AUES JOB NO.: TCS00715/14

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

29TH MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT – MARCH 2017

PREPARED FOR
CRBC AND KADEN JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
13 April 2017	TCS00715/14/600/R0282v2	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_5253L.17 13 April 2017

AECOM By Fax (2293 6300) and By Post
Supervising Officer Representative's Office
No. 8 Mong Fat Street, Tuen Mun,
New Territories, Hong Kong

Attention: Mr. Albert Yu

Dear Mr. Yu,

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
29th Monthly EM&A Report for March 2017 (EP-354/2009/D)

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (March 2017) (AUES reference: TCS00715/14/600/R0282v2 dated 13 April 2017) certified by the ET Leader and provided to us via e-mail on 13 April 2017.

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

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

Yours sincerely,

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

c.c. HyD – Mr. Stephen Chan (By Fax: 3188 6614)
HyD – Mr. Vico Cheung (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

Q:\Projects\HYDHZMBEEM00\02_Proj_Mgt\02_Corr\HYDHZMBEEM00_0_5253L.17.docx

Ramboll Environ Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.Ramboll-Environ.com

EXECUTIVE SUMMARY

ES01 This is the **29th** Monthly EM&A Report presenting the monitoring results and inspection findings for the period from **1 to 31 March 2017** (hereinafter 'the Reporting Period').

SUMMARY OF EM&A ACTIVITIES FOR THE REPORTING PERIOD

ES02 The EM&A activities conducted in the Reporting Period are summary in below:-

- 24-hours TSP of Air Quality Monitoring –**55 events**
- 1-hour TSP of Air Quality Monitoring – **165 events**
- Cultural Heritage Inspection – **4 events**
- Landfill Gas Monitoring – **27 days**
- Landscape & Visual Monitoring – **5 events**
- Environmental Site Inspection – **4 events**

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES03 In the Reporting Period, no exceedances of 1-hour and 24-hour TSP were recorded according to the measurement results by the ET of Contract HY/2012/08. The summary of breach of air quality performance is shown below.

Environmental Aspect	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation	Corrective Actions
Air Quality	1-hour TSP	0	0	0	0	0
	24-hour TSP	0	0	0	0	0

ES04 No noise complaints were received in the Reporting Period.

ES05 Landfill gas monitoring was conducted at the TD1 and Lung Mun Road works area in this reporting month by the Safety Officer. The monitoring results shown no exceedances were triggered.

ES06 Site inspection for landscape and visual was conducted on weekly basis by the Landscape Architect to ensure the compliance with the intended aims of the mitigation measures. Most of the landscape works such as planting was not yet commenced.

SITE INSPECTION

ES07 In the Reporting Period, joint site inspection by the RE, ET and the Contractor was carried out on **7th, 14th, 21st and 28th March 2017** and the IEC has attended the joint site inspection on **28th March 2017**. No non-compliance was recorded during the site inspection but **5** observations and **2** reminders were recorded.

ES08 Inspection for Pitcher Plants of ecology and grave of culture heritage were also carried out during the weekly site inspection. It was observed that the transplanted pitcher plants were properly protected. Establishment period for the pitcher plants was completed at the end of September 2016 and the final pitcher plants report was submitted to AFCD on early December 2016. Since then only the integrity of the protection fence was checked to fulfil the EIA requirement.

ENVIRONMENTAL COMPLAINT

ES09 In the Reporting Period, no environmental complaint was received.

ES10 The statistical summary of environmental complaints is summarized in the following table.

Reporting Period	Environmental Complaint Statistics	
	Frequency	Cumulative
Since the Contract commencement	**7**	**7**
March 2017	**0**	**7**

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES11 No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGE

ES12 No reporting changes were made in the Reporting Period.

FUTURE KEY ISSUES

ES13 As wet season is approaching, muddy water or other water pollutants from site surface runoff into the public areas will be key environment issue. Special attention should be paid on the water quality mitigation measures to prevent surface runoff flow to public area.

ES14 Although in coming wet season, air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be fully implemented to reduce construction dust impact as recommended in the EMIS.

ES15 It was reminded that good housekeeping practice should be maintained. Mosquito control measures should be properly implemented to prevent mosquito breeding on site especially after rain.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

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 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 ***B*** respectively.

1.1.2 The construction 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 This is **29th** monthly EM&A report presenting the monitoring results and inspection findings for period from **1 to 31 March 2017**.

1.2 REPORT STRUCTURE

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

Section 1 *Introduction*
Section 2 *Contract Organization and Construction Progress and Environmental Submissions*
Section 3 *Summary of Impact Monitoring Requirements under the Contract*
Section 4 *Air Quality Monitoring*
Section 5 *Ecology Monitoring*
Section 6 *Cultural Heritage*
Section 7 *Landscape and Visual*
Section 8 *Landfill gas hazard Monitoring*
Section 9 *Waste Management*
Section 10 *Inspections and Audit*
Section 11 *Environmental Complaints 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. The three-months rolling programme of the Contract is enclosed in ***Appendix D***.

- Instrumentation and Monitoring
- Site Formation – Earthwork on Slope D and E; surface drainage on Slope C, D & E and Portion H;
- Toll Plaza Decking and TD2;
- Toll Plaza Footbridge;
- Retaining Structure RW_A, RW_B and RW_F;
- Toll Collector Subway & Associated Works;
- Bridge G1, G2 and Bridge H1 by Form Traveller;
- Sewer Culvert at FC1 and FC2;
- Waterproofing and lining at Vehicular Underpass
- Road and Drainage Works at +11mPD, +19mPD and Portion H

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 The environmental submissions under the EP requirement had been submitted to the EPD and they are 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 EPD on 16 March 2015)
- Baseline Monitoring Report (not yet endorsed by EPD)

2.3.2 Summary of environmental permits, licenses and notifications for the Contract is presented in ***Table 2-1***.

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

No.	Type of Permit/ License	Submission Date	Reference/ License No.	Date of Issue	Date of Expiry
1	Air pollution Control (Construction Dust) Regulation	06-08-2014	377719	06-08-2014	N/A
2	Chemical Waste Producer Registration - Waste Producers Number	06-08-2014	5117422C389301	03-09-2014	N/A
3	Water Pollution Control Ordinance -Variation of Effluent Discharge License	22-08-15	WT00023973-2016	14-03-16	30-09-2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	21-07-2014	7020460	01-08-2014	N/A
5	CNP for Multiple Task	18-10-2016	GW-RW0619-16	05-11-2016	04-05-2017
6	CNP for MH5	1-11-2016	GW-RW0650-16	18-11-2016	17-05-2017
7	CNP for Tunnel Works	3-11-2016	GW-RW0653-16	23-11-2016	22-05-2017
8	CNP for Falsework Erection	01-12-2016	GW-RW0724-16	28-12-2016	16-03-2017
9	CNP for Portion H Roundabout	02-02-2017	GW-RW0049-17	14-02-2017	18-08-2017

3 SUMMARY OF IMPACT MONITORING REQUIREMENTS UNDER THE CONTRACT

3.1 GENERAL

3.1.1 The major construction activities under the Contract are land-based and no marine work will be involved. In accordance with the Project EM&A Manual requirements, the environmental aspects under the Contract shall be included air quality, ecological, cultural heritage, landscape and visual, landfill gas and site inspection during construction period. In addition, 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

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 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

3.4.1 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.

3.4.2 The air quality monitoring requirements for the Contract is summarized 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
	24-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	Daily every three days	

Condition	Monitoring Parameter	Monitoring Location	Frequency	Monitoring Requirement
				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

3.5 MONITORING EQUIPMENT

3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.*

3.5.2 A high volume sampler in compliance with the following specifications shall be used for carrying out the 1-hr and 24-hr TSP monitoring:

(i) 0.6-1.7 m3/min (20-60 SCFM) adjustable flow range;
(ii) equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
(iii) installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
(iv) capable of providing a minimum exposed area of 406 cm2 (63 in^2);
(v) flow control accuracy: +/- 2.5% deviation over 24-hr sampling period;
(vi) equipped with a shelter to protect the filter and sampler;
(vii) incorporated with an electronic mass flow rate controller or other equivalent devices;
(viii) equipped with a flow recorder for continuous monitoring;
(ix) provided with a peaked roof inlet;
(x) equipped with a manometer;
(xi) able to hold and seal the filter paper to the sampler housing in a horizontal position;
(xii) easy to change the filter; and
(xiii) capable of operating continuously for 24-hr period.

3.5.3 Calibration of dust monitoring equipment shall be conducted by the ET upon installation and in bi-monthly intervals during construction phase. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The calibration data shall be properly documented for future reference by concerned parties, such as the IEC. All the data shall be converted into standard temperature and pressure condition.

3.5.4 The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

3.5.5 If the ET Leader proposes to use a direct reading dust meter to measure 1-hr TSP levels on an ad hoc basis, he shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable result as that the High Volume Sampler (HVS) and may be used for the 1-hr sampling. The instrument should also be calibrated regularly and the 1-hr sampling shall be checked periodically by the HVS to check the validity and accuracy of the results measured by the direct reading method.

3.5.6 According to the Project EM&A Manual, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring

locations. The equipment installation location shall be proposed by the ET Leader and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:

(i) the wind sensors should be installed on masts at an elevated level 10 m above ground so that they are clear of obstructions or turbulence caused by the buildings;

(ii) the wind data should be captured by a data logger to be down-loaded for processing at least once a month;

(iii) the wind data monitoring equipment should be re-calibrated at least once every six months; and

(iv) wind direction should be divided into 16 sectors of 22.5 degrees each.

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

3.6.1 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 Action and Limit Levels for impact dust monitoring are shown in ***Tables 3-3***.

Table 3-3 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

3.6.2 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.***

3.7 OTHER ENVIRONMENTAL ASPECTS

Noise

3.7.1 The TM-CLKL EIA study stated that no existing noise sensitive receiver (NSR) was identified within the Study Area at Tuen Mun. Therefore, no noise monitoring is required for the construction phase of the Contract.

3.7.2 Regular site inspections and audits will be carried out during the construction phase in order to confirm the construction works under the Contract comply with the regulatory noise requirements.

Water Quality

3.7.3 No marine works will be undertaken under the Contract. Therefore, no water quality monitoring is required for the construction phase of the Contract.

Ecology

3.7.4 No marine works will be undertaken under the Contract and generated marine ecological impact, no dolphin monitoring is required for the construction phase of the Contract.

3.7.5 During construction phase, the ET will perform Pitcher Plants inspection at least once every week to report the growth condition (only undertaken at Establishment period) and protection measures.

Landscape and Visual

3.7.6 Measures 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 in accordance with the EM&A Manual.

Cultural Heritage

3.7.7 Grave G1 as a heritage resource 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.

Landfill Gas

3.7.8 During EIA study, landfill gas hazards are likely to be generated from the Pillar Point Valley (PPV) Landfill. Landfill gas monitoring is recommended during construction of the Contract to ensure the works area is free of landfill gas before the worker entered the concerned area.

3.8 MONITORING SCHEDULE

3.8.1 The monitoring schedule for landscape &visual and landfill gas for the present and next reporting period are presented in ***Appendix G***.

4 AIR QUALITY MONITORING

4.1 GENERAL

4.1.1 The air quality impact monitoring and enhanced Total Suspended Particulates (TSP) level monitoring at five proposed locations are currently carried out 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. The Contract is not required to conduct its own dust monitoring exercise until the Contract HY/2012/08 ends.

4.2 AIR QUALITY MONITORING RESULTS IN REPORTING PERIOD

4.2.1 In the Reporting Period, 1-hour and 24-hour TSP monitoring at the five proposed locations are continued to perform by the ET of Contract HY/2012/08. Therefore, no air quality monitoring was conducted by the ET of Contract HY/2013/12. Details information of air quality monitoring results could be referred to the Monthly EM&A Reports of the Contract HY /2012 /08 (**March 2017**).

4.3 ACTION AND LIMIT (A/L) LEVELS EXCEEDANCE

4.3.1 According to the air quality monitoring result provided by Contract HY/2012/08, no exceedances in 1-hour and 24-hour TSP were recorded in the Reporting Period. No Notification on Exceedances (NOEs) was issued by the ET of Contract HY/2012/08. The summary of air quality exceedance in the Reporting Period 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
NA	NA	NA	--	--

4.4 AIR QUALITY EXCEEDANCE INVESTIGATION

4.4.1 No investigation for exceedance is required for the Reporting Period.

5 ECOLOGY MONITORING

5.1 GENERAL

5.1.1 According to the EM&A Manual requirements, regularly inspection for Pitcher Plants shall be conducted at least once every week to report the protection measure of the Pitcher Plants during construction period.

5.1.2 A total of 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 Inspection for the mitigation measures implementation status of the Pitcher Plant at the final receptor area were performed on **7th, 14th, 21st and 28th March 2017** by the ET in 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 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.

5.2.3 No matters the completion of Establishment period, the Contractor should properly maintain the fencing along the receptor area to avoid disturbance to the pitcher plants under the EIA requirement.

6 CULTURAL HERITAGE

6.1 GENERAL

6.1.1 According to the EM&A Manual requirements, regular inspection for heritage resource, Grave G1, shall be audited by the ET at least once every week to ensure recommended mitigation measures implemented during construction period. The aim of the survey is to prevent any possible damage to the grave and to ensure the 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 the Reporting Period, Grave G1 of inspection was undertaken on **7th, 14th, 21st and 28th March 2017**. During these inspections, buffer zone was maintained between the working area and the Grave. The nearby areas were clean, and no construction materials or mechanical equipment were stored within or close to the buffer zone. Moreover protective measures (hoarding and scaffold with protective net above the grave) was provided for constructing Toll Plaza Decking TD2 deck structure.

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

7.2.1 In the Reporting Period, site inspection for landscape and visual mitigation measures was undertaken on **3rd, 10th, 17th, 24th and 31st March 2017** by the Registered Landscape Architect.

7.2.2 Most of the landscape works such as planting was not yet commenced. The detailed inspection checklists were provided in ***Appendix K***.

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 (SO) 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 advised by the SO, the gas analyser would be optimally calibrated by the self-test function to provide the most accurate result. The gas analyser is calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.

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	Yes
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	Yes

8.2 LANDFILL GAS MONITORING RESULT

8.2.1 In the Reporting Period, landfill gas monitoring was conducted at the zone TD1 and LMR

which have excavation works was undertaking. A BIOGAS 5000 gas analyser was used for the landfill gas monitoring and the valid calibration certificate is presented in ***Appendix H***.

8.2.2 There were a total of ***27*** days monitoring were carried by the Safety Officer or an approved and qualified persons. The results of landfill gas measurement are summarized in ***Table 8-2***. Moreover, database of monitoring result and graphical plot are attached in ***Appendix I***.

Table 8-2 Summary of Landfill Gas Measurement Results

Landfill Gas Parameter	Action Level	Limit Level	Detectable at TD1		Detectable at LMR	
			Min	Max	Min	Max
Methane	>10% LEL (>0.5% v/v)	>20% LEL (>1% v/v)	0.1%	0.1%	0.1%	0.1%
Oxygen	<19%	<18%	21.0%	21.1%	21.0%	21.1%
Carbon Dioxide	>0.5%	>1.5%	0.1%	0.2%	0.1%	0.2%

8.2.3 The measurement results shown that slightly methane concentration was detected and oxygen concentration measured was over 21.0 % and Carbon Dioxide was between 0.1% and 0.2 %. No exceedance was triggered and therefore no corrective action was required accordingly.

9 WASTE MANAGEMENT

9.1 GENERAL WASTE MANAGEMENT

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

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

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

9.2 RECORDS OF WASTE QUANTITIES

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

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

9.2.2 The quantities of wastes generated under the Contract in this Reporting Period are summarized in ***Tables 9-1*** and ***9-2*** and the Monthly Summary Waste Flow Table is shown in ***Appendix L***. Whenever possible, materials were reused on-site as far as practicable.

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

Type of Waste	Quantity	Disposal Location
Reused in this Contract (Inert) (`000m^3)	2.116	-
Reused in other Projects (Inert) (`000m^3)	12.844	1. Lam Tei Quarry 2. Eco Park K.Wah Recycle Facilities 3. Lung Kwu Tan Tailor Recycled Aggregates 4. Liantang BCP Project 5. TM-CLKL Contract 2 - Northern Connection Sub-sea Tunnel Section Project
Disposal as Public Fill (Inert) (`000m^3)	3.413	Tuen Mum Area 38

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (`000kg)	0	-
Recycled Paper / Cardboard Packaging (`000kg)	0	-
Recycled Plastic (`000kg)	0	-
Chemical Wastes (`000kg)	0	License Collector
General Refuses (`000m^3)	0.334	WENT

10 INSPECTION AND AUDIT

10.1 SITE INSPECTION

10.1.1 According to the approved EM&A Manual, the environmental site inspection shall be formulated by ET Leader on weekly basis to confirm the environmental performance of the construction site.

Findings / Deficiencies During Reporting Period

10.1.2 In the Reporting Period, joint site inspections to evaluate site environmental performance were carried out by the RE, ET and the Contractor on **7th, 14th, 21st and 28th March 2017**. No non-compliance was noted but **5** observations and **2** reminders were recorded during site inspection. Moreover, ENPO/IEC has attended joint site inspection on **28th March 2017**.

10.1.3 The findings / deficiencies observed during the weekly site inspection in the Reporting Period are listed in ***Table 10-1***.

Table 10-1 Site Observations for the Contract

Date	Findings / Deficiencies	Follow-Up Status
7 March 2017	• Dust emitted from drilling works was observed. Proper mitigation measures should be provided to reduce dust generation. (slope E)	• Water spraying was provided for the drilling works.
14 March 2017	• Backhoe missing NRMM label was observed. NRMM label should be displayed properly for all NRMM using on site. (Central Divider)	• NRMM label was displayed properly.
	• Stagnant water cumulated on site should be cleaned to prevent mosquito breeding. (Retaining Wall B bay 15)	• Not required for reminder.
	• Construction waste and general refuse cumulated on site should be cleaned more frequency. (General)	• Not required for reminder.
21 March 2017	• Stagnant water cumulated on site should be cleaned to prevent mosquito breeding. (Retaining Wall B Bay 15)	• Stagnant water cumulated on site was removed.
	• C&D waste and general refuse scattered on site was observed. Designated area should be provided for waste disposal and waste should be cleaned frequency. (General)	• C&D waste and general refuse scattered on site was cleared
28 March 2017	• Dusty haul road was observed. Water spraying frequency should be increased to minimize dust generation. According to EP's requirement, water spraying frequency should at least 12 times per day. (General)	• Water spraying for the haul road was observed.

10.1.4 No outstanding deficiency remained to be rectified in previous Reporting Period which presented in ***Table 10-2***.

Table 10-2 Outstanding Items in Site Inspection of previous Reporting Period

Date	Findings / Deficiencies	Follow-Up Status
--	• NA	• NA

10.1.5 Air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be implemented during the construciton period to reduce construction dust impact as recommended in the EMIS.

10.1.6 Good site practice for daily housekeeping is reminded. In addition, clean-up of the waste skips and wastewater treatment system should be increased to ensure these facilities functional and effective.

10.1.7 In addition, muddy water or other water pollutants from site surface runoff shall not be discharged into public areas. Water quality mitigation measures to prevent surface runoff into the public areas should be paid on special attention.

