



AUES JOB No.: TCS00715/14

**TUEN MUN - CHEK LAP KOK LINK
CONTRACT NO. HY/2013/12 –
NORTHERN CONNECTION TOLL PLAZA AND
ASSOCIATED WORKS**

**FINAL ENVIRONMENTAL MONITORING AND AUDIT
(EM&A) REPORT – NOVEMBER 2014 TO DECEMBER
2020**

PREPARED FOR
CRBC AND KADEN JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
7 September 2021	TCS00715/14/600/R0745v3	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

9 September 2021

By Fax (2218 7299) 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. Roger Man

Dear Mr. Man,

**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/2013/12
TM-CLKL – Northern Connection Toll Plaza and Associated Works
Final EM&A Report**

Reference is made to the Environmental Team's submission of the Final EM&A report (ET's ref.: "TCS00715/14/600/R0745v3" dated 7 September 2021) certified by the ET Leader and provided to us via e-mail on 7 September 2021.

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

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

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



Brian Tam
Independent Environmental Checker
Tuen Mun-Chek Lap Kok Link

c.c.

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EXECUTIVE SUMMARY

- ES01 In August 2014, CRBC-Kaden Joint Venture (*hereafter “CRBC-Kaden JV”*) has been awarded the *Contract No. HY/2013/12 -Northern Connection Toll Plaza and Tunnel Section of the Tuen Mun – Chek Lap Kok Link* (*hereinafter called “the Contract”*) by the Highways Department (HyD). The construction phase of the Contract was commenced on **23 October 2014**.
- ES02 The Project TM-CLKL had been commissioning at the end of 2020 and the termination proposal for construction EM&A programme was approved by EPD on 23 December 2020. The construction phase EM&A programme of the Contract has been terminated since 31 December 2020.
- ES03 In view of the construction works under the Contract, the major construction activities are land-based. In accordance with the Project EM&A Manual requirements, environmental aspect monitoring should be conducted including air quality, ecological (Pitcher plant), cultural heritage and site inspections during construction period. In addition, landscape and visual (L&V) monitoring, landfill gas monitoring and audit of the contractor’s implementation of the construction noise and land-based water quality pollution control measures are also required for the Contract.
- ES04 This is the **Final** EM&A Report for the “*Tuen Mun - Chek Lap Kok Link - Northern Connection Toll Plaza and Associated Works*” under Environmental Permit No. EP-354/2009/D (*hereinafter “the EP”*), covering the construction phase of the contract from **23 October 2014 to 31 December 2020** (*hereinafter “Reporting Period”*).

SUMMARY OF EM&A ACTIVITIES FOR THE REPORTING PERIOD

- ES05 In the Reporting Period, the EM&A activities is summarized in *Table ES-02*.

Table ES-02 Summary EM&A Activities Undertaken in the Reporting Period

Environmental Aspect	Environmental Monitoring Parameters / Inspection	Total
Air Quality	1-hour TSP	10,845
	24-hour TSP	3,605
Cultural heritage inspection	Grave G1	322
Landfill Gas Monitoring	Oxygen; Methane & Carbon Dioxide	1,403 days
Landscape & Visual	Landscape & Visual Monitoring	291
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	322

BREACH OF ACTION AND LIMIT (A/L) LEVELS

- ES06 In according with the air quality measurement results by the ET of Contract HY/2012/08 total 94 Action Level, 13 Limit Level exceedances of 1-hour TSP and total 7 Action Level, 3 Limit Level exceedances of 24-hour TSP were recorded in the Reporting Period

ES07 For landfill gas monitoring, the concentration of all parameters were detected within the acceptable levels. *Table ES-03* is summarized breach of environmental performance criteria.

Table ES-03 Action and Limit (A/L) Levels Breach Summarized in the Reporting Period

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	94	13	71	71	0
	24-hour TSP	7	3	10	10	0
Landfill Gas Monitoring	Oxygen	0	0	0	0	0
	Methane	0	0	0	0	0
	Carbon Dioxide	0	0	0	0	0

ENVIRONMENTAL COMPLAINT

ES08 Total 11 complaints received during the Construction Phase of the contract. The statistics of environmental complaint is listed in *Table ES-04*.

Table ES-04 Statistical Summary of Environmental Complaints

Reporting Period	Complaint Nature				Total Registered
	Water Quality	Construction Dust	Construction Noise	Others	
23 October 2014 – 31 December 2020	6	4	1	2	11

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES09 No environmental summons or successful prosecutions were recorded in the Reporting Period.

CONCLUSIONS

ES10 The construction phase monitoring programme ensured that any environmental impact to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental acceptability of the Project. The regular site inspection and waste audit ensured that all the mitigation measures on waste management were effectively implemented.

ES11 The EM&A programme effectively monitored the environmental impacts from the construction phase of the Project and no particular recommendation was advised for the improvement of the programme.

ES12 It is considered that the environmental acceptability of the Contract during the construction phase was satisfactory and acceptable. In general, the monitoring results were in line with EIA predictions.

ES13 After terminated of the construction phase EM&A programme, the establishment period monitoring for planting works will be carried on till May 2022 to fulfill the EM&A Manual requirement.

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1 INTRODUCTION

1.1 CONTRACT BACKGROUND

- 1.1.1 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.
- 1.1.2 CRBC-Kaden Joint Venture (hereafter “CRBC-Kaden JV”) is commissioned by the Highways Department (HyD) as the Main Contractor of the Contract No. HY/2013/12 – Northern Connection Toll Plaza and Tunnel Section ((hereafter “the Contract”) and this Contract is part of the Tuen Mun – Chek Lap Kok Link (TM-CLK Link Project). TM-CLK Link Project is a Designated Project under the latest Environmental Permit number EP-354/2009/D issued on 13 March 2015. The layout Plan of the Project and the Contract are showed in [Appendix A](#) and [Appendix B](#) respectively.
- 1.1.3 AECOM Asia Company Limited as the Resident Engineer (RE) and Ramboll Hong Kong Limited as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) were employed by the HyD. For implementation of the environmental monitoring and audit (EM&A) programme under the Contract, CRBC-Kaden JV has appointed Action-United Environmental Services & Consulting (AUES) as the Environmental Team (ET) to responsible relevant environmental monitoring work.
- 1.1.4 Construction phase of the Contract was commenced on 23 October 2014. According to the approved EM&A Manual, the impact monitoring for the EM&A programme including air quality, ecological monitoring, cultural heritage monitoring, landscape and visual monitoring, landfill gas hazard monitoring and environmental site inspections.
- 1.1.5 The Project TM-CLKL had been commissioning at the end of 2020 and the termination proposal for construction EM&A programme was approved by EPD on 23 December 2020. The construction phase EM&A programme of the Contract has been terminated since 31 December 2020.
- 1.1.6 This is the Final EM&A Report to summarize the monitoring results and inspection findings with the Contractor performance during the construction period from 23 October 2014 to 31 December 2020 (hereinafter “Reporting Period”).

1.2 REPORT STRUCTURE

- 1.2.1 The Final Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

Section 1 *Introduction*

Section 2 *Contract Organization and Construction Progress and Environmental Submissions*

Section 3 *Summary of Impact Monitoring Requirements under the Contract*

Section 4 *Air Quality Monitoring*

Section 5 *Ecology Monitoring*

Section 6 *Cultural Heritage*

Section 7 *Landscape and Visual*

- Section 8* *Landfill gas hazard Monitoring*
- Section 9* *Waste Management*
- Section 10* *Inspection and Auditing*
- Section 11* *Environmental Complaint and Non-Compliance*
- Section 12* *Implementation Status of Mitigation Measures*
- Section 13* *Conclusions and Recommendations*

2 CONTRACT ORGANIZATION AND CONSTRUCTION PROGRESS AND ENVIRONMENTAL SUBMISSIONS

2.1 CONTRACT ORGANIZATION

2.1.1 The Contract organization and contact details of key personnel are shown in [Appendix C](#).

2.2 CONSTRUCTION PROGRESS

2.2.1 The major construction activity conducted under the Contract is summarized in below.

- a. construction of an approximately 5.4 hectares toll plaza and an associated footbridge;
- b. construction of associated carriageways including approximately 0.74 kilometre land viaducts, and an approximately 230 metres vehicular underpass to connect the toll plaza and the roundabout at Lung Mun Road/Lung Fu Road;
- c. site formation for the construction of the toll plaza, including associated slope works and natural terrain hazard mitigation measures;
- d. modification and realignment of the existing Lung Mun Road and Lung Fu Road; and
- e. associated waterworks, drainage, sewerage and landscaping works, etc..

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 In according to the EP, the required documents have submitted to EPD for retention which listed in below:

- Monitoring Plan on construction dust
- Landscape and Visual Plan
- Waste Management Plan
- Baseline Monitoring Report

2.3.2 Summary of the relevant permits, licenses, and/or notifications on environmental protection as obtained by the Contract in the reporting period is presented in [Table 2-1](#).

Table 2-1 Status of Environmental Licenses and Permits of the Contract

No.	Type of Permit/ License	Reference/ License No.	Date of Issue	Date of Expiry
1	Air pollution Control (Construction Dust) Regulation	377719	06-08-2014	N/A
2	Chemical Waste Producer Registration - Waste Producers Number	5117422C389301	03-09-2014	N/A
3	Water Pollution Control Ordinance –Original / Variation of Effluent Discharge License	WT00020065-2014	29-09-2014	30-09-2019
		WT00023973-2016	25-10-2017	30-09-2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	7020460	01-08-2014	N/A
5	Permission to Transplant Pitcher Plant	(7) in AF CON 11/13 pt.4	09-12-2014	08-06-2015
		(30) in AF CON 11/13 pt.4	23-6-2015	22-12-2015
6	CNP for Construction of Site Office	GW-RW0656-14	03-09-2014	22-02-2015
7	CNP for Site Formation	GW-RW0761-14	29-09-2014	29-03-2015
8	CNP for Concreting	GW-RW0748-14	29-09-2014	29-03-2015
9	CNP for Multiple Task	GW-RW0949-14	05-12-2014	04-05-2015
		GW-RW0225-15	13-05-2015	04-11-2015
		GW-RW0520-15	05-11-2015	04-05-2016
		GW-RW0520-16	05-05-2016	04-11-2016

No.	Type of Permit/ License	Reference/ License No.	Date of Issue	Date of Expiry
		GW-RW0619-16	05-11-2016	04-05-2017
		GW-RW0230-17	08-05-2017	04-11-2017
		GW-RW0605-17	25-11-2017	24-05-2018
		GW-RW0154-18	25-05-2018	24-11-2018
		GW-RW0480-18	25-11-2018	24-05-2019
		GW-RW0230-19	30-05-2019	24-11-2019
		GW-RW0555-19	25-11-2019	23-05-2020
		GW-RW0202-20	24-05-2020	23-11-2020
10	CNP for GI works	GW-RW0532-20	24-11-2020	23-05-2021
		GW-RW0134-15	16-03-2015	07-04-2015
11	CNP for MH5	GW-RW0226-15	18-05-2015	17-11-2015
		GW-RW0563-15	18-11-2015	17-05-2016
		GW-RW0563-16	18-05-2016	17-11-2016
		GW-RW0650-16	18-11-2016	17-05-2017
		GW-RW0242-17	22-05-2017	17-11-2017
12	CNP for Tunnel	GW-RW0582-15	23-11-2015	22-05-2016
		GW-RW0582-16	23-05-2016	22-11-2016
		GW-RW0653-16	23-11-2016	22-05-2017
		GW-RW0243-17	23-05-2017	22-11-2017
		GW-RW0567-17	26-10-2017	22-05-2018
		GW-RW0140-18	23-05-2018	22-11-2018
13	CNP for falsework erection	GW-RW0478-18	23-11-2018	22-05-2019
		GW-RW0076-16	15-02-2016	21-04-2016
		GW-RW0215-16	26-04-2016	21-06-2016
		GW-RW0289-16	22-06-2016	19-08-2016
		GW-RW0472-16	22-08-2016	21-12-2016
		GW-RW0724-16	28-12-2016	16-03-2017
		GW-RW0117-17	09-03-2017	16-06-2017
		GW-RW0205-17	25-04-2017	25-11-2017
14	CNP for Portion H	GW-RW0563-17	26-10-2017	24-02-2018
		GW-RW0066-18	26-02-2018	19-05-2018
		GW-RW0704-16	06-12-2016	21-02-2017
		GW-RW0049-17	14-02-2017	18-08-2017
		GW-RW0242-17	22-05-2017	17-11-2017
		GW-RW0568-17	26-10-2017	22-05-2018
		GW-RW0155-18	25-05-2018	17-11-2018
		GW-RW0479-18	18-11-2018	17-05-2019
		GW-RW0203-19	18-05-2019	17-11-2019
15	CNP for Road Paving Works	GW-RW0556-19	25-11-2019	17-05-2020
		GW-RW0201-20	18-05-2020	16-11-2020
		GW-RW0211-17	25-04-2017	01-11-2017
16	CNP for Lung Mun Road	GW-RW0561-17	26-10-2017	01-02-2018
		GW-RW0044-18	01-02-2018	28-04-2018
		GW-RW0174-18	20-05-2018	12-08-2018
		GW-RW0334-18	13-08-2018	17-11-2018
		GW-RW0475-18	19-11-2018	02-12-2018
		GW-RW0530-18	25-12-2018	02-03-2019
		GW-RW0103-19	15-03-2019	30-04-2019
		GW-RW0200-19	16-05-2019	05-06-2019
		GW-RW0344-19	27-07-2019	01-10-2019
		GW-RW0491-19	11-10-2019	15-12-2019
		GW-RW0004-20	09-01-2020	14-03-2020
		GW-RW0123-20	27-03-2020	14-05-2020
GW-RW0261-20	12-06-2020	16-08-2020		

No.	Type of Permit/ License	Reference/ License No.	Date of Issue	Date of Expiry
		GW-RW0382-20	04-09-2020	13-11-2020
		GW-RW0506-20	13-11-2020	18-12-2020
17	CNP for Lung Fu Road	GW-RW0135-18	02-05-2018	27-07-2018
		GW-RW0289-18	30-07-2018	27-10-2018
		GW-RW0436-18	29-10-2018	01-12-2018
		GW-RW0531-18	27-12-2018	02-03-2019
		GW-RW0162-19	17-04-2019	05-06-2019
		GW-RW0341-19	26-07-2019	28-09-2019
		GW-RW0490-19	11-10-2019	14-12-2019
		GW-RW0005-20	10-01-2020	26-03-2020
		GW-RW0130-20	08-04-2020	24-06-2020
		GW-RW0287-20	03-07-2020	09-09-2020
		GW-RW0423-20	22-09-2020	06-11-2020
18	CNP for Lung Fu Road (Out of site boundary)	GW-RW0381-20	04-09-2020	27-09-2020

Note: CNP is Control Noise Permit

3 SUMMARY OF IMPACT MONITORING REQUIREMENTS UNDER THE CONTRACT

3.1 GENERAL

3.1.1 In view of the construction works under the Contract, the major construction activities are land-based. In accordance with the Project EM&A Manual requirements, environmental aspect monitoring should be conducted including air quality, ecological (Pitcher plant), cultural heritage and site inspections during construction period. In addition, landscape and visual (L&V) monitoring, landfill gas monitoring and audit of the contractor’s implementation of the construction noise and land-based water quality pollution control measures are also required for the Contract.

3.1.2 A summary of construction phase EM&A requirements are presented in the sub-sections below.

3.2 AIR QUALITY MONITORING PARAMETERS

3.2.1 The construction phase air quality monitoring shall cover the following parameters:

- 1-hour TSP; and
- 24-hour TSP

3.3 MONITORING LOCATION

3.3.1 The air quality monitoring stations for impact monitoring are listed in **Table 3.1** and illustrated in **Appendix D**.

Table 3-1 Designated Air Quality Monitoring Stations under the Contract

ID	Location	Air monitoring station Description
ASR1	Tuen Mun Fireboat Station	EM&A Manual
ASR5	Pillar Point Fire Station	EM&A Manual
AQMS1	Previous River Trade Golf	Enhanced TSP Level under EP condition 2.4
ASR6	Butterfly Beach Laundry	Enhanced TSP Level under EP condition 2.4
ASR10	Butterfly Beach Park	Enhanced TSP Level under EP condition 2.4

3.4 MONITORING FREQUENCY

General Requirement

3.4.1 For regular impact monitoring, the sampling frequency of at least once in every six days shall be strictly observed at five of the designated monitoring stations for 24-hr TSP monitoring. For 1-hr TSP monitoring, the sampling frequency of at least three times in every six days should be undertaken at five locations when the highest dust impact occurs. The stations to be monitored should be selected based on the prevailing wind direction and their proximity to the active construction works.

Special Requirement

3.4.2 As per Condition 2.4 of the EP of TM-CLKL, an enhanced monitoring plan on TSP level at Tuen Mun (“the Enhanced TSP Monitoring Plan”) is required to be submitted to the DEP for approval at least 1 month before the commencement of construction of the Project. Details of the Enhanced TSP Monitoring Plan under Contract No. HY/2012/08 could be found from the project website. The air quality monitoring work under this Contract will follow the monitoring requirement of enhanced TSP monitoring under the project.

3.4.3 The air quality monitoring requirements for the Contract is shown in **Table 3-2**.

Table 3-2 Enhanced TSP Monitoring Plan – Construction Phase

Condition	Monitoring Parameter	Monitoring Location	Frequency	Monitoring Requirement
General	1-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	3 times per day every six days	Throughout the Northern Connection, toll plaza and tunnel buildings construction works
	24-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	Daily every six days	
Special	1-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	3 times per day every three days	<p><u>Northern Connection</u> During excavation works for launching shaft, excavation work for Cut and Cover Tunnel and Cut and Cover Tunnel Construction</p> <p><u>Toll Plaza</u> During excavation, slope works, construction of road and superstructures and wind erosion from open sites and stockpiling areas</p> <p><u>Tunnel Buildings</u> During excavation, foundation works, construction of superstructures and wind erosion from open sites and stockpiling areas</p>
	24-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	Daily every three days	

3.5 DERIVATION OF ACTION/LIMIT (A/L) LEVELS

3.5.1 The baseline monitoring results formed the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 24-hour TSP and 1-hour TSP. Based on results of the approved Baseline Monitoring Report of HyD Contract HY/2012/08, the proposed Action and Limit Levels are shown in *Tables 3-3*.

Table 3-3 TSP Action and Limit Levels for Impact Air Quality Monitoring

Air Quality Monitoring Stations	24-hour TSP ($\mu\text{g}/\text{m}^3$)		1-hour TSP ($\mu\text{g}/\text{m}^3$)	
	Action Level	Limit Level	Action Level	Limit Level
ASR1	213	260	331	500
ASR5	238	260	340	500
AQMS1	213	260	335	500
ASR6	238	260	338	500
ASR10	214	260	337	500

3.5.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in *Appendix E*.

3.6 OTHER ENVIRONMENTAL ASPECTS

Noise

- 3.6.1 The TM-CLKL EIA study concluded that no existing noise sensitive receiver (NSR) was identified within the Study Area at Tuen Mun. Therefore, no planned NSR designated at the Project sites of Tuen Mun. Based upon this, no noise monitoring is necessary for construction phase under the Contract.
- 3.6.2 Regular site inspections and audits will be carried out during the construction phase in order to confirm compliance with the regulatory requirements and conformity of the Contractor with regard to noise control and contract conditions.

Water Quality

- 3.6.3 No marine works will be undertaken under the Contract. Based upon this, no water quality monitoring is necessary for construction phase.

Ecology

- 3.6.4 Since the Works of the Contract would not generate marine ecological impact, no dolphin monitoring under the Contract was conducted.
- 3.6.5 During construction phase, the ET will perform Pitcher Plants inspection at least once every week to report the growth condition (only undertaken at Establish period) and protection measures.

Landscape and Visual

- 3.6.6 According to EIA recommendation, site inspection and audit shall be required to be undertaken in the operation stage. Measures to mitigate landscape and visual impacts during construction should be checked and monitored by a Registered Landscape Architect to ensure compliance with the intended aims of the mitigation measures in accordance with the EM&A Manual.

Cultural Heritage

- 3.6.7 Grave G1 of heritage resources is situated near the proposed toll plaza in Tuen Mun. Site inspections should be undertaken at least once per week throughout the construction period to ensure compliance with the intended aims of recommended mitigation measures.

Monitoring and Measurement of Landfill Gas

- 3.6.8 During EIA study, landfill gas hazards are likely to be generated from the Pillar Point Valley (PPV) Landfill. Hence, regular landfill gas monitoring is recommended during construction of the proposed toll plaza. Safety Officer or an approved and appropriated qualified person should be carried out the monitoring works to make sure the area free of landfill gas before any man enters in the area.

3.6.9 Depending on the results of the measurements, actions required will vary and should be set down by the Safety Officer or other appropriately qualified person. As a minimum these should encompass those actions specified as follow:

Table 3-4 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%

4 AIR QUALITY MONITORING

4.1 GENERAL

4.1.1 According to the Updated EM&A Manual and the Enhanced Total Suspended Particulates (TSP) Monitoring Plan, the air quality impact monitoring was conducted at the five air quality monitoring stations during the Reporting Period by the ET of Contract HY/2012/08. Sharing of impact air quality monitoring data between HY/2012/08 and HY/2013/12 is agreed by all relevant parties. Therefore the Contract is not required to conduct its own dust monitoring exercise until the Contract HY/2012/08 is ended.

