

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

Seventeenth Monthly EM&A Report

12 November 2019

Environmental Resources Management
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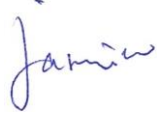


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**Environmental Resources
Management**

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Seventeenth Monthly EM&A Report

Document Code: 0463091_17th Monthly EM&A_20191112.doc

Client: Gammon		Project No: 0463091			
Summary: This document presents the Seventeenth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 12 November 2019			
		Approved by: 			
		<i>Mr Craig Reid</i> Partner			
		Certified by: 			
		<i>Dr Jasmine Ng</i> ET Leader			
	Seventeenth Monthly EM&A Report	CW	JN	CAR	12/11/19
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution		 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential 	

13 November 2019

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
17th Monthly EM&A Report for October 2019**

Reference is made to the Environmental Team's submission of the monthly EM&A report for October 2019 (ET's ref.: "0463091_17th Monthly EM&A_20191112.doc" dated 12 November 2019) certified by the ET Leader and provided to us via e-mail on 12 November 2019.

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. Cheng Pan	(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, HW, 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 Seventeenth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 October 2019 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 Toll 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;
- Building Structure at Customs and Excise Department Building;

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes 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;
- Building Structure, Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll Booth;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Satellite Control Building;
- Building Structure 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
Landfill Gas Hazard Monitoring	25 days
Joint Environmental Site Inspection	4 sessions

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

Three (3) exceedances of Action Level of 1-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

Results of landfill gas hazard monitoring in the reporting month complied with the Action Level.

Environmental Complaints, Non-compliance & Summons

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

Reporting Change

There was no reporting change 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

Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of November 2019 include the following:

Land-based Works

- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll 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 at Customs and Excise Department Building;
- 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 Toll Booth;
- 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 November 2019 are mainly associated with dust and waste management issues.

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

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

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

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

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

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

Plot File by: Jerry Wong 23-Jan-18
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PROJECT
 TUEN MUN -
 CHEK LAP KOK LINK

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

CLIENT

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

CONSULTANT
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Figure 1.1

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

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DIMENSION UNIT
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KEY PLAN

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

SHEET TITLE
 OVERALL SITE PLAN

SHEET NUMBER
 60240249/C4/7051A

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PROJECT
TUEN MUN - CHEK LAP KOK LINK

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

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

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Figure 1.2a

ISSUE/REVISION

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KEY PLAN

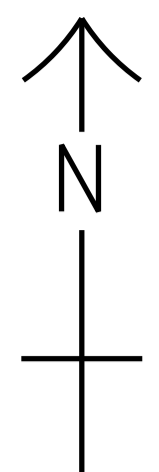
PROJECT NO.
60240249

CONTRACT NO.
HY/2017/10

SHEET TITLE
ZONING PLAN (SHEET 1)

SHEET NUMBER
60240249/C4/7061A

PLOT FILE BY: jerrywong 15-Jan-18
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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
 Hong Kong Project Management Office

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Figure 1.2b

ISSUE/REVISION
 修訂

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修訂	日期	修訂描述	核對
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-	DEC.17	TENDER DRAWING	SYLC

STATUS
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SCALE
 比例
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DIMENSION UNIT
 尺寸單位
 MILLIMETRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60240249

CONTRACT NO.
 合約編號
 HY/2017/10

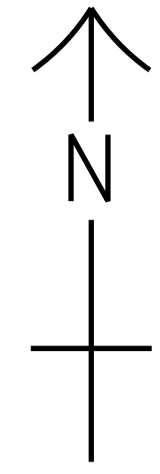
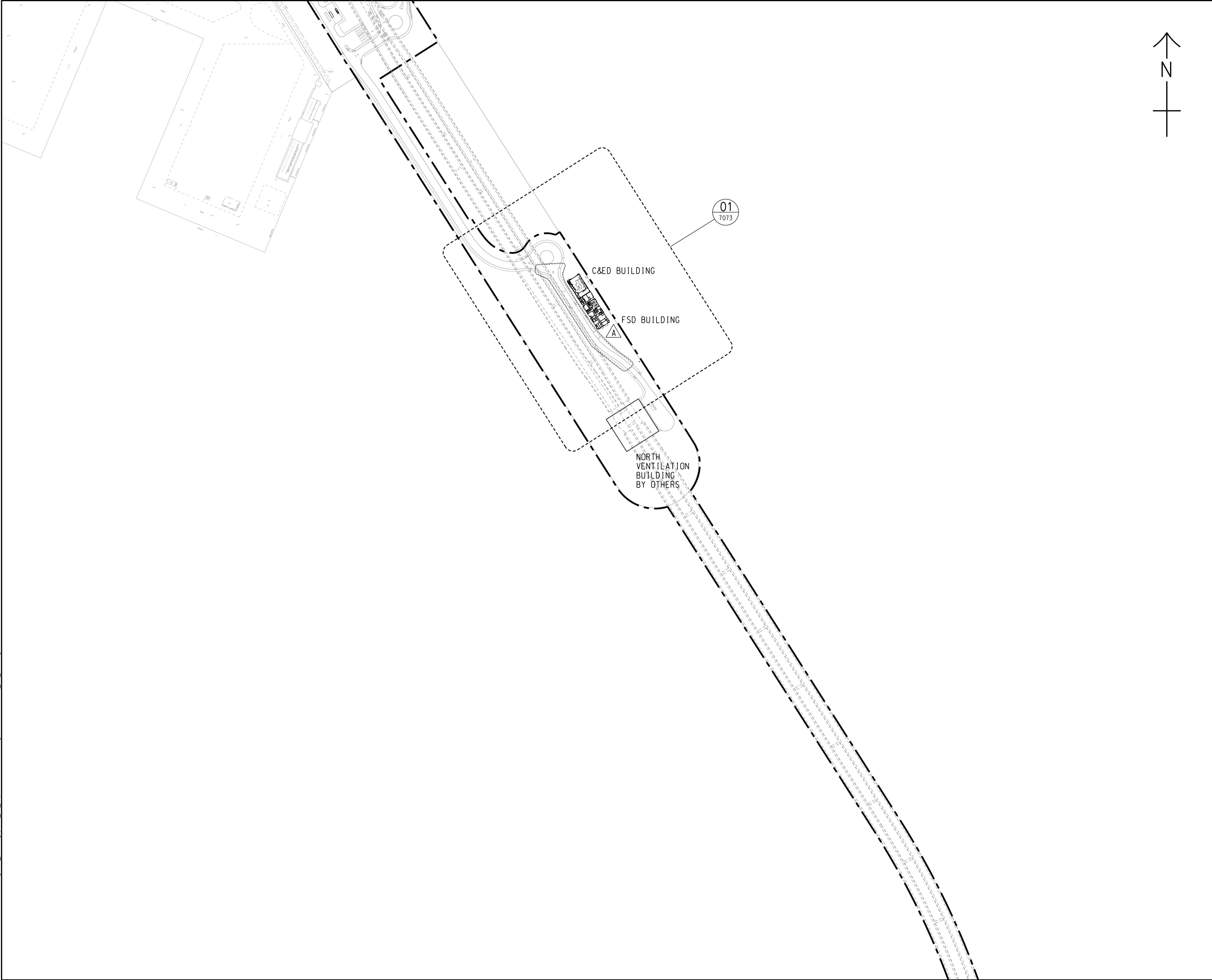
SHEET TITLE
 圖紙名稱
 ZONING PLAN (SHEET 2)

SHEET NUMBER
 圖紙編號
 60240249/C4/7062A

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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
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Figure 1.2c

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

STATUS
 階段

SCALE
 比例
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DIMENSION UNIT
 尺寸單位
 MILLIMETRES

KEY PLAN
 索引圖

PROJECT NO.
 項目編號
 60240249

CONTRACT NO.
 合約編號
 HY/2017/10

SHEET TITLE
 圖紙名稱
 ZONING PLAN
 (SHEET 3)

SHEET NUMBER
 圖紙編號
 60240249/C4/7063A

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1.2 SCOPE OF REPORT

This is the Seventeenth 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 October 2019.

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

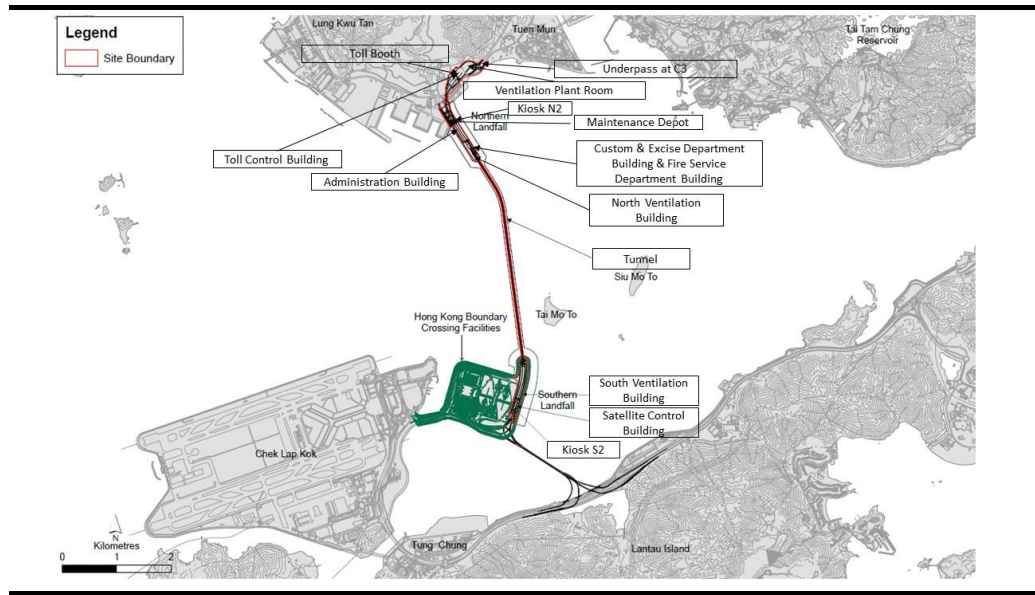
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;

- 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;
- Building Structure at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes 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;
- Building Structure, Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll Booth;
- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Satellite Control Building;
- Building Structure at Kiosk S2; and
- Electrical and Mechanical Works at South Ventilation Building.

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

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

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



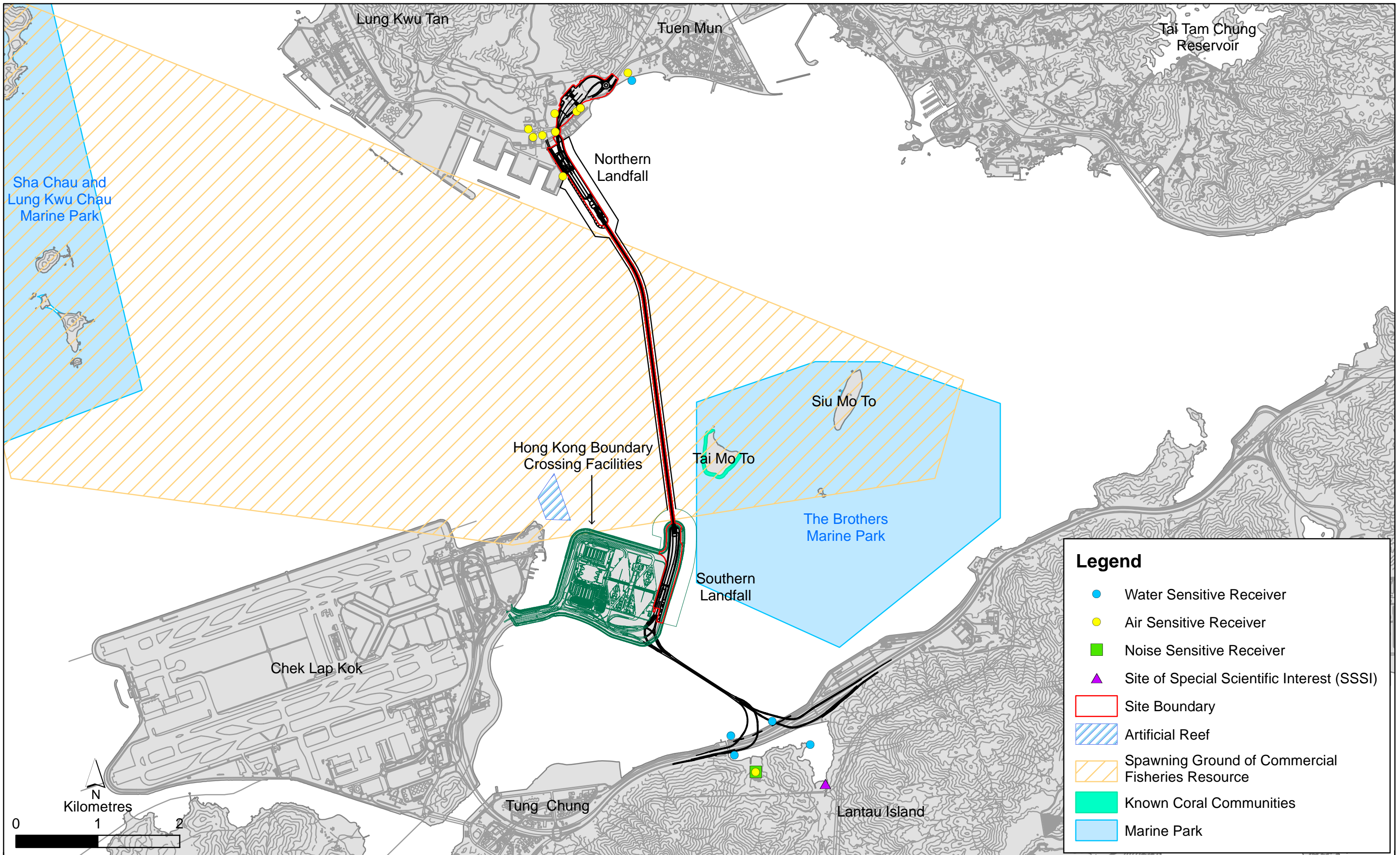


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

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

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

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

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

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	2, 5, 8, 11, 14, 17, 20, 23, 26 and 29 October 2019	Tuen Mun Fireboat Station	Office	TSP monitoring
ASR5		Pillar Point Fire Station	Office	<ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days
AQMS1		Previous River Trade Golf	Bare ground	Enhanced TSP monitoring

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

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

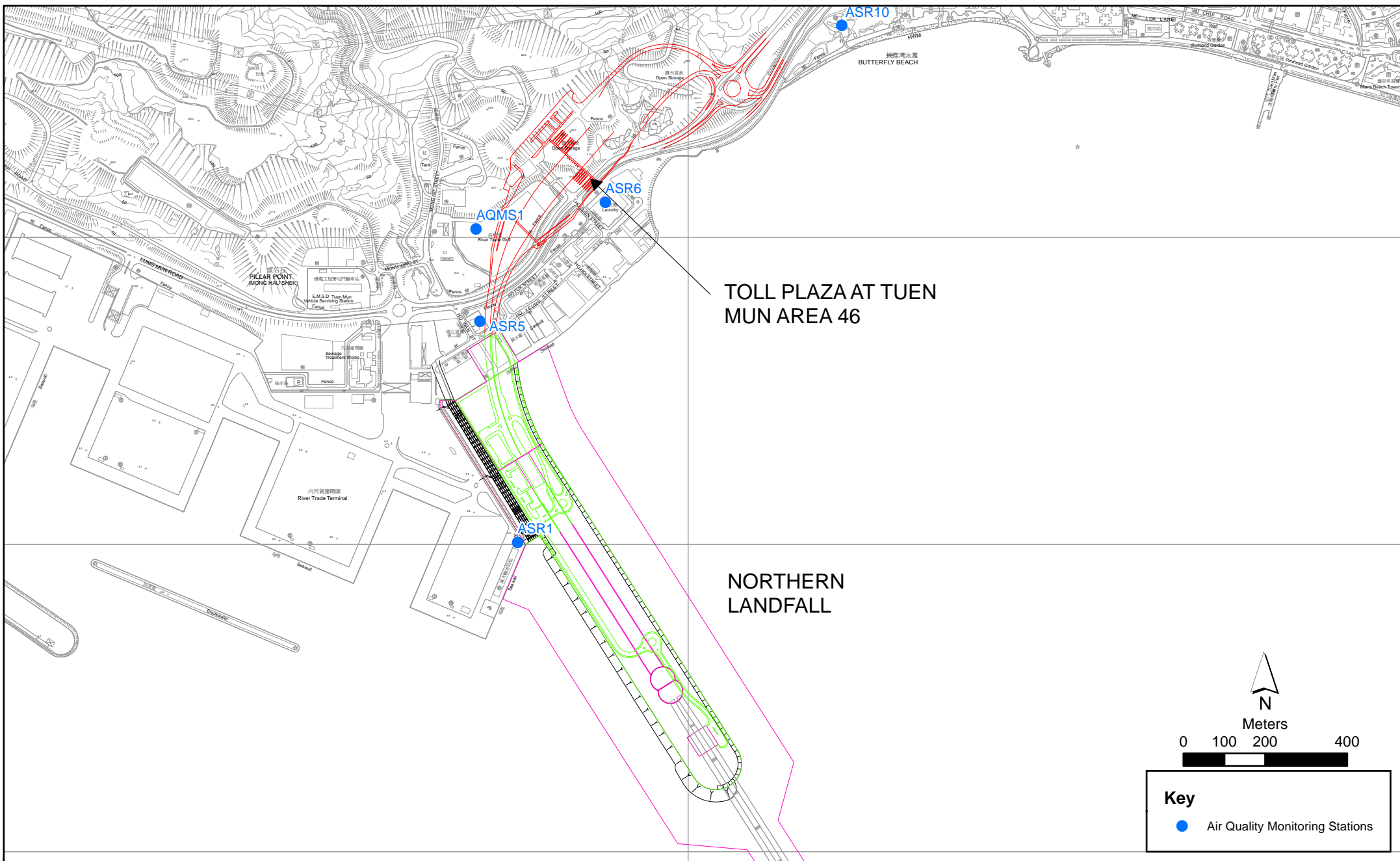


Figure 2.1

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

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

2.1.2 *Results and Observations*

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

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

No exceedance of Action and Limit Levels for 24-hour TSP was recorded in the reporting month.

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. A total of 25 days of landfill gas hazard monitoring was conducted at Toll Control Building during 2 to 31 October 2019 (*Appendix F*).

The landfill gas hazard monitoring was conducted in accordance to the Updated EM&A Manual with a Altair 5X Gas Detector. The calibration certificate for the equipment is presented in *Appendix G*.

