

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

Second Quarterly EM&A Report

5 March 2019

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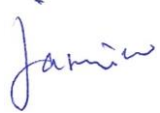


Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works

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Second Quarterly EM&A Report

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Client: Gammon		Project No: 0463091			
Summary: This document presents the Second Quarterly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 4 March 2019			
		Approved by: 			
		<i>Mr Craig Reid</i> Partner			
		Certified by: 			
		<i>Dr Jasmine Ng</i> ET Leader			
	Second Quarterly Monthly EM&A Report	VAR	JN	CAR	05/03/19
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential			
		 			

Ref.: HYDHZMBEEM00_0_7235L.19

6 March 2019

AECOM
Engineer's Representative's Office
No. 8 Mong Fat Street, Tuen Mun
New Territories, Hong Kong

By Fax (2783 0155) and By Post

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, Electrical and Mechanical Works
2nd Quarterly EM&A Report (September – November 2018)**

Reference is made to the Quarterly Environmental Monitoring and Audit (EM&A) Report (ET's ref.: "0463091_2nd Quarterly EM&A_20190305.doc") certified by the ET Leader and provided to us via e-mail.

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

Thank you for your attention. Please do not hesitate to contact the undersigned or the ENPO Leader Mr. Y. H. Hui should you have any queries.

Yours sincerely,



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

c.c. HyD – Mr. Patrick Ng (By Fax: 3188 6614)
HyD – Mr. Andrew Chow (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, DF, ENPO Site

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EXECUTIVE SUMMARY

Under *Contract No. HY/2017/10*, Gammon Construction Limited (GCL) is commissioned by the Highways Department (HyD) to undertake Northern Connection Tunnel Buildings, Electrical and Mechanical Works of the Tuen Mun – Chek Lap Kok Link Project (TM-CLK Link Project) while AECOM Asia Company Limited was appointed by HyD as the Engineer. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, ERM-Hong Kong, Limited (ERM) has been appointed as the Environmental Team (ET) in accordance with *Environmental Permit No. EP-354/2009/A*. Ramboll Hong Kong Ltd. was employed by HyD as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO). Subsequent applications for variation of environmental permits (VEP), *EP-354/2009/B*, *EP-354/2009/C* and *EP-354/2009/D*, were granted on 28 January 2014, 10 December 2014 and 13 March 2015, respectively.

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

This is the Second Quarterly EM&A Report presenting the EM&A works carried out during the period from 1 September to 30 November 2018 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:

September 2018

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;
- Architectural, Builder’s Work and Finishing and Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Socket H-pilling at Administration Building;
- Additional land ground investigation (GI) and socket H-pilling at Maintenance Depot, trial pits and laboratory testing.

October 2018

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;

- Architectural, Builder's Work and Finishing and Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Socket H-piling at Administration Building;
- Additional land ground investigation (GI) and socket H-piling at Maintenance Depot, trial pits and laboratory testing.

November 2018

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;
- Architectural, Builder's Work and Finishing and Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Excavation at Administration Building;
- Excavation at Maintenance Depot;
- Pre-drilling and socket H-piling at Customs & Excise Department Building; and
- Trial pits, pre-drilling and socket H-piling at Fire Service Department Building.

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

24-hour TSP Monitoring	30 sessions
1-hour TSP Monitoring	30 sessions
Joint Environmental Site Inspection	13 sessions

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

Eleven (11) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period.

Environmental Complaints, Non-compliance & Summons

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

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:

December 2018

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

Future 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.

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

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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有限公司
 Hong Kong - Zhuhai - Macao Bridge
 Hong Kong Project Management Office

CONSULTANT
 AECOM Asia Company Ltd.
 www.aecom.com

SUB-CONSULTANTS

Figure 1.1

ISSUE/REVISION

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

STATUS

SCALE
 A1 1:40000
 DIMENSION UNIT
 MILLIMETRES

KEY PLAN

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

SHEET TITLE
 OVERALL SITE PLAN

SHEET NUMBER
 60240249/C4/7051A

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 Project Management Initials: Designer: WATH Chenweid SYLC Approved: CWN ISO 11941mm x 847mm
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 01/7072



AECOM

PROJECT
 1.3
TUEN MUN - CHEK LAP KOK LINK

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

CLIENT
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 2 NET ENGINEERS

Figure 1.2a

ISSUE/REVISION

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

STATUS

SCALE: 1:2500
 DIMENSION UNIT: MILLIMETRES

KEY PLAN

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

SHEET TITLE
 ZONING PLAN (SHEET 1)

SHEET NUMBER
 60240249/C4/7061A

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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
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HIGHWAYS DEPARTMENT
 港珠澳大橋管理處
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 AECOM Asia Company Ltd.
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Figure 1.2b

ISSUE/REVISION

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	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
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PROJECT
 TUEN MUN - CHEK LAP KOK LINK

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

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

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Figure 1.2c

ISSUE/REVISION

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

STATUS

SCALE: A1 1:2500
 DIMENSION UNIT: MILLIMETRES

KEY PLAN

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

SHEET TITLE
 ZONING PLAN (SHEET 3)

SHEET NUMBER
 60240249/C4/7063A

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1.2 SCOPE OF REPORT

This is the Second 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 September to 30 November 2018.

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 September to November 2018 is shown in *Appendix B*.

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

September 2018

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;

- Architectural, Builder's Work and Finishing and Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Socket H-piling at Administration Building;
- Additional land ground investigation (GI) and socket H-piling at Maintenance Depot, trial pits and laboratory testing.

October 2018

Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;
- Architectural, Builder's Work and Finishing and Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Socket H-piling at Administration Building;
- Additional land ground investigation (GI) and socket H-piling at Maintenance Depot, trial pits and laboratory testing.

November 2018

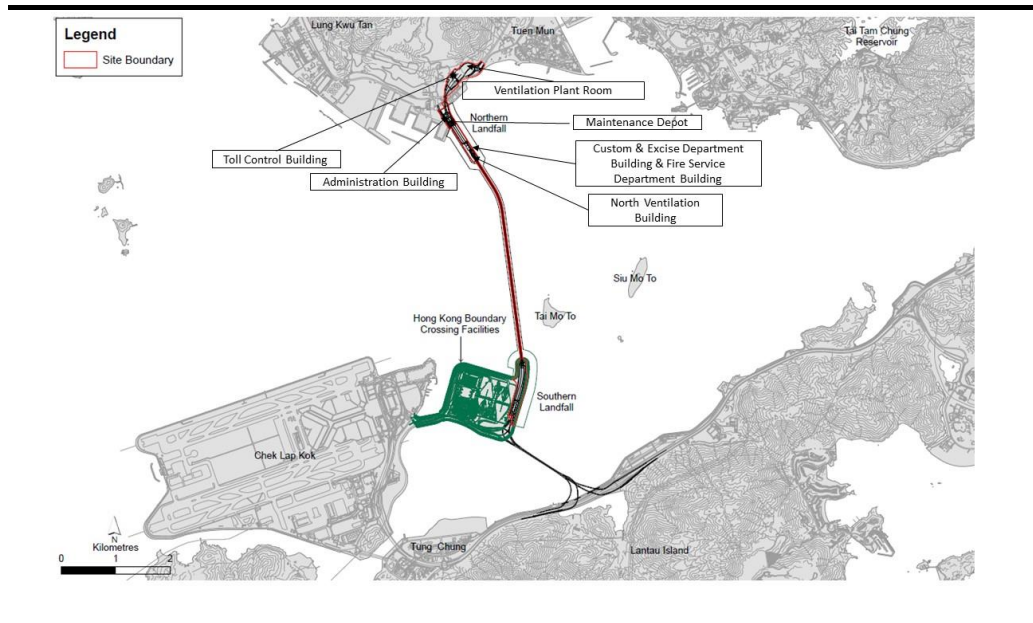
Land-based Works

- Bar bending, timber formwork and concreting at Toll Control Building;
- Architectural, Builder's Work and Finishing and Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at Northern Ventilation Building;
- Excavation at Administration Building;
- Excavation at Maintenance Depot;
- Pre-drilling and socket H-piling at Customs & Excise Department Building; and
- Trial pits, pre-drilling and socket H-piling at Fire Service Department Building.

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



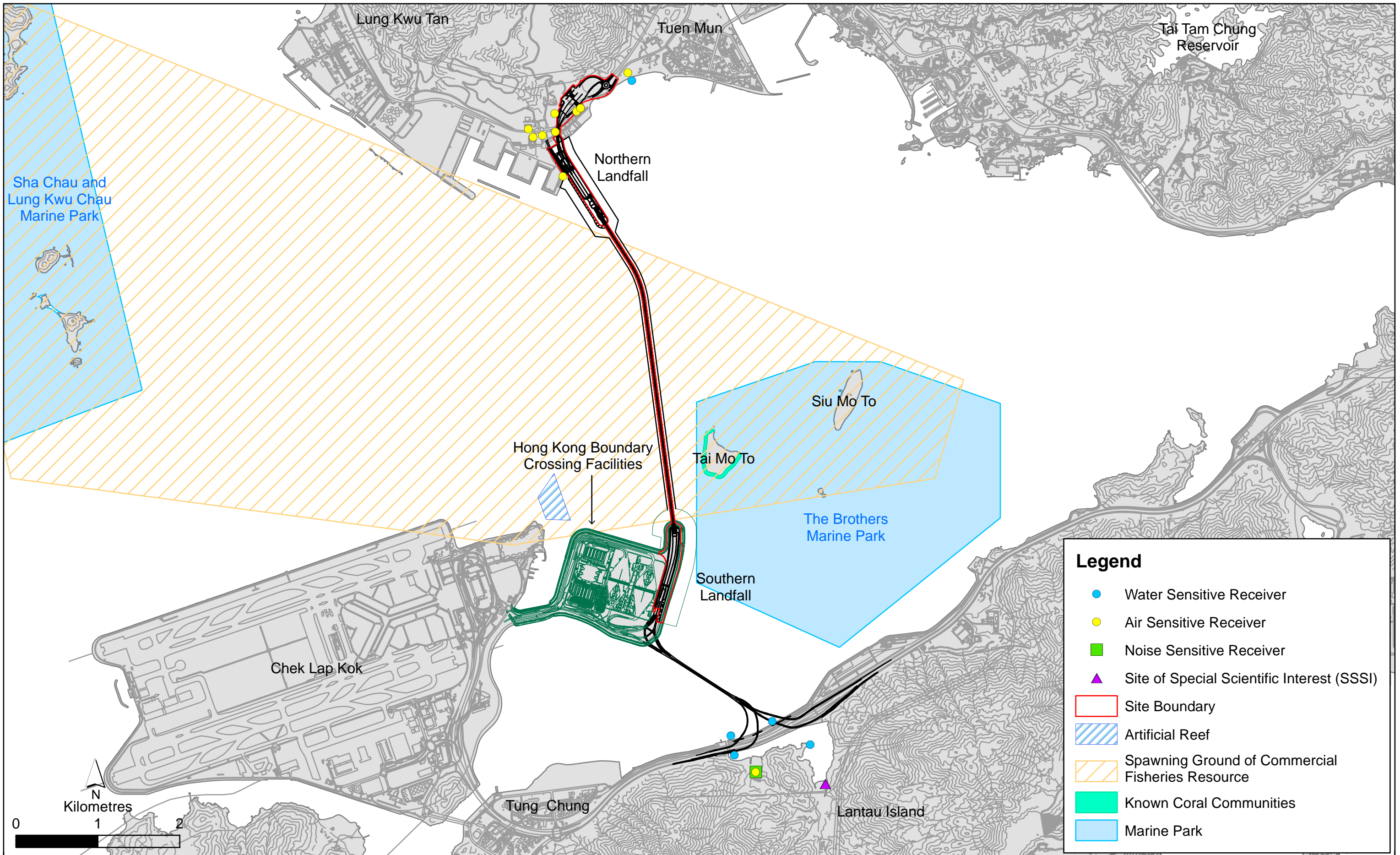


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Contract

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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

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

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

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

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

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

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

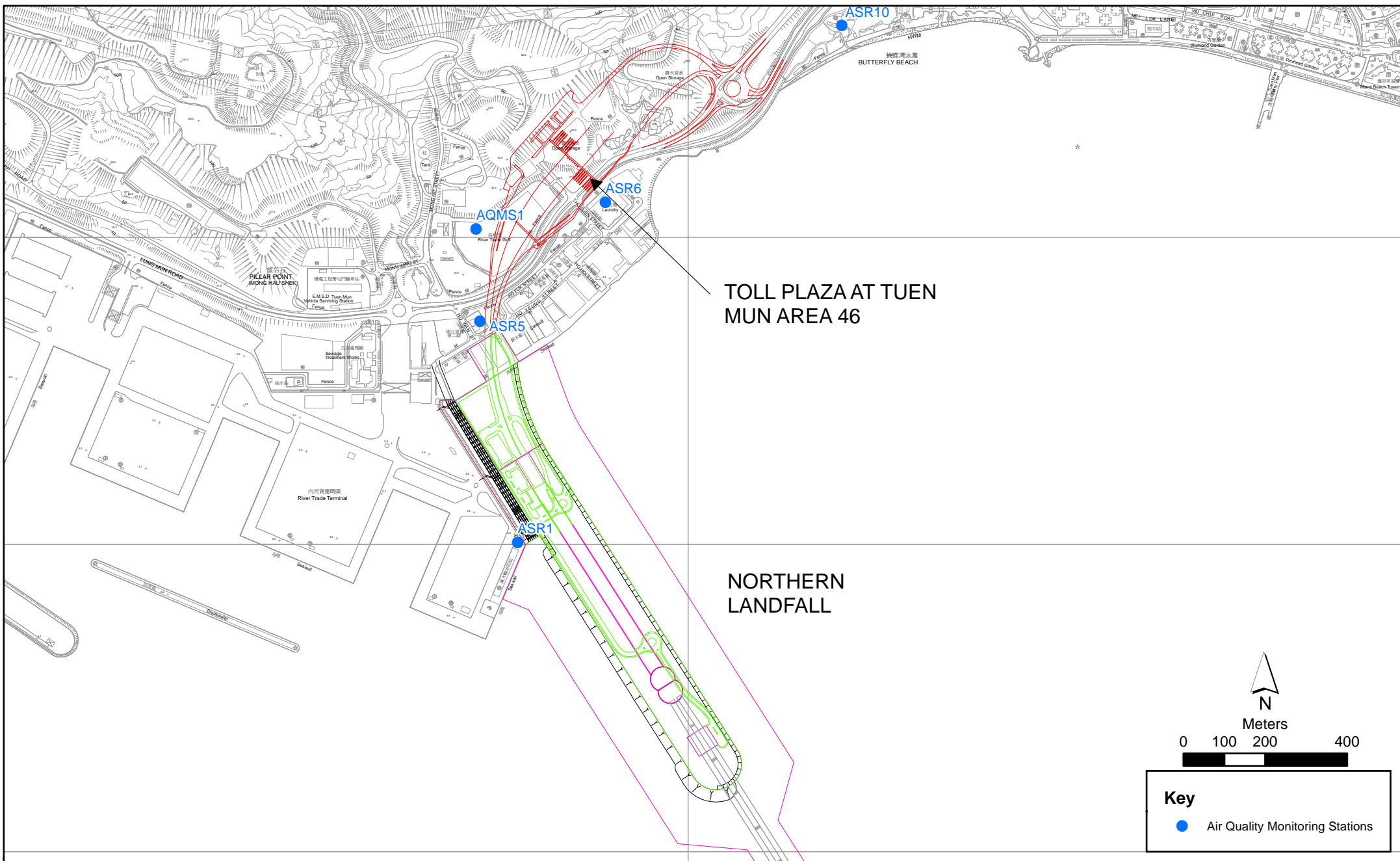


Figure 2.1

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

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	1, 4, 7, 10, 13, 19, 22, 25 and 28 September 2018	Tuen Mun Fireboat Station	Office	TSP monitoring <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 6 days
ASR5	1, 4, 7, 10, 13, 16, 19, 22, 25, 28 and 31 October 2018	Pillar Point Fire Station	Office	<ul style="list-style-type: none"> 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 6 days
AQMS1	3, 6, 9, 12, 15, 18, 21, 24, 27 and 30 November 2018	Previous River Trade Golf	Bare ground	Enhanced TSP monitoring (commenced on 24 October 2014 under <i>Contract No. HY/2012/08</i>) <ul style="list-style-type: none"> 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$), 3 times in every 3 days 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$), daily for 24-hour in every 3 days
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⁾.

Eleven (11) Action Level exceedances on 7 and 28 September, 4 and 10 October and 6 and 12 November 2018 and one (1) Limit Level exceedance on 28 September 2018 were recorded by the Environmental Team of Contract No. *HY/2012/08* for 1-hour TSP during the reporting period. The exceedances were considered not related to this Contract upon further investigation and the investigation report is presented in *Appendix G*. No action is required to be undertaken in accordance with the Event Action Plan as presented in *Appendix E*.

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

2.2 *EM&A SITE INSPECTION*

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. Thirteen (13) site inspections were carried out in the reporting period on 7, 14, 21 and 28 September, 5, 12, 19 and 26 October and 2, 9, 16, 23 and 30 November 2018.

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

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

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

Inspection Date	Observations	Recommendations/ Remarks
7 September 2018	Administration Building <ul style="list-style-type: none"> Cement bags should be covered by tarpaulin. 	Administration Building <ul style="list-style-type: none"> The Contractor was reminded to cover cement bags with tarpaulin.
14 September 2018	Administration Building <ul style="list-style-type: none"> Chemical containers were observed not placed in drip tray. 	Administration Building <ul style="list-style-type: none"> The Contractor was reminded to place chemical containers in drip tray.
21 September 2018	Administration Building <ul style="list-style-type: none"> Chemical containers near the generator should be kept on the drip tray. Oil stain near the power pad should be cleared. 	Administration Building <ul style="list-style-type: none"> The Contractor was reminded to place chemical containers in drip tray. The Contractor was reminded to clear oil stain.
28 September 2018	Toll Control Building <ul style="list-style-type: none"> Stagnant water was observed in the drip tray. Chemical containers should be placed in designated storage location. Ventilation Plant Room <ul style="list-style-type: none"> Waste should be disposed of in designated bin and remove from site. 	Toll Control Building <ul style="list-style-type: none"> The Contractor was reminded to clear stagnant water. The Contractor was reminded to place chemical containers in designated location. Ventilation Plant Room <ul style="list-style-type: none"> The Contractor was reminded to remove the waste from site.
5 October 2018	FSD C&ED <ul style="list-style-type: none"> Watering should be applied on unpaved road. 	FSD C&ED <ul style="list-style-type: none"> The Contractor has been reminded to maintain watering on unpaved road.
12 October 2018	Maintenance Depot <ul style="list-style-type: none"> Damaged NRMM label on generator should be replaced. Toll Control Building, Ventilation Plant Room <ul style="list-style-type: none"> Rubbish bin with lid should be covered. 	Maintenance Depot <ul style="list-style-type: none"> The Contractor has been reminded to replace damaged NRMM label on generator. Toll Control Building, Ventilation Plant Room <ul style="list-style-type: none"> The Contractor has been reminded to cover rubbish bin with lid.
19 October 2018	Administration Building <ul style="list-style-type: none"> Stagnant water in drip tray and near generator should be removed. Store chemical drums properly. FSD <ul style="list-style-type: none"> Decolorized NRMM label should be replaced on drilling rig. 	Administration Building <ul style="list-style-type: none"> The Contractor has been reminded to remove stagnant water in drip tray and near the generator The Contractor has been reminded to store chemical drums properly. FSD <ul style="list-style-type: none"> The Contractor has been reminded to replace NRMM label on the drilling rig.