10.1.8 Stagnant water should be removed as soon as possible after rain to prevent mosquito breeding on site.

Inspection Checklist for Vulnerable to Contaminated Water Discharge

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

10.1.10 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.

10.1.11 The daily inpsection for vulnerable to contaminated water discharge was temporarily suspended during the dry season and will be resumed on 12 April 2017 during wet season. As requested by the EPD, the associated inspection checklist should be presented in the Monthly EM&A Report and it is shown in ***Appendix P*** (if necessary).

11 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

11.1.1 In the Reporting Period, no environmental complaint, summons and prosecution under the EM&A Programme was lodged. Moreover, no exceedance of the environmental performance (Action / Limit Levels) was recorded for monitoring programme.

11.1.2 The statistical summary table of environmental exceedance, complaint, summons and prosecution are presented in ***Tables 11-1, 11-2, 11-3 and 11-4***.

Table 11-1 Statistical Summary of Environmental Exceedance

Reporting Period	Environmental Aspect / Parameter	Environmental Performance	Event Exceedance		
			Reporting Month	Previous Months	Cumulative
March 2017	Air Quality - 1-hr TSP	Action Level	0	**4**	**4**
		Limit Level	0	0	0
	Air Quality - 24-hr TSP	Action Level	0	0	0
		Limit Level	0	0	0

Table 11-2 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
March 2017	0	**7**	**1**	NA	**6**

Table 11-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
March 2017	0	0	NA	NA	NA

Table 11-4 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
March 2017	0	0	NA	NA	NA

11.1.3 In the Reporting Period, no warning letter related to environmental issue was received from the EPD or HyD.

12 IMPLEMENTATION STATUS OF MITIGATION MEASURES

12.1 GENERAL REQUIREMENTS

12.1.1 The environmental mitigation measures that recommended in the Environmental Mitigation and Enhancement Measures Implementation Schedule (EMIS) for in the Project EM&A Manual covered the issues of air quality, cultural heritage, ecology, landfill gas hazard, landscape & visual, noise, water and waste. The updated EMIS for the Contract is shown in ***Appendix M***.

12.1.2 The Contractor shall implement the required environmental mitigation measures according to the EM&A Manual as subject to the site condition. The environmental mitigation measures implemented by the Contract in this Reporting Period are summarized in ***Table 12-1*** and ***Appendix M***.

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	• Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants • The noisy plants or works provide mobile noise barriers • Shut down the plants when not in used
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.

12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

12.2.1 Construction activities as undertaken in the coming month for the Contract lists below:

- Site Formation – Earthwork on Slope D and E; surface drainage on Slope C, D & E and Portion H;
- Toll Plaza Decking TD1 and TD2;
- Toll Plaza Footbridge;
- Retaining Structure RW_A, RW_B and RW_F;
- Toll Collector Subway & Associated Works;
- Bridge G1, G2 and Bridge H1 by Form Traveller;
- Sewer Culvert at FC1 and FC2;
- Waterproofing and lining at Vehicular Underpass; and

- Road and Drainage Works at +11mPD, +19mPD and Portion H.

12.3 KEY ENVIRONMENTAL ISSUES FOR THE COMING MONTH

12.3.1 Key environmental issues to be considered in the coming month include:

- Implementation of dust suppression measures at all times;
- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust impact due to the dry/loose/exposure soil surface/dusty material;
- Ensure dust suppression measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Management of chemical wastes;
- Site effluent discharge to the nearby nullah is prohibited;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures

13 CONCLUSIONS AND RECOMMENDATIONS

13.1 CONCLUSIONS

13.1.1 This is **29th** monthly EM&A report presenting the monitoring results and inspection findings for the period of **1st** to **31st March 2017**.

13.1.2 No air quality monitoring including 1-hour and 24-hour TSP exceedance was recorded in the Reporting Period.

13.1.3 In the Reporting Period, no noise complaint was received by RE, the Contractor, ENPO or HyD. No Action Level exceedances were therefore triggered and no NOE or the associated corrective actions were required.

13.1.4 Site inspection for landscape and visual was conducted on weekly basis by the Landscape Architect to ensure the compliance of the intended aims of the mitigation measures. Most of the landscape works such as planting was not yet commenced.

13.1.5 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.

13.1.6 Landfill gas monitoring was conducted at the TD1 and Lung Mun Road works area. The monitoring results shown no exceedances were triggered.

13.1.7 In the Reporting Period, no environmental complaint was received.

13.1.8 No notifications of summons, or successful prosecution were received by the Contractor during the Reporting Period.

13.1.9 In the Reporting Period, joint site inspection by the RE, ET and the Contractor was carried out on **7th, 14th, 21st and 28th March 2017** and the IEC has attended the joint site inspection on **28th February 2017**. No non-compliance was recorded during the site inspection but **5** observations and **2** reminders were recorded.

13.1.10 In the Reporting Period, Grave G1 of inspection was undertaken on **7th, 14th, 21st and 28th March 2017**. Based on the inspection findings, the cultural heritage mitigation measures as implemented by the Contractor are fully complied with the EM&A Manual requirements.

13.2 RECOMMENDATIONS

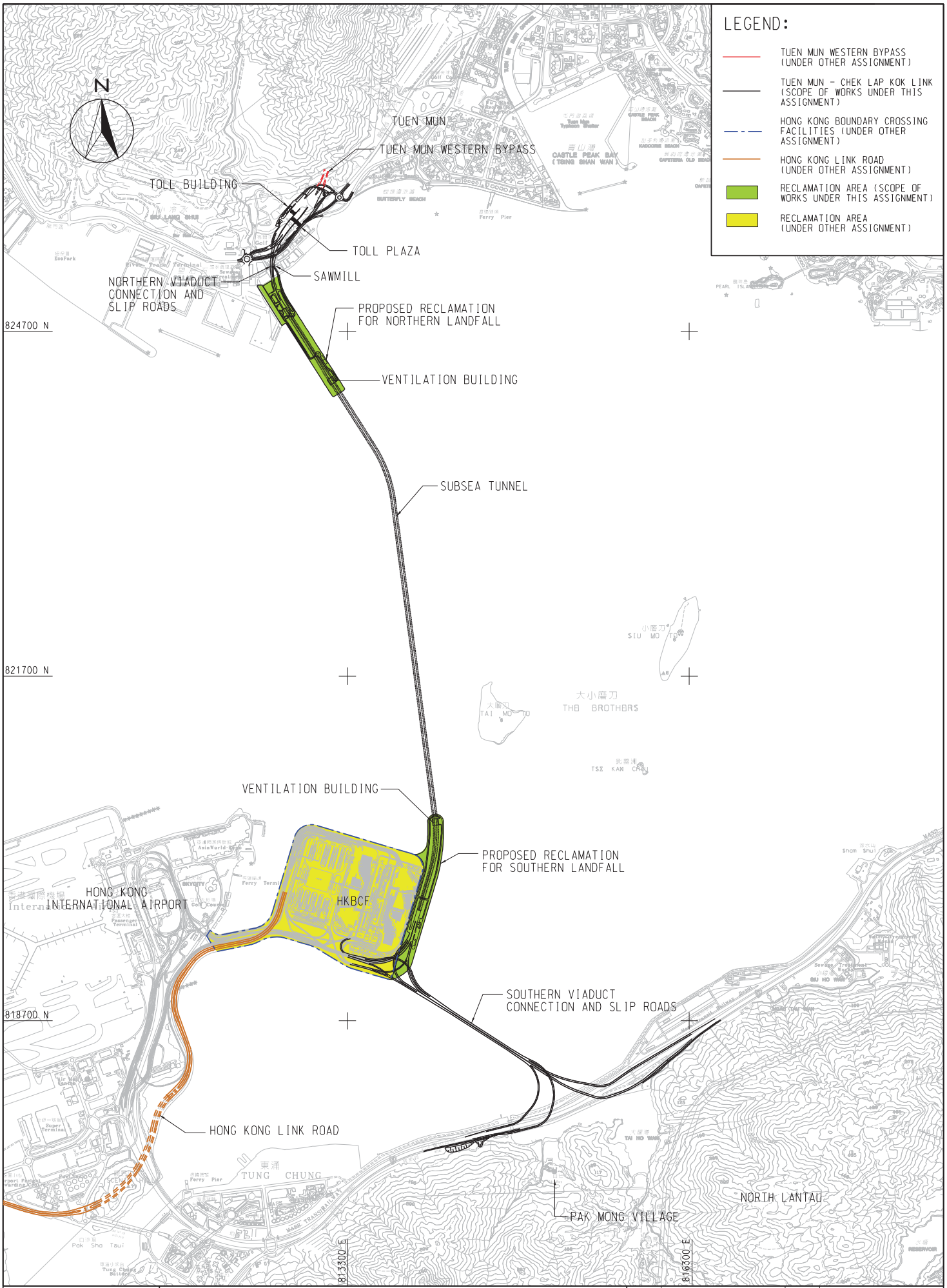
13.2.1 During dry season, air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be fully implemented to reduce construction dust impact as recommended in the EMIS.

13.2.2 As wet season is approaching, muddy water or other water pollutants from site surface runoff discharged into public areas would be a potential environmental issue. Special attention should be paid on the water quality mitigation measures to prevent surface runoff flow to public area.

13.2.3 Stagnant water should be removed as soon as possible after rain to prevent mosquito breeding on site.

Appendix A

Project Layout Plan



AECOM

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: 1:1

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: | ALCF Approved: | CWN | ISO A1 594mm x 841mm

CUT LINE A-A
SEE INSET 'A'
INSET 'A'
CUT LINE B-B
SEE SHEET NO. 60240249/C3/1052
EXISTING FOOTPATHS EXCLUDED FROM LIMIT OF SITE BOUNDARY
BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE
EXISTING GRAVE EXCLUDED FROM LIMIT OF SITE BOUNDARY
EXISTING GRAVE
CLP OVERHEAD CABLE PYLON
UNDERPASS
TOLL BOOTH
TOLL CONTROL BUILDING (BY OTHERS)
TOLL COLLECTOR SUBWAY
BOUNDARY OF PORTION FOLLOWS THE EDGE OF SEAWALL
826200 N
826300 N
826000 N
825800 N
812800 E
813000 E
813200 E
N
蝴蝶灣 BUTTERFLY

LEGEND:

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

NOTES:

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

Plot File by: LXQ2 20140319
PATH: P:\Projects\60240249\DRAWING\CONTRACT\C31000IC3_1051.dgn

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

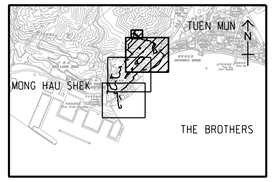
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核
			CWN
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS 階段

SCALE 比例
A1 1 : 1000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖 1 : 50000



PROJECT NO. 項目編號
60240249

CONTRACT NO. 合約編號
HY/2013/12

SHEET TITLE 圖紙名稱

PORTIONS OF SITE AND SITE BOUNDARY SETTING OUT PLAN

SHEET 1 OF 3

SHEET NUMBER 圖紙編號

60240249/C3/1051B

Project Management Initials: PI Designer: CWN 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 BOOTH

TOLL CONTROL BUILDING (BY OTHERS)

TOLL COLLECTOR SUBWAY

TOLL BOOTH B

EXISTING GRAVE

ALONG THE EDGE OF SEAWALL

FOOTBRIDGE WITH PASSENGER LIFT

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
394	812854.412	825514.644

Plot File by: LUOMQ 2014/3/18
PATH : P:\Projects\60240249\DRAWING\CONTRACT\C3\1000\C3_1052.dgn

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

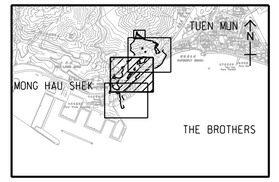
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核
			CWN
			CWN
			CWN
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

STATUS 階段

SCALE 比例
A1 1 : 1000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖引圖 1 : 50000



PROJECT NO. 項目編號
60240249

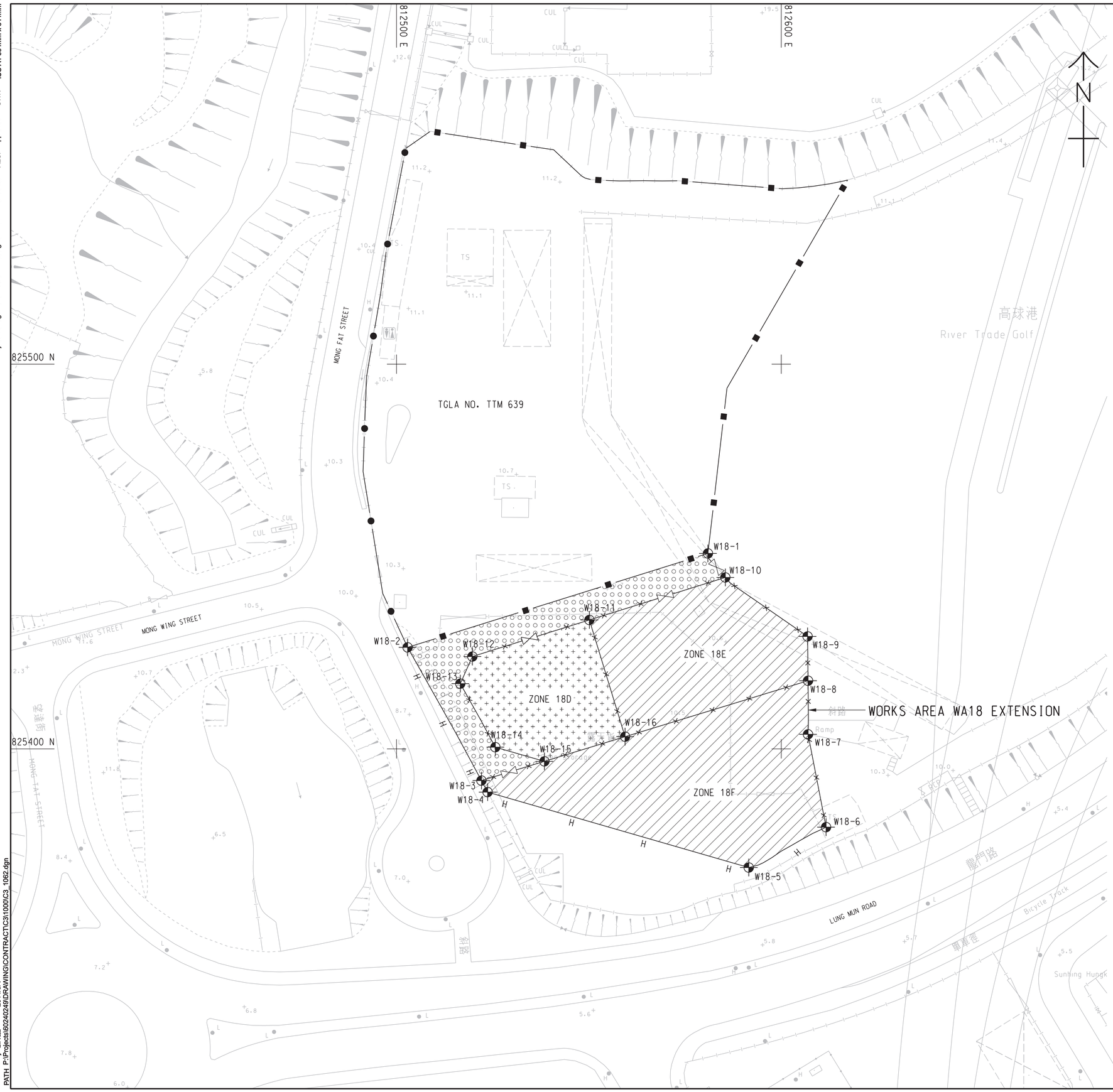
CONTRACT NO. 合約編號
HY/2013/12

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

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



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

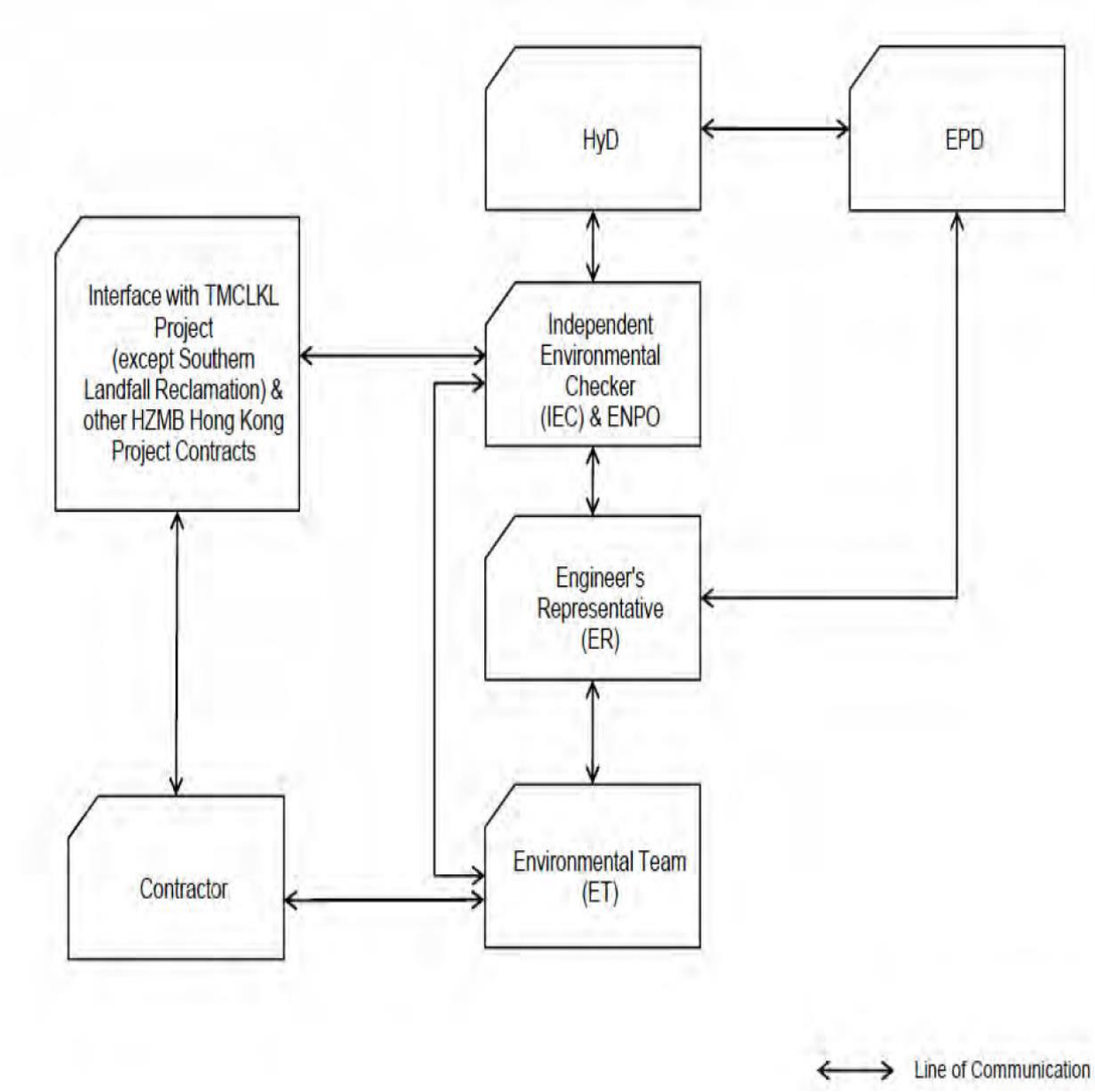
SHEET NUMBER 圖紙編號

60240249/C3/1062B

Plot File by: LIXQ2 2014/3/4
PATH P:\Projects\60240249\DRAWING\CONTRACT\C3\1000\C3_1062.dgn

