

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

Twenty-second Monthly EM&A Report

9 April 2020

Environmental Resources Management
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Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works

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Twenty-second Monthly EM&A Report

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Client: Gammon		Project No: 0463091			
Summary: This document presents the Twenty-second Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 9 April 2020			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
		Dr Jasmine Ng ET Leader			
	Twenty-second Monthly EM&A Report	CW	JN	CAR	9/4/20
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			
		 			

9 April 2020

By Fax (2783 0155) and By Post

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
22nd Monthly EM&A Report for March 2020**

Reference is made to the Environmental Team's submission of the monthly EM&A report for March 2020 (ET's ref.: "0463091_22nd Monthly EM&A_20200409.doc" dated 9 April 2020) certified by the ET Leader and provided to us via e-mail on 9 April 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-second Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 March 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 ⁽¹⁾:

24-hour TSP Monitoring	10 sessions
1-hour TSP Monitoring	10 sessions
Joint Environmental Site Inspection	4 sessions

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

One (1) Action Level exceedance for 1-hour TSP was 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 April 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; and
- Electrical and Mechanical Works at South Ventilation Building.

Future Key Issues

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

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

Plot File by: Jerry Wong 23-Jan-18
 PATH: Y:\TO TO RSS\MSL\C4 Drawings\C4 Drawings\CON\60240249_C4_7051.dgn



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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
 AECOM Asia Company Ltd.
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SUB-CONSULTANTS

Figure 1.1

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
A	JAN.18	TENDER ADDENDUM NO.1	SYLC
-	DEC.17	TENDER DRAWING	SYLC

STATUS

SCALE
 A1 1:40000

DIMENSION UNIT
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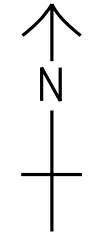
KEY PLAN

PROJECT NO. 60240249
CONTRACT NO. HY/2017/10

SHEET TITLE
 OVERALL SITE PLAN

SHEET NUMBER
 60240249/C4/7051A

Plot File by: jerry.wong 23-Jan-18
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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
Hong Kong Project Management Office

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Figure 1.2a

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
A	JAN.18	TENDER ADDENDUM NO.1	SYLC
-	DEC.17	TENDER DRAWING	SYLC

STATUS

SCALE
A1 1:2500

DIMENSION UNIT
MILLIMETRES

KEY PLAN

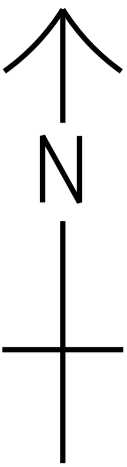
PROJECT NO.
60240249

CONTRACT NO.
HY/2017/10

SHEET TITLE
ZONING PLAN (SHEET 1)

SHEET NUMBER
60240249/C4/7061A

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

CLIENT
 業主



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Figure 1.2b

ISSUE/REVISION
 修訂

I/R 修訂	DATE 日期	DESCRIPTION 修訂描述	CHK. 核對
A	JAN.18	TENDER ADDENDUM NO.1	SYLC
-	DEC.17	TENDER DRAWING	SYLC

STATUS
 階段

SCALE
 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 2)

SHEET NUMBER
 圖紙編號

60240249/C4/7062A

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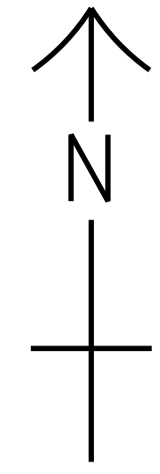
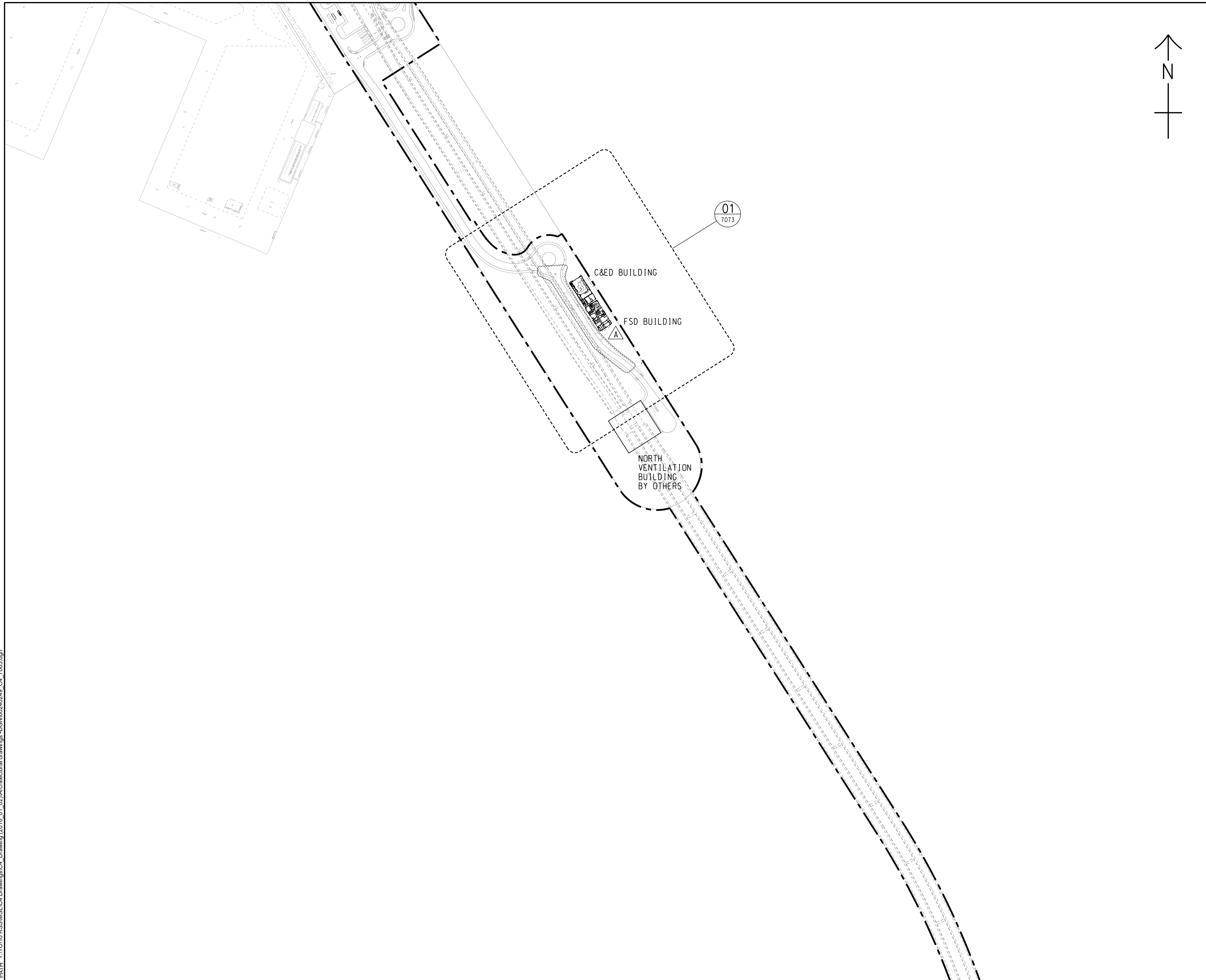


Figure 1.2c

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.
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-	DEC.17	TENDER DRAWING	SYLC

STATUS

SCALE DIMENSION UNIT

A1 1 : 2500 MILLIMETRES

KEY PLAN

PROJECT NO. CONTRACT NO.