The Action Level of the landfill gas hazard monitoring was adopted from the Updated EM&A Manual of the TM-CLK Link Project and are provided in *Appendix D*.

2.2.1 *Results and Observations*

Results for landfill gas hazard monitoring are summarized in *Table 2.2* and the monitoring data is provided in *Appendix H*.

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

Results of methane, oxygen and carbon dioxide in the reporting month complied with the Action Level. No action as stated in the Updated EM&A Manual of the TM-CLK Link Project and presented in *Appendix D* is required to be undertaken.

Table 2.2 *Summary of Landfill Gas Hazard Monitoring Results in the Reporting Period*

	Average (%)	Range (%)	Action Level (%) ^(a)
Methane	0	0	10/20
Oxygen	20.8	20.7-20.9	19/18
Carbon Dioxide	0.03	0.03-0.04	0.5/1.5

Notes:

(a) Depending on the results of the measurements, actions required will vary. Actions in the event of landfill gas being detected in excavation/confined area was adopted from the Updated EM&A Manual of the TM-CLK Link Project.

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 4, 11, 18 and 25 October 2019.

Key observations and recommendations during the site inspections in this reporting period are summarized in *Table 2.3*.

Table 2.3 *Specific Observations and Recommendations during the Weekly Site Inspection in this Reporting Month*

Inspection Date	Observations	Recommendations/ Remarks
4 October 2019	Satellite Control Building <ul style="list-style-type: none"> Waste disposed of in the skip should be sorted. Scissors platform should be turned off when not in use. 	Satellite Control Building <ul style="list-style-type: none"> The Contractor was reminded to sort waste disposed of in the skip. The Contractor was reminded to shut down scissors platform when not in use.
11 October 2019	North Ventilation Building <ul style="list-style-type: none"> Construction waste should be regularly removed. Fire Services Department Building <ul style="list-style-type: none"> Construction waste should be regularly removed. Cement bags should be covered. 	North Ventilation Building <ul style="list-style-type: none"> The Contractor was reminded to clear construction waste. Fire Services Department Building <ul style="list-style-type: none"> The Contractor was reminded to clear construction waste. The Contractor was reminded to cover cement bags.
18 October 2019	Toll Control Building <ul style="list-style-type: none"> General refuse was observed. 	Toll Control Building <ul style="list-style-type: none"> The Contractor was reminded to remove general refuse regularly.
25 October 2019	North Ventilation Building <ul style="list-style-type: none"> Accumulated general refuse was observed. 	North Ventilation Building <ul style="list-style-type: none"> The Contractor was reminded to remove general refuse regularly.

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 I*). The quantities of different types of wastes are summarized in *Table 2.4*.

Table 2.4 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)
October 2019	200	0	265,560	0	56	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 2.5* below.

Table 2.5 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-RW0267-19	21 June 2019	14 October 2019	GCL	For Toll Control Building, Administration Building, Maintenance Depot, FSD, C&ED, Boundary Wall, Tunnel, Approach ramp, NVB and WA18
Construction Noise Permit	GW-RS0778-19	30 August 2019	28 February 2020	GCL	For Kiosk S2 and SCB
Construction Noise Permit	GW-RS0448-19	25 September 2019	14 December 2019	GCL	For Deck Void Lighting Installation

2.6 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

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

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

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

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

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

No exceedance of Action and Limit Levels for 24-hour TSP was recorded in the reporting month.

Results of landfill gas hazard monitoring in the reporting month complied with the Action Level.

Cumulative statistics are provided in *Appendix J*.

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 J*.



Figure 2.2

Environmental Complaint Handling Procedure

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

As informed by the Contractor, the major works for the Contract in November 2019 will be:

Land-based Works

- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll 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 at Customs and Excise Department Building;
- 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 Toll Booth;
- 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.

3.2

KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting month of November 2019 are mainly associated with dust and waste management issues.

4.1 CONCLUSIONS

This Seventeenth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 October 2019, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

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

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

Results of landfill gas hazard monitoring in the reporting month complied with the Action Level.

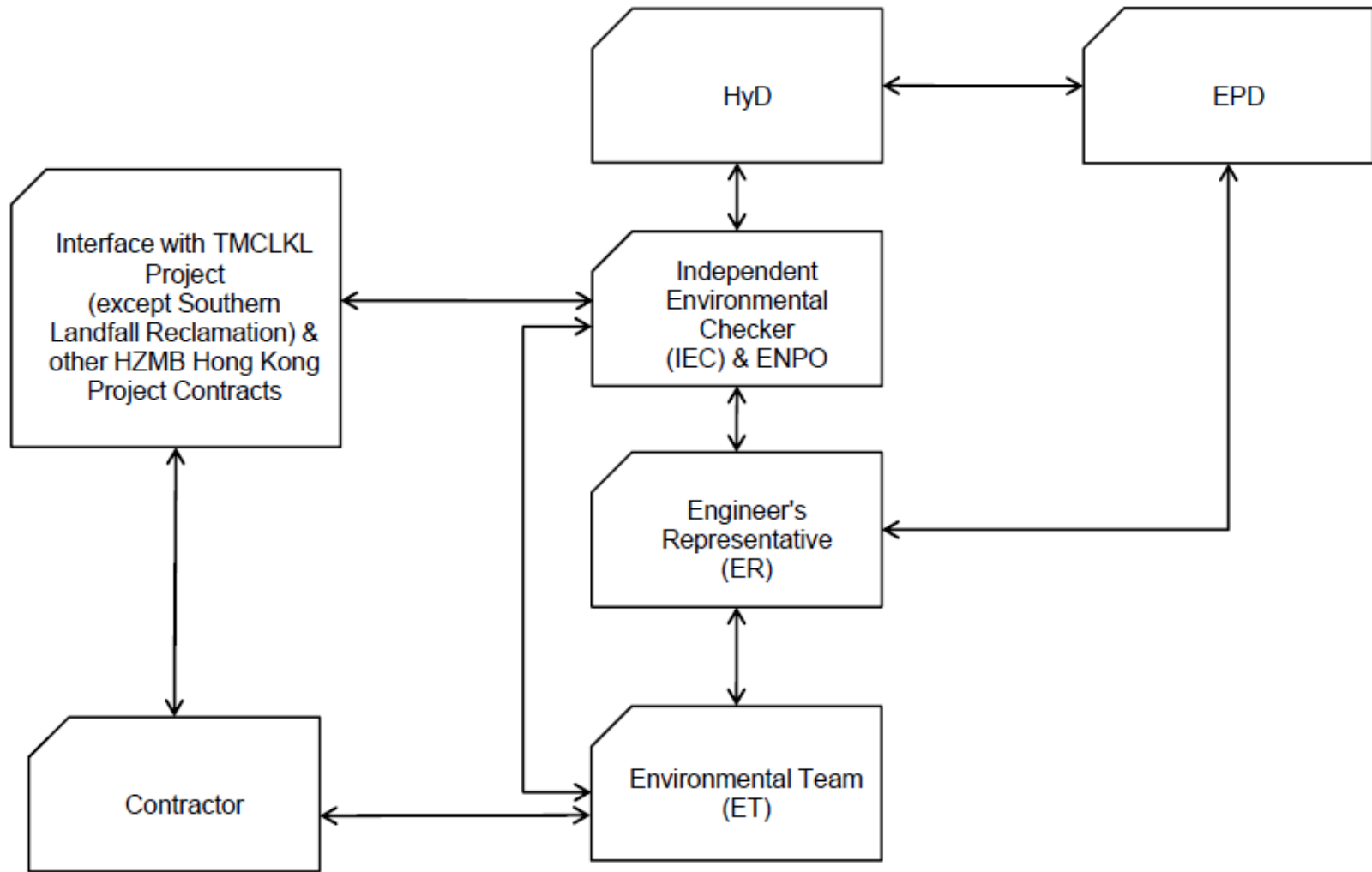
Environmental site inspection was carried out four (4) times in October 2019. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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)	% Comp	Remaining Duration	Start	Finish	2019						
							Oct	Nov	Dec	2020			
							Jan						
HY2017/10 - Works Programme Three Month Rolling Programme 20-Oct-19													
Contract Dates													
Key Dates													
KD03	KD03 - Satellite Control Bldg & TCCS Provision	0	0%	0									
KD06	KD06 - E&M for Admin Bldg, Depot, Training Ground, N Vent Bldg, N2	0	0%	0									
Portion Access Dates													
P2030	Access to Portion VII SVB 1/F	0	100%	0									
P2040	Access to Portion VII SVB 2/F	0	100%	0									
P360	Access to Portion IVa (Day 588)	0	0%	0									
P380	Access to Portion XVIII (Day 605 or notified by engineer)	0	0%	0									
P390	Access to Portion Va (Day 605 or notified by engineer)	0	0%	0									
P400	Access to Portion Vb (Day 605 or notified by engineer)	0	0%	0									
P410	Access to Portion Vd (Day 605 or notified by engineer)	0	0%	0									
P420	Access to Portion II - 8 Jan 2020	0	0%	0									
Portion Possession Dates													
P325	Possession to Portion XXII (Day 483)	0	0%	0									
P335	Possession to Portion XXIII (Day 483)	0	0%	0									
P345	Possession to Portion VIb (Day 483)	0	0%	0									
P355	Possession to Portion VII	0	0%	0									
Portion Handover Dates													
H110	Vacate Portion XVIIb (Day 137 after Possession)	0	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%	28									
TCB-EMD1115	Authorities Review and Comment of MVAC Pump head calculation	56	50%	28									
Electrical System													
TCB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%	28									
TCB-EMD1055	Authorities Review and Comment of Generator Calculation	56	50%	28									
Fire Service System													
TCB-EMD1175	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28									
TCB-EMD1195	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28									
TCB-EMD1215	Authorities Review and Comment of FM200 System Design Calculation	56	50%	28									
Plumbing & Drainage System													
TCB-EMD1235	Authorities Review and Comment of Pump Head Calculation	56	50%	28									
TCB-EMD1275	Authorities Review and Comment of Hot water system capacity calculation	56	50%	28									
TCB-EMD1395	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%	28									
Administration Building													
MVAC System													
ADB-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	50%	28									
ADB-EMD1035	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	50%	28									
ADB-EMD1055	Authorities Review and Comment of Pump head calculation	56	50%	28									
ADB-EMD1075	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	50%	28									
Electrical System													
ADB-EMD1115	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28									
ADB-EMD1135	Authorities Review and Comment of Generator Calculation	56	50%	28									
Fire Service System													
ADB-EMD1155	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28									

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2019

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Date	Revision	Check...	Appro...
20-Oct-19			

ID	Activity	Duration (Days)	% Comp	Remaining Duration	Start	Finish	2019				2020
							Oct	Nov	Dec	Jan	
ADB-EMD1175	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
ADB-EMD1195	Authorities Review and Comment of FM200 System Design Calculation	56	50%	28							
Plumbing & Drainage System											
ADB-EMD1215	Authorities Review and Comment of Pump Head Calculation	56	50%	28							
ADB-EMD1235	Authorities Review and Comment of Pressure Vessel Calculation	56	50%	28							
ADB-EMD1255	Authorities Review and Comment of Hot water system capacity calculation	56	50%	28							
North Ventilation Building											
MVAC System											
NVB-EMD1035	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	50%	28							
Electrical System											
NVB-EMD1055	Authorities Review and Comment of HV Electrical Loading Calculation	56	50%	28							
NVB-EMD1075	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%	28							
NVB-EMD1095	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28							
NVB-EMD1115	Authorities Review and Comment of Generator Calculation	56	50%	28							
Fire Service System											
NVB-EMD1135	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
NVB-EMD1155	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
NVB-EMD1175	Authorities Review and Comment of FM200 System Design Calculation	28	50%	14							
Plumbing & Drainage System											
NVB-EMD1305	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%	28							
Maintenance Depot											
MVAC System											
MD-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	50%	28							
Electrical System											
MD-EMD1075	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28							
MD-EMD1095	Authorities Review and Comment of Generator Calculation	56	50%	28							
Fire Service System											
MD-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
MD-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
MD-EMD1155	Authorities Review and Comment of FM200 System Design Calculation	56	50%	28							
Plumbing & Drainage System											
MD-EMD1175	Authorities Review and Comment of Pump Head Calculation	56	50%	28							
MD-EMD1195	Authorities Review and Comment of Pressure Vessel Calculation	56	50%	28							
MD-EMD1215	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%	28							
Satellite Control Building											
Electrical System											
SCB-EMD1055	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%	28							
SCB-EMD1075	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28							
SCB-EMD1095	Authorities Review and Comment of Generator Calculation	56	50%	28							
Fire Service System											
SCB-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
SCB-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
SCB-EMD1155	Authorities Review and Comment of FM200 System Design Calculation	56	50%	28							
Plumbing & Drainage System											
SCB-EMD1285	Authorities Review and Comment of Pump Head Calculation	56	50%	28							
SCB-EMD1335	Authorities Review and Comment of Pressure Vessel Calculation	56	50%	28							
Custom & Excise Department Building											
Electrical System											

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THREE MONTHLY PROGRAMME AS OF 20 Oct 2019

P 2/24	Date	Revision	Check...	Appro...
	20-Oct-19			

ID	Activity	Duration (Days)	% Comp	Remaining Duration	Start	Finish	2019				2020
							Oct	Nov	Dec	Jan	
CEDB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%	28							
CEDB-EMD1035	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28							
CEDB-EMD1055	Authorities Review and Comment of Generator Calculation	56	50%	28							
Fire Service System											
CEDB-EMD1075	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
CEDB-EMD1095	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
Plumbing & Drainage System											
CEDB-EMD1135	Authorities Review and Comment of Pump Head Calculation	56	50%	28							
CEDB-EMD1155	Authorities Review and Comment of Pressure Vessel Calculation	56	50%	28							
Fire Services Department Building											
Electrical System											
FSDB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	50%	28							
FSDB-EMD1035	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28							
FSDB-EMD1055	Authorities Review and Comment of Generator Calculation	56	50%	28							
Fire Service System											
FSDB-EMD1075	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
FSDB-EMD1095	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
FSDB-EMD1205	Authorities Review and Comment of FM200 System Design Calculation	56	50%	28							
Plumbing & Drainage System											
FSDB-EMD1135	Authorities Review and Comment of Pump Head Calculation	56	50%	28							
FSDB-EMD1155	Authorities Review and Comment of Pressure Vessel Calculation	56	50%	28							
South Ventilation Building											
MVAC System											
SVB-EMD1015	Authorities Review and Comment of Staircase Pressurization System Calculation	56	50%	28							
SVB-EMD1035	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	50%	28							
Electrical System											
SVB-EMD1055	Authorities Review and Comment of HV Electrical Loading Calculation	56	50%	28							
SVB-EMD1095	Authorities Review and Comment of Electrical Loading Demand Calculation	56	50%	28							
SVB-EMD1115	Authorities Review and Comment of Generator Calculation	56	50%	28							
Fire Service System											
SVB-EMD1135	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
SVB-EMD1155	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
SVB-EMD1175	Authorities Review and Comment of FM200 System Design Calculation	56	50%	28							
Vehicular Underpass											
Fire Service System											
VU-EMD1025	Authorities Review and Comment of Foam system design calculation	56	50%	28							
Plumbing & Drainage System											
VU-EMD1045	Authorities Review and Comment of Pump Head Calculation	56	50%	28							
Tunnel Lighting System											
VU-EMD1145	Authorities Review and Comment of Design Proposal of Tunnel Lighting System (TLS)	56	50%	28							
VU-EMD1165	Authorities Review and Comment of Tunnel Lighting Lux Calculation	56	50%	28							
Tunnel											
Fire Service System											
TUN-EMD1035	Authorities Review and Comment of Foam system design calculation	56	50%	28							
TUN-EMD1115	Authorities Review and Comment of FS Pump Head Calculation	56	50%	28							
TUN-EMD1135	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	50%	28							
Plumbing & Drainage System											
TUN-EMD1185	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	50%	28							

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Date	Revision	Check...	Appro...
20-Oct-19			

ID	Activity	Duration (Days)	% Comp	Remaining Duration	Start	Finish	2019				
							Oct	Nov	Dec	2020	
										Jan	
CCMS, TCS and ELV System											
ELV-EMD1015	Authorities Review and Comment of System Design for Toll Control system	56	50%	28							
ELV-EMD1035	Authorities Review and Comment of System Design for CMCS	56	50%	28							
ELV-EMD1055	Authorities Review and Comment of System Design for other ELV systems	56	50%	28							
Major Material Submission & Approval											
GEN-EMM1020	Authorities Review and Comment of Technical Info. - Miscellaneous 1st fix Materials/ Equipment	28	50%	14							
GEN-EMM1050	Authorities Review and Comment of Technical Info. - Miscellaneous 2nd fix Materials/ Equipment	28	50%	14							
GEN-EMM1080	Authorities Review and Comment of Technical Info. - Miscellaneous final fix Materials/ Equipment	28	50%	14							
MVAC System											
MVAC-EMM1015	Authorities Review and Comment of Technical Info. - Chiller	56	50%	28							
MVAC-EMM1035	Authorities Review and Comment of Technical Info. - Chilled Water Pump	56	50%	28							
MVAC-EMM1075	Authorities Review and Comment of Technical Info. - Computer Room AC (CRAC) Unit	56	50%	28							
MVAC-EMM1095	Authorities Review and Comment of Technical Info. - AHU & PAU	56	50%	28							
MVAC-EMM1115	Authorities Review and Comment of Technical Info. - Staircase Pressurization Fan	56	50%	28							
Electrical System											
ELE-EMM1075	Authorities Review and Comment of Technical Info. - HV Cables	56	50%	28							
ELE-EMM1155	Authorities Review and Comment of Technical Info. - UPS and Battery	28	50%	14							
ELE-EMM1175	Authorities Review and Comment of Technical Info. - MCB & MCCB & Distribution Board	28	50%	14							
ELE-EMM1225	Authorities Review and Comment of Technical Info. - PV System	56	50%	28							
Fire Service System											
FS-EMM1015	Authorities Review and Comment of Technical Info. - FM200	56	50%	28							
FS-EMM1095	Authorities Review and Comment of Technical Info. - FR/ HR system	56	50%	28							
FS-EMM1115	Authorities Review and Comment of Technical Info. - Gas detection	56	50%	28							
Plumbing & Drainage System											
PD-EMM1015	Authorities Review and Comment of Technical Info. - Sump Pump	56	50%	28							
PD-EMM1035	Authorities Review and Comment of Technical Info. - Hot Water System	56	50%	28							
PD-EMM1055	Authorities Review and Comment of Technical Info. - LMCP (PD)	56	50%	28							
Tunnel Ventilation System											
TVS-EMM1035	Authorities Review and Comment of Technical Info. - Pressurization Fan	56	50%	28							
TVS-EMM1105	Authorities Review and Comment of Technical Info. - AQMS Equipment	56	50%	28							
TVS-EMM1155	Authorities Review and Comment of Technical Info. - MFSD	56	50%	28							
Tunnel and Road Lighting System											
TRLS-EMM1035	Authorities Review and Comment of Technical Info. - Road Lighting Fitting	56	50%	28							
CCMS, TCS and ELV System											
ELV-EMM1020	Authorities Review and Comment of Technical Info. - CMCS Equipment	56	50%	28							
ELV-EMM1050	Authorities Review and Comment of Technical Info. - TCS Equipment	56	50%	28							
ELV-EMM1080	Authorities Review and Comment of Technical Info. - other ELV Equipment	56	50%	28							
Drawing Submission & Approval											
Satellite Control Building											
Individual Shop Drawing											
SCB-ISD1040	Authorities Review and Comment of SCB ISD 1st batch	28	50%	14							
SCB-ISD1090	Authorities Review and Comment of SCB ISD 2nd batch	28	50%	14							
Custom & Excise Department Building											
Individual Shop Drawing											
CEDB-ISD1040	Authorities Review and Comment of C&EDB ISD 1st batch	28	50%	14							
CEDB-ISD1090	Authorities Review and Comment of C&EDB ISD 2nd batch	28	50%	14							
South Ventilation Building											
Structural, Electrical & Mechanical Drawing											