4.2 AIR QUALITY MONITORING RESULTS IN REPORTING PERIOD

4.2.1 In the Reporting Period (construction phase), total 10,845 of 1-hr TSP measurements and 3,605 events of 24-hours TSP monitoring at five proposed locations were carried out by the ET of Contract HY/2012/08. Detailed air quality monitoring results and statistical analysis of the trends of air quality data during the Reporting Period can be referred to the Monthly EM&A Reports (from November 2014 to December 2020).

4.3 SUMMARY OF ACTION AND LIMIT (A/L) LEVELS EXCEEDANCE (NON-COMPLIANCE)

4.3.1 According to the air quality monitoring result provided by Contract HY/2012/08, total 94 Action Level, 13 Limit Level exceedances of 1-hour TSP and total 7 Action Level, 3 Limit Level exceedances of 24-hour TSP were recorded in the Reporting Period. Notification of Exceedances (NOEs) were issued after receiving the monitoring result from the Contract HY/2012/08. The summary of air quality exceedance is shown in *Table 4-1*.

Table 4-1 Summary of Air Quality Monitoring Exceedance

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed	Contract Related
14 November 2014	ASR1	1-hour TSP	404µg/m ³	Action Level	No
14 November 2014	ASR1	1-hour TSP	396µg/m ³	Action Level	No
2 December 2014	ASR5	1-hour TSP	346µg/m ³	Action Level	No
17 December 2014	AQMS1	1-hour TSP	348µg/m ³	Action Level	No
29 July 2017	ASR5	1Hr TSP	370 µg/m ³	Action Level	No
29 July 2017	ASR6	1Hr TSP	401 µg/m ³	Action Level	No
29 July 2017	ASR10	1Hr TSP	475 µg/m ³	Action Level	No
22 August 2017	ASR1	1Hr TSP	360 µg/m ³	Action Level	No
12 September 2017	ASR1	1Hr TSP	332 µg/m ³	Action Level	No
12 September 2017	ASR1	1Hr TSP	545 µg/m ³	Limit Level	No
12 September 2017	ASR1	1Hr TSP	413 µg/m ³	Action Level	No
12 September 2017	ASR5	1Hr TSP	367 µg/m ³	Action Level	No
18 September 2017	AQMS1	1Hr TSP	473 µg/m ³	Action Level	No
27 September 2017	ASR5	1Hr TSP	355 µg/m ³	Action Level	No
27 September 2017	ASR5	1Hr TSP	456 µg/m ³	Action Level	No

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed	Contract Related
21 October 2017	ASR1	1Hr TSP	372 µg/m ³	Action Level	No
21 October 2017	ASR1	1Hr TSP	439 µg/m ³	Action Level	No
27 October 2017	ASR5	1Hr TSP	368 µg/m ³	Action Level	No
27 October 2017	ASR6	1Hr TSP	388 µg/m ³	Action Level	No
2 November 2017	ASR5	1Hr TSP	351 µg/m ³	Action Level	No
2 November 2017	ASR10	1Hr TSP	403 µg/m ³	Action Level	No
2 November 2017	ASR10	1Hr TSP	816 µg/m ³	Limit Level	No
11 November 2017	ASR5	1Hr TSP	389 µg/m ³	Action Level	No
29 November 2017	ASR10	1Hr TSP	455 µg/m ³	Action Level	No
8 December 2017	ASR5	1Hr TSP	353 µg/m ³	Action Level	No
11 December 2017	ASR1	1Hr TSP	399 µg/m ³	Action Level	No
11 December 2017	ASR1	1Hr TSP	443 µg/m ³	Action Level	No
11 December 2017	ASR5	1Hr TSP	417 µg/m ³	Action Level	No
20 December 2017	ASR1	1Hr TSP	357 µg/m ³	Action Level	No
20 December 2017	ASR5	1Hr TSP	372 µg/m ³	Action Level	No
26 December 2017	ASR1	1Hr TSP	407 µg/m ³	Action Level	No
13 January 2018	ASR5	1Hr TSP	345 µg/m ³	Action Level	No
16 January 2018	ASR5	1Hr TSP	396 µg/m ³	Action Level	No
16 January 2018	ASR5	1Hr TSP	384 µg/m ³	Action Level	No
16 January 2018	ASR5	1Hr TSP	345 µg/m ³	Action Level	No
22 January 2018	ASR5	1Hr TSP	363 µg/m ³	Action Level	No
22 January 2018	ASR5	1Hr TSP	380 µg/m ³	Action Level	No
3 February 2018	ASR1	1Hr TSP	392 µg/m ³	Action Level	No
3 February 2018	ASR5	1Hr TSP	455 µg/m ³	Action Level	No
2 March 2018	ASR1	1Hr TSP	460 µg/m ³	Action Level	No
20 March 2018	ASR1	1Hr TSP	446 µg/m ³	Action Level	No
13 April 2018	ASR5	1Hr TSP	389 µg/m ³	Action Level	No

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed	Contract Related
26 August 2018	ASR1	1Hr TSP	417 µg/m ³	Action Level	No
29 August 2018	ASR1	1Hr TSP	403 µg/m ³	Action Level	No
7 September 2018	ASR1	1Hr TSP	392 µg/m ³	Action Level	No
28 September 2018	ASR1	1Hr TSP	584 µg/m ³	Limit Level	No
28 September 2018	ASR1	1Hr TSP	417 µg/m ³	Action Level	No
4 October 2018	ASR1	1Hr TSP	340 µg/m ³	Action Level	No
10 October 2018	ASR1	1Hr TSP	451 µg/m ³	Action Level	No
31 October 2018	ASR1	1Hr TSP	371 µg/m ³	Action Level	No
6 November 2018	ASR1	1Hr TSP	376 µg/m ³	Action Level	No
12 November 2018	ASR1	1Hr TSP	395 µg/m ³	Action Level	No
12 November 2018	ASR5	1Hr TSP	371 µg/m ³	Action Level	No
12 November 2018	ASR5	1Hr TSP	425 µg/m ³	Action Level	No
12 November 2018	ASR5	1Hr TSP	377 µg/m ³	Action Level	No
12 November 2018	ASR6	1Hr TSP	343 µg/m ³	Action Level	No
9 December 2018	ASR1	1Hr TSP	346 µg/m ³	Action Level	No
12 December 2018	ASR1	1Hr TSP	414 µg/m ³	Action Level	No
18 December 2018	ASR6	1Hr TSP	478 µg/m ³	Action Level	No
8 January 2019	ASR5	1Hr TSP	354 µg/m ³	Action Level	No
11 January 2019	ASR1	1Hr TSP	335 µg/m ³	Action Level	No
11 January 2019	ASR5	1Hr TSP	398 µg/m ³	Action Level	No
17 January 2019	ASR1	1Hr TSP	519 µg/m ³	Limit Level	No
17 January 2019	ASR5	1Hr TSP	354 µg/m ³	Action Level	No
26 January 2019	ASR5	1Hr TSP	399 µg/m ³	Action Level	No
27 March 2019	ASR1	1Hr TSP	412 µg/m ³	Action Level	No
30 March 2019	ASR1	1Hr TSP	374 µg/m ³	Action Level	No
11 May 2019	ASR1	1Hr TSP	339 µg/m ³	Action Level	No
23 May 2019	ASR1	1Hr TSP	408 µg/m ³	Action Level	No
10 July 2019	ASR6	1Hr TSP	372 µg/m ³	Action Level	No
28 July 2019	ASR1	1Hr TSP	646 µg/m ³	Limit Level	No
28 July 2019	ASR5	1Hr TSP	410 µg/m ³	Action Level	No

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed	Contract Related
20 September 2019	ASR1	1Hr TSP	539 µg/m ³	Limit Level	No
14 October 2019	ASR1	1Hr TSP	363 µg/m ³	Action Level	No
17 October 2019	ASR1	1Hr TSP	354 µg/m ³	Action Level	No
17 October 2019	ASR1	1Hr TSP	385 µg/m ³	Action Level	No
4 November 2019	ASR1	1Hr TSP	626 µg/m ³	Limit Level	No
4 November 2019	ASR5	1Hr TSP	398 µg/m ³	Action Level	No
7 November 2019	ASR5	1Hr TSP	479 µg/m ³	Action Level	No
28 November 2019	ASR1	1Hr TSP	577 µg/m ³	Limit Level	No
28 November 2019	ASR1	1Hr TSP	452 µg/m ³	Action Level	No
28 November 2019	ASR1	1Hr TSP	385 µg/m ³	Action Level	No
28 November 2019	ASR5	1Hr TSP	534 µg/m ³	Limit Level	No
28 November 2019	ASR5	1Hr TSP	500 µg/m ³	Action Level	No
1 December 2019	ASR1	1Hr TSP	747 µg/m ³	Limit Level	No
1 December 2019	ASR5	1Hr TSP	377 µg/m ³	Action Level	No
1 December 2019	ASR10	1Hr TSP	407 µg/m ³	Action Level	No
4 December 2019	ASR1	1Hr TSP	366 µg/m ³	Action Level	No
4 December 2019	ASR5	1Hr TSP	380 µg/m ³	Action Level	No
12 March 2020	ASR5	1Hr TSP	356 µg/m ³	Action Level	No
8 April 2020	ASR1	1Hr TSP	357 µg/m ³	Action Level	No
8 April 2020	ASR1	1Hr TSP	457 µg/m ³	Action Level	No
8 April 2020	ASR5	1Hr TSP	384 µg/m ³	Action Level	No
14 April 2020	ASR1	1Hr TSP	673 µg/m ³	Limit Level	No
13 June 2020	ASR6	1Hr TSP	357 µg/m ³	Action Level	No
13 August 2020	ASR1	1Hr TSP	352 µg/m ³	Action Level	No
11 September 2020	ASR6	1Hr TSP	499 µg/m ³	Action Level	No
11 September 2020	ASR6	1Hr TSP	1454 µg/m ³	Limit Level	No
9 October 2020	ASR5	1Hr TSP	373 µg/m ³	Action Level	No
21 October 2020	ASR1	1Hr TSP	494 µg/m ³	Action Level	No
21 October 2020	ASR5	1Hr TSP	474 µg/m ³	Action Level	No

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed	Contract Related
21 October 2020	ASR6	1Hr TSP	352 µg/m ³	Action Level	No
6 November 2020	ASR1	1Hr TSP	887 µg/m ³	Limit Level	No
12 November 2020	ASR1	1Hr TSP	474 µg/m ³	Action Level	No
12 November 2020	ASR5	1Hr TSP	433 µg/m ³	Action Level	No
12 November 2020	ASR6	1Hr TSP	358 µg/m ³	Action Level	No
10 December 2020	ASR5	1Hr TSP	348 µg/m ³	Action Level	No
21 October 2017	ASR1	24Hr TSP	220 µg/m ³	Action Level	No
8 December 2017	ASR1	24Hr TSP	328 µg/m ³	Limit Level	No
8 December 2017	ASR5	24Hr TSP	279 µg/m ³	Limit Level	No
11 December 2017	ASR1	24Hr TSP	218 µg/m ³	Action Level	No
17 December 2017	ASR5	24Hr TSP	265 µg/m ³	Limit Level	No
29 December 2017	ASR10	24Hr TSP	250µg/m ³	Action Level	No
16 February 2019	ASR1	24Hr TSP	237 µg/m ³	Action Level	No
23 May 2019	ASR1	24Hr TSP	217 µg/m ³	Action Level	No
2 November 2020	ASR1	24Hr TSP	244 µg/m ³	Action Level	No
6 November 2020	ASR1	24Hr TSP	214 µg/m ³	Action Level	No

4.4 AIR QUALITY EXCEEDANCE INVESTIGATION

4.4.1 Investigation for the 1-hour and 24-hour TSP exceedance was undertaken upon received the monitoring results by the ET.

4.4.2 For the exceednances in the reporting period, the investigation reports were submitted to all relevant parties and concluded that those exceedances are unlikely related to the Contract work and no corrective action was required accordingly. The detailed investigation reports and findings can be referred to the Monthly EM&A Reports of the contract.

5 ECOLOGY MONITORING

5.1 GENERAL

- 5.1.1 According to the EM&A Manual requirements, regularly inspection for Pitcher Plants at least once every week to report its growth and protection measure situation shall be conducted during construction period.
- 5.1.2 Permission for transplantation of Pitcher Plant was issued by the AFCD on 9th December 2014. 280 numbers of Pitcher Plant individuals located at Zones 1 - 7 were transplanted to the nursery site on 17th December 2014 by the accredited person and his assistant. The transplantation work was strictly followed to conditions on permit.
- 5.1.3 Trial transplantation of pitcher plant from the nursery site to final receptor site which located near Zone 9 and Zone 10 was carried out on 15 April 2015 and a total of 5% pitcher plant was transplanted. Transplantation of remaining 95% pitcher plant from the nursery site to final receptor site was completed on 10th September 2015.
- 5.1.4 Total 181 pitcher plants were transplanted to final receptor site and the rest of the Pitcher Plant individuals (certified dead by the specialist) were not transplanted and were treated as general refuse. All the transplantation of pitcher plant from the nursery site to final receptor site was completed on 10th September 2015. The layout plan for the final receptor site is illustrated in [Appendix D](#).

5.2 PITCHER PLANTS INSPECTION

- 5.2.1 A total **322** occasions of inspection were carried out by the Contractor and ET during the Reporting Period.
- 5.2.2 During weekly site inspection at the nursery zone before the transplantation to the receptor site, the transplanted Pitcher Plants in the nursery zone were observed in fair to poor condition. At the final receptor site, all the transplanted Pitcher Plants were protected properly and the growth also was in fair to poor condition.
- 5.2.3 Establishment period for the pitcher plants was completed at the end of September 2016, the joint site completion of Establishment period visit with AFCD was undertaken on 23 September 2016 and the final pitcher plants report was submitted to AFCD on early December 2016. Therefore after 23 September 2016, only the integrity of the protection fence was checked to fulfill the EIA requirement. During each inspection, the protection mitigation measures were checked at the final receptor area to make sure no site activities were undertaken inside the protection zone. Besides, no construction activities were observed to be carried out at the surrounding of the final receptor area. The condition of chain link fence is good and no repair or maintenance is required.
- 5.2.4 No matter the completion of establishment period, the Contractor should properly maintain the fencing along the receptor area to avoid disturbance to the pitcher plants under the EIA requirement.

6 CULTURAL HERITAGE

6.1 GENERAL

6.1.1 According to the EM&A Manual requirements, regular inspection for heritage resource Grave G1 shall be audited by the ET at least once every week to ensure recommended mitigation measures implemented during construction period. The aim of the survey is prevention of any possible damage to the grave and to ensure that proposed mitigation measures are implemented. The broad scope of the audit will involve supervision of the following:

- Non-contact effects of the engineering works, such as vibration from pneumatic drills which could cause damage, such as foundation or wall cracks and loosening of tiles or fixtures; and
- Contact between the historic structures and equipment and materials associated with the engineering works.

6.1.2 Specifically, the monitoring programme will entail the following tasks:

- The extent of the agreed works areas should be regularly checked during the construction phase to ensure the buffer is being maintained; and
- Ensure no stockpiling or equipment storage is affecting the structure.

6.1.3 In the event of non-compliance the responsibilities of the relevant parties is detailed in the Event/ Action Plan in [Appendix E](#).

6.2 GRAVE INSPECTION

6.2.1 In this Reporting Period, there are total **322 occasions** to carry out the Grave G1 inspection. During site inspection, buffer zone was observed between the working area and the Grave and no construction material or equipment was stored nearby the Grave throughout the construction period.

7 LANDSCAPE AND VISUAL

7.1 GENERAL

7.1.1 According to EM&A Manual requirements, monitoring of Contractor's operations during construction period to report on Contractor's compliance should be carried out on weekly basis. Measure to mitigate landscape and visual impact during construction should be checked and monitored by a Registered Landscape Architect to ensure compliance with the intended aims of the mitigation measures. Moreover, the progress of the engineering works shall be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken.

7.2 LANDSCAPE AND VISUAL INSPECTION (CONSTRUCTION PHASE)

7.2.1 In this Reporting Period, Registered Landscape Architect with the Contractor had undertaken a total of **291** occasions of inspection during construction phase.

7.2.2 During the Reporting Period, existing trees on boundary of the project area were properly protected and no damage of the existing trees were record in this Reporting Period. Felled trees during construction were collected by a licensed collector for recycling. The detailed inspection checklists can be referred to relevant Monthly EM&A Reports of the Contract.

7.2.3 According to the approved planting plan, most of the planting works under the contract were completed and the substantial completion certificate had been issued by RE. Therefore, the establishment period monitoring for planting works was commenced on 1 June 2020 under the EM&A manual requirement. The detailed inspection checklists can be referred to relevant Monthly EM&A Reports of the Contract.

7.3 ESTABLISHMENT WORKS INSPECTION

7.3.1 According to EM&A Manual requirements, monitoring of the planting works during the 24-month Establishment period after completion of the construction works should be carried out. Establishment Works Inspection should be carried out once every 3 months to make sure the establishment planting works is complied with EMIS requirement.

8 LANDFILL GAS HAZARD MONITORING

8.1 GENERAL

8.1.1 During EIA study, landfill gas hazards are likely to be generated from the Pillar Point Valley (PPV) Landfill. Hence, regular landfill gas monitoring is recommended during construction of the proposed toll plaza.

8.1.2 During construction, a Safety Officer should be appointed to carry out the monitoring works. The monitoring frequency and areas to be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriated qualified person. The routine monitoring should be carried out in all excavations, manholes, chambers, relocation of monitoring wells and any other confined spaces that may have been created. All measurements in excavations should be made with the extended monitoring tube located not more than 10 mm from the exposed ground surface. Monitoring should be performed properly to make sure that the area is free of landfill gas before any man enters in the area.

8.1.3 For excavations deeper than 1m, measurements should be carried out:

- at the ground surface before excavation commences;
- immediately before any worker enters the excavation;
- at the beginning of each working day for the entire period the excavation remains open; and
- periodically through the working day whilst workers are in the excavation.

8.1.4 For excavations between 300mm and 1m deep, measurements should be carried out:

- directly after the excavation has been completed; and
- periodically whilst the excavation remains open

8.1.5 For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person.

8.1.6 To ensure the accuracy of the monitoring data, zeroing of the gas analyser shall be undertaken at the start of each day's monitoring. As part of the QA/QC, calibration of the gas analyser shall be conducted at least once every two weeks according to the specification of the manufacturer's operation manual.

8.1.7 The landfill consultation zone was divided into 6 monitoring zones. The landfill gas monitoring zones are summarized in Table 8-1 and the layout plan for the monitoring zone is illustrated in [Appendix D](#).

Table 8-1 Landfill Gas Monitoring Zone

ID	Location
TD1	TD1, Retaining Wall A, Grave G1 and Subway
RW-B	Retaining Wall B
RW-F	Retaining Wall F
S&U	Slope and Underpass
BW	Bridge Works (G2, H1)
LMR	Lung Mun Road

8.2 LANDFILL GAS MONITORING RESULT

8.2.1 In the Reporting Period, total 1,403 monitoring days carried out by the Safety Officer or an approved and qualified persons. Landfill gas measurement results throughout the construction period are summarized in Table 8-2. Moreover, graphical plot are attached in [Appendix F](#).

Table 8-2 Summary of Landfill Gas Measurement Results

Para.	Action Level	Limit Level	In Period	Retaining Wall B		In Period	Retaining Wall F	
				Min	Max		Min	Max
Methane	>10% LEL (>0.5% v/v)	>20% LEL (>1% v/v)	Nov 2014 to Sep 2016	0%	0.2%	Nov 2014 to Sep 2016	0%	0.2%
				TD1			LMR	
				Min	Max		Min	Max
			Oct 2016 to Oct 2018	0.1%	0.1%	Oct 2016 to Oct 2019	0.1%	0.1%
Oxygen	<19%	<18%		Retaining Wall B			Retaining Wall F	
				Min	Max		Min	Max
			Nov 2014 to Sep 2016	20.9%	21.4%	Nov 2014 to Sep 2016	21.0%	21.3%
				TD1			LMR	
				Min	Max		Min	Max
			Oct 2016 to Oct 2018	19.2%	21.1%	Oct 2016 to Oct 2019	20.1%	21.1%
Carbon Dioxide	>0.5%	>1.5%		Retaining Wall B			Retaining Wall F	
				Min	Max		Min	Max
			Nov 2014 to Sep 2016	0%	0.3%	Nov 2014 to Sep 2016	0%	0.3%
				TD1			LMR	
				Min	Max		Min	Max
			Oct 2016 to Oct 2018	0.1%	0.2%	Oct 2016 to Oct 2019	0.1%	0.2%

8.2.2 Landfill gas monitoring at TD1 was temporary suspended in the period from 7 June 2018 to 10 July 2018 and LMR from 22 July 2017 to 2 April 2018 and 1 June 2019 to 30 June 2019 due to no excavation work were undertaken at those area.

8.2.3 The measurement results shown that no monitoring parameter was trigger to the action / limit level throughout the construction period.