Inspection Date	Observations	Recommendations/ Remarks
26 October 2018	<p>Administration Building</p> <ul style="list-style-type: none"> Chemical container should be put in drip tray. Water and sediment in the drip tray should be cleared. <p>Ventilation Plant Room</p> <ul style="list-style-type: none"> Domestic waste should be disposed in waste bin and waste bin should be cleared regularly to avoid overloading. Stagnant water in drip tray should be discharged. 	<p>Administration Building</p> <ul style="list-style-type: none"> The Contractor has been reminded to place chemical container in drip tray. The Contractor has been reminded to clear the drip tray of the generator. <p>Ventilation Plant Room</p> <ul style="list-style-type: none"> The Contractor has been reminded to dispose domestic waste in waste bin and to clear waste bin regularly. Discharge stagnant water in drip tray.
2 November 2018	<p>Administration Building</p> <ul style="list-style-type: none"> Stagnant water in drip tray should be cleared. Stagnant water is observed near grouting station. <p>Toll Control Building</p> <ul style="list-style-type: none"> The refuse skip should be cleared regularly to prevent overloading. 	<p>Administration Building</p> <ul style="list-style-type: none"> Clear stagnant water in drip tray Improve the drainage near the works area of the grouting station. <p>Toll Control Building</p> <ul style="list-style-type: none"> The refuse skip should be cleared regularly to prevent overloading.
9 November 2018	<p>Administration Building</p> <ul style="list-style-type: none"> Stockpile of cement bags should be covered with tarpaulin. Stagnant water in drip tray should be discharged. <p>FSD</p> <ul style="list-style-type: none"> Oil leakage was observed in the pipe of the water pump. 	<p>Administration Building.</p> <ul style="list-style-type: none"> The Contractor was reminded to cover stockpile of cement bags with tarpaulin. The Contractor was reminded to discharge stagnant water in drip tray. <p>FSD</p> <ul style="list-style-type: none"> The Contractor has been reminded to fix the oil leakage in the pipe of the water pump.
16 November 2018	<p>FSD</p> <ul style="list-style-type: none"> Decolorized NRMM label should be replaced on the generator. 	<p>FSD</p> <ul style="list-style-type: none"> The Contractor has been reminded to replace NRMM label on the generator.
23 November 2018	<p>Maintenance Depot</p> <ul style="list-style-type: none"> Water should be applied on unpaved road. <p>North Ventilation Building</p> <ul style="list-style-type: none"> Accumulated refuse should be cleared. 	<p>Maintenance Depot</p> <ul style="list-style-type: none"> The Contractor has been reminded to water unpaved road. <p>North Ventilation Building</p> <ul style="list-style-type: none"> The Contractor has been reminded to clear accumulated refuse.
30 November 2018	<p>Toll Control Building</p> <ul style="list-style-type: none"> General refuse and silt should be cleared in the drainage. General refuse bin should be properly placed on the ground. Domestic waste should be disposed in rubbish bin. 	<p>Toll Control Building</p> <ul style="list-style-type: none"> The Contractor has been reminded to clear general refuse and silt in the drainage. The Contractor has been reminded to place general refuse bin properly on the ground. The Contractor has been reminded to dispose domestic waste in rubbish bin.

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

2.3

LANDFILL GAS HAZARD MONITORING

Landfill gas hazard monitoring was undertaken by the Safety Officer on combustible gas (include methane as part of the component) and oxygen to monitor the risk to workers at the excavation area in September and October 2018. However, it is noted that carbon dioxide and methane which are required under the Updated EM&A Manual were not measured. As such, the monitoring data are not presented in this report.

No excavation work was conducted at the excavation area in November 2018 and thus landfill gas hazard monitoring was temporary suspended in November 2018.

2.4

WASTE MANAGEMENT STATUS

The Contractor had submitted application form for registration as chemical waste producer under the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

Wastes generated during this reporting period included mainly construction wastes (inert and non-inert). Reference has been made to the waste flow table prepared by the Contractor (*Appendix F*). The quantities of different types of wastes are summarized in *Table 2.3*.

Table 2.3 Quantities of Different Waste Generated in the Reporting 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)
September 2018	205	0	22,150	0	0	0
October 2018	720	0	26,280	0	63	0
November 2018	253	0	11,720	0	0	0

Notes:

- (a) Inert construction wastes include hard rock and large broken concrete, and materials 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-RW0384-18	14 September 2018	6 March 2019	GCL	For Toll Control Building, Administration Building, Maintenance Depot and WA18
Construction Noise Permit	GW-RW0451-18	2 November 2018	25 April 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*

Eleven (11) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. The exceedances were considered not related to this Contract upon further investigation and the investigation report is presented in *Appendix G*. No action is required to be undertaken in accordance with the Event Action Plan as presented in *Appendix E*.

No exceedance of 24-hour TSP was recorded in this reporting period.

Cumulative statistics are provided in *Appendix G*.

2.8 *SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

The Environmental Complaint Handling Procedure is provided in *Figure 2.2*.

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

Statistics on complaints, notifications of summons, successful prosecutions are summarized in *Appendix G*.

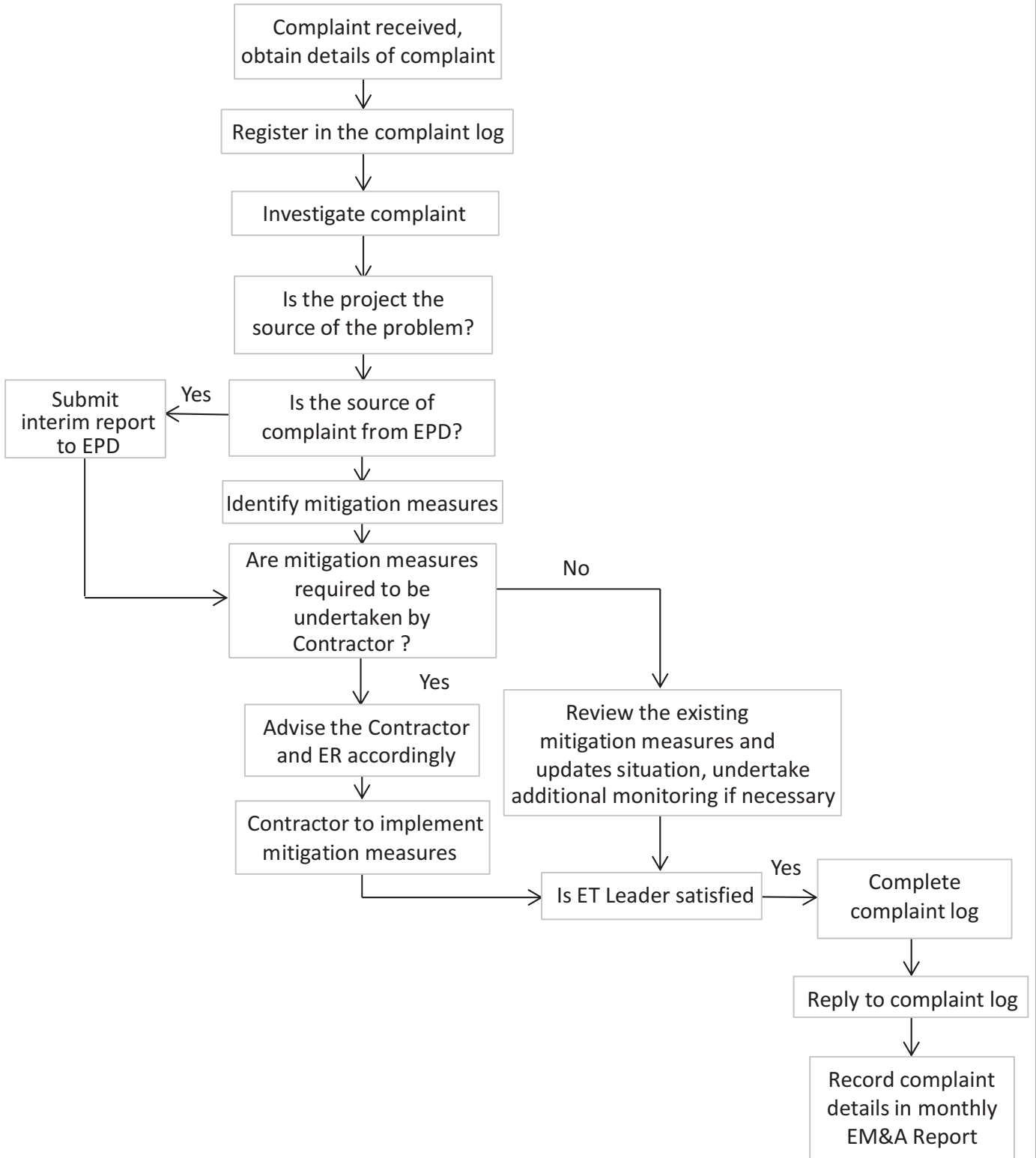


Figure 2.2

Environmental Complaint Handling Procedure

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING QUARTER

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

December 2018***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 North 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 Builder's Work 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 North Ventilation Building;
- Building Structure at Administration Building;
- Building Structure at Maintenance Depot;
- Excavation at Fire Services Department Building;
- Excavation at Customs and Excise Department Building; and
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk N2.

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.

4.1 CONCLUSIONS

This Second Quarterly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 September to 30 November 2018, 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.

Eleven (11) Action Level and one (1) Limit Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. The exceedances were considered not related to this Contract upon further investigation and the investigation report is presented in *Appendix G*. No action is required to be undertaken in accordance with the Event Action Plan as presented in *Appendix E*.

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

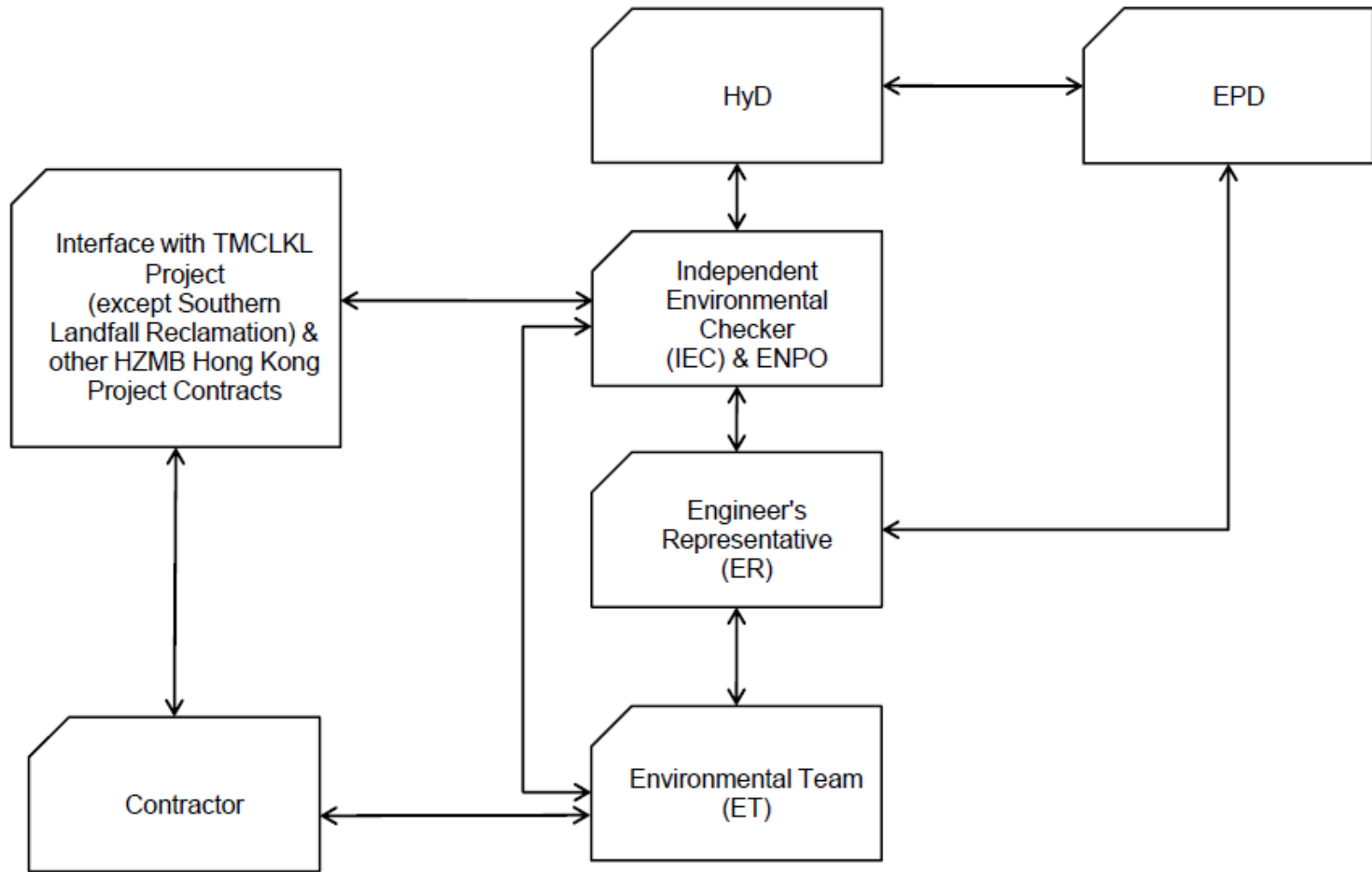
Environmental site inspection was carried out thirteen (13) times in the reporting period. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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

The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Appendix A

Project Organization for Environmental Works



↔ Line of Communication



Appendix B

Construction Programme

ID	Activity	Days	Start	Finish	2018															
					September					October				November				December		
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03
Three Monthly Programme 20/09/18 - 20/12/18																				
Contract Dates																				
Portion Access Dates																				
P190	Access to Portion XVa (Day 161)	0	14/09/18 A		◆															
P200	Access to Portion XVla (Day 161)	0	14/09/18 A		◆															
Portion Possession Dates																				
P185	Possession to Portion Ve (Day 132)	0	15/09/18 A		◆															
P195	Possession to Portion XIII (16 Sep 2018)	0	16/09/18 A		◆															
General Procurement																				
P1060	ABWF Material	70	07/06/18 A	29/08/18 A	■■■■■															
P1070	ABWF Erector	70	07/06/18 A	29/08/18 A	■■■■■															
P1080	Cladding	70	07/06/18 A	29/08/18 A	■■■■■															
Method Statements																				
Administration Building																				
MS1050	Prepare & Submit MS for Administration Building (Civil)	24	01/09/18 A	29/09/18	■■■■■															
MS1060	ICE & ER Approval of MS for Administration Building (Civil)	12	02/10/18	15/10/18	■■■■■															
MS1190	Prepare & Submit MS for Administration Building (E&M)	24	16/10/18	13/11/18	■■■■■															
MS1200	ICE & ER Approval of MS for Administration Building (E&M)	12	14/11/18	27/11/18	■■■■■															
Maintenance Depot																				
MS1070	Prepare & Submit MS for Maintenance Depot (Civil)	24	02/10/18*	30/10/18	■■■■■															
MS1080	ICE & ER Approval of MS for Maintenance Depot (Civil)	12	31/10/18	13/11/18	■■■■■															
MS1210	Prepare & Submit MS for Maintenance Depot (E&M)	24	14/11/18	11/12/18	■■■■■															
MS1220	ICE & ER Approval of MS for Maintenance Depot (E&M)	12	12/12/18	28/12/18	■■■■■															
Custom & Excise Department Building																				
MS1090	Prepare & Submit MS for C&ED Building (Civil)	24	31/10/18	27/11/18	■■■■■															
MS1100	ICE & ER Approval of MS for C&ED Building (Civil)	12	28/11/18	11/12/18	■■■■■															
MS1230	Prepare & Submit MS for C&ED Building (E&M)	24	12/12/18	12/01/19	■■■■■															
Fire Services Department Building																				
MS1110	Prepare & Submit MS for Fire Services Building (Civil)	24	28/11/18	28/12/18	■■■■■															
E&M Design																				
Section A - Tunnel Ventilation System																				
A010	Design Proposal of Tunnel Ventilation System	60	18/08/18 A	16/10/18	■■■■■															