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2019

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Date	Revision	Check...	Appro...
20-Oct-19			

ID	Activity	Duration (Days)	% Comp	Remaining Duration	Start	Finish	2019			
							Oct	Nov	Dec	2020
										Jan
SVB-SEM2030	ER Review and Approval of SVB SEM	7	0%	7						
Tunnel										
Individual Shop Drawing										
TUN-ISD1090	Authorities Review and Comment of Tunnel ISD 2nd batch	28	50%	14						
TUN-ISD1130	ER Review and Approval of Tunnel ISD 3rd batch	15	100%	0						
TUN-ISD1140	Authorities Review and Comment of Tunnel ISD 3rd batch	28	50%	14						
TUN-ISD1170	Preparation and Resubmission of Tunnel ISD 4th batch	30	50%	15						
TUN-ISD1180	ER Review and Approval of Tunnel ISD 4th batch	15	0%	15						
TUN-ISD1190	Authorities Review and Comment of Tunnel ISD 4th batch	28	50%	14						
Fire Services Department Building										
Individual Shop Drawing										
FSD-ISD1040	Authorities Review and Comment of FSDB ISD 1st batch	28	50%	14						
FSD-ISD1090	Authorities Review and Comment of FSDB ISD 2nd batch	28	50%	14						
Vehicular Underpass										
Individual Shop Drawing										
VU-ISD1090	Authorities Review and Comment of Vehicular Underpass ISD 2nd batch	28	50%	14						
North Ventilation Building										
Individual Shop Drawing										
NVB-ISD1090	Authorities Review and Approval of NVB ISD - 2nd batch	28	50%	14						
E&M Manufacture & Delivery										
Toll Control Building										
CCMS, TCS and ELV System										
TCB-MD1200	Manufacture - CMCS Equipment	62	80.65%	12						
TCB-MD1205	Shipping to HK - CMCS Equipment	14	0%	14						
TCB-MD1210	Manufacture - TCS Equipment	180	25%	135						
TCB-MD1220	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35						
Plumbing & Drainage System										
TCB-MD1110	Manufacture & Delivery to HK - Sump Pump	120	90%	12						
TCB-MD1120	Manufacture & Delivery to HK - Hot Water System	120	90%	12						
TCB-MD1130	Manufacture & Delivery to HK - LMCP (PD)	60	90%	6						
Electrical System										
TCB-MD1280	Manufacture & Delivery to HK - PV System Equipment	60	50%	30						
Fire Service System										
TCB-MD1150	Manufacture & Delivery to HK - FM200	150	90%	15						
Administration Building										
Electrical System										
ADB-MD1310	Manufacture & Delivery to HK - PV System Equipment	60	50%	30						
Plumbing & Drainage System										
ADB-MD1130	Manufacture & Delivery to HK - Hot Water System	120	65%	42						
ADB-MD1140	Manufacture & Delivery to HK - LMCP (PD)	60	50%	30						
CCMS and ELV System										
ADB-MD1210	Manufacture - CMCS Equipment	62	46.77%	33						
ADB-MD1212	FAT - CMCS Equipment	7	100%	0						
ADB-MD1215	Shipping to HK - CMCS Equipment	14	100%	0						
ADB-MD1220	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35						
Lift System										
ADB-MD1000	Manufacture & Delivery to HK - Lift System	120	90.83%	11						
North Ventilation Building										

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ID	Activity	Duration (Days)	% Comp	Remaining Duration	Start	Finish	2019						
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										Jan			
Plumbing & Drainage System													
NVB-MD1100	Manufacture & Delivery to HK - Sump Pump	120	90%	12									
NVB-MD1110	Manufacture & Delivery to HK - LMCP (PD)	60	50%	30									
CCMS and ELV System													
NVB-MD1225	Shipping to HK - CMCS Equipment	14	50%	7									
NVB-MD1230	Manufacture - other ELV Equipment	62	66.13%	21									
NVB-MD1232	FAT - other ELV Equipment	7	0%	7									
NVB-MD1235	Shipping to HK - other ELV Equipment	7	0%	7									
Maintenance Depot													
Fire Service System													
MD-MD1080	Manufacture & Delivery to HK - FM200	150	88%	18									
CCMS and ELV System													
MD-MD1130	Manufacture - CMCS Equipment	62	46.77%	33									
MD-MD1132	FAT - CMCS Equipment	7	100%	0									
MD-MD1135	Shipping to HK - CMCS Equipment	14	100%	0									
MD-MD1140	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35									
Plumbing & Drainage System													
MD-MD1050	Manufacture & Delivery to HK - Sump Pump	120	90%	12									
MD-MD1070	Manufacture & Delivery to HK - LMCP (PD)	60	50%	30									
Satellite Control Building													
Electrical System													
SCB-MD1020	Manufacture - Generator	118	82.2%	21									
SCB-MD1025	Shipping to HK - Generator	28	0%	28									
SCB-MD1035	Shipping to HK - UPS and Battery	42	0%	42									
SCB-MD1040	Manufacture - LV Switchboard	86	79.07%	18									
SCB-MD1042	FAT - LV Switchboard	10	0%	10									
SCB-MD1045	Shipping to HK - LV Switchboard	14	0%	14									
SCB-MD1050	Manufacture & Delivery to HK - MCB & MCCB and Distribution Board	60	40%	36									
SCB-MD1060	Manufacture & Delivery to HK - LV Cables	120	64.17%	43									
MVAC System													
SCB-MD1010	Manufacture & Delivery to HK - Computer Room Air Conditioning (CRAC) Unit	120	50.83%	59									
Fire Service System													
SCB-MD1100	Manufacture & Delivery to HK - FM200	150	88.67%	17									
SCB-MD1110	Manufacture & Delivery to HK - FS Pump	120	60.83%	47									
SCB-MD1120	Manufacture & Delivery to HK - AFA System	100	73%	27									
SCB-MD1130	Manufacture & Delivery to HK - LMCP (FS)	60	0%	60									
SCB-MD1140	Manufacture & Delivery to HK - FR/ HR system	90	70%	27									
Plumbing & Drainage System													
SCB-PO1120	Manufacture & Delivery to HK - LMCP (PD)	60	0%	60									
SCB-PO1130	Manufacture & Delivery to HK - Water Pump	90	80%	18									
CCMS and ELV System													
SCB-MD1150	Manufacture - CMCS Equipment	62	0%	62									
SCB-MD1152	FAT - CMCS Equipment	7	0%	7									
SCB-MD1155	Shipping to HK - CMCS Equipment	14	0%	14									
SCB-MD1160	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35									
Lift System													
SCB-MD1000	Manufacture & Delivery to HK - Lift System	120	80%	24									
Custom & Excise Department Building													

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							Oct	Nov	Dec	Jan		
											Jan	
Electrical System												
CEDB-MD1020	Manufacture - Generator	118	82.2%	21								
CEDB-MD1025	Shipping to HK - Generator	28	0%	28								
CEDB-MD1035	Shipping to HK - UPS and Battery	42	0%	42								
CEDB-MD1040	Manufacture - LV Switchboard	86	79.07%	18								
CEDB-MD1042	FAT - LV Switchboard	10	0%	10								
CEDB-MD1045	Shipping to HK - LV Switchboard	14	0%	14								
CEDB-MD1050	Manufacture & Delivery to HK - LV Cables	120	64.17%	43								
CEDB-MD1060	Manufacture & Delivery to HK - MCB & MCCB and Distribution Board	38	5.26%	36								
MVAC System												
CEDB-MD1010	Manufacture & Delivery to HK - AHU & PAU	60	18.33%	49								
Fire Service System												
CEDB-MD1090	Manufacture & Delivery to HK - FM200	120	35.83%	77								
CEDB-MD1100	Manufacture & Delivery to HK - FS Pump	120	60.83%	47								
CEDB-MD1110	Manufacture & Delivery to HK - AFA System	70	61.43%	27								
CEDB-MD1120	Manufacture & Delivery to HK - LMCP (FS)	51	21.57%	40								
CEDB-MD1130	Manufacture & Delivery to HK - FR/ HR system	90	70%	27								
Plumbing & Drainage System												
CEDB-MD1070	Manufacture & Delivery to HK - LMCP (PD)	60	68.33%	19								
CEDB-MD1080	Manufacture & Delivery to HK - Water Pump	90	41.11%	53								
CCMS and ELV System												
CEDB-MD1170	Manufacture - CMCS Equipment	62	0%	62								
CEDB-MD1172	FAT - CMCS Equipment	7	0%	7								
CEDB-MD1175	Shipping to HK - CMCS Equipment	14	0%	14								
CEDB-MD1180	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35								
Lift System												
CEDB-MD1000	Manufacture & Delivery to HK - Lift System	124	52.42%	59								
Fire Services Department Building												
Electrical System												
FSDB-MD1000	Manufacture - Generator	118	80.51%	23								
FSDB-MD1005	Shipping to HK - Generator	28	0%	28								
FSDB-MD1010	Manufacture - UPS and Battery	53	98.11%	1								
FSDB-MD1015	Shipping to HK - UPS and Battery	42	0%	42								
FSDB-MD1020	Manufacture - LV Switchboard	86	79.07%	18								
FSDB-MD1022	FAT - LV Switchboard	10	0%	10								
FSDB-MD1025	Shipping to HK - LV Switchboard	14	0%	14								
FSDB-MD1030	Manufacture & Delivery to HK - LV Cables	120	45%	66								
FSDB-MD1040	Manufacture & Delivery to HK - MCB & MCCB and Distribution Board	60	40%	36								
Fire Service System												
FSDB-MD1090	Manufacture & Delivery to HK - FS Pump	120	34.17%	79								
FSDB-MD1100	Manufacture & Delivery to HK - AFA System	100	73%	27								
FSDB-MD1110	Manufacture & Delivery to HK - LMCP (FS)	48	0%	48								
FSDB-MD1120	Manufacture & Delivery to HK - FR/ HR system	90	70%	27								
FSDB-MD1185	Manufacture & Delivery to HK - FM200	150	48.67%	77								
Plumbing & Drainage System												
FSDB-MD1060	Manufacture & Delivery to HK - Water Pump	90	30%	63								
FSDB-MD1070	Manufacture & Delivery to HK - LMCP (PD)	60	0%	60								
CCMS and ELV System												

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							Oct	Nov	Dec	Jan	
FSDB-MD1130	Manufacture - CMCS Equipment	62	0%	62							
FSDB-MD1132	FAT - CMCS Equipment	7	0%	7							
FSDB-MD1135	Shipping to HK - CMCS Equipment	14	0%	14							
FSDB-MD1140	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35							
South Ventilation Building											
Electrical System											
SVB-MD1005	Shipping to HK - Generator	28	60%	11							
SVB-MD1015	Shipping to HK - UPS and Battery	42	40%	25							
SVB-MD1022	FAT - HV/LV Transformer	14	0%	14							
SVB-MD1025	Shipping to HK - HV/LV Transformer	14	20%	11							
SVB-MD1032	FAT - LV Switchboard	10	0%	10							
SVB-MD1035	Shipping to HK - LV Switchboard	14	0%	14							
SVB-MD1042	FAT - HV Switchboard	14	0%	14							
SVB-MD1045	Shipping to HK - HV Switchboard	14	0%	14							
SVB-MD1050	Manufacture & Delivery to HK - HV Cables	120	89.17%	13							
SVB-MD1060	Manufacture & Delivery to HK - Busduct	120	90%	12							
SVB-MD1070	Manufacture & Delivery to HK - LV Cables	120	90.83%	11							
MVAC System											
SVB-MD1170	Manufacture - Tunnel Ventilation Fan	180	85.56%	26							
SVB-MD1175	Shipping to HK - Tunnel Ventilation Fan	45	20%	36							
SVB-MD1180	Manufacture & Delivery to HK - Staircase Pressurization Fan	60	60%	24							
Fire Service System											
SVB-MD1120	Manufacture & Delivery to HK - FM200	150	85%	23							
SVB-MD1130	Manufacture & Delivery to HK - FS Pump	120	70%	36							
SVB-MD1140	Manufacture & Delivery to HK - AFA System	100	70%	30							
SVB-MD1150	Manufacture & Delivery to HK - FR/ HR system	90	70%	27							
SVB-MD1160	Manufacture & Delivery to HK - LMCP (FS)	60	70%	18							
Plumbing & Drainage System											
SVB-MD1100	Manufacture & Delivery to HK - Water Pump	90	85%	14							
SVB-MD1110	Manufacture & Delivery to HK - LMCP (PD)	60	75%	15							
SVB-MD1255	Manufacture & Delivery to HK - Sump Pump	120	85%	18							
CCMS and ELV System											
SVB-MD1200	Manufacture - CMCS Equipment	62	66%	21							
SVB-MD1202	FAT - CMCS Equipment	7	0%	7							
SVB-MD1205	Shipping to HK - CMCS Equipment	14	0%	14							
SVB-MD1210	Manufacture & Delivery to HK - other ELV Equipment	83	57.83%	35							
Lift System											
SVB-MD1190	Manufacture & Delivery to HK - Lift System	120	95.83%	5							
Vehicular Underpass											
VU-MD1030	Manufacture & Delivery to HK - Sump Pump	120	67.5%	39							
VU-MD1050	Manufacture & Delivery to HK - Gas detection	60	18.33%	49							
VU-MD1060	Manufacture - CMCS Equipment	62	80.65%	12							
VU-MD1062	FAT - CMCS Equipment	7	0%	7							
VU-MD1065	Shipping to HK - CMCS Equipment	21	0%	21							
VU-MD1070	Manufacture & Delivery to HK - other ELV Equipment	90	53.33%	42							
Tunnel											
TUN-MD1009	Manufacture - Tunnel Lighting System (4th Batch)	90	50%	45							
TUN-MD1015	Manufacture & Delivery to HK - Gas detection	90	45.56%	49							

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TUN-MD1030	Manufacture & Delivery to HK - FS Pump	60	23.33%	46						
TUN-MD1040	Manufacture - CMCS Equipment	62	69.35%	19						
TUN-MD1042	FAT - CMCS Equipment	21	0%	21						
TUN-MD1045	Shipping to HK - CMCS Equipment	7	0%	7						
TUN-MD1050	Manufacture & Delivery to HK - other ELV Equipment	90	61.11%	35						
TUN-MD1060	Manufacture & Delivery to HK - Sump Pump	109	55.05%	49						
TUN-MD1070	Manufacture - AQMS Equipment	69	79.71%	14						
TUN-MD1080	FAT - AQMS Equipment	14	100%	0						
TUN-MD1090	Shipping to HK - AQMS Equipment	7	0%	7						
Approach Road										
AR-MD1000	Manufacture & Delivery to HK - Road Lighting Fitting	90	92.22%	7						
AR-MD1010	Manufacture - CMCS Equipment	62	93.55%	4						
AR-MD1015	FAT - CMCS Equipment	7	0%	7						
AR-MD1018	Shipping to HK - CMCS Equipment	14	0%	14						
AR-MD1020	Manufacture & Delivery to HK - other ELV Equipment	83	49.4%	42						
Key Date 1 - Toll Control Building (TCB) & TCSS Provision										
ABWF Works (for All)										
ATCB1010	Door and Window Frames	82	93.9%	5						
ATCB1120	External Cladding and Wall Plastering	94	89%	10						
ATCB1130	ABWF second fix & final fix	90	45%	50						
Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision										
Administration Building (ADB)										
ABWF Works (for All)										
AADB1140	Door and Window Frames	19	35%	12						
AADB1151	ABWF Works to Plant Rooms 1/F	52	69.23%	16						
AADB1160	ABWF Works to Office and Corridors G/F	126	44.44%	70						
AADB1161	ABWF Works to Office and Corridors 1/F	126	44.44%	70						
AADB1170	ABWF Works to Toilets G/F	132	50%	66						
AADB1171	ABWF Works to Toilets 1/F	132	50%	66						
AADB1180	Waterproofing and Roofing	48	83.33%	8						
AADB1190	External Cladding and Wall Plastering	69	55%	31						
AADB1200	ABWF second fix & final fix	90	35%	59						
Maintenance Depot										
ABWF Works (for All)										
AMD1010	Door and Window Frames	10	55%	5						
AMD1020	ABWF Works to Plant Rooms	58	63%	21						
AMD1030	ABWF Works to Office and Corridors	132	80.3%	26						
AMD1040	ABWF Works to Toilets	144	76.39%	34						
AMD1050	Waterproofing and Roofing	51	88.24%	6						
AMD1060	External Cladding and Wall Plastering	98	98%	2						
AMD1070	ABWF second fix & final fix	80	31%	55						
Key Date 6 - E&M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2										
E&M Works for Administration Building										
Installation										
G/F										
ADB-EMGF1020	E&M Installation - 2nd fix - G/F	40	95%	2						
ADB-EMGF1030	E&M Installation - Final fix - G/F	40	60%	16						
ADB-EMGF1050	E&M Installation - 11kV Switch & Tx Room 1 - G/F	46	95%	2						