60240249 HY/2017/10

SHEET TITLE

ZONING PLAN (SHEET 3)

SHEET NUMBER

60240249/C4/7063A

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1.2 SCOPE OF REPORT

This is the Twenty-second 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 March 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

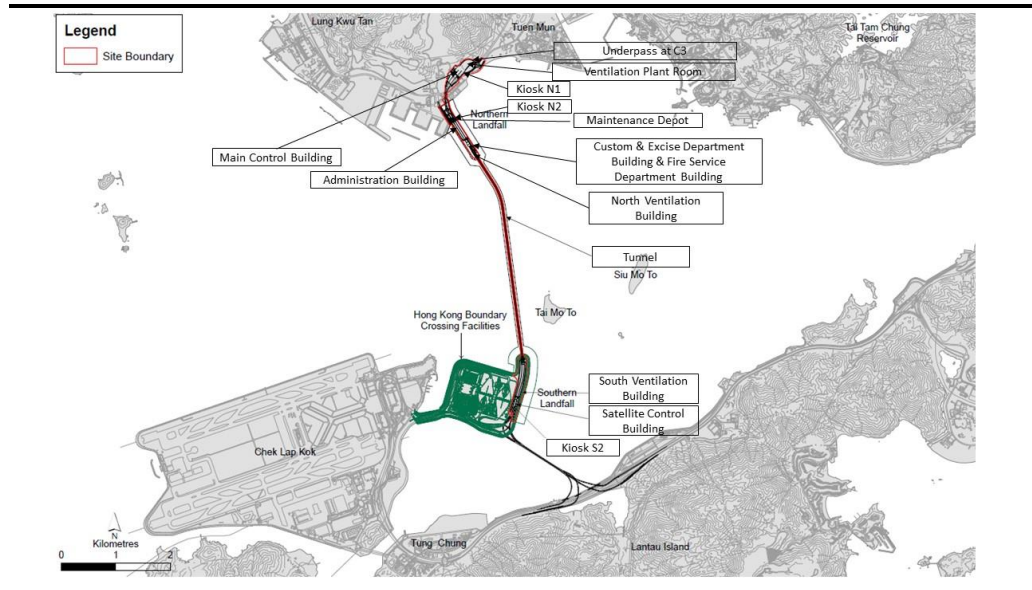
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;

- 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*



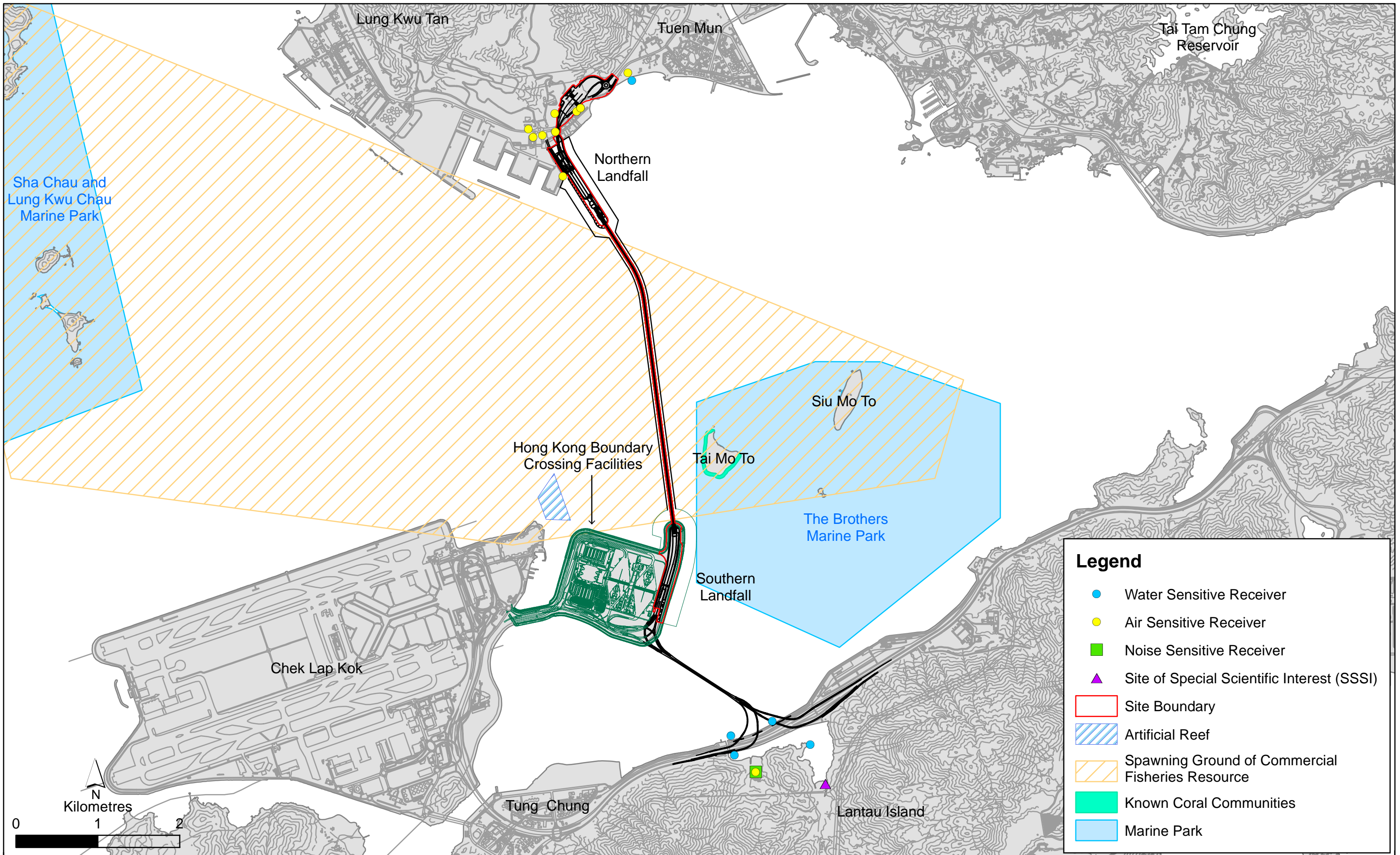


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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* ⁽¹⁾.

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* ⁽²⁾. 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	3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 March 2020	Tuen Mun Fireboat Station	Office	TSP monitoring
ASR5		Pillar Point Fire Station	Office	<ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days
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/>

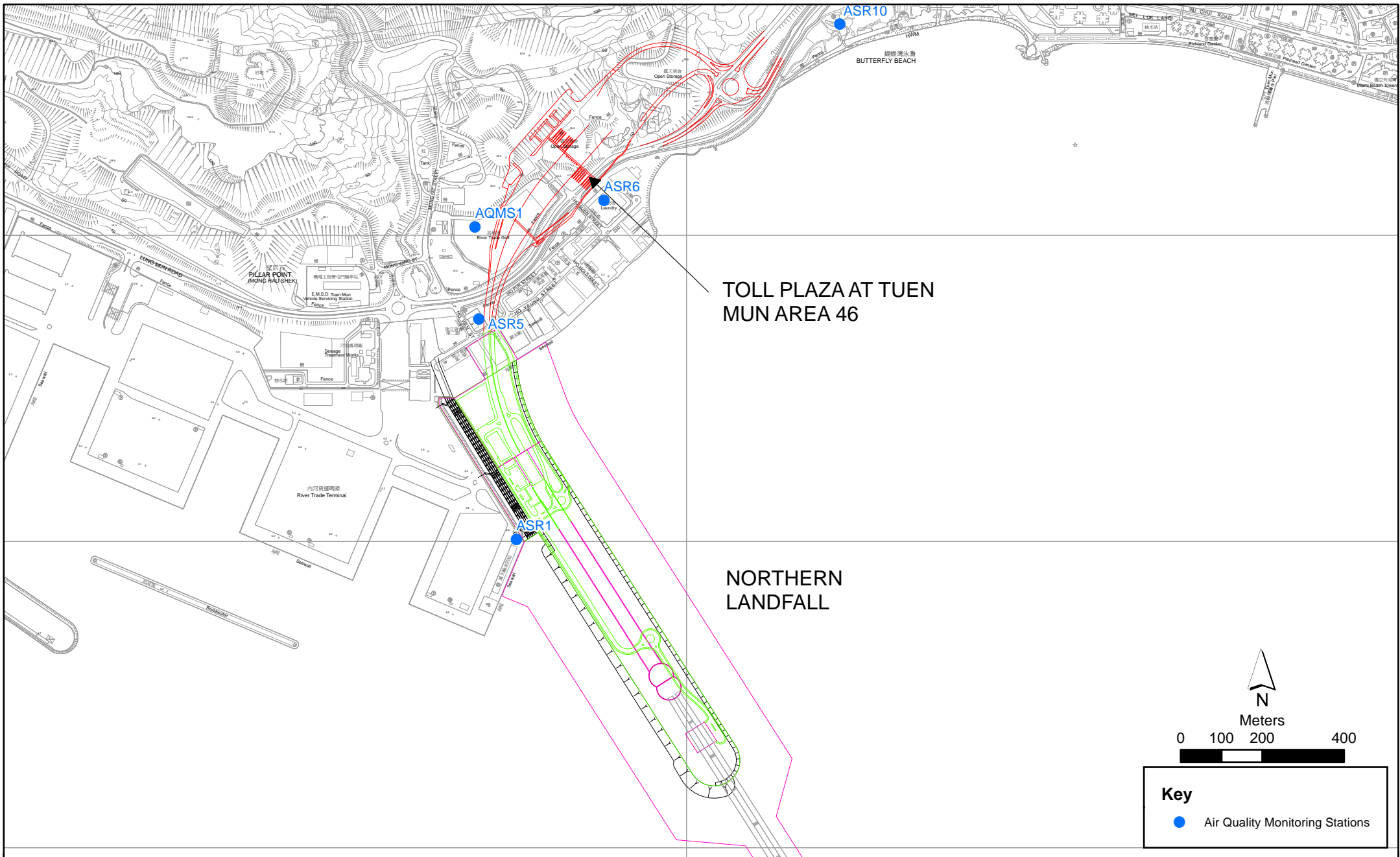


Figure 2.1

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"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 3 days
ASR10		Butterfly Beach Park	Recreational uses	<ul style="list-style-type: none"> 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days

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* ⁽¹⁾.