9 WASTE MANAGEMENT

9.1 GENERAL WASTE MANAGEMENT

9.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time. The effective management of waste arising during the construction phase will be monitored through the site audit programme. The aims of the waste audit are:

- to ensure the waste arising from the works are handled, stored, collected, transferred and disposed of in an environmentally acceptable manner; and
- to encourage the reuse and recycling of material.

9.1.2 In addition to the site inspections, the ET shall review the documentation procedures prepared by the Waste Coordinator once a week to ensure proper records are being maintained and procedures undertaken in accordance with the Waste Management Plan.

9.2 RECORDS OF WASTE QUANTITIES

9.2.1 All types of waste arising from the construction work are classified into the following:

- Construction & Demolition (C&D) Material;
- Chemical Waste;
- General Refuse; and
- Excavated Soil.

9.2.2 In the reporting periods, total quantities of waste disposal are summarized in *Tables 9-1, 9-2* and the Waste Flow Table is presented in *Appendix G*.

Table 9-1 Summary of Quantities of Inert C&D Materials

Type of Waste	Quantity							Total	Disposal Location
	Nov 14 – Oct 15	Nov 15 – Oct 16	Nov 16 – Oct 17	Nov 17 – Oct 18	Nov 18 – Oct 19	Nov 19 – Oct 20	Nov 20 – Dec 20		
Reused in this Contract (Inert) ('000m ³)	158.692	121.699	30.492	2.201	0	0	0	313.084	-
Reused in other Projects (Inert) ('000m ³)	161.308	125.501	81.074	4.770	0	0	0	372.653	<ul style="list-style-type: none"> • TM-CLKL C2 HY/2012/08 • Lam Tei Quarry • Eco Park K.wah Recycle Facilities • Lung Kwu Tan Tailor Recycled Aggregates • Laintang BCP
Disposal as Public Fill (Inert) ('000m ³)	159.021	7.618	15.508	29.501	26.861	11.985	0.662	251.156	Tuen Mum Area 38

Table 9-2 Summary of Quantities of C&D Wastes

Type of Waste	Quantity							Total	Disposal Location
	Nov 14 – Oct 15	Nov 15 – Oct 16	Nov 16 – Oct 17	Nov 17 – Oct 18	Nov 18 – Oct 19	Nov 19 – Oct 20	Nov 20 – Dec 20		
Recycled Metal (‘000kg)	0	0	0	0	0	0	0	0	-
Recycled Paper / Cardboard Packing (‘000kg)	0.05	0.07	0	0	0	0	0	0.12	Recycle Collector
Recycled Plastic (‘000kg)	0	0	0	0	0	0	0	0	-
Chemical Wastes (‘000kg)	0	0	0.030	0.080	0	0	0	0.11	Licensed collector
General Refuses (‘000m ³)	0.374	1.250	2.267	3.259	2.598	1.291	0.115	11.154	WENT

9.2.3 To control the site performance on waste management, the Contractor was ensured that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor was also implemented the recommended environmental mitigation measures according to the Environmental Monitoring and Audit Manual.

10 INSPECTION AND AUDITING

10.1 SITE INSPECTION

10.1.1 According to the approved EM&A Manual, the environmental site inspection shall be formulated by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

Findings / Deficiencies During Reporting Period

10.1.2 During the reporting period, total 322 events of joint site inspection to evaluate site environmental performance has been carried out by the RE, ET and the Contractor. Moreover, IEC or ENPO attended total 84 occasions' joint site inspection.

10.1.3 During the reporting period, there are no non-compliance recorded, however, 581 observations/ reminders were recorded during the site inspections. The minor deficiencies found in the weekly site inspections were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Inspection Checklist for Vulnerable to Contaminated Water Discharge

10.1.4 Following the complaint about discharge of milky water to Bufferfuly Beach on 2 September 2015, the Contractor proposed to carry out inspection of wastewater treatment facilities, concerned discharge points, drainage inlets and outlets daily during typhoon or wet season and once per week at dry season.

10.1.5 In addition, specific inspections would also be conducted before and after adverse weather to ensure necessary remedial works would be carried out timely. Should incidental contaminated water discharge be found at the inlet of the associated drainage system, a specific inspection of the relevant drainage pipes would be conducted for traces of deposit, and follow up actions would be taken when necessary.

10.1.6 Following the EPD's site inspection on 22 February 2019, the contractor was advised to carry on the temporary drainage inspection until the completion of the construction of permanent drainage system. As the permanent drainage system was fully commissioned in July 2019, the temporary drainage inspection has been terminated since then.

11 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

11.1.1 For the Contract, no environmental summons and prosecution was received throughout the construction period. However, there are 117 exceedances of action / limit levels recorded and 11 complaints received during the Construction Period. The statistical summary table of environmental exceedance, complaint, summons and prosecution is presented in *Tables 11-1, 11-2, 11-3 and 11-4*.

Table 11-1 Statistical Summary of Environmental Exceedance

Reporting Period	Environmental Aspect		Exceedance Statistics	
			Action	Limit
23 October 2014 – 31 December 2020	Air Quality	1-hour TSP	94	13
		24-hour TSP	7	3
	Landfill Gas	Methane	0	0
		Oxygen	0	0
		Carbon Dioxide	0	0

Table 11-2 Statistical Summary of Environmental Complaints

Reporting Period	Complaint Nature*				Total Registered
	Water Quality	Construction Dust	Construction Noise	Others	
23 October 2014 – 31 December 2020	6	4	1	2	11

*Remarks: Some complaint related to more than one nature

Table 11-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics			
	Cumulative	Complaint Nature		
		Air	Noise	Water
23 October 2014 – 31 December 2020	0	NA	NA	NA

Table 11-4 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics			
	Cumulative	Complaint Nature		
		Air	Noise	Water
23 October 2014 – 31 December 2020	0	NA	NA	NA

11.2 SUMMARY RECORD OF ALL COMPLAINTS, ACTION AND WORKING PROCEDURES

11.2.1 During the complaint investigation work, the Contractor was co-operated with the ET in providing all the necessary information and assistance for completion of the investigation. Investigation reports for the complaints have completed by the ET and submitted to all relevant parties and they are summarized in below.

- 28 July 2015 - A complaint was received from the DSD on 28 July 2015. The complainant complained that milky water was observed from drainage outlet to Butterfly Beach. It was suspected that the milky water was come from the site under the Contractor. Joint inspection has been carried out by DSD, AECOM and CKJV immediately receipt the complaint and no milky/ muddy water was found. Moreover, EPD was conducted site inspection with AECOM and CKJV on 29 July 2015 to further investigation. No milky/ muddy water was observed during the inspection. However,

EPD urged CKJV to enhance the mitigation measures for wastewater at Eastern Portal and MH7

- 3 August 2015 - A complaint was received via 1823 hotline on 3 August 2015. The complainant complained that the frequent dump trucks running along Lung Mun Road from Tuen Mun Area 38 Fill Bank and carriageway near River Trade Terminal causing soil/ muddy water on the road surface. In our investigation, it was concluded that the complaint was not related to the works under the Contract.
- 2 September 2015 - A complaint was received from the LCSD on 2 September 2015 regarding milky water discharged from the drainage outlet near the Butterfly Beach, Tuen Mun. It was suspected that the milky water was come from the site under the Contract. . In our investigation, it was concluded that the complaint was not related to the works under the Contract.
- 28 April 2016 - A complaint was received from the EPD on 28 April 2016. The complainant complained that dust and smoke emission from a drilling rig was observed on the slope near Pillar Point, Tuen Mun. It was suspected that the heavy dust was generated from the construction activities under the Contractor.
- 9 May 2016 - A complaint was received from the EPD on 9 May 2016. The complainant complained that white color effluent discharging outfall behind sawmill at Ho Yeung Street, Tuen Mun. It cannot confirm the source of the white color effluent therefore it considered that the above complaint is not related to the project.
- 7 June 2016 - A complaint was received from the EPD on 7 June 2016. The complainant complained that white color effluent discharging outfall at storm outfall of No.33 Ho Yeung Street, Tuen Mun at around 18:00 and this is a follow up of the complaint EP/RW/0000368066 which received on 9 May 2016 and defecated as not project related complain. EPD visit the upstream area and open the cover of manhole at Ho Fuk Street on 21 June 2016. No water discharge was observed and the manhole was clean and dry in condition. During the joint investigation and inspection by EPD, Aecom and the Contractor, it was found that the white water might come from other facilities or site located at Ho Yeung Street which is not related to this project.
- 3 October 2016 - A complaint was received via EPD hotline on 3 October 2016, claimed that muddy water entering the drainage system near site entrance-Hand-key attendance system Pillar Point, Tuen Mun at around 03:00 to 04:00 after the rainstorm. Refer to tele-conversation with EPD and Contractor, the complaint was actually mentioning the muddy water entering the drainage system was occurred on 1 October 2016 03:00 to 04:00 at the bus station nearby the site entrance. According to the site record, the works carried out during the concerned time period was maintenance works of TTA include maintenances of flashlight, water barrier and road marking, there is no ponding water was observed nearby the concerned locations. Also during the weekly site inspection on 4 October 2016, no water discharged from site and ponding at the bus station nearby the site entrance was observed. Earth bund was also provided at the slope near the site entrance to divert the surface run-off to the de-silting system. Moreover, the record from the Hong Kong Observatory also stated there was no rainfall recorded at Tuen Mun between 30 September 2016 and 1 October 2016 04:45 a.m. Therefore for the above result, it is considered that the above complaint is not related to the project.
- 29 September 2017 - A complaint was received from the EPD on 29 September 2017. The complainant complained that no water spraying for road works to cause construction dust emission at Lung Mun Road across from warehouse near Tuen Mun River Trade Terminal. After the investigation it was concluded that the complaint was project related,

the improvement works for dust mitigation had been completed by contractor. The detailed investigation report can be referred to the Monthly EM&A Reports (October 2017) of the contract.

- 25 October 2017 - A complaint was received from the EPD on 24 October 2017 by District Councillor Mr. YAN Siu-nam. The District Councillor represents the resident who living at Tuen Mun Ferry Pier area to complain that light nuisance created by Tuen Mun - Chek Lap Kok Link Project during mid-night to cause serious impact for their rest. Also, the complainant query the schedule for the construction works and the mitigation measures to avoid light nuisance affect to the resident. After the investigation it was concluded that the complaint was not project related. The detailed investigation report can be referred to the Monthly EM&A Reports (November 2017) of the contract.
- 30 January 2018 - A complaint was received from the EPD on 30 January 2018 to complaint that “晚上12點或凌晨3點至5點，點解內河碼頭還有工程要做，不是晚上11點前應該不可發出噪音嗎？而且可以無限發光，已經是凌晨了有這需要嗎？已經是凌晨了，為何開着咁多大光燈？至於在日頭觀察，為何內河碼頭及港珠澳大橋工程，不是應該把沙石灑水避免空氣污染嗎？為何沒有依程序灑水，令沙塵飄到屯門碼頭？還容一船船沙石飄揚？屯門碼頭空氣污染指數甚高，這就是原因.” After the investigation it was concluded that the complaint was project related, the improvement works for dust mitigation had been completed by contractor. The detailed investigation report can be referred to the Monthly EM&A Reports (**January 2018**) of the contract.
- 22 May 2019 - A complaint was received on 22 May 2019 to complaint that “投訴地盤的大塵滋擾，地盤位置在屯門內河碼頭及珠江倉旁邊，正在興建一條由屯門通往機場的隧道，煩請跟進及回覆”. After the investigation it was concluded that the complaint was not project related. The detailed investigation report can be referred to the Monthly EM&A Reports (**May 2019**) of the contract.

12 IMPLEMENTATION STATUS OF MITIGATION MEASURES

12.1 GENERAL REQUIREMENTS

12.1.1 The environmental mitigation measures that recommended in the Environmental Mitigation Measures Implementation Schedule (EMMIS) in the Project EM&A Manual covered the issues of Air Quality, Cultural Heritage, Ecology, Landfill Gas Hazard, Landscape & Visual, Noise, Water and Waste and they are presented in [Appendix H](#).

12.1.2 During the construction period, environmental mitigation measures generally implemented by the Contract are listed in [Table 12-1](#).

Table 12-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Air Quality	<ul style="list-style-type: none"> • Maintain damp / wet surface on access road • Keep slow speed in the sites • All vehicles must use wheel washing facility before off site • Sprayed water during rock breaking works • During transportation by truck, materials loaded lower than the side and tail boards, and covered before transport • Compacted all soil stockpiles • Part of the exposed slopes covered geotextile net
Cultural Heritage	<ul style="list-style-type: none"> • Set a buffer zone between the working area and the Grave • All construction materials and equipment store far from the Grave • Inspection the Grave to ensure provision mitigation measures effective
Ecology	<ul style="list-style-type: none"> • Wire fencing provided for temporary protect Pitcher Plants • Undertake weekly inspection of Pitcher Plants
Landfill Gas Hazard	<ul style="list-style-type: none"> • Landfill Gas measurement undertake during trench excavation
Water Quality	<ul style="list-style-type: none"> • Temporary drainage system provide for surface runoff prevent discharge to public area • Wastewater to be treated by sedimentation tank before discharge.
Noise	<ul style="list-style-type: none"> • No operation of powered mechanical equipment is allowed during restricted hours from 19:00 to 07:00 on the following day and whole day during Sunday and public holiday without construction noise permit (CNP) • Keep good maintenance of plants • The noisy plants or works provide mobile noise barriers • Shut down the plants when not in use
Waste and Chemical Management	<ul style="list-style-type: none"> • On-site sorting prior to disposal • Follow requirements and procedures of the “Trip-ticket System” • Predict required quantity of concrete accurately • Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	<ul style="list-style-type: none"> • The site was generally kept tidy and clean.

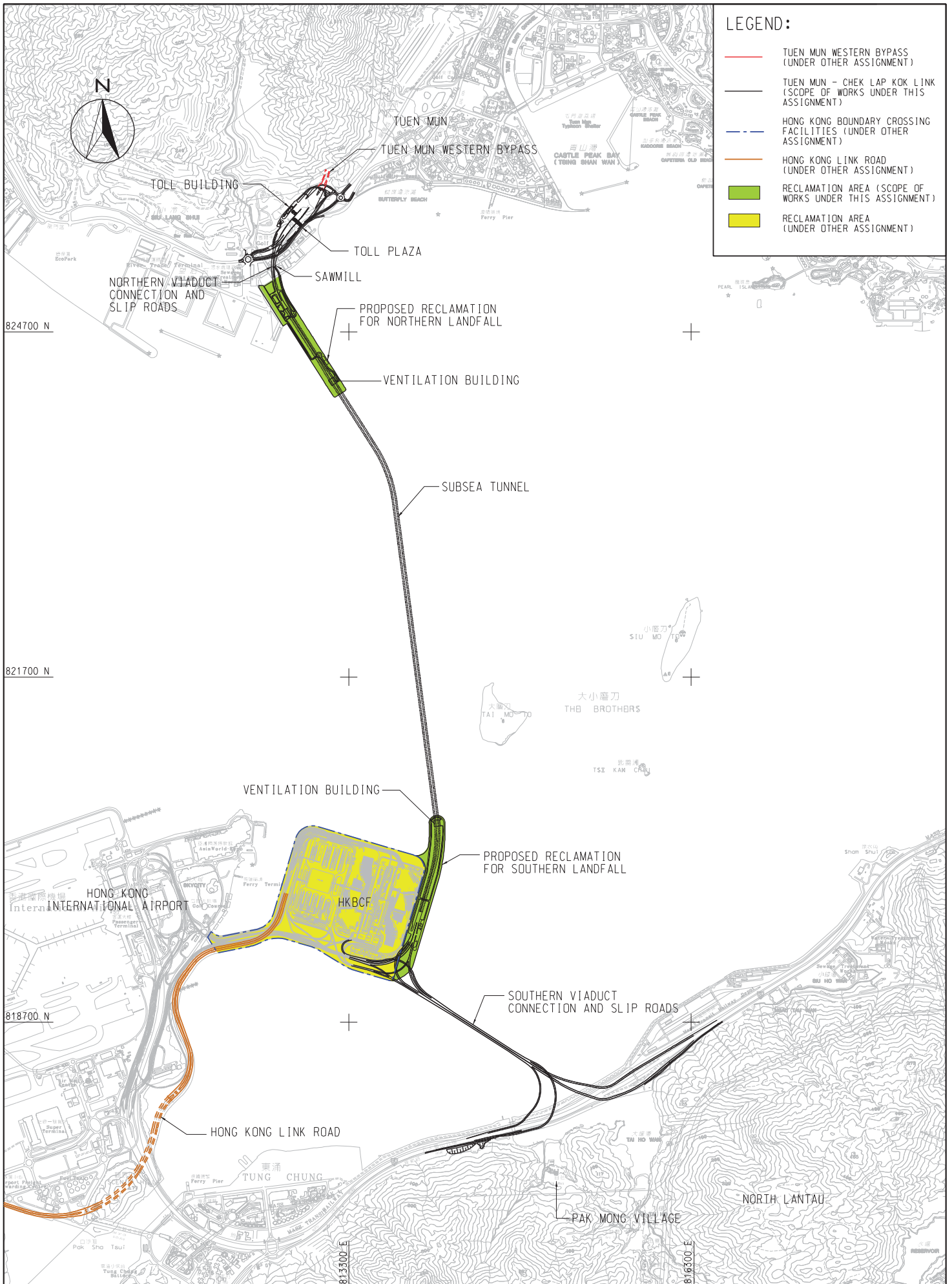
13 CONCLUSIONS AND RECOMMENDATIONS

13.1 CONCLUSIONS

- 13.1.1 This is Final EM&A Report summarized the monitoring results and inspection findings for the Reporting Period from **23 October 2014** to **31 December 2020**.
- 13.1.2 The construction phase EM&A programme for the Contract commenced on 23 October 2014 and was terminated since 31 December 2020.
- 13.1.3 No environmental notifications of summons or successful prosecution were received during the Reporting Period.
- 13.1.4 The construction phase monitoring programme ensured that any environmental impact to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental acceptability of the Project. The regular site inspection and waste audit ensured that all the mitigation measures on waste management were effectively implemented.
- 13.1.5 The EM&A programme effectively monitored the environmental impacts from the construction phase of the Project and no particular recommendation was advised for the improvement of the programme.
- 13.1.6 It is considered that the environmental acceptability of the Contract during the construction phase was satisfactory and acceptable. In general, the monitoring results were in line with EIA predictions.

