

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

Ninth Quarterly EM&A Report

7 October 2020

Environmental Resources Management
2507, 25/F One Harbourfront
18 Tak Fung Street
Hung Hom, Kowloon
Hong Kong
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Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works

**Environmental Resources
Management**

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Ninth Quarterly EM&A Report

Document Code: 0463091_9th Quarterly EM&A_20201007.doc

Client: Gammon		Project No: 0463091			
Summary: This document presents the Ninth Quarterly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 7 October 2020			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
Dr Jasmine Ng ET Leader					
	Ninth Quarterly Monthly EM&A Report	CW	JN	CAR	7/10/20
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential			
		 			

Ref.: HYDHZMBEEM00_0_8242L.20.doc

16 October 2020

By Fax (2783 0155) and By Post

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

Attention: Mr. Desmond Fung

Dear Mr. Fung,

**Re: Agreement No. CE 48/2011 (EP)
Environmental Project Office for the
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and
Tuen Mun-Chek Lap Kok Link – Investigation**

**Contract No. HY/2017/10
TM-CLKL – Northern Connection Tunnel Buildings, E&M Works
9th Quarterly EM&A Report for June 2020 – August 2020**

Reference is made to the Environmental Team's submission of the quarterly EM&A report for June 2020 – August 2020 (ET's ref.: "0463091_9th Quarterly EM&A_20201007.doc" dated 7 October 2020) certified by the ET Leader and provided to us via e-mail on 7 October 2020.

Please be informed that we have no adverse comments on the captioned submission.

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



Manson Yeung
Independent Environmental Checker
Tuen Mun-Chek Lap Kok Link

c.c.

HyD	Mr. Patrick Ng	(By Fax: 3188 6614)
HyD	Mr. Francis Chan	(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, 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 Ninth Quarterly EM&A Report presenting the EM&A works carried out during the period from 1 June 2020 to 31 August 2020 for the *Contract No. HY/2017/10 Northern Connection Tunnel Buildings, Electrical and Mechanical Works* (the “Contract”) in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

June 2020

Land-based Works

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

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

July 2020

Land-based Works

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;

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

August 2020

Land-based Works

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

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

24-hour TSP Monitoring	31 sessions
1-hour TSP Monitoring	31 sessions
Landfill Gas Hazard Monitoring	52 days
Joint Environmental Site Inspection	13 sessions

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

Two (2) 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 were recorded.

Breaches of Action Level for Landfill Gas Hazard Monitoring

No exceedance of Action and Limit Level exceedance was recorded for landfill gas hazard monitoring in the reporting period.

Environmental Complaints, Non-compliance & Summons

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

Reporting Change

There was no reporting change in the reporting period.

Upcoming Works for the Next Reporting Period

Works to be undertaken in the coming quarter include the following:

September 2020

Land-based Works

- Handover Inspection at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;
- Handover Inspection at Administration Building;
- Handover Inspection at Maintenance Depot;

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

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Handover Inspection at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2;
- Handover Inspection at South Ventilation Building; and
- Soil Mix and Landscape Works at Northern Landfall and Southern Landfall.

October 2020

Land-based Works

- Handover Inspection at Main Control Building;
- Handover Inspection at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;
- Handover Inspection at Administration Building;
- Handover Inspection at Maintenance Depot;
- Handover Inspection at Fire Services Department Building;
- Handover Inspection at Customs and Excise Department Building;
- Handover Inspection at N1;
- Handover Inspection at Kiosk N2;
- T&C and FSI at the Tunnel;
- Handover Inspection at underpass at C3 area;

- Handover Inspection at Satellite Control Building;
- Handover Inspection at Kiosk S2;
- Handover Inspection at South Ventilation Building; and
- Landscape Works at Northern Landfall and Southern Landfall.

November 2020

Land-based Works

- Handover Inspection at Main Control Building;
- Handover Inspection at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;
- Handover Inspection at Administration Building;
- Handover Inspection at Maintenance Depot;
- Handover Inspection at Fire Services Department Building;
- Handover Inspection at Customs and Excise Department Building;
- Handover Inspection at N1;
- Handover Inspection at Kiosk N2;
- T&C and FSI at the Tunnel;
- Handover Inspection at underpass at C3 area;
- Handover Inspection at Satellite Control Building;
- Handover Inspection at Kiosk S2;
- Handover Inspection at South Ventilation Building; and
- Landscape Works at Northern Landfall and Southern Landfall.

Future Key Issues

Potential environmental impacts arising from the above upcoming construction activities in the coming quarterly period are mainly associated with dust, waste management and landfill gas monitoring issues.

1.1

BACKGROUND

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

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

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

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

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

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

Plot File by: Jerry Wong 23-Jan-18
 PATH: Y:\TO\RSS\MSL\C4 Drawings\C4 Drawing (2018_01_02)\Architectural Drawings - CON\60240249_C4_7051.dgn



AECOM

PROJECT
 TUEN MUN - CHEK LAP KOK LINK

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

CLIENT

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

CONSULTANT
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS

Figure 1.1

ISSUE/REVISION

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

STATUS

SCALE
 A1 1:40000

DIMENSION UNIT
 MILLIMETRES

KEY PLAN

PROJECT NO.
 60240249

CONTRACT NO.
 HY/2017/10

SHEET TITLE
 OVERALL SITE PLAN

SHEET NUMBER
 60240249/C4/7051A

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 PATH: Y:\TOTO\RES\SUB\1\CA Drawings\CA Drawing (2018_01_02)\Architectural drawings - CGN\60240249 CA_7061.dgn
 Project Management Initials: Designer: WATH Chenweid SYLC Approved: CWN ISO 1194mm x 847mm
 01/7071 01/7072



AECOM

PROJECT
1.3

TUEN MUN - CHEK LAP KOK LINK

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

CLIENT

HIGHWAYS DEPARTMENT
 路政署
 香港 - 珠海 - 澳門大橋
 Hong Kong - Zhuhai - Macao Bridge
 Hong Kong Project Management Office

CONSULTANT

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S&B ENGINEERING

Figure 1.2a

ISSUE/REVISION

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

STATUS

SCALE: 1:2500
DIMENSION UNIT: MILLIMETRES

KEY PLAN

PROJECT NO. 60240249	CONTRACT NO. HY/2017/10
SHEET TITLE ZONING PLAN (SHEET 1)	
SHEET NUMBER 60240249/C4/7061A	

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Project Management initials: Designer: KATH Checked: SYLC Approved: CWN ISO A1 394mm x 641mm

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AECOM

PROJECT
TUEN MUN - CHEK LAP KOK LINK

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

CLIENT

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

CONSULTANT
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Figure 1.2b

ISSUE/REVISION

NO.	DATE	DESCRIPTION	CHK.
A	JAN.16	TENDER ADDENDUM NO.1	SYLC
	DEC.17	TENDER DRAWING	SYLC

STATUS

SCALE: A1 1:2500
 DIMENSION UNIT: MILLIMETRES

KEY PLAN

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

SHEET TITLE
 ZONING PLAN
 (SHEET 2)

SHEET NUMBER
 60240249/C4/7062A

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Project Management Initials: Designer: KATH; Checked: SYLC; Approved: CWN ISO A1 554mm x 841mm

Plot File by: Jerrywong 17-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
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 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

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Figure 1.2c

ISSUE/REVISION

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

STATUS

SCALE: A1 1:2500
 DIMENSION UNIT: MILLIMETRES

KEY PLAN

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

SHEET TITLE
 ZONING PLAN (SHEET 3)

SHEET NUMBER
 60240249/C4/7063A

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1.2 SCOPE OF REPORT

This is the Ninth Quarterly 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 from 1 June 2020 to 31 August 2020.

1.3 ORGANIZATION STRUCTURE

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

Table 1.1 *Contact Information of Key Personnel*

Party	Position	Name	Telephone	Fax
HyD (Highways Department)	Project Coordinator	Joseph Lee	2762 4958	3188 6614
	Senior Engineer	Cheng Pan	2762 3383	3188 6614
ER (AECOM Asia Company Limited)	Principle Resident Engineer	S. W. Fok	2293 6200	2293 6300
	Resident Engineer	Desmond Fung	2293 6200	2293 6300
ENPO / IEC (Ramboll Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
	IEC	Manson Yeung	9700 6767	3465 2899
Contractor (Gammon Construction Limited)	Site Agent	H. H. Lee	6096 6281	-
	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 rolling construction programme for the period of June to August 2020 is shown in *Appendix B*.

