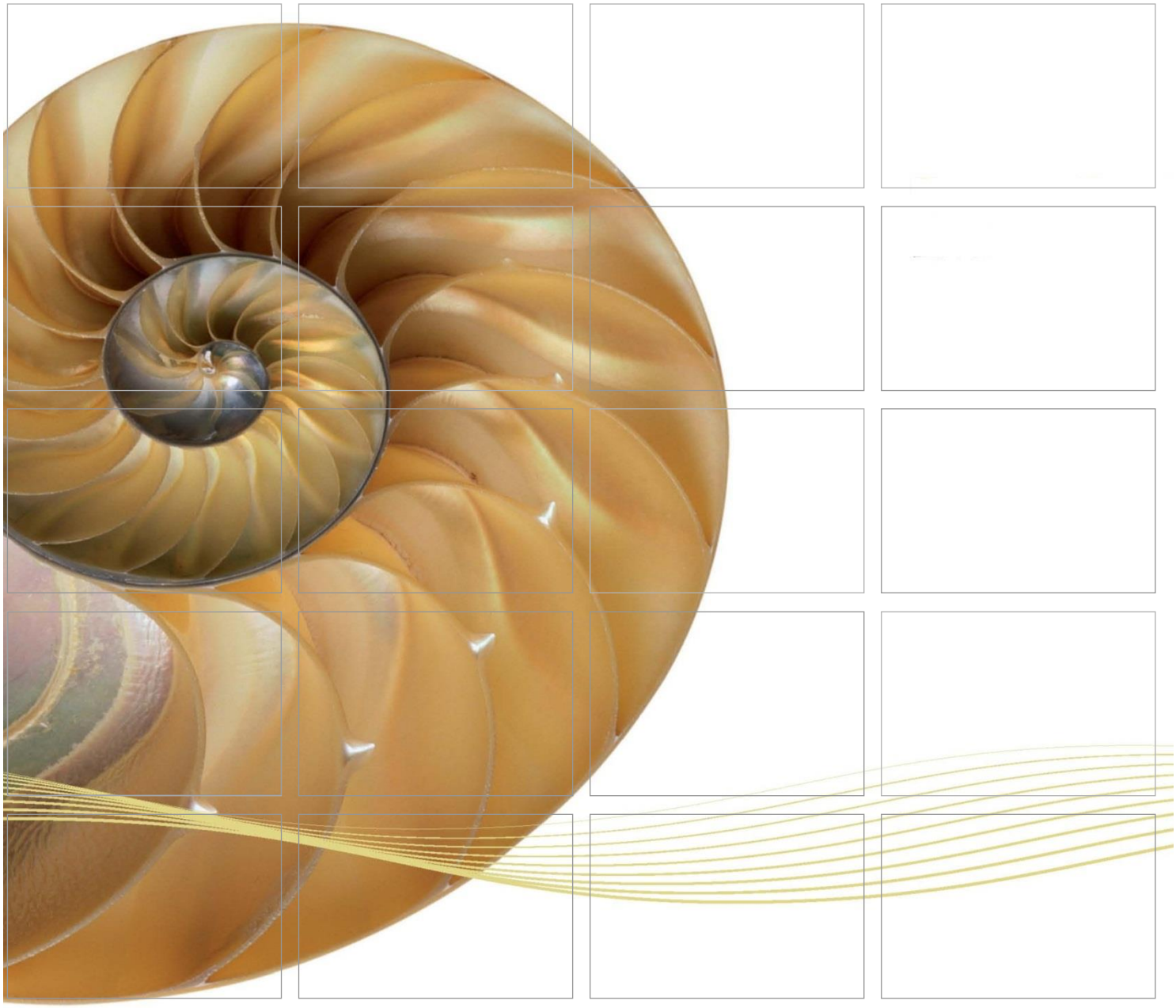
REPORT



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

Twenty-ninth Monthly EM&A Report

11 November 2020

Environmental Resources Management
2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone 2271 3000
Facsimile 2723 5660

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

Environmental Resources Management

2507, 25/F One Harbourfront
18 Tak Fung Street
Hunghom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Twenty-ninth Monthly EM&A Report

Document Code: 0463091_29th Monthly EM&A_20201111.doc

Client: Gammon	Project No: 0463091
Summary: This document presents the Twenty-ninth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.	Date: 11 November 2020 Approved by: *Mr Craig Reid* *Partner* Certified by: *Dr Jasmine Ng* *ET Leader*

Revision	Description	By	Checked	Approved	Date
	Twenty-ninth Monthly EM&A Report	CW	JN	CAR	11/11/20

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12 November 2020

By Fax (2783 0155) and By Post

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

Attention: Mr. Desmond Fung

Dear Mr. Fung,

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

Contract No. HY/2017/10
TM-CLKL – Northern Connection Tunnel Buildings, E&M Works
29th Monthly EM&A Report for October 2020

Reference is made to the Environmental Team's submission of the monthly EM&A report for October 2020 (ET's ref.: "*0463091_29th Monthly EM&A_20201111.doc*" dated 11 November 2020) certified by the ET Leader and provided to us via e-mail on 11 November 2020.

Please be informed that we have no adverse comments on the captioned submission. We write to verify the captioned submission in accordance with Condition 4.4 of EP-354/2009/D.

Thank you for your attention. Please feel free to contact the undersigned or the ENPO Leader, Mr. Y H Hui, should you require further information.

Yours sincerely,
For and on behalf of
Ramboll Hong Kong Limited

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

c.c.

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

Internal: DY, YH, ENPO Site

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TABLE OF CONTENTS

List of Appendices

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

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

This is the Twenty-ninth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 October 2020 for the *Contract No. HY/2017/10 Northern Connection Tunnel Buildings, Electrical and Mechanical Works* (the "Contract") in accordance with the Updated EM&A Manual of the TM-CLK Link Project. As informed by the Contractor, major activities in the reporting period included:

Land-based Works

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

- Handover Inspection at underpass at C3 area;
- Handover Inspection at Satellite Control Building;
- Handover Inspection at Kiosk S2;
- Handover Inspection at South Ventilation Building; and
- Landscape Works at Northern Landfall and Southern Landfall.

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

24-hour TSP Monitoring	5 sessions
1-hour TSP Monitoring	5 sessions
Landfill Gas Hazard Monitoring	24 days
Joint Environmental Site Inspection	4 sessions

Summary of Breaches of Action/Limit Levels

Breaches of Action and Limit Levels for Air Quality

Four (4) Action Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

Breaches of Action Level for Landfill Gas Hazard Montioring

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

Environmental Complaints, Non-compliance & Summons

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

Reporting Change

Landscape and visual monitoring for 24-month establishment period conducted by Contract No. HY/2012/07 and HY/2013/12 was not reported in the EM&A report for this Contract in this reporting period.

Upcoming Works for the Next Reporting Month

Works to be undertaken in the next monitoring period of November 2020 include the following:

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

Land-based Works

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

Future Key Issues

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

1 INTRODUCTION

1.1 BACKGROUND

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

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

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

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

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

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

N

TUEN MUN

LUNG KWU TAN

URMSTON ROAD

TAI LAM CHUNG RESERVOIR

TSING YI

A

01
7061

01
7063

TUEN MUN TO
CHEK LAP KOK LINK

SOUTH CHINA SEA

SIU MO TO

TAI MO TO

HONG KONG
BOUNDARY
CROSSING
FACILITIES

01
7062

CHEK LAP KOK

A

TUNG
CHUNG

LANTAU ISLAND

AECOM

PROJECT
TUEN MUN -
CHEK LAP KOK LINK

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

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

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Figure 1.1

ISSUE/REVISION

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

STATUS

SCALE: A1 1 : 40000
DIMENSION UNIT: MILLIMETRES

KEY PLAN

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

SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
60240249/C4/7051A

Plot File by: jerrywong
PATH: X:\TO\To RSSMSL\C4 Drawings\C4_Drawing (2018_01_02)\Architectural drawings -DGN\60240249_C4_7051.dgn

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

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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處
Hong Kong - Zhuhai - Macao Bridge
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Figure 1.2a

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 1)

SHEET NUMBER
60240249/C4/7061A

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

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PATH: Y:\TOTo RSS\MSL\C4 Drawings\C4_Drawing (2018_01_02)\Architectural drawings -DGN\60240249_C4_7062.dgn

AECOM

PROJECT
項目

TUEN MUN -
CHEK LAP KOK LINK

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

CLIENT
業主

路 政 署
HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
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Figure 1.2b

ISSUE/REVISION
修訂

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

STATUS
階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
MILLIMETRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60240249

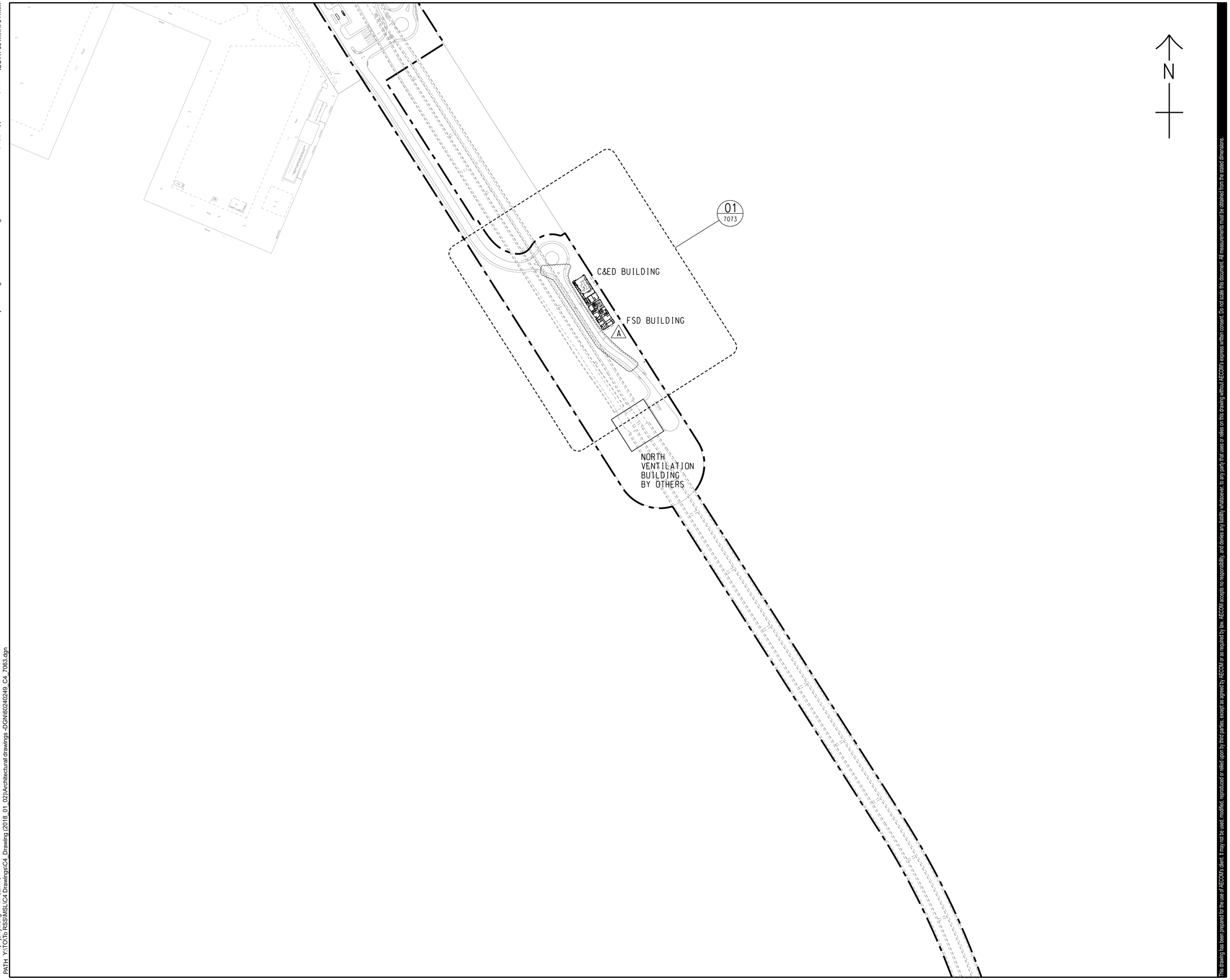
CONTRACT NO. 合約編號
HY/2017/10

SHEET TITLE
圖紙名稱

ZONING PLAN
(SHEET 2)

SHEET NUMBER
圖紙編號

60240249/C4/7062A



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AECOM

PROJECT
項目

TUEN MUN -
CHEK LAP KOK LINK

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

CLIENT
業主

路 政 署
HIGHWAYS DEPARTMENT
港珠澳大橋香港工程管理處
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Figure 1.2c

ISSUE/REVISION
修訂

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

STATUS
階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
MILLIMETRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60240249

CONTRACT NO. 合約編號
HY/2017/10

SHEET TITLE
圖紙名稱

ZONING PLAN
(SHEET 3)

SHEET NUMBER
圖紙編號

60240249/C4/7063A

1.2 SCOPE OF REPORT

This is the Twenty-ninth Monthly EM&A Report under the *Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works*. This report presents a summary of the environmental monitoring and audit works in October 2020.