Appendix A

Project Layout Plan



LEGEND:

- TUEN MUN WESTERN BYPASS (UNDER OTHER ASSIGNMENT)
- TUEN MUN - CHEK LAP KOK LINK (SCOPE OF WORKS UNDER THIS ASSIGNMENT)
- - - HONG KONG BOUNDARY CROSSING FACILITIES (UNDER OTHER ASSIGNMENT)
- HONG KONG LINK ROAD (UNDER OTHER ASSIGNMENT)
- RECLAMATION AREA (SCOPE OF WORKS UNDER THIS ASSIGNMENT)
- RECLAMATION AREA (UNDER OTHER ASSIGNMENT)

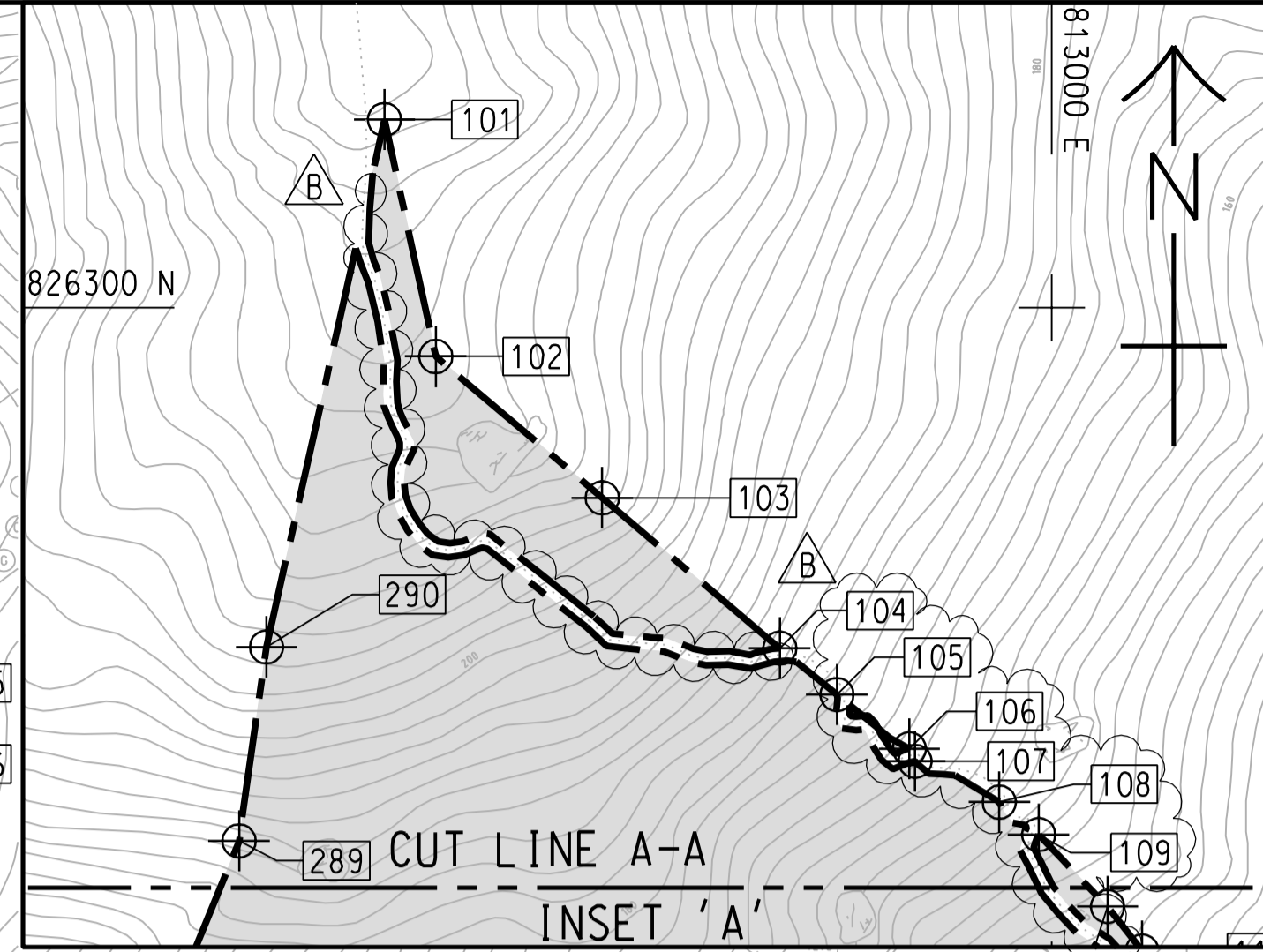
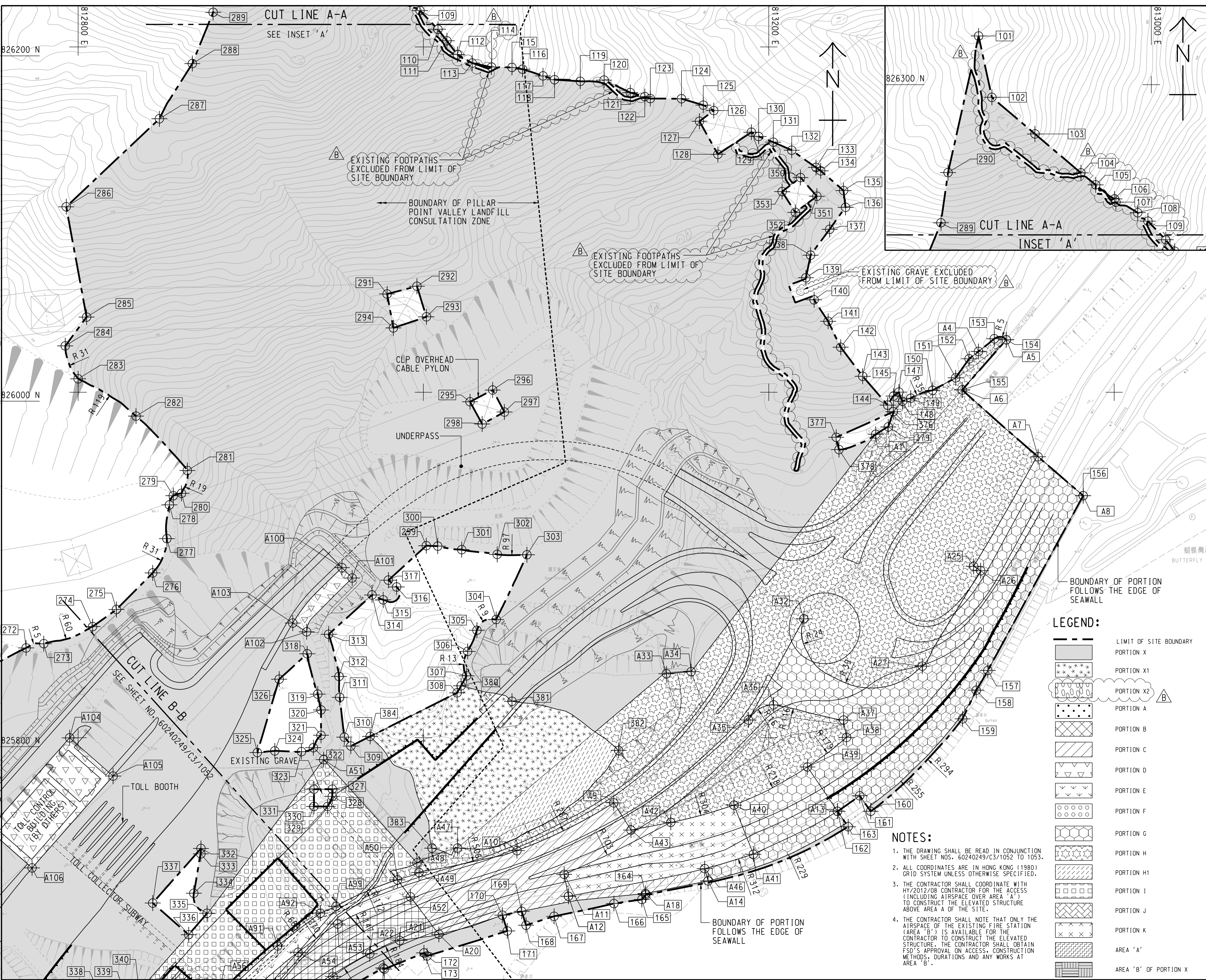
PROJECT NO. 60044963
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	GENERAL LAYOUT OF TM-CLKL	CHECK	--	DRAWN	WYP
		JOB No.	60044963	DRAWING No.	Fig 2.1
					A

Appendix B

Layout Plan of the Contract

Project Management Initials: Designer: PI Checked: ALCF Approved: CWN ISO A1 594mm x 841mm
 Plot File by: LINDO 2014/05/19 PATH: P:\Projects\60240249\DRAWING\CONTRACT\C3\1005C3_05E1.dgn



LEGEND:

	LIMIT OF SITE BOUNDARY
	PORTION X
	PORTION X1
	PORTION X2
	PORTION A
	PORTION B
	PORTION C
	PORTION D
	PORTION E
	PORTION F
	PORTION G
	PORTION H
	PORTION H1
	PORTION I
	PORTION J
	PORTION K
	AREA 'A'
	AREA 'B' OF PORTION X

NOTES:

1. THE DRAWING SHALL BE READ IN CONJUNCTION WITH SHEET NOS. 60240249/C3/1052 TO 1053.
2. ALL COORDINATES ARE IN HONG KONG (1980) GRID SYSTEM UNLESS OTHERWISE SPECIFIED.
3. THE CONTRACTOR SHALL COORDINATE WITH HY/2012/08 CONTRACTOR FOR THE ACCESS (INCLUDING AIRSPACE OVER AREA 'A') TO CONSTRUCT THE ELEVATED STRUCTURE ABOVE AREA A OF THE SITE.
4. THE CONTRACTOR SHALL NOTE THAT ONLY THE AIRSPACE OF THE EXISTING FIRE STATION (AREA 'B') IS AVAILABLE FOR THE CONTRACTOR TO CONSTRUCT THE ELEVATED STRUCTURE. THE CONTRACTOR SHALL OBTAIN FSD'S APPROVAL ON ACCESS, CONSTRUCTION METHODS, DURATIONS AND ANY WORKS AT AREA 'B'.

AECOM

PROJECT
項目
TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE
TUEN MUN - CHEK LAP KOK LINK - NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS

CLIENT
業主
路政署
HIGHWAYS DEPARTMENT
港務大樓香港工程管理處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

CONSULTANT
工程顧問公司
AECOM Asia Company Ltd.
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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

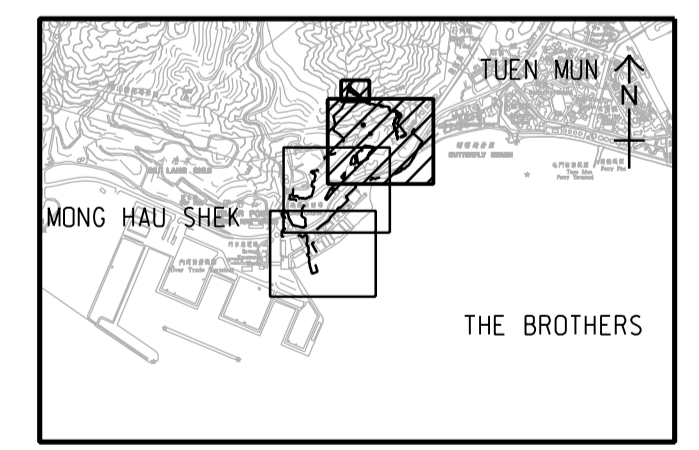
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A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS
階段

SCALE
比例
A1 1:1000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖
1:50000



PROJECT NO.
項目編號
60240249

CONTRACT NO.
合約編號
HY/2013/12

SHEET TITLE
圖紙名稱
PORTIONS OF SITE AND SITE BOUNDARY SETTING OUT PLAN

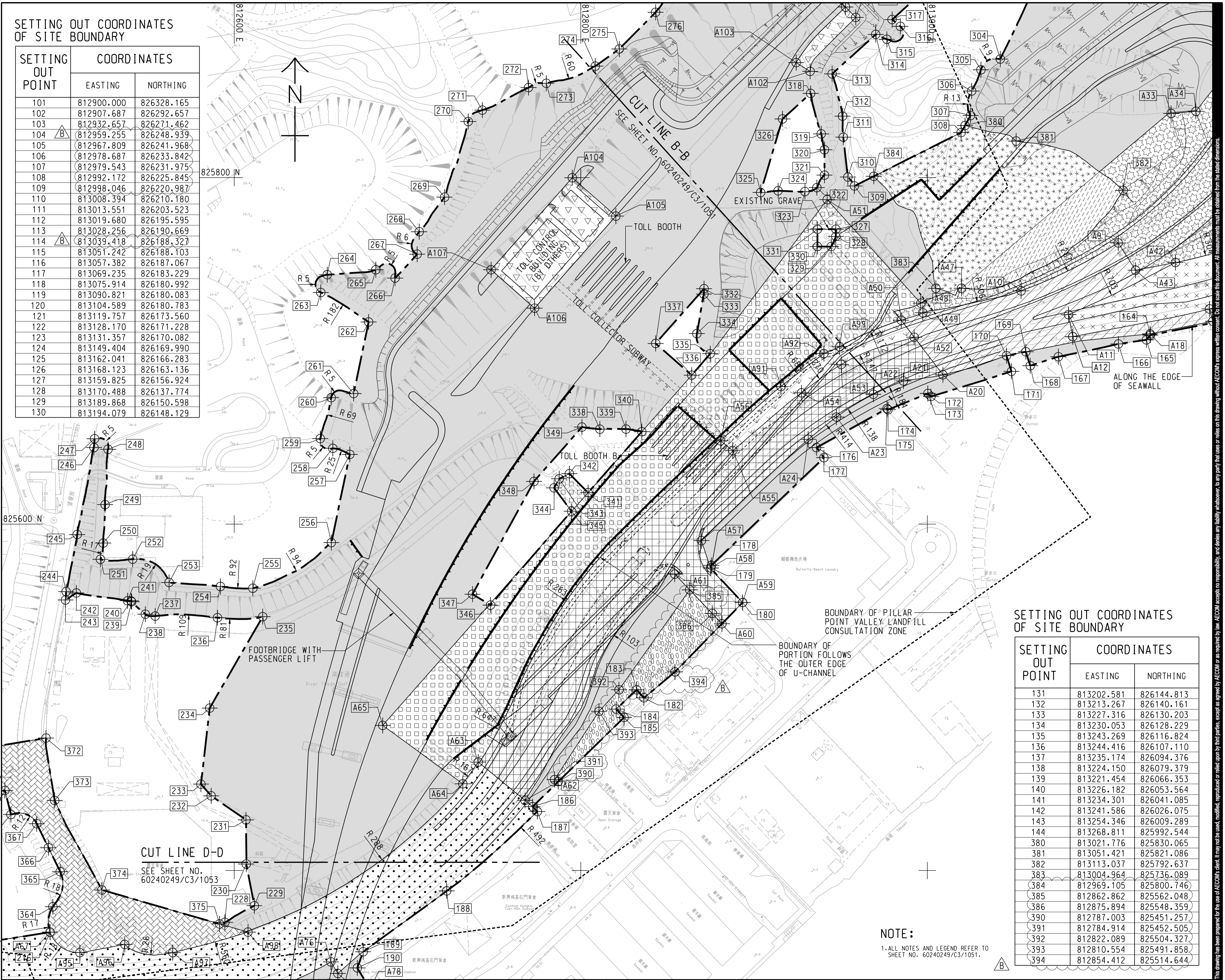
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圖紙編號
60240249/C3/1051B

SHEET 1 OF 3

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SETTING OUT COORDINATES OF SITE BOUNDARY

SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING
101	812900.000	826328.165
102	812907.687	826292.657
103	812932.657	826271.462
104	812959.255	826248.939
105	812967.809	826241.968
106	812978.687	826233.842
107	812979.543	826231.975
108	812992.172	826225.845
109	812998.046	826220.987
110	813008.394	826210.180
111	813013.551	826203.523
112	813019.680	826195.595
113	813028.256	826190.669
114	813039.418	826188.327
115	813051.242	826188.103
116	813057.382	826187.067
117	813069.235	826183.229
118	813075.914	826180.992
119	813090.821	826180.083
120	813104.589	826180.783
121	813119.757	826173.560
122	813128.170	826171.228
123	813131.357	826170.082
124	813149.404	826169.990
125	813162.041	826166.283
126	813168.123	826163.136
127	813159.825	826156.924
128	813170.488	826137.774
129	813189.868	826150.598
130	813194.079	826148.129



SETTING OUT COORDINATES OF SITE BOUNDARY

SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING
131	813202.581	826144.813
132	813213.267	826140.161
133	813227.316	826130.203
134	813230.053	826128.229
135	813243.269	826116.824
136	813244.416	826107.110
137	813235.174	826094.376
138	813224.150	826079.379
139	813221.454	826066.353
140	813226.182	826053.564
141	813234.301	826041.085
142	813241.586	826026.075
143	813254.346	826009.289
144	813268.811	825992.544
380	813021.776	825830.065
381	813051.421	825821.086
382	813113.037	825792.637
383	813004.964	825736.089
384	812969.105	825800.746
385	812862.862	825562.048
386	812875.894	825548.359
390	812787.003	825451.257
391	812784.914	825452.505
392	812822.089	825504.327
393	812810.554	825491.858
394	812854.412	825514.644

NOTE:
1. ALL NOTES AND LEGEND REFER TO SHEET NO. 60240249/C3/1051.

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS
備註

SCALE
比例

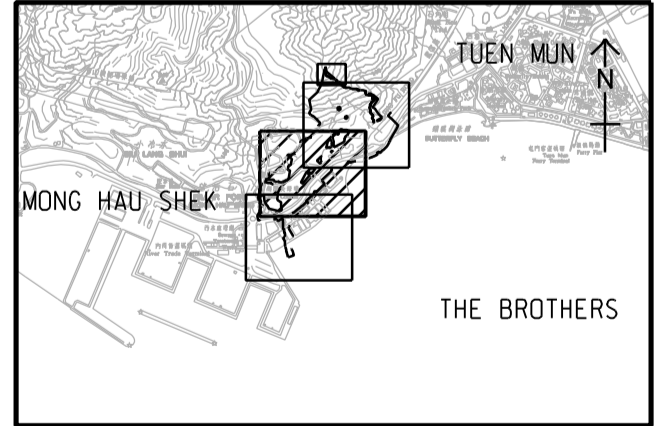
A1 1: 1000

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

1: 50000



PROJECT NO.
項目編號

60240249

CONTRACT NO.
合約編號

HY/2013/12

SHEET TITLE
圖紙名稱

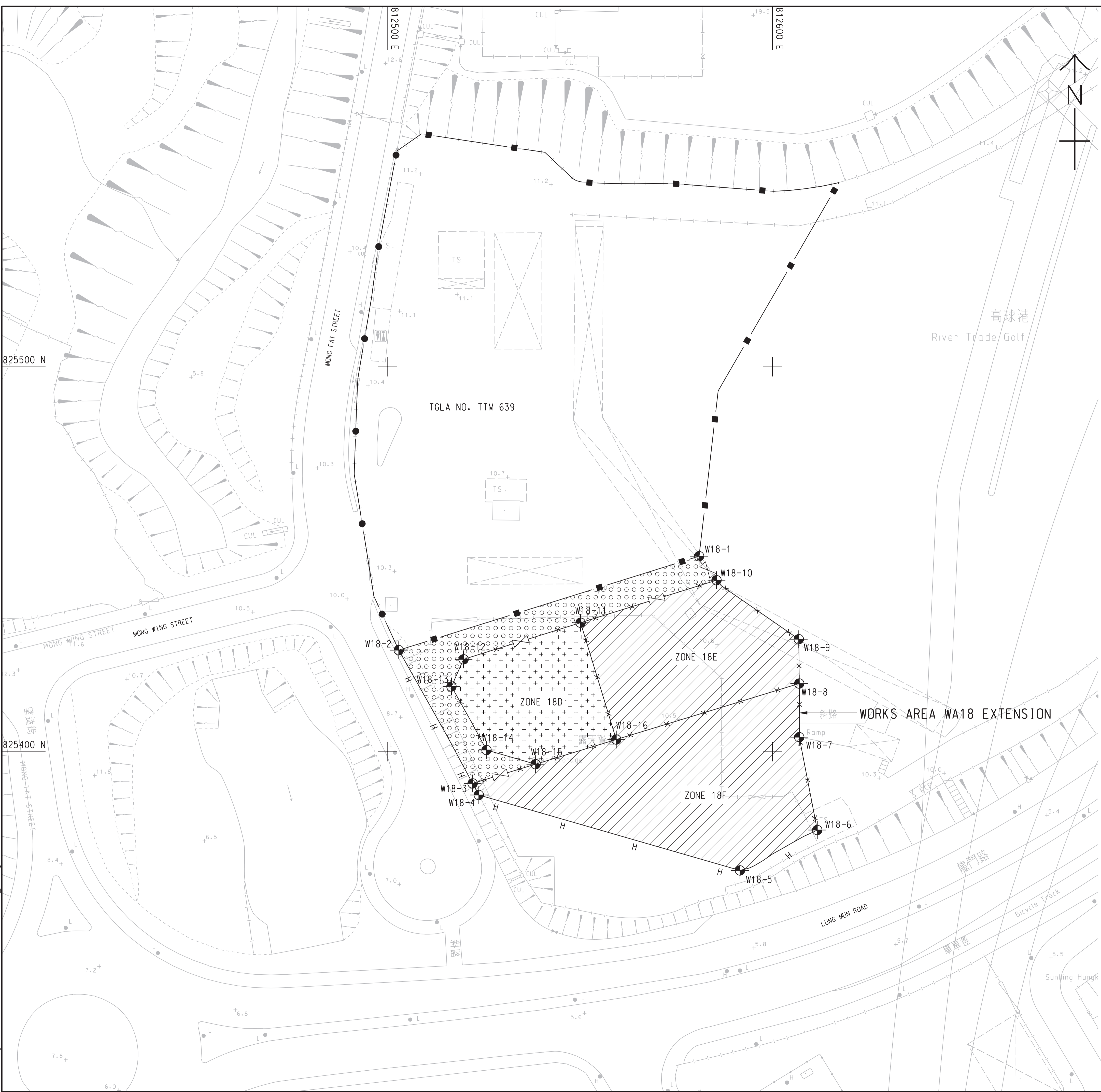
PORTIONS OF SITE AND SITE BOUNDARY SETTING OUT PLAN

SHEET NUMBER
圖紙編號

60240249/C3/1052B

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Plot File by: LIXQ2 2014/03/4
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 Project Management Initials: Designer: PL Checked: ALCF Approved: CWN ISO A1 594mm x 841mm



NOTES:

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE WORKS AREA KEY PLAN IN SHEET NO. 60240249/C3/1000.
- DEMARCATON OF THE WORKS AREA SHALL BE DETERMINED ON SITE.
- REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6110 AND H6111 FOR DETAILS OF HOARDING.
- REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6121 AND H6122 FOR DETAILS OF CHAIN LINK FENCE.
- REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NO. H6121 FOR DETAILS OF GATE.
- CHAIN LINK FENCE SHALL BE ERRECTED ALONG THE WORKS AREA BOUNDARY. THE ALIGNMENT AND EXTENT OF HOARDING AND CHAIN LINK FENCE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE ENGINEER.
- THE LOCATION AND WIDTH OF GATE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE ENGINEER.
- THE SETTING OUT INFORMATION AND WORKS AREA CONDITIONS SHOWN IN THIS DRAWING ARE FOR REFERENCE ONLY. THE WORKS AREA BOUNDARY SHALL BE IN ACCORDANCE WITH THE ENGINEERING CONDITIONS FOR TEMPORARY GOVERNMENT LAND ALLOCATION NO. GLA-TM 639. IN CASE OF DISCREPANCY BETWEEN THE BOUNDARY SHOWN ON THIS DRAWING AND THE BOUNDARY INDICATED ON THE ENGINEERING CONDITIONS, THE LATTER SHALL PREVAIL.
- THE WORKS AREAS SHOWN ON THIS DRAWING ARE TO BE SHARED-USED AMONG THE TM-CLKL RELATED CONTRACTS. THE AREAS HATCHED WITH ARE TENTATIVELY ALLOCATED FOR THE USE BY THE CONTRACT.
- THE COMMON AREA SHALL BE CONCRETE PAVED BY THE CONTRACTOR.
- ZONE 18F SHALL BE USED FOR THE SITE ACCOMMODATION OF THE ENGINEER. ZONE 18E SHALL BE USED FOR SITE ACCOMMODATION OF THE CONTRACTOR.
- ZONE 18D IS TO BE USED BY THE CONTRACTOR OF CONTRACT NO. HY/2012/08-TUEN MUN-CHEK LAP KOK LINK-NORTHERN CONNECTION SUB-SEA TUNNEL SECTION TO STORE PLANT AND EQUIPMENT ASSOCIATED WITH THE TBM TUNNELS FROM THE DATE FOR COMMENCEMENT OF THE WORKS TO 126 DAYS FROM THE DATE FOR COMMENCEMENT OF THE WORKS. THE CONTRACTOR SHALL LIAISE AND PROVIDE FREE AND UNOBSTRUCTED 24-HOUR ACCESS FOR THE CONTRACTOR OF CONTRACT NO. HY/2012/08 TO ZONE 18D. THE CONTRACTOR SHALL BE GIVEN THE POSSESSION OF ZONE 18D IN ACCORDANCE WITH APPENDIX TO FORM OF TENDER-P.3.

