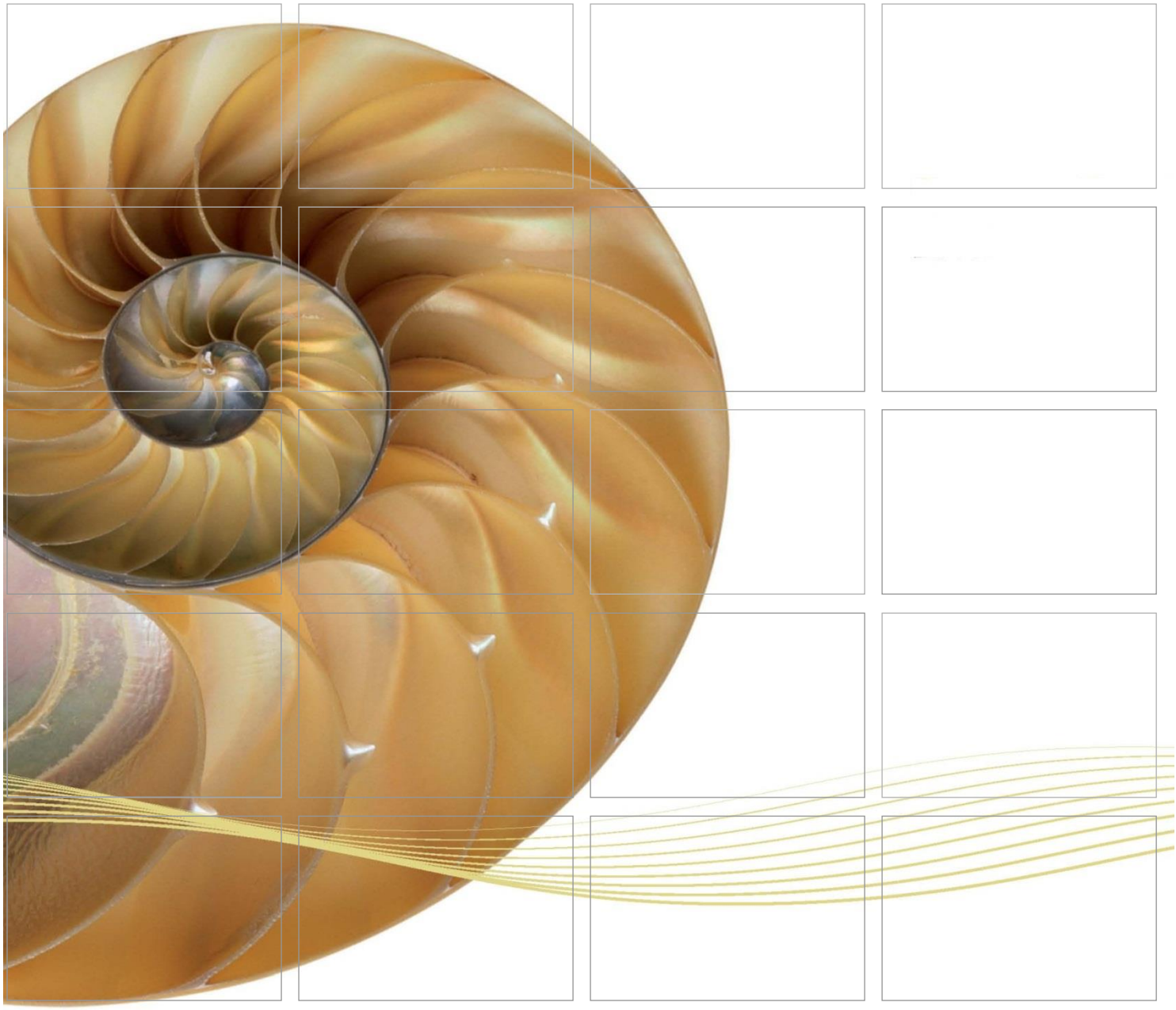
REPORT



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

Third Quarterly EM&A Report

15 May 2019

Environmental Resources Management
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Contract No. HY/2017/10
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Third Quarterly EM&A Report

Document Code: 0463091_3rd Quarterly EM&A_20190515.doc

Client: Gammon	Project No: 0463091
Summary: This document presents the Third Quarterly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.	Date: 15 May 2019 Approved by: *Mr Craig Reid* *Partner* Certified by: *Dr Jasmine Ng* *ET Leader*

Revision	Description	By	Checked	Approved	Date
	Third Quarterly Monthly EM&A Report	VAR	JN	CAR	15/05/19

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15 May 2019

By Fax (2783 0155) and By Post

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

Attention: Mr. Desmond Fung

Dear Mr. Fung,

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

Contract No. HY/2017/10
TM-CLKL – Northern Connection Tunnel Buildings, E&M Works
3rd Quarterly EM&A Summary Report for December 2018 to February 2019

Reference is made to the Environmental Team's submission of the quarterly EM&A summary report for December 2018 to February 2019 (ET's ref.: *"0463091_3rd Quarterly EM&A_20190515.doc"* dated 15 May 2019) certified by the ET Leader and provided to us via e-mail on 15 May 2019.

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

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

c.c.

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

Internal: DY, YH, RY, DF, HW, ENPO Site

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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 Third Quarterly EM&A Report presenting the EM&A works carried out during the period from 1 December 2018 to 28 February 2019 for the *Contract No. HY/2017/10 Northern Connection Tunnel Buildings, Electrical and Mechanical Works* (the "Contract") in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

<u>December 2018</u>

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Excavation at Administration Building;
- Excavation at Maintenance Depot;
- Socket H-piling at Fire Services Department Building; and
- Socket H-piling at Customs and Excise Department Building.

<u>January 2019</u>

Land-based Works

- Bar bending, timber formwork and concreting and Architectural Builder's Work and Finishes at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Building Structure at Administration Building;
- Building Structure at Maintenance Depot;
- Socket H-piling at Fire Services Department Building;
- Socket H-piling at Customs and Excise Department Building; and
- Electrical and Mechanical Works and Architectural Builders' Works and Finishes at Kiosk N2.

February 2019

Land-based Works

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Building Structure at Administration Building;
- Building Structure at Maintenance Depot;
- Excavation at Fire Services Department Building;
- Excavation at Customs & Excise Department Building; and
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk N2.

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

24-hour TSP Monitoring	29 sessions
1-hour TSP Monitoring	29 sessions
Landfill Gas Hazard Monitoring	6 days
Joint Environmental Site Inspection	12 sessions

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

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

Eight (8) Action Level and one (1) Limit Level exceedances for 1-hour TSP and one (1) Action Level exceedance for 24-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period.

Breaches of Action and Limit Levels 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:

March 2019

Land-based Works

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

April 2019

Land-based Works

- Electrical and Mechanical Works and Architectural Builders Work and Finishes at Toll Control Building;

- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Building Structure at Administration Building;
- Building Structure at Maintenance Depot;
- Building Structure at Fire Services Department Building;
- Building Structure at Customs and Excise Department Building; and
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Underpass at C3 area;
- Electrical and Mechanical Works at the Tunnel; and
- Excavation and Building Structure at Satellite Control Building

May 2019

Land-based Works

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

F**uture Key Issues**

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

1 INTRODUCTION

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

N

TUEN MUN

LUNG KWU TAN

URMSTON ROAD

TAI LAM CHUNG RESERVOIR

TSING YI

A

01
7061

01
7063

TUEN MUN TO
CHEK LAP KOK LINK

SOUTH CHINA SEA

SIU MO TO

TAI MO TO

HONG KONG
BOUNDARY
CROSSING
FACILITIES

01
7062

CHEK LAP KOK

A

TUNG
CHUNG

LANTAU ISLAND

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處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

CONSULTANT
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Figure 1.1

ISSUE/REVISION

I/R	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

Plot File by: jerrywong
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Project Management Initials: Designed: KATH Checked: SYLC Approved: CWN ISO A1 594mm x 841mm

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AECOM

PROJECT
TUEN MUN - CHEK LAP KOK LINK

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

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

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Figure 1.2a

ISSUE/REVISION

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

STATUS

SCALE	DIMENSION UNIT
A1 1 : 2500	MILLIMETRES

KEY PLAN

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

SHEET TITLE
ZONING PLAN (SHEET 1)

SHEET NUMBER
60240249/C4/7061A

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

N

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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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Figure 1.2b

ISSUE/REVISION

I/R	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 2)

SHEET NUMBER
60240249/C4/7062A

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

Plot File by: jerrywong 17-Jan-18
PATH: Y:\TOTo RSS\MSLIC4 Drawings\C4_Drawing (2018_01_02)\Architectural drawings -DGN\60240249_C4_7063.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

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Hong Kong Project Management Office

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Figure 1.2c

ISSUE/REVISION

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

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

1.2 SCOPE OF REPORT

This is the Third 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 December 2018 to 28 February 2019.

1.3 ORGANIZATION STRUCTURE

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

Table 1.1 Contact Information of Key Personnel

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

1.4 SUMMARY OF CONSTRUCTION WORKS

The construction phase of the Contract commenced on 7 June 2018. The rolling construction programme for the period of December 2018 to February 2019 is shown in *Appendix B*.

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

<u>December 2018</u>

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;

- Electrical and Mechanical Works at Northern Ventilation Building;
- Excavation at Administration Building;
- Excavation at Maintenance Depot;
- Socket H-piling at Fire Services Department Building; and
- Socket H-piling at Customs and Excise Department Building.

January 2019

Land-based Works

- Bar bending, timber formwork and concreting and Architectural Builder's Work and Finishes at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Building Structure at Administration Building;
- Building Structure at Maintenance Depot;
- Socket H-piling at Fire Services Department Building;
- Socket H-piling at Customs and Excise Department Building; and
- Electrical and Mechanical Works and Architectural Builders' Works and Finishes at Kiosk N2.

February 2019

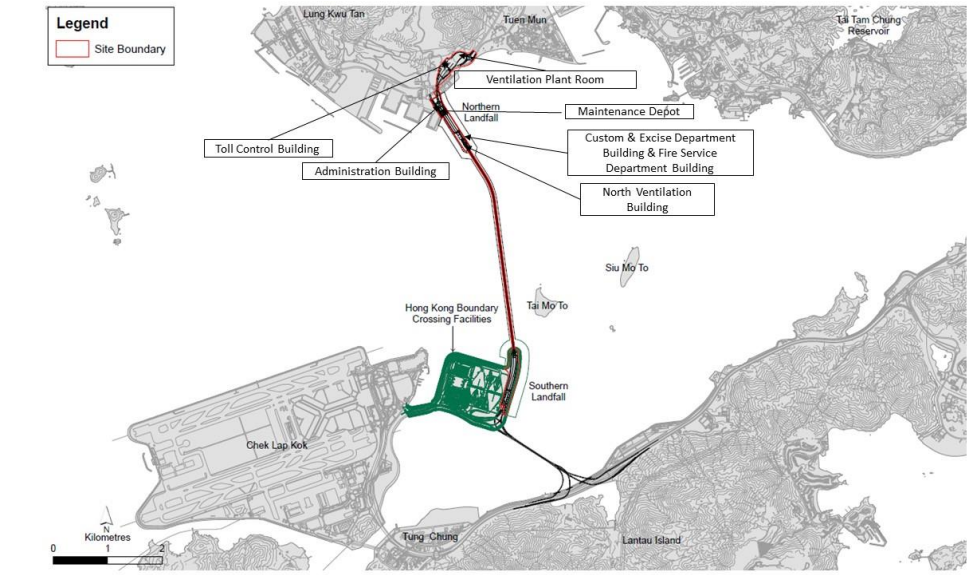
Land-based Works

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Toll Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Building Structure at Administration Building;
- Building Structure at Maintenance Depot;
- Excavation at Fire Services Department Building;
- Excavation at Customs & Excise Department Building; and
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk N2.

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



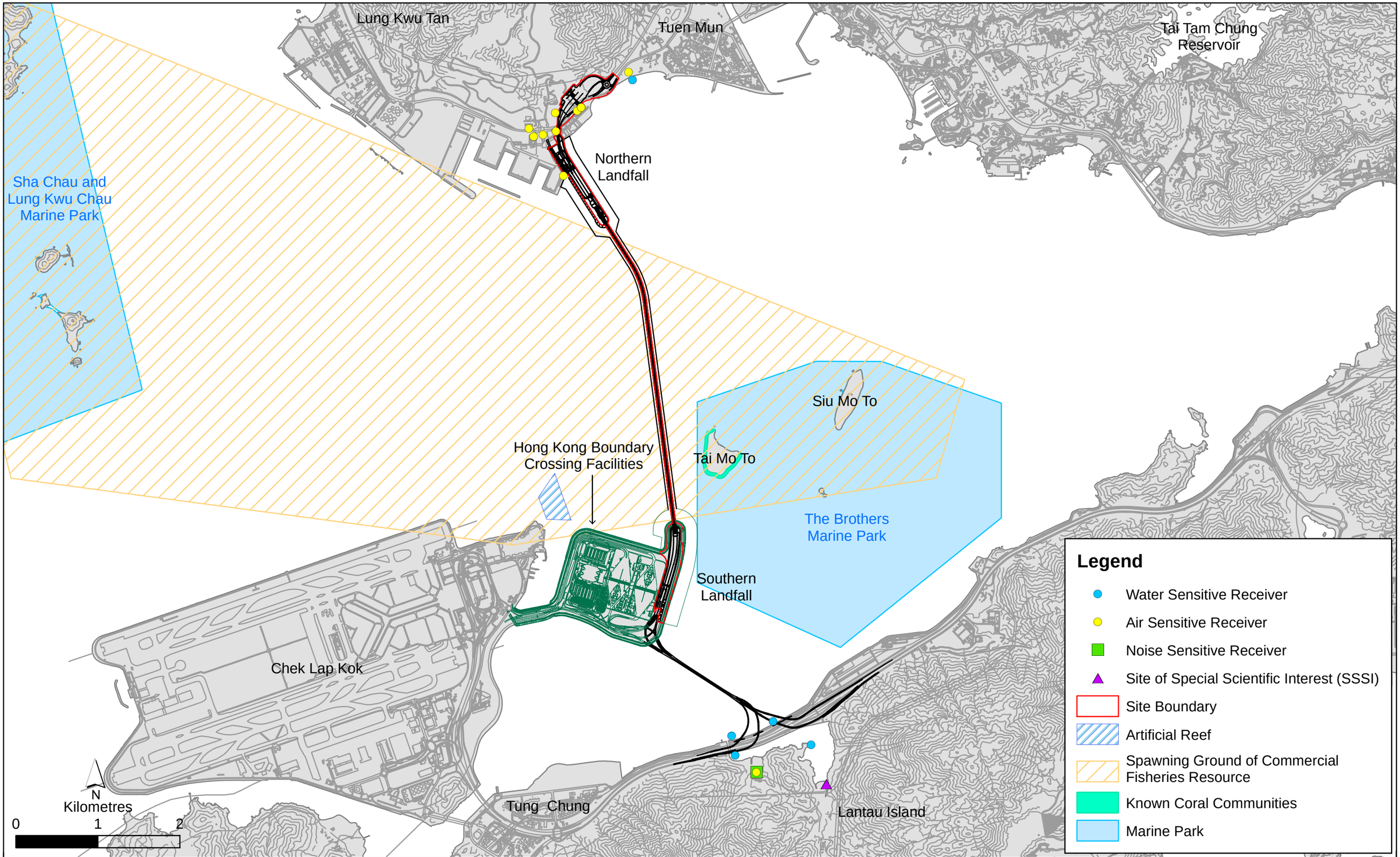


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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Date: 12/7/2018

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2 EM&A RESULTS

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/

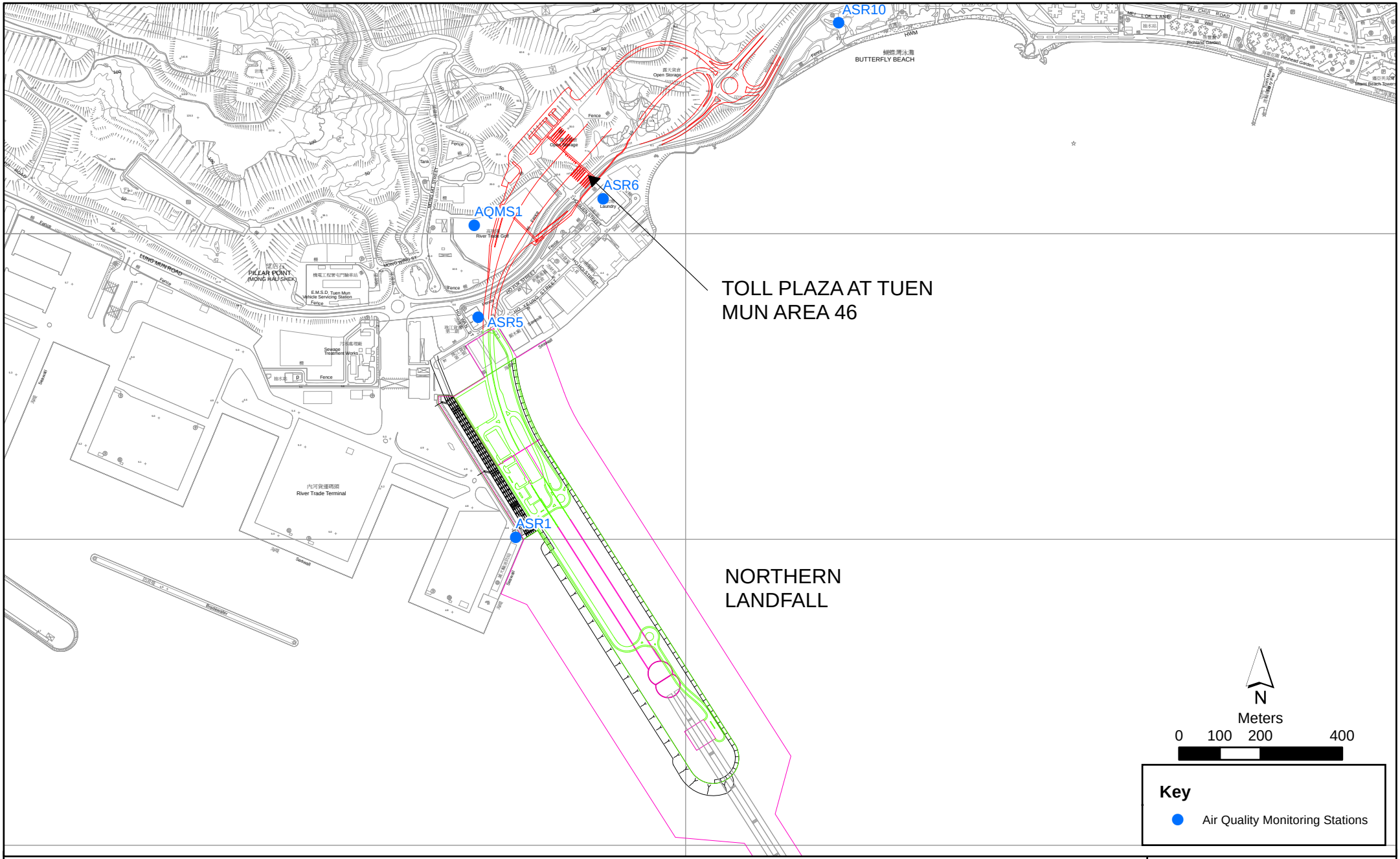

Figure 2.1

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)

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Date: 21/2/2014

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 December 2018	Tuen Mun Fireboat Station	Office	TSP monitoring • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 6 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 6 days Enhanced TSP monitoring (commenced on 24 October 2014 under *Contract No. HY/2012/08*) • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 3 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 3 days
ASR5	2, 5, 8, 11, 14, 17, 20 ,23, 26 and 29 January 2019	Pillar Point Fire Station	Office	
AQMS1	1, 4, 10, 13, 16, 19, 22, 25 and 28 February 2019	Previous River Trade Golf	Bare ground	
ASR6		Butterfly Beach Laundry	Office	
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).

Eight (8) Action Level exceedances for 1-hour TSP on 9, 12 and 18 December 2018, 11, 17 and 26 January 2019, one (1) Limit Level exceedance for 1-hour TSP on 17 January 2019 and one (1) Action Level exceedance for 24-hour TSP were recorded on 16 February 2019 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*.

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. Twelve (12) site inspections were carried out in the reporting period on 7, 14, 21 and 28 December 2018, 4, 11, 18 and 25 January and 1, 4, 15 and 22 February 2019.

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 water 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
7 December 2018	Fire Services Department Building • Accumulated refuse in waste bin should be removed. • Untreated waste water should not be discharged directly into the sea.	Fire Services Department Building • The Contractor was reminded to remove accumulated refuse in waste bin. • The Contractor was reminded to remove the hose discharging untreated wastewater.
14 December 2018	Toll Control Building • General refuse in the drainage should be cleared. Fire Services Department Building and Custom & Excise Department Building • Decolorized NRMM label should be replaced on the generator.	Toll Control Building • The Contractor was reminded to clear general refuse in the drainage. Fire Services Department Building and Custom & Excise Department Building • The Contractor was reminded to replace decolorized NRMM label on the generator. •
21 December 2018	Fire Services Department Building • Chemical containers should be placed in drip tray. North Ventilation Building Accumulated refuse should be cleared.	Fire Services Department Building • The Contractor was reminded to place chemical containers in drip tray. North Ventilation Building • The Contractor was reminded to clear accumulated refuse.
28 December 2018	Maintenance Depot and Administration Building • Soil stockpiles was observed.	Maintenance Depot and Administration Building • The Contractor was reminded to cover soil stockpiles by tarpaulin or apply water to the stockpile. •
4 January 2019 2019	Fire Services Department Building & Customs and Excise Department Building • Chemical containers should be placed in drip tray. • Unnecessary pipes were observed connected to the Aqua Sed.	Fire Services Department Building & Customs and Excise Department Building • The Contractor was reminded to place chemical containers in drip tray. • The Contractor was reminded to remove unnecessary pipes connected to the Aqua Sed.
11 January 2019	North Ventilation Building • Accumulated waste was observed in the waste bin.	North Ventilation Building • The Contractor was reminded to clear accumulated refuse in waste bin. •
18 January 2019	Fire Services Department Building • Surface runoff was observed during piling. North Ventilation Building Oil leakage was observed under machinery.	Fire Services Department Building • The Contractor was reminded to prevent surface runoff during piling. North Ventilation Building • The Contractor was reminded to provide drip tray under machinery.
25 January 2019	Custom and Excise Department Building • Accumulated rubbish in the waste skip should be cleared regularly.	Custom and Excise Department Building • The Contractor was reminded to clear accumulated rubbish in the waste skip.

Inspection Date	Observations	Recommendations/ Remarks
1 February 2019 2019	Fire Services Department Building Chemical containers should be placed in drip tray.	Fire Services Department Building • The Contractor was reminded to place chemical containers in drip tray.
4 February 2019	Fire Services Department Building & Custom and Excise Department Building • General refuse was observed on the ground. • Openings of water safety barriers was observed. Toll Control Building • Construction waste should be disposed in the refuse skip.	Fire Services Department Building & Custom and Excise Department Building • The Contractor was reminded to dispose general refuse in capped rubbish bin. • The Contractor was reminded to cap the openings of water safety barriers. Toll Control Building • The Contaractor was reminded to dispose construction waste in the refuse skip.
15 February 2019	Fire Services Department Building & Custom and Excise Department Building • Chemical containers should be placed in drip tray. Decolorized NRMM label was observed on the crane.	Fire Services Department Building & Custom and Excise Department Building • The Contractor was reminded to place chemical containers in drip tray. • The Contractor was reminded to replace the decolorized NRMM label on the crane.
22 February 2019	Custom and Excise Department Building • Black smoke observed from water pump. Administration Building • Stagnant water was observed in the drip tray.	Custom and Excise Department Building • The Contractor was reminded to provide maintenance for the plant. Administration Building • The Contractor was reminded to clear the stagnant water in the drip tray.

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 perform to ensure that the works area at Pillar Point Valley (PPV) Landfill is free of landfill gas during any excavations works. A total of 6 days of landfill gas hazard monitoring was conducted at Toll Control Building prior to the excavation works during 3 to 9 January 2019 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 2.2* 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 2.2 Summary of Landfill Gas Hazard Monitoring Results in the Reporting Period

	Average (%)	Range (%)	Action / Limit Level (%)
Methane	0	0	10 / 20
Oxygen	20.8	20.7-20.8	19 / 18
Carbon Dioxide	0.08	0.07-0.08	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 2.3*.

Table 2.3 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)
December 2018	7,592	602	33,280	0	0	0
January 2019	1,939	0	74,680	0	0	0
February 2019	2,129	0	54,130	0	49	0

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

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

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

2.5 ENVIRONMENTAL LICENSES AND PERMITS

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

Table 2.4 Summary of Environmental Licensing and Permit Status

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	N/A	HyD	Tuen Mun- Chek Lap Kok Link
APCO Construction Dust Notification	433493	14 May 2018	N/A	GCL	For Tuen Mun working area
Construction Waste Billing Account	7030836	15 May 2018	N/A	GCL	N/A
Chemical Waste Producer Registration	5213-422-G2827-01	13 June 2018	N/A	GCL	N/A
Discharge License under WPCO for Buildings at C2 area	WT00031783-2018	22 October 2018	31 October 2023	GCL	Sampling Frequency: Bimonthly
Discharge License under WPCO for Buildings at C3 area	WT00032062-2018	30 October 2018	31 October 2023	GCL	Sampling Frequency: Quarterly
Construction Noise Permit	GW-RW0451-18	2 November 2018	25 April 2019	GCL	For Toll Control Building, Administration Building, Maintenance Depot and WA18
Construction Noise Permit	GW-RW0560-18	28 December 2018	18 June 2019	GCL	For Toll Control Building, Administration Building, Maintenance Depot and WA18
Construction Noise Permit	GW-RW0037-19	28 January 2019	23 July 2019	GCL	For Toll Control Building, Administration Building, Maintenance Depot and WA18

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

Eight (8) Action Level and one (1) Limit Level exceedances for 1-hour TSP and one (1) Action Level exceedance for 24-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 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*.

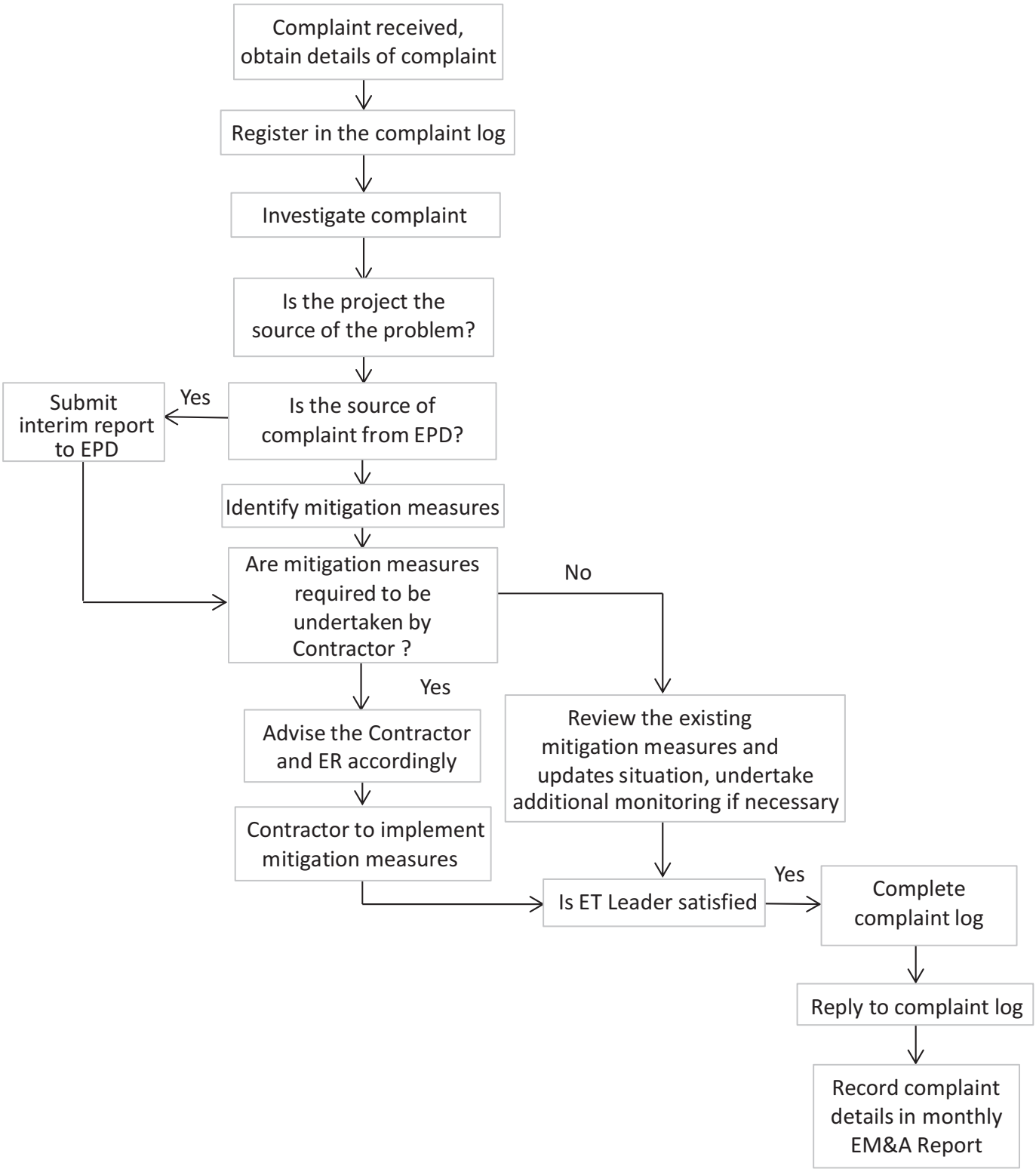

Figure 2.2 Environmental Complaint Handling Procedure

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DATE: 06/12/2013

Environmental Resources Management

ERM

3 FUTURE KEY ISSUES

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:

March 2019

Land-based Works

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

April 2019

Land-based Works

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

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Underpass at C3 area;
- Electrical and Mechanical Works at the Tunnel; and
- Excavation and Building Structure at Satellite Control Building

May 2019

Land-based Works

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

3.2 KEY ISSUES FOR THE COMING QUARTER

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

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

This Third Quarterly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 December to 28 February 2019, in accordance with the Updated EM&A Manual and the requirements of EP-354/2009/D.

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

Eight (8) Action Level and one (1) Limit Level exceedances for 1-hour TSP and one (1) Action Level exceedance for 24-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 methane, oxygen and carbon dioxide was recorded during landfill gas hazard monitoring in the reporting period.