Appendix C

Organization of the Contract



Project Organization chart

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. Stephen W.C. Chan	2762 3669	3188 6614
AECOM	Principal Resident Engineer	Mr. S.W. Fok	2218 7209	2218 7399
AECOM	Chief Resident Engineer	Mr. Roger Man	2218 7288	2218 7399
AECOM	Resident Engineer (S&E)	Mr. Kelvin Yeung	22187289	2218 7399
Ramboll Environ	Environmental Project Office (ENPO)	Mr. YH Hui	3465 2850	3465 2899
Ramboll Environ	Independent Environmental Checker (IEC)	Dr. FC Tsang	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. HY Tang	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 Environ (ENPO and IEC) – Ramboll Environ Hong Kong Limited

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

HKL(RLA) – Hong Kong Landscape

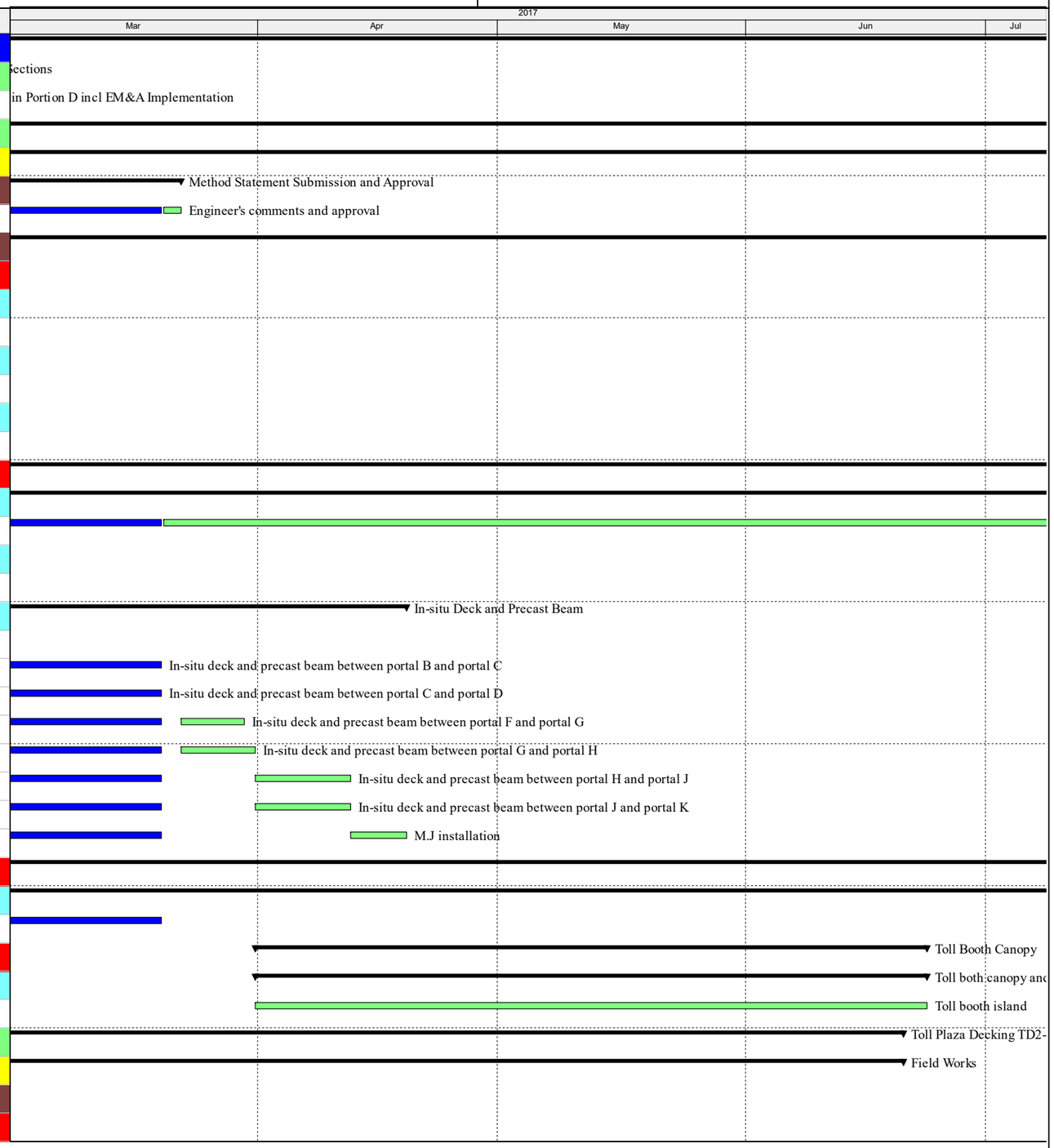
Appendix D

Three-Months Rolling Programme

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
	HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly I
	Achievement of Stages/ Completion of Sections
KD10170	KD7 - Sec 4 Completion All Works within Portion D incl EM&A Implementation
	Toll Plaza Decking TD1-Section 1
	Stage 1
	Method Statement Submission and Approval
TD121360	Engineer's comments and approval
	Field Works
	Portal Construction
	Portal Beam 1st(H)
TD121180	Portal beam 1st(Portal H -Pier 18 to Pier 19)
	Portal Beam 2nd(J)
TD121190	Portal beam 2nd(Portal J -Pier 20 to Pier 21)
	Portal Beam 3rd(G)
TD121200	Portal beam 3rd(Portal G -Pier 16 to Pier 17)
	Deck Construction
	Precast beam fabrication
TD120800	Precast parapet and planter
	Precast beam installation
TD12130	Precast beam installation between portal J and portal K(4nos)
	In-situ Deck and Precast Beam
TD121100	In-situ deck and precast beam between portal D and portal E
TD121110	In-situ deck and precast beam between portal B and portal C
TD121105	In-situ deck and precast beam between portal C and portal D
TD121090	In-situ deck and precast beam between portal F and portal G
TD121120	In-situ deck and precast beam between portal G and portal H
TD121130	In-situ deck and precast beam between portal H and portal J
TD121140	In-situ deck and precast beam between portal J and portal K
TD121150	M.J installation
	Parapet and Finishing Work
	Parapet and Railing Installation
TD120940	Parapet and planter installation
	Toll Booth Canopy
	Toll both canopy and island
TD121270	Toll booth island
	Toll Plaza Decking TD2-Section 1
	Field Works
	G.I and Piling Works
	DWP-Bored Piles



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

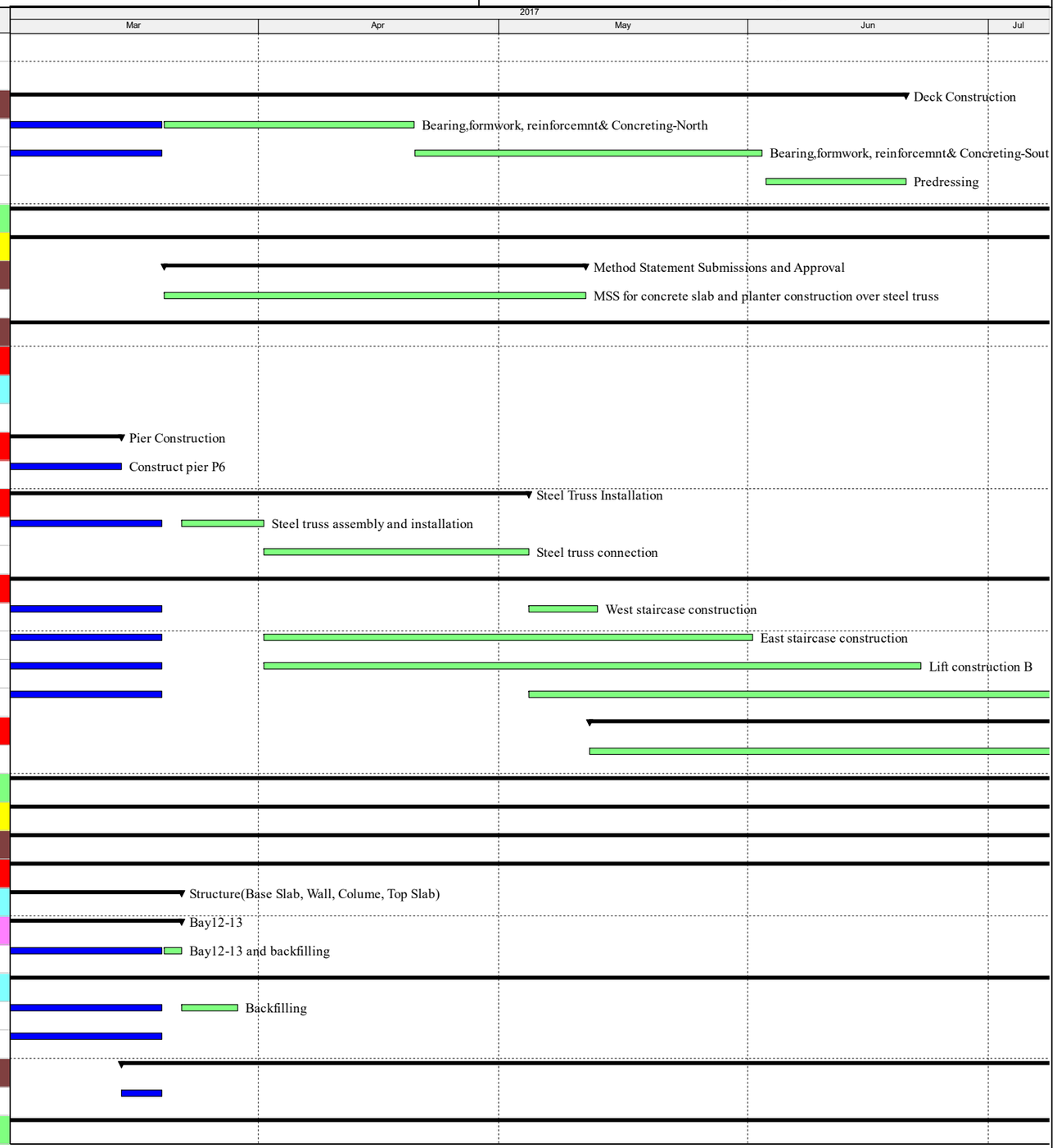
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
TD220530	Working platform for pile cap L4
TD220540	Bored piles for P12-13
Deck Construction	
TD220190	Bearing,formwork, reinforcemnt& Concreting-North
TD220200	Bearing,formwork, reinforcemnt& Concreting-South
TD220220	Predressing
Toll Plaza Footbridge-Section 1	
Stage 1	
Method Statement Submissions and Approval	
TFB1090	MSS for concrete slab and planter construction over steel truss
Field Works	
G.I and Foundation Works	
Foundation for Pier P1,P5,P7 and West staircase	
TFB1210	ELS for Pier P1,P5,P7 and West staircase
Pier Construction	
TFB1320	Construct pier P6
Steel Truss Installation	
TFB1330	Steel truss assembly and installation
TFB1340	Steel truss connection
Staircase and Lift Construction	
TFB1350	West staircase construction
TFB1370	East staircase construction
TFB1380	Lift construction B
TFB1360	Lift construction A
Concrete Decking , Planters and Finishing Works	
TFB1390	Concrete decking and planter construction
Retaining Structure RW_B-Section 1	
Site Formation - Retaining Structure RW_B	
Stage 1	
Retaining Structure RW_B	
Structure(Base Slab, Wall, Colume, Top Slab)	
Bay12-13	
RWB10170	Bay12-13 and backfilling
Backfilling	
RWB10230	Backfilling
RWB10260	Parapet and street furniture installation for TCSS and E&M installation
Achievement of KD-4 (Section 1) for RW_B	
RWB10650	Road works
Toll Collector Subway & Associated Works-Section 1	



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

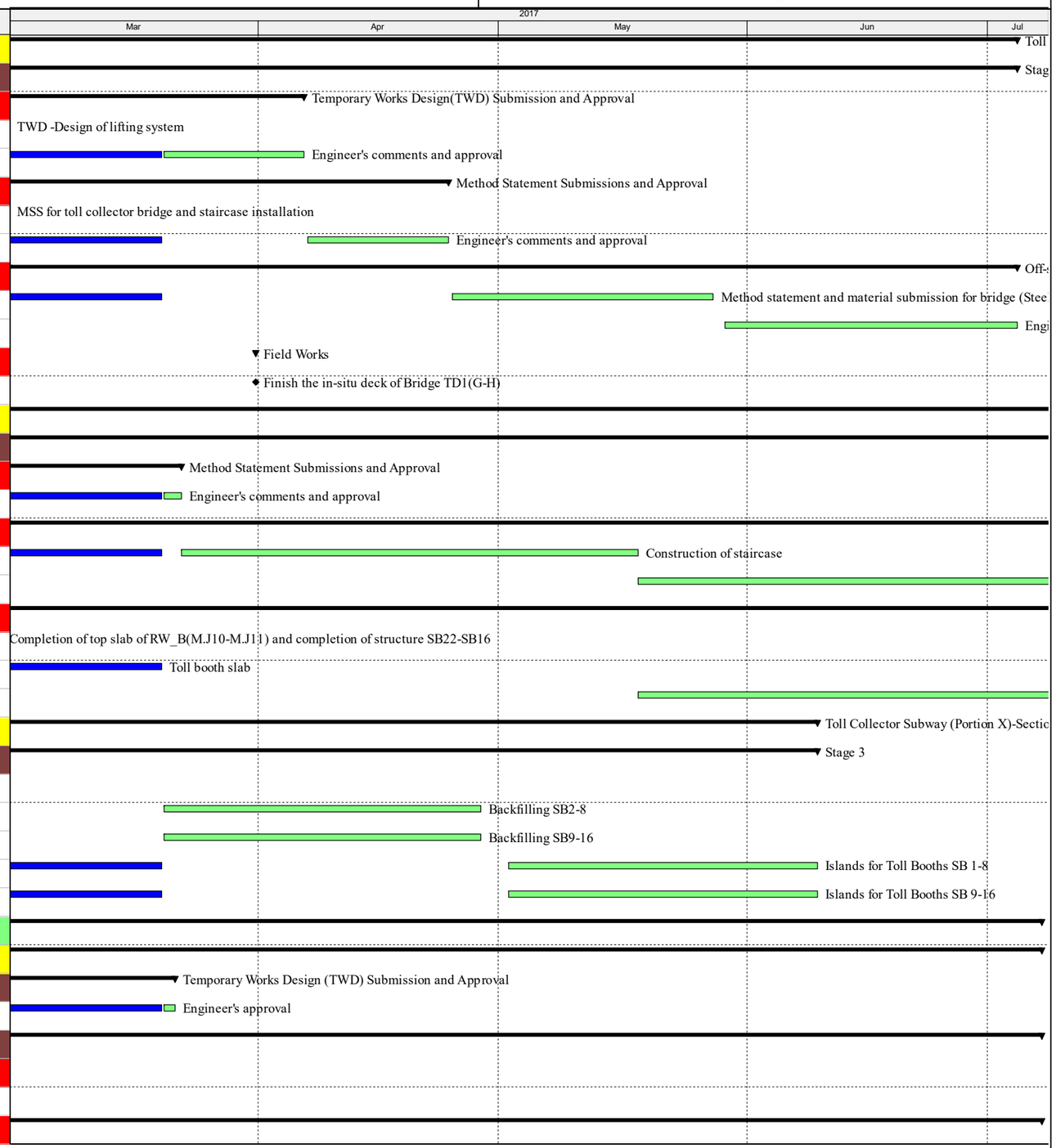
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
Toll Collector Bridge (Portion I)-Section 1	
Stage 1	
Temporary Works Design(TWD) Submission and Approval	
TCS1240	TWD -Design of lifting system
TCS1580	Engineer's comments and approval
Method Statement Submissions and Approval	
TCS1250	MSS for toll collector bridge and staircase installation
TCS1590	Engineer's comments and approval
Off-site Works	
TCS1260	Method statement and material submission for bridge (Steel Truss) and staircase fabrication
TCS1600	Engineer's comments and approval
Field Works	
TCS1270	Finish the in-situ deck of Bridge TD1(G-H)
Toll Collector Subway & Associate Works (Portion I)-Section 1	
Stage 1	
Method Statement Submissions and Approval	
TCS1630	Engineer's comments and approval
Field Works - Toll Collector Subway and Staircase	
TCS1440	Construction of staircase
TCS1450	Internal finishing works
Field Works - Toll Booth & Canopy	
TCS1470	Completion of top slab of RW_B(M.J10-M.J11) and completion of structure SB22-SB16
TCS1480	Toll booth slab
TCS1490	Island for toll booths
Toll Collector Subway (Portion X)-Section 5	
Stage 3	
TCS1090	Hand over Portion D
TCS1140	Backfilling SB2-8
TCS1150	Backfilling SB9-16
TCS1160	Islands for Toll Booths SB 1-8
TCS1170	Islands for Toll Booths SB 9-16
Bridge G2	
Stage 2	
Temporary Works Design (TWD) Submission and Approval	
BG23620	Engineer's approval
Field Works	
Foundation Works	
BG23340	Excavation for G2b
Deck	



