AUES JOB NO.: TCS00715/14

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

40TH MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT – FEBRUARY 2018

PREPARED FOR
CRBC AND KADEN JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
5 October 2018	TCS00715/14/600/R0406v3	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

RAMBOLL

Ref.: HYDHZMBEEM00_0_6870L.18 08 October 2018

AECOM By Fax (2218 7299) and By Post
Engineer's Representative's Office
No. 8 Mong Fat Street, Tuen Mun,
New Territories, Hong Kong

Attention: Mr. Roger Man

Dear Mr. Man,

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

Contract No. HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works
40th Monthly EM&A Report for February 2018 (EP-354/2009/D)

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Feb. 2018) (AUES reference: TCS00715/14/600/R0406v3 dated 5 Oct. 2018) certified by the ET Leader and provided to us via e-mail on 5 Oct. 2018.

Please be informed that we have no adverse comments on the captioned 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. Tony Pang (By Fax: 3188 6614)
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)
AUES – Mr. T. W. Tam (By Fax: 2959 6079)
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Internal: DY, YH, DF, ENPO Site

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EXECUTIVE SUMMARY

ES01 This is the **40th** Monthly EM&A Report presenting the monitoring results and inspection findings for the period from **1 to 28 February 2018** (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 –**40 events**
- 1-hour TSP of Air Quality Monitoring – **120 events**
- Cultural Heritage Inspection – **4 events**
- Landfill Gas Monitoring – **19 days**
- Landscape & Visual Monitoring – **4 events**
- Environmental Site Inspection – **4 events**

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES03 In the Reporting Period, 2 Action Level exceedances of 1-hour TSP were recorded at ASR1 and ASR5 on 3 February 2018 according to the measurement results by the ET of Contract HY/2012/08. Investigation report (IR) for the exceedances on February 2018 was prepared by the ET were endorsed by IEC and the IRs revealed that the exceedances were not project related. The endorsed investigation reports are included in this monthly EM&A Report. 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	**2**	**0**	**1**	**1**	**NA**
	24-hour TSP	**0**	**0**	**0**	**0**	**NA**

ES04 No noise complaints were received in the Reporting Period.

ES05 Landfill gas monitoring was conducted at the TD1 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 **6th, 13th, 20thand 27th February 2018** and the IEC has attended the joint site inspection on **27th February 2018**. No non-compliance was recorded during the site inspection but **4** 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	**10**	**10**
February 2018	**0**	**10**

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 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.

ES14 Moreover, 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.

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.

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1 INTRODUCTION

1.1 CONTRACT BACKGROUND

1.1.1 CRBC-Kaden Joint Venture (hereafter "CRBC-Kaden JV") is commissioned by the Highways Department (HyD) as the Main Contractor of the Contract No. HY/2013/12 – Northern Connection Toll Plaza and Tunnel Section ((hereafter "the Contract") and this Contract is part of the Tuen Mun – Chek Lap Kok Link (TM-CLK Link Project). TM-CLK Link Project is a Designated Project under 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 **40th** monthly EM&A report presenting the monitoring results and inspection findings for period from **1 to 28 February 2018**.

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*
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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 at 5SE-D/C170; surface drainage on Slope C, D & E and Portion H;
- Parapet construction for Retaining Structure RW_A and Bridge G2;
- Temporary Traffic Arrangement at Lung Mun Road and Lung Fu Road;
- Toll Collector Subway & Associated Works;
- Toll Booth Canopy Construction;
- Road pavement works at +19mPD platform ;
- Bridge G1C and H1C by Formtraveller at Portion F;
- Bridge G1b at Portion F;
- Vehicular Underpass – Cable Trough construction and partition wall construction;
- Retaining Structure TP_G at Portion H;
- Excavation and lateral Support of Construction of Retaining Wall TP_G;
- Backfilling Work of Existing Sewer Culvert between MH1 to MH8;
- Construction of Storage Area at Retaining Wall B

