

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

*Twenty-fourth Monthly EM&A Report*

9 June 2020

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

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*Twenty-fourth Monthly EM&A Report*

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Client:  Gammon		Project No:  0463091			
Summary:  This document presents the Twenty-fourth Monthly EM&A Report for Tuen Mun – Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works.		Date: 9 June 2020			
		Approved by: 			
		Mr Craig Reid Partner			
		Certified by: 			
		Dr Jasmine Ng ET Leader			
	Twenty-fourth Monthly EM&A Report	CW	JN	CAR	9/6/20
Revision	Description	By	Checked	Approved	Date
This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.  We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.		Distribution <input type="checkbox"/> Internal <input checked="" type="checkbox"/> Public <input type="checkbox"/> Confidential			
		 			

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  
24<sup>th</sup> Monthly EM&A Report for May 2020**

Reference is made to the Environmental Team's submission of the monthly EM&A report for May 2020 (ET's ref.: "0463091\_24th Monthly EM&A\_20200609.doc" dated 9 June 2020) certified by the ET Leader and provided to us via e-mail on 11 June 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. Andy HO	(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

	<i>EXECUTIVE SUMMARY</i>	<i>I</i>
<i>1</i>	<i>INTRODUCTION</i>	<i>1</i>
<i>1.1</i>	<i>BACKGROUND</i>	<i>1</i>
<i>1.2</i>	<i>SCOPE OF REPORT</i>	<i>2</i>
<i>1.3</i>	<i>ORGANIZATION STRUCTURE</i>	<i>2</i>
<i>1.4</i>	<i>SUMMARY OF CONSTRUCTION WORKS</i>	<i>2</i>
<i>2</i>	<i>EM&amp;A RESULTS</i>	<i>5</i>
<i>2.1</i>	<i>AIR QUALITY</i>	<i>5</i>
<i>2.2</i>	<i>LANDFILL GAS HAZARD MONITORING</i>	<i>6</i>
<i>2.3</i>	<i>EM&amp;A SITE INSPECTION</i>	<i>6</i>
<i>2.4</i>	<i>WASTE MANAGEMENT STATUS</i>	<i>7</i>
<i>2.5</i>	<i>ENVIRONMENTAL LICENSES AND PERMITS</i>	<i>8</i>
<i>2.6</i>	<i>IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES</i>	<i>10</i>
<i>2.7</i>	<i>SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT</i>	<i>10</i>
<i>2.8</i>	<i>SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS</i>	<i>10</i>
<i>3</i>	<i>FUTURE KEY ISSUES</i>	<i>11</i>
<i>3.1</i>	<i>CONSTRUCTION ACTIVITIES FOR THE COMING MONTH</i>	<i>11</i>
<i>3.2</i>	<i>KEY ISSUES FOR THE COMING MONTH</i>	<i>11</i>
<i>4</i>	<i>CONCLUSIONS AND RECOMMENDATIONS</i>	<i>13</i>
<i>4.1</i>	<i>CONCLUSIONS</i>	<i>13</i>



*List of Appendices*

- Appendix A Project Organization for Environmental Works
- Appendix B Construction Programmes
- Appendix C Implementation Schedule of Environmental Mitigation Measures (EMIS)
- Appendix D Summary of Action and Limit Levels
- Appendix E Event Action Plan
- Appendix F Monthly Summary of Waste Flow Table
- Appendix G Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

## **EXECUTIVE SUMMARY**

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

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

This is the Twenty-fourth Monthly EM&A report presenting the EM&A works carried out during the period from 1 to 31 May 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***

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

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

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

24-hour TSP Monitoring	10 sessions
1-hour TSP Monitoring	10 sessions
Joint Environmental Site Inspection	4 sessions

#### Summary of Breaches of Action/Limit Levels

##### *Breaches of Action and Limit Levels for Air Quality*

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

##### *Breaches of Action Level for Landfill Gas Hazard Monitoring*

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

#### Environmental Complaints, Non-compliance & Summons

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

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

## Reporting Change

There was no reporting change in the reporting period.

## Upcoming Works for the Next Reporting Month

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

### *Land-based Works*

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2;
- Electrical and Mechanical Works 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 June 2020 are mainly associated with dust and waste management issues.



**BACKGROUND**

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

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

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

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

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



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



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PROJECT  
TUEN MUN -  
CHEK LAP KOK LINK

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

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

CONSULTANT  
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**Figure 1.1**

ISSUE/REVISION

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

STATUS

SCALE  
A1 1:40000  
DIMENSION UNIT  
MILLIMETRES

KEY PLAN

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

SHEET TITLE  
OVERALL SITE PLAN

SHEET NUMBER  
60240249/C4/7051A

Plot File by: jerrywong 23-Jan-18  
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Ref: File by: jerry.wong 23-Jan-18  
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**PROJECT**  
 TUEN MUN - CHEK LAP KOK LINK

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

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 **HIGHWAYS DEPARTMENT**  
 路政署  
 港務局大橋及港務工程管理處  
 Hong Kong - Zhuhai - Macao Bridge  
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**Figure 1.2a**