THREE MONTHLY ROLLING PROGRAMME

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

20/09/18 - 20/12/18

P1

Date	Revision	Checked	Approved
20/09/18			

ID	Activity	Days	Start	Finish	2018														
					September					October				November			December		
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26
A015	Design Proposal of Tunnel Ventilation System - Approval	31	17/10/18	16/11/18															
A020	Tunnel Ventilation Fan Pressure Calculations	60	29/09/18*	27/11/18															
A025	Tunnel Ventilation Fan Pressure Calculations - Approval	28	28/11/18	25/12/18															
A030	Acoustic Calculations	60	28/11/18*	26/01/19															
A040	TVS -Smoke Extraction Fan Static Calculation for Service Gallery	60	13/09/18 A	11/11/18															
A045	TVS -Smoke Extraction Fan Static Calculation for Service Gallery - Approval	28	12/11/18	09/12/18															
A060	Pressurization Fan Static Calculation for Vehicle Underpass	60	22/08/18 A	20/10/18															
A065	Pressurization Fan Static Calculation for Vehicle Underpass - Approval	28	21/10/18	17/11/18															
A070	Design Proposal of Power Loading Assessment of TVS	60	02/12/18*	30/01/19															
A080	TVS -Design Proposal including the Smoke Extraction Strategy	60	13/09/18 A	11/11/18															
A088	TVS -Design Proposal including the Smoke Extraction Strategy - Approval	28	12/11/18	09/12/18															
A090	TVS -Control Logic Review with FSD	60	13/09/18 A	11/11/18															
A095	TVS -Control Logic Review with FSD - Approval	28	12/11/18	09/12/18															
A100	TVS -Cable Sizing and Voltage Drop for TVFs	60	18/12/18*	15/02/19															
A160	Tunnel Cable Sizing and Voltage Drop Verification	60	06/10/18*	04/12/18															
A165	Tunnel Cable Sizing and Voltage Drop Verification - Approval	30	05/12/18	03/01/19															
A170	Tunnel Cable Containment Calculation	60	03/11/18*	01/01/19															
Section B - Tunnel Lighting and Road Lighting System																			
B010	Design Proposal of Tunnel Lighting System (TLS)	60	04/08/18 A	02/10/18															
B015	Design Proposal of Tunnel Lighting System (TLS) - Approval	30	03/10/18	01/11/18															
B020	Tunnel lighting control	60	08/09/18 A	06/11/18															
B025	Tunnel lighting control - Approval	30	07/11/18	06/12/18															
B030	TLS -Lux Calculation	60	08/09/18 A	06/11/18															
B035	TLS -Lux Calculation - Approval	30	07/11/18	06/12/18															
B040	TLS -Structure support design calculation for tunnel lighting	60	08/09/18 A	06/11/18															
B045	TLS -Structure support design calculation for tunnel lighting - Approval	30	07/11/18	06/12/18															
B050	Design Proposal of Road / Street Lighting System	60	27/09/18*	25/11/18															
B055	Design Proposal of Road / Street Lighting System - Approval	30	26/11/18	25/12/18															
B060	Road Lighting Lux Calculation	60	17/11/18*	15/01/19															
Section C - Building Services of MVAC System																			
TCB																			

THREE MONTHLY ROLLING PROGRAMME

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

20/09/18 - 20/12/18

P2

Date	Revision	Checked	Approved
20/09/18			

ID	Activity	Days	Start	Finish	2018																	
					September						October			November			December					
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
C012	TCB -AC Cooling Capacity Calculation	60	31/07/18 A	28/09/18																		
C015	TCB -AC Cooling Capacity Calculation - Approval	28	29/09/18	26/10/18																		
C020	TCB -AHU/PAU Static Pressure Calculation	60	02/07/18 A	30/08/18 A																		
C025	TCB -AHU/PAU Static Pressure Calculation - Approval	28	31/08/18 A	27/09/18																		
C030	TCB -Pump head calculation	60	03/10/18*	01/12/18																		
C035	TCB -Pump head calculation - Approval	28	02/12/18	29/12/18																		
C045	TCB -Mechanical Ventilation Capacity Calculation - Approval	28	16/08/18 A	12/09/18 A																		
C050	TCB -Fan Static Pressure Calculation	60	29/07/18 A	26/09/18																		
C055	TCB -Fan Static Pressure Calculation - Approval	28	27/09/18	24/10/18																		
C060	TCB -Acoustic Performance Calculation	60	30/09/18*	28/11/18																		
C065	TCB -Acoustic Performance Calculation - Approval	28	29/11/18	26/12/18																		
ADB																						
C070	ADB -AC Cooling Capacity Calculation	60	24/06/18 A	22/08/18 A																		
C075	ADB -AC Cooling Capacity Calculation - Approval	28	23/08/18 A	19/09/18 A																		
C080	ADB -AHU/PAU Static Pressure Calculation	60	07/09/18 A	05/11/18																		
C085	ADB -AHU/PAU Static Pressure Calculation - Approval	28	06/11/18	03/12/18																		
C090	ADB -Pump head calculation	60	27/08/18 A	25/10/18																		
C095	ADB -Pump head calculation - Approval	28	26/10/18	22/11/18																		
C100	ADB -Mechanical Ventilation Capacity Calculation	60	26/07/18 A	23/09/18																		
C105	ADB -Mechanical Ventilation Capacity Calculation - Approval	28	24/09/18	21/10/18																		
C110	ADB -Fan Static Pressure Calculation	60	06/09/18 A	04/11/18																		
C115	ADB -Fan Static Pressure Calculation - Approval	28	05/11/18	02/12/18																		
C120	ADB -Acoustic Performance Calculation	60	08/11/18*	06/01/19																		
NVB																						
C130	NVB -AC Cooling Capacity Calculation	60	13/09/18 A	11/11/18																		
C135	NVB -AC Cooling Capacity Calculation - Approval	28	12/11/18	09/12/18																		
C140	NVB -Mechanical Ventilation Capacity Calculation	60	13/09/18 A	11/11/18																		
C145	NVB -Mechanical Ventilation Capacity Calculation - Approval	28	12/11/18	09/12/18																		
C150	NVB -Fan Static Pressure Calculation	60	25/10/18*	23/12/18																		
C160	NVB -Acoustic Performance Calculation	60	17/09/18 A	15/11/18																		
C165	NVB -Acoustic Performance Calculation - Approval	28	16/11/18	13/12/18																		

THREE MONTHLY ROLLING PROGRAMME

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

20/09/18 - 20/12/18

P3	Date	Revision	Checked	Approved
	20/09/18			

ID	Activity	Days	Start	Finish	2018														
					September					October				November			December		
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26
C170	NVB -Refrigerant Pipes Sizing Calculation	60	21/09/18*	19/11/18															
C175	NVB -Refrigerant Pipes Sizing Calculation - Approval	28	20/11/18	17/12/18															
C180	NVB -Staircase Pressurization System Calculation	60	13/09/18 A	11/11/18															
C185	NVB -Staircase Pressurization System Calculation - Approval	28	12/11/18	09/12/18															
CEDB																			
C250	CEDB -AC Cooling Capacity Calculation	60	09/11/18*	07/01/19															
C260	CEDB -Mechanical Ventilation Capacity Calculation	60	11/12/18*	08/02/19															
FSDB																			
C300	FSDB -AC Cooling Capacity Calculation	60	09/11/18*	07/01/19															
C310	FSDB -Mechanical Ventilation Capacity Calculation	60	11/12/18*	08/02/19															
MD																			
C400	MD -AC Cooling Capacity Calculation	60	13/09/18 A	11/11/18															
C405	MD -AC Cooling Capacity Calculation - Approval	28	12/11/18	09/12/18															
C410	MD -AHU/PAU Static Pressure Calculation	60	10/10/18*	08/12/18															
C415	MD -AHU/PAU Static Pressure Calculation - Approval	28	09/12/18	05/01/19															
C420	MD -Mechanical Ventilation Capacity Calculation	60	28/08/18 A	26/10/18															
C425	MD -Mechanical Ventilation Capacity Calculation - Approval	28	27/10/18	23/11/18															
C430	MD -Fan Static Pressure Calculation	60	09/10/18*	07/12/18															
C435	MD -Fan Static Pressure Calculation - Approval	28	08/12/18	04/01/19															
C440	MD -Acoustic Performance Calculation	60	11/12/18*	08/02/19															
Vehicular Underpass																			
C450	Vehicle Underpass -Mechanical Ventilation Capacity Calculation	60	18/08/18 A	16/10/18															
C455	Vehicle Underpass -Mechanical Ventilation Capacity Calculation - Approval	28	17/10/18	13/11/18															
C460	Vehicle Underpass -Fan Static Pressure Calculation	60	29/09/18*	27/11/18															
C465	Vehicle Underpass -Fan Static Pressure Calculation - Approval	28	28/11/18	25/12/18															
C470	Vehicle Underpass -Acoustic Performance Calculation	60	01/12/18*	29/01/19															
Thermal Insulation																			
C480	Ductwork & Pipework Thermal Insulation Thickness Calculation	60	02/07/18 A	30/08/18 A															
C485	Ductwork & Pipework Thermal Insulation Thickness Calculation - Approval	28	31/08/18 A	27/09/18															
Section D - Building Services of Electrical System																			
TCB																			
D010	TCB -UPS and Battery Capacity Calculations	60	06/07/18 A	03/09/18 A															

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P4	Date	Revision	Checked	Approved
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ID	Activity	Days	Start	Finish	2018															
					September				October				November				December			
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03
D015	TCB -UPS and Battery Capacity Calculations - Approval	30	04/09/18 A	03/10/18																
D020	TCB -Electrical Loading Demand Calculation	60	24/07/18 A	21/09/18																
D025	TCB -Electrical Loading Demand Calculation - Approval	30	22/09/18	21/10/18																
D030	TCB -Lux Level Calculation	60	18/07/18 A	15/09/18 A																
D035	TCB -Lux Level Calculation - Approval	30	16/09/18 A	15/10/18																
D040	TCB -Cable Sizing and Voltage Drop Verification	60	07/08/18 A	05/10/18																
D045	TCB -Cable Sizing and Voltage Drop Verification - Approval	30	06/10/18	04/11/18																
D055	TCB -Generator Calculation - Approval	30	14/08/18 A	12/09/18 A																
D065	TCB -Fuel Tank Calculation - Approval	30	14/08/18 A	12/09/18 A																
D070	TCB -Cable Containment Calculation	60	04/09/18 A	02/11/18																
D075	TCB -Cable Containment Calculation - Approval	30	03/11/18	02/12/18																
D080	TCB -Earthing Resistance Calculation	60	07/08/18 A	05/10/18																
D085	TCB -Earthing Resistance Calculation - Approval	30	06/10/18	04/11/18																
D090	TCB -Power Factor Correction & Harmonic Current AnalysisCalculation	60	07/08/18 A	05/10/18																
D095	TCB -Power Factor Correction & Harmonic Current AnalysisCalculation - Apprc	30	06/10/18	04/11/18																
ADB																				
D100	ADB -UPS and Battery Capacity Calculations	60	01/08/18 A	29/09/18																
D105	ADB -UPS and Battery Capacity Calculations - Approval	30	30/09/18	29/10/18																
D110	ADB -Electrical Loading Demand Calculation	60	28/06/18 A	26/08/18 A																
D115	ADB -Electrical Loading Demand Calculation - Approval	30	27/08/18 A	25/09/18																
D120	ADB -Lux Level Calculation	60	09/09/18 A	07/11/18																
D125	ADB -Lux Level Calculation - Approval	30	08/11/18	07/12/18																
D130	ADB -Cable Sizing and Voltage Drop Verification	60	30/09/18*	28/11/18																
D135	ADB -Cable Sizing and Voltage Drop Verification - Approval	30	29/11/18	28/12/18																
D145	ADB -Generator Calculation - Approval	30	10/08/18 A	08/09/18 A																
D155	ADB -Fuel Tank Calculation - Approval	30	10/08/18 A	08/09/18 A																
D160	ADB -Cable Containment Calculation	60	10/10/18*	08/12/18																
D165	ADB -Cable Containment Calculation - Approval	30	09/12/18	07/01/19																
D170	ADB -Earthing Resistance Calculation	60	30/09/18*	28/11/18																
D175	ADB -Earthing Resistance Calculation - Approval	30	29/11/18	28/12/18																
D180	ADB -Power Factor Correction & Harmonic Current AnalysisCalculation	60	30/09/18*	28/11/18																

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Date	Revision	Checked	Approved
20/09/18			

ID	Activity	Days	Start	Finish	2018																		
					September					October				November			December						
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	
D185	ADB -Power Factor Correction & Harmonic Current AnalysisCalculation - Apprc	30	29/11/18	28/12/18																			
NVB																							
D195	NVB -UPS and Battery Capacity Calculations - Approval	30	19/08/18 A	17/09/18 A																			
D200	NVB -Electrical Loading Demand Calculation	60	06/07/18 A	03/09/18 A																			
D205	NVB -Electrical Loading Demand Calculation - Approval	30	04/09/18 A	03/10/18																			
D210	NVB -Lux Level Calculation	60	17/07/18 A	14/09/18 A																			
D215	NVB -Lux Level Calculation - Approval	30	15/09/18 A	14/10/18																			
D220	NVB -Cable Sizing and Voltage Drop Verification	60	11/08/18 A	09/10/18																			
D225	NVB -Cable Sizing and Voltage Drop Verification - Approval	30	10/10/18	08/11/18																			
D235	NVB -Generator Calculation - Approval	30	19/08/18 A	17/09/18 A																			
D245	NVB -Fuel Tank Calculation - Approval	30	19/08/18 A	17/09/18 A																			
D250	NVB -Cable Containment Calculation	60	19/09/18 A	17/11/18																			
D255	NVB -Cable Containment Calculation - Approval	30	18/11/18	17/12/18																			
D260	NVB -Earthing Resistance Calculation	60	11/08/18 A	09/10/18																			
D265	NVB -Earthing Resistance Calculation - Approval	30	10/10/18	08/11/18																			
D270	NVB -Power Factor Correction & Harmonic Current AnalysisCalculation	60	11/08/18 A	09/10/18																			
D275	NVB -Power Factor Correction & Harmonic Current AnalysisCalculation - Apprc	30	10/10/18	08/11/18																			
D280	NVB -HV Electrical Loading Calculation	60	11/08/18 A	09/10/18																			
D285	NVB -HV Electrical Loading Calculation - Approval	30	10/10/18	08/11/18																			
CEDB																							
D490	CEDB -Electrical Loading Demand Calculation	60	13/11/18*	11/01/19																			
D520	CEDB -Calculation of Total Electrical Load	60	13/11/18*	11/01/19																			
D530	CEDB -Generator Calculation	60	15/12/18*	12/02/19																			
D540	CEDB -Fuel Tank Calculation	60	15/12/18*	12/02/19																			
FSDB																							
D590	FSDB -Electrical Loading Demand Calculation	60	13/11/18*	11/01/19																			
D620	FSDB -Calculation of Total Electrical Load	60	13/11/18*	11/01/19																			
MD																							
D680	MD -Electrical Loading Demand Calculation	60	31/07/18 A	28/09/18																			
D685	MD -Electrical Loading Demand Calculation - Approval	30	29/09/18	28/10/18																			
D690	MD -Lux Level Calculation	60	20/09/18*	18/11/18																			

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Date	Revision	Checked	Approved
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ID	Activity	Days	Start	Finish	2018																						
					September					October				November			December										
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17					
D695	MD -Lux Level Calculation - Approval	30	19/11/18	18/12/18																							
D700	MD -Cable Sizing and Voltage Drop Verification	60	26/10/18*	24/12/18																							
D710	MD -Generator Calculation	60	21/08/18 A	19/10/18																							
D715	MD -Generator Calculation - Approval	30	20/10/18	18/11/18																							
D720	MD -Fuel Tank Calculation	60	21/08/18 A	19/10/18																							
D725	MD -Fuel Tank Calculation - Approval	30	20/10/18	18/11/18																							
D730	MD -Cable Containment Calculation	60	14/11/18*	12/01/19																							
D740	MD -Earthing Resistance Calculation	60	26/10/18*	24/12/18																							
D750	MD -Power Factor Correction & Harmonic Current Analysis Calculation	60	26/10/18*	24/12/18																							
Section E - Building Services of Fire Services System																											
Tunnel & Service Gallery																											
E010	FS and Sprinkler Water Tanks Effective Volumes Calculation	60	16/10/18*	14/12/18																							
E015	FS and Sprinkler Water Tanks Effective Volumes Calculation - Approval	30	15/12/18	13/01/19																							
E020	FS Pump Head Calculation for Tunnel	60	14/10/18*	12/12/18																							
E025	FS Pump Head Calculation for Tunnel - Approval	30	13/12/18	11/01/19																							
E030	FS Pump Head Calculation for Services Gallery	60	14/10/18*	12/12/18																							
E035	FS Pump Head Calculation for Services Gallery - Approval	30	13/12/18	11/01/19																							
E040	Sprinkler Pump Head Calculation for Services Gallery	60	14/10/18*	12/12/18																							
E045	Sprinkler Pump Head Calculation for Services Gallery - Approval	30	13/12/18	11/01/19																							
E055	Foam system design calculation for Services Gallery - Approval	30	11/08/18 A	09/09/18 A																							
TCB																											
E060	TCB -FS Pump Head Calculation	60	13/09/18 A	11/11/18																							
E065	TCB -FS Pump Head Calculation - Approval	30	12/11/18	11/12/18																							
E070	TCB -Sprinkler Pump Head Calculation	60	13/09/18 A	11/11/18																							
E075	TCB -Sprinkler Pump Head Calculation - Approval	30	12/11/18	11/12/18																							
E080	TCB -Battery Capacity Calculation	60	02/07/18 A	30/08/18 A																							
E085	TCB -Battery Capacity Calculation - Approval	30	31/08/18 A	29/09/18																							
E090	TCB -FM200 System Design Calculation	60	22/06/18 A	20/08/18 A																							
E095	TCB -FM200 System Design Calculation - Approval	30	21/08/18 A	19/09/18 A																							
ADB																											
E100	ADB -FS Pump Head Calculation	60	13/09/18 A	11/11/18																							

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Date	Revision	Checked	Approved
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ID	Activity	Days	Start	Finish	2018																	
					September				October				November				December					
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17
E105	ADB -FS Pump Head Calculation - Approval	30	12/11/18	11/12/18																		
E110	ADB -Sprinkler Pump Head Calculation	60	13/09/18 A	11/11/18																		
E115	ADB -Sprinkler Pump Head Calculation - Approval	30	12/11/18	11/12/18																		
E120	ADB -Battery Capacity Calculation	60	29/07/18 A	26/09/18																		
E125	ADB -Battery Capacity Calculation - Approval	30	27/09/18	26/10/18																		
E130	ADB -FM200 System Design Calculation	60	22/06/18 A	20/08/18 A																		
E135	ADB -FM200 System Design Calculation - Approval	30	21/08/18 A	19/09/18 A																		
NVB																						
E140	NVB -FS Pump Head Calculation	60	19/08/18 A	17/10/18																		
E145	NVB -FS Pump Head Calculation - Approval	30	18/10/18	16/11/18																		
E150	NVB -Sprinkler Pump Head Calculation	60	19/08/18 A	17/10/18																		
E155	NVB -Sprinkler Pump Head Calculation - Approval	30	18/10/18	16/11/18																		
E165	NVB -Battery Capacity Calculation - Approval	30	19/08/18 A	17/09/18 A																		
E170	NVB -FM200 System Design Calculation	60	22/06/18 A	20/08/18 A																		
E175	NVB -FM200 System Design Calculation - Approval	30	21/08/18 A	19/09/18 A																		
SCB																						
E250	SCB -FM200 System Design Calculation	60	22/10/18*	20/12/18																		
CEDB																						
E280	CEDB -Battery Capacity Calculation	60	27/11/18*	25/01/19																		
E290	CEDB -FM200 System Design Calculation	60	22/11/18*	20/01/19																		
FSDB																						
E300	FSDB -FS Pump Head Calculation	60	28/11/18*	26/01/19																		
E310	FSDB -Sprinkler Pump Head Calculation	60	28/11/18*	26/01/19																		
E320	FSDB -Battery Capacity Calculation	60	28/11/18*	26/01/19																		
MD																						
E330	MD -FS Pump Head Calculation	60	21/08/18 A	19/10/18																		
E335	MD -FS Pump Head Calculation - Approval	30	20/10/18	18/11/18																		
E340	MD -Sprinkler Pump Head Calculation	60	21/08/18 A	19/10/18																		
E345	MD -Sprinkler Pump Head Calculation - Approval	30	20/10/18	18/11/18																		
E350	MD -Battery Capacity Calculation	60	21/08/18 A	19/10/18																		
E355	MD -Battery Capacity Calculation - Approval	30	20/10/18	18/11/18																		
E360	MD -FM200 System Design Calculation	60	22/11/18*	20/01/19																		