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	Reference/ License No.	Date of Issue	Date of Expiry
1	Air pollution Control (Construction Dust) Regulation	377719	06-08-2014	N/A
2	Chemical Waste Producer Registration - Waste Producers Number	5117422C389301	03-09-2014	N/A
3	Water Pollution Control Ordinance -Variation of Effluent Discharge License	WT00023973-2016	25-10-2017	30-09-2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	7020460	01-08-2014	N/A
5	Extend CNP for Flasework Erection	GW-RW0563-17	26-10-2017	24-02-2018
		GW-RW0066-18	26-02-18	19-05-18
6	Extend CNP for Multiple Task	GW-RW0605-17	25-11-2017	24-05-2018
7	Extent CNP for Tunnel Works	GW-RW0567-17	26-10-2017	22-05-2018
8	CNP for Portion H	GW-RW0568-17	26-10-2017	22-05-2018

No.	Type of Permit/ License	Reference/ License No.	Date of Issue	Date of Expiry
9	CNP for Road Paving Works	GW-RW0044-18	01-02-18	28-04-18

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 **Toll Plaza**
	24-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	Daily every three days	

Condition	Monitoring Parameter	Monitoring Location	Frequency	Monitoring Requirement
				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 1-hour and 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 (**February 2018**).

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, 2 Action Level were recorded at ASR1 and ASR5 on 3 February 2018. 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
3 February 2018	ASR1	1Hr TSP	392 $\mu g/m^3$	Action Level
3 February 2018	ASR5	1Hr TSP	455 $\mu g/m^3$	Action Level

4.4 AIR QUALITY EXCEEDANCE INVESTIGATION

4.4.1 Investigation report (IR) for those exceedances on 3 February 2018 was prepared by the ET were endorsed by IEC and the IR revealed that the exceedances were not project related. The completed investigation report is included in ***Appendix J***.

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 **6th, 13th, 20thand 27th February 2018** 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 **6th, 13th, 20thand 27th February 2018**. 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.

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 **2nd, 9th, 15th and 23th February 2018** by the Registered Landscape Architect.

7.2.2 Most of the landscape works such as planting was not yet commenced, but some transplanting works was commenced on 22 May 2017. 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	No

8.2 LANDFILL GAS MONITORING RESULT

8.2.1 In the Reporting Period, landfill gas monitoring was conducted at the zone TD1 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 ***19*** 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	
			Min	Max
Methane	>10% LEL (>0.5% v/v)	>20% LEL (>1% v/v)	0.1%	0.1%
Oxygen	<19%	<18%	20.8%	21.0%
Carbon Dioxide	>0.5%	>1.5%	0.1%	0.2%

8.2.3 The measurement results shown that slightly methane concentration was detected and oxygen concentration measured was over 19.0 % 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)	0.110	-
Reused in other Projects (Inert) (`000m^3)	0.482	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)	1.036	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)	0.154	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 **6th, 13th, 20thand 27th February 2018**. No non-compliance was noted but **4** observations and **2** reminders were recorded during site inspection. Moreover, ENPO/IEC has attended joint site inspection on **27th February 2018**.

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
6 February 2018	• Drip tray should be provided for chemical storage on-site. (portion J)	• Chemical container without drip tray was removed.
	• Construction water should not discharge into foul sewage. All construction water should divert to the de-silting facilitied and discharge into the assigned discharge point. (Portion J)	• No construction water was pumped into the foul sewage.
	• For the new construction area at Portion F, temporary drainage system should be installed to divert site run-off to proper de-silting facilities prior discharge. (Portion F)	• Not required for reminder.
13 February 2018	• Chemical waste mixed with C&D waste was observed. Chemical waste should be stored in designated area and disposed by license collector. (Portion H)	• Chemical waste and debris was removed.
	• Stagnant water cumulated inside the drip tray should be cleared. (Portion H)	• Stagnant water cumulated inside the drip tray was removed.
20 February 2018	• Nil	• NA
27 February 2018	• Water frequency should be increased to minimize dust impact for the exposed area. (General)	• Not required for reminder.

