AUES JOB NO.: TCS00715/14

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

6TH ANNUAL ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REVIEW REPORT – NOVEMBER 2019 TO OCTOBER 2020

PREPARED FOR
CRBC AND KADEN JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
25 March 2021	TCS00715/14/600/R0735v2	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

RAMBOLL

Ref.: HYDHZMBEEM00_0_8431L.21

9 April 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
6th Annual EM&A Report for November 2019 - October 2020

Reference is made to the Environmental Team's submission of the Annual EM&A report for November 2019 - October 2020 (ET's ref.: "TCS00715/14/600/R0735v2" dated 25 March 2021) certified by the ET Leader and provided to us via e-mail on 25 March 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

pp

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

c.c.

HyD	Mr. Patrick Ng	(By Fax: 3188 6614)
HyD	Mr. Alan Ip	(By Fax: 3188 6614)
AECOM	Mr. Conrad Ng	(By Fax: 3922 9797)
AUES	Mr. T. W. Tam	(By Fax: 2959 6079)
CRBC-Kaden JV	Mr. John Wong	(By Fax: 2253 8399)

Internal: DY, YH, ENPO Site

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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 Before the Contract commencement, the baseline air quality monitoring was carried out by the ET of HY/2012/08 from ***16th*** to ***31st October 2013***. A set of Action and Limit Levels (A/L Levels) of air quality performance criteria was proposed by ET of HY/2012/08 which has been verified by IEC and endorsed by EPD. The Action and Limit Levels of the air quality adopted for the Contract is shown in ***Table ES-01***.

Table ES-01 Action and Limit Levels of Air Quality Monitoring

Monitoring Station	24-hour TSP, (μg /m^3)		1-hour TSP, (μg/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

ES03 In September 2013, baseline survey for Pitcher Plant has been conducted within the project area by a suitably qualified ecologist. In mid-September 2014, Contract HY/2013/12 has also conducted a one-off survey to confirm the number of existing Pitcher Plant. For cultural heritage, a condition survey for the grave was conducted on ***23 September 2014***. The Baseline Monitoring Report for the Contract was submitted on ***7 October 2014*** for IEC's verification and ***25 November 2014*** for EPD's endorsement.

ES04 This is the **6th** Annual EM&A Review 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 period from **1 November 2019 to 31 October 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	Sub-total Occasions				Total
		1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	
Air Quality	1-hour TSP	450	450	465	345	**1710**
	24-hour TSP	150	150	155	115	**570**
Cultural heritage inspection	Grave G1	13	12	13	13	**51**
Landfill Gas Monitoring	Oxygen; Methane & Carbon Dioxide	Nil	Nil	Nil	Nil	**Nil**
Landscape &Visual	Landscape & Visual Monitoring	14	11	4	1*	**30**
Joint Site Inspection / Audit	IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing	13	12	13	13	**51**

Remark: * Landscape & Visual Monitoring for Establishment period

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 20 Action Level and 6 Limit Level exceedances of 1-hour TSP were recorded in the Reporting Period.

ES07 For landfill gas monitoring, the concentration of all parameters were detected within the acceptable levels. Moreover, no noise complaint was received in the Reporting Period. ***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	**20**	**6**	**13**	**13**	0
	24-hour TSP	0	0	0	0	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 No environmental complaint was received in the sixth annual of Reporting Period. 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	
1 November 2019 – 31 October 2020	NA	NA	NA	NA	0

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

SITE INSPECTION

ES10 For past twelve months, total 51 occasions joint site inspection were carried out by the RE, IEC, ET and the Contractor. For joint site inspections, no non-compliance was observed. However, 70 observations/reminders were recorded within the past twelve months.

ES11 During each occasion of site inspection, Pitcher Plants of ecology and grave of culture heritage were also to inspect and audit.

FUTURE KEY ISSUES

ES12 Construction dust emission would be a key environmental issue during construction work of the Contract at dry season. Dust mitigation measures such as watering at least 12 times per day on all exposed soil within the Project site and associated work areas in Tuen Mun area throughout the construction period should be implemented in accordance with the EP requirement.

ES13 Muddy water or other water pollutants from sites surface flow to public area should be avoided. Water quality mitigation measures to prevent surface runoff to impact public areas should be fully implemented.

ES14 Substantial completion for the Works under the contract has been achieved on October 2019. The certifications of completion of the Work, which cover the whole contract had been issued. Proposal Termination of Construction Phase EM&A programme which verified by IEC had been submitted to

EPD and received no objection to the proposal from EPD on 23 December 2020. Therefore, the construction phase EM&A programme under the contract was terminated after 31 December 2020. There is no stand-alone annual report to cover the period from November to December 2020, the details summary EM&A information can refer to the 25th Quarterly Report (November to December 2020) of the Contract.

ES15 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 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.

1.1.2 The works of the Contract mainly include:-

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..

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***. This is the Sixth (6th) Annual EM&A Review Report to summarize the monitoring results and inspection findings with the Contractor performance from **1 November 2019** to **31 October 2020** (hereinafter "Reporting Period") for the past twelve months.

1.2 REPORT STRUCTURE

1.2.1 The Annual Environmental Monitoring and Audit (EM&A) Review 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 In the Reporting Period, the major construction activity conducted under the Contract is summarized in below. Moreover, the master construction program of the Contract is enclosed in ***Appendix D***.

- Instrumentation and Monitoring;
- E & M Works at Retaining Wall B;
- Road and Drainage Works at LMR and Butterfly Beach;
- Landscape planting works on slopes, Lung Mun Road and Butterfly Beach;
- Finishing work at Footbridge;
- Modification of Toll booth Canopy and TD 1,2

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 (submission refer to Contract HY/2012/08)
- Landscape and Visual Plan (not yet endorsed by EPD)
- Waste Management Plan (endorsed by the EPD on 16 March 2015)
- Baseline Monitoring Report (not yet endorsed by EPD)

2.3.2 Summary of the relevant permits, licenses, and/or notifications on environmental protection as obtained by the Contract in the past twelve months 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 -Variation of Effluent Discharge License	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	CNP for Multiple Task	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
6	CNP for Portion H	GW-RW0203-19	18-05-2019	17-11-2019
		GW-RW0556-19	25-11-2019	17-05-2020
		GW-RW0201-20	18-05-2020	16-11-2020
7	CNP for Lung Mun Road	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
		GW-RW0382-20	04-09-2020	13-11-2020
8	CNP for Lung Fu Road	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-RW0341-19	03-07-2020	09-09-2020
		GW-RW0423-20	22-09-2020	06-11-2020
9	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 E*****.**

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	**Northern Connection** During excavation works for launching shaft, excavation work for Cut and Cover Tunnel and Cut and Cover Tunnel Construction **Toll Plaza** During excavation, slope works, construction of road and superstructures and wind erosion from open sites and stockpiling areas **Tunnel Buildings** During excavation, foundation works, construction of superstructures and wind erosion from open sites and stockpiling areas
	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 (μg/m^3)		1-hour TSP (μg/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 F.***

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, total 1,710 of 1-hr TSP measurements and 570 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 2019 to October 2020) and the Fifth Annual EM&A Review Report (November 2019 to October 2020) prepared by the ET of Contract HY/2012/08.

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 20 Action Level and 6 Limit Level exceedances of 1-hour TSP were recorded in the Reporting Period. Notification on 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
4 November 2019	ASR1	1Hr TSP	626 $\mu g/m^3$	Limit Level
4 November 2019	ASR5	1Hr TSP	398 $\mu g/m^3$	Action Level
7 November 2019	ASR5	1Hr TSP	479 $\mu g/m^3$	Action Level
28 November 2019	ASR1	1Hr TSP	577 $\mu g/m^3$	Limit Level
28 November 2019	ASR1	1Hr TSP	452 $\mu g/m^3$	Action Level
28 November 2019	ASR1	1Hr TSP	385 $\mu g/m^3$	Action Level
28 November 2019	ASR5	1Hr TSP	534 $\mu g/m^3$	Limit Level
28 November 2019	ASR5	1Hr TSP	500 $\mu g/m^3$	Action Level
1 December 2019	ASR1	1Hr TSP	747 $\mu g/m^3$	Limit Level
1 December 2019	ASR5	1Hr TSP	377 $\mu g/m^3$	Action Level
1 December 2019	ASR10	1Hr TSP	407 $\mu g/m^3$	Action Level
4 December 2019	ASR1	1Hr TSP	366 $\mu g/m^3$	Action Level
4 December 2019	ASR5	1Hr TSP	380 $\mu g/m^3$	Action Level
12 March 2020	ASR5	1Hr TSP	356 $\mu g/m^3$	Action Level
8 April 2020	ASR1	1Hr TSP	357 $\mu g/m^3$	Action Level
8 April 2020	ASR1	1Hr TSP	457 $\mu g/m^3$	Action Level
8 April 2020	ASR5	1Hr TSP	384 $\mu g/m^3$	Action Level
14 April 2020	ASR1	1Hr TSP	673 $\mu g/m^3$	Limit Level
13 June 2020	ASR6	1Hr TSP	357 $\mu g/m^3$	Action Level
13 August 2020	ASR1	1Hr TSP	352 $\mu g/m^3$	Action Level
11 September 2020	ASR6	1Hr TSP	499 $\mu g/m^3$	Action Level

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed
11 September 2020	ASR6	1Hr TSP	1454 µg/m^3	Limit Level
9 October 2020	ASR5	1Hr TSP	373 µg/m^3	Action Level
21 October 2020	ASR1	1Hr TSP	494 µg/m^3	Action Level
21 October 2020	ASR5	1Hr TSP	474 µg/m^3	Action Level
21 October 2020	ASR6	1Hr TSP	352 µg/m^3	Action Level

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 it growth and protection measure situation shall be conducted during construction period.