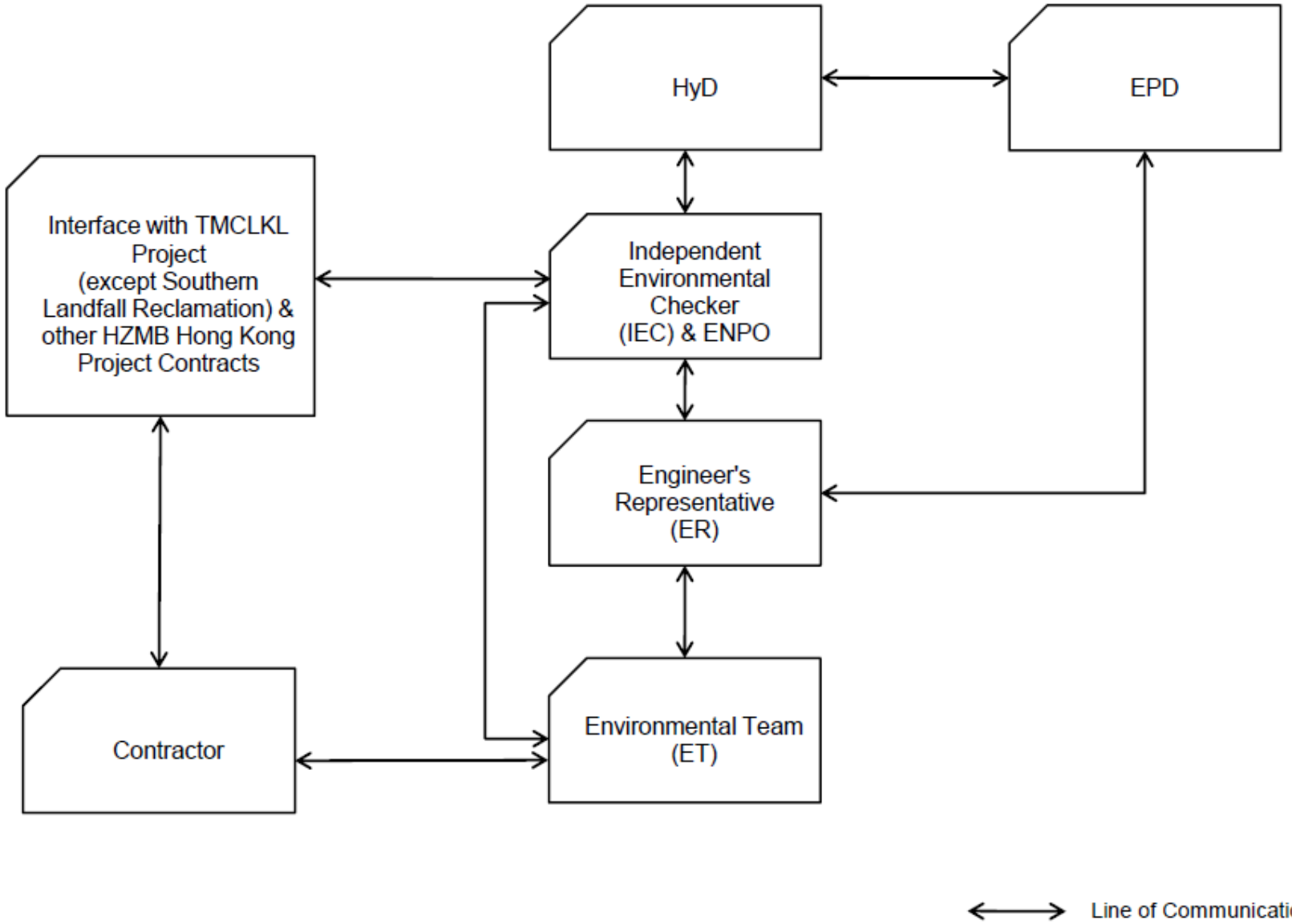
Environmental site inspection was carried out twelve (12) times in the reporting period. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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



Appendix A1

DATE: 09/07/2018

Contract No. HY/2017/10 Northern Connection Tunnel Buildings, Electrical and Mechanical Works, Project Organization

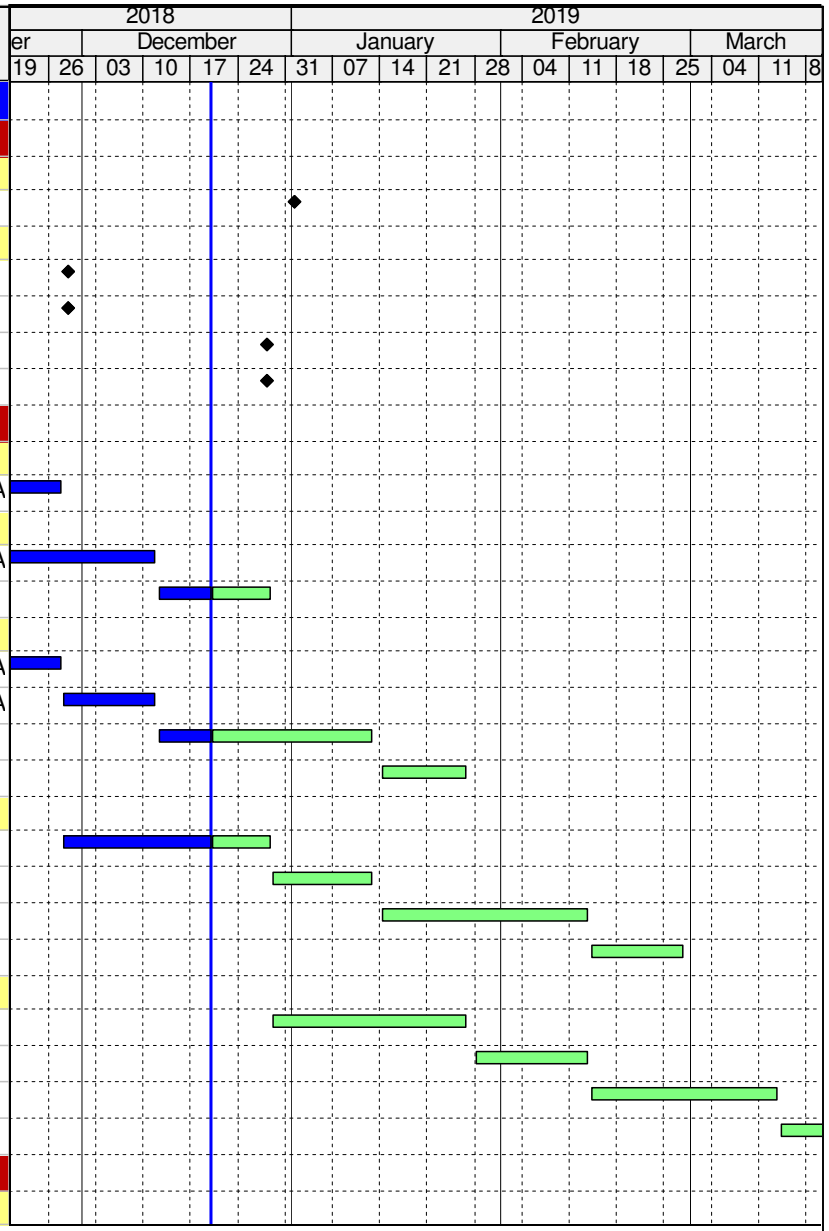
Environmental Resources Management

ERM

Appendix B

Construction Programme

ID	Activity	Days	Start	Finish
Three Monthly Programme 20/12/18 - 20/03/19				
Contract Dates				
Portion Access Dates				
P230	Access to Portion X (Day 240)	0	01-Jan-19	
Portion Possession Dates				
P205	Possession to Portion XVb (Day 236)	0	29-Nov-18 A	
P215	Possession to Portion XVIb (Day 236)	0	29-Nov-18 A	
P225	Possession to Portion XVa (Day 236)	0	28-Dec-18	
P235	Possession to Portion XVIa (Day 236)	0	28-Dec-18	
Method Statements				
Administration Building				
MS1200	ICE & ER Approval of MS for Administration Building (E&M)	12	14-Nov-18 A	27-Nov-18 A
Maintenance Depot				
MS1210	Prepare & Submit MS for Maintenance Depot (E&M)	24	14-Nov-18 A	11-Dec-18 A
MS1220	ICE & ER Approval of MS for Maintenance Depot (E&M)	12	12-Dec-18 A	28-Dec-18
Costom & Excise Department Building				
MS1090	Prepare & Submit MS for C&ED Building (Civil)	24	31-Oct-18 A	27-Nov-18 A
MS1100	ICE & ER Approval of MS for C&ED Building (Civil)	12	28-Nov-18 A	11-Dec-18 A
MS1230	Prepare & Submit MS for C&ED Building (E&M)	24	12-Dec-18 A	12-Jan-19
MS1240	ICE & ER Approval of MS for C&ED Building (E&M)	12	14-Jan-19	26-Jan-19
Fire Services Department Building				
MS1110	Prepare & Submit MS for Fire Services Building (Civil)	24	28-Nov-18 A	28-Dec-18
MS1120	ICE & ER Approval of MS for Fire Services Building (Civil)	12	29-Dec-18	12-Jan-19
MS1250	Prepare & Submit MS for Fire Services Building (E&M)	24	14-Jan-19	13-Feb-19
MS1260	ICE & ER Approval of MS for Fire Services Building (E&M)	12	14-Feb-19	27-Feb-19
Satellite Control Building				
MS1130	Prepare & Submit MS for Satellite Control Building (Civil)	24	29-Dec-18	26-Jan-19
MS1140	ICE & ER Approval of MS for Satellite Control Building (Civil)	12	28-Jan-19	13-Feb-19
MS1270	Prepare & Submit MS for Satellite Control Building (E&M)	24	14-Feb-19	13-Mar-19
MS1280	ICE & ER Approval of MS for Satellite Control Building (E&M)	12	14-Mar-19	27-Mar-19
E&M Design				
Section A - Tunnel Ventilation System				



THREE MONTHLY ROLLING PROGRAMME

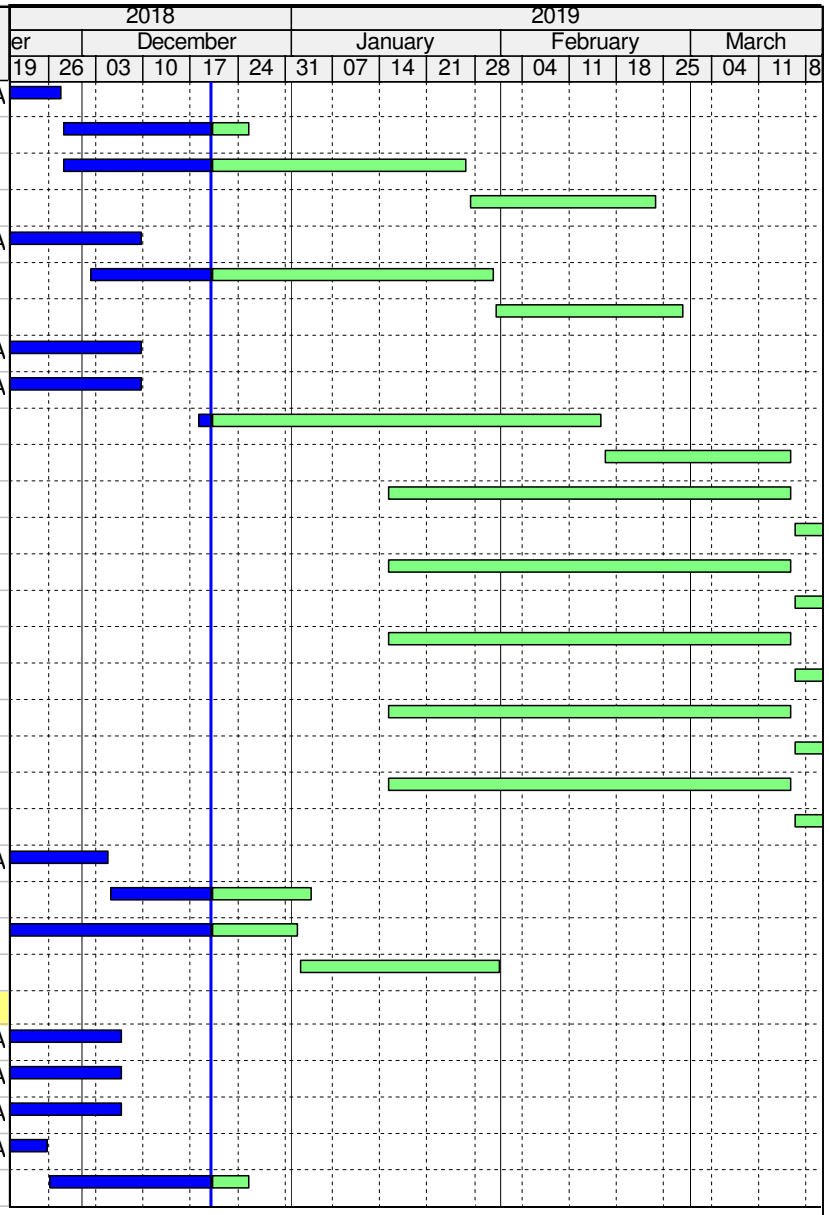
P1

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
A020	Tunnel Ventilation Fan Pressure Calculations	60	29-Sep-18 A	27-Nov-18 A
A025	Tunnel Ventilation Fan Pressure Calculations - Approval	28	28-Nov-18 A	25-Dec-18
A030	Acoustic Calculations	60	28-Nov-18 A	26-Jan-19
A035	Acoustic Calculations - Approval	28	27-Jan-19	23-Feb-19
A045	TVS -Smoke Extraction Fan Static Calculation for Service Gallery - Approval	28	12-Nov-18 A	09-Dec-18 A
A070	Design Proposal of Power Loading Assessment of TVS	60	02-Dec-18 A	30-Jan-19
A075	Design Proposal of Power Loading Assessment of TVS - Approval	28	31-Jan-19	27-Feb-19
A088	TVS -Design Proposal including the Smoke Extraction Strategy - Approval	28	12-Nov-18 A	09-Dec-18 A
A095	TVS -Control Logic Review with FSD - Approval	28	12-Nov-18 A	09-Dec-18 A
A100	TVS -Cable Sizing and Voltage Drop for TVFs	60	18-Dec-18 A	15-Feb-19
A105	TVS -Cable Sizing and Voltage Drop for TVFs - Approval	28	16-Feb-19	15-Mar-19
A110	TVS -Structural Calculation -Fan Support	60	15-Jan-19*	15-Mar-19
A115	TVS -Structural Calculation -Fan Support - Approval	28	16-Mar-19	12-Apr-19
A120	TVS -Structural Calculation -Duct Support	60	15-Jan-19*	15-Mar-19
A125	TVS -Structural Calculation -Duct Support - Approval	28	16-Mar-19	12-Apr-19
A130	TVS -Structural Calculation -Ceiling Mounted Fan Supports	60	15-Jan-19*	15-Mar-19
A135	TVS -Structural Calculation -Ceiling Mounted Fan Supports - Approval	28	16-Mar-19	12-Apr-19
A140	TVS -Structural Calculation -Vertical Fan Supports	60	15-Jan-19*	15-Mar-19
A145	TVS -Structural Calculation -Vertical Fan Supports - Approval	28	16-Mar-19	12-Apr-19
A150	TVS -Structural Calculation -Horizontal Air Duct Supports	60	15-Jan-19*	15-Mar-19
A155	TVS -Structural Calculation -Horizontal Air Duct Supports - Approval	28	16-Mar-19	12-Apr-19
A160	Tunnel Cable Sizing and Voltage Drop Verification	60	06-Oct-18 A	04-Dec-18 A
A165	Tunnel Cable Sizing and Voltage Drop Verification - Approval	30	05-Dec-18 A	03-Jan-19
A170	Tunnel Cable Containment Calculation	60	03-Nov-18 A	01-Jan-19
A175	Tunnel Cable Containment Calculation - Approval	30	02-Jan-19	31-Jan-19
Section B - Tunnel Lighting and Road Lighting System				
B025	Tunnel lighting control - Approval	30	07-Nov-18 A	06-Dec-18 A
B035	TLS -Lux Calculation - Approval	30	07-Nov-18 A	06-Dec-18 A
B045	TLS -Structure support design calculation for tunnel lighting - Approval	30	07-Nov-18 A	06-Dec-18 A
B050	Design Proposal of Road / Street Lighting System	60	27-Sep-18 A	25-Nov-18 A
B055	Design Proposal of Road / Street Lighting System - Approval	30	26-Nov-18 A	25-Dec-18



THREE MONTHLY ROLLING PROGRAMME

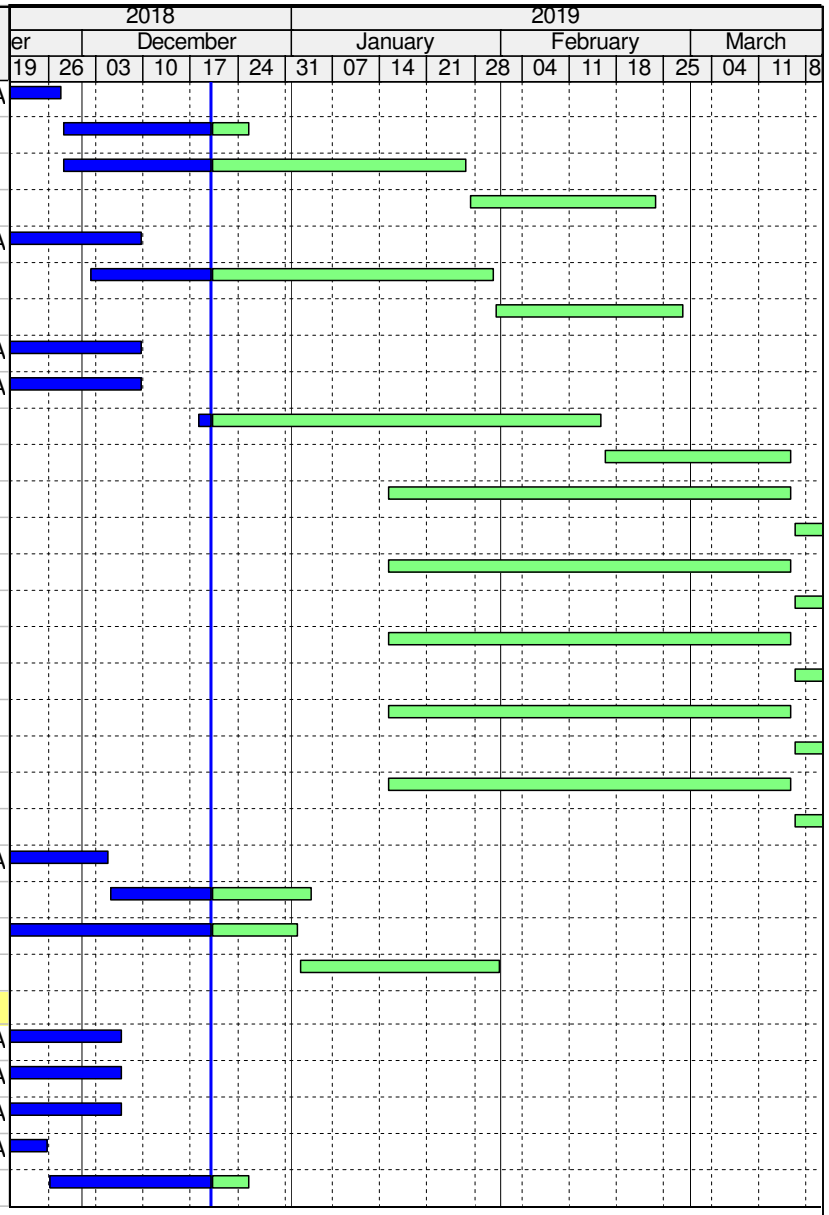
P2

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
A020	Tunnel Ventilation Fan Pressure Calculations	60	29-Sep-18 A	27-Nov-18 A
A025	Tunnel Ventilation Fan Pressure Calculations - Approval	28	28-Nov-18 A	25-Dec-18
A030	Acoustic Calculations	60	28-Nov-18 A	26-Jan-19
A035	Acoustic Calculations - Approval	28	27-Jan-19	23-Feb-19
A045	TVS -Smoke Extraction Fan Static Calculation for Service Gallery - Approval	28	12-Nov-18 A	09-Dec-18 A
A070	Design Proposal of Power Loading Assessment of TVS	60	02-Dec-18 A	30-Jan-19
A075	Design Proposal of Power Loading Assessment of TVS - Approval	28	31-Jan-19	27-Feb-19
A088	TVS -Design Proposal including the Smoke Extraction Strategy - Approval	28	12-Nov-18 A	09-Dec-18 A
A095	TVS -Control Logic Review with FSD - Approval	28	12-Nov-18 A	09-Dec-18 A
A100	TVS -Cable Sizing and Voltage Drop for TVFs	60	18-Dec-18 A	15-Feb-19
A105	TVS -Cable Sizing and Voltage Drop for TVFs - Approval	28	16-Feb-19	15-Mar-19
A110	TVS -Structural Calculation -Fan Support	60	15-Jan-19*	15-Mar-19
A115	TVS -Structural Calculation -Fan Support - Approval	28	16-Mar-19	12-Apr-19
A120	TVS -Structural Calculation -Duct Support	60	15-Jan-19*	15-Mar-19
A125	TVS -Structural Calculation -Duct Support - Approval	28	16-Mar-19	12-Apr-19
A130	TVS -Structural Calculation -Ceiling Mounted Fan Supports	60	15-Jan-19*	15-Mar-19
A135	TVS -Structural Calculation -Ceiling Mounted Fan Supports - Approval	28	16-Mar-19	12-Apr-19
A140	TVS -Structural Calculation -Vertical Fan Supports	60	15-Jan-19*	15-Mar-19
A145	TVS -Structural Calculation -Vertical Fan Supports - Approval	28	16-Mar-19	12-Apr-19
A150	TVS -Structural Calculation -Horizontal Air Duct Supports	60	15-Jan-19*	15-Mar-19
A155	TVS -Structural Calculation -Horizontal Air Duct Supports - Approval	28	16-Mar-19	12-Apr-19
A160	Tunnel Cable Sizing and Voltage Drop Verification	60	06-Oct-18 A	04-Dec-18 A
A165	Tunnel Cable Sizing and Voltage Drop Verification - Approval	30	05-Dec-18 A	03-Jan-19
A170	Tunnel Cable Containment Calculation	60	03-Nov-18 A	01-Jan-19
A175	Tunnel Cable Containment Calculation - Approval	30	02-Jan-19	31-Jan-19
Section B - Tunnel Lighting and Road Lighting System				
B025	Tunnel lighting control - Approval	30	07-Nov-18 A	06-Dec-18 A
B035	TLS -Lux Calculation - Approval	30	07-Nov-18 A	06-Dec-18 A
B045	TLS -Structure support design calculation for tunnel lighting - Approval	30	07-Nov-18 A	06-Dec-18 A
B050	Design Proposal of Road / Street Lighting System	60	27-Sep-18 A	25-Nov-18 A
B055	Design Proposal of Road / Street Lighting System - Approval	30	26-Nov-18 A	25-Dec-18



THREE MONTHLY ROLLING PROGRAMME

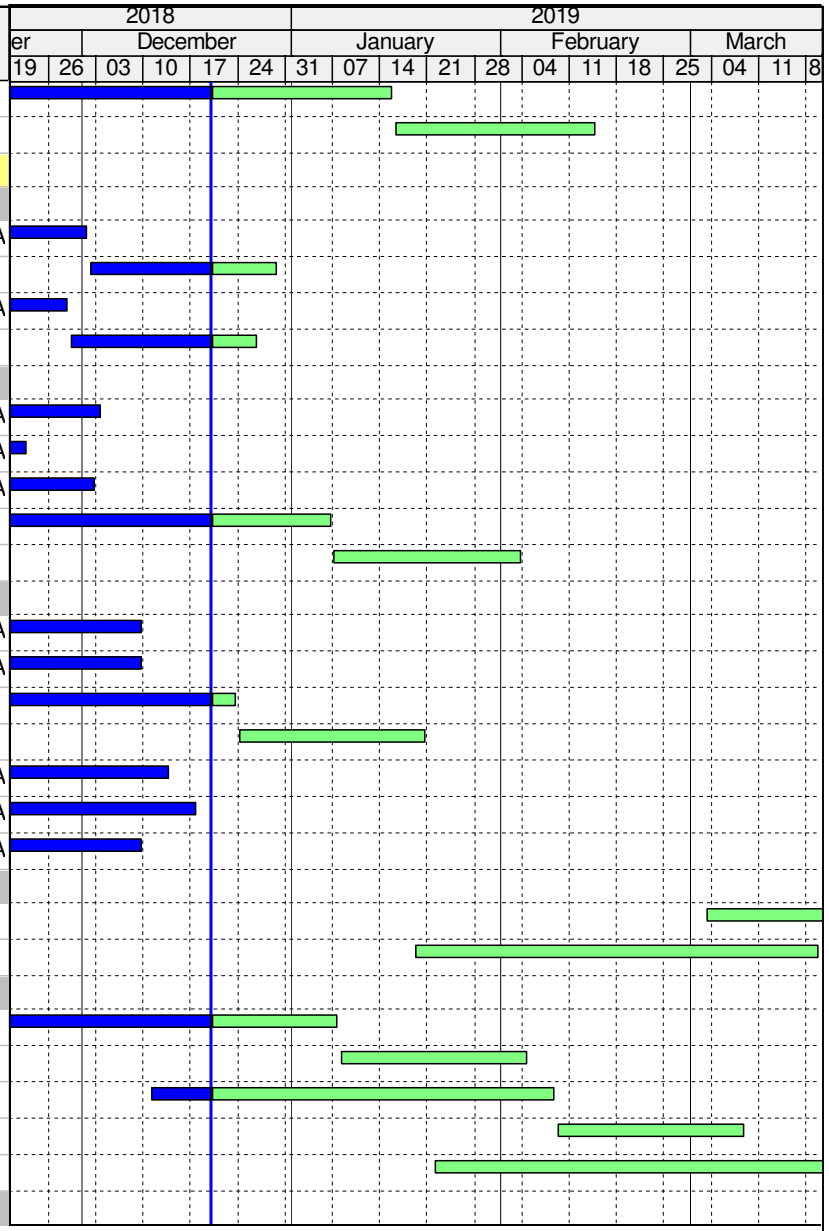
P2

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
B060	Road Lighting Lux Calculation	60	17-Nov-18 A	15-Jan-19
B065	Road Lighting Lux Calculation - Approval	30	16-Jan-19	14-Feb-19
Section C - Building Services of MVAC System				
TCB				
C030	TCB -Pump head calculation	60	03-Oct-18 A	01-Dec-18 A
C035	TCB -Pump head calculation - Approval	28	02-Dec-18 A	29-Dec-18
C060	TCB -Acoustic Performance Calculation	60	30-Sep-18 A	28-Nov-18 A
C065	TCB -Acoustic Performance Calculation - Approval	28	29-Nov-18 A	26-Dec-18
ADB				
C085	ADB -AHU/PAU Static Pressure Calculation - Approval	28	06-Nov-18 A	03-Dec-18 A
C095	ADB -Pump head calculation - Approval	28	26-Oct-18 A	22-Nov-18 A
C115	ADB -Fan Static Pressure Calculation - Approval	28	05-Nov-18 A	02-Dec-18 A
C120	ADB -Acoustic Performance Calculation	60	08-Nov-18 A	06-Jan-19
C125	ADB -Acoustic Performance Calculation - Approval	28	07-Jan-19	03-Feb-19
NVB				
C135	NVB -AC Cooling Capacity Calculation - Approval	28	12-Nov-18 A	09-Dec-18 A
C145	NVB -Mechanical Ventilation Capacity Calculation - Approval	28	12-Nov-18 A	09-Dec-18 A
C150	NVB -Fan Static Pressure Calculation	60	25-Oct-18 A	23-Dec-18
C155	NVB -Fan Static Pressure Calculation - Approval	28	24-Dec-18	20-Jan-19
C165	NVB -Acoustic Performance Calculation - Approval	28	16-Nov-18 A	13-Dec-18 A
C175	NVB -Refrigerant Pipes Sizing Calculation - Approval	28	20-Nov-18 A	17-Dec-18 A
C185	NVB -Staircase Pressurization System Calculation - Approval	28	12-Nov-18 A	09-Dec-18 A
SVB				
C190	SVB -AC Cooling Capacity Calculation	60	03-Mar-19*	01-May-19
C240	SVB -Staircase Pressurization System Calculation	60	19-Jan-19*	19-Mar-19
CEDB				
C250	CEDB -AC Cooling Capacity Calculation	60	09-Nov-18 A	07-Jan-19
C255	CEDB -AC Cooling Capacity Calculation - Approval	28	08-Jan-19	04-Feb-19
C260	CEDB -Mechanical Ventilation Capacity Calculation	60	11-Dec-18 A	08-Feb-19
C265	CEDB -Mechanical Ventilation Capacity Calculation - Approval	28	09-Feb-19	08-Mar-19
C270	CEDB -Fan Static Pressure Calculation	60	22-Jan-19*	22-Mar-19
FSDB				



THREE MONTHLY ROLLING PROGRAMME

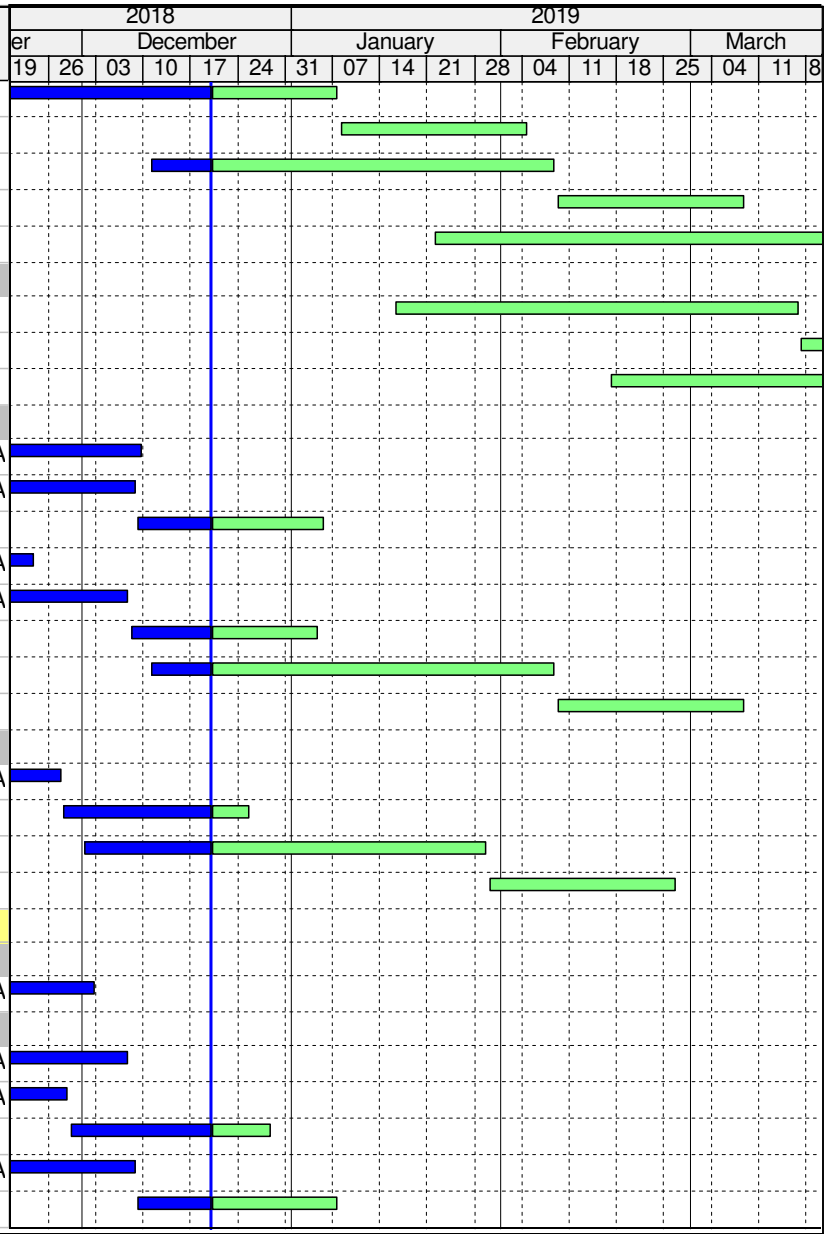
P3

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
C300	FSDB -AC Cooling Capacity Calculation	60	09-Nov-18 A	07-Jan-19
C305	FSDB -AC Cooling Capacity Calculation - Approval	28	08-Jan-19	04-Feb-19
C310	FSDB -Mechanical Ventilation Capacity Calculation	60	11-Dec-18 A	08-Feb-19
C315	FSDB -Mechanical Ventilation Capacity Calculation - Approval	28	09-Feb-19	08-Mar-19
C320	FSDB -Fan Static Pressure Calculation	60	22-Jan-19*	22-Mar-19
SCB				
C350	SCB -AC Cooling Capacity Calculation	60	16-Jan-19*	16-Mar-19
C355	SCB -AC Cooling Capacity Calculation - Approval	28	17-Mar-19	13-Apr-19
C360	SCB -Mechanical Ventilation Capacity Calculation	60	17-Feb-19*	17-Apr-19
MD				
C405	MD -AC Cooling Capacity Calculation - Approval	28	12-Nov-18 A	09-Dec-18 A
C410	MD -AHU/PAU Static Pressure Calculation	60	10-Oct-18 A	08-Dec-18 A
C415	MD -AHU/PAU Static Pressure Calculation - Approval	28	09-Dec-18 A	05-Jan-19
C425	MD -Mechanical Ventilation Capacity Calculation - Approval	28	27-Oct-18 A	23-Nov-18 A
C430	MD -Fan Static Pressure Calculation	60	09-Oct-18 A	07-Dec-18 A
C435	MD -Fan Static Pressure Calculation - Approval	28	08-Dec-18 A	04-Jan-19
C440	MD -Acoustic Performance Calculation	60	11-Dec-18 A	08-Feb-19
C445	MD -Acoustic Performance Calculation - Approval	28	09-Feb-19	08-Mar-19
Vehicular Underpass				
C460	Vehicle Underpass -Fan Static Pressure Calculation	60	29-Sep-18 A	27-Nov-18 A
C465	Vehicle Underpass -Fan Static Pressure Calculation - Approval	28	28-Nov-18 A	25-Dec-18
C470	Vehicle Underpass -Acoustic Performance Calculation	60	01-Dec-18 A	29-Jan-19
C475	Vehicle Underpass -Acoustic Performance Calculation - Approval	28	30-Jan-19	26-Feb-19
Section D - Building Services of Electrical System				
TCB				
D075	TCB -Cable Containment Calculation - Approval	30	03-Nov-18 A	02-Dec-18 A
ADB				
D125	ADB -Lux Level Calculation - Approval	30	08-Nov-18 A	07-Dec-18 A
D130	ADB -Cable Sizing and Voltage Drop Verification	60	30-Sep-18 A	28-Nov-18 A
D135	ADB -Cable Sizing and Voltage Drop Verification - Approval	30	29-Nov-18 A	28-Dec-18
D160	ADB -Cable Containment Calculation	60	10-Oct-18 A	08-Dec-18 A
D165	ADB -Cable Containment Calculation - Approval	30	09-Dec-18 A	07-Jan-19