**ISSUE/REVISION**

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

**STATUS**

**SCALE**  
 A1 1:2500

**DIMENSION UNIT**  
 MILLIMETRES

**KEY PLAN**

**PROJECT NO.**  
 60240249

**CONTRACT NO.**  
 HY/2017/10

**SHEET TITLE**  
 ZONING PLAN (SHEET 1)

**SHEET NUMBER**  
 60240249/C4/7061A

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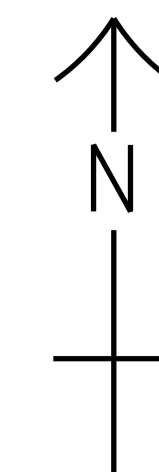
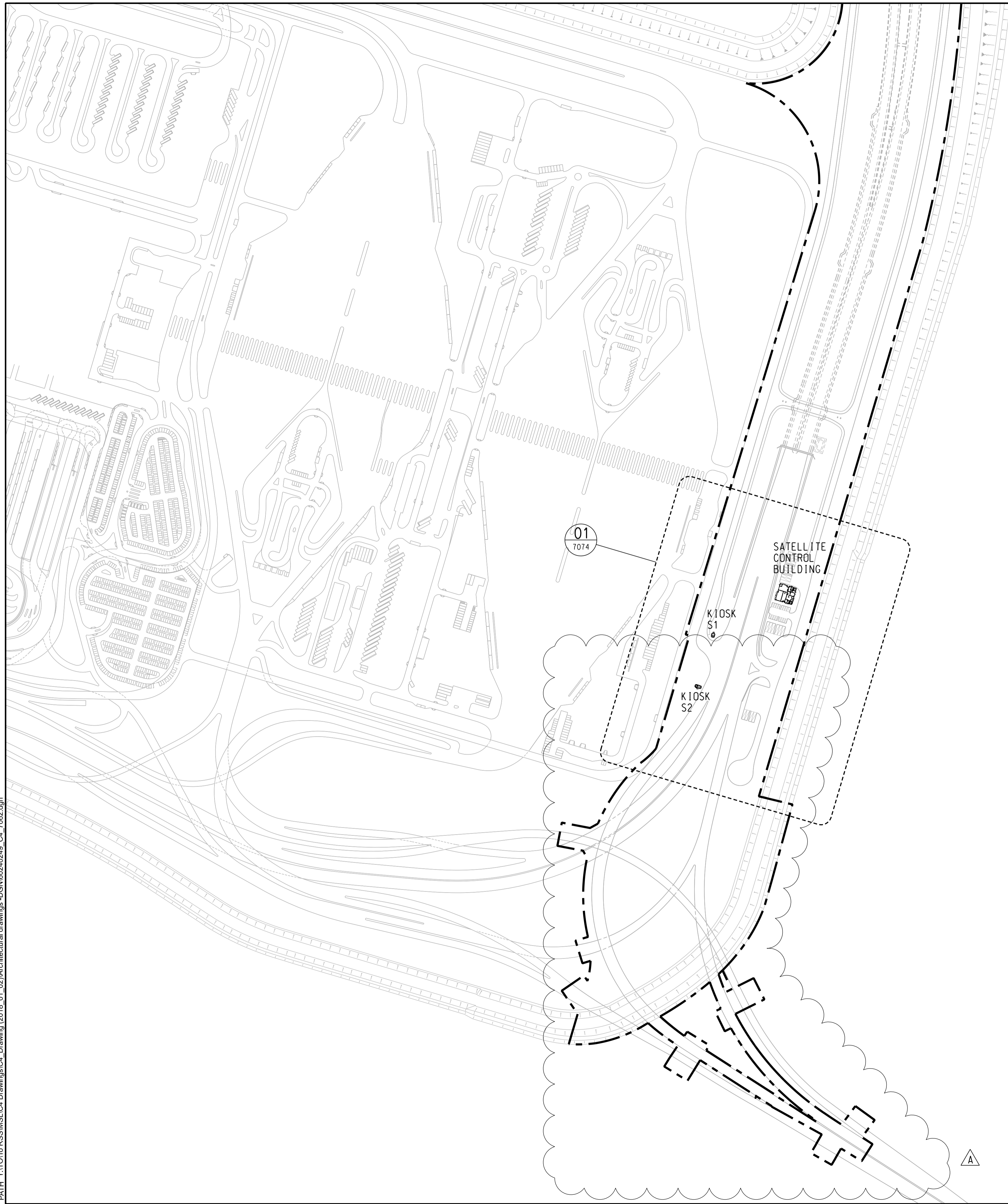


Figure 1.2b

ISSUE/REVISION

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

STATUS

SCALE

A1 1 : 2500

DIMENSION UNIT

MILLIMETRES

KEY PLAN

PROJECT NO.

60240249

CONTRACT NO.

HY/2017/10

SHEET TITLE

ZONING PLAN  
(SHEET 2)

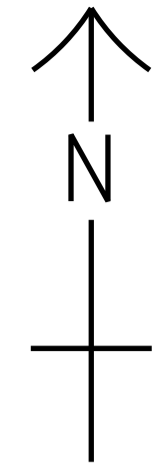
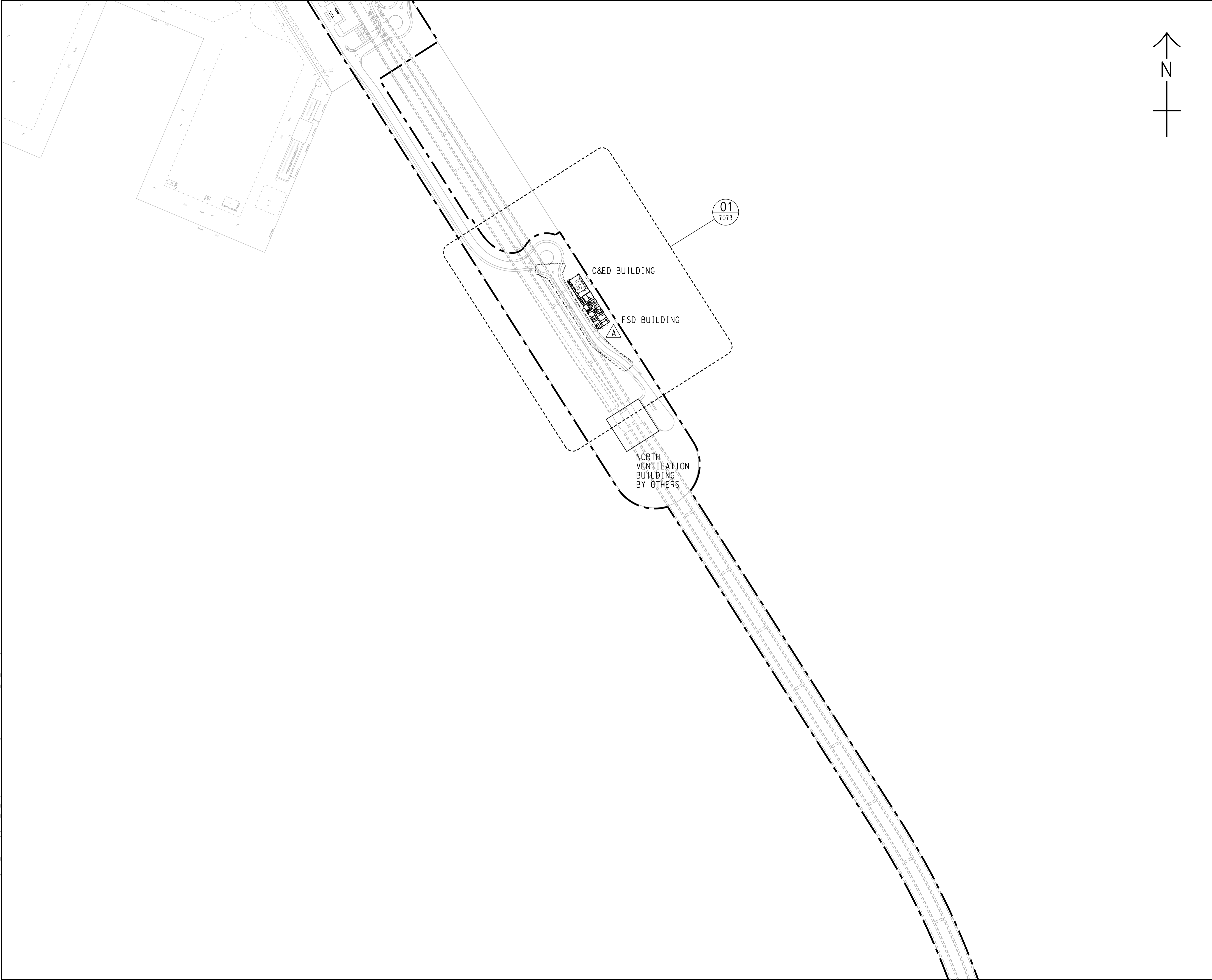
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 PATH: \\TOTO10-RSSMSL\C4 Drawings\C4\_Drawing (2018\_01\_02)\Architectural Drawings-DGN\60240249\_C4\_7063.dgn



**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局  
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**Figure 1.2c**

**ISSUE/REVISION**  
 修訂

I/R	DATE	DESCRIPTION	CHK.
修訂	日期	內容摘要	核校
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  
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## 1.2 SCOPE OF REPORT

This is the Twenty-fourth 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 May 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	Dr. F. C. Tsang	3465 2851	3465 2899
		Manson Yeung <sup>(1)</sup>	9700 6767	3465 2899
Contractor (Gammon Construction Limited)	Site Agent	Kenneth Tai	9039 4723	-
	Environmental Officer	Max Poon	9103 6303	-
ET (ERM-HK)	ET Leader	Dr. Jasmine Ng	2271 3311	2723 5660

(1) The role and responsibilities as the IEC of the Contract has been taken up by Mr Manson Yeung instead of Dr. F.C. Tsang since 18 May 2020.

