (A1307)													■ Pile Caps (A1307)																															
CONS.B1.2380	Pile Caps (A1301)													■ Pile Caps (A1301)																															
CONS.B1.2390	Pile Caps (P1308)													■ Pile Caps (P1308)																															
CONS.B1.2400	Pile Caps (P1303)													■ Pile Caps (P1303)																															
CONS.B1.2410	Pile Caps (P1302)													■ Pile Caps (P1302)																															
CONS.B1.2560	Pier Head & Bearing (P1311 & P1306)													■ Pier Head & Bearing (P1311 & P1306)																															
CONS.B1.2580	Pier Head & Bearing (P1310 & P1305)													■ Pier Head & Bearing (P1310 & P1305)																															
CONS.B1.2600	Pier Head & Bearing (P1309 & P1304)													■ Pier Head & Bearing (P1309 & P1304)																															
CONS.B1.2610	Pier Head & Bearing (P1303)													■ Pier Head & Bearing (P1303)																															
CONS.B1.2620	Pier Head & Bearing (P1308)													■ Pier Head & Bearing (P1308)																															
CONS.B1.2630	Pier Head & Bearing (P1302)													■ Pier Head & Bearing (P1302)																															
<b>RW13 (40m / 3 bays)</b>																																													
CONS.C2.3260	Commence RW13 Retaining Wall													◆ 11-Oct-17; Commence RW13 Retaining Wall																															
CONS.C2.3270	Survey / Setting Out													■ Survey / Setting Out																															
CONS.C2.3280	Excavate to formation level (open cut / slope)													■ Excavate to formation level (open cut / slope)																															
CONS.C2.3290	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.C2.3300	Backfill to final ground level and Reinstate Road													■ Backfill to final ground level and Reinstate Road																															
<b>Bridge D14a</b>																																													
CONS.A1.1464	Commence Bridge D14a / Portion A1													◆ 06-Oct-16; Commence Bridge D14a / Portion A1																															
CONS.A1.1466	Survey / Setting Out													■ Survey / Setting Out																															
CONS.A1.1470.1	Predrilling (12 nos) (D14a)	■												■ Predrilling (12 nos) (D14a)																															
CONS.A1.1470.2	GI Report and Verification / Agreement to Founding Level													■ GI Report and Verification / Agreement to Founding Level																															
CONS.A1.1480	D14a Bored Piling (12 nos. 2000mm dia x 62m) 47m for Abutment	■												■ D14a Bored Piling (12 nos. 2000mm dia x 62m) 47m for Abutment																															
CONS.A1.1485	Pile Testing	■												■ Pile Testing																															
CONS.A1.1490	Pile Trimming													■ Pile Trimming																															
CONS.A1.1515	Construct Abutment A1401													■ Construct Abutment A1401																															
CONS.A1.1520	Bridge D14a - Erect Precast Segments + Stitching + Stressing (5 spans)													■ Bridge D14a - Erect Precast Segments + Stitching + Stressing (5 spans)																															
CONS.A1.1530	D14a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages													■ D14a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages																															
CONS.A1.1540	D14a Final Asphalt Paving + Road Markings													■ D14a Final Asphalt Paving + Road Markings																															
CONS.A1.1550	Bridge D14a complete													◆ 09-Jun-17; Bridge D14a complete																															
CONS.A1.8940	Pier Columns (P1402)													■ Pier Columns (P1402)																															









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
CONS.RW.3890	Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion B)																												■ Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion B and C)																																								
CONS.RW.3900	Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion D)																												■ Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion D)																																								
<b>Drainage and U/G Utilities (West of Pump House)</b>																																																																					
<b>Drainage &amp; UU</b>																																																																					
<b>Road SOL 101 / 105 (Phase 1)</b>																																																																					
<b>Drainage System</b>																																																																					
CONS.RW.22	Survey/ Road Setting Out																												■ Survey/ Road Setting Out																																								
CONS.RW.22	Road Formation to Sub-grade (Cut & Fill)																												■ Road Formation to Sub-grade (Cut & Fill)																																								
CONS.RW.22	Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) +																												■ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection																																								
<b>Installation of Underground Utilities</b>																																																																					
CONS.RW.23	Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection																																								
CONS.RW.23	Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																												■ Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																																								
CONS.RW.23	Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																												■ Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																																								
<b>Road SOL 101 / 105 (Phase 2)</b>																																																																					
<b>Drainage System</b>																																																																					
CONS.RW.34	Survey/ Road Setting Out																												■ Survey/ Road Setting Out																																								
CONS.RW.34	Road Formation to Sub-grade (Cut & Fill)																												■ Road Formation to Sub-grade (Cut & Fill)																																								
CONS.RW.34	Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) +																												■ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection																																								
<b>Installation of Underground Utilities</b>																																																																					
CONS.RW.34	Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection																																								
CONS.RW.34	Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																												■ Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																																								
CONS.RW.34	Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																												■ Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																																								
<b>Road SOL 102 /106 /111 and the neighboring Ia</b>																																																																					
<b>Drainage System</b>																																																																					
CONS.RW.24	Survey/ Road Setting Out																												■ Survey/ Road Setting Out																																								
CONS.RW.24	Road Formation to Sub-grade (Cut & Fill)																												■ Road Formation to Sub-grade (Cut & Fill)																																								
CONS.RW.24	Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) +																												■ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection																																								
<b>Installation of Underground Utilities</b>																																																																					
CONS.RW.29	Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection																																								
CONS.RW.29	Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																												■ Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																																								
CONS.RW.29	Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																												■ Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																																								
<b>Road SOL 102 /106 /111 and the neighboring Ia</b>																																																																					
<b>Drainage System</b>																																																																					
CONS.RW.34	Survey/ Road Setting Out																												■ Survey/ Road Setting Out																																								
CONS.RW.34	Road Formation to Sub-grade (Cut & Fill)																												■ Road Formation to Sub-grade (Cut & Fill)																																								
CONS.RW.34	Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) +																												■ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection																																								
<b>Installation of Underground Utilities</b>																																																																					
CONS.RW.35	Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection																																								
CONS.RW.35	Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																												■ Excavate and Install Common Telecom Ducting and Telecom Ducting by Others																																								
CONS.RW.35	Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																												■ Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																																								
<b>Road SOL 104 (Phase 1)</b>																																																																					
<b>Drainage System</b>																																																																					
CONS.RW.24	Survey/ Road Setting Out																												■ Survey/ Road Setting Out																																								
CONS.RW.24	Road Formation to Sub-grade (Cut & Fill)																												■ Road Formation to Sub-grade (Cut & Fill)																																								
CONS.RW.24	Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) +																												■ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection																																								
<b>Installation of Underground Utilities</b>																																																																					
CONS.RW.24	Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection (3 lines)																																								
CONS.RW.24	Excavate and Install Flush WM/ Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Flush WM/ Valves & fittings + Testing, Cleaning & Flushing and Interface Connection (1 line)																																								
CONS.RW.24	Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																												■ Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																																								
<b>Road SOL 104 (Phase 2)</b>																																																																					
<b>Drainage System</b>																																																																					
CONS.RW.35	Survey/ Road Setting Out																												■ Survey/ Road Setting Out																																								
CONS.RW.35	Road Formation to Sub-grade (Cut & Fill)																												■ Road Formation to Sub-grade (Cut & Fill)																																								
CONS.RW.35	Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) +																												■ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection																																								
<b>Installation of Underground Utilities</b>																																																																					
CONS.RW.35	Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection (3 lines)																																								
CONS.RW.35	Excavate and Install Flush WM/ Valves & fittings + Testing, Cleaning & Flushing and																												■ Excavate and Install Flush WM/ Valves & fittings + Testing, Cleaning & Flushing and Interface Connection (1 line)																																								
CONS.RW.35	Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																												■ Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS																																								
<b>Underground Utilities (ELV, Fresh WM &amp; Teleco)</b>																																																																					
<b>Work in Portion D1 and D2</b>																																																																					
<b>Sewage Rising main at Portion D1</b>																																																																					
CONS.RM.101	Commence Works on Rising Main																												15-May-17 ◆ Commence Works on Rising Main																																								
CONS.RM.102	Site Survey / Setting Out Sewerage Alignment																												■ Site Survey / Setting Out Sewerage Alignment																																								
CONS.RM.103	Excavate to Invert Level & Install 2 Sewage Rising Main DN100 CHC & CHD																												■ Excavate to Invert Level & Install 2 Sewage Rising Main DN100 CHC & CHD																																								
CONS.RM.104	Construct Thrust Block																												■ Construct Thrust Block																																								
CONS.RM.105	Gravity Flow Testing																												■ Gravity Flow Testing																																								