1.3 ORGANIZATION STRUCTURE

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

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
HyD (Highways Department)	Project Coordinator	Joseph Lee	2762 4958	3188 6614
	Senior Engineer	Cheng Pan	2762 3383	3188 6614
ER (AECOM Asia Company Limited)	Principle Resident Engineer	S. W. Fok	2293 6200	2293 6300
	Resident Engineer	Desmond Fung	2293 6200	2293 6300
ENPO / IEC (Ramboll Hong Kong Ltd.)	ENPO Leader	Y.H. Hui	3465 2850	3465 2899
	IEC	Manson Yeung	9700 6767	3465 2899
Contractor (Gammon Construction Limited)	Site Agent	H. H. Lee	6096 6281	-
	Environmental Officer	Phoebe Ng	9869 1105	-
ET (ERM-HK)	ET Leader	Dr. Jasmine Ng	2271 3311	2723 5660

1.4 SUMMARY OF CONSTRUCTION WORKS

The construction phase of the Contract commenced on 7 June 2018. The three-month rolling construction programme is shown in Appendix B.

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

Land-based Works

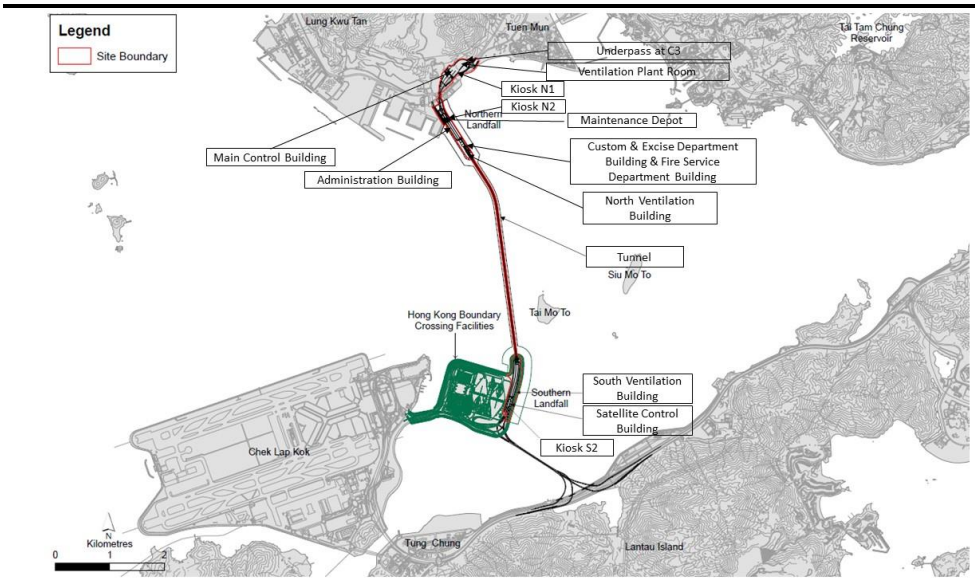
- Handover Inspection at Main Control Building;
- Handover Inspection at Ventilation Plant Room;
- Handover Inspection at North Ventilation Building;

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

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

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

Figure 1.3 Locations of Major Construction Activities in the Reporting Month



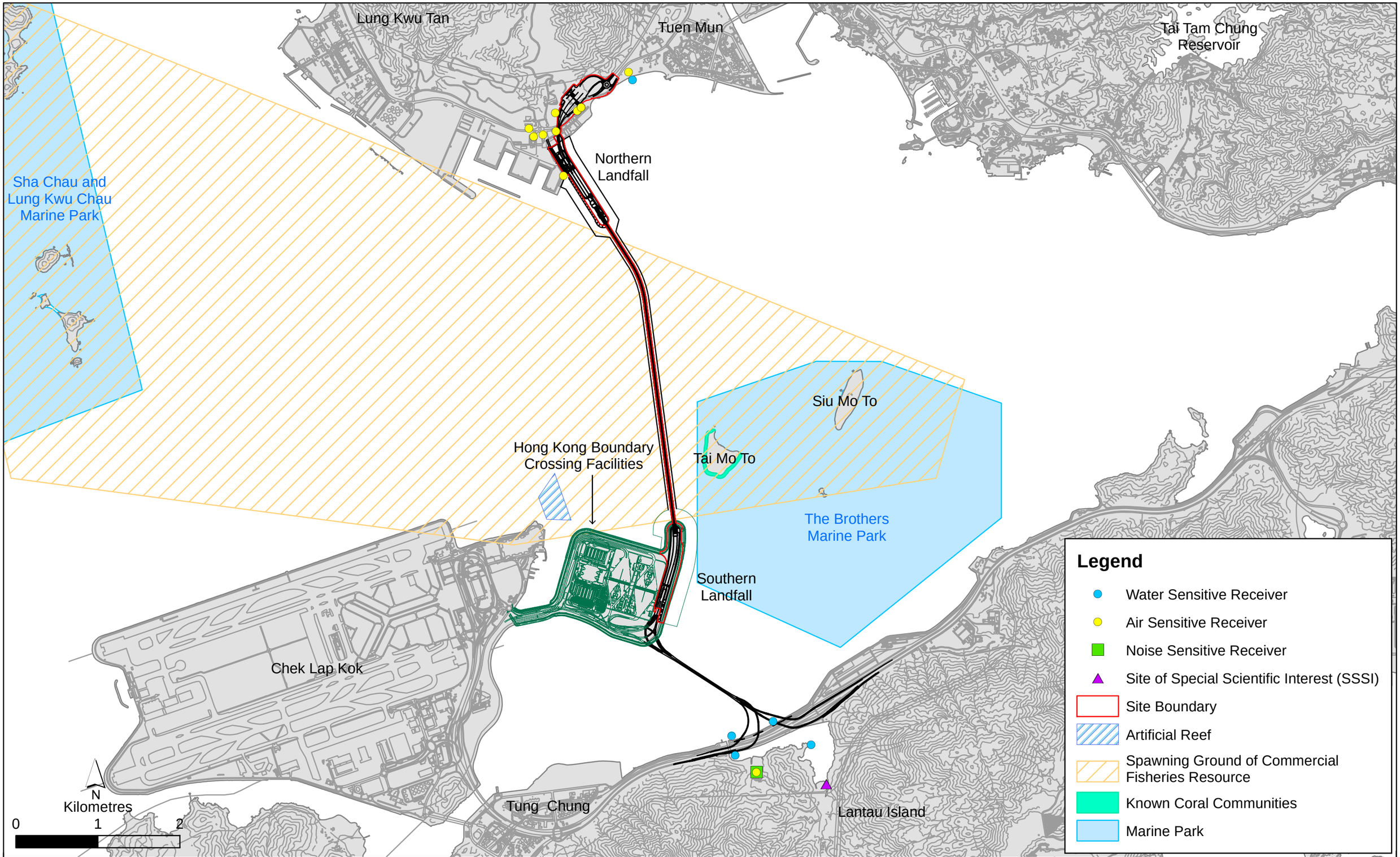


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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Date: 12/7/2018

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2 EM&A RESULTS

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

2.1 AIR QUALITY

2.1.1 Monitoring Requirements and Equipment

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

Informed by the Environmental Team of *Contract No. HY/2012/08 Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section*, excavation works for lauching shaft were completed and notification of change on air quality monitoring frequency was submitted to EPD on 14 September 2020. 1-hr and 24-hr TSP monitoring frequency was changed to three times per day every six days and daily every six days, respectively, since 14 September 2020.

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

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

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

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency

(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/

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	5, 9, 15, 21 and 27 October 2020	Tuen Mun Fireboat Station	Office	TSP monitoring • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 6 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 6 days Enhanced TSP monitoring (commenced on 24 October 2014 under *Contract No. HY/2012/08*) • 1-hour Total Suspended Particulates (1-hour TSP, µg/m³), 3 times in every 3 days • 24-hour Total Suspended Particulates (24-hour TSP, µg/m³), daily for 24-hour in every 3 days
ASR5		Pillar Point Fire Station	Office	
AQMS1		Previous River Trade Golf	Bare ground	
ASR6		Butterfly Beach Laundry	Office	
ASR10		Butterfly Beach Park	Recreational uses	

2.1.2 Results and Observations

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

Four (4) Action Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded. The exceedance was considered not related to this Contract upon further investigation and the investigation report is presented in *Appendix J*. No action is required to be undertaken in accordance with the Event Action Plan as presented in *Appendix E*.

2.2 LANDFILL GAS HAZARD MONITORING

In accordance with the Updated EM&A Manual of the TM-CLK Link Project, landfill gas hazard monitoring should be perform to ensure that the works area at Pillar Point Valley (PPV) Landfill is free of landfill gas. A total of 24 days of landfill gas hazard monitoring was conducted at Main Control Building during 1 to 31 October 2020 (*Appendix F*).

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

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

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

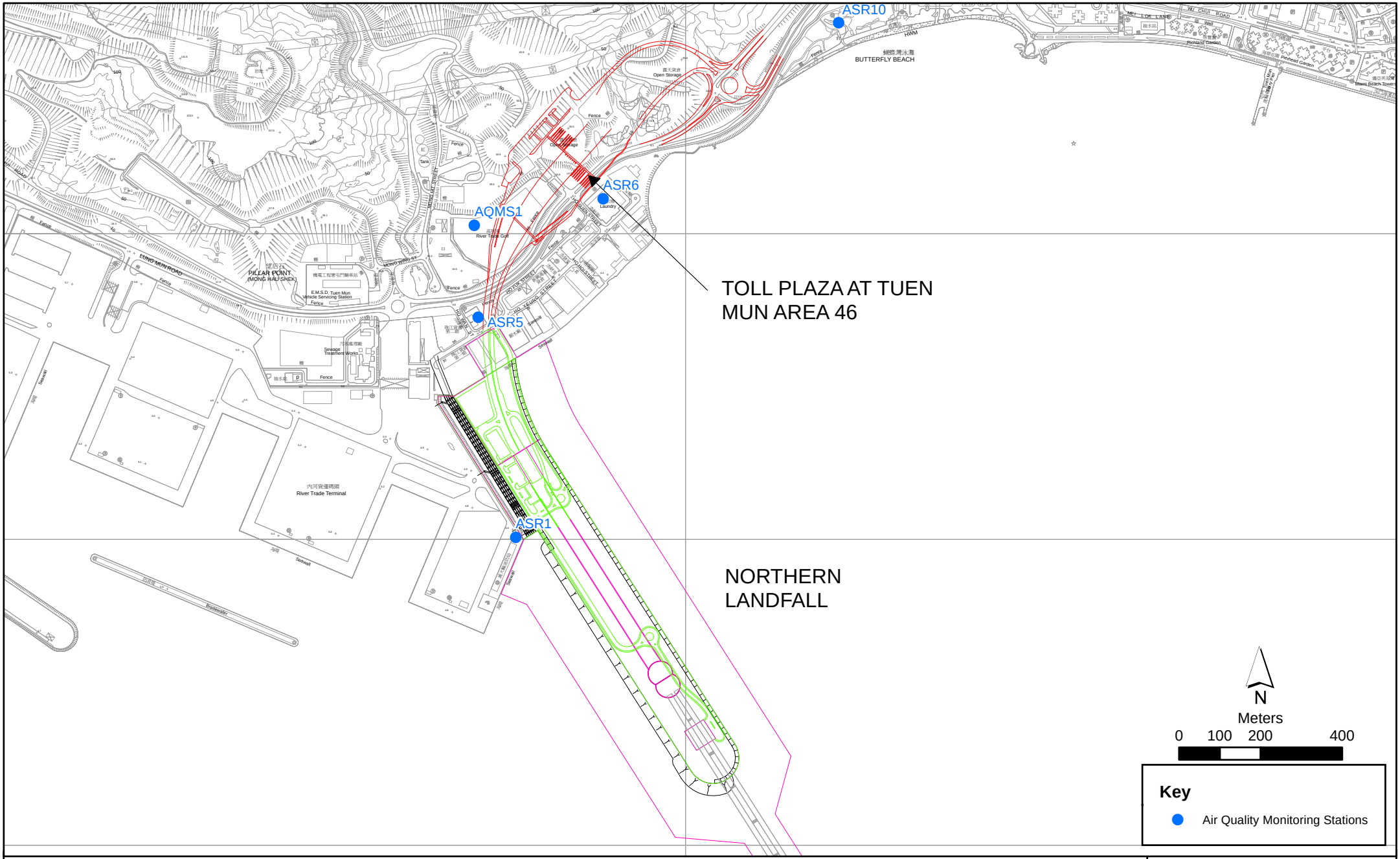

Figure 2.1

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

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Date: 21/2/2014

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2.2.1 *Results and Observations*

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

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

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

	Average (%)	Range (%)	Action Level (%) [(a)]
Methane	0	0	10/20
Oxygen	20.8	20.8-20.8	19/18
Carbon Dioxide	0.03	0.03-0.03	0.5/1.5

Notes:

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

2.3 *EM&A SITE INSPECTION*

Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting month, four (4) site inspections were carried out on 9, 16, 23 and 30 October 2020.

