

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

Twenty-first Monthly EM&A Report

9 March 2020

Environmental Resources Management
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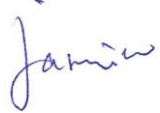


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Twenty-first Monthly EM&A Report

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Client: Gammon		Project No: 0463091			
Summary: This document presents the Twenty-first Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 9 March 2020			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
		Dr Jasmine Ng ET Leader			
	Twenty-first Monthly EM&A Report	CW	JN	CAR	9/3/20
Revision	Description	By	Checked	Approved	Date
<p>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.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p>		<p>Distribution</p> <p><input type="checkbox"/> Internal</p> <p><input checked="" type="checkbox"/> Public</p> <p><input type="checkbox"/> Confidential</p> <div style="text-align: right;">   </div>			

13 March 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
21st Monthly EM&A Report for February 2020**

Reference is made to the Environmental Team's submission of the monthly EM&A report for February 2020 (ET's ref.: "0463091_21st Monthly EM&A_20200309.doc" dated 9 March 2020) certified by the ET Leader and provided to us via e-mail on 9 March 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 very much 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-first Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 29 February 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 Builders 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 Builders Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builders 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

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

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 March 2020 include the following:

Land-based Works

- Electrical and Mechanical Works and Architectural Builders 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 Builders Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builders 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 March 2020 are mainly associated with dust and waste management issues.

1.1

BACKGROUND

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

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

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

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

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



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

CONSULTANT

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SUB-CONSULTANTS

Figure 1.1

ISSUE/REVISION

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

STATUS

SCALE
比例
A1 1:40000
DIMENSION UNIT
尺寸单位
MILLIMETRES

KEY PLAN

PROJECT NO.
项目编号
60240249
CONTRACT NO.
合约编号
HY/2017/10

SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

60240249/C4/7051A



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PROJECT

TUEN MUN -
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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局
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Figure 1.2a

ISSUE/REVISION

A	JAN.18	TENDER ADDENDUM NO.1	SYLC
-	DEC.17	TENDER DRAWING	SYLC
W/R 彭訂	DATE 日期	DESCRIPTION 內容描述	CHK. 查核

STATUS

SCALE 比例	DIMENSION UNIT 尺寸單位
A1 1:2500	MILLIMETRES

KEY PLAN

PROJECT NO.

60240249

SHEET TITLE
シートの名称

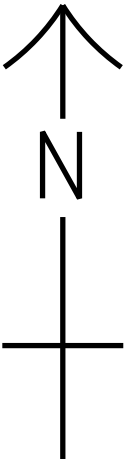
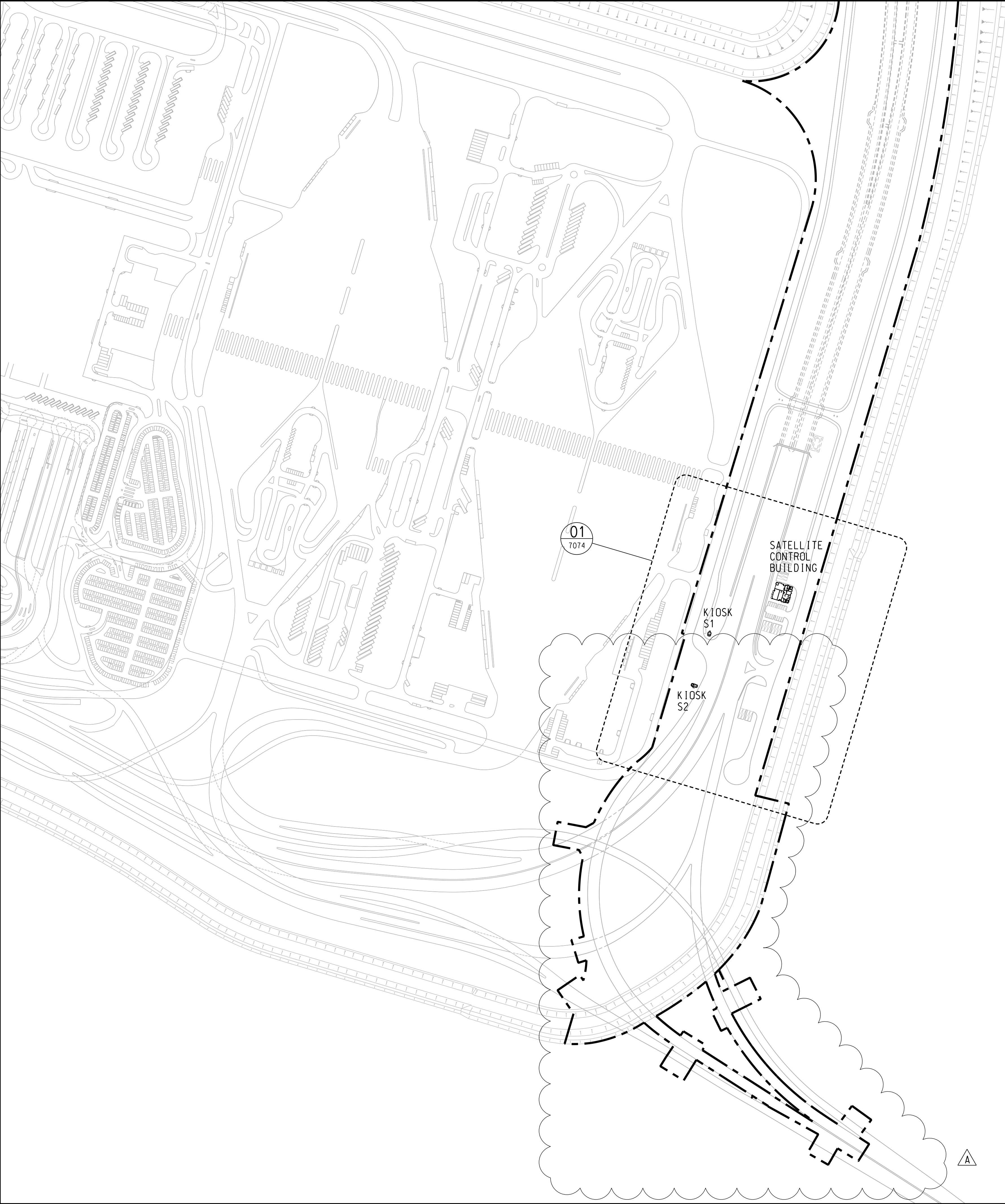
ZONING PLAN (SHEET 1)

SHEET NUMBER

60240249/C4/7061A

CONTRACT NO.

HY/2017/10



AECOM

PROJECT
項目

**TUEN MUN -
CHEK LAP KOK LINK**

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

CLIENT
業主

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

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Figure 1.2b

ISSUE/REVISION
修訂

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

STATUS
階段

SCALE 比例	DIMENSION UNIT 尺寸單位
A1 1 : 2500	MILLIMETRES

KEY PLAN
索引圖

PROJECT NO. 項目編號	CONTRACT NO. 合約編號
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60240249HY/2017/10