## 1.4 SUMMARY OF CONSTRUCTION WORKS

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

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

### *Land-based Works*

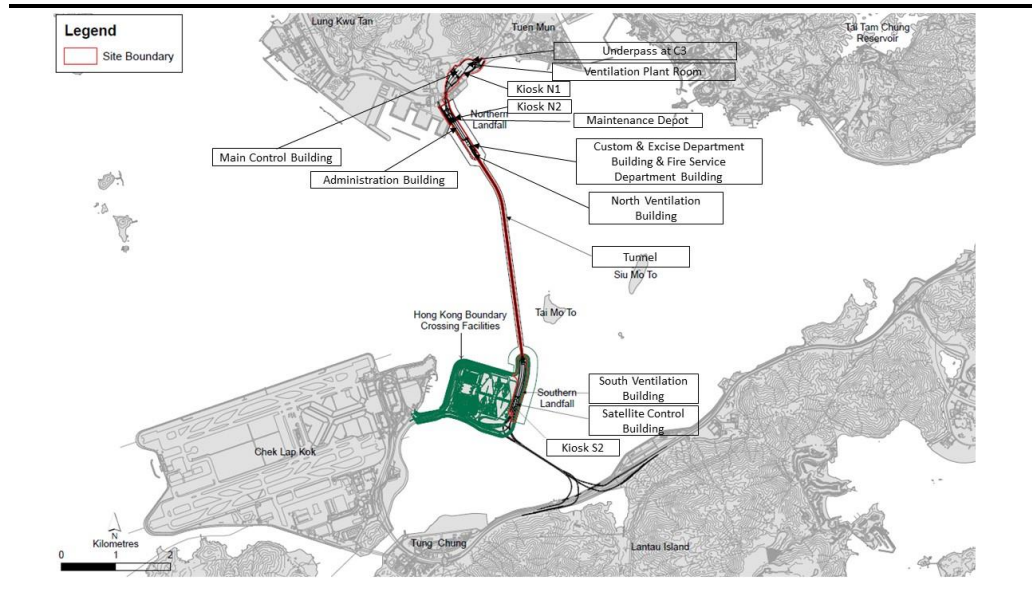
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;

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

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

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

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



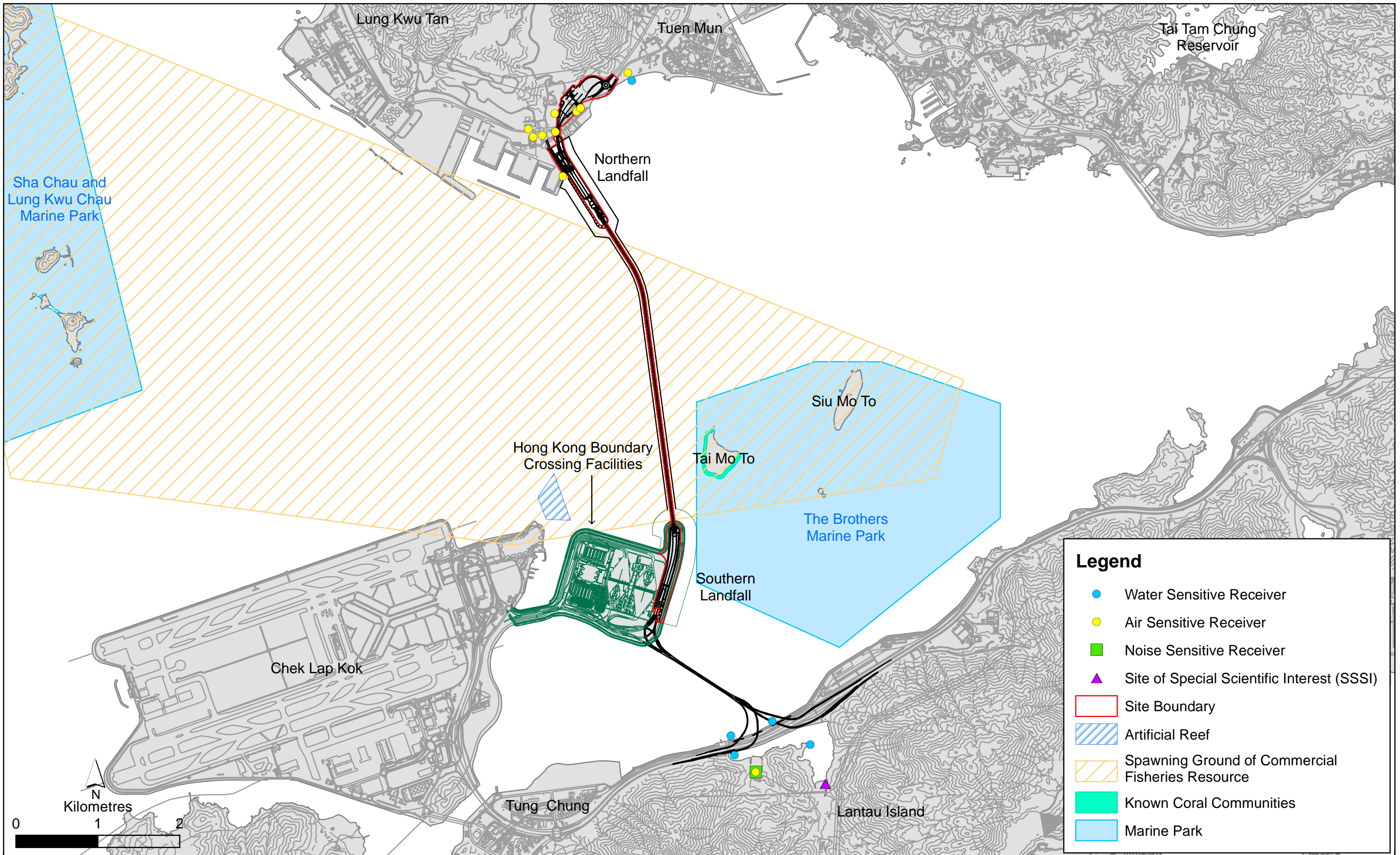


Figure 1.4

Environmental Sensitive Receivers in the Vicinity of the Project

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

## 2.1 AIR QUALITY

### 2.1.1 Monitoring Requirements and Equipment

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

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

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* <sup>(2)</sup>. The Action and Limit Levels are provided in *Appendix D*.