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 During the dry season, the frequency of inspection for vulnerable to contaminated water discharge was reduced to once per week by the Contractor at **February 2018**. 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*** .

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. However, two exceedances of the environmental performance limit (2 Action Level) were recorded for monitoring programme. Follow up actions have been undertaking by the Contractor to resolve the deficiencies.

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
February 2018	Air Quality - 1-hr TSP	Action Level	**2**	**35**	**37**
		Limit Level	0	**2**	**2**
	Air Quality - 24-hr TSP	Action Level	0	**3**	**3**
		Limit Level	0	**3**	**3**

Table 11-2 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics					
	Frequency	Cumulative	Complaint Nature			
			Air	Noise	Water	Others
February 2018	0	**10**	**3**	**1**	**6**	**2**

Table 11-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
February 2018	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
February 2018	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	• No operation of powered mechanical equipment is allowed during restricted hours from 19:00 to 07:00 on the following day and whole day during Sunday and public holiday without construction noise permit (CNP) • Keep good maintenance of plants • The noisy plants or works provide mobile noise barriers • Shut down the plants when not in use
Waste and Chemical Management	• On-site sorting prior to disposal • Follow requirements and procedures of the "Trip-ticket System" • Predict required quantity of concrete accurately • Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	• The site was generally kept tidy and clean.

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 at 5SE-D/C170; surface drainage on Slope C, D & E and Portion H;
- Parapet construction for Retaining Structure RW_A , Bridge H and Bridge G;
- Temporary Traffic Arrangement at Lung Mun Road and Lung Fu Road;
- Toll Booth Canopy Construction;
- Road pavement works at +19mPD platform ;
- Bridge G1C and H1C by Formtraveller at Portion F;
- Bridge G1b at Portion F;

- Vehicular Underpass – Cable Trough construction and Partition wall construction;
- Retaining Structure TP_G at Portion H;
- Installation of Glazed Lift Shaft for Lift A and B and footbridge; and
- Construction of Storage Area at Retaining Wall B
- Installation of Toll Collector Bridge
- Pile cap construction for RW_E and HAS at Portion F
- Laying Watermain at Portion G

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 **40th** monthly EM&A report presenting the monitoring results and inspection findings for the period of **1** to **28 February 2018**.

13.1.2 There were two exceedances of 1-hour TSP measurements trigger in Action Level at ASR1 and ASR5 on 3 February 2018. NOE was issued to notify all relevant parties. Investigation report (IR) for the exceedances prepared by the ET was endorsed by IEC and the IR revealed that the exceedances were not project related.

13.1.3 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.

13.1.4 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.

13.1.5 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.

13.1.6 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.

13.1.7 Landfill gas monitoring was conducted at the TD1 works area. The monitoring results shown no exceedances were triggered.

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

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

13.1.10 In the Reporting Period, joint site inspection by the RE, ET and the Contractor was carried out on **6th, 13th, 20thand 27th February 2018** and the IEC has attended the joint site inspection on **27th February 2018**. No non-compliance was recorded during the site inspection but **4** observations and **2** reminders were recorded.

13.1.11 In the Reporting Period, Grave G1 of inspection was undertaken on **6th, 13th, 20thand 27th February 2018**. 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