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Date	Revision	Checked	Approved
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ID	Activity	Days	Start	Finish	2018															
					September					October					November				December	
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03
Vehicular Underpass																				
E370	Vehicular Underpass -Foam system design calculation	60	02/07/18 A	30/08/18 A																
E375	Vehicular Underpass -Foam system design calculation - Approval	30	31/08/18 A	29/09/18																
Section F - Building Services of Plumbing & Drainage System																				
Tunnel																				
F010	Oil Interceptor Calculation for tunnel	60	12/07/18 A	09/09/18 A																
F015	Oil Interceptor Calculation for tunnel - Approval	30	10/09/18 A	09/10/18																
F020	Water Storage Tank Calculation	60	16/10/18*	14/12/18																
F025	Water Storage Tank Calculation - Approval	30	15/12/18	13/01/19																
TCB																				
F030	TCB - Pump Head Calculation	60	13/10/18*	11/12/18																
F035	TCB - Pump Head Calculation - Approval	30	12/12/18	10/01/19																
F040	TCB - Pressure Vessel Calculation	60	13/10/18*	11/12/18																
F045	TCB - Pressure Vessel Calculation - Approval	30	12/12/18	10/01/19																
F050	TCB - Rainwater Analysis and Pipe Work Calculation	60	01/08/18 A	29/09/18																
F055	TCB - Rainwater Analysis and Pipe Work Calculation - Approval	30	30/09/18	29/10/18																
F065	TCB - Hydraulic Analysis of Waste Water Systems - Approval	30	01/08/18 A	30/08/18 A																
F070	TCB - Hot water system capacity calculation	60	08/08/18 A	06/10/18																
F075	TCB - Hot water system capacity calculation - Approval	30	07/10/18	05/11/18																
ADB																				
F080	ADB - Pump Head Calculation	60	09/11/18*	07/01/19																
F090	ADB - Pressure Vessel Calculation	60	09/11/18*	07/01/19																
F100	ADB - Rainwater Analysis and Pipe Work Calculation	60	07/10/18*	05/12/18																
F105	ADB - Rainwater Analysis and Pipe Work Calculation - Approval	30	06/12/18	04/01/19																
F110	ADB - Hydraulic Analysis of Waste Water Systems	60	08/08/18 A	06/10/18																
F115	ADB - Hydraulic Analysis of Waste Water Systems - Approval	30	07/10/18	05/11/18																
F120	ADB - Hot water system capacity calculation	60	08/08/18 A	06/10/18																
F125	ADB - Hot water system capacity calculation - Approval	30	07/10/18	05/11/18																
F130	ADB - Drainage Sump Pumps and Pump Pits Calculation	60	18/10/18*	16/12/18																
F135	ADB - Drainage Sump Pumps and Pump Pits Calculation - Approval	30	17/12/18	15/01/19																
NVB																				
F140	NVB - Pump Head Calculation	60	18/10/18*	16/12/18																

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Date	Revision	Checked	Approved
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ID	Activity	Days	Start	Finish	2018															
					September					October				November			December			
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03
F145	NVB - Pump Head Calculation - Approval	30	17/12/18	15/01/19																
F150	NVB - Pressure Vessel Calculation	60	18/10/18*	16/12/18																
F155	NVB - Pressure Vessel Calculation - Approval	30	17/12/18	15/01/19																
F160	NVB - Rainwater Analysis and Pipe Work Calculation	60	16/08/18 A	14/10/18																
F165	NVB - Rainwater Analysis and Pipe Work Calculation - Approval	30	15/10/18	13/11/18																
F175	NVB - Hydraulic Analysis of Waste Water Systems - Approval	30	16/08/18 A	14/09/18 A																
MD																				
F310	MD - Drainage Sump Pumps and Pump Pits Calculation	60	19/12/18*	16/02/19																
F320	MD - Pump Head Calculation	60	19/12/18*	16/02/19																
F330	MD - Pressure Vessel Calculation	60	19/12/18*	16/02/19																
F340	MD - Rainwater Analysis and Pipe Work Calculation	60	09/11/18*	07/01/19																
F350	MD - Hydraulic Analysis of Waste Water Systems	60	10/09/18 A	08/11/18																
F355	MD - Hydraulic Analysis of Waste Water Systems - Approval	30	09/11/18	08/12/18																
Vehicular Underpass																				
F360	Vehicular underpass - Drainage Sump Pumps and Pump Pits Calculation	60	18/11/18*	16/01/19																
F370	Vehicular underpass - Pump Head Calculation	60	18/11/18*	16/01/19																
F380	Vehicular underpass - Pressure Vessel Calculation	60	18/11/18*	16/01/19																
F390	Vehicular underpass - Rainwater Analysis and Pipe Work Calculation	60	30/10/18*	28/12/18																
F400	Vehicular underpass - Hydraulic Analysis of Waste Water Systems	60	31/08/18 A	29/10/18																
F405	Vehicular underpass - Hydraulic Analysis of Waste Water Systems - Approval	30	30/10/18	28/11/18																
Section G - ELV System																				
G015	System Design for Toll Control system - Approval	30	01/08/18 A	30/08/18 A																
G020	System Design for CMCS	60	02/09/18 A	31/10/18																
G025	System Design for CMCS - Approval	30	01/11/18*	30/11/18																
G030	System Design for Access Control System	60	02/09/18 A	31/10/18																
G035	System Design for Access Control System - Approval	30	01/11/18*	30/11/18																
G040	System Design for CCTV	60	04/10/18*	02/12/18																
G045	System Design for CCTV - Approval	30	03/12/18*	01/01/19																
G050	System Design for IT System	60	01/09/18 A	30/10/18																
G055	System Design for IT System - Approval	30	31/10/18*	29/11/18																
G060	System Design for PABX System	60	15/09/18 A	13/11/18																

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Date	Revision	Checked	Approved
20/09/18			

ID	Activity	Days	Start	Finish	2018																		
					September				October				November				December						
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	
G065	System Design for PABX System - Approval	30	14/11/18*	13/12/18																			
G070	System Design for PA System	60	15/09/18 A	13/11/18																			
G075	System Design for PA System - Approval	30	14/11/18*	13/12/18																			
G080	System Design for BRI System	60	15/09/18 A	13/11/18																			
G085	System Design for BRI System - Approval	30	14/11/18*	13/12/18																			
G090	System Design for Audio Recording System	60	15/09/18 A	13/11/18																			
G095	System Design for Audio Recording System - Approval	30	14/11/18*	13/12/18																			
G100	System Design for Communication Network System System	60	15/09/18 A	13/11/18																			
G105	System Design for Communication Network System System - Approval	30	14/11/18*	13/12/18																			
G110	System Design for Building Management System	60	24/10/18*	22/12/18																			
Section H - Building Services of Lift system																							
H015	System Design for Lift System - Approval	30	31/07/18 A	29/08/18 A																			
Key Date 4A - FSD Building Substructure, Boundary Wall, and C&ED Building Substructure																							
FSD Building Substructure																							
FSD100	Access Portion XVIa	0		14/09/18 A																			
C&ED Building Substructure																							
CED110	Access Portion XVa	0		14/09/18 A																			
CED140	Predrilling (No.1-6)	10	12/12/18	22/12/18																			
Key Date 1 - Toll Control Building (TCB) & TCSS Provision																							
Toll Control Building (TCB)																							
TCB155	Ground Floor Slab - Rock Breaking for Subway Area	7	16/08/18 A	23/08/18 A																			
TCB156	Ground Floor Slab - Subway Area	6	24/08/18 A	12/09/18 A																			
TCB160	Remove G/F Slab Formwork	2	18/08/18 A	20/08/18 A																			
TCB161	Level 1 Columns & Scaffolding	10	21/08/18 A	31/08/18 A																			
TCB162	Level 1 Slab	12	01/09/18 A	03/10/18																			
TCB171	Remove 1/F Slab Formwork	2	04/10/18	05/10/18																			
TCB172	Level 2 Columns & Scaffolding	10	06/10/18	18/10/18																			
TCB173	Level 2 Slab	12	19/10/18	01/11/18																			
TCB174	Remove 2/F Slab Formwork	2	02/11/18	03/11/18																			
TCB175	Roof Columns & Scaffolding	10	05/11/18	15/11/18																			
TCB180	Roof Slab	12	16/11/18	29/11/18																			

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Date	Revision	Checked	Approved
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ID	Activity	Days	Start	Finish	2018															
					September					October				November			December			
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03
TCB190	Top Roof	12	16/11/18	29/11/18																
TCSS Provision																				
TCB200	Blockwork Walls and Plaster (G/F)	12	19/10/18	01/11/18																
TCB210	ABWF Works to enable TCSS installation	90	11/12/18	02/04/19																
TCB231	Blockwork Walls and Plaster (1/F - East Side)	12	02/11/18	15/11/18																
TCB232	Blockwork Walls and Plaster (1/F - Middle Area)	12	16/11/18	29/11/18																
TCB233	Blockwork Walls and Plaster (1/F - West Side)	12	30/11/18	13/12/18																
TCB243	Blockwork Walls and Plaster (2/F - East Side)	12	14/12/18	31/12/18																
Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision																				
Administration Building (ADB)																				
Piling Works																				
ADB141	Socket H-Piling (No. 6-10) - 1Rig	12	07/08/18 A	20/08/18 A																
ADB142	Socket H-Piling (No. 11-15) - 1Rig	12	21/08/18 A	03/09/18 A																
ADB143	Socket H-Piling (No. 16-20) - 1Rig	12	04/09/18 A	17/09/18 A																
ADB144	Socket H-Piling (No. 21-25) - 1Rig	12	18/09/18 A	03/10/18																
ADB145	Socket H-Piling (No.26-30) - 1Rig	12	04/10/18	18/10/18																
ADB146	Socket H-Piling (No. 31-36) - 1Rig	12	19/10/18	01/11/18																
ADB147	Socket H-Piling (No.37-42) - 1Rig	12	02/11/18	15/11/18																
ADB148	Socket H-Piling (No. 43-49) - 1Rig	12	16/11/18	29/11/18																
ADB150	Loading Test	14	30/11/18	15/12/18																
Building Structure																				
ADB160	Foundations	12	17/12/18	03/01/19																
Maintenance Depot																				
Piling Works																				
MD121	Predrilling (11-20)	10	18/08/18 A	15/09/18 A																
MD130	Socket H-Piling (No. 1-16), 2 Rigs	12	15/09/18 A	29/09/18																
MD131	Socket H-Piling (No. 17-33), 2 Rigs	12	02/10/18	15/10/18																
MD140	Setting Up for Loading Test	7	16/10/18	24/10/18																
MD141	Loading Test and Report	7	25/10/18	01/11/18																
Depot Structure																				
MD150	Foundations	10	02/11/18	13/11/18																
MD160	Ground Floor	14	14/11/18	29/11/18																

THREE MONTHLY ROLLING PROGRAMME

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Date	Revision	Checked	Approved
20/09/18			

ID	Activity	Days	Start	Finish	2018																		
					September				October				November				December						
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10	17	
MD170	Roof Slab	24	30/11/18	31/12/18																			
Kiosk N2																							
N2-110	Possess Portion Ve	0		15/09/18 A																			
N2-120	Site clearance & trial pits	6	20/09/18	27/09/18																			
N2-125	Excavation	6	28/09/18	05/10/18																			
N2-126	Kiosk Structure - Raft	12	06/10/18	20/10/18																			
N2-127	Kiosk Structure - Wall	12	22/10/18	03/11/18																			
N2-128	Kiosk Structure - Roof	12	05/11/18	17/11/18																			
N2-130	ABWF Works to enable TCSS installation	18	19/11/18	08/12/18																			
N2-140	E&M Works to enable TCSS installation	18	10/12/18	03/01/19																			
Key Date 6 - E&M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2																							
E&M Works for North Ventilation Building																							
E&M Works																							
ENVB1	E&M Installation - B2/F	150	01/11/18*	08/05/19																			
ENVB1	E&M Installation - B1/F	150	03/12/18	10/06/19																			
Remaining E&M Works for Kiosk N2 (Structure Completed under KD2)																							
EN2110	Kiosk Structure Completed	0		17/11/18																			
EN2120	ABWF Works (Door, windows, tiles)	30	19/11/18	22/12/18																			
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		18/10/18																			
ETCB11	Remaining Blockwork Walls and Plaster (G/F)	12	19/10/18	01/11/18																			
ETCB12	Blockwork Walls and Plaster (1/F)	12	02/11/18	15/11/18																			
ETCB12	Remaining Blockwork Walls	12	16/11/18	29/11/18																			
ETCB12	Remaining Plaster	12	30/11/18	13/12/18																			
ETCB13	Remaining ABWF Works	210	30/11/18	17/08/19																			
Power On and Statutory Inspections (except FSD)																							
ETCB1	Liaison with CLP	12	19/10/18	01/11/18																			
ETCB1	E&M Installation in Transformer Room - 1st Fix	12	02/11/18	15/11/18																			
ETCB1	E&M Installation in Transformer Room - 2nd Fix	12	16/11/18	29/11/18																			
ETCB2	CLP Installation Works	82	30/11/18	13/03/19																			
Kiosk N1																							

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ID	Activity	Days	Start	Finish	2018																
					September					October				November				December			
					20	27	03	10	17	24	01	08	15	22	29	05	12	19	26	03	10
EN131	Trim Formation	2	20/08/18 A	21/08/18 A																	
EN132	Cast Concrete Base	6	22/08/18 A	28/08/18 A																	
EN133	Steel Structure - Columns	11	29/08/18 A	10/09/18 A																	
EN134	Steel Structure - Roof	11	11/09/18 A	22/09/18																	
EN135	Steel Structure - Panels	12	24/09/18	09/10/18																	
EN140	ABWF Works - 1st Fix	12	10/10/18	24/10/18																	
EN150	E&M works - Stage 1	12	25/10/18	07/11/18																	
EN151	E&M works - Stage 2	12	08/11/18	21/11/18																	
EN152	E&M works - Stage 3	12	22/11/18	05/12/18																	
EN155	ABWF Works - Final Fix	12	06/12/18	19/12/18																	
Plant Room																					
E&M Works																					
EPR120	Blockwork Wall	12	20/08/18 A	01/09/18 A																	
EPR130	E&M Installation	90	10/12/18	01/04/19																	
PR151	ABWF Works	78	01/11/18*	04/02/19																	
Key Date 7A - E&M Works for Approach Roads at South Side																					
Design and Procurement																					
DP810	Tunnel and Approach Road Lighting System	206	01/11/18*	15/07/19																	
DP820	CMCS System and ELV System	206	01/11/18*	15/07/19																	
DP830	Electrical System	206	01/11/18*	15/07/19																	
DP840	Building Services System	206	01/11/18*	15/07/19																	
DP850	Plumbing and Drainage System (Tunnel and Roads)	206	01/11/18*	15/07/19																	
DP860	Fire Services System	206	01/11/18*	15/07/19																	
DP870	Other Related Works to enable E&M Works	206	01/11/18*	15/07/19																	
Key Date 11 - Landscape Soft Works & Trees Protection																					
Trees Protection																					
SL190	Protection of Existing Trees	613	06/08/18 A	28/08/20																	

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Appendix C

Environmental Mitigation and Enhancement Measure Implementation Schedules

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
Air Quality									
4.8.1	3.8	Watering of the construction sites in Lantau for 8 times/day and in Tuen Mun for 12 times/day to reduce dust emissions by 87.5% and 91.7% respectively and shall be undertaken.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall not burn debris or other materials on the works areas.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet.	All unpaved haul roads / throughout construction period in hot, dry or windy weather	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		<>
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	All site exits / throughout construction period	Contractor	TMEIA Avoid dust		Y		✓
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	Contractor	EM&A Manual		Y		✓ (Currently implemented by the

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Tuen Mun – Chek Lap Kok Link
Northern Connection Tunnel Buildings, Electrical and Mechanical Works
Environmental Mitigation and Enhancement Measure Implementation Schedule

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

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						D	C	O	
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		✓
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		✓

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Tuen Mun – Chek Lap Kok Link
Northern Connection Tunnel Buildings, Electrical and Mechanical Works
Environmental Mitigation and Enhancement Measure Implementation Schedule

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling.	Contract Mobilisation	Contractor	TMEIA		Y		✓
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	No waste shall be burnt on site.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		✓

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						D	C	O	
12.6	8.1	The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: <i>f</i> suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; <i>f</i> Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. <i>f</i> Clearly labelled and used solely for the storage of chemical wastes; <i>f</i> Enclosed with at least 3 sides; <i>f</i> Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; <i>f</i> Adequate ventilation; <i>f</i> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and <i>f</i> Incompatible materials are adequately 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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						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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						D	C	O	
10.9	7.6	Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme (CM2)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Hillside and roadside screen planting to proposed roads, associated structures and slope works (CM3)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone) (CM4)	All areas/detailed design/ during construction/post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Control night-time lighting and glare by hooding all lights (CM6)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Recycle/ Reuse all felled trees and vegetation, e.g. mulching (CM9)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006 (CM10)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		N/A
10.9	7.6	Re-vegetation of affected woodland/shrubland with native species (OM1)	All areas/detailed design/ during construction/ during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be implemented by AFCD/HyD/L CSD
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

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

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	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 $\mu\text{g}/\text{m}^3$	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in $\mu\text{g} / \text{m}^3$	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337	500

Appendix E

Event Action Plan

Appendix L1 Event/ Action Plan for Air Quality

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

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

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

8. If the exceedance stops, cease
additional monitoring.

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

Appendix F

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	-	0.000	-	-	-	-	-	-	-	-	-	-
Feb	-	0.000	-	-	-	-	-	-	-	-	-	-
Mar	-	0.000	-	-	-	-	-	-	-	-	-	-
Apr	-	0.000	-	-	-	-	-	-	-	-	-	-
May	0.397	0.000	-	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	-	3.750	-	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	0.253	0.011	0.010	-	0.243	-	-	11.720	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	5.315	0.115	0.010	0.397	4.908	-	-	182.510	-	-	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.