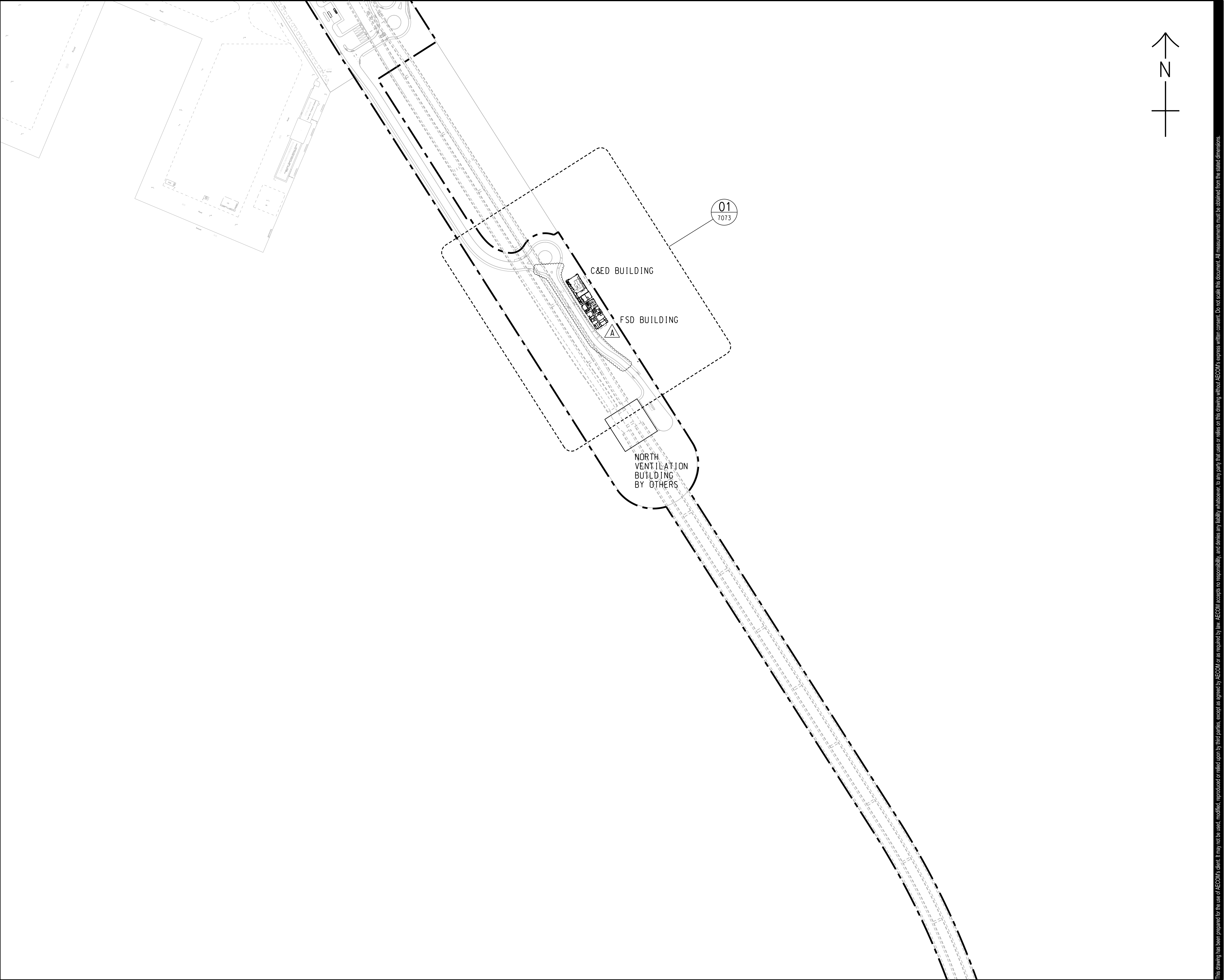
SHEET TITLE
圖紙名稱

ZONING PLAN
(SHEET 2)

SHEET NUMBER
圖紙編號

60240249/C4/7062A

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PROJECT
項目
TUEN MUN -
CHEK LAP KOK LINK

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

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

ISSUE/REVISION
修訂

A	JAN.18	TENDER ADDENDUM NO.1	SYLC
-	DEC.17	TENDER DRAWING	SYLC
I/R	DATE	DESCRIPTION	CHK.
修訂	日期	內容摘要	校核

STATUS
階段

SCALE 比例	DIMENSION UNIT 尺寸單位
A1 1 : 2500	MILLIMETRES

KEY PLAN
索引圖

PROJECT NO. 項目編號	CONTRACT NO. 合約編號
60240249	HY/2017/10

SHEET TITLE
圖紙名稱
ZONING PLAN
(SHEET 3)

SHEET NUMBER
圖紙編號
60240249/C4/7063A

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1.2 SCOPE OF REPORT

This is the Twenty-first 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 February 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

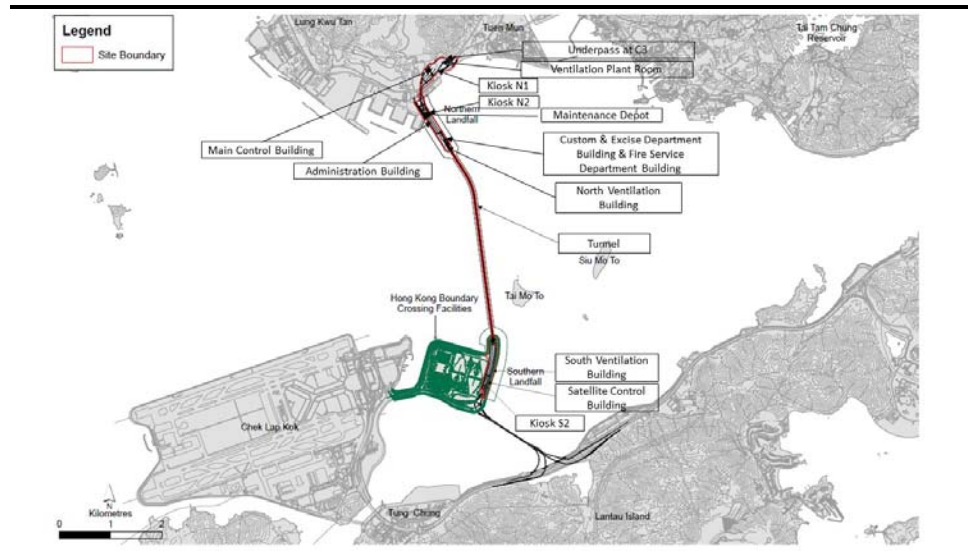
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;

- 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 Builders Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Kiosk S2; and
- Electrical and Mechanical Works at South Ventilation Building.

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

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

Figure 1.3 *Locations of Major Construction Activities in the Reporting Month*



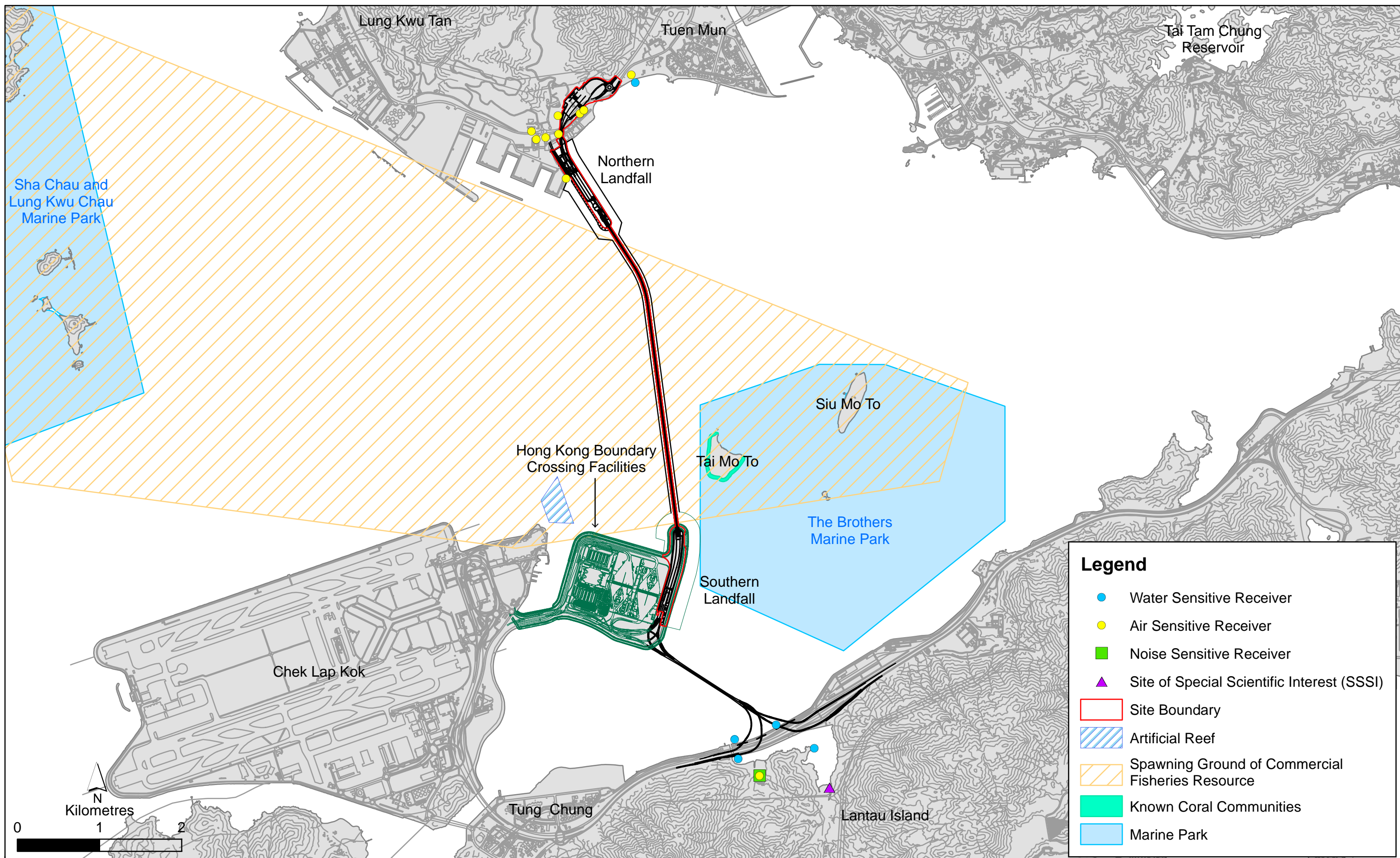


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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Date: 12/7/2018