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

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

Inspection Date	Observations	Recommendations/ Remarks
9 October 2020	Satellite Control Building • Chemical was observed not placed in trip tray. • Cement was not properly covered. • Accumulated residual was observed on site. Tunnel • Chemical was observed not placed in trip tray. Container Village • Accumulated residual was observed on site. • Contstruction site should be watered regularly to reduce dust emission.	Satellite Control Building • The Contractor was reminded to place chemical in trip tray. • The Contractor was reminded to cover the cement properly. • The Contractor was reminded to clear accumulated residuals. Tunnel • The Contractor was reminded to place chemical in trip tray. Container Village • The Contractor was reminded to clear accumulated residuals. • The Contractor was reminded to provide regular watering.
16 October 2020	Administration Building • Accumulated general refuse was observed on site.	Administration Building • The Contractor was reminded to clear accumulated refuse.

Inspection Date	Observations	Recommendations/ Remarks
23 October 2020	Northern Landfall • Chemicals were observed not placed in trip tray. • General residuals were observed on site. Satellite Control Building • Chemicals were observed not placed in trip tray. • Excessive dust emission was observed on site. Administration Building • Chemicals were observed not placed in trip tray.	Northern Landfall • The Contractor was reminded to place chemicals in trip tray. • The Contractor was reminded to keep better housekeeping. Satellite Control Building • The Contractor was reminded to place chemicals in trip tray • The Contractor was reminded to water the road more frequently. Administration Building • The Contractor was reminded to place chemicals in trip tray.
30 October 2020	Southern Landfall • Nil.	Southern Landfall • Nil.

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

2.4 WASTE MANAGEMENT STATUS

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

Wastes generated during this reporting period included mainly construction wastes (inert and non-inert). Reference has been made to the waste flow table prepared by the Contractor (*Appendix I*). The quantities of different types of wastes are summarized in *Table 2.4*.

Table 2.4 Quantities of Different Waste Generated in the Reporting Month

Month/Year	Inert C&D Materials [a] (m^3)	Inert Construction Waste Re-used (m^3)	Non-inert Construction Waste [b] (kg)	Imported Fill (m^3)	Recyclable Materials [c] (kg)	Chemical Wastes (kg)
October 2020	210	0	184,460	0	0	0

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

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

For chemical waste containers, the Contractor was reminded to treat properly and store temporarily in designated chemical waste storage area on site in

accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*.

2.5 *ENVIRONMENTAL LICENSES AND PERMITS*

The status of environmental licensing and permit is summarized in *Table 2.5* below.

Table 2.5 Summary of Environmental Licensing and Permit Status

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	N/A	HyD	Tuen Mun- Chek Lap Kok Link
APCO Construction Dust Notification	433493	14 May 2018	N/A	GCL	For Tuen Mun working area
Construction Waste Billing Account	7030836	15 May 2018	N/A	GCL	N/A
Chemical Waste Producer Registration	5213-422-G2827-01	13 June 2018	N/A	GCL	N/A
Discharge License under WPCO for Buildings at C2 area	WT00031783-2018	22 October 2018	31 October 2023	GCL	Sampling Frequency: Bimonthly
Discharge License under WPCO for Buildings at C3 area	WT00032062-2018	30 October 2018	31 October 2023	GCL	Sampling Frequency: Quarterly
Discharge License under WPCO for Southern Landfall	WT00034878-2019	1 April 2020	31 March 2025	GCL	Sampling Frequency: Quarterly
Construction Noise Permit	GW-RW0351-20	3 August 2020	29 January 2021	GCL	For Northern Landfall and Tunnel
Construction Noise Permit	GW-RS0413-20	19 June 2020	15 December 2020	GCL	For HKBCF Area

2.6 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

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

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

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

2.7 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

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

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

Cumulative statistics are provided in *Appendix J*.

2.8 SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

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

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

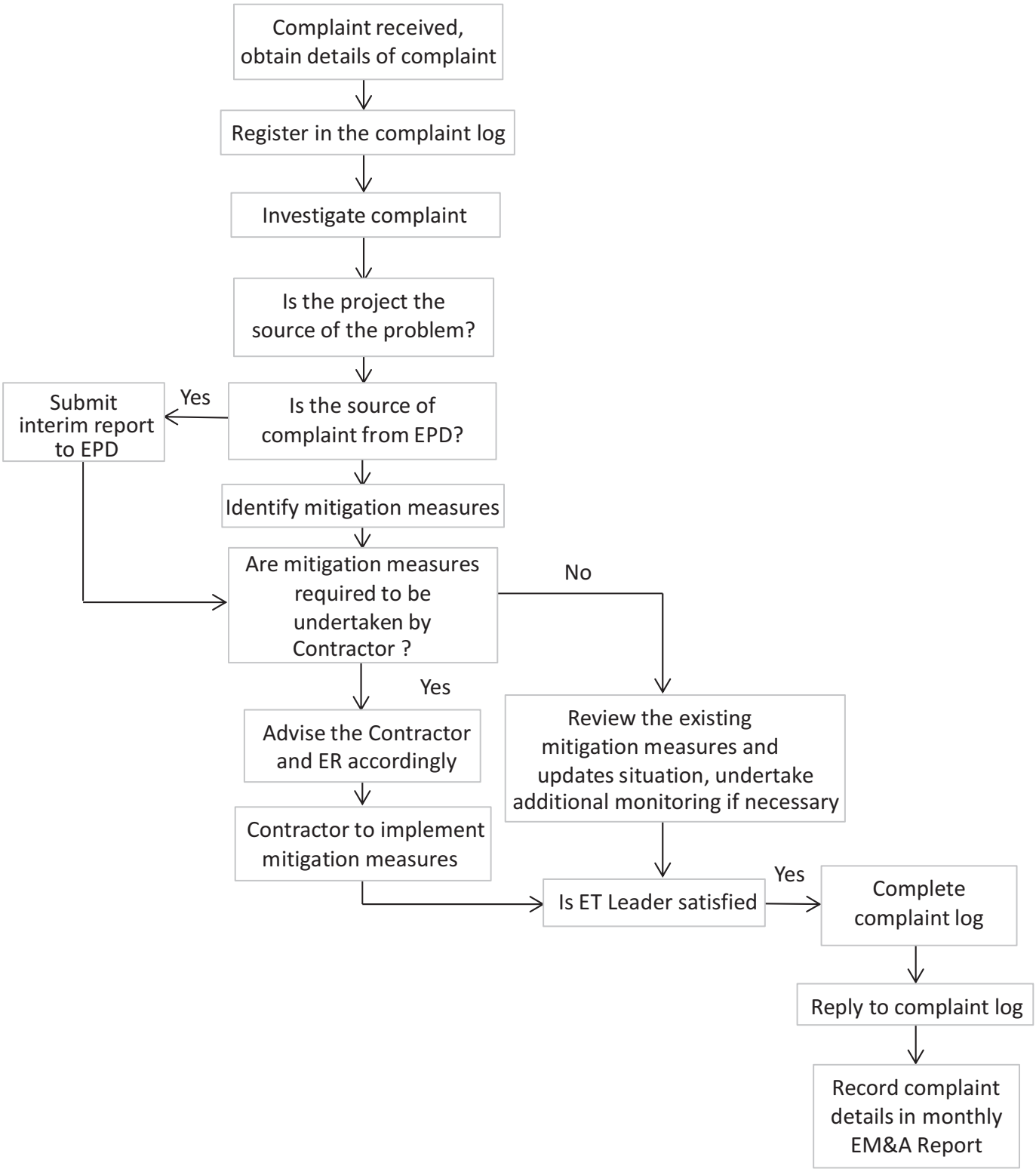

Figure 2.2 Environmental Complaint Handling Procedure

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DATE: 06/12/2013

Environmental Resources Management

ERM

3 FUTURE KEY ISSUES

3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH

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

Land-based Works

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

3.2 KEY ISSUES FOR THE COMING MONTH

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

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

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

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

Four (4) Action Level exceedances for 1-hour TSP were recorded by the Environmental Team of Contract No. *HY/2012/08* during the reporting period. No exceedance of Action and Limit Levels for 24-hour TSP were recorded.

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

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

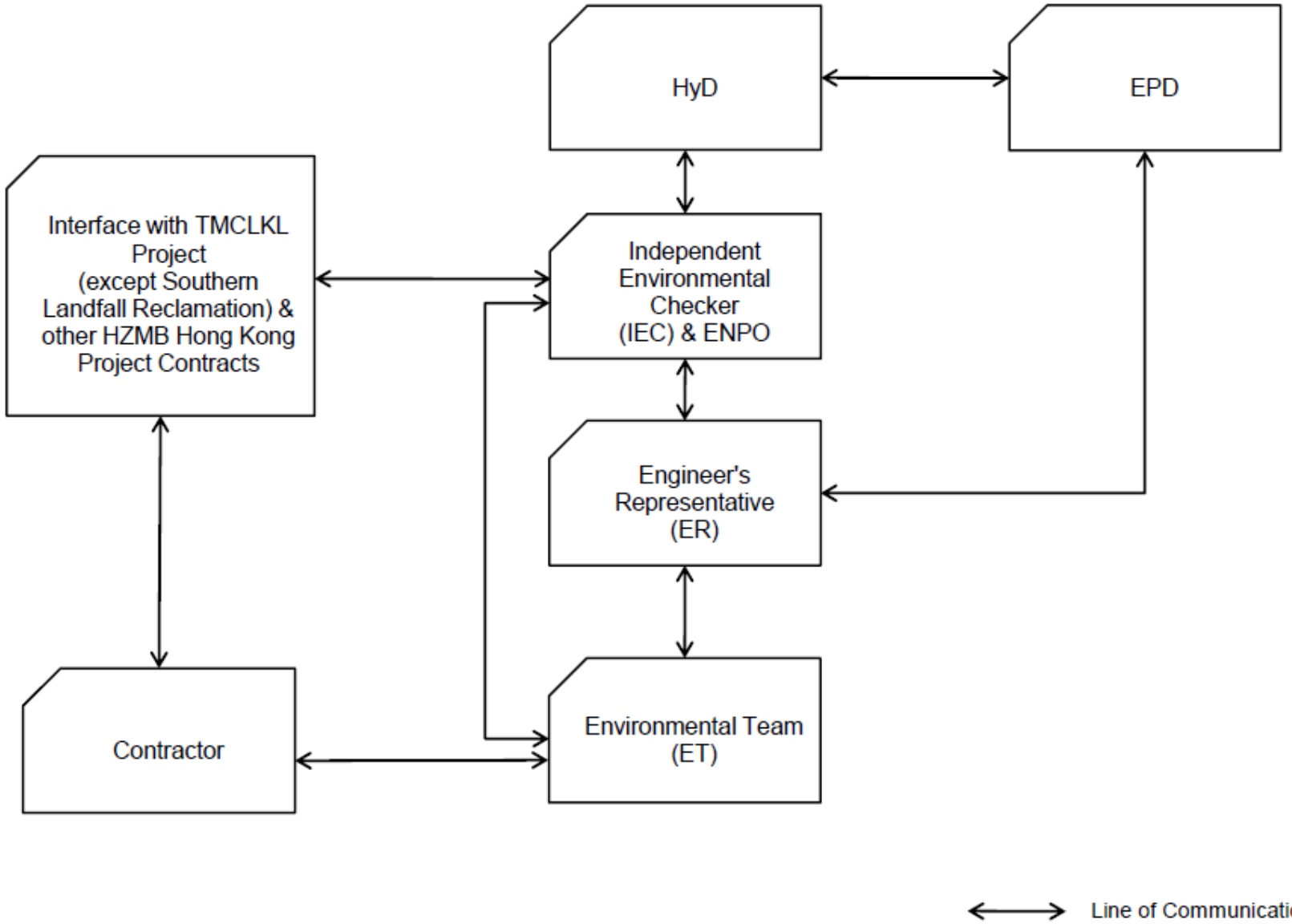
Landscape and visual monitoring for 24-month establishment period conducted by Contract No. HY/2012/07 and HY/2013/12 was not reported in the EM&A report for this Contract in this reporting period.