*Inert C&D materials generated in May 2018 before Contract commencement was due to site preparation works.

Appendix G

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

Appendix G1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting quarter	Total No. recorded since project commencement
1-Hr TSP	Action	11	13
	Limit	1	1
24-Hr TSP	Action	0	0
	Limit	0	0

Appendix G2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

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

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To Ramboll Hong Kong Limited (ENPO)

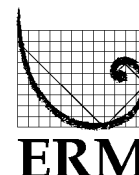
From ERM- Hong Kong, Limited

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

Subject Notification of Exceedance for Air Quality
Impact Monitoring

Date 02 October 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance
0215660_07 September 2018_1hrTSP_Station ASR1

A total of one (1) exceedance was recorded on 07 September 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

CONTRACT NO. HY/2017/10

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<p><u>Action Level Exceedance</u> 0215660_07 September 2018_1hrTSP_Station ASR1</p> <p>[Total No. of Exceedances = 1]</p>	
Date	<p>07 September 2018 (Measured) 02 October 2018 (Results obtained from ENPO Website)</p>	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	<p>Works undertaken under this Contract on 07 September 2018 included:</p> <ul style="list-style-type: none"> ▪ Site preparation works, bar bending, timber formwork and concreting at Toll Control Building; ▪ Architectural, Builder's Work and Finishing at Ventilation Plant Room; ▪ Electrical and Mechanical Works at Northern Ventilation Building; and ▪ Socket H-pilling at Administration Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Apart from one 1 hour TSP (08:57 - 09:57) 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 07 September 2018. • According to ET's site inspection on the same day, no particular findings was observed at the work areas nearby ASR1 (refer to ET's Site Inspection Photo). Unpaved roads were in wet condition. Material having the potential to create dust was covered by tarpaulin. <p>Based on the above, the exceedance is unlikely to be due to the Project.</p>	
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.	
Dust Remarks	The monitoring results on 07 September 2018 and locations of air quality monitoring stations are attached. Works area under this Contract is attached. The attached wind data on 07 September 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	2018-09-07	AQMS1	9:08	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2018-09-07	AQMS1	10:10	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018-09-07	AQMS1	11:12	1-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR1	8:57	1-hour TSP	392	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR1	9:59	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR1	11:01	1-hour TSP	60	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR10	8:24	1-hour TSP	58	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR10	9:26	1-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR10	10:28	1-hour TSP	69	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR5	8:46	1-hour TSP	104	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR5	9:48	1-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR5	10:50	1-hour TSP	129	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR6	8:34	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR6	9:36	1-hour TSP	119	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR6	10:38	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2018-09-07	AQMS1	12:14	24-hour TSP	45	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR1	12:03	24-hour TSP	66	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR10	11:30	24-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR5	11:52	24-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2018-09-07	ASR6	11:41	24-hour TSP	70	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)
18/09/07	0:00	0.9	90
18/09/07	1:00	1.3	79
18/09/07	2:00	1.3	94
18/09/07	3:00	0.9	60
18/09/07	4:00	0	72
18/09/07	5:00	0	326
18/09/07	6:00	0	330
18/09/07	7:00	0	261
18/09/07	8:00	0.4	144
18/09/07	9:00	0.9	143
18/09/07	10:00	0.9	129
18/09/07	11:00	0.9	125
18/09/07	12:00	2.2	196
18/09/07	13:00	1.8	204
18/09/07	14:00	0.9	274
18/09/07	15:00	0.9	200
18/09/07	16:00	0.4	288
18/09/07	17:00	1.3	72
18/09/07	18:00	1.3	74
18/09/07	19:00	1.3	95
18/09/07	20:00	0.4	63
18/09/07	21:00	0.4	281
18/09/07	22:00	0.4	281
18/09/07	23:00	1.3	319

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

Photo 1 - Unpaved roads were in wet condition (07 September 2018)

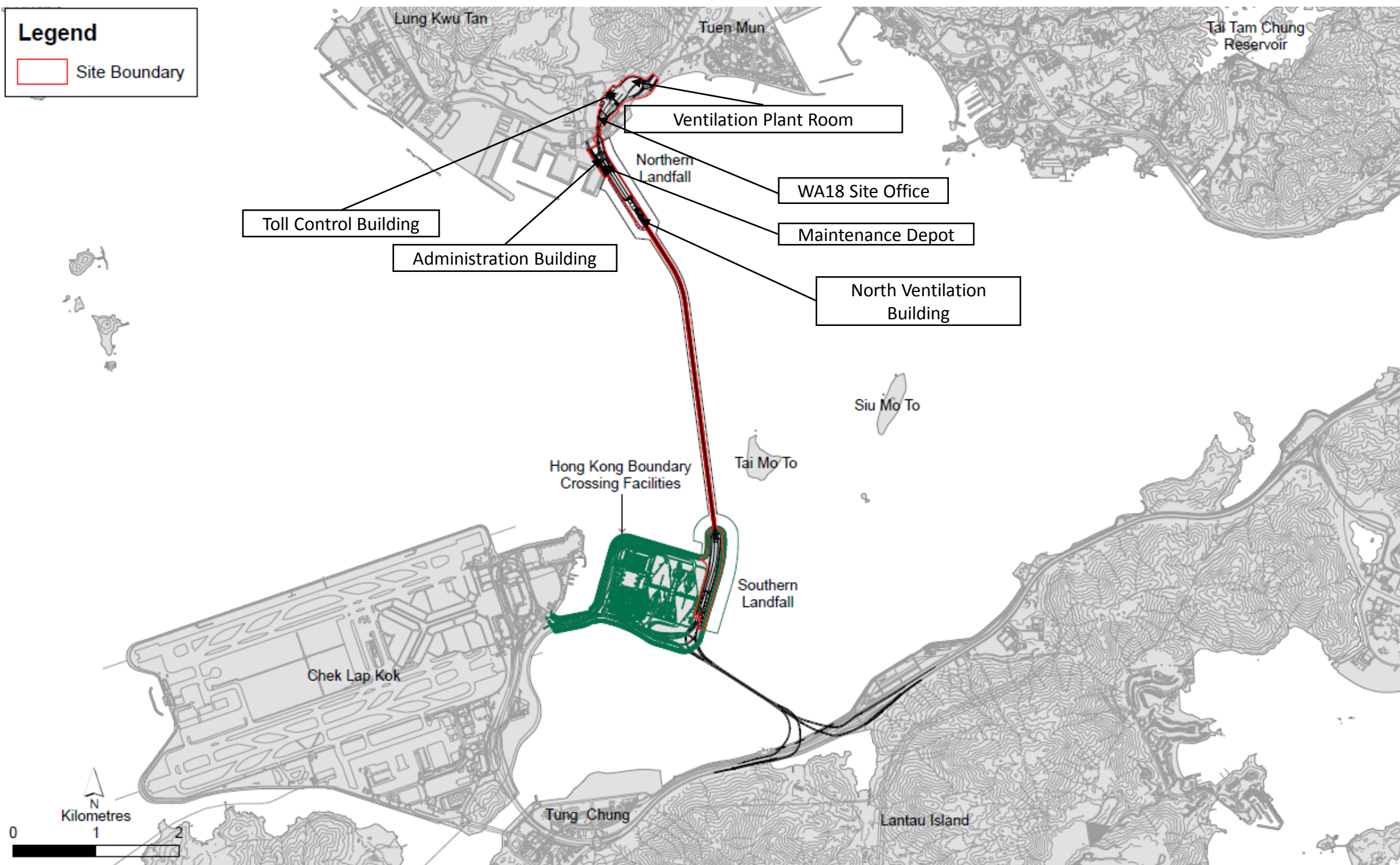


Photo 2 - Material that has potential impact on air quality was covered by tarpaulin (07 September 2018)



Legend

Site Boundary



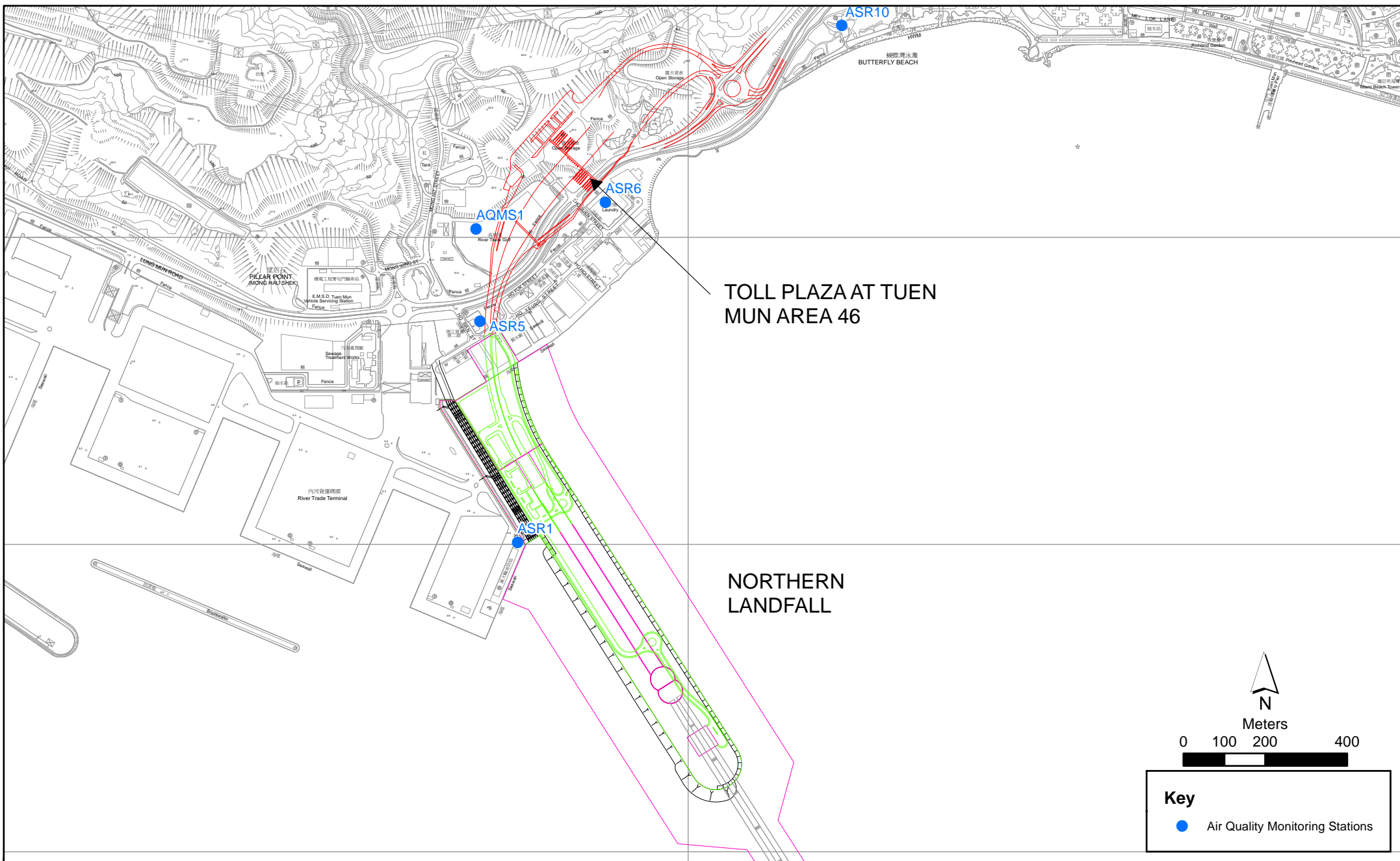


Figure 2.1

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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To Ramboll Hong Kong Limited (ENPO)

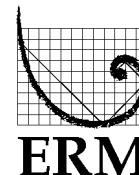
From ERM- Hong Kong, Limited

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 05 October 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance

0215660_28 September 2018_1hrTSP_Station ASR1

Limit Level Exceedance

0215660_28 September 2018_1hrTSP_Station ASR1

A total of two (2) exceedances were recorded on 28 September 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

**CONTRACT NO. HY/2017/10
TUEN MUN – CHEK LAP KOK LINK –
NORTHERN CONNECTION TUNNEL BUILDINGS,
ELECTRICAL AND MECHANICAL WORKS**

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<p><u>Action Level Exceedance</u> 0215660_28 September 2018_1hrTSP_Station ASR1</p> <p><u>Limit Level Exceedance</u> 0215660_28 September 2018_1hrTSP_Station ASR1</p> <p>[Total No. of Exceedances = 2]</p>	
Date	<p>28 September 2018 (Measured) 05 October 2018 (Results obtained from ENPO Website)</p>	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	<p>Works undertaken under this Contract on 28 September 2018 included:</p> <ul style="list-style-type: none"> ▪ Socket H-piling at Administration Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedances of 1 hour TSP (14:39 - 15:39 and 15:41 - 16:41) 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 28 September 2018. • According to ET's site inspection on the same day, no particular findings was observed at the work areas nearby ASR1 (refer to ET's Site Inspection Photo). Construction works were limited to the work area of Administration Building. Unpaved roads at the work area were in wet condition. <p>Based on the above, the exceedances are unlikely to be due to the Project.</p>	
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.	
Dust Remarks	The monitoring results on 28 September 2018 and locations of air quality monitoring stations are attached. Works area under this Contract is attached. The attached wind data on 28 September 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	28-09-2018	AQMS1	13:48	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	28-09-2018	AQMS1	14:50	1-hour TSP	130	ug/m3
TMCLKL	HY/2012/08	28-09-2018	AQMS1	15:52	1-hour TSP	139	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR1	13:37	1-hour TSP	252	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR1	14:39	1-hour TSP	584	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR1	15:41	1-hour TSP	417	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR10	13:02	1-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR10	14:04	1-hour TSP	87	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR10	15:06	1-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR5	13:25	1-hour TSP	314	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR5	14:27	1-hour TSP	184	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR5	15:29	1-hour TSP	234	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR6	13:14	1-hour TSP	201	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR6	14:16	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR6	15:18	1-hour TSP	187	ug/m3
TMCLKL	HY/2012/08	28-09-2018	AQMS1	16:54	24-hour TSP	67	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR1	16:43	24-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR10	16:08	24-hour TSP	52	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR5	16:31	24-hour TSP	133	ug/m3
TMCLKL	HY/2012/08	28-09-2018	ASR6	16:20	24-hour TSP	96	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)
18-09-28	0:00	0.4	320
18-09-28	1:00	0.4	310
18-09-28	2:00	0.0	198
18-09-28	3:00	0.4	43
18-09-28	4:00	0.4	47
18-09-28	5:00	0.4	12
18-09-28	6:00	0.9	40
18-09-28	7:00	0.9	47
18-09-28	8:00	1.8	12
18-09-28	9:00	1.8	49
18-09-28	10:00	2.2	53
18-09-28	11:00	1.8	36
18-09-28	12:00	2.2	314
18-09-28	13:00	2.2	312
18-09-28	14:00	2.7	301
18-09-28	15:00	2.7	297
18-09-28	16:00	2.7	282
18-09-28	17:00	1.3	297
18-09-28	18:00	1.3	338
18-09-28	19:00	1.8	296
18-09-28	20:00	1.8	340
18-09-28	21:00	2.2	348
18-09-28	22:00	1.8	348
18-09-28	23:00	1.3	292

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

Photo 1 - Unpaved roads were in wet condition (28 September 2018)



Photo 2 - Unpaved roads were in wet condition (28 September 2018)



Legend

 Site Boundary

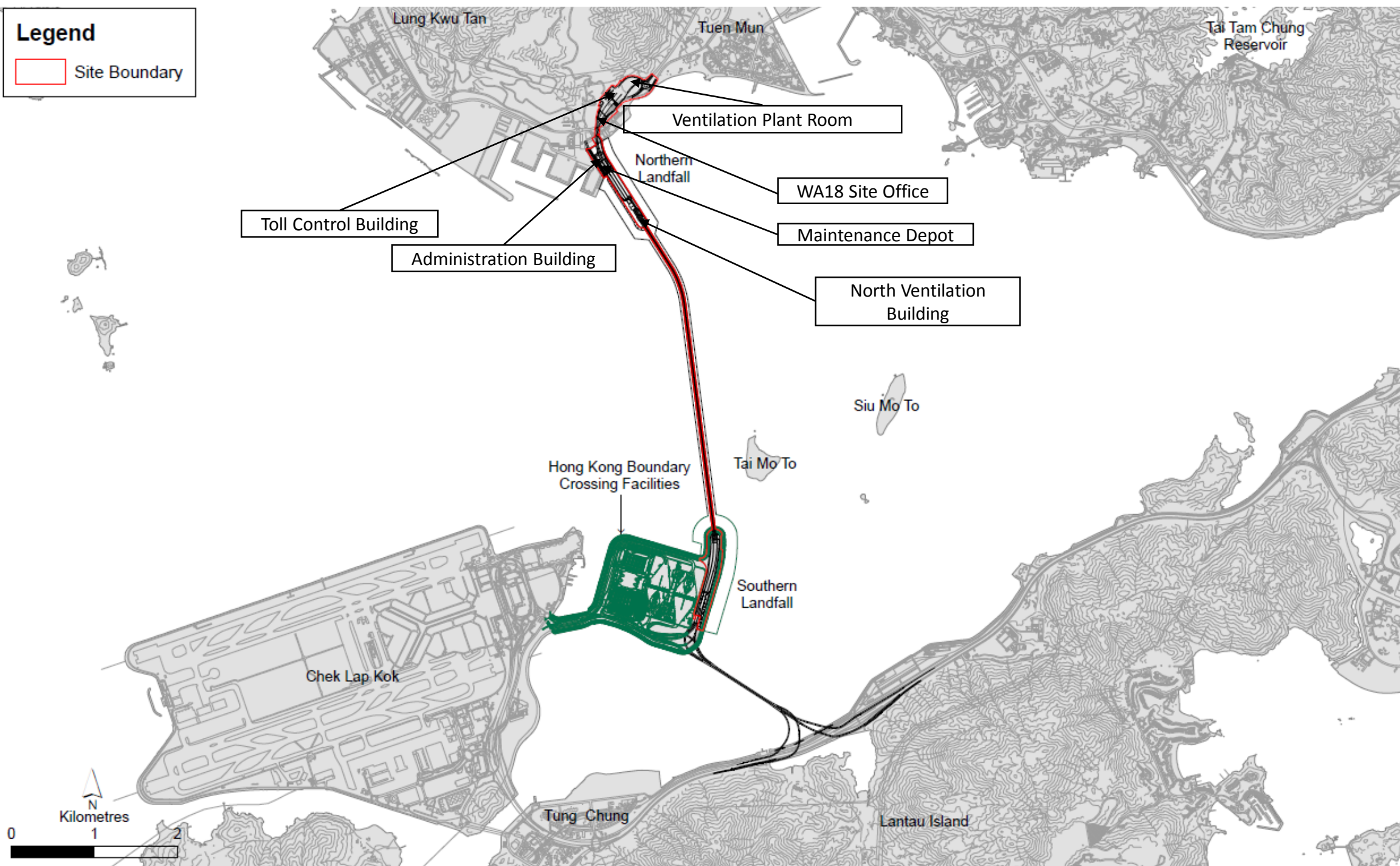




Figure 2.1

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)