LEGEND:

- WORKS AREA FOR THE CONTRACT
- COMMON AREA (MAINTAINED UNDER THE CONTRACT) TO BE SHARED-USED WITH OTHER CONTRACTS
- AREA TO BE USED BY THE CONTRACTOR OF CONTRACT NO. HY/2012/08 AND WORKS AREA FOR THIS CONTRACT TO BE EARLY HANDED OVER BY THE CONTRACTOR (SEE NOTES NO. 12 ABOVE)
- HOARDING AND GATE (TO BE ERRECTED AND MAINTAINED UNDER THIS CONTRACT)
- EXISTING CHAIN LINK FENCE MAINTAINED BY OTHERS
- CHAIN LINK FENCE AND GATE (TO BE ERRECTED AND MAINTAINED UNDER THIS CONTRACT)
- EXISTING HOARDING AND GATE MAINTAINED BY OTHERS

SETTING OUT CO-ORDINATES OF WORKS AREA WA18 EXTENSION

POINT	CO-ORDINATES	
	EASTING	NORTHING
W18-1	812580.934	825450.791
W18-2	812502.880	825426.380
W18-3	812522.068	825391.750
W18-4	812523.679	825388.756
W18-5	812591.556	825369.151
W18-6	812611.638	825379.647
W18-7	812606.954	825403.769
W18-8	812606.951	825417.705
W18-9	812606.832	825429.231
W18-10	812585.456	825444.557
W18-11	812550.126	825433.508
W18-12	812519.715	825423.997
W18-13	812516.580	825416.947
W18-14	812525.682	825400.438
W18-15	812538.435	825396.754
W18-16	812559.404	825403.166

PROJECT
項目

TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE
TUEN MUN - CHEK LAP KOK LINK - NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS

CLIENT
業主

路政署
HIGHWAYS DEPARTMENT
港務處大樓香港工程發展處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

CONSULTANT
工程顧問公司

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ISSUE/REVISION
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NO.	DATE	DESCRIPTION	CHK.
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS
階段

SCALE
比例

A1 1 : 500

DIMENSION UNIT
尺寸單位

METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號

60240249

CONTRACT NO.
合約編號

HY/2013/12

SHEET TITLE
圖紙名稱

WORKS AREA AND HOARDING PLAN

SHEET NUMBER
圖紙編號

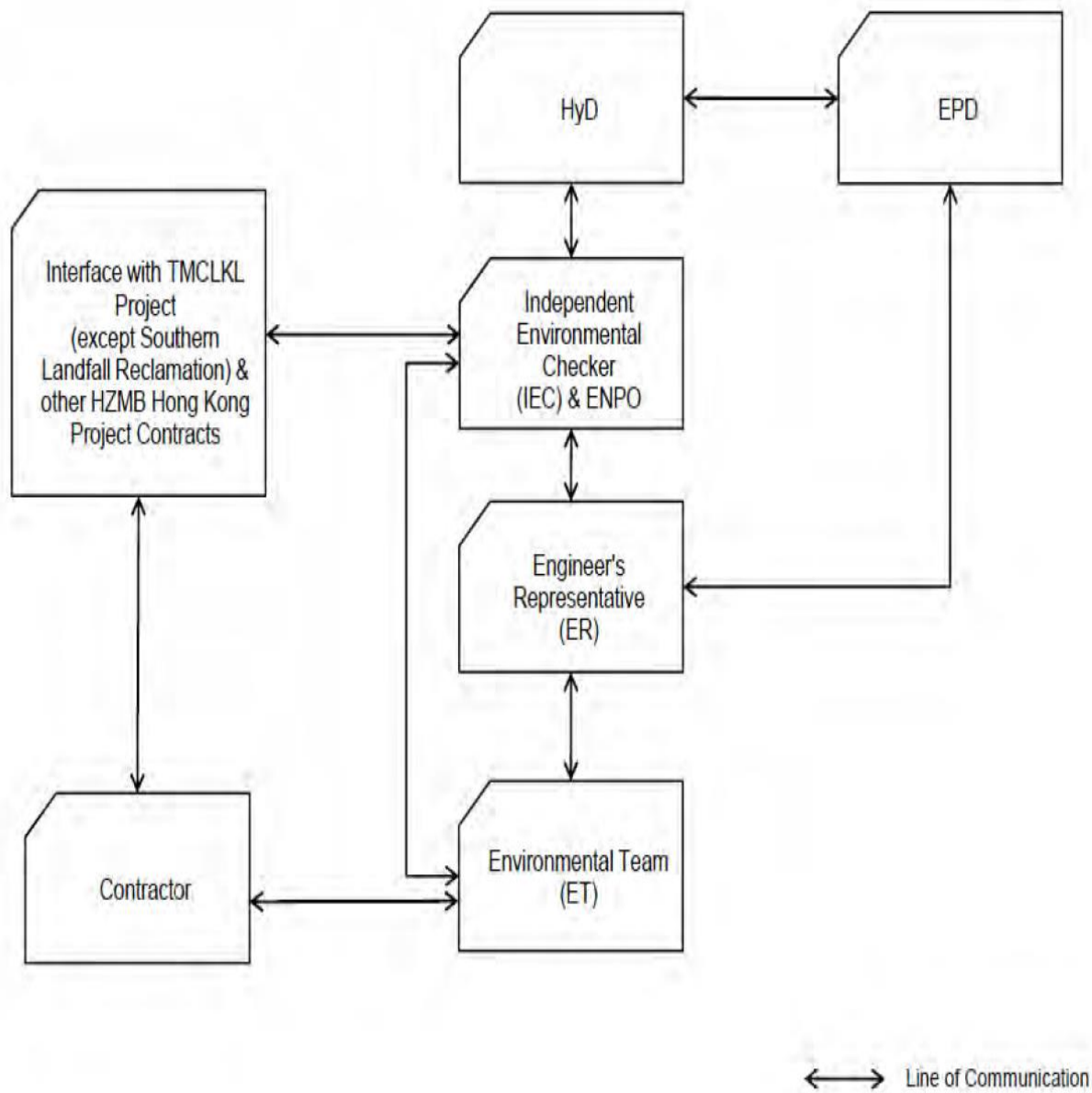
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SHEET 2 OF 2

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Appendix C

Organization of the Contract



Project Organization chart

Organization chart of the Contractor

Contact Details of Key Personnel for the Contract HY/2013/12

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
HyD	Employer	Mr. Joseph Chung	2762 4986	3188 6614
AECOM	Principal Resident Engineer	Mr. S.W. Fok	2218 7209	2218 7399
AECOM	Chief Resident Engineer	Mr. Roger Man	2293 6388	2218 7399
AECOM	Resident Engineer (S&E)	Mr. Kelvin Yeung	22187289	2218 7399
Ramboll	Environmental Project Office Leader (ENPO Leader)	Mr. YH Hui	3465 2850	3465 2899
Ramboll	Independent Environmental Checker (IEC)	Dr. FC Tsang	3465 2851	3465 2899
		Mr. Manson Yeung (Since 18 May 2020)		
		Mr. Brian Tam (Since 12 April 2021)		
CKJV	Deputy Project Manager	Mr. Raymond Suen	2253 8309	2253 8399
CKJV	Site Agent	Mr. Wilson Lau	2253 8300	2253 8399
CKJV	Safety and Environmental Manager	Mr. Winson Chung	2273 3185	2375 3655
CKJV	Environmental Officer	Mr. Thomas Tang	2253 8300	2253 8399
CKJV	Environmental Supervisor	Mr. Tommy Law	2253 8300	2253 8399
CKJV	Environmental Supervisor	Mr. Alex Li	2253 8300	2253 8399
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Miss Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079
HKL	Registered Landscape Architect	Kenneth Ng	2866 3903	--

Legend:

HyD (Employer) – Highways Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CKJV (Main Contractor) – CRBC-Kaden Joint Venture

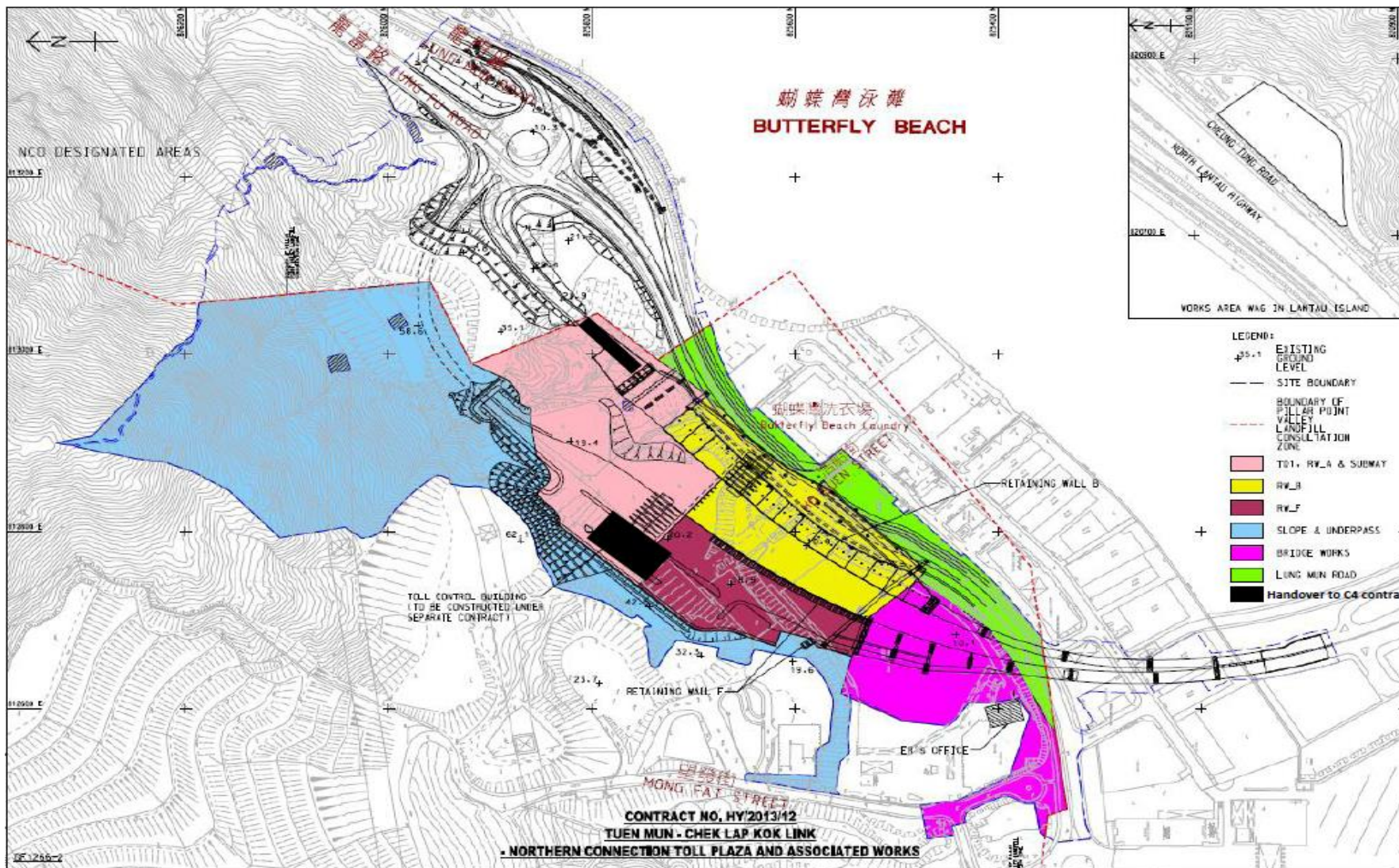
Ramboll (ENPO and IEC) – Ramboll Hong Kong Limited