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

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

Appendix A

Project Organization for Environmental Works



Appendix A1

DATE: 09/07/2018

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

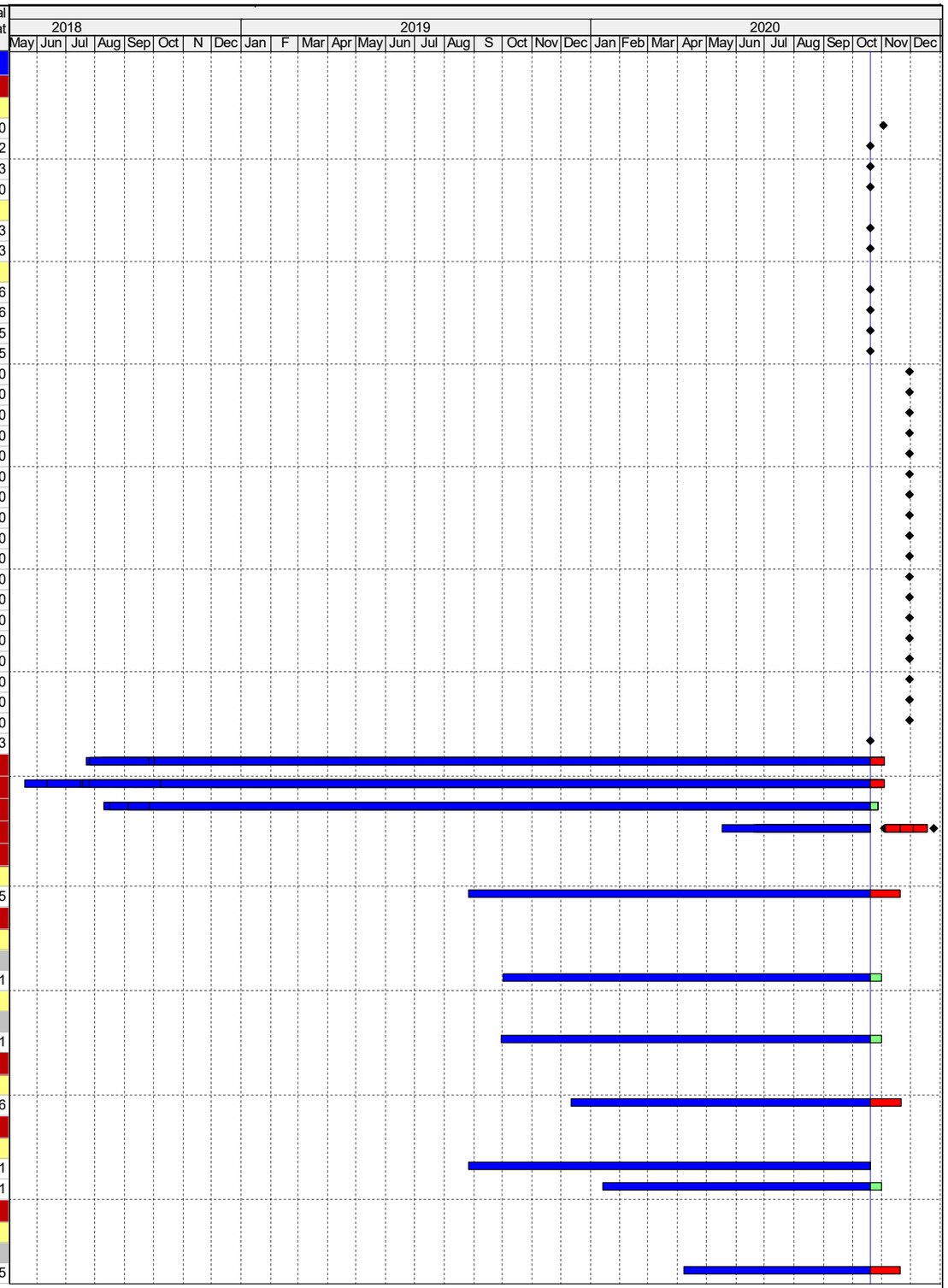
Environmental Resources Management

ERM

Appendix B

Construction Programme

ID	Activity	Duration (Days)	Activity % Complete	Start	Finish	Total Float
HY2017/10 - Works Programme Three Month Rolling Programme 20-Oct-20						
Contract Dates						
Key Dates						
KD08	KD08 - All Other Works for Tunnel Comissioning & Opening	0	0%			0
KD09	KD09 - C&ED Building, E&M Works, & FSD Inspection	0	0%			-72
KD10	KD10 - FSD Building, E&M Works, & FSD Inspection	0	0%			-133
KD11	KD11 - Landscape Soft Works & Trees Protection	0	0%			-30
Portion Possession Dates						
P325	Possession to Portion XXII (Day 483)	0	0%			-73
P335	Possession to Portion XXIII (Day 483)	0	0%			-73
Portion Handover Dates						
H120	Vacate Portion XVIb (KD10+28)	0	0%			-106
H130	Vacate Portion XVIa (KD10+28)	0	0%			-106
H140	Vacate Portion XVb (KD9+28)	0	0%			-45
H150	Vacate Portion XVa (KD9+28)	0	0%			-45
H160	Vacate Portion XXIa (KD8+28)	0	0%			0
H170	Vacate Portion XXIb (KD8+28)	0	0%			0
H180	Vacate Portion XXII (KD8+28)	0	0%			0
H190	Vacate Portion XXIII (KD8+28)	0	0%			0
H200	Vacate Portion XII (KD8+28)	0	0%			0
H210	Vacate Portion XIII (KD8+28)	0	0%			0
H220	Vacate Portion XIV (KD8+28)	0	0%			0
H230	Vacate Portion XVIIa (KD8+28)	0	0%			0
H240	Vacate Portion Ve (KD8+28)	0	0%			0
H250	Vacate Portion Vc (KD8+28)	0	0%			0
H260	Vacate Portion VIb (KD8+28)	0	0%			0
H270	Vacate Portion VIII (KD8+28)	0	0%			0
H280	Vacate Portion XI (KD8+28)	0	0%			0
H290	Vacate Portion VII (KD8+28)	0	0%			0
H300	Vacate Portion IX (KD8+28)	0	0%			0
H310	Vacate Portion X (KD8+28)	0	0%			0
H320	Vacate Portion XXIc (KD8+28)	0	0%			0
H330	Vacate Portion WA6 (KD8+28)	0	0%			0
H340	Vacate Portion XIX (KD11+28)	0	0%			-3
Major Design Submission & Approval						
Major Material Submission & Approval						
Drawing Submission & Approval						
General Procurement						
Key Date 1 - Toll Control Building (TCB) & TCSS Provision						
ABWF Works (for All)						
ATCB1130	ABWF second fix & final fix	90	95%			-15
Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision						
Administration Building (ADB)						
ABWF Works (for All)						
AADB1200	ABWF second fix & final fix	90	98%			1
Maintenance Depot						
ABWF Works (for All)						
AMD1070	ABWF second fix & final fix	80	97%			1
Key Date 6 - E&M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2						
Remaining Works						
KD6-OSW-1000	Remaining Works (Non FSI related)	42	95%			-16
Key Date 3 - Satellite Control Building & TCSS Provision						
ABWF Works (for All)						
ASCB1020	ABWF Works to Plant Rooms G/F	60	100%			1
ASCB1070	ABWF second fix & final fix	56	95%			1
Key Date 5 - E&M Works for TCB, Toll Area, Kiosk N1, Underpass, Plant Rm, and Approach Roads						
E&M Works for TCB						
Remaining Works for TCB (Non-FSI related)						
KD5-OSW-1000	Remaining Works (Non FSI related)	42	95%			-15



CONTRACT NO. HY2017/10

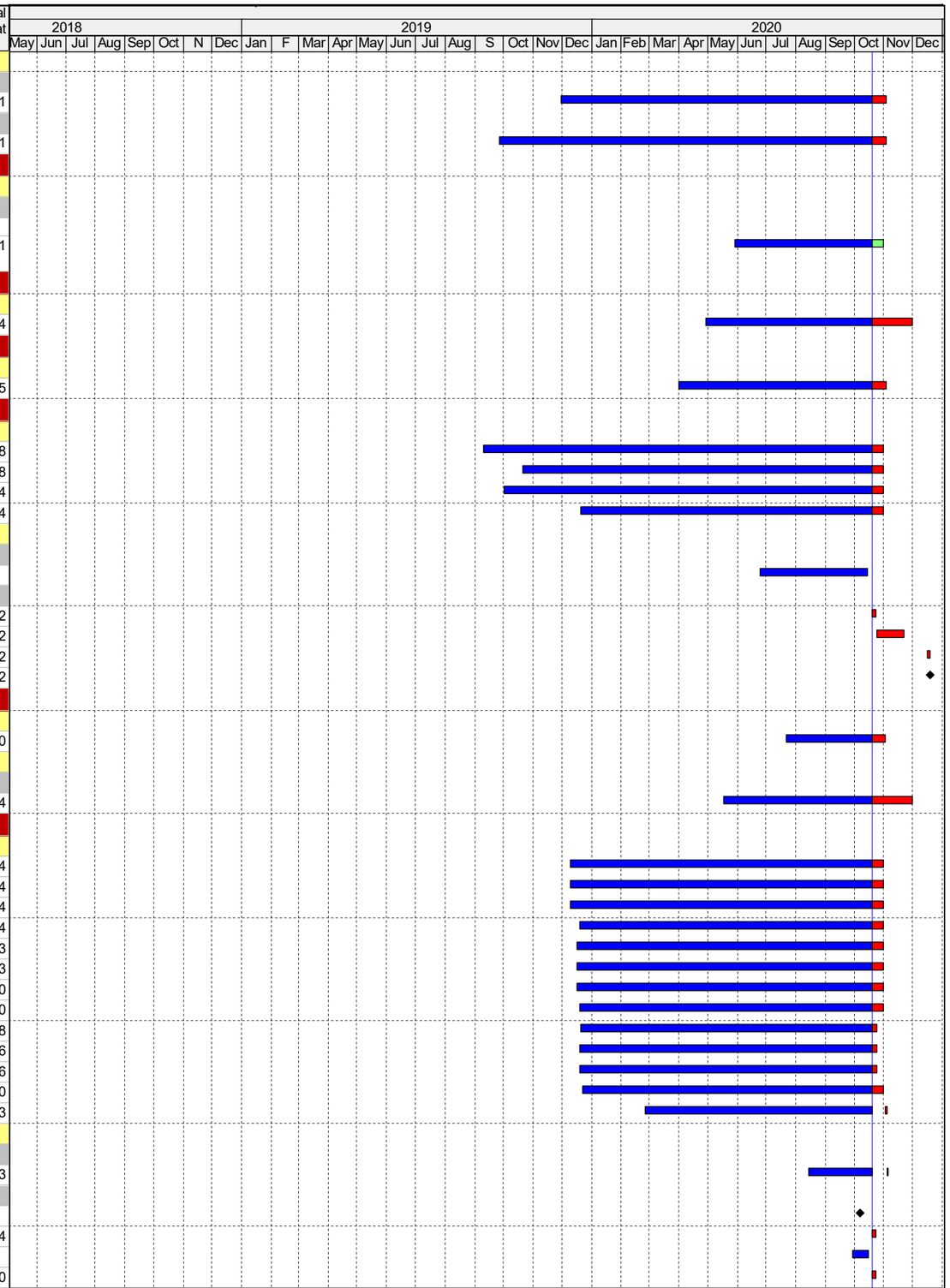
TM-CLKL NORTHERN CONNECTION TUNNEL BUILDINGS, E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2020