5.1.2 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.

5.2 PITCHER PLANTS INSPECTION

5.2.1 A total **51** occasions of inspection were carried out by the Contractor and ET during the Reporting Period.

5.2.2 Establishment period for the pitcher plants was completed at the end of September 2016, the join 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 checking at the final receptor area to make sure no site activities was 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.

5.2.3 No matters the completion of establish 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 F***.

6.2 GRAVE INSPECTION

6.2.1 In this Reporting Period, there are total ***52 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.

6.2.2 Since construction works very close to buffer zone of the Grave G1, cultural heritage mitigation measures and protection measures as provided by the Contractor, therefore has fully implemented in accordance with EM&A Manual requirements

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 ***30*** occasions of inspection during construction phase.

7.2.2 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.

7.3.2 In the Reporting Period, the **1st** quarter (**June-August 2020**) site inspection for establishment planting works was undertaken on **17th & 26th August 2020** by the ET and supervised by the Registered Landscape Architect of RE. The detailed inspection checklists for construction phase can be referred to the Monthly EM&A Reports **(August 2020)** of the contract.

7.3.3 The **2nd** quarter (**September - November 2020**) site inspection for establishment planting works will be scheduled on November 2020.

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 E***.

Table 8-1 Landfill Gas Monitoring Zone

ID	Location	Excavation >300mm deep undertaken in this reporting period
TD1	TD1, Retaining Wall A, Grave G1 and Subway	No
RW-B	Retaining Wall B	No
RW-F	Retaining Wall F	No
S&U	Slope and Underpass	No
BW	Bridge Works (G2, H1)	No
LMR	Lung Mun Road	No

8.2 LANDFILL GAS MONITORING RESULT

8.2.1 In the Reporting Period, no landfill gas monitoring was conducted at the consultation zone.

8.2.2 The excavation works within the landfill consultation zone was temporarily completed on 25 September 2019. Therefore, the landfill gas monitoring will be temporarily suspended until the excavation works within the consultation zone resume.

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 arisings 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 past twelve months, total quantities of waste disposal are summarized in ***Tables 9-1*** and ***9-2.***

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

Type of Waste	Quantity				Total	Disposal Location
	Nov 2019 – Jan 2020	Feb 2020 – Apr 2020	May 2020 – Jul 2020	Aug 2020 – Oct 2020		
Reused in this Contract (Inert) (`000m^3)	0	0	0	0	**0**	-
Reused in other Projects (Inert) (`000m^3)	0	0	0	0	**0**	• 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)	0.728	1.731	8.521	1.005	**11.985**	Tuen Mum Area 38

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

Type of Waste	Quantity				Total	Disposal Location
	Nov 2019 – Jan 2020	Feb 2020 – Apr 2020	May 2020 – Jul 2020	Aug 2020 – Oct 2020		
Recycled Metal (`000kg)	0	0	0	0	**0**	-
Recycled Paper / Cardboard Packing (`000kg)	0	0	0	0	**0**	-
Recycled Plastic (`000kg)	0	0	0	0	**0**	-
Chemical Wastes (`000kg)	0	0	0	0	**0**	-
General Refuses (`000m^3)	0.475	0.313	0.382	0.121	**1.291**	WENT

9.2.3 To control the site performance on waste management, the Contractor shall ensure 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 is also reminded to implement 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 formulation by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance.

Findings / Deficiencies During Reporting Period

10.1.2 In the past twelve months, total 52 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 13 occasion's joint site inspection. The quantity of reminders/observations is summarized in ***Table 10-1***.

Table 10-1 Summary of Reminders/Observations of Site Inspection for the Annual

Reporting Period	Date of site inspection	Nos. of findings / reminders	Follow-Up Status
November 2019	5th, 12th, 19th and 26th November 2019	9	Completed
December 2019	3rd, 10th, 18th, 24th and 31st December 2019	7	Completed
January 2020	7th, 17th, 21st and 29th January 2020	2	Completed
February 2020	4th, 21st and 25th February 2020	5	Completed
March 2020	3rd, 10th, 17th, 24th and 31st March 2020	5	Completed
April 2020	7th, 14th, 21st and 28th April 2020	4	Completed
May 2020	5th, 12th, 19th and 26th May 2020	7	Completed
June 2020	2nd, 9th, 16th, 23rd and 30th June 2020	6	Completed
July 2020	8th, 14th, 21st and 28th July 2020	10	Completed
August 2020	4th, 11th, 17th and 25th August 2020	7	Completed
September 2020	1st, 8th, 15th, 22nd and 29th September 2020	7	Completed
October 2020	6th, 16th, 20th and 27th October 2020	1	Completed

10.1.3 In the past twelve months, there are no non-compliance recorded, however, ***70*** 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 complaint, summons and prosecution was received in the Reporting Period. However, there are 26 exceedances of action / limit levels recorded during the Reporting 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
1 November 2019 – 31 October 2020	Air Quality	1-hour TSP	**20**	**6**
		24-hour TSP	0	0
	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	
1 November 2019 – 31 October 2020	NA	NA	NA	NA	1

Table 11-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics			
	Cumulative	Complaint Nature		
		Air	Noise	Water
1 November 2019 – 31 October 2020	0	NA	NA	NA

Table 11-4 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics			
	Cumulative	Complaint Nature		
		Air	Noise	Water
1 November 2019 – 31 October 2020	0	NA	NA	NA

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 In the past twelve months, 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	• 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	• 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	• Wire fencing provided for temporary protect Pitcher Plants • Undertake weekly inspection of Pitcher Plants
Landfill Gas Hazard	• Landfill Gas measurement undertake during trench excavation
Water Quality	• Temporary drainage system provide for surface runoff prevent discharge to public area • Wastewater to be treated by sedimentation tank before discharge.
Noise	• 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	• 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	• The site was generally kept tidy and clean.

13 CONCLUSIONS AND RECOMMENDATIONS

13.1 CONCLUSIONS

13.1.1 This is **6th** Annual EM&A Review Report presenting the monitoring results and inspection findings for the Reporting Period from **1 November 2019** to **31 October 2020**.

13.1.2 In the Reporting Period, total 20 Action Level and 6 Limit Level exceedances of 1-hour TSP were recorded.

13.1.3 Site inspection for landscape and visual was conducted on weekly basis until the end of May 2020 by the Landscape Architect to ensure the compliance of the intended aims of the mitigation measures.

13.1.4 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 and no site inspection for landscape and visual mitigation measures under construction phase was undertaken.

13.1.5 No landfill gas monitoring was conducted in the consultation zone in this reporting month due to the excavation works within the zone was temporarily completed.

13.1.6 No environmental complaints, notifications of summons or successful prosecution were received during the Reporting Period.

13.1.7 Joint site inspection by the RE, ET and CRBC-Kaden JV was carried in accordance with the EM&A Manual. Moreover, the IEC attended a total of **13** joint site inspections during the Reporting Period. No non-compliance was recorded during the site inspection but **total 70** observations/reminders were recorded in the past twelve months. All the deficiencies were rectified before next site inspection date.

13.1.8 A total **51** occasions of Pitcher Plant inspection were carried out by the Contractor and ET during the Reporting Period at the final receptor site. Establishment period for the pitcher plants was completed at the end of September 2016, the join 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 fulfil the EIA requirement. During each inspection, the protection mitigation measures were checking at the final receptor area to make sure no site activities was 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.

13.1.9 For cultural heritage in the past twelve months, the buffer zone between the working area and the Grave was observed and no construction material or equipment was stored nearby.

13.2 RECOMMENDATIONS

13.2.1 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.

13.2.2 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.

13.2.3 It is considered that the environmental acceptability of the Contract in the past twelve months was satisfactory and acceptable.

