

**Contract No. HY/2017/10  
Tuen Mun - Chek Lap Kok Link -  
Northern Connection Tunnel  
Buildings, Electrical and Mechanical  
Works**

*Twenty-third Monthly EM&A Report*

12 May 2020

**Environmental Resources Management**  
2507, 25/F One Harbourfront  
18 Tak Fung Street  
Hung Hom, Kowloon  
Hong Kong  
Telephone 2271 3000  
Facsimile 2723 5660









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Tuen Mun – Chek Lap Kok Link –  
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**Environmental Resources  
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2507, 25/F One Harbourfront  
18 Tak Fung Street  
Hung Hom, Kowloon  
Hong Kong  
Telephone: (852) 2271 3000  
Facsimile: (852) 2723 5660  
E-mail: post.hk@erm.com  
http://www.erm.com

*Twenty-third Monthly EM&A Report*

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Client:  Gammon		Project No:  0463091			
Summary:  This document presents the Twenty-third Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 12 May 2020			
		Approved by: 			
		<i>Mr Craig Reid</i> Partner			
		Certified by: 			
		<i>Dr Jasmine Ng</i> ET Leader			
	Twenty-third Monthly EM&A Report	CW	JN	CAR	12/5/20
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.  We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution		 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential 	



AECOM Asia Company Limited  
Supervising Officer's Representative Office  
No. 8 Mong Fat Street, Tuen Mun, New Territories, Hong Kong

Attention: Mr. Desmond Fung

Dear Mr. Fung,

**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/2017/10  
TM-CLKL – Northern Connection Tunnel Buildings, E&M Works  
23<sup>rd</sup> Monthly EM&A Report for April 2020**

Reference is made to the Environmental Team's submission of the monthly EM&A report for April 2020 (ET's ref.: "0463091\_23rd Monthly EM&A\_20200512.doc" dated 12 May 2020) certified by the ET Leader and provided to us via e-mail on 12 May 2020.

Please be informed that we have no adverse comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 4.4 of EP-354/2009/D.

Thank you for your attention. Please feel free to contact the undersigned or the ENPO Leader, Mr. Y H Hui, should you require further information.

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



F. C. Tsang  
Independent Environmental Checker  
Tuen Mun-Chek Lap Kok Link

c.c.

HyD	Mr. Patrick Ng	(By Fax: 3188 6614)
HyD	Mr. Andy HO	(By Fax: 3188 6614)
AECOM	Mr. Conrad Ng	(By Fax: 3922 9797)
ERM	Dr. Jasmine Ng	(By Fax: 2723 5660)
Gammon	Mr. Max Poon	(By Fax: 3520 0486)

Internal: DY, YH, RY, ENPO Site

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## **EXECUTIVE SUMMARY**

Under *Contract No. HY/2017/10*, Gammon Construction Limited (GCL) is commissioned by the Highways Department (HyD) to undertake Northern Connection Tunnel Buildings, Electrical and Mechanical Works of the Tuen Mun – Chek Lap Kok Link Project (TM-CLK Link Project) while AECOM Asia Company Limited was appointed by HyD as the Engineer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET) in accordance with *Environmental Permit No. EP-354/2009/A*. Ramboll Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO). Subsequent applications for variation of environmental permits (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

The construction phase of the Contract commenced on 7 June 2018 and will tentatively be completed by 2021. The impact monitoring of the EM&A programme, including air quality and environmental site inspections, were commenced on 7 June 2018.

This is the Twenty-third Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 30 April 2020 for the *Contract No. HY/2017/10 Northern Connection Tunnel Buildings, Electrical and Mechanical Works* (the “Contract”) in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

### ***Land-based Works***

- Electrical and Mechanical Works and Architectural Builder’s Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2; and
- Electrical and Mechanical Works at South Ventilation Building.

A summary of monitoring and audit activities conducted in the reporting period is listed below <sup>(1)</sup>:

24-hour TSP Monitoring	10 sessions
1-hour TSP Monitoring	10 sessions
Joint Environmental Site Inspection	5 sessions

#### Summary of Breaches of Action/Limit Levels

##### *Breaches of Action and Limit Levels for Air Quality*

Three (3) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. HY/2012/08 during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

##### *Breaches of Action Level for Landfill Gas Hazard Monitoring*

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

#### Environmental Complaints, Non-compliance & Summons

There was no environmental complaint, notification of summons or successful prosecution recorded in the reporting period.

(1) ET justification on the Contract Specific Environmental Monitoring and Audit activities under this Contract was submitted to ENPO on 11 September 2018

### Reporting Change

There was no reporting change in the reporting period.

### Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of May 2020 include the following:

#### *Land-based Works*

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2;
- Electrical and Mechanical Works at South Ventilation Building; and
- Landscape Works at Northern Landfall and Southern Landfall.

### **Future Key Issues**

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of May 2020 are mainly associated with dust and waste management issues.

**1.1****BACKGROUND**

According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway would be operating beyond capacity after 2016. This forecast has been based on the estimated increase in cross boundary traffic, developments in the Northwest New Territories (NWNT), and possible developments in North Lantau, including the Airport developments, the Lantau Logistics Park (LLP) and the Hong Kong – Zhuhai – Macao Bridge (HZMB). In order to cope with the anticipated traffic demand, two new road sections between NWNT and North Lantau – Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) are proposed.

An Environmental Impact Assessment (EIA) of TM-CLKL (the Project) was prepared in accordance with the EIA Study Brief (No. ESB-175/2007) and the *Technical Memorandum of the Environmental Impact Assessment Process (EIAO-TM)*. The EIA Report was submitted under the Environmental Impact Assessment Ordinance (EIAO) in August 2009. Subsequent to the approval of the EIA Report (EIAO Register Number AEIAR-146/2009), an Environmental Permit (EP-354/2009) for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009, and EP variation (VEP) (EP-354/2009/A) was issued on 8 December 2010. Subsequent applications for variation of environmental permits (VEPs), EP-354/2009/B, EP-354/2009/C and EP-354/2009/D, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

Under *Contract No. HY/2017/10*, Gammon Construction Limited (GCL) is commissioned by the Highways Department (HyD) to undertake the Northern Connection Tunnel Buildings, Electrical and Mechanical Works of TM-CLKL while AECOM Asia Company Limited was appointed by HyD as the Engineer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET). Ramboll Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO).

The construction phase of the Contract commenced on 7 June 2018 and will be tentatively completed by 2021. The impact monitoring phase of the EM&A programme, including air quality and environmental site inspections, commenced on 7 June 2018.

The general layout plan of the Contract components is presented in *Figures 1.1 & 1.2a to c*.



Project Management Initials: Designer: KATH Checked: SYLC Approved: CWN ISO A1 594mm x 841mm

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**AECOM**

PROJECT  
 TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE  
 TUEN MUN - CHEK LAP KOK LINK - NORTHERN CONNECTION TUNNEL BUILDINGS, ELECTRICAL AND MECHANICAL WORKS

CLIENT  

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

CONSULTANT  
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## Figure 1.1

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
A	JAN.18	TENDER ADDENDUM NO.1	SYLC
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KEY PLAN

PROJECT NO.  
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CONTRACT NO.  
 HY/2017/10

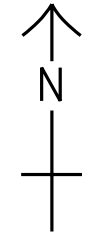
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PROJECT  
TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE  
TUEN MUN - CHEK LAP KOK LINK - NORTHERN CONNECTION TUNNEL BUILDINGS, ELECTRICAL AND MECHANICAL WORKS

CLIENT  
路政署 HIGHWAYS DEPARTMENT  
港務局 大橋香港工程管理有限公司  
Hong Kong - Zhuhai - Macao Bridge  
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## Figure 1.2a

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DIMENSION UNIT  
MILLIMETRES

KEY PLAN

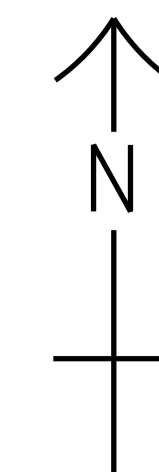
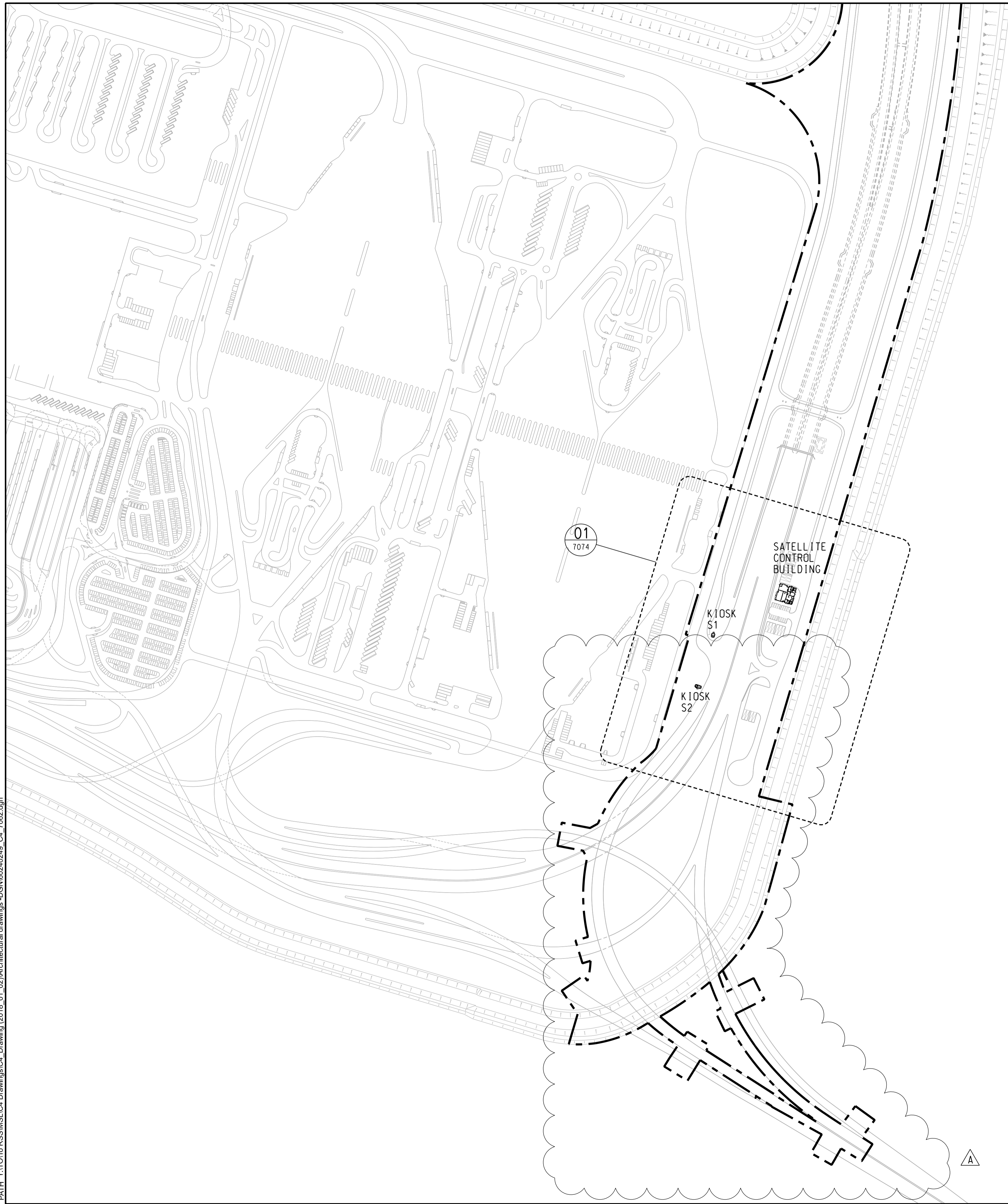
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CONTRACT NO.  
HY/2017/10