P 1

Date	Revision	Checked	Approved
20-Oct-20			

ID	Activity	Duration (Days)	Activity % Complete	Start	Finish	Total Float
Approach Roads						
Under Portions IX, XI, XX						
AR150	T&C of Roading Lighting	30	80%			-1
Under Portion X						
AR200	T&C of Roading Lighting in portion X	30	80%			-1
Key Date 7 - E&M Works for Satellite Control Building and Kiosks S1&S2						
E&M Works for Satellite Control Building						
E&M Works						
Remaining Works for SCB (Non-FSI related)						
KD7-OSW-1010	Remaining Works (Non-FSI related)	42	95%			1
Key Date 6C - E&M Works for South Ventilation Building						
Remaining Works for SVB (Non-FSI related)						
KD6C-OSW-1000	Remaining Works (Non-FSI related)	42	95%			-24
Key Date 6A - E&M Works for Approach Roads at North Side						
Approach Roads						
EAR140	T&C & Miscellaneous Works for Statutory Inspection	12	0%			-75
Key Date 10 - FSD Building Structure & E&M Works						
ABWF Works						
AFSD1030	ABWF Works to Office and Corridors G/F	124	99%			-158
AFSD1031	ABWF Works to Office and Corridors 1/F	124	99%			-158
AFSD1060	External Cladding and Wall Plastering	101	95%			-114
AFSD1070	ABWF second fix & final fix	73	90%			-114
E&M Works						
Testing and Commissioning						
FSDB-TC1030	Non-Essential T&C	30	100%			
Statutory Inspections and approvals						
FSDB-SI1060	WSD inspection of Plumbing Installation (PL)	4	0%			-162
FSDB-SI1080	Water Samples Test	24	0%			-162
FSDB-SI1100	Obtain Water Certificate and water supply connection - PL	4	0%			-162
FSDB-SI1140	KD10 Achieved	0	0%			-162
Key Date 7A - E&M Works for Approach Roads at South Side						
Approach Roads						
EAR200	T&C	12	50%			0
Tunnel						
Remaining Works for Tunnel (CH2500 - 1800)						
A1010	Remaining Works (Non FSI related)	98	90%			-24
Key Date 9 - C&ED Building & E&M Works						
ABWF Works						
ACED1020	ABWF Works to Plant Rooms G/F	60	85%			-84
ACED1021	ABWF Works to Plant Rooms 1/F	60	85%			-84
ACED1022	ABWF Works to Plant Rooms 2/F	60	85%			-84
ACED1023	ABWF Works to Plant Rooms 3/F	60	85%			-84
ACED1030	ABWF Works to Office and Corridors G/F	133	95%			-73
ACED1031	ABWF Works to Office and Corridors 1/F	118	85%			-73
ACED1032	ABWF Works to Office and Corridors 2/F	130	85%			-70
ACED1033	ABWF Works to Office and Corridors 3/F	92	85%			-70
ACED1040	ABWF Works to Toilets G/F	142	95%			-68
ACED1041	ABWF Works to Toilets 2/F	142	95%			-66
ACED1042	ABWF Works to Toilets 3/F	98	99%			-66
ACED1060	External Cladding and Wall Plastering	97	80%			-70
ACED1070	ABWF second fix & final fix	69	80%			-73
E&M Works						
Testing and Commissioning						
C&EDB-TC1030	Non-Essential T&C	24	95%			-73
Statutory Inspections and approvals						
C&EDB-SI1030	Obtain DG Licence	0	100%			
C&EDB-SI1060	WSD inspection of Plumbing Installation (PL)	4	0%			-84
C&EDB-SI1080	Water Samples Test	24	100%			
C&EDB-SI1090	Obtain Water Certificate and water supply connection - FS	4	0%			-70



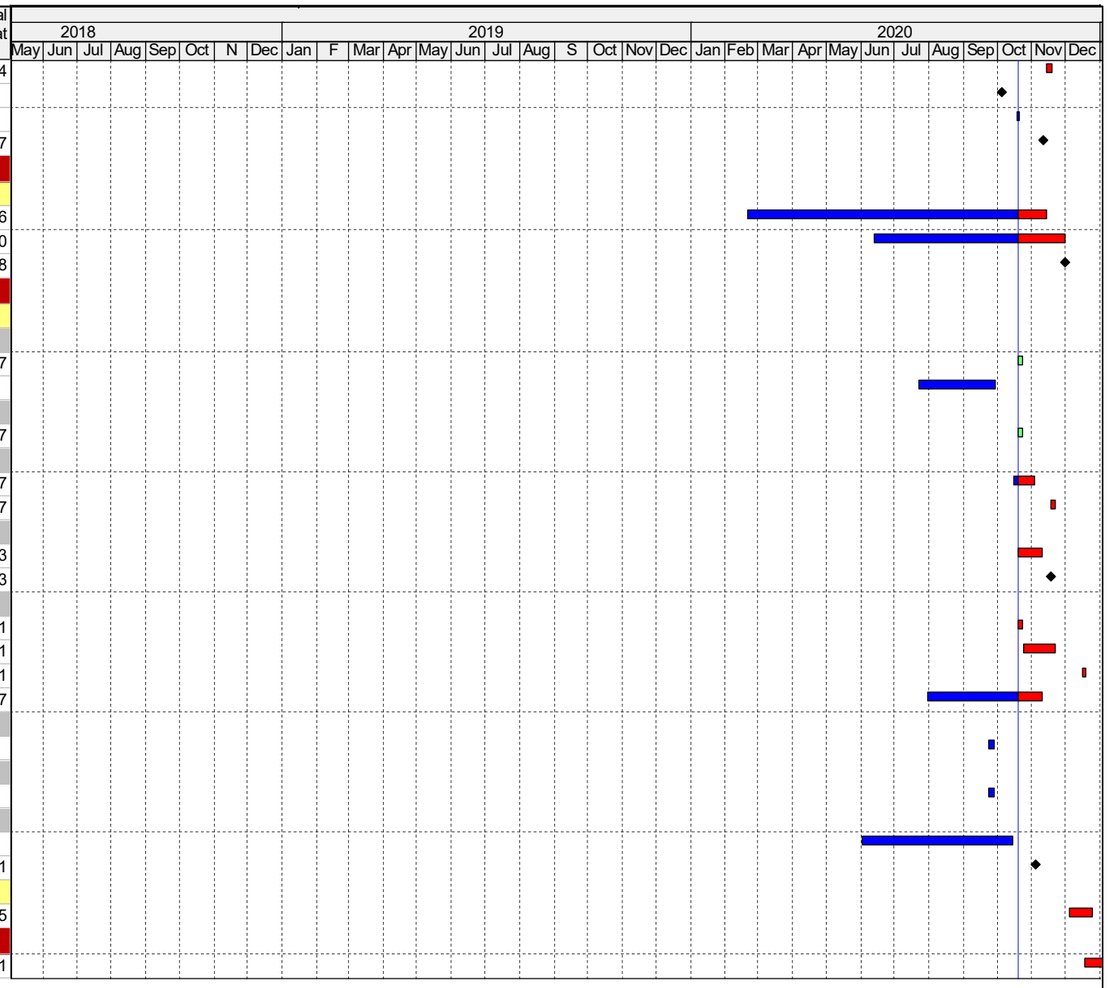
CONTRACT NO. HY2017/10

TM-CLKL NORTHERN CONNECTION TUNNEL BUILDINGS, E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2020

P 2	Date	Revision	Checked	Approved
	20-Oct-20			

ID	Activity	Duration (Days)	Activity % Complete	Start	Finish	Total Float
C&EDB-SI1100	Obtain Water Certificate and water supply connection - PL	4	0%			-84
C&EDB-SI1110	Final Submission of Form FSI 314 / 501 to FSD	0	100%			
C&EDB-SI1120	FSD Inspection	28	100%			
C&EDB-SI1130	Obtain FSI Certificate FS 172	0	0%			-77
Key Date 11 - Landscape Soft Works & Trees Protection						
Landscape Soft Works						
SL120	Landscape Soft Works at North Side (wet season)	122	82.79%			-46
SL140	Landscape Soft Works at South Side (wet season)	102	65.69%			-60
SL550	KD 11 Achieved	0	0%			-58
Key Date 8 - All Works for Tunnel Comissioning & Opening						
Statutory Inspections and approvals						
Administration Building						
ADB-SI1070	Obtain Water Certificate and water supply connection - PL	4	0%			7
ADB-SI1120	EMSD examines site acceptance report and acceptance	36	100%			
Maintenance Depot						
MD-SI1100	Obtain Water Certificate and water supply connection - PL	4	0%			7
North Ventilation Building						
NVB-SI1130	Water Samples Test	24	50%			-17
NVB-SI1140	Obtain Water Certificate and water supply connection - PL	4	0%			-17
Petrol Filling Station						
PFS-SI1030	DG Inspection	18	0%			-13
PFS-SI1040	Obtain DG Licence	0	0%			-13
Toll Control Building & Toll Collector Subway						
TCB-SI2020	WSD inspection of Plumbing Installation (PL)	4	0%			-41
TCB-SI2040	Water Samples Test	24	0%			-41
TCB-SI2050	Obtain Water Certificate and water supply connection - PL	4	0%			-41
TCB-SI3010	EMSD examines site acceptance report and acceptance	36	50%			-7
Satellite Control Building						
SCB-SI1100	Obtain Water Certificate and water supply connection - PL	1	100%			
South Ventilation Building						
SVB-SI1140	Obtain Water Certificate and water supply connection - PL	4	100%			
Tunnel						
TNL-10TC2010	FSD inspection & re-inspection	42	100%			
TNL-10TC2020	Obtain Fire Certificate	0	0%			-1
Others Works for Road Opening						
OW175	Operation Verifications and Trial	18	0%			-45
Key Date 12 - Establishment Works						
EW110	Establishment Works	365	0%			-91



CONTRACT NO. HY2017/10

TM-CLKL NORTHERN CONNECTION TUNNEL BUILDINGS, E&M WORKS

THREE MONTHLY PROGRAMME AS OF 20 Oct 2020

P 3

Date	Revision	Checked	Approved
20-Oct-20			

Appendix C

Environmental Mitigation and Enhancement Measure Implementation Schedules

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
Air Quality									
4.8.1	3.8	Watering of the construction sites in Lantau for 8 times/day and in Tuen Mun for 12 times/day to reduce dust emissions by 87.5% and 91.7% respectively and shall be undertaken.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall not burn debris or other materials on the works areas.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8. 1	3.8	In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet.	All unpaved haul roads / throughout construction period in hot, dry or windy weather	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		<>
4.8.1	3.8	Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8. 1	3.8	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	All site exits / throughout construction period	Contractor	TMEIA Avoid dust		Y		✓

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
4.8.1	3.8	Areas of exposed soil shall be minimised to areas in which works have been completed shall be restored as soon as is practicable.	All exposed surfaces / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		√
4.8.1	3.8	All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		N/A
4.11	Section 3	EM&A in the form of 1 hour and 24 hour dust monitoring and site audit.	All representative existing ASRs / throughout construction period	Contractor	EM&A Manual		Y		N/A (Results adopted from published EM&A data of Contract No. HY/2012/08)
WATER QUALITY (LAND WORKS)									
6.10	-	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Sewage effluent and discharges from on- site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Temporary access roads should be surfaced with crushed stone or gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	5.8	Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		✓