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						
CONS.RE.411	Road Formation to Base Course																			■	■	■	■	■																													
<b>Installation of Railing and Fencing + Road Light</b>																																																					
CONS.RE.418	Install Road Railing and Fencing																											■																									
CONS.RE.419	Install Road Lighting and Signages																											■																									
<b>Final Paving and Road Markings</b>																																																					
CONS.RE.402	Final Road Paving (Wearing Course)																											■																									
CONS.RE.403	Road Markings and Road Signages																											■																									
<b>Road SOL 102 (Phase 2)</b>																																																					
<b>Kerbing and Footings for Railing, Fencing, Sign</b>																																																					
CONS.RE.449	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																											■																									
CONS.RE.450	Construct Precast Road Kerbings																											■																									
CONS.RE.451	Road Formation to Sub-base																											■																									
<b>Road Works to Road Base and Base Course</b>																																																					
CONS.RE.447	Road Formation to Road Base																											■																									
CONS.RE.448	Road Formation to Base Course																											■																									
<b>Installation of Railing and Fencing + Road Light</b>																																																					
CONS.RE.452	Install Road Railing and Fencing																											■																									
CONS.RE.453	Install Road Lighting and Signages																											■																									
<b>Final Paving and Road Markings</b>																																																					
CONS.RE.445	Final Road Paving (Wearing Course)																											■																									
CONS.RE.446	Road Markings and Road Signages																											■																									
<b>Road SOL 107 / 113 (Phase 1)</b>																																																					
<b>Kerbing and Footings for Railing, Fencing, Sign</b>																																																					
CONS.RE.393	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																											■																									
CONS.RE.394	Road Formation to Sub-base																											■																									
CONS.RE.395	Construct Precast Road Kerbings																											■																									
<b>Road Works to Road Base and Base Course</b>																																																					
CONS.RE.396	Road Formation to Road Base																											■																									
CONS.RE.397	Road Formation to Base Course																											■																									
<b>Installation of Railing and Fencing + Road Light</b>																																																					
CONS.RE.398	Install Road Railing and Fencing																											■																									
CONS.RE.399	Install Road Lighting and Signages																											■																									
<b>Final Paving and Road Markings</b>																																																					
CONS.RE.400	Final Road Paving (Wearing Course)																											■																									
CONS.RE.401	Road Markings and Road Signages																											■																									
<b>Road SOL 107 / 113 (Phase 2)</b>																																																					
<b>Kerbing and Footings for Railing, Fencing, Sign</b>																																																					
CONS.RE.454	Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages																											■																									
CONS.RE.455	Road Formation to Sub-base																											■																									
CONS.RE.456	Construct Precast Road Kerbings																											■																									
<b>Road Works to Road Base and Base Course</b>																																																					
CONS.RE.457	Road Formation to Road Base																											■																									
CONS.RE.458	Road Formation to Base Course																											■																									
<b>Installation of Railing and Fencing + Road Light</b>																																																					
CONS.RE.459	Install Road Railing and Fencing																											■																									
CONS.RE.460	Install Road Lighting and Signages																											■																									
<b>Final Paving and Road Markings</b>																																																					
CONS.RE.461	Final Road Paving (Wearing Course)																											■																									
CONS.RE.462	Road Markings and Road Signages																											■																									
<b>Road SOL 108 / 106 &amp; SOL 110</b>																																																					
<b>Adjacent to Road SOL 108 / 106, Abutment A9</b>																																																					
CONS.RE.362	Excavate and Construct footing for Railing and Road lighting																											■																									
CONS.RE.363	Road formation to Subbase																											■																									
CONS.RE.364	Construct Precast Road Kerbings																											■																									
CONS.RE.365	Road formation to Road base and Base course																											■																									
CONS.RE.366	Install Road Lighting, Railing and Signages																											■																									
CONS.RE.367	Final Road Paving and Road markings (KD13 - Completion of Section VI)																											■																									
<b>Portion A1 and A2 - Sub-Base Area</b>																																																					
CONS.A1.8710	Demobilisation of Temporary Facilities on Site																											■																									
CONS.A1.8720	Site Survey / Site Clearing																											■																									
CONS.A1.8730	Area to Formation Level																											■																									
CONS.A1.8740	Sub-Base Material Topping (Area 29,963 m2 x 100mm thk Subbase)																											■																									
<b>Area 3 (in Portion A6)</b>																																																					
<b>Final Paving and Road Markings</b>																																																					
<b>Portion A6 - Final Paving and Road Markings</b>																																																					
CONS.RE.3780	Road Clearing																											■																									









# Appendix D. Event and Action Plan

## Event/Action Plan for Air Quality Monitoring

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

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

## Event / Action Plan for Construction Noise Monitoring

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

## Event / Action Plan for Water Quality Monitoring

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

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



## Event / Action Plan for Dolphin Monitoring

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

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

# Appendix E. Waste Flow Table

**Monthly Summary Waste Flow Table for 2018**

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)	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (Note 1)	Chemical Waste	Others, e.g. general refuse
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	0	0	0	0	0	0	0	0	0	0	0.1293
Feb											
Mar											
Apr											
May											
Jun											
Sub-total	0.000	0	0	0.000	0	0	0	0	0	0	0.1293
Jul											
Aug											
Sep											
Oct											
Nov											
Dec											
Total	0.000	0	0	0.000	0	0	0	0	0	0	0.1293

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

**Monthly Summary of Excavated Marine Sediment for 2018**

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)	e. Estimated Volume of Treated Excavated Marine Sediment Stored on Site (Unused)
	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m <sup>3</sup> )	(in m <sup>3</sup> )
Jan	0	0	0	0	0
Feb					
Mar					
Apr					
May					
Jun					
Sub-total	0	0	0	0	0
Jul					
Aug					
Sep					
Oct					
Nov					
Dec					
Total	0	0	0	0	0

Note: (1) "Other Projects" refers to HKBCF Contract No. HY/2013/03. The disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017.

# Appendix F. Environmental Licences 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	Discharge Licence under WPCO (HKBCF Works Area)	WT00028782-2017	25 May 2017	19 Jul 2017	31 Jul 2022	Issued
7	Construction Noise Permit	GW-RS0945-17	16 Oct 2017	1 Nov 2017	30 Apr 2018	Issued

# **Appendix G. Implementation Schedule for Environmental Mitigation Measures (EMIS)**



## Appendix G – Implementation Schedule of Environmental Mitigation Measures (EMIS)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
<b>Air Quality</b>				
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"> <li>• 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;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;</li> <li>• 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;</li> <li>• 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;</li> </ul>	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>• 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</li> </ul>	All construction sites	V
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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</li> <li>• 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.</li> </ul>	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/2013/01 & HY/2011/03)
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:	Selected representative dust	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<ul style="list-style-type: none"> <li>• Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;</li> <li>• 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;</li> <li>• Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;</li> <li>• The materials which may generate airborne dusty emissions should be wetted by water spray system;</li> <li>• All receiving hoppers should be enclosed on three sides up to 3m above unloading point;</li> <li>• All conveyor transfer points should be totally enclosed;</li> <li>• All access and route roads within the premises should be paved and wetted; and</li> <li>• 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.</li> </ul>	monitoring station	
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"> <li>• All road surface within the barging facilities will be paved;</li> <li>• Dust enclosures will be provided for the loading ramp;</li> <li>• Vehicles will be required to pass through designated wheels wash facilities; and</li> <li>• Continuous water spray at the loading points.</li> </ul>	All construction sites	N/A
<b>Construction Noise (Air borne)</b>				
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"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• 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;</li> <li>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>• material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	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	V
S6.4.12	N3	<p>3) Install movable noise barriers (typically density @ 14kg/m<sup>2</sup>), 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	V
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	V
S6.4.14	N5	<p>5) Sequencing operation of construction plants where practicable.</p>	All construction sites where practicable	V
	N6	<p>6) Implement a noise monitoring under EM&amp;A programme.</p>	Selected representative noise monitoring station	V (covered by Contract No. HY/2013/01)
<b>Sediment</b>				
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
<b>Waste Management (Construction Noise)</b>				
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"> <li>• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>• Carry out on-site sorting;</li> <li>• Make provisions in the Contract documents to allow and promote the use of recycled</li> </ul>	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		<p>aggregates where appropriate;</p> <ul style="list-style-type: none"> <li>• Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</li> <li>• Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>• 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&amp;D materials and to minimize their generation during the course of construction.</li> <li>• In addition, disposal of the C&amp;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.</li> </ul>		
S8.3.9- S8.3.11	WM2	<p><u>C&amp;D Waste</u></p> <ul style="list-style-type: none"> <li>• Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;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.</li> <li>• The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;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.</li> </ul>	All construction sites	V
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>	All construction sites	V
S8.3.16	WM4	<p><u>Sewage</u></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	All construction sites	V
S8.3.17	WM5	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.</li> </ul>	All construction sites	V

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
<b>Water Quality (Construction Phase)</b>				
S9.11.1.1	W1	<p><u>Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below.</u></p> <ul style="list-style-type: none"> <li>• Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works.</li> <li>• Silt curtain shall be fully maintained throughout the works.</li> </ul>	Marine works	V
S9.11.1.7	W2	<p><u>Land Works</u></p> <p>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> <li>• wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;</li> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• temporary access roads should be surfaced with crushed stone or gravel;</li> <li>• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;</li> <li>• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;</li> <li>• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;</li> <li>• 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;</li> <li>• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;</li> <li>• 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;</li> <li>• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;</li> <li>• the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel;</li> <li>• wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects;</li> <li>• 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;</li> <li>• the Contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;</li> <li>• waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance;</li> <li>• 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</li> <li>• surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.</li> </ul>	Land-based works areas	V
S9.14	W3	Implement a water quality monitoring programme	At identified monitoring locations	V (covered by Contract No. HY/2013/01)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
<b>Ecology (Construction Phase)</b>				
S10.7	E2	<ul style="list-style-type: none"> <li>• Install silt curtain during the construction.</li> <li>Limit dredging and works fronts.</li> <li>• Good site practices.</li> <li>• Site runoff control.</li> </ul>	Marine works and Land-based works areas	V
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	E6	<ul style="list-style-type: none"> <li>• Dolphin Exclusion Zone;</li> <li>• Dolphin watching plan</li> </ul>	Marine works	V
S10.7	E7	<ul style="list-style-type: none"> <li>• Decouple compressors and other equipment on working vessels</li> <li>• Avoidance of percussive piling</li> </ul>	Marine works	V
S10.7	E8	<ul style="list-style-type: none"> <li>• Control vessel speed</li> <li>• Skipper training</li> <li>• Predefined and regular routes for working vessels; avoid Brother Islands.</li> </ul>	Marine Traffic	V
S10.10	E9	<ul style="list-style-type: none"> <li>• Dolphin vessel monitoring</li> </ul>	North Lantau and West Lantau	V (covered by Contract No. HY/2013/01)
<b>Fisheries</b>				
S11.7	F4	<ul style="list-style-type: none"> <li>• Maritime Oil Spill Response Plan (MOSRP);</li> <li>• Contingency plan.</li> </ul>	HKBCF	V
<b>Landscape &amp; Visual (Detailed Design Phase)</b>				
S14.3.3.1	LV1	<p>General design measures include:</p> <ul style="list-style-type: none"> <li>• Roadside planting and planting along the edge of the HKBCF Island is proposed;</li> <li>• 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;</li> <li>• Protection measures for the trees to be retained during construction activities;</li> <li>• Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations;</li> <li>• Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed;</li> <li>• Providing planting area around peripheral of HKBCF for tree planting screening effect;</li> <li>• Providing salt-tolerant native trees along the planter strip at affected seawall and newly reclaimed coastline;</li> <li>• 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</li> <li>• 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.</li> </ul>	HKBCF	V
<b>Landscape &amp; Visual (Construction Phase)</b>				
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</p>	HKBCF	N/A