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

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

Monitoring Station	Monitoring Dates	Location	Description	Parameters & Frequency
ASR1	2, 5, 8, 11, 14, 17, 20, 23, 26 and 29 May 2020	Tuen Mun Fireboat Station	Office	TSP monitoring • 1-hour Total Suspended Particulates (1-hour TSP, $\mu\text{g}/\text{m}^3$ ), 3 times in every 6 days
ASR5		Pillar Point Fire Station	Office	• 24-hour Total Suspended Particulates (24-hour TSP, $\mu\text{g}/\text{m}^3$ ), 3 times in every 6 days
AQMS1		Previous River Trade Golf	Bare ground	$\mu\text{g}/\text{m}^3$ ), daily for 24-hour in every 6 days Enhanced TSP monitoring

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

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





Figure 2.1

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

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

### 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* <sup>(1)</sup>.

1-hour TSP at ASR1 on 14 and 17 May 2020 and 24-hour TSP at ASR1 on 2, 11, 14 and 17 May 2020 were suspended due to power shortage.

No exceedance of Action and Limit Levels for 1-hour TSP and 24-hour TSP was recorded by the Environmental Team of *Contract No. HY/2012/08* during the reporting period. 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 performed to ensure that the works area at Pillar Point Valley (PPV) Landfill is free of landfill gas during any excavations works.

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

## 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 8, 15, 22 and 29 May 2020.

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

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

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

Inspection Date	Observations	Recommendations/ Remarks
8 May 2020	<p>Container Village</p> <ul style="list-style-type: none"> <li>Accumulated residues were observed on site.</li> <li>Stagnant water was observed on site.</li> <li>A storage tank was observed to be leaking oil on site.</li> <li>A drip tray was filled with liquid.</li> </ul> <p>Tunnel</p> <ul style="list-style-type: none"> <li>Accumulated residuals were observed on site.</li> </ul> <p>South Ventilation Building</p> <ul style="list-style-type: none"> <li>A drip tray carrying thread drilling machine was deformed.</li> </ul>	<p>Container Village</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> <li>The Contractor was reminded to clean the stagnant water.</li> <li>The Contractor was reminded to clean the oil and fix the storage tank.</li> <li>The Contractor was reminded to clean the drip tray.</li> </ul> <p>Tunnel</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul> <p>South Ventilation Building</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to fix the deformed drip tray.</li> </ul>
15 May 2020	<p>Fire Services Department Building</p> <ul style="list-style-type: none"> <li>Accumulated residuals were observed on site.</li> </ul>	<p>Fire Services Department Building</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul>
22 May 2020	<p>Tunnel (Near South Ventilation Shaft)</p> <ul style="list-style-type: none"> <li>General refuses were observed on site.</li> </ul> <p>Satellite Control Building</p> <ul style="list-style-type: none"> <li>Chemical containers should be placed in drip tray.</li> </ul>	<p>Tunnel (Near South Ventilation Shaft)</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to remove general refuse.</li> </ul> <p>Satellite Control Building</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to place chemical containers in drip tray.</li> </ul>
29 May 2020	<p>Tunnel</p> <ul style="list-style-type: none"> <li>Accumulated residues were observed on site.</li> </ul>	<p>Tunnel</p> <ul style="list-style-type: none"> <li>The Contractor was reminded to keep better housekeeping.</li> </ul>

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 F*). The quantities of different types of wastes are summarized in *Table 2.3*.

**Table 2.3 Quantities of Different Waste Generated in the Reporting Month**

Month/Year	Inert C&D Materials <sup>(a)</sup> (m <sup>3</sup> )	Inert Construction Waste Re-used (m <sup>3</sup> )	Non-inert Construction Waste <sup>(b)</sup> (kg)	Imported Fill (m <sup>3</sup> )	Recyclable Materials <sup>(c)</sup> (kg)	Chemical Wastes (kg)
May 2020	3,641	0	252,730	1,666	56	0

Notes:

Month/Year	Inert C&D Materials <sup>(a)</sup> (m <sup>3</sup> )	Inert Construction Waste Re-used (m <sup>3</sup> )	Non-inert Construction Waste <sup>(b)</sup> (kg)	Imported Fill (m <sup>3</sup> )	Recyclable Materials <sup>(c)</sup> (kg)	Chemical Wastes (kg)
<p>(a) Inert construction wastes include hard rock and large broken concrete disposed as public fill.</p> <p>(b) Non-inert construction wastes include general refuse disposed at landfill.</p> <p>(c) Recyclable materials include metals, paper, cardboard, plastics, timber and others.</p>						

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

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

## 2.5 ENVIRONMENTAL LICENSES AND PERMITS

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

**Table 2.4 Summary of Environmental Licensing and Permit Status**

License/ Permit	License or Permit No.	Date of Issue	Date of Expiry	License/ Permit Holder	Remarks
Environmental Permit	EP-354/2009/D	13 March 2015	N/A	HyD	Tuen Mun- Chek Lap Kok Link
APCO Construction Dust Notification	433493	14 May 2018	N/A	GCL	For Tuen Mun working area
Construction Waste Billing Account	7030836	15 May 2018	N/A	GCL	N/A
Chemical Waste Producer Registration	5213-422-G2827-01	13 June 2018	N/A	GCL	N/A
Discharge License under WPCO for Buildings at C2 area	WT00031783-2018	22 October 2018	31 October 2023	GCL	Sampling Frequency: Bimonthly
Discharge License under WPCO for Buildings at C3 area	WT00032062-2018	30 October 2018	31 October 2023	GCL	Sampling Frequency: Quarterly
Discharge License under WPCO for Southern Landfall	WT00034878-2019	1 April 2020	31 March 2025	GCL	Sampling Frequency: Quarterly
Construction Noise Permit	GW-RW0054-20	11 February 2020	11 August 2020	GCL	For Northern Landfall and Tunnel
Construction Noise Permit	GW-RS0039-20	23 January 2020	22 July 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*

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

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

Cumulative statistics are provided in *Appendix G*.