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

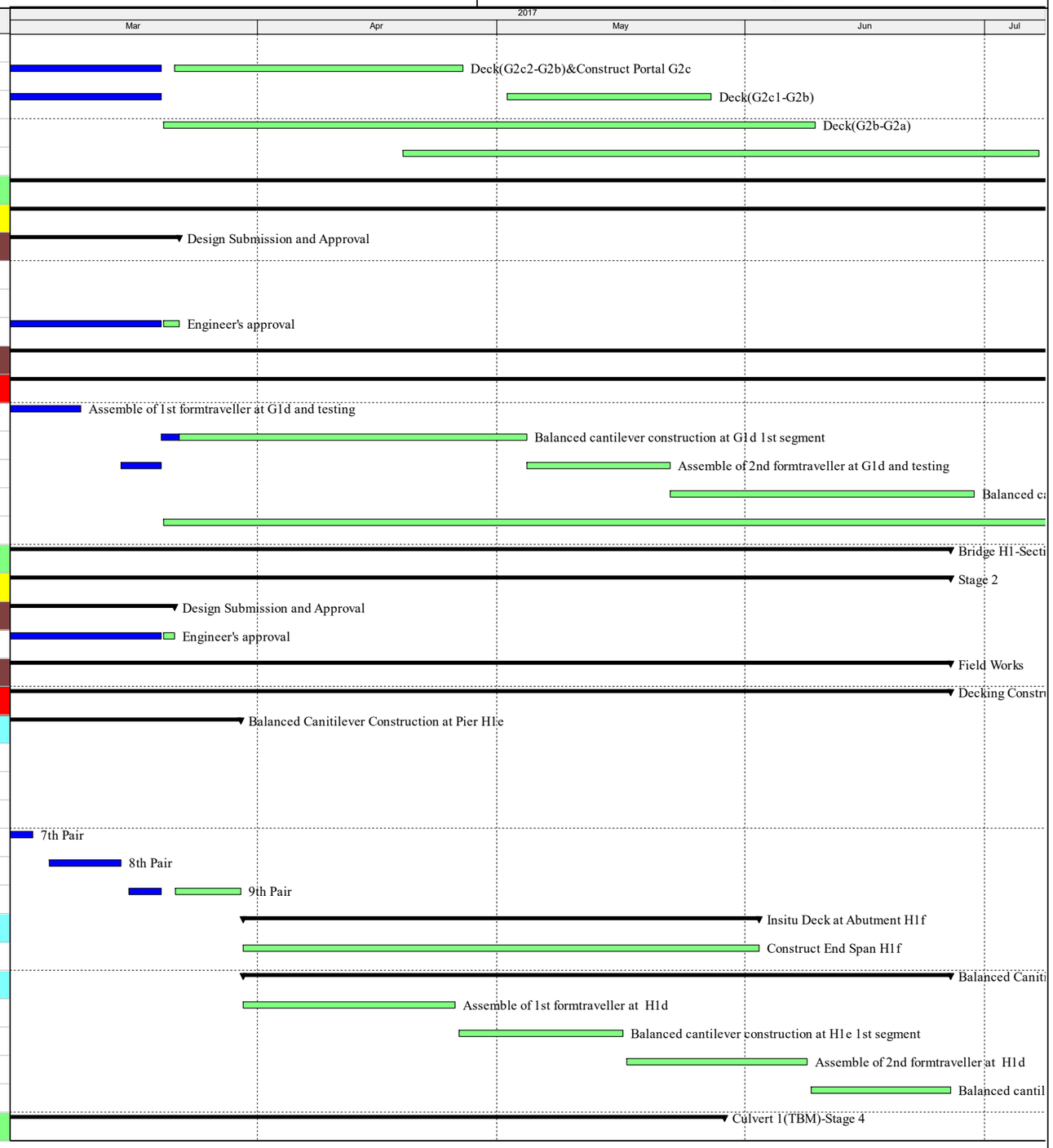
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
BG23050	Deck(G2d1-G2c1)
BG23020	Deck(G2c2-G2b)&Construct Portal G2c
BG23060	Deck(G2c1-G2b)
BG23030	Deck(G2b-G2a)
BG23070	Deck(G2b-G2a)
Bridge G1	
Stage 2	
Design Submission and Approval	
BG112230	DDA for substructure(draft)
BG112240	Engineer's comments
BG112300	Engineer's approval
Field Works	
Deck Construction from Pier G1d to Pier G2a	
BG112120	Assemble of 1st formtraveller at G1d and testing
BG112350	Balanced cantilever construction at G1d 1st segment
BG112360	Assemble of 2nd formtraveller at G1d and testing
BG112370	Balanced cantilever construction at G1d 2nd segment
BG112780	TTA application
Bridge H1-Section 2	
Stage 2	
Design Submission and Approval	
BH12860	Engineer's approval
Field Works	
Decking Construction From Abutment H1f to Pier H1d	
Balanced Canitilever Construction at Pier H1e	
BH12040	3rd Pair
BH12060	5th Pair
BH12070	6th Pair
BH12080	7th Pair
BH12090	8th Pair
BH12110	9th Pair
Insitu Deck at Abutment H1f	
BH12420	Construct End Span H1f
Balanced Canitilever Construction at Pier H1d	
BH12130	Assemble of 1st formtraveller at H1d
BH12140	Balanced cantilever construction at H1e 1st segment
BH12142	Assemble of 2nd formtraveller at H1d
BH12144	Balanced cantilever construction at H1e 2nd segment
Culvert 1(TBM)-Stage 4	



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

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
Field Works	
Bay15 to Bay16	
CUL13310	Pipe installation for Bay 15 and 16 and grouting
FC2	
CUL13470	Construction of chamber FC2
CUL13480	Backfilling and removal section of sheetpile
BY-Pass Sewer between FC1 and FC2(1800 Pipe)	
CUL13510	Backfilling
Completion of KD3A and Remaining Works	
CUL13535	Backfilling
Culvert 2 & Culvert 3 and Existing Box Culvert	
Method statement Submission	
CCE20140	Method statement for screeding the existing box culvert
Culvert 2	
CCE20090	Bay 21
CCE20120	Bay 20
Culvert 3	
CCE20212	Drainage diversion
CCE20215	MH8
Existing Sewer Box Culvert	
MH3-MH6	
CCE20220	Base slab to be applied with screeding concrete
Site Formation - Retainging Structure RW_A	
Stage 3	
Retaining Wall A	
RWA20240	Completion civil provision works for TCSS and E&M
Achievement of KD-3 (Stage 3)	
RWA20190	Achievement of KD-3(Stage 3) for RW_A
Achievement of KD-8 (Section 5) for RW_A	
RWA20200	Drainage Works
Retaining Structure RW_E	
Stage 2	
Design Submission and Approval	
RWE20000	DDA for foundation (draft)
RWE20010	Engineer's comments
RWE20020	DDA for foundation submission
RWE20040	DDA for substructure(draft)
RWE20030	Engineer's approval
Site Formation - Retaining Structure for Slope TP_F	

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

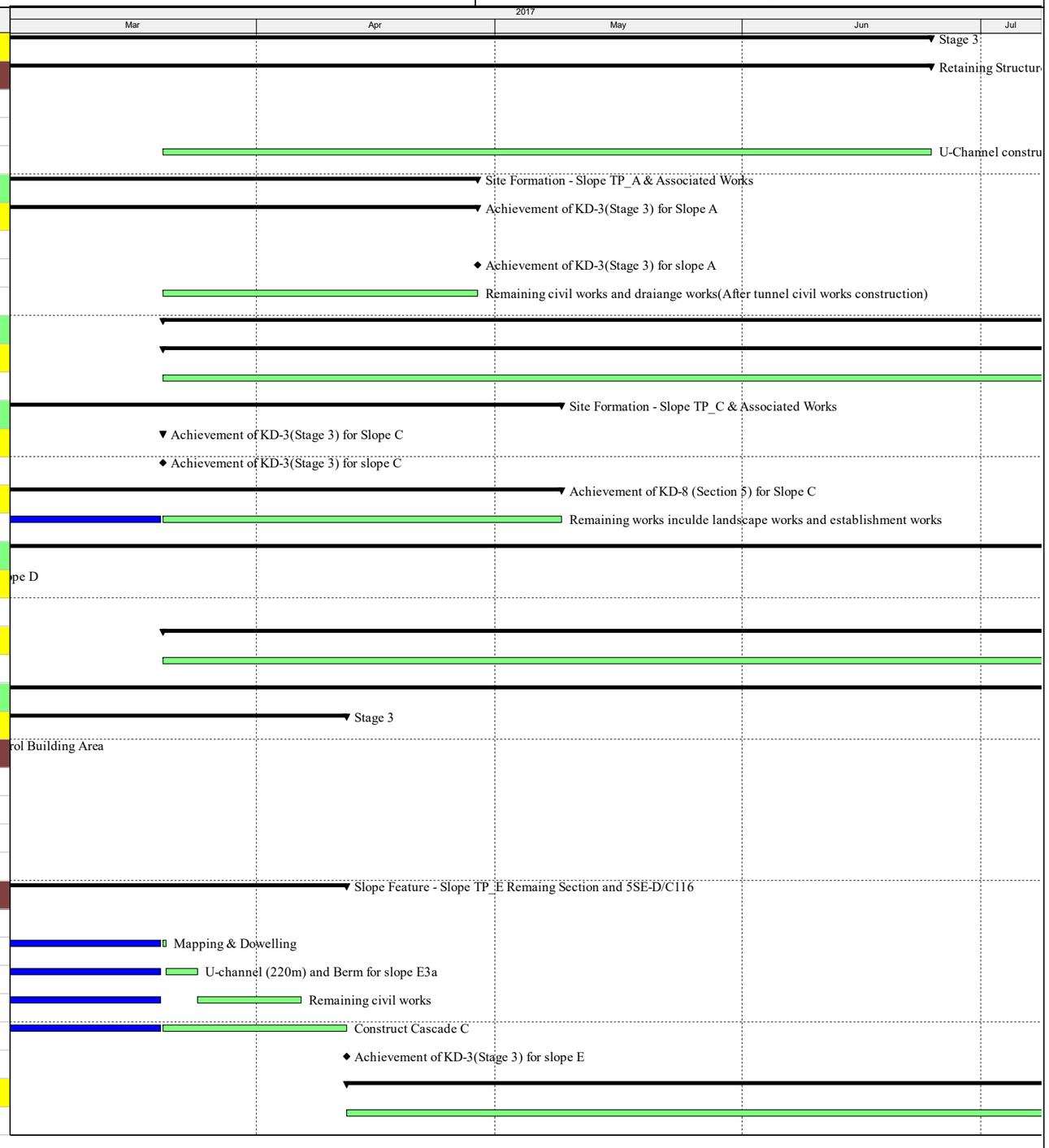
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
	Stage 3
	Retaining Structure for Slope TP_F
RWF313071	Construct Retaining Wall-Wall construction Bay 20
RWF31308	Backfilling
RWF31480	U-Channel construction,Completion civil provision works for TCSS and E&M
	Site Formation - Slope TP_A & Associated Works
	Achievement of KD-3(Stage 3) for Slope A
TPA41800	Tunnel Lining Completion
TPA41830	Achievement of KD-3(Stage 3) for slope A
TPA41810	Remaining civil works and draiange works(After tunnel civil works construction)
	Site Formation - Slope TP_B & Associated Works
	Achievement of KD-3(Stage 3) for Slope B
TPB41710	Remaining civil works and drainage works
	Site Formation - Slope TP_C & Associated Works
	Achievement of KD-3(Stage 3) for Slope C
TPC51320	Achievement of KD-3(Stage 3) for slope C
	Achievement of KD-8 (Section 5) for Slope C
TPC51330	Remaining works inculde landscape works and establishment works
	Site Formation - Slope TP_D & Associated Works
	Achievement of KD-7(Section 4) for Slope D
TPD51755	Hand over of portion D
	Achievement of KD-3(Stage 3) for Slope D
TPD52350	Remaining civil works and drainage works
	Site Formation - Slope TP_E & Associated Works
	Stage 3
	Slope Feature - Slope TP_E at Toll Control Building Area
TPE61190	U-channel (150m) and Berm for slope E2b
TPE61240	Excavation of Rock for slope E3b - stage 4
TPE61700	Hand Over Portion D
TPE65350	KD-7(Section 4)
	Slope Feature - Slope TP_E Remaing Section and 5SE-D/C116
TPE62220	Excavation of Rock for slope E3c - stage 2
TPE62410	Mapping & Dowelling
TPE62420	U-channel (220m) and Berm for slope E3a
TPE62550	Remaining civil works
TPE62600	Construct Cascade C
TPE62700	Achievement of KD-3(Stage 3) for slope E
	Achievement of KD-8(Section 5) for Slope E
TPE65320	Remaining works inculde landscape works and establishment works



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

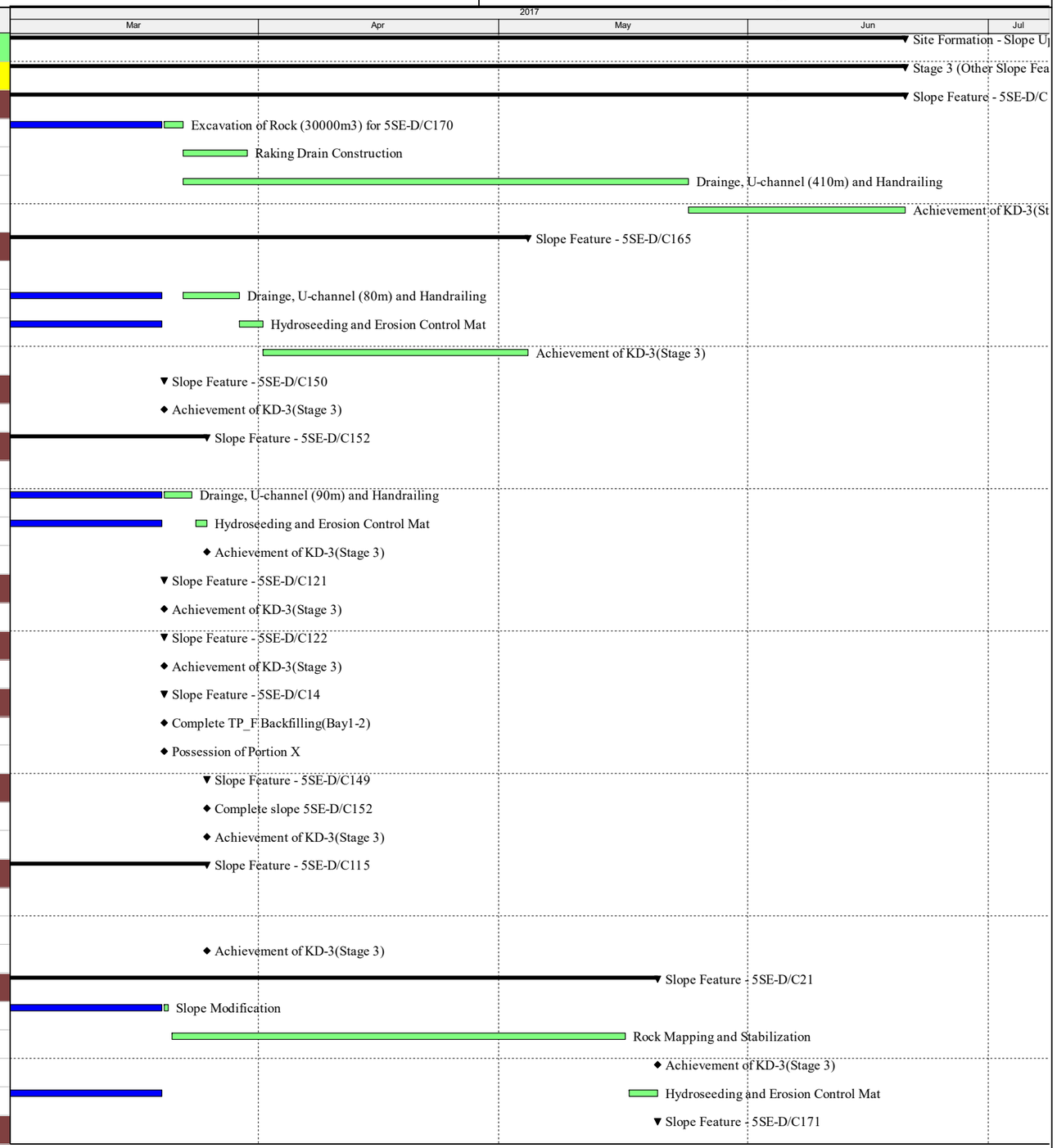
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
	Site Formation - Slope Upgrading Works
	Stage 3 (Other Slope Features)
	Slope Feature - 5SE-D/C170
SFW10080	Excavation of Rock (30000m3) for 5SE-D/C170
SFW10105	Raking Drain Construction
SFW10110	Drainge, U-channel (410m) and Handrailing
SFW10850	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C165
SFW10790	Soil Nail RowC (12nos) Level + 17.60 (Install and grouting)
SFW10820	Drainge, U-channel (80m) and Handrailing
SFW10830	Hydroseeding and Erosion Control Mat
SFW10870	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C150
SFW10890	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C152
SFW10220	Complete slope 5SE-D/C150
SFW10240	Drainge, U-channel (90m) and Handrailing
SFW10250	Hydroseeding and Erosion Control Mat
SFW10910	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C121
SFW10930	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C122
SFW10950	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C14
SFW10340	Complete TP_F Backfilling(Bay1-2)
AK10410	Possession of Portion X
	Slope Feature - 5SE-D/C149
SFW10380	Complete slope 5SE-D/C152
SFW10990	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C115
SFW10450	Drainge, U-channel (150m) and Handrailing
SFW10420	Complete slope 5SE-D/C149
SFW11010	Achievement of KD-3(Stage 3)
	Slope Feature - 5SE-D/C21
SFW10550	Slope Modification
SFW10560	Rock Mapping and Stabilization
SFW11070	Achievement of KD-3(Stage 3)
SFW10570	Hydroseeding and Erosion Control Mat
	Slope Feature - 5SE-D/C171



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

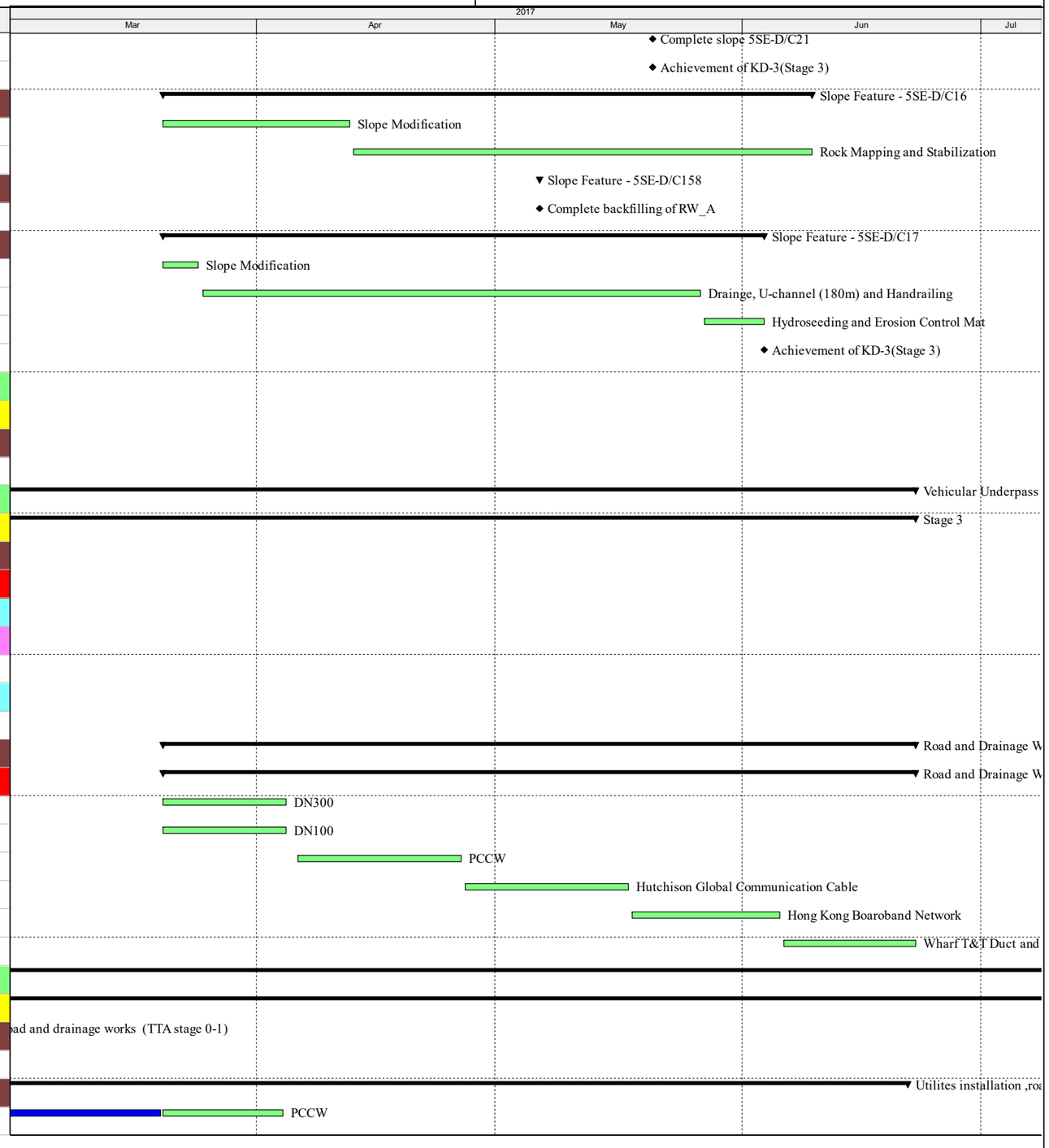
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
SFW10580	Complete slope 5SE-D/C21
SFW11090	Achievement of KD-3(Stage 3)
Slope Feature - 5SE-D/C16	
SFW10630	Slope Modification
SFW10640	Rock Mapping and Stabilization
Slope Feature - 5SE-D/C158	
SFW10710	Complete backfilling of RW_A
Slope Feature - 5SE-D/C17	
SFW10750	Slope Modification
SFW10760	Drainge, U-channel (180m) and Handrailing
SFW10770	Hydroseeding and Erosion Control Mat
SFW11170	Achievement of KD-3(Stage 3)
Natural Terrain Hazard Mitigation Measures	
Natural Terrian Hazard Mitigation Measures	
Boulders outside Blasting Zone	
NTH10120	Mitigation measures for 15 boulders outside blasting zone
Vehicular Underpass TN-01	
Stage 3	
Lining Works and Road Works	
Water Proofing and Lining Works	
Type B	
Lining B1	
UDP4080	Completed the lining works
Type C	
UDP4260	Concrete for east bulkhead wall
Road and Drainage Work,Utilities Works in Tunnel	
Road and Drainage Work,Utilities Works in Tunnel	
UDP34000	DN300
UDP34010	DN100
UDP34020	PCCW
UDP34030	Hutchison Global Communication Cable
UDP34040	Hong Kong Boaroband Network
UDP34050	Wharf T&T Duct and Joint Box
Road and Drainage Work ,Utilities Works at for Lung Fu Road Roundabout	
Section 3	
Utilites installation ,road and drainage works (TTA stage 0-1)	
LFR10210	TTA for stage 1
Utilites installation ,road and drainage works (TTA stage 1)	
LFR10300	PCCW