Email
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To Ramboll Hong Kong Limited (ENPO)

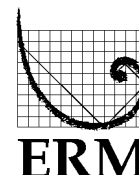
From ERM- Hong Kong, Limited

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 23 October 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance
0215660_4 October 2018_1hrTSP_Station ASR1

A total of one (1) exceedance was recorded on 4 October 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

**CONTRACT NO. HY/2017/10
TUEN MUN – CHEK LAP KOK LINK –
NORTHERN CONNECTION TUNNEL BUILDINGS,
ELECTRICAL AND MECHANICAL WORKS**

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<p><u>Action Level Exceedance</u> 0215660_4 October 2018_1hrTSP_Station ASR1</p> <p>[Total No. of Exceedances = 1]</p>	
Date	<p>4 October 2018 (Measured) 23 October 2018 (Results obtained from ENPO Website)</p>	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 4 October 2018 included: <ul style="list-style-type: none"> ▪ Socket H-piling at Administration Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedances of 1 hour TSP (14:11 - 15:11) 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 4 October 2018 (<i>refer to Contractor's Photo and watering record</i>). • According to ET's site inspection on 5 October 2018, no particular findings was observed at works area near ASR1 (<i>refer to ET's Site Inspection Photo</i>). Unpaved roads were in wet condition. <p>Based on the above, the exceedances are unlikely to be due to the Project.</p>	
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.	
Dust Remarks	The monitoring results on 4 October 2018 and locations of air quality monitoring stations are attached. Works area under this Contract is attached. The attached wind data on 4 October 2018 is sourced from <i>Contract No. HY/2012/08</i> 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	2018/10/04	AQMS1	14:22	1-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2018/10/04	AQMS1	15:24	1-hour TSP	111	ug/m3
TMCLKL	HY/2012/08	2018/10/04	AQMS1	16:25	1-hour TSP	61	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR1	14:11	1-hour TSP	340	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR1	15:13	1-hour TSP	267	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR1	16:15	1-hour TSP	76	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR10	13:35	1-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR10	14:37	1-hour TSP	78	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR10	16:41	1-hour TSP	56	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR5	13:58	1-hour TSP	228	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR5	15:00	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR5	16:02	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR6	13:47	1-hour TSP	183	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR6	14:49	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR6	15:51	1-hour TSP	81	ug/m3
TMCLKL	HY/2012/08	2018/10/04	AQMS1	17:28	24-hour TSP	65	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR1	17:17	24-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR10	16:41	24-hour TSP	86	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR5	17:04	24-hour TSP	137	ug/m3
TMCLKL	HY/2012/08	2018/10/04	ASR6	16:53	24-hour TSP	112	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)
18/10/04	0:00	0.9	100
18/10/04	1:00	0.4	79
18/10/04	2:00	0.4	98
18/10/04	3:00	0.9	343
18/10/04	4:00	1.3	342
18/10/04	5:00	0.4	340
18/10/04	6:00	1.3	313
18/10/04	7:00	1.3	308
18/10/04	8:00	1.3	319
18/10/04	9:00	1.8	348
18/10/04	10:00	1.8	14
18/10/04	11:00	1.8	341
18/10/04	12:00	1.8	315
18/10/04	13:00	1.8	330
18/10/04	14:00	2.2	283
18/10/04	15:00	2.2	302
18/10/04	16:00	2.2	302
18/10/04	17:00	2.2	281
18/10/04	18:00	1.3	318
18/10/04	19:00	1.8	310
18/10/04	20:00	0.9	306
18/10/04	21:00	0.9	317
18/10/04	22:00	1.3	320
18/10/04	23:00	0.9	311

*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 4 OCTOBER 2018

Photo 1 - Watering of unpaved roads to maintain a wet condition (4 October 2018)



PHOTO BY ET ON 5 OCTOBER 2018

Photo 2 - Unpaved roads were maintained in a wet condition (5 October 2018)



WATERING RECORD ON 4 OCTOBER 2018

Date	Location	Watering time	Signature
4 th Oct	AdB 8 MD		
7-8			
8-9	✓	8:15	Toby
9-10	✓✓	9:01 9:47	Toby
10-11	✓	10:40	Toby
11-12	✓	11:36	Toby
12-13	✓	12:56	Toby
13-14	✓✓	13:30 13:59	Toby
14-15	✓	14:50	Toby
15-16	✓	15:48	Toby
16-17	✓	16:45	Toby
17-18	✓	18:00	Toby
18-19			

Legend

Site Boundary

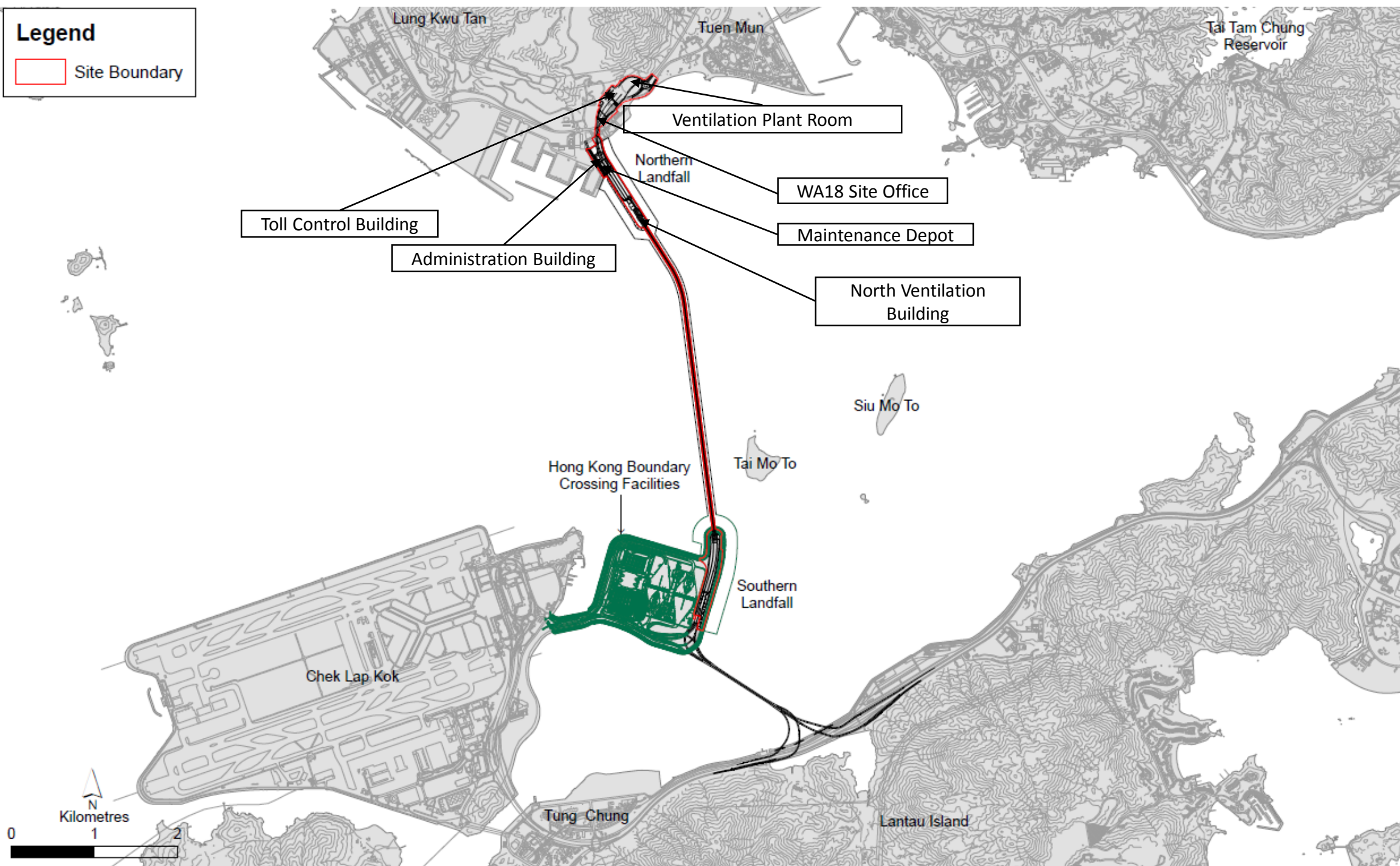




Figure 2.1

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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To Ramboll Hong Kong Limited (ENPO)

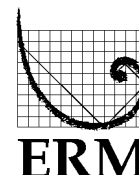
From ERM- Hong Kong, Limited

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 24 October 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance
0463091_10 October 2018_1hrTSP_Station ASR1

A total of one (1) exceedance was recorded on 10 October 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

**CONTRACT NO. HY/2017/10
TUEN MUN – CHEK LAP KOK LINK –
NORTHERN CONNECTION TUNNEL BUILDINGS,
ELECTRICAL AND MECHANICAL WORKS**

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	Action Level Exceedance 0463091_10 October 2018_1hrTSP_Station ASR1 [Total No. of Exceedances = 1]	
Date	10 October 2018 (Measured) 24 October 2018 (Results obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 10 October 2018 included: <ul style="list-style-type: none"> ▪ Socket H-piling at Administration Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedances of 1 hour TSP (13:38 - 14:38) 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 10 October 2018 (<i>refer to Contractor's Photo and watering record</i>). • According to ET's site inspection on 5 and 12 October 2018, no particular findings was observed at the works area near ASR1 (<i>refer to ET's Site Inspection Photo</i>). Unpaved roads at the works area were in wet condition. <p>Based on the above, the exceedances are unlikely to be due to the Project.</p>	
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.	
Dust Remarks	The monitoring results on 10 October 2018 and locations of air quality monitoring stations are attached. Works area under this Contract is attached. The attached wind data on 10 October 2018 is sourced from <i>Contract No. HY/2012/08</i> 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	2018/10/10	AQMS1	13:50	1-hour TSP	74	ug/m3
TMCLKL	HY/2012/08	2018/10/10	AQMS1	14:52	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018/10/10	AQMS1	15:54	1-hour TSP	70	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR1	13:38	1-hour TSP	451	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR1	14:40	1-hour TSP	77	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR1	15:42	1-hour TSP	117	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR10	13:04	1-hour TSP	103	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR10	14:06	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR10	15:08	1-hour TSP	98	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR5	13:26	1-hour TSP	297	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR5	14:28	1-hour TSP	213	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR5	15:30	1-hour TSP	156	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR6	13:15	1-hour TSP	176	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR6	14:17	1-hour TSP	171	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR6	15:19	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2018/10/10	AQMS1	16:56	24-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR1	16:44	24-hour TSP	75	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR10	16:10	24-hour TSP	47	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR5	16:32	24-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2018/10/10	ASR6	16:21	24-hour TSP	71	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)
18/10/10	0:00	1.8	120
18/10/10	1:00	0.9	81
18/10/10	2:00	0.4	77
18/10/10	3:00	0.0	332
18/10/10	4:00	0.9	328
18/10/10	5:00	0.4	339
18/10/10	6:00	0.4	327
18/10/10	7:00	0.4	335
18/10/10	8:00	0.0	96
18/10/10	9:00	0.9	115
18/10/10	10:00	2.2	123
18/10/10	11:00	2.2	132
18/10/10	12:00	2.2	303
18/10/10	13:00	2.7	318
18/10/10	14:00	4.5	343
18/10/10	15:00	4.5	330
18/10/10	16:00	0.9	288
18/10/10	17:00	0.4	293
18/10/10	18:00	0.9	314
18/10/10	19:00	0.9	184
18/10/10	20:00	0.4	183
18/10/10	21:00	1.8	39
18/10/10	22:00	1.3	35
18/10/10	23:00	0.9	345

*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 10 OCTOBER 2018

Photo 1 - Watering of unpaved roads to maintain a wet condition (10 October 2018)



PHOTO BY ET ON 5 AND 12 OCTOBER 2018

Photo 2 - Unpaved roads were maintained in a wet condition (5 October 2018)



Photo 3 - Unpaved roads were maintained in a wet condition (12 October 2018)



WATERING RECORD ON 10 OCTOBER 2018

Date	Location	Watering Time	Signature
10 th Oct	AUB & MD		
7-8			
8-9	✓	8=09	tsky
9-10	✓	9=15	tsky
10-11	✓	10=13	tsky
11-12	✓	11=05	11=55 tsky
12-13	✓	12=50	tsky
13-14	✓	13=49	tsky
14-15	✓	14=20	14=55 tsky
15-16	✓	15=50	tsky
16-17	✓ ✓	16=50	tsky
17-18	✓	17=44	tsky
18-19			

Legend

Site Boundary

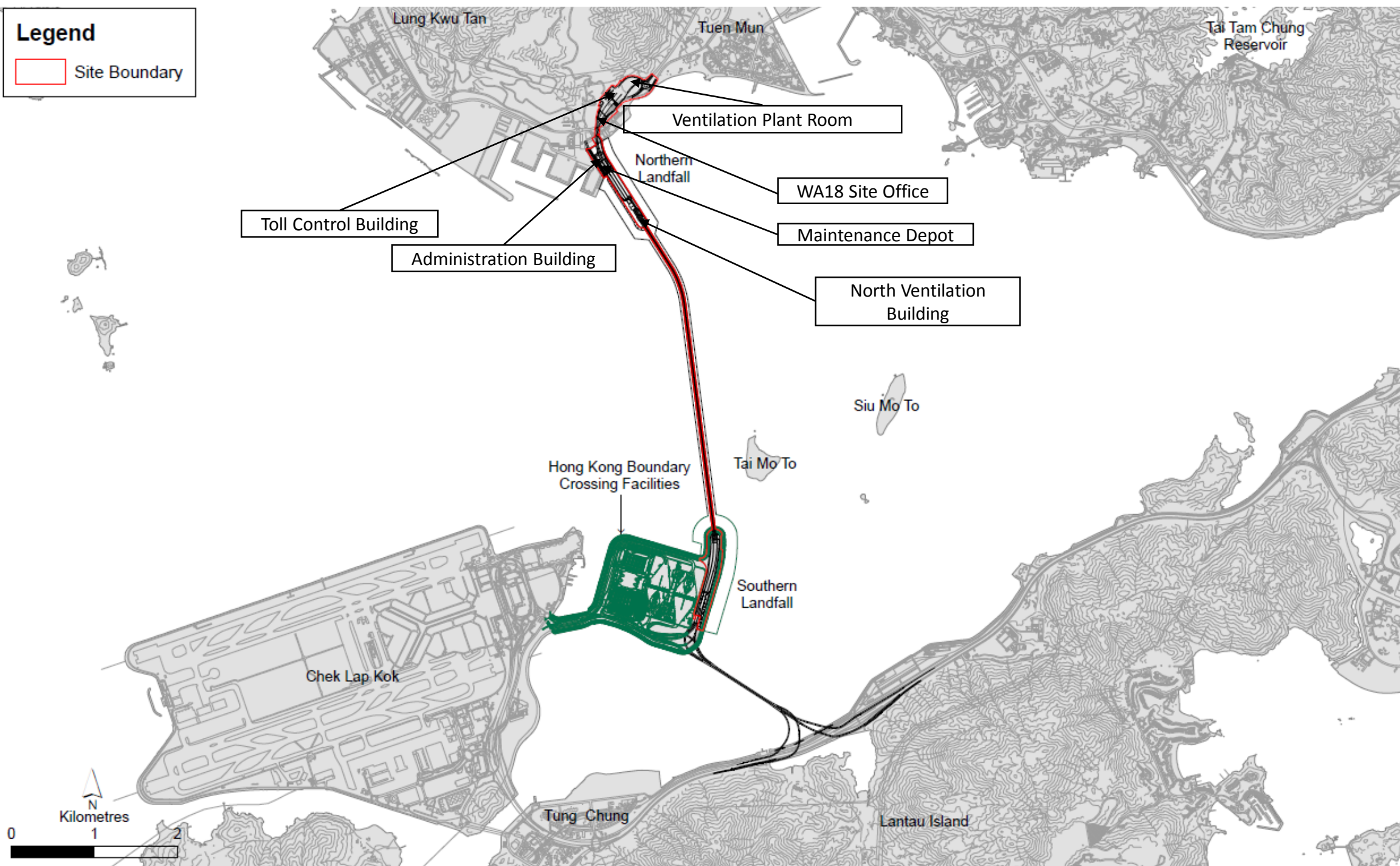




Figure 2.1

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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To Ramboll Hong Kong Limited (ENPO)

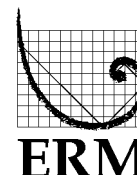
From ERM- Hong Kong, Limited

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 November 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance
0463091_31 October 2018_1hrTSP_Station ASR5

A total of one (1) exceedance was recorded on 31 October 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

**CONTRACT NO. HY/2017/10
TUEN MUN – CHEK LAP KOK LINK –
NORTHERN CONNECTION TUNNEL BUILDINGS,
ELECTRICAL AND MECHANICAL WORKS**