**Environmental
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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	2, 5, 8, 11, 14, 17, 20, 23, 26 and 29 February 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/>

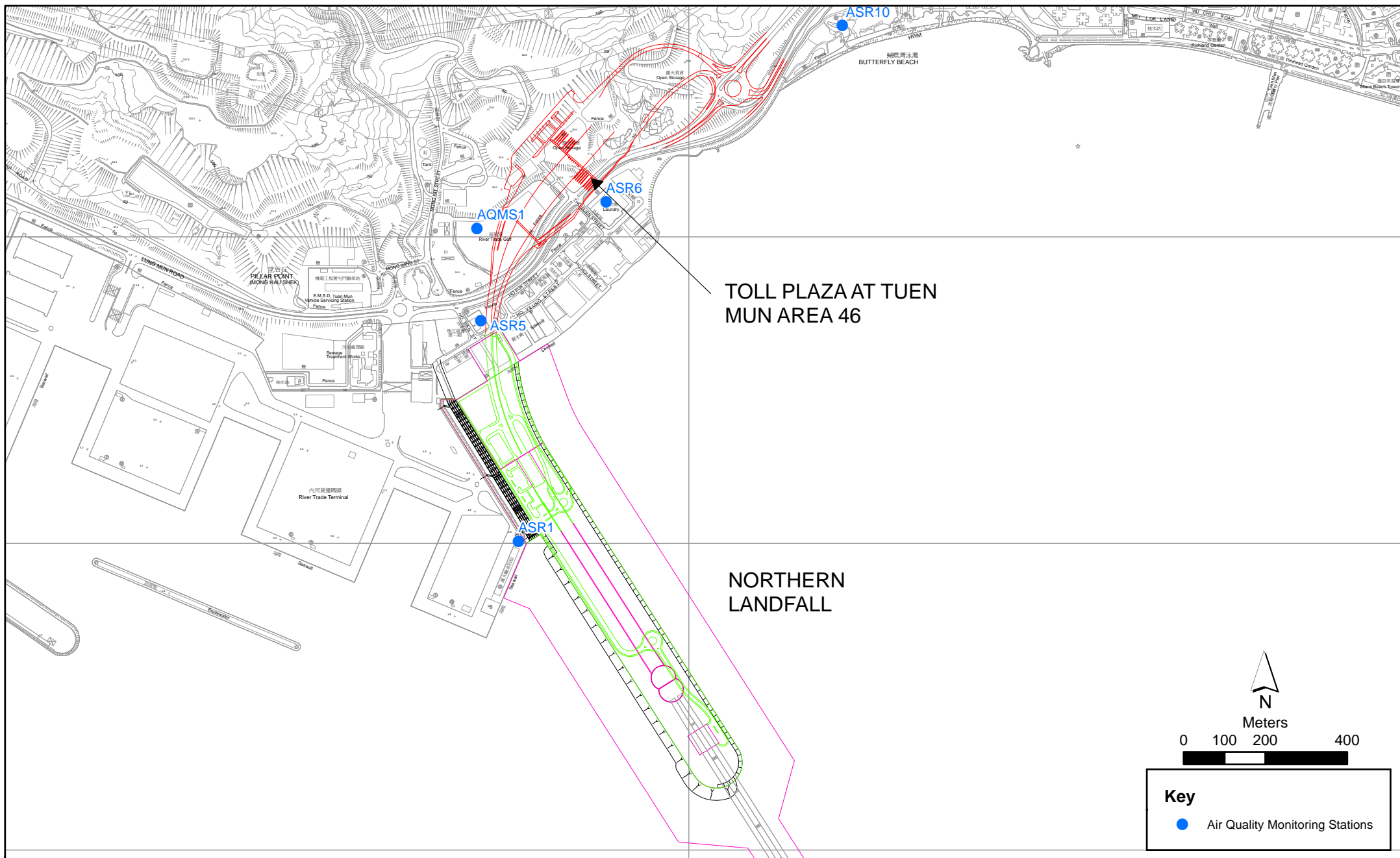


Figure 2.1

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)

File: T:\GIS\CONTRACT\0212330\Mxd\0212330_ASR_for_Enhanced_TSP_monitoring.mxd
Date: 21/2/2014

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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>)
ASR10		Butterfly Beach Park	Recreational uses	<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 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⁾.

No exceedance of Action and Limit Levels for 1-hour TSP and 24-hour TSP were recorded by the Environmental Team of *Contract No. HY/2012/08* during the reporting period. 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 6, 14, 21 and 28 February 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
6 February 2020	Tunnel <ul style="list-style-type: none"> Chemicals was observed on the hard paved surface. General refuse was found accumulated. 	Tunnel <ul style="list-style-type: none"> The Contractor was reminded to remove chemical stain. The Contractor was reminded to keep good housekeeping.
14 February 2020	Fire Services Department Building <ul style="list-style-type: none"> Accumulated general refuse should be removed. Pipe threading machine should be placed in drip tray. Chemical container should be placed in drip tray. Customs and Excise Department Building <ul style="list-style-type: none"> Retained water in the drip tray was observed. Accumulated general refuse were observed. 	Fire Services Department Building <ul style="list-style-type: none"> The Contractor was reminded to clear general refuse. The Contractor was reminded to place pipe threading machine in drip tray. The Contractor was reminded to place chemical container in drip tray. Customs and Excise Department Building <ul style="list-style-type: none"> The Contractor was reminded to clear retained water. The Contractor was reminded to clear refuse.
21 February 2020	Satellite Control Building <ul style="list-style-type: none"> Chemical container should be placed in drip tray. Tunnel <ul style="list-style-type: none"> Better housekeeping should be maintained. 	Satellite Control Building <ul style="list-style-type: none"> The Contractor was reminded to place the chemical container in drip tray. Tunnel <ul style="list-style-type: none"> The Contractor was reminded to keep better housekeeping.
28 February 2020	Ventilation Shaft <ul style="list-style-type: none"> Accumulated general refuse should be removed. Pipe threading machine should be placed in drip tray. 	Ventilation Shaft <ul style="list-style-type: none"> The Contractor was reminded to maintain better housekeeping. The Contractor was reminded to place pipe threading machine in drip tray.

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)
February 2020	47	0	176,100	0	84	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-RW0054-19	3 November 2019	29 April 2020	GCL	For Toll Control Building, Administration Building, Maintenance Depot, FSD, C&ED, Boundary Wall, Tunnel, Approach ramp, NVB and WA18
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*

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

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*.