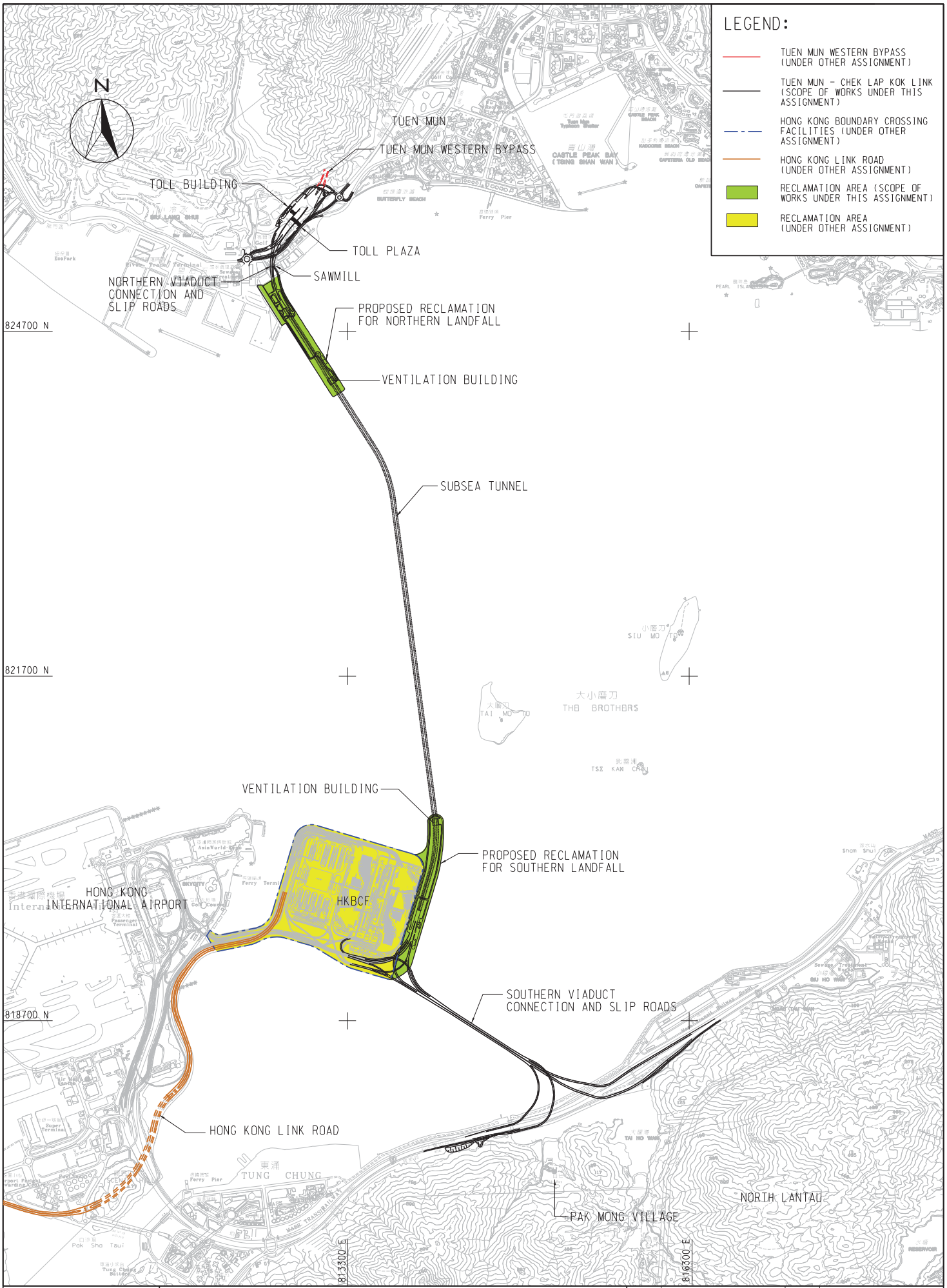
13.2.1 During dry season, air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be fully implemented to reduce construction dust impact as recommended in the EMIS.