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

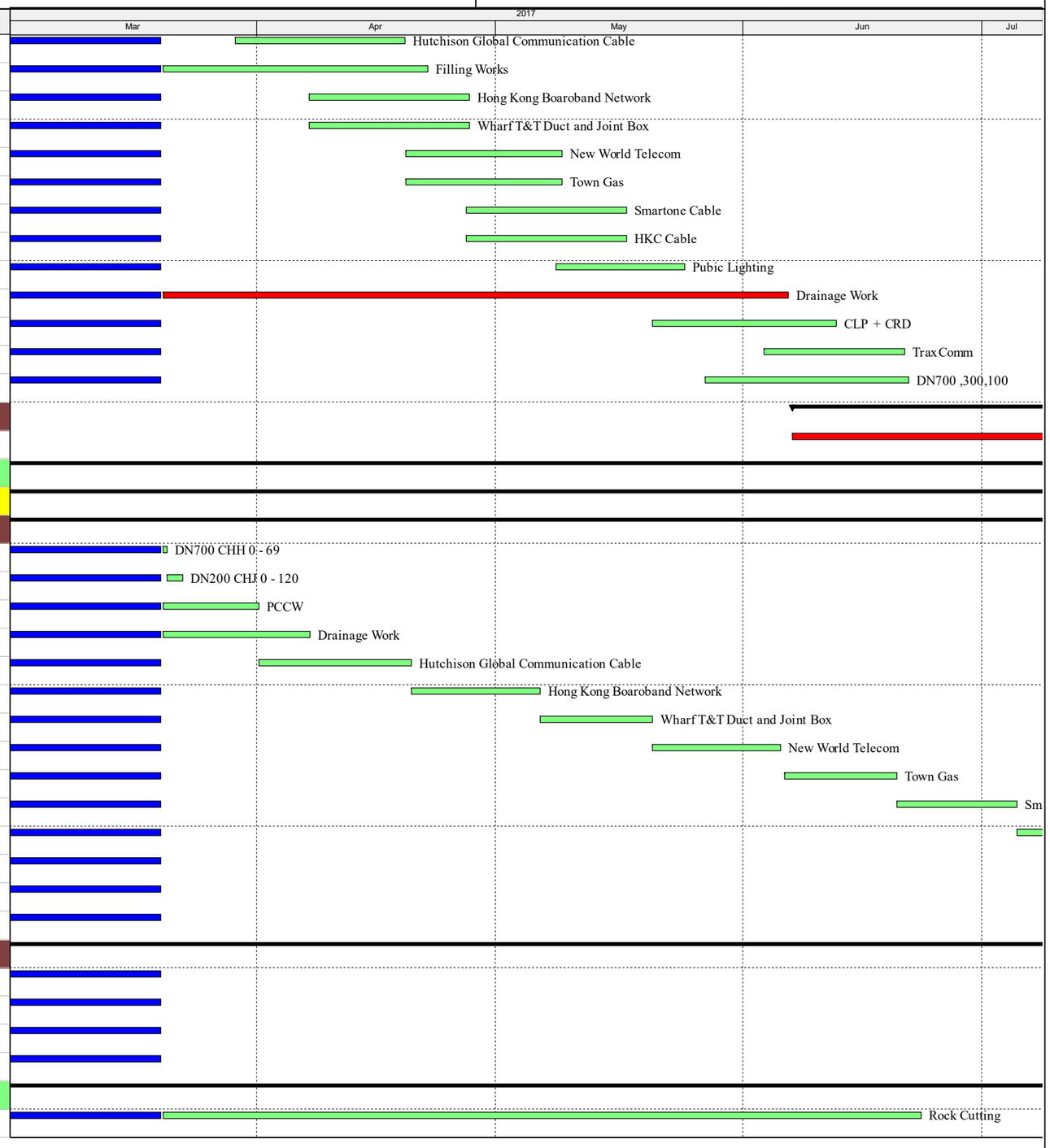
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
LFR10310	Hutchison Global Communication Cable
LFR10270	Filling Works
LFR10320	Hong Kong Boaroband Network
LFR10330	Wharf T&T Duct and Joint Box
LFR10340	New World Telecom
LFR10350	Town Gas
LFR10360	Smartone Cable
LFR10370	HKC Cable
LFR10380	Pubic Lighting
LFR10280	Drainage Work
LFR10390	CLP + CRD
LFR10400	Trax Comm
LFR10290	DN700 ,300,100
Utilites installation ,road and drainage works (TTA Stage 2-0)	
LFR10450	Drainage Work
Road and Drainage Work ,Utilities Works at Lung Mun Road	
Lung Mun Road (Westbound)	
Ho Suen Street North	
LMRWA1020	DN700 CHH 0 - 69
LMRWA1030	DN200 CHJ 0 - 120
LMRWA1040	PCCW
LMRWA1000	Drainage Work
LMRWA1050	Hutchison Global Communication Cable
LMRWA1060	Hong Kong Boaroband Network
LMRWA1070	Wharf T&T Duct and Joint Box
LMRWA1080	New World Telecom
LMRWA1090	Town Gas
LMRWA1100	Smartone Cable
LMRWA1110	HKC Cable
LMRWA1120	Pubic Lighting
LMRWA1130	CLP + CRD
LMRWA1140	Trax Comm
Ho Suen Street South	
LMRWA1190	DN200 CHK 0 - 50
LMRWA1200	DN300 CHE 0 - 116
LMRWA1210	DN100 CHG 0 - 112
LMRWA1170	Drainage Work
Utilites installation ,road and drainage works for East Portal	
EPA1000	Rock Cutting



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

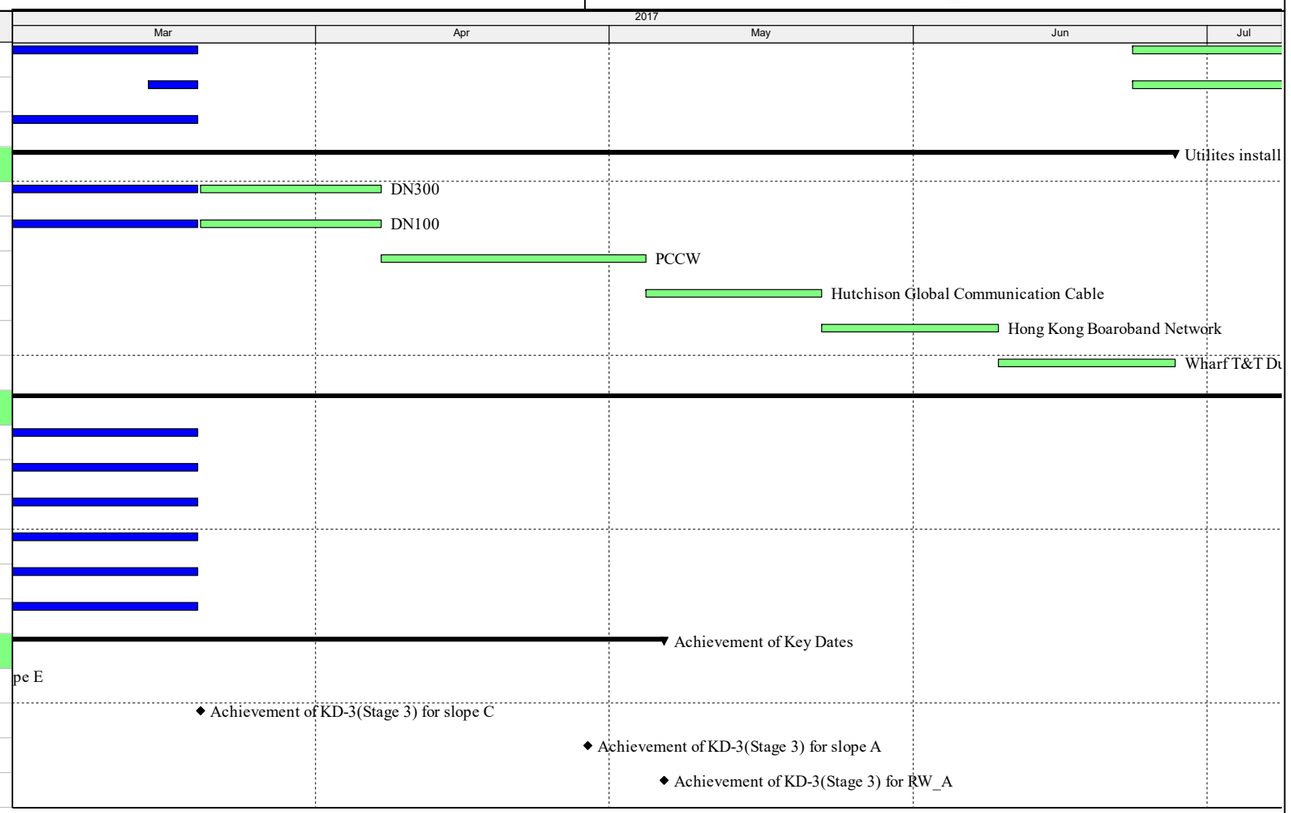
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
EPA1020	DN300 CHA 0 - 175&DN100
EPA1030	Street furniture and sign gantry
EPA1130	CLP
Utilites installation ,road and drainage works near portion D	
TOLLA1010	DN300
TOLLA1020	DN100
TOLLA1030	PCCW
TOLLA1040	Hutchison Global Communication Cable
TOLLA1050	Hong Kong Boaroband Network
TOLLA1060	Wharf T&T Duct and Joint Box
Seweage, Irrigation and Road& Drainage Works	
SAI10020	Seweage, irrigation and road&drainage works - RW_B-north side
SAI10060	Seweage, irrigation and road&drainage works -G2-north side
SAI10070	Seweage, irrigation and road&drainage works- G2-south side
SAI10030	Seweage, irrigation and road&drainage works - RW_B-south side
SAI10040	Seweage, irrigation and road&drainage works -G1&H1-north side
SAI10050	Seweage, irrigation and road&drainage works - G1&H1-south side
Achievement of Key Dates	
AK10365	Achievement of KD-7(Section 4) for slope E
AK10320	Achievement of KD-3(Stage 3) for slope C
AK10280	Achievement of KD-3(Stage 3) for slope A
AK10210	Achievement of KD-3(Stage 3) for RW_A



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

CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
07-04-17			

Appendix E

Monitoring Locations / Sensitive Receivers for the Contract

NCO DESIGNATED AREAS

龍運路 LUNG WUN ROAD

蝴蝶灣泳灘
BUTTERFLY BEACH

蝴蝶灣洗衣場
Butterfly Beach Laundry

望發街 MONG FAT STREET

826200 N
826000 N
825800 N
825600 N
825400 N
813200 E
813000 E
812800 E
812600 E

BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE

10.3
35.6
21.3
29.4
21.9
35.1
58.6
19.4
62.1
20.2
10.8
18.9
42.8
32.3
19.6
10.1
23.7

RETAINING WALL B
RETAINING WALL F
TOLL CONTROL BUILDING (TO BE CONSTRUCTED UNDER SEPARATE CONTRACT)
ER's OFFICE

821100 N
820900 N
820900 E
820700 E
CHEUNG TUNG ROAD
NORTH LANTAU HIGHWAY

WORKS AREA WA6 IN LANTAU ISLAND

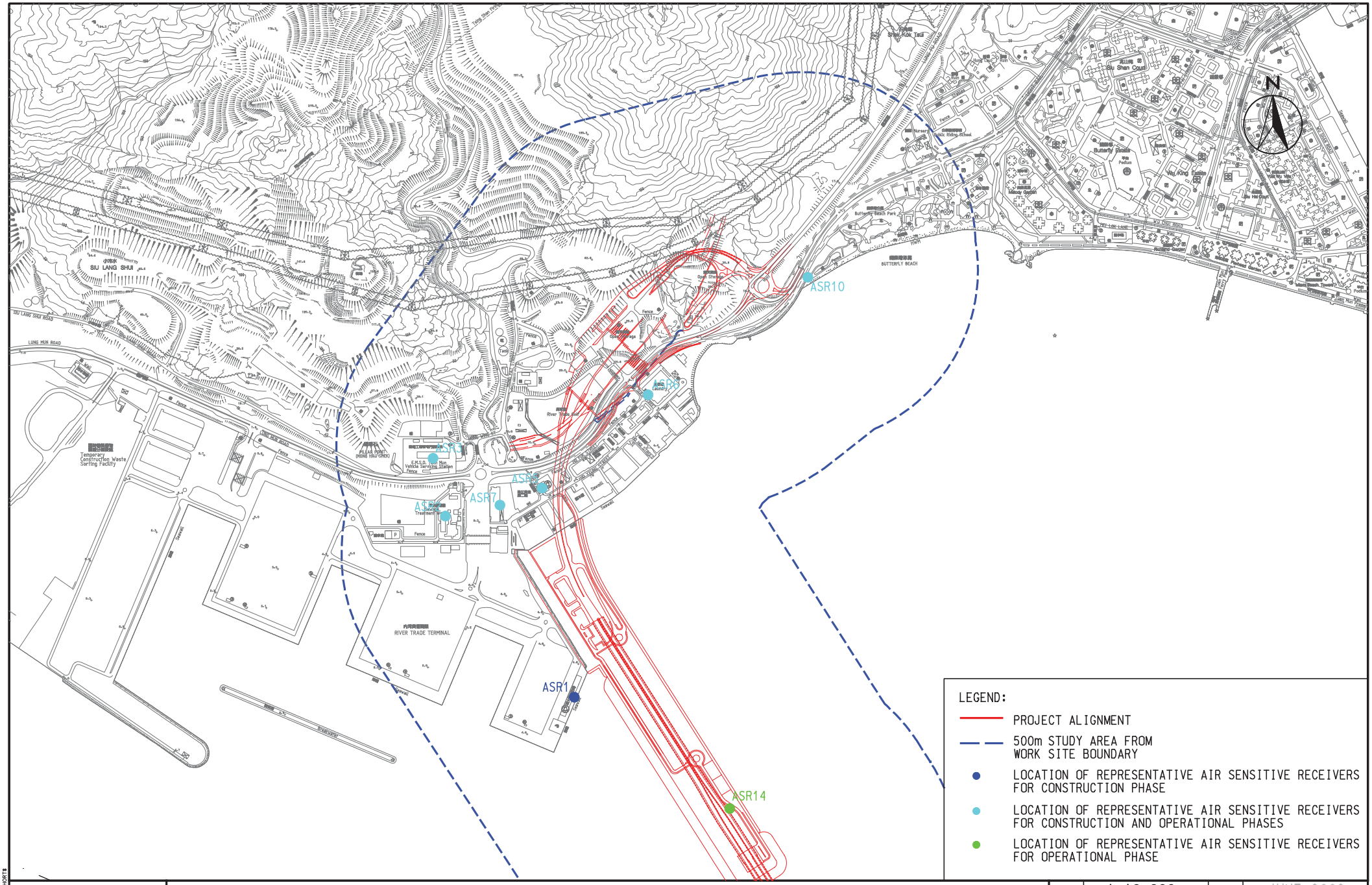
LEGEND:

- 35.1 EXISTING GROUND LEVEL
- SITE BOUNDARY
- BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE
- TD1, RW_A, GRAVE G1, TD2 & SUBWAY
- RW_B
- RW_F
- SLOPE & UNDERPASS
- BRIDGE WORKS (G2, H1)
- LUNG MUN ROAD

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

DF1266-3

Plot File by: rstoc1 10-Mar-17 4:32:51 PM
PATH: T:\Drawing\DRAFT\DF1266\DF1266-3.dgn