One (1) Action Level exceedance for 1-hour TSP was 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 exceedance was 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, four (4) site inspections were carried out on 5, 13, 19 and 27 March 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

Inspection Date	Observations	Recommendations/ Remarks
5 March 2020	South Ventilation Building <ul style="list-style-type: none"> A drip tray carrying a pipe threading machine was deformed. 	South Ventilation Building <ul style="list-style-type: none"> The Contractor was reminded to fix the deformed drip tray.
13 March 2020	Fire Services Department Building <ul style="list-style-type: none"> A drip tray carrying a pipe threading machine was deformed. Accumulated general refuse should be removed. Chemical was disposed on ground. 	Fire Services Department Building <ul style="list-style-type: none"> The Contractor was reminded to fix the deformed drip tray. The Contractor was reminded to clear general refuse. The Contractor was reminded to clear the chemical.
19 March 2020	Tunnel <ul style="list-style-type: none"> Nil. 	Tunnel <ul style="list-style-type: none"> Nil.
27 March 2020	South Ventilation Building <ul style="list-style-type: none"> Accumulated general refuse should be removed. 	South Ventilation Building <ul style="list-style-type: none"> The Contractor was reminded to clear general refuse.

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 ^(a) (m ³)	Inert Construction Waste Re-used (m ³)	Non-inert Construction Waste ^(b) (kg)	Imported Fill (m ³)	Recyclable Materials ^(c) (kg)	Chemical Wastes (kg)
March 2020	366	0	237,850	284	42	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
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*

One (1) Action Level exceedance for 1-hour TSP was 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*.

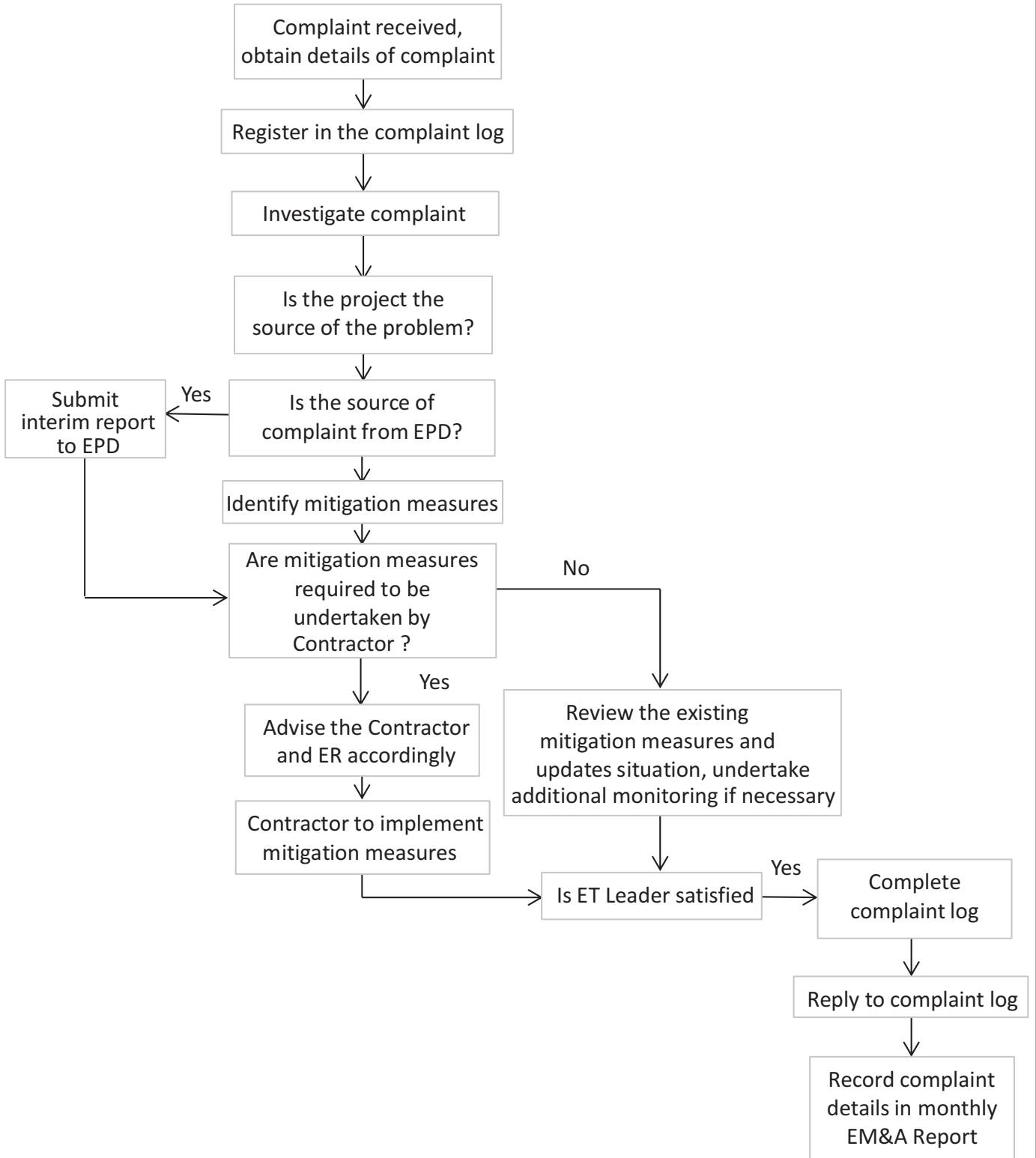


Figure 2.2

Environmental Complaint Handling Procedure

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Contract in April 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; and
- Electrical and Mechanical Works at South Ventilation Building.

3.2

KEY ISSUES FOR THE COMING MONTH

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

4.1 CONCLUSIONS

This Twenty-second Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 March 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.

One (1) Action Level exceedance for 1-hour TSP was 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.