THREE MONTHLY ROLLING PROGRAMME

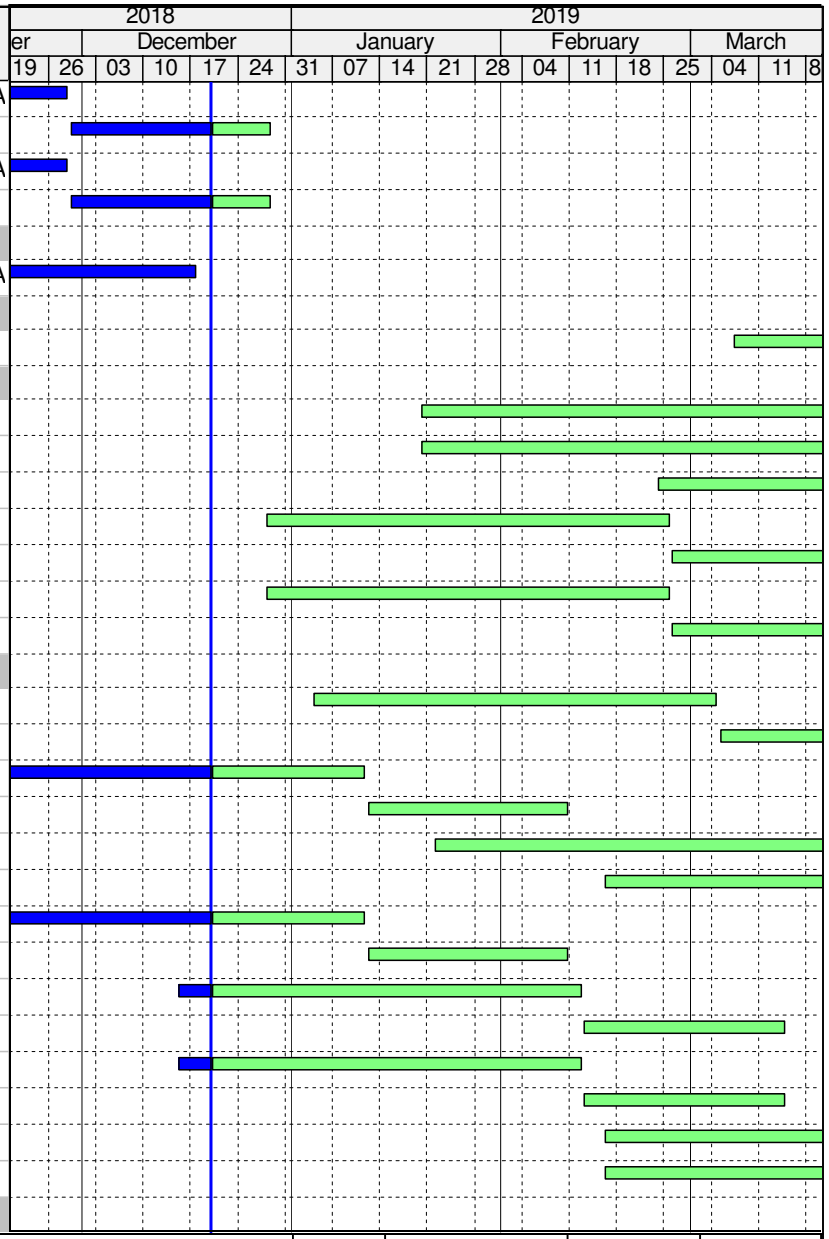
P4

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
D170	ADB -Earthing Resistance Calculation	60	30-Sep-18 A	28-Nov-18 A
D175	ADB -Earthing Resistance Calculation - Approval	30	29-Nov-18 A	28-Dec-18
D180	ADB -Power Factor Correction & Harmonic Current AnalysisCalculation	60	30-Sep-18 A	28-Nov-18 A
D185	ADB -Power Factor Correction & Harmonic Current AnalysisCalculation - Apprc	30	29-Nov-18 A	28-Dec-18
NVB				
D255	NVB -Cable Containment Calculation - Approval	30	18-Nov-18 A	17-Dec-18 A
SVB				
D300	SVB -Electrical Loading Demand Calculation	60	07-Mar-19*	05-May-19
SCB				
D390	SCB -UPS and Battery Capacity Calculations	60	20-Jan-19*	20-Mar-19
D400	SCB -Electrical Loading Demand Calculation	60	20-Jan-19*	20-Mar-19
D410	SCB -Lux Level Calculation	60	24-Feb-19*	24-Apr-19
D430	SCB -Generator Calculation	60	28-Dec-18*	25-Feb-19
D435	SCB -Generator Calculation - Approval	30	26-Feb-19	27-Mar-19
D440	SCB -Fuel Tank Calculation	60	28-Dec-18*	25-Feb-19
D445	SCB -Fuel Tank Calculation - Approval	30	26-Feb-19	27-Mar-19
CEDB				
D480	CEDB -UPS and Battery Capacity Calculations	60	04-Jan-19*	04-Mar-19
D485	CEDB -UPS and Battery Capacity Calculations - Approval	30	05-Mar-19	03-Apr-19
D490	CEDB -Electrical Loading Demand Calculation	60	13-Nov-18 A	11-Jan-19
D495	CEDB -Electrical Loading Demand Calculation - Approval	30	12-Jan-19	10-Feb-19
D500	CEDB -Lux Level Calculation	60	22-Jan-19*	22-Mar-19
D510	CEDB -Cable Sizing and Voltage Drop Verification	60	16-Feb-19*	16-Apr-19
D520	CEDB -Calculation of Total Electrical Load	60	13-Nov-18 A	11-Jan-19
D525	CEDB -Calculation of Total Electrical Load - Approval	30	12-Jan-19	10-Feb-19
D530	CEDB -Generator Calculation	60	15-Dec-18 A	12-Feb-19
D535	CEDB -Generator Calculation - Approval	30	13-Feb-19	14-Mar-19
D540	CEDB -Fuel Tank Calculation	60	15-Dec-18 A	12-Feb-19
D545	CEDB -Fuel Tank Calculation - Approval	30	13-Feb-19	14-Mar-19
D560	CEDB -Earthing Resistance Calculation	60	16-Feb-19*	16-Apr-19
D570	CEDB -Power Factor Correction & Harmonic Current Analysis Calculation	60	16-Feb-19*	16-Apr-19
FSDB				



THREE MONTHLY ROLLING PROGRAMME

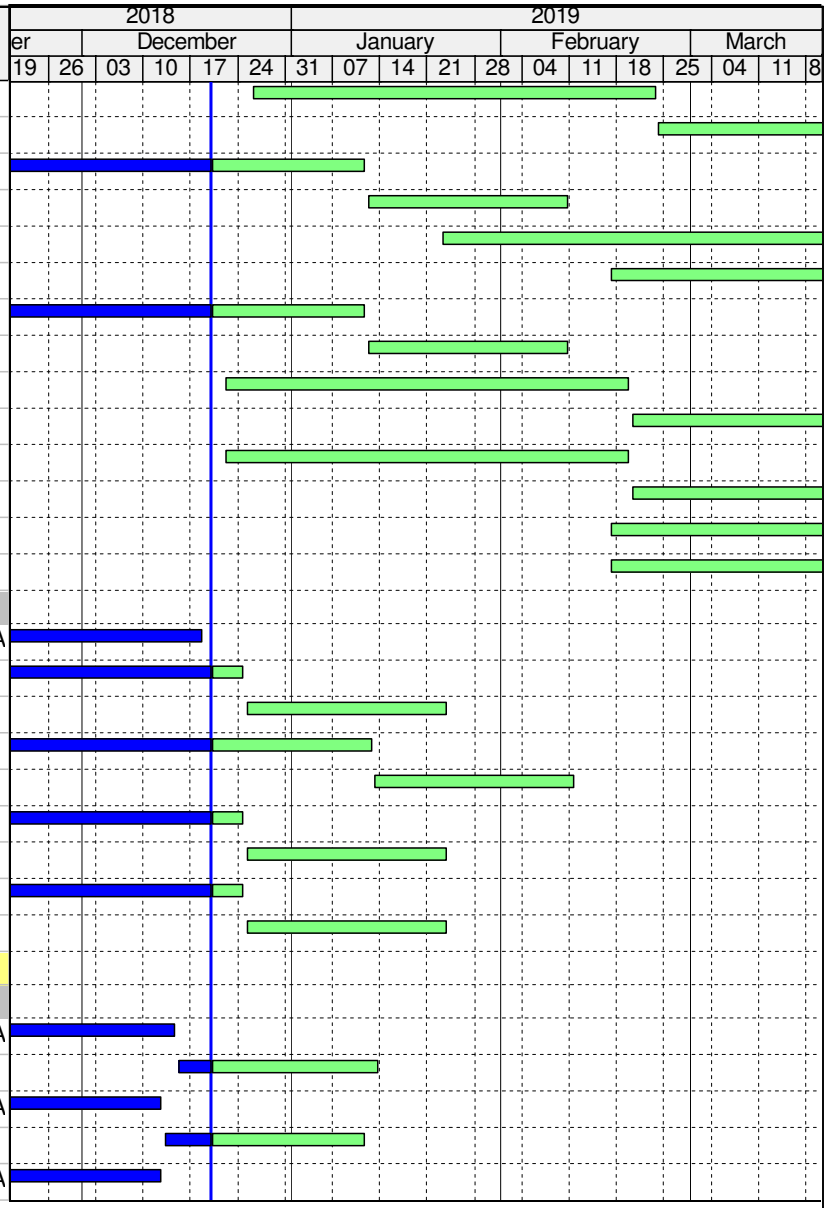
P5

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
D580	FSDB -UPS and Battery Capacity Calculations	60	26-Dec-18*	23-Feb-19
D585	FSDB -UPS and Battery Capacity Calculations - Approval	30	24-Feb-19	25-Mar-19
D590	FSDB -Electrical Loading Demand Calculation	60	13-Nov-18 A	11-Jan-19
D595	FSDB -Electrical Loading Demand Calculation - Approval	30	12-Jan-19	10-Feb-19
D600	FSDB -Lux Level Calculation	60	23-Jan-19*	23-Mar-19
D610	FSDB -Cable Sizing and Voltage Drop Verification	60	17-Feb-19*	17-Apr-19
D620	FSDB -Calculation of Total Electrical Load	60	13-Nov-18 A	11-Jan-19
D625	FSDB -Calculation of Total Electrical Load - Approval	30	12-Jan-19	10-Feb-19
D630	FSDB -Generator Calculation	60	22-Dec-18*	19-Feb-19
D635	FSDB -Generator Calculation - Approval	30	20-Feb-19	21-Mar-19
D640	FSDB -Fuel Tank Calculation	60	22-Dec-18*	19-Feb-19
D645	FSDB -Fuel Tank Calculation - Approval	30	20-Feb-19	21-Mar-19
D660	FSDB -Earthing Resistance Calculation	60	17-Feb-19*	17-Apr-19
D670	FSDB -Power Factor Correction & Harmonic Current Analysis Calculation	60	17-Feb-19*	17-Apr-19
MD				
D695	MD -Lux Level Calculation - Approval	30	19-Nov-18 A	18-Dec-18 A
D700	MD -Cable Sizing and Voltage Drop Verification	60	26-Oct-18 A	24-Dec-18
D705	MD -Cable Sizing and Voltage Drop Verification - Approval	30	25-Dec-18	23-Jan-19
D730	MD -Cable Containment Calculation	60	14-Nov-18 A	12-Jan-19
D735	MD -Cable Containment Calculation - Approval	30	13-Jan-19	11-Feb-19
D740	MD -Earthing Resistance Calculation	60	26-Oct-18 A	24-Dec-18
D745	MD -Earthing Resistance Calculation - Approval	30	25-Dec-18	23-Jan-19
D750	MD -Power Factor Correction & Harmonic Current Analysis Calculation	60	26-Oct-18 A	24-Dec-18
D755	MD -Power Factor Correction & Harmonic Current Analysis Calculation - Apprc	30	25-Dec-18	23-Jan-19
Section E - Building Services of Fire Services System				
Tunnel & Service Gallery				
E010	FS and Sprinkler Water Tanks Effective Volumes Calculation	60	16-Oct-18 A	14-Dec-18 A
E015	FS and Sprinkler Water Tanks Effective Volumes Calculation - Approval	30	15-Dec-18 A	13-Jan-19
E020	FS Pump Head Calculation for Tunnel	60	14-Oct-18 A	12-Dec-18 A
E025	FS Pump Head Calculation for Tunnel - Approval	30	13-Dec-18 A	11-Jan-19
E030	FS Pump Head Calculation for Services Gallery	60	14-Oct-18 A	12-Dec-18 A



THREE MONTHLY ROLLING PROGRAMME

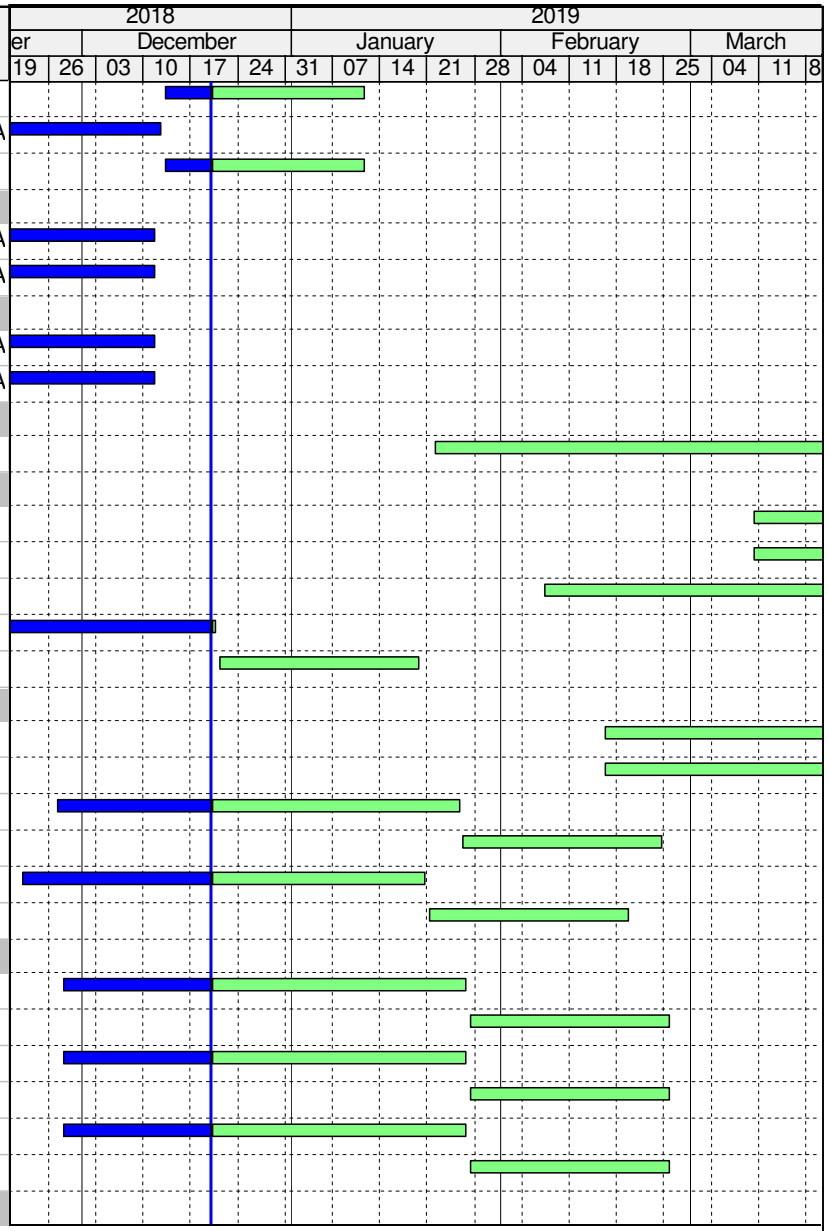
P6

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
E035	FS Pump Head Calculation for Services Gallery - Approval	30	13-Dec-18 A	11-Jan-19
E040	Sprinkler Pump Head Calculation for Services Gallery	60	14-Oct-18 A	12-Dec-18 A
E045	Sprinkler Pump Head Calculation for Services Gallery - Approval	30	13-Dec-18 A	11-Jan-19
TCB				
E065	TCB -FS Pump Head Calculation - Approval	30	12-Nov-18 A	11-Dec-18 A
E075	TCB -Sprinkler Pump Head Calculation - Approval	30	12-Nov-18 A	11-Dec-18 A
ADB				
E105	ADB -FS Pump Head Calculation - Approval	30	12-Nov-18 A	11-Dec-18 A
E115	ADB -Sprinkler Pump Head Calculation - Approval	30	12-Nov-18 A	11-Dec-18 A
SVB				
E210	SVB -FM200 System Design Calculation	60	22-Jan-19*	22-Mar-19
SCB				
E220	SCB -FS Pump Head Calculation	60	10-Mar-19*	08-May-19
E230	SCB -Sprinkler Pump Head Calculation	60	10-Mar-19*	08-May-19
E240	SCB -Battery Capacity Calculation	60	07-Feb-19*	07-Apr-19
E250	SCB -FM200 System Design Calculation	60	22-Oct-18 A	20-Dec-18
E255	SCB -FM200 System Design Calculation - Approval	30	21-Dec-18	19-Jan-19
CEDB				
E260	CEDB -FS Pump Head Calculation	60	16-Feb-19*	16-Apr-19
E270	CEDB -Sprinkler Pump Head Calculation	60	16-Feb-19*	16-Apr-19
E280	CEDB -Battery Capacity Calculation	60	27-Nov-18 A	25-Jan-19
E285	CEDB -Battery Capacity Calculation - Approval	30	26-Jan-19	24-Feb-19
E290	CEDB -FM200 System Design Calculation	60	22-Nov-18 A	20-Jan-19
E295	CEDB -FM200 System Design Calculation - Approval	30	21-Jan-19	19-Feb-19
FSDB				
E300	FSDB -FS Pump Head Calculation	60	28-Nov-18 A	26-Jan-19
E305	FSDB -FS Pump Head Calculation - Approval	30	27-Jan-19	25-Feb-19
E310	FSDB -Sprinkler Pump Head Calculation	60	28-Nov-18 A	26-Jan-19
E315	FSDB -Sprinkler Pump Head Calculation - Approval	30	27-Jan-19	25-Feb-19
E320	FSDB -Battery Capacity Calculation	60	28-Nov-18 A	26-Jan-19
E325	FSDB -Battery Capacity Calculation - Approval	30	27-Jan-19	25-Feb-19
MD				



THREE MONTHLY ROLLING PROGRAMME

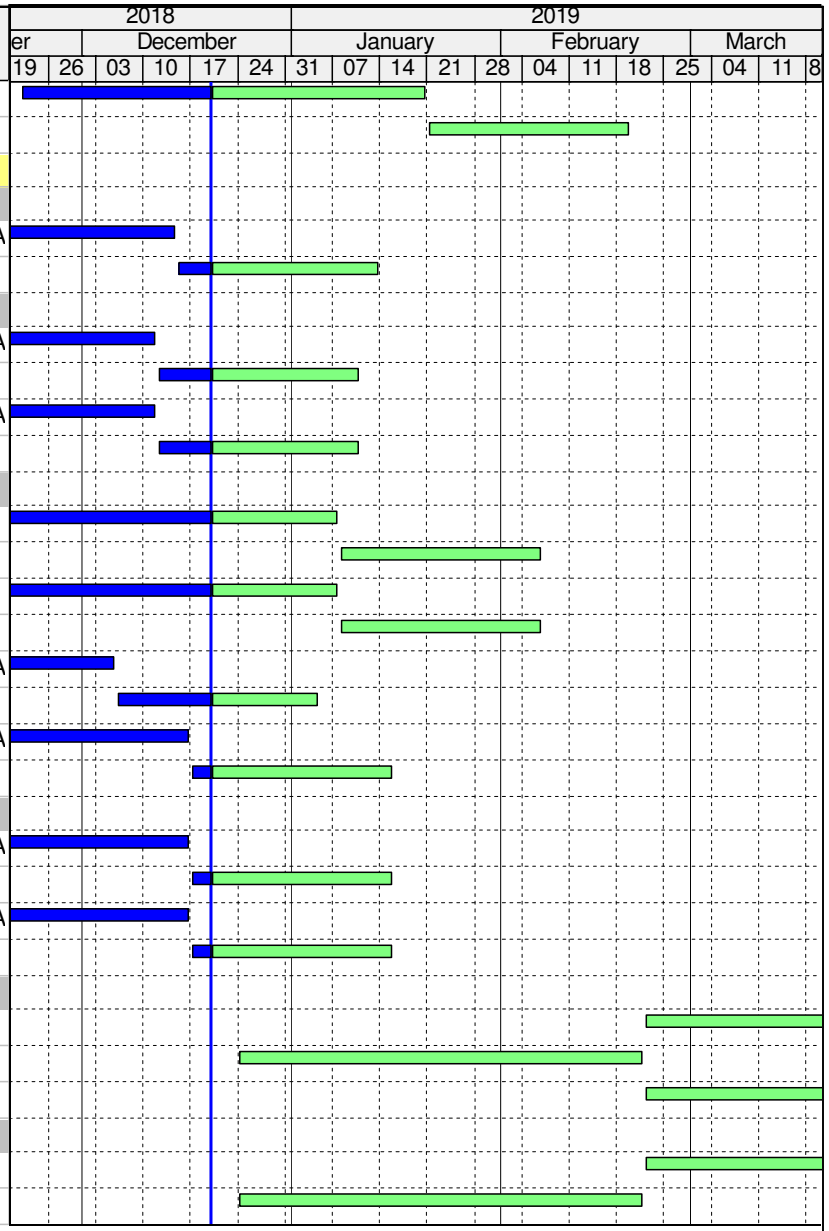
P7

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
E360	MD -FM200 System Design Calculation	60	22-Nov-18 A	20-Jan-19
E365	MD -FM200 System Design Calculation - Approval	30	21-Jan-19	19-Feb-19
Section F - Building Services of Plumbing & Drainage System				
Tunnel				
F020	Water Storage Tank Calculation	60	16-Oct-18 A	14-Dec-18 A
F025	Water Storage Tank Calculation - Approval	30	15-Dec-18 A	13-Jan-19
TCB				
F030	TCB - Pump Head Calculation	60	13-Oct-18 A	11-Dec-18 A
F035	TCB - Pump Head Calculation - Approval	30	12-Dec-18 A	10-Jan-19
F040	TCB - Pressure Vessel Calculation	60	13-Oct-18 A	11-Dec-18 A
F045	TCB - Pressure Vessel Calculation - Approval	30	12-Dec-18 A	10-Jan-19
ADB				
F080	ADB - Pump Head Calculation	60	09-Nov-18 A	07-Jan-19
F085	ADB - Pump Head Calculation - Approval	30	08-Jan-19	06-Feb-19
F090	ADB - Pressure Vessel Calculation	60	09-Nov-18 A	07-Jan-19
F095	ADB - Pressure Vessel Calculation - Approval	30	08-Jan-19	06-Feb-19
F100	ADB - Rainwater Analysis and Pipe Work Calculation	60	07-Oct-18 A	05-Dec-18 A
F105	ADB - Rainwater Analysis and Pipe Work Calculation - Approval	30	06-Dec-18 A	04-Jan-19
F130	ADB - Drainage Sump Pumps and Pump Pits Calculation	60	18-Oct-18 A	16-Dec-18 A
F135	ADB - Drainage Sump Pumps and Pump Pits Calculation - Approval	30	17-Dec-18 A	15-Jan-19
NVB				
F140	NVB - Pump Head Calculation	60	18-Oct-18 A	16-Dec-18 A
F145	NVB - Pump Head Calculation - Approval	30	17-Dec-18 A	15-Jan-19
F150	NVB - Pressure Vessel Calculation	60	18-Oct-18 A	16-Dec-18 A
F155	NVB - Pressure Vessel Calculation - Approval	30	17-Dec-18 A	15-Jan-19
CEDB				
F250	CEDB - Rainwater Analysis and Pipe Work Calculation	60	22-Feb-19*	22-Apr-19
F260	CEDB - Hydraulic Analysis of Waste Water Systems	60	24-Dec-18*	21-Feb-19
F265	CEDB - Hydraulic Analysis of Waste Water Systems - Approval	30	22-Feb-19	23-Mar-19
FSDB				
F290	FSDB - Rainwater Analysis and Pipe Work Calculation	60	22-Feb-19*	22-Apr-19
F300	FSDB - Hydraulic Analysis of Waste Water Systems	60	24-Dec-18*	21-Feb-19



THREE MONTHLY ROLLING PROGRAMME

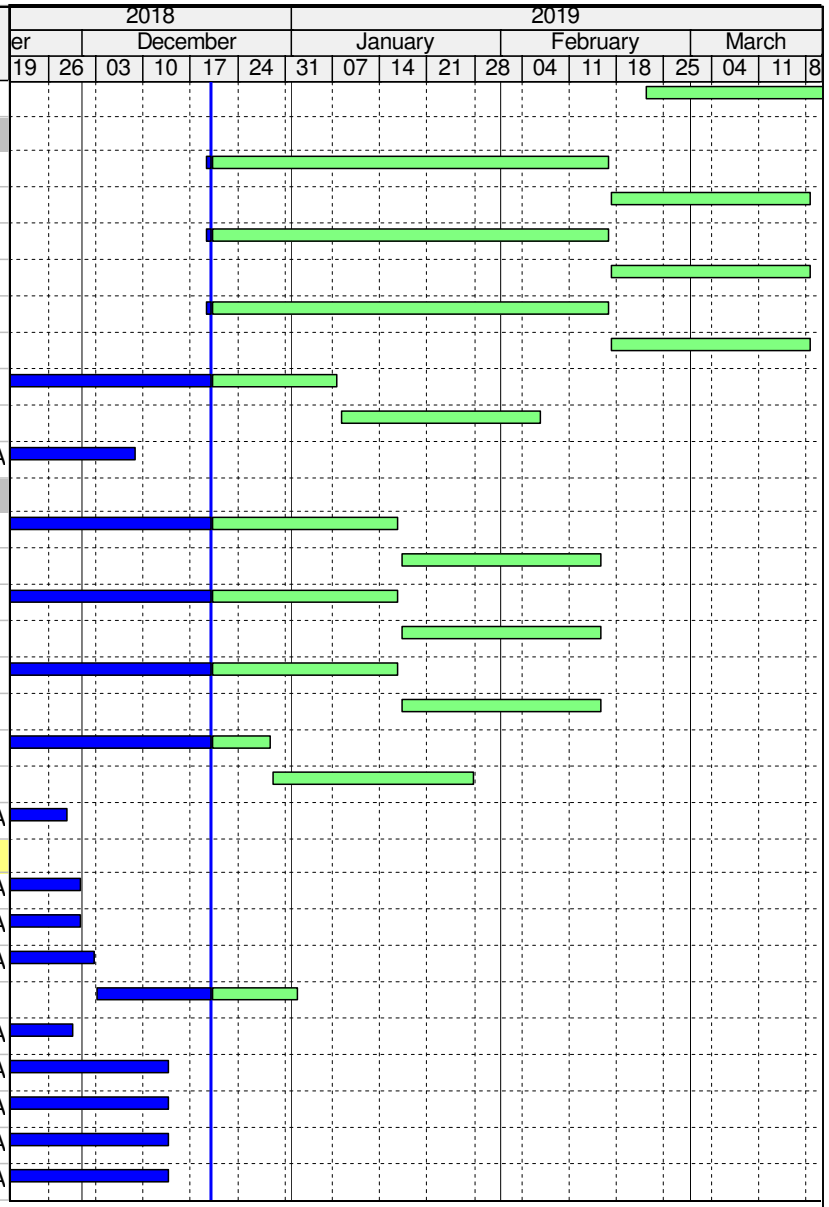
P8

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
F305	FSDB - Hydraulic Analysis of Waste Water Systems - Approval	30	22-Feb-19	23-Mar-19
MD				
F310	MD - Drainage Sump Pumps and Pump Pits Calculation	60	19-Dec-18 A	16-Feb-19
F315	MD - Drainage Sump Pumps and Pump Pits Calculation - Approval	30	17-Feb-19	18-Mar-19
F320	MD - Pump Head Calculation	60	19-Dec-18 A	16-Feb-19
F325	MD - Pump Head Calculation - Approval	30	17-Feb-19	18-Mar-19
F330	MD - Pressure Vessel Calculation	60	19-Dec-18 A	16-Feb-19
F335	MD - Pressure Vessel Calculation - Approval	30	17-Feb-19	18-Mar-19
F340	MD - Rainwater Analysis and Pipe Work Calculation	60	09-Nov-18 A	07-Jan-19
F345	MD - Rainwater Analysis and Pipe Work Calculation - Approval	30	08-Jan-19	06-Feb-19
F355	MD - Hydraulic Analysis of Waste Water Systems - Approval	30	09-Nov-18 A	08-Dec-18 A
Vehicular Underpass				
F360	Vehicular underpass - Drainage Sump Pumps and Pump PitsCalculation	60	18-Nov-18 A	16-Jan-19
F365	Vehicular underpass - Drainage Sump Pumps and Pump PitsCalculation - Appı	30	17-Jan-19	15-Feb-19
F370	Vehicular underpass - Pump Head Calculation	60	18-Nov-18 A	16-Jan-19
F375	Vehicular underpass - Pump Head Calculation - Approval	30	17-Jan-19	15-Feb-19
F380	Vehicular underpass - Pressure Vessel Calculation	60	18-Nov-18 A	16-Jan-19
F385	Vehicular underpass - Pressure Vessel Calculation - Approval	30	17-Jan-19	15-Feb-19
F390	Vehicular underpass - Rainwater Analysis and Pipe WorkCalculation	60	30-Oct-18 A	28-Dec-18
F395	Vehicular underpass - Rainwater Analysis and Pipe WorkCalculation - Approva	30	29-Dec-18	27-Jan-19
F405	Vehicular underpass - Hydraulic Analysis of Waste Water Systems - Approval	30	30-Oct-18 A	28-Nov-18 A
Section G - ELV System				
G025	System Design for CMCS - Approval	30	01-Nov-18 A	30-Nov-18 A
G035	System Design for Access Control System - Approval	30	01-Nov-18 A	30-Nov-18 A
G040	System Design for CCTV	60	04-Oct-18 A	02-Dec-18 A
G045	System Design for CCTV - Approval	30	03-Dec-18 A	01-Jan-19
G055	System Design for IT System - Approval	30	31-Oct-18 A	29-Nov-18 A
G065	System Design for PABX System - Approval	30	14-Nov-18 A	13-Dec-18 A
G075	System Design for PA System - Approval	30	14-Nov-18 A	13-Dec-18 A
G085	System Design for BRI System - Approval	30	14-Nov-18 A	13-Dec-18 A
G095	System Design for Audio Recording System - Approval	30	14-Nov-18 A	13-Dec-18 A