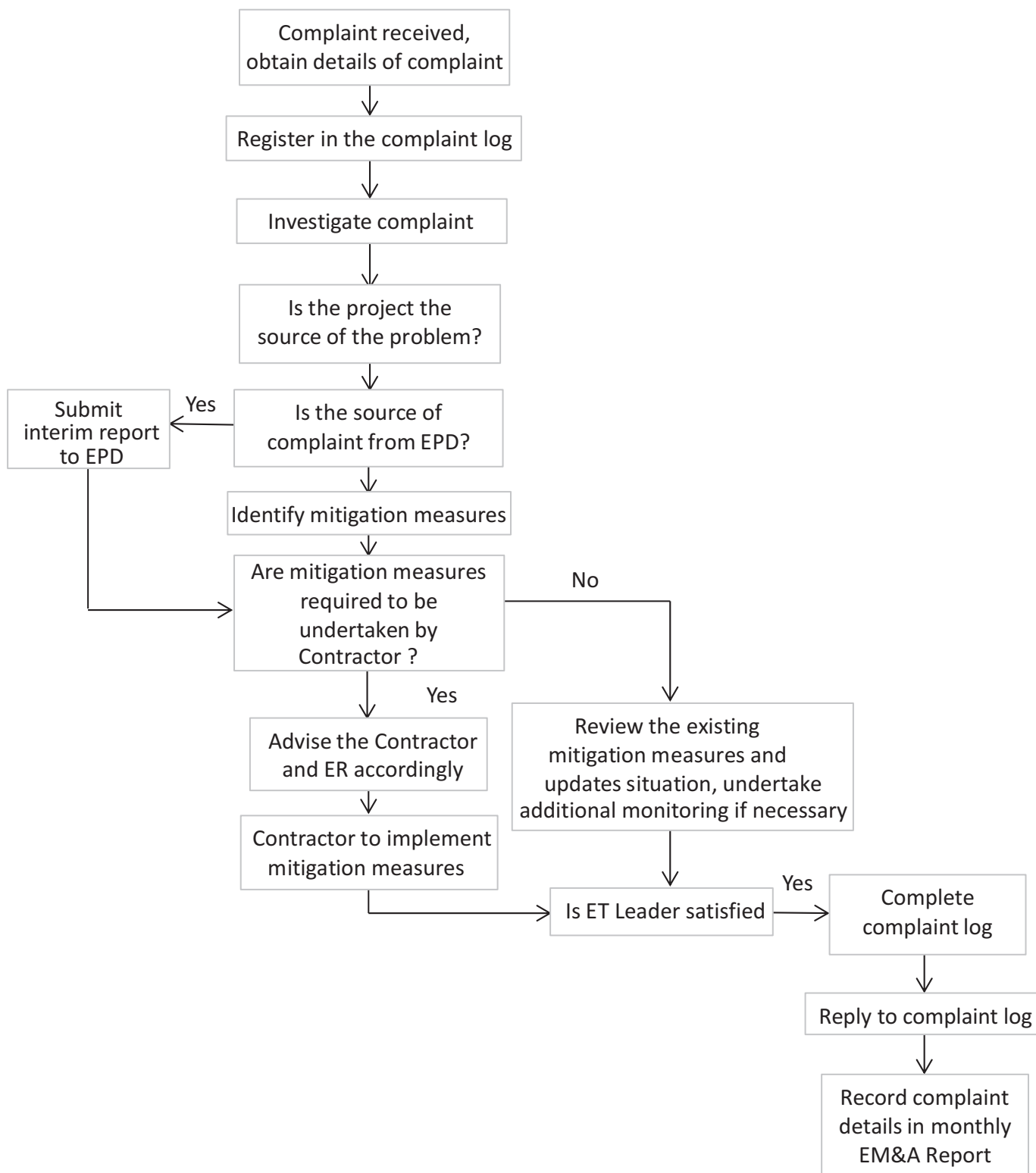


Figure 2.2

Environmental Complaint Handling Procedure

FILE: 0215660n2.cdr
DATE: 06/12/2013

Environmental
Resources
Management



3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

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

Land-based Works

- Electrical and Mechanical Works and Architectural Builders 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 Builders Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Kiosk S2; and
- Electrical and Mechanical Works at South Ventilation Building.

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

4.1**CONCLUSIONS**

This Twenty-first Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 29 February 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.

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

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.

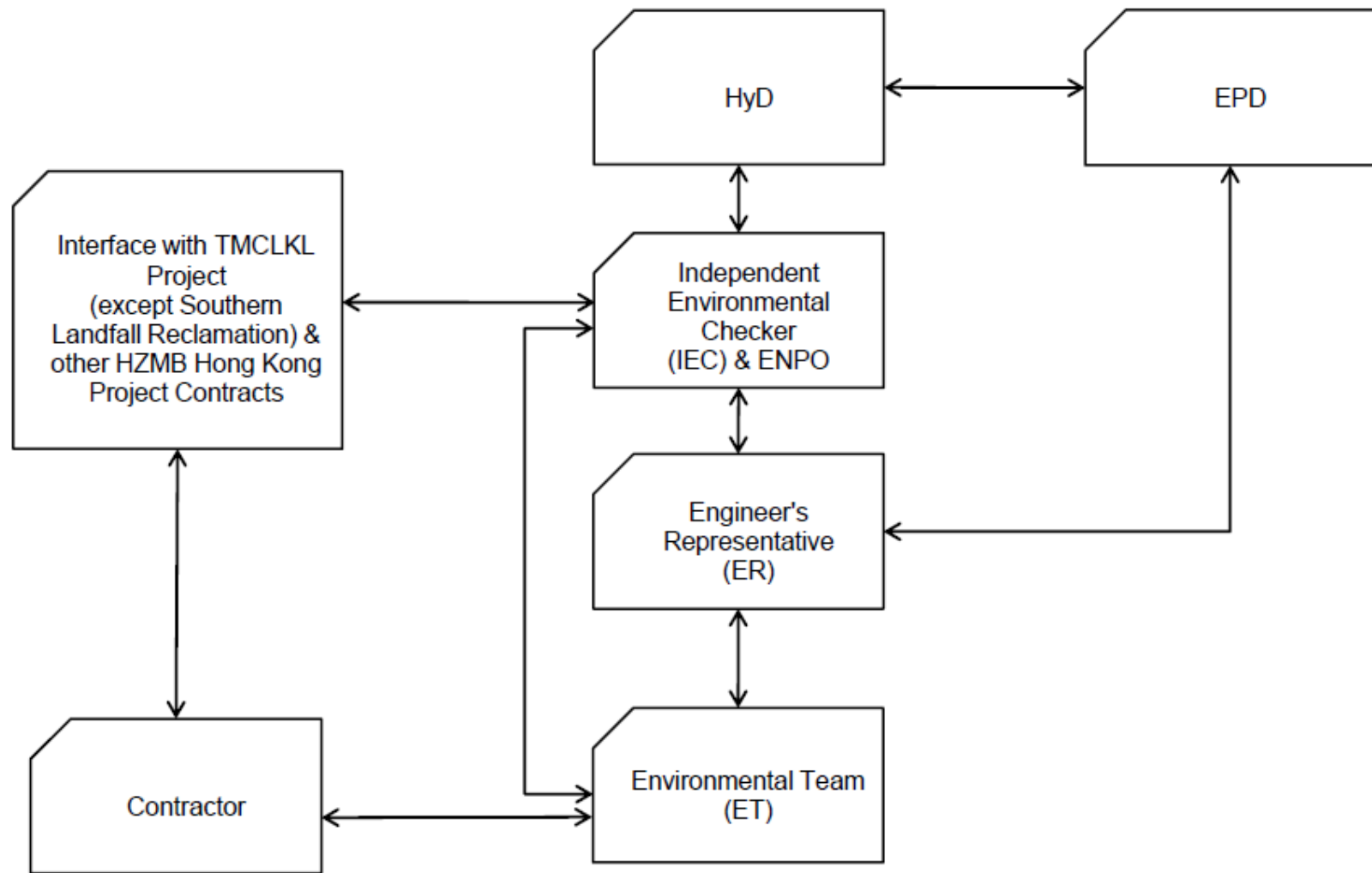
Environmental site inspection was carried out four (4) times in February 2020. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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																							
								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-Feb-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%																																							
Portion Access Dates																																											
	P430	Access to Portion VIId (Day 641)	0	100%																																							
	P440	Access to Portion IVb	0	0%																																							
	P450	Access to Portion IVc	0	0%																																							
	P460	Access to Portion VIc (Day 666 or notified by engineer)	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%																																							
Major Design Submission & Approval																																											
Toll Control Building																																											
MVAC System																																											
	TCB-EMD1095	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	50%																																							
	TCB-EMD1115	Authorities Review and Comment of MVAC Pump head calculation	56	50%																																							
Electrical System																																											
	TCB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%																																							
	TCB-EMD1055	Authorities Review and Comment of Generator Calculation	56	50%																																							
Fire Service System																																											
	TCB-EMD1175	Authorities Review and Comment of FS Pump Head Calculation	56	50%																																							
	TCB-EMD1195	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																																							
	TCB-EMD1215	Authorities Review and Comment of FM200 System Design Calculation	56	50%																																							
Plumbing & Drainage System																																											
	TCB-EMD1235	Authorities Review and Comment of Pump Head Calculation	56	50%																																							
	TCB-EMD1275	Authorities Review and Comment of Hot water system capacity calculation	56	50%																																							
	TCB-EMD1395	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%																																							
Administration Building																																											
MVAC System																																											
	ADB-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	50%																																							
	ADB-EMD1035	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	50%																																							
	ADB-EMD1055	Authorities Review and Comment of Pump head calculation	56	50%																																							
	ADB-EMD1075	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	50%																																							
Electrical System																																											
	ADB-EMD1115	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																																							
	ADB-EMD1135	Authorities Review and Comment of Generator Calculation	56	50%																																							
Fire Service System																																											
	ADB-EMD1155	Authorities Review and Comment of FS Pump Head Calculation	56	50%																																							
	ADB-EMD1175	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																																							