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

June 2020

Land-based Works

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

July 2020

Land-based Works

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

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

August 2020

Land-based Works

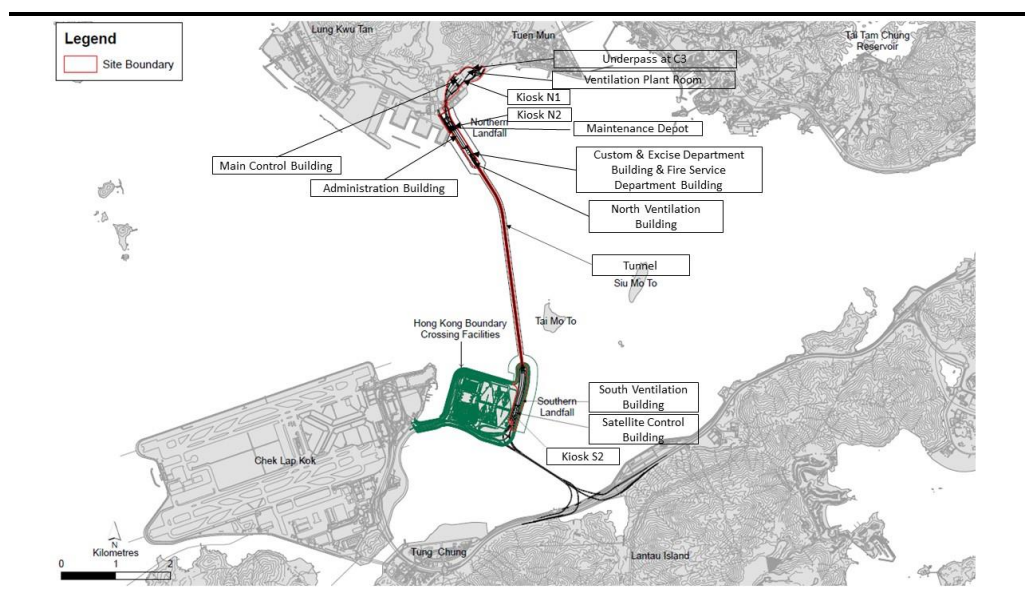
- Handover Inspection at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;
- Handover Inspection at Administration Building;
- Handover Inspection at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Handover Inspection at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2;
- Handover Inspection at South Ventilation Building; and
- Soil Mix and Landscape Works at Northern Landfall and Southern Landfall.

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 Period*



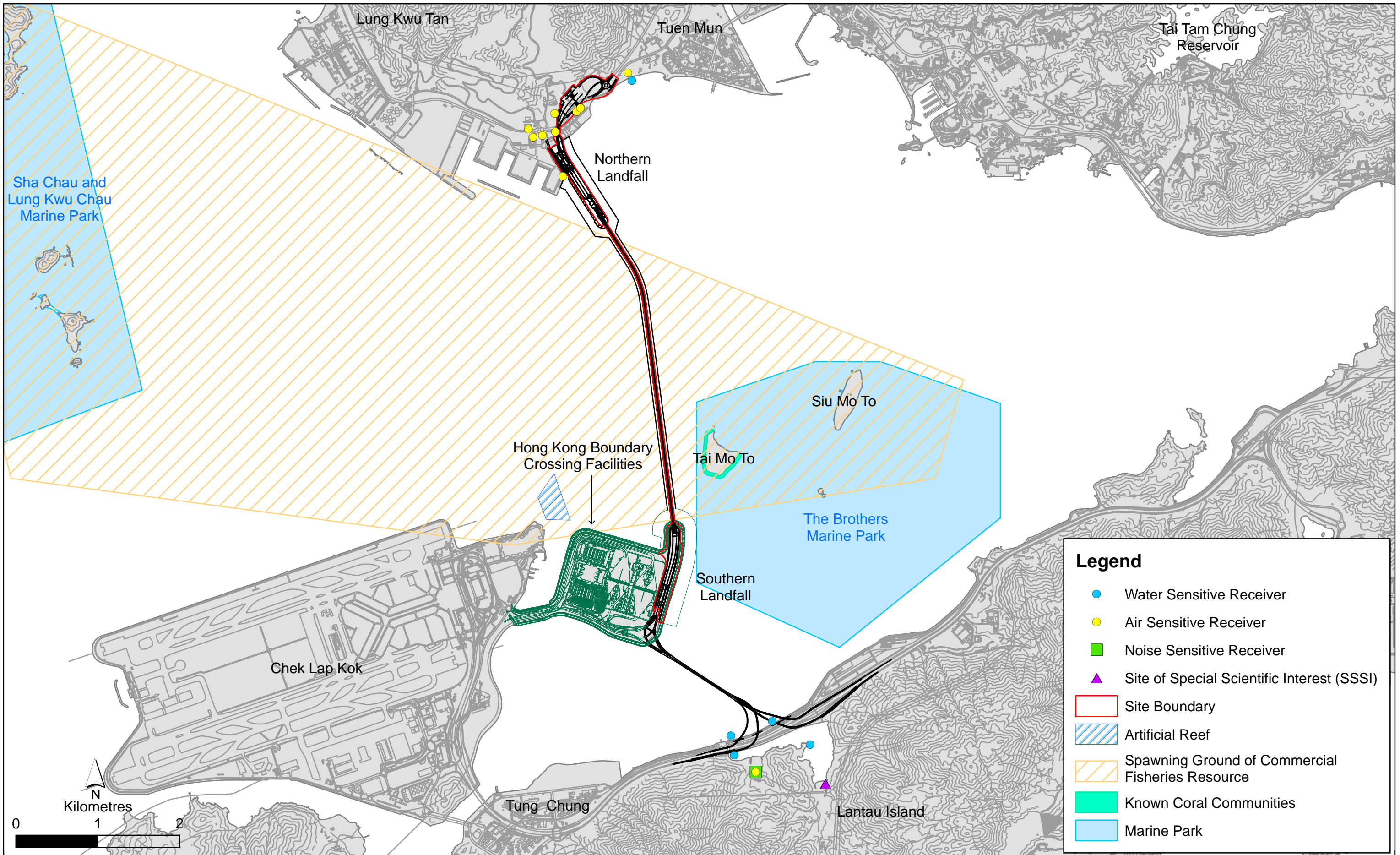


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

File: T:\GIS\CONTRACT\0463091\mxd\0463091_Environmental_Sensitive_Receivers.mxd
 Date: 12/7/2018

**Environmental
 Resources
 Management**



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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

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

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

(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/>

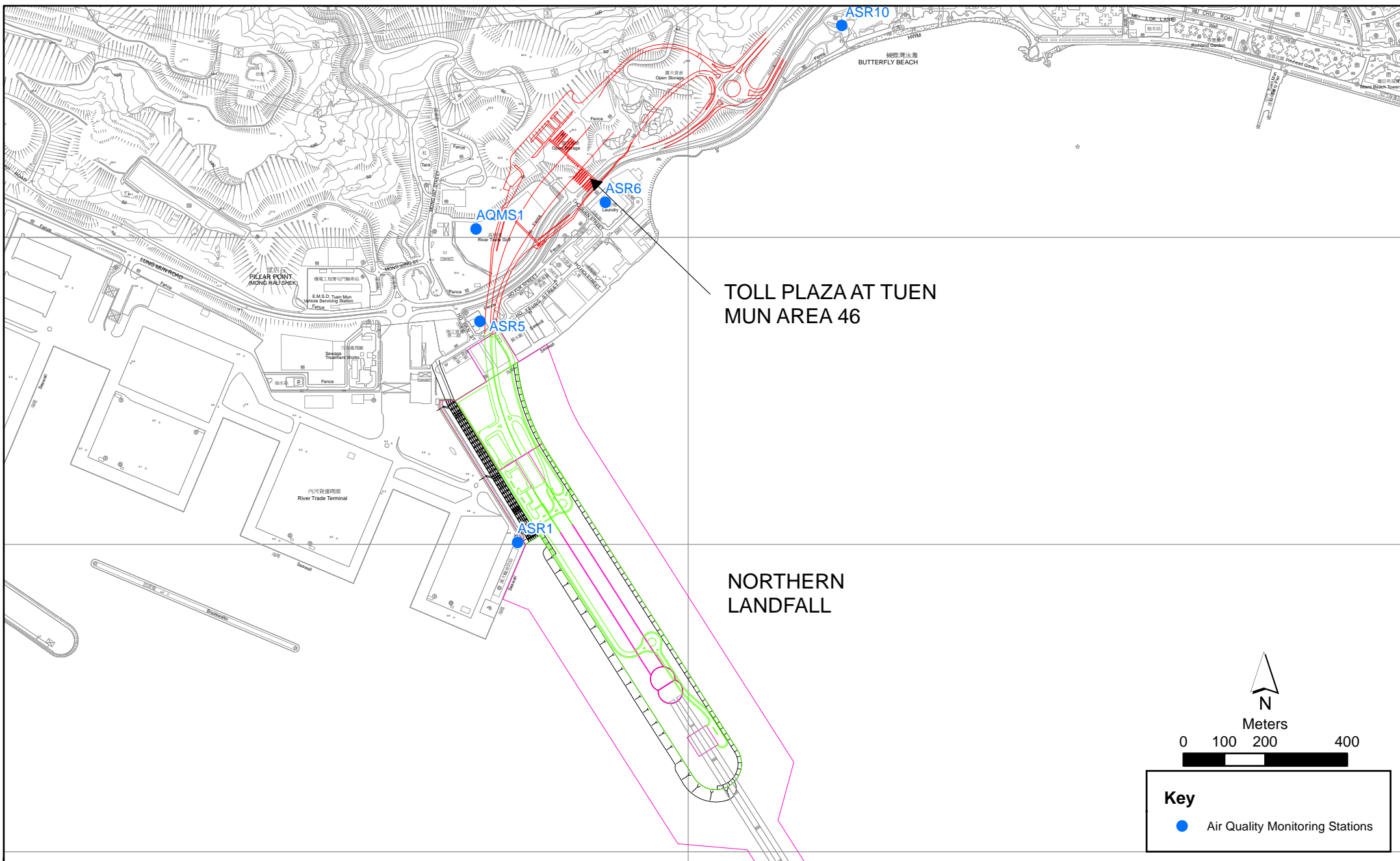


Figure 2.1

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)

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	1, 4, 7, 10, 13, 16, 19, 22, 25 and 28 June 2020	Tuen Mun Fireboat Station	Office	TSP monitoring
ASR5	1, 4, 7, 10, 13, 16, 19, 22, 25, 28 and 31 July 2020	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	3, 6, 9, 12, 15, 18, 21, 24, 27 and 20 August 2020	Previous River Trade Golf	Bare ground	Enhanced TSP monitoring (commenced on 24 October 2014 under <i>Contract No. HY/2012/08</i>)
ASR6		Butterfly Beach Laundry	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 3 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days
ASR10		Butterfly Beach Park	Recreational uses	

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⁾.