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

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

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

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

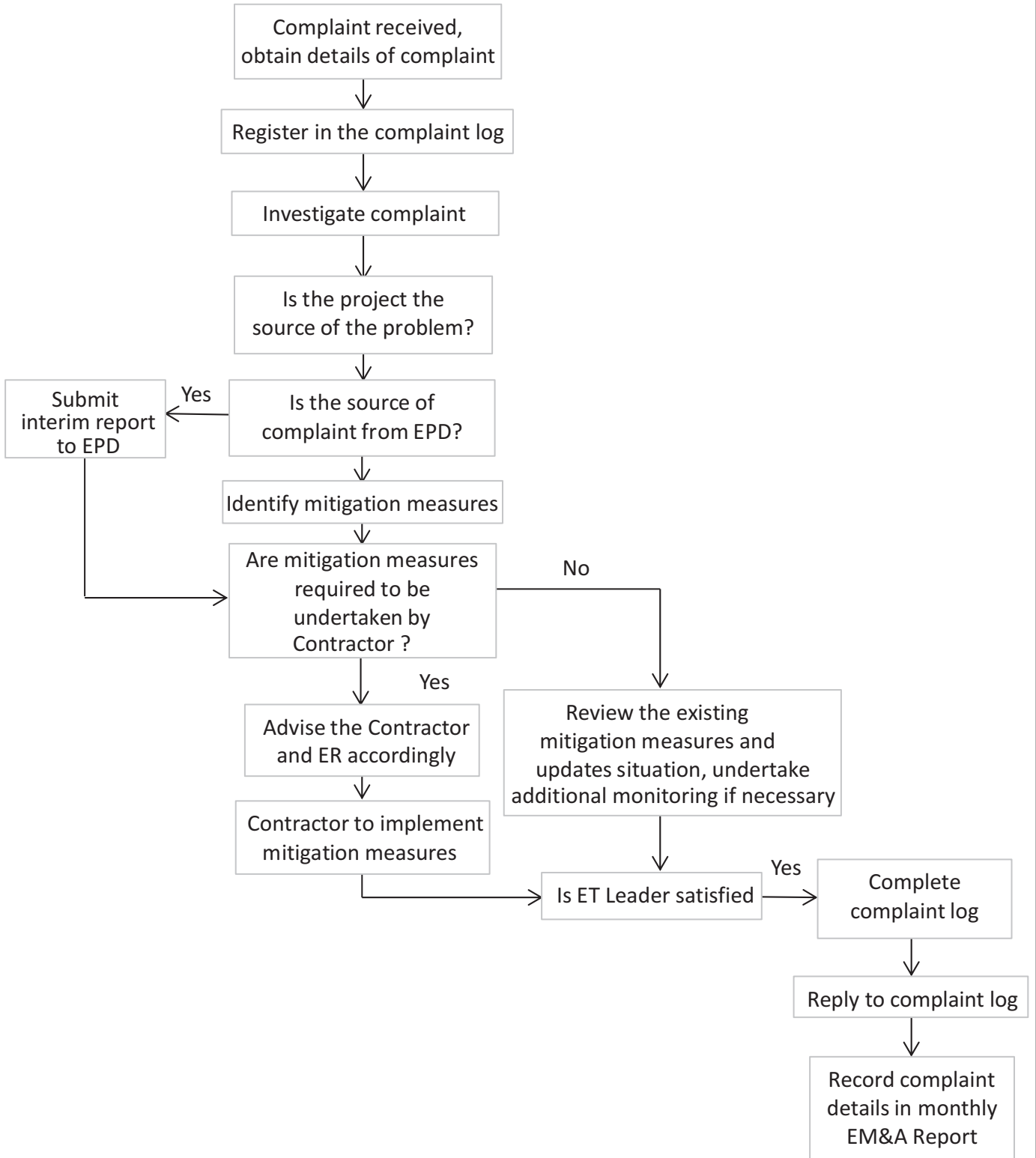


Figure 2.2

Environmental Complaint Handling Procedure

**3.1 CONSTRUCTION ACTIVITIES FOR THE COMING MONTH**

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

***Land-based Works***

- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Main Control Building;
- Electrical and Mechanical Works at Ventilation Plant Room;
- Electrical and Mechanical Works at North Ventilation Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Administration Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Maintenance Depot;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Fire Services Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Customs and Excise Department Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at N1;
- Electrical and Mechanical Works at Kiosk N2;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at the Tunnel;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at underpass at C3 area;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Satellite Control Building;
- Electrical and Mechanical Works and Architectural Builder's Work and Finishes at Kiosk S2;
- Electrical and Mechanical Works 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 June 2020 are mainly associated with dust and waste management issues.

**4.1 CONCLUSIONS**

This Twenty-fourth Monthly EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 31 May 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.

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

No excavation work was conducted at the excavation area in the reporting period and thus no landfill gas hazard monitoring was undertaken in the reporting period.

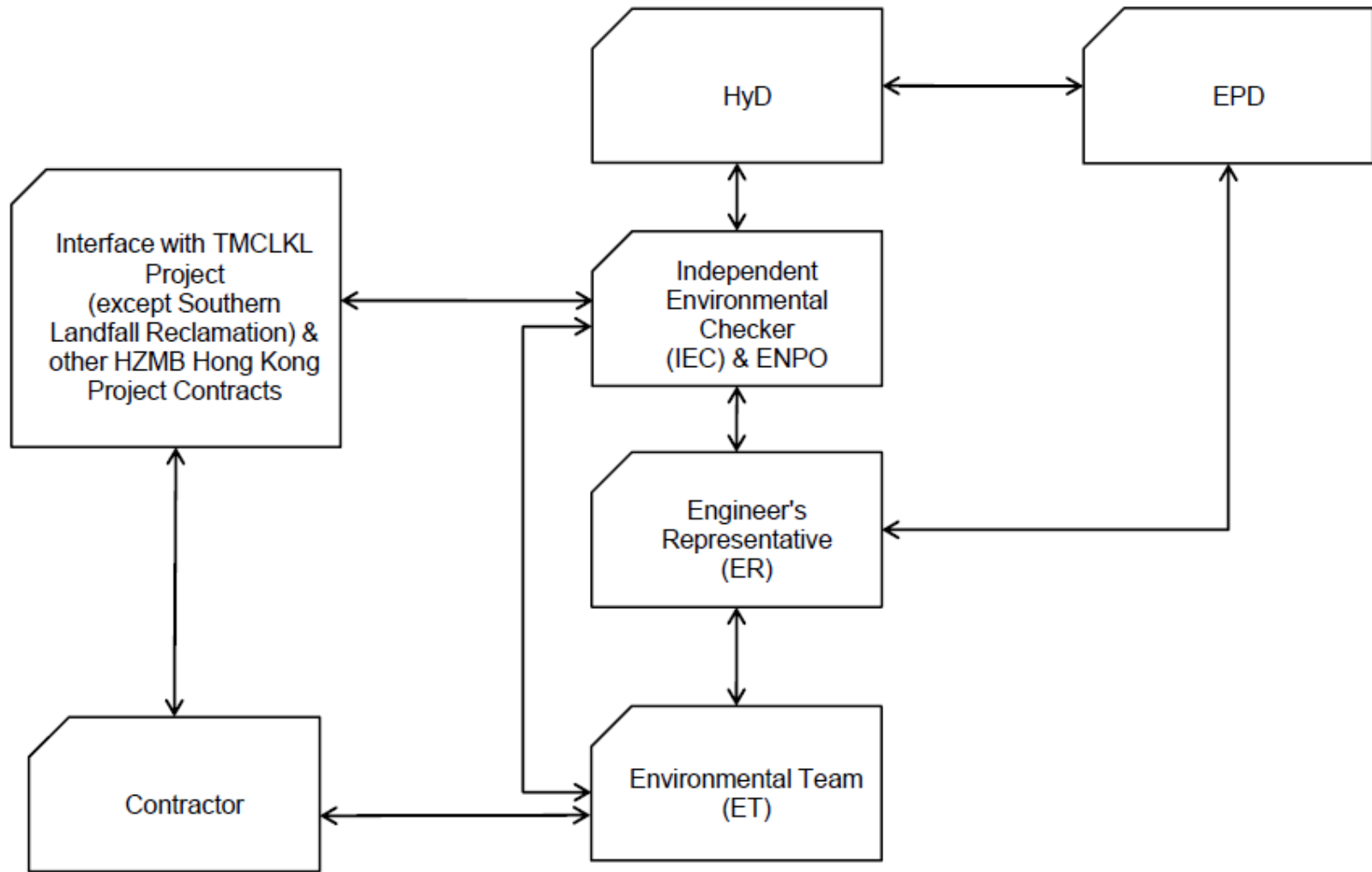
Environmental site inspection was carried out four (4) times in May 2020. Remedial actions recommended for the deficiencies identified during the site audits were properly implemented by the Contractor.