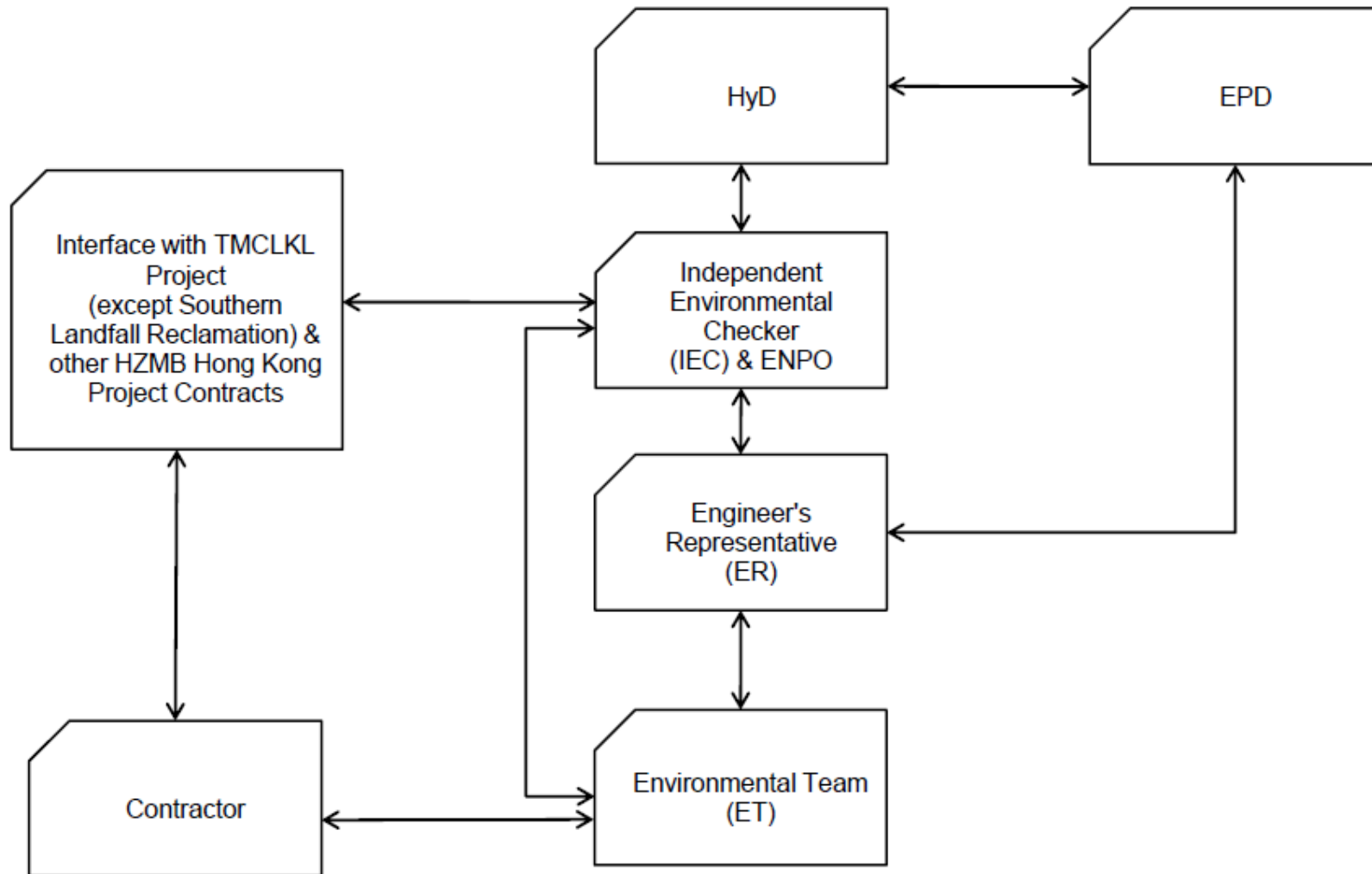
Environmental site inspection was carried out four (4) times in March 2020. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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-Mar-20																																			
Contract Dates																																			
Key Dates																																			
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%																																
Portion Access Dates																																			
P440	Access to Portion IVb	0	0%																																
P450	Access to Portion IVc	0	0%																																
P470	Access to Portion VIa (Day 678 or notified by engineer)	0	0%																																
Portion Possession Dates																																			
P325	Possession to Portion XXII (Day 483)	0	0%																																
P335	Possession to Portion XXIII (Day 483)	0	0%																																
Portion Handover Dates																																			
H120	Vacate Portion XVIb (KD10+28)	0	0%																																
H130	Vacate Portion XVIa (KD10+28)	0	0%																																
Major Design Submission & Approval																																			
Toll Control Building																																			
MVAC System																																			
TCB-EMD1095	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	80%																																
TCB-EMD1115	Authorities Review and Comment of MVAC Pump head calculation	56	80%																																
Electrical System																																			
TCB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	80%																																
TCB-EMD1055	Authorities Review and Comment of Generator Calculation	56	80%																																
Fire Service System																																			
TCB-EMD1175	Authorities Review and Comment of FS Pump Head Calculation	56	80%																																
TCB-EMD1195	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																																
TCB-EMD1215	Authorities Review and Comment of FM200 System Design Calculation	56	80%																																
Plumbing & Drainage System																																			
TCB-EMD1235	Authorities Review and Comment of Pump Head Calculation	56	80%																																
TCB-EMD1275	Authorities Review and Comment of Hot water system capacity calculation	56	80%																																
TCB-EMD1395	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	80%																																
Administration Building																																			
MVAC System																																			
ADB-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	80%																																
ADB-EMD1035	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	80%																																
ADB-EMD1055	Authorities Review and Comment of Pump head calculation	56	80%																																
ADB-EMD1075	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	80%																																

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 1	Date	Revision	Checked	Approved
	20-Mar-20			

ID	Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018 2019 2020																											
							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
Electrical System																																		
	ADB-EMD1115	Authorities Review and Comment of Electrical Loading Demand Calculation	56	80%																														
	ADB-EMD1135	Authorities Review and Comment of Generator Calculation	56	80%																														
Fire Service System																																		
	ADB-EMD1155	Authorities Review and Comment of FS Pump Head Calculation	56	80%																														
	ADB-EMD1175	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																														
Plumbing & Drainage System																																		
	ADB-EMD1215	Authorities Review and Comment of Pump Head Calculation	56	80%																														
	ADB-EMD1235	Authorities Review and Comment of Pressure Vessel Calculation	56	80%																														
	ADB-EMD1255	Authorities Review and Comment of Hot water system capacity calculation	56	80%																														
North Ventilation Building																																		
MVAC System																																		
	NVB-EMD1035	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	80%																														
Electrical System																																		
	NVB-EMD1055	Authorities Review and Comment of HV Electrical Loading Calculation	56	80%																														
	NVB-EMD1075	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	80%																														
	NVB-EMD1095	Authorities Review and Comment of Electrical Loading Demand Calculation	56	80%																														
	NVB-EMD1115	Authorities Review and Comment of Generator Calculation	56	80%																														
Fire Service System																																		
	NVB-EMD1135	Authorities Review and Comment of FS Pump Head Calculation	56	80%																														
	NVB-EMD1155	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																														
	NVB-EMD1175	Authorities Review and Comment of FM200 System Design Calculation	28	80%																														
Plumbing & Drainage System																																		
	NVB-EMD1305	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	80%																														
Maintenance Depot																																		
MVAC System																																		
	MD-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	80%																														
Electrical System																																		
	MD-EMD1075	Authorities Review and Comment of Electrical Loading Demand Calculation	56	80%																														
	MD-EMD1095	Authorities Review and Comment of Generator Calculation	56	80%																														
Fire Service System																																		
	MD-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	80%																														
	MD-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																														
	MD-EMD1155	Authorities Review and Comment of FM200 System Design Calculation	56	80%																														
Plumbing & Drainage System																																		
	MD-EMD1175	Authorities Review and Comment of Pump Head Calculation	56	80%																														
	MD-EMD1195	Authorities Review and Comment of Pressure Vessel Calculation	56	80%																														
	MD-EMD1215	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	80%																														
Satellite Control Building																																		
Electrical System																																		
	SCB-EMD1055	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	80%																														
	SCB-EMD1075	Authorities Review and Comment of Electrical Loading Demand Calculation	56	80%																														

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P 2	Date	Revision	Checked	Approved
	20-Mar-20			

NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS
THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

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
	SVB-EMD1175	Authorities Review and Comment of FM200 System Design Calculation	56	80%																															
Vehicular Underpass																																			
Fire Service System																																			
	VU-EMD1025	Authorities Review and Comment of Foam system design calculation	56	80%																															
Plumbing & Drainage System																																			
	VU-EMD1045	Authorities Review and Comment of Pump Head Calculation	56	80%																															
Tunnel Lighting System																																			
	VU-EMD1145	Authorities Review and Comment of Design Proposal of Tunnel Lighting System (TLS)	56	80%																															
	VU-EMD1165	Authorities Review and Comment of Tunnel Lighting Lux Calculation	56	80%																															
Tunnel																																			
Fire Service System																																			
	TUN-EMD1035	Authorities Review and Comment of Foam system design calculation	56	80%																															
	TUN-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	80%																															
	TUN-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																															
Plumbing & Drainage System																																			
	TUN-EMD1185	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	80%																															
CCMS, TCS and ELV System																																			
	ELV-EMD1015	Authorities Review and Comment of System Design for Toll Control system	56	80%																															
	ELV-EMD1035	Authorities Review and Comment of System Design for CMCS	56	80%																															
	ELV-EMD1055	Authorities Review and Comment of System Design for other ELV systems	56	80%																															
Major Material Submission & Approval																																			
	GEN-EMM1020	Authorities Review and Comment of Technical Info. - Miscellaneous 1st fix Materials/ Equipment	28	80%																															
	GEN-EMM1050	Authorities Review and Comment of Technical Info. - Miscellaneous 2nd fix Materials/ Equipment	28	80%																															
	GEN-EMM1080	Authorities Review and Comment of Technical Info. - Miscellaneous final fix Materials/ Equipment	28	80%																															
MVAC System																																			
	MVAC-EMM1015	Authorities Review and Comment of Technical Info. - Chiller	56	80%																															
	MVAC-EMM1035	Authorities Review and Comment of Technical Info. - Chilled Water Pump	56	80%																															
	MVAC-EMM1075	Authorities Review and Comment of Technical Info. - Computer Room AC (CRAC) Unit	56	80%																															
	MVAC-EMM1095	Authorities Review and Comment of Technical Info. - AHU & PAU	56	80%																															
	MVAC-EMM1115	Authorities Review and Comment of Technical Info. - Staircase Pressurization Fan	56	80%																															
Electrical System																																			
	ELE-EMM1155	Authorities Review and Comment of Technical Info. - UPS and Battery	28	80%																															
	ELE-EMM1175	Authorities Review and Comment of Technical Info. - MCB & MCCB & Distribution Board	28	80%																															
Fire Service System																																			
	FS-EMM1015	Authorities Review and Comment of Technical Info. - FM200	56	80%																															
	FS-EMM1095	Authorities Review and Comment of Technical Info. - FR/ HR system	56	80%																															
	FS-EMM1115	Authorities Review and Comment of Technical Info. - Gas detection	56	80%																															
Plumbing & Drainage System																																			
	PD-EMM1015	Authorities Review and Comment of Technical Info. - Sump Pump	56	80%																															
	PD-EMM1035	Authorities Review and Comment of Technical Info. - Hot Water System	56	80%																															
	PD-EMM1055	Authorities Review and Comment of Technical Info. - LMCP (PD)	56	80%																															
Tunnel Ventilation System																																			