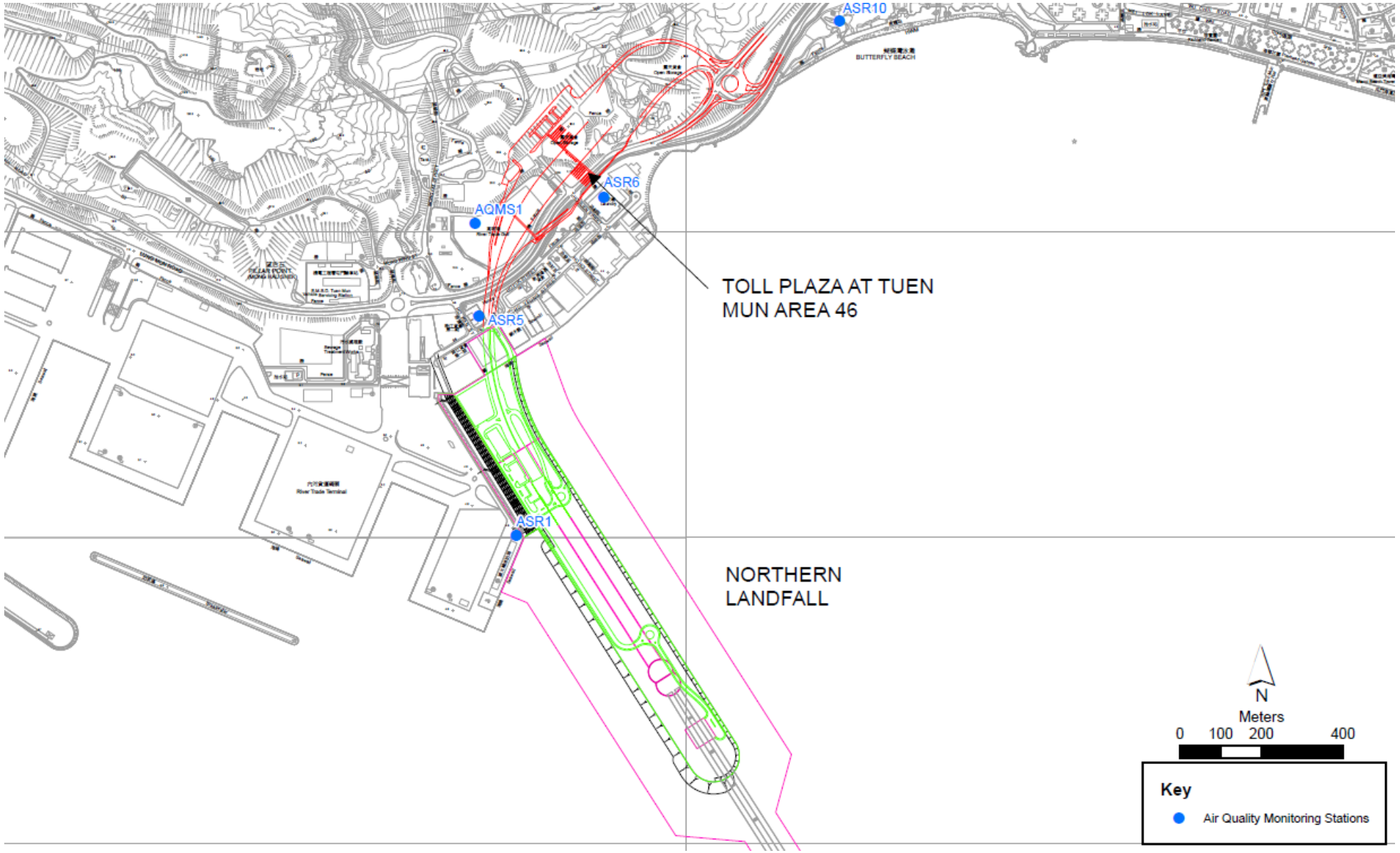


AGREEMENT NO. CE 52/2007(HY)
TUEN MUN – CHEK LAP KOK LINK – INVESTIGATION

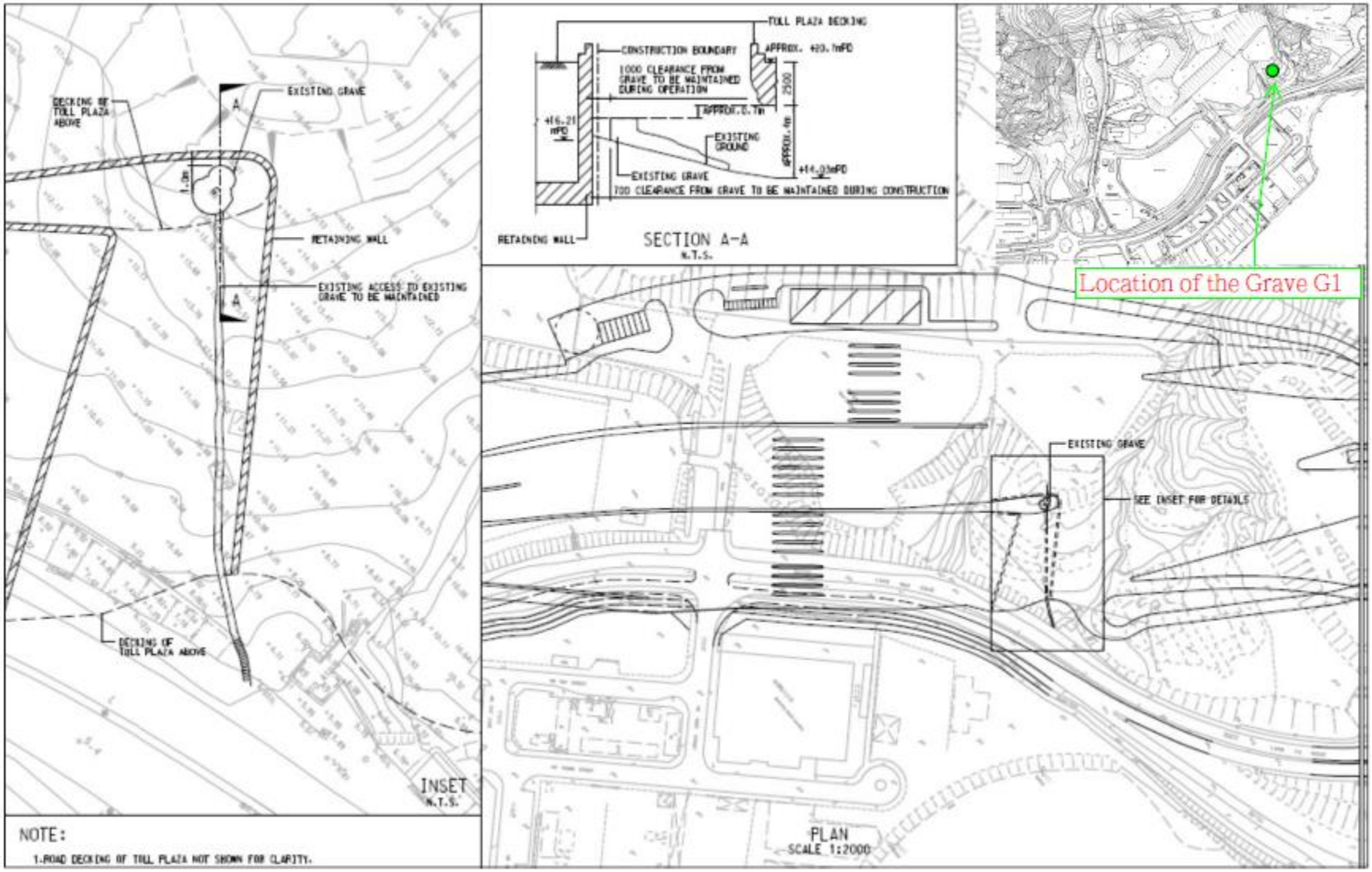
REPRESENTATIVE AIR SENSITIVE RECEIVERS

SCALE	1:10 000	DATE	

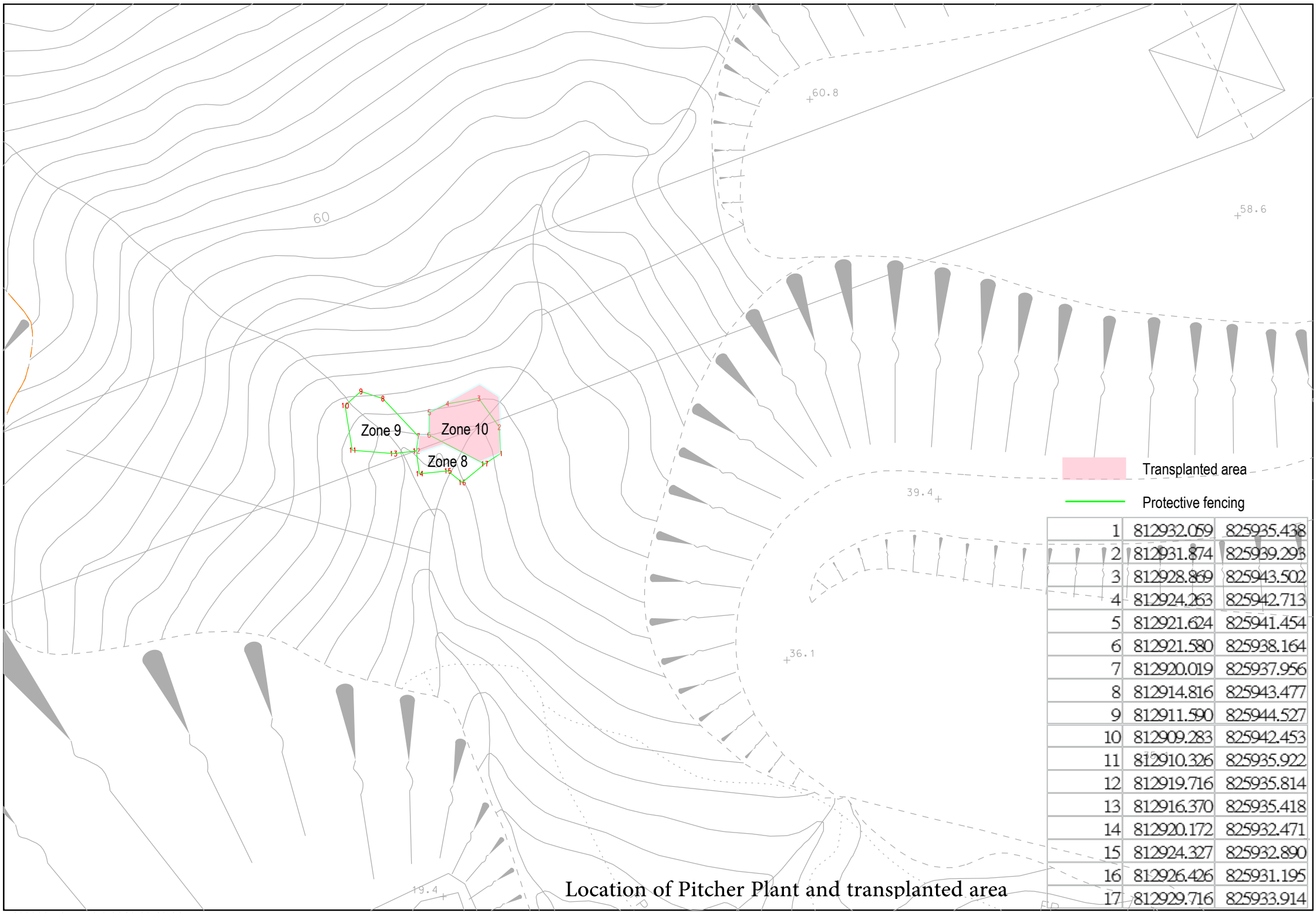
Plotting By:7/27/2009
PLOT SCALE: #SCALE$SHORT$



Air Quality Monitoring Location



Location of the Grave G1



1	812932.059	825935.438
2	812931.874	825939.293
3	812928.869	825943.502
4	812924.263	825942.713
5	812921.624	825941.454
6	812921.580	825938.164
7	812920.019	825937.956
8	812914.816	825943.477
9	812911.590	825944.527
10	812909.283	825942.453
11	812910.326	825935.922
12	812919.716	825935.814
13	812916.370	825935.418
14	812920.172	825932.471
15	812924.327	825932.890
16	812926.426	825931.195
17	812929.716	825933.914

Location of Pitcher Plant and transplanted area

R160908MC.dgn 9/9/2016 10:46:14

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

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

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

Appendix G

Monitoring Schedule

Impact Monitoring Schedule for March 2017

Date		Landfill Gas Monitoring	Landscape and Visual Monitoring
Wed	1-March-17	✓	
Thu	2-March-17	✓	
Fri	3-March-17	✓	✓
Sat	4-March-17	✓	
Sun	5-March-17		
Mon	6-March-17	✓	
Tue	7-March-17	✓	
Wed	8-March-17	✓	
Thu	9-March-17	✓	
Fri	10-March-17	✓	✓
Sat	11-March-17	✓	
Sun	12-March-17		
Mon	13-March-17	✓	
Tue	14-March-17	✓	
Wed	15-March-17	✓	
Thu	16-March-17	✓	
Fri	17-March-17	✓	✓
Sat	18-March-17	✓	
Sun	19-March-17		
Mon	20-March-17	✓	
Tue	21-March-17	✓	
Wed	22-March-17	✓	
Thu	23-March-17	✓	
Fri	24-March-17	✓	✓
Sat	25-March-17	✓	
Sun	26-March-17		
Mon	27-March-17	✓	
Tue	28-March-17	✓	
Wed	29-March-17	✓	
Thu	30-March-17	✓	
Fri	31-March-17	✓	✓

✓	Monitoring Day
	Sunday or Public Holiday

Impact Monitoring Schedule for April 2017

Date		Landfill Gas Monitoring	Landscape and Visual Monitoring
Sat	1-April-17	✓	
Sun	2-April-17		
Mon	3-April-17	✓	
Tue	4-April-17		
Wed	5-April-17	✓	
Thu	6-April-17	✓	
Fri	7-April-17	✓	✓
Sat	8-April-17	✓	
Sun	9-April-17		
Mon	10-April-17	✓	
Tue	11-April-17	✓	
Wed	12-April-17	✓	
Thu	13-April-17	✓	✓
Fri	14-April-17		
Sat	15-April-17		
Sun	16-April-17		
Mon	17-April-17		
Tue	18-April-17	✓	
Wed	19-April-17	✓	
Thu	20-April-17	✓	
Fri	21-April-17	✓	✓
Sat	22-April-17	✓	
Sun	23-April-17		
Mon	24-April-17	✓	
Tue	25-April-17	✓	
Wed	26-April-17	✓	
Thu	27-April-17	✓	
Fri	28-April-17	✓	✓
Sat	29-April-17	✓	
Sun	30-April-17		

✓	Monitoring Day
	Sunday or Public Holiday

Appendix H

Calibration Certificates of Monitoring Equipment

CERTIFICATION OF CALIBRATION

Date Of Calibration: 13-Jul-2016 **Certificate Number:** G502306_2/16764

UKAS CALIBRATION 4533

Geotech

ISSUED BY: GEOTECHNICAL INSTRUMENTS (UK) LTD

Customer: **Fugro Geotechnical Services Ltd**

Units 6, 8-11 10/F Worldwide Industrial Centre 43-47 Shan Mei Street
Fo Tan Sha Tln, N.T. HONG KONG

Description: Gas Analyser

Model: BIOGAS 5000

Serial Number: G502306

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.1	5.0	0.41
15.0	14.9	0.64
50.0	49.4	0.94

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.1	4.9	0.43
15.1	14.8	0.70
50.0	49.9	1.1

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.4	21.5	0.31

The inwards assessment was carried out 11-Jul-2016.
The maximum adjustment is larger than the inwards assessment uncertainty.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 31.7 °C ± 1.5 °C

O2 reading recorded at : 22.0 °C ± 1.5 °C

Barometric Pressure : 1011 mbar ± 3 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Geotechnical Instruments (UK) Ltd
Sovereign House, Queensway, Leamington Spa, Warwickshire, CV31 3JR
geotechuk.com service@geotech.co.uk +44 (0)1926 338111

CERTIFICATION OF CALIBRATION

Date Of Calibration: 13-Jul-2016 **Certificate Number**: G502306_2/16764

4533

ISSUED BY: GEOTECHNICAL INSTRUMENTS (UK) LTD

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS Accredited results:

Barometer (mbar)	
Reference	**Instrument Reading**
1011	1011

Approved by Signatory

Dawn Hemings

Laboratory Inspection

Geotechnical Instruments (UK) Ltd
Sovereign House, Queensway, Leamington Spa, Warwickshire, CV31 3JR
geotechuk.com service@geotech.co.uk +44 (0)1926 338111

Instrument Service Report

Unit Type: BIOGAS 5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G502306	BM5K0000-000	14-Jul-2016	13-Jul-2017	Fugro Geotechnical Services Ltd

Actions/Investigation Description	Result	Comments
Serial Number Check	Yes	
Full Automatic Calibration	Pass	
Serial Comms Test (USB)	Pass	
Inward Gas Check Performed?	Yes	
Service history of instrument reviewed	Yes	
Inwards gas check data reviewed	Yes	
Instrument turns on	Pass	
Customer specific requirements observed and reported fault(s) acknowledged	N/A	
Backlight operates correctly	Yes	
External visual inspection performed	Pass	
Instrument has latest software	Retest Passed	
Internal visual inspection performed	Pass	
Chemical sensor(s) replaced	N/A	
O2 sensor replaced	No	
All screws tightened to correct torque	Yes	
All connectors are secure	Pass	

Instrument Service Report

Unit Type: BIOGAS 5000	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: G502306	BM5K0000-000	14-Jul-2016	13-Jul-2017	Fugro Geotechnical Services Ltd

Actions/Investigation Description	Result	Comments
Check diagnostic channels	Pass	
Case compression test	Pass	
Impact and stability test	Pass	
Pressure transducer test(s) as per user operation	Pass	
Final visual inspection on instrument	Pass	
Case assembly closed and screws tightened to correct torque	Yes	
Response to customer's reported comments	NA	
PTFE filters replaced	Yes	
Pump flow greater than 550 ml/min	Pass	
Automated instrument pressure system test (leak test)	Pass	
Pump vacuum greater than -400 mb and flow fails	Pass	
Temperature probe tested	Pass	
Chemical cells calibrated - refer to results on Calibration Certificate	NA	

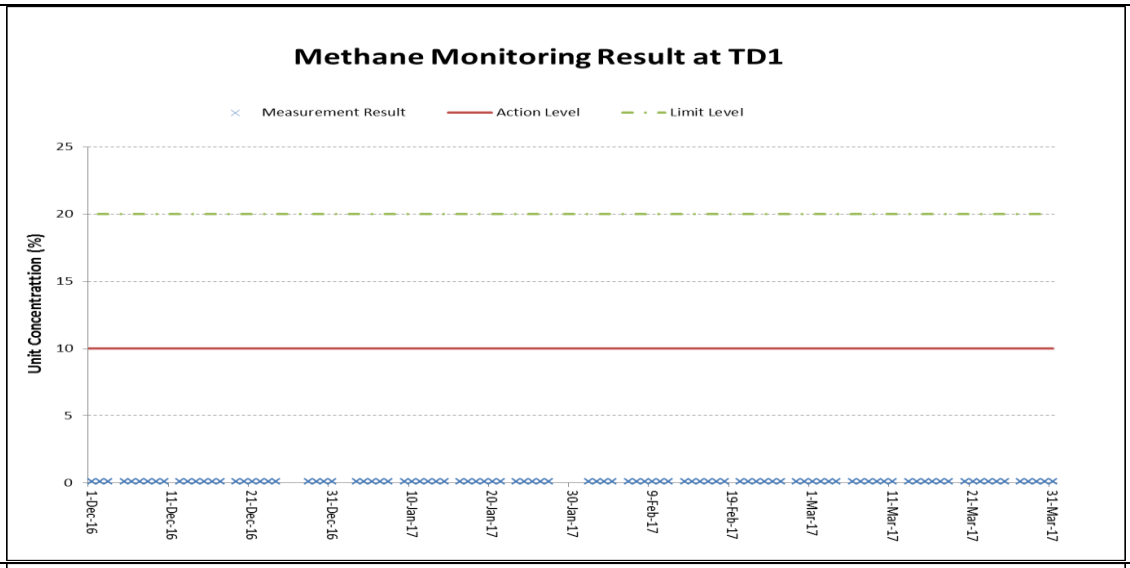
Customer Comments

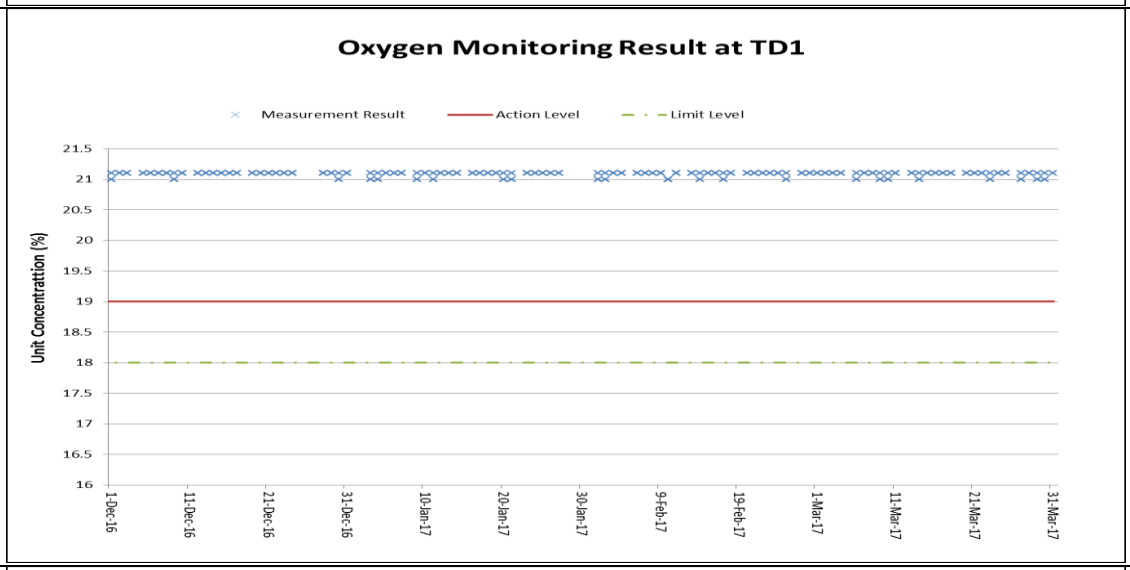
Returned for full service and calibration.