SHEET TITLE  
ZONING PLAN (SHEET 1)

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PROJECT  
 項目

**TUEN MUN -  
 CHEK LAP KOK LINK**

CONTRACT TITLE  
 TUEN MUN - CHEK LAP KOK LINK  
 - NORTHERN CONNECTION TUNNEL  
 BUILDINGS, ELECTRICAL AND  
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**Figure 1.2b**

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PROJECT NO.  
 項目編號

60240249

CONTRACT NO.  
 合約編號

HY/2017/10

SHEET TITLE  
 圖號/名稱

ZONING PLAN  
 (SHEET 2)

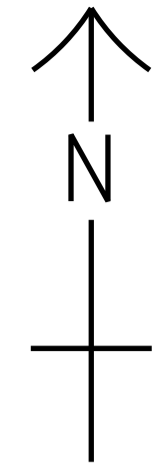
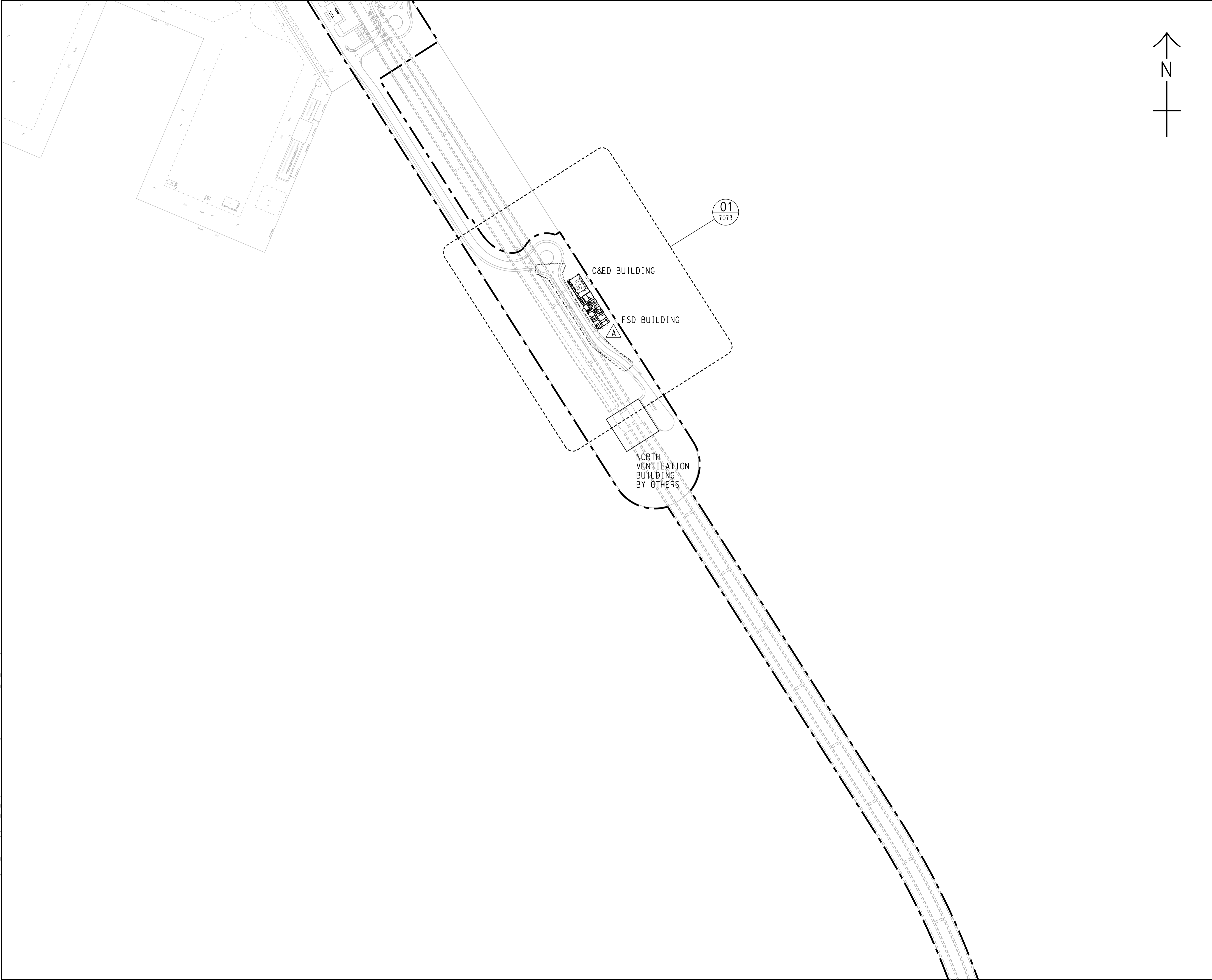
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**AECOM**

**PROJECT**  
 項目  
**TUEN MUN - CHEK LAP KOK LINK**

**CONTRACT TITLE**  
 TUEN MUN - CHEK LAP KOK LINK - NORTHERN CONNECTION TUNNEL BUILDINGS, ELECTRICAL AND MECHANICAL WORKS

**CLIENT**  
 業主  
  
 路政署 HIGHWAYS DEPARTMENT  
 港珠澳大橋香港工程管理局  
 Hong Kong - Zhuhai - Macao Bridge  
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**Figure 1.2c**

**ISSUE/REVISION**  
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I/R	DATE	DESCRIPTION	CHK.
修訂	日期	內容摘要	核校
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-	DEC.17	TENDER DRAWING	SYLC

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 比例  
 A1 1 : 2500

**DIMENSION UNIT**  
 尺寸單位  
 MILLIMETRES

**KEY PLAN**  
 索引圖

**PROJECT NO.**  
 項目編號  
 60240249

**CONTRACT NO.**  
 合約編號  
 HY/2017/10

**SHEET TITLE**  
 圖紙名稱  
 ZONING PLAN  
 (SHEET 3)

**SHEET NUMBER**  
 圖紙編號  
 60240249/C4/7063A

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## 1.2 SCOPE OF REPORT

This is the Twenty-third Monthly EM&A Report under the *Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works*. This report presents a summary of the environmental monitoring and audit works in April 2020.

## 1.3 ORGANIZATION STRUCTURE

The organization structure of the Contract is shown in *Appendix A*. The key personnel contact names and contact details are summarized in *Table 1.1* below.

**Table 1.1** *Contact Information of Key Personnel*

Party	Position	Name	Telephone	Fax
HyD (Highways Department)	Project Coordinator	Joseph Lee	2762 4958	3188 6614
	Senior Engineer	Cheng Pan	2762 3383	3188 6614
ER (AECOM Asia Company Limited)	Principle Resident Engineer	S. W. Fok	2293 6200	2293 6300
	Resident Engineer	Desmond Fung	2293 6200	2293 6300
ENPO / IEC (Ramboll Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
	IEC	Dr. F.C. Tsang	3465 2851	3465 2899
Contractor (Gammon Construction Limited)	Site Agent	Kenneth Tai	9039 4723	-
	Environmental Officer	Max Poon	9103 6303	-
ET (ERM-HK)	ET Leader	Dr. Jasmine Ng	2271 3311	2723 5660

## 1.4 SUMMARY OF CONSTRUCTION WORKS

The construction phase of the Contract commenced on 7 June 2018. The three-month rolling construction programme is shown in Appendix B.