AUES (ET) – Action-United Environmental Services & Consulting

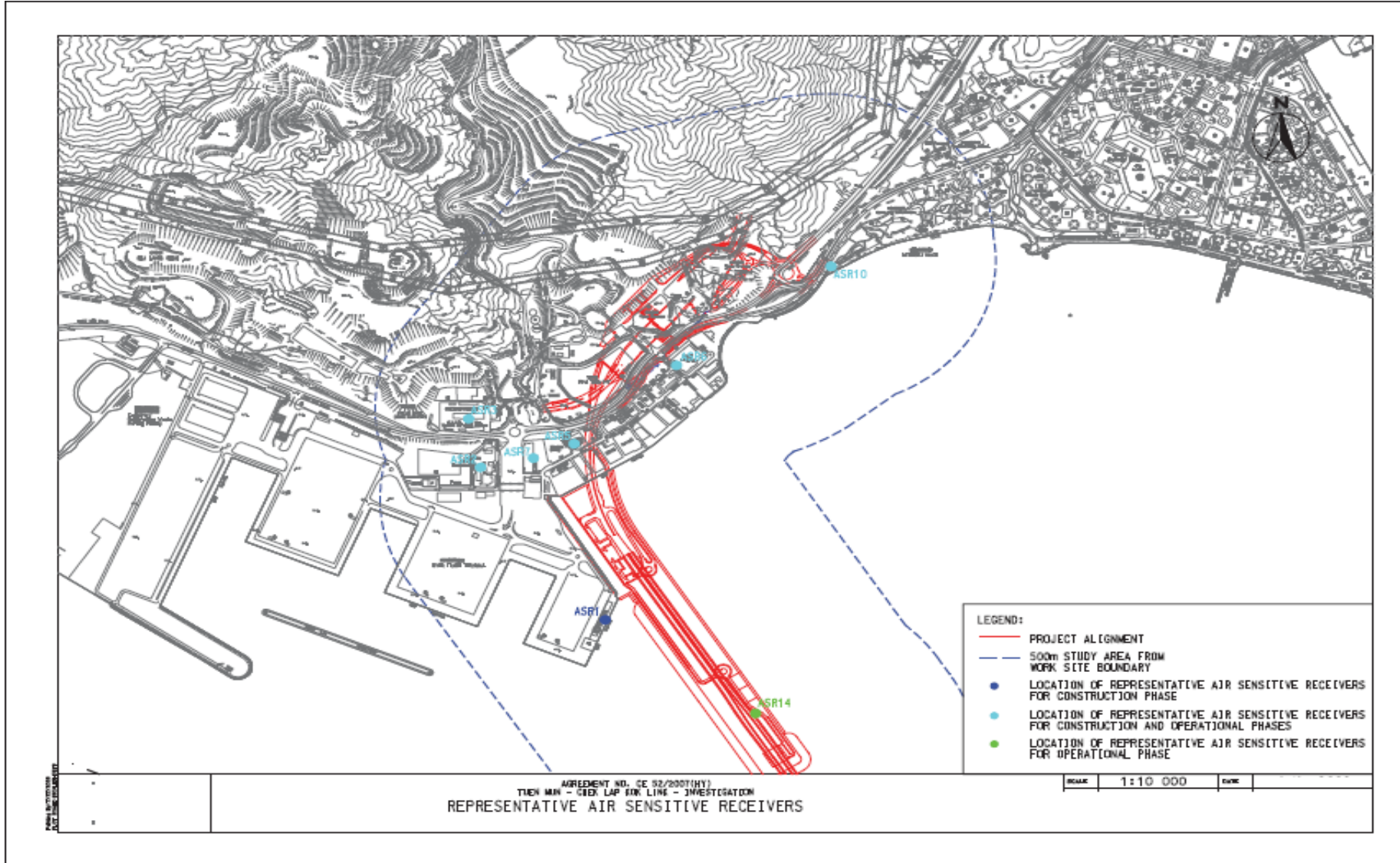
HKL(RLA) – Hong Kong Landscape

Appendix D

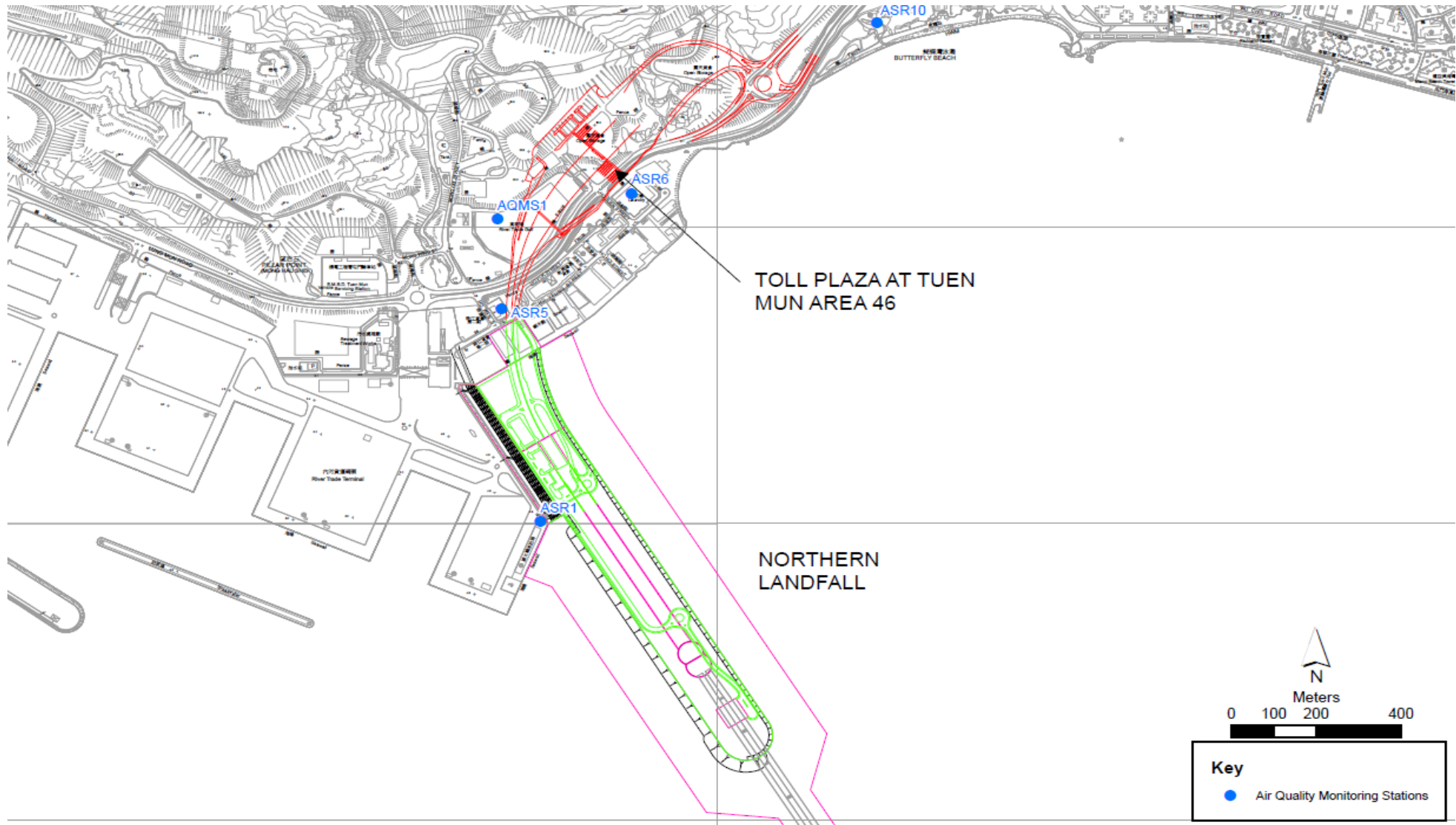
Monitoring Locations for the Contract



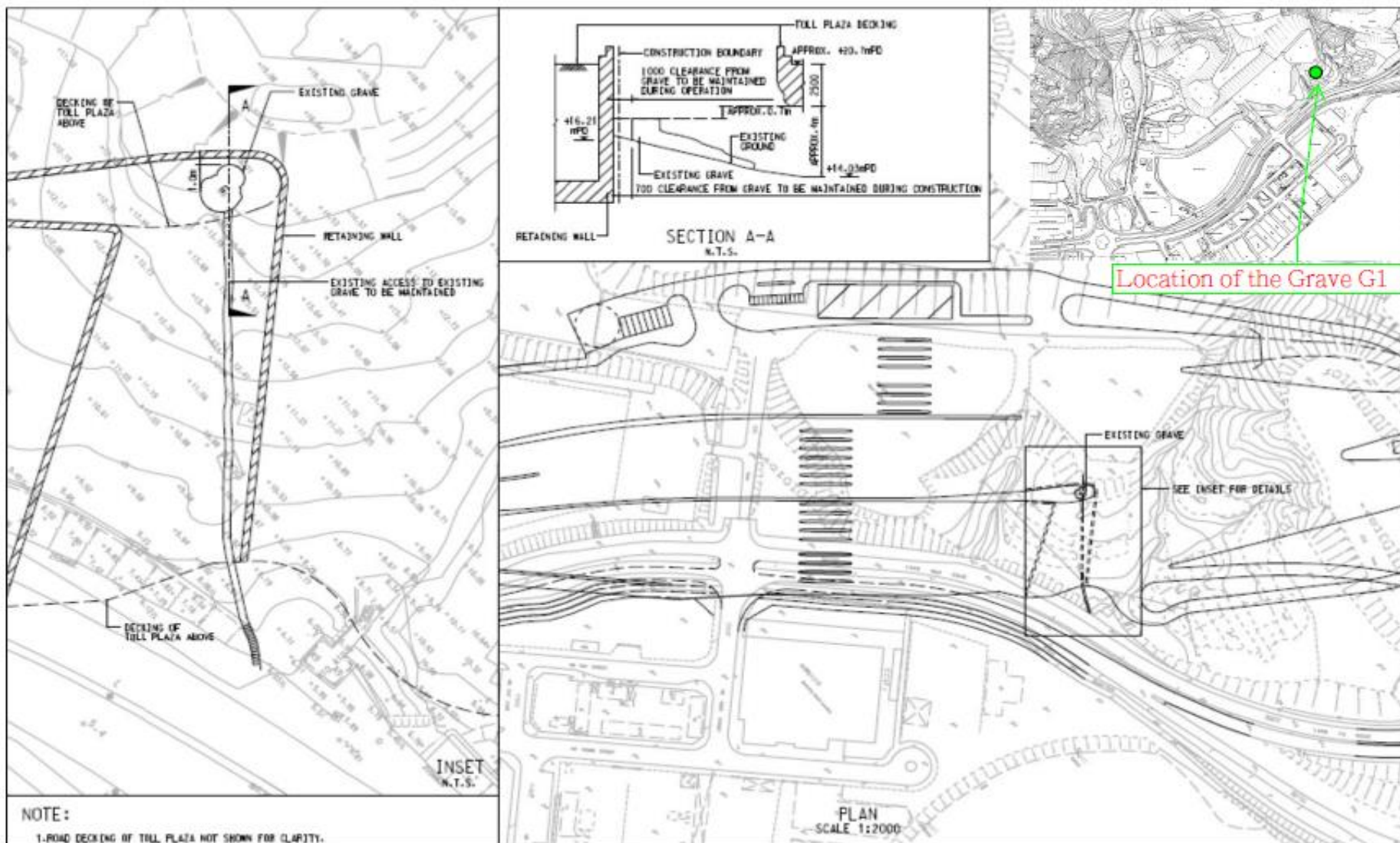
Layout of landfill gas monitoring zone



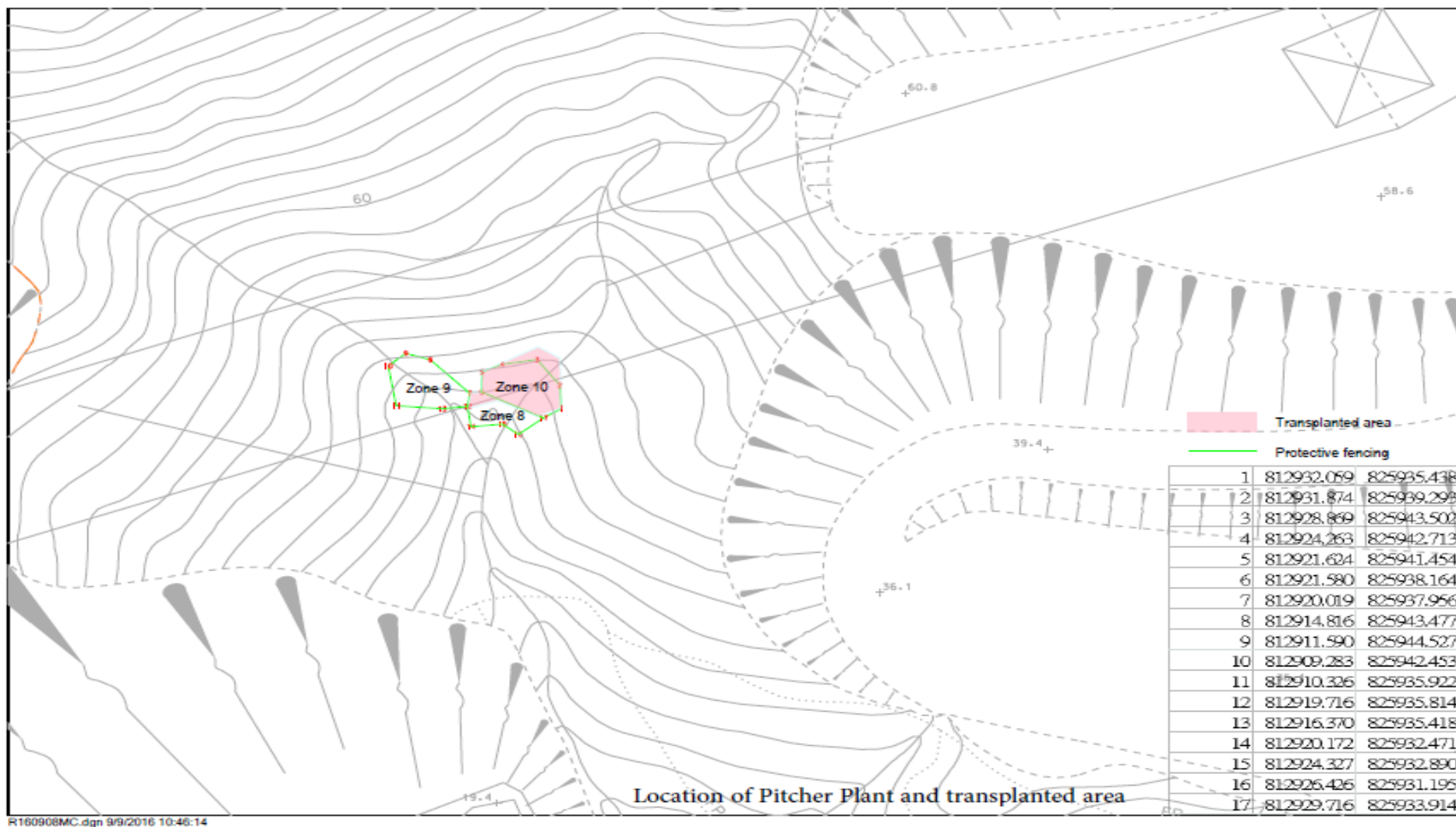
Representative Air Sensitive Receivers



Air Quality Monitoring Location



Location of the Grave G1



Location of the pitcher plants final receptor site

Appendix E

Event and Action Plan

Event and Action Plan for Air Quality

EVENT	ACTION			
	ET ⁽¹⁾	IEC ⁽¹⁾	SOR ⁽¹⁾	Contractor(s)
Action Level				
Exceedance recorded	<ol style="list-style-type: none"> 1 Identify the source. 2 Repeat measurements to confirm findings. If two consecutive measurements exceed Action Level, the exceedance is then confirmed. 3 Inform the IEC and the SOR 4 Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. 5 If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. 6 Discuss with the IEC and the Contractor on remedial actions required. 7 If exceedance continues, arrange meeting with the IEC and the SOR. 8 If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1 Check monitoring data submitted by the ET. 2 Check the Contractor's working method. 3 If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. 4 Advise the SOR on the effectiveness of the proposed remedial measures. 5 Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1 Confirm receipt of notification of failure in writing. 2 Notify the Contractor. 3 Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1 Rectify any unacceptable practice. 2 Amend working methods if appropriate 3 If the exceedance is confirmed to be Project related, submit proposals for remedial actions to IEC within 3 working days of notification 4 Implement the agreed proposals 5 Amend proposal if appropriate.
Limit Level				
Exceedance recorded	<ol style="list-style-type: none"> 1. Identify the source. 2. Repeat measurement to confirm finding. If two consecutive measurements exceed Limit Level, the exceedance is then confirmed. 3. Inform the IEC, the SOR, the DEP and the Contractor. 4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented. 5. If the exceedance is confirmed to be Project related after investigation, increase monitoring frequency to daily. 6. Carry out analysis of the Contractor's working procedures to determine possible mitigation to be implemented. 7. Arrange meeting with the IEC and the SOR to discuss the remedial actions to be taken. 8. Assess effectiveness of the Contractor's remedial actions and keep the IEC, the DEP and the SOR informed of the results. 9. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1 Check monitoring data submitted by the ET. 2 Check Contractor's working method. 3 If the exceedance is confirmed to be Project related after investigation, discuss with the ET and the Contractor on possible remedial measures. 4 Advise the SOR on the effectiveness of the proposed remedial measures. 5 Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. If the exceedance is confirmed to be Project related after investigation, in consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1 Take immediate action to avoid further exceedance. 2 If the exceedance is confirmed to be Project related after investigation, submit proposals for remedial actions to IEC within 3 working days of notification. 3 Implement the agreed proposals. 4 Amend proposal if appropriate. 5 Stop the relevant activity of works as determined by the SOR until the exceedance is abated.

Event and Action Plan for Landscape and Visual Impact

EVENT ACTION LEVEL	ACTION			
	ET	IEC	ER	Contractor
Design Check	<ul style="list-style-type: none"> Check final design conforms to the requirements of EP and prepare report. 	<ul style="list-style-type: none"> Check report. Recommend remedial design if necessary 	<ul style="list-style-type: none"> Undertake remedial design if necessary 	
Non- conformity on one occasion	<ul style="list-style-type: none"> Identify Source Inform IEC and ER Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed 	<ul style="list-style-type: none"> Check report Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise ER on effectiveness of proposed remedial measures. Check implementation of remedial measures 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement
Repeated Non-conformity	<ul style="list-style-type: none"> Identify Source Inform IEC and ER Increase monitoring frequency Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed If nonconformity stops, cease additional monitoring 	<ul style="list-style-type: none"> Check monitoring report Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement

Event / Action Plan for Cultural Heritage

Action Level	ET	IC (E)	ER	Contractor
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Identify Source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed 	<ol style="list-style-type: none"> 1. Check report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Notify Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	<ol style="list-style-type: none"> 1. Identify Source 2. Inform the IC(E) and the ER 3. Increase monitoring frequency 4. Discuss remedial actions with the IC(E), the ER and the Contractor 5. Monitor remedial actions until 6. rectification has been completed 7. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Check monitoring report 2. Check the Contractor's working method 3. Discuss with the ES and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Notify the Contractor 2. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Amend working methods 2. Rectify damage and undertake any necessary replacement

Note:

ET – Environmental Specialist, IEC – Independent Environmental Checker, ER – Engineer's Representative

Event / Action Plan for General Ecology

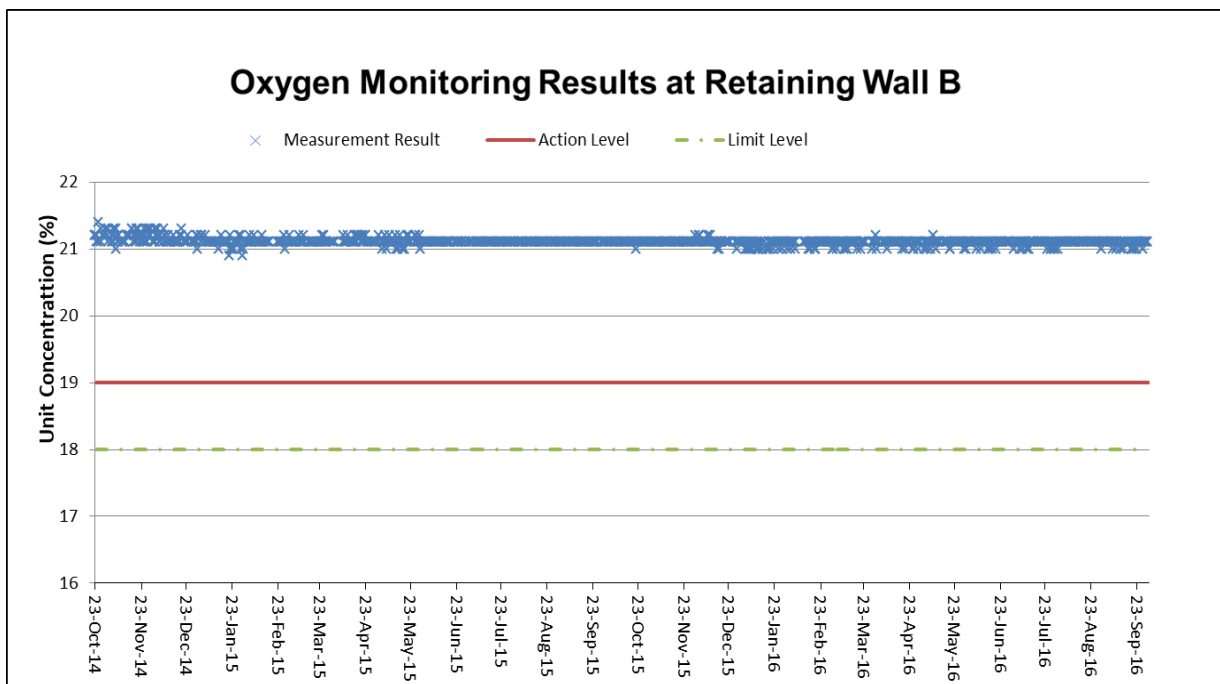
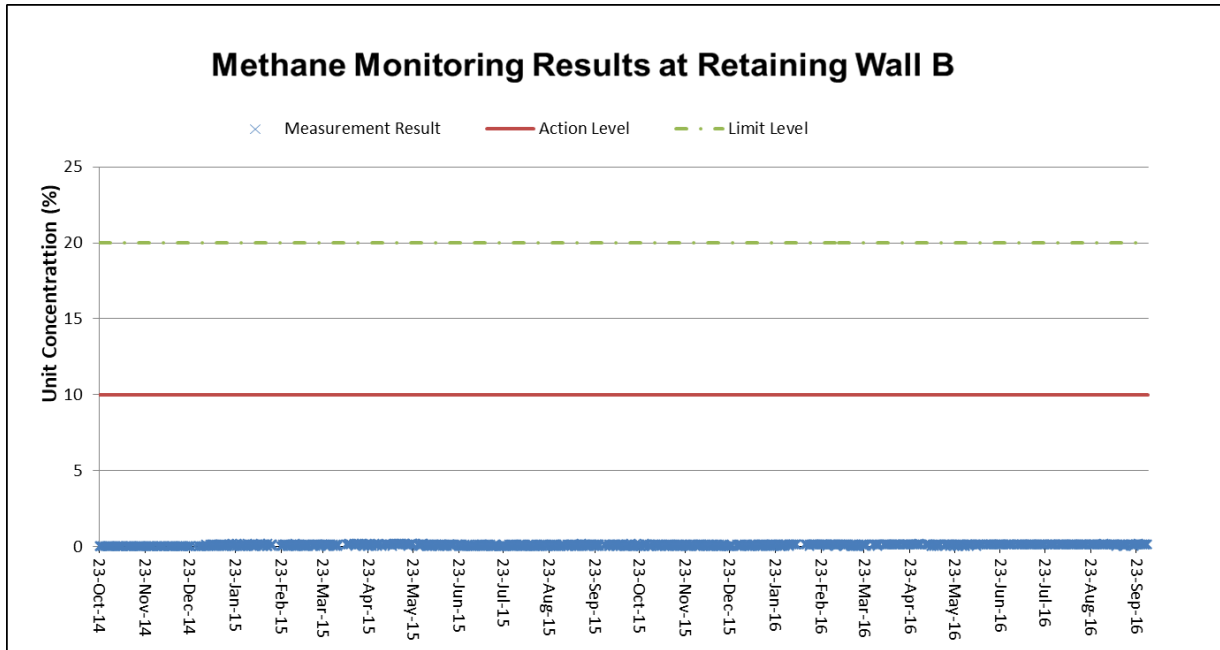
Action Level	ET	IEC	ER	Contractor
Non-conformity on one occasion	<ul style="list-style-type: none"> Identify Source Inform the IEC and the ER Discuss remedial actions with the IEC, the ER and the Contractor Monitor remedial actions until rectification has been completed 	<ul style="list-style-type: none"> Check report Check the Contractor's working method Discuss with the ET and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures. Check implementation of remedial measures. 	<ul style="list-style-type: none"> Notify Contractor Ensure remedial measures are properly implemented Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of a serious nonconformity until situation rectified. 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement
Repeated Non conformity	<ul style="list-style-type: none"> Identify Source Inform the IC(E) and the ER Increase monitoring frequency Discuss remedial actions with the IC(E), the ER and the Contractor Monitor remedial actions until rectification has been completed If exceedance stops, cease additional monitoring 	<ul style="list-style-type: none"> Check monitoring report Check the Contractor's working method Discuss with the ES and the Contractor on possible remedial measures Advise the ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures 	<ul style="list-style-type: none"> Notify the Contractor Ensure remedial measures are properly implemented Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of a serious nonconformity until situation rectified. 	<ul style="list-style-type: none"> Amend working methods Rectify damage and undertake any necessary replacement

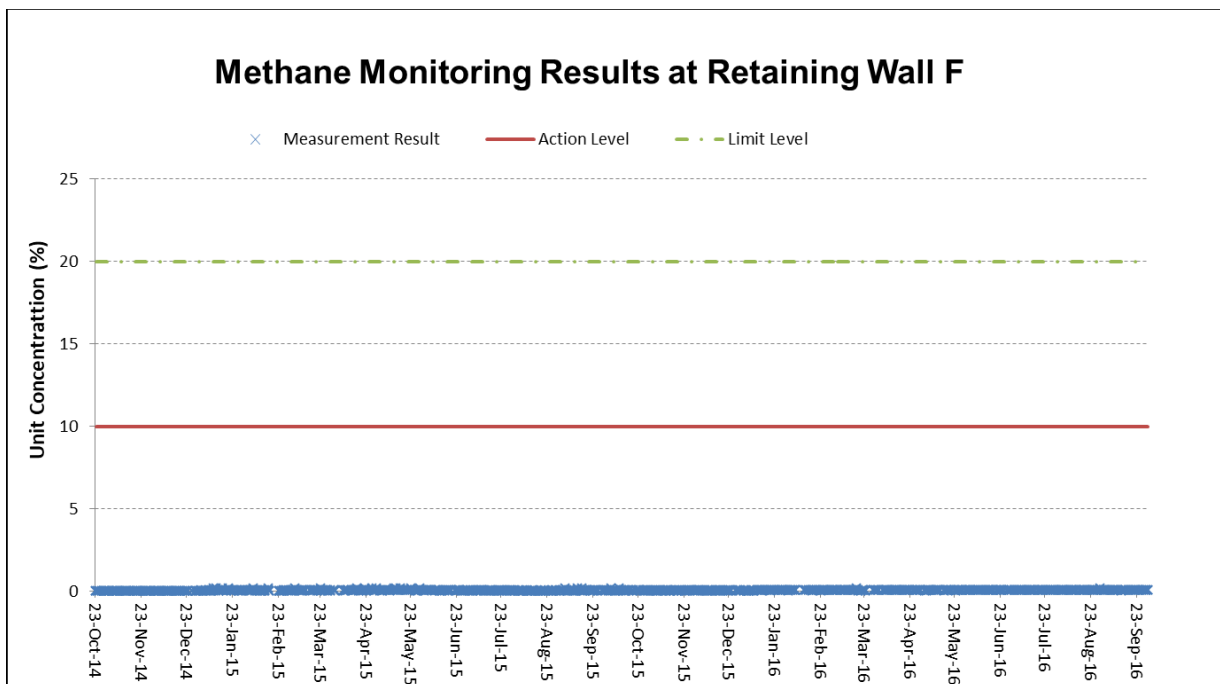
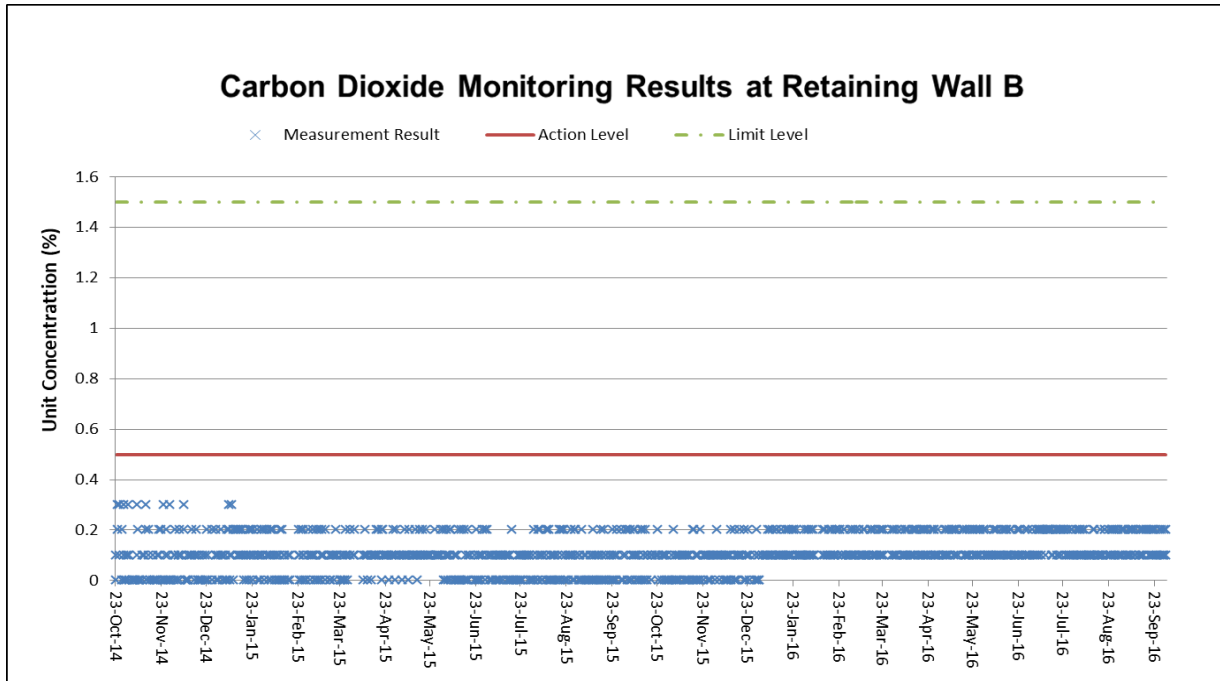
Note: ET – Environmental Specialist, IC(E) – Independent Checker (Environmental), ER – Engineer's Representative