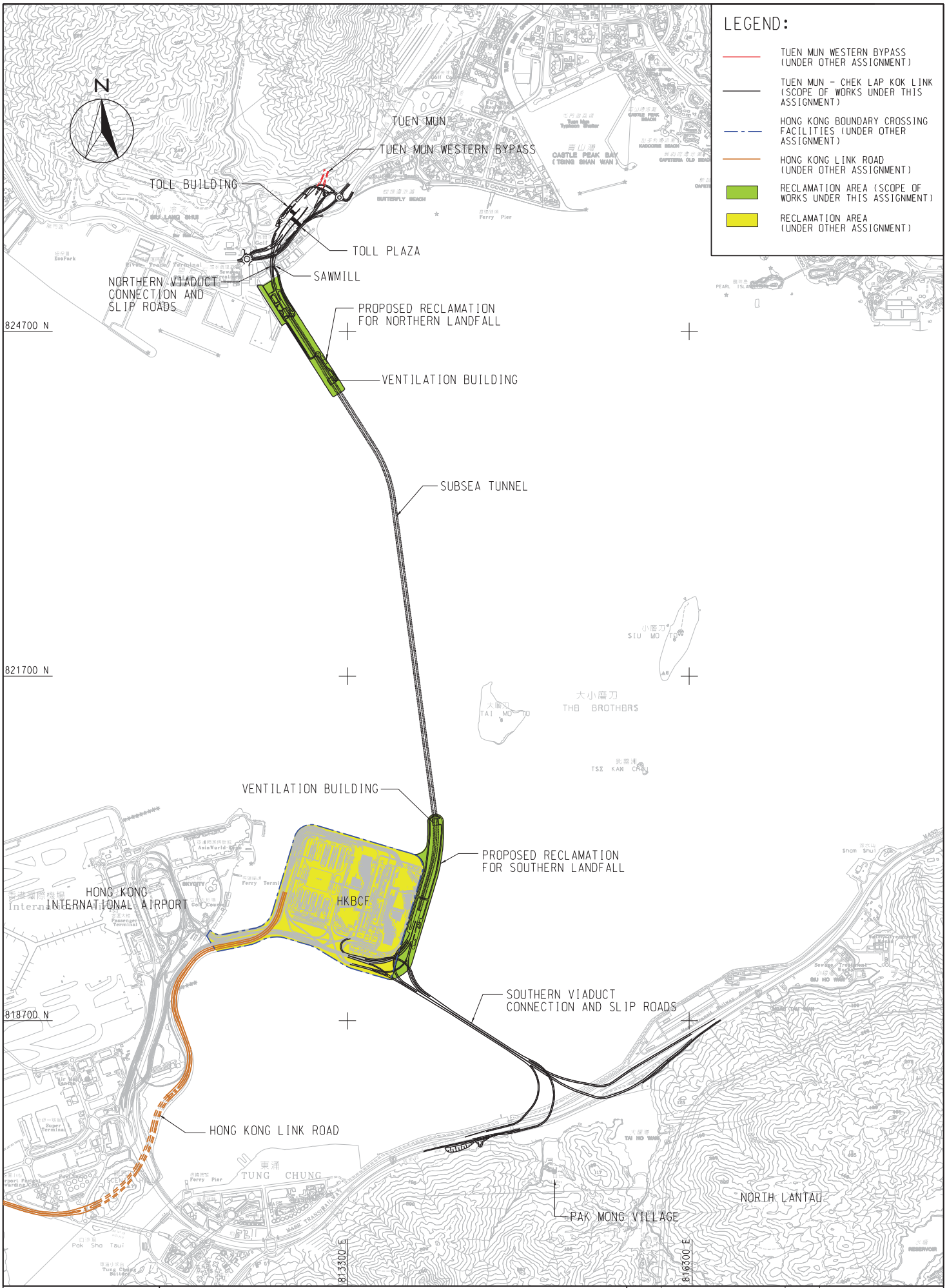
13.3 TERMINATION OF CONSTRUCTION PHASE EM&A PROGRAMME

13.3.1 Substantial completion for the Works under the contract has been achieved on October 2019. The certifications of completion of the Work, which cover the whole contract had been issued. Proposal Termination of Construction Phase EM&A programme which verified by IEC had been submitted to EPD and received no objection to the proposal from EPD on 23 December 2020. Therefore, the construction phase EM&A programme under the contract was terminated after 31 December 2020. There is no stand-alone annual report to cover the period from November to December 2020, the details summary EM&A information can refer to the 25th Quarterly Report (November to December 2020) of the Contract.

13.3.2 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.

Appendix A

Project Layout Plan



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AGREEMENT NO. CE 52/2007(HY)
TUEN MUN - CHEK LAP KOK LINK - INVESTIGATION

GENERAL LAYOUT OF TM-CLKL

SCALE	A3 1:30000	DATE	JUL. 2009
CHECK	--	DRAWN	WYP
JOB No.	60044963	DRAWING No.	Fig 2.1
		REV	A

Plotting By: 2009-8-6 CHENCA
PLOT SCALE: 1%2

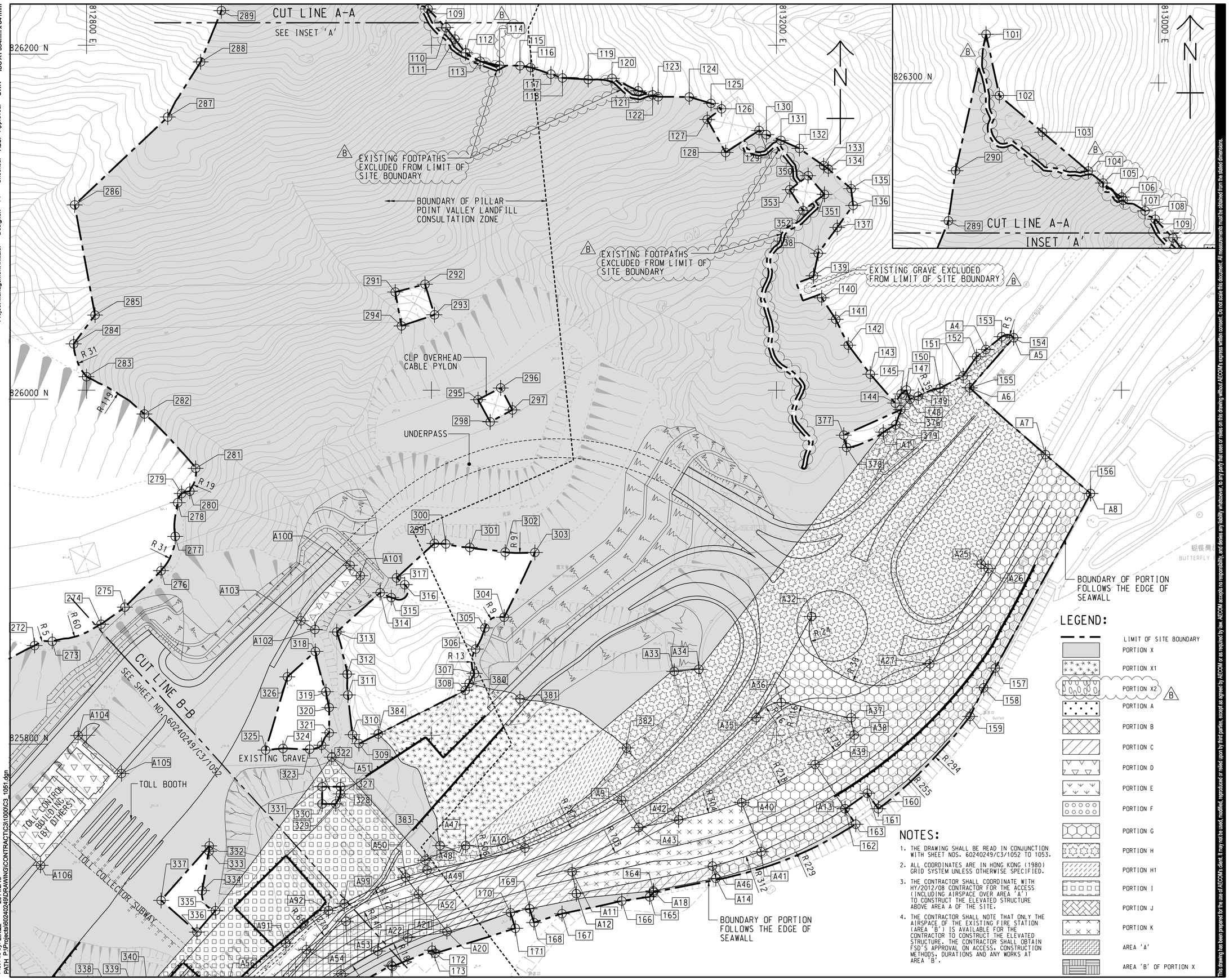
p:\PROJECTS\60044963\DRAWING\FIGURE\EIA REPORT\CH3\FIGURE 3-1.dgn

Appendix B

Layout Plan of the Contract

Project Management Initials: PI | Designer: | Checked: | Approved: ALCF | Drawn: CWN | ISO A1 594mm x 841mm

Plot File by: LXQ2 20140319
PATH: P:\Projects\60240249\DRAWING\CONTRACT\C3\1000\C3_1051.dgn



LEGEND:

- LIMIT OF SITE BOUNDARY
- PORTION X
- PORTION X1
- PORTION X2 (B)
- 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
港珠澳大橋香港工程管理處
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

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核
			CWN
			CWN
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS 階段

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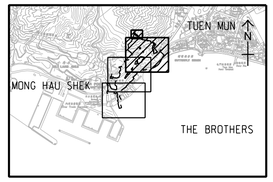
DIMENSION UNIT 尺寸單位 METRES

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 1 OF 3

SHEET NUMBER 圖紙編號

60240249/C3/1051B

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Project Management Initials: PI | Designer: | Checked: | ALCF Approved: | CWN | ISO A1 594mm x 841mm

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 B	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 B	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

812600 E | 812800 E | 813000 E | 825800 N | 825600 N

CUT LINE B-B
SEE SHEET NO. 60240249/C3/1051

CUT LINE D-D
SEE SHEET NO. 60240249/C3/1053

TOLL CONTROL BUILDING (BY OTHERS)
TOLL BOOTH
TOLL COLLECTOR SUBWAY
TOLL BOOTH B

EXISTING GRAVE

FOOTBRIDGE WITH PASSENGER LIFT

ALONG THE EDGE OF SEAWALL

BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE

BOUNDARY OF PORTION FOLLOWS THE OUTER EDGE OF U-CHANNEL

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

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
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Plot File by: LUOMQ 2014/3/18
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PROJECT 項目
TUEN MUN - CHEK LAP KOK LINK

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

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			CWN
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS 階段

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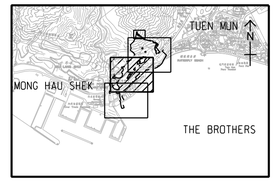
DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖引圖 1 : 50000