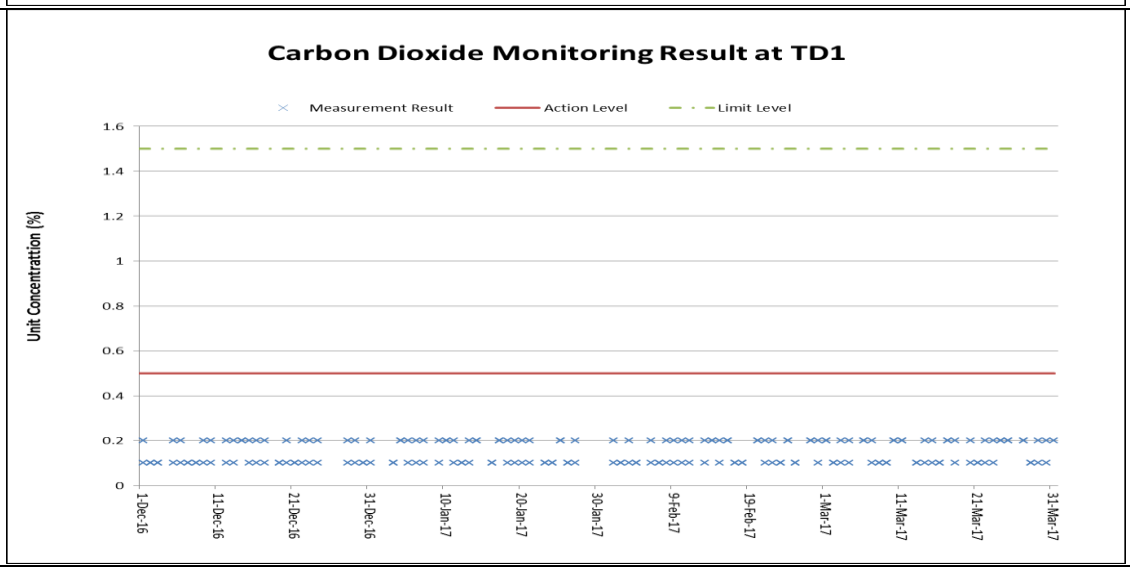
Service Details:		Service Engineer:	Calibration Engineer:	Approved By:	Signature:
Service Scheme	☐	Mustafa Ghalaboun	Suk Balrey	Dawn Hemings	
Standard Service	✓				

Appendix I

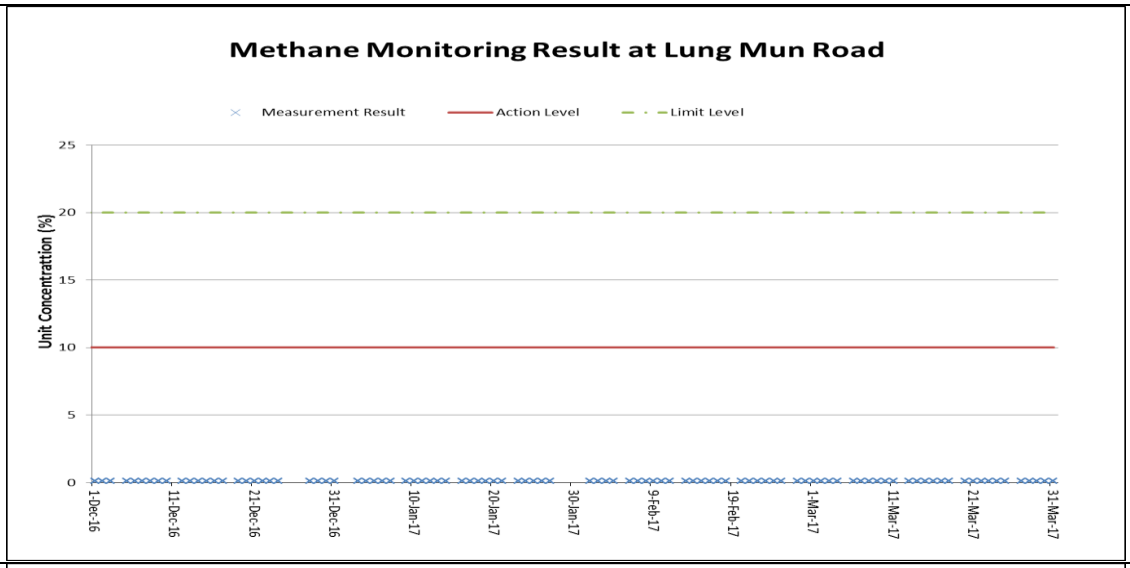
Landfill Gas Monitoring Results and Graphical Plots

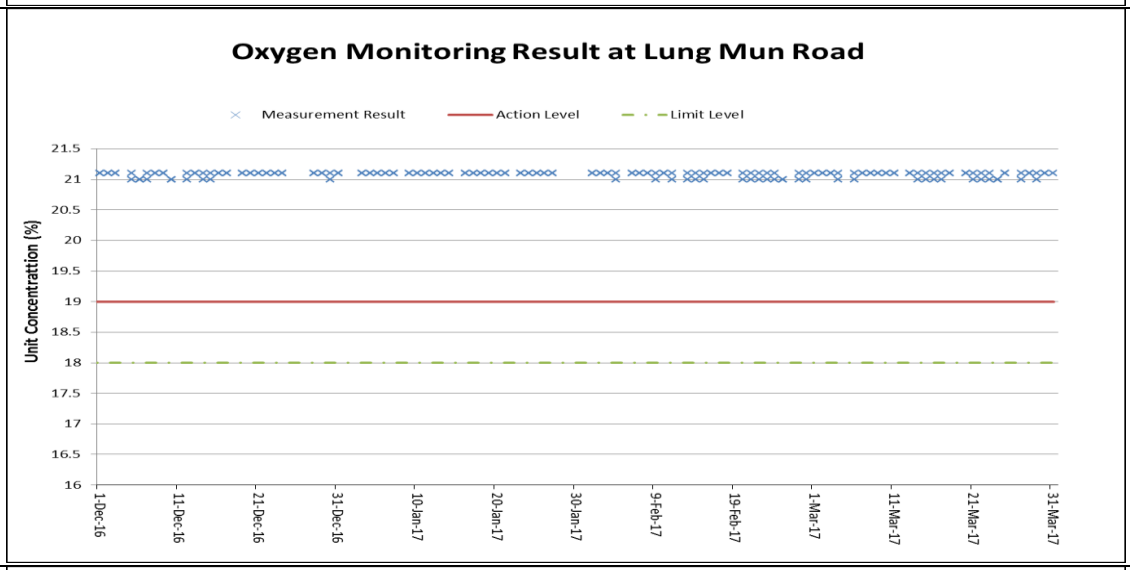


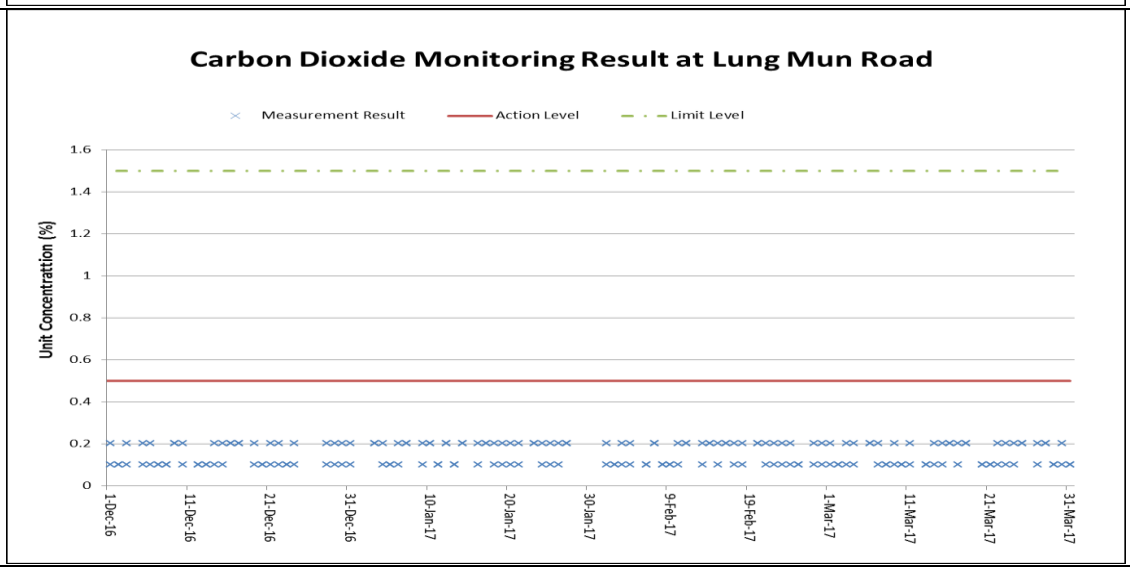




Annotation:
During 1 to 31 March 2017, major construction activity at TD1 and the specified works included excavation, stitching, blinding, formworking, steel-fixing and concreting. The weather condition varied from sunny to rainy. The monitoring data was provided by the Contractor followed to their QA/QC control.







Annotation:
During 1 to 31 March 2017, major construction activity at Lung Mun Road and the specified works included excavation, blinding, formworking, steel-fixing and concreting. The weather condition varied from sunny to rainy. The monitoring data was provided by the Contractor followed to their QA/QC control.

Landfill Gas Monitoring Results (TD1)

Monitoring Location	Date	Time	Weather	Temperature (°C)	Methane (%)			Oxygen (%)			Carbon Dioxide (%)		
					Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level
TD1	1/3/2017	8:00	Fine	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	1/3/2017	14:00		23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	2/3/2017	8:00	Fine	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	2/3/2017	14:00		24	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	3/3/2017	8:00	Fine	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	3/3/2017	14:00		20	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	4/3/2017	8:00	Fine	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	4/3/2017	14:00		22	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	6/3/2017	8:00	Cloudy	18	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	6/3/2017	14:00		24	0.1	10	20	21	19	18	0.2	0.5	1.5
	7/3/2017	8:00	Cloudy	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	7/3/2017	14:00		21	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	8/3/2017	8:00	Rain	15	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	8/3/2017	14:00		17	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	9/3/2017	8:00	Rain	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	9/3/2017	14:00		20	0.1	10	20	21	19	18	0.1	0.5	1.5
	10/3/2017	8:00	Rain	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	10/3/2017	14:00		19	0.1	10	20	21	19	18	0.2	0.5	1.5
	11/3/2017	8:00	Rain	16	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	11/3/2017	14:00		19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	13/3/2017	8:00	Sunny	19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	13/3/2017	14:00		25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	14/3/2017	8:00	Rain	17	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	14/3/2017	14:00		22	0.1	10	20	21	19	18	0.1	0.5	1.5
	15/3/2017	8:00	Rain	16	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	15/3/2017	14:00		18	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	16/3/2017	8:00	Cloudy	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	16/3/2017	14:00		19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	17/3/2017	8:00	Cloudy	17	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	17/3/2017	14:00		21	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	18/3/2017	8:00	Hazy	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	18/3/2017	14:00		20	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	20/3/2017	8:00	Cloudy	19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	20/3/2017	14:00		27	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	21/3/2017	8:00	Cloudy	19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	21/3/2017	14:00		27	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	22/3/2017	8:00	Cloudy	18	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	22/3/2017	14:00		20	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	23/3/2017	8:00	Hazy	19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	23/3/2017	14:00		25	0.1	10	20	21	19	18	0.1	0.5	1.5
	24/3/2017	8:00	Cloudy	19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	24/3/2017	14:00		23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	25/3/2017	8:00	Cloudy	16	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	25/3/2017	14:00		23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	27/3/2017	8:00	Hazy	16	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	27/3/2017	14:00		21	0.1	10	20	21	19	18	0.2	0.5	1.5
	28/3/2017	8:00	Cloudy	18	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	28/3/2017	14:00		25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	29/3/2017	8:00	Rain	20	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	29/3/2017	14:00		23	0.1	10	20	21	19	18	0.1	0.5	1.5
	30/3/2017	8:00	Cloudy	21	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	30/3/2017	14:00		23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	31/3/2017	8:00	Rain	19	0.1	10	20	21	19	18	0.1	0.5	1.5
	31/3/2017	14:00		17	0.1	10	20	21.1	19	18	0.2	0.5	1.5

Remark:

Parameter	Criteria	Measurement
Oxygen	Action Level	< 19%
	Limit Level	< 18%
Methane	Action Level	> 10% LEL (> 0.5% v/v)
	Limit Level	> 20% LEL (>1% v/v)
Carbon Dioxide	Action Level	> 0.5%
	Limit Level	> 1.5%

Landfill Gas Monitoring Results (Lung Mun Road)

Monitoring Location	Date	Time	Weather	Temperature (°C)	Methane (%)			Oxygen (%)			Carbon Dioxide (%)		
					Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level
Lung Mun Road	1/3/2017	8:20	Fine	16	0.1	10	20	21	19	18	0.1	0.5	1.5
	1/3/2017	14:20		23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	2/3/2017	8:20	Fine	17	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	2/3/2017	14:20		24	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	3/3/2017	8:20	Fine	16	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	3/3/2017	14:20		20	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	4/3/2017	8:20	Fine	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	4/3/2017	14:20		22	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	6/3/2017	8:20	Cloudy	18	0.1	10	20	21	19	18	0.2	0.5	1.5
	6/3/2017	14:20		24	0.1	10	20	21	19	18	0.2	0.5	1.5
	7/3/2017	8:20	Cloudy	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	7/3/2017	14:20		21	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	8/3/2017	8:20	Rain	15	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	8/3/2017	14:20		17	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	9/3/2017	8:20	Rain	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	9/3/2017	14:20		20	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	10/3/2017	8:20	Rain	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	10/3/2017	14:20		19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	11/3/2017	8:20	Rain	16	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	11/3/2017	14:20		19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	13/3/2017	8:20	Sunny	19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	13/3/2017	14:20		25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	14/3/2017	8:20	Rain	17	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	14/3/2017	14:20		22	0.1	10	20	21	19	18	0.2	0.5	1.5
	15/3/2017	8:20	Rain	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	15/3/2017	14:20		18	0.1	10	20	21	19	18	0.2	0.5	1.5
	16/3/2017	8:20	Cloudy	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	16/3/2017	14:20		19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	17/3/2017	8:20	Cloudy	17	0.1	10	20	21	19	18	0.2	0.5	1.5
	17/3/2017	14:20		21	0.1	10	20	21	19	18	0.1	0.5	1.5
	18/3/2017	8:20	Hazy	17	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	18/3/2017	14:20		20	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	20/3/2017	8:20	Cloudy	19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	20/3/2017	14:20		27	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	21/3/2017	8:20	Cloudy	19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	21/3/2017	14:20		27	0.1	10	20	21	19	18	0.1	0.5	1.5
	22/3/2017	8:20	Cloudy	18	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	22/3/2017	14:20		20	0.1	10	20	21	19	18	0.1	0.5	1.5
	23/3/2017	8:20	Hazy	19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	23/3/2017	14:20		25	0.1	10	20	21	19	18	0.2	0.5	1.5
	24/3/2017	8:20	Cloudy	19	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	24/3/2017	14:20		23	0.1	10	20	21	19	18	0.1	0.5	1.5
	25/3/2017	8:20	Cloudy	16	0.1	10	20	21	19	18	0.2	0.5	1.5
	25/3/2017	14:20		23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	27/3/2017	8:20	Hazy	16	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	27/3/2017	14:20		21	0.1	10	20	21	19	18	0.2	0.5	1.5
	28/3/2017	8:20	Cloudy	18	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	28/3/2017	14:20		25	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	29/3/2017	8:20	Rain	20	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	29/3/2017	14:20		23	0.1	10	20	21	19	18	0.1	0.5	1.5
	30/3/2017	8:20	Cloudy	21	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	30/3/2017	14:20		23	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	31/3/2017	8:20	Rain	19	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	31/3/2017	14:20		17	0.1	10	20	21.1	19	18	0.1	0.5	1.5

Remark:

Parameter	Criteria	Measurement
Oxygen	Action Level	< 19%
	Limit Level	< 18%
Methane	Action Level	> 10% LEL (> 0.5% v/v)
	Limit Level	> 20% LEL (>1% v/v)
Carbon Dioxide	Action Level	> 0.5%
	Limit Level	> 1.5%

Appendix J

Investigation Report for Exceedance

(Not Used)

Appendix K

Checklist for Landscape and Visual Monitoring

Contract No. HY/2013/12

Tuen Mun – Chek Lap Kok Link – Northern Connection Toll Plaza and Associated Works

Landscape and Visual Checklist

Monitoring Date: 3rd March 2017

Item	Environmental Protection Measures	Location/ Timing	Implementation Agent	Status				Remarks
				A	UA	IR	NA	
1	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage)	All areas / During construction	Design Consultant/ Contractor	√				
2	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	All areas / During construction	Design Consultant/ Contractor				√	Tree Transplanting Specification has been specified in P.S., no transplantation works has been carried out at this stage.
3	Hillside and roadside screen planting to proposed roads, associated structures and slope works	All areas / During construction	Design Consultant/ Contractor				√	Construction of roads not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor	√				
5	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works	All areas / During construction	Design Consultant/ Contractor				√	For some area, erection of hoarding was not feasible due to

								the limitation of traffic sight line; water barrier with panel was used to screen works.
6	Control night-time lighting and glare by hooding all lights	All areas / During construction	Design Consultant/ Contractor	√				Only temporary traffic management lighting was applied.
7	Ensure no run-off into water body adjacent to the Project Area	All areas / During construction	Design Consultant/ Contractor	√				
8	Avoidance of excessive height and bulk of buildings and structures	All areas / During construction	Design Consultant/ Contractor				√	No high-rise building would be constructed.
9	Recycle/Reuse all felled trees and vegetation, e.g. mulching	All areas / During construction	Design Consultant/ Contractor	√				Recycle of trees carried out licensed recycler was conducted.
10	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006	All areas / During construction	Design Consultant/ Contractor				√	Compensatory planting will be carry out in later stage of the project.