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ADB-EMGF1110	E&M Installation - 11kV Swtich & Tx Room 2 - G/F	46	95%	2						
ADB-EMGF1120	Cabling from NVB	12	90%	1						
ADB-EMGF1170	E&M Installation - LV Switch Room - G/F	34	98%	1						
ADB-EMGF1180	Cable laying - LV Switch Room - from G/F	24	70%	7						
ADB-EMGF1190	Sub-circuit Power On - LV Switch Room - G/F	0	0%	0						
ADB-EMGF1210	E&M Installation - Generator Room & Fuel Tank Room - G/F	70	88%	8						
ADB-EMGF1240	E&M Installation - MVAC Plant Rooms - G/F	76	88%	9						
ADB-EMGF1260	E&M Installation - FS Plant Rooms - G/F	60	90%	6						
ADB-EMGF1280	E&M Installation - PD Plant Rooms - G/F	50	25%	38						
ADB-EMGF1300	E&M Installation - ELV Plant Rooms - G/F	50	40%	30						
1/F										
ADB-EM1F1020	E&M Installation - 2nd fix - 1/F	40	90%	4						
ADB-EM1F1030	E&M Installation - Final fix - 1/F	40	50%	20						
ADB-EM1F1060	E&M Installation - MVAC Plant Rooms - 1/F	64	70%	19						
ADB-EM1F1080	E&M Installation - Electrical Plant Rooms - 1/F	64	70%	19						
ADB-EM1F1100	E&M Installation - ELV Plant Rooms - 1/F	52	35%	34						
Roof										
ADB-EMRF1010	E&M Installation - 1st fix - Roof	25	30%	18						
ADB-EMRF1013	E&M Installation - 2nd fix - Roof	25	8%	23						
ADB-EMRF1016	E&M Installation - Final fix - Roof	25	0%	25						
ADB-EMRF1020	ABWF Works ready for E&M Mobilization to Cooling Tower Area - Roof	0	100%	0						
ADB-EMRF1030	E&M Installation - Cooling Tower Area - Roof	90	40%	54						
Lift Installation (L01)										
ADB-LF1020	Lift & lift machine room installation	80	50%	40						
ADB-LF1030	Testing & commissioning	12	0%	12						
ADB-LF1040	Final adjustment, Submission of Form LE5 & EMSD processing	18	0%	18						
Testing and Commissioning										
ADB-TC1000	T&C for Subcircuit Power On	18	0%	18						
ADB-TC1010	T&C for DG Licence	6	100%	0						
ADB-TC1020	Equipment Start-up T&C for FSI for FSI	12	0%	12						
E&M Works for Maintenance Depot										
Installation										
G/F										
MD-EMGF1020	E&M Installation - 2nd fix - G/F	40	90%	4						
MD-EMGF1030	E&M Installation - Final fix - G/F	40	45%	22						
MD-EMGF1050	E&M Installation - LV Switch Room - G/F	90	95%	5						
MD-EMGF1060	Cable laying - LV Switch Room - from G/F	12	25%	9						
MD-EMGF1061	Cabling from ADB	6	0%	6						
MD-EMGF1070	Sub-Circuit Power On - LV Switch Room - G/F	0	0%	0						
MD-EMGF1090	E&M Installation - Generator & Fuel Tank Rooms - G/F	75	80%	15						
MD-EMGF1120	E&M Installation - Electrical Plant Rooms - G/F	70	80%	14						
MD-EMGF1140	E&M Installation - MVAC Plant Rooms - G/F	90	55%	41						
MD-EMGF1160	E&M Installation - FS Plant Rooms - G/F	90	85%	14						
MD-EMGF1180	E&M Installation - PD Plant Rooms - G/F	85	35%	55						
MD-EMGF1190	ABWF Works ready for E&M Mobilization to Elv Plant Rooms - G/F	0	100%	0						
MD-EMGF1200	E&M Installation - Elv Plant Rooms - G/F	60	45%	33						
R/F										
MD-EMRF1000	ABWF Works ready for E&M Mobilization to R/F	0	0%	0						

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MD-EMRF1010	E&M Installation - 1st fix - R/F	30	0%	30						
MD-EMRF1020	E&M Installation - 2nd fix - R/F	30	0%	30						
MD-EMRF1030	E&M Installation - Final fix - R/F	30	0%	30						
Testing & Commissioning										
MD-TC1000	T&C for Subcircuit Power On	12	0%	12						
MD-TC1010	T&C for DG Licence	6	100%	0						
E&M Works for North Ventilation Building										
Installation										
TVF Installation										
SB-NVB-TVF-3										
TVF-NVB1490	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	80%	2						
TVF-NVB1510	Leakage test for TVF	8	0%	8						
SB-NVB-TVF-4										
TVF-NVB1530	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						
TVF-NVB1540	Ventilation fan and duct installation - Fan Room (G/F)	6	80%	1						
TVF-NVB1550	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-2										
TVF-NVB1050	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						
TVF-NVB1070	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-3										
TVF-NVB1090	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						
TVF-NVB1110	Leakage test for TVF	8	0%	8						
SB-NVB-TVF-1										
TVF-NVB1410	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	80%	2						
TVF-NVB1420	Ventilation fan and duct installation - Fan Room (G/F)	6	50%	3						
TVF-NVB1430	Leakage test for TVF	8	0%	8						
SB-NVB-TVF-2										
TVF-NVB1450	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	80%	2						
TVF-NVB1460	Ventilation fan and duct installation - Fan Room (G/F)	6	100%	0						
TVF-NVB1470	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-1										
TVF-NVB1010	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						
TVF-NVB1020	Ventilation fan and duct installation - Fan Room (G/F)	6	50%	3						
TVF-NVB1030	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-4										
TVF-NVB0130	Preparation Works	6	0%	6						
TVF-NVB1120	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	12	0%	12						
TVF-NVB1130	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						
TVF-NVB1140	Ventilation fan and duct installation - Fan Room (G/F)	6	0%	6						
TVF-NVB1150	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-5										
TVF-NVB1170	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	80%	2						
TVF-NVB1190	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-6										
TVF-NVB1210	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	80%	2						
TVF-NVB1230	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-7										
TVF-NVB1250	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						

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TVF-NVB1260	Ventilation fan and duct installation - Fan Room (G/F)	6	50%	3						
TVF-NVB1270	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-8										
TVF-NVB1290	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	80%	2						
TVF-NVB1310	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-9										
TVF-NVB1330	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	0%	12						
TVF-NVB1340	Ventilation fan and duct installation - Fan Room (G/F)	6	50%	3						
TVF-NVB1350	Leakage test for TVF	8	0%	8						
NB-NVB-TVF-10										
TVF-NVB1370	Damper/Silencer and duct installation - Lower Attenuator Room (B1/F)	12	90%	1						
TVF-NVB1390	Leakage test for TVF	8	0%	8						
B2/F										
NVB-EMB21020	E&M Installation - 2nd fix - B2/F	50	98%	1						
NVB-EMB21030	E&M Installation - Final fix - B2/F	50	75%	13						
NVB-EMB21060	E&M Installation - Electrical Plant Rooms - B2/F	90	98%	2						
NVB-EMB21080	E&M Installation - MVAC Plant Rooms - B2/F	60	57%	26						
NVB-EMB21100	E&M Installation - FS Plant Rooms - B2/F	45	40%	27						
NVB-EMB21120	E&M Installation - PD Plant Rooms - B2/F	60	70%	18						
NVB-EMB21140	E&M Installation - Elv Plant Rooms - B2/F	45	80%	9						
B1/F										
NVB-EMB11020	E&M Installation - 2nd fix - B1/F	50	96%	2						
NVB-EMB11030	E&M Installation - Final fix - B1/F	50	75%	13						
NVB-EMB11060	E&M Installation - Electrical Plant Rooms - B1/F	90	98%	2						
NVB-EMB11080	E&M Installation - MVAC Plant Rooms - B1/F	60	55%	27						
NVB-EMB11100	E&M Installation - Elv Plant Rooms - B1/F	45	70%	14						
G/F										
NVB-EMGF1020	E&M Installation - 2nd fix - G/F	50	98%	1						
NVB-EMGF1030	E&M Installation - Final fix - G/F	50	80%	10						
NVB-EMGF1080	Wiring Inspection with CLP	12	50%	6						
NVB-EMGF1090	Power On Energization by CLP	0	0%	0						
NVB-EMGF1120	E&M Installation - Genset Room & Fuel Tank Room - G/F	80	90%	8						
NVB-EMGF1140	E&M Installation - Electrical Plant Rooms - G/F	50	98%	1						
NVB-EMGF1160	E&M Installation - MVAC Plant Rooms - G/F	52	75%	13						
NVB-EMGF1180	E&M Installation - FS Plant Rooms - G/F	90	90%	9						
NVB-EMGF1200	E&M Installation - PD Plant Rooms - G/F	90	65%	32						
1/F										
NVB-EM1F1020	E&M Installation - 2nd fix - 1/F	50	95%	3						
NVB-EM1F1030	E&M Installation - Final fix - 1/F	50	70%	15						
NVB-EM1F1050	E&M Installation - LV Switch Room - 1/F	40	98%	1						
NVB-EM1F1060	Cable laying - LV Switch Room - 1/F	58	98%	1						
NVB-EM1F1070	Sub-Circuit Power On - LV Switch Room - 1/F	0	0%	0						
NVB-EM1F1090	E&M Installation - 11kV Switch & Tx Room 1 - 1/F	60	95%	3						
NVB-EM1F1150	E&M Installation - 11kV Switch & Tx Room 2 - 1/F	60	95%	3						
NVB-EM1F1220	E&M Installation - Electrical Plant Rooms - 1/F	50	98%	1						
NVB-EM1F1240	E&M Installation - MVAC Plant Rooms - 1/F	90	80%	18						
NVB-EM1F1260	E&M Installation - FS Plant Rooms - 1/F	90	90%	9						
2/F										

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							Oct	Nov	Dec	2020
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NVB-EM2F1020	E&M Installation - 2nd fix - 2/F	50	95%	3						
NVB-EM2F1030	E&M Installation - Final fix - 2/F	50	75%	13						
NVB-EM2F1060	E&M Installation - Electrical Plant Rooms - 2/F	50	98%	1						
NVB-EM2F1080	E&M Installation - MVAC Plant Rooms - 2/F	60	60%	24						
NVB-EM2F1100	E&M Installation - Elv Plant Rooms - 2/F	45	55%	20						
Lift Installation (L01 & L02)										
NVB-LF1020	Lift & lift machine room installation	73	80%	15						
NVB-LF1030	Testing & commissioning	24	0%	24						
NVB-LF1040	Final adjustment, Submission of Form LE5 & EMSD processing	20	0%	20						
NVB-LF1050	Issuance of lift use permit	0	0%	0						
Testing & Commissioning										
NVB-TC1000	T&C for Subcircuit Power On	18	0%	18						
NVB-TC1010	T&C for DG Licence	6	100%	0						
NVB-TC1020	T&C for TVF	33	0%	33						
NVB-TC1030	Equipment Start-up T&C for FSI	12	50%	6						
NVB-TC1033	Individual E&M System T&C for FSI	42	25%	32						
Remaining E&M Works for Kiosk N2 (Structure Completed under KD2)										
EN2120	ABWF Works (Door, windows, tiles)	30	0%	30						
EN2130	E&M Works	31	0%	31						
EN2140	Testing & Commissioning	12	0%	12						
Key Date 3 - Satellite Control Building & TCSS Provision										
Building Structure										
SCB180	Handover Portion XVIIIb to HY/2012/08	0	0%	0						
ABWF Works (for All)										
ASCB1020	ABWF Works to Plant Rooms G/F	60	42%	35						
ASCB1021	ABWF Works to Plant Rooms 1/F	60	25%	45						
ASCB1022	ABWF Works to Plant Rooms 2/F	60	15%	51						
ASCB1030	ABWF Works to Office and Corridors G/F	95	42%	55						
ASCB1031	ABWF Works to Office and Corridors 1/F	95	25%	71						
ASCB1040	ABWF Works to Toilets 1/F	103	39.81%	62						
ASCB1050	Waterproofing and Roofing	50	0%	50						
ASCB1060	External Cladding and Wall Plastering	101	0%	101						
Provision for TCSS Installation										
SCB210	Cable Containment Installation to enable TCSS installation	62	0%	62						
SCB220	KD3 Achieved	0	0%	0						
Key Date 5 - E&M Works for TCB, Toll Area, Kiosk N1, Underpass, Plant Rm, and Approach Roads										
Carpark Canopy										
ETCB150	Steelwork for Canopy Structure	45	0%	45						
ETCB160	E&M 1st fix Installation for Canopy Structure	30	0%	30						
E&M Works for TCB										
Installation										
Basement										
TCB-EM1001	E&M Installation - 1st fix - Basement	60	94%	4						
TCB-EM1002	E&M Installation - 2nd fix - Basement	60	68%	19						
TCB-EM1003	E&M Installation - Final fix - Basement	60	32%	41						
G/F										
TCB-EMGF1010	E&M Installation - 1st fix - G/F	60	98%	1						
TCB-EMGF1020	E&M Installation - 2nd fix - G/F	60	93%	4						

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							Oct	Nov	Dec	Jan	
TCB-EMGF1030	E&M Installation - Final fix - G/F	60	40%	36							
TCB-EMGF1080	Wiring Inspection with CLP	12	0%	12							
TCB-EMGF1090	Power On Energization by CLP	0	0%	0							
TCB-EMGF1110	E&M Installation - LV Switch Room - G/F	70	85%	11							
TCB-EMGF1120	Cable laying - LV Switch Room - from G/F	51	45%	28							
TCB-EMGF1150	E&M Installation - Generator & Fuel Tank Rooms - G/F	90	40%	54							
TCB-EMGF1180	E&M Installation - Electrical Plant Rooms - G/F	50	95%	3							
TCB-EMGF1200	E&M Installation - MVAC Plant Rooms - G/F	90	75%	23							
TCB-EMGF1220	E&M Installation - FS Plant Rooms - G/F	90	57%	39							
TCB-EMGF1240	E&M Installation - PD Plant Rooms - G/F	60	40%	36							
1/F											
TCB-EM1F1010	E&M Installation - 1st fix - 1/F	60	98%	1							
TCB-EM1F1020	E&M Installation - 2nd fix - 1/F	60	95%	3							
TCB-EM1F1030	E&M Installation - Final fix - 1/F	60	45%	33							
TCB-EM1F1060	E&M Installation - Electrical Plant Rooms - 1/F	90	75%	23							
TCB-EM1F1080	E&M Installation - FS Plant Rooms - 1/F	90	95%	5							
TCB-EM1F1100	E&M Installation - PD Plant Rooms - 1/F	90	50%	45							
2/F											
TCB-EM2F1010	E&M Installation - 1st fix - 2/F	48	98%	1							
TCB-EM2F1020	E&M Installation - 2nd fix - 2/F	48	94%	3							
TCB-EM2F1030	E&M Installation - Final fix - 2/F	48	37%	30							
TCB-EM2F1060	E&M Installation - Electrical Plant Room - 2/F	60	95%	3							
TCB-EM2F1080	E&M Installation - MVAC Plant Rooms - 2/F	90	75%	23							
TCB-EM2F1100	E&M Installation - Elv Plant Rooms - 2/F	60	65%	21							
Roof											
TCB-EMRF1010	E&M Installation - 1st fix - Roof	50	60%	20							
TCB-EMRF1020	E&M Installation - 2nd fix - Roof	50	36%	32							
TCB-EMRF1030	E&M Installation - Final fix - Roof	40	0%	40							
Lift Installation (L01)											
TCB-LF1010	Lift & lift machine room installation	90	35%	59							
Toll Area											
South Bound											
ETA140	South Bound Toll Booths - E&M installation 1st fix	36	0%	36							
ETA150	Toll Booth Subway - E&M installation 1st fix	48	70%	14							
ETA160	E&M installation - 2nd fix and final fix	36	0%	36							
North Bound											
ETA210	North Bound Toll Booths - E&M installation 1st fix	36	0%	36							
ETA220	Toll Booth Subway - E&M installation 1st fix	48	70%	14							
ETA230	E&M installation - 2nd fix and final fix	36	0%	36							
Kiosk N1											
EN130	Structure	48	40%	29							
EN140	ABWF Works (Door, windows, tiles)	30	0%	30							
EN150	E&M works	36	0%	36							
Underpass											
E&M Works at Underpass											
EU120	Remaining E&M Installations	37	75%	9							
EU130	Equipment Start-up T&C for FSI	12	0%	12							
EU135	Individual E&M System T&C for FSI	42	0%	42							

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VU110	Jet Fans installation	24	50%	12						
VU140	Dampers installation	24	0%	24						
VU180	Cladding Works	25	60%	10						
Plant Room										
E&M Works										
EPR130	E&M Installation	90	87%	12						
EPR150	Equipment Start-up T&C for FSI	6	0%	6						
EPR153	Individual E&M System T&C for FSI	18	0%	18						
EPR155	Integrated T&C for FSI	6	0%	6						
EPR160	Non-Essential T&C	30	0%	30						
VU160	Pressurization Fans Installation	24	50%	12						
Deck Void										
Bridge H1, G1, G2										
DV120	Electrical Installation - Bridge H1	20	0%	20						
DV130	Electrical Installation - Bridge G1	20	0%	20						
DV140	Electrical Installation - Bridge G2	20	0%	20						
DV150	T&C for Electrical Installation	12	0%	12						
TD1, TD2, RB_W										
DV190	Electrical Installation - Bridge TD1	20	0%	20						
DV200	Electrical Installation - Bridge TD2	20	66.67%	7						
Approach Roads										
Under Portions IX, XI, XX										
AR130	Cabling works - Portion IX	40	0%	40						
AR133	Cabling works - Portion XI	40	5%	38						
AR140	Road lighting installation & termination - Portion IX	25	0%	25						
AR145	Road lighting installation & termination - Portion XI	25	0%	25						
Under Portion X										
AR190	Road lighting installation & termination in portion X	90	50%	45						
AR200	T&C of Roading Lighting in portion X	30	0%	30						
Key Date 6B - E&M Works for South Vent Duct, Tunnel, and Approach Roads										
E&M Works										
SVD130	Access to Portions IVa	0	0%	0						
Ventilation Ducts										
SVD-1000	Cable Containment Installation	8	0%	8						
SVD-1010	Damper Installation	8	0%	8						
SVD-1020	Cable Laying	8	0%	8						
SVD-1030	Installation T&C	4	0%	4						
Service Gallery										
Ch 7200 - 5000										
TNL-SG1000	Drilling works CH7200 - 5000	12	37.21%	8						
TNL-SG1010	Wall Mounted Pipe Module Installation CH7200 - 5000	30	31.7%	20						
TNL-SG1020	Ceiling Mounted Module Delivery CH7200 - 5000	30	0%	30						
TNL-SG1030	High Level 2nd Fix and Final Fix Installation CH7200 - 5000	46	0%	46						
TNL-SG1040	Cabling Works CH7200 - 5000	29	0%	29						
CH5000 - 3050										
TNL-SG1060	Drilling works CH5000 - 3050	12	55%	5						
TNL-SG1070	Wall Mounted Pipe Module Installation CH5000 - 3050	30	55%	14						
TNL-SG1080	Ceiling Mounted Module Delivery CH5000 - 3050	30	55%	14						