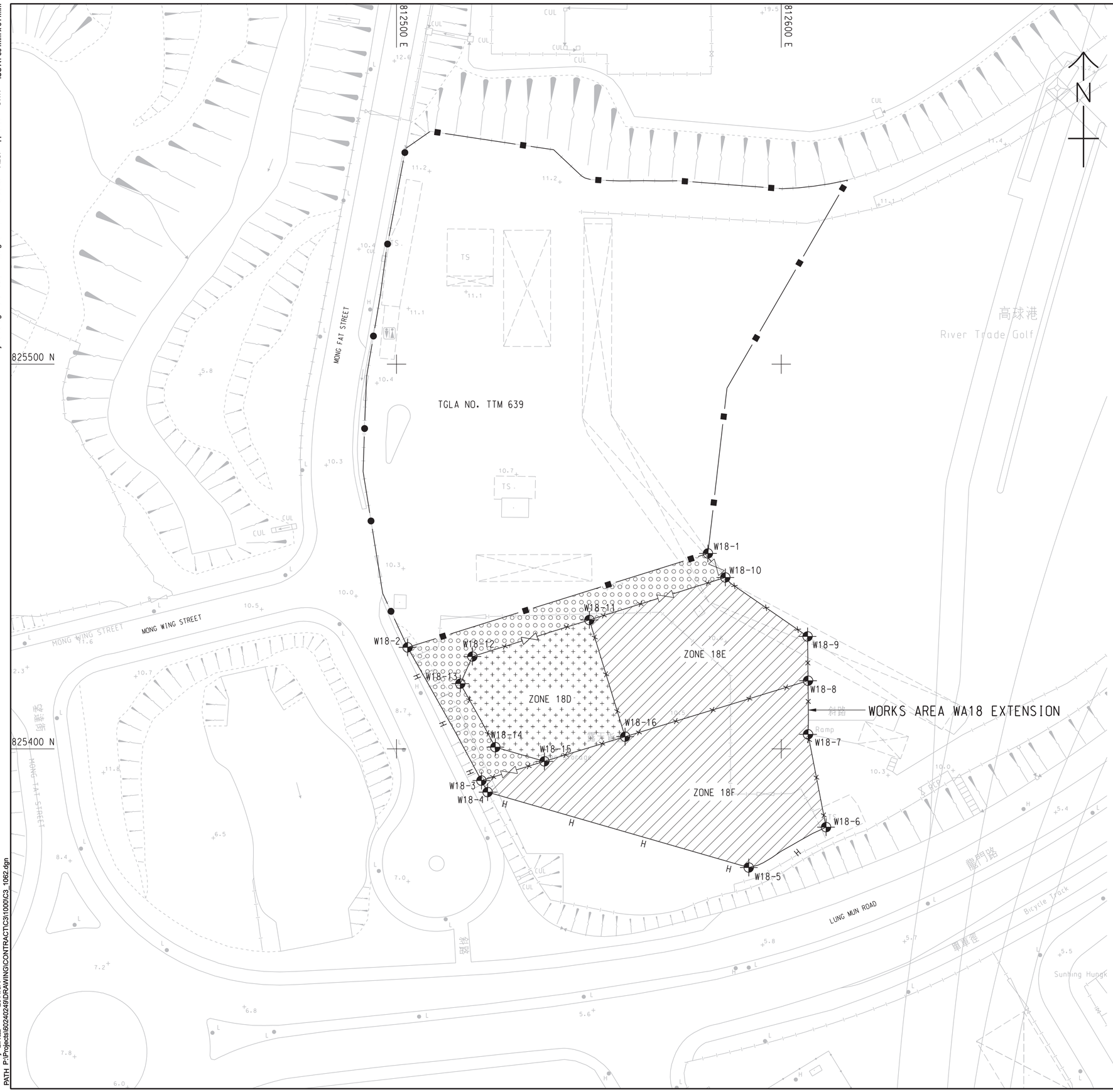
PROJECT NO. 項目編號
60240249

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 2 OF 3

SHEET NUMBER 圖紙編號
60240249/C3/1052B



NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE WORKS AREA KEY PLAN IN SHEET NO. 60240249/C3/1000.
2. DEMARCATION OF THE WORKS AREA SHALL BE DETERMINED ON SITE.
3. REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6110 AND H6111 FOR DETAILS OF HOARDING.
4. REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NOS. H6121 AND H6122 FOR DETAILS OF CHAIN LINK FENCE.
5. REFER TO HIGHWAYS DEPARTMENT STANDARD DRAWING NO. H6121 FOR DETAILS OF GATE.
6. CHAIN LINK FENCE SHALL BE ERECTED 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.
7. THE LOCATION AND WIDTH OF GATE SHOWN ARE INDICATIVE ONLY AND SHALL BE CONFIRMED BY THE ENGINEER.
8. 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-TTM 639. IN CASE OF DISCREPANCY BETWEEN THE BOUNDARY SHOWN ON THIS DRAWING AND THE BOUNDARY INDICATED ON THE ENGINEERING CONDITIONS, THE LATTER SHALL PREVAIL.
9. 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.
10. THE COMMON AREA SHALL BE CONCRETE PAVED BY THE CONTRACTOR.
11. ZONE 18F SHALL BE USED FOR THE SITE ACCOMMODATION OF THE ENGINEER. ZONE 18E SHALL BE USED FOR SITE ACCOMMODATION OF THE CONTRACTOR.
12. 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 COMMENCMENT OF THE WORKS TO 126 DAYS FROM THE DATE FOR COMMENCMENT 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. B

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)
- H — HOARDING AND GATE (TO BE ERECTED AND MAINTAINED UNDER THIS CONTRACT)
- EXISTING CHAIN LINK FENCE MAINTAINED BY OTHERS
- CHAIN LINK FENCE AND GATE (TO BE ERECTED 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

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

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核
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 2 OF 2

SHEET NUMBER 圖紙編號

60240249/C3/1062B

Project Management Initials: PI Designer: ALCF Checked: CWN Approved: CWN ISO A1 594mm x 841mm

Plot File by: LIXQ2 2014/3/4
PATH P:\Projects\60240249\DRAWING\CONTRACT\C31000\C3_1062.dgn

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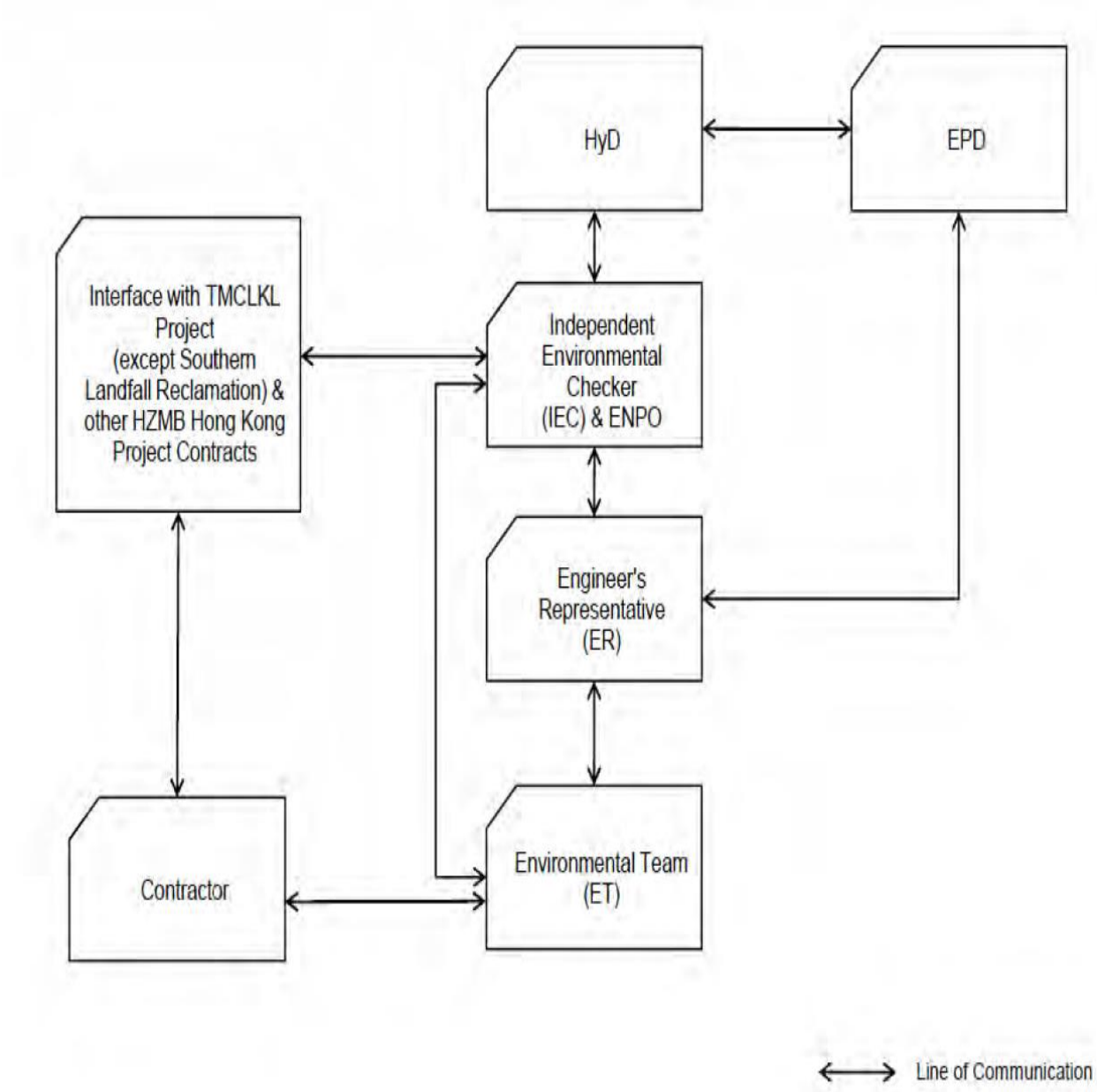
Appendix C