Two (2) exceedances of Action Level 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 I*. 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 were recorded.

2.2 *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. Thirteen (13) site inspections were carried out in the reporting period on 5, 12, 19 and 26 June 2020, 3, 10, 17, 24 and 31 July 2020 and 7, 14, 21 and 28 August 2020.

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

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

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

Inspection Date	Observations	Recommendations/ Remarks
5 June 2020	<p>Fire Services Department Building</p> <ul style="list-style-type: none"> Accumulated residuals were observed on site. Stagnant water was observed on site. Oil spillage was observed on site. Chemical was not placed on drip tray. <p>Customs and Excise Department Building</p> <ul style="list-style-type: none"> Accumulated residuals were observed on site. Oil spillage was observed on site. Stagnant water was observed on site and on drip tray. A chemical was not placed on drip tray. 	<p>Fire Services Department Building</p> <ul style="list-style-type: none"> The Contractor was reminded to keep better housekeeping. The Contractor was reminded to clean the stagnant water. The Contractor was reminded to clean the oil and place a drip tray beneath the machine. The Contractor was reminded to place the chemical on a drip tray. <p>Customs and Excise Department Building</p> <ul style="list-style-type: none"> The Contractor was reminded to keep better housekeeping. The Contractor was reminded to clean the oil and place a drip tray beneath the machine. The Contractor was reminded to clean the stagnant water. The Contractor was reminded to place the chemical on a drip tray.
12 June 2020	<p>Fire Services Department Building</p> <ul style="list-style-type: none"> Chemical container should be placed on drip tray. 	<p>Fire Services Department Building</p> <ul style="list-style-type: none"> The Contractor was reminded to place chemical container on drip tray.
19 June 2020	<p>Northern landfall (Container Office)</p> <ul style="list-style-type: none"> Better housekeeping should be maintained. Chemical container should be placed on drip tray. <p>Southern landfall (Container Office)</p> <ul style="list-style-type: none"> Chemical container should be placed on drip tray. 	<p>Northern landfall (Container Office)</p> <ul style="list-style-type: none"> The Contractor was reminded to keep better housekeeping. The Contractor was reminded to place chemicals on a drip tray. <p>Southern landfall (Container Office)</p> <ul style="list-style-type: none"> The Contractor was reminded to place chemicals on drip tray.
26 June 2020	<p>Customs and Excise Department Building</p> <ul style="list-style-type: none"> A few chemical containers were not placed on drip tray. 	<p>Customs and Excise Department Building</p> <ul style="list-style-type: none"> The Contractor was reminded to store the chemicals properly.
3 July 2020	<p>South Ventilation Building</p> <ul style="list-style-type: none"> A faded NRMM label was observed on site. Oil leakage from generator was observed on site. 	<p>South Ventilation Building</p> <ul style="list-style-type: none"> The Contractor was reminded to replace the faded NRMM label. The Contractor was reminded to clean the oil and replace the leakage drip tray.
10 July 2020	<p>South Ventilation Building</p> <ul style="list-style-type: none"> Chemicals in the drip tray should be properly treated. Drip tray was observed not plugged. 	<p>South Ventilation Building</p> <ul style="list-style-type: none"> The Contractor was reminded to cleanup the chemicals. The Contractor was reminded to plug drip tray.
17 July 2020	<p>Tunnel</p> <ul style="list-style-type: none"> Drip tray should be provided for chemicals. 	<p>Tunnel</p> <ul style="list-style-type: none"> The Contractor was reminded to provide drip tray.
24 July 2020	<p>Southern Landfall (Container Office)</p> <ul style="list-style-type: none"> Chemical containers should be placed on drip tray and chemical container waste should be disposed of properly. <p>Satellite Control Building</p> <ul style="list-style-type: none"> Chemical containers should be placed on drip tray and chemical container waste should be disposed of properly. 	<p>Southern Landfall (Container Office)</p> <ul style="list-style-type: none"> The Contractor was reminded to place chemicals on drip tray and disposed of the chemical waste properly. <p>Satellite Control Building</p> <ul style="list-style-type: none"> The Contractor was reminded to place chemicals on drip tray and disposed of the chemical waste properly.

Inspection Date	Observations	Recommendations/ Remarks
31 July 2020	Container Village <ul style="list-style-type: none"> Accumulated residuals were observed on site. A few chemicals were not placed on drip tray. 	Container Village <ul style="list-style-type: none"> The Contractor was reminded to keep better house keeping. The Contractor was reminded to place the chemicals on drip tray.
7 August 2020	Southern Landfall (Container Office) <ul style="list-style-type: none"> Chemical containers should be placed on drip tray. 	Southern Landfall (Container Office) <ul style="list-style-type: none"> The Contractor was reminded to place chemical containers on drip tray.
14 August 2020	Container Village (Portion XX1a) <ul style="list-style-type: none"> Chemical containers should be placed on drip tray. 	Container Village (Portion XX1a) <ul style="list-style-type: none"> The Contractor was reminded to place chemical containers on drip tray.
21 August 2020	Fire Services Department Building <ul style="list-style-type: none"> Soapy water was observed discharge to the drainage system. 	Fire Services Department Building <ul style="list-style-type: none"> The Contractor was reminded to take measures to avoid illegal discharge.
28 August 2020	Container Village (Portion XX1a) <ul style="list-style-type: none"> Chemical container should be placed on drip tray. Fire Services Department Building <ul style="list-style-type: none"> Chemical container should be placed on drip tray. Oil stain was observed. 	Container Village (Portion XX1a) <ul style="list-style-type: none"> The Contractor was reminded to place chemical container on drip tray. Fire Services Department Building <ul style="list-style-type: none"> The Contractor was reminded to place chemical container on drip tray. The Contractor was reminded to cleanup oil stain and dispose of the chemical waste separately.

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

2.3 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 52 days of landfill gas hazard monitoring was conducted at Main Control Building during 1 July to 31 August 2020 during the reporting period (*Appendix F*).

The Action and Limit Levels of the landfill gas hazard monitoring were adopted from the Undated EM&A Manual of the TM-CLK Link Project and are provided in *Appendix D*.

2.3.1 Results and Observations

Results for landfill gas hazard monitoring are summarized in *Table 2.3* and the monitoring data is provided in *Appendix G*.

No exceedance of Action and Limit Levels for methane, oxygen and carbon dioxide was recorded in the reporting period.

Table 2.3 *Summary of Landfill Gas Hazard Monitoring Results in the Reporting Period*

		Average (%)	Range (%)	Action / Limit Level (%)
July 2020	Methane	0	0	10/20
	Oxygen	20.8	20.7-20.8	19/18
	Carbon Dioxide	0.03	0.03-0.04	0.5/1.5

		Average (%)	Range (%)	Action / Limit Level (%)
August 2020	Methane	0	0	10/20
	Oxygen	20.8	20.7-20.8	19/18
	Carbon Dioxide	0.03	0.03-0.04	0.5/1.5

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

Table 2.4 Quantities of Different Waste Generated in the Reporting Period

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)
June 2020	17,715 ^(d)	421 ^(d)	255,300	17,260 ^(d)	0	0
July 2020	41,044	6,284 ^(d)	134,530	34,725	56	0
August 2020	10,705	0	132,420	10,541	35	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.
- (d) Updated figures were presented.

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 chemical waste properly and store the containers 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
Discharge License under WPCO for Southern Landfall	WT00034878-2019	1 April 2020	31 March 2025	GCL	Sampling Frequency: Quarterly
Construction Noise Permit	GW-RW0054-20	11 February 2020	11 August 2020	GCL	For Northern Landfall and Tunnel
Construction Noise Permit	GW-RW0351-20	3 August 2020	29 January 2021	GCL	For Northern Landfall and Tunnel
Construction Noise Permit	GW-RS0039-20	23 January 2020	22 July 2020	GCL	For HKBCF Area
Construction Noise Permit	GW-RS0413-20	19 June 2020	15 December 2020	GCL	For HKBCF Area

2.6 *IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES*

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

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

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

Two (2) exceedances of Action Level 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 I*. 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 period.

No exceedance of Action and Limit Levels for methane, oxygen and carbon dioxide was recorded landfill gas hazard monitoring in the reporting period.

Cumulative statistics are provided in *Appendix I*.

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 I*.