13.2.2 Moreover, 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.

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.
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SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

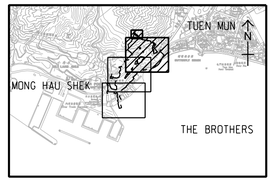
I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核
			CWN
B	MAR. 14	TENDER ADDENDUM NO. 2	CWN
A	FEB. 14	TENDER ADDENDUM NO. 1	CWN
-	JAN. 14	TENDER DRAWING	CWN

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
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SUB-CONSULTANTS 分判工程顧問公司

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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
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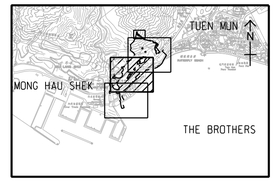
DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖引圖 1 : 50000



PROJECT NO. 項目編號
60240249

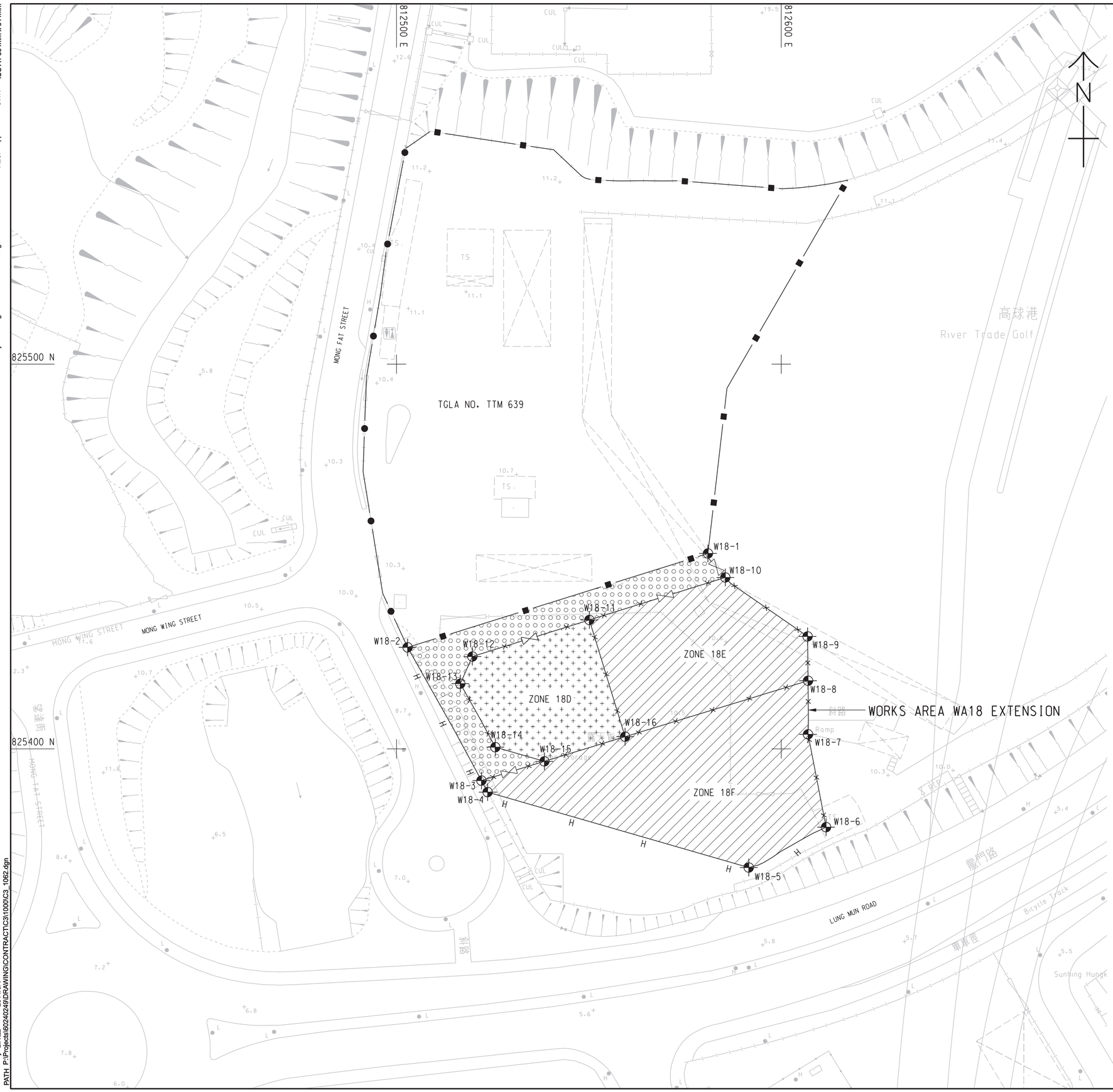
CONTRACT NO. 合約編號
HY/2013/12

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

SHEET 2 OF 3

SHEET NUMBER 圖紙編號
60240249/C3/1052B

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
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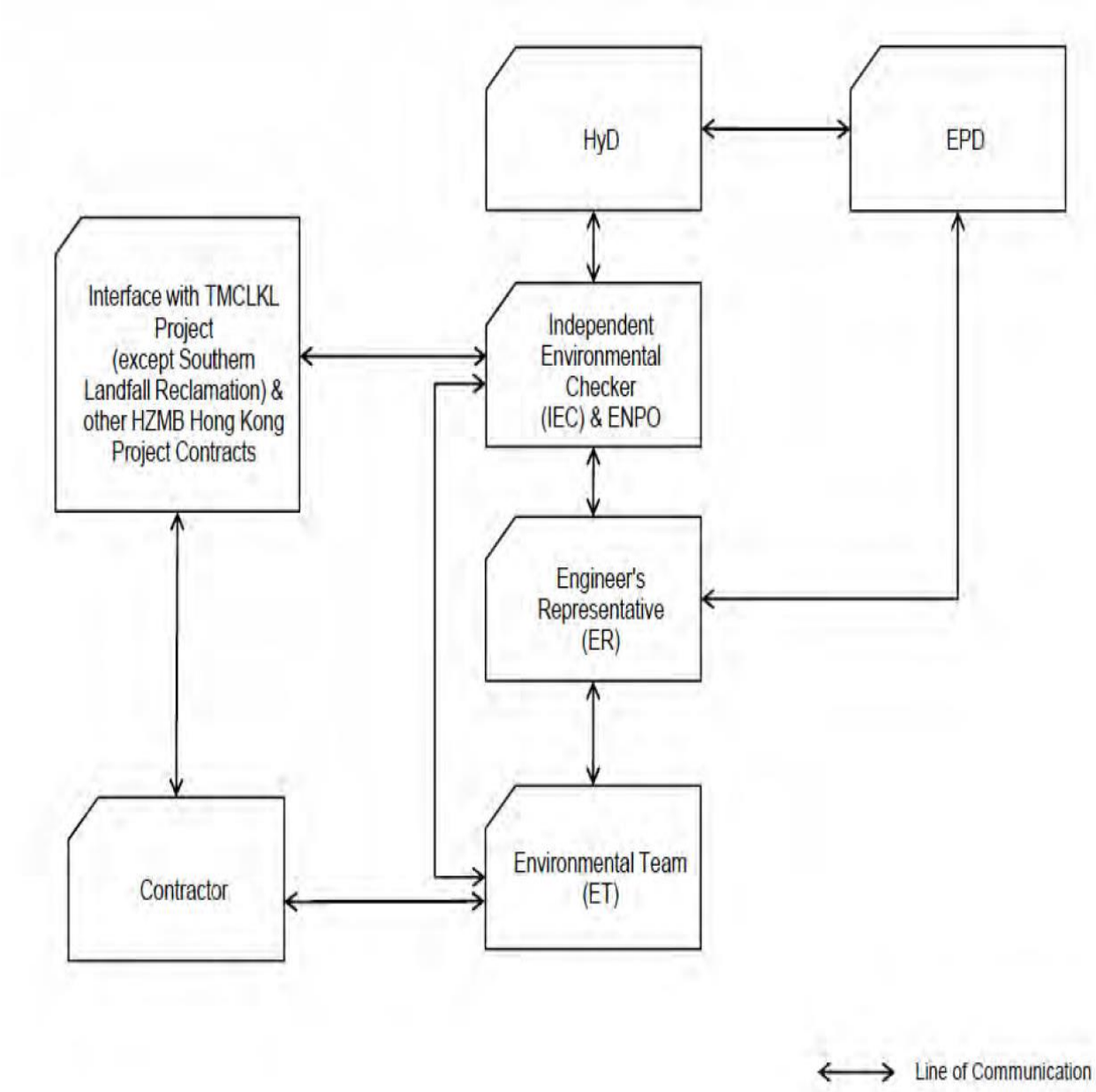
Appendix C