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 Mr. Manson Yeung (Since 18 May 2020)	3465 2851	3465 2899
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

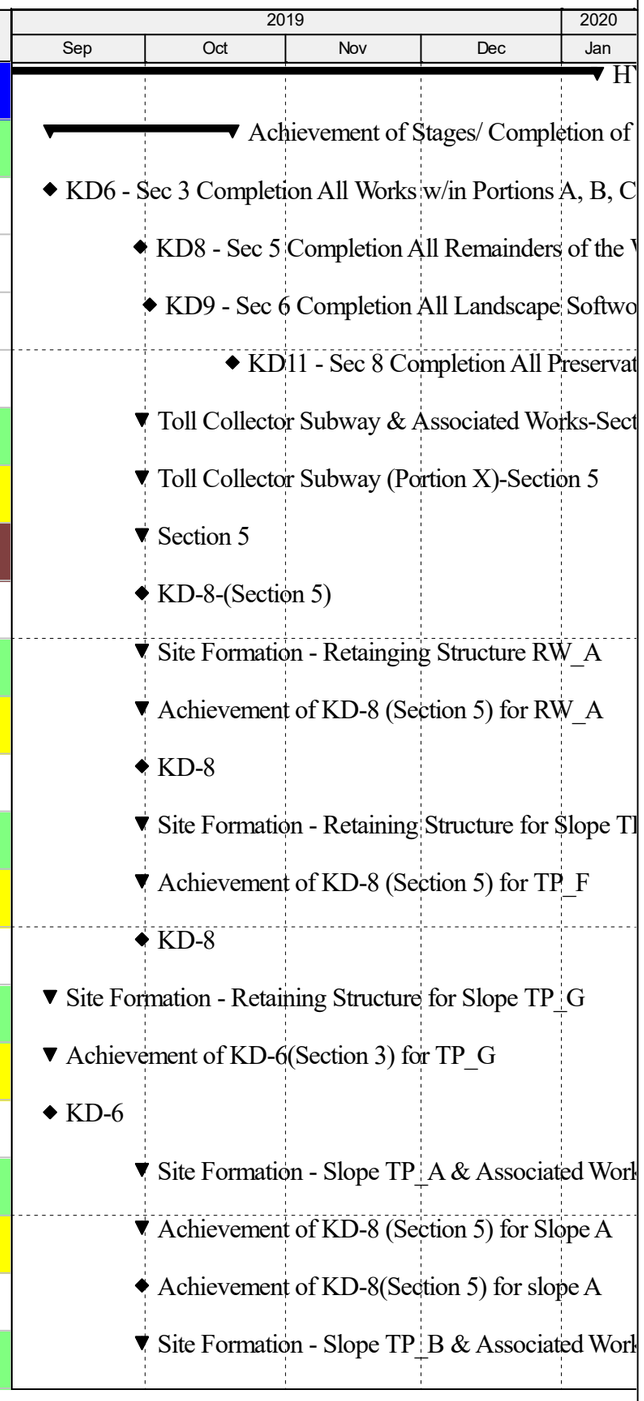
HKL(RLA) – Hong Kong Landscape

Appendix D

Master Construction Program

HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly Update	
Achievement of Stages/ Completion of Sections	
KD10160	KD6 - Sec 3 Completion All Works w/in Portions A, B, C, E, G, H, H1, J & K except Works under Sec 1/2//6/7/8
KD10180	KD8 - Sec 5 Completion All Remainders of the Works except Works under Sec 1 thru 4
KD10190	KD9 - Sec 6 Completion All Landscape Softworks
KD10210	KD11 - Sec 8 Completion All Preservation & Protection to Existing Trees
Toll Collector Subway & Associated Works-Section 1	
Toll Collector Subway (Portion X)-Section 5	
Section 5	
TCS1670	KD-8-(Section 5)
Site Formation - Retainging Structure RW_A	
Achievement of KD-8 (Section 5) for RW_A	
RWA20220	KD-8
Site Formation - Retaining Structure for Slope TP_F	
Achievement of KD-8 (Section 5) for TP_F	
RWF31490	KD-8
Site Formation - Retaining Structure for Slope TP_G	
Achievement of KD-6(Section 3) for TP_G	
RWG1455	KD-6
Site Formation - Slope TP_A & Associated Works	
Achievement of KD-8 (Section 5) for Slope A	
TPA41880	Achievement of KD-8(Section 5) for slope A
Site Formation - Slope TP_B & Associated Works	



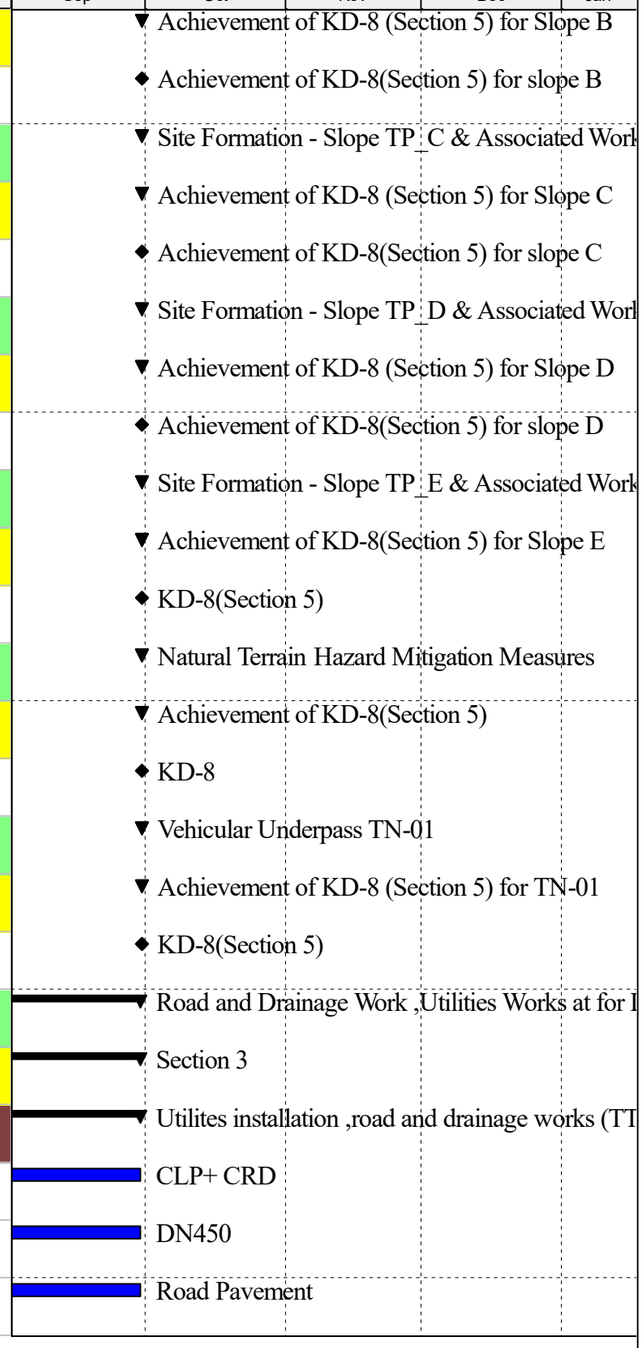
Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
25-Oct-19	4		

HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
	Achievement of KD-8 (Section 5) for Slope B
TPB41800	Achievement of KD-8(Section 5) for slope B
	Site Formation - Slope TP_C & Associated Works
	Achievement of KD-8 (Section 5) for Slope C
TPC51340	Achievement of KD-8(Section 5) for slope C
	Site Formation - Slope TP_D & Associated Works
	Achievement of KD-8 (Section 5) for Slope D
TPD51380	Achievement of KD-8(Section 5) for slope D
	Site Formation - Slope TP_E & Associated Works
	Achievement of KD-8(Section 5) for Slope E
TPE65360	KD-8(Section 5)
	Natural Terrain Hazard Mitigation Measures
	Achievement of KD-8(Section 5)
NTH10140	KD-8
	Vehicular Underpass TN-01
	Achievement of KD-8 (Section 5) for TN-01
UDP20670	KD-8(Section 5)
	Road and Drainage Work ,Utilities Works at for Lung Fu Road Roundabout
	Section 3
	Utilites installation ,road and drainage works (TTA Stage 2-1)
LFR10220	CLP+ CRD
LFR10230	DN450
LFR10240	Road Pavement