As informed by the Contractor, details of the major works carried out in this reporting month are listed below:

### *Land-based Works*

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;

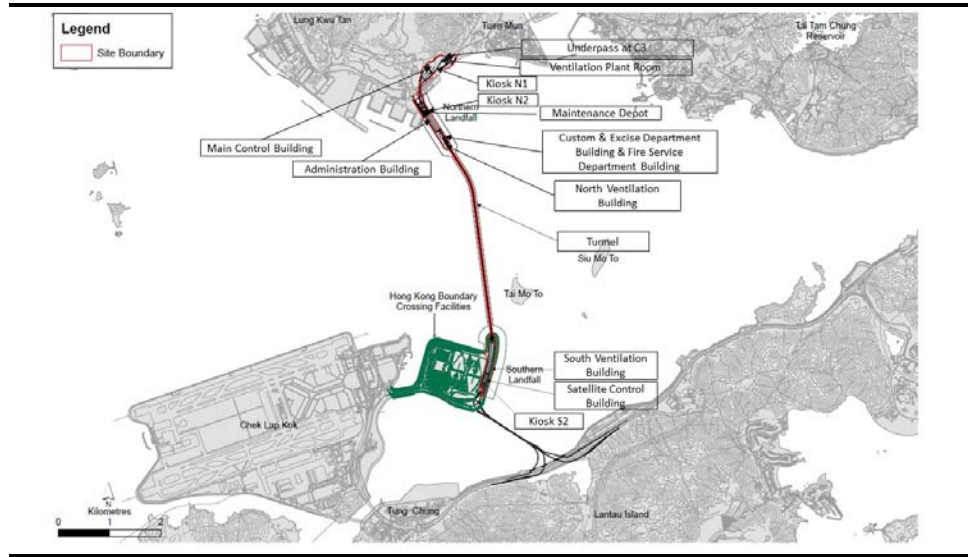
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2; and
- Electrical and Mechanical Works at South Ventilation Building.

The locations of the construction activities are shown in *Figure 1.3*. The Environmental Sensitive Receivers in the vicinity of the Contract are shown in *Figure 1.4*.

The implementation schedule of environmental mitigation measures is presented in *Appendix C*.



Figure 1.3 Locations of Major Construction Activities in the Reporting Month



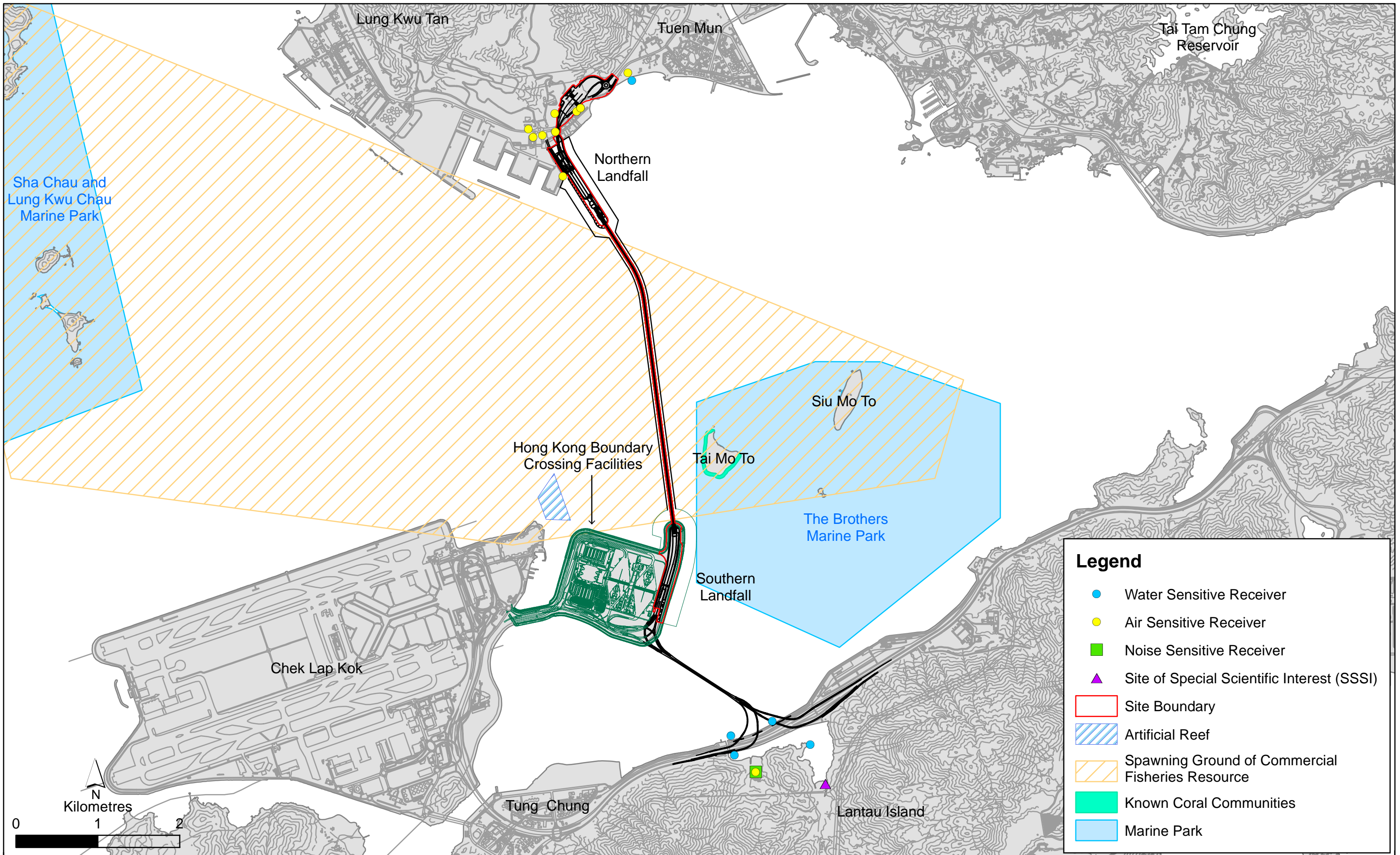


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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 Date: 12/7/2018

**Environmental  
 Resources  
 Management**



The EM&A programme required environmental monitoring for air quality and environmental site inspections for air quality, water quality and waste management. The EM&A requirements and related findings for each component are summarized in the following sections

## 2.1 AIR QUALITY

### 2.1.1 Monitoring Requirements and Equipment

In accordance with the Updated EM&A Manual and the Enhanced TSP Monitoring Plan, impact 1-hour TSP monitoring was conducted three (3) times every six (6) days and impact 24-hour TSP monitoring was carried out once every six (6) days when the highest dust impact was expected. 1-hr and 24-hr TSP monitoring frequency was increased to three times per day every three days and daily every three days, respectively, as excavation works for launching shaft under *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section* commenced on 24 October 2014.

Results of air quality monitoring were adopted from the published EM&A data of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section* <sup>(1)</sup>.

The Action and Limit Levels of the air quality monitoring were adopted from the published EM&A reports of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section* <sup>(2)</sup>. The Action and Limit Levels are provided in *Appendix D*.

The locations of the monitoring stations overlapped with *Contract No. HY/2012/08* are shown in *Figure 2.1* and presented in *Table 2.1*.

**Table 2.1** *Locations of Impact Air Quality Monitoring Stations and its Corresponding Monitoring Requirements*

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	2, 5, 8, 11, 14, 17, 20, 23, 26 and 29 April 2020	Tuen Mun Fireboat Station	Office	TSP monitoring <ul style="list-style-type: none"> <li>1-hour Total Suspended Particulates (1-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), 3 times in every 6 days</li> <li>24-hour Total Suspended Particulates (24-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), daily for 24-hour in every 6 days</li> </ul>
ASR5		Pillar Point Fire Station	Office	
AQMS1		Previous River Trade Golf	Bare ground	Enhanced TSP monitoring

(1) Published EM&A data for impact air quality monitoring by *Contract No. HY/2012/08* are available at: <http://www.hzmbenpo.com/>

(2) Published EM&A reports of *Contract No. HY/2012/08* are available at: <http://www.hzmbenpo.com/>





Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring  
 (Source: Adopted from Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link -  
 Northern Connection Sub-sea Tunnel Section)

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR6		Butterfly Beach Laundry	Office	(commenced on 24 October 2014 under <i>Contract No. HY/2012/08</i> ) <ul style="list-style-type: none"> <li>1-hour Total Suspended Particulates (1-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), 3 times in every 3 days</li> </ul>
ASR10		Butterfly Beach Park	Recreational uses	<ul style="list-style-type: none"> <li>24-hour Total Suspended Particulates (24-hour TSP, <math>\mu\text{g}/\text{m}^3</math>), daily for 24-hour in every 3 days</li> </ul>

### 2.1.2 *Results and Observations*

Results of air quality monitoring were adopted from the published EM&A data of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section* <sup>(1)</sup>.

Three (3) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of *Contract No. HY/2012/08* during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded. The exceedances were considered not related to this *Contract* upon further investigation and the investigation report is presented in *Appendix G*. No action is required to be undertaken in accordance with the Event Action Plan as presented in *Appendix E*.

### 2.2 *LANDFILL GAS HAZARD MONITORING*

In accordance with the Updated EM&A Manual of the TM-CLK Link Project, landfill gas hazard monitoring should be performed to ensure that the works area at Pillar Point Valley (PPV) Landfill is free of landfill gas during any excavations works.

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

### 2.3 *EM&A SITE INSPECTION*

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the *Contract*. In the reporting month, five (5) site inspections were carried out on 3, 9, 17, 24 and 29 April 2020.

Key observations and recommendations during the site inspections in this reporting period are summarized in *Table 2.2*.