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

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

Appendix A

## Project Organization for Environmental Works



↔ Line of Communication

Appendix B

## Construction Programme

ID	Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020				
							May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
HY2017/10 - Works Programme Three Month Rolling Programme 20-May-20																																			
<b>Contract Dates</b>																																			
<b>Key Dates</b>																																			
KD05	KD05 - E&M for Toll Area, N1, Underpass, Plant Rm, Footbridges/Roads	0	0%																																
KD06C	KD06C - E&M for South Vent Building	0	100%																																
KD07	KD07 - E&M for Satellite Control Bldg and S1 & S2	0	0%																																
KD07A	KD07A - E&M for Approach Roads and At-Grade Rd at South Side	0	100%																																
KD09	KD09 - C&ED Building, E&M Works, & FSD Inspection	0	0%																																
KD10	KD10 - FSD Building, E&M Works, & FSD Inspection	0	0%																																
<b>Portion Possession Dates</b>																																			
P325	Possession to Portion XXII (Day 483)	0	0%																																
P335	Possession to Portion XXIII (Day 483)	0	0%																																
<b>Portion Handover Dates</b>																																			
H120	Vacate Portion XVIb (KD10+28)	0	0%																																
H130	Vacate Portion XVIa (KD10+28)	0	0%																																
H140	Vacate Portion XVb (KD9+28)	0	0%																																
H150	Vacate Portion XVa (KD9+28)	0	0%																																
<b>Major Design Submission &amp; Approval</b>																																			
<b>Toll Control Building</b>																																			
<b>MVAC System</b>																																			
TCB-EMD1095	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	80%																																
TCB-EMD1115	Authorities Review and Comment of MVAC Pump head calculation	56	80%																																
<b>Electrical System</b>																																			
TCB-EMD1015	Authorities Review and Comment of UPS and Battery Capacity Calculations	56	80%																																
TCB-EMD1055	Authorities Review and Comment of Generator Calculation	56	80%																																
<b>Fire Service System</b>																																			
TCB-EMD1175	Authorities Review and Comment of FS Pump Head Calculation	56	80%																																
TCB-EMD1195	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																																
TCB-EMD1215	Authorities Review and Comment of FM200 System Design Calculation	56	80%																																
<b>Plumbing &amp; Drainage System</b>																																			
TCB-EMD1235	Authorities Review and Comment of Pump Head Calculation	56	80%																																
TCB-EMD1275	Authorities Review and Comment of Hot water system capacity calculation	56	80%																																
TCB-EMD1395	Authorities Review and Comment of Drainage Sump Pumps and Pump Pits Calculation	56	80%																																
<b>Administration Building</b>																																			
<b>MVAC System</b>																																			
ADB-EMD1015	Authorities Review and Comment of AC Cooling Capacity Calculation	56	80%																																
ADB-EMD1035	Authorities Review and Comment of AHU/PAU Static Pressure Calculation	56	80%																																
ADB-EMD1055	Authorities Review and Comment of Pump head calculation	56	80%																																
ADB-EMD1075	Authorities Review and Comment of Mechanical Ventilation Capacity Calculation	56	80%																																
<b>Electrical System</b>																																			
ADB-EMD1115	Authorities Review and Comment of Electrical Loading Demand Calculation	56	80%																																
ADB-EMD1135	Authorities Review and Comment of Generator Calculation	56	80%																																
<b>Fire Service System</b>																																			
ADB-EMD1155	Authorities Review and Comment of FS Pump Head Calculation	56	80%																																
ADB-EMD1175	Authorities Review and Comment of Sprinkler Pump Head Calculation	56	80%																																
<b>Plumbing &amp; Drainage System</b>																																			
ADB-EMD1215	Authorities Review and Comment of Pump Head Calculation	56	80%																																
ADB-EMD1235	Authorities Review and Comment of Pressure Vessel Calculation	56	80%																																

CONTRACT NO. HY2017/10

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

THREE MONTHLY PROGRAMME AS OF 20 May 2020

P 1	Date	Revision	Checked	Approved
	20-May-20			









ID	Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020				
							May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Tunnel</b>																																			
<b>Individual Shop Drawing</b>																																			
TUN-ISD1090	Authorities Review and Comment of Tunnel ISD 2nd batch	28	80%																																
TUN-ISD1140	Authorities Review and Comment of Tunnel ISD 3rd batch	28	80%																																
TUN-ISD1190	Authorities Review and Comment of Tunnel ISD 4th batch	28	80%																																
<b>Fire Services Department Building</b>																																			
<b>Individual Shop Drawing</b>																																			
FSD-1040	Authorities Review and Comment of FSD ISD 1st batch	28	80%																																
FSD-1090	Authorities Review and Comment of FSD ISD 2nd batch	28	80%																																
<b>Vehicular Underpass</b>																																			
<b>Individual Shop Drawing</b>																																			
VU-ISD1090	Authorities Review and Comment of Vehicular Underpass ISD 2nd batch	28	80%																																
<b>North Ventilation Building</b>																																			
<b>Individual Shop Drawing</b>																																			
NVB-ISD1090	Authorities Review and Approval of NVB ISD - 2nd batch	28	80%																																
<b>E&amp;M Manufacture &amp; Delivery</b>																																			
<b>Toll Control Building</b>																																			
<b>CCMS, TCS and ELV System</b>																																			
TCB-MD1215	Shipping to HK - TCS Equipment	14	50%																																
<b>Satellite Control Building</b>																																			
<b>MVAC System</b>																																			
SCB-MD1010	Manufacture & Delivery to HK - Computer Room Air Conditioning (CRAC) Unit	120	100%																																
<b>Tunnel</b>																																			
TUN-MD1060	Manufacture & Delivery to HK - Sump Pump	109	83.49%																																
TUN-MD1090	Shipping to HK - AQMS Equipment	7	50%																																
<b>Key Date 1 - Toll Control Building (TCB) &amp; TCSS Provision</b>																																			
<b>ABWF Works (for All)</b>																																			
ATCB1130	ABWF second fix & final fix	90	85%																																
<b>Key Date 2 - Administration Building, Maintenance Depot, Kiosk N2, TCSS Provision</b>																																			
<b>Administration Building (ADB)</b>																																			
<b>ABWF Works (for All)</b>																																			
AADB1200	ABWF second fix & final fix	90	98%																																
<b>Maintenance Depot</b>																																			
<b>ABWF Works (for All)</b>																																			
AMD1070	ABWF second fix & final fix	80	97%																																
<b>Key Date 6 - E&amp;M Works for Administration Building, Maintenance Depot, North Vent Building, Kiosk N2</b>																																			
<b>E&amp;M Works for Administration Building</b>																																			
<b>Testing and Commissioning</b>																																			
ADB-TC1030	Non-Essential T&C	30	80%																																
<b>E&amp;M Works for Maintenance Depot</b>																																			
<b>Testing &amp; Commissioning</b>																																			
MD-TC1040	Non-Essential T&C	30	80%																																
<b>Remaining E&amp;M Works for Kiosk N2 (Structure Completed under KD2)</b>																																			
EN2140	Testing & Commissioning	12	95%																																
<b>Remaining Works</b>																																			
KD6-OSW-1000	Remaining Works (Non FSI related)	42	50%																																
<b>Key Date 3 - Satellite Control Building &amp; TCSS Provision</b>																																			
<b>ABWF Works (for All)</b>																																			
ASCB1020	ABWF Works to Plant Rooms G/F	60	100%																																
ASCB1060	External Cladding and Wall Plastering	101	100%																																
ASCB1070	ABWF second fix & final fix	56	82%																																
<b>Key Date 5 - E&amp;M Works for TCB, Toll Area, Kiosk N1, Underpass, Plant Rm, and Approach Roads</b>																																			
<b>E&amp;M Works for TCB</b>																																			
<b>Installation</b>																																			
<b>G/F</b>																																			
TCB-EMGF1240	E&M Installation - PD Plant Rooms - G/F	60	85%																																
<b>1/F</b>																																			
TCB-EM1F1100	E&M Installation - PD Plant Rooms - 1/F	90	85%																																