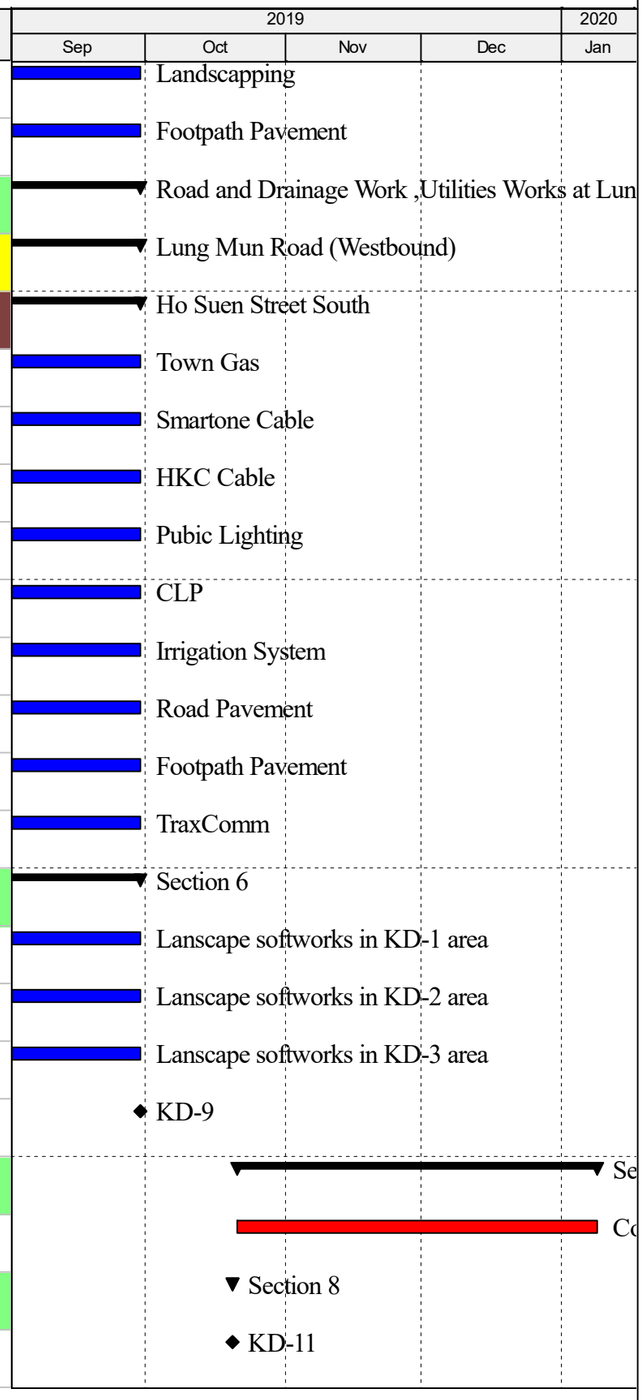
Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
25-Oct-19	4		

HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
LFR10250	Landscapping
LFR10260	Footpath Pavement
Road and Drainage Work ,Utilities Works at Lung Mun Road	
Lung Mun Road (Westbound)	
Ho Suen Street South	
LMRWA1270	Town Gas
LMRWA1280	Smartone Cable
LMRWA1290	HKC Cable
LMRWA1300	Pubic Lighting
LMRWA1310	CLP
LMRWA1330	Irrigation System
LMRWA1340	Road Pavement
LMRWA1370	Footpath Pavement
LMRWA1320	TraxComm
Section 6	
SEC61000	Lanscape softworks in KD-1 area
SEC61020	Lanscape softworks in KD-2 area
SEC61040	Lanscape softworks in KD-3 area
SEC61050	KD-9
Section 7	
SEC71000	Construction of all Establishment Works for all landscape works-1st batch
Section 8	
SEC81050	KD-11



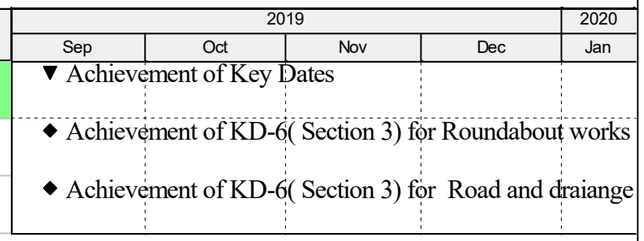
Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
25-Oct-19	4		

HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
Achievement of Key Dates	
AK10420	Achievement of KD-6(Section 3) for Roundabout works
AK10460	Achievement of KD-6(Section 3) for Road and draiange Works under TD1



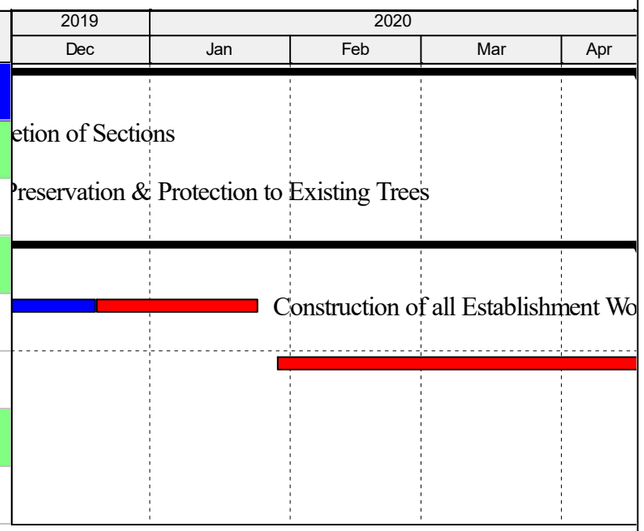
Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
25-Oct-19	4		

HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly Update	
Achievement of Stages/ Completion of Sections	
KD10210	KD11 - Sec 8 Completion All Preservation & Protection to Existing Trees
Section 7	
SEC71000	Construction of all Establishment Works for all landscape works-1st batch
SEC71010	Construction of all Establishment Works for all landscape works-2nd batch
Section 8	
SEC81050	KD-11



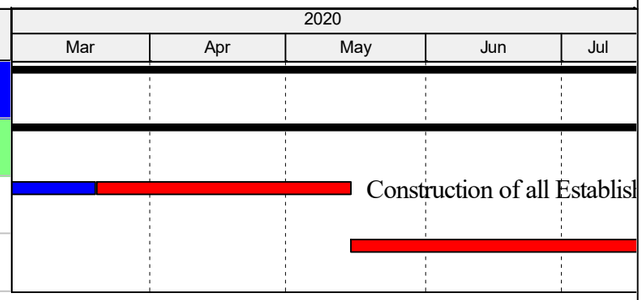
Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
20-Dec-19	4		

HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly Update	
Section 7	
SEC71010	Construction of all Establishment Works for all landscape works-2nd batch
SEC71020	Construction of all Establishment Works for all landscape works-3rd batch



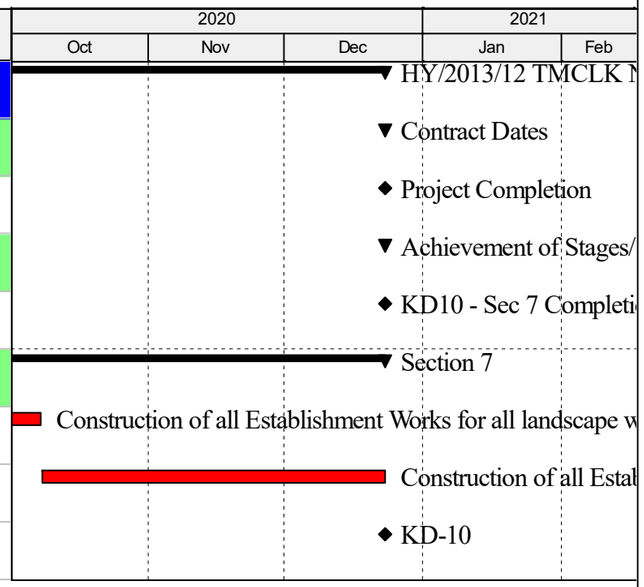
Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
20-Mar-20	4		

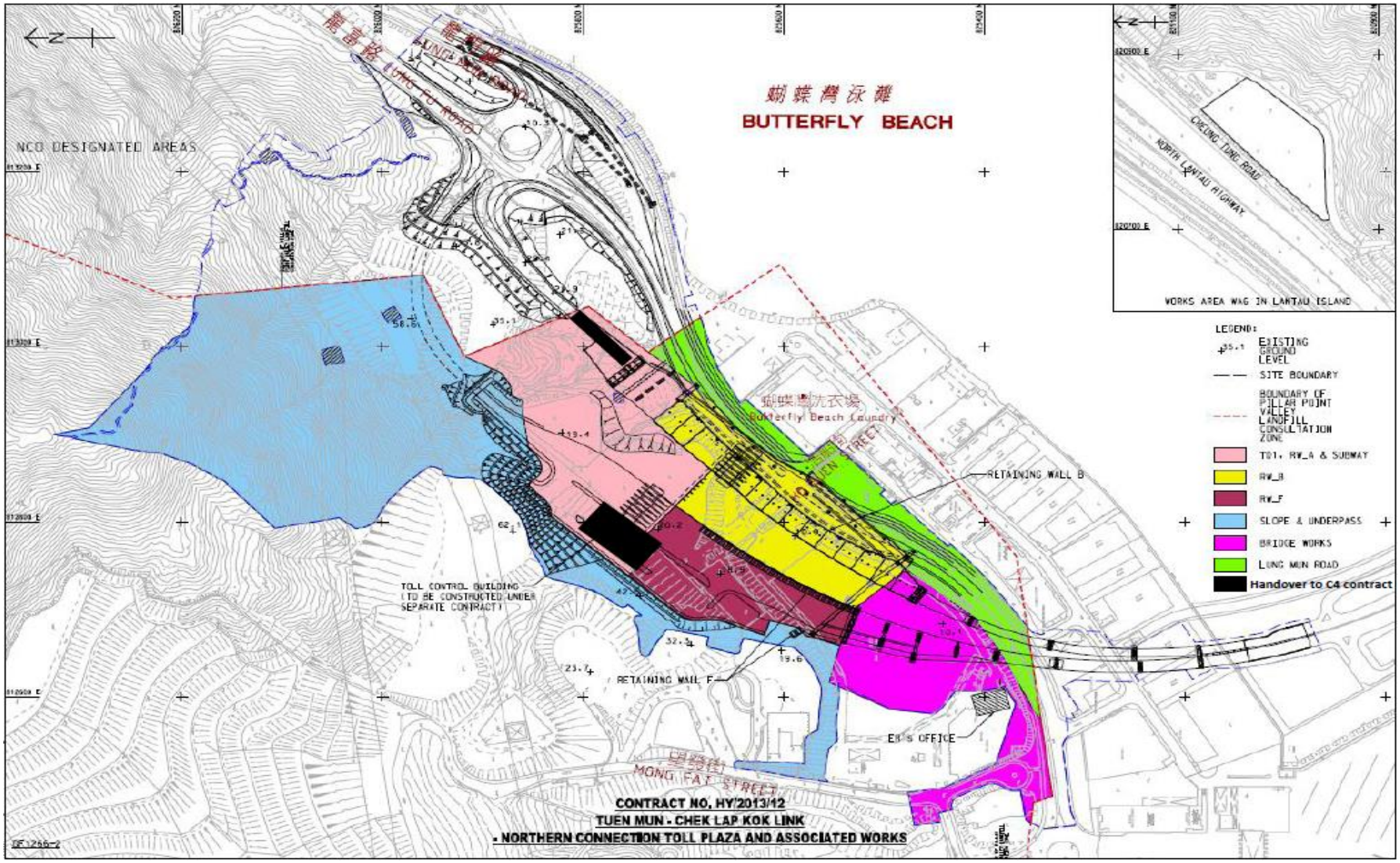
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