(1) Published EM&A data for impact air quality monitoring by *Contract No. HY/2012/08* are available at: <http://www.hzmbenpo.com/>

**Table 2.2 Specific Observations and Recommendations during the Weekly Site Inspection in this Reporting Month**

<b>Inspection Date</b>	<b>Observations</b>	<b>Recommendations/ Remarks</b>
3 April 2020	Fire Services Department Building <ul style="list-style-type: none"> <li>Chemical container was observed not placed on drip tray.</li> </ul> Main Control Building <ul style="list-style-type: none"> <li>Watering on site was insufficient to reduce dust emission.</li> </ul>	Fire Services Department Building <ul style="list-style-type: none"> <li>The Contractor was reminded to place chemical container on drip tray.</li> </ul> Main Control Building <ul style="list-style-type: none"> <li>The Contractor was reminded to provide watering to reduce dust emission.</li> </ul>
9 April 2020	Satellite Control Building <ul style="list-style-type: none"> <li>A drip tray in use was deformed.</li> </ul>	Fire Services Department Building <ul style="list-style-type: none"> <li>The Contractor was reminded to fix the deformed drip tray.</li> </ul>
17 April 2020	Tunnel <ul style="list-style-type: none"> <li>Accumulated refuses were observed on site.</li> </ul> South Ventilation Building <ul style="list-style-type: none"> <li>Pipe threading machine was not placed on drip tray.</li> </ul>	Tunnel <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul> South Ventilation Building <ul style="list-style-type: none"> <li>The Contractor was reminded to place pipe threading machine on drip tray.</li> </ul>
24 April 2020	Satellite Control Building <ul style="list-style-type: none"> <li>Accumulated refuses were observed on site.</li> </ul>	South Ventilation Building <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul>
29 April 2020	Fire Services Department Building <ul style="list-style-type: none"> <li>Accumulated residuals were observed on site.</li> </ul> Customs and Excise Department Building <ul style="list-style-type: none"> <li>Accumulated residuals were observed on site.</li> <li>Thread drilling machine was not placed on drip tray.</li> <li>Excavator was observed emitting dark smoke.</li> <li>Stagnant water was observed on site.</li> </ul>	Fire Services Department Building <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul> Customs and Excise Department Building <ul style="list-style-type: none"> <li>The Contractor was reminded to place thread drilling machine on drip tray.</li> <li>The Contractor was reminded to fix and replace the excavator.</li> <li>The Contractor was reminded to clean the stagnant water.</li> </ul>

The Contractor has rectified all of the observations as identified during environmental site inspections in the reporting month.

#### 2.4 WASTE MANAGEMENT STATUS

The Contractor had submitted application form for registration as chemical waste producer under the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

Wastes generated during this reporting period included mainly construction wastes (inert and non-inert). Reference has been made to the waste flow table prepared by the Contractor (*Appendix F*). The quantities of different types of wastes are summarized in *Table 2.3*.



**Table 2.3 Quantities of Different Waste Generated in the Reporting Month**

Month/Year	Inert C&D Materials <sup>(a)</sup> (m <sup>3</sup> )	Inert Construction Waste Re-used (m <sup>3</sup> )	Non-inert Construction Waste <sup>(b)</sup> (kg)	Imported Fill (m <sup>3</sup> )	Recyclable Materials <sup>(c)</sup> (kg)	Chemical Wastes (kg)
April 2020	139	0	167,820	0	0	0

**Notes:**

- (a) Inert construction wastes include hard rock and large broken concrete disposed as public fill.
- (b) Non-inert construction wastes include general refuse disposed at landfill.
- (c) Recyclable materials include metals, paper, cardboard, plastics, timber and others.

The Contractor was advised to properly maintain on site C&D materials and waste collection, sorting and recording system, dispose of C&D materials and wastes at designated ground and maximize reuse/ recycle of C&D materials and wastes. The Contractor was also reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

For chemical waste containers, the Contractor was reminded to treat properly and store temporarily in designated chemical waste storage area on site in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*.

**2.5 ENVIRONMENTAL LICENSES AND PERMITS**

The status of environmental licensing and permit is summarized in *Table 2.4* below.

**Table 2.4 Summary of Environmental Licensing and Permit Status**

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	N/A	HyD	Tuen Mun- Chek Lap Kok Link
APCO Construction Dust Notification	433493	14 May 2018	N/A	GCL	For Tuen Mun working area
Construction Waste Billing Account	7030836	15 May 2018	N/A	GCL	N/A
Chemical Waste Producer Registration	5213-422-G2827-01	13 June 2018	N/A	GCL	N/A
Discharge License under WPCO for Buildings at C2 area	WT00031783-2018	22 October 2018	31 October 2023	GCL	Sampling Frequency: Bimonthly
Discharge License under WPCO for Buildings at C3 area	WT00032062-2018	30 October 2018	31 October 2023	GCL	Sampling Frequency: Quarterly
Discharge License under WPCO for Southern Landfall	WT00034878-2019	1 April 2020	31 March 2025	GCL	Sampling Frequency: Quarterly
Construction Noise Permit	GW-RW0054-20	11 February 2020	11 August 2020	GCL	For Northern Landfall and Tunnel
Construction Noise Permit	GW-RS0039-20	23 January 2020	22 July 2020	GCL	For HKBCF Area

## 2.6 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

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

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in *Appendix C*. The necessary mitigation measures relevant to this Contract were implemented properly.

The landscape and visual (L&V) mitigation measures were also monitored on weekly basis in the reporting period. The monitoring status is summarized in *Appendix C*.

## 2.7 *SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT*

Three (3) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

Cumulative statistics are provided in *Appendix G*.

## 2.8 *SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

The Environmental Complaint Handling Procedure is provided in *Figure 2.2*.

There was no environmental complaint, notification of summons or successful prosecution recorded in the reporting period.

Statistics on complaints, notifications of summons, successful prosecutions are summarized in *Appendix G*.

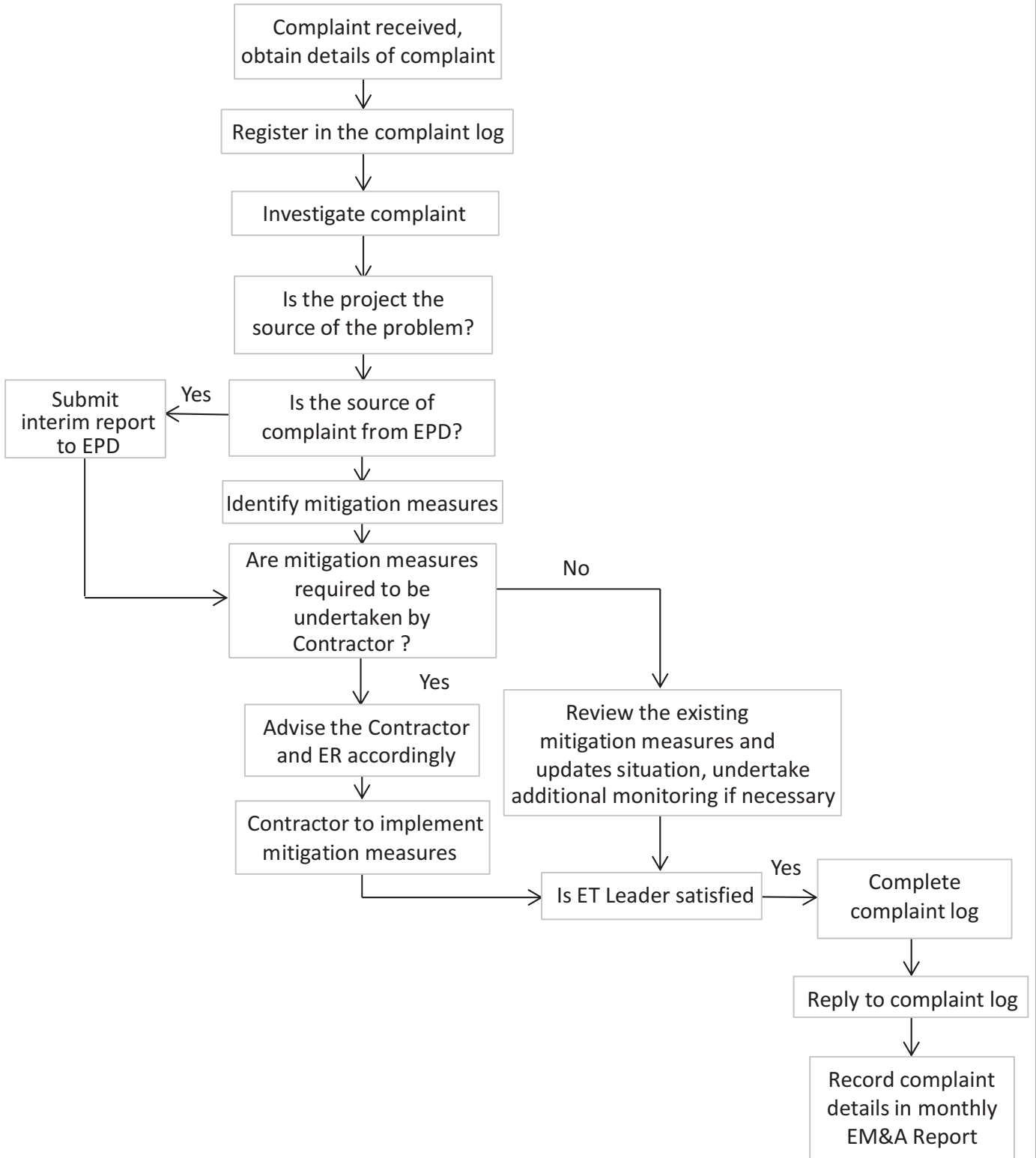


Figure 2.2

Environmental Complaint Handling Procedure

**3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH**

As informed by the Contractor, the major works for the Contract in May 2020 will be:

***Land-based Works***

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2;
- Electrical and Mechanical Works at South Ventilation Building; and
- Landscape Works at Northern Landfall and Southern Landfall.

### 3.2

#### *KEY ISSUES FOR THE COMING MONTH*

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of May 2020 are mainly associated with dust and waste management issues.

**4.1****CONCLUSIONS**

This Twenty-third Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 30 April 2020, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

Air quality (including 1-hour TSP and 24-hour TSP) monitoring were carried out in this reporting month.

Three (3) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

Environmental site inspection was carried out five (5) times in April 2020. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

There was no environmental complaint, notification of summons or successful prosecution recorded in the reporting period.