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

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

EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		<>
6.10	-	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/design and operation	Design Consultant/ Contractor	TM-EIAO	Y		Y	N/A
6.10	Section 11	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
WASTE									
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		✓
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
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		<>

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	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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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
12.6	8.1	The Contractor should recycle as many C&D materials (this is a waste section) as possible on-site. The public fill and C&D waste should be segregated and stored in separate containers or skips to facilitate the reuse or recycling of materials and proper disposal. Where practicable, the concrete and masonry should be crushed and used as fill materials. Steel reinforcement bar should be collected for use by scrap steel mills. Different areas of the sites should be considered for segregation and storage activities.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All falsework will be steel instead of wood.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Chemical waste producers should register with the EPD. Chemical waste should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes as follows: *f* suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; *f* Having a capacity of <450L unless the specifications have been approved by the EPD; and w Chinese according to the instructions prescribed in Schedule 2 of the Regulations. *f* Clearly labelled and used solely for the storage of chemical wastes; *f* Enclosed with at least 3 sides; *f* Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; *f* Adequate ventilation;	All areas / throughout construction period	Contractor	TMEIA		Y		√

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
		f Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and *f* Incompatible materials are adequately separated.							
12.6	8.1	Waste oils, chemicals or solvents shall not be disposed of to drain,	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Adequate numbers of portable toilets should be provided for on-site workers. Portable toilets should be maintained in reasonable states, which will not deter the workers from utilising them.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Night soil should be regularly collected by licensed collectors.	All areas / throughout construction period	Contractor	TMEIA		Y		N/A
12.6	8.1	General refuse arising on-site should be stored in enclosed bins or compaction units separately from C&D and chemical wastes. Sufficient dustbins shall be provided for storage of waste as required under the Public Cleansing and Prevention of Nuisances By-laws. In addition, general refuse shall be cleared daily and shall be disposed of to the nearest licensed landfill or refuse transfer station. Burning of refuse on construction sites is prohibited.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	All waste containers shall be in a secure area on hardstanding;	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	Office wastes can be reduced by recycling of paper if such volume is sufficiently large to warrant collection. Participation in a local collection scheme by the Contractor should be advocated. Waste separation facilities for paper, aluminium cans, plastic bottles, etc should be provided on-site.	Site Offices/ throughout construction period	Contractor	TMEIA		Y		✓
12.6	Section 8	EM&A of waste handling, storage, transportation, disposal procedures and documentation through the site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
LANDSCAPE AND VISUAL									

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

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

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

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
10.9	7.6	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 maintained by HyD/LCSD
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 maintained by HyD
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 maintained by HyD/ArchSD
10.9	7.6	Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD/ArchSD
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (OM6)	All areas/detailed design/ during construction / during operation	Design Consultant/ Contractor	TMEIA	Y	Y	Y	n/a. To be maintained by HyD/ArchSD

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

*** Remarks:**

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

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

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

Appendix D

Summary of Action and Limit Levels

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

Parameters	Action	Limit
24 Hour TSP Level in μg/m³	ASR1 = 213 ASR5 = 238 AQMS1 = 213 ASR6 = 238 ASR10 = 214	260
1 Hour TSP Level in μg /m³	ASR1 = 331 ASR5 = 340 AQMS1 = 335 ASR6 = 338 ASR10 = 337	500

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

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

Appendix E

Event Action Plan

Appendix E1 Event/ Action Plan for Air Quality

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

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

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

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

Appendix F

EM&A Monitoring Schedule

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

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

HY/2017/10 Tuen Mun - Chek Lap Kok Link - Northern Tunnel Connection Buildings, E&M Works
Landfill Gas Monitoring Schedule (1 to 30 November 2020)

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

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

Appendix G

Calibration Certificate of Monitoring Equipment

MSA Hong Kong Ltd.
25/F Jupiter Tower, 9 Jupiter Street, Hong Kong
Tel 852-22587588 Fax 25478780 Email info.hk@msasafety.com Website www.msasafety.com

Ref. 2019/12/009 Date: 11-Dec-19
Customer Gammon Constructions Limited

CERTIFICATE FOR CALIBRATION CHECK TEST

Model	Serial No.	Calibration Check Gas	Regulator	Full Scale	Response
Altair 5XIR	145986	1.45% Methane, 15% Oxygen 2.5% Carbon Dioxide	.25litre/min	100% LEL 30% Vol 9.99%	29%LEL 15% O2 2.5% CO2

Remarks: Regular inspection completed. Calibration passed

MSA Hong Kong Ltd. certify that instrument/s listed above has/have been calibrated check tested on:
11-Dec-19

This instrument was calibrated in accordance with all requirements of the specifications of MSA.

This instrument must be calibration checked prior to use in accordance with the instruction manual.

This instrument was calibrated using NIST traceable equipment and was in accordance with all requirements of the drawings and specifications of MSA.

For and on behalf of
MSA Hong Kong Ltd.

MSA HONG KONG LIMITED

Authorised Signature

Appendix H

Landfill Gas Monitoring Results and Graphical Presentation

Landfill Gas Monitoring Results on Methane Level

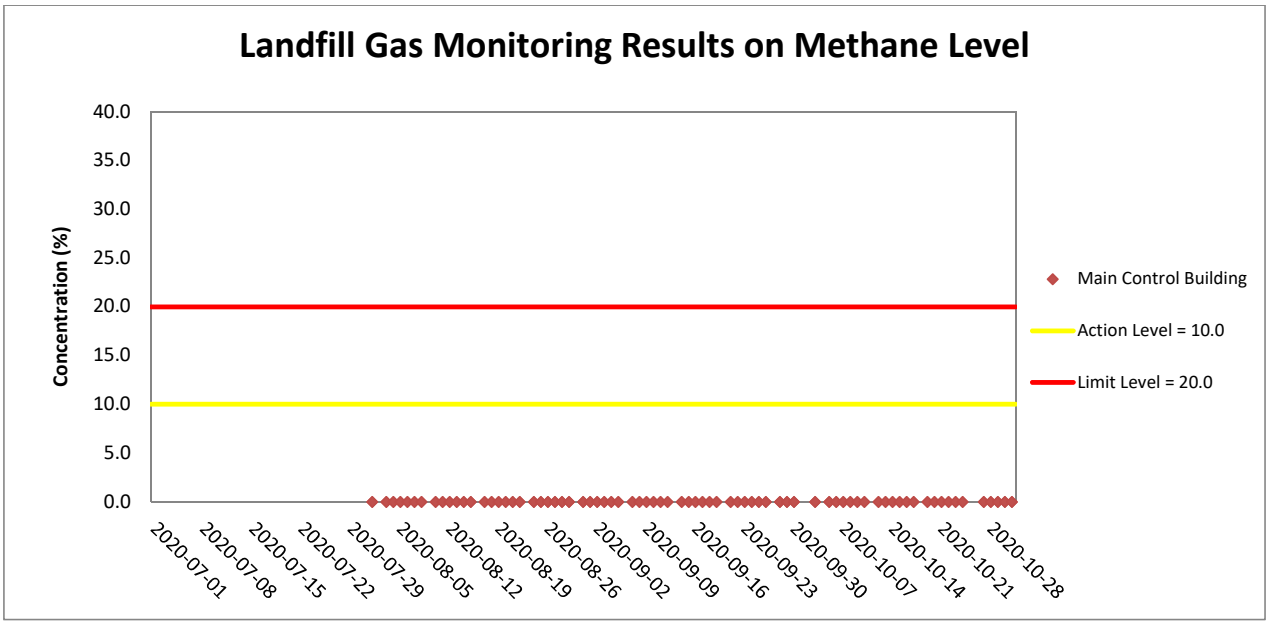
Project	Works	Date(yyyy-mm-dd)	Monitoring Location	Time (hh:mm, 24hour)	Results (%)	Action Level (%)	Limit Level (%)
TMCLKL	HY/2017/10	2020-10-03	Main Control Building	8:15	0	10.0	20.0
TMCLKL	HY/2017/10	2020-10-03	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-05	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-05	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-06	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-06	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-07	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-07	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-08	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-08	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-09	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-09	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-10	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-10	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-12	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-12	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-13	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-13	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-14	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-14	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-15	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-15	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-16	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-16	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-17	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-17	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-19	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-19	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-20	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-20	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-21	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-21	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-22	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-22	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-23	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-23	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-24	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-24	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-27	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-27	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-28	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-28	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-29	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-29	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-30	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-30	Main Control Building	13:15	0		
TMCLKL	HY/2017/10	2020-10-31	Main Control Building	8:15	0		
TMCLKL	HY/2017/10	2020-10-31	Main Control Building	13:15	0		
				Average	0		
				Min.	0		
				Max.	0		

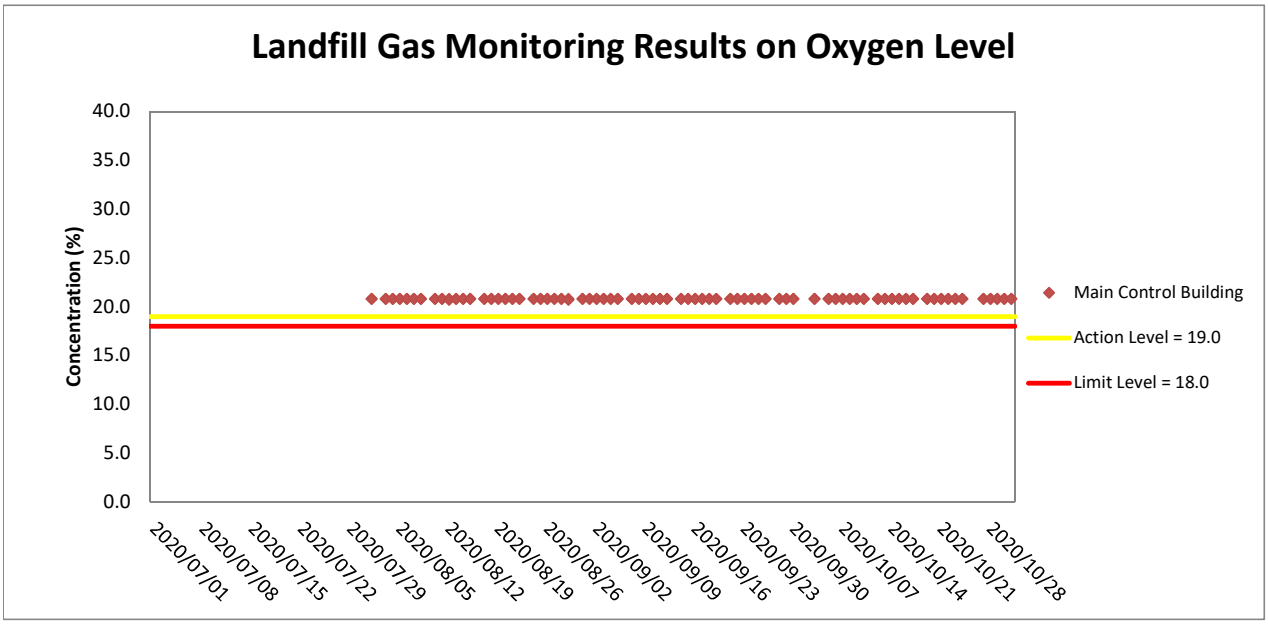
Landfill Gas Monitoring Results on Oxygen Level

Project	Works	Date(yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Results (%)	Action Level (%)	Limit Level (%)
TMCLKL	HY/2017/10	2020-10-03	Main Control Building	8:15	20.8	19.0	18.0
TMCLKL	HY/2017/10	2020-10-03	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-05	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-05	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-06	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-06	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-07	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-07	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-08	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-08	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-09	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-09	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-10	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-10	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-12	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-12	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-13	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-13	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-14	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-14	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-15	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-15	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-16	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-16	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-17	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-17	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-19	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-19	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-20	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-20	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-21	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-21	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-22	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-22	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-23	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-23	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-24	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-24	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-27	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-27	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-28	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-28	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-29	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-29	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-30	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-30	Main Control Building	13:15	20.8		
TMCLKL	HY/2017/10	2020-10-31	Main Control Building	8:15	20.8		
TMCLKL	HY/2017/10	2020-10-31	Main Control Building	13:15	20.8		
				Average	20.8		
				Min.	20.8		
				Max.	20.8		