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Location of the measures	Implementation Status
		effect; G8. Plant salt-tolerant native and shrubs etc along the planter strip at affected seawall. 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.		
S14.3.3.3	LV3	<u>Mitigate Visual Impacts</u> V1. Minimize time for construction activities during construction period. V2. Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKBCF construction.		N/A
<b>EM&amp;A</b>				
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	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 H. 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	0	0	0
From commencement date of construction to end of reporting month	8	0	0



# Appendix I. Environmental Site Inspection Schedule

Environmental Site Inspection Schedule for January 2018

Jan-18						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Public Holiday	2	3 Weekly Audit	4	5	6
7	8	9	10 Weekly Audit	11	12	13
14	15 Weekly Audit	16	17	18	19	20
21	22	23	24 Weekly Audit	25	26	27
28	29	30	31 Weekly Audit			

Tentative Environmental Site Inspection Schedule for February 2018

Feb-18						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7 Weekly Audit	8	9	10
11	12 Weekly Audit	13	14	15	16 Public Holiday	17 Public Holiday
18	19 Public Holiday	20	21 Weekly Audit	22	23	24
25	26	27	28 Weekly Audit			

# Appendix J. Complaint Investigation Report

**Environmental Complaint Form**

<b>RECEIPT OF COMPLAINT</b>		<b>Ref: ENPO-C0129</b>
Date:	29 December 2017	
Time:	N/A	
Via:	HyD (ref: CASE#2-4404344922)	
<b>COMPLAINANT</b>		
Name:	N/A	Address: N/A
Contact no.:	N/A	
<b>DETAILS OF COMPLAINT</b>		
Date:	Not specified in complaint	
Time:	Not specified in complaint	
Parameter:	Air Quality and Water Quality	Other (specify): N/A
Description:	The complaint was about effectiveness of mitigation measures implemented for dust and mud (namely, street washing vehicles and dust collecting vehicles) on East Coast Road to handle dust problems associated with HZMB BCF Island site works, which according to the complainant, was not as effective as they should. Specifically, the complainant said that water spray from street washing vehicles had turned the dust on the road into mud, and furthermore dust was still present on the road despite the use of dust collecting vehicles, causing the problem to persist.	
<b>INVESTIGATION RESULT &amp; RESPONSE</b>		
IEC and ER notified on:	8 January 2018	
ET inspected site on:	10, 15 and 24 January 2018 (before operation of wheel wash facility) 31 January, 9 and 12 February 2018 (following implementation of wheel wash facility)	
Result of investigation:	<p>This investigation reviewed the effectiveness of mitigation measures implemented by the Contractor of HY/2013/04 to control any potential dust or mud nuisance attributed to vehicles leaving the HY/2013/04 site boundary.</p> <p>The relevant mitigation measures for access roads for the HZMB BCF Island site, as required in the EMIS and statutory requirements in the Air Pollution Control (Construction Dust) Regulations and other applicable environmental legislation, are consolidated as follows:</p> <ul style="list-style-type: none"> <li>• Immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels and to ensure that no earth, mud or debris is deposited by them on roads.</li> <li>• 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.</li> <li>• Every main haul road shall be paved with concrete, bituminous materials, hardcores or metal plates, and kept clear of dusty materials, or sprayed with water or a dust suppression chemical so as to maintain the entire road surface wet.</li> <li>• 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.</li> <li>• The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per</li> </ul>	

day) throughout the construction phase.

In early January 2018 RE had requested the Contractor of HY/2013/04 to provide a wheel washing facility at the HY/2013/04 site boundary exit for vehicles to adjacent HKBCF contract site. A map showing the general location of the HKBCF contract sites is presented in **Attachment 1**.

As informed by the Contractor of HY/2013/04, water spray was provided by site workers as an interim measure at the HY/2013/04 site boundary entrance/exit for vehicles leaving HY/2013/04 site in the direction of HZMB BCF Island site exit. The wheel washing facility was subsequently completed and implemented on 27 January 2018. Contractor's photos showing the operation of the wheel wash facility on that day are presented in **Attachment 2**.

Also, watering of all main haul roads was provided in accordance with the HY/2013/04 site watering plan (as presented in **Attachment 3**). This plan schedules water spraying for at least 8 times per day which follows the recommended mitigation measures in the EM&A Manual and Environmental Permit. Before operation of the wheel wash facility, ET conducted regular weekly site inspections on 10, 15 and 24 January 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. The following observations were made:

- 10 January 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB BCF Island site exit. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.
- 15 January 2018 (14:30-15:30): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB BCF Island site exit. An air quality observation regarding effectiveness of water spray was made; subsequently the Contractor displayed a temporary stop sign to ensure vehicles were being properly washed at this location and the observation was closed. Also, an air quality observation regarding dry haul road at Bridge D1 was observed; subsequently, the Contractor provide water spray.
- 24 January 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Water spray from two hoses was provided by the Contractor to wash the wheels of vehicles leaving HY/2013/04 and entering HY/2013/02 site towards HZMB BCF Island site exit. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.

Following commencement of operation of the wheel wash facility, ET conducted regular weekly site inspections on 31 January, 9 and 12 February 2018 with extra focus on the implementation status of all air quality and water quality mitigation measures including haul roads and washing of vehicles leaving HY/2013/04 site. The following observations were made:

- 31 January 2018 (14:30-15:00): Water spray provided for haul roads in the HY/2013/04 site area. Wheel wash facility was in operation. No specific observations referring to air or water quality mitigation measures associated with wheel washing facility.
- 9 February 2018 (14:00-15:00): Water spray was provided for haul roads in the HY/2013/04 site area. Wheel wash facility was in operation. No specific observation referring to air or water quality mitigation measures associated with wheel washing facility and access roads was observed.
- 12 February 2018 (14:00-15:00): Wheel wash facility was in operation; no specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed. Water spray was provided for haul roads in the HY/2013/04 site area. An air quality observation regarding fugitive dust generated when vehicles passed through the haul road between wheel washing facilities and Box Culvert C was observed. The Contractor was reminded to provide watering on haul road frequently.

Relevant photos for each abovementioned site inspection are presented in **Attachment 4**.

**RECOMMENDATIONS / MITIGATION MEASURES / ACTIONS**

The Contractor was reminded to properly implement all necessary air and water quality mitigation measures identified in the EM&A Manual. Proper implementation of the site watering plan should be maintained to prevent potential dust dispersion due to site vehicles. Also, all site vehicles leaving HY/2013/04 site should be properly washed at the wheel washing facilities at HY/2013/04 site exit to prevent muddy trail on the access roads and public roads thereafter.

The Contractor has agreed to provide 4 no. site workers for the operation of the wheel washing facility. They will be trained in the use of temporary traffic signals to control the flow of vehicles and ensure proper cleaning before being allowed to proceed. A grab lorry will be deployed daily to remove silt from the wheel wash pit and a wastewater treatment facility will be implemented to treat the site runoff. A plan of the wheel washing facility is presented in **Attachment 5**.

Photos showing implementation of the wheel washing facility at HY/2013/04 site exit on 9 and 12 February 2018 are presented in **Attachment 4**.