Legend: A=Acceptable, UA= Unacceptable, IR=Improvement Required, N/A=Not Applicable

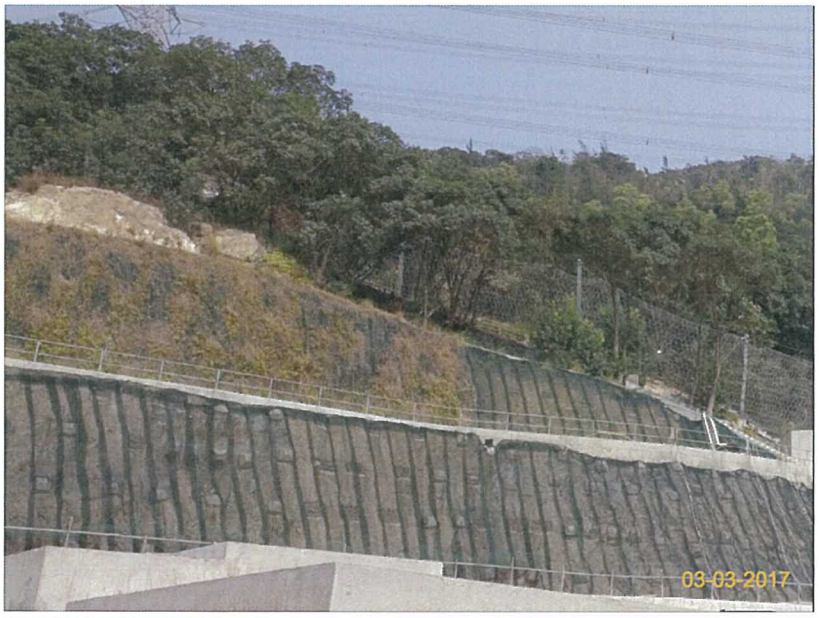
Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 10/04/2017

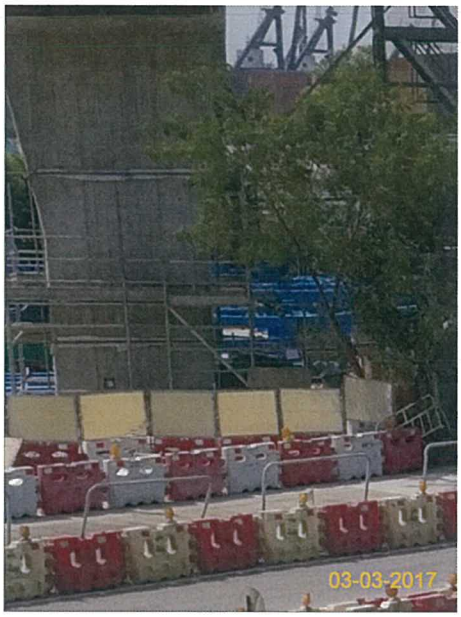
Checked by: (ET) 10/04/2017 **(Date)**

Checked by: (IEC) 11/4/2017 **(Date)**

Item 1. Existing trees on boundary of the Project Area should be protected carefully during construction.



Item 4. Hydro-seeding or sheeting provided at stockpile.



Item 5. Hoarding with panel around works area & Item 6. Temporary traffic management lighting.

Item 7. Ensure no run-off into water body.

Item 9. Recycle of felled trees as facilities to reuse.

Contract No. HY/2013/12

Tuen Mun – Chek Lap Kok Link – Northern Connection Toll Plaza and Associated Works

Landscape and Visual Checklist

Monitoring Date: 10th March 2017

Item	Environmental Protection Measures	Location/ Timing	Implementation Agent	Status				Remarks
				A	UA	IR	NA	
1	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage)	All areas / During construction	Design Consultant/ Contractor	√				
2	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	All areas / During construction	Design Consultant/ Contractor	√				Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17
3	Hillside and roadside screen planting to proposed roads, associated structures and slope works	All areas / During construction	Design Consultant/ Contractor				√	Construction of roads not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor	√				
5	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works	All areas / During construction	Design Consultant/ Contractor				√	For some area, erection of hoarding was not

								the limitation of traffic sight line; water barrier with panel was used to screen works.
6	Control night-time lighting and glare by hooding all lights	All areas / During construction	Design Consultant/ Contractor	√				Only temporary traffic management lighting was applied.
7	Ensure no run-off into water body adjacent to the Project Area	All areas / During construction	Design Consultant/ Contractor	√				
8	Avoidance of excessive height and bulk of buildings and structures	All areas / During construction	Design Consultant/ Contractor				√	No high-rise building would be constructed.
9	Recycle/Reuse all felled trees and vegetation, e.g. mulching	All areas / During construction	Design Consultant/ Contractor	√				Recycle of trees carried out licensed recycler was conducted.
10	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006	All areas / During construction	Design Consultant/ Contractor				√	Compensatory planting will be carry out in later stage of the project.

Legend: A=Acceptable, UA= Unacceptable, IR=Improvement Required, N/A=Not Applicable

Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 10/04/2017

Checked by: (ET) 10/04/2017 **(Date)**

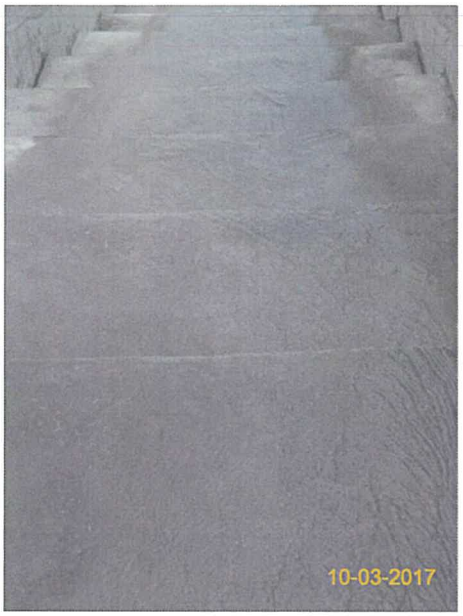
Checked by: (IEC) 11 April 2017 **(Date)**

Item 1. Existing trees on boundary of the Project Area should be protected carefully during construction.

Item 2. Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17

Item 4. Hydro-seeding or sheeting provided at stockpile.

Item 5. Hoarding with panel around works area & Item 6. Temporary traffic management lighting.



Item 7. Ensure no run-off into water body.

Item 9. Recycle of felled trees as facilities to reuse.

Contract No. HY/2013/12

Tuen Mun – Chek Lap Kok Link – Northern Connection Toll Plaza and Associated Works

Landscape and Visual Checklist

Monitoring Date: 17th March 2017

Item	Environmental Protection Measures	Location/ Timing	Implementation Agent	Status				Remarks
				A	UA	IR	NA	
1	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage)	All areas / During construction	Design Consultant/ Contractor	√				
2	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	All areas / During construction	Design Consultant/ Contractor	√				Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17
3	Hillside and roadside screen planting to proposed roads, associated structures and slope works	All areas / During construction	Design Consultant/ Contractor				√	Construction of roads not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor	√				
5	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works	All areas / During construction	Design Consultant/ Contractor				√	For some area, erection of hoarding was not

								the limitation of traffic sight line; water barrier with panel was used to screen works.
6	Control night-time lighting and glare by hooding all lights	All areas / During construction	Design Consultant/ Contractor	√				Only temporary traffic management lighting was applied.
7	Ensure no run-off into water body adjacent to the Project Area	All areas / During construction	Design Consultant/ Contractor	√				
8	Avoidance of excessive height and bulk of buildings and structures	All areas / During construction	Design Consultant/ Contractor				√	No high-rise building would be constructed.
9	Recycle/Reuse all felled trees and vegetation, e.g. mulching	All areas / During construction	Design Consultant/ Contractor	√				Recycle of trees carried out licensed recycler was conducted.
10	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006	All areas / During construction	Design Consultant/ Contractor				√	Compensatory planting will be carry out in later stage of the project.

Legend: A=Acceptable, UA= Unacceptable, IR=Improvement Required, N/A=Not Applicable

Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 10/04/2017

Checked by: (ET) 10/04/2017 **(Date)**

Checked by: (IEC) 11 April 2017 **(Date)**

Item 1. Existing trees on boundary of the Project Area should be protected carefully during construction.

Item 2. Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17

Item 4. Hydro-seeding or sheeting provided at stockpile.

Item 5. Hoarding with panel around works area & Item 6. Temporary traffic management lighting.

Item 7. Ensure no run-off into water body.

Item 9. Recycle of felled trees as facilities to reuse.

Contract No. HY/2013/12

Tuen Mun – Chek Lap Kok Link – Northern Connection Toll Plaza and Associated Works

Landscape and Visual Checklist

Monitoring Date: 24th March 2017

Item	Environmental Protection Measures	Location/ Timing	Implementation Agent	Status				Remarks
				A	UA	IR	NA	
1	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage)	All areas / During construction	Design Consultant/ Contractor	√				
2	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	All areas / During construction	Design Consultant/ Contractor	√				Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17
3	Hillside and roadside screen planting to proposed roads, associated structures and slope works	All areas / During construction	Design Consultant/ Contractor				√	Construction of roads not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor	√				
5	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works	All areas / During construction	Design Consultant/ Contractor				√	For some area, erection of hoarding was not

								the limitation of traffic sight line; water barrier with panel was used to screen works.
6	Control night-time lighting and glare by hooding all lights	All areas / During construction	Design Consultant/ Contractor	√				Only temporary traffic management lighting was applied.
7	Ensure no run-off into water body adjacent to the Project Area	All areas / During construction	Design Consultant/ Contractor	√				
8	Avoidance of excessive height and bulk of buildings and structures	All areas / During construction	Design Consultant/ Contractor				√	No high-rise building would be constructed.
9	Recycle/Reuse all felled trees and vegetation, e.g. mulching	All areas / During construction	Design Consultant/ Contractor	√				Recycle of trees carried out licensed recycler was conducted.
10	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006	All areas / During construction	Design Consultant/ Contractor				√	Compensatory planting will be carry out in later stage of the project.

Legend: A=Acceptable, UA= Unacceptable, IR=Improvement Required, N/A=Not Applicable

Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 10/04/2017

Checked by: (ET) 10/04/2017 (Date)

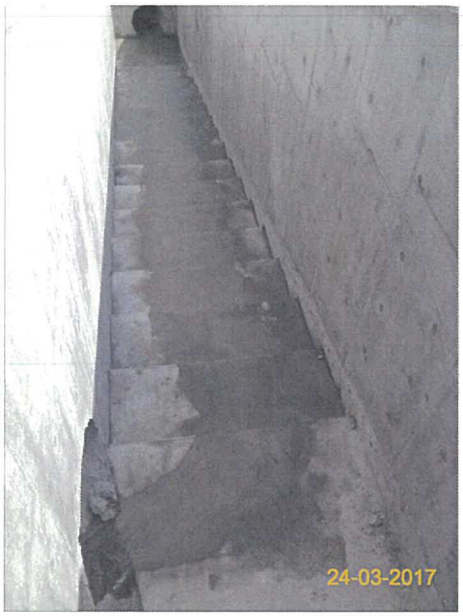
Checked by: (IEC) 11/4/2017 (Date)

Item 1. Existing trees on boundary of the Project Area should be protected carefully during construction.

Item 2. Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17

Item 4. Hydro-seeding or sheeting provided at stockpile.

Item 5. Hoarding with panel around works area & Item 6. Temporary traffic management lighting.



Item 7. Ensure no run-off into water body.

Item 9. Recycle of felled trees as facilities to reuse.

Contract No. HY/2013/12

Tuen Mun – Chek Lap Kok Link – Northern Connection Toll Plaza and Associated Works

Landscape and Visual Checklist

Monitoring Date: 31st March 2017

Item	Environmental Protection Measures	Location/ Timing	Implementation Agent	Status				Remarks
				A	UA	IR	NA	
1	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage)	All areas / During construction	Design Consultant/ Contractor	√				
2	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	All areas / During construction	Design Consultant/ Contractor	√				Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17
3	Hillside and roadside screen planting to proposed roads, associated structures and slope works	All areas / During construction	Design Consultant/ Contractor				√	Construction of roads not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor	√				
5	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works	All areas / During construction	Design Consultant/ Contractor				√	For some area, erection of hoarding was not

								the limitation of traffic sight line; water barrier with panel was used to screen works.
6	Control night-time lighting and glare by hooding all lights	All areas / During construction	Design Consultant/ Contractor	√				Only temporary traffic management lighting was applied.
7	Ensure no run-off into water body adjacent to the Project Area	All areas / During construction	Design Consultant/ Contractor	√				
8	Avoidance of excessive height and bulk of buildings and structures	All areas / During construction	Design Consultant/ Contractor				√	No high-rise building would be constructed.
9	Recycle/Reuse all felled trees and vegetation, e.g. mulching	All areas / During construction	Design Consultant/ Contractor	√				Recycle of trees carried out licensed recycler was conducted.
10	Compensatory tree planting shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006	All areas / During construction	Design Consultant/ Contractor				√	Compensatory planting will be carry out in later stage of the project.

Legend: A=Acceptable, UA= Unacceptable, IR=Improvement Required, N/A=Not Applicable

Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 10/04/2017

Checked by: (ET) 10/04/2017 **(Date)**

Checked by: (IEC) 11/4/2017 **(Date)**

Item 1. Existing trees on boundary of the Project Area should be protected carefully during construction.

Item 2. Tree Transplanting works scheduled in May 2017, Root pruning and crown thinning works has been commenced on 8-Mar-17

Item 4. Hydro-seeding or sheeting provided at stockpile.

Item 5. Hoarding with panel around works area & Item 6. Temporary traffic management lighting.

Item 7. Ensure no run-off into water body.

Item 9. Recycle of felled trees as facilities to reuse.

Appendix L

Monthly Summary Waste Flow Table

Appendix A –Monthly Waste Flow Table

Monthly Summary Waste Flow Table for 2017 (year)

Month		Annual Quantities of Inert C&D Materials Generated Monthly					Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	13.334	0.000	4.543	7.512	1.062	0.000	0.000	0.000	0.000	0.000	0.217
Feb	14.323	0.000	1.066	10.617	2.566	0.000	0.000	0.000	0.000	0.000	0.074
Mar	18.707	0.000	2.116	12.844	3.413	0.000	0.000	0.000	0.000	0.000	0.334
Apr											
May											
June											
Sub-total	46.364	0.000	7.725	30.973	7.041	0.000	0.000	0.000	0.000	0.000	0.625
July											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	46.364	0.000	7.725	30.973	7.041	0.000	0.000	0.000	0.000	0.000	0.625

Notes:

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

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

3 Broken concrete for recycling into aggregates.

Appendix M

Environmental Mitigation and Enhancement Measures Implementation Schedule (EMIS)

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		✓

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		✓

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 be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriately qualified person.	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
14.12.2	-	*Safety Measures - Excavation*	Construction Stage	Contractor	EPD/TR8/97 -		Y		✓

		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.			Landfill Gas Hazard Assessment Guidance Note				
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 each working day.	Services & utilities / Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment Guidance Note		Y		✓
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	Construction Stage	Contractor	EPD/TR8/97 - Landfill Gas Hazard Assessment		Y		✓

		posted around the site warning the anger and potential hazards.			Guidance Note				
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		✓
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		✓
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, including trees in contractor's works areas. (Tree protection measures will be detailed at Tree Removal Application stage) (CM1)	All areas/detailed design/ during construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
10.9	7.6	Trees unavoidably affected by the works shall be transplanted where practical. Trees will be	All areas/detailed design/ during	Design Consultant/	TMEIA	Y	Y		NA

		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)	construction	Contractor					
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		NA
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. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006 (CM10)	All areas/detailed design/ during Construction	Design Consultant/ Contractor	TMEIA	Y	Y		NA
10.9	7.6	Re-vegetation of affected woodland/shrubland with	All areas/detailed design/	Design	TMEIA	Y	Y	Y	N/A

		native species (OM1)	during Construction/ post construction	Consultant/ Contractor					
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	N/A
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	N/A
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	N/A
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	N/A
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	✓
Waste									
EIA reference	**EM&A Manual reference**	**Environmental Protection Measures**	**Location/ Timing**	**Implementation Agent**	**Relevant Standard or Requirement**	**Implementation Stages**			**Status**
						D	**C**	**O**	
12.6		The Contractor shall 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	Contract mobilisation	Contractor	TMEIA, Works Branch		Y		✓

		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.			Technical Circular No. 5/99 for the Trip-ticket System for Disposal of Construction and Demolition Material				
12.6		The Contractor shall apply for and obtain the appropriate licenses for the disposal of public fill, chemical waste and effluent discharges.	Contract mobilisation	Contractor	TMEIA, Land (Miscellaneous Provisions) Ordinance (Cap 28); Waste Disposal Ordinance (Cap 354); Dumping at Sea Ordinance (Cap 466); Water Pollution Control Ordinance.		Y		✓
12.6	8.1	Training shall be provided to workers about the concepts of site cleanliness and appropriate waste management procedures including waste reduction, reuse and recycling	Contract mobilisation	Contractor	TMEIA		Y		✓
12.6	8.1	The extent of cutting operation should be optimised where possible. Earth retaining structures and bored pile walls should be proposed to 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 materials should avoid over-ordering and wastage.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
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	All areas / throughout construction period	Contractor	TMEIA		Y		✓

		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.							
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; • 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.	All areas / throughout construction period	Contractor	TMEIA		Y		✓
12.6	8.1	Waste oils, chemicals or solvents shall not be	All areas / throughout	Contractor	TMEIA		Y		✓

		disposed of to drain,	construction period						
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 site audit programme shall be undertaken.	All areas / throughout construction period	Contractor	EM&A Manual		Y		✓
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	All areas/ throughout construction period	Contractor	TM-EIAO		Y		◇

		materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers.							
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

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

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

Appendix N

Cumulative Statistics on Exceedance and Complaint

Table N-1 Statistical Summary of Environmental Exceedance

Reporting Period	Environmental Aspect / Parameter	Environmental Performance	Event Exceedance	
			Reporting Period	Cumulative since project commencement
March 2017	Air Quality – 1-hour TSP	Action Level	0	**4**
		Limit Level	0	0
	Air Quality – 24-hour TSP	Action Level	0	0
		Limit Level	0	0

Table N-2 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
March 2017	0	**7**	**1**	NA	**6**
Cumulative since project commencement	**7**	**7**	**1**	NA	**6**

Table N-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
March 2017	0	0	NA	NA	NA
Cumulative since project commencement	0	0	NA	NA	NA

Table N-4 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
March 2017	0	0	NA	NA	NA
Cumulative since project commencement	0	0	NA	NA	NA

Appendix O

Investigation Report for the Complaint

(Not Used)

Appendix P

Inspection Checklist for Vulnerable to Contaminated Water Discharge

(Not Used)