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<p><u>Action Level Exceedance</u> 0463091_31 October 2018_1hrTSP_Station ASR5</p> <p>[Total No. of Exceedances = 1]</p>	
Date	<p>31 October 2018 (Measured) 12 November 2018 (Results obtained from ENPO Website)</p>	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	<p>Works undertaken under this Contract on 31 October 2018 included:</p> <ul style="list-style-type: none"> ▪ Socket H-piling at Administration Building and Maintenance Depot; and ▪ Erection of formwork and fixing of steer bar at Toll Control Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedances of 1 hour TSP (13:45 - 14:45) 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 31 October 2018 (refer to Contractor's Photo and watering record). • According to ET's site inspection on 2 November 2018, no particular findings was observed at the works area near ASR5 (refer to ET's Site Inspection Photo). Unpaved roads at the works area were in wet condition. <p>Based on the above, the exceedances are unlikely to be due to the Project.</p>	
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.	
Dust Remarks	The monitoring results on 31 October 2018 and locations of air quality monitoring stations are attached. Works area under this Contract is attached. The attached wind data on 31 October 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	2018/10/31	AQMS1	14:08	1-hour TSP	161	ug/m3
TMCLKL	HY/2012/08	2018/10/31	AQMS1	15:10	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2018/10/31	AQMS1	16:12	1-hour TSP	169	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR1	13:57	1-hour TSP	197	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR1	14:59	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR1	16:01	1-hour TSP	134	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR10	13:22	1-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR10	14:24	1-hour TSP	122	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR10	15:26	1-hour TSP	102	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR5	13:45	1-hour TSP	371	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR5	14:47	1-hour TSP	293	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR5	15:49	1-hour TSP	303	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR6	13:33	1-hour TSP	234	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR6	14:35	1-hour TSP	194	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR6	15:37	1-hour TSP	210	ug/m3
TMCLKL	HY/2012/08	2018/10/31	AQMS1	17:14	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR1	17:03	24-hour TSP	121	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR10	16:28	24-hour TSP	83	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR5	16:51	24-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2018/10/31	ASR6	16:39	24-hour TSP	130	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)
18/10/31	0:00	2.2	342
18/10/31	1:00	2.2	355
18/10/31	2:00	2.7	346
18/10/31	3:00	3.1	14
18/10/31	4:00	3.1	32
18/10/31	5:00	2.2	37
18/10/31	6:00	1.8	18
18/10/31	7:00	2.2	6
18/10/31	8:00	3.6	33
18/10/31	9:00	3.6	13
18/10/31	10:00	1.8	284
18/10/31	11:00	1.8	36
18/10/31	12:00	3.1	46
18/10/31	13:00	3.6	29
18/10/31	14:00	2.2	27
18/10/31	15:00	1.8	39
18/10/31	16:00	2.2	39
18/10/31	17:00	1.8	22
18/10/31	18:00	2.2	339
18/10/31	19:00	0.9	324
18/10/31	20:00	0.9	118
18/10/31	21:00	2.7	4
18/10/31	22:00	3.1	357
18/10/31	23:00	2.2	334

*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 31 OCTOBER 2018

Photo 1 - Watering of unpaved roads to maintain a wet condition (31 October 2018)



PHOTO BY CONTRACTOR ON 31 OCTOBER 2018

PHOTO BY ET ON 2 NOVEMBER 2018

Photo 2 - Unpaved roads were maintained in a wet condition (2 November 2018)



Photo 3 - No dust emission works were conducted at Toll Control Building.



WATERING RECORD ON 31 OCTOBER 2018

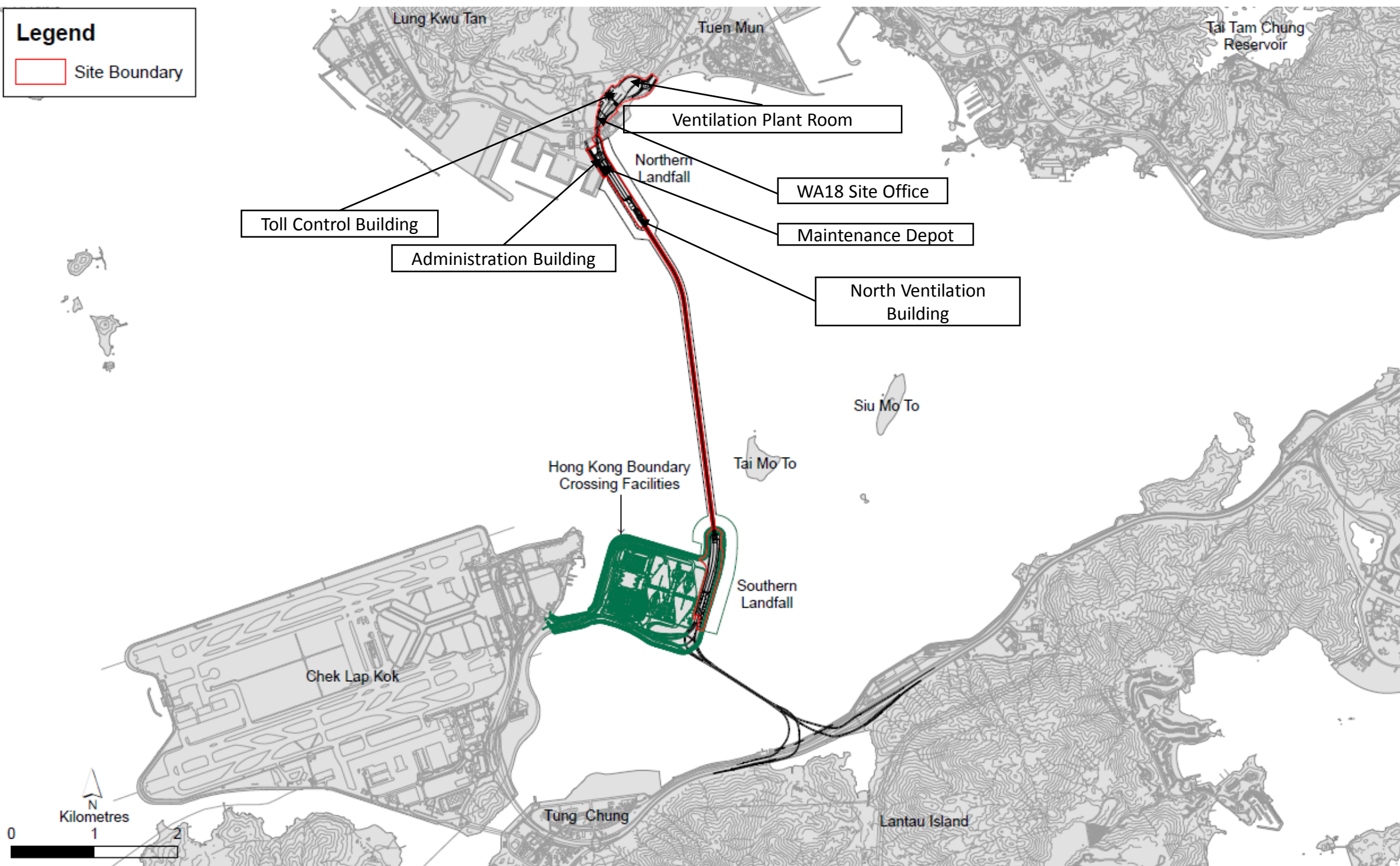
Date: 31st Oct

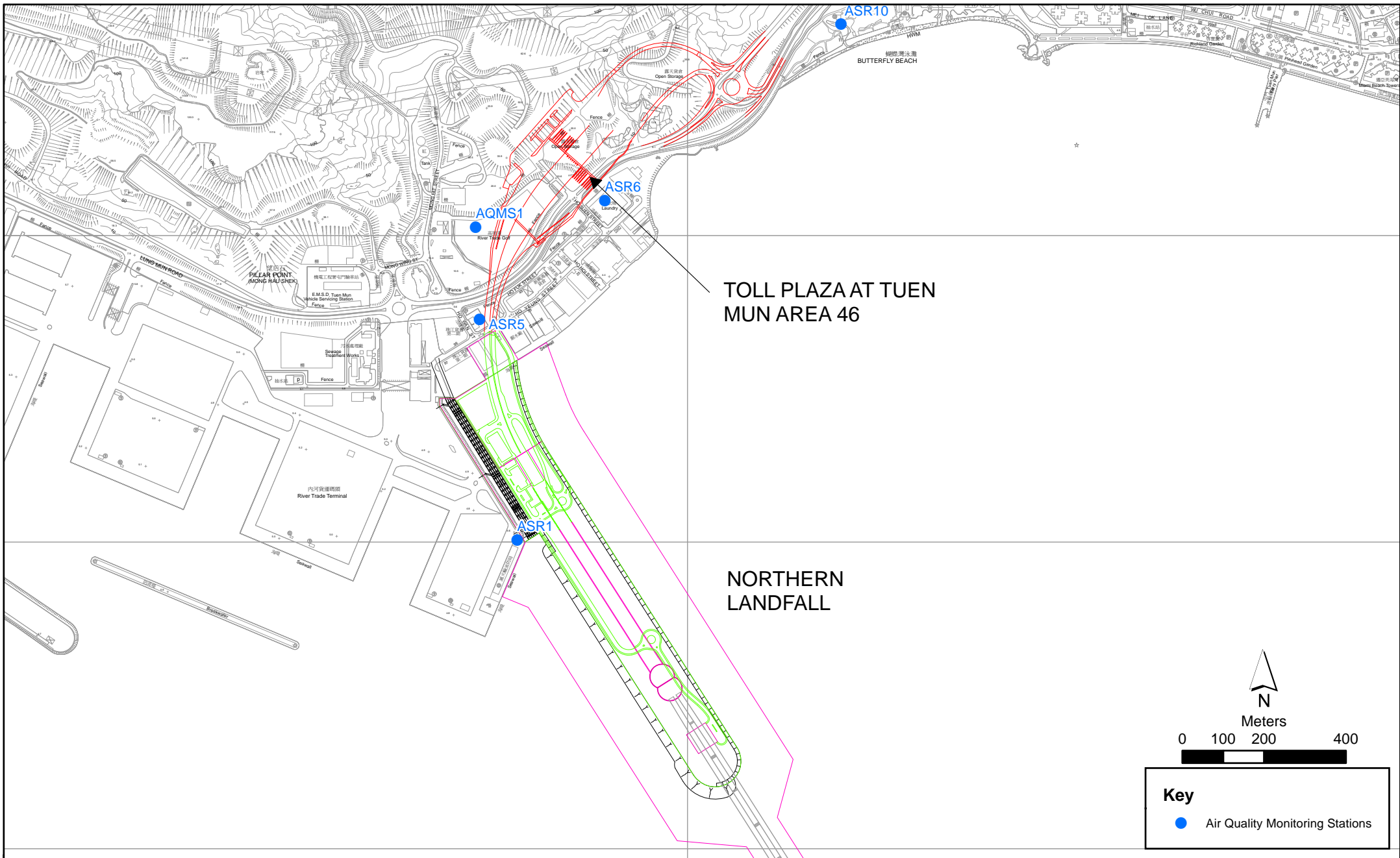
Location: AUB & MD

Period		Watering time	Signature
8-9	✓	8:09	Toby
9-10	✓✓	9:10 9:49	Toby
10-11	✓	10:47	Toby
11-12	✓	11:50	Toby
12-13	✓	12:51	Toby
13-14	✓	13:42	Toby
14-15	✓✓	14:09 14:53	Toby
15-16	✓	15:49	Toby
16-17	✓	16:52	Toby
17-18	✓	17:45	Toby
18-19			

Legend

Site Boundary





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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To Ramboll Hong Kong Limited (ENPO)

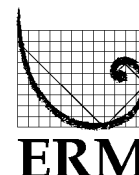
From ERM- Hong Kong, Limited

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 22 November 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance
0463091_6 November 2018_1hrTSP_Station ASR1

A total of one (1) exceedance was recorded on 6 November 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

**CONTRACT NO. HY/2017/10
TUEN MUN – CHEK LAP KOK LINK –
NORTHERN CONNECTION TUNNEL BUILDINGS,
ELECTRICAL AND MECHANICAL WORKS**

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<p><u>Action Level Exceedance</u> 0463091_6 November 2018_1hrTSP_Station ASR1</p> <p>[Total No. of Exceedances = 1]</p>	
Date	<p>6 November 2018 (Measured) 22 November 2018 (Results obtained from ENPO Website)</p>	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	<p>Works undertaken under this Contract on 6 November 2018 included:</p> <ul style="list-style-type: none"> ▪ Socket H-piling at Administration Building; and ▪ Formwork at Toll Control Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedance is unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Apart from exceedances of 1 hour TSP (14:50 - 15:50) 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 6 November 2018 (refer to Contractor's Photo and watering record). • No outdoor construction works was conducted under this Contract in the wind direction (south-easterly wind) during the time that exceedance was recorded. • According to ET's site inspection on 9 November 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. <p>Based on the above, the exceedances are unlikely to be due to the Project.</p>	
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 roads. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 6 November 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 6 November 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	2018/11/06	AQMS1	13:59	1-hour TSP	82	ug/m3
TMCLKL	HY/2012/08	2018/11/06	AQMS1	15:01	1-hour TSP	110	ug/m3
TMCLKL	HY/2012/08	2018/11/06	AQMS1	16:03	1-hour TSP	79	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR1	13:48	1-hour TSP	126	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR1	14:50	1-hour TSP	376	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR1	15:52	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR10	13:13	1-hour TSP	152	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR10	14:15	1-hour TSP	50	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR10	15:17	1-hour TSP	53	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR5	13:37	1-hour TSP	181	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR5	14:39	1-hour TSP	152	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR5	15:41	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR6	13:25	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR6	14:27	1-hour TSP	96	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR6	15:29	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2018/11/06	AQMS1	17:05	24-hour TSP	55	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR1	16:54	24-hour TSP	48	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR10	16:19	24-hour TSP	41	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR5	16:43	24-hour TSP	90	ug/m3
TMCLKL	HY/2012/08	2018/11/06	ASR6	16:31	24-hour TSP	65	ug/m3

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

PHOTO BY CONTRACTOR ON 6 NOVEMBER 2018

Photo 1 - Watering of unpaved roads near Administration Building and Maintenance Depot to maintain a wet condition (6 November 2018)



Photo 2 - Watering of unpaved roads near Fire Services Department Building and Customs & Excise Department Building to maintain a wet condition (6 November 2018)



Photo 3 - Unpaved roads were maintained in a wet condition (9 November 2018)



WATERING RECORD ON 6 NOVEMBER 2018

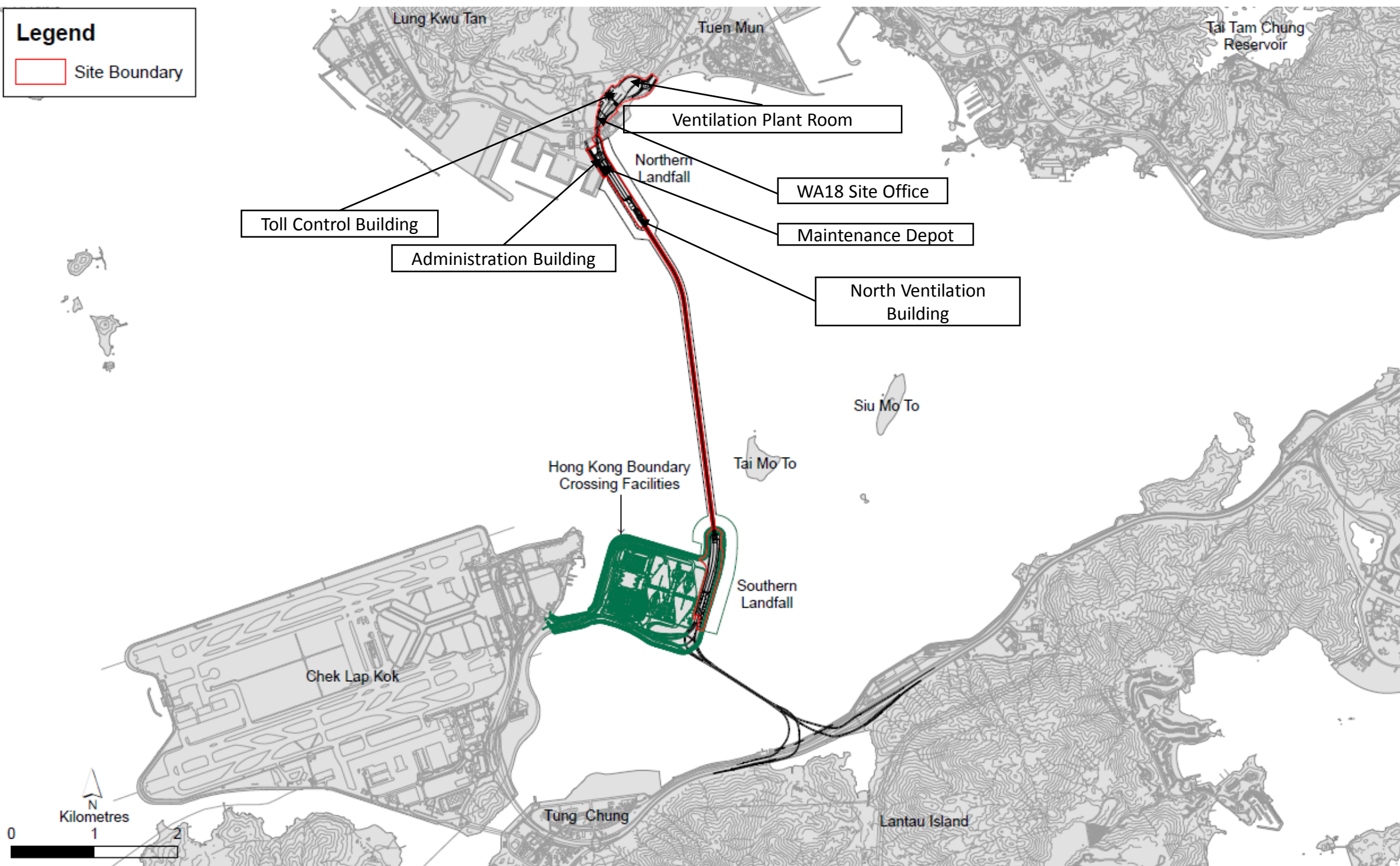
Date: 6th Nov

A/B & M/D

Period	Time of watering	Sign
7-8		
8-9	✓ 8:05	tohy
9-10	✓ 9:06	tohy
10-11	✓ 10:03	tohy
11-12	✓ 11:05	tohy
12-13	✓ 12:06	tohy
13-14	✓ 13:04	tohy
14-15	✓ ✓ 14:01 14:53	tohy
15-16	✓ 15:53	tohy
16-17	✓ 16:45	tohy
17-18	✓ 17:44	tohy
18-19	✓ 18:30	tohy