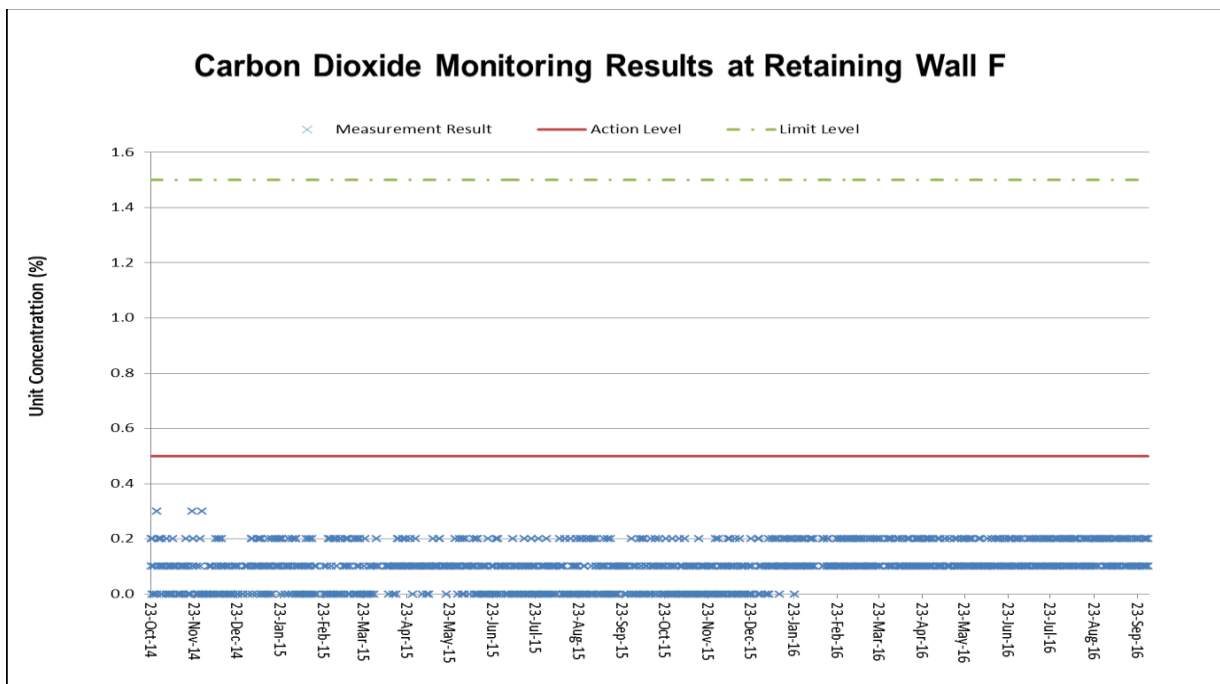
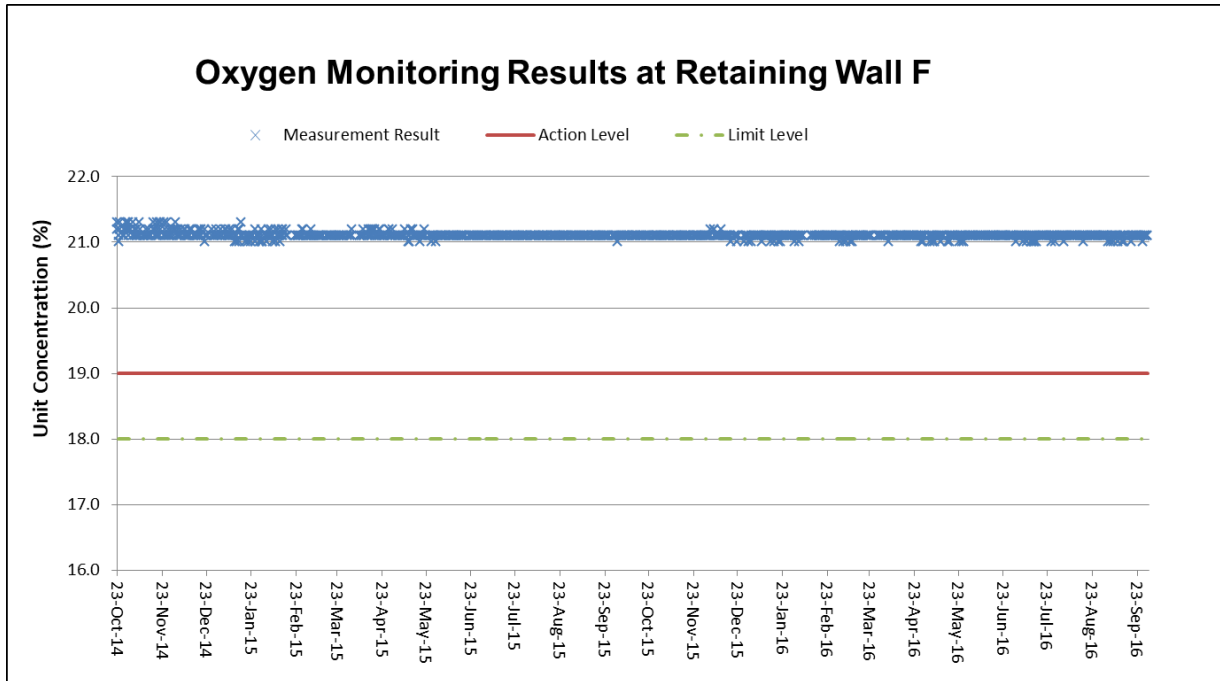
Appendix F

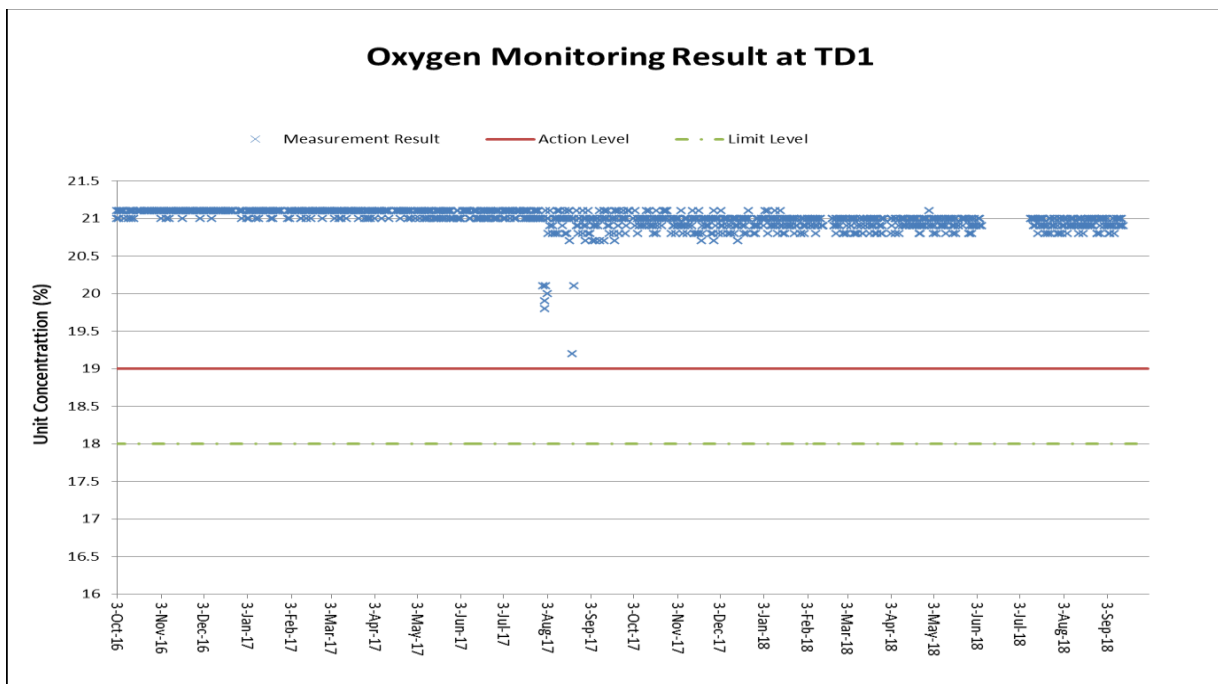
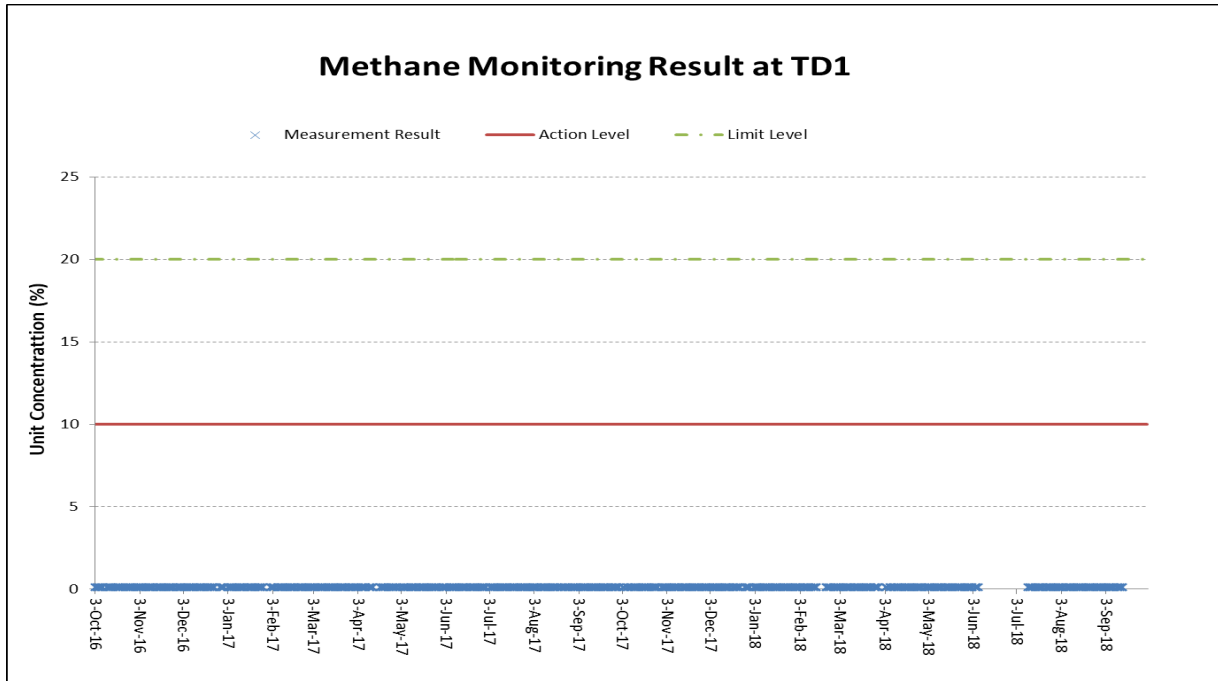
Graphical Plot of Monitoring Results

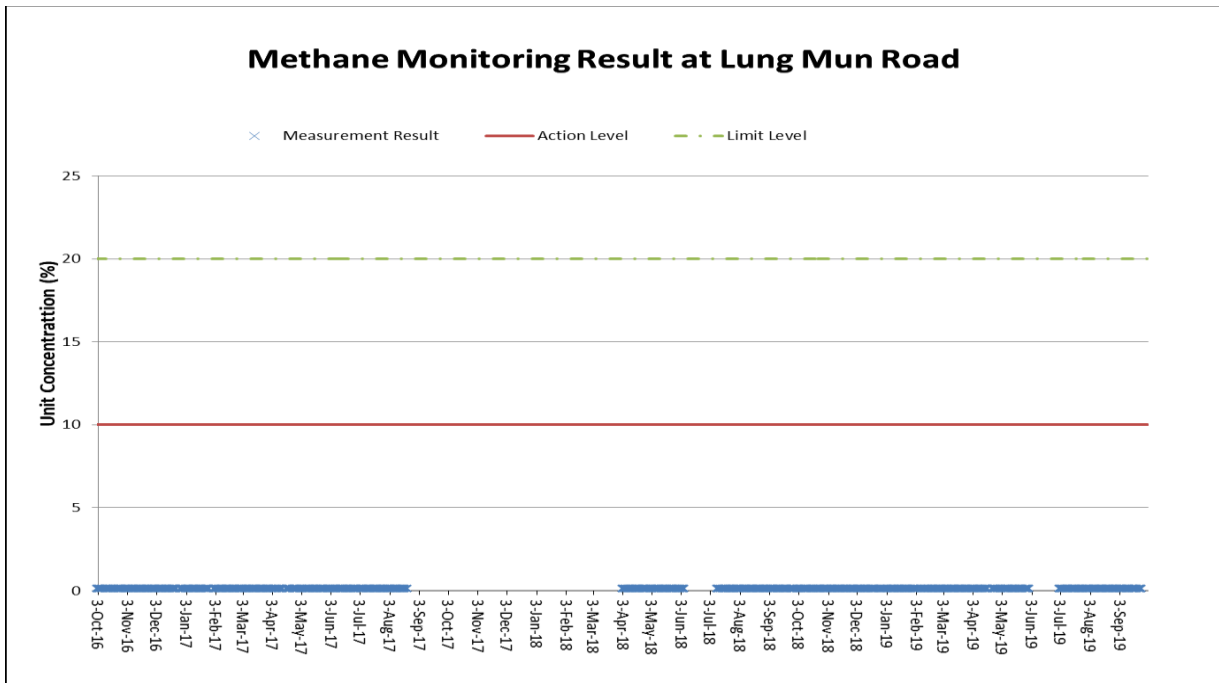
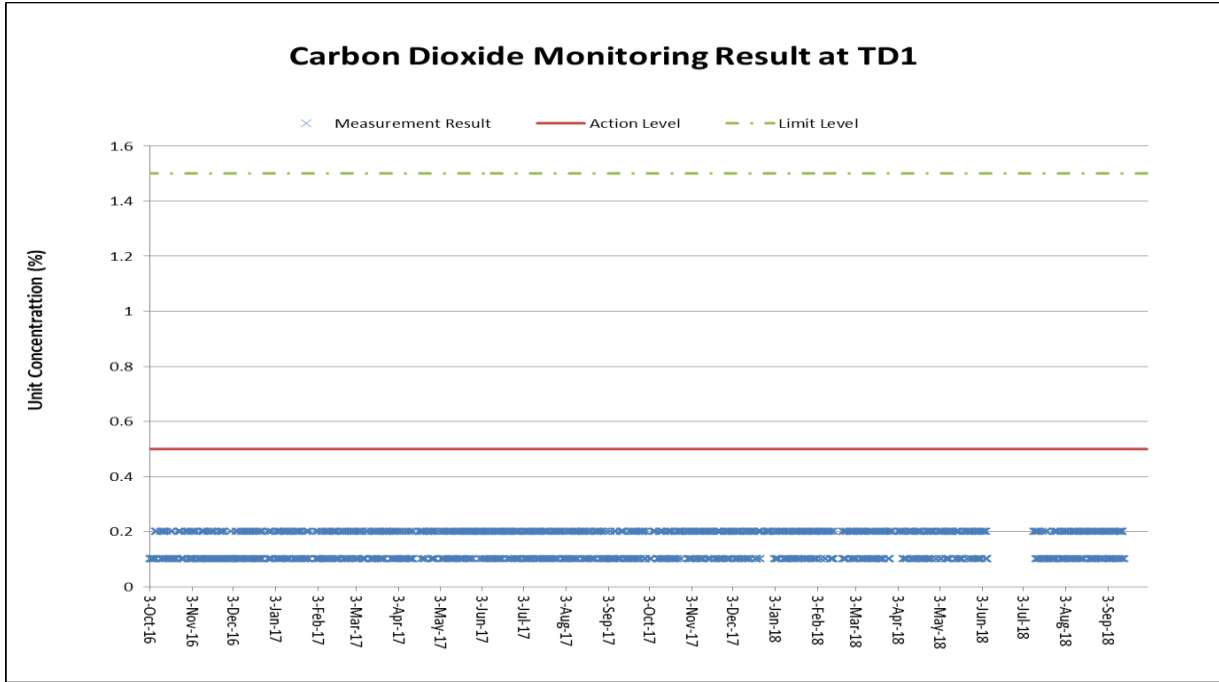
I. Landfill Gas

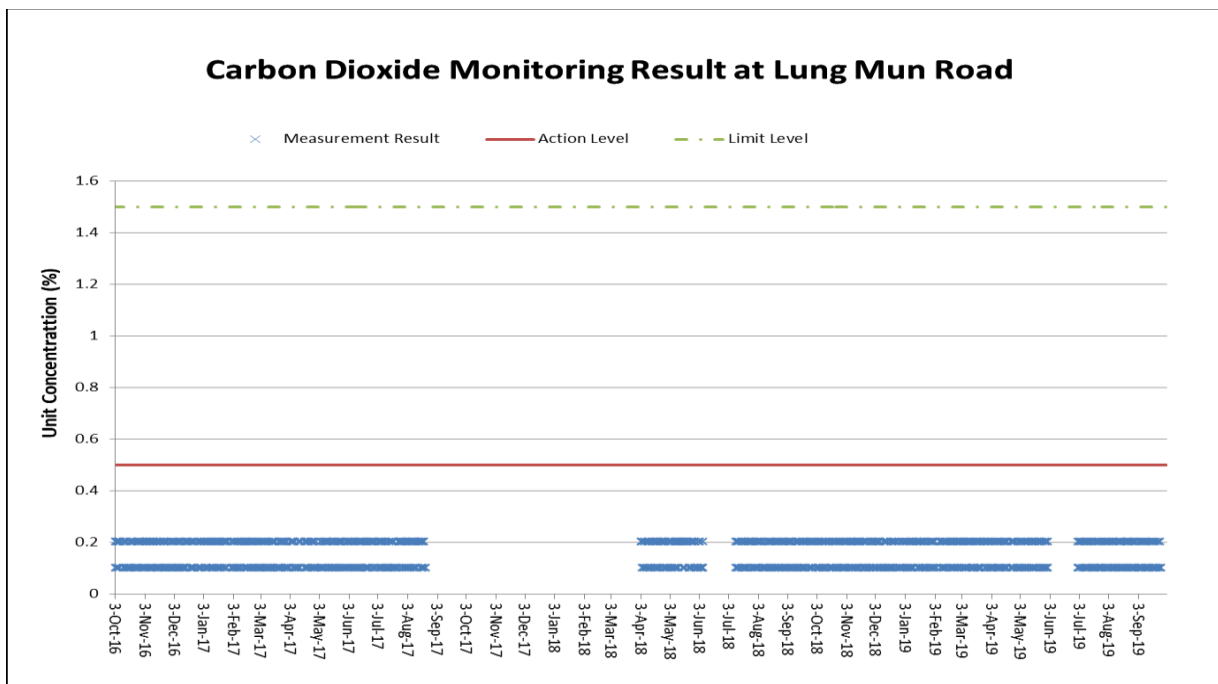
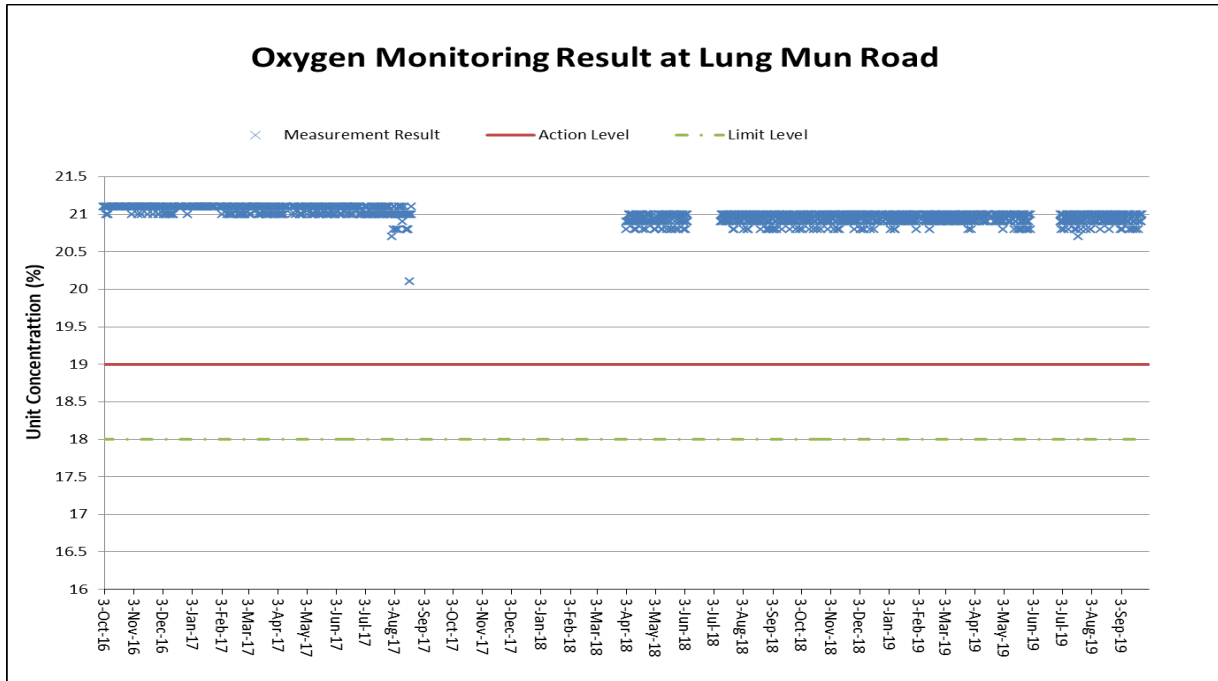