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							Oct	Nov	Dec	2020	
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CH3050 - 2500											
TNL-SG1120	Drilling works CH3050 - 2500	3	30%	2							
TNL-SG1130	Wall Mounted Pipe Module Installation CH3050 - 2500	12	30%	8							
TNL-SG1140	Ceiling Mounted Module Delivery CH3050 - 2500	12	30%	8							
Road Level & OHVD											
Ch 7200 - 5000											
Ch 7200 - 6700											
TNU-RL1770	Bracket fixing on side wall - CH7200 to 6700	8	90%	1							
TNU-RL1800	FH/ HR pipe installation - CH7200 to 6700	8	95%	0							
TNU-RL1880	High level wiring works and remaining High level works in the middle of tunnels - CH7200 to 6700	20	50%	10							
TNU-RL1910	Low level works - FS nicle module - CH7200 to 6700	10	10%	9							
TNU-RL1930	Low level works - FS nicle connection - CH7200 to 6700	10	0%	10							
TNU-RL1940	Final connection to small powers - CH7200 to 6700	10	0%	10							
TNU-RL1970	Cladding works - CH7200 to 6700	13	0%	13							
Ch 6700 - 6100											
TNU-RL1000	Bracket fixing on side wall - CH6700 to 6100	10	97%	0							
TNU-RL1010	Lighting in the middle of tunnels - CH6700 to 6100	9	98%	0							
TNU-RL1030	Cabling Works on Brackets - CH6700 to 6100	17	78%	4							
TNU-RL1040	MSFD delivery in OHVD - CH6700 to 6100	11	95%	1							
TNU-RL1050	MSFD installation works in OHVD - CH6700 to 6100	11	95%	1							
TNU-RL1060	High level wiring works and remaining High level works in the middle of tunnels - CH6700 to 6100	24	40%	14							
TNU-RL1070	Low level works - FS nicle module - CH6700 to 6100	12	0%	12							
TNU-RL1080	Low level works - FS nicle connection - CH6700 to 6100	12	0%	12							
TNU-RL1090	Final connection to small powers - CH6700 to 6100	10	0%	10							
TNU-RL1100	Cladding works - CH6700 to 6100	15	0%	15							
Ch 6100 - 5600											
TNU-RL1110	Bracket fixing on side wall - CH6100 to 5600	8	96.99%	0							
TNU-RL1140	Cabling Works on Brackets - CH6100 to 5600	14	82%	3							
TNU-RL1170	High level wiring works and remaining High level works in the middle of tunnels - CH6100 to 5600	20	40%	12							
TNU-RL1180	Low level works - FS nicle module - CH6100 to 5600	10	0%	10							
TNU-RL1190	Low level works - FS nicle connection - CH6100 to 5600	10	0%	10							
TNU-RL1200	Final connection to small powers - CH6100 to 5600	10	0%	10							
TNU-RL1210	Cladding works - CH6100 to 5600	13	0%	13							
CH 5600 - 5000											
TNU-RL1220	Bracket fixing on side wall - CH5600 to 5000	10	95%	1							
TNU-RL1250	Cabling Works on Brackets - CH5600 to 5000	17	82%	3							
TNU-RL1280	High level wiring works and remaining High level works in the middle of tunnels - CH5600 to 5000	24	40%	14							
TNU-RL1290	Low level works - FS nicle module - CH5600 to 5000	12	0%	12							
TNU-RL1300	Low level works - FS nicle connection - CH5600 to 5000	12	0%	12							
TNU-RL1310	Final connection to small powers - CH5600 to 5000	10	0%	10							
TNU-RL1320	Cladding works - CH5600 to 5000	15	0%	15							
CH5000 - 3050											
CH5000 - 4500											
TNU-RL1780	Bracket fixing on side wall - CH5000 to 4500	8	90%	1							
TNU-RL1850	Cabling Works on Brackets - CH5000 to 4500	14	93%	1							
TNU-RL1860	MSFD delivery in OHVD - CH5000 to 4500	9	98%	0							
TNU-RL1890	MSFD installation works in OHVD - CH5000 to 4500	9	98%	0							
TNU-RL1900	High level wiring works and remaining High level works in the middle of tunnels - CH5000 to 4500	20	35%	13							

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							Oct	Nov	Dec	2020
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TNU-RL1920	Low level works - FS nicle module - CH5000 to 4500	10	0%	10						
TNU-RL1950	Low level works - FS nicle connection - CH5000 to 4500	10	0%	10						
TNU-RL1960	Final connection to small powers - CH5000 to 4500	10	0%	10						
CH4500 - 4000										
TNU-RL1330	Bracket fixing on side wall - CH4500 to 4000	8	90%	1						
TNU-RL1360	Cabling Works on Brackets - CH4500 to 4000	14	90%	1						
TNU-RL1390	High level wiring works and remaining High level works in the middle of tunnels - CH4500 to 4000	20	35%	13						
TNU-RL1400	Low level works - FS nicle module - CH4500 to 4000	10	0%	10						
TNU-RL1410	Low level works - FS nicle connection - CH4500 to 4000	10	0%	10						
CH4000 - 3500										
TNU-RL1440	Bracket fixing on side wall - CH4000 to 3500	8	91%	1						
TNU-RL1470	Cabling Works on Brackets - CH4000 to 3500	14	92%	1						
TNU-RL1480	MSFD delivery in OHVD - CH4000 to 3500	9	80%	2						
TNU-RL1490	MSFD installation works in OHVD - CH4000 to 3500	9	80%	2						
TNU-RL1500	High level wiring works and remaining High level works in the middle of tunnels - CH4000 to 3500	20	35%	13						
CH3500 - 3050										
TNU-RL1550	Bracket fixing on side wall - CH3500 to 3050	8	89%	1						
TNU-RL1570	FH/ HR pipe installation - CH3500 to 3050	8	96%	0						
TNU-RL1580	Cabling Works on Brackets - CH3500 to 3050	14	58.99%	6						
TNU-RL1590	MSFD delivery in OHVD - CH3500 to 3050	9	38%	6						
TNU-RL1600	MSFD installation works in OHVD - CH3500 to 3050	9	38%	6						
TNU-RL1610	High level wiring works & remaining High level works in the tunnel middle - CH3500 to 3050	20	30%	14						
CH3050 - 2500										
TNU-RL1660	Bracket fixing on side wall - CH3050 to 2500	8	0%	8						
TNU-RL1670	Lighting in the middle of tunnels - CH3050 to 2500	8	0%	8						
TNU-RL1680	FH/ HR pipe installation - CH3050 to 2500	4	0%	4						
TNU-RL1690	Cabling Works on Brackets - CH3050 to 2500	11	0%	11						
Other Works										
TNU-OW1000	HV Cabling Works in Tunnels	48	80%	10						
TNU-OW1010	FR enclosure installation	42	0%	42						
T&C										
TNL-10TC1010	Permanent power available to tunnels from NVB	0	0%	0						
Key Date 7 - E&M Works for Satellite Control Building and Kiosks S1&S2										
E&M Works for Satellite Control Building										
E&M Works										
Installation										
G/F										
SCB-EMGF10	ABWF Works ready for E&M Mobilization to General Areas - G/F	0	0%	0						
SCB-EMGF10	E&M Installation - 1st fix - G/F	30	0%	30						
SCB-EMGF10	E&M Installation - 2nd fix - G/F	30	0%	30						
SCB-EMGF10	ABWF Works ready for E&M Mobilization to Generator Room & Fuel Tank Room - G/F	0	0%	0						
SCB-EMGF10	E&M Installation - Generator Room & Fuel Tank Room - G/F	70	0%	70						
SCB-EMGF10	ABWF Works ready for E&M Mobilization to LV Switch Room - G/F	0	0%	0						
SCB-EMGF10	E&M Installation - LV Switch Room - G/F	60	0%	60						
SCB-EMGF11	E&M Installation - CLP Tx Room - G/F	18	50%	9						
SCB-EMGF11	Inspection & Handover to CLP	6	0%	6						
SCB-EMGF11	Installation by CLP - CLP Tx Room - G/F	68	0%	68						
SCB-EMGF11	ABWF Works ready for E&M Mobilization to FS Plant Rooms - G/F	0	0%	0						

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SCB-EMGF11	E&M Installation - FS Plant Rooms - G/F	80	0%	80						
SCB-EMGF11	ABWF Works ready for E&M Mobilization to PD Plant Rooms - G/F	0	0%	0						
SCB-EMGF12	E&M Installation - PD Plant Rooms - G/F	90	0%	90						
1F										
SCB-EM1F10	ABWF Works ready for E&M Mobilization to General Areas - 1/F	0	0%	0						
SCB-EM1F10	E&M Installation - 1st fix - 1/F	30	0%	30						
SCB-EM1F10	E&M Installation - 2nd fix - 1/F	30	0%	30						
SCB-EM1F10	E&M Installation - Final fix - 1/F	30	0%	30						
SCB-EM1F10	ABWF Works ready for E&M Mobilization to Computer Room (TCSS) - 1/F	0	0%	0						
SCB-EM1F10	E&M Installation - Computer Room (TCSS) - 1/F	60	0%	60						
SCB-EM1F10	ABWF Works ready for E&M Mobilization to EL Room - 1/F	0	0%	0						
SCB-EM1F10	E&M Installation - EL Room - 1/F	90	0%	90						
SCB-EM1F10	ABWF Works ready for E&M Mobilization to FS Plant Rooms - 1/F	0	0%	0						
SCB-EM1F11	E&M Installation - FS Plant Rooms - 1/F	85	0%	85						
SCB-EM1F11	ABWF Works ready for E&M Mobilization to Elv Plant Room - 1/F	0	0%	0						
SCB-EM1F11	E&M Installation - ELV Plant Room - 1/F	70	0%	70						
Roof										
SCB-EMRF10	ABWF Works ready for E&M Mobilization to R/F	0	0%	0						
SCB-EMRF10	E&M Installation - 1st fix - R/F	25	0%	25						
SCB-EMRF10	ABWF Works ready for E&M Mobilization to FS Plant Rooms	0	0%	0						
SCB-EMRF10	E&M Installation - FS Plant Rooms	75	0%	75						
Lift Installation (L01)										
SCB-LF1010	Access to lift shaft and lift machine room	0	0%	0						
SCB-LF1020	Lift & lift machine room installation	75	0%	75						
Kiosk S2										
S2120	Structure	30	0%	30						
S2130	ABWF Works (Door, windows, tiles)	15	0%	15						
S2140	E&M works	36	0%	36						
Key Date 6C - E&M Works for South Ventilation Building										
SVB-SEM1000	SEM Drawings ready for Structural Works for SVB	0	0%	0						
Installation										
TVF Installation										
NB-SVB-TVF-1										
SVB-TVF2000	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6						
SVB-TVF2010	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7						
SVB-TVF2020	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2						
SVB-TVF2030	Leakage test for TVF	8	0%	8						
NB-SVB-TVF-2										
SVB-TVF2040	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6						
SVB-TVF2050	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7						
SVB-TVF2060	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2						
SVB-TVF2070	Leakage test for TVF	8	0%	8						
NB-SVB-TVF-3										
SVB-TVF2080	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6						
SVB-TVF2090	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7						
SVB-TVF2100	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2						
SVB-TVF2110	Leakage test for TVF	8	0%	8						
NB-SVB-TVF-4										

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SVB-TVF2120	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2130	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	8	0%	8							
SVB-TVF2140	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2150	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-1											
SVB-TVF2160	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2170	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2180	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2190	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-2											
SVB-TVF2200	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2210	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2220	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2230	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-3											
SVB-TVF2240	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2250	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2260	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2270	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-4											
SVB-TVF2280	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2290	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	8	0%	8							
SVB-TVF2300	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2310	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-5											
SVB-TVF2320	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2330	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2340	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2350	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-6											
SVB-TVF2360	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2370	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2380	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2390	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-7											
SVB-TVF2400	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2410	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2420	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2430	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-8											
SVB-TVF2440	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2450	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2460	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							
SVB-TVF2470	Leakage test for TVF	8	0%	8							
SB-SVB-TVF-9											
SVB-TVF2480	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6							
SVB-TVF2490	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	7	0%	7							
SVB-TVF2500	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2							

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							Oct	Nov	Dec	Jan		
SVB-TVF2510	Leakage test for TVF	8	0%	8								
SB-SVB-TVF-10												
SVB-TVF2520	Silencer, splitter and duct installation - Upper Attenuator Room (1/F)	6	0%	6								
SVB-TVF2530	Damper/Silencer and duct installation - Lower Attenuator Room(B1/F)	8	0%	8								
SVB-TVF2540	Ventilation fan and duct installation - Fan Room (G/F)	2	0%	2								
SVB-TVF2550	Leakage test for TVF	8	0%	8								
B2/F												
SVB-EMB21010	E&M Installation - 1st fix - B2/F	25	90%	3								
SVB-EMB21020	E&M Installation - 2nd fix - B2/F	25	0%	25								
SVB-EMB21030	E&M Installation - Final fix - B2/F	25	0%	25								
SVB-EMB21060	E&M Installation - Electrical Plant Rooms- B2/F	40	0%	40								
SVB-EMB21080	E&M Installation - MVAC Palnt Rooms - B2/F	60	0%	60								
SVB-EMB21100	E&M Installation - FS Plant Rooms - B2/F	45	0%	45								
SVB-EMB21110	E&M Installation - PD Palnt Rooms - B2/F	60	0%	60								
B1/F												
SVB-EMB11010	E&M Installation - 1st fix - B1/F	25	52%	12								
SVB-EMB11020	E&M Installation - 2nd fix - B1/F	25	0%	25								
SVB-EMB11030	E&M Installation - Final fix - B1/F	25	0%	25								
SVB-EMB11060	E&M Installation - Electrical Plant Rooms - B1/F	40	0%	40								
SVB-EMB11080	E&M Installation - MVAC Plant Rooms - B1/F	60	0%	60								
SVB-EMB11100	E&M Installation - FS Plant Rooms - B1/F	48	0%	48								
SVB-EMB11120	E&M Installation - Elv Plant Rooms - B1/F	48	0%	48								
G/F												
SVB-EMGF1010	E&M Installation - 1st fix - G/F	25	10%	23								
SVB-EMGF1020	E&M Installation - 2nd fix - G/F	25	0%	25								
SVB-EMGF1030	E&M Installation - Final fix - G/F	25	0%	25								
SVB-EMGF1050	E&M Installation - CLPP HV Switch Room - G/F	12	0%	12								
SVB-EMGF1060	Inspection & Handover to CLP	5	0%	5								
SVB-EMGF1070	Installation by CLP - CLPP HV Switch Room - G/F	24	0%	24								
SVB-EMGF1080	Wiring Inspection with CLP	2	0%	2								
SVB-EMGF1090	Power On Energization by CLP	0	0%	0								
SVB-EMGF1120	E&M Installation - Genset Room & Fuel Tank Rooms - G/F	40	0%	40								
SVB-EMGF1140	E&M Installation - Electrical Plant Rooms - G/F	40	0%	40								
SVB-EMGF1160	E&M Installation - MVAC Plant Rooms - G/F	40	0%	40								
SVB-EMGF1180	E&M Installation - FS Plant Rooms - G/F	40	0%	40								
SVB-EMGF1200	E&M Installation - PD Plant Rooms - G/F	40	0%	40								
SVB-EMGF1220	E&M Installation - Elv Plant Rooms - G/F	48	0%	48								
1/F												
SVB-EM1F1000	E&M access to 1/F	0	0%	0								
SVB-EM1F1010	E&M Installation - 1st fix - 1/F	25	0%	25								
SVB-EM1F1020	E&M Installation - 2nd fix - 1/F	25	0%	25								
SVB-EM1F1030	E&M Installation - Final fix - 1/F	25	0%	25								
SVB-EM1F1050	E&M Installation - 11kV Switch & Tx Room 1 - 1/F	41	0%	41								
SVB-EM1F1110	E&M Installation - 11kV Switch & Tx Room 2 - 1/F	41	0%	41								
SVB-EM1F1170	E&M Installation - LV Switch Room - 1/F	41	0%	41								
SVB-EM1F1180	Cable laying - from 1/F	16	0%	16								
SVB-EM1F1190	Sub-Circuit Power On - LV Switch Room - 1/F	0	0%	0								
SVB-EM1F1220	E&M Installation - Electrical Plant Rooms - 1/F	50	0%	50								

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SVB-EM1F1240	E&M Installation - MVAC Plant Rooms - 1/F	60	0%	60							
SVB-EM1F1260	E&M Installation - FS Plant Rooms - 1/F	50	0%	50							
SVB-EM1F1280	E&M Installation - ELV Plant Rooms - 1/F	50	0%	50							
2/F											
SVB-EM2F1000	E&M access to 2F	0	0%	0							
SVB-EM2F1010	E&M Installation - 1st fix - 2/F	25	0%	25							
SVB-EM2F1020	E&M Installation - 2nd fix - 2/F	25	0%	25							
SVB-EM2F1030	E&M Installation - Final fix - 2/F	25	0%	25							
SVB-EM2F1060	E&M Installation - Electrical Plant Rooms - 2/F	40	0%	40							
SVB-EM2F1080	E&M Installation - MVAC Plant Rooms - 2/F	40	0%	40							
SVB-EM2F1100	E&M Installation - FS Plant Rooms - 2/F	40	0%	40							
SVB-EM2F1120	E&M Installation - PD Plant Rooms - 2/F	40	0%	40							
Lift Installation (L01 & L02)											
SVB-LF1010	Access to lift shaft and lift machine room	0	0%	0							
SVB-LF1020	Lift & lift machine room installation	50	0%	50							
SVB-LF1030	Testing & commissioning	13	0%	13							
Testing & Commissioning											
SVB-TC1000	T&C for Subcircuit Power On	6	0%	6							
SVB-TC1010	T&C for DG Licence	4	0%	4							
SVB-TC1020	T&C for TVF	25	0%	25							
Key Date 6A - E&M Works for Approach Roads at North Side											
Approach Roads											
EAR110	Access Portions Vb, Vd, XVIII	0	0%	0							
EAR120	Road Lighting Cabling	50	0%	50							
EAR130	Road Ligting Installation & Termination	50	0%	50							
Tunnel											
EAR265	Access Portions Va	0	0%	0							
CH7200 - 7300											
TNU-RL2000	Bracket fixing on side wall - CH7200 to 7300	4	0%	4							
TNU-RL2010	Lighting in the middle of tunnels - CH7200 to 7300	9	0%	9							
TNU-RL2020	FH/ HR pipe installation - CH7200 to 7300	4	0%	4							
TNU-RL2040	MSFD delivery in OHVD - CH7200 to 7300	4	0%	4							
TNU-RL2050	MSFD installation works in OHVD - CH7200 to 7300	4	0%	4							
Key Date 10 - FSD Building Structure & E&M Works											
ABWF Works											
AFSD1000	Blockwork Walls	25	90%	3							
AFSD1010	Door and Window Frames	19	0%	19							
AFSD1020	ABWF Works to Plant Rooms G/F	56	50%	28							
AFSD1021	ABWF Works to Plant Rooms 1/F	56	0%	56							
AFSD1030	ABWF Works to Office and Corridors G/F	124	30%	87							
AFSD1031	ABWF Works to Office and Corridors 1/F	124	0%	124							
AFSD1040	ABWF Works to Toilets G/F	136	30%	95							
AFSD1050	Waterproofing and Roofing	52	0%	52							
AFSD1060	External Cladding and Wall Plastering	101	10%	91							
E&M Works											
Installation											
G/F											
FSDB-EMGF10	ABWF Works ready for E&M Mobilization to General Areas - G/F	0	0%	0							