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THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 4	Date	Revision	Checked	Approved
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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																		
CEDB-MD1090	Manufacture & Delivery to HK - FM200	120	75%																																						
CEDB-MD1120	Manufacture & Delivery to HK - LMCP (FS)	51	70%																																						
Fire Services Department Building																																									
Electrical System																																									
FSDB-MD1030	Manufacture & Delivery to HK - LV Cables	120	100%																																						
Fire Service System																																									
FSDB-MD1185	Manufacture & Delivery to HK - FM200	150	100%																																						
Tunnel																																									
TUN-MD1060	Manufacture & Delivery to HK - Sump Pump	109	83.49%																																						
TUN-MD1090	Shipping to HK - AQMS Equipment	7	50%																																						
Key Date 1 - Toll Control Building (TCB) & TCSS Provision																																									
ABWF Works (for All)																																									
ATCB1130	ABWF second fix & final fix	90	85%																																						
Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision																																									
Administration Building (ADB)																																									
ABWF Works (for All)																																									
AADB1200	ABWF second fix & final fix	90	96%																																						
Maintenance Depot																																									
ABWF Works (for All)																																									
AMD1070	ABWF second fix & final fix	80	96%																																						
Key Date 6 - E&M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2																																									
E&M Works for Administration Building																																									
Lift Installation (L01)																																									
ADB-LF1040	Final adjustment, Submission of Form LE5 & EMSD processing	18	50%																																						
ADB-LF1050	Issuance of lift use permit	0	0%																																						
Testing and Commissioning																																									
ADB-TC1030	Non-Essential T&C	30	80%																																						
E&M Works for Maintenance Depot																																									
Testing & Commissioning																																									
MD-TC1040	Non-Essential T&C	30	80%																																						
Remaining E&M Works for Kiosk N2 (Structure Completed under KD2)																																									
EN2130	E&M Works	31	70%																																						
Key Date 3 - Satellite Control Building & TCSS Provision																																									
ABWF Works (for All)																																									
ASCB1020	ABWF Works to Plant Rooms G/F	60	100%																																						
ASCB1060	External Cladding and Wall Plastering	101	90%																																						
ASCB1070	ABWF second fix & final fix	56	22%																																						
Key Date 5 - E&M Works for TCB, Toll Area, Kiosk N1, Underpass, Plant Rm, and Approach Roads																																									
E&M Works for TCB																																									
Installation																																									
Basement																																									
TCB-EM1003	E&M Installation - Final fix - Basement	60	100%																																						
G/F																																									
TCB-EMGF1030	E&M Installation - Final fix - G/F	60	100%																																						
TCB-EMGF1200	E&M Installation - MVAC Plant Rooms - G/F	90	100%																																						
TCB-EMGF1240	E&M Installation - PD Plant Rooms - G/F	60	85%																																						
1/F																																									

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THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 6	Date	Revision	Checked	Approved
	20-Mar-20			

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
TCB-EM1F1030	E&M Installation - Final fix - 1/F	60	100%																																
TCB-EM1F1100	E&M Installation - PD Plant Rooms - 1/F	90	85%																																
2/F																																			
TCB-EM2F1030	E&M Installation - Final fix - 2/F	48	100%																																
TCB-EM2F1080	E&M Installation - MVAC Plant Rooms - 2/F	90	100%																																
TCB-EM2F1100	E&M Installation - Elev Plant Rooms - 2/F	60	85%																																
Roof																																			
TCB-EMRF1030	E&M Installation - Final fix - Roof	40	100%																																
Testing and Commissioning																																			
TCB-TC1025	Integrated T&C for FSI	6	100%																																
TCB-TC1030	Non-Essential T&C	12	50%																																
Kiosk N1																																			
EN140	ABWF Works (Door, windows, tiles)	30	85%																																
EN150	E&M works	36	70%																																
EN160	T&C	12	0%																																
Underpass																																			
E&M Works at Underpass																																			
EU120	Remaining E&M Installations	37	90%																																
EU130	Equipment Start-up T&C for FSI	12	0%																																
EU135	Individual E&M System T&C for FSI	42	0%																																
VU110	Jet Fans installation	24	90%																																
VU140	Dampers installation	24	15%																																
VU180	Cladding Works	25	89.8%																																
Plant Room																																			
E&M Works																																			
EPR130	E&M Installation	90	95%																																
EPR150	Equipment Start-up T&C for FSI	6	50%																																
EPR153	Individual E&M System T&C for FSI	18	0%																																
EPR155	Integrated T&C for FSI	6	0%																																
EPR160	Non-Essential T&C	30	0%																																
VU160	Pressurization Fans Installation	24	80%																																
Approach Roads																																			
Under Portions IX, XI, XX																																			
AR150	T&C of Roading Lighting	30	80%																																
Key Date 6B - E&M Works for South Vent Duct, Tunnel, and Approach Roads																																			
E&M Works																																			
Ventilation Ducts																																			
SVD-1010	Damper Installation	8	90%																																
Service Gallery																																			
Ch 7200 - 5000																																			
TNL-SG1030	High Level 2nd Fix and Final Fix Installation CH7200 - 5000	46	90%																																
TNL-SG1040	Cabling Works CH7200 - 5000	29	85%																																

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS
THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 7	Date	Revision	Checked	Approved
	20-Mar-20			

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
TNL-SG1050	Low Level 2nd Fix and Final Fix Installation CH7200 - 5000	24	80%																																
CH5000 - 3050																																			
TNL-SG1090	High Level 2nd Fix and Final Fix Installation CH5000 - 3050	43	90%																																
TNL-SG1100	Cabling Works CH5000 - 3050	28	80%																																
TNL-SG1110	Low Level 2nd Fix and Final Fix Installation CH5000 - 3050	24	80%																																
CH3050 - 2500																																			
TNL-SG1150	High Level 2nd Fix and Final Fix Installation CH3050 - 2500	21	90%																																
TNL-SG1160	Cabling Works CH3050 - 2500	13	80%																																
TNL-SG1170	Low Level 2nd Fix and Final Fix Installation CH3050 - 2500	11	80%																																
Road Level & OHVD																																			
Ch 7200 - 5000																																			
Ch 7200 - 6700																																			
TNU-RL1880	High level wiring works and remaining High level works in the middle of tunnels - CH7200 to 6700	20	95%																																
TNU-RL1940	Final connection to small powers - CH7200 to 6700	10	50%																																
TNU-RL1970	Cladding works - CH7200 to 6700	13	80%																																
Ch 6700 - 6100																																			
TNU-RL1060	High level wiring works and remaining High level works in the middle of tunnels - CH6700 to 6100	24	95%																																
TNU-RL1090	Final connection to small powers - CH6700 to 6100	10	50%																																
TNU-RL1100	Cladding works - CH6700 to 6100	15	80%																																
Ch 6100 - 5600																																			
TNU-RL1170	High level wiring works and remaining High level works in the middle of tunnels - CH6100 to 5600	20	95%																																
TNU-RL1200	Final connection to small powers - CH6100 to 5600	10	50%																																
TNU-RL1210	Cladding works - CH6100 to 5600	13	80%																																
CH 5600 - 5000																																			
TNU-RL1280	High level wiring works and remaining High level works in the middle of tunnels - CH5600 to 5000	24	95%																																
TNU-RL1310	Final connection to small powers - CH5600 to 5000	10	50%																																
TNU-RL1320	Cladding works - CH5600 to 5000	15	80%																																
CH5000 - 3050																																			
CH5000 - 4500																																			
TNU-RL1900	High level wiring works and remaining High level works in the middle of tunnels - CH5000 to 4500	20	90%																																
TNU-RL1960	Final connection to small powers - CH5000 to 4500	10	50%																																
TNU-RL1980	Cladding works - CH5000 to 4500	13	90%																																
CH4500 - 4000																																			
TNU-RL1390	High level wiring works and remaining High level works in the middle of tunnels - CH4500 to 4000	20	90%																																
TNU-RL1420	Final connection to small powers - CH4500 to 4000	10	50%																																
TNU-RL1430	Cladding works - CH4500 to 4000	13	90%																																
CH4000 - 3500																																			
TNU-RL1500	High level wiring works and remaining High level works in the middle of tunnels - CH4000 to 3500	20	90%																																
TNU-RL1520	Low level works - FS nice connection - CH4000 to 3500	10	100%																																
TNU-RL1530	Final connection to small powers - CH4000 to 3500	10	50%																																
TNU-RL1540	Cladding works - CH4000 to 3500	13	90%																																
CH3500 - 3050																																			
TNU-RL1610	High level wiring works & remaining High level works in the tunnel middle - CH3500 to 3050	20	90%																																