CONTRACT NO. HY2017/10

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

THREE MONTHLY PROGRAMME AS OF 20 May 2020

P 5	Date	Revision	Checked	Approved
	20-May-20			

ID	Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020				
							May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>2/F</b>																																			
TCB-EM2F1100	E&M Installation - Elv Plant Rooms - 2/F	60	85%																[Gantt bar: July 2019 - May 2020]																
<b>Testing and Commissioning</b>																																			
AR210	KD5 Achieved	0	0%																[Gantt bar: May 2020]																
TCB-TC1030	Non-Essential T&C	12	50%																[Gantt bar: Feb 2020 - May 2020]																
<b>Remaining Works for TCB (Non-FSI related)</b>																																			
KD5-OSW-1000	Remaining Works (Non FSI related)	42	10%																[Gantt bar: Apr 2020 - May 2020]																
<b>Kiosk N1</b>																																			
EN140	ABWF Works (Door, windows, tiles)	30	92%																[Gantt bar: Oct 2019 - May 2020]																
EN160	T&C	12	0%																[Gantt bar: May 2020]																
<b>Underpass</b>																																			
<b>E&amp;M Works at Underpass</b>																																			
EU120	Remaining E&M Installations	37	90%																[Gantt bar: July 2019 - May 2020]																
EU130	Equipment Start-up T&C for FSI	12	100%																[Gantt bar: May 2020]																
EU135	Individual E&M System T&C for FSI	42	100%																[Gantt bar: May 2020]																
EU140	Integrated T&C for FSI	6	0%																[Gantt bar: May 2020]																
EU150	Non-Essential T&C	30	0%																[Gantt bar: May 2020]																
VU110	Jet Fans installation	24	100%																[Gantt bar: May 2020]																
VU140	Dampers installation	24	100%																[Gantt bar: May 2020]																
VU180	Cladding Works	25	95%																[Gantt bar: May 2020]																
<b>Plant Room</b>																																			
<b>E&amp;M Works</b>																																			
EPR130	E&M Installation	90	100%				[Gantt bar: Dec 2018 - May 2020]																												
EPR150	Equipment Start-up T&C for FSI	6	100%				[Gantt bar: May 2020]																												
EPR153	Individual E&M System T&C for FSI	18	100%				[Gantt bar: May 2020]																												
EPR155	Integrated T&C for FSI	6	0%				[Gantt bar: May 2020]																												
EPR160	Non-Essential T&C	30	0%				[Gantt bar: May 2020]												[Gantt bar: May 2020]																
<b>Approach Roads</b>																																			
<b>Under Portions IX, XI, XX</b>																																			
AR150	T&C of Roading Lighting	30	80%																[Gantt bar: Dec 2019 - May 2020]																
<b>Key Date 6B - E&amp;M Works for South Vent Duct, Tunnel, and Approach Roads</b>																																			
<b>E&amp;M Works</b>																																			
<b>Service Gallery</b>																																			
<b>Ch 7200 - 5000</b>																																			
TNL-SG1030	High Level 2nd Fix and Final Fix Installation CH7200 - 5000	46	100%																[Gantt bar: Oct 2019 - May 2020]																
TNL-SG1040	Cabling Works CH7200 - 5000	29	100%																[Gantt bar: Nov 2019 - May 2020]																
TNL-SG1050	Low Level 2nd Fix and Final Fix Installation CH7200 - 5000	24	100%																[Gantt bar: Dec 2019 - May 2020]																
<b>CH5000 - 3050</b>																																			
TNL-SG1090	High Level 2nd Fix and Final Fix Installation CH5000 - 3050	43	100%																[Gantt bar: Oct 2019 - May 2020]																
TNL-SG1100	Cabling Works CH5000 - 3050	28	100%																[Gantt bar: Nov 2019 - May 2020]																
TNL-SG1110	Low Level 2nd Fix and Final Fix Installation CH5000 - 3050	24	100%																[Gantt bar: Dec 2019 - May 2020]																
<b>CH3050 - 2500</b>																																			
TNL-SG1150	High Level 2nd Fix and Final Fix Installation CH3050 - 2500	21	100%																[Gantt bar: Dec 2019 - May 2020]																
TNL-SG1160	Cabling Works CH3050 - 2500	13	100%																[Gantt bar: Jan 2020 - May 2020]																
TNL-SG1170	Low Level 2nd Fix and Final Fix Installation CH3050 - 2500	11	100%																[Gantt bar: Jan 2020 - May 2020]																
<b>Road Level &amp; OHVD</b>																																			
<b>Ch 7200 - 5000</b>																																			
<b>Ch 7200 - 6700</b>																																			
TNU-RL1880	High level wiring works and remaining High level works in the middle of tunnels - CH7200 to 6700	20	100%																[Gantt bar: July 2019 - May 2020]																
TNU-RL1940	Final connection to small powers - CH7200 to 6700	10	100%																[Gantt bar: Feb 2020 - May 2020]																
TNU-RL1970	Cladding works - CH7200 to 6700	13	90%																[Gantt bar: Feb 2020 - May 2020]																
<b>Ch 6700 - 6100</b>																																			