THREE MONTHLY ROLLING PROGRAMME

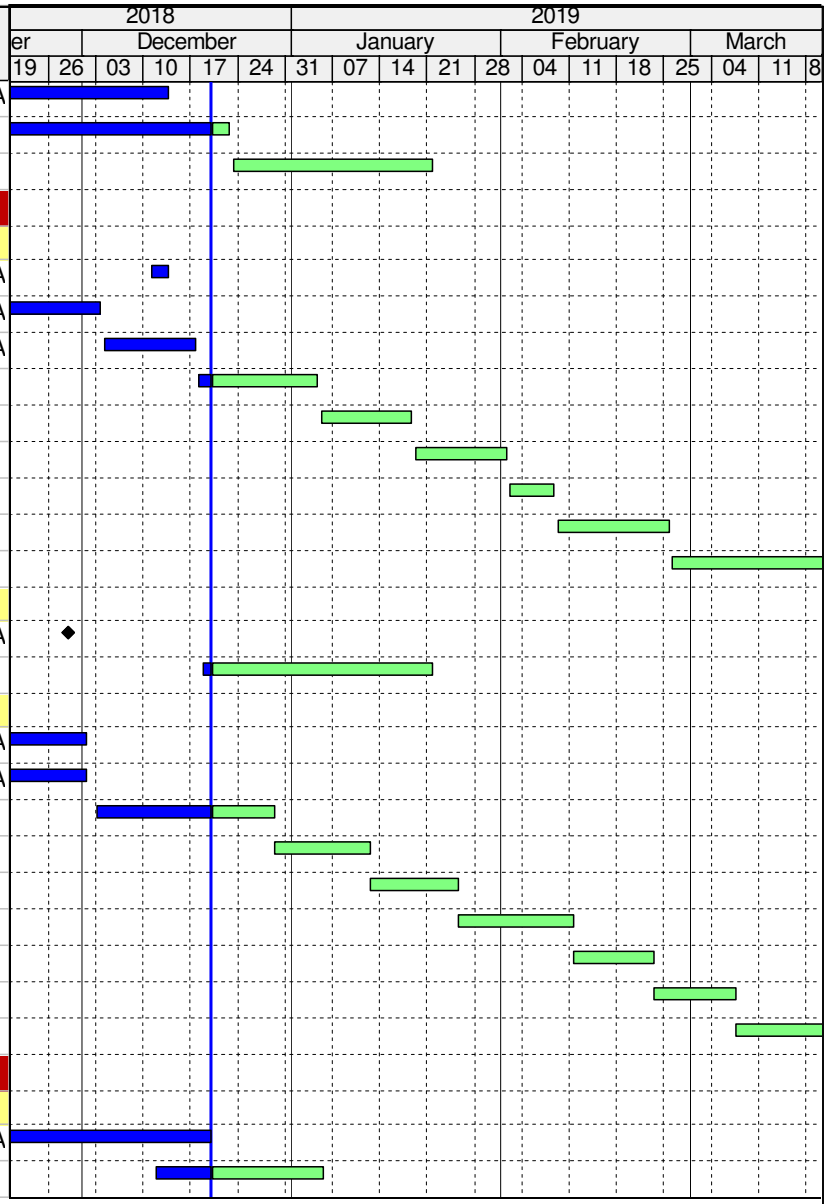
P9

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
G105	System Design for Communication Network System System - Approval	30	14-Nov-18 A	13-Dec-18 A
G110	System Design for Building Management System	60	24-Oct-18 A	22-Dec-18
G115	System Design for Building Management System - Approval	30	23-Dec-18*	21-Jan-19
Key Date 4A - FSD Building Substructure, Boundary Wall, and C&ED Building Substructure				
FSD Building Substructure				
FSD117	Demobilization	3	11-Dec-18 A	13-Dec-18 A
FSD140	Socket H-Piles (Pile No. 1-7)	12	20-Nov-18 A	03-Dec-18 A
FSD141	Socket H-Piles (Pile No. 8-14)	12	04-Dec-18 A	17-Dec-18 A
FSD142	Socket H-Piles (Pile No. 15-21)	12	18-Dec-18 A	04-Jan-19
FSD143	Socket H-Piles (Pile No. 22-28)	12	05-Jan-19	18-Jan-19
FSD144	Socket H-Piles (Pile No. 29-35)	12	19-Jan-19	01-Feb-19
FSD145	Socket H-Piles (Pile No. 36-37)	3	02-Feb-19	08-Feb-19
FSD150	Loading Test	14	09-Feb-19	25-Feb-19
FSD160	Building Substructure	22	26-Feb-19	22-Mar-19
Boundary Wall for FSD Building				
FSD180	Possess Portion XVIb	0		29-Nov-18 A
FSD190	Boundary Wall for FSD Building	24	19-Dec-18 A	21-Jan-19
C&ED Building Substructure				
CED141	Predrilling (No. 7-12)	11	20-Nov-18 A	01-Dec-18 A
CED150	Socket H-Piling (No. 1-8)	11	20-Nov-18 A	01-Dec-18 A
CED151	Socket H-Piling (No. 9-16)	11	03-Dec-18 A	29-Dec-18
CED152	Socket H-Piling (No. 17-24)	11	29-Dec-18	12-Jan-19
CED153	Socket H-Piling (No. 25-32)	11	12-Jan-19	25-Jan-19
CED154	Socket H-Piling (No. 33-40)	11	25-Jan-19	11-Feb-19
CED155	Socket H-Piling (No. 41-48	11	11-Feb-19	23-Feb-19
CED156	Socket H-Piling (No. 49-52)	10	23-Feb-19	07-Mar-19
CED170	Loading Test	14	07-Mar-19	23-Mar-19
Key Date 1 - Toll Control Building (TCB) & TCSS Provision				
Toll Control Building (TCB)				
TCB173	Level 2 Slab	12	15-Nov-18 A	20-Dec-18 A
TCB175	Roof Columns & Scaffolding	10	12-Dec-18 A	05-Jan-19



THREE MONTHLY ROLLING PROGRAMME

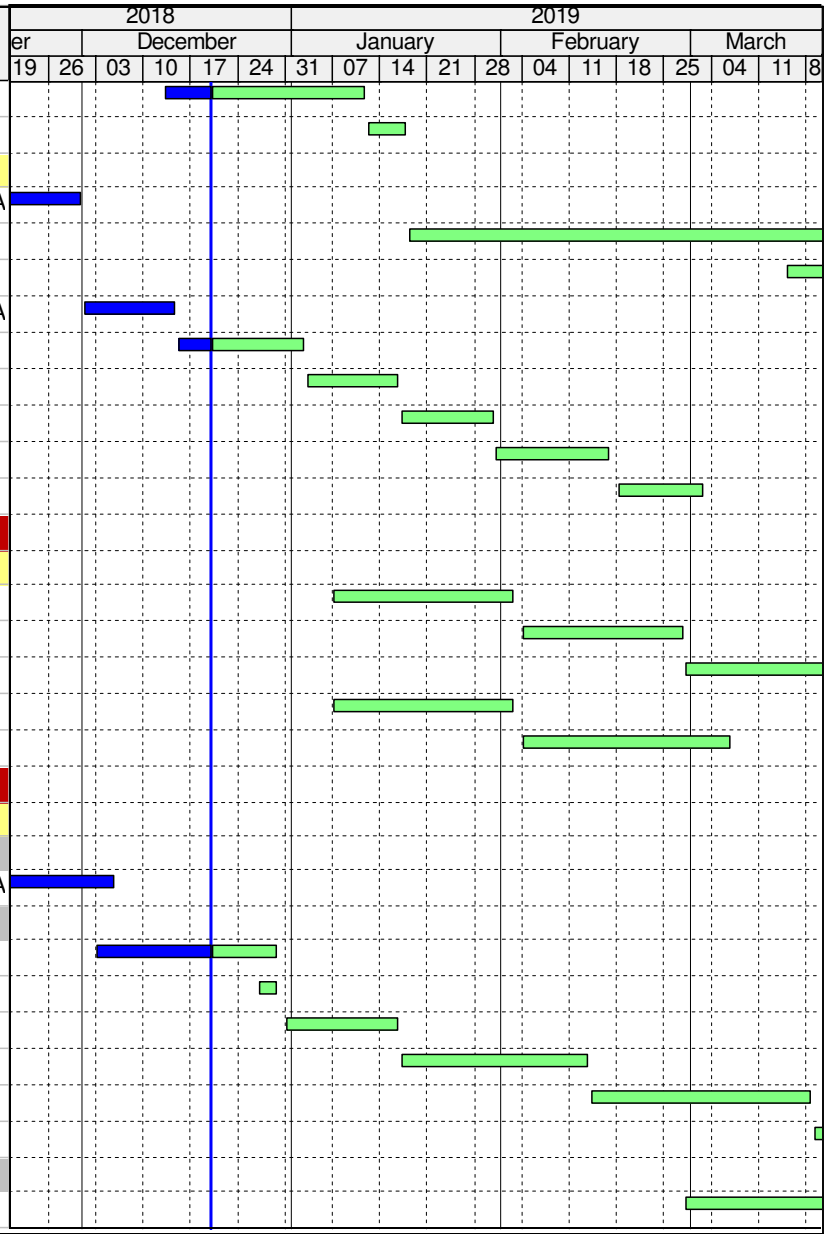
P10

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
TCB180	Roof Slab	12	13-Dec-18 A	11-Jan-19
TCB190	Top Roof	5	12-Jan-19	17-Jan-19
TCSS Provision				
TCB200	Blockwork Walls and Plaster (G/F)	12	17-Nov-18 A	30-Nov-18 A
TCB210	ABWF Works to enable TCSS installation	90	18-Jan-19	11-May-19
TCB220	E&M Works to enable TCSS installation	90	15-Mar-19	05-Jul-19
TCB231	Blockwork Walls and Plaster (1/F - East Side)	12	01-Dec-18 A	14-Dec-18 A
TCB232	Blockwork Walls and Plaster (1/F - Middle Area)	12	15-Dec-18 A	02-Jan-19
TCB233	Blockwork Walls and Plaster (1/F - West Side)	12	03-Jan-19	16-Jan-19
TCB243	Blockwork Walls and Plaster (2/F - East Side)	12	17-Jan-19	30-Jan-19
TCB253	Blockwork Walls and Plaster (2/F - Middle Area)	12	31-Jan-19	16-Feb-19
TCB263	Blockwork Walls and Plaster (2/F - West Side)	12	18-Feb-19	02-Mar-19
Key Date 4 - E&M Works in Vehicular Underpass Area & TCSS Provision				
E&M Works				
VU120	Jet Fans installation	24	07-Jan-19*	02-Feb-19
VU130	Post Drill and Bracket Fixing	18	04-Feb-19	27-Feb-19
VU140	Cabling Works	36	28-Feb-19	11-Apr-19
VU170	Cable containment in Ventilation Duct	24	07-Jan-19*	02-Feb-19
VU180	Dampers installation in Ventilation Duct	24	04-Feb-19	06-Mar-19
Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision				
Administration Building (ADB)				
Piling Works				
ADB150	Loading Test	14	20-Nov-18 A	05-Dec-18 A
Building Structure				
ADB160	Foundations	12	03-Dec-18 A	29-Dec-18
ADB170	Erect Tower Crane (ADB)	3	27-Dec-18	29-Dec-18
ADB180	Ground Floor	14	31-Dec-18	16-Jan-19
ADB190	First Floor	21	17-Jan-19	13-Feb-19
ADB200	Roof Slab	28	14-Feb-19	18-Mar-19
ADB210	Top Roof	16	19-Mar-19	06-Apr-19
Provision for TCSS Installation				
ADB230	Blockwork Walls and Plaster	70	28-Feb-19	25-May-19



THREE MONTHLY ROLLING PROGRAMME

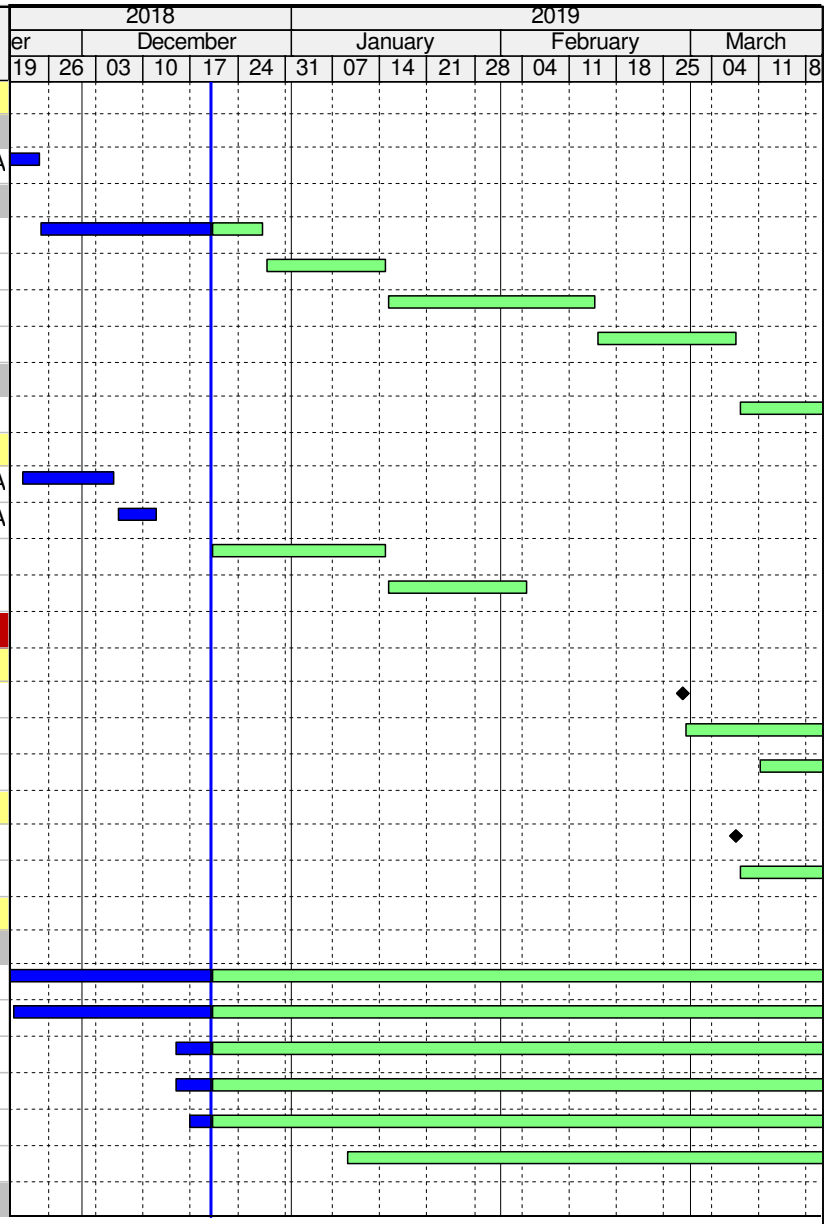
P11

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
	Maintenance Depot			
	Piling Works			
MD141	Loading Test and Report	7	17-Nov-18 A	24-Nov-18 A
	Depot Structure			
MD150	Foundations	10	25-Nov-18 A	27-Dec-18
MD160	Ground Floor	14	28-Dec-18	14-Jan-19
MD170	Roof Slab	24	15-Jan-19	14-Feb-19
MD180	Top Roof	18	15-Feb-19	07-Mar-19
	Provision for TCSS Installation			
MD190	Blockwork Walls and Plaster	60	08-Mar-19	22-May-19
	Kiosk N2			
N2-127	Kiosk Structure - Wall	12	22-Nov-18 A	05-Dec-18 A
N2-128	Kiosk Structure - Roof	12	06-Dec-18 A	12-Dec-18 A
N2-130	ABWF Works to enable TCSS installation	18	20-Dec-18	14-Jan-19
N2-140	E&M Works to enable TCSS installation	18	15-Jan-19	04-Feb-19
	Key Date 6 - E&M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2			
	E&M Works for Administration Building (Structure Completed under KD2)			
EADB11	ADB First Floor Completed with Scaffolding Removed	0		27-Feb-19
EADB12	ABWF Works	133	28-Feb-19	09-Aug-19
EADB13	E&M Installation	133	11-Mar-19	20-Aug-19
	E&M Works for Maintenance Depot (Structure Completed under KD2)			
EMD110	Maintenance Depot Structure Completed	0		07-Mar-19
EMD120	ABWF Works	104	08-Mar-19	15-Jul-19
	E&M Works for North Ventilation Building			
	E&M Works			
ENVB1	E&M Installation - G/F	150	01-Nov-18 A	06-Apr-19
ENVB1	E&M Installation - 1/F	150	21-Nov-18 A	10-May-19
ENVB1	E&M Installation - B2/F	150	15-Dec-18 A	15-Jun-19
ENVB1	E&M Installation - B1/F	150	15-Dec-18 A	15-Jun-19
ENVB1	E&M Installation - 2/F	150	17-Dec-18 A	15-Jun-19
ENVB1	TVF Installation	68	09-Jan-19*	01-Apr-19
	Power On and Statutory Inspections (except FSD)			



THREE MONTHLY ROLLING PROGRAMME

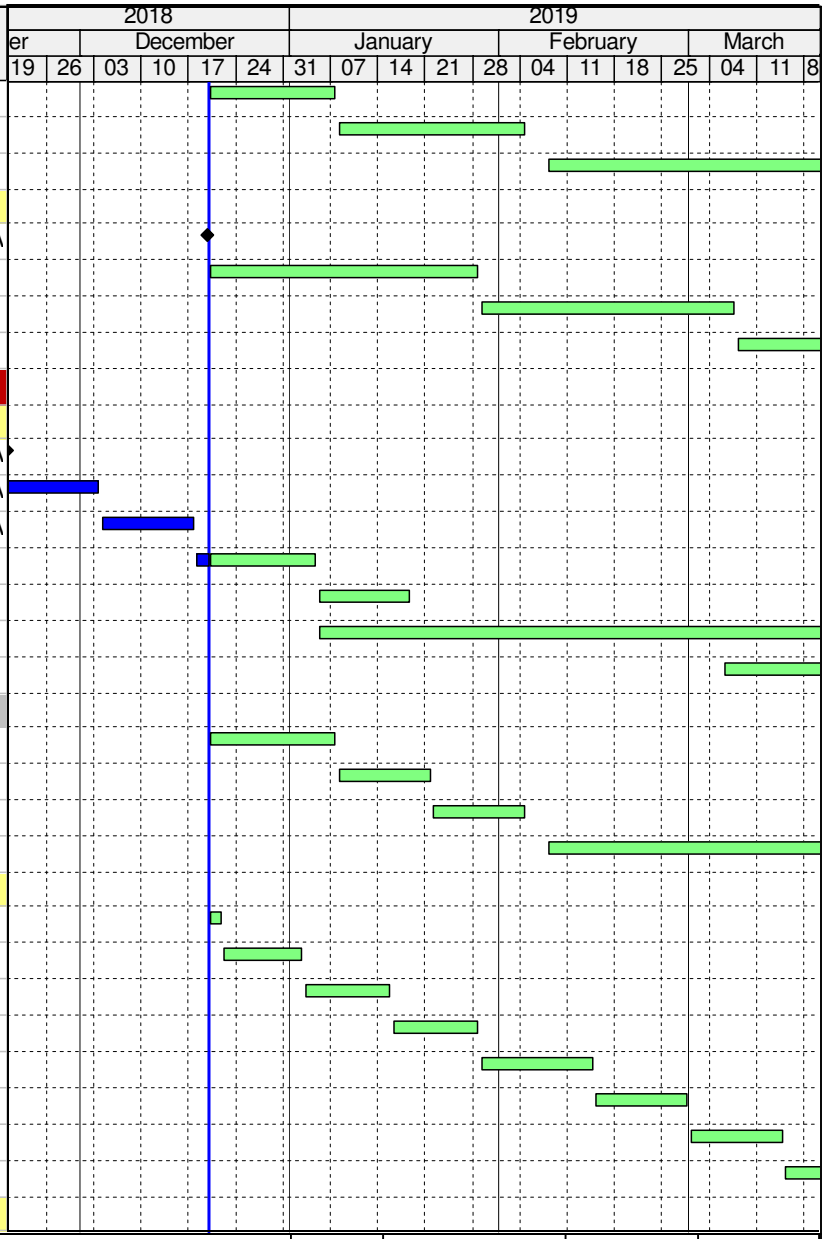
P12

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
ENVB2	Liaison with CLP	12	20-Dec-18	07-Jan-19
ENVB2	E&M Installation in Transformer Room	24	08-Jan-19	04-Feb-19
ENVB2	CLP Installation Works	82	08-Feb-19	20-May-19
Remaining E&M Works for Kiosk N2 (Structure Completed under KD2)				
EN2110	Kiosk Structure Completed	0		19-Dec-18 A
EN2120	ABWF Works (Door, windows, tiles)	30	20-Dec-18	28-Jan-19
EN2130	E&M Works	30	29-Jan-19	07-Mar-19
EN2140	Testing & Comissioning	12	08-Mar-19	21-Mar-19
Key Date 5 - E&M Works for TCB, Toll Area, Kiosk N1, Underpass, Plant Rm, and Approach Roads				
E&M Works for TCB				
ETCB11	First Floor Completed at TCB with Scaffolding Removed	0		20-Nov-18 A
ETCB11	Remaining Blockwork Walls and Plaster (G/F)	12	20-Nov-18 A	03-Dec-18 A
ETCB12	Blockwork Walls and Plaster (1/F)	12	04-Dec-18 A	17-Dec-18 A
ETCB12	Remaining Blockwork Walls	12	18-Dec-18 A	04-Jan-19
ETCB12	Remaining Plaster	12	05-Jan-19	18-Jan-19
ETCB13	Remaining ABWF Works	210	05-Jan-19	19-Sep-19
ETCB14	Remaining E&M Installations	210	06-Mar-19	16-Nov-19
Power On and Statutory Inspections (except FSD)				
ETCB1	Liaison with CLP	12	20-Dec-18	07-Jan-19
ETCB1	E&M Installation in Transformer Room - 1st Fix	12	08-Jan-19	21-Jan-19
ETCB1	E&M Installation in Transformer Room - 2nd Fix	12	22-Jan-19	04-Feb-19
ETCB2	CLP Installation Works	82	08-Feb-19	20-May-19
Kiosk N1				
EN131	Trim Formation	2	20-Dec-18	21-Dec-18
EN132	Cast Concrete Base	6	22-Dec-18	02-Jan-19
EN133	Steel Structure - Columns	11	03-Jan-19	15-Jan-19
EN134	Steel Structure - Roof	11	16-Jan-19	28-Jan-19
EN135	Steel Structure - Panels	12	29-Jan-19	14-Feb-19
EN140	ABWF Works - 1st Fix	12	15-Feb-19	28-Feb-19
EN150	E&M works - Stage 1	12	01-Mar-19	14-Mar-19
EN151	E&M works - Stage 2	12	15-Mar-19	28-Mar-19
Plant Room				



THREE MONTHLY ROLLING PROGRAMME

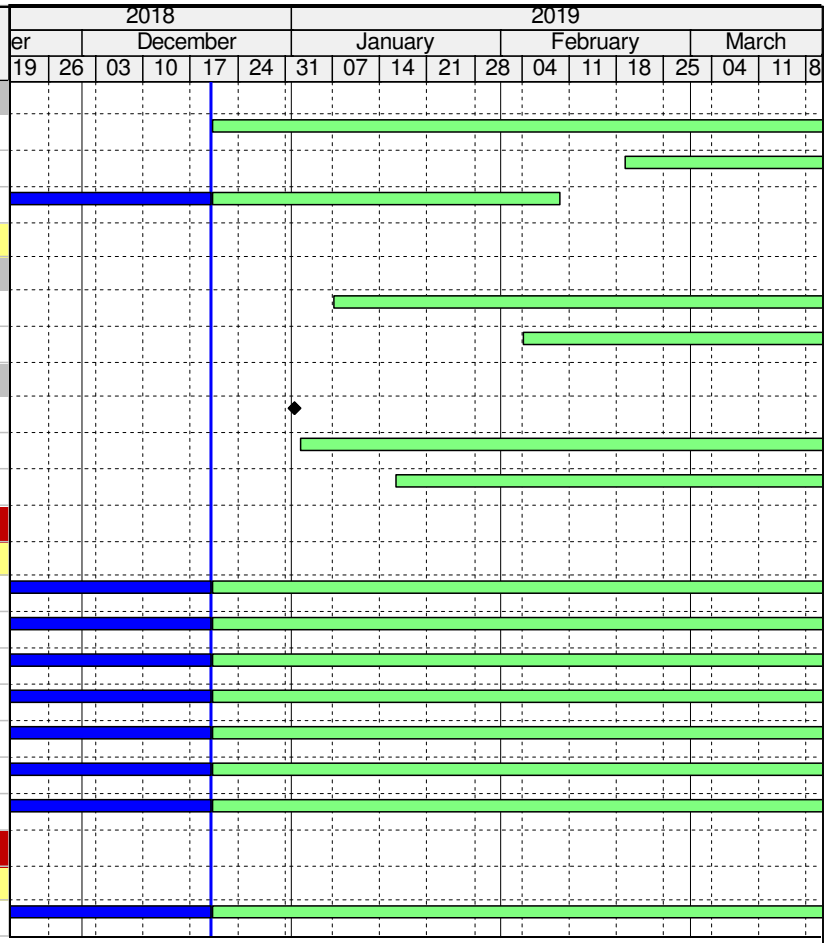
P13

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

ID	Activity	Days	Start	Finish
	E&M Works			
EPR130	E&M Installation	90	20-Dec-18	12-Apr-19
EPR140	External Works	82	19-Feb-19	30-May-19
PR151	ABWF Works	78	03-Nov-18 A	09-Feb-19
	Approach Roads			
	Under Portions IX, XI, XX			
AR130	Cabling works	238	07-Jan-19*	25-Oct-19
AR140	Road lighting installation & termination	238	04-Feb-19	22-Nov-19
	Under Portion X			
AR160	Access Portions X	0		01-Jan-19
AR180	Cabling works in portion X	260	02-Jan-19	15-Nov-19
AR190	Road lighting installation & termination in portion X	260	16-Jan-19	29-Nov-19
	Key Date 7A - E&M Works for Approach Roads at South Side			
	Design and Procurement			
DP810	Tunnel and Approach Road Lighting System	206	01-Nov-18 A	15-Jul-19
DP820	CMCS System and ELV System	206	01-Nov-18 A	15-Jul-19
DP830	Eletrical System	206	01-Nov-18 A	15-Jul-19
DP840	Building Services System	206	01-Nov-18 A	15-Jul-19
DP850	Plumbing and Drainage System (Tunnel and Roads)	206	01-Nov-18 A	15-Jul-19
DP860	Fire Services System	206	01-Nov-18 A	15-Jul-19
DP870	Other Related Works to enable E&M Works	206	01-Nov-18 A	15-Jul-19
	Key Date 11 - Landscape Soft Works & Trees Protection			
	Trees Protection			
SL190	Protection of Existing Trees	613	06-Aug-18 A	28-Aug-20



THREE MONTHLY ROLLING PROGRAMME

P14

HY/2017/10 TM-CLKL - Northern Connection Tunnel Buildings, Electrical and Mechanical Works

20/12/18 - 20/03/19

Date	Revision	Checked	Approved
20-Dec			

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-Chep 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 Mechancial 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

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 periood	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		✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
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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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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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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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: *f* suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; *f* Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. *f* Clearly labelled and used solely for the storage of chemical wastes; *f* Enclosed with at least 3 sides; *f* 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; *f* Adequate ventilation; *f* Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and *f* 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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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 hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
LANDSCAPE AND VISUAL									
10.9	7.6	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas (Tree protection measures will be detailed at Tree Removal Application Stage) (CM1)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	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 unobstrusive material (in earth tone) (CM4)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
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		✓
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

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

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

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

Appendix D

Summary of Action and Limit Levels

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

Parameters	Action	Limit
24 Hour TSP Level in μg/m³	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in μg /m³	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

	ACTION			
EVENT	**ET** [(1)]	**IEC** [(1)]	**ER** [(1)]	**Contractor**
Action Level				
1. Exceedance for one sample	1. Identify the source. 2. Inform the IEC and the ER. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by the ET. 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	1. Identify the source. 2. Inform the IEC and the ER. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with the IEC and the Contractor on remedial actions required. 6. If exceedance continues, arrange meeting with the IEC and the ER. 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET. 2. Check the Contractor's working method. 3. Discuss with the ET and the Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate

	ACTION			
EVENT	**ET** [(1)]	**IEC** [(1)]	**ER** [(1)]	**Contractor**
Limit Level				
1. Exceedance for one sample	1. Identify the source. 2. Inform the ER and the DEP. 3. Repeat measurement to confirm finding. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep the IEC, the DEP and the ER informed of the results.	1. Check monitoring data submitted by the ET. 2. Check Contractor's working method. 3. Discuss with the ET and the Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Ensure remedial measures are properly implemented.	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IEC within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate
2. Exceedance for two or more consecutive samples	1. Notify the IEC, the ER, the DEP and the Contractor. 2. Identify the source. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 6. Arrange meeting with the IEC and the ER to discuss the remedial actions to be taken. 7. Assess effectiveness of the Contractor's remedial actions	1. Discuss amongst the ER, ET and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

and keep the IEC, the DEP and the ER informed of the results. 8. If the exceedance stops, cease additional monitoring.	