The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Appendix A

## Project Organization for Environmental Works





↔ Line of Communication

Appendix B

## Construction Programme

ID	Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020				
							May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
HY2017/10 - Works Programme Three Month Rolling Programme 20-Apr-20																																			
<b>Contract Dates</b>																																			
<b>Key Dates</b>																																			
KD05	KD05 - E&M for Toll Area, N1, Underpass, Plant Rm, Footbridges/Roads	0	0%																																
KD06A	KD6A - E&M for Approach Roads and At-Grade Rd at North Side	0	0%																																
KD06B	KD6B - E&M for South Vent Duct, Tunnel, Approach Roads	0	0%																																
KD06C	KD6C - E&M for South Vent Building	0	0%																																
KD07	KD07 - E&M for Satellite Control Bldg and S1 & S2	0	0%																																
KD07A	KD7A - E&M for Approach Roads and At-Grade Rd at South Side	0	0%																																
KD10	KD10 - FSD Building, E&M Works, & FSD Inspection	0	0%																																
<b>Portion Possession Dates</b>																																			
P325	Possession to Portion XXII (Day 483)	0	0%																																
P335	Possession to Portion XXIII (Day 483)	0	0%																																
<b>Portion Handover Dates</b>																																			
H120	Vacate Portion XVIb (KD10+28)	0	0%																																
H130	Vacate Portion XVIa (KD10+28)	0	0%																																
<b>Major Design Submission &amp; Approval</b>																																			
<b>Toll Control Building</b>																																			
<b>MVAC System</b>																																			
TCB-EMD1095	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	95%																																
TCB-EMD1115	Authorities Review and Comment of MVAC Pump head calculation	56	95%																																
<b>Electrical System</b>																																			
TCB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	95%																																
TCB-EMD1055	Authorities Review and Comment of Generator Calculation	56	95%																																
<b>Fire Service System</b>																																			
TCB-EMD1175	Authorities Review and Comment of FS Pump Head Calculation	56	95%																																
TCB-EMD1195	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	95%																																
TCB-EMD1215	Authorities Review and Comment of FM200 System Design Calculation	56	95%																																
<b>Plumbing &amp; Drainage System</b>																																			
TCB-EMD1235	Authorities Review and Comment of Pump Head Calculation	56	95%																																
TCB-EMD1275	Authorities Review and Comment of Hot water system capacity calculation	56	95%																																
TCB-EMD1395	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	95%																																
<b>Administration Building</b>																																			
<b>MVAC System</b>																																			
ADB-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	95%																																
ADB-EMD1035	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	95%																																
ADB-EMD1055	Authorities Review and Comment of Pump head calculation	56	95%																																
ADB-EMD1075	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	95%																																
<b>Electrical System</b>																																			
ADB-EMD1115	Authorities Review and Comment of Electrical Loading Demand Calculation	56	95%																																
ADB-EMD1135	Authorities Review and Comment of Generator Calculation	56	95%																																
<b>Fire Service System</b>																																			
ADB-EMD1155	Authorities Review and Comment of FS Pump Head Calculation	56	95%																																
ADB-EMD1175	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	95%																																
<b>Plumbing &amp; Drainage System</b>																																			
ADB-EMD1215	Authorities Review and Comment of Pump Head Calculation	56	95%																																
ADB-EMD1235	Authorities Review and Comment of Pressure Vessel Calculation	56	95%																																
ADB-EMD1255	Authorities Review and Comment of Hot water system capacity calculation	56	95%																																
<b>North Ventilation Building</b>																																			

**CONTRACT NO. HY2017/10**  
**NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS**  
**THREE MONTHLY PROGRAMME AS OF 20 Apr 2020**

P 1	Date	Revision	Checked	Approved
	20-Apr-20			

































Appendix C

# Environmental Mitigation and Enhancement Measure Implementation Schedules

(In reference to CINOTECH (2011) Agreement No.  
CE35/2011 EP Baseline Environmental Monitoring for  
Hong Kong-Zhuhai-Macao Bridge Tuen Mun-Chek Lap  
Kok Link - Investigation. Updated EM&A Manual for  
Tuen Mun-Chek Lap Kok Link)

**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
<b>Air Quality</b>									
4.8.1	3.8	Watering of the construction sites in Lantau for 8 times/day and in Tuen Mun for 12 times/day to reduce dust emissions by 87.5% and 91.7% respectively and shall be undertaken.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall not burn debris or other materials on the works areas.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet.	All unpaved haul roads / throughout construction period in hot, dry or windy weather	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		<>
4.8.1	3.8	Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	All site exits / throughout construction period	Contractor	TMEIA Avoid dust		Y		✓

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
4.8.1	3.8	Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable.	All exposed surfaces / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.11	Section 3	EM&A in the form of 1 hour and 24 hour dust monitoring and site audit.	All representative existing ASRs / throughout construction period	Contractor	EM&A Manual		Y		N/A (Results adopted from published EM&A data of Contract No. HY/2012/08)
<b>WATER QUALITY (LAND WORKS)</b>									
6.10	-	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Sewage effluent and discharges from on- site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Temporary access roads should be surfaced with crushed stone or gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A

Legend: D=Design, C=Construction, O=Operation

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**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	5.8	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		✓

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

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**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	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.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		<>
6.10	-	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/design and operation	Design Consultant/ Contractor	TM-EIAO	Y		Y	N/A
6.10	Section 11	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
<b>WASTE</b>									
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		✓
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling.	Contract Mobilisation	Contractor	TMEIA		Y		✓

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government



**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	No waste shall be burnt on site.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		✓

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows:  <i>f</i> suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; <i>f</i> Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. <i>f</i> Clearly labelled and used solely for the storage of chemical wastes; <i>f</i> Enclosed with at least 3 sides; <i>f</i> Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; <i>f</i> Adequate ventilation; <i>f</i> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and	All areas / throughout construction period	Contractor	TMEIA		Y		✓

Legend: D=Design, C=Construction, O=Operation

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**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
		f Incompatible materials are adequately separated.							
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Adequate numbers of portable toilets should be provided for on-site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Night soil should be regularly collected by licensed collectors.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		↔
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
<b>LANDSCAPE AND VISUAL</b>									

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas (Tree protection measures will be detailed at Tree Removal Application Stage) (CM1)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme (CM2)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Hillside and roadside screen planting to proposed roads, associated structures and slope works (CM3)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone) (CM4)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Recycle/ Reuse all felled trees and vegetation, e.g. mulching (CM9)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006 (CM10)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

**Contract No. HY/2017/10**  
**Tuen Mun – Chek Lap Kok Link**  
**Northern Connection Tunnel Buildings, Electrical and Mechanical Works**  
**Environmental Mitigation and Enhancement Measure Implementation Schedule**

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	Re-vegetation of affected woodland/shrubland with native species (OM1)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y		n/a. To be maintained by HyD
10.9	7.6	Tall buffer screen tree / shrub / climber planting should be incorporated to soften hard engineering structures and facilities (OM2)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD/LCSD
10.9	7.6	Streetscape elements (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the local context, and minimises potential negative landscape and visual impacts. Lighting units should be directional and minimise unnecessary light spill (OM3)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD
10.9	7.6	Structure, ornamental tree / shrub / climber planting should be provided along roadside amenity strips, central dividers and newly formed slopes to enhance the townscape quality and further greenery enhancement (OM4)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD/ ArchSD
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD/ ArchSD
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (OM6)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD/ ArchSD

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

Contract No. HY/2017/10  
 Tuen Mun – Chek Lap Kok Link  
 Northern Connection Tunnel Buildings, Electrical and Mechanical Works  
 Environmental Mitigation and Enhancement Measure Implementation Schedule

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	

\* Remarks:

- ✓ Compliance of Mitigation Measures
- <> Compliance of Mitigation but need improvement
- x Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by Contractor
- Δ Deficiency of Mitigation Measures but rectified by Contractor
- N/A Not Applicable in Reporting Period

Legend: D=Design, C=Construction, O=Operation

Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government



Appendix D

## Summary of Action and Limit Levels

**Table D1**      *Action and Limit Levels for 1-hour and 24-hour TSP*

<b>Parameters</b>	<b>Action</b>	<b>Limit</b>
24 Hour TSP Level in $\mu\text{g}/\text{m}^3$	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in $\mu\text{g} / \text{m}^3$	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337	500

Appendix E

## Event Action Plan

*Appendix E1 Event/ Action Plan for Air Quality*

EVENT	ET <sup>(1)</sup>	ACTION		
		IEC <sup>(1)</sup>	ER <sup>(1)</sup>	Contractor
<b>Action Level</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify the source.</li> <li>2. Inform the IEC and the 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 the 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 the source.</li> <li>2. Inform the IEC and the ER.</li> <li>3. Repeat measurements to confirm findings.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Discuss with the IEC and the Contractor on remedial actions required.</li> <li>6. If exceedance continues, arrange meeting with the IEC and the ER.</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET.</li> <li>2. Check the Contractor's working method.</li> <li>3. Discuss with the ET and the 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 the Contractor.</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial actions to IEC 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 <sup>(1)</sup>	IEC <sup>(1)</sup>	ER <sup>(1)</sup>	Contractor
<b>Limit Level</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify the source.</li> <li>2. Inform the ER and the DEP.</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 the IEC, the DEP and the ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET.</li> <li>2. Check Contractor's working method.</li> <li>3. Discuss with the ET and the 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 the Contractor.</li> <li>3. Ensure remedial measures are 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 the IEC, the ER, the DEP and the Contractor.</li> <li>2. Identify the source.</li> <li>3. Repeat measurements to confirm findings.</li> <li>4. Increase monitoring frequency to daily.</li> <li>5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>6. Arrange meeting with the IEC and the ER to discuss the remedial actions to be taken.</li> <li>7. Assess effectiveness of the Contractor's remedial actions</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst the ER, ET and the Contractor on the potential remedial actions.</li> <li>2. Review the 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 the 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 are properly implemented.</li> <li>5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity 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 activity of works as determined by the ER until the exceedance is abated.</li> </ol>

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and keep the IEC, the DEP and  
the ER informed of the results.