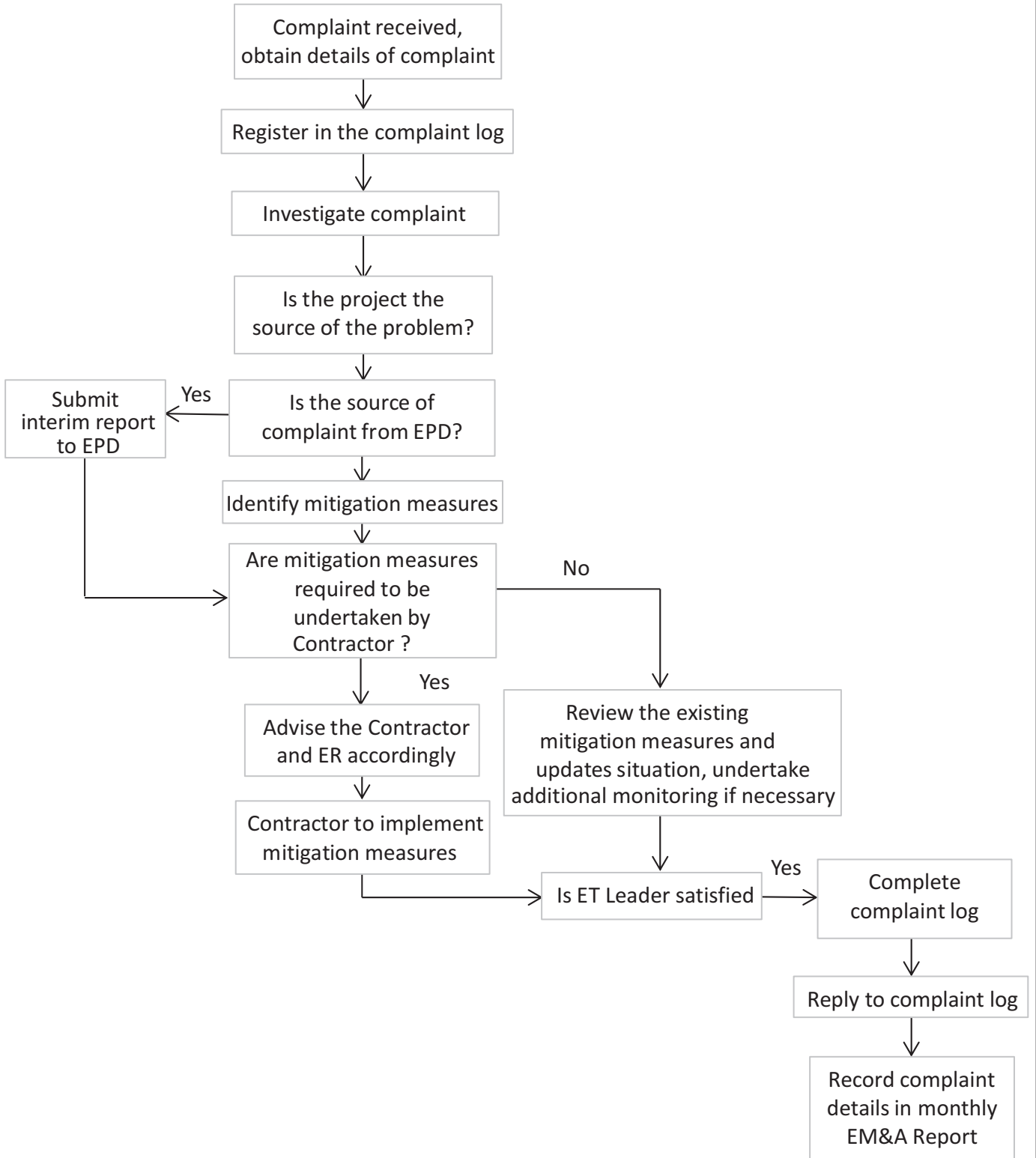


Figure 2.2

Environmental Complaint Handling Procedure

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING QUARTER

As informed by the Contractor, the major works for the Contract in the coming quarter are summarized below:

September 2020***Land-based Works***

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

October 2020***Land-based Works***

- Handover Inspection at Main Control Building;
- Handover Inspection at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;
- Handover Inspection at Administration Building;
- Handover Inspection at Maintenance Depot;
- Handover Inspection at Fire Services Department Building;
- Handover Inspection at Customs and Excise Department Building;
- Handover Inspection at N1;
- Handover Inspection at Kiosk N2;
- T&C and FSI at the Tunnel;
- Handover Inspection at underpass at C3 area;
- Handover Inspection at Satellite Control Building;
- Handover Inspection at Kiosk S2;
- Handover Inspection at South Ventilation Building; and
- [Landscape Works at Northern Landfall and Southern Landfall.](#)

November 2020

Land-based Works

- Handover Inspection at Main Control Building;
- Handover Inspection at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;
- Handover Inspection at Administration Building;
- Handover Inspection at Maintenance Depot;
- Handover Inspection at Fire Services Department Building;
- Handover Inspection at Customs and Excise Department Building;
- Handover Inspection at N1;
- Handover Inspection at Kiosk N2;
- T&C and FSI at the Tunnel;
- Handover Inspection at underpass at C3 area;

- Handover Inspection at Satellite Control Building;
- Handover Inspection at Kiosk S2;
- Handover Inspection at South Ventilation Building; and

3.2

LANDSCAPE WORKS AT NORTHERN LANDFALL AND SOUTHERN LANDFALL. KEY ISSUES FOR THE COMING QUARTER

Potential environmental impacts arising from the above upcoming construction activities are mainly associated with dust, waste management and landfill gas monitoring issues.

4.1 CONCLUSIONS

This Ninth Quarterly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 June 2020 to 31 August 2020, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

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

Two (2) exceedances of Action Level 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 I*. 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.

No exceedance of Action and Limit Levels for methane, oxygen and carbon dioxide was recorded during landfill gas hazard monitoring in the reporting period.

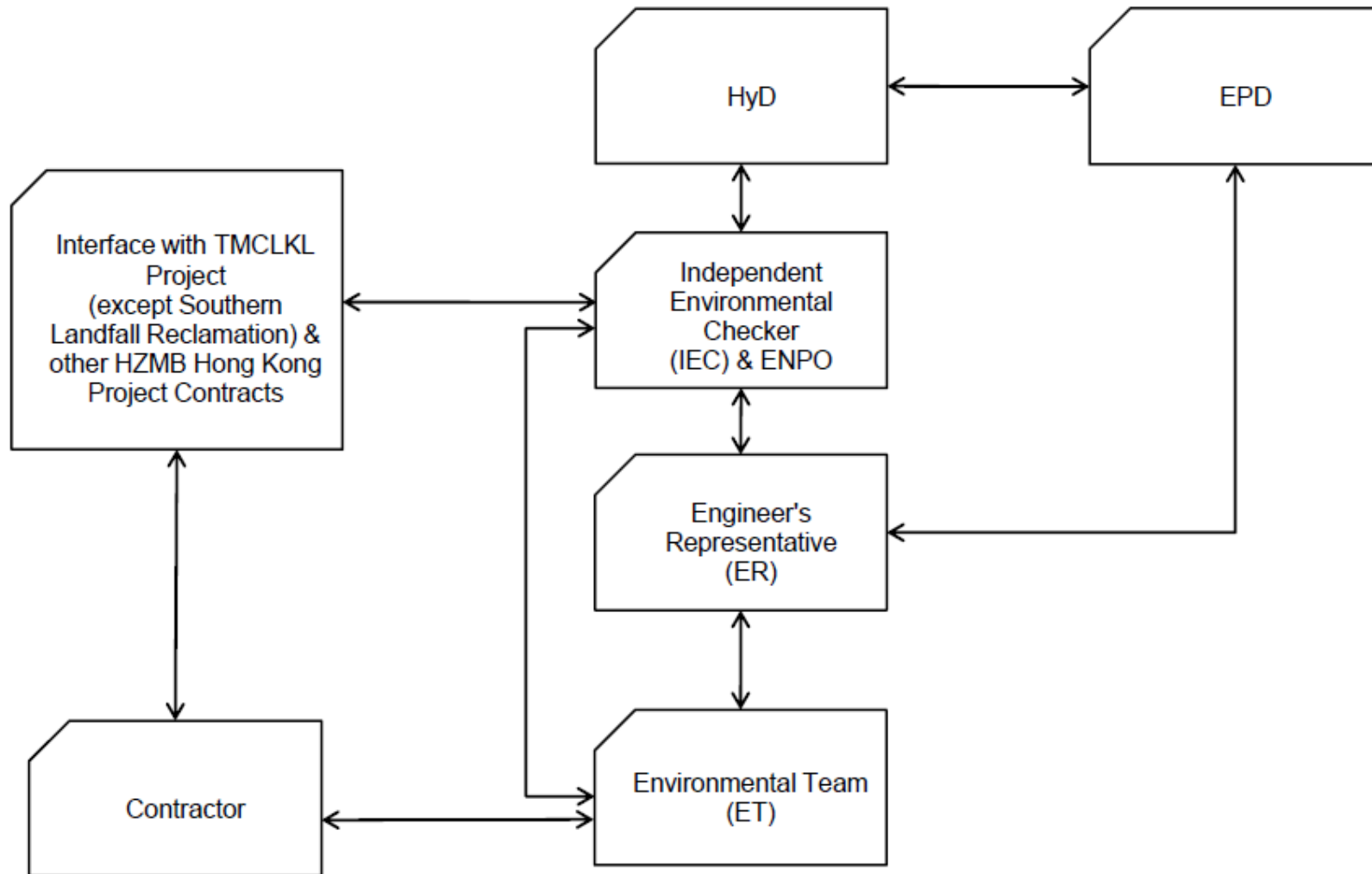
Environmental site inspection was carried out thirteen (13) times in the reporting period. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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