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, SO – Supervising Office, DEP – Director of Environmental Protection

Appendix F

EM&A Monitoring Schedule

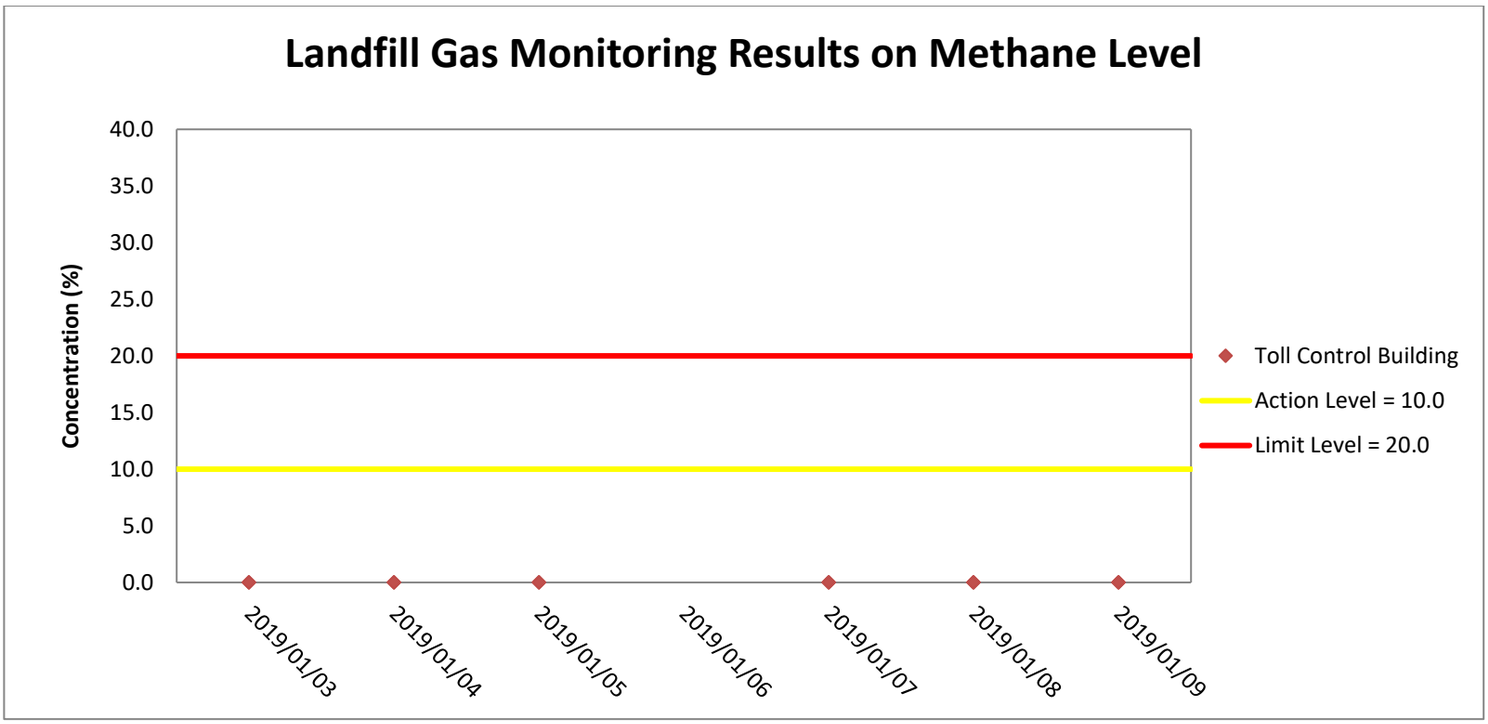
HY/2017/10 Tuen Mun - Chek Lap Kok Link - Northern Tunnel Connection Buildings, E&M Works
Landfill Gas Monitoring Schedule (1 to 31 January 2019)

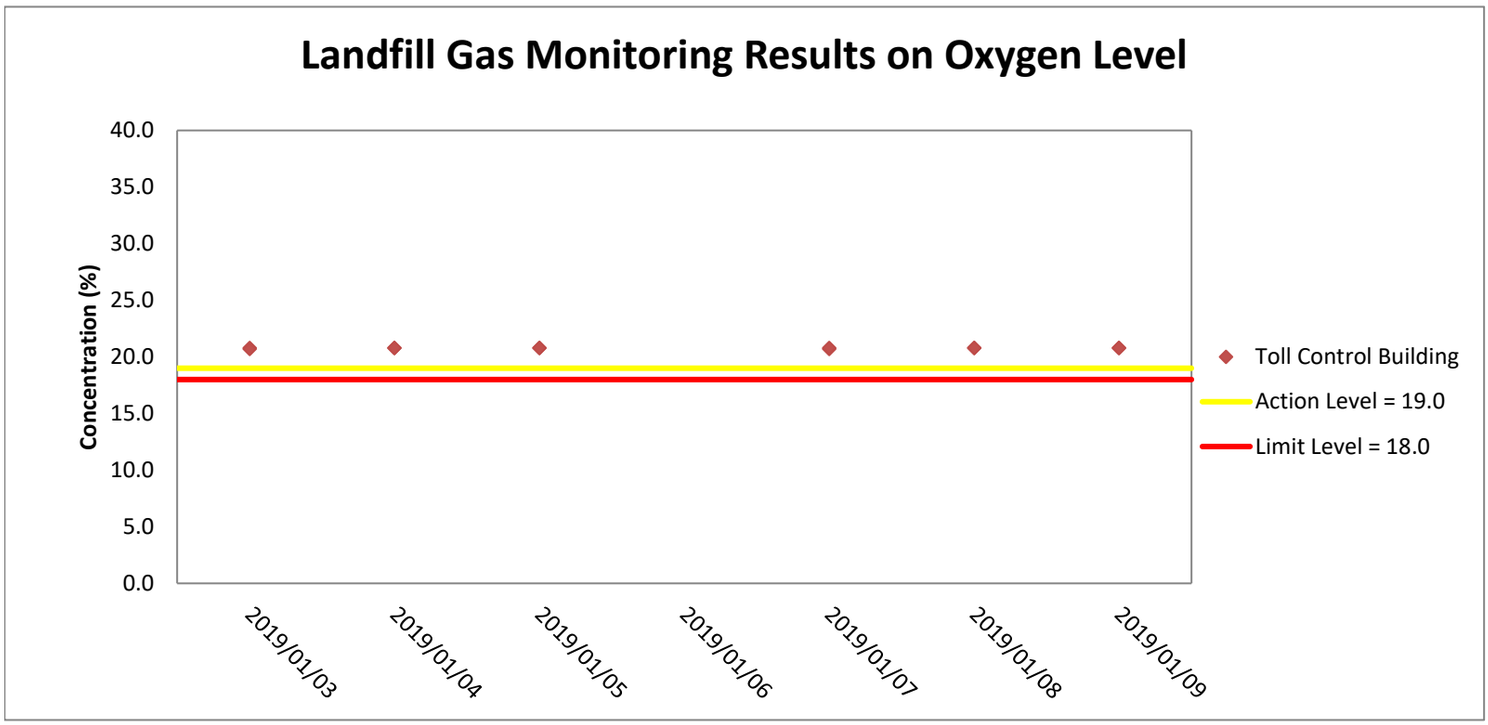
Alternative Air Quality Monitoring at WA4 and MTRC Depot Entrance

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

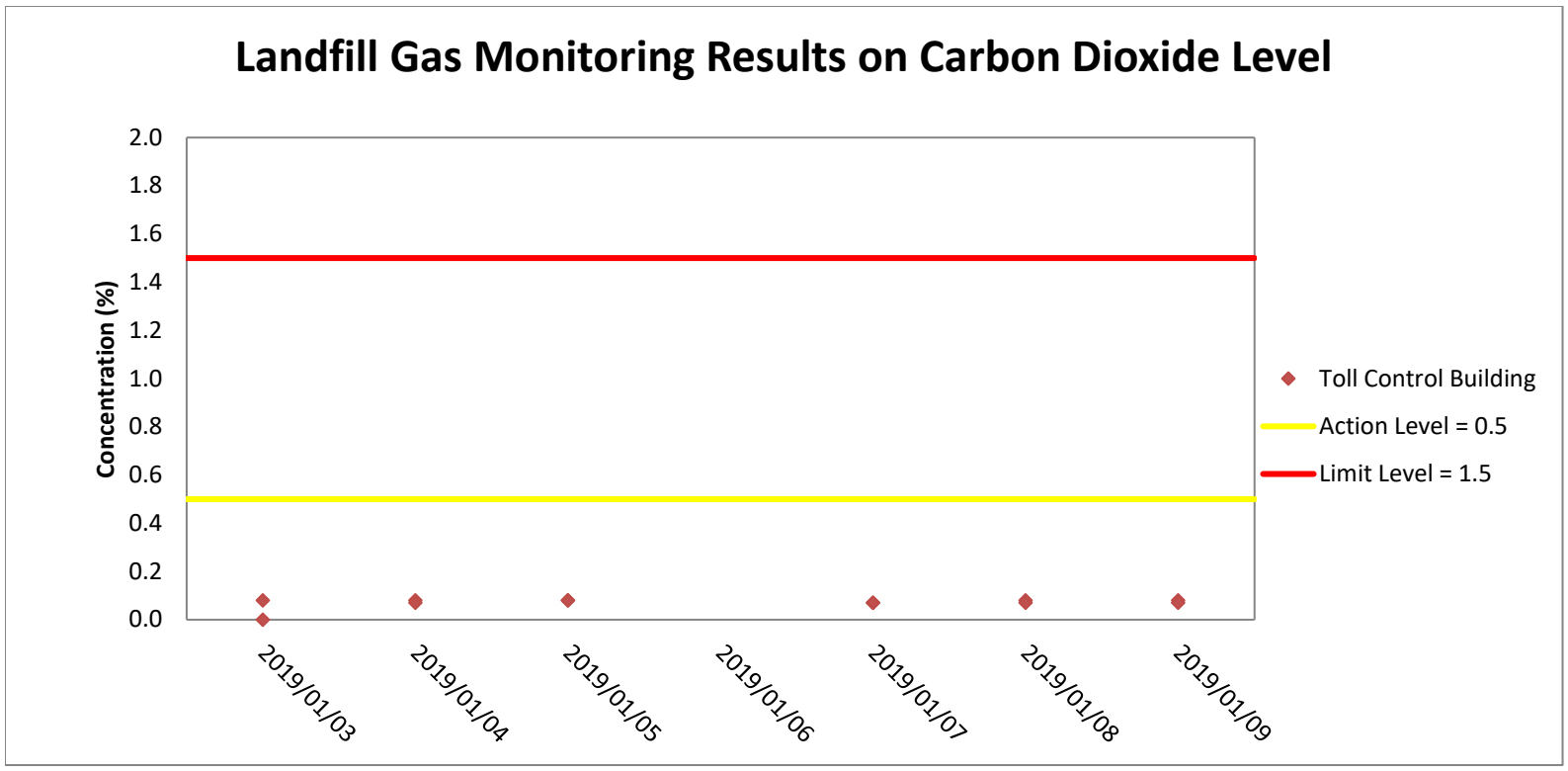
Appendix G

Landfill Gas Monitoring Graphical Presentation





Weather condition within the reporting period was cloudy.
Major construction works undertaken within the reporting period include bar bending, timber formwork and concreting and Architectural Builder's Work and Finishes at Toll Control Building; electrical and Mechanical works at Ventilation Plant Room and North Ventilation Building, Building Structure at Administration Building and Maintenance Depot; Socket H-piling at Fire Services Department Building and Customs and Excise Department Building and Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk N2.



Weather condition within the reporting period was cloudy.
Major construction works undertaken within the reporting period include bar bending, timber formwork and concreting and Architectural Builder's Work and Finishes at Toll Control Building; electrical and Mechanical works at Ventilation Plant Room and North Ventilation Building, Building Structure at Administration Building and Maintenance Depot; Socket H-piling at Fire Services Department Building and Customs and Excise Department Building and Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk N2.

Appendix H

Monthly Summary of Waste Flow Table

Contract No. : HY/2017/10

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

Monthly Summary Waste Flow Table for 2018 (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	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-
May	0.397	-	-	0.397	-	-	-	-	-	-	-	-
Jun	2.085	0.008	-	-	2.085	-	-	3.750	-	-	-	-
SUB-TOTAL	**2.482**	**0.008**	**0.000**	**0.397**	**2.085**	**0.000**	**0.000**	**3.750**	**0.000**	**0.000**	**0.000**	**0.000**
Jul	0.830	0.050	-	-	0.830	-	-	15.190	-	-	-	-
Aug	0.825	0.046	-	-	0.825	-	-	103.420	-	-	-	-
Sep	0.205	-	-	-	0.205	-	-	22.150	-	-	-	-
Oct	0.720	-	-	-	0.720	-	-	26.280	-	-	0.063	-
Nov	3.660	0.019	0.010	-	3.650	-	-	26.530	-	-	-	-
Dec	7.592	-	0.602	-	6.990	-	-	33.280	-	-	-	-
TOTAL	**16.314**	**0.123**	**0.612**	**0.397**	**15.305**	**-**	**-**	**230.600**	**-**	**-**	**0.063**	**-**

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.

Contract No. : HY/2017/10

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

Monthly Summary Waste Flow Table for 2019 (Year)

Month\Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation		Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	1.939	-	-	-	1.939	-	-	74.680	-	-	0.042	-
Feb	2.129	0.008	-	-	2.129	-	-	54.130	-	-	0.049	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-
SUB-TOTAL	**4.068**	**0.008**	**0.000**	**0.000**	**4.068**	**0.000**	**0.000**	**128.810**	**0.000**	**0.000**	**0.091**	**0.000**
Jul	-	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**4.068**	**0.008**	**0.000**	**0.000**	**4.068**	**0.000**	**0.000**	**128.810**	**0.000**	**0.000**	**0.091**	**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	8	21
	Limit	1	2
24-Hr TSP	Action	1	1
	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	0	0	0

Email message

Environmental Resources Management

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

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	18 December 2018

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_9December2018_1hrTSP_Station ASR1

One (1) exceedance was recorded on 9 December 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_9December2018_1hrTSP_Station ASR1 [Total No. of Exceedances = 1]**	
Date	9 December 2018 (Measured) 18 December 2018 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	No works were undertaken under this Contract on 9 December 2018.	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • According to information provided by the Contractor, no construction works were conducted on 9 December 2018 under this Contract. • According to ET's site inspection on 7 December 2018, no particular findings was observed at the works area near ASR1 (*refer to ET's Site Inspection Photo*). Unpaved roads at the works area were in wet condition. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying on unpaved roads. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 9 December 2018 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 9 December 2018 is sourced from Contract No. HY/2012/08 for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2018-12-09	AQMS1	8:52	1-hour TSP	79	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	AQMS1	9:54	1-hour TSP	57	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	AQMS1	10:56	1-hour TSP	75	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR1	8:40	1-hour TSP	135	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR1	9:42	1-hour TSP	212	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR1	10:44	1-hour TSP	346	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR10	8:05	1-hour TSP	74	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR10	9:07	1-hour TSP	79	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR10	10:09	1-hour TSP	83	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR5	8:28	1-hour TSP	201	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR5	9:30	1-hour TSP	194	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR5	10:32	1-hour TSP	194	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR6	8:16	1-hour TSP	134	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR6	9:18	1-hour TSP	97	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR6	10:20	1-hour TSP	112	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	AQMS1	11:58	24-hour TSP	35	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR1	11:46	24-hour TSP	62	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR10	11:09	24-hour TSP	40	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR5	11:34	24-hour TSP	117	ug/m^3
TMCLKL	HY/2012/08	2018-12-09	ASR6	11:22	24-hour TSP	53	ug/m^3

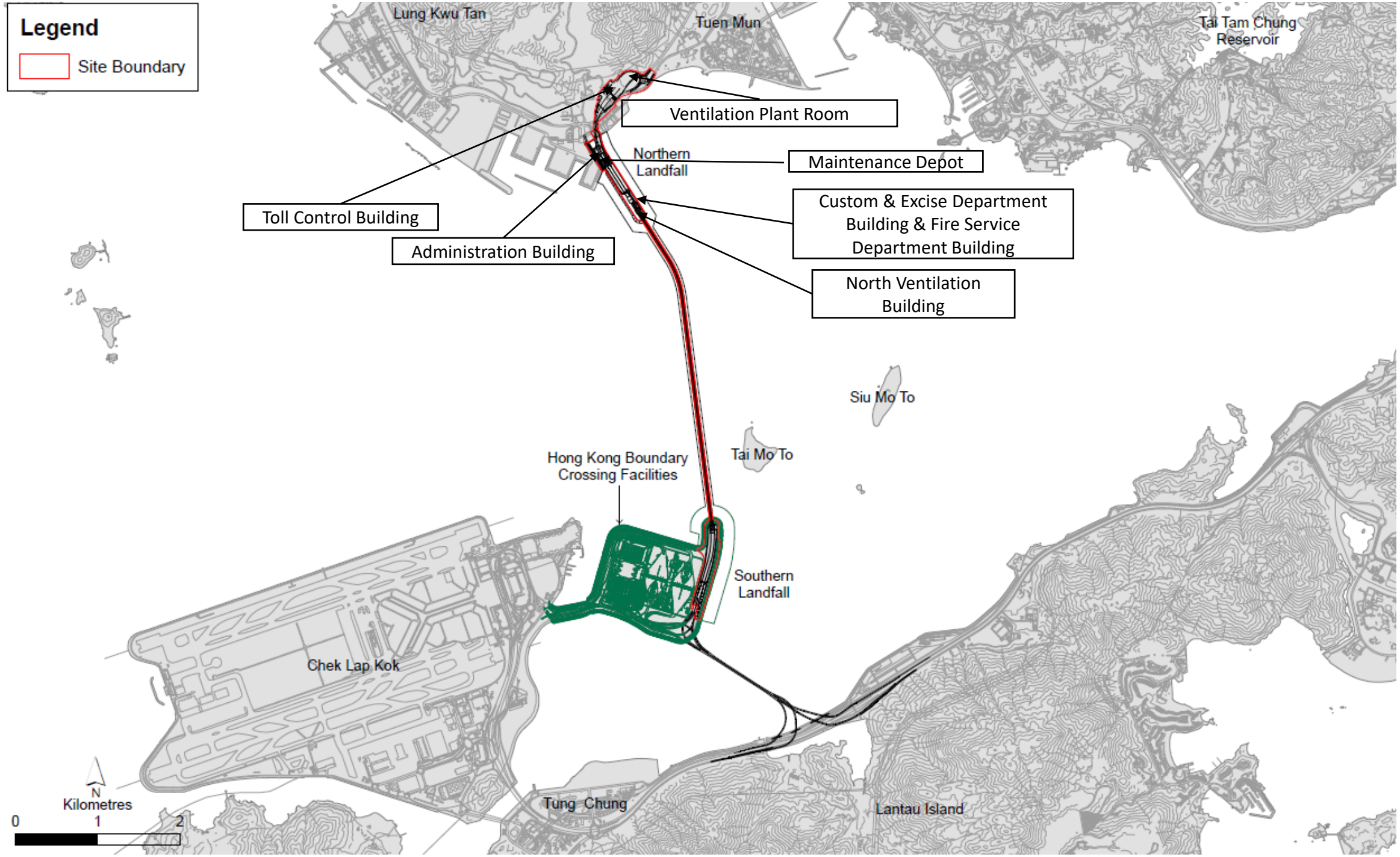
Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level

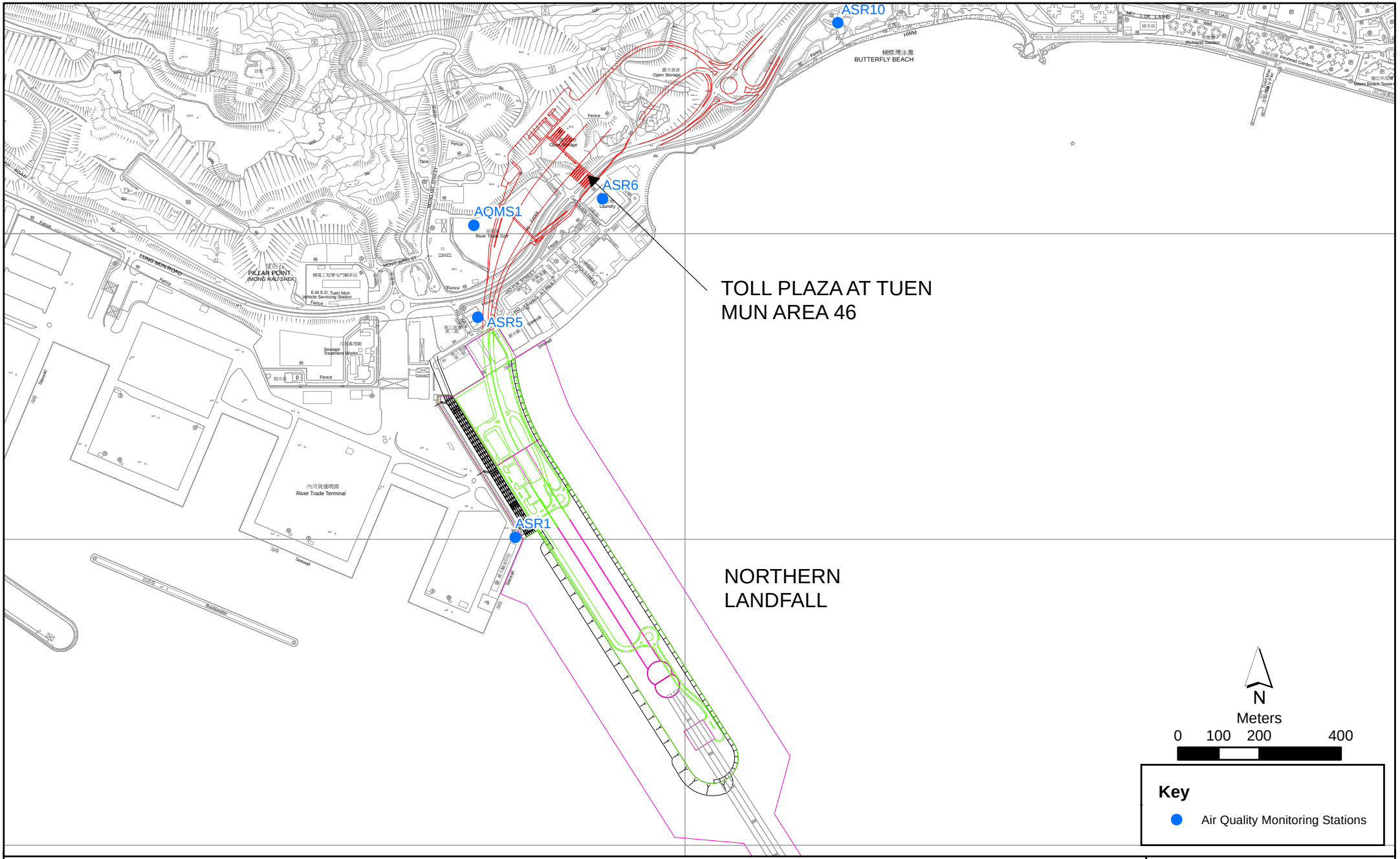
Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Direction (degree)
18/12/09	0:00	2.7	21
18/12/09	1:00	3.1	34
18/12/09	2:00	2.2	55
18/12/09	3:00	2.2	39
18/12/09	4:00	1.3	18
18/12/09	5:00	1.3	56
18/12/09	6:00	1.8	56
18/12/09	7:00	1.8	38
18/12/09	8:00	2.2	36
18/12/09	9:00	2.7	14
18/12/09	10:00	1.8	32
18/12/09	11:00	0.9	43
18/12/09	12:00	0.9	41
18/12/09	13:00	1.3	348
18/12/09	14:00	2.2	331
18/12/09	15:00	3.1	326
18/12/09	16:00	1.8	330
18/12/09	17:00	1.3	13
18/12/09	18:00	1.3	4
18/12/09	19:00	1.8	18
18/12/09	20:00	1.8	53
18/12/09	21:00	0.9	336
18/12/09	22:00	1.3	27
18/12/09	23:00	1.3	44

*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section

PHOTO BY ET ON 7 DECEMBER 2018

Photo 1 - Watering of unpaved roads at works area near Fire Services Department Building to maintain a wet condition (7 December 2018)


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
Maintenance Depot
Toll Control Building
Custom & Excise Department Building & Fire Service Department Building
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2



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

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

2507,
25/F One Harbourfront,
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Facsimile: (852) 2723 5660
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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	31 December 2018

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_12December2018_1hrTSP_Station ASR1

One (1) exceedance was recorded on 12 December 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_12December2018_1hrTSP_Station ASR1** **[Total No. of Exceedances = 1]**	
Date	12 December 2018 (Measured) 31 December 2018 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 12 December 2018 included: ▪ Rebar fixing at Administration Building and Maintenance Depot.	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedances of 1 hour-TSP (13:31 - 14:31) at ASR1, other 1hr-TSP levels and all 24-hr TSP at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 12 December 2018 (*refer to Contractor's Photo* and *watering record*). • No works under this Contract was conducted in the wind direction (north-westerly wind) during the time of exceedance. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 12 December 2018 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 12 December 2018 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2018-12-12	AQMS1	13:41	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2018-12-12	AQMS1	14:43	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018-12-12	AQMS1	15:45	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR1	13:31	1-hour TSP	414	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR1	14:33	1-hour TSP	174	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR1	15:35	1-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR10	13:00	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR10	14:02	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR10	15:04	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR5	13:20	1-hour TSP	340	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR5	14:22	1-hour TSP	171	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR5	15:24	1-hour TSP	168	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR6	13:10	1-hour TSP	230	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR6	14:12	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR6	15:14	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2018-12-12	AQMS1	16:47	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR1	16:27	24-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR10	16:06	24-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR5	16:26	24-hour TSP	142	ug/m3
TMCLKL	HY/2012/08	2018-12-12	ASR6	16:16	24-hour TSP	93	ug/m3

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

Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Director (degree)
18/12/12	0:00	1.8	313
18/12/12	1:00	1.8	282
18/12/12	2:00	1.8	297
18/12/12	3:00	1.8	306
18/12/12	4:00	1.8	316
18/12/12	5:00	0.9	348
18/12/12	6:00	1.3	281
18/12/12	7:00	1.3	55
18/12/12	8:00	1.8	295
18/12/12	9:00	1.3	298
18/12/12	10:00	1.8	19
18/12/12	11:00	1.3	344
18/12/12	12:00	0.9	321
18/12/12	13:00	1.3	347
18/12/12	14:00	2.2	304
18/12/12	15:00	1.3	306
18/12/12	16:00	1.8	322
18/12/12	17:00	1.8	303
18/12/12	18:00	0.9	289
18/12/12	19:00	0.9	327
18/12/12	20:00	1.3	3
18/12/12	21:00	0.9	260
18/12/12	22:00	1.8	18
18/12/12	23:00	1.8	40

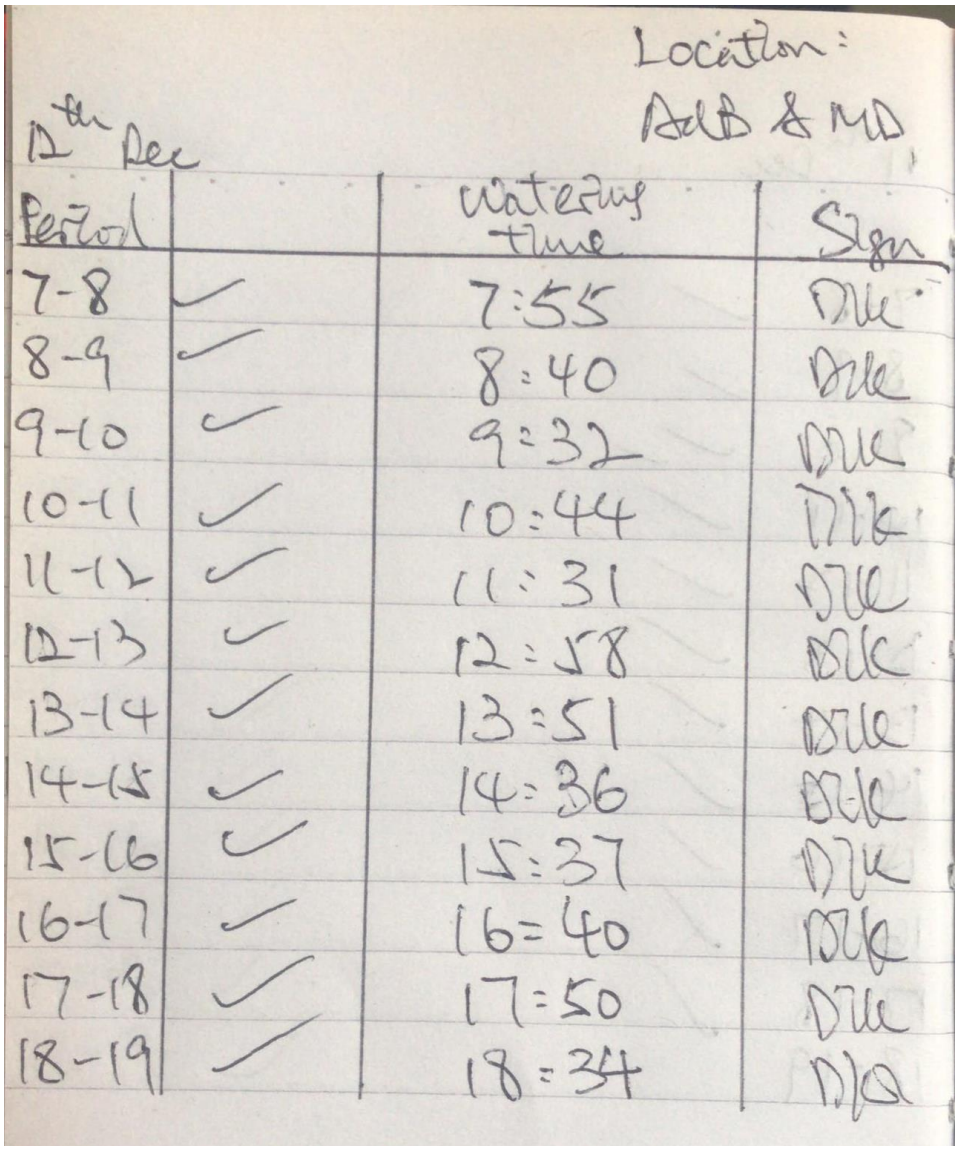
*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section

PHOTO BY CONTRACTOR ON 12 DECEMBER 2018

Photo 1 - Watering of unpaved roads to maintain a wet condition

Photo 2 - Rebar fixing works conducted at works area of Administration Building and Maintenance Depot

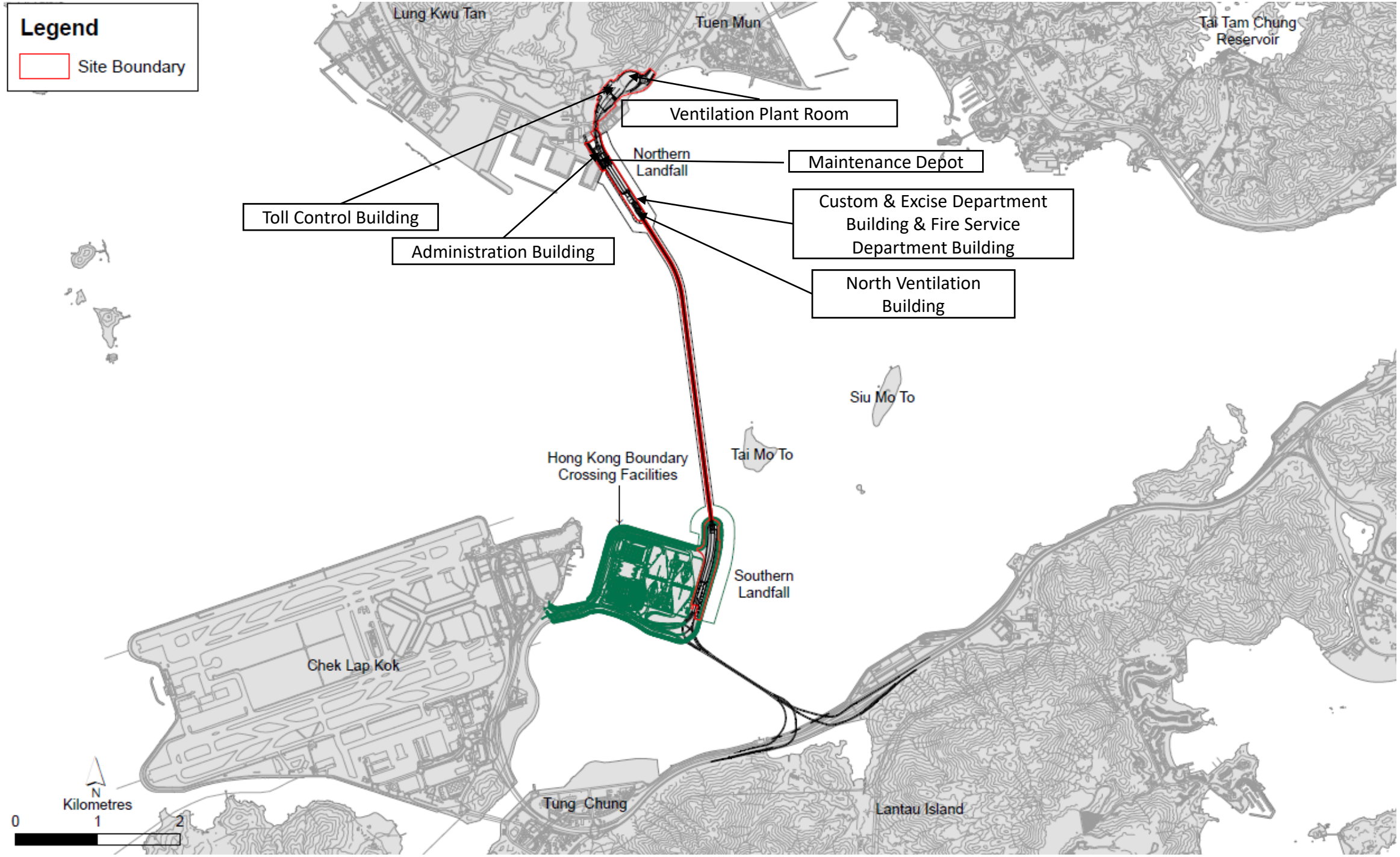
WATERING RECORD ON 12 DECEMBER 2018

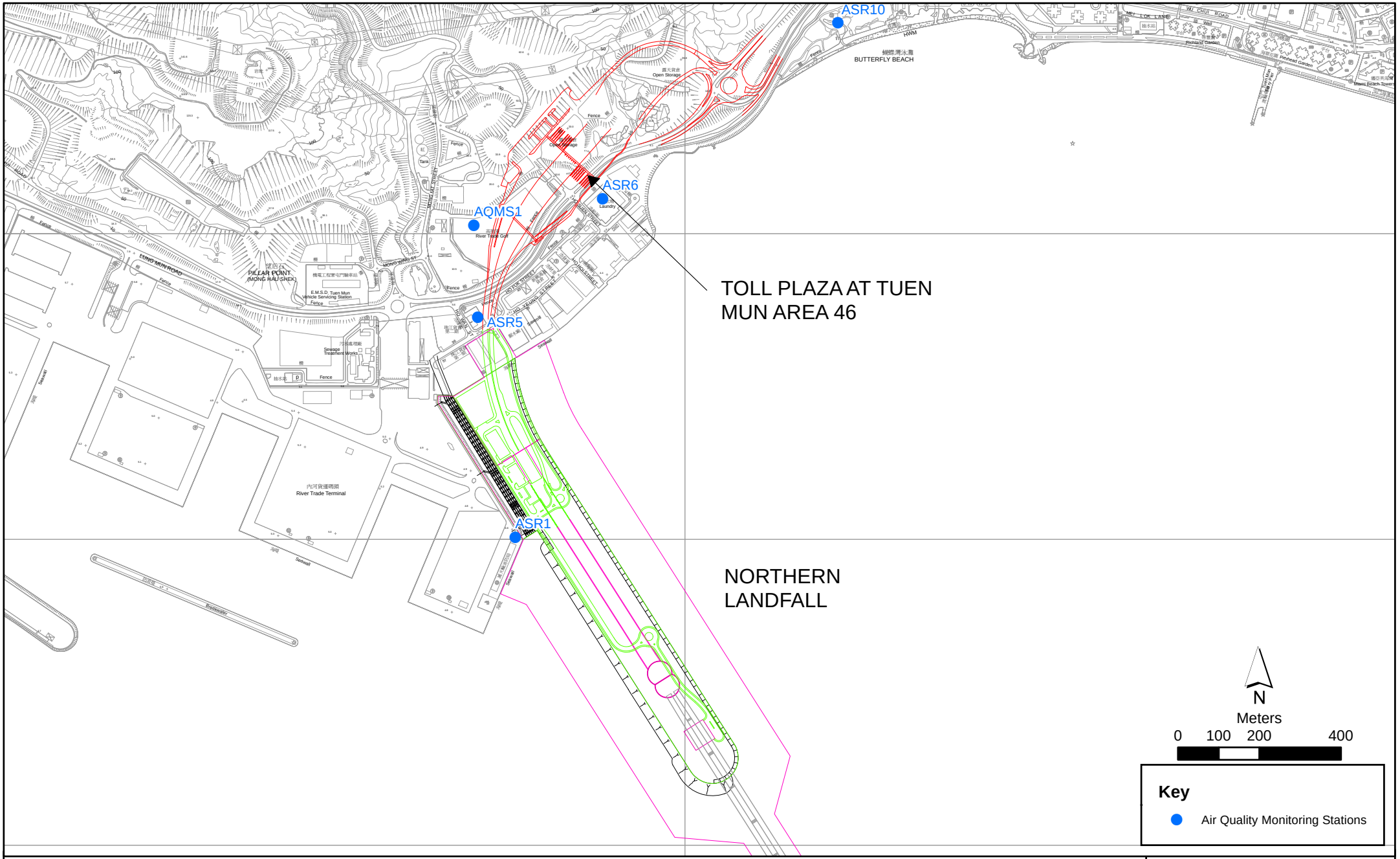


Location: ABB & MD

12th Dec

Period		Watering time	Sign
7-8	✓	7:55	DLL
8-9	✓	8:40	DLL
9-10	✓	9:32	DLL
10-11	✓	10:44	DLL
11-12	✓	11:31	DLL
12-13	✓	12:58	DLL
13-14	✓	13:51	DLL
14-15	✓	14:36	DLL
15-16	✓	15:37	DLL
16-17	✓	16:40	DLL
17-18	✓	17:50	DLL
18-19	✓	18:34	DLL