Prepared by: Gary Chow

Title: Environmental Team Leader

Signature:

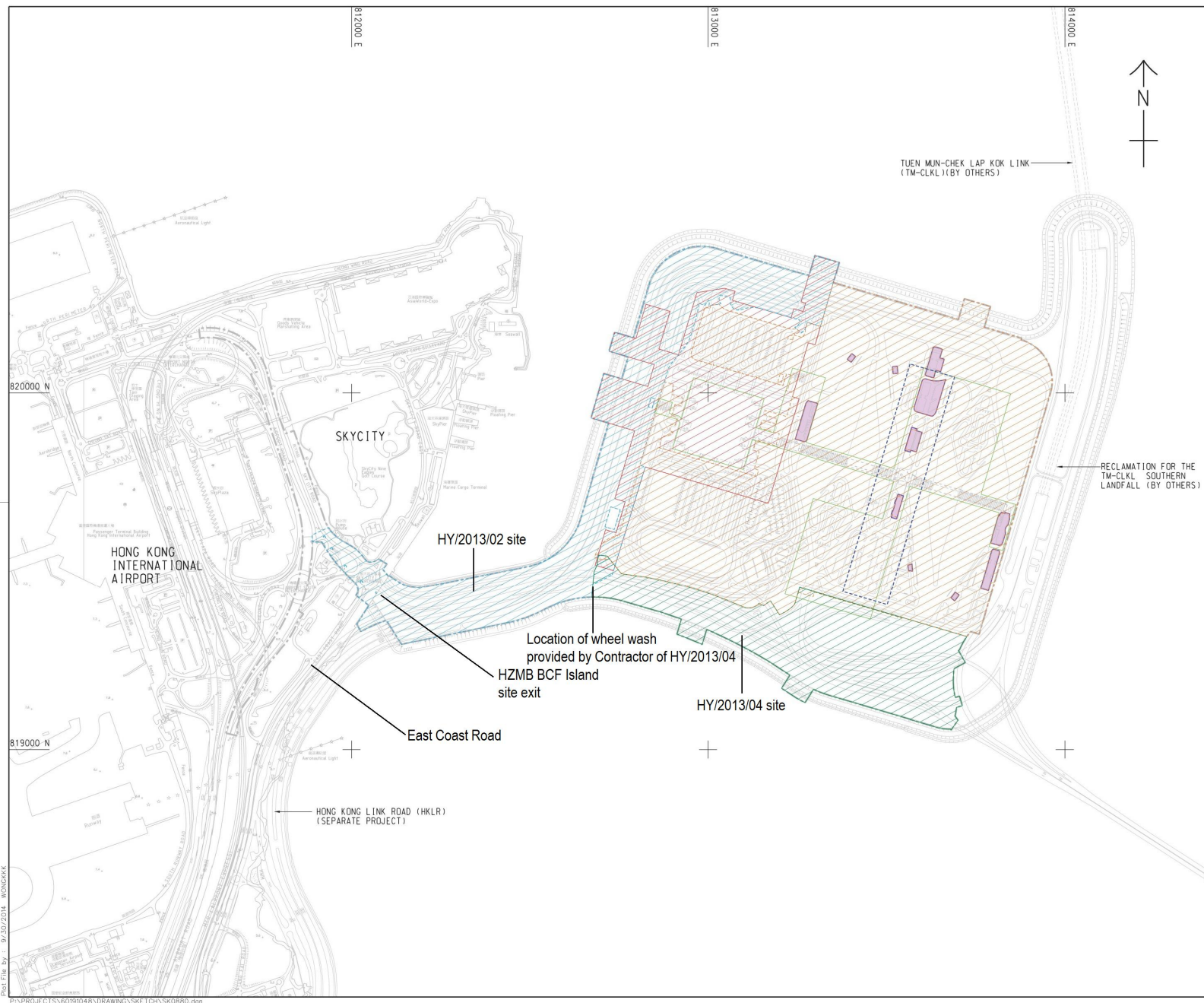


Date: 15 February 2018

**ATTACHMENTS**

1. General location of the HKBCF contract sites.
2. Contractor's photos showing completion of the wheel wash facility on 27 January 2018.
3. Site watering plan for HY/2013/04.
4. Photos of site mitigation measures (and observations) on 10, 15, 24 and 31 January, 9 and 12 February 2018.
5. Wheel washing facility layout plan.

## **Attachment 1**



**LEGEND:**

[Red hatched box]	HY/2013/01
[Blue hatched box]	HY/2013/02
[Orange hatched box]	HY/2013/03
[Green hatched box]	HY/2013/04
[Light green box]	HY/2013/06
[Dashed line]	HY/2014/04
[Purple box]	HY/2014/05

REV	DESCRIPTION	DATE
<p>HONG KONG BRIDGE AND TUNNEL AUTHORITY          香港橋隧有限公司          Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office</p>		
AGREEMENT NO. TS/2010 (CE) HONG KONG - ZHUAHAI - MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES (SUPERSTRUCTURES AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION		
<b>CONTRACT AREA</b>		
<b>Figure 1.1</b>		
DESIGNED BY DR	CONTRACT NO. S/08/03	APPROVED DATE
DRAWN BY WSY	STATUS REV	
SCALE A1 1 : 5000		
DIMENSIONS ARE IN METRES	© COPYRIGHT RESERVED 版權所有	

Plot File by : 9/23/2014 10:50:00 AM  
 P:\PROJECTS\60191048\DRAWING\SKE1\CHK\S0880.dgn



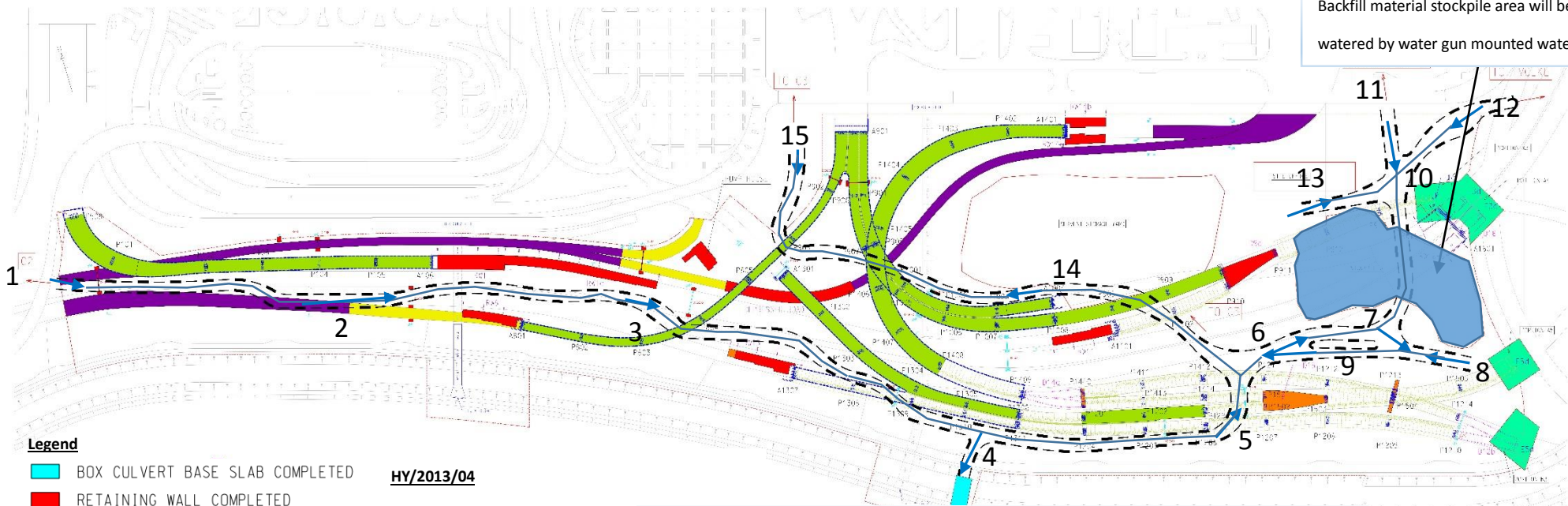
## **Attachment 2**

**Contractor's photos showing completion of the wheel wash facility  
on 27 January 2018**



1. Wheel wash facility and water spray provided at HY/2013/04 site boundary for vehicles leaving HY/2013/04 site towards BCF Island site exit.

## **Attachment 3**



Backfill material stockpile area will be watered by water gun mounted water truck

**Legend**

- BOX CULVERT BASE SLAB COMPLETED
- RETAINING WALL COMPLETED
- RETAINING WALL / INSITU-DECK IN CONSTRUCTION
- SEGMENT ERECTED
- TRAVELLING ROUTE of WATER TRUCK