Landfill Gas Monitoring Results on Carbon Dioxide Level

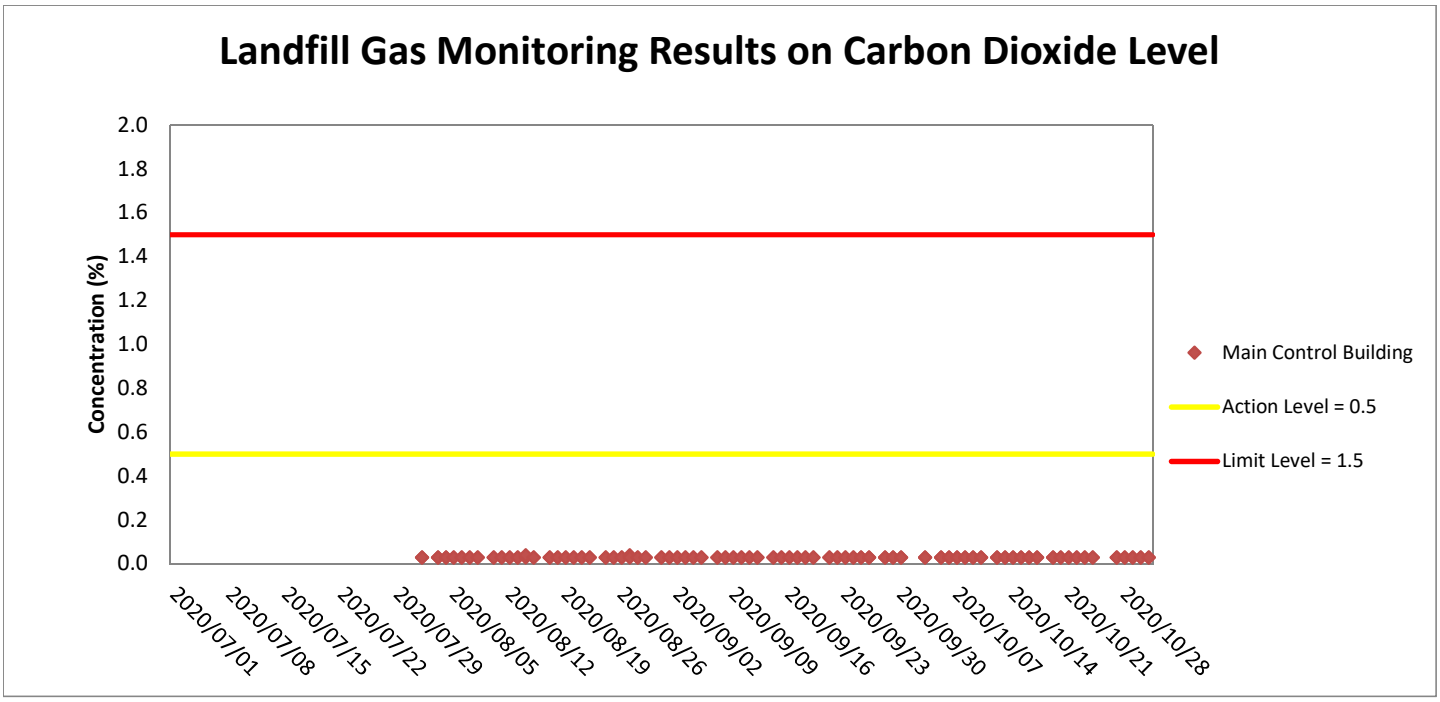
Project	Works	Date(yyyy-mm-dd)	Station	Time (hh:mm, 24hour)	Results (%)	Action Level (%)	Limit Level (%)
TMCLKL	HY/2017/10	2020-10-03	Main Control Building	8:15	0.03	0.5	1.5
TMCLKL	HY/2017/10	2020-10-03	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-05	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-05	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-06	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-06	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-07	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-07	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-08	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-08	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-09	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-09	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-10	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-10	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-12	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-12	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-13	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-13	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-14	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-14	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-15	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-15	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-16	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-16	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-17	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-17	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-19	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-19	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-20	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-20	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-21	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-21	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-22	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-22	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-23	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-23	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-24	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-24	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-27	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-27	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-28	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-28	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-29	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-29	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-30	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-30	Main Control Building	13:15	0.03		
TMCLKL	HY/2017/10	2020-10-31	Main Control Building	8:15	0.03		
TMCLKL	HY/2017/10	2020-10-31	Main Control Building	13:15	0.03		
				Average	0.03		
				Min.	0.03		
				Max.	0.03		





Weather condition within the reporting period was sunny to rainy
Major construction works undertaken within the reporting period include

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



Weather condition within the reporting period was sunny to rainy
Major construction works undertaken within the reporting period include

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

Appendix I

Monthly Summary of Waste Flow Table

Contract No. : HY/2017/10

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

Monthly Summary Waste Flow Table for 2020 (Year)

Month\Material	Actual Quantities of Inert C&D Materials Generation						Actual Quantities of C&D wastes Generation		Actual Quantities of Recyclables Generation			
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fills	Imported Fill	Chemical Waste	General Refuse	Metals	Felled trees	Paper/ cardboard packaging	Plastics
Unit	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000m^3)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)	('000Kg)
Jan	0.025	0.000	-	-	0.025	-	-	187.500	-	-	0.070	-
Feb	0.074	0.026	-	-	0.074	-	-	176.100	-	-	0.084	-
Mar	0.650	0.117	-	-	0.366	0.284	-	237.850	-	-	0.042	-
Apr	0.139	0.000	-	-	0.139	-	-	167.820	-	-	-	-
May	6.429	0.000	-	1.975	0.023	4.431	-	252.730	-	-	0.056	-
Jun	17.715	0.053	-	0.421	0.034	17.260	-	255.300	-	-	-	-
SUB-TOTAL	**25.032**	**0.196**	**0.000**	**2.396**	**0.661**	**21.975**	**0.000**	**1277.300**	**0.000**	**0.000**	**0.252**	**0.000**
Jul	41.044	0.008	-	6.284	0.035	34.725	-	134.530	-	-	0.056	-
Aug	10.705	0.007	-	-	0.163	10.541	-	132.420	-	-	0.035	-
Sep	0.033	0.005	-	-	0.033	-	-	89.120	-	-	-	-
Oct	0.210	0.011	-	-	0.210	-	-	184.460	-	-	-	-
Nov	-	-	-	-	-	-	-	-	-	-	-	-
Dec	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**77.023**	**0.227**	**0.000**	**8.680**	**1.102**	**67.241**	**0.000**	**1,817.830**	**0.000**	**0.000**	**0.343**	**0.000**

Notes :

1 - The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.

2 - Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.

3 - Broken concrete for recycling into aggregates.

4 - Assumed 5 kg per damaged water-filled barrier.

5 - Disposed as Public Fills includes Hard Rock and Large Broken Concrete.

Appendix J

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

Appendix J1 Cumulative Statistics on Exceedances

		Total No. recorded in this reporting month	Total No. recorded since contract commencement
1-Hr TSP	Action	4	50
	Limit	0	10
24-Hr TSP	Action	0	2
	Limit	0	0
Landfill gas hazard monitoring			
• Methane		0	0
• Oxygen		0	0
• Carbon Dioxide		0	0

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

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Successful Prosecutions
This Reporting Month (October 2020)	0	0	0
Total No. received since contract commencement	1	0	0

Email message

Environmental Resources Management

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

To	Ramboll Hong Kong Limited (ENPO)
From	ERM- Hong Kong, Limited
Ref/Project number	Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works
Subject	Notification of Exceedance for Air Quality Impact Monitoring
Date	22 October 2020

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_9October2020_1hrTSP_Station ASR5

One (1) exceedance was recorded on 9 October 2020.

Regards,

Dr Jasmine Ng
Environmental Team Leader

ERM-Hong Kong, Limited

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	**<u>Action Level Exceedance</u> 0463091_9October2020_1hrTSP_Station ASR5 [Total No. of Exceedances = 1]**	
Date	9 October 2020 (Measured) 22 October 2020 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR5	
Parameter(s) with Exceedance(s)	1- hr TSP	
Action Levels	1-hr TSP (µg/m³)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP (µg/m³)	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
Limit Levels	1-hr TSP (µg/m³)	500
	24-hr TSP (µg/m³)	260
Measured Levels	Refer to *Appendix A* (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 9 October 2020 included • Indoor defect rectification at Fire Services Department Building; • Indoor defect rectification at Main Control Building	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedance is unlikely to be due to the Contract, in view of the following: • With reference to the recorded wind direction (ranged between 3° and 34°), blowing from a northerly/north-easterly direction) and wind speed (1.8 m/s) when exceedance recorded, ASR5 is located upstream to the work area. However, only minor defect rectification works were conducted which are considered not major dust generating works. • The construction area under this Contract were mainly paved. The remaining unpaved area are seated by machines such as crane machines and generators or used as material storage area with proper cover of tarpaulin sheet or designated for landscaping works. The exposed area are covered with tarpaulin sheet/vegetation. Dust are not anticipated (*Appendix B*). Based on the above, the exceedance is unlikely to be due to the Contract.	
Actions Taken / To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 9 October 2020, locations of air quality monitoring stations and wind data are attached (refer to *Appendix A*).	

Appendix A

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

Air quality monitoring results on 9/10/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	8:10:00	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	9:12:00	1-hour TSP	64	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	10:14:00	1-hour TSP	85	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	8:20:00	1-hour TSP	178	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	9:22:00	1-hour TSP	91	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	10:24:00	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	8:32:00	1-hour TSP	373	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	9:34:00	1-hour TSP	178	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	10:36:00	1-hour TSP	167	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	8:44:00	1-hour TSP	181	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	9:46:00	1-hour TSP	145	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	10:48:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	8:55:00	1-hour TSP	80	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	9:57:00	1-hour TSP	106	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	10:59:00	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR10	Sunny	11:16:00	24-hour TSP	73	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR6	Sunny	11:26:00	24-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR5	Sunny	11:38:00	24-hour TSP	125	ug/m3
TMCLKL	HY/2012/08	2020-10-09	ASR1	Sunny	11:50:00	24-hour TSP	153	ug/m3
TMCLKL	HY/2012/08	2020-10-09	AQMS1	Sunny	12:01:00	24-hour TSP	82	ug/m3

Action level exceedance
Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	**Time (24hrs)**	**Average of Wind Speed (m/s)**	**Average of Wind Direction(degree)**
20/10/09	0:00	2.2	29
20/10/09	1:00	2.2	30
20/10/09	2:00	2.2	28
20/10/09	3:00	2.2	20
20/10/09	4:00	2.2	16
20/10/09	5:00	2.7	27
20/10/09	6:00	1.8	15
20/10/09	7:00	0.9	347
20/10/09	8:00	1.8	3
20/10/09	9:00	1.8	34
20/10/09	10:00	1.8	11
20/10/09	11:00	1.8	34
20/10/09	12:00	1.8	31
20/10/09	13:00	1.8	23
20/10/09	14:00	1.3	266
20/10/09	15:00	1.3	332
20/10/09	16:00	1.3	338
20/10/09	17:00	1.8	25
20/10/09	18:00	2.2	332
20/10/09	19:00	1.8	312
20/10/09	20:00	2.7	318
20/10/09	21:00	2.7	331
20/10/09	22:00	1.8	345
20/10/09	23:00	0.9	335