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 8	Date	Revision	Checked	Approved
	20-Mar-20			

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				
TNU-RL1630	Low level works - FS niche connection - CH3500 to 3050	10	100%																																				
TNU-RL1640	Final connection to small powers - CH3500 to 3050	10	50%																																				
TNU-RL1650	Cladding works - CH3500 to 3050	11	90%																																				
CH3050 - 2500 (ML02)																																							
TNU-RL1720	High level wiring works and remaining High level works in the middle of tunnels - CH3050 to 2500	12	80%																																				
TNU-RL1750	Final connection to small powers - CH3050 to 2500	4	50%																																				
TNU-RL1760	Cladding works - CH3050 to 2500	14	50%																																				
CH3050 - 2500 (ML03)																																							
TNU-RL3120	Bracket fixing on side wall - CH3050 to 2500	8	0%																																				
TNU-RL3170	High level wiring works and remaining High level works in the middle of tunnels - CH3050 to 2500	12	90%																																				
TNU-RL3210	Final connection to small powers - CH3050 to 2500	4	50%																																				
TNU-RL3220	Cladding works - CH3050 to 2500	14	50%																																				
Other Works																																							
TNU-OW1010	FR enclosure installation	42	0%																																				
T&C																																							
TNL-10TC1010	Permanent power available to tunnels from NVB	0	100%																																				
TNL-10TC1016	Partial T&C for Tunnel Ventilation System - CH 7200 to 2500	89	80%																																				
TNL-10TC1020	T&C for Tunnel Lighting - CH 7200 to 2500	47	0%																																				
TNL-10TC1030	T&C for other Tunnel Services - CH 7200 to 2500	48	20%																																				
TNL-10TC1050	T&C for MSFD - CH 7200 to 2500	30	50%																																				
TNL-10TC1060	T&C for Service Gallery - Sprinkler System - CH 7200 to 2500	40	20%																																				
TNL-10TC1070	T&C for Services Gallery - other services - CH 7200 to 2500	40	20%																																				
TNL-10TC1075	KD6B Achieved	0	0%																																				

Key Date 7 - E&M Works for Satellite Control Building and Kiosks S1&S2

E&M Works for Satellite Control Building

E&M Works

Installation

G/F

SCB-EMGF1000	ABWF Works ready for E&M Mobilization to General Areas - G/F	0	0%
SCB-EMGF1010	E&M Installation - 1st fix - G/F	30	100%
SCB-EMGF1020	E&M Installation - 2nd fix - G/F	30	100%
SCB-EMGF1030	E&M Installation - Final fix - G/F	30	80%
SCB-EMGF1050	E&M Installation - Generator Room & Fuel Tank Room - G/F	70	100%
SCB-EMGF1070	E&M Installation - LV Switch Room - G/F	60	80%
SCB-EMGF1080	Cable laying - LV Switch Room - from G/F	42	70%
SCB-EMGF1090	Sub-Circuit Power On - LV Switch Room - G/F	0	0%
SCB-EMGF1140	Wiring Inspection with CLP	3	0%
SCB-EMGF1150	Power On Energization by CLP	0	0%
SCB-EMGF1180	E&M Installation - FS Plant Rooms - G/F	80	95%
SCB-EMGF1200	E&M Installation - PD Plant Rooms - G/F	90	60%

1/F

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 NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS
 THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 9	Date	Revision	Checked	Approved
	20-Mar-20			

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
TNU-RL2060	High level wiring works & remaining High level works in tunnel middle - CH7200 to 7300	12	20%																																
TNU-RL2070	Low level works - FS nicle module - CH7200 to 7300	4	50%																																
TNU-RL2080	Low level works - FS nicle connection - CH7200 to 7300	4	25%																																
TNU-RL2090	Final connection to small powers - CH7200 to 7300	4	25%																																
TNU-RL2100	Cladding works - CH7200 to 7300	5	0%																																
Key Date 10 - FSD Building Structure & E&M Works																																			
ABWF Works																																			
AFSD1010	Door and Window Frames	19	65%																																
AFSD1020	ABWF Works to Plant Rooms G/F	56	98%																																
AFSD1021	ABWF Works to Plant Rooms 1/F	56	98%																																
AFSD1030	ABWF Works to Office and Corridors G/F	124	97%																																
AFSD1031	ABWF Works to Office and Corridors 1/F	124	97%																																
AFSD1040	ABWF Works to Toilets G/F	136	97%																																
AFSD1060	External Cladding and Wall Plastering	101	88%																																
AFSD1070	ABWF second fix & final fix	73	40%																																
E&M Works																																			
Installation																																			
G/F																																			
FSDB-EMGF1010	E&M Installation - 1st fix - G/F	40	95%																																
FSDB-EMGF1020	E&M Installation - 2nd fix - G/F	40	70%																																
FSDB-EMGF1030	E&M Installation - Final fix - G/F	30	20%																																
FSDB-EMGF1060	Inspection & Handover to CLP	6	50%																																
FSDB-EMGF1070	Installation by CLP - CLP Tx Room - G/F	82	0%																																
FSDB-EMGF1120	E&M Installation - Electrical Plant Rooms - G/F	60	95%																																
FSDB-EMGF1140	E&M Installation - FS Plant Rooms - G/F	50	95%																																
FSDB-EMGF1160	E&M Installation - Elv Plant Rooms - G/F	50	25%																																
1/F																																			
FSDB-EM1F1010	E&M Installation - 1st fix - 1/F	40	90%																																
FSDB-EM1F1020	E&M Installation - 2nd fix - 1/F	39	70%																																
FSDB-EM1F1030	E&M Installation - Final fix - 1/F	35	20%																																
FSDB-EM1F1050	E&M Installation - Emergency Generator & Fuel Tank Rooms - 1/F	60	50%																																
FSDB-EM1F1070	E&M Installation - LV Switch Room - 1/F	55	60%																																
FSDB-EM1F1080	Cable laying - LV Switch Room - from 1/F	41	60%																																
FSDB-EM1F1120	E&M Installation - FS Plant Rooms - 1/F	60	95%																																
FSDB-EM1F1140	E&M Installation - PD Plant Rooms - 1/F	60	60%																																
Roof																																			
FSDB-EMRF1000	ABWF Works ready for E&M Mobilization to Roof	0	0%																																
FSDB-EMRF1010	E&M Installation - 1st fix - Roof	20	0%																																
FSDB-EMRF1020	E&M Installation - 2nd fix - Roof	20	0%																																

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS
THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