Activity ID	Activity Name
HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly Update	
Contract Dates	
CND1020	Project Completion
Achievement of Stages/ Completion of Sections	
KD10200	KD10 - Sec 7 Completion All Establishment Works for All Landscape Softworks
Section 7	
SEC71020	Construction of all Establishment Works for all landscape works-3rd batch
SEC71030	Construction of all Establishment Works for all landscape works-4th batch
SEC71040	KD-10

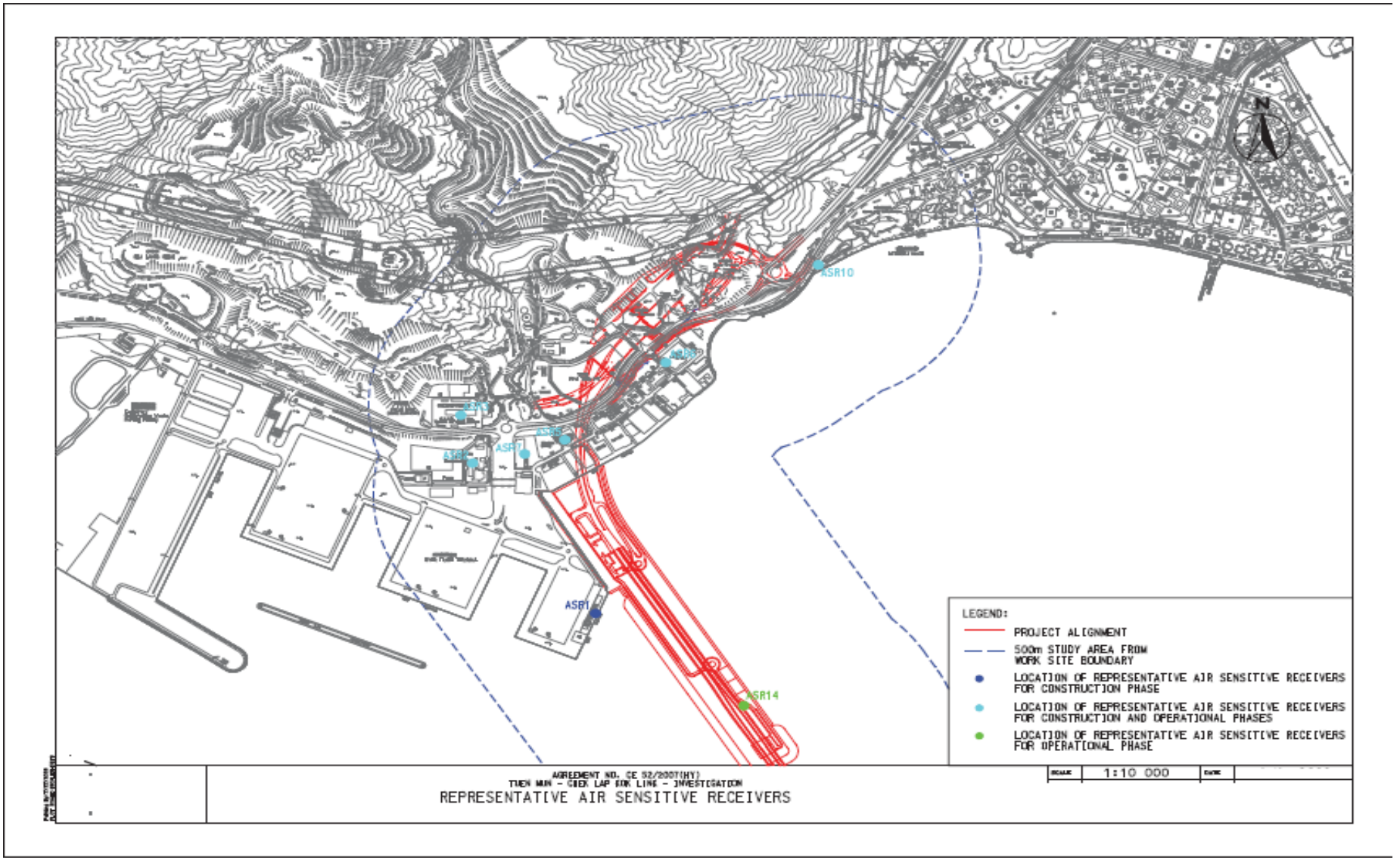


Appendix E

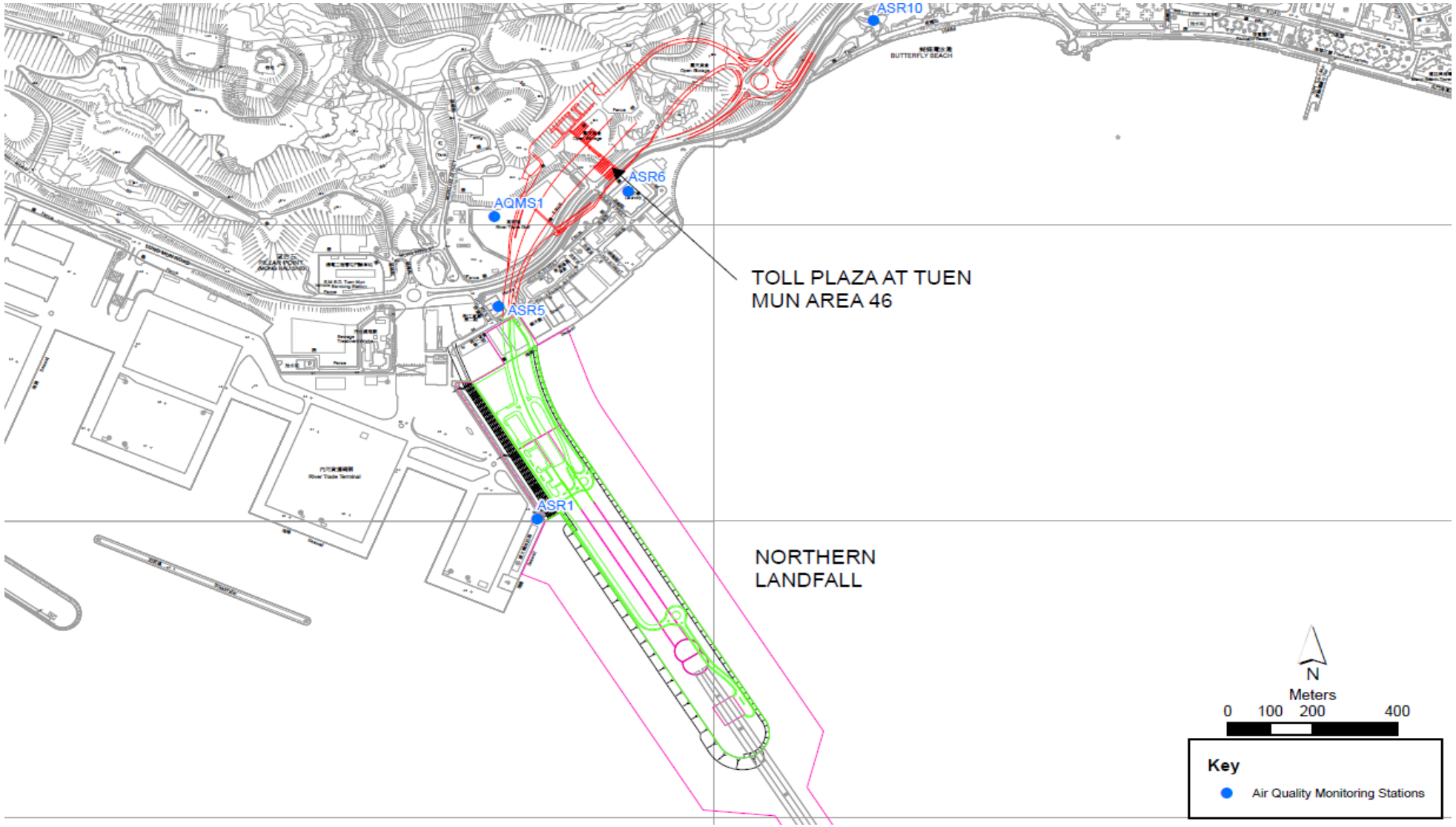
Monitoring Locations for the Contract



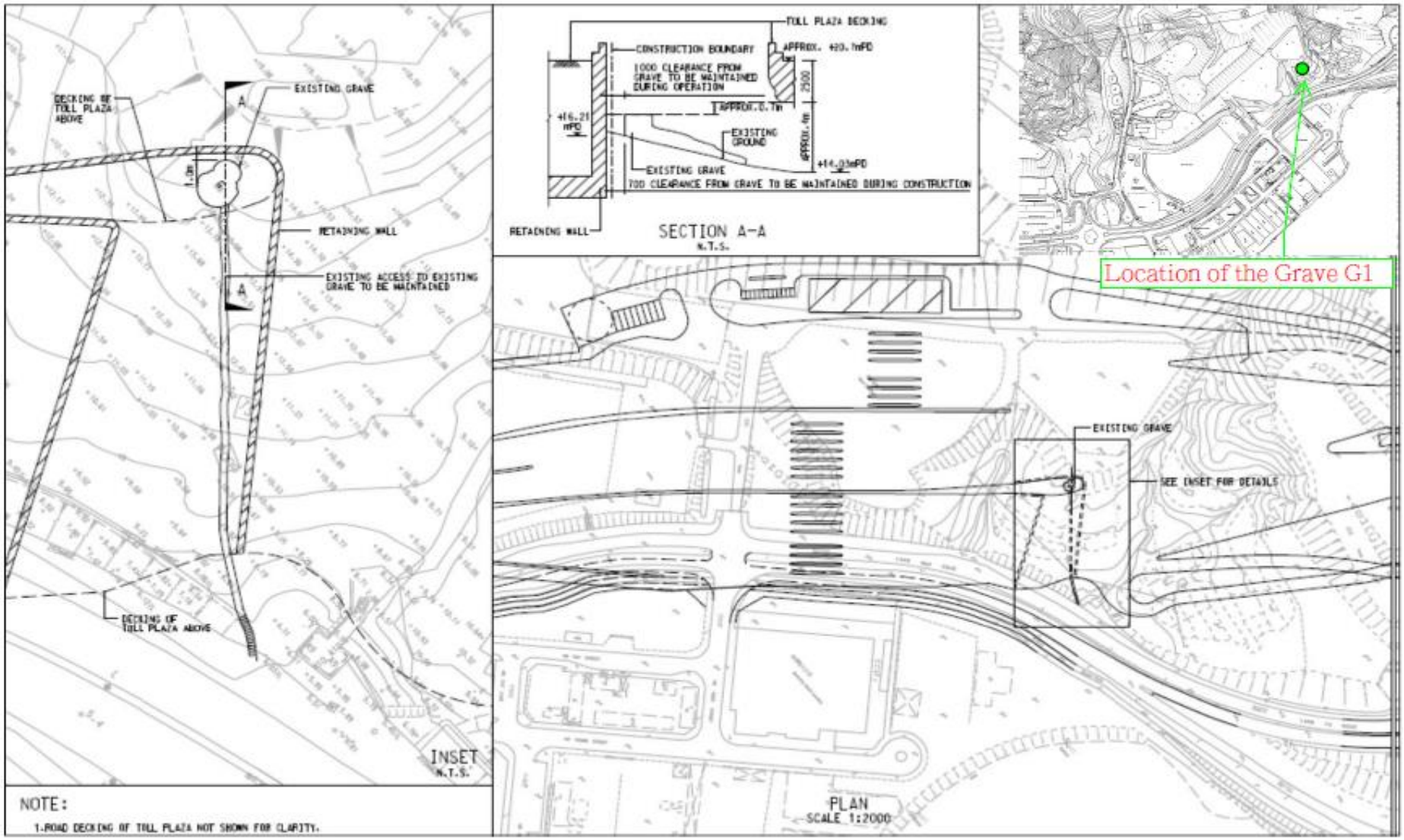
Layout of landfill gas monitoring zone



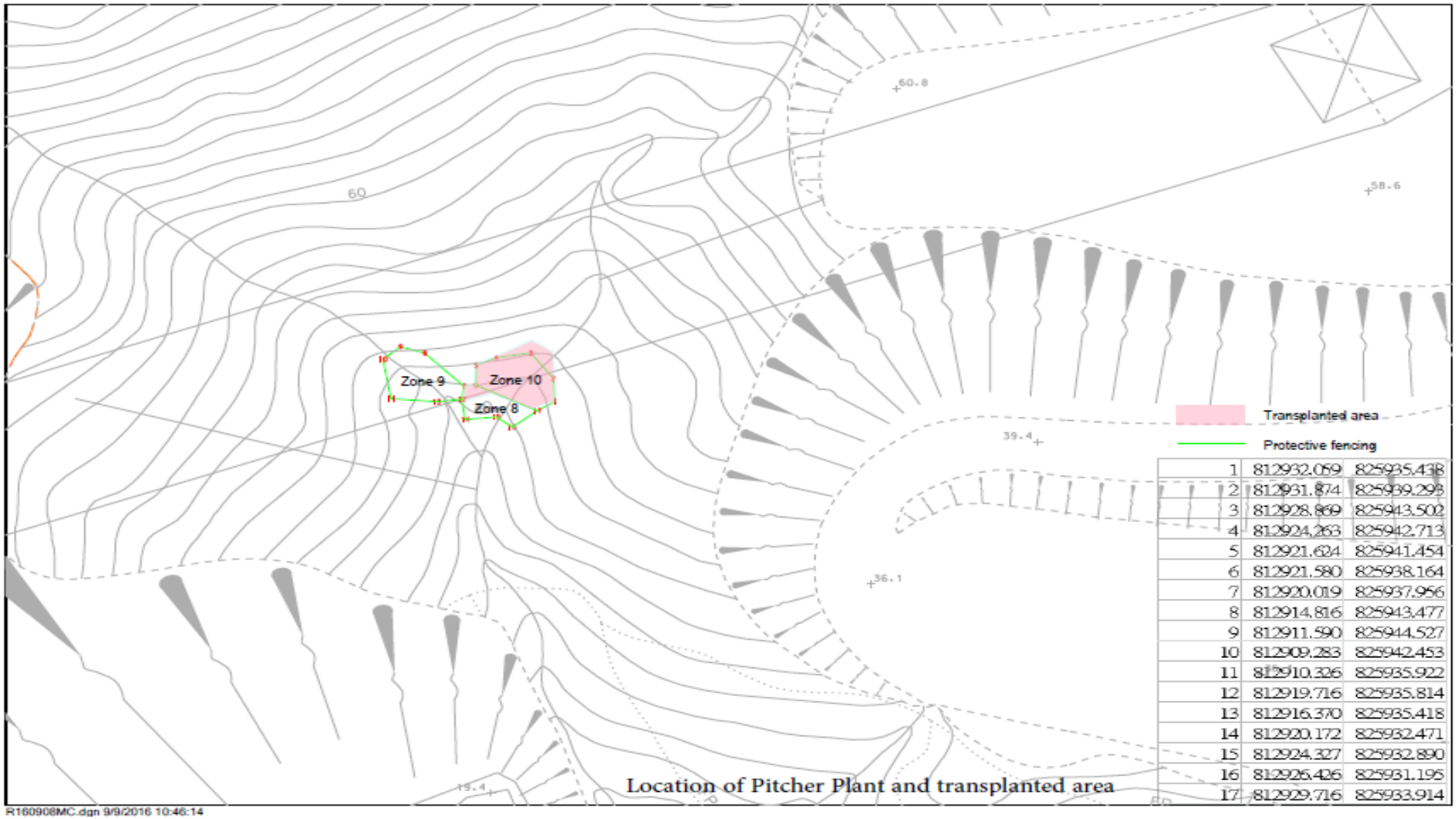
Representative Air Sensitive Receivers



Air Quality Monitoring Location



Location of the Grave G1



Location of the pitcher plants final receptor site

Appendix F

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	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.	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.	1 Confirm receipt of notification of failure in writing. 2 Notify the Contractor. 3 Ensure remedial measures properly implemented.	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	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.	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.	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.	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	• Check final design conforms to the requirements of EP and prepare report.	• Check report. • Recommend remedial design if necessary	• Undertake remedial design if necessary	
Non- conformity on one occasion	• Identify Source • Inform IEC and ER • Discuss remedial actions with IEC, ER and Contractor • Monitor remedial actions until rectification has been completed	• 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	• Notify Contractor • Ensure remedial measures are properly implemented	• Amend working methods • Rectify damage and undertake any necessary replacement
Repeated Non-conformity	• 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	• 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	• Notify Contractor • Ensure remedial measures are properly implemented	• 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	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	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.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	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	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.	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	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	• 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	• 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.	• 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.	• Amend working methods • Rectify damage and undertake any necessary replacement