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		✓
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		✓
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		✓
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		✓
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	All site exits / throughout construction period	Contractor	TMEIA Avoid dust		Y		✓

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

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
4.8.1	3.8	Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable.	All exposed surfaces / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
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		✓
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		✓
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		✓

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

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	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		✓
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		✓
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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Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

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

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

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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	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		✓
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		✓

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: <i>f</i> suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; <i>f</i> Having a capacity of <450L unless the specifications have been approved by the EPD; and <i>w</i> Chinese according to the instructions prescribed in Schedule 2 of the Regulations. <i>f</i> Clearly labelled and used solely for the storage of chemical wastes; <i>f</i> Enclosed with at least 3 sides; <i>f</i> Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; <i>f</i> Adequate ventilation; <i>f</i> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and <i>f</i> Incompatible materials are adequately separated.	All areas / throughout construction period	Contractor	TMEIA		Y		↔
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		✓

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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	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 handstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		◁▷
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
LANDSCAPE AND VISUAL									
10.9	7.6	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas (Tree protection measures will be detailed at Tree Removal Application Stage) (CM1)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A

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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	
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		✓

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

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	Recycle/ Reuse all felled trees and vegetation, e.g. mulching (CM9)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006 (CM10)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Re-vegetation of affected woodland/shrubland with native species (OM1)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by AFCD/HyD/L CSD
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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Note: Funding Agent for all mitigation measures will be the Highways Department of the Hong Kong SAR Government

Appendix D

Summary of Action and Limit Levels

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

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

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 L1 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, SO - Supervising Office, 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
Landfill Gas Monitoring Schedule (1 to 31 July 2020)**

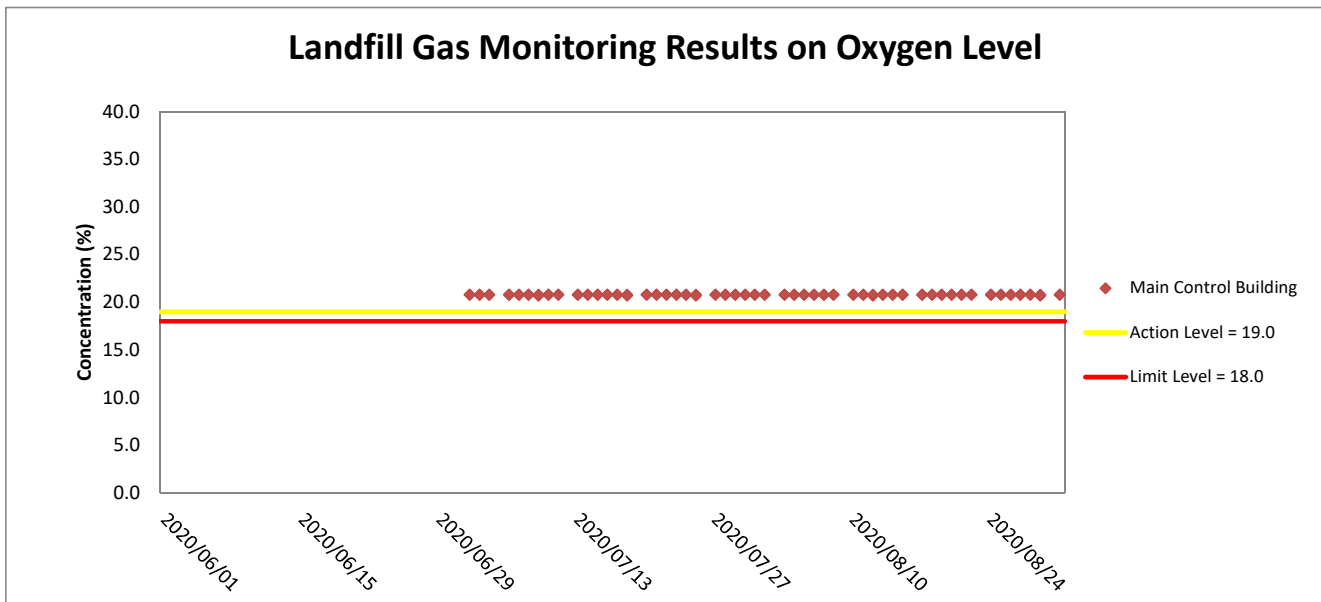
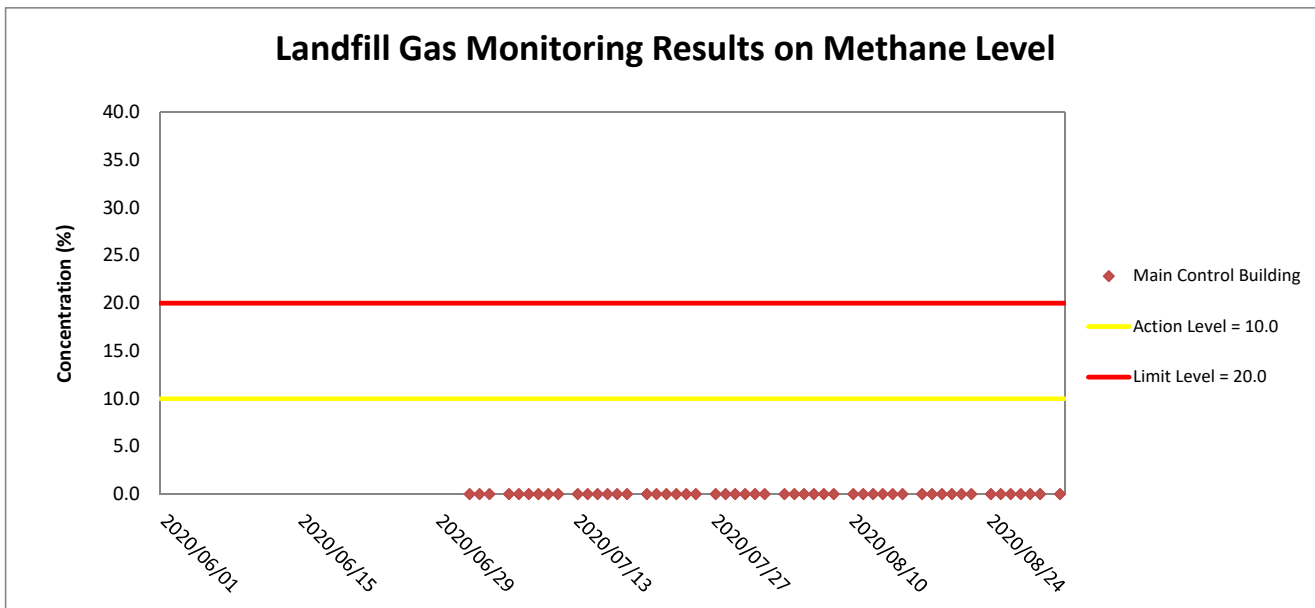
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1-Jul	2-Jul	3-Jul	4-Jul
				LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
5-Jul	6-Jul	7-Jul	8-Jul	9-Jul	10-Jul	11-Jul
	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)	LFG Monitoring (a.m. & p.m.)
12-Jul	13-Jul	14-Jul	15-Jul	16-Jul	17-Jul	18-Jul
	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.)
19-Jul	20-Jul	21-Jul	22-Jul	23-Jul	24-Jul	25-Jul
	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.)
26-Jul	27-Jul	28-Jul	29-Jul	30-Jul	31-Jul	
	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.)	

**HY/2017/10 Tuen Mun - Chek Lap Kok Link - Northern Tunnel Connection Buildings, E&M Works
Landfill Gas Monitoring Schedule (1 to 31 August 2020)**