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							Oct	Nov	Dec	2020
										Jan
FSDB-EMGF101	E&M Installation - 1st fix - G/F	40	0%	40						
FSDB-EMGF102	E&M Installation - 2nd fix - G/F	40	0%	40						
FSDB-EMGF104	ABWF Works ready for E&M Mobilization to CLP TX Room - G/F	0	0%	0						
FSDB-EMGF105	E&M Installation - CLP Tx Room - G/F	18	0%	18						
FSDB-EMGF106	Inspection & Handover to CLP	6	0%	6						
FSDB-EMGF107	Installation by CLP - CLP Tx Room - G/F	82	0%	82						
FSDB-EMGF111	ABWF Works ready for E&M Mobilization to Electrical Plant Rooms - G/F	0	0%	0						
FSDB-EMGF112	E&M Installation - Electrical Plant Rooms - G/F	60	0%	60						
FSDB-EMGF113	ABWF Works ready for E&M Mobilization to FS Plant Rooms - G/F	0	0%	0						
FSDB-EMGF114	E&M Installation - FS Plant Rooms - G/F	50	0%	50						
FSDB-EMGF115	ABWF Works ready for E&M Mobilization to Elv Plant Rooms - G/F	0	0%	0						
FSDB-EMGF116	E&M Installation - Elv Plant Rooms - G/F	50	0%	50						
1/F										
FSDB-EM1F100	ABWF Works ready for E&M Mobilization to General Areas - 1/F	0	0%	0						
FSDB-EM1F101	E&M Installation - 1st fix - 1/F	40	0%	40						
FSDB-EM1F104	ABWF Works ready for E&M Mobilization to Emergency Generator & Fuel Tank Rooms - 1/F	0	0%	0						
FSDB-EM1F105	E&M Installation - Emergency Generator & Fuel Tank Rooms - 1/F	60	0%	60						
FSDB-EM1F106	ABWF Works ready for E&M Mobilization to LV Switch Room - 1/F	0	0%	0						
FSDB-EM1F107	E&M Installation - LV Switch Room - 1/F	55	0%	55						
FSDB-EM1F111	ABWF Works ready for E&M Mobilization to FS Plant Rooms - 1/F	0	0%	0						
FSDB-EM1F112	E&M Installation - FS Plant Rooms - 1/F	60	0%	60						
FSDB-EM1F113	ABWF Works ready for E&M Mobilization to PD Plant Rooms - 1/F	0	0%	0						
FSDB-EM1F114	E&M Installation - PD Plant Rooms - 1/F	60	0%	60						
Roof										
FSDB-EMRF100	ABWF Works ready for E&M Mobilization to Roof	0	0%	0						
FSDB-EMRF101	E&M Installation - 1st fix - Roof	20	0%	20						
FSDB-EMRF102	E&M Installation - 2nd fix - Roof	20	0%	20						
Key Date 7A - E&M Works for Approach Roads at South Side										
Tunnel										
T&C										
TNL-10TC1000	Permanent power available to tunnels from SVB	0	0%	0						
Key Date 9 - C&ED Building & E&M Works										
Building Structure										
CED250	Third Floor	32	100%	0						
CED260	Roof Slab	30	0%	30						
CED270	Top Roof	14	0%	14						
ABWF Works										
ACED1000	Blockwork Walls	54	0%	54						
ACED1010	Door and Window Frames	48	0%	48						
ACED1020	ABWF Works to Plant Rooms G/F	60	0%	60						
ACED1021	ABWF Works to Plant Rooms 1/F	60	0%	60						
ACED1022	ABWF Works to Plant Rooms 2/F	60	0%	60						
ACED1023	ABWF Works to Plant Rooms 3/F	60	0%	60						
ACED1030	ABWF Works to Office and Corridors G/F	133	0%	133						
ACED1031	ABWF Works to Office and Corridors 1/F	118	0%	118						
ACED1032	ABWF Works to Office and Corridors 2/F	130	0%	130						
ACED1033	ABWF Works to Office and Corridors 3/F	92	0%	92						
ACED1040	ABWF Works to Toilets G/F	142	0%	142						

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							Oct	Nov	Dec	Jan	
ACED1041	ABWF Works to Toilets 2/F	142	0%	142							
ACED1042	ABWF Works to Toilets 3/F	98	0%	98							
ACED1050	Waterproofing and Roofing	50	0%	50							
ACED1060	External Cladding and Wall Plastering	97	0%	97							
E&M Works											
Installation											
C&EDB-GF0001	E&M cast-in Installation	90	80%	18							
G/F											
C&EDB-GF1000	ABWF Works ready for E&M Mobilization to General Areas - G/F	0	0%	0							
C&EDB-GF1010	E&M Installation - 1st fix - G/F	40	0%	40							
C&EDB-GF1020	E&M Installation - 2nd fix - G/F	40	0%	40							
C&EDB-GF1040	ABWF Works ready for E&M Mobilization to CLP Tx Room - G/F	0	0%	0							
C&EDB-GF1050	E&M Installation - CLP Tx Room - G/F	18	0%	18							
C&EDB-GF1060	Inspection & Handover to CLP	6	0%	6							
C&EDB-GF1070	Installation by CLP - CLP Tx Room - G/F	82	0%	82							
C&EDB-GF1110	ABWF Works ready for E&M Mobilization to Generator & Fuel Tank Rooms - G/F	0	0%	0							
C&EDB-GF1120	E&M Installation - Generator & Fuel Tank Rooms - G/F	90	0%	90							
C&EDB-GF1130	ABWF Works ready for E&M Mobilization to FS Plant Rooms - G/F	0	0%	0							
C&EDB-GF1140	E&M Installation - FS Plant Rooms - G/F	90	0%	90							
C&EDB-GF1150	ABWF Works ready for E&M Mobilization to Elv Plant Rooms - G/F	0	0%	0							
C&EDB-GF1160	E&M Installation - Elv Plant Rooms - G/F	90	0%	90							
1/F											
C&EDB-1F1000	ABWF Works ready for E&M Mobilization to General Areas - 1/F	0	0%	0							
C&EDB-1F1010	E&M Installation - 1st fix - 1/F	40	0%	40							
C&EDB-1F1040	ABWF Works ready for E&M Mobilization to LV Switch Room - 1/F	0	0%	0							
C&EDB-1F1050	E&M Installation - LV Switch Room - 1/F	60	0%	60							
C&EDB-1F1080	ABWF Works ready for E&M Mobilization to Electrical Plant Rooms - 1/F	0	0%	0							
C&EDB-1F1090	E&M Installation - Electrical Plant Rooms - 1/F	90	0%	90							
2/F											
C&EDB-2F1000	ABWF Works ready for E&M Mobilization to General Areas - 2/F	0	0%	0							
C&EDB-2F1010	E&M Installation - 1st fix - 2/F	40	0%	40							
C&EDB-2F1050	ABWF Works ready for E&M Mobilization to Electrical Plant Rooms - 2/F	0	0%	0							
C&EDB-2F1060	E&M Installation - Electrical Plant Rooms - 2/F	90	0%	90							
C&EDB-2F1070	ABWF Works ready for E&M Mobilization to FS Plant Rooms - 2/F	0	0%	0							
C&EDB-2F1080	E&M Installation - FS Plant Rooms - 2/F	90	0%	90							
C&EDB-2F1090	ABWF Works ready for E&M Mobilization to Elv Plant Rooms - 2/F	0	0%	0							
C&EDB-2F1100	E&M Installation - Elv Plant Rooms - 2/F	90	0%	90							
Key Date 11 - Landscape Soft Works & Trees Protection											
Trees Protection											
SL198	Protection Existing Trees & Submit Report with Photographic Record No.9	41	17.07%	34							
SL199	Protection Existing Trees & Submit Report with Photographic Record No.10	41	0%	41							
Key Date 8 - All Works for Tunnel Commissioning & Opening											
Petrol Filling Station											
Structure											
PS120	Excavation	20	0%	20							
PS130	Footing	20	0%	20							
PS140	Petrol Filling Station Roof	14	0%	14							
PS150	Structure for Petrol Filling Station	36	0%	36							

CONTRACT NO. HY2017/10

NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2019

P 23/24

Date	Revision	Check...	Appro...
20-Oct-19			

ID	Activity	Duration (Days)	% Comp	Remaining Duration	Start	Finish	2019			
							Oct	Nov	Dec	2020
										Jan
PS160	Underground Fuel Tank Structure	36	0%	36						
Statutory Inspections and approvals										
Administration Building										
ADB-SI1020	Submit WWO46 Part IV for FS	0	100%	0						
ADB-SI1080	DG Submission & Vent/425 to FSD	0	100%	0						
ADB-SI1090	DG Inspection by FSD	36	0%	36						
ADB-SI1100	Obtain DG Licence	0	0%	0						
Maintenance Depot										
MD-SI1010	DG Submission & Vent/425 to FSD	0	100%	0						
MD-SI1020	DG Inspection by FSD	36	0%	36						
MD-SI1030	Obtain DG Licence	0	0%	0						
MD-SI1050	Submit WWO46 Part IV for FS	0	100%	0						
North Ventilation Building										
NVB-SI1010	DG Submission & Vent/425 to FSD	0	100%	0						
NVB-SI1020	DG Inspection by FSD	36	0%	36						
NVB-SI1030	Obtain DG Licence	0	0%	0						
NVB-SI1090	Submit WWO46 Part IV for PD	0	0%	0						
NVB-SI1100	Submit WWO46 Part IV for FS	0	100%	0						
NVB-SI1110	WSD inspection of Plumbing Installation (PL)	4	0%	4						
NVB-SI1120	WSD inspection of Plumbing Installation (FS)	4	0%	4						
NVB-SI1130	Water Samples Test	24	0%	24						
NVB-SI1135	Obtain Water Certificate and water supply connection - FS	4	0%	4						
Underpass & Plant Room										
VUP-SI1060	Submit WWO46 Part IV for FS	0	0%	0						
VUP-SI1080	WSD inspection of Plumbing Installation (FS)	4	0%	4						
VUP-SI1095	Obtain Water Certificate and water supply connection - FS	4	0%	4						
Toll Control Building & Toll Collector Subway										
TCB-SI1010	DG Submission & Vent/425 to FSD	0	100%	0						
South Ventilation Building										
SVB-SI1010	DG Submission & Vent/425 to FSD	0	0%	0						
SVB-SI1020	DG Inspection by FSD	24	0%	24						
SVB-SI1090	Submit WWO46 Part IV for PD	0	0%	0						
SVB-SI1110	WSD inspection of Plumbing Installation (PL)	4	0%	4						

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NORTHERN TUNNEL CONNECTION BUILDING E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2019

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Date	Revision	Check...	Appro...
20-Oct-19			

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

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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	
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		✓

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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	
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		✓
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		✓

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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	
6.10	-	All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/ design and operation	Design Consultant/ Contractor	TM-EIAO	Y		Y	N/A
6.10	Section 11	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
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		✓

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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	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		✓
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		✓

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

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Northern Connection Tunnel Buildings, Electrical and Mechanical Works
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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	
		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									

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

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						D	C	O	
10.9	7.6	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006 (CM10)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Re-vegetation of affected woodland/shrubland with native species (OM1)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by AFCD/HyD/L CSD
10.9	7.6	Tall buffer screen tree / shrub / climber planting should be incorporated to soften hard engineering structures and facilities (OM2)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by AFCD/HyD/L CSD
10.9	7.6	Streetscape elements (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the local context, and minimises potential negative landscape and visual impacts. Lighting units should be directional and minimise unnecessary light spill (OM3)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by HyD/LCSD
10.9	7.6	Structure, ornamental tree / shrub / climber planting should be provided along roadside amenity strips, central dividers and newly formed slopes to enhance the townscape quality and further greenery enhancement (OM4)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by HyD/LCSD
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by HyD

*** Remarks:**

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

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Appendix D

Summary of Action and Limit Levels

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

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

Table D2 *Actions in the Event of Landfill Gas being Detected in Excavation / Confined Area*

Parameter	Measurement	Action
Oxygen	< 19%	- Ventilate to restore oxygen to > 19%
	< 18%	- Stop work - Evacuate personnel / prohibit entry - Increase ventilation to restore to > 19%
Methane	> 10% LEL (> 0.5% v/v)	- Prohibit hot work - Ventilate to restore methane to < 10% LEL
	> 20% LEL (>1% v/v)	- Stop work - Evacuate personnel / prohibit entry - Increase ventilation to restore to < 10%
Carbon Dioxide	> 0.5%	- Ventilate to restore oxygen to < 0.5%
	> 1.5%	- Stop work - Evacuate personnel / prohibit entry - Increase ventilation to restore to < 0.5%

Appendix E

Event Action Plan

Appendix E1 Event/ Action Plan for Air Quality

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

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

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

8. If the exceedance stops, cease
additional monitoring.

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

Appendix F

EM&A Monitoring Schedule

**HY/2017/10 Tuen Mun - Chek Lap Kok Link - Northern Tunnel Connection Buildings, E&M Works
Tentative Landfill Gas Monitoring Schedule (1 to 31 October 2019)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
			LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
		LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)		

**HY/2017/10 Tuen Mun - Chek Lap Kok Link - Northern Tunnel Connection Buildings, E&M Works
Tentative Landfill Gas Monitoring Schedule (1 to 30 November 2019)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					01-Nov	02-Nov
					LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
03-Nov	04-Nov	05-Nov	06-Nov	07-Nov	08-Nov	09-Nov
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
10-Nov	11-Nov	12-Nov	13-Nov	14-Nov	15-Nov	16-Nov
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
24-Nov	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)

The schedule is subjected to excavation works at Toll Control Building. The schedule will be revised after reviewing the progress of the construction works or due to adverse conditions (safety and weather etc).

Appendix G

Calibration Certificate of Monitoring Equipment



The Safety Company

MSA Corporate Center • 1000 Cranberry Woods Drive • Cranberry Township, PA 16066

www.msasafety.com

Telephone: (800) MSA-2222

ALTAIR5X CERTIFICATE OF CALIBRATION

Serial Number: 145986

Part Number: A-ALT5X-B-N-K-0-0-B-0-T-0-0-0



Factory Calibration Date: 11/26/18

Set Points

	METHANE 0-100.00 %LEL	O2 0-30.00 %VOL				CO2 0-9.99 %VOL
↓ (Low)	10.00 %LEL	19.50 %VOL				0.50 %VOL
↑ (High)	20.00 %LEL	23.00 %VOL				1.50 %VOL
STEL						0.50 %VOL
TWA						1.50 %VOL
Calibrated Value	Methane 1.457 %VOL	O2 15.00 %VOL				CO2 2.502 %VOL
Cylinder Lot #	122- 401167301-1	122- 401167301-1				141- 401019452- 1N461052

Calibration Certification

All applicable inspections, testing, and calibrations were performed using NIST traceable equipment, where available, in accordance with MSA's ISO 9001 Certified Quality System. Each material, component, and/or instrument must be installed, operated and maintained in strict accordance with its labels, cautions, warnings, instructions, and within the limitations stated in the supplied instruction manual. Routine calibration checks, equipment inspections, and applicable preventative maintenance measures must be performed to verify that the materials, components, and/or instruments are operating properly. Failure to perform these tasks on a routine basis, or suggested intervals, with specified equipment or methods, may result in inaccurate readings.

Conformance Statement

MSA certifies that the materials, components, and/or instruments delivered in this shipment conform to all applicable specifications. The items delivered have been processed through the appropriate approved document controlled procedures for Receiving, Manufacturing and Inspection. The materials, components, and/or instruments were inspected, tested, and calibrated, as applicable, per the associated drawings, standards requirements, and/or specifications, and were deemed acceptable by appropriate authorized personnel.