CONTRACT NO. HY2017/10				P 1	Date	Revision	Checked	Approved
NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS					20-Feb-20			
THREE MONTHLY PROGRAMME AS OF 20 Feb 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
	Plumbing & Drainage System	ADB-EMD1215	Authorities Review and Comment of Pump Head Calculation	56	50%																															
		ADB-EMD1235	Authorities Review and Comment of Pressure Vessel Calculation	56	50%																															
		ADB-EMD1255	Authorities Review and Comment of Hot water system capacity calculation	56	50%																															
		North Ventilation Building																																		
	MVAC System	NVB-EMD1035	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	50%																															
		Electrical System																																		
		NVB-EMD1055	Authorities Review and Comment of HV Electrical Loading Calculation	56	50%																															
		NVB-EMD1075	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%																															
	Electrical System	NVB-EMD1095	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																															
		NVB-EMD1115	Authorities Review and Comment of Generator Calculation	56	50%																															
		Fire Service System																																		
		NVB-EMD1135	Authorities Review and Comment of FS Pump Head Calculation	56	50%																															
	Electrical System	NVB-EMD1155	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																															
		NVB-EMD1175	Authorities Review and Comment of FM200 System Design Calculation	28	50%																															
		Plumbing & Drainage System																																		
		NVB-EMD1305	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%																															
	Maintenance Depot																																			
	MVAC System	MD-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	50%																															
		Electrical System																																		
		MD-EMD1075	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																															
		MD-EMD1095	Authorities Review and Comment of Generator Calculation	56	50%																															
	Fire Service System	MD-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	50%																															
		MD-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																															
		MD-EMD1155	Authorities Review and Comment of FM200 System Design Calculation	56	50%																															
		Plumbing & Drainage System																																		
	Electrical System	MD-EMD1175	Authorities Review and Comment of Pump Head Calculation	56	50%																															
		MD-EMD1195	Authorities Review and Comment of Pressure Vessel Calculation	56	50%																															
		MD-EMD1215	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%																															
		Satellite Control Building																																		
	Electrical System	SCB-EMD1055	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%																															
		SCB-EMD1075	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																															
		SCB-EMD1095	Authorities Review and Comment of Generator Calculation	56	50%																															
		Fire Service System																																		
	Electrical System	SCB-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	50%																															
		SCB-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																															
		SCB-EMD1155	Authorities Review and Comment of FM200 System Design Calculation	56	50%																															
		Fire Service System																																		

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
	Plumbing & Drainage System																																			
	SCB-EMD1285	Authorities Review and Comment of Pump Head Calculation	56	50%																																
	SCB-EMD1335	Authorities Review and Comment of Pressure Vessel Calculation	56	50%																																
	Costom & Excise Department Building																																			
	Electrical System																																			
	CEDB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%																																
	CEDB-EMD1035	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																																
	CEDB-EMD1055	Authorities Review and Comment of Generator Calculation	56	50%																																
	Fire Service System																																			
	CEDB-EMD1075	Authorities Review and Comment of FS Pump Head Calculation	56	50%																																
	CEDB-EMD1095	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																																
	Plumbing & Drainage System																																			
	CEDB-EMD1135	Authorities Review and Comment of Pump Head Calculation	56	50%																																
	CEDB-EMD1155	Authorities Review and Comment of Pressure Vessel Calculation	56	50%																																
	Fire Services Department Building																																			
	Electrical System																																			
	FSDB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%																																
	FSDB-EMD1035	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																																
	FSDB-EMD1055	Authorities Review and Comment of Generator Calculation	56	50%																																
	Fire Service System																																			
	FSDB-EMD1075	Authorities Review and Comment of FS Pump Head Calculation	56	50%																																
	FSDB-EMD1095	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																																
	FSDB-EMD1205	Authorities Review and Comment of FM200 System Design Calculation	56	50%																																
	Plumbing & Drainage System																																			
	FSDB-EMD1135	Authorities Review and Comment of Pump Head Calculation	56	50%																																
	FSDB-EMD1155	Authorities Review and Comment of Pressure Vessel Calculation	56	50%																																
	South Ventilation Building																																			
	MVAC System																																			
	SVB-EMD1015	Authorities Review and Comment of Staircase Pressurization System Calculation	56	50%																																
	SVB-EMD1035	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	50%																																
	Electrical System																																			
	SVB-EMD1055	Authorities Review and Comment of HV Electrical Loading Calculation	56	50%																																
	SVB-EMD1095	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%																																
	SVB-EMD1115	Authorities Review and Comment of Generator Calculation	56	50%																																
	Fire Service System																																			
	SVB-EMD1135	Authorities Review and Comment of FS Pump Head Calculation	56	50%																																
	SVB-EMD1155	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																																
	SVB-EMD1175	Authorities Review and Comment of FM200 System Design Calculation	56	50%																																
	Vehicular Underpass																																			
	Fire Service System																																			

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				
	Tunnel Lighting System																																							
	VU-EMD1145	Authorities Review and Comment of Design Proposal of Tunnel Lighting System (TLS)	56	50%																																				
	VU-EMD1165	Authorities Review and Comment of Tunnel Lighting Lux Calculation	56	50%																																				
Tunnel																																								
Fire Service System																																								
	TUN-EMD1035	Authorities Review and Comment of Foam system design calculation	56	50%																																				
	TUN-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	50%																																				
	TUN-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%																																				
Plumbing & Drainage System																																								
	TUN-EMD1185	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%																																				
CCMS, TCS and ELV System																																								
	ELV-EMD1015	Authorities Review and Comment of System Design for Toll Control system	56	50%																																				
	ELV-EMD1035	Authorities Review and Comment of System Design for CMCS	56	50%																																				
	ELV-EMD1055	Authorities Review and Comment of System Design for other ELV systems	56	50%																																				
Major Material Submission & Approval																																								
	GEN-EMM1020	Authorities Review and Comment of Technical Info. - Miscellaneous 1st fix Materials/ Equipment	28	50%																																				
	GEN-EMM1050	Authorities Review and Comment of Technical Info. - Miscellaneous 2nd fix Materials/ Equipment	28	50%																																				
	GEN-EMM1080	Authorities Review and Comment of Technical Info. - Miscellaneous final fix Materials/ Equipment	28	50%																																				
MVAC System																																								
	MVAC-EMM1015	Authorities Review and Comment of Technical Info. - Chiller	56	50%																																				
	MVAC-EMM1035	Authorities Review and Comment of Technical Info. - Chilled Water Pump	56	50%																																				
	MVAC-EMM1075	Authorities Review and Comment of Technical Info. - Computer Room AC (CRAC) Unit	56	50%																																				
	MVAC-EMM1095	Authorities Review and Comment of Technical Info. - AHU & PAU	56	50%																																				
	MVAC-EMM1115	Authorities Review and Comment of Technical Info. - Staircase Pressurization Fan	56	50%																																				
Electrical System																																								
	ELE-EMM1155	Authorities Review and Comment of Technical Info. - UPS and Battery	28	50%																																				
	ELE-EMM1175	Authorities Review and Comment of Technical Info. - MCB & MCCB & Distribution Board	28	50%																																				
Fire Service System																																								
	FS-EMM1015	Authorities Review and Comment of Technical Info. - FM200	56	50%																																				
	FS-EMM1095	Authorities Review and Comment of Technical Info. - FR/ HR system	56	50%																																				
	FS-EMM1115	Authorities Review and Comment of Technical Info. - Gas detection	56	50%																																				
Plumbing & Drainage System																																								
	PD-EMM1015	Authorities Review and Comment of Technical Info. - Sump Pump	56	50%																																				
	PD-EMM1035	Authorities Review and Comment of Technical Info. - Hot Water System	56	50%																																				
	PD-EMM1055	Authorities Review and Comment of Technical Info. - LMCP (PD)	56	50%																																				
Tunnel Ventilation System																																								
	TVS-EMM1035	Authorities Review and Comment of Technical Info. - Pressurization Fan	56	50%																																				
	TVS-EMM1155	Authorities Review and Comment of Technical Info. - MFSD	56	50%																																				
Tunnel and Road Lighting System																																								
	TRLS-EMM1035	Authorities Review and Comment of Technical Info. - Road Lighting Fitting	56	50%																																				
CCMS, TCS and ELV System																																								