**HY/2013/04**

Water Truck Travelling Route

Location: HKBCF

Date: 30-12-2017

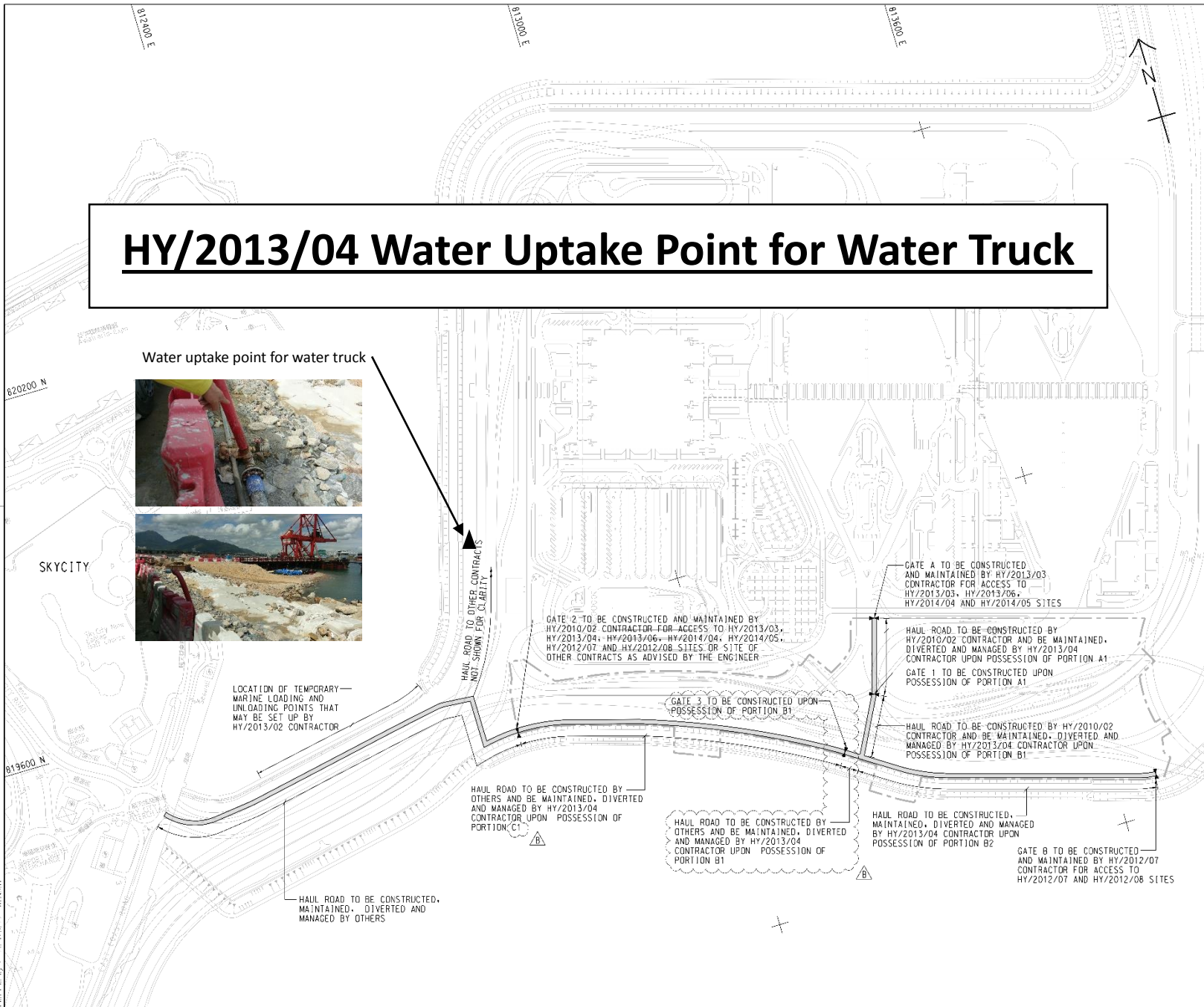
Scale: Not to Scale

**Note for Water Truck Travelling Route**  
 1 (Start point) > 2 > 3 > 4 > 5 > 6 > 7 > 8 > 9 > 6 > 10 > 11 > 12 > 13 > 10 > 7 > 6 > 14 > 15 (end point)

# HY/2013/04 Water Truck Travelling Route

# HY/2013/04 Water Uptake Point for Water Truck

Water uptake point for water truck



DATE PLOTTED: 2013/03/27 09:55:00 AM



Water Truck License Plate Number: TW4312 & ES6277

Capacity of Water Truck: 15000L

#### Planned Schedule of Water Spraying

Cycle	Time of Water Spraying
1	08:20-09:20
2	09:20-10:20
3	10:20-11:20
4	11:20-12:20
5	13:20-14:20
6	14:20-15:20
7	15:20-16:20
8	16:20-17:20

## **Attachment 4**

**Before Operation of Enhanced Wheel Washing Facilities**

**Photo record of site mitigation measures for access roads  
during weekly environmental site inspection on 10 January 2018**



1. Water spray provided at HY/2013/04 site boundary for vehicles leaving HY/2013/04 site towards BCF Island site exit. No adverse observation was observed.



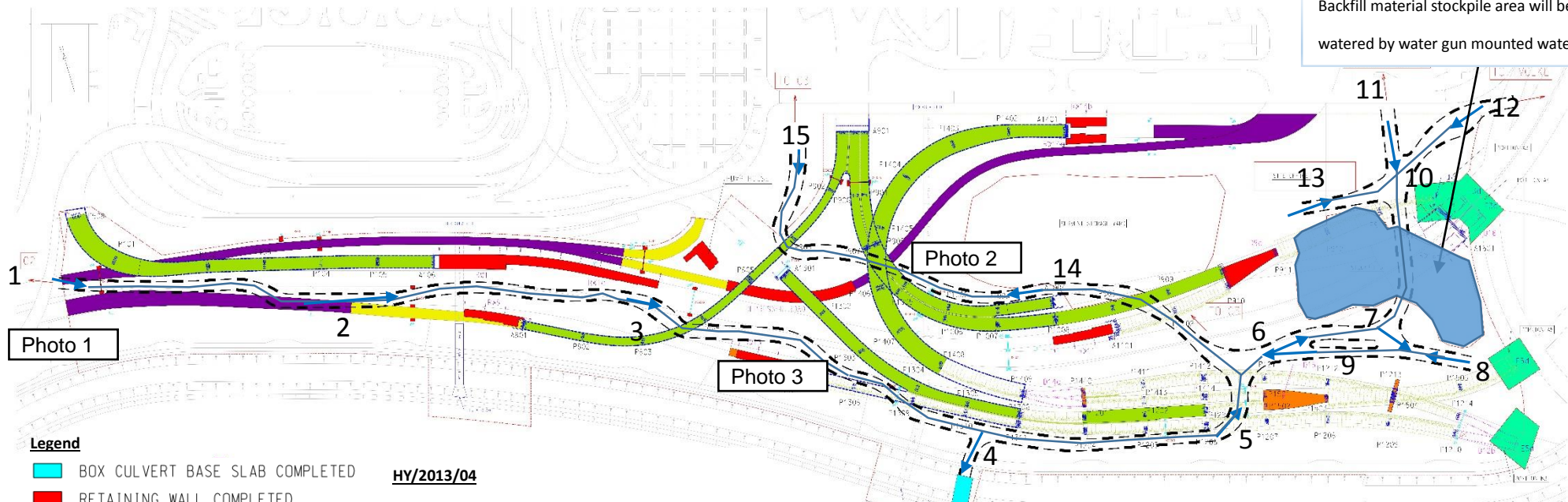
2. Water spray provided for haul roads in the HY/2013/04 site area (near Bridge D10).



3. Haul roads were wetted in the HY/2013/04 site area (between Box Culvert C and Box Culvert D).



Photos taken on 10 January 2018



Backfill material stockpile area will be watered by water gun mounted water truck

- Legend**
- BOX CULVERT BASE SLAB COMPLETED
  - RETAINING WALL COMPLETED
  - RETAINING WALL / INSITU-DECK IN CONSTRUCTION
  - SEGMENT ERECTED
  - TRAVELLING ROUTE of WATER TRUCK

**HY/2013/04**  
 Water Truck Travelling Route  
 Location: HKBCF  
 Date: 30-12-2017  
 Scale: Not to Scale

**Note for Water Truck Travelling Route**  
 1 (Start point) > 2 > 3 > 4 > 5 > 6 > 7 > 8 > 9 > 6 > 10 > 11 > 12 > 13 > 10 > 7 > 6 > 14 > 15 (end point)

**HY/2013/04 Water Truck Travelling Route**

**Photo record of site mitigation measures for access roads  
during weekly environmental site inspection on 15 January 2018**

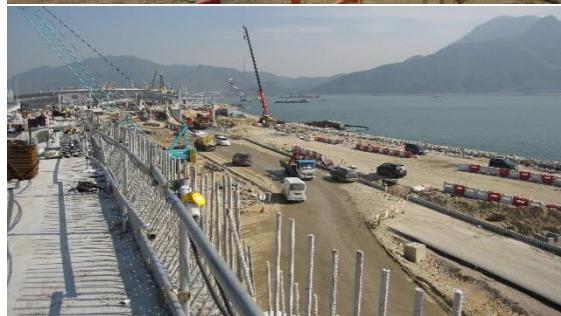


1a. Water spray provided for site vehicles leaving the HY/2013/04 site area towards BCF Island site exit.

Air quality observation: The Contractor was reminded to display a sign of temporary stop in the vicinity of wheel washing facilities.



1b. Subsequent follow-up action by Contractor: Sign of temporary stop in the vicinity of wheel washing area.



2. Water spray provided for haul roads in the HY/2013/04 site area (near Box Culvert C). No fugitive dust generation was observed.



3. Water spray provided for haul roads in the HY/2013/04 site area (near Bridge D14a). No fugitive dust generation was observed.

**Photo record of site mitigation measures for access roads  
during weekly environmental site inspection on 15 January 2018**

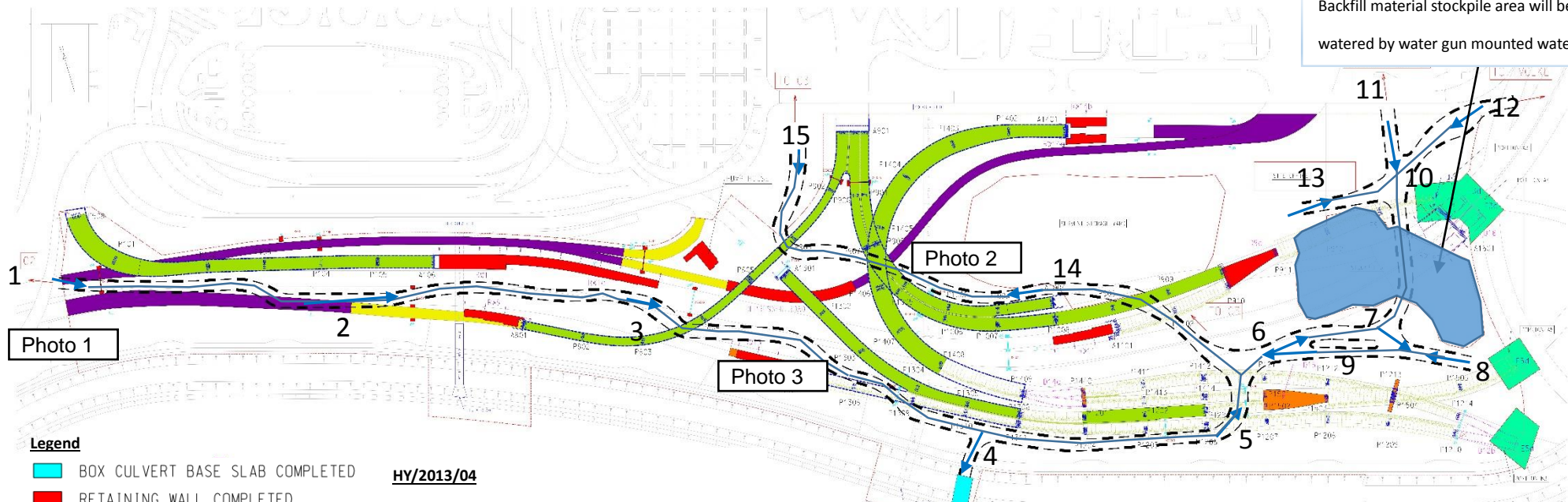


4a. Air quality observation: Dry haul road at Bridge D1.