P 13	Date	Revision	Checked	Approved
	20-Mar-20			

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				
C&EDB-GF1160	E&M Installation - Elv Plant Rooms - G/F	90	0%																																				
1/F																																							
C&EDB-1F1010	E&M Installation - 1st fix - 1/F	40	5%																																				
C&EDB-1F1020	E&M Installation - 2nd fix - 1/F	40	0%																																				
C&EDB-1F1050	E&M Installation - LV Switch Room - 1/F	60	35%																																				
C&EDB-1F1060	Cable laying - LV Switch Room - from 1/F	44	0%																																				
C&EDB-1F1080	ABWF Works ready for E&M Mobilization to Electrical Plant Rooms - 1/F	0	100%																																				
C&EDB-1F1090	E&M Installation - Electrical Plant Rooms - 1/F	90	35%																																				
2/F																																							
C&EDB-2F1000	ABWF Works ready for E&M Mobilization to General Areas - 2/F	0	100%																																				
C&EDB-2F1010	E&M Installation - 1st fix - 2/F	40	5%																																				
C&EDB-2F1020	E&M Installation - 2nd fix - 2/F	40	0%																																				
C&EDB-2F1050	ABWF Works ready for E&M Mobilization to Electrical Plant Rooms - 2/F	0	100%																																				
C&EDB-2F1060	E&M Installation - Electrical Plant Rooms - 2/F	90	0%																																				
C&EDB-2F1070	ABWF Works ready for E&M Mobilization to FS Plant Rooms - 2/F	0	100%																																				
C&EDB-2F1080	E&M Installation - FS Plant Rooms - 2/F	90	0%																																				
C&EDB-2F1090	ABWF Works ready for E&M Mobilization to Elv Plant Rooms - 2/F	0	100%																																				
C&EDB-2F1100	E&M Installation - Elv Plant Rooms - 2/F	90	0%																																				
3/F																																							
C&EDB-3F1000	ABWF Works ready for E&M Mobilization to General Areas - 3/F	0	100%																																				
C&EDB-3F1010	E&M Installation - 1st fix - 3/F	30	5%																																				
C&EDB-3F1020	E&M Installation - 2nd fix - 3/F	30	0%																																				
C&EDB-3F1030	E&M Installation - Final fix - 3/F	30	0%																																				
C&EDB-3F1050	ABWF Works ready for E&M Mobilization to Electrical Plant Rooms - 3/F	0	0%																																				
C&EDB-3F1060	E&M Installation - Electrical Plant Rooms - 3/F	84	0%																																				
C&EDB-3F1080	E&M Installation - MVAC Plant Rooms - 3/F	84	50%																																				
C&EDB-3F1090	ABWF Works ready for E&M Mobilization to FS Plant Rooms - 3/F	0	100%																																				
C&EDB-3F1100	E&M Installation - FS Plant Rooms - 3/F	80	35%																																				
C&EDB-3F1110	ABWF Works ready for E&M Mobilization to PD Plant Rooms - 3/F	0	100%																																				
C&EDB-3F1120	E&M Installation - PD Plant Rooms - 3/F	60	5%																																				
Roof																																							
C&EDB-RF1000	ABWF Works ready for E&M Mobilization to Roof	0	0%																																				
C&EDB-RF1010	E&M Installation - 1st fix - Roof	30	0%																																				
C&EDB-RF1020	E&M Installation - 2nd fix - Roof	25	0%																																				
C&EDB-RF1030	E&M Installation - Final fix - Roof	20	0%																																				
Lift Installation																																							
C&EDB-LF1020	Lift & lift machine room installation	65	35%																																				
Statutory Inspections and approvals																																							
C&EDB-SI1040	Submit WWO46 Part IV for PD	0	0%																																				

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

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Date	Revision	Checked	Approved
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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				
	SCB-SI1090	Obtain Water Certificate and water supply connection - FS	1	0%																																			
	SCB-SI1110	Final Submission of Form FSI 314 / 501 to FSD	0	0%																																			
	SCB-SI1120	FSD Inspection	29	0%																																			
South Ventilation Building																																							
	SVB-SI1020	DG Inspection by FSD	24	0%																																			
	SVB-SI1030	Obtain DG Licence	0	0%																																			
	SVB-SI1090	Submit WWO46 Part IV for PD	0	0%																																			
	SVB-SI1100	Submit WWO46 Part IV for FS	0	0%																																			
	SVB-SI1110	WSD inspection of Plumbing Installation (PL)	4	0%																																			
	SVB-SI1120	WSD inspection of Plumbing Installation (FS)	4	0%																																			
	SVB-SI1130	Water Samples Test	24	0%																																			
	SVB-SI1135	Obtain Water Certificate and water supply connection - FS	4	0%																																			
	SVB-SI1140	Obtain Water Certificate and water supply connection - PL	4	0%																																			
	SVB-SI2000	Final Submission of Form FSI 314 / 501 to FSD	0	0%																																			
	SVB-SI2010	FSD Inspection	13	0%																																			
	SVB-SI2020	Obtain FSI Certificate FS 172	0	0%																																			
Tunnel																																							
	TNL-10TC2000	Submit FS Form 501	0	0%																																			

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS
THREE MONTHLY PROGRAMME AS OF 20 Mar 2020

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	
Air Quality									
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)
WATER QUALITY (LAND WORKS)									
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
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		✓

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	
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		✓
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

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	
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		✓
WASTE									
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		✓
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		✓

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	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		✓
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 <i>w</i> 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	All areas / throughout construction period	Contractor	TMEIA		Y		✓

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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	
		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 <i>f</i> 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		✓
LANDSCAPE AND VISUAL									

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
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	Y	n/a. To be implemented by AFCD/HyD/L CSD

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	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 implemented by AFCD/HyD/L CSD
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 implemented by HyD/LCSD
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 implemented by HyD/LCSD
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by HyD

*** 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
- △ 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*

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

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

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

8. If the exceedance stops, cease
additional monitoring.

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 ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	0.010	0.000	-	-	0.010	-	-	187.500	-	-	0.070	-
Feb	0.047	0.026	-	-	0.047	-	-	176.100	-	-	0.084	-
Mar	0.650	0.292	-	-	0.366	0.284	-	237.850	-	-	0.042	-
Apr	-	0.000	-	-	-	-	-	-	-	-	-	-
May	-	0.000	-	-	-	-	-	-	-	-	-	-
Jun	-	0.000	-	-	-	-	-	-	-	-	-	-
SUB-TOTAL	0.707	0.318	0.000	0.000	0.423	0.284	0.000	601.450	0.000	0.000	0.196	0.000
Jul	-	0.000	-	-	-	-	-	-	-	-	-	-
Aug	-	0.000	-	-	-	-	-	-	-	-	-	-
Sep	-	0.000	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	0.000	-	-	-	-	-	-	-	-	-	-
Dec	-	0.000	-	-	-	-	-	-	-	-	-	-
TOTAL	0.707	0.318	0.000	0.000	0.423	0.284	0.000	601.450	0.000	0.000	0.196	0.000

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	1	40
	Limit	0	8
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 (March 2020)	0	0	0
Total No. received since contract commencement	1	0	0

Email
message

Environmental
Resources
Management

To Ramboll Hong Kong Limited (ENPO)

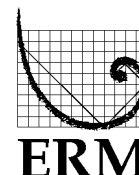
From ERM- Hong Kong, Limited

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 23 March 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



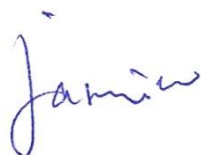
Dear Sir/ Madam,

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

Action Level Exceedance
0463091_12March2020_1hrTSP_Station ASR5

One (1) exceedance was recorded on 12 March 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

Log No.	<u>Action Level Exceedance</u> 0463091_12March2020_1hrTSP_Station ASR5	
	[Total No. of Exceedances = 1]	
Date	12 March 2020 (Measured) 3 April 2020 (Results obtained from ENPO Website)	
Monitoring Station	ASR5	
Parameter(s) with Exceedance(s)	1- hr TSP	
Action Levels	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
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	260
Measured Levels	Refer to <i>Appendix A</i> (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 12 March 2020 included <ul style="list-style-type: none"> • 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 	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedance is unlikely to be due to the Contract, in view of the following: <ul style="list-style-type: none"> • With reference to the recorded wind direction (ranged between 72° and 87°, blowing from a easterly direction) and wind speed (2.7 m/s) when exceedances recorded, ASR5 is located far from the construction works at Maintenance Depot and Administration Building. In addition, the construction works at Maintenance Depot and Administration Building were mainly Electrical and Mechanical Works and Architectural Builders Work and Finishes which are considered not major dust generating works (refer to <i>Appendix B</i> and <i>C</i>). • 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. Based on the above, the exceedance is unlikely to be due to the Contract.	
Actions Taken / To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 12 March 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 12/3/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-03-12	AQMS1	Cloudy	8:49:00	1-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2020-03-12	AQMS1	Cloudy	9:51:00	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	2020-03-12	AQMS1	Cloudy	10:53:00	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR1	Cloudy	8:37:00	1-hour TSP	137	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR1	Cloudy	9:39:00	1-hour TSP	172	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR1	Cloudy	10:41:00	1-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR10	Cloudy	8:03:00	1-hour TSP	19	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR10	Cloudy	9:05:00	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR10	Cloudy	10:07:00	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR5	Cloudy	8:26:00	1-hour TSP	146	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR5	Cloudy	9:28:00	1-hour TSP	356	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR5	Cloudy	10:30:00	1-hour TSP	221	ug/m3
TMCLKL	HY/2012/08	2020-03-12	AQMS1	Cloudy	11:55:00	24-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR1	Cloudy	11:43:00	24-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR10	Cloudy	11:09:00	24-hour TSP	62	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR5	Cloudy	11:32:00	24-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2020-03-12	ASR6	Cloudy	11:20:00	24-hour TSP	75	ug/m3