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
Maintenance Depot
Toll Control Building
Custom & Excise Department Building & Fire Service Department Building
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2



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

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

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Telephone: (852) 2271 3113
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E-mail: jasmine.ng@erm.com

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	31 December 2018

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_18December2018_1hrTSP_Station ASR6

One (1) exceedance was recorded on 18 December 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_18December2018_1hrTSP_Station ASR6** **[Total No. of Exceedances = 1]**	
Date	18 December 2018 (Measured) 31 December 2018 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 18 December 2018 included: ▪ Falsework, rebar fixing and formwork at Toll Control Building (*refer to Contractor's photo)*	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedances of 1 hour-TSP (14:16 - 15:16) at ASR6, other 1hr-TSP levels and all 24-hr TSP at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 18 December 2018 (*refer to watering record*). • No works under this Contract was conducted in the wind direction (easterly wind) upstream of ASR6 during the time of exceedance. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 18 December 2018 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 18 December 2018 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2018-12-18	AQMS1	13:49	1-hour TSP	118	ug/m3
TMCLKL	HY/2012/08	2018-12-18	AQMS1	14:51	1-hour TSP	188	ug/m3
TMCLKL	HY/2012/08	2018-12-18	AQMS1	15:53	1-hour TSP	151	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR1	13:37	1-hour TSP	207	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR1	14:39	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR1	15:41	1-hour TSP	174	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR10	13:03	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR10	14:05	1-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR10	15:07	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR5	13:26	1-hour TSP	311	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR5	14:30	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR5	15:32	1-hour TSP	192	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR6	13:14	1-hour TSP	224	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR6	14:16	1-hour TSP	478	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR6	15:18	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2018-12-18	AQMS1	16:55	24-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR1	16:43	24-hour TSP	131	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR10	16:09	24-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR5	16:34	24-hour TSP	134	ug/m3
TMCLKL	HY/2012/08	2018-12-18	ASR6	16:20	24-hour TSP	94	ug/m3

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

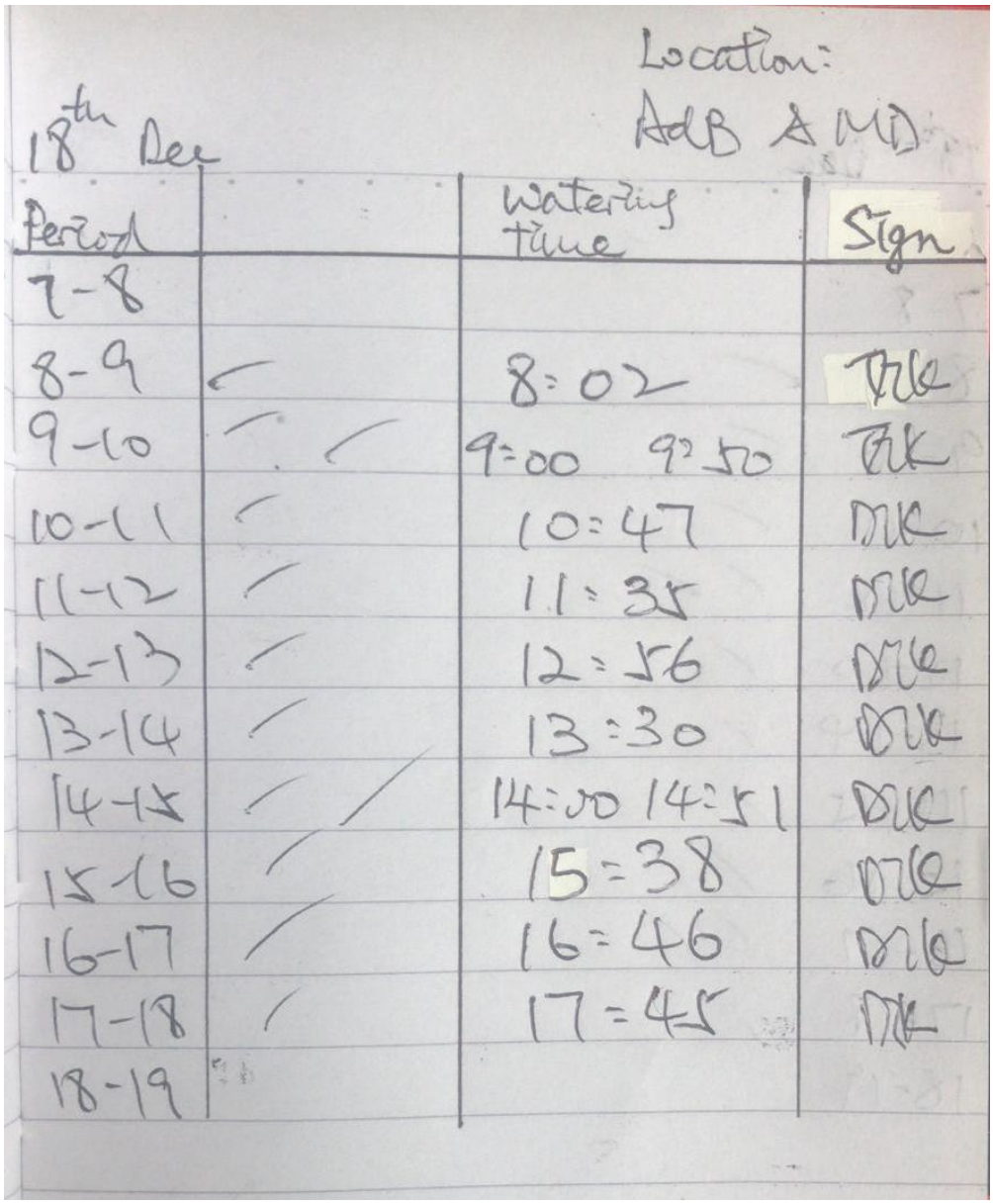
Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Director (degree)
18/12/18	0:00	1.3	339
18/12/18	1:00	0.9	335
18/12/18	2:00	0.4	50
18/12/18	3:00	0.9	335
18/12/18	4:00	0.9	56
18/12/18	5:00	0.4	81
18/12/18	6:00	0.9	81
18/12/18	7:00	0.9	99
18/12/18	8:00	1.3	83
18/12/18	9:00	1.3	86
18/12/18	10:00	1.3	35
18/12/18	11:00	1.8	31
18/12/18	12:00	1.3	130
18/12/18	13:00	3.1	140
18/12/18	14:00	3.6	103
18/12/18	15:00	3.1	114
18/12/18	16:00	4.0	132
18/12/18	17:00	4.0	110
18/12/18	18:00	2.7	84
18/12/18	19:00	2.2	101
18/12/18	20:00	1.8	36
18/12/18	21:00	1.8	34
18/12/18	22:00	1.8	43
18/12/18	23:00	1.8	49

*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section

PHOTO BY CONTRACTOR ON 18 DECEMBER 2018

Photo 1 - Falsework, rebar fixing and formwork conducted at works area of Toll Control Building

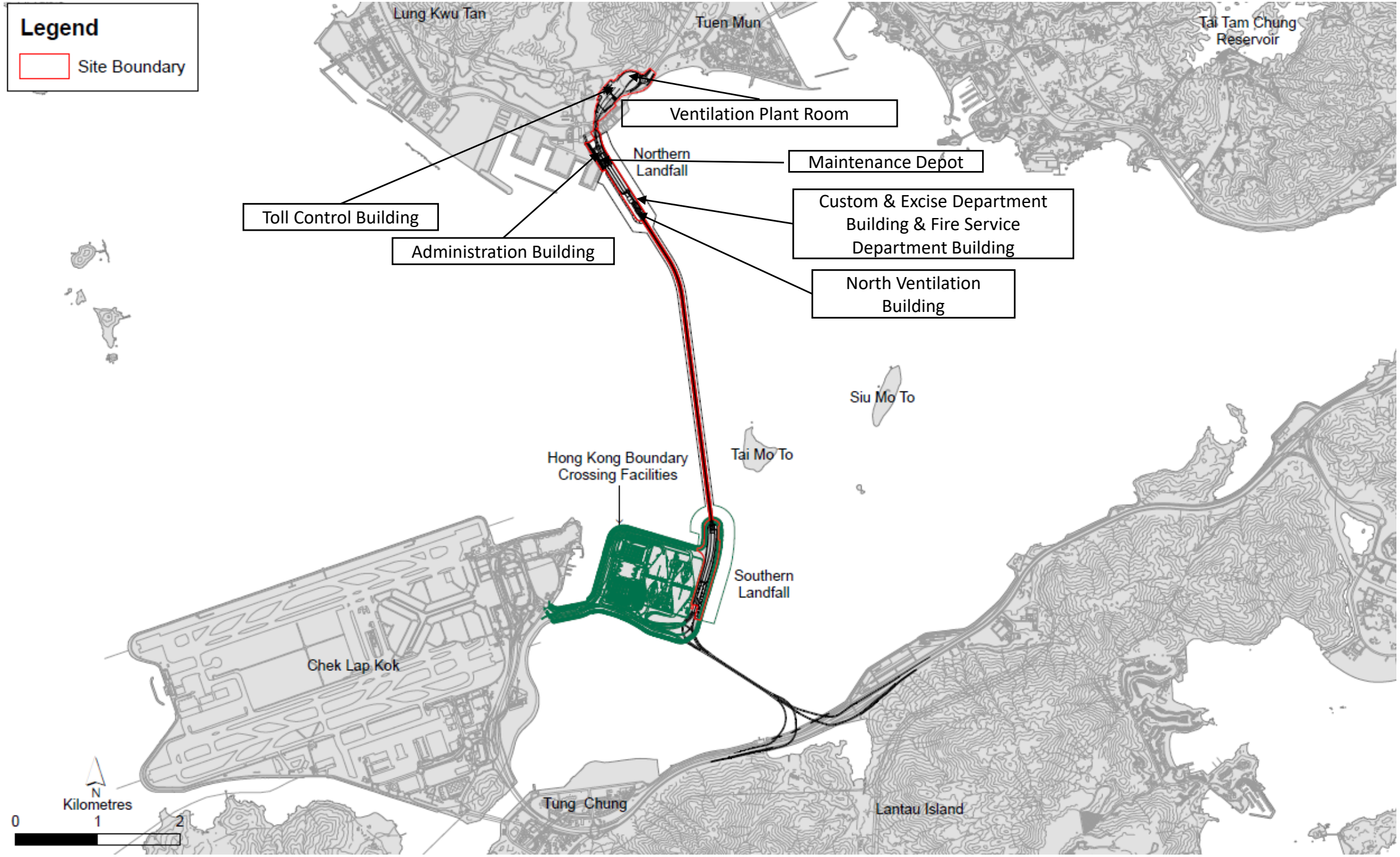
WATERING RECORD ON 18 DECEMBER 2018



Location: AdB & MD

18th Dec

Period		Watering Time	Sign
7-8			
8-9	✓	8:02	TKL
9-10	✓ ✓	9:00 9:50	TKL
10-11	✓	10:47	TKL
11-12	✓	11:35	TKL
12-13	✓	12:56	TKL
13-14	✓	13:30	TKL
14-15	✓ ✓	14:00 14:51	TKL
15-16	✓	15:38	TKL
16-17	✓	16:46	TKL
17-18	✓	17:45	TKL
18-19			


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
Maintenance Depot
Toll Control Building
Custom & Excise Department Building & Fire Service Department Building
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
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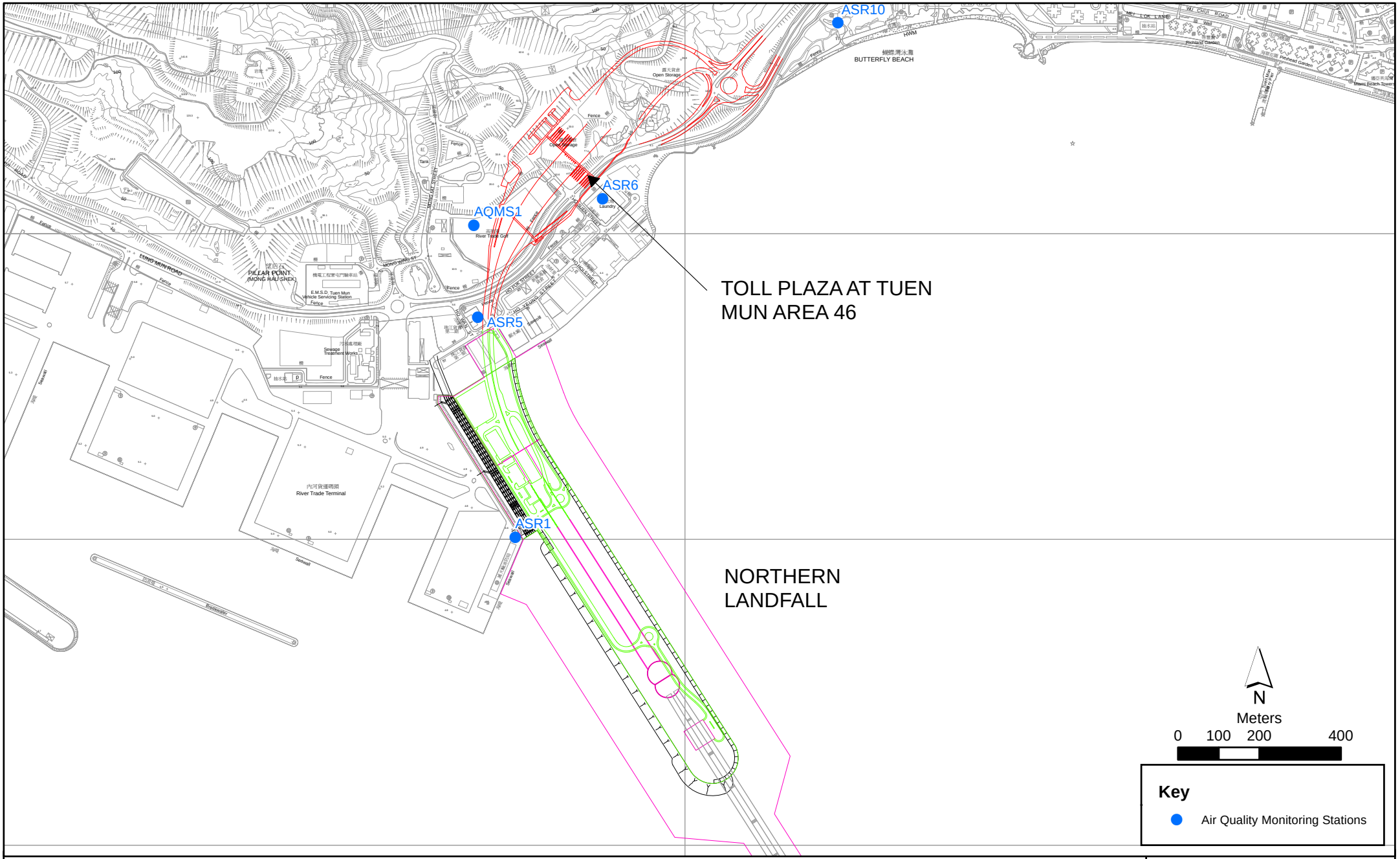

Air Quality Monitoring Stations for the Enhanced TSP Monitoring
(Source: Adopted from Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section)

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

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E-mail: jasmine.ng@erm.com

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	18 January 2019

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_8January2019_1hrTSP_Station ASR5

One (1) exceedance was recorded on 8 January 2019.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_8January2019_1hrTSP_Station ASR5** **[Total No. of Exceedances = 1]**	
Date	8 January 2019 (Measured) 18 January 2019 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 8 January 2019 included: ▪ Rebar fixing at Administration Building and Maintenance Depot (*refer to Contractor's photo)*	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedances of 1 hour-TSP (13:20 – 14:20) at ASR5, other 1hr-TSP levels and all 24-hr TSP at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 8 January 2019 (*refer to Contractor's Photo* and *Watering Record*). • With reference to the recorded wind direction (ranged between 204° to 221°, blowing from a south westerly direction) during the period of the observed 1-hr TSP exceedances, station ASR5 is located downstream of the Administration Building and Maintenance Depot. However, rebar fixing was conducted at the Administration Building and Maintenance Depot which are not major dust generating works. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 8 January 2019 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 8 January 2019 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-01-08	AQMS1	13:41	1-hour TSP	179	ug/m3
TMCLKL	HY/2012/08	2019-01-08	AQMS1	14:43	1-hour TSP	192	ug/m3
TMCLKL	HY/2012/08	2019-01-08	AQMS1	15:45	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR1	13:30	1-hour TSP	184	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR1	14:32	1-hour TSP	281	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR1	15:34	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR10	13:00	1-hour TSP	162	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR10	14:02	1-hour TSP	189	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR10	15:04	1-hour TSP	192	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR5	13:20	1-hour TSP	354	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR5	14:22	1-hour TSP	292	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR5	15:24	1-hour TSP	275	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR6	13:10	1-hour TSP	239	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR6	14:12	1-hour TSP	231	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR6	15:14	1-hour TSP	197	ug/m3
TMCLKL	HY/2012/08	2019-01-08	AQMS1	16:47	24-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR1	16:36	24-hour TSP	135	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR10	16:06	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR5	16:26	24-hour TSP	175	ug/m3
TMCLKL	HY/2012/08	2019-01-08	ASR6	16:16	24-hour TSP	119	ug/m3

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

Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Director (degree)
19/01/08	0:00	0.0	-
19/01/08	1:00	0.0	-
19/01/08	2:00	0.0	-
19/01/08	3:00	0.4	47
19/01/08	4:00	0.9	44
19/01/08	5:00	1.3	93
19/01/08	6:00	0.9	111
19/01/08	7:00	1.3	95
19/01/08	8:00	0.4	88
19/01/08	9:00	0.9	113
19/01/08	10:00	0.4	163
19/01/08	11:00	0.9	159
19/01/08	12:00	1.3	228
19/01/08	13:00	0.9	210
19/01/08	14:00	0.9	204
19/01/08	15:00	0.9	221
19/01/08	16:00	0.4	250
19/01/08	17:00	0.9	182
19/01/08	18:00	1.8	345
19/01/08	19:00	1.3	309
19/01/08	20:00	1.3	295
19/01/08	21:00	0.9	299
19/01/08	22:00	1.3	297
19/01/08	23:00	0.4	346

*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section

PHOTO BY CONTRACTOR ON 8 JANUARY 2019

Photo 1 - Rebar fixing conducted at works area of Administration Building and Maintenance Depot

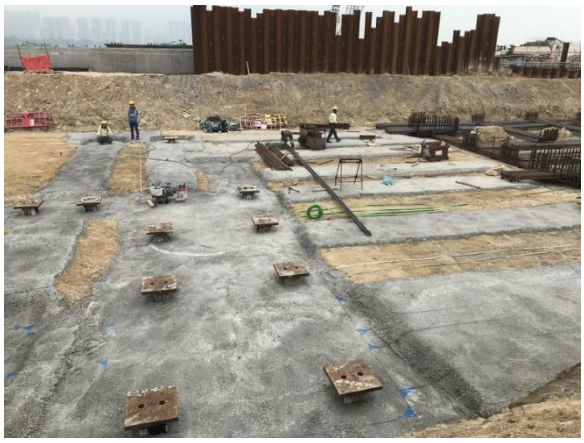
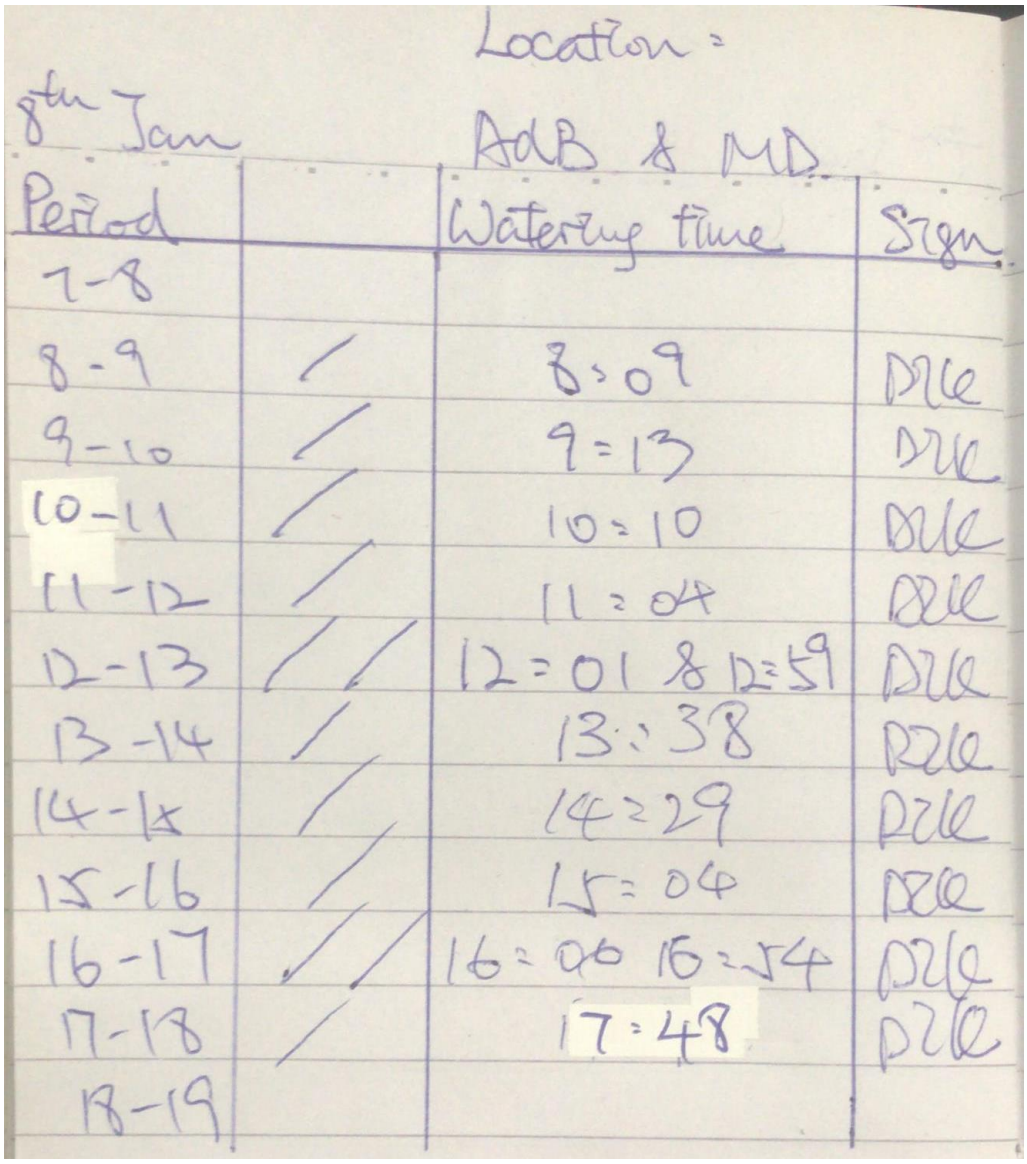


Photo 2- Watering of unpaved roads near Administration Building and Maintenance Depot

WATERING RECORD ON 8 JANUARY 2019

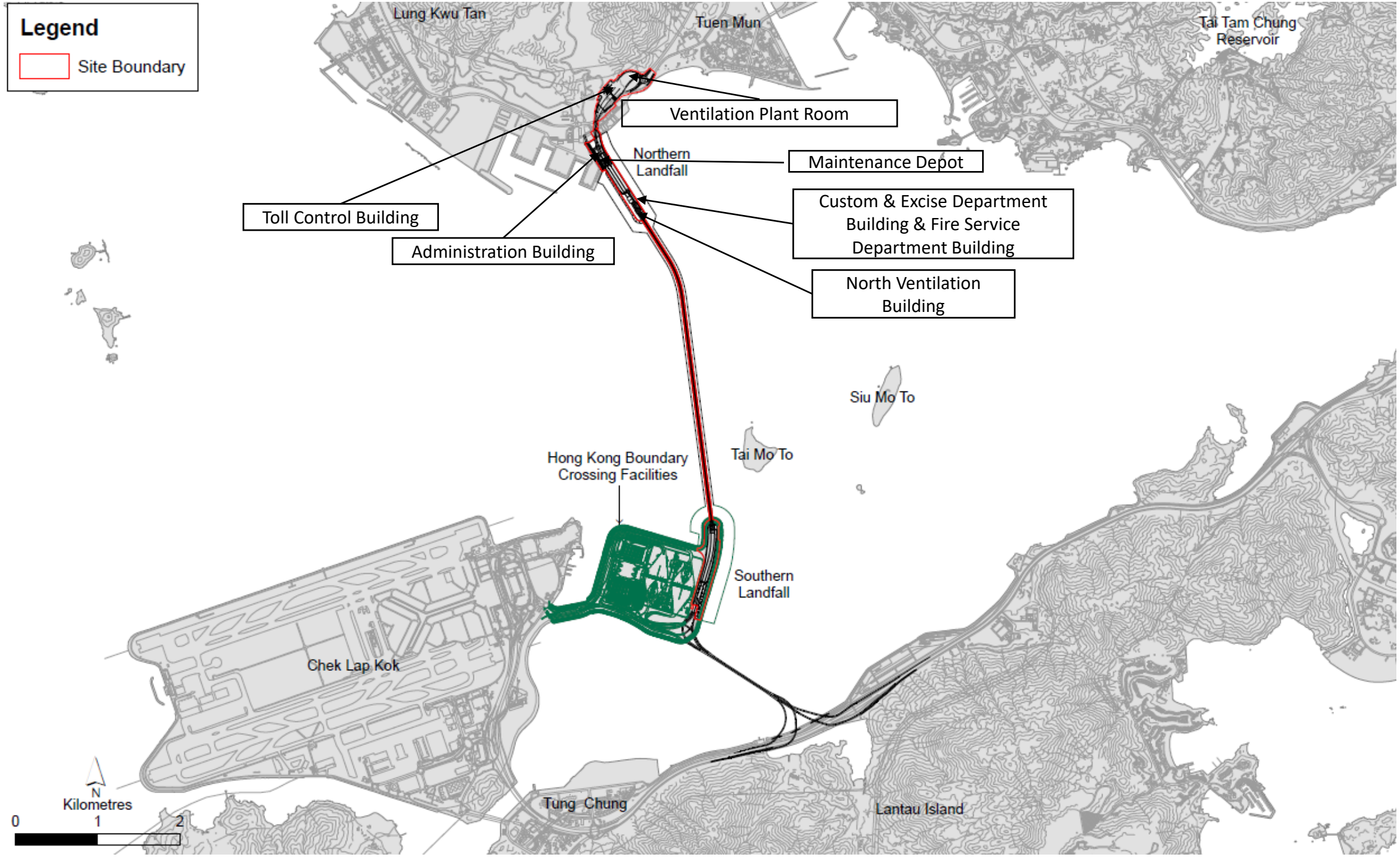


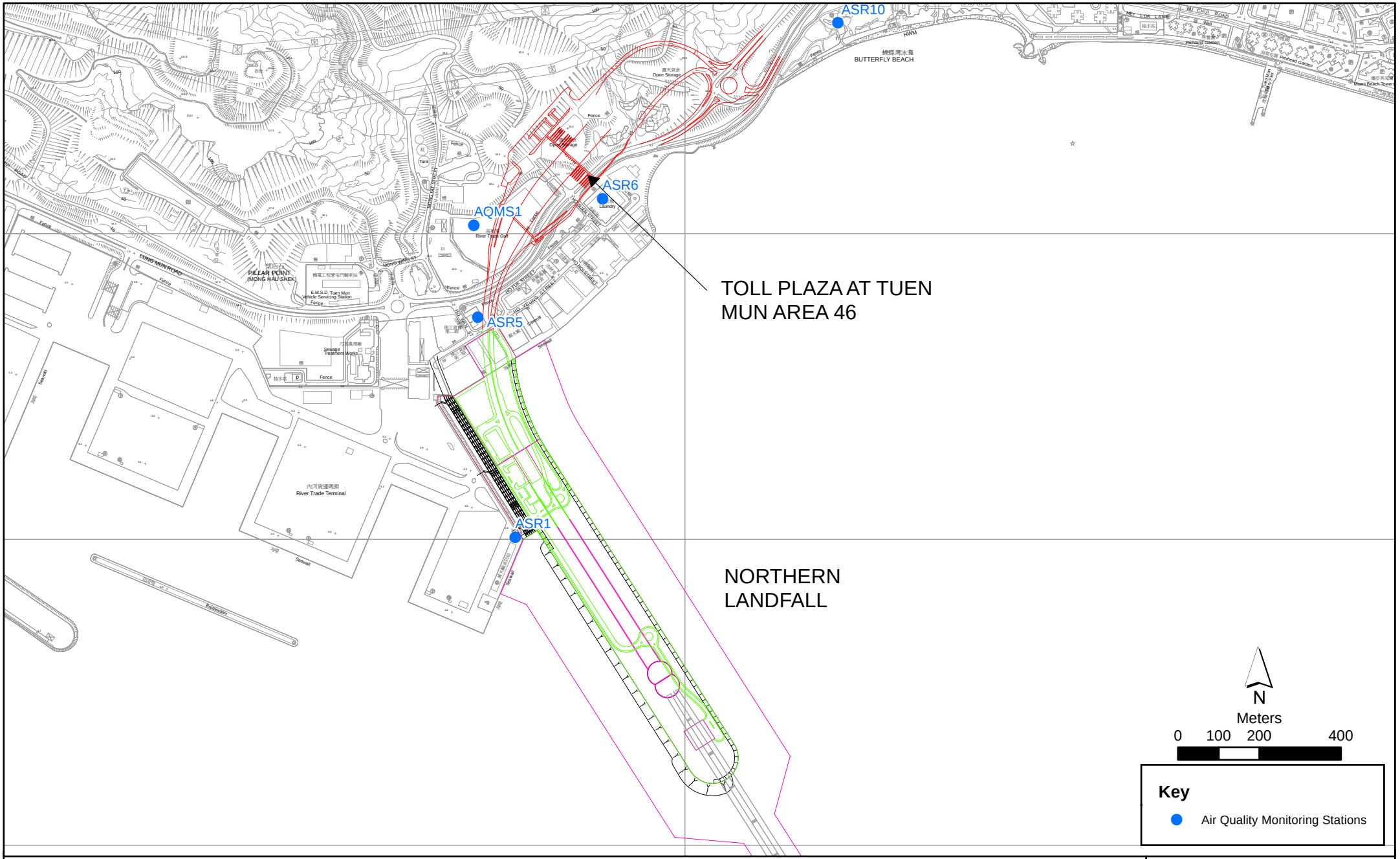
Location :