Repeated Non conformity	• 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	• 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	• 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.	• Amend working methods • Rectify damage and undertake any necessary replacement

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

Appendix G

Graphical Plot of Monitoring Results

I. Landfill Gas

(Not Use)

Appendix H

Environmental Mitigation Measures Implementation Schedule (EMMIS)

CONTRACT NO. HY/2013/12
TUEN MUN – CHECK LAP KOK LINK – NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS
ENVIORNMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE

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		✓

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		✓

CONTRACT NO. HY/2013/12
TUEN MUN – CHECK LAP KOK LINK – NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS
ENVIORNMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE

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	*Appointment of Safety Officer* 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		✓

		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	-	*Safety Measures - Excavation* 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	-	*Safety Measures – Welding, Flame- Cutting and Hot works* 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	-	*Safety Measures – Enclosed Spaces* 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	-	*Safety Measures – Electrical Equipment* 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	-	*Safety Measures – Piping* 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		✓

		each working day.							
14.12.2	-	*Safety Measures – Fire Safety* 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	-	*Safety Measures – Confined Spaces* 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		N/A
14.12.1	-	*Monitoring* 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		N/A

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		✓

		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		✓

		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**

	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		✓

		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		✓

		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: • 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		△

		• 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		✓

		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		✓

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		✓

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