Action level exceedance

Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
20/03/12	0:00	2.2	38
20/03/12	1:00	2.7	63
20/03/12	2:00	4	91
20/03/12	3:00	3.6	74
20/03/12	4:00	2.7	79
20/03/12	5:00	2.7	73
20/03/12	6:00	2.2	70
20/03/12	7:00	2.7	61
20/03/12	8:00	2.2	72
20/03/12	9:00	2.7	72
20/03/12	10:00	2.7	87
20/03/12	11:00	2.2	76
20/03/12	12:00	1.8	70
20/03/12	13:00	0.9	36
20/03/12	14:00	0.9	99
20/03/12	15:00	0.9	60
20/03/12	16:00	1.3	39
20/03/12	17:00	1.3	49
20/03/12	18:00	1.3	56
20/03/12	19:00	1.3	56
20/03/12	20:00	0.9	39
20/03/12	21:00	1.3	34
20/03/12	22:00	0.9	41
20/03/12	23:00	1.3	29

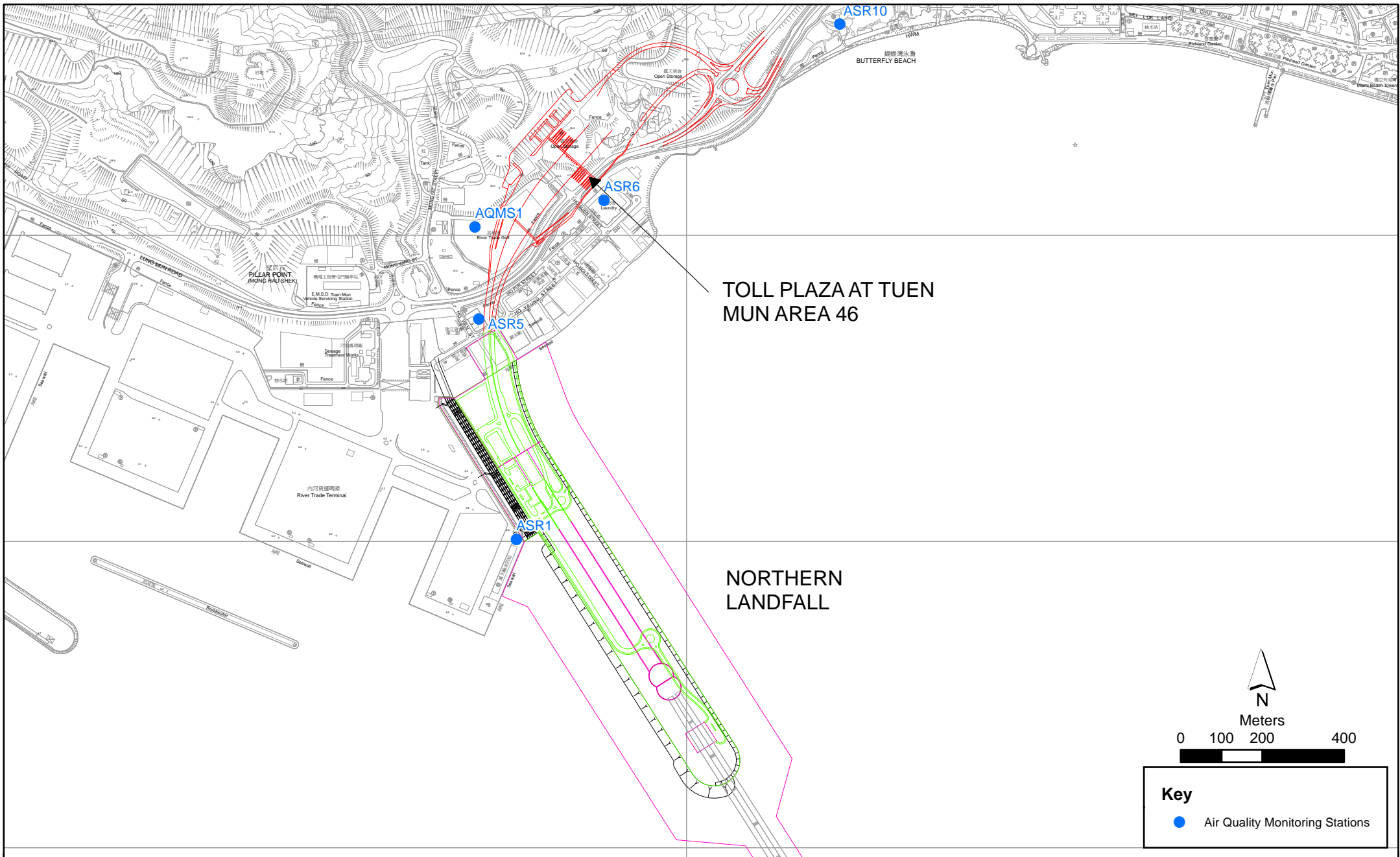


Figure 2.1

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**

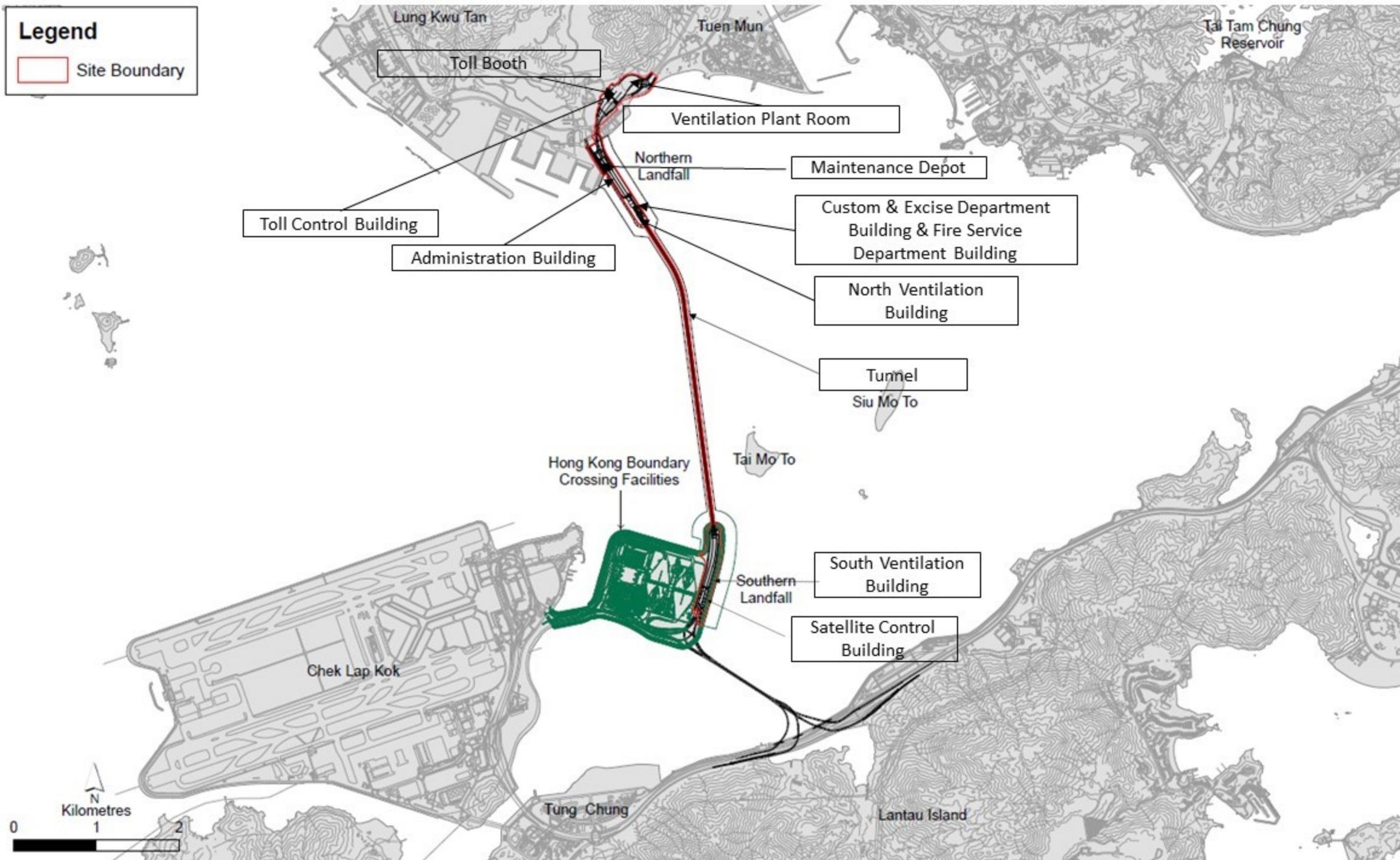


Appendix B

Works Locations

Legend

Site Boundary



Appendix C

Site Photo



Photo 1 - Construction works at Administration Building



Photo 2 - Construction works at Maintenance Depot