8th Jan

AdB & MD

Period		Watering time	Sign
7-8			
8-9	/	8:09	DRC
9-10	/	9:13	DRC
10-11	/	10:10	DRC
11-12	/	11:04	DRC
12-13	//	12:01 & 12:59	DRC
13-14	/	13:38	DRC
14-15	/	14:29	DRC
15-16	/	15:04	DRC
16-17	//	16:06 16:54	DRC
17-18	/	17:48	DRC
18-19			


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
Maintenance Depot
Toll Control Building
Custom & Excise Department Building & Fire Service Department Building
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2



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

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

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

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	18 January 2019

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_11January2019_1hrTSP_Station ASR1
0463091_11January2019_1hrTSP_Station ASR5

Two (2) exceedances were recorded on 11 January 2019.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_11January2019_1hrTSP_Station ASR1** **0463091_11January2019_1hrTSP_Station ASR5** **[Total No. of Exceedances = 2]**	
Date	11 January 2019 (Measured) 18 January 2019 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 11 January 2019 included: ▪ Rebar fixing at Administration Building and Maintenance Depot (*refer to Contractor's photo)*	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedances of 1 hour-TSP at ASR1 during 13:39 to 14:39 and at ASR5 during 13:27 to 14:27, other 1hr-TSP levels and all 24-hr TSP at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 11 January 2019 (*refer to Contractor's Photo* and *Watering Record*). • Works conducted at Administration Building and Maintenance Depot during the time when 1-hour TSP exceedances was recorded was rebar fixing which not dust generating. • With reference to the recorded wind direction (ranged between 112^o and 155^o, blowing from a south-easterly direction) during the period of the observed 1-hr TSP exceedances, stations ASR1 and ASR5 are located downstream of the Administration Building and Maintenance Depot. However, rebar fixing was conducted at the Administration Building and Maintenance Depot which are not major dust generating works. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 11 January 2019 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 11 January 2019 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-01-11	AQMS1	13:50	1-hour TSP	214	ug/m3
TMCLKL	HY/2012/08	2019-01-11	AQMS1	14:52	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2019-01-11	AQMS1	15:54	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR1	13:39	1-hour TSP	335	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR1	14:41	1-hour TSP	129	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR1	15:43	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR10	13:05	1-hour TSP	116	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR10	14:07	1-hour TSP	155	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR10	15:09	1-hour TSP	95	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR5	13:27	1-hour TSP	398	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR5	14:29	1-hour TSP	327	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR5	15:31	1-hour TSP	243	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR6	13:16	1-hour TSP	214	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR6	14:18	1-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR6	15:20	1-hour TSP	153	ug/m3
TMCLKL	HY/2012/08	2019-01-11	AQMS1	16:56	24-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR1	16:45	24-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR10	16:11	24-hour TSP	137	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR5	16:33	24-hour TSP	196	ug/m3
TMCLKL	HY/2012/08	2019-01-11	ASR6	16:22	24-hour TSP	191	ug/m3

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

Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Director (degree)
19/01/11	0:00	0.0	-
19/01/11	1:00	0.0	-
19/01/11	2:00	0.0	-
19/01/11	3:00	0.0	-
19/01/11	4:00	0.9	89
19/01/11	5:00	0.4	113
19/01/11	6:00	1.3	51
19/01/11	7:00	1.8	71
19/01/11	8:00	0.9	137
19/01/11	9:00	0.9	284
19/01/11	10:00	0.9	162
19/01/11	11:00	1.3	223
19/01/11	12:00	0.9	160
19/01/11	13:00	0.9	112
19/01/11	14:00	1.3	155
19/01/11	15:00	2.2	69
19/01/11	16:00	1.8	55
19/01/11	17:00	0.9	90
19/01/11	18:00	0.4	88
19/01/11	19:00	0	-
19/01/11	20:00	0	-
19/01/11	21:00	0	-
19/01/11	22:00	0	-
19/01/11	23:00	0	-

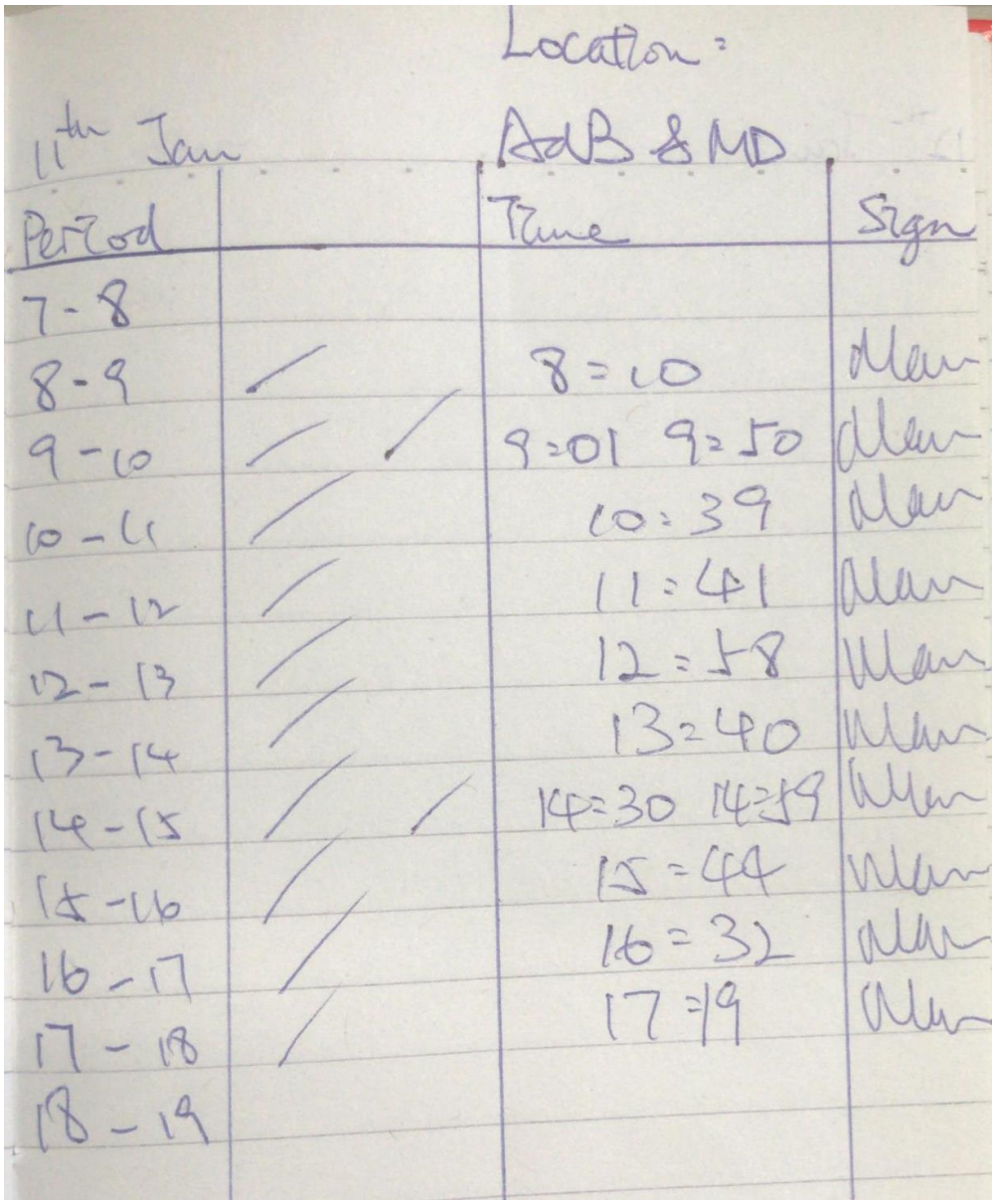
*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section

PHOTO BY CONTRACTOR ON 11 JANUARY 2019

Photo 1 - Rebar fixing conducted at works area of Administration Building and Maintenance Depot

Photo 2- Watering of unpaved roads near Administration Building and Maintenance Depot

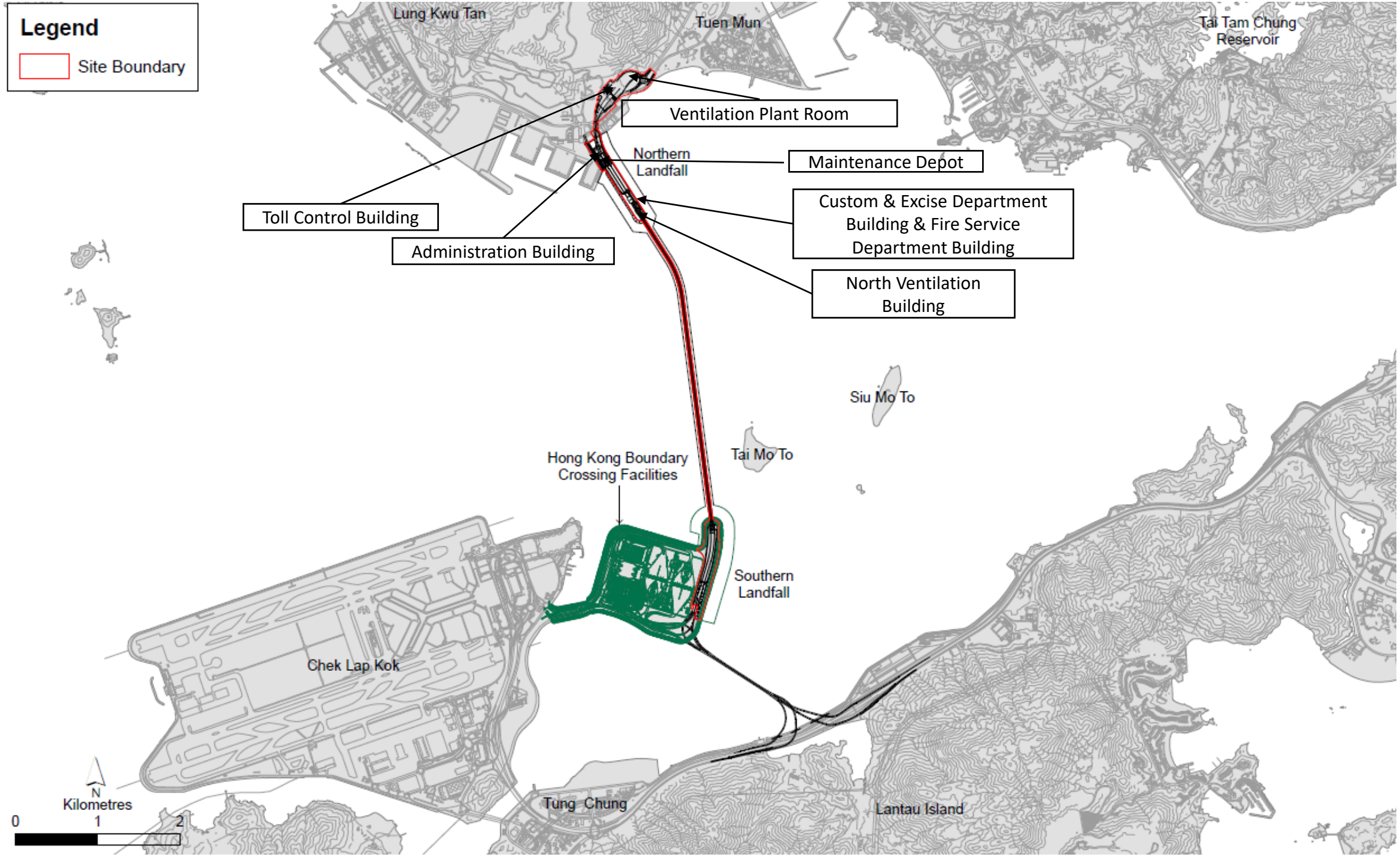
WATERING RECORD ON 11 JANUARY 2019

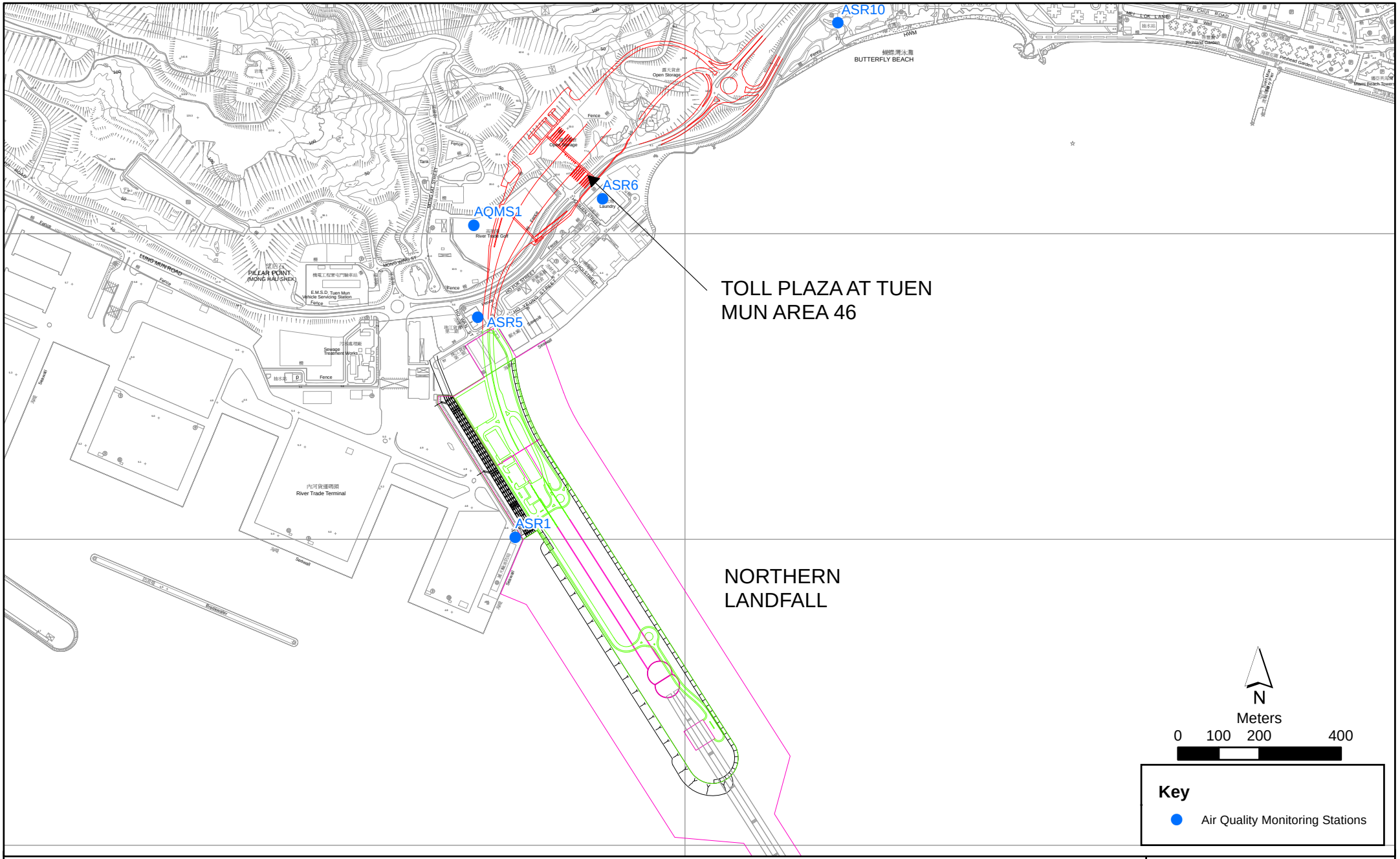


Location: AdB & MD

11th Jan

Period		Time	Sign
7-8			
8-9	/	8:10	Man
9-10	/ /	9:01 9:50	Man
10-11	/	10:39	Man
11-12	/	11:41	Man
12-13	/	12:48	Man
13-14	/	13:40	Man
14-15	/ /	14:30 14:59	Man
15-16	/	15:44	Man
16-17	/	16:32	Man
17-18	/	17:19	Man
18-19			


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
Maintenance Depot
Toll Control Building
Custom & Excise Department Building & Fire Service Department Building
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2



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

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

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

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	8 February 2019

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_17January2019_1hrTSP_Station ASR1
0463091_17January2019_1hrTSP_Station ASR5

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

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_17January2019_1hrTSP_Station ASR1** **0463091_17January2019_1hrTSP_Station ASR5** **[Total No. of Exceedances = 2]**	
Date	17 January 2019 (Measured) 8 February 2019 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 17 January 2019 included: ▪ Rebar fixing at Administration Building and Maintenance Depot (*refer to Contractor's photo)*	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedances of 1 hour-TSP at ASR1 during 16:04 to 17:04 and at ASR5 during 15:52 to 16:52, other 1hr-TSP levels and all 24-hr TSP at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 17 January 2019 (*refer to Contractor's Photo* and *watering record*). • With reference to the recorded wind direction (ranged between 284^o and 351^o, blowing from a north-westerly direction) during the period of the observed 1-hr TSP exceedances, no works are conducted upstream of stations ASR1 and ASR5. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 17 January 2019 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 17 January 2019 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-01-17	AQMS1	14:13	1-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2019-01-17	AQMS1	15:14	1-hour TSP	194	ug/m3
TMCLKL	HY/2012/08	2019-01-17	AQMS1	16:16	1-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR1	14:00	1-hour TSP	154	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR1	15:02	1-hour TSP	200	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR1	16:04	1-hour TSP	519	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR10	13:26	1-hour TSP	223	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR10	14:28	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR10	15:30	1-hour TSP	113	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR5	13:48	1-hour TSP	140	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR5	14:50	1-hour TSP	269	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR5	15:52	1-hour TSP	354	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR6	13:37	1-hour TSP	97	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR6	14:39	1-hour TSP	304	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR6	15:41	1-hour TSP	255	ug/m3
TMCLKL	HY/2012/08	2019-01-17	AQMS1	17:18	24-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR1	17:06	24-hour TSP	137	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR10	16:32	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR5	16:54	24-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2019-01-17	ASR6	16:43	24-hour TSP	98	ug/m3

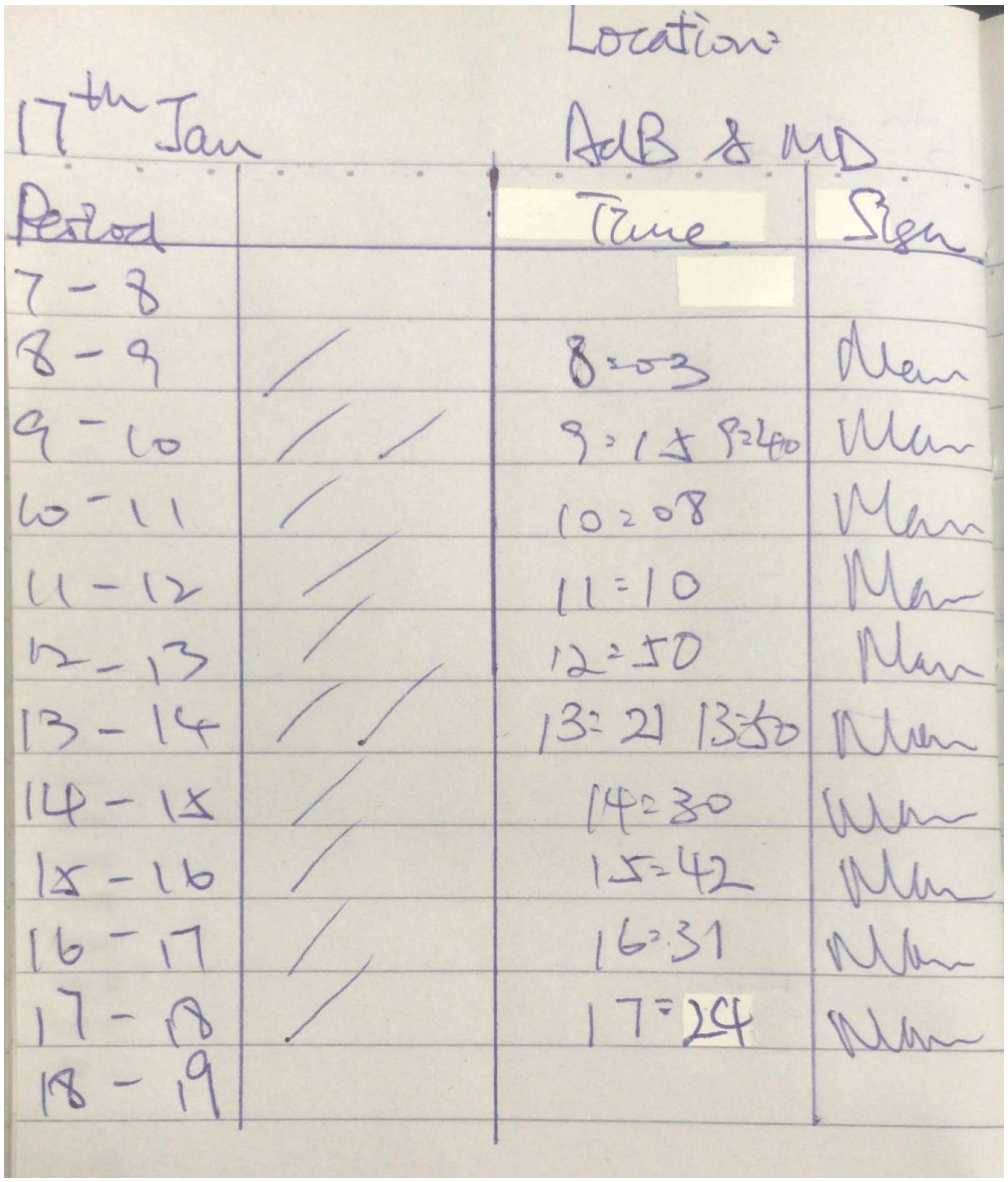
Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level

PHOTO BY CONTRACTOR ON 17 JANUARY 2019

Photo 1 - Rebar fixing conducted at works area of Administration Building and Maintenance Depot

Photo 2- Watering of unpaved roads near Administration Building and Maintenance Depot

WATERING RECORD ON 17 JANUARY 2019



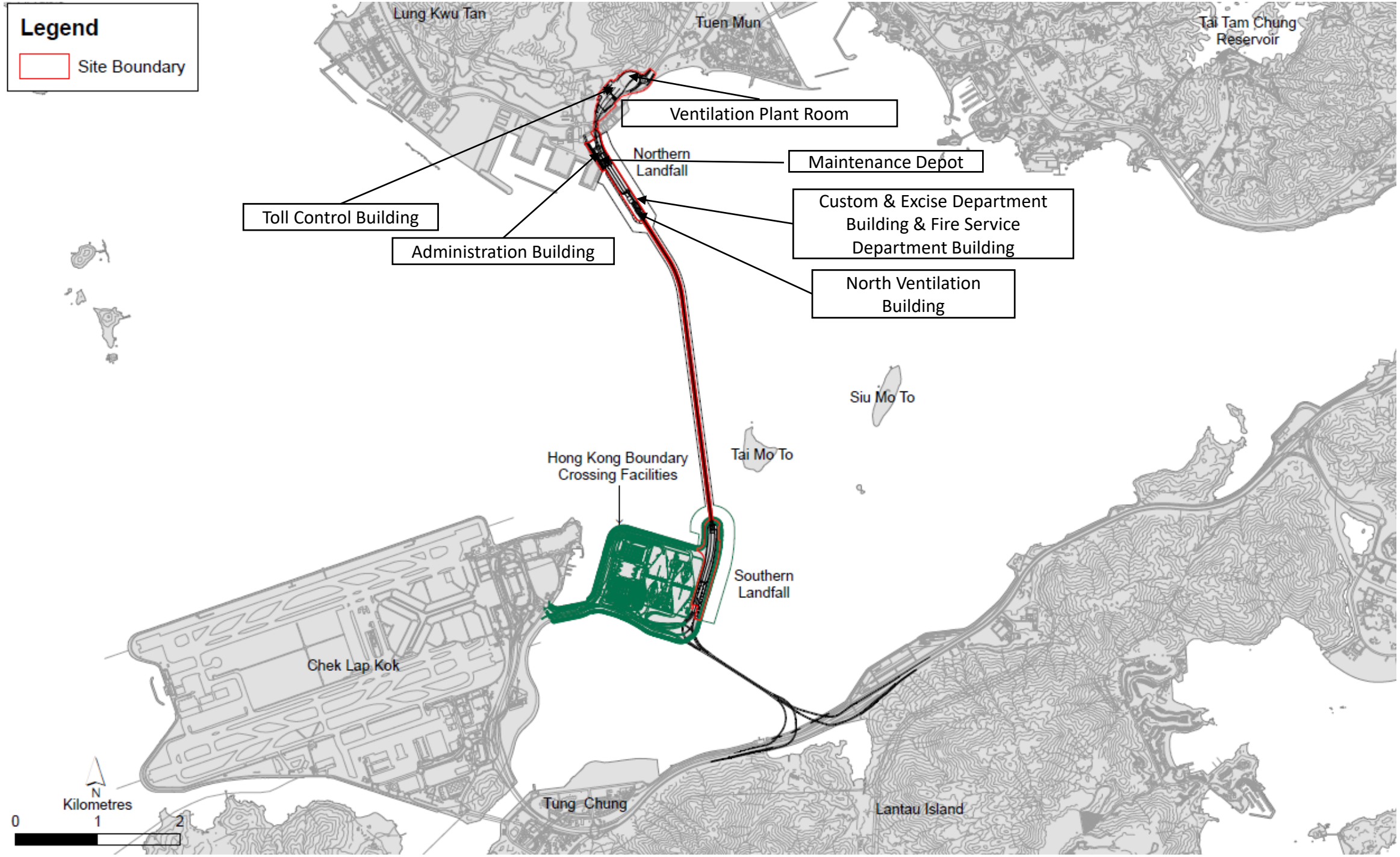
Location: AdB & MD

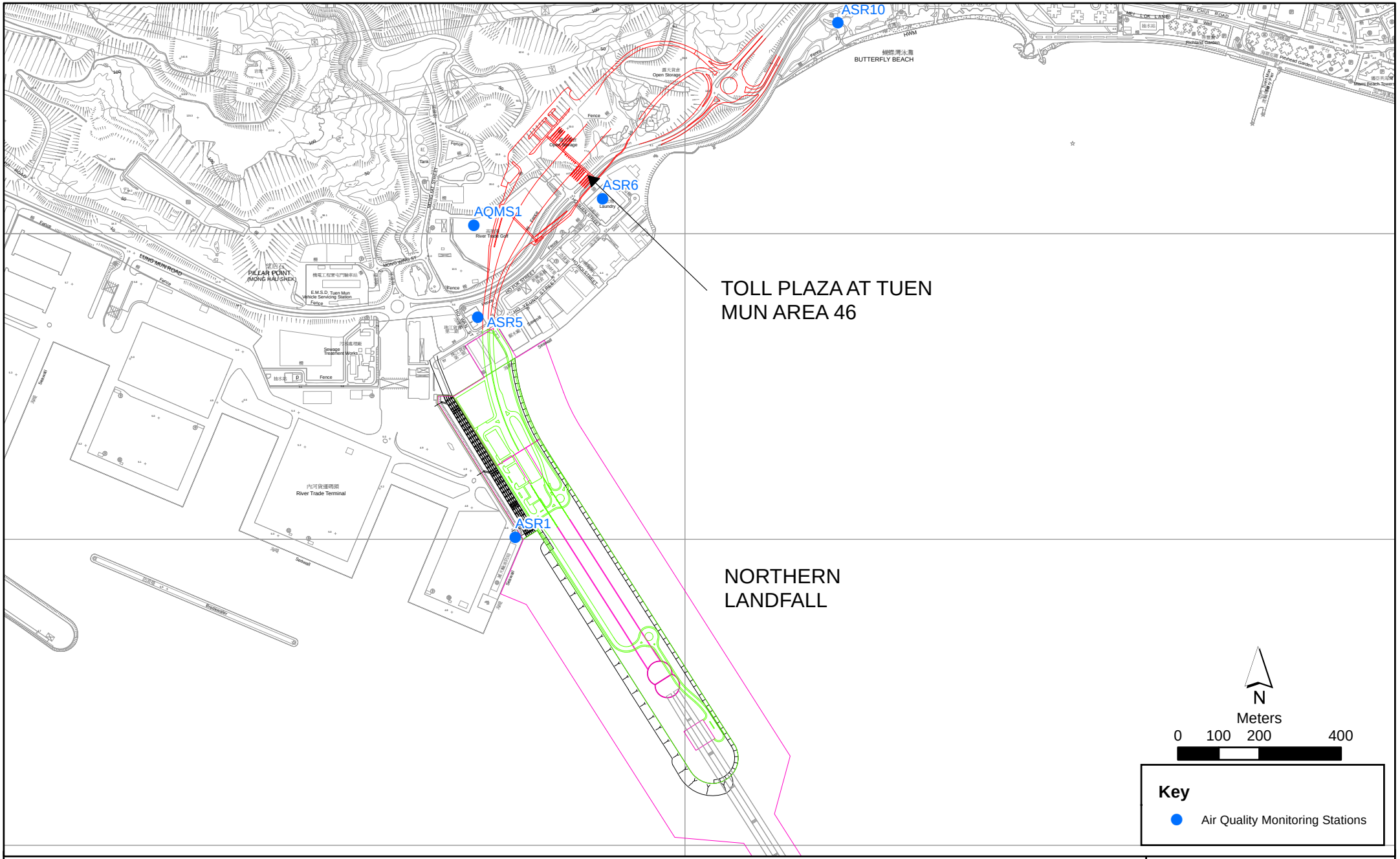
17th Jan

Period		Time	Sign
7 - 8			
8 - 9	/	8:03	
9 - 10	/ /	9:14 & 9:40	
10 - 11	/	10:08	
11 - 12	/	11:10	
12 - 13	/	12:50	
13 - 14	/ /	13:21 13:50	
14 - 15	/	14:30	
15 - 16	/	15:42	
16 - 17	/	16:31	
17 - 18	/	17:24	
18 - 19			

Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Director (degree)
19/01/17	0:00	1.3	342
19/01/17	1:00	1.8	340
19/01/17	2:00	2.2	32
19/01/17	3:00	1.8	30
19/01/17	4:00	1.8	22
19/01/17	5:00	1.8	49
19/01/17	6:00	1.8	17
19/01/17	7:00	1.3	55
19/01/17	8:00	0.9	32
19/01/17	9:00	1.8	45
19/01/17	10:00	2.2	47
19/01/17	11:00	2.2	52
19/01/17	12:00	1.8	29
19/01/17	13:00	2.2	207
19/01/17	14:00	2.2	274
19/01/17	15:00	3.1	276
19/01/17	16:00	2.2	284
19/01/17	17:00	0.9	351
19/01/17	18:00	1.8	90
19/01/17	19:00	1.3	85
19/01/17	20:00	0.9	32
19/01/17	21:00	1.3	37
19/01/17	22:00	1.3	42
19/01/17	23:00	1.3	44

*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
Maintenance Depot
Toll Control Building
Custom & Excise Department Building & Fire Service Department Building
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2



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

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

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Hung Hom, Hong Kong
Telephone: (852) 2271 3113
Facsimile: (852) 2723 5660
E-mail: jasmine.ng@erm.com

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	12 February 2019

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_26January2019_1hrTSP_Station ASR5

One (1) exceedance were recorded on 26 January 2019.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_26January2019_1hrTSP_Station ASR5** **[Total No. of Exceedances = 1]**	
Date	26 January 2019 (Measured) 12 February 2019 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP (µg/m^3)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m^3)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 26 January 2019 included: ▪ Rebar fixing at Administration Building and Maintenance Depot (*refer to Contractor's photo)*	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedance of 1 hour-TSP at ASR5 during 8:30 to 9:30, other 1hr-TSP levels and all 24-hr TSP at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 26 January 2019 (*refer to Contractor's Photo*). • With reference to the recorded wind direction (ranged between 143^o and 158^o, blowing from a south-easterly direction) during the period of the observed 1-hr TSP exceedances, station ASR5 is located downstream of the Administration Building and Maintenance Depot. However, rebar fixing was conducted at the Administration Building and Maintenance Depot which are not major dust generating works. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 26 January 2019 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 26 January 2019 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-01-26	AQMS1	8:53	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2019-01-26	AQMS1	9:55	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2019-01-26	AQMS1	10:57	1-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR1	8:42	1-hour TSP	245	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR1	9:44	1-hour TSP	207	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR1	10:46	1-hour TSP	112	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR10	8:08	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR10	9:10	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR10	10:12	1-hour TSP	71	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR5	8:30	1-hour TSP	399	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR5	9:32	1-hour TSP	208	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR5	10:34	1-hour TSP	208	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR6	8:19	1-hour TSP	304	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR6	9:21	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR6	10:23	1-hour TSP	141	ug/m3
TMCLKL	HY/2012/08	2019-01-26	AQMS1	11:59	24-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR1	11:48	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR10	11:14	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR5	11:36	24-hour TSP	101	ug/m3
TMCLKL	HY/2012/08	2019-01-26	ASR6	11:25	24-hour TSP	90	ug/m3

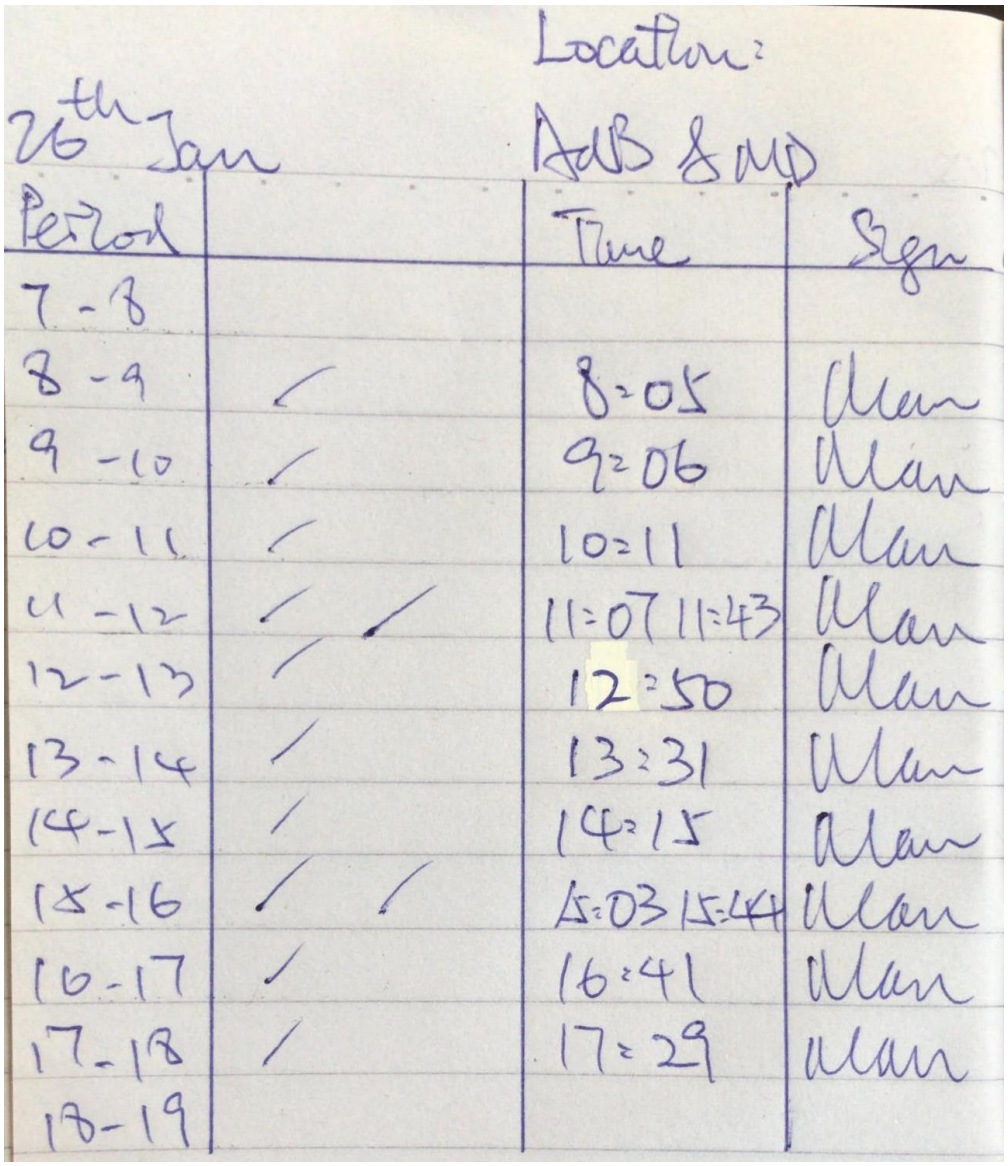
Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level

PHOTO BY CONTRACTOR ON 26 JANUARY 2019

Photo 1 - Rebar fixing conducted at works area of Administration Building and Maintenance Depot

Photo 2- Watering of unpaved roads near Administration Building and Maintenance Depot

WATERING RECORD ON 26 JANUARY 2019



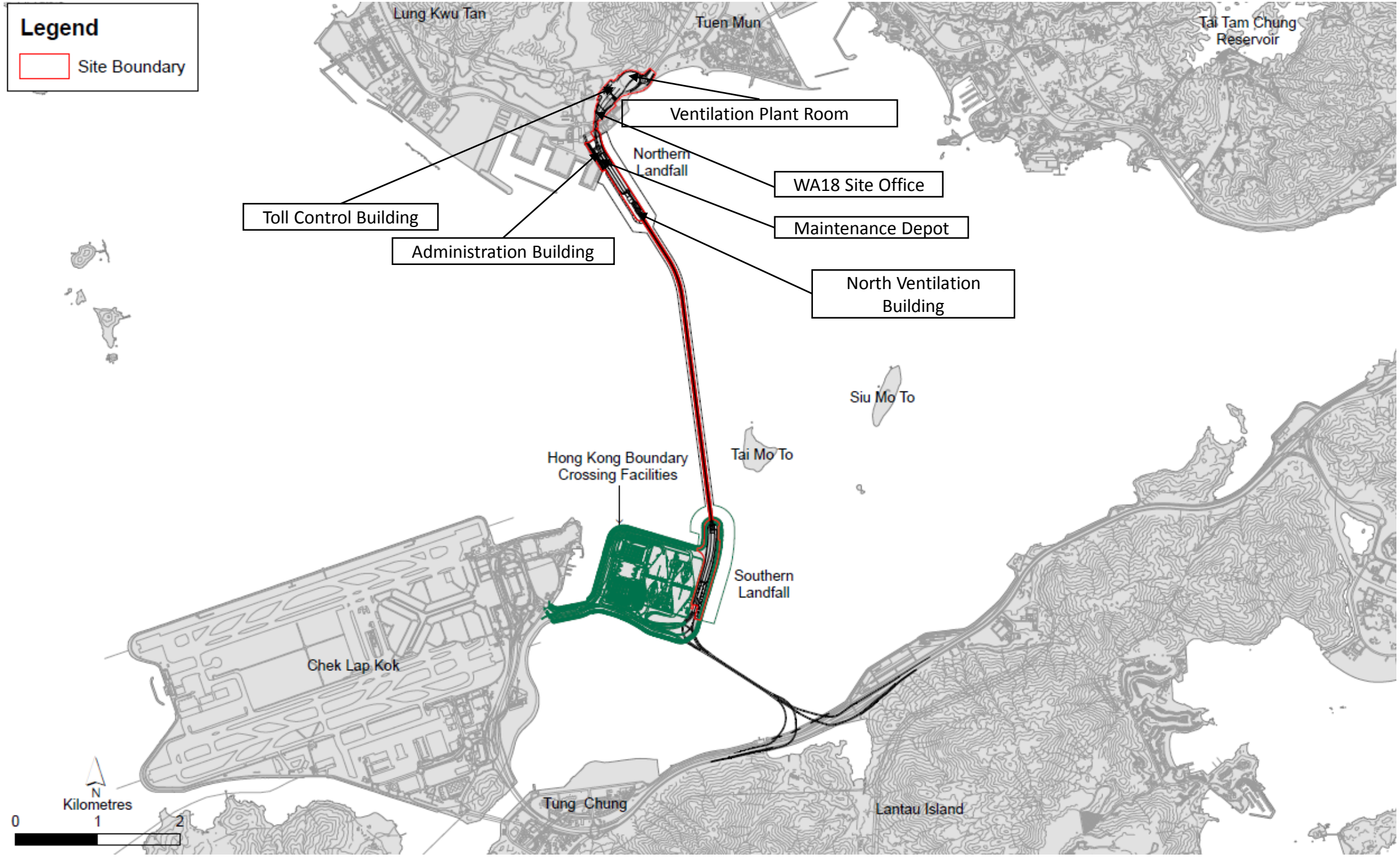
Location: AdB & MD

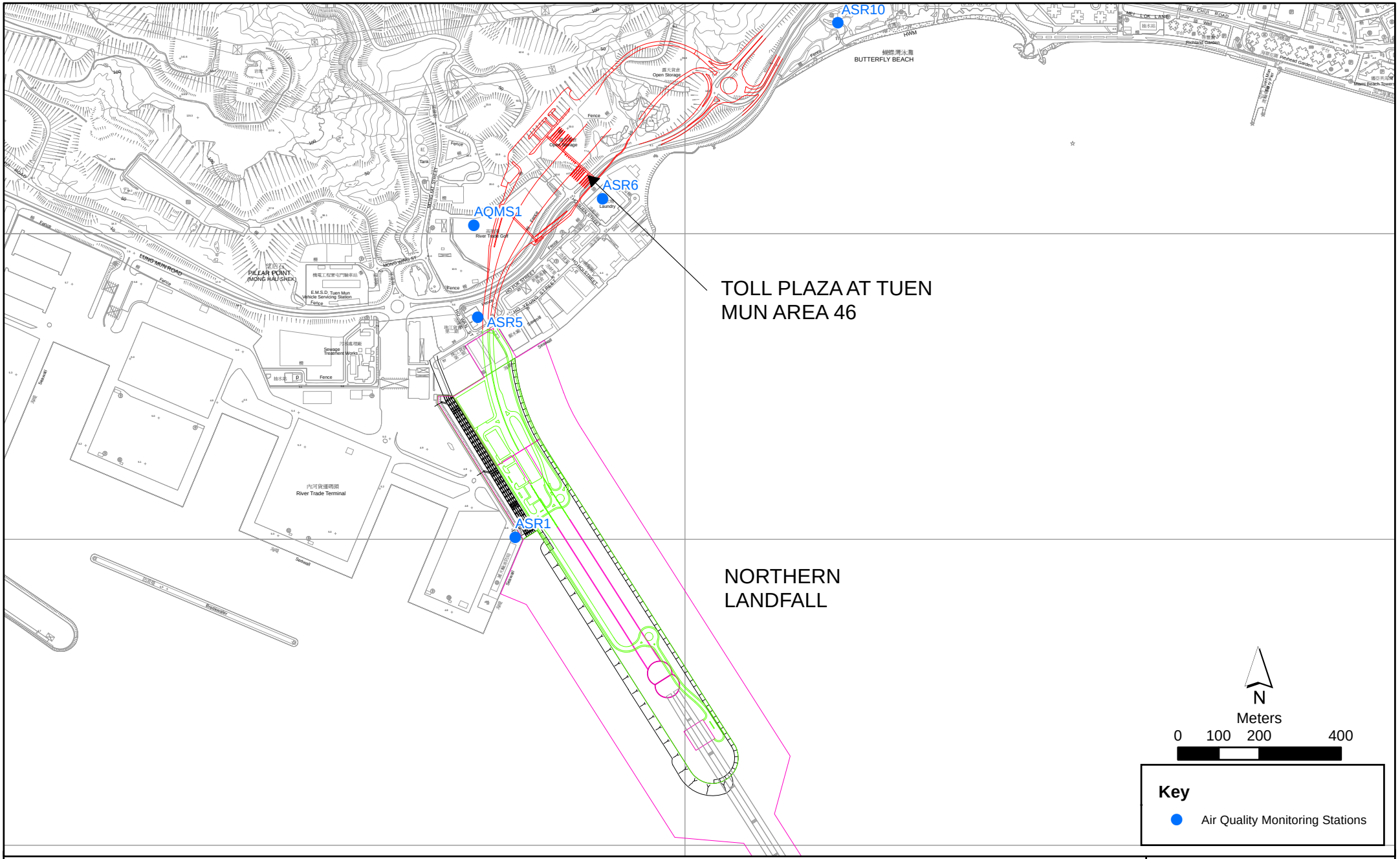
26th Jan

Period			Time	Sign
7 - 8				
8 - 9	✓		8:05	Man
9 - 10	✓		9:06	Man
10 - 11	✓		10:11	Man
11 - 12	✓	✓	11:07 11:43	Man
12 - 13	✓		12:50	Man
13 - 14	✓		13:31	Man
14 - 15	✓		14:15	Man
15 - 16	✓	✓	15:03 15:44	Man
16 - 17	✓		16:41	Man
17 - 18	✓		17:29	Man
18 - 19				

Meteorological Data for Impact Monitoring in the reporting period*			
Date (yy-mm-dd)	Time (24hrs)	Average of Wind Speed (m/s)	Average of Wind Director (degree)
19/01/26	0:00	0.0	-
19/01/26	1:00	0.0	-
19/01/26	2:00	0.4	12
19/01/26	3:00	2.2	34
19/01/26	4:00	2.2	47
19/01/26	5:00	2.2	39
19/01/26	6:00	2.7	47
19/01/26	7:00	1.8	14
19/01/26	8:00	1.3	143
19/01/26	9:00	2.2	158
19/01/26	10:00	2.2	154
19/01/26	11:00	1.8	221
19/01/26	12:00	2.2	215
19/01/26	13:00	1.3	220
19/01/26	14:00	1.3	254
19/01/26	15:00	2.2	213
19/01/26	16:00	2.2	232
19/01/26	17:00	1.3	94
19/01/26	18:00	1.8	96
19/01/26	19:00	1.8	95
19/01/26	20:00	2.2	85
19/01/26	21:00	2.7	94
19/01/26	22:00	3.6	86
19/01/26	23:00	3.1	95

*Wind data is sourced from Contract No. HY/2012/08 Tuen Mun - Chek Lap Kok Link - Northern Connection Sub-sea Tunnel Section


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
WA18 Site Office
Toll Control Building
Maintenance Depot
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2



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

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

Environmental Resources Management

ERM

Email message

Environmental Resources Management

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

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	4 March 2019

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_16February2019_24hrTSP_Station ASR1

One (1) exceedance was recorded on 16 February 2019.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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_16 February2019_24hrTSP_Station ASR1** **[Total No. of Exceedances = 1]**	
Date	16 February 2019 (Measured) 1 March 2019 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	24-hr TSP	
Action Levels	1-hr TSP (µg/m³)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP (µg/m³)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 16 February 2019 included: ▪ Formworks at Administration Building and Maintenance Depot (*refer to Contractor's photo)*	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedances are unlikely to be due to the Contract, in view of the following: • Apart from exceedance of 24-hour TSP at ASR1 during 11:58 on 16 February 2019 to 11:58 on 17 February 2019, all 1hr-TSP levels and other 24-hr TSP levels at all monitoring stations were in compliance with the Action and Limit Levels on the same day. • No works were conducted on 17 February 2019 due to site closure. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 16 February 2019 (*refer to Contractor's Photo*). • With reference to the recorded wind direction (ranged between 80° and 122°, blowing from a easterly direction) during the period of the observed 24-hr TSP exceedance, no works area under this contract is upstream of station ASR1. • Formworks conducted at Administration Building and Maintenance Depot were generally not major dust generating works. Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	The Contractor has been reminded to ensure all dust suppression measures are implemented at the site area including water spraying at unpaved road. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 16 February 2019 and locations of air quality monitoring stations are attached. The location of the works area under this Contract is attached. The attached wind data on 16 and 17 February 2019 is sourced from *Contract No. HY/2012/08* for reference.	

Results of Air Quality Monitoring

Project	Works	Date (yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Parameter	Results	Unit
TMCLKL	HY/2012/08	2019-02-16	AQMS1	9:03	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2019-02-16	AQMS1	10:05	1-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2019-02-16	AQMS1	11:07	1-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR1	8:52	1-hour TSP	244	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR1	9:54	1-hour TSP	223	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR1	10:56	1-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR10	8:22	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR10	9:24	1-hour TSP	49	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR10	10:26	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR5	8:41	1-hour TSP	235	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR5	9:43	1-hour TSP	99	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR5	10:45	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR6	8:32	1-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR6	9:34	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR6	10:36	1-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	2019-02-16	AQMS1	12:09	24-hour TSP	57	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR1	11:58	24-hour TSP	237	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR10	11:28	24-hour TSP	35	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR5	11:47	24-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2019-02-16	ASR6	11:38	24-hour TSP	76	ug/m3

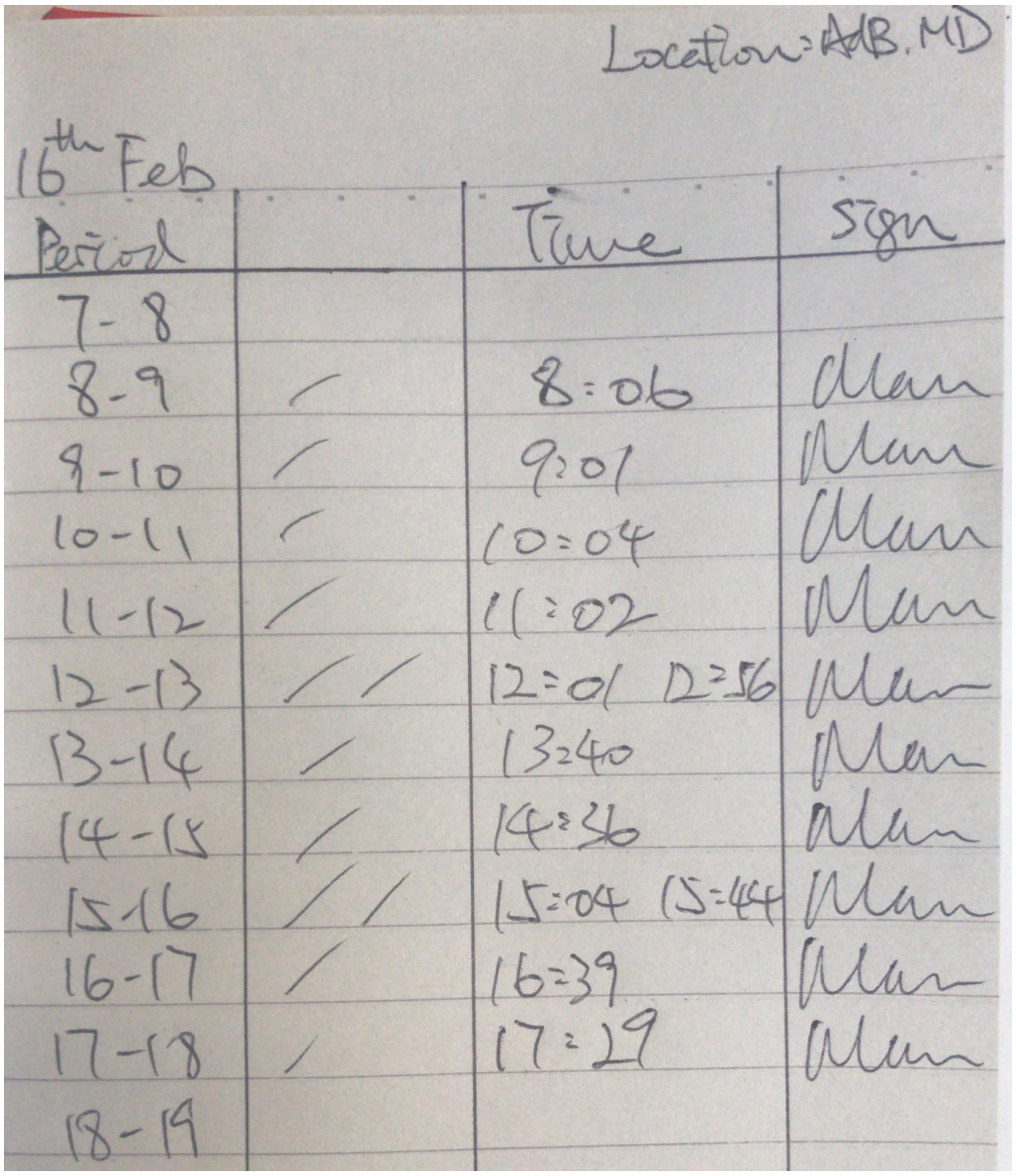
Note: Indicates Exceedance of Action Level
Indicates Exceedance of Limit Level

PHOTO BY CONTRACTOR ON 16 FEBRUARY 2019

Photo 1 - Formwork conducted at works area of Administration Building and Maintenance Depot

Photo 2- Watering of unpaved roads near Administration Building and Maintenance Depot

WATERING RECORD ON 16 FEBRUARY 2019

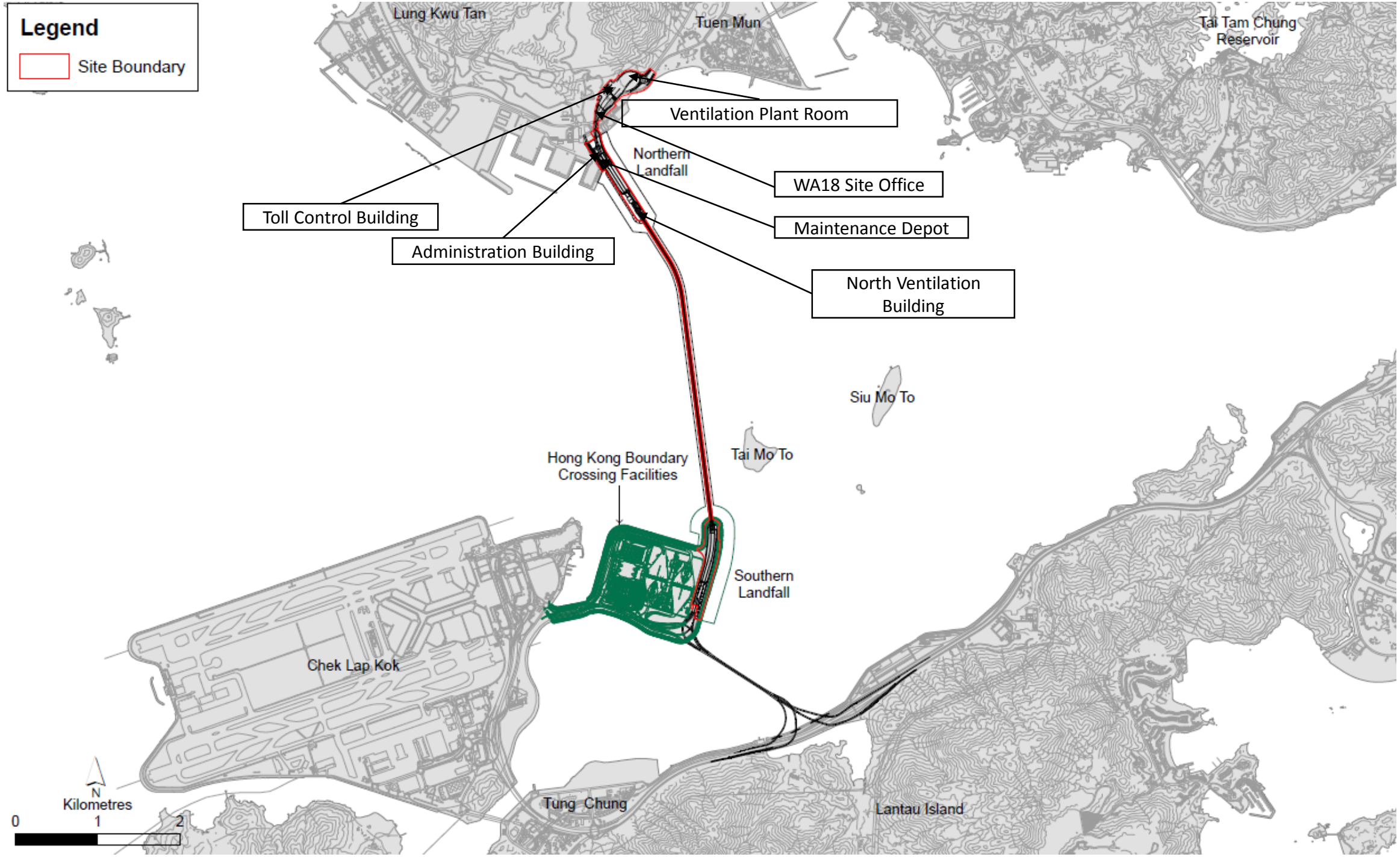


Location: AdB. MD

16th Feb

Period		Time	Sign
7-8			
8-9	/	8:06	Man
9-10	/	9:01	Man
10-11	/	10:04	Man
11-12	/	11:02	Man
12-13	/ /	12:01 D=56	Man
13-14	/	13:40	Man
14-15	/	14:36	Man
15-16	/ /	15:04 15:44	Man
16-17	/	16:39	Man
17-18	/	17:29	Man
18-19			

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	**Time (24hrs)**	**Average of Wind Speed (m/s)**	**Average of Wind Direction(degree)**
19/02/16	11:00	1.3	120
19/02/16	12:00	2.7	112
19/02/16	13:00	3.1	122
19/02/16	14:00	3.1	80
19/02/16	15:00	2.7	82
19/02/16	16:00	3.1	99
19/02/16	17:00	3.1	88
19/02/16	18:00	2.7	110
19/02/16	19:00	3.1	118
19/02/16	20:00	3.6	119
19/02/16	21:00	3.6	101
19/02/16	22:00	4	80
19/02/16	23:00	4.5	96
19/02/17	0:00	4	82
19/02/17	1:00	3.6	91
19/02/17	2:00	3.1	83
19/02/17	3:00	3.1	86
19/02/17	4:00	3.6	95
19/02/17	5:00	4.5	98
19/02/17	6:00	3.6	101
19/02/17	7:00	4	84
19/02/17	8:00	4.9	83
19/02/17	9:00	5.4	80
19/02/17	10:00	4.9	81
19/02/17	11:00	4.9	79


Legend
Site Boundary
Lung Kwu Tan
Tuen Mun
Tai Tam Chung Reservoir
Ventilation Plant Room
Northern Landfall
WA18 Site Office
Toll Control Building
Maintenance Depot
Administration Building
North Ventilation Building
Siu Mo To
Tai Mo To
Hong Kong Boundary Crossing Facilities
Southern Landfall
Chek Lap Kok
Tung Chung
Lantau Island
N
Kilometres
0
1
2

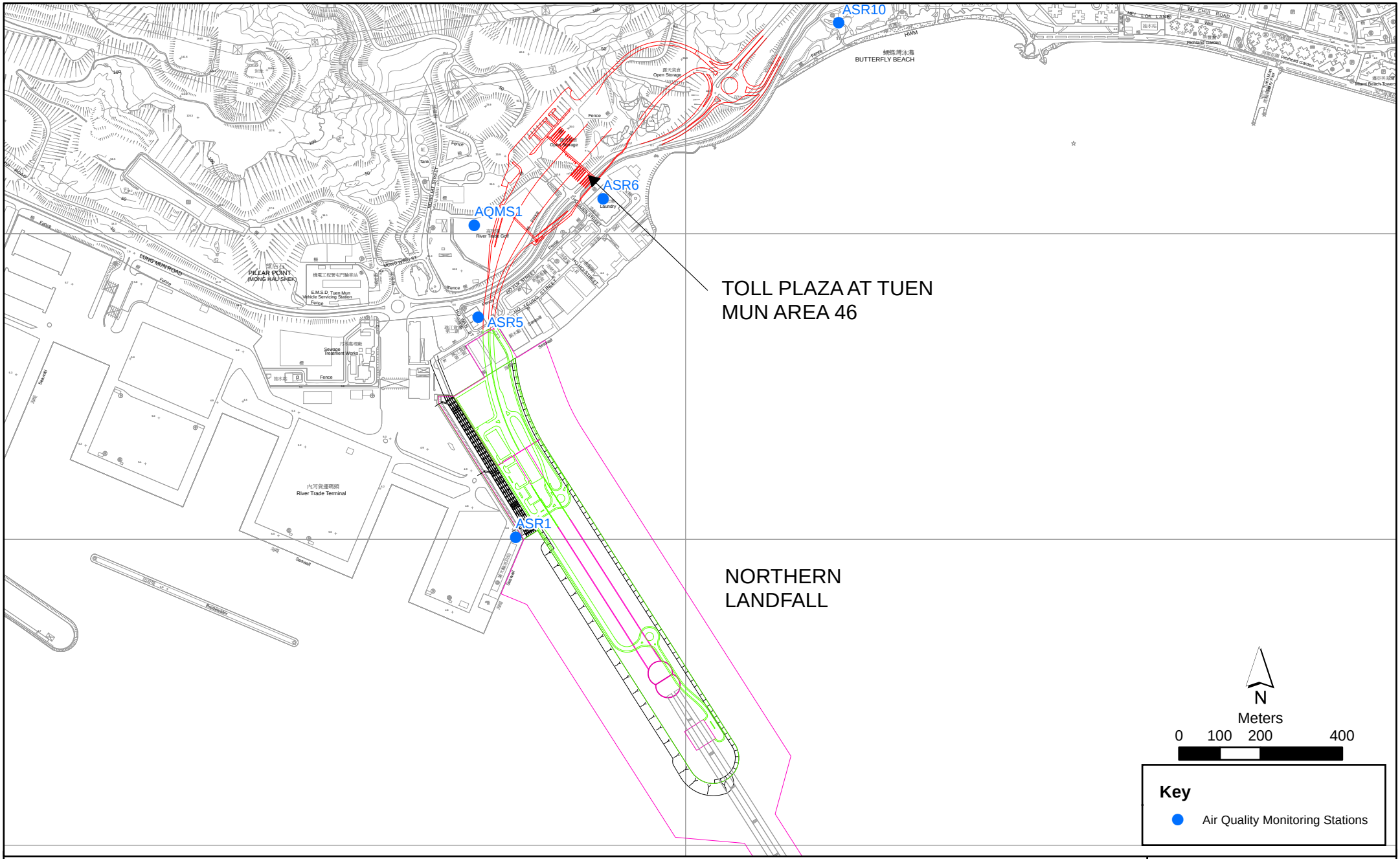


Figure 2.1

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

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

Environmental Resources Management

ERM