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

Appendix G

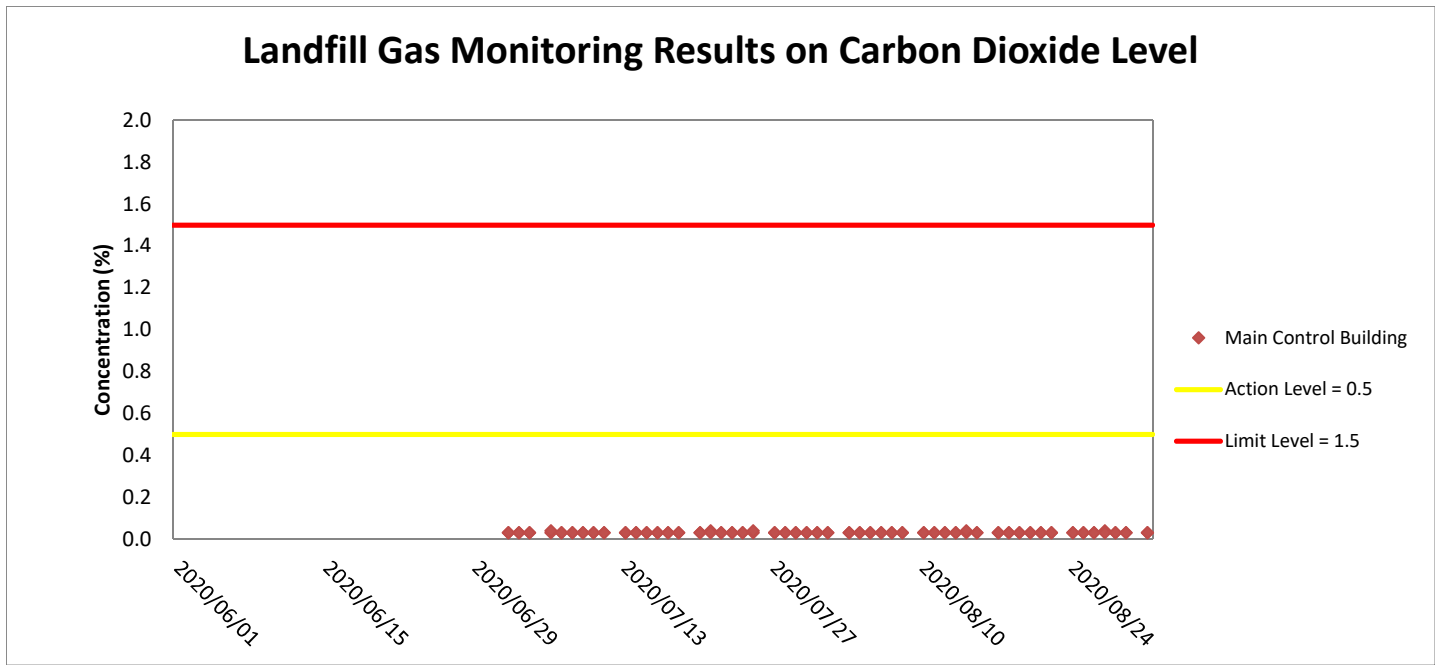
Landfill Gas Monitoring
Results and Graphical
Presentation



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



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

Appendix H

Quarterly Summary of Waste Flow Table

Contract No. : HY/2017/10

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

Monthly Summary Waste Flow Table for 2020 (Year)

Month/Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation		Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000m ³)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	0.025	0.000	-	-	0.025	-	-	187.500	-	-	0.070	-
Feb	0.074	0.026	-	-	0.074	-	-	176.100	-	-	0.084	-
Mar	0.650	0.117	-	-	0.366	0.284	-	237.850	-	-	0.042	-
Apr	0.139	0.000	-	-	0.139	-	-	167.820	-	-	-	-
May	6.429	0.000	-	1.975	0.023	4.431	-	252.730	-	-	0.056	-
Jun	17.715	0.053	-	0.421	0.034	17.260	-	255.300	-	-	-	-
SUB-TOTAL	25.032	0.196	0.000	2.396	0.661	21.975	0.000	1277.300	0.000	0.000	0.252	0.000
Jul	41.044	0.008	-	6.284	0.035	34.725	-	134.530	-	-	0.056	-
Aug	10.705	0.007	-	-	0.163	10.541	-	132.420	-	-	0.035	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	76.781	0.211	0.000	8.680	0.859	67.241	0.000	1,544.250	0.000	0.000	0.343	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 I

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

Appendix I1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting quarter	Total No. recorded since contract commencement
1-Hr TSP	Action	2	45
	Limit	0	9
24-Hr TSP	Action	0	2
	Limit	0	0
Landfill gas hazard monitoring			
• Methane	Action	0	0
	Limit	0	0
• Oxygen	Action	0	0
	Limit	0	0
• Carbon Dioxide	Action	0	0
	Limit	0	0

Appendix I2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This reporting quarter	0	0	0
Total No. received since contract commencement	1	0	0

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To Ramboll Hong Kong Limited (ENPO)

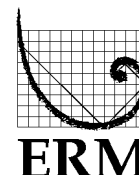
From ERM- Hong Kong, Limited

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 26 June 2020

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



Dear Sir/ Madam,

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

Action Level Exceedance
0463091_13June2020_1hrTSP_Station ASR6

One (1) exceedance was recorded on 13 June 2020.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2017/10

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0463091_13June2020_1hrTSP_Station ASR6 [Total No. of Exceedances = 1]	
Date	13 June 2020 (Measured) 26 June 2020 (Results obtained from ENPO Website)	
Monitoring Station	ASR6	
Parameter(s) with Exceedance(s)	1- hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
	24-hr TSP ($\mu\text{g}/\text{m}^3$)	260
Measured Levels	Refer to <i>Appendix A</i> (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 13 June 2020 included <ul style="list-style-type: none"> Defect rectification at Main 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"> With reference to the recorded wind direction (ranged between 32° and 95°, blowing from a north-easterly/easterly direction) and wind speed (ranged between 0.9 m/s and 1.8 m/s) when exceedance recorded, ASR6 is located downstream to the construction works at Main Control Building. However, works undertaken at Main Control Building were mainly minor defect rectification works which are considered not major dust generating works (refer to <i>Appendix B</i> and <i>C</i>). The construction area under this Contract were mainly paved. The remaining unpaved area are seated by machines such as crane machines and generators or used as material storage area with proper cover of tarpaulin sheet. The exposed area are suppressed/covered. Dust are not anticipated. <p>Based on the above, the exceedance is unlikely to be due to the Contract.</p>	
Actions Taken / To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 13 June 2020, locations of air quality monitoring stations and wind data are attached (refer to <i>Appendix A</i>).	

Appendix A

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

Air quality monitoring results on 13/6/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-06-13	ASR10	Sunny	8:15:00	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR10	Sunny	9:17:00	1-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR10	Sunny	10:19:00	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR6	Sunny	8:26:00	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR6	Sunny	9:28:00	1-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR6	Sunny	10:30:00	1-hour TSP	357	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR5	Sunny	8:38:00	1-hour TSP	195	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR5	Sunny	9:40:00	1-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR5	Sunny	10:42:00	1-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR1	Sunny	8:50:00	1-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR1	Sunny	9:52:00	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR1	Sunny	10:54:00	1-hour TSP	44	ug/m3
TMCLKL	HY/2012/08	2020-06-13	AQMS1	Sunny	9:01:00	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2020-06-13	AQMS1	Sunny	10:03:00	1-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2020-06-13	AQMS1	Sunny	11:05:00	1-hour TSP	51	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR10	Sunny	11:21:00	24-hour TSP	20	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR6	Sunny	11:32:00	24-hour TSP	27	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR5	Sunny	11:44:00	24-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2020-06-13	ASR1	Sunny	11:56:00	24-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2020-06-13	AQMS1	Sunny	12:07:00	24-hour TSP	27	ug/m3

Action level exceedance

Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
20/06/13	0:00	0.9	57
20/06/13	1:00	0	64
20/06/13	2:00	0	79
20/06/13	3:00	0	311
20/06/13	4:00	0.9	355
20/06/13	5:00	0	271
20/06/13	6:00	0	303
20/06/13	7:00	0	145
20/06/13	8:00	0.9	132
20/06/13	9:00	0.9	138
20/06/13	10:00	1.8	32
20/06/13	11:00	0.9	95
20/06/13	12:00	0.4	3
20/06/13	13:00	0.9	159
20/06/13	14:00	0.9	125
20/06/13	15:00	1.3	118
20/06/13	16:00	2.2	101
20/06/13	17:00	2.7	63
20/06/13	18:00	2.2	45
20/06/13	19:00	2.2	19
20/06/13	20:00	2.2	12
20/06/13	21:00	1.8	50
20/06/13	22:00	1.8	41
20/06/13	23:00	2.2	54