8. If the exceedance stops, cease  
additional monitoring.

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Abbreviations: ET - Environmental Team, IEC - Independent Environmental Checker, ER - Engineer's Representative, DEP - Director of Environmental Protection



Appendix F

## Monthly Summary of Waste Flow Table

Contract No. : HY/2017/10

Tuen Mun Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works

Monthly Summary Waste Flow Table for 2020 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation		Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	0.025	0.000	-	-	0.025	-	-	187.500	-	-	0.070	-
Feb	0.074	0.026	-	-	0.074	-	-	176.100	-	-	0.084	-
Mar	0.650	0.117	-	-	0.366	0.284	-	237.850	-	-	0.042	-
Apr	0.139	0.000	-	-	0.139	-	-	167.820	-	-	-	-
May	-	0.000	-	-	-	-	-	-	-	-	-	-
Jun	-	0.000	-	-	-	-	-	-	-	-	-	-
<b>SUB-TOTAL</b>	<b>0.888</b>	<b>0.143</b>	<b>0.000</b>	<b>0.000</b>	<b>0.604</b>	<b>0.284</b>	<b>0.000</b>	<b>769.270</b>	<b>0.000</b>	<b>0.000</b>	<b>0.196</b>	<b>0.000</b>
Jul	-	0.000	-	-	-	-	-	-	-	-	-	-
Aug	-	0.000	-	-	-	-	-	-	-	-	-	-
Sep	-	0.000	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	0.000	-	-	-	-	-	-	-	-	-	-
Dec	-	0.000	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>0.888</b>	<b>0.143</b>	<b>0.000</b>	<b>0.000</b>	<b>0.604</b>	<b>0.284</b>	<b>0.000</b>	<b>769.270</b>	<b>0.000</b>	<b>0.000</b>	<b>0.196</b>	<b>0.000</b>

Notes :

- 1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- 2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- 3 - Broken concrete for recycling into aggregates.
- 4 - Assumed 5 kg per damaged water-filled barrier.
- 5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Appendix G

Cumulative Statistics on  
Exceedances, Complaints,  
Notifications of Summons  
and Successful Prosecutions

*Appendix G1 Cumulative Statistics on Exceedances*

		Total No. recorded in this reporting month	Total No. recorded since contract commencement
1-Hr TSP	Action	3	43
	Limit	1	9
24-Hr TSP	Action	0	2
	Limit	0	0
Landfill gas hazard monitoring			
	• Methane	0	0
	• Oxygen	0	0
	• Carbon Dioxide	0	0

*Appendix G2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions*

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (April 2020)	0	0	0
Total No. received since contract commencement	1	0	0

Email  
message

Environmental  
Resources  
Management

**To** Ramboll Hong Kong Limited (ENPO)

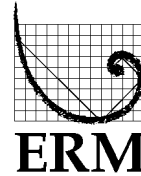
**From** ERM- Hong Kong, Limited

**Ref/Project number** Contract No. HY/2017/10  
Tuen Mun – Chek Lap Kok Link – Northern  
Connection Tunnel Buildings, Electrical and  
Mechanical Works

**Subject** Notification of Exceedance for Air Quality  
Impact Monitoring

**Date** 22 April 2020

2507,  
25/F One Harbourfront,  
18 Tak Fung Street,  
Hung Hom, Hong Kong  
Telephone: (852) 2271 3113  
Facsimile: (852) 2723 5660  
E-mail: jasmine.ng@erm.com



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Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following  
Log no.:

**Action Level Exceedance**

0463091\_8April2020\_1hrTSP\_Station ASR5

0463091\_8April2020\_1hrTSP\_Station ASR1

0463091\_8April2020\_1hrTSP\_Station ASR1

Three (3) exceedances were recorded on 8 April 2020.

Regards,

Dr Jasmine Ng  
*Environmental Team Leader*

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**ERM-Hong Kong, Limited**

**CONTRACT NO. HY/2017/10  
TUEN MUN – CHEK LAP KOK LINK –  
NORTHERN CONNECTION TUNNEL BUILDINGS,  
ELECTRICAL AND MECHANICAL WORKS**

*Air Quality Impact Monitoring*

**Notification of Exceedance**

<b>Log No.</b>	<u>Action Level Exceedance</u> 0463091_8April2020_1hrTSP_Station ASR5 0463091_8April2020_1hrTSP_Station ASR1 0463091_8April2020_1hrTSP_Station ASR1  [Total No. of Exceedances = 3]	
<b>Date</b>	8 April 2020 (Measured) 22 April 2020 (Results obtained from ENPO Website)	
<b>Monitoring Station</b>	ASR1 and ASR5	
<b>Parameter(s) with Exceedance(s)</b>	1- hr TSP	
<b>Action Levels</b>	1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
<b>Limit Levels</b>	1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	500
	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )	260
<b>Measured Levels</b>	Refer to <i>Appendix A</i> (Data are source from Contract No. HY/2012/08).	
<b>Works Undertaken (at the time of monitoring event)</b>	Works undertaken under this Contract on 8 April 2020 included <ul style="list-style-type: none"> <li>• Defect rectification at Administration Building;</li> <li>• Defect rectification at Maintenance Depot</li> </ul>	
<b>Possible Reason for Action or Limit Level Exceedance(s)</b>	The exceedance is unlikely to be due to the Contract, in view of the following: <ul style="list-style-type: none"> <li>• With reference to the recorded wind direction (ranged between 128° and 124°, blowing from a south easterly direction) and wind speed (ranged between 1.8 and 2.7 m/s) when exceedances recorded, ASR5 is located far from the construction works at Maintenance Depot and Administration Building.</li> <li>• ASR1 is located nearby to the construction works at Maintenance Depot and Administration Building. However, the construction works at Maintenance Depot and Administration Building were mainly minor defect rectification works which are considered not major dust generating works (refer to <i>Appendix B</i> and <i>C</i>).</li> <li>• The construction area under this Contract were mainly paved. The remaining unpaved area are seated by machines such as crane machines and generators or used as material storage area with proper cover of tarpaulin sheet. The exposed area are suppressed/covered. Dust are not anticipated.</li> </ul> Based on the above, the exceedance is unlikely to be due to the Contract.	
<b>Actions Taken / To Be Taken</b>	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
<b>Remarks</b>	The monitoring results on 8 April 2020, locations of air quality monitoring stations and wind data are attached (refer to <i>Appendix A</i> ).	

Appendix A

Results of Air Quality  
Monitoring, Meteorological  
Data and Locations of Air  
Quality Monitoring Stations



Air quality monitoring results on 8/4/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-04-08	ASR10	Sunny	13:13:00	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR10	Sunny	14:15:00	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR10	Sunny	15:17:00	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR6	Sunny	13:42:00	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR6	Sunny	14:26:00	1-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR6	Sunny	15:28:00	1-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR5	Sunny	13:36:00	1-hour TSP	198	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR5	Sunny	14:38:00	1-hour TSP	243	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR5	Sunny	15:40:00	1-hour TSP	384	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR1	Sunny	13:47:00	1-hour TSP	328	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR1	Sunny	14:49:00	1-hour TSP	357	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR1	Sunny	15:51:00	1-hour TSP	457	ug/m3
TMCLKL	HY/2012/08	2020-04-08	AQMS1	Sunny	13:58:00	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2020-04-08	AQMS1	Sunny	15:00:00	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2020-04-08	AQMS1	Sunny	16:02:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR10	Sunny	16:19:00	24-hour TSP	42	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR6	Sunny	16:30:00	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR5	Sunny	16:42:00	24-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2020-04-08	ASR1	Sunny	16:53:00	24-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-04-08	AQMS1	Sunny	17:04:00	24-hour TSP	67	ug/m3

Action level exceedance

Limit level exceedance

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
20/04/08	0:00	0	1
20/04/08	1:00	0	354
20/04/08	2:00	0	355
20/04/08	3:00	0	48
20/04/08	4:00	0	73
20/04/08	5:00	0.9	50
20/04/08	6:00	0.4	31
20/04/08	7:00	0.9	52
20/04/08	8:00	1.3	84
20/04/08	9:00	1.3	99
20/04/08	10:00	1.3	99
20/04/08	11:00	0.9	95
20/04/08	12:00	1.3	90
20/04/08	13:00	1.8	86
20/04/08	14:00	1.8	128
20/04/08	15:00	2.7	124
20/04/08	16:00	0.9	84
20/04/08	17:00	1.3	91
20/04/08	18:00	0.9	81
20/04/08	19:00	0.9	68
20/04/08	20:00	0.9	98
20/04/08	21:00	1.8	80
20/04/08	22:00	1.8	93
20/04/08	23:00	0.9	96