4b. Subsequent follow-up action by Contractor: provision of water spray.

Photos taken on 15 January 2018



Backfill material stockpile area will be watered by water gun mounted water truck

- Legend**
- █ BOX CULVERT BASE SLAB COMPLETED
  - █ RETAINING WALL COMPLETED
  - █ RETAINING WALL / INSITU-DECK IN CONSTRUCTION
  - █ SEGMENT ERECTED
  - TRAVELLING ROUTE of WATER TRUCK

**HY/2013/04**  
 Water Truck Travelling Route  
 Location: HKBCF  
 Date: 30-12-2017  
 Scale: Not to Scale

**Note for Water Truck Travelling Route**  
 1 (Start point) > 2 > 3 > 4 > 5 > 6 > 7 > 8 > 9 > 6 > 10 > 11 > 12 > 13 > 10 > 7 > 6 > 14 > 15 (end point)

**HY/2013/04 Water Truck Travelling Route**

**Photo record of site mitigation measures for access roads  
during weekly environmental site inspection on 24 January 2018**



1. Water spray provided for haul roads in the HY/2013/04 site area (near Box Culvert C). No fugitive dust generation was observed.



2. Water spray provided for haul roads in the HY/2013/04 site area (near Bridge D13). No fugitive dust generation was observed.

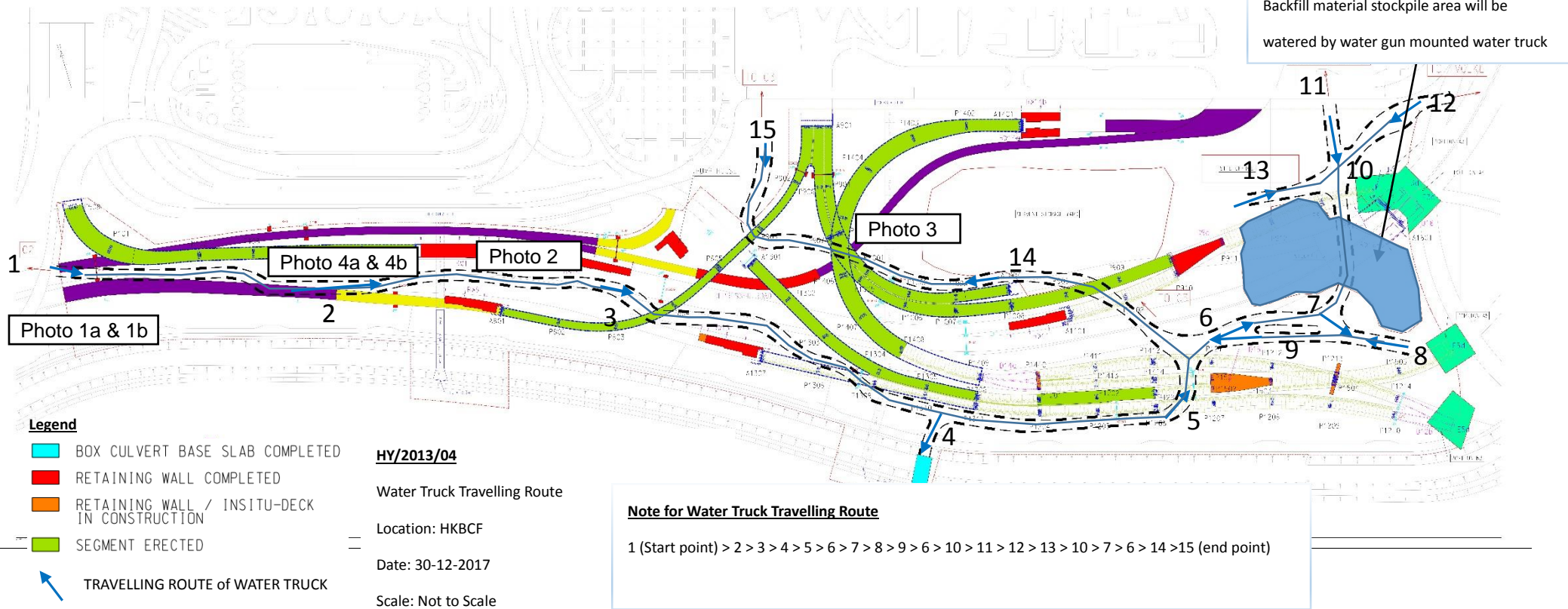


3. Water spray provided for haul roads in the HY/2013/04 site area (near Bridge D10). No fugitive dust generation was observed.



4. Water spray provided for haul roads in the HY/2013/04 site area (near Bridge D9a). No fugitive dust generation was observed.

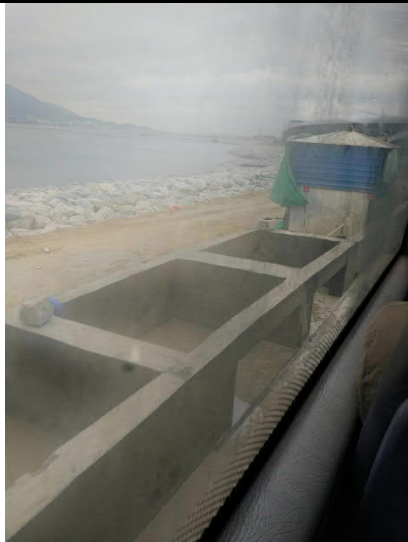
Photos taken on 24 January 2018



**HY/2013/04 Water Truck Travelling Route**

**After Operation of Enhanced Wheel Washing Facilities**

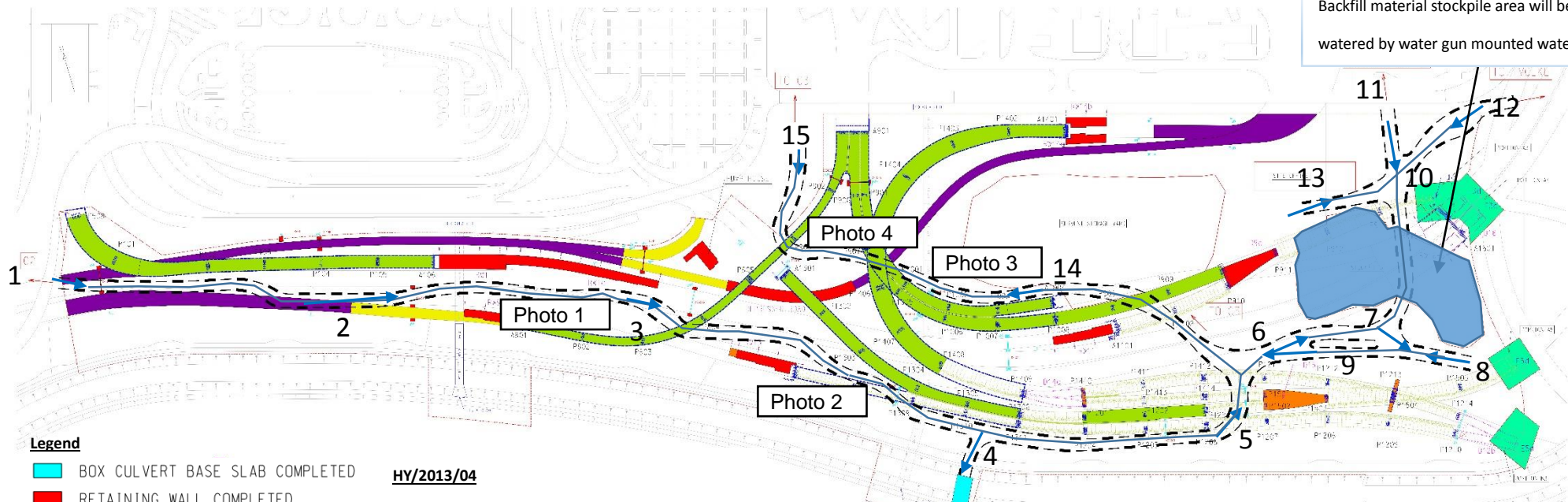
**Photo record of site mitigation measures for wheel wash facility and access roads during weekly environmental site inspection on 31 January 2018**



1. Wheel wash facility was in operation at HY/2013/04 site boundary for vehicles leaving HY/2013/04 site towards BCF Island site exit. No specific observation referring to air or water quality mitigation measures associated with access roads was observed.

2. Water spray provided for haul roads in the HY/2013/04 site area (near Box Culvert D). No fugitive dust generation was observed.