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. Albert Yu	2218 7288	2218 7399
AECOM	Resident Engineer (S&E)	Mr. Kelvin Yeung	22187289	2218 7399
Ramboll	Environmental Project Office (ENPO)	Mr. YH Hui	3465 2850	3465 2899
Ramboll	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. Thomas Tang	2253 8300	2253 8399
CKJV	Environmental Supervisor	Mr. Tommy Law	2253 8300	2253 8399
CKJV	Environmental Supervisor	Mr. Alex Li	2253 8300	2253 8399
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Miss Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079
HKL	Registered Landscape Architect	Kenneth Ng	2866 3903	--

Legend:

HyD (Employer) –Highways Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CKJV (Main Contractor) – CRBC-Kaden Joint Venture

Ramboll (ENPO and IEC) – Ramboll Hong Kong Limited

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

HKL(RLA) – Hong Kong Landscape

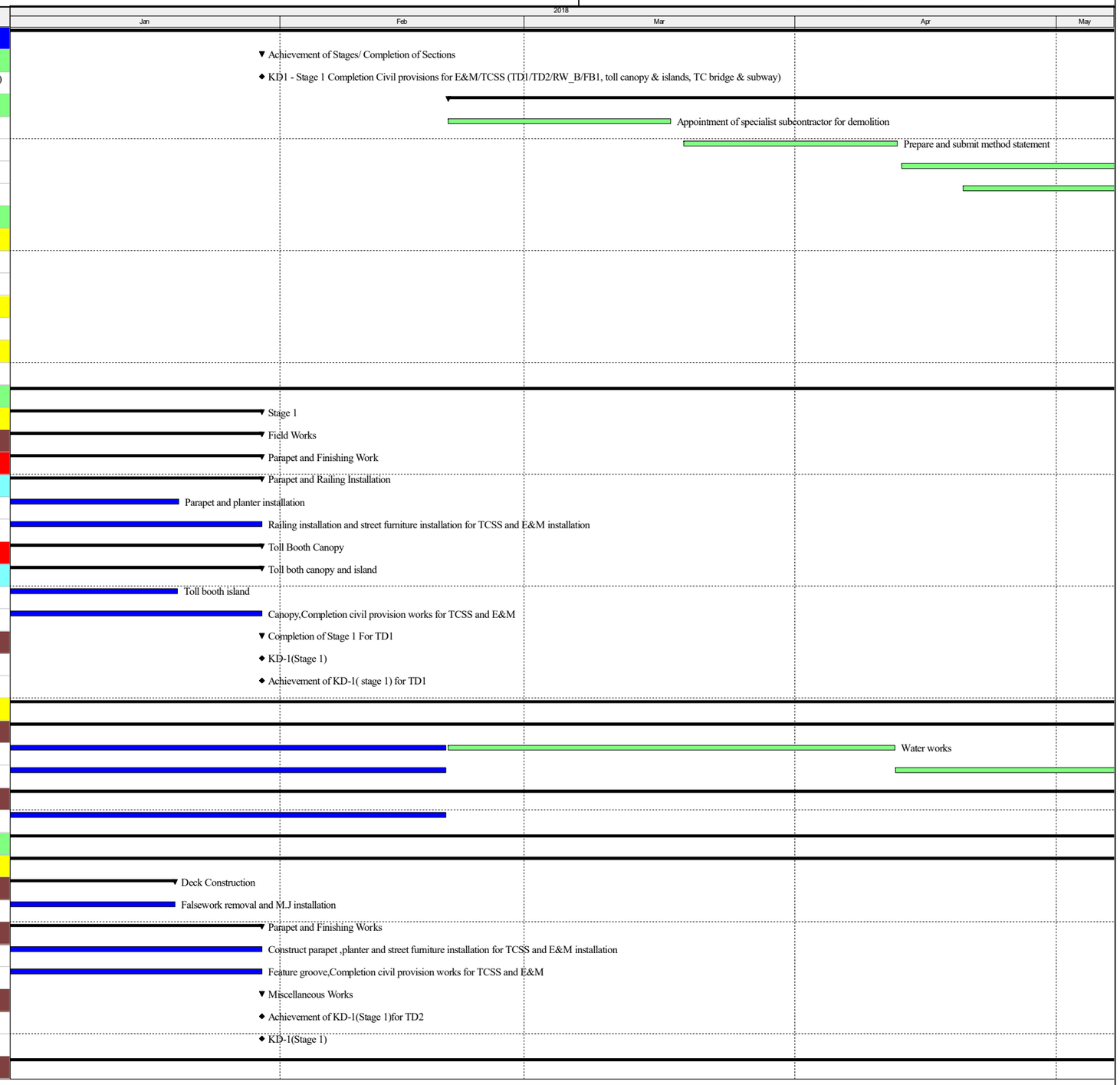
Appendix D

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 Update	
Achievement of Stages/ Completion of Sections	
KD10100	KD1 - Stage 1 Completion Civil provisions for E&M/TCSS (TD1/TD2/RW_B/FB1, toll canopy & islands, TC bridge & subway)
Dismantling of HY/2012/04 Project Office at WA6	
DM10010	Appointment of specialist subcontractor for demolition
DM10020	Prepare and submit method statement
DM10030	Approval of method statement
DM10040	Advance necessary precantionary and protective measure
Instrumentation and Monitoring	