	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				
		ELV-EMM1020	Authorities Review and Comment of Technical Info. - CMCS Equipment	56	50%																																			
	Drawing Submission & Approval																																							
	Satellite Control Building																																							
	Individual Shop Drawing																																							
		SCB-ISD1040	Authorities Review and Comment of SCB ISD 1st batch	28	50%																																			
		SCB-ISD1090	Authorities Review and Comment of SCB ISD 2nd batch	28	50%																																			
	Costom & Excise Department Building																																							
	Individual Shop Drawing																																							
		CEDB-ISD1040	Authorities Review and Comment of C&EDB ISD 1st batch	28	50%																																			
		CEDB-ISD1090	Authorities Review and Comment of C&EDB ISD 2nd batch	28	50%																																			
	Tunnel																																							
	Individual Shop Drawing																																							
		TUN-ISD1090	Authorities Review and Comment of Tunnel ISD 2nd batch	28	50%																																			
		TUN-ISD1140	Authorities Review and Comment of Tunnel ISD 3rd batch	28	50%																																			
		TUN-ISD1190	Authorities Review and Comment of Tunnel ISD 4th batch	28	50%																																			
	Fire Services Department Building																																							
	Individual Shop Drawing																																							
		FSDB-ISD1040	Authorities Review and Comment of FSDB ISD 1st batch	28	50%																																			
		FSDB-ISD1090	Authorities Review and Comment of FSDB ISD 2nd batch	28	50%																																			
	Vehicular Underpass																																							
	Individual Shop Drawing																																							
		VU-ISD1090	Authorities Review and Comment of Vehicular Underpass ISD 2nd batch	28	50%																																			
	North Ventilation Building																																							
	Individual Shop Drawing																																							
		NVB-ISD1090	Authorities Review and Approval of NVB ISD - 2nd batch	28	50%																																			
	E&M Manufacture & Delivery																																							
	Toll Control Building																																							
	CCMS, TCS and ELV System																																							
		TCB-MD1215	Shipping to HK - TCS Equipment	14	0%																																			
	Satellite Control Building																																							
	Electrical System																																							
		SCB-MD1045	Shipping to HK - LV Switchboard	14	0%																																			
	MVAC System																																							
		SCB-MD1010	Manufacture & Delivery to HK - Computer Room Air Conditioning (CRAC) Unit	120	90%																																			
	Fire Service System																																							
		SCB-MD1100	Manufacture & Delivery to HK - FM200	150	100%																																			
		SCB-MD1110	Manufacture & Delivery to HK - FS Pump	120	90%																																			
		SCB-MD1130	Manufacture & Delivery to HK - LMCP (FS)	60	80%																																			
	Costom & Excise Department Building																																							
	Electrical System																																							
	CEDB-MD1035	Shipping to HK - UPS and Battery	42	50%																																				
	CEDB-MD1045	Shipping to HK - LV Switchboard	14	100%																																				
	CEDB-MD1060	Manufacture & Delivery to HK - MCB & MCCB and Distribution Board	38	65%																																				
MVAC System																																								
	CEDB-MD1010	Manufacture & Delivery to HK - AHU & PAU	60	70%																																				
Fire Service System																																								
	CEDB-MD1090	Manufacture & Delivery to HK - FM200	120	75%																																				
	CEDB-MD1120	Manufacture & Delivery to HK - LMCP (FS)	51	70%																																				
Plumbing & Drainage System																																								
	CEDB-MD1080	Manufacture & Delivery to HK - Water Pump	90	100%																																				
Lift System																																								
	CEDB-MD1000	Manufacture & Delivery to HK - Lift System	124	94.35%																																				

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS					20-Feb-20			
THREE MONTHLY PROGRAMME AS OF 20 Feb 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							
	Fire Services Department Building																																									
	Electrical System																																									
	FSDB-MD1030	Manufacture & Delivery to HK - LV Cables	120	86.67%																																						
	Fire Service System																																									
	FSDB-MD1185	Manufacture & Delivery to HK - FM200	150	90%																																						
	Vehicular Underpass																																									
	VU-MD1065	Shipping to HK - CMCS Equipment	21	95.24%																																						
	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)																																									
	ATCB1010	Door and Window Frames	82	95%																																						
	ATCB1120	External Cladding and Wall Plastering	94	92%																																						
	ATCB1130	ABWF second fix & final fix	90	55%																																						
	Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision																																									
	Administration Building (ADB)																																									
	ABWF Works (for All)																																									
	AADB1151	ABWF Works to Plant Rooms 1/F	52	95%																																						
	AADB1160	ABWF Works to Office and Corridors G/F	126	95%																																						
	AADB1161	ABWF Works to Office and Corridors 1/F	126	95%																																						
	AADB1170	ABWF Works to Toilets G/F	132	95%																																						
	AADB1171	ABWF Works to Toilets 1/F	132	95%																																						
	AADB1200	ABWF second fix & final fix	90	95%																																						
	Maintenance Depot																																									
	ABWF Works (for All)																																									
	AMD1020	ABWF Works to Plant Rooms	58	95%																																						
	AMD1030	ABWF Works to Office and Corridors	132	99%																																						
	AMD1040	ABWF Works to Toilets	144	95%																																						
	AMD1070	ABWF second fix & final fix	80	95%																																						
	Key Date 6 - E&M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2																																									
	E&M Works for Administration Building																																									
	Installation																																									
	1/F																																									
	ADB-EM1F1100	E&M Installation - ELV Plant Rooms - 1/F	52	100%																																						
	Lift Installation (L01)																																									
	ADB-LF1040	Final adjustment, Submission of Form LE5 & EMSD processing	18	0%																																						
	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%																																							
E&M Works for North Ventilation Building																																										
Installation																																										
B2F																																										
NVB-EMB21080	E&M Installation - MVAC Plant Rooms - B2/F(For Services Gallery)	60	98%																																							
NVB-EMB21100	E&M Installation - FS Plant Rooms - B2/F(For Tunnel)	45	98%																																							
NVB-EMB21120	E&M Installation - PD Plant Rooms - B2/F	60	98%																																							
NVB-EMB21140	E&M Installation - Elv Plant Rooms - B2/F	45	98%																																							
B1F																																										
NVB-EMB11080	E&M Installation - MVAC Plant Rooms - B1/F(For Services Gallery)	60	98%																																							

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Feb 2020

P 6	Date	Revision	Checked	Approved
	20-Feb-20			

[illegible]

CONTRACT NO. HY2017/10

NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Feb 2020

P 7	Date	Revision	Checked	Approved
	20-Feb-20			

[illegible]

NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

P 8	Date	Revision	Checked	Approved
	20-Feb-20			

		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-SG1160	Cabling Works CH3050 - 2500	13	30%																																			
		TNL-SG1170	Low Level 2nd Fix and Final Fix Installation CH3050 - 2500	11	10%																																			
Road Level I & OHVD																																								
Ch 7200 - 5000																																								
Ch 7200 - 6700																																								
		TNU-RL1800	FH/ HR pipe installation - CH7200 to 6700	8	98.01%																																			
		TNU-RL1880	High level wiring works and remaining High level works in the middle of tunnels - CH7200 to 6700	20	90%																																			
		TNU-RL1940	Final connection to small powers - CH7200 to 6700	10	0%																																			
		TNU-RL1970	Cladding works - CH7200 to 6700	13	10%																																			
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	0%																																			
		TNU-RL1100	Cladding works - CH6700 to 6100	15	0%																																			
Ch 6100 - 5600																																								
		TNU-RL1170	High level wiring works and remaining High level works in the middle of tunnels - CH6100 to 5600	20	90%																																			
		TNU-RL1200	Final connection to small powers - CH6100 to 5600	10	0%																																			
		TNU-RL1210	Cladding works - CH6100 to 5600	13	0%																																			
CH 5600 - 5000																																								
		TNU-RL1280	High level wiring works and remaining High level works in the middle of tunnels - CH5600 to 5000	24	90%																																			
		TNU-RL1310	Final connection to small powers - CH5600 to 5000	10	0%																																			
		TNU-RL1320	Cladding works - CH5600 to 5000	15	0%																																			
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	0%																																			
		TNU-RL1980	Cladding works - CH5000 to 4500	13	60%																																			
CH4500 - 4000																																								
		TNU-RL1390	High level wiring works and remaining High level works in the middle of tunnels - CH4500 to 4000	20	85%																																			
		TNU-RL1420	Final connection to small powers - CH4500 to 4000	10	0%																																			
		TNU-RL1430	Cladding works - CH4500 to 4000	13	45%																																			
CH4000 - 3500																																								
		TNU-RL1500	High level wiring works and remaining High level works in the middle of tunnels - CH4000 to 3500	20	85%																																			
		TNU-RL1510	Low level works - FS nicle module - CH4000 to 3500	10	100%																																			
		TNU-RL1520	Low level works - FS nicle connection - CH4000 to 3500	10	60%																																			
		TNU-RL1530	Final connection to small powers - CH4000 to 3500	10	0%																																			
		TNU-RL1540	Cladding works - CH4000 to 3500	13	35%																																			
CH3500 - 3050																																								
		TNU-RL1610	High level wiring works & remaining High level works in the tunnel middle - CH3500 to 3050	20	30%																																			
		TNU-RL1620	Low level works - FS nicle module - CH3500 to 3050	10	80%																																			
		TNU-RL1630	Low level works - FS nicle connection - CH3500 to 3050	10	55%																																			
		TNU-RL1640	Final connection to small powers - CH3500 to 3050	10	0%																																			
		TNU-RL1650	Cladding works - CH3500 to 3050	11	30%																																			
CH3050 - 2500 (ML02)																																								