Photos taken on 31 January 2018



Backfill material stockpile area will be watered by water gun mounted water truck

**Legend**

- BOX CULVERT BASE SLAB COMPLETED
- RETAINING WALL COMPLETED
- RETAINING WALL / INSITU-DECK IN CONSTRUCTION
- SEGMENT ERECTED
- TRAVELLING ROUTE of WATER TRUCK

**HY/2013/04**

Water Truck Travelling Route

Location: HKBCF

Date: 30-12-2017

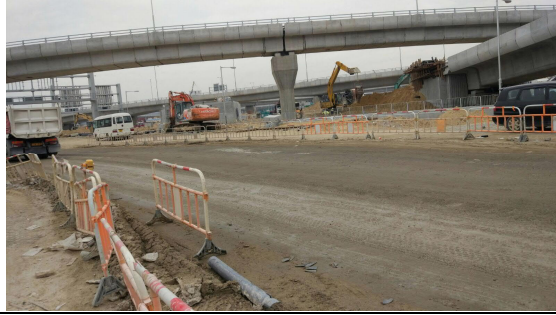
Scale: Not to Scale

**Note for Water Truck Travelling Route**  
 1 (Start point) > 2 > 3 > 4 > 5 > 6 > 7 > 8 > 9 > 6 > 10 > 11 > 12 > 13 > 10 > 7 > 6 > 14 > 15 (end point)

**HY/2013/04 Water Truck Travelling Route**



**Photo record of site mitigation measures for wheel wash facility and access roads during weekly environmental site inspection on 9 February 2018**

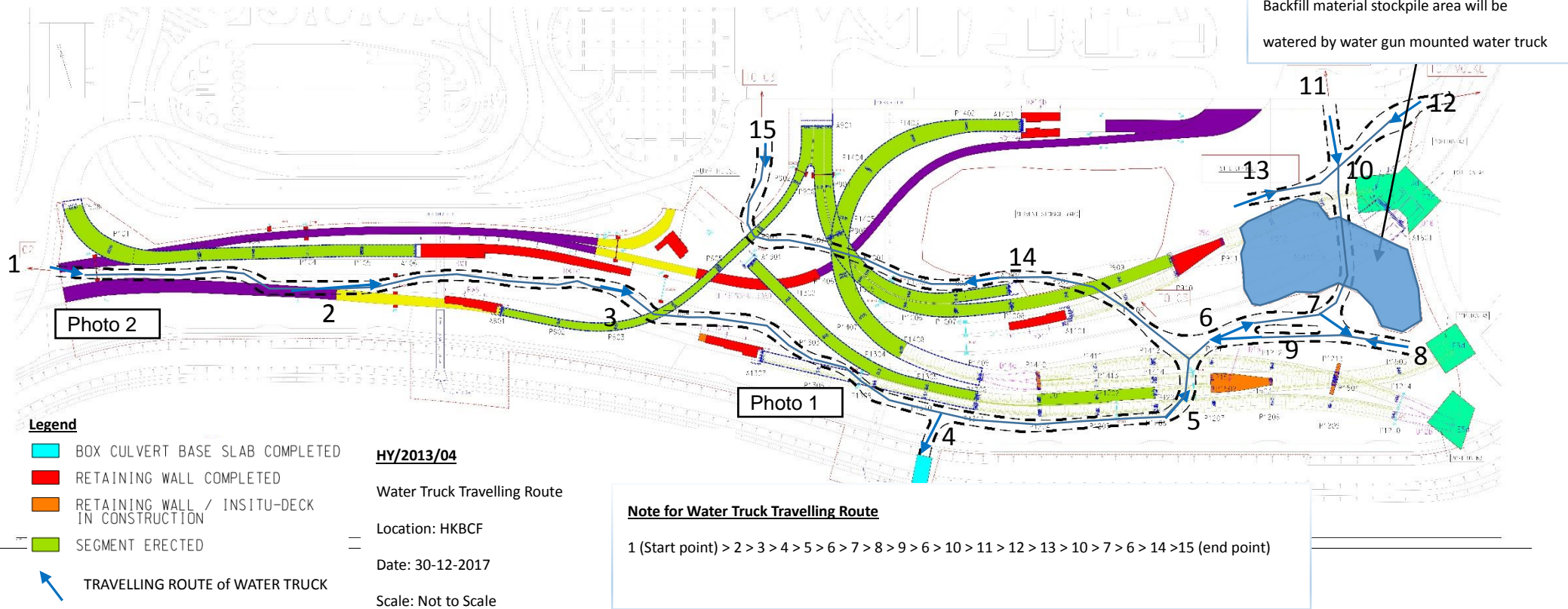


1. Haul roads were wetted in the HY/2013/04 site area (between Box Culvert C and Box Culvert D). No specific observation referring to air or water quality mitigation measures associated with access roads was observed.



2. Wheel wash facility was in operation at HY/2013/04 site boundary for vehicles leaving HY/2013/04 site towards BCF Island site exit. No specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed.

Photos taken on 9 February 2018



**HY/2013/04 Water Truck Travelling Route**

**Photo record of site mitigation measures for wheel wash facility and access roads during weekly environmental site inspection on 12 February 2018**



1. Wheel wash facility was in operation at HY/2013/04 site boundary for vehicles leaving HY/2013/04 site towards BCF Island site exit. No specific observation referring to air or water quality mitigation measures associated with the wheel wash facility was observed.

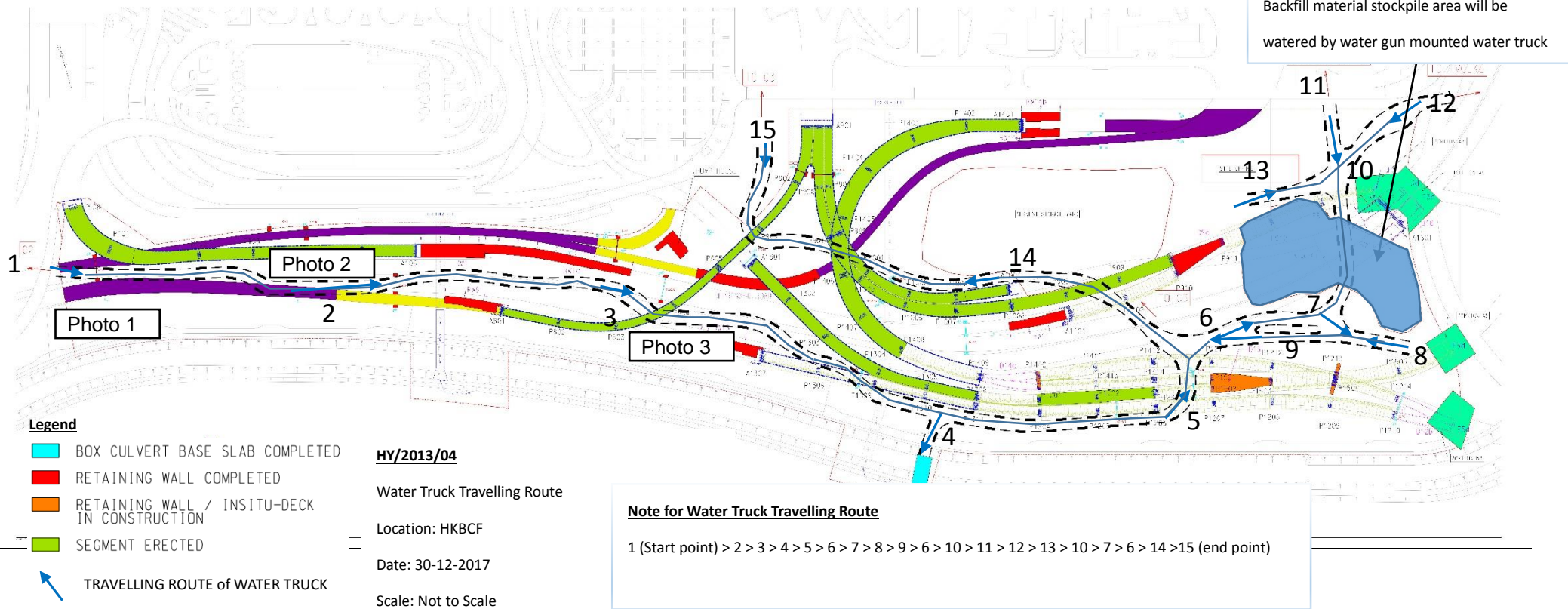


2. Air quality observation: Fugitive dust was generated when vehicles passed through the haul road between wheel washing facilities and Box Culvert C. The Contractor was reminded to provide watering on haul road frequently.