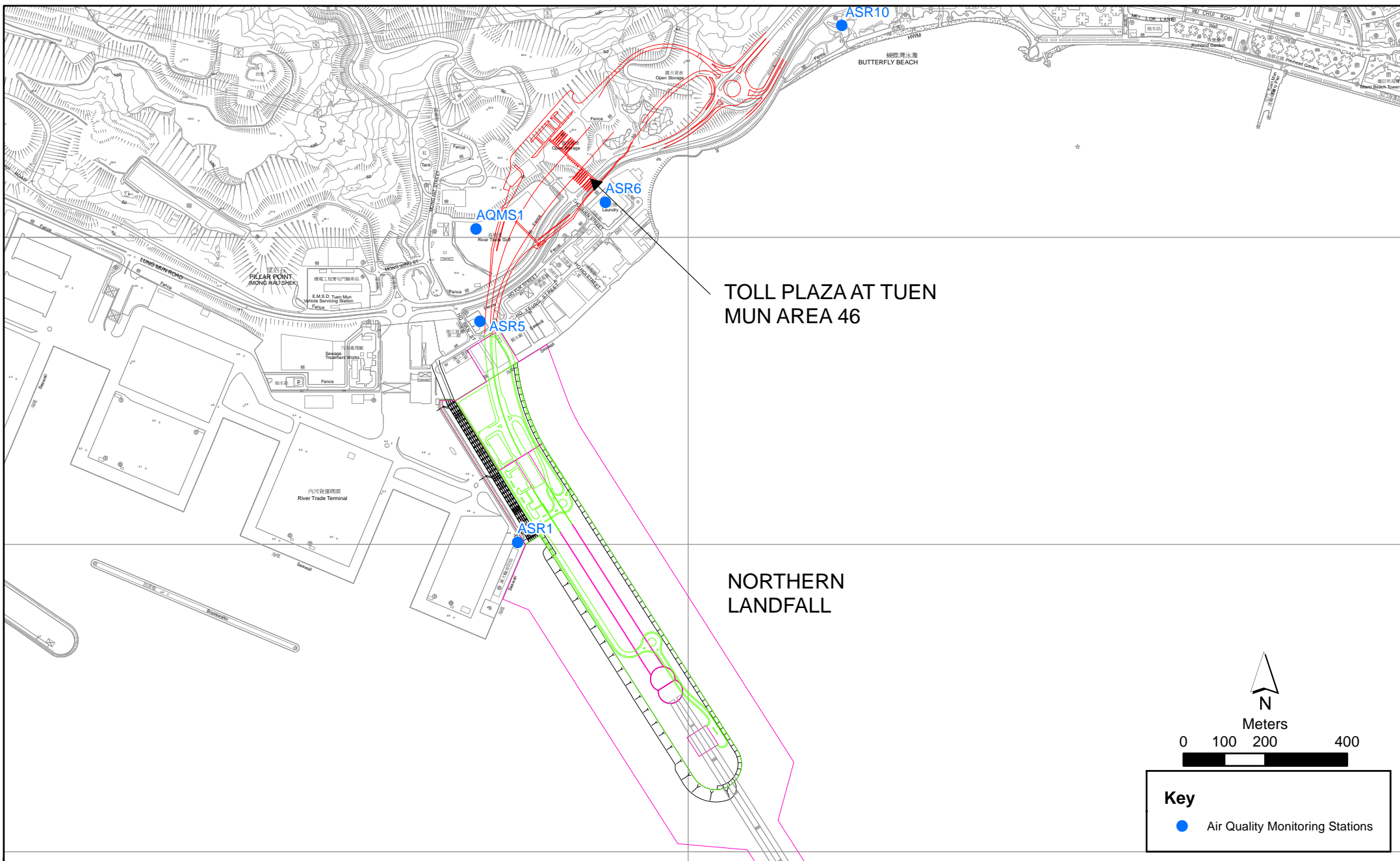


Figure 2.1

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

Key
 ● Air Quality Monitoring Stations

**Environmental
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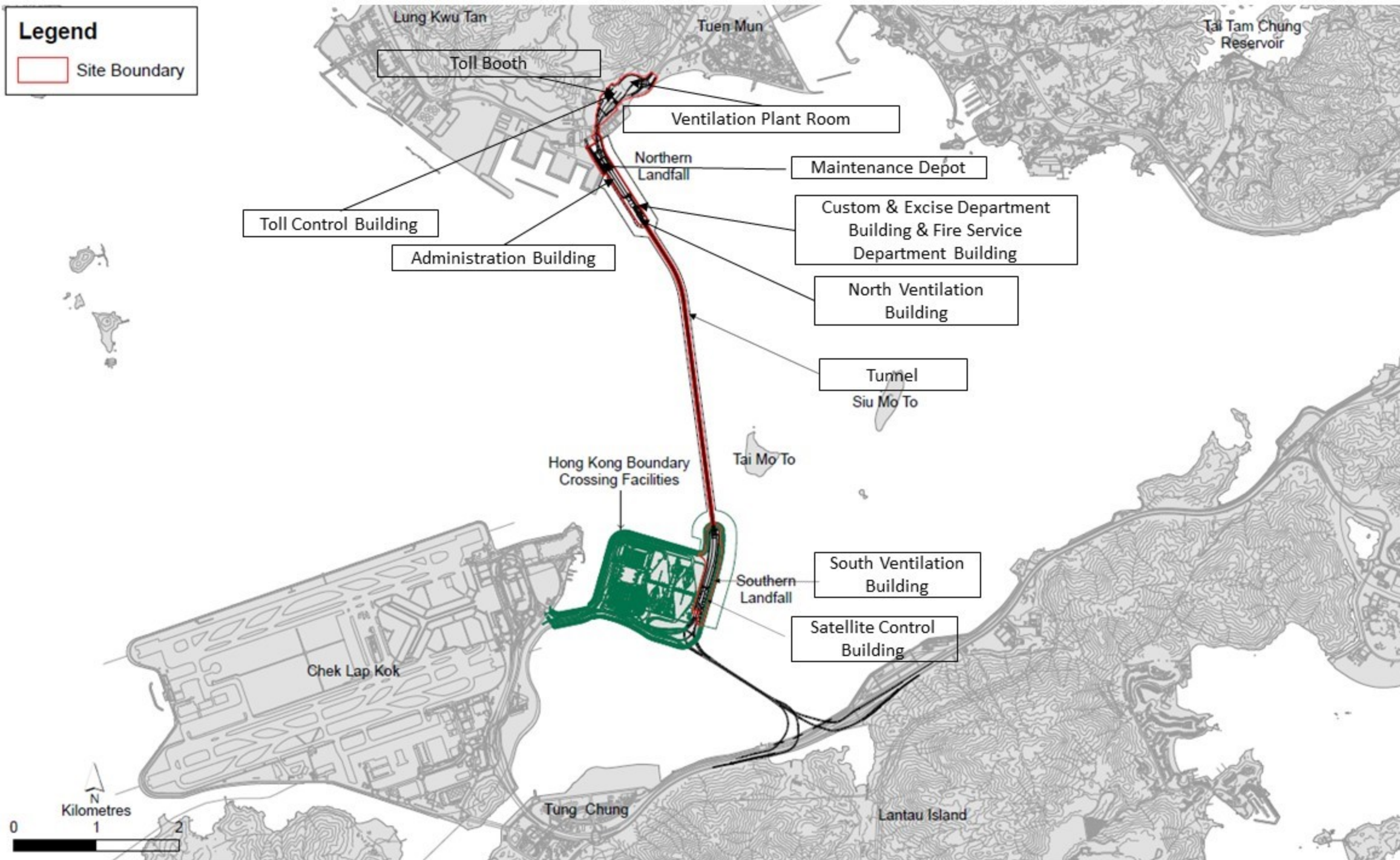


Appendix B

Works Locations

Legend

Site Boundary



Appendix C

Site Photo



Photo 1 - Construction works at Main Control Building



Photo 2 - Work Area nearby Main Control Building

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To Ramboll Hong Kong Limited (ENPO)

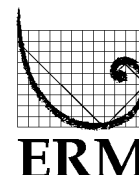
From ERM- Hong Kong, Limited

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 19 August 2020

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



Dear Sir/ Madam,

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

Action Level Exceedance
0463091_12August2020_1hrTSP_Station ASR1

One (1) exceedance was recorded on 12 August 2020.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2017/10

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	Action Level Exceedance 0463091_12August2020_1hrTSP_Station ASR1 [Total No. of Exceedances = 1]	
Date	12 August 2020 (Measured) 19 August 2020 (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 <i>Appendix A</i> (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	<p>Works undertaken under this Contract on 12 August 2020 included</p> <ul style="list-style-type: none"> • Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building; • Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building; and • Handover Inspection at North Ventilation 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"> • With reference to the recorded wind direction (ranged between 44° and 322°), blowing from a north-easterly/north-westerly direction) and wind speed (ranged between 0 and 0.9 m/s) when exceedance recorded, ASR1 is located downstream to Fire Services Department Building, Customs and Excise Department Building and North Ventilation Building. However, only inspection works, electrical and mechanical works and architectural builder's work and finishes were conducted which are considered not major dust generating works (refer to <i>Appendix B</i> and <i>C</i>). • The construction area under this Contract were mainly paved. The remaining unpaved area are seated by machines such as crane machines and generators or used as material storage area with proper cover of tarpaulin sheet. The exposed area are suppressed/covered. Dust are not anticipated. <p>Based on the above, the exceedance is unlikely to be due to the Contract.</p>	
Actions Taken / To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 12 August 2020, locations of air quality monitoring stations and wind data are attached (refer to <i>Appendix A</i>).	