Appendix G

Waste Flow Table

Monthly Summary Waste Flow Table for 2014 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / cardboard packaging	Plastics (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-
Sub-total	-	-	-	-	-	-	-	-	-	-	-
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	3.000	0.000	3.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sept	14.367	0.000	5.000	0.882	8.485	0.000	0.000	0.000	0.000	0.000	0.000
Oct	61.302	0.000	8.890	14.386	37.887	0.000	0.000	0.000	0.000	0.000	0.139
Nov	63.963	0.000	6.351	13.728	43.868	0.000	0.000	0.000	0.000	0.000	0.016
Dec	41.646	0.000	10.145	16.525	14.954	0.000	0.000	0.000	0.000	0.000	0.022
Total	184.278	0.000	33.386	45.521	105.194	0.000	0.000	0.000	0.000	0.000	0.177

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 materials.
- 3 Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2015 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / cardboard packaging	Plastics (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	40.959	0.000	11.915	23.31	5.664	0	0.000	0.000	0.000	0.000	0.07
Feb	50.363	0.000	24.411	25.313	0.629	0	0.000	0.000	0.000	0.000	0.01
Mar	42.223	0.000	13.473	26.648	2.042	0	0.000	0.050	0.000	0.000	0.01
Apr	29.037	0.000	8.06	11.209	9.765	0	0.000	0.000	0.000	0.000	0.003
May	30.547	0.000	4.626	18.857	7.024	0	0.000	0.000	0.000	0.000	0.04
June	31.313	0.000	17.48	9.577	4.234	0	0.000	0.000	0.000	0.000	0.022
Sub-total	224.442	0.000	79.965	114.914	29.358	0.000	0.000	0.050	0.000	0.000	0.155
July	34.081	0.000	19.216	9.037	5.668	0	0.000	0.060	0.000	0.000	0.1
Aug	27.515	0.000	21.142	0	6.293	0	0.000	0.000	0.000	0.000	0.08
Sept	21.196	0.000	12.275	2.185	6.723	0	0.000	0.000	0.000	0.000	0.013
Oct	25.609	0.000	12.486	9.752	3.333	0	0.000	0.000	0.000	0.000	0.038
Nov	40.827	0.000	9.258	29.403	2.145	0	0.000	0.070	0.000	0.000	0.079
Dec	40.827	0.000	12.964	25.436	0.922	0	0.000	0.000	0.000	0.000	0.089
Total	414.497	0.000	167.306	190.727	54.442	0.000	0.000	0.180	0.000	0.000	0.554

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 materials.
- 3 Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2016 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	39.066	0.000	12.964	18.171	0.922	0	6.920	0.000	0.000	0.000	0.089
Feb	14.943	0.000	7.894	5.755	1.036	0	0.000	0.192	0.000	0.000	0.066
Mar	34.090	0.000	16.333	6.392	0.496	0	10.780	0.000	0.000	0.000	0.089
Apr	84.330	0.000	15.186	4.939	0.071	0	63.980	0.000	0.000	0.000	0.154
May	57.179	0.000	11.511	2.658	0	0	42.920	0.000	0.000	0.000	0.09
June	29.316	0.000	10.647	2.935	1.377	0	14.260	0.000	0.000	0.000	0.097
Sub-total	258.924	0.000	74.535	40.850	3.902	0.000	138.860	0.192	0.000	0.000	0.585
July	12.981	0.000	9.589	3.134	0.162	0	0.000	0.000	0.000	0.000	0.096
Aug	8.683	0.000	5.694	2.607	0.225	0	0.000	0.000	0.000	0.000	0.157
Sept	12.767	0.000	3.923	8.561	0.164	0	0.000	0.000	0.000	0.000	0.119
Oct	21.469	0.000	5.736	15.51	0.098	0	0.000	0.000	0.000	0.000	0.125
Nov	21.726	0.000	4.89	15.424	1.207	0	0.000	0.000	0.000	0.030	0.175
Dec	17.870	0.000	7.858	9.131	0.762	0	0.000	0.000	0.000	0.000	0.119
Total	354.420	0.000	112.225	95.217	6.520	0.000	138.860	0.192	0.000	0.030	1.376

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 materials.
- 3 Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2017 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	13.334	0.000	4.543	7.512	1.062	0.000	0.000	0.000	0.000	0.000	0.217
Feb	14.323	0.000	1.066	10.617	2.566	0.000	0.000	0.000	0.000	0.000	0.074
Mar	18.707	0.000	2.116	12.844	3.413	0.000	0.000	0.000	0.000	0.000	0.334
Apr	10.839	0.000	2.291	7.287	1.099	0.000	0.000	0.000	0.000	0.000	0.162
May	10.418	0.000	2.089	7.793	0.341	0.000	0.000	0.000	0.000	0.000	0.195
June	7.465	0.000	2.111	4.388	0.789	0.000	0.000	0.000	0.000	0.000	0.177
Sub-total	75.086	0.000	14.216	50.441	9.270	0.000	0.000	0.000	0.000	0.000	1.159
July	6.783	0.000	1.961	3.482	1.120	0.000	0.000	0.000	0.000	0.000	0.220
Aug	4.154	0.000	1.768	1.547	0.660	0.000	0.000	0.000	0.000	0.000	0.179
Sept	2.373	0.000	0.367	0.558	1.274	0.000	0.000	0.000	0.000	0.000	0.174
Oct	2.716	0.000	0.754	0.491	1.215	0.000	0.000	0.000	0.000	0.000	0.256
Nov	3.874	0.000	0.871	1.254	1.557	0.000	0.000	0.000	0.000	0.000	0.192
Dec	3.223	0.000	0.347	0.843	1.680	0.000	0.000	0.000	0.000	0.000	0.353
Total	98.208	0.000	20.284	58.616	16.776	0.000	0.000	0.000	0.000	0.000	2.533

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 materials.
- 3 Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2018 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	3.292	0.000	0.180	0.802	2.000	0.000	0.000	0.000	0.000	0.000	0.310
Feb	1.782	0.000	0.110	0.482	1.036	0.000	0.000	0.000	0.000	0.000	0.154
Mar	7.001	0.000	0.130	0.418	6.167	0.000	0.000	0.000	0.000	0.040	0.286
Apr	4.669	0.000	0.173	0.372	3.936	0.000	0.000	0.000	0.000	0.000	0.188
May	3.907	0.000	0.141	0.261	3.311	0.000	0.000	0.000	0.000	0.000	0.194
June	1.581	0.000	0.106	0.162	1.167	0.000	0.000	0.000	0.000	0.000	0.146
Sub-total	22.232	0.000	0.840	2.497	17.617	0.000	0.000	0.000	0.000	0.040	1.278
July	1.502	0.000	0.084	0.093	1.123	0.000	0.000	0.000	0.000	0.000	0.202
Aug	2.656	0.000	0.074	0.083	2.291	0.000	0.000	0.000	0.000	0.000	0.208
Sept	3.519	0.000	0.039	0.000	3.250	0.000	0.000	0.000	0.000	0.000	0.230
Oct	2.226	0.000	0.000	0.000	1.983	0.000	0.000	0.000	0.000	0.040	0.243
Nov	5.508	0.000	0.000	0.000	5.283	0.000	0.000	0.000	0.000	0.000	0.225
Dec	9.465	0.000	0.000	0.000	9.322	0.000	0.000	0.000	0.000	0.000	0.143
Total	47.108	0.000	1.037	2.673	40.869	0.000	0.000	0.000	0.000	0.080	2.529

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 materials.
- 3 Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2019 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	1.467	0.000	0.000	0.000	1.203	0.000	0.000	0.000	0.000	0.000	0.264
Feb	0.949	0.000	0.000	0.000	0.882	0.000	0.000	0.000	0.000	0.000	0.067
Mar	1.404	0.000	0.000	0.000	1.245	0.000	0.000	0.000	0.000	0.000	0.159
Apr	1.051	0.000	0.000	0.000	0.918	0.000	0.000	0.000	0.000	0.040	0.133
May	2.015	0.000	0.000	0.000	1.499	0.000	0.000	0.000	0.000	0.000	0.516
June	4.059	0.000	0.000	0.000	3.858	0.000	0.000	0.000	0.000	0.000	0.201
Sub-total	10.945	0.000	0.000	0.000	9.605	0.000	0.000	0.000	0.000	0.040	1.340
July	1.395	0.000	0.000	0.000	1.052	0.000	0.000	0.000	0.000	0.000	0.343
Aug	0.942	0.000	0.000	0.000	0.799	0.000	0.000	0.000	0.000	0.000	0.143
Sep	0.703	0.000	0.000	0.000	0.526	0.000	0.000	0.000	0.000	0.000	0.177
Oct	0.501	0.000	0.000	0.000	0.274	0.000	0.000	0.000	0.000	0.000	0.227
Nov	0.432	0.000	0.000	0.000	0.327	0.000	0.000	0.000	0.000	0.000	0.105
Dec	0.455	0.000	0.000	0.000	0.130	0.000	0.000	0.000	0.000	0.000	0.325
Total	15.373	0.000	0.000	0.000	12.713	0.000	0.000	0.000	0.000	0.040	2.660

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.
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- 3 Broken concrete for recycling into aggregates.

Monthly Summary Waste Flow Table for 2020 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
Jan	0.316	0.000	0.000	0.000	0.271	0.000	0.000	0.000	0.000	0.000	0.045
Feb	0.129	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.038
Mar	0.807	0.000	0.000	0.000	0.624	0.000	0.000	0.000	0.000	0.000	0.183
Apr	1.108	0.000	0.000	0.000	1.016	0.000	0.000	0.000	0.000	0.000	0.092
May	6.168	0.000	0.000	0.000	6.044	0.000	0.000	0.000	0.000	0.000	0.124
June	1.375	0.000	0.000	0.000	1.264	0.000	0.000	0.000	0.000	0.000	0.111
Sub-total	9.903	0.000	0.000	0.000	9.310	0.000	0.000	0.000	0.000	0.000	0.593
July	1.360	0.000	0.000	0.000	1.213	0.000	0.000	0.000	0.000	0.000	0.147
Aug	0.309	0.000	0.000	0.000	0.224	0.000	0.000	0.000	0.000	0.000	0.085
Sep	0.504	0.000	0.000	0.000	0.481	0.000	0.000	0.000	0.000	0.000	0.023
Oct	0.313	0.000	0.000	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.013
Nov	0.777	0.000	0.000	0.000	0.662	0.000	0.000	0.000	0.000	0.000	0.115
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	13.165	0.000	0.000	0.000	12.190	0.000	0.000	0.000	0.000	0.000	0.975

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.
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- 3 Broken concrete for recycling into aggregates.

Appendix H

**Environmental Mitigation Measures Implementation Schedule
(EMMIS)**

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Air Quality									
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	An effective watering programme of twice daily watering with complete coverage, is estimated to reduce by 50%. This is recommended for all areas in order to reduce dust levels to a minimum;	All areas / throughout construction period	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	Watering of the construction sites in Lantau for 8 times/day and in Tuen Mun for 12 times/day to reduce dust emissions by 87.5% and 91.7% respectively and shall be undertaken.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall, to the satisfaction of the Engineer, install effective dust suppression measures and take such other measures as may be necessary to ensure that at the Site boundary and any nearby sensitive receiver, dust levels are kept to acceptable levels.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	The Contractor shall not burn debris or other materials on the works areas.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	In hot, dry or windy weather, the watering programme shall maintain all exposed road surfaces and dust sources wet.	All unpaved haul roads / throughout construction period in hot, dry or windy weather	Contractor	TMEIA Avoid smoke impacts and disturbance		Y		✓
4.8.1	3.8	Where breaking of oversize rock/concrete is required, watering shall be implemented to control dust. Water spray shall be used during the handling of fill material at the site and at active cuts, excavation and fill sites where dust is likely to be created.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	Open dropping heights for excavated materials shall be controlled to a maximum height of 2m to minimise the fugitive dust arising from unloading.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓

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4.8.1	3.8	During transportation by truck, materials shall not be loaded to a level higher than the side and tail boards, and shall be dampened or covered before transport.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin. The tarpaulin shall be properly secured and shall extend at least 300mm over the edges of the side and tail boards.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	No earth, mud, debris, dust and the like shall be deposited on public roads. Wheel washing facility shall be usable prior to any earthworks excavation activity on the site.	construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	Areas of exposed soil shall be minimized to areas in which works have been completed shall be restored as soon as is practicable.	All exposed surfaces / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.8.1	3.8	All stockpiles of aggregate or spoil shall be enclosed or covered and water applied in dry or windy condition.	All areas / throughout construction period	Contractor	TMEIA Avoid dust generation		Y		✓
4.11	Section 3	EM&A in the form of 1 hour and 24 hour dust monitoring and site audit	All representative existing ASRs / throughout construction period	Contractor	EM&A Manual		Y		✓ Monitoring for 1 hour and 24 hour dust monitoring were undertaken by the ET of Contract HY/2012/08

Cultural Heritage

EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
11.8	Section 9	EM&A in the form of audit of the mitigation measures	All areas / throughout construction period	Highways Department	EIAO-TM		Y		✓

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Ecology									
EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
7.13#	6.3, 6.5#	Fencing or other physical barriers for protection of Pitcher Plant around Zones 8, 9 and 10 and the temporary nursery site	Tuen Mun Area 46 shrubland/ Detailed/ Prior to construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
7.13	6.5	Audit Pitcher Plant protection measures	Tuen Mun Area 46	Contractor	TMEIA		Y		✓
7.13	6.5	The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule.	All areas / As soon as accessible	Contractor	TMEIA		Y		✓
7.13	6.5	Spoil heaps shall be covered at all times.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Avoid damage and disturbance to the remaining and surrounding natural habitat	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Placement of equipment in designated areas within the existing disturbed land	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Disturbed areas to be reinstated immediately after completion of the works.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Construction activities should be restricted to the proposed works boundary	All areas / Throughout construction	Contractor	TMEIA		Y		✓
Landfill Gas Hazard Assessment									
EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
14.12.2	14.2	<u>Appointment of Safety Officer</u> Appoint a properly trained safety officer and provide with appropriate equipment to measure and monitor LFG hazard. The monitoring frequency and areas to	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment		Y		✓

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		be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriately qualified person.			Guidance Note				
14.12.2	-	<u>Safety Measures - Excavation</u> Staff should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards. Excavation procedures and code of practice should be implemented.	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.2	-	<u>Safety Measures – Welding, Flame- Cutting and Hot works</u> Hot works should be confined to open areas away from any trench or excavation. Should hot works must be carried out in trenches or confined space, “permit to work” procedures should be followed.	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.2	-	<u>Safety Measures – Enclosed Spaces</u> Site offices or buildings located within PPV Landfill Consultation Zone which have the capacity to accumulate landfill gas, then they should either be located in an area which has been proven to be free of landfill gas; or be raised clear of the ground by a minimum of 500mm.	Site office, building, tunnel, subway, confined area / Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.2	-	<u>Safety Measures – Electrical Equipment</u> Any electrical equipment, such as motors and extension cords, should be intrinsically safe.	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.2	-	<u>Safety Measures – Piping</u> During piping assembly or conduiting construction, all valves/seals should be closed immediately after installation. As construction progresses, all valves/seals should be closed as installed to prevent the migration of gases through the pipeline/conduit. All piping/conduiting should be capped at the end of	Services & utilities / Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓

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		each working day.							
14.12.2	-	<u>Safety Measures – Fire Safety</u> Adequate fire safety equipments should be provided on site. Workers and visitors should be notified of the potential fire hazards. Safety notices should be posted around the site warning the anger and potential hazards.	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.1	-	<u>Safety Measures – Confined Spaces</u> Precautionary measures should include ensuring that staff members are aware of the potential hazards of working in confined spaces, and that appropriate monitoring procedures are in place to prevent hazards in confined spaces.	Confined space / Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.1	-	<u>Monitoring</u> Periodically during ground-works within the Consultation Zone, the works area should be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment. Depending on the results of the measurements, actions required will vary. As a minimum these should encompass those actions specified in Table 14.8 of the EIA Report or Table 14.1 of the EM&A Manual.	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓

Landscape and Visual

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,	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓

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		including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage) (CM1)							
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		✓
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		✓
10.9	7.6	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone) (CM4)	All areas/detailed design/ during Construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works (CM5)	All areas/detailed design/ during Construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
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		✓
10.9	7.6	Ensure no run-off into water body adjacent to the Project Area (CM7)	All areas/detailed design/ during Construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (CM8)	All areas/detailed design/ during Construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
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		✓
10.9	7.6	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments.	All areas/detailed design/ during	Design Consultant/	TMEIA	Y	Y		✓

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		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)	Construction	Contractor					
10.9	7.6	Re-vegetation of affected woodland/shrubland with native species (OM1)	All areas/detailed design/ during Construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓* maintenance agent : HyD
10.9	7.6	Tall buffer screen tree / shrub / climber planting where appropriate should be incorporated to soften hard engineering structures and facilities (OM2)	All areas/detailed design/ during Construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓* maintenance agent : 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 minimize unnecessary light spill (OM3)	All areas/detailed design/ during Construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓* maintenance agent : 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/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓* maintenance agent : HyD & LCSD
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/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓* maintenance agent : HyD & ArchSD
10.9	7.6	Avoidance of excessive height and bulk of buildings and structures (OM6)	All areas/detailed design/ during Construction/ post construction	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓* maintenance agent : HyD & ArchSD
Waste									
EIA reference	EM&A Manual	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or	Implementation Stages	Status		

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	reference				Requirement	D	C	O	
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	Contract mobilisation	Contractor	TMEIA		Y		✓

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		management procedures including waste reduction, reuse and recycling							
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 minimize the extent of cutting.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Inert C&D materials from the toll plaza cut slopes shall be reused for construction of the raised platform for the toll plaza where possible.	Tol Plaza / toll plaza 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	All areas / throughout construction period	Contractor	TMEIA		Y		✓

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		materials should avoid over-ordering and wastage.							
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: <ul style="list-style-type: none"> • suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; • Having a capacity of <450L unless the specifications have been approved by the EPD; and • Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations. • Clearly labelled and used solely for the storage of chemical wastes; • Enclosed with at least 3 sides; • 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; • Adequate ventilation; 	All areas / throughout construction period	Contractor	TMEIA		Y	✓	

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ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE**

		<ul style="list-style-type: none"> Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and 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		✓
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	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.	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, aluminum 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	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓

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		site audit programme shall be undertaken.							
Water Quality									
EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
Land Works									
6.10	-	Wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Sewage effluent and discharges from onsite kitchen facilities shall be directed to Government sewer in accordance with the Requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including specifically at the onset of and after each rainstorm.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Temporary access roads should be surfaced with crushed stone or gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓

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6.10	-	Open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	5.8	Manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	All vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
6.10	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal.	All areas/ throughout construction period	Contractor	TM-EIAO		Y		✓
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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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	Section 5	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		✓

Remarks:

- ✓ Compliance of Mitigation Measures
- <> Compliance of Mitigation Measures but need improvement.
- × Non-compliance of Mitigation Measures
- ▲ Non-compliance of Mitigation Measures but rectified by Contractor
- △ Deficiency of Mitigation Measures but rectified by Contractor
- N/A Not Applicable in Reporting Period
- # Amended against condition 3.13 of EP-354/2009/C
- * In Progress and subject to approved L&V Plan

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