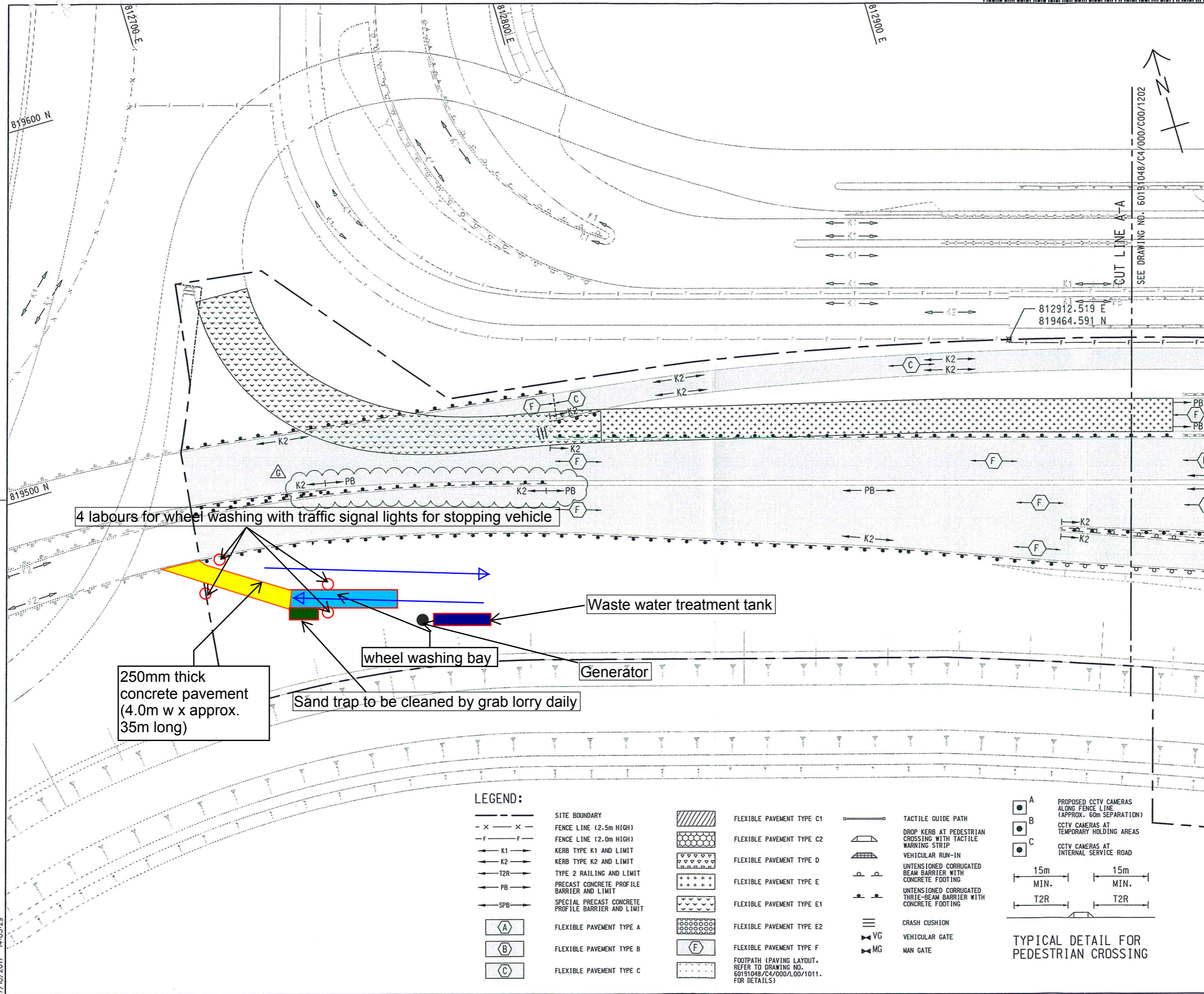
3. Haul roads were wetted in the HY/2013/04 site area (between Box Culvert C and Box Culvert D).

Photos taken on 12 February 2018



**HY/2013/04 Water Truck Travelling Route**

## **Attachment 5**



**KEY PLAN**  
SCALE 1 : 12500

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
  - THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60191048/C4/000/C00/1204.
  - FOR ROADWORKS DETAILS, REFER TO DRAWING NOS. 60191048/C4/000/C00/1221 TO 1228.
  - FOR PRECAST CONCRETE KERB, REFER TO HYD STANDARD DRAWINGS H1118 TO H1119 FOR DETAILS.
  - FOR STANDARD PRECAST CONCRETE PROFILE BARRIER, REFER TO HYD STANDARD DRAWINGS H2104 FOR DETAILS.
  - FOR CONCRETE PROFILE BARRIER - TERMINAL SECTION, REFER TO HYD STANDARD DRAWINGS H2103 FOR DETAILS.
  - FOR UNTENSIONED CORRUGATED BEAM BARRIERS, REFER TO HYD STANDARD DRAWINGS H2117C, H2119D, H2120A, H2121, H2122, H2123, H2124A, H2125B, H2126, H2127A, H2128A AND H2129C FOR DETAILS.
  - FOR THRIE-BEAM AND TRANSITION DETAILS TO W-BEAM, REFER TO HYD STANDARD DRAWINGS H2190 TO H2197 FOR DETAILS.
  - FOR TYPE 2 RAILING, REFER TO HYD STANDARD DRAWINGS H2130F TO H2132F FOR DETAILS.
  - FOR RUN-IN, REFER TO HYD STANDARD DRAWINGS H1113B TO H1114A FOR DETAILS.
  - FOR PRECAST CONCRETE BLOCK PAVING, REFER TO HYD STANDARD DRAWINGS H1103F, H5102A AND H5114B FOR DETAILS.
  - FOR CRASH CUSHION, REFER TO HYD STANDARD DRAWING H2265A FOR DETAILS.
  - FOR TACTILE TILES/SLABS/BLOCKS, REFER TO HYD STANDARD DRAWING H5118C FOR DETAILS.
  - FOR DROP KERB AT PEDESTRIAN CROSSING WITH TACTILE WARNING STRIP, REFER TO HYD STANDARD DRAWING H1117A FOR DETAILS.
  - FOR EMERGENCY CRASH GATE, REFER TO HYD STANDARD DRAWING H2108B FOR DETAILS.
  - THE EXTENT OF THE PAVEMENT RE-SURFACING AND ROAD WORKS AS SHOWN ON THE PLAN IS INDICATIVE ONLY. EXACT EXTENT SHALL BE AGREED WITH THE ENGINEER ON SITE.
  - ALL KERBS SHOULD BE K1 UNLESS OTHERWISE STATED.
  - FOR SPECIAL CONCRETE PROFILE BARRIER, REFER TO HYD STANDARD H2102A.

REV.	DATE	DESCRIPTION	DRAWN	PRE.	CHK.
G	07/10/17	CHANGE AS SHOWN	CKL	DKFK	PYFL
F	18/09/17	CHANGE AS SHOWN	CKL	DKFK	PYFL
E	16/08/17	CHANGE AS SHOWN	CKL	DKFK	PYFL
D	14/07/17	CHANGE AS SHOWN	CKL	DKFK	PYFL
C	03/02/17	CHANGE AS SHOWN	CKL	GTCC	PYFL
B	18/10/16	CHANGE AS SHOWN	CKL	DKFK	SC
A	20/05/16	CHANGE AS SHOWN	CKL	DKFK	SC
-	10/07/15	REVISION OF STANDARD DRAWINGS INCORPORATED	LCTK	BYHT	JCYJ

DRAWING REFERENCE TO LATEST VERSION:  
60191048/C4/000/C00/1201

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

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

HY/2013/04  
HONG KONG-ZHUHAI-MACAO BRIDGE  
HONG KONG BOUNDARY CROSSING FACILITIES  
- INFRASTRUCTURE WORKS STAGE II  
(SOUTHERN PORTION)

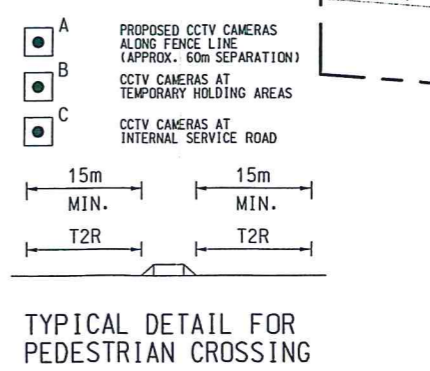
TITLE  
**LAYOUT OF WHEEL WASHING BAY AND CONCRETE PAVEMENT**

SKETCH NO. 60191048/C4/SK0211  
REV. G

SCALE 1:500 (A1)  
1:1000 (A3)  
© COPYRIGHT RESERVED  
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**LEGEND:**

--- X --- X ---	SITE BOUNDARY	[Pattern]	FLEXIBLE PAVEMENT TYPE C1	[Symbol]	TACTILE GUIDE PATH
- x - x -	FENCE LINE (2.5m HIGH)	[Pattern]	FLEXIBLE PAVEMENT TYPE C2	[Symbol]	DROP KERB AT PEDESTRIAN CROSSING WITH TACTILE WARNING STRIP
- f - f -	FENCE LINE (2.0m HIGH)	[Pattern]	FLEXIBLE PAVEMENT TYPE D	[Symbol]	VEHICULAR RUN-IN
- K1 -	KERB TYPE K1 AND LIMIT	[Pattern]	FLEXIBLE PAVEMENT TYPE E	[Symbol]	UNTENSIONED CORRUGATED BEAM BARRIER WITH CONCRETE FOOTING
- K2 -	KERB TYPE K2 AND LIMIT	[Pattern]	FLEXIBLE PAVEMENT TYPE E1	[Symbol]	UNTENSIONED CORRUGATED THRIE-BEAM BARRIER WITH CONCRETE FOOTING
- T2R -	TYPE 2 RAILING AND LIMIT	[Pattern]	FLEXIBLE PAVEMENT TYPE E2	[Symbol]	CRASH CUSHION
- PB -	PRECAST CONCRETE PROFILE BARRIER AND LIMIT	[Pattern]	FLEXIBLE PAVEMENT TYPE F	[Symbol]	VEHICULAR GATE
- SPB -	SPECIAL PRECAST CONCRETE PROFILE BARRIER AND LIMIT	[Pattern]	FOOTPATH (PAVING LAYOUT, REFER TO DRAWING NO. 60191048/C4/000/L00/1011. FOR DETAILS)	[Symbol]	MAN GATE
[A]	FLEXIBLE PAVEMENT TYPE A				
[B]	FLEXIBLE PAVEMENT TYPE B				
[C]	FLEXIBLE PAVEMENT TYPE C				



7/10/2017 14:05:29