Process Certified By:

Calibrated By: Ca. Mccandless

JIM HOFFMAN
QUALITY ENGINEER

Appendix H

Landfill Gas Monitoring
Results and Graphical
Presentation

Landfill Gas Monitoring Results on Methane Level

Project	Works	Date(yyyy-mm-dd)	Monitoring Location	Time (hh:mm, 24hour)	Results (%)	Action Level (%)	Limit Level (%)		
TMCLKL	HY/2017/10	2019-10-02	Toll Control Building	8:15	0	10.0	20.0		
TMCLKL	HY/2017/10	2019-10-02	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-03	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-03	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-04	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-04	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-05	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-05	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-08	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-08	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-09	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-09	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-10	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-10	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-11	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-11	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-12	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-12	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-14	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-14	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-15	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-15	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-16	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-16	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-17	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-17	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-19	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-19	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-21	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-21	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-22	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-22	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-23	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-23	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-24	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-24	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-25	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-25	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-26	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-26	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-28	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-28	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-29	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-29	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-30	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-30	Toll Control Building	13:15	0				
TMCLKL	HY/2017/10	2019-10-31	Toll Control Building	8:15	0				
TMCLKL	HY/2017/10	2019-10-31	Toll Control Building	13:15	0				
					Average			0	
					Min.			0	
					Max.			0	

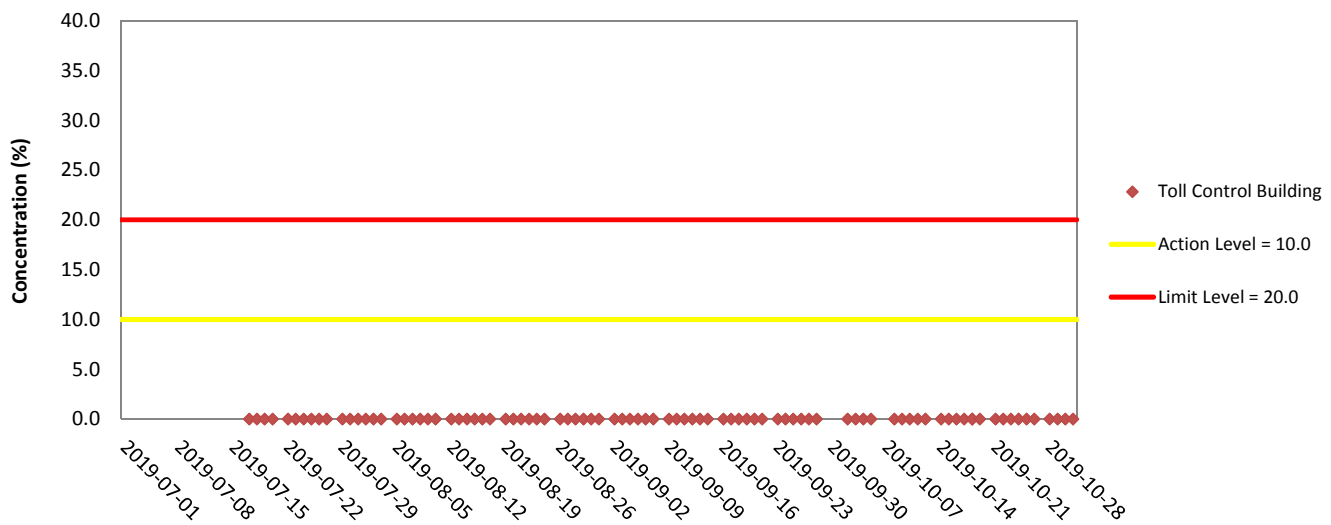
Landfill Gas Monitoring Results on Oxygen Level

Project	Works	Date(yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Results (%)	Action Level (%)	Limit Level (%)		
TMCLKL	HY/2017/10	2019-10-02	Toll Control Building	8:15	20.8	19.0	18.0		
TMCLKL	HY/2017/10	2019-10-02	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-03	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-03	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-04	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-04	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-05	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-05	Toll Control Building	13:15	20.7				
TMCLKL	HY/2017/10	2019-10-08	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-08	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-09	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-09	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-10	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-10	Toll Control Building	13:15	20.9				
TMCLKL	HY/2017/10	2019-10-11	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-11	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-12	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-12	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-14	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-14	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-15	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-15	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-16	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-16	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-17	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-17	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-19	Toll Control Building	8:15	20.7				
TMCLKL	HY/2017/10	2019-10-19	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-21	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-21	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-22	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-22	Toll Control Building	13:15	20.7				
TMCLKL	HY/2017/10	2019-10-23	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-23	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-24	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-24	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-25	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-25	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-26	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-26	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-28	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-28	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-29	Toll Control Building	8:15	20.9				
TMCLKL	HY/2017/10	2019-10-29	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-30	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-30	Toll Control Building	13:15	20.8				
TMCLKL	HY/2017/10	2019-10-31	Toll Control Building	8:15	20.8				
TMCLKL	HY/2017/10	2019-10-31	Toll Control Building	13:15	20.8				
					Average			20.8	
					Min.			20.7	
					Max.			20.9	

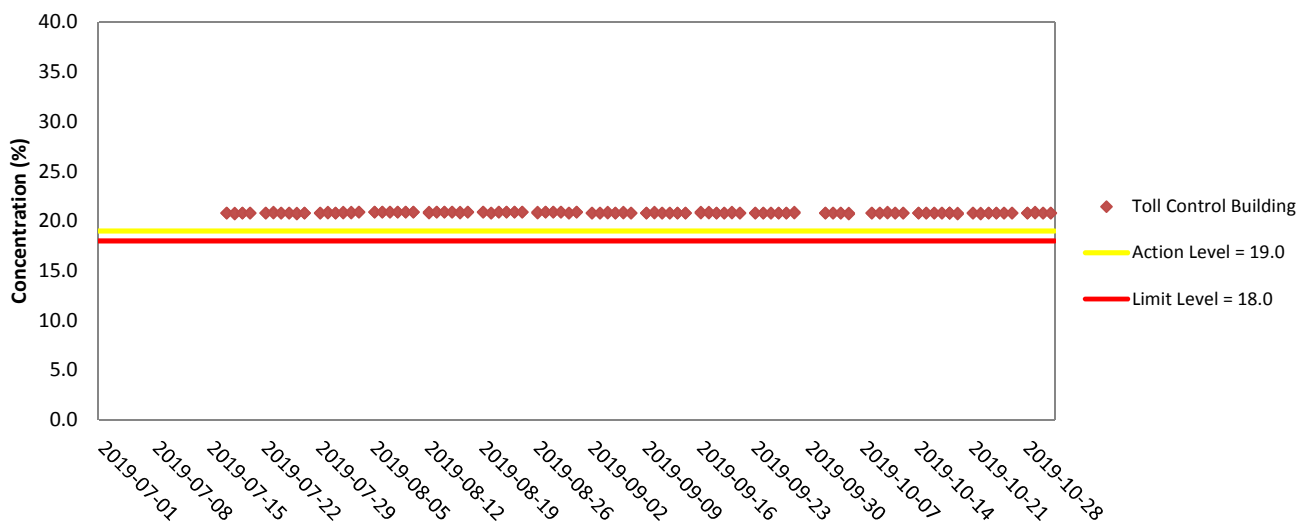
Landfill Gas Monitoring Results on Carbon Dioxide Level

Project	Works	Date(yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Results (%)	Action Level (%)	Limit Level (%)		
TMCLKL	HY/2017/10	2019-10-02	Toll Control Building	8:15	0.03	0.5	1.5		
TMCLKL	HY/2017/10	2019-10-02	Toll Control Building	13:15	0.04				
TMCLKL	HY/2017/10	2019-10-03	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-03	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-04	Toll Control Building	8:15	0.04				
TMCLKL	HY/2017/10	2019-10-04	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-05	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-05	Toll Control Building	13:15	0.04				
TMCLKL	HY/2017/10	2019-10-08	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-08	Toll Control Building	13:15	0.04				
TMCLKL	HY/2017/10	2019-10-09	Toll Control Building	8:15	0.04				
TMCLKL	HY/2017/10	2019-10-09	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-10	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-10	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-11	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-11	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-12	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-12	Toll Control Building	13:15	0.04				
TMCLKL	HY/2017/10	2019-10-14	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-14	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-15	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-15	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-16	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-16	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-17	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-17	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	13:15	0.04				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-18	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-19	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-19	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-21	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-21	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-22	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-22	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-23	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-23	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-24	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-24	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-25	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-25	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-26	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-26	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-28	Toll Control Building	8:15	0.04				
TMCLKL	HY/2017/10	2019-10-28	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-29	Toll Control Building	8:15	0.04				
TMCLKL	HY/2017/10	2019-10-29	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-30	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-30	Toll Control Building	13:15	0.03				
TMCLKL	HY/2017/10	2019-10-31	Toll Control Building	8:15	0.03				
TMCLKL	HY/2017/10	2019-10-31	Toll Control Building	13:15	0.03				
					Average			0.03	
					Min.			0.03	
					Max.			0.04	

Landfill Gas Monitoring Results on Methane Level



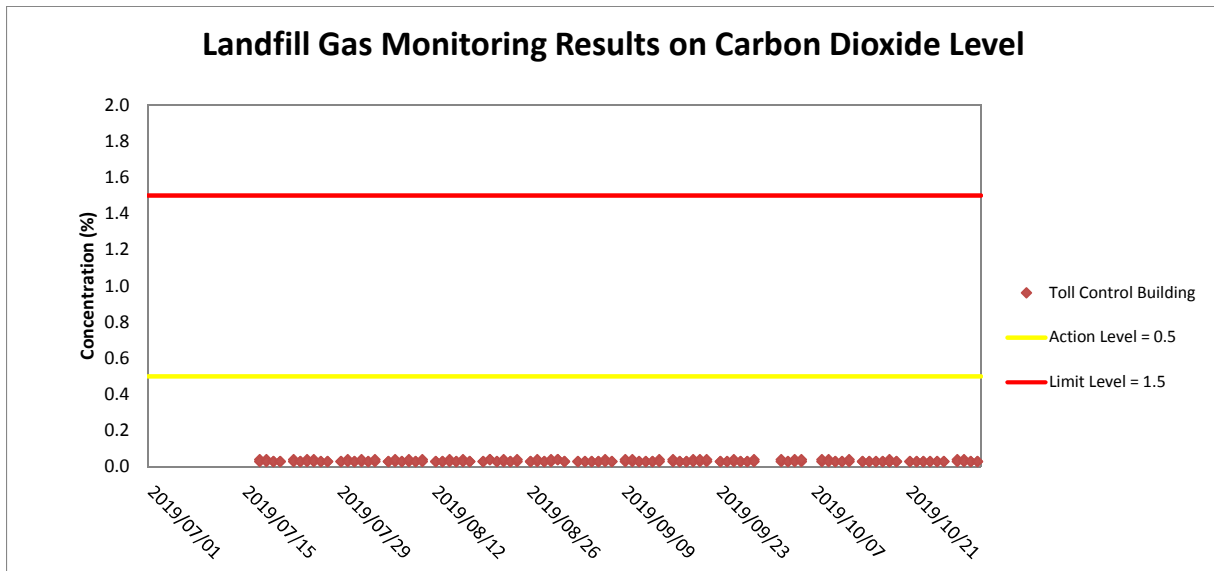
Landfill Gas Monitoring Results on Oxygen Level



Weather condition within the reporting period was sunny to rainy

Major construction works undertaken within the reporting period include

- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll 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 Builders Work and Finishes at Fire Services Department Building;
- Building Structure at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes 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 Toll Booth;
- 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.



Weather condition within the reporting period was sunny to rainy

Major construction works undertaken within the reporting period include

- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll 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 Builders Work and Finishes at Fire Services Department Building;
- Building Structure at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes 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 Toll Booth;
- 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.

Appendix I

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 2019 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation		Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	2.089	-	0.150	-	1.939	-	-	74.680	47.620	-	0.077	-
Feb	2.474	0.008	0.345	-	2.129	-	-	67.230	-	-	0.056	-
Mar	0.079	0.060	-	-	0.079	-	-	73.690	23.310	-	-	-
Apr	0.013	-	-	-	0.013	-	-	56.730	18.020	-	0.056	-
May	-	-	-	-	-	-	-	62.240	-	-	0.056	-
Jun	0.011	0.004	-	-	0.011	-	-	118.070	-	-	0.077	-
SUB-TOTAL	4.666	0.072	0.495	0.000	4.171	0.000	0.000	452.640	88.950	0.000	0.322	0.000
Jul	0.058	-	-	-	0.058	-	-	148.880	-	-	0.070	-
Aug	0.192	0.073	-	-	0.192	-	-	177.240	-	-	-	-
Sep	0.177	-	-	-	0.177	-	-	196.740	-	-	0.063	-
Oct	0.200	0.087	-	-	0.200	-	-	265.560	-	-	0.056	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	5.293	0.232	0.495	0.000	4.798	0.000	0.000	1,241.060	88.950	0.000	0.511	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 J

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

Appendix J1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting month	Total No. recorded since contract commencement
1-Hr TSP	Action	3	30
	Limit	0	4
24-Hr TSP	Action	0	2
	Limit	0	0

Appendix J2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (October 2019)	0	0	0
Total No. received since contract commencement	1	0	0

Email
message

**Environmental
Resources
Management**

To Ramboll Hong Kong Limited (ENPO)

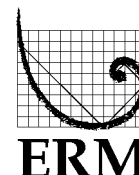
From ERM- Hong Kong, Limited

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

Subject Notification of Exceedance for Air Quality
Impact Monitoring

Date 7 November 2019

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



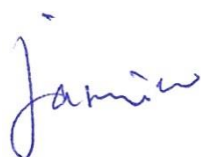
Dear Sir/ Madam,

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

Action Level Exceedance
0463091_14October2019_1hrTSP_Station ASR1

One (1) exceedance was recorded on 14 October 2019.

Regards,



Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2017/10

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0463091_14October2019_1hrTSP_Station ASR1 [Total No. of Exceedances = 1]	
Date	14 October 2019 (Measured) 7 November 2019 (Results obtained from ENPO Website)	
Monitoring Station	ASR1	
Parameter(s) with Exceedance(s)	1- hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	260
Measured Levels	Refer to the attached data sheet (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 14 October 2019 included <ul style="list-style-type: none"> • Electrical and Mechanical Works and Architectural Builders Work and Finishes at Maintenance Depot • Electrical and Mechanical Works and Architectural Builders Work and Finishes at Administration Building • Architectural Builders Work and Finishes at Fire Services Department Building • Building Structure at Customs and Excise Department Building • Electrical and Mechanical Works at North Ventilation Building • Architectural Builders Work and Finishes at Toll Control Building 	

Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Contract, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedance of 1-hr TSP at ASR1 during 9:50-10:50 on 14 October 2019, all 1-hr TSP levels at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • With reference to the recorded wind direction (ranged between 65° and 335°, blowing from a north-easterly and north-westerly direction) and wind speed (0.4 m/s) when exceedance recorded, ASR1 is located downstream to the construction works at Maintenance Depot and in vicinity of Administration Building. However, the construction works at Maintenance Depot and Administration Building were Electrical and Mechanical Works and Architectural Builders Work and Finishes which are considered not major dust generating works. • Dust suppression measures i.e. watering were applied on site nearby Maintenance Depot and Administration Building to prevent dust generation (refer to <i>watering record</i>). • In addition, other construction activities which located upstream of ASR1 and further away included Architectural Builders Work and Finishes at Toll Control Building. These construction works are also considered not major dust generating works. <p>Based on the above, the exceedance is unlikely to be due to the Contract.</p>
Actions Taken / To Be Taken	<p>The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area. The ET will monitor for future trends in exceedances.</p>
Remarks	<p>The monitoring results on 14 October and locations of air quality monitoring stations are attached.</p>

Results of Air Quality Monitoring

Project	Contract	Date (yyyy-mm-dd)	Station	Time	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-10-14	AQMS1	9:00:00	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2019-10-14	AQMS1	10:02:00	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2019-10-14	AQMS1	11:04:00	1-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR1	8:48:00	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR1	9:50:00	1-hour TSP	363	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR1	10:52:00	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR10	8:15:00	1-hour TSP	36	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR10	9:17:00	1-hour TSP	35	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR10	10:19:00	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR5	8:37:00	1-hour TSP	278	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR5	9:39:00	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR5	10:41:00	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR6	8:25:00	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR6	9:27:00	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR6	10:29:00	1-hour TSP	84	ug/m3
TMCLKL	HY/2012/08	2019-10-14	AQMS1	12:06:00	24-hour TSP	72	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR1	11:54:00	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR10	11:21:00	24-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR5	11:43:00	24-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2019-10-14	ASR6	11:31:00	24-hour TSP	65	ug/m3

Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/10/14	0:00	0.4	165
19/10/14	1:00	0.4	336
19/10/14	2:00	0.9	77
19/10/14	3:00	0.9	66
19/10/14	4:00	1.3	65
19/10/14	5:00	0.9	80
19/10/14	6:00	0.4	178
19/10/14	7:00	0.4	187
19/10/14	8:00	0	-
19/10/14	9:00	0.4	65
19/10/14	10:00	0.4	335
19/10/14	11:00	0.9	60
19/10/14	12:00	1.3	64
19/10/14	13:00	0.9	83
19/10/14	14:00	0.9	3
19/10/14	15:00	1.3	30
19/10/14	16:00	1.3	344
19/10/14	17:00	1.3	114
19/10/14	18:00	0.4	123
19/10/14	19:00	0.4	81
19/10/14	20:00	0.9	65
19/10/14	21:00	0.9	86
19/10/14	22:00	1.3	83
19/10/14	23:00	2.7	62