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS					20-Feb-20			
THREE MONTHLY PROGRAMME AS OF 20 Feb 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				
		TNU-RL1690	Cabling Works on Brackets - CH3050 to 2500	11	92%																																			
		TNU-RL1720	High level wiring works and remaining High level works in the middle of tunnels - CH3050 to 2500	12	20%																																			
		TNU-RL1730	Low level works - FS nicle module - CH3050 to 2500	5	100%																																			
		TNU-RL1740	Low level works - FS nicle connection - CH3050 to 2500	5	100%																																			
		CH3050 - 2500 (ML03)																																						
		TNU-RL3120	Bracket fixing on side wall - CH3050 to 2500	8	0%																																			
		TNU-RL3155	MSFD delivery in OHVD - CH3050 to 2500	9	88.99%																																			
		TNU-RL3160	MSFD installation works in OHVD - CH3050 to 2500	9	88.99%																																			
		TNU-RL3170	High level wiring works and remaining High level works in the middle of tunnels - CH3050 to 2500	12	20%																																			
		TNU-RL3180	Low level works - FS nicle module - CH3050 to 2500	5	100%																																			
		TNU-RL3190	Low level works - FS nicle connection - CH3050 to 2500	5	100%																																			
		Other Works																																						
		TNU-OW1010	FR enclosure installation	42	0%																																			
		T&C																																						
		TNL-10TC1010	Permanent power available to tunnels from NVB	0	0%																																			
		TNL-10TC1016	Partial T&C for Tunnel Ventilation System - CH 7200 to 2500	89	55%																																			
		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	0%																																			
		TNL-10TC1050	T&C for MSFD - CH 7200 to 2500	30	45%																																			
		TNL-10TC1060	T&C for Service Gallery - Sprinkler System - CH 7200 to 2500	40	0%																																			
		TNL-10TC1070	T&C for Services Gallery - other services - CH 7200 to 2500	40	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	75%																																			
		SCB-EMGF1020	E&M Installation - 2nd fix - G/F	30	50%																																			
		SCB-EMGF1030	E&M Installation - Final fix - G/F	30	5%																																			
		SCB-EMGF1050	E&M Installation - Generator Room & Fuel Tank Room - G/F	70	35%																																			
		SCB-EMGF1070	E&M Installation - LV Switch Room - G/F	60	20%																																			
		SCB-EMGF1080	Cable laying - LV Switch Room - from G/F	42	0%																																			
		SCB-EMGF1130	Installation by CLP - CLP Tx Room - G/F	68	100%																																			
		SCB-EMGF1180	E&M Installation - FS Plant Rooms - G/F	80	15%																																			
		SCB-EMGF1200	E&M Installation - PD Plant Rooms - G/F	90	15%																																			
		1/F																																						
		SCB-EM1F1000	ABWF Works ready for E&M Mobilization to General Areas - 1/F	0	0%																																			
		SCB-EM1F1010	E&M Installation - 1st fix - 1/F	30	50%																																			
		SCB-EM1F1020	E&M Installation - 2nd fix - 1/F	30	25%																																			
		SCB-EM1F1030	E&M Installation - Final fix - 1/F	30	5%																																			
		SCB-EM1F1050	E&M Installation - Computer Room (TCSS) - 1/F	60	15%																																			

ID					Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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					SCB-EM1F1080	E&M Installation - EL Room - 1/F	90	35%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

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-TVF2510	Leakage test for TVF	8	0%																																			
		SB-SVB-TVF-10																																						
		SVB-TVF2550	Leakage test for TVF	8	0%																																			
		B2/F																																						
		SVB-EMB21010	E&M Installation - 1st fix - B2/F	25	95%																																			
		SVB-EMB21020	E&M Installation - 2nd fix - B2/F	25	82%																																			
		SVB-EMB21030	E&M Installation - Final fix - B2/F	25	25%																																			
		SVB-EMB21060	E&M Installation - Electrical Plant Rooms- B2/F	40	78%																																			
		SVB-EMB21080	E&M Installation - MVAC Palnt Rooms - B2/F	60	50%																																			
		SVB-EMB21100	E&M Installation - FS Plant Rooms - B2/F	45	60%																																			
		SVB-EMB21110	E&M Installation - PD Palnt Rooms - B2/F	60	35%																																			
		B1/F																																						
		SVB-EMB11010	E&M Installation - 1st fix - B1/F	25	92%																																			
		SVB-EMB11020	E&M Installation - 2nd fix - B1/F	25	65%																																			
		SVB-EMB11030	E&M Installation - Final fix - B1/F	25	20%																																			
		SVB-EMB11060	E&M Installation - Electrical Plant Rooms - B1/F	40	68%																																			
		SVB-EMB11080	E&M Installation - MVAC Plant Rooms - B1/F	60	53%																																			
		SVB-EMB11100	E&M Installation - FS Plant Rooms - B1/F	48	60%																																			
		SVB-EMB11120	E&M Installation - Elv Plant Rooms - B1/F	48	35%																																			
		G/F																																						
		SVB-EMGF1010	E&M Installation - 1st fix - G/F	25	80%																																			
		SVB-EMGF1020	E&M Installation - 2nd fix - G/F	25	35%																																			
		SVB-EMGF1030	E&M Installation - Final fix - G/F	25	15%																																			
		SVB-EMGF1070	Installation by CLP - CLPP HV Switch Room - G/F	24	80%																																			
		SVB-EMGF1080	Wiring Inspection with CLP	2	0%																																			
		SVB-EMGF1090	Power On Energization by CLP	0	0%																																			
		SVB-EMGF1120	E&M Installation - Genset Room & Fuel Tank Rooms - G/F	40	85%																																			
		SVB-EMGF1140	E&M Installation - Electrical Plant Rooms - G/F	40	70%																																			
		SVB-EMGF1160	E&M Installation - MVAC Plant Rooms - G/F	40	75%																																			
		SVB-EMGF1180	E&M Installation - FS Plant Rooms - G/F	40	65%																																			
		SVB-EMGF1200	E&M Installation - PD Plant Rooms - G/F	40	35%																																			
		SVB-EMGF1220	E&M Installation - Elv Plant Rooms - G/F	48	35%																																			
		1/F																																						
		SVB-EM1F1010	E&M Installation - 1st fix - 1/F	25	82%																																			
		SVB-EM1F1020	E&M Installation - 2nd fix - 1/F	25	63%																																			
		SVB-EM1F1030	E&M Installation - Final fix - 1/F	25	12%																																			
		SVB-EM1F1050	E&M Installation - 11kV Switch & Tx Room 1 - 1/F	41	95%																																			
		SVB-EM1F1110	E&M Installation - 11kV Switch & Tx Room 2 - 1/F	41	95%																																			
		SVB-EM1F1170	E&M Installation - LV Switch Room - 1/F	41	85%																																			
		SVB-EM1F1180	Cable laying - from 1/F	16	65%																																			
		SVB-EM1F1190	Sub-Circuit Power On - LV Switch Room - 1/F	0	0%																																			
		SVB-EM1F1220	E&M Installation - Electrical Plant Rooms - 1/F	50	60%																																			
		SVB-EM1F1240	E&M Installation - MVAC Plant Rooms - 1/F	60	50%																																			
		SVB-EM1F1260	E&M Installation - FS Plant Rooms - 1/F	50	45%																																			
		SVB-EM1F1280	E&M Installation - ELV Plant Rooms - 1/F	50	35%																																			
		2/F																																						
		SVB-EM2F1010	E&M Installation - 1st fix - 2/F	25	77%																																			
		SVB-EM2F1020	E&M Installation - 2nd fix - 2/F	25	40%																																			
		SVB-EM2F1030	E&M Installation - Final fix - 2/F	25	18%																																			
		SVB-EM2F1060	E&M Installation - Electrical Plant Rooms - 2/F	40	70%																																			
		SVB-EM2F1080	E&M Installation - MVAC Plant Rooms - 2/F	40	45%																																			
		SVB-EM2F1100	E&M Installation - FS Plant Rooms - 2/F	40	40%																																			
		SVB-EM2F1120	E&M Installation - PD Plant Rooms - 2/F	40	35%																																			
		Lift Installation (L01 & L02)																																						
		SVB-LF1020	Lift & lift machine room installation	50	100%																																			