Appendix A

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

Air quality monitoring results on 12/8/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-08-12	ASR10	Sunny	8:00:00	1-hour TSP	31	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR10	Sunny	9:02:00	1-hour TSP	33	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR10	Sunny	10:04:00	1-hour TSP	18	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR6	Sunny	8:15:00	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR6	Sunny	9:17:00	1-hour TSP	46	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR6	Sunny	10:19:00	1-hour TSP	35	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR5	Sunny	8:30:00	1-hour TSP	200	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR5	Sunny	9:32:00	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR5	Sunny	10:34:00	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR1	Sunny	8:40:00	1-hour TSP	352	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR1	Sunny	9:42:00	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR1	Sunny	10:44:00	1-hour TSP	38	ug/m3
TMCLKL	HY/2012/08	2020-08-12	AQMS1	Sunny	8:50:00	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2020-08-12	AQMS1	Sunny	9:52:00	1-hour TSP	37	ug/m3
TMCLKL	HY/2012/08	2020-08-12	AQMS1	Sunny	10:54:00	1-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR10	Sunny	11:06:00	24-hour TSP	22	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR6	Sunny	11:21:00	24-hour TSP	27	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR5	Sunny	11:36:00	24-hour TSP	43	ug/m3
TMCLKL	HY/2012/08	2020-08-12	ASR1	Sunny	11:46:00	24-hour TSP	40	ug/m3
TMCLKL	HY/2012/08	2020-08-12	AQMS1	Sunny	11:56:00	24-hour TSP	41	ug/m3

Action level exceedance

Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period

Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction(degree)
20/08/12	0:00	2.7	81
20/08/12	1:00	2.2	90
20/08/12	2:00	2.7	138
20/08/12	3:00	1.8	132
20/08/12	4:00	0.9	49
20/08/12	5:00	0.9	65
20/08/12	6:00	1.8	358
20/08/12	7:00	0	324
20/08/12	8:00	0	322
20/08/12	9:00	0.9	44
20/08/12	10:00	0.9	36
20/08/12	11:00	1.3	65
20/08/12	12:00	1.8	271
20/08/12	13:00	1.3	36
20/08/12	14:00	2.2	87
20/08/12	15:00	2.7	95
20/08/12	16:00	3.1	88
20/08/12	17:00	1.8	93
20/08/12	18:00	2.2	101
20/08/12	19:00	1.8	101
20/08/12	20:00	2.2	92
20/08/12	21:00	2.2	96
20/08/12	22:00	1.8	93
20/08/12	23:00	1.3	100

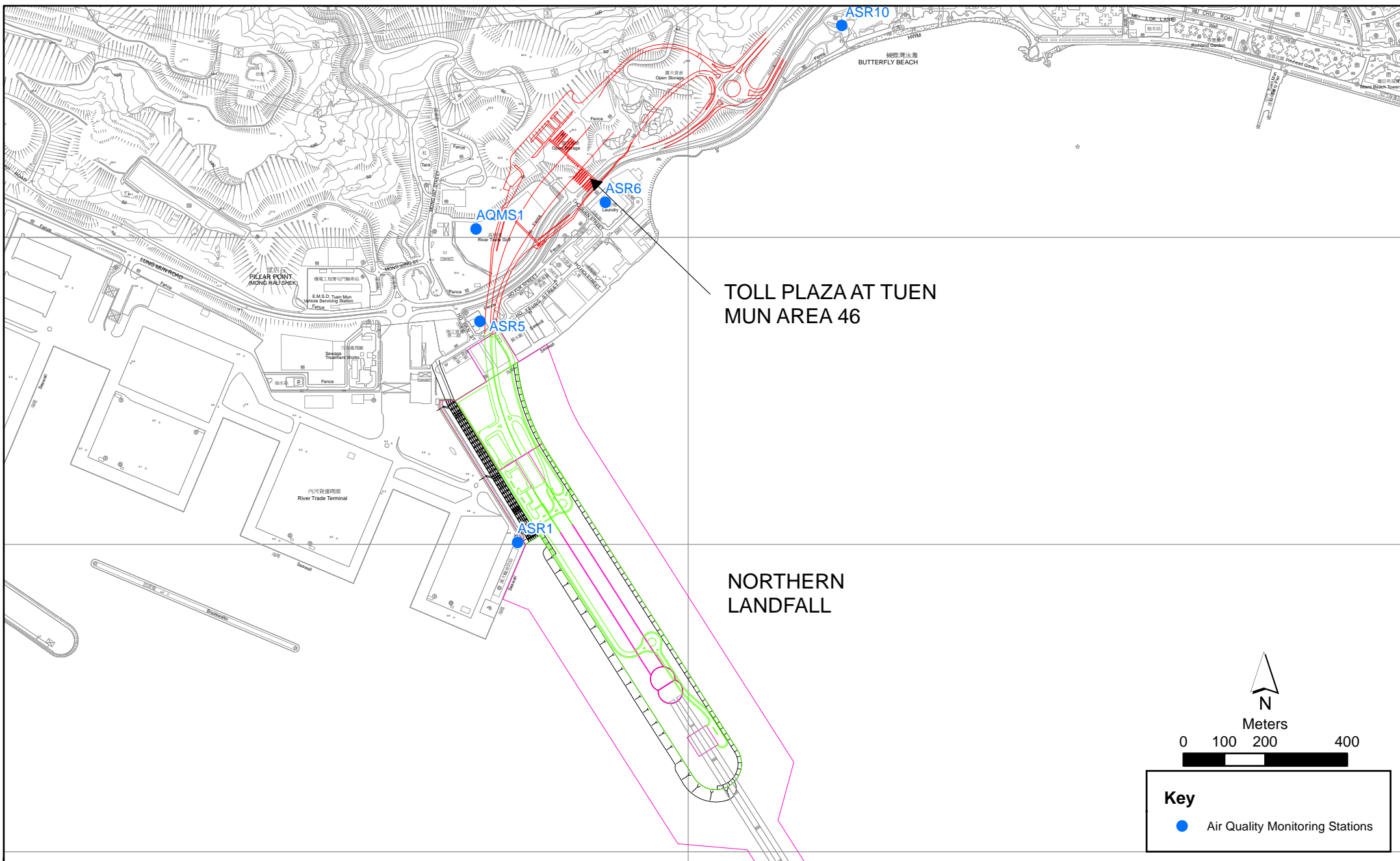


Figure 2.1

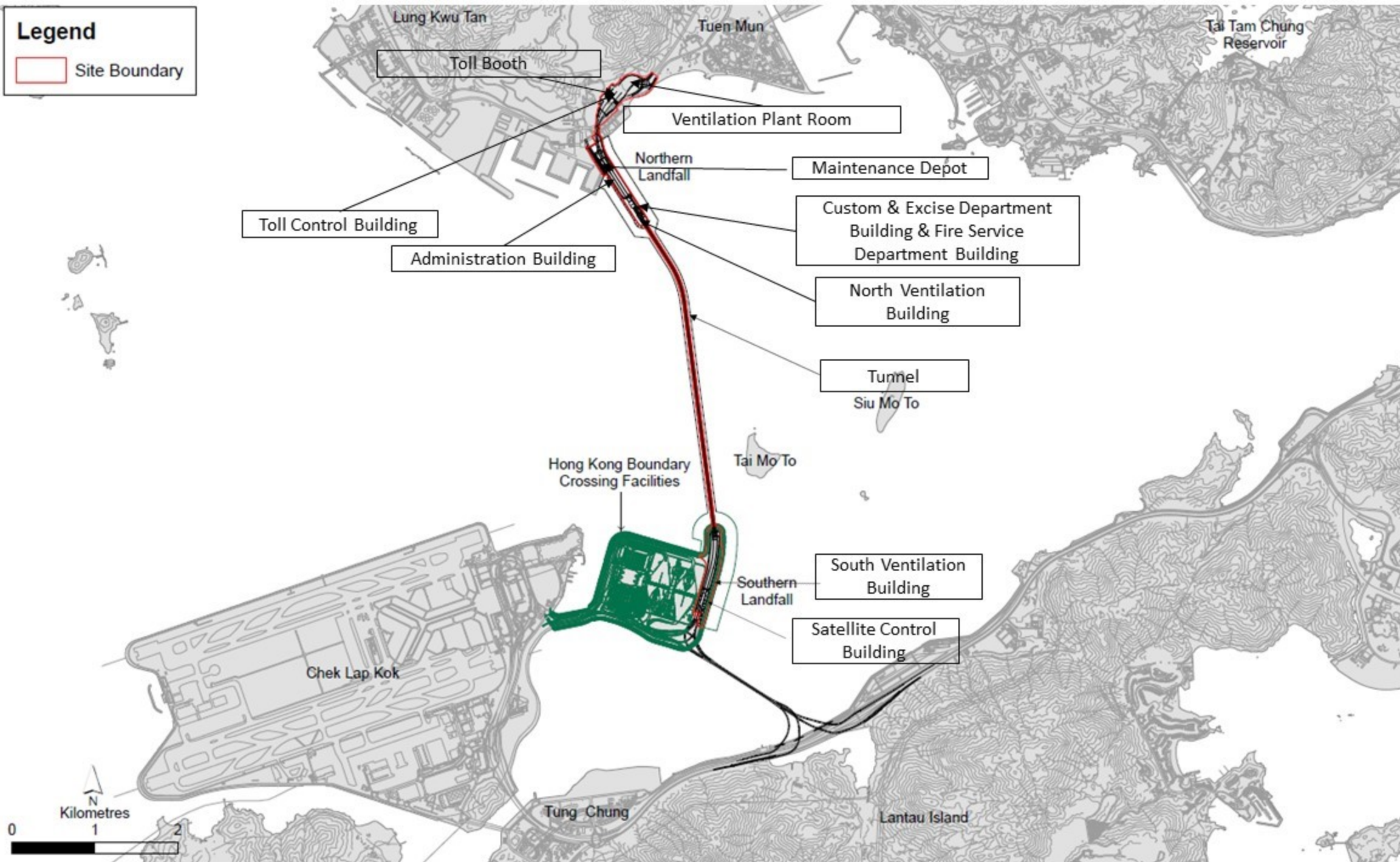
Air Quality Monitoring Stations for the Enhanced TSP Monitoring
 (Source: Adopted from Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link -
 Northern Connection Sub-sea Tunnel Section)

Appendix B

Works Locations

Legend

Site Boundary



Appendix C

Site Photo



Photo 1 - Fire Services Department Building & Customs and Excise Department Building



Photo 2 -North Ventilation Building