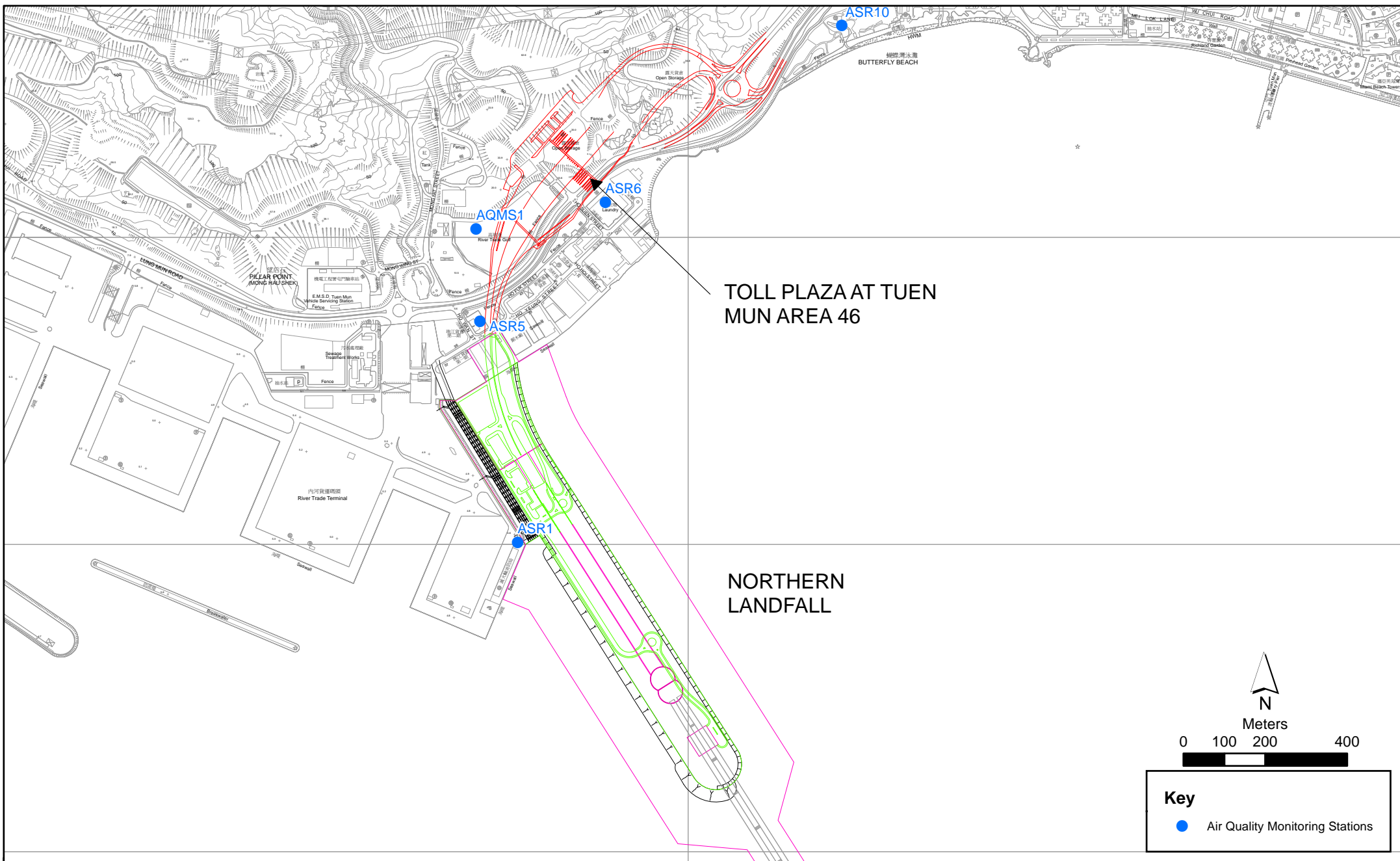


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring  
 (Source: Adopted from Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link -  
 Northern Connection Sub-sea Tunnel Section)

**Key**  
 ● Air Quality Monitoring Stations

**Environmental  
 Resources  
 Management**

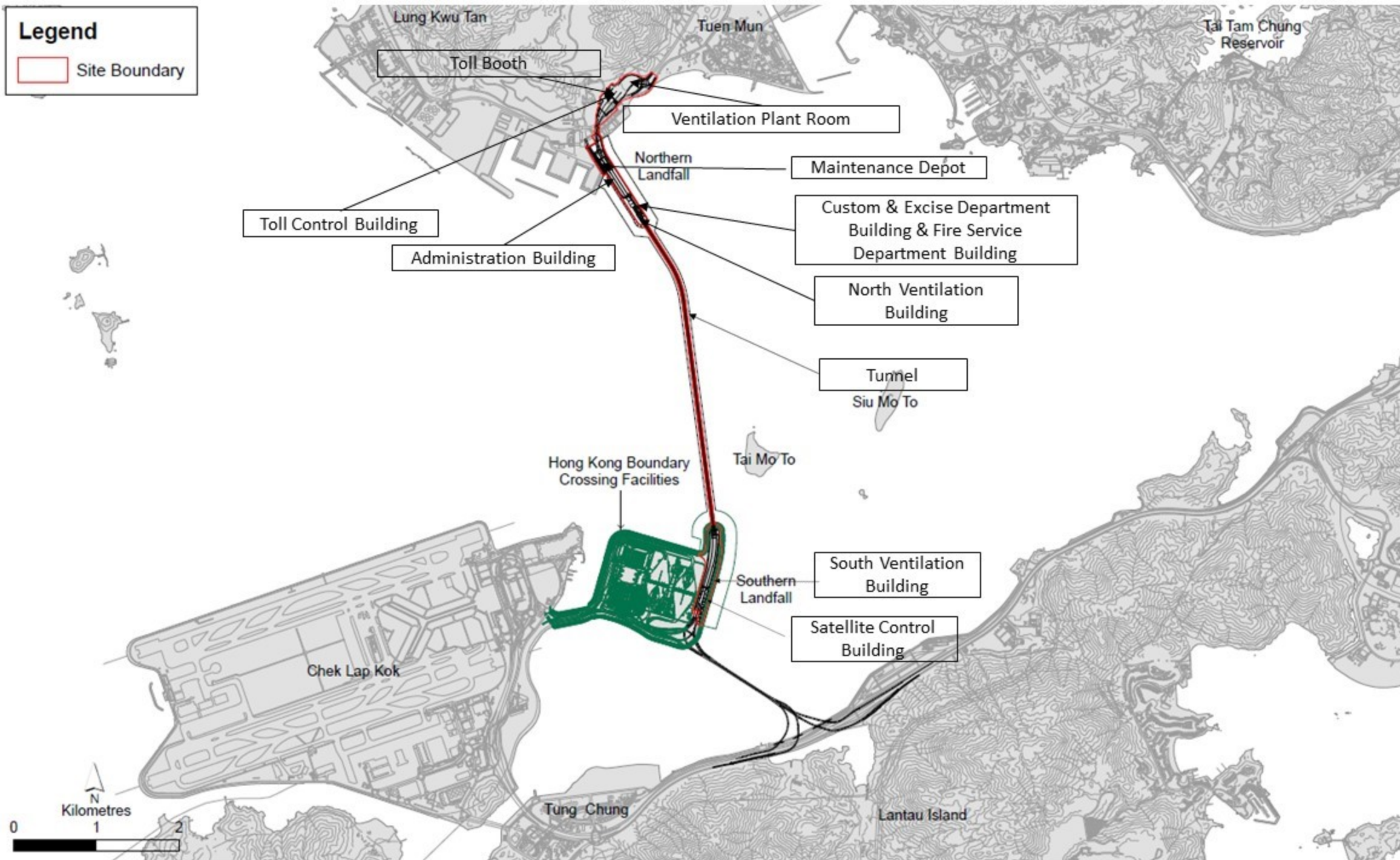


Appendix B

## Works Locations

# Legend

Site Boundary



Appendix C

Site Photo



Photo 1 - Construction works at Administration Building



Photo 2 - Construction works at Maintenance Depot



Email  
message

Environmental  
Resources  
Management

**To** Ramboll Hong Kong Limited (ENPO)

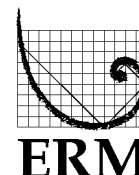
**From** ERM- Hong Kong, Limited

**Ref/Project number** Contract No. HY/2017/10  
Tuen Mun – Chek Lap Kok Link – Northern  
Connection Tunnel Buildings, Electrical and  
Mechanical Works

**Subject** Notification of Exceedance for Air Quality  
Impact Monitoring

**Date** 5 May 2020

2507,  
25/F One Harbourfront,  
18 Tak Fung Street,  
Hung Hom, Hong Kong  
Telephone: (852) 2271 3113  
Facsimile: (852) 2723 5660  
E-mail: jasmine.ng@erm.com



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Dear Sir/ Madam,

Please find attached the Notification of Exceedance (NOE) of the following  
Log no.:

**Limit Level Exceedance**  
**0463091\_14April2020\_1hrTSP\_Station ASR1**

One (1) exceedance was recorded on 14 April 2020.

Regards,

A handwritten signature in blue ink that reads "Jasmine". The signature is written in a cursive, flowing style.

Dr Jasmine Ng  
*Environmental Team Leader*

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**ERM-Hong Kong, Limited**

**CONTRACT NO. HY/2017/10  
TUEN MUN – CHEK LAP KOK LINK –  
NORTHERN CONNECTION TUNNEL BUILDINGS,  
ELECTRICAL AND MECHANICAL WORKS**

*Air Quality Impact Monitoring*

**Notification of Exceedance**

<b>Log No.</b>	<u>Limit Level Exceedance</u> 0463091_14April2020_1hrTSP_Station ASR1  [Total No. of Exceedances = 1]	
<b>Date</b>	14 April 2020 (Measured) 5 May 2020 (Results obtained from ENPO Website)	
<b>Monitoring Station</b>	ASR1	
<b>Parameter(s) with Exceedance(s)</b>	1- hr TSP	
<b>Action Levels</b>	1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
<b>Limit Levels</b>	1-hr TSP ( $\mu\text{g}/\text{m}^3$ )	500
	24-hr TSP ( $\mu\text{g}/\text{m}^3$ )	260
<b>Measured Levels</b>	Refer to <i>Appendix A</i> (Data are source from Contract No. HY/2012/08).	
<b>Works Undertaken (at the time of monitoring event)</b>	Works undertaken under this Contract on 14 April 2020 included <ul style="list-style-type: none"> <li>Defect rectification at Administration Building;</li> <li>Defect rectification at Maintenance Depot</li> </ul>	
<b>Possible Reason for Action or Limit Level Exceedance(s)</b>	<p>The exceedance is unlikely to be due to the Contract, in view of the following:</p> <ul style="list-style-type: none"> <li>With reference to the recorded wind direction (<math>80^\circ</math>, blowing from an easterly direction) and wind speed (<math>1.3 \text{ m/s}</math>) when exceedance recorded, ASR1 is located downstream to the construction works at Maintenance Depot and Administration Building. However, the construction works at Maintenance Depot and Administration Building were mainly minor defect rectification works which are considered not major dust generating works (refer to <i>Appendix B</i> and <i>C</i>).</li> <li>The construction area under this Contract were mainly paved. The remaining unpaved area are seated by machines such as crane machines and generators or used as material storage area with proper cover of tarpaulin sheet. The exposed area are suppressed/covered. Dust are not anticipated.</li> </ul> <p>Based on the above, the exceedance is unlikely to be due to the Contract.</p>	
<b>Actions Taken / To Be Taken</b>	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
<b>Remarks</b>	The monitoring results on 14 April 2020, locations of air quality monitoring stations and wind data are attached (refer to <i>Appendix A</i> ).	