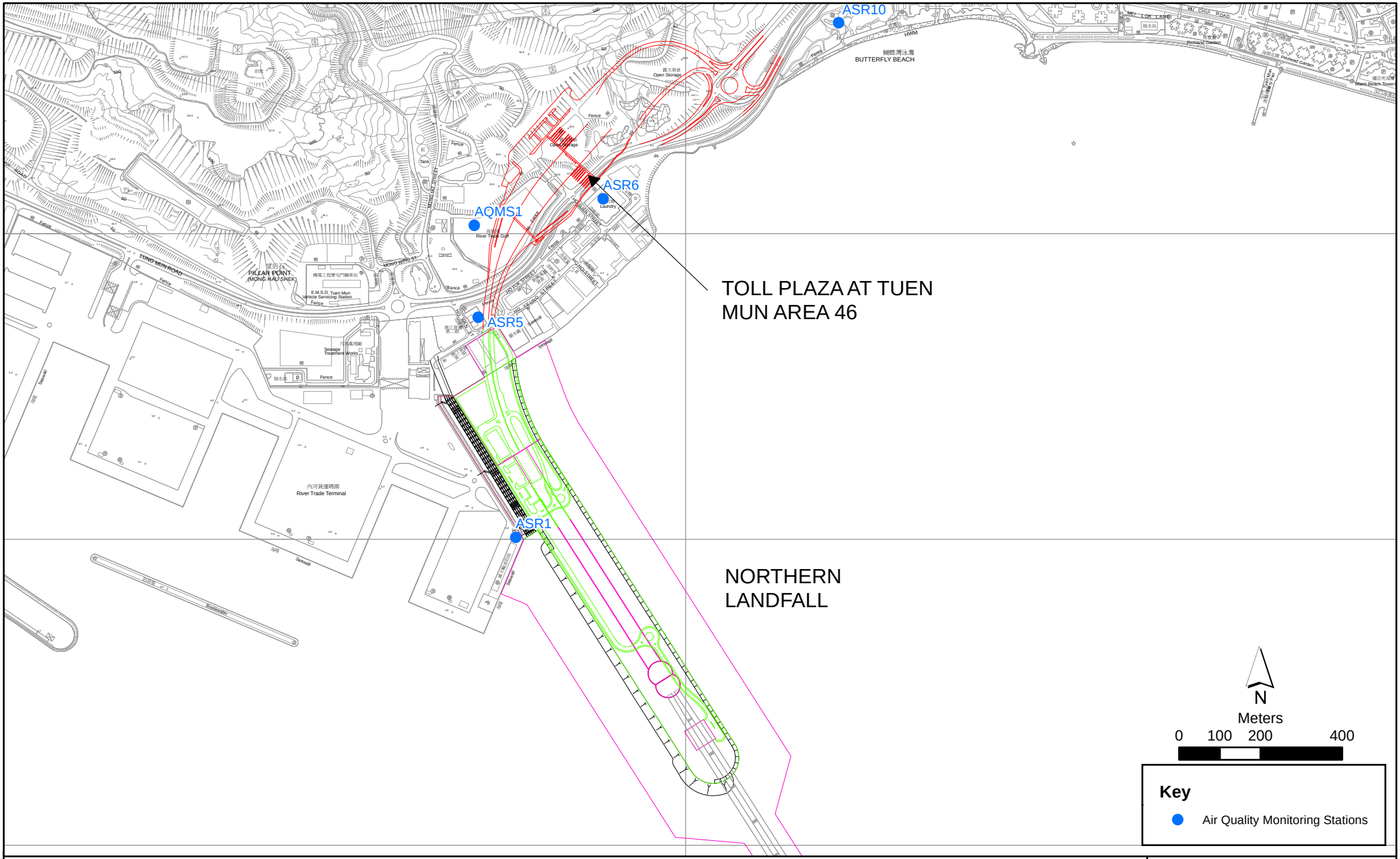


Figure 2.1

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

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

Environmental Resources Management

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Appendix B

Site Photo

Photo 1 – Fire Services Department Building

Photo 2 – Main Control Building

Email message

Environmental Resources Management

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

To	Ramboll Hong Kong Limited (ENPO)
From	ERM- Hong Kong, Limited
Ref/Project number	Contract No. HY/2017/10 Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works
Subject	Notification of Exceedance for Air Quality Impact Monitoring
Date	10 November 2020

Dear Sir/ Madam,

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

Action Level Exceedance
0463091_21October2020_1hrTSP_Station ASR6
0463091_21October2020_1hrTSP_Station ASR5
0463091_21October2020_1hrTSP_Station ASR1

Three (3) exceedances were recorded on 21 October 2020.

Regards,

Dr Jasmine Ng
Environmental Team Leader

ERM-Hong Kong, Limited

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

Air Quality Impact Monitoring

Notification of Exceedance

Log No.	**<u>Action Level Exceedance</u> 0463091_21October2020_1hrTSP_Station ASR6 0463091_21October2020_1hrTSP_Station ASR5 0463091_21October2020_1hrTSP_Station ASR1 [Total No. of Exceedances = 3]**	
Date	21 October 2020 (Measured) 10 November 2020 (*R*esults obtained from ENPO Website)	
Monitoring Station	ASR6, ASR5, ASR1	
Parameter(s) with Exceedance(s)	1- hr TSP	
Action Levels	1-hr TSP (µg/m³)	ASR1 = 331 ASR5 = 340 ASR6 = 338 ASR10 = 335 AQMS1 = 337
	24-hr TSP (µg/m³)	ASR1 = 213 ASR5 = 238 ASR6 = 238 ASR10 = 214 AQMS1 = 213
Limit Levels	1-hr TSP (µg/m³)	500
	24-hr TSP (µg/m³)	260
Measured Levels	Refer to *Appendix A* (Data are source from Contract No. HY/2012/08).	
Works Undertaken (at the time of monitoring event)	Works undertaken under this Contract on 21 October 2020 included • Indoor defect rectification at Northern Landfall; • Indoor defect rectification at Main Control Building	
Possible Reason for Action or Limit Level Exceedance(s)	The exceedance is unlikely to be due to the Contract, in view of the following: • With reference to the recorded wind direction (ranged between 322° and 345°), blowing from a north-westerly direction) and wind speed (2.2 m/s) when exceedances recorded, ASR5 and ASR6 are located upstream to the work area. • Only minor defect rectification works were conducted which are considered not major dust generating works, thus result of 1-hour TSP at ASR1 was unlikely impacted by the works under this project. • The construction area under this Contract were mainly paved. The remaining unpaved area are seated by machines such as crane machines and generators or used as material storage area with proper cover of tarpaulin sheet or designated for landscaping works. The exposed area are covered with tarpaulin sheet/vegetation. Dust are not anticipated (*Appendix B*). Based on the above, the exceedances are unlikely to be due to the Contract.	
Actions Taken / To Be Taken	No immediate action is considered necessary. The ET will monitor for future trends in exceedances.	
Remarks	The monitoring results on 21 October 2020, locations of air quality monitoring stations and wind data are attached (refer to *Appendix A*).	

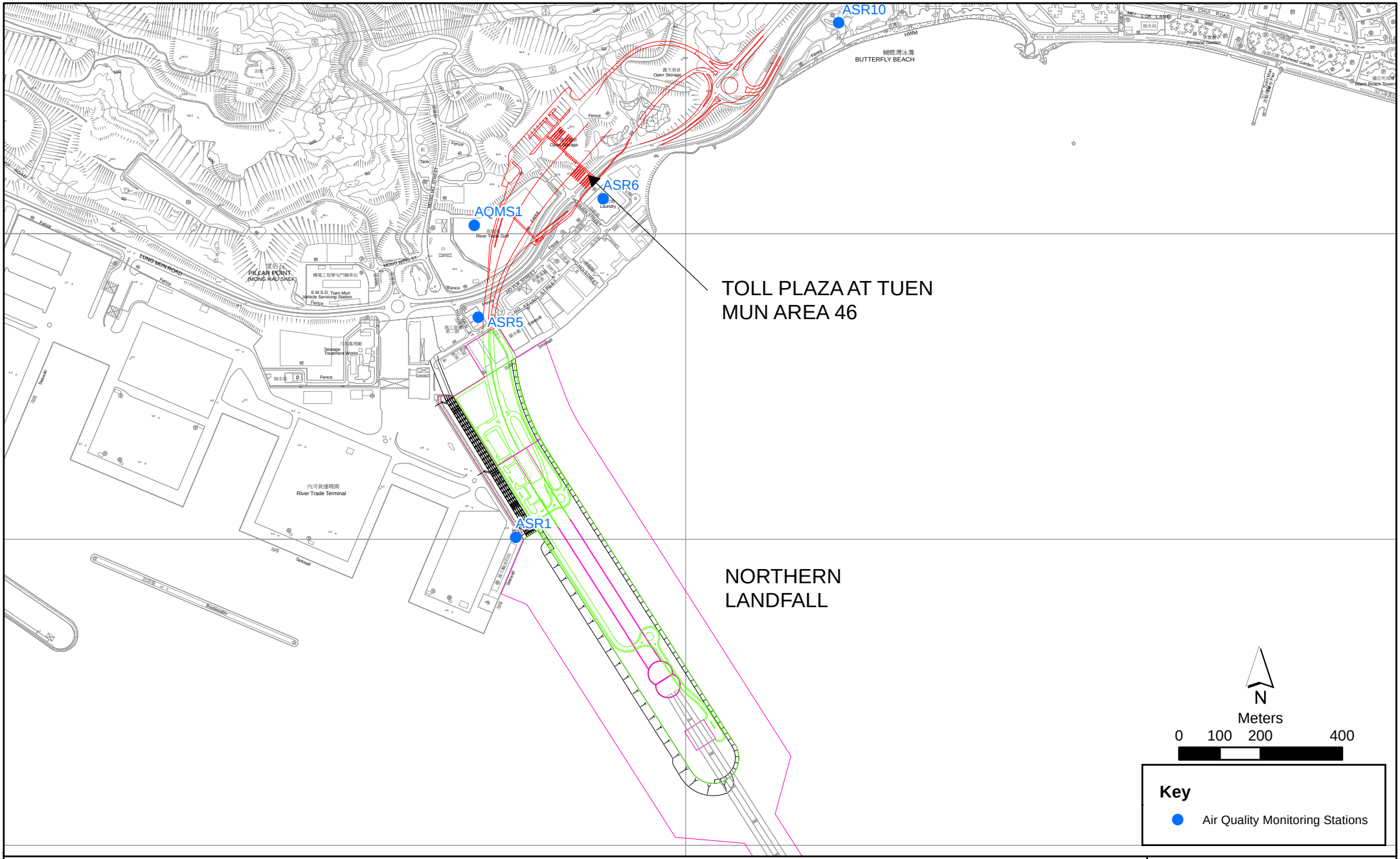
Appendix A

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

Air quality monitoring results on 21/10/2020								
Project	Contract	Date	Station	Weather	Start time	Parameters	Results	Unit
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	8:00:00	1-hour TSP	108	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	9:02:00	1-hour TSP	94	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	10:04:00	1-hour TSP	107	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	8:12:00	1-hour TSP	254	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	9:14:00	1-hour TSP	149	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	10:16:00	1-hour TSP	352	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	8:23:00	1-hour TSP	474	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	9:25:00	1-hour TSP	213	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	10:27:00	1-hour TSP	265	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	8:35:00	1-hour TSP	494	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	9:37:00	1-hour TSP	231	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	10:39:00	1-hour TSP	224	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	8:47:00	1-hour TSP	92	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	9:49:00	1-hour TSP	114	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	10:51:00	1-hour TSP	123	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR10	Sunny	11:06:00	24-hour TSP	88	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR6	Sunny	11:18:00	24-hour TSP	165	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR5	Sunny	11:29:00	24-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	2020-10-21	ASR1	Sunny	11:41:00	24-hour TSP	170	ug/m3
TMCLKL	HY/2012/08	2020-10-21	AQMS1	Sunny	11:53:00	24-hour TSP	101	ug/m3

Action level exceedance
Limit level exceedance

Meteorological Data for Impact Monitoring in the reporting period			
Date (yy-mm-dd)	**Time (24hrs)**	**Average of Wind Speed (m/s)**	**Average of Wind Direction(degree)**
20/10/21	0:00	3.1	345
20/10/21	1:00	2.2	337
20/10/21	2:00	2.7	348
20/10/21	3:00	4.9	341
20/10/21	4:00	1.3	207
20/10/21	5:00	2.7	320
20/10/21	6:00	3.6	328
20/10/21	7:00	2.2	308
20/10/21	8:00	2.2	339
20/10/21	9:00	2.2	345
20/10/21	10:00	2.2	322
20/10/21	11:00	3.1	303
20/10/21	12:00	2.7	337
20/10/21	13:00	2.7	341
20/10/21	14:00	2.7	320
20/10/21	15:00	2.2	321
20/10/21	16:00	2.2	320
20/10/21	17:00	1.3	323
20/10/21	18:00	2.2	309
20/10/21	19:00	3.6	341
20/10/21	20:00	4	339
20/10/21	21:00	1.8	315
20/10/21	22:00	2.7	348
20-10-21	23:00	1.8	346



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Environmental Resources Management

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Appendix B

Site Photo

Photo 1 – Northern Landfall

Photo 2 – Main Control Building