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Feb 2020

P 12	Date	Revision	Checked	Approved
	20-Feb-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				
		SVB-TC1000	T&C for Subcircuit Power On	6	0%																																			
		SVB-TC1010	T&C for DG Licence	4	0%																																			
		SVB-TC1020	T&C for TVF	25	0%																																			
		SVB-TC1030	Equipment Start-up T&C for FSI	6	0%																																			
		SVB-TC1033	Individual E&M System T&C for FSI	18	35%																																			
		SVB-TC1035	Intergrated T&C for FSI	6	25%																																			
		SVB-TC1040	Non-Essential T&C	30	0%																																			
		SVB-TC1050	KD6C Achieved	0	0%																																			
	Key Date 6A - E&M Works for Approach Roads at North Side																																							
	Approach Roads																																							
		EAR120	Road Lighting Cabling	50	75%																																			
		EAR130	Road Ligting Installation & Termination	50	50%																																			
		EAR140	T&C & Miscellaneous Works for Statutory Inspection	12	0%																																			
		EAR300	KD6A Achieved	0	0%																																			
	Tunnel																																							
CH7200 - 7300																																								
	TNL-09CL5610	T&C & Miscellaneous Works for Statutory Inspection - CH 7300 to 7200	30	0%																																				
	TNU-RL2010	Lighting in the middle of tunnels - CH7200 to 7300	9	15%																																				
	TNU-RL2020	FH/ HR pipe installation - CH7200 to 7300	4	85%																																				
	TNU-RL2060	High level wiring works & remaining High level works in tunnel middle - CH7200 to 7300	12	0%																																				
	TNU-RL2070	Low level works - FS nicle module - CH7200 to 7300	4	0%																																				
	TNU-RL2080	Low level works - FS nicle connection - CH7200 to 7300	4	0%																																				
	TNU-RL2090	Final connection to small powers - CH7200 to 7300	4	0%																																				
	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	60%																																				
	AFSD1020	ABWF Works to Plant Rooms G/F	56	95%																																				
	AFSD1021	ABWF Works to Plant Rooms 1/F	56	95%																																				
	AFSD1030	ABWF Works to Office and Corridors G/F	124	95%																																				
	AFSD1031	ABWF Works to Office and Corridors 1/F	124	95%																																				
	AFSD1040	ABWF Works to Toilets G/F	136	95%																																				
	AFSD1060	External Cladding and Wall Plastering	101	68%																																				
	AFSD1070	ABWF second fix & final fix	73	0%																																				
E&M Works																																								
Installation																																								
G/F																																								
	FSDB-EMGF1010	E&M Installation - 1st fix - G/F	40	88%																																				
	FSDB-EMGF1020	E&M Installation - 2nd fix - G/F	40	48%																																				
	FSDB-EMGF1030	E&M Installation - Final fix - G/F	30	10%																																				
	FSDB-EMGF1040	ABWF Works ready for E&M Mobilization to CLP TX Room - G/F	0	0%																																				
	FSDB-EMGF1050	E&M Installation - CLP Tx Room - G/F	18	100%																																				
	FSDB-EMGF1060	Inspection & Handover to CLP	6	0%																																				
	FSDB-EMGF1070	Installation by CLP - CLP Tx Room - G/F	82	0%																																				
	FSDB-EMGF1120	E&M Installation - Electrical Plant Rooms - G/F	60	40%																																				
	FSDB-EMGF1140	E&M Installation - FS Plant Rooms - G/F	50	40%																																				
	FSDB-EMGF1160	E&M Installation - Elv Plant Rooms - G/F	50	10%																																				
1/F																																								
	FSDB-EM1F1010	E&M Installation - 1st fix - 1/F	40	62%																																				
	FSDB-EM1F1020	E&M Installation - 2nd fix - 1/F	39	20%																																				

CONTRACT NO. HY2017/10					P 13					Date	Revision	Checked	Approved
NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS										20-Feb-20			
THREE MONTHLY PROGRAMME AS OF 20 Feb 2020													

ID		Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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		FSDB-EM1F1030	E&M Installation - Final fix - 1/F	35	0%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								</

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				
		ACED1020	ABWF Works to Plant Rooms G/F	60	35%																																			
		ACED1021	ABWF Works to Plant Rooms 1/F	60	35%																																			
		ACED1022	ABWF Works to Plant Rooms 2/F	60	35%																																			
		ACED1023	ABWF Works to Plant Rooms 3/F	60	35%																																			
		ACED1030	ABWF Works to Office and Corridors G/F	133	35%																																			
		ACED1031	ABWF Works to Office and Corridors 1/F	118	35%																																			
		ACED1032	ABWF Works to Office and Corridors 2/F	130	35%																																			
		ACED1033	ABWF Works to Office and Corridors 3/F	92	35%																																			
		ACED1040	ABWF Works to Toilets G/F	142	35%																																			
		ACED1041	ABWF Works to Toilets 2/F	142	35%																																			
		ACED1042	ABWF Works to Toilets 3/F	98	35%																																			
		ACED1050	Waterproofing and Roofing	50	35%																																			
		ACED1060	External Cladding and Wall Plastering	97	5%																																			
E&M Works																																								
Installation																																								
G/F																																								
		C&EDB-GF1000	ABWF Works ready for E&M Mobilization to General Areas - G/F	0	100%																																			
		C&EDB-GF1010	E&M Installation - 1st fix - G/F	40	15%																																			
		C&EDB-GF1020	E&M Installation - 2nd fix - G/F	40	0%																																			
		C&EDB-GF1030	E&M Installation - Final fix - G/F	40	0%																																			
		C&EDB-GF1040	ABWF Works ready for E&M Mobilization to CLP Tx Room - G/F	0	0%																																			
		C&EDB-GF1050	E&M Installation - CLP Tx Room - G/F	18	0%																																			
		C&EDB-GF1060	Inspection & Handover to CLP	6	0%																																			
		C&EDB-GF1070	Installation by CLP - CLP Tx Room - G/F	82	0%																																			
		C&EDB-GF1120	E&M Installation - Generator & Fuel Tank Rooms - G/F	90	35%																																			
		C&EDB-GF1130	ABWF Works ready for E&M Mobilization to FS Plant Rooms - G/F	0	0%																																			
		C&EDB-GF1140	E&M Installation - FS Plant Rooms - G/F	90	0%																																			
		C&EDB-GF1150	ABWF Works ready for E&M Mobilization to Elv Plant Rooms - G/F	0	0%																																			
		C&EDB-GF1160	E&M Installation - Elv Plant Rooms - G/F	90	0%																																			
1/F																																								
		C&EDB-1F1000	ABWF Works ready for E&M Mobilization to General Areas - 1/F	0	0%																																			
		C&EDB-1F1010	E&M Installation - 1st fix - 1/F	40	0%																																			
		C&EDB-1F1020	E&M Installation - 2nd fix - 1/F	40	0%																																			
		C&EDB-1F1040	ABWF Works ready for E&M Mobilization to LV Switch Room - 1/F	0	0%																																			
		C&EDB-1F1050	E&M Installation - LV Switch Room - 1/F	60	0%																																			
		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	0%																																			
		C&EDB-1F1090	E&M Installation - Electrical Plant Rooms - 1/F	90	0%																																			
2/F																																								
		C&EDB-2F1000	ABWF Works ready for E&M Mobilization to General Areas - 2/F	0	0%																																			
		C&EDB-2F1010	E&M Installation - 1st fix - 2/F	40	0%																																			
		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	0%																																			
		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	0%																																			
		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	0%																																			
		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	0%																																			
		C&EDB-3F1010	E&M Installation - 1st fix - 3/F	30	0%																																			
		C&EDB-3F1020	E&M Installation - 2nd fix - 3/F	30	0%																																			

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Feb 2020

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Date	Revision	Checked	Approved
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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

P 16	Date	Revision	Checked	Approved
	20-Feb-20			

Appendix C

Environmental Mitigation and Enhancement Measure Implementation Schedules

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

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

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

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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		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	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

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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-ELAO	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		✓
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		✓

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
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 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	All areas / throughout construction period	Contractor	TMEIA		Y		✓

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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	
		entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and / 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									
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

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	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 FTWBTC 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
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

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	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
- Δ Deficiency of Mitigation Measures but rectified by Contractor
- N/A Not Applicable in Reporting Period

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

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

Appendix D

Summary of Action and Limit Levels

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

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

Appendix E

Event Action Plan

Appendix E1 **Event/ Action Plan for Air Quality**

ACTION				
EVENT	ET ⁽¹⁾	IEC ⁽¹⁾	ER ⁽¹⁾	Contractor
Action Level				
1. Exceedance for one sample	1. Identify the source. 2. Inform the IEC and the ER. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by the ET. 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate

ACTION				
EVENT	ET ⁽¹⁾	IEC ⁽¹⁾	ER ⁽¹⁾	Contractor
Limit Level				
1. Exceedance for one sample	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.	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.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures are properly implemented.	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	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	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.	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.	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	('000m³)	('000m³)	('000m³)	('000m³)	('000m³)	('000m³)	('000m³)	('000m³)	('000m³)	('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	-	0.000					-	-	-	-	-	-	-	-	-
Apr	-	0.000					-	-	-	-	-	-	-	-	-
May	-	0.000					-	-	-	-	-	-	-	-	-
Jun	-	0.000					-	-	-	-	-	-	-	-	-
SUB-TOTAL	0.057	0.026	0.000	0.000	0.000	0.000	0.000	0.057	0.000	0.000	363.600	0.000	0.000	0.154	0.000
Jul	-	0.000					-	-	-	-	-	-	-	-	-
Aug	-	0.000					-	-	-	-	-	-	-	-	-
Sep	-	0.000					-	-	-	-	-	-	-	-	-
Oct	-	-					-	-	-	-	-	-	-	-	-
Nov	-	0.000					-	-	-	-	-	-	-	-	-
Dec	-	0.000					-	-	-	-	-	-	-	-	-
TOTAL	0.057	0.026	0.000	0.000	0.000	0.000	0.000	0.057	0.000	0.000	363.600	0.000	0.000	0.154	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	0	39
	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 (February 2020)	0	0	0
Total No. received since contract commencement	1	0	0