Appendix A

Results of Air Quality  
Monitoring, Meteorological  
Data and Locations of Air  
Quality Monitoring Stations

Air quality monitoring results on 14/4/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-04-14	ASR10	Sunny	13:27:00	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR10	Sunny	14:29:00	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR10	Sunny	15:31:00	1-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR6	Sunny	13:38:00	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR6	Sunny	14:40:00	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR6	Sunny	15:42:00	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR5	Sunny	13:50:00	1-hour TSP	254	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR5	Sunny	14:52:00	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR5	Sunny	15:54:00	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR1	Sunny	14:00:00	1-hour TSP	673	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR1	Sunny	15:02:00	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR1	Sunny	16:04:00	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	2020-04-14	AQMS1	Sunny	14:12:00	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2020-04-14	AQMS1	Sunny	15:14:00	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2020-04-14	AQMS1	Sunny	16:16:00	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR10	Sunny	16:33:00	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR6	Sunny	16:44:00	24-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR5	Sunny	16:54:00	24-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2020-04-14	ASR1	Sunny	17:06:00	24-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2020-04-14	AQMS1	Sunny	17:18:00	24-hour TSP	93	ug/m3

Action level exceedance

Limit level exceedance

**Meteorological Data for Impact Monitoring in the reporting period**

<b>Date (yy-mm-dd)</b>	<b>Time (24hrs)</b>	<b>Average of Wind Speed (m/s)</b>	<b>Average of Wind Direction(degree)</b>
20/04/14	0:00	0	24
20/04/14	1:00	0	25
20/04/14	2:00	0	6
20/04/14	3:00	0	347
20/04/14	4:00	0	350
20/04/14	5:00	1.3	309
20/04/14	6:00	0.4	347
20/04/14	7:00	0	333
20/04/14	8:00	0	123
20/04/14	9:00	0	104
20/04/14	10:00	0	102
20/04/14	11:00	0.4	127
20/04/14	12:00	0.9	139
20/04/14	13:00	1.3	96
20/04/14	14:00	1.3	80
20/04/14	15:00	1.3	142
20/04/14	16:00	0.9	200
20/04/14	17:00	1.3	212
20/04/14	18:00	1.3	197
20/04/14	19:00	0.4	119
20/04/14	20:00	0.9	83
20/04/14	21:00	0.9	139
20/04/14	22:00	0.4	61
20/04/14	23:00	0.4	83

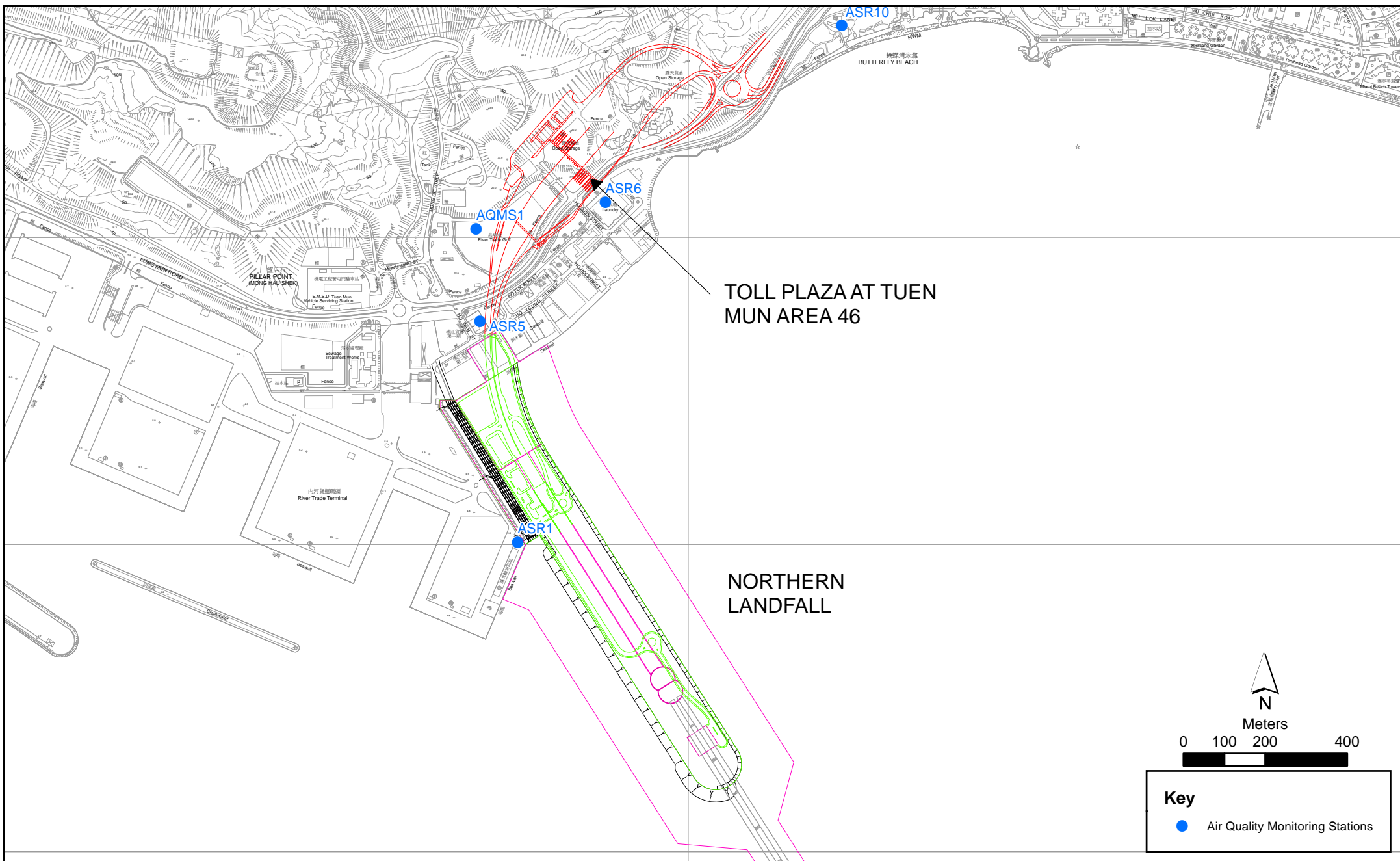


Figure 2.1

Air Quality Monitoring Stations for the Enhanced TSP Monitoring  
 (Source: Adopted from Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link -  
 Northern Connection Sub-sea Tunnel Section)

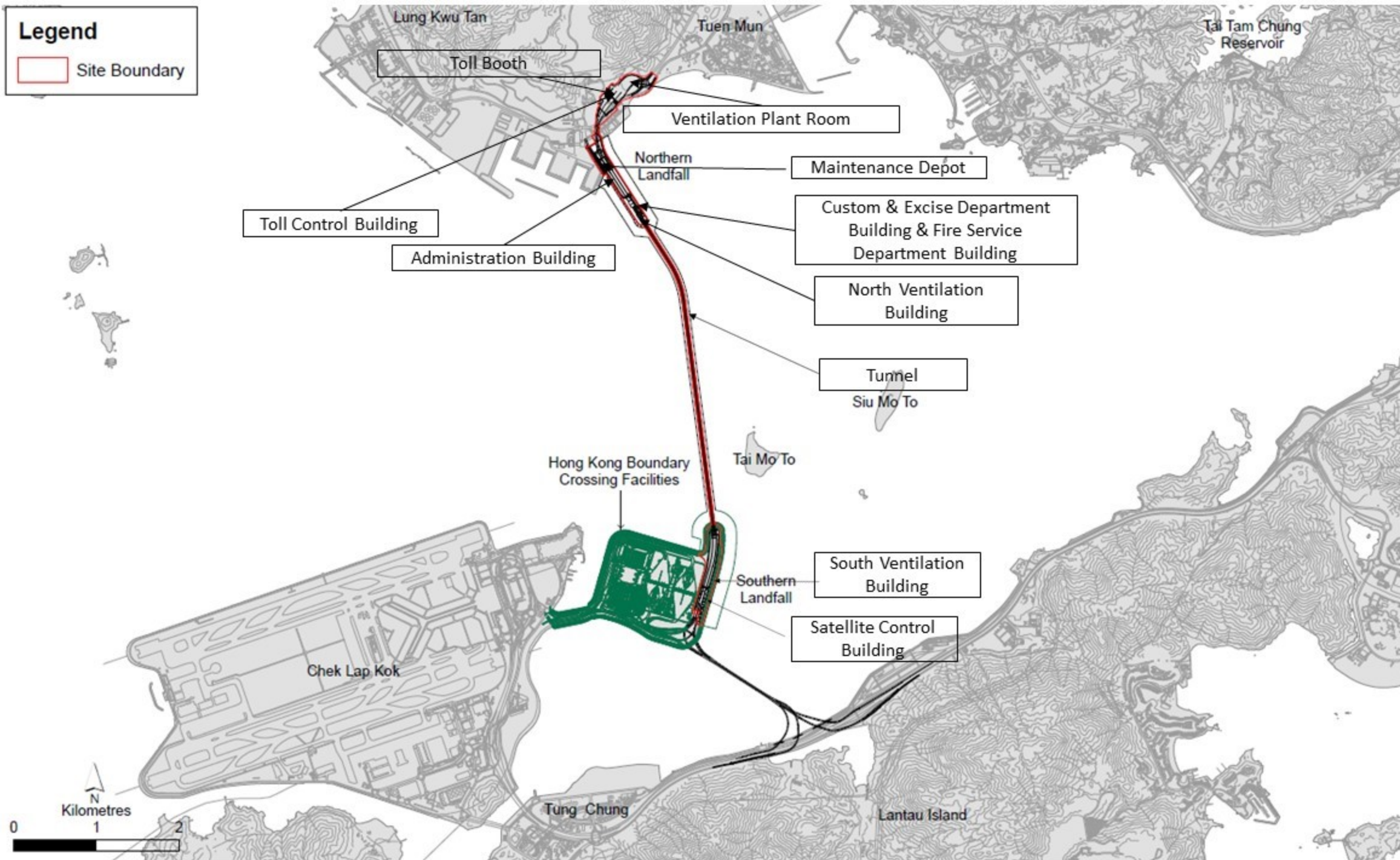
Appendix B

## Works Locations



# Legend

Site Boundary



Appendix C

Site Photo



Photo 1 - Construction works at Administration Building



Photo 2 - Construction works at Maintenance Depot