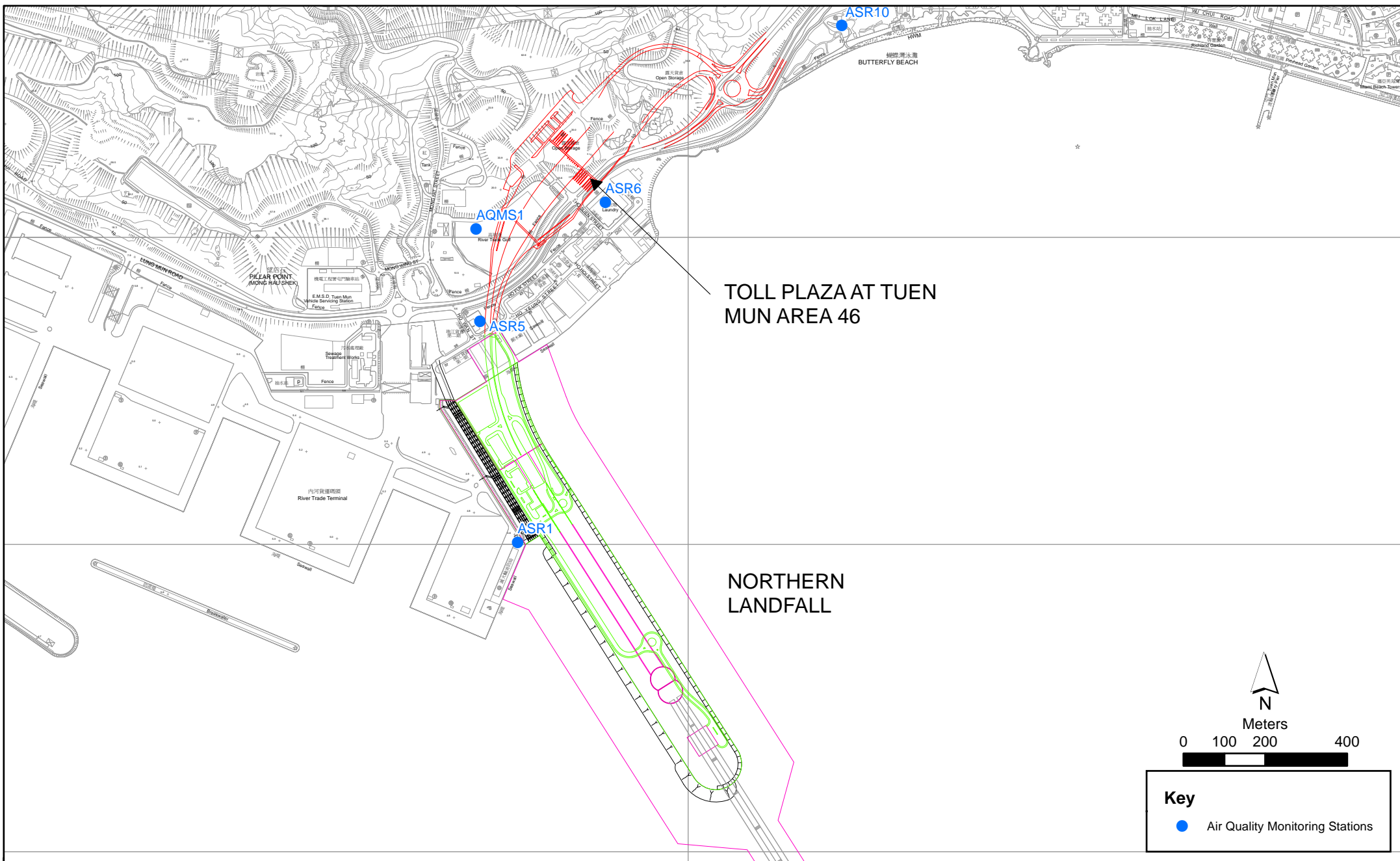
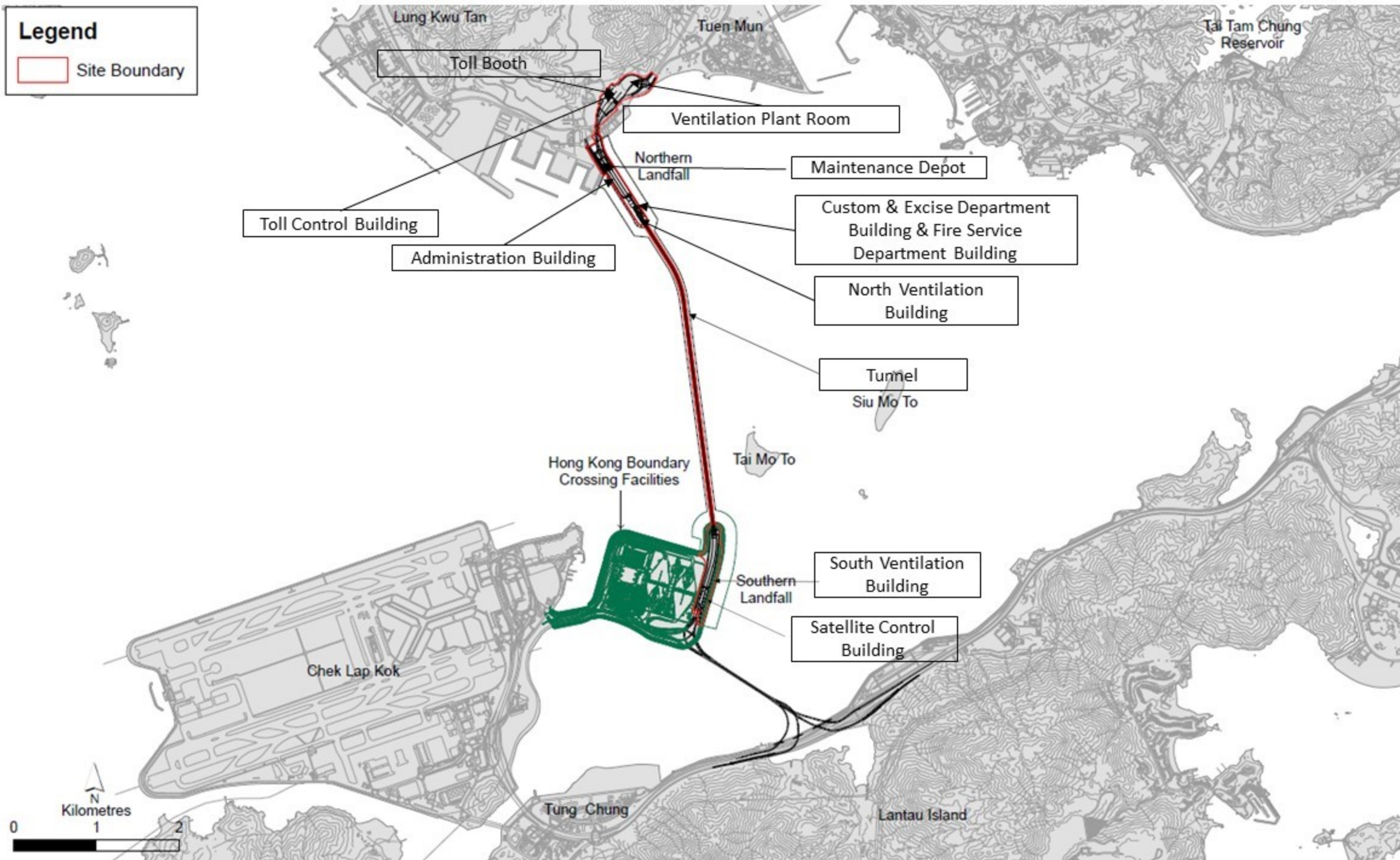


Figure 2.1

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)

Legend

Site Boundary



Appendix A

Watering Record on 14 October 2019

Location

14th Oct

MD & AdB

Period		Time	Sign.
7-8			
8-9	/	8:30	成
9-10	/	9:30	成
10-11	/	10:15	成
11-12	/ /	11:15 11:45	成
12-13	/	12:55	成
13-14	/	13:40	成
14-15	/	14:30	成
15-16	/ /	15:15 15:55	成
16-17	/	16:35	成
17-18	/	17:35	成
18-19			

Email
message

Environmental
Resources
Management

To Ramboll Hong Kong Limited (ENPO)

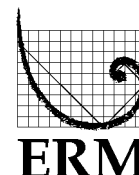
From ERM- Hong Kong, Limited

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

Subject Notification of Exceedance for Air Quality
Impact Monitoring

Date 7 November 2019

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



Dear Sir/ Madam,

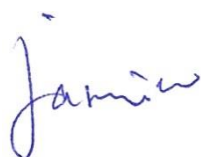
Please find attached the Notification of Exceedance (NOE) of the following
Log no.:

Action Level Exceedance

0463091_17October2019_1hrTSP_Station ASR1
0463091_17October2019_1hrTSP_Station ASR1

Two (2) exceedances were recorded on 17 October 2019.

Regards,



Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2017/10

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0463091_17October2019_1hrTSP_Station ASR1 0463091_17October2019_1hrTSP_Station ASR1 [Total No. of Exceedances = 2]	
Date	17 October 2019 (Measured) 7 November 2019 (Results obtained from ENPO Website)	
Monitoring Station	ASR1	
Parameter(s) with Exceedance(s)	1- hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	260
Measured Levels	Refer to the attached data sheet (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 17 October 2019 included <ul style="list-style-type: none"> • Electrical and Mechanical Works and Architectural Builders Work and Finishes at Maintenance Depot • Electrical and Mechanical Works and Architectural Builders Work and Finishes at Administration Building • Architectural Builders Work and Finishes at Fire Services Department Building • Building Structure at Customs and Excise Department Building • Electrical and Mechanical Works at North Ventilation Building • Architectural Builders Work and Finishes at Toll Control Building 	

Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Contract, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedances of 1-hr TSP at ASR1 during 9:41-10:41 and 10:43-11:43 on 17 October 2019, all 1-hr TSP levels at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • With reference to the recorded wind direction (ranged between 67° and 98°, blowing from a north-easterly direction) and wind speed (ranged between 1.3 and 1.8 m/s) when exceedances recorded, ASR1 is located downstream to the construction works at Maintenance Depot and in vicinity of Administration Building. However, the construction works at Maintenance Depot and Administration Building were Electrical and Mechanical Works and Architectural Builders Work and Finishes which are considered not major dust generating works. • Dust suppression measures i.e. watering were applied on site nearby Maintenance Depot and Administration Building to prevent dust generation (refer to <i>watering record</i>). • In addition, other construction activities which located upstream of ASR1 and further away included Architectural Builders Work and Finishes at Toll Control Building. These construction works are also considered not major dust generating works. <p>Based on the above, the exceedance is unlikely to be due to the Contract.</p>
Actions Taken / To Be Taken	<p>The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area. The ET will monitor for future trends in exceedances.</p>
Remarks	<p>The monitoring results on 17 October and locations of air quality monitoring stations are attached.</p>

Results of Air Quality Monitoring

Project	Contract	Date (yyyy-mm-dd)	Station	Time	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-10-17	AQMS1	8:50:00	1-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2019-10-17	AQMS1	9:52:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2019-10-17	AQMS1	10:54:00	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR1	8:39:00	1-hour TSP	331	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR1	9:41:00	1-hour TSP	354	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR1	10:43:00	1-hour TSP	385	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR10	8:04:00	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR10	9:06:00	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR10	10:08:00	1-hour TSP	68	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR5	8:27:00	1-hour TSP	288	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR5	9:29:00	1-hour TSP	230	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR5	10:31:00	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR6	8:15:00	1-hour TSP	128	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR6	9:17:00	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR6	10:19:00	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2019-10-17	AQMS1	11:56:00	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR1	11:45:00	24-hour TSP	144	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR10	11:10:00	24-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR5	11:33:00	24-hour TSP	100	ug/m3
TMCLKL	HY/2012/08	2019-10-17	ASR6	11:21:00	24-hour TSP	81	ug/m3

Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
19/10/17	0:00	0.4	153
19/10/17	1:00	0.4	108
19/10/17	2:00	0.4	7
19/10/17	3:00	0.4	69
19/10/17	4:00	0.4	183
19/10/17	5:00	0	-
19/10/17	6:00	0.4	111
19/10/17	7:00	1.3	101
19/10/17	8:00	2.2	67
19/10/17	9:00	1.8	84
19/10/17	10:00	1.3	98
19/10/17	11:00	1.8	67
19/10/17	12:00	1.3	98
19/10/17	13:00	1.8	44
19/10/17	14:00	1.3	56
19/10/17	15:00	0.9	74
19/10/17	16:00	0.9	27
19/10/17	17:00	0.9	329
19/10/17	18:00	0.9	345
19/10/17	19:00	0.9	356
19/10/17	20:00	0.9	337
19/10/17	21:00	0.9	351
19/10/17	22:00	1.3	335
19/10/17	23:00	1.3	339

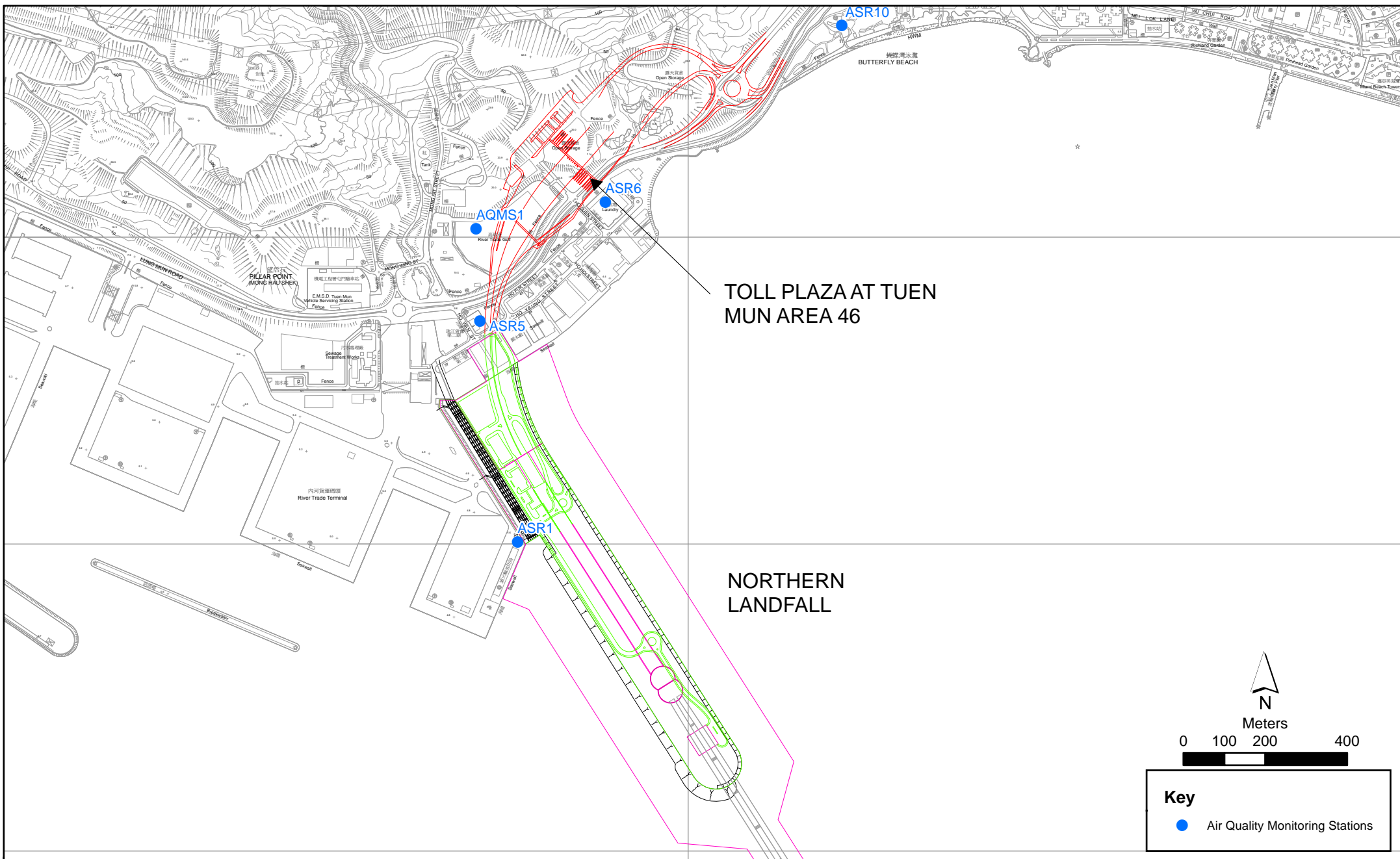
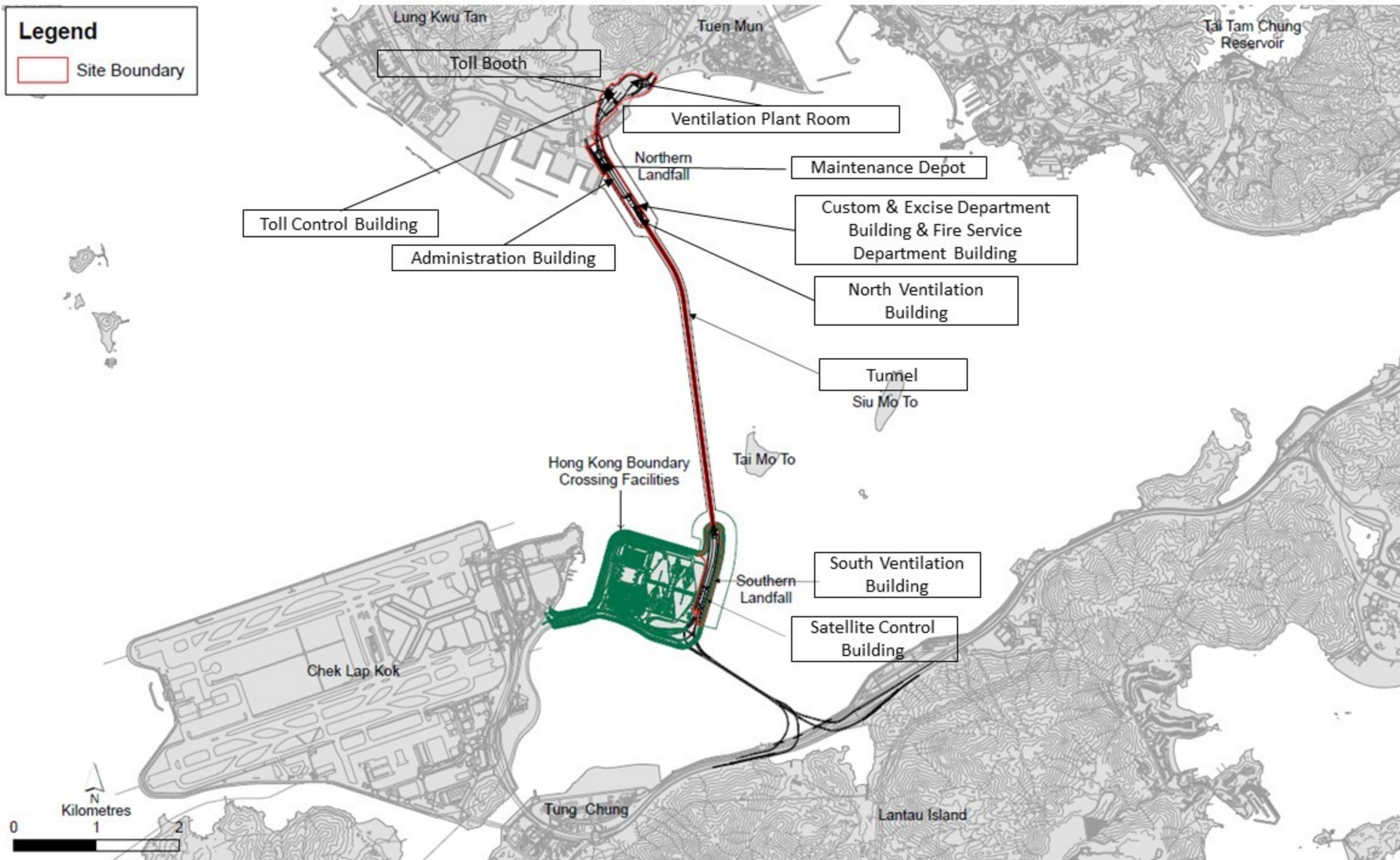


Figure 2.1

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)

Legend

Site Boundary



Appendix A

Watering Record on 17 October 2019

17th Oct

Location

MD & AdB.

Period		Time	Sign
7-8	/	7:58	成
8-9	/	8:35	成
9-10	/	9:30	成
10-11	/	10:30	成
11-12	/	11:30	成
12-13	/	12:50	成
13-14	/ /	13:15 13:50	成
14-15	/	14:50	成
15-16	/	15:45	成
16-17	/	16:45	成
17-18	/	17:35	成
18-19			