CONTRACT NO. HY2017/10

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

THREE MONTHLY PROGRAMME AS OF 20 May 2020

P 6	Date	Revision	Checked	Approved
	20-May-20			

















ID	Activity	Duration (Days)	Duration % Complete	Start	Finish	Total Float	2018												2019												2020					
							May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
VUP-SI1080	WSD inspection of Plumbing Installation (FS)	4	100%																																	
VUP-SI1095	Obtain Water Certificate and water supply connection - FS	4	0%																																	
VUP-SI2000	Final Submission of Form FSI 314 / 501 to FSD	0	0%																																	
VUP-SI2010	FSD Inspection	42	0%																																	
VUP-SI2020	Obtain FSI Certificate FS 172	0	0%																																	
<b>Toll Control Building &amp; Toll Collector Subway</b>																																				
TCB-SI2000	Submit WWO46 Part IV for PD	0	0%																																	
TCB-SI2020	WSD inspection of Plumbing Installation (PL)	4	0%																																	
TCB-SI2030	WSD inspection of Plumbing Installation (FS)	4	50%																																	
TCB-SI2040	Water Samples Test	24	0%																																	
TCB-SI2045	Obtain Water Certificate and water supply connection - FS	4	0%																																	
TCB-SI2050	Obtain Water Certificate and water supply connection - PL	4	0%																																	
TCB-SI3000	Submit CT2B	0	0%																																	
TCB-SI3010	EMSD examines site acceptance report and acceptance	36	0%																																	
TCB-SI3020	Submit WWO46 part IV for CT plumbing works	0	0%																																	
TCB-SI3030	WSD inspection and water connection for CT plumbing works	4	0%																																	
TCB-SI4020	Obtain FSI Certificate FS 172	0	0%																																	
<b>Satellite Control Building</b>																																				
SCB-SI1030	Obtain DG Licence	0	100%																																	
SCB-SI1040	Submit WWO46 Part IV for PD	0	0%																																	
SCB-SI1050	Submit WWO46 Part IV for FS	0	0%																																	
SCB-SI1060	WSD inspection of Plumbing Installation (PL)	4	0%																																	
SCB-SI1070	WSD inspection of Plumbing Installation (FS)	4	0%																																	
SCB-SI1080	Water Samples Test	24	0%																																	
SCB-SI1090	Obtain Water Certificate and water supply connection - FS	1	0%																																	
SCB-SI1100	Obtain Water Certificate and water supply connection - PL	1	0%																																	
SCB-SI1110	Final Submission of Form FSI 314 / 501 to FSD	0	0%																																	
SCB-SI1120	FSD Inspection	29	0%																																	
<b>South Ventilation Building</b>																																				
SVB-SI1090	Submit WWO46 Part IV for PD	0	0%																																	
SVB-SI1110	WSD inspection of Plumbing Installation (PL)	4	0%																																	
SVB-SI1120	WSD inspection of Plumbing Installation (FS)	4	0%																																	
SVB-SI1130	Water Samples Test	24	0%																																	
SVB-SI1135	Obtain Water Certificate and water supply connection - FS	4	0%																																	
SVB-SI1140	Obtain Water Certificate and water supply connection - PL	4	0%																																	
SVB-SI2000	Final Submission of Form FSI 314 / 501 to FSD	0	100%																																	
SVB-SI2010	FSD Inspection	13	50%																																	
SVB-SI2020	Obtain FSI Certificate FS 172	0	0%																																	
<b>Tunnel</b>																																				
TNL-10TC2000	Submit FS Form 501	0	100%																																	
TNL-10TC2010	FSD inspection & re-inspection	42	0%																																	
TNL-10TC2020	Obtain Fire Certificate	0	0%																																	
<b>Others Works for Road Opening</b>																																				
OW110	Works Substantially Completed at North Side	0	0%																																	
OW120	Hard Landscaping Works & Irrigation Systems	96	0%																																	
OW130	Street Furniture	96	0%																																	
OW135	All T&C Completed	0	0%																																	
OW140	Toll Collection System Test	70	0%																																	
OW145	ELV System Test	70	0%																																	
OW155	Interfacing T&C with C5	70	0%																																	

CONTRACT NO. HY2017/10

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

THREE MONTHLY PROGRAMME AS OF 20 May 2020

P 13

Date	Revision	Checked	Approved
20-May-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-Chek Lap  
Kok Link - Investigation. Updated EM&A Manual for  
Tuen Mun-Chek Lap Kok Link)

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

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

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						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)
<b>WATER QUALITY (LAND WORKS)</b>									
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

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						D	C	O	
6.10	5.8	Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	The Contractor shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance.	All areas/ throughout construction period	Contractor	TM-EIAO Waste Disposal Ordinance		Y		✓

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EIA Reference	EM&A Manual Reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status *
						D	C	O	
6.10	-	All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		<>
6.10	-	Surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		N/A
6.10	-	Roadside gullies to trap silt and grit shall be provided prior to discharging the stormwater into the marine environment. The sumps will be maintained and cleaned at regular intervals.	Roadside/design and operation	Design Consultant/ Contractor	TM-EIAO	Y		Y	N/A
6.10	Section 11	All construction works shall be subject to routine audit to ensure implementation of all EIA recommendations and good working practice.	All areas/ throughout construction period	Contractor	EM&A Manual		Y		✓
<b>WASTE</b>									
12.6		The Contractor shall identify a coordinator for the management of waste.	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6		The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such as a ticketing system, to facilitate tracking of loads and to ensure that illegal disposal of wastes does not occur, and protocols for the maintenance of records of the quantities of wastes generated, recycled and disposed. A recording system for the amount of waste generated, recycled and disposed (locations) should be established.	Contract mobilisation	Contractor	TMEIA, Works Branch Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material		Y		✓
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling.	Contract Mobilisation	Contractor	TMEIA		Y		✓

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						D	C	O	
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to minimise the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The site and surroundings shall be kept tidy and litter free.	All areas / throughout construction period	Contractor	TMEIA		Y		<>
12.6	8.1	No waste shall be burnt on site.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	The Contractor shall be prohibited from disposing of C&D materials at any sensitive locations. The Contractor should propose the final disposal sites in the EMP and WMP for approval before implementation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Stockpiled material shall be covered by tarpaulin and /or watered as appropriate to prevent windblown dust/ surface run off.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Excavated material in trucks shall be covered by tarpaulins to reduce the potential for spillage and dust generation.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Wheel washing facilities shall be used by all trucks leaving the site to prevent transfer of mud onto public roads.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Standard formwork or pre-fabrication should be used as far as practicable so as to minimise the C&D materials arising. The use of more durable formwork/plastic facing for construction works should be considered. The use of wooden hoardings should be avoided and metal hoarding should be used to facilitate recycling. Purchasing of construction materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		✓

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

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						D	C	O	
		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		✓
<b>LANDSCAPE AND VISUAL</b>									

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

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						D	C	O	
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
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

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

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

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

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

\* 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*

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

Appendix E

## Event Action Plan

*Appendix E1 Event/ Action Plan for Air Quality*

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

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

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

8. If the exceedance stops, cease  
additional monitoring.

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

Appendix F

## Monthly Summary of Waste Flow Table

Contract No. : HY/2017/10

**Tuen Mun Chek Lap Kok Link – Northern Connection Tunnel Buildings, Electrical and Mechanical Works  
Monthly Summary Waste Flow Table for 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 <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('000m <sup>3</sup> )	('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	3.641	0.000	-	1.975	-	1.666	-	252.730	-	-	0.056	-
Jun	-	0.000	-	-	-	-	-	-	-	-	-	-
<b>SUB-TOTAL</b>	<b>4.529</b>	<b>0.143</b>	<b>0.000</b>	<b>1.975</b>	<b>0.604</b>	<b>1.950</b>	<b>0.000</b>	<b>1022.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.252</b>	<b>0.000</b>
Jul	-	0.000	-	-	-	-	-	-	-	-	-	-
Aug	-	0.000	-	-	-	-	-	-	-	-	-	-
Sep	-	0.000	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-
Nov	-	0.000	-	-	-	-	-	-	-	-	-	-
Dec	-	0.000	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>	<b>4.529</b>	<b>0.143</b>	<b>0.000</b>	<b>1.975</b>	<b>0.604</b>	<b>1.950</b>	<b>0.000</b>	<b>1,022.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.252</b>	<b>0.000</b>

**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 G

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

*Appendix G1 Cumulative Statistics on Exceedances*

		Total No. recorded in this reporting month	Total No. recorded since contract commencement
1-Hr TSP	Action	0	43
	Limit	0	9
24-Hr TSP	Action	0	2
	Limit	0	0
Landfill gas hazard monitoring			
	• Methane	0	0
	• Oxygen	0	0
	• Carbon Dioxide	0	0

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

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