Legend

Site Boundary



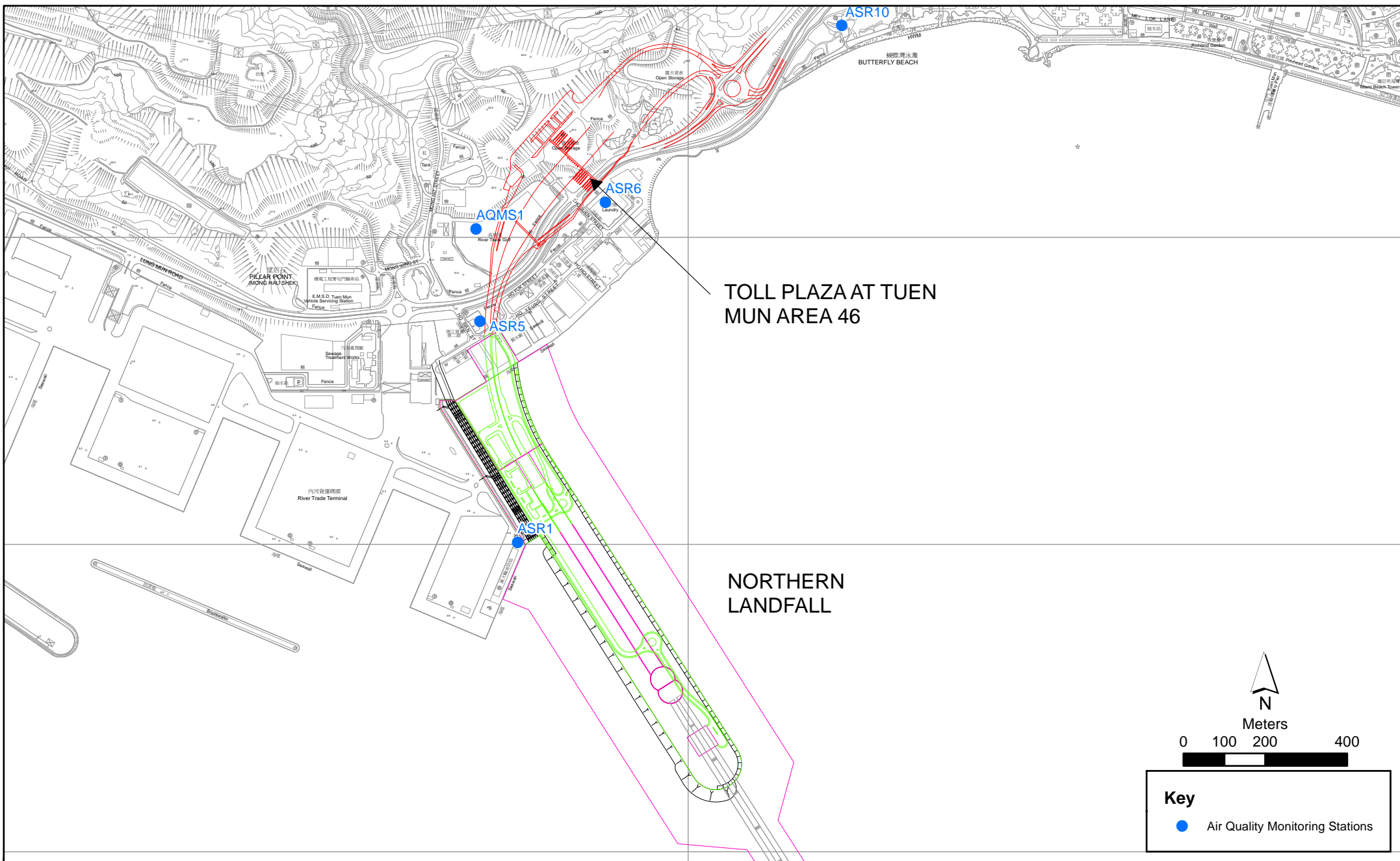


Figure 2.1

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)

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)
18/11/06	0:00	2.7	95
18/11/06	1:00	2.7	93
18/11/06	2:00	2.2	98
18/11/06	3:00	0.9	62
18/11/06	4:00	1.3	95
18/11/06	5:00	0.4	312
18/11/06	6:00	0.9	53
18/11/06	7:00	1.3	51
18/11/06	8:00	1.3	76
18/11/06	9:00	3.1	101
18/11/06	10:00	3.1	132
18/11/06	11:00	4.0	144
18/11/06	12:00	3.6	124
18/11/06	13:00	3.6	143
18/11/06	14:00	2.7	139
18/11/06	15:00	2.2	131
18/11/06	16:00	1.3	120
18/11/06	17:00	1.8	97
18/11/06	18:00	2.2	101
18/11/06	19:00	1.3	121
18/11/06	20:00	1.3	80
18/11/06	21:00	1.3	93
18/11/06	22:00	2.2	93
18/11/06	23:00	1.3	81

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

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To Ramboll Hong Kong Limited (ENPO)

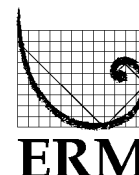
From ERM- Hong Kong, Limited

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 22 November 2018

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



Dear Sir/ Madam,

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

Action Level Exceedance

0463091_12 November 2018_1hrTSP_Station ASR1
0463091_12 November 2018_1hrTSP_Station ASR5
0463091_12 November 2018_1hrTSP_Station ASR5
0463091_12 November 2018_1hrTSP_Station ASR5
0463091_12 November 2018_1hrTSP_Station ASR6

A total of five (5) exceedances were recorded on 12 November 2018.

Regards,

Dr Jasmine Ng
Environmental Team Leader

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ERM-Hong Kong, Limited

**CONTRACT NO. HY/2017/10
TUEN MUN – CHEK LAP KOK LINK –
NORTHERN CONNECTION TUNNEL BUILDINGS,
ELECTRICAL AND MECHANICAL WORKS**

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	<u>Action Level Exceedance</u> 0212330_12November2018_1hrTSP_Station ASR1 0212330_12November2018_1hrTSP_Station ASR5 0212330_12November2018_1hrTSP_Station ASR5 0212330_12November2018_1hrTSP_Station ASR5 0212330_12November2018_1hrTSP_Station ASR6 [Total No. of Exceedances = 5]	
Date	12 November 2018 (Measured) 22 November 2018 (Results obtained from ENPO Website)	
Monitoring Station	ASR1, ASR5, ASR6, ASR10, AQMS1	
Parameter(s) with Exceedance(s)	1-hr TSP	
Action Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
Limit Levels	1-hr TSP ($\mu\text{g}/\text{m}^3$)	500
Measured Levels	Refer to the attached data sheet.	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 12 November 2018 included: <ul style="list-style-type: none"> ▪ Socket H-piling at Administration Building. ▪ Formwork at Toll Control Building. 	
Possible Reason for Action or Limit Level Exceedance(s)	<p>The exceedances are unlikely to be due to the Project, in view of the following:</p> <ul style="list-style-type: none"> • Although five (5) Action Levels Exceedances of 1-hour TSP were recorded, including exceedances recorded at ASR1 (15:02-16:02), ASR-5 (13:49-14:49; 14:51-15:51; 15:53-16:53) and ASR6 (14:40- 15:40), no works area under this Contract are located upstream of stations ASR1 and ASR5 and only the works area of Toll Control Building (TCB) are located upstream of station ASR6 in the wind direction (ranged between 217° and 304° blowing from a Westerly direction) during the period when 1-hour TSP exceedances were observed. • Only one (1) Action Level Exceedance of 1- hour TSP was recorded at station ASR6 downstream of the TCB when exceedance was recorded, works at TCB were formworks which are not dust generating. • Watering record provided by the Contractor was reviewed. Watering was maintained on unpaved and dry road on 12 November 2018 (<i>refer to Contractor's Photo and watering record</i>). <p>With reference to the recorded wind Based on the above, the exceedances are unlikely to be due to the Project.</p>	
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 November 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 November 2018 is sourced from <i>Contract No. HY/2012/08</i> 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	2018/11/12	AQMS1	14:12	1-hour TSP	311	ug/m3
TMCLKL	HY/2012/08	2018/11/12	AQMS1	15:14	1-hour TSP	272	ug/m3
TMCLKL	HY/2012/08	2018/11/12	AQMS1	16:16	1-hour TSP	292	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR1	14:00	1-hour TSP	148	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR1	15:02	1-hour TSP	395	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR1	16:04	1-hour TSP	193	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR10	13:26	1-hour TSP	242	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR10	14:28	1-hour TSP	164	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR10	15:30	1-hour TSP	197	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR5	13:49	1-hour TSP	371	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR5	14:51	1-hour TSP	425	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR5	15:53	1-hour TSP	377	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR6	13:38	1-hour TSP	262	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR6	14:40	1-hour TSP	343	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR6	15:42	1-hour TSP	259	ug/m3
TMCLKL	HY/2012/08	2018/11/12	AQMS1	17:18	24-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR1	17:06	24-hour TSP	63	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR10	16:32	24-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR5	16:55	24-hour TSP	136	ug/m3
TMCLKL	HY/2012/08	2018/11/12	ASR6	16:44	24-hour TSP	103	ug/m3

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

Photo 1 - Watering of unpaved roads at works area near Administration Building and Maintenance Depot to maintain a wet condition



Photo 2 - Watering of unpaved roads at works areas near Fire Service Department Building and Customs & Excise Department Building to maintain a wet condition

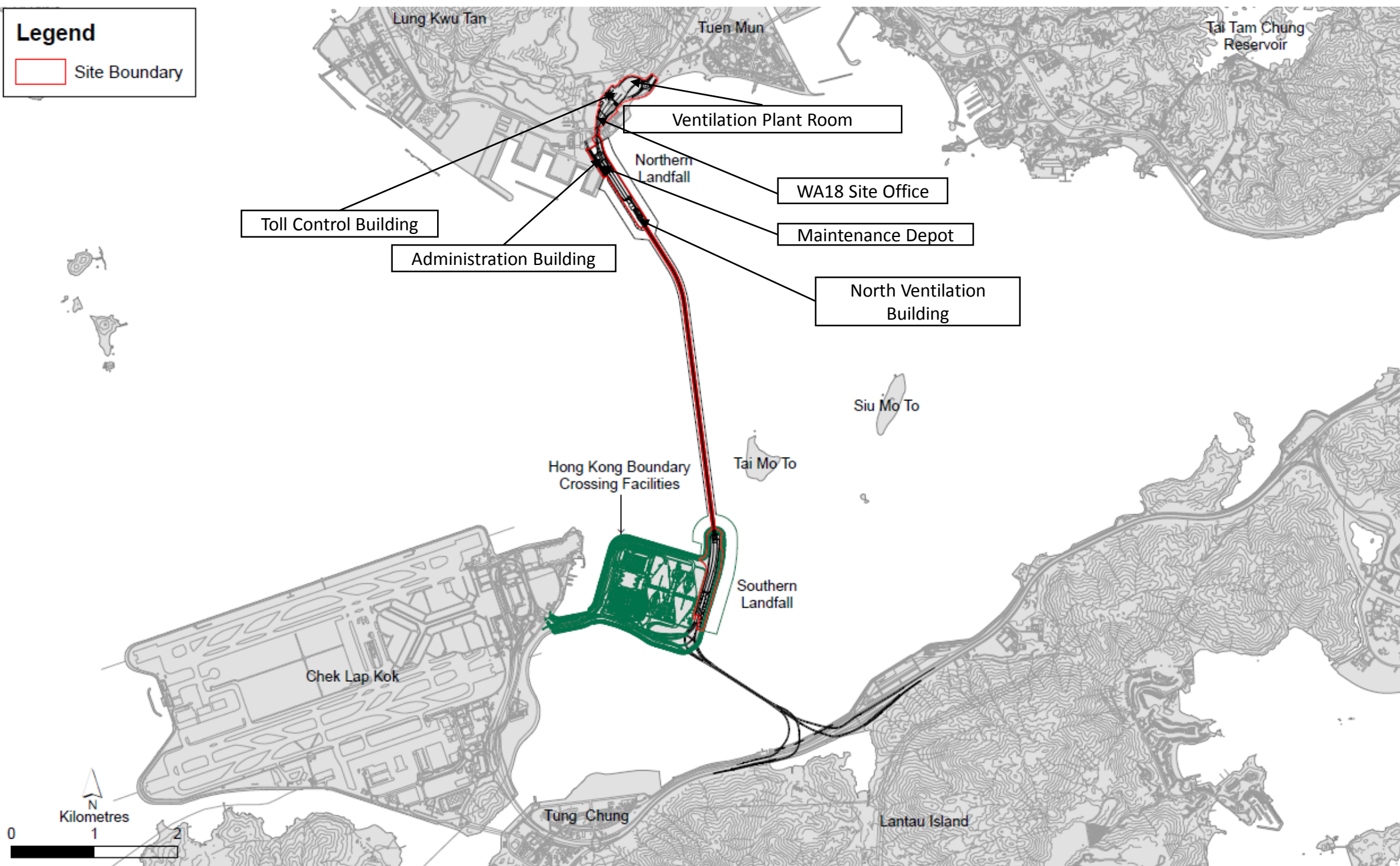


WATERING RECORD ON 12 NOVEMBER 2018

12 th Nov		Add & MD	
Period	Watering time		Sign
7-8	✓ 7:56		Toby
8-9	✓ 8:54		Toby
9-10	✓ 9:40		Toby
10-11	✓ 10:56		Toby
11-12	✓ ✓ 11:10 • 11:55		Toby
12-13	✓ 12:56		Toby
13-14	✓ 13:56		Toby
14-15	✓ 14:50		Toby
15-16	✓ 15:52		Toby
16-17	✓ 16:51		Toby
17-18	✓ 17:54		Toby
18-19			Toby

Legend

 Site Boundary



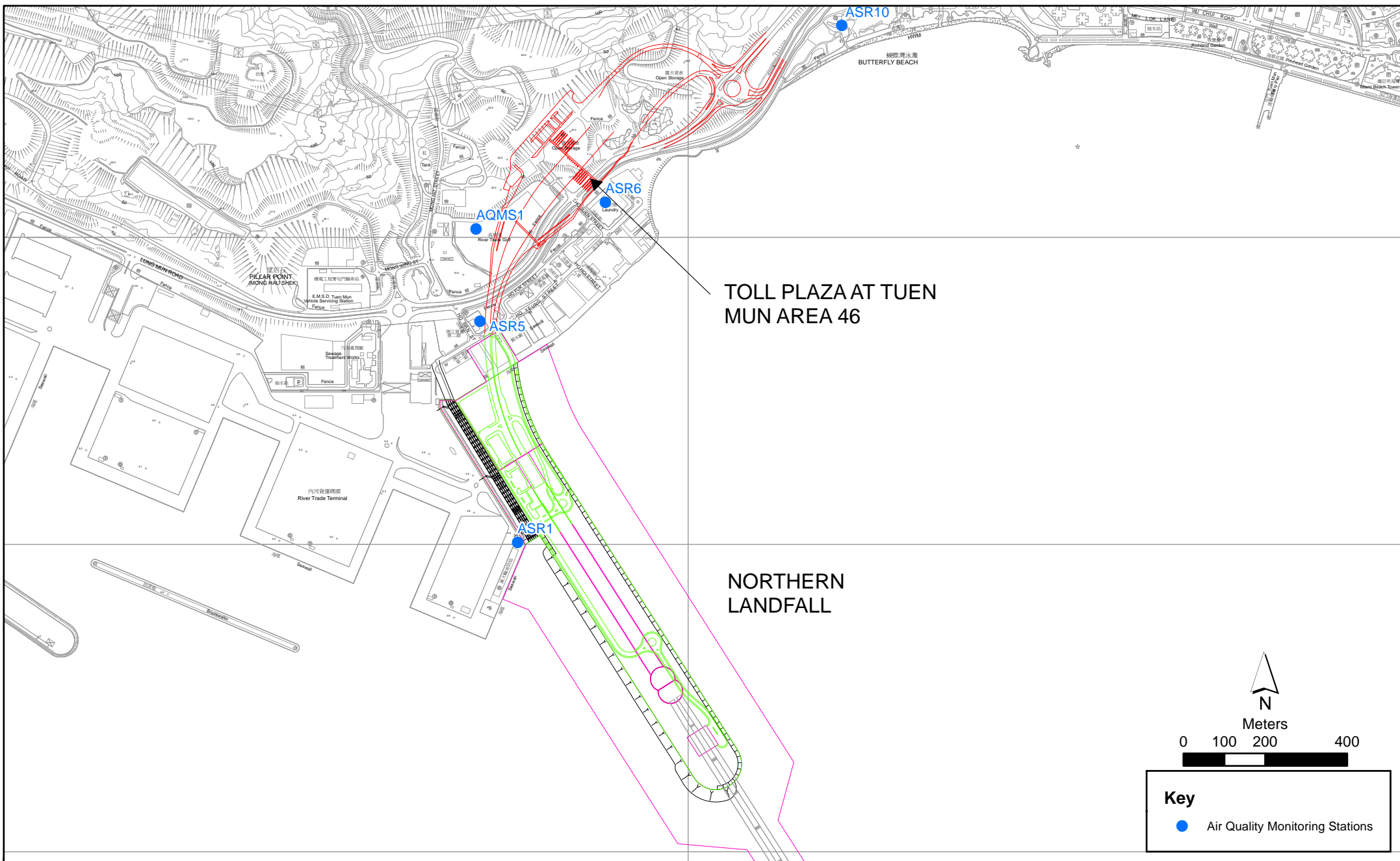


Figure 2.1

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)

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)
18/11/12	0:00	0.4	301
18/11/12	1:00	0.4	285
18/11/12	2:00	0.4	296
18/11/12	3:00	0.9	100
18/11/12	4:00	2.2	94
18/11/12	5:00	1.3	93
18/11/12	6:00	0.9	313
18/11/12	7:00	0.9	329
18/11/12	8:00	0.9	288
18/11/12	9:00	1.3	303
18/11/12	10:00	1.3	133
18/11/12	11:00	1.8	200
18/11/12	12:00	1.3	131
18/11/12	13:00	1.3	217
18/11/12	14:00	1.3	281
18/11/12	15:00	1.8	262
18/11/12	16:00	0.9	291
18/11/12	17:00	0.9	304
18/11/12	18:00	1.3	79
18/11/12	19:00	1.8	93
18/11/12	20:00	1.3	99
18/11/12	21:00	0.9	93
18/11/12	22:00	0.9	68
18/11/12	23:00	0.9	92

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