Ground Settlement Marker	
IM10090	Installation of GSM11,GSM45-46(Outside site boundary)
IM10110	Installation of GSM35-36,GSM44,GSM47-50(Portion F)
Vibration Monitroing Point	
IM30020	Installation of VB02(Outside site boundary)
Tiltmeter	
IM40020	Installation of TM02(Outside site boundary)
Toll Plaza Decking TD1-Section 1	
Stage 1	
Field Works	
Parapet and Finishing Work	
Parapet and Railing Installation	
TD120940	Parapet and planter installation
TD120990	Railing installation and street furniture installation for TCSS and E&M installation
Toll Booth Canopy	
Toll both canopy and island	
TD121270	Toll booth island
TD121290	Canopy,Completion civil provision works for TCSS and E&M
Completion of Stage 1 For TD1	
TD120020	KD-1(Stage 1)
TD120010	Achievement of KD-1(stage 1) for TD1
Completion of TD1 in Section 1	
Drainage Works and Water Works	
TD121000	Water works
TD121010	Drainage work
Road pavement and road furniture	
TD121020	Road pavement and remain furniture
Toll Plaza Decking TD2-Section 1	
Field Works	
Deck Construction	
TD220720	Falsework removal and M.J installation
Parapet and Finishing Works	
TD220210	Construct parapet ,planter and street furniture installation for TCSS and E&M installation
TD220230	Feature groove,Completion civil provision works for TCSS and E&M
Miscellaneous Works	
TD220700	Achievement of KD-1(Stage 1)for TD2
TD220730	KD-1(Stage 1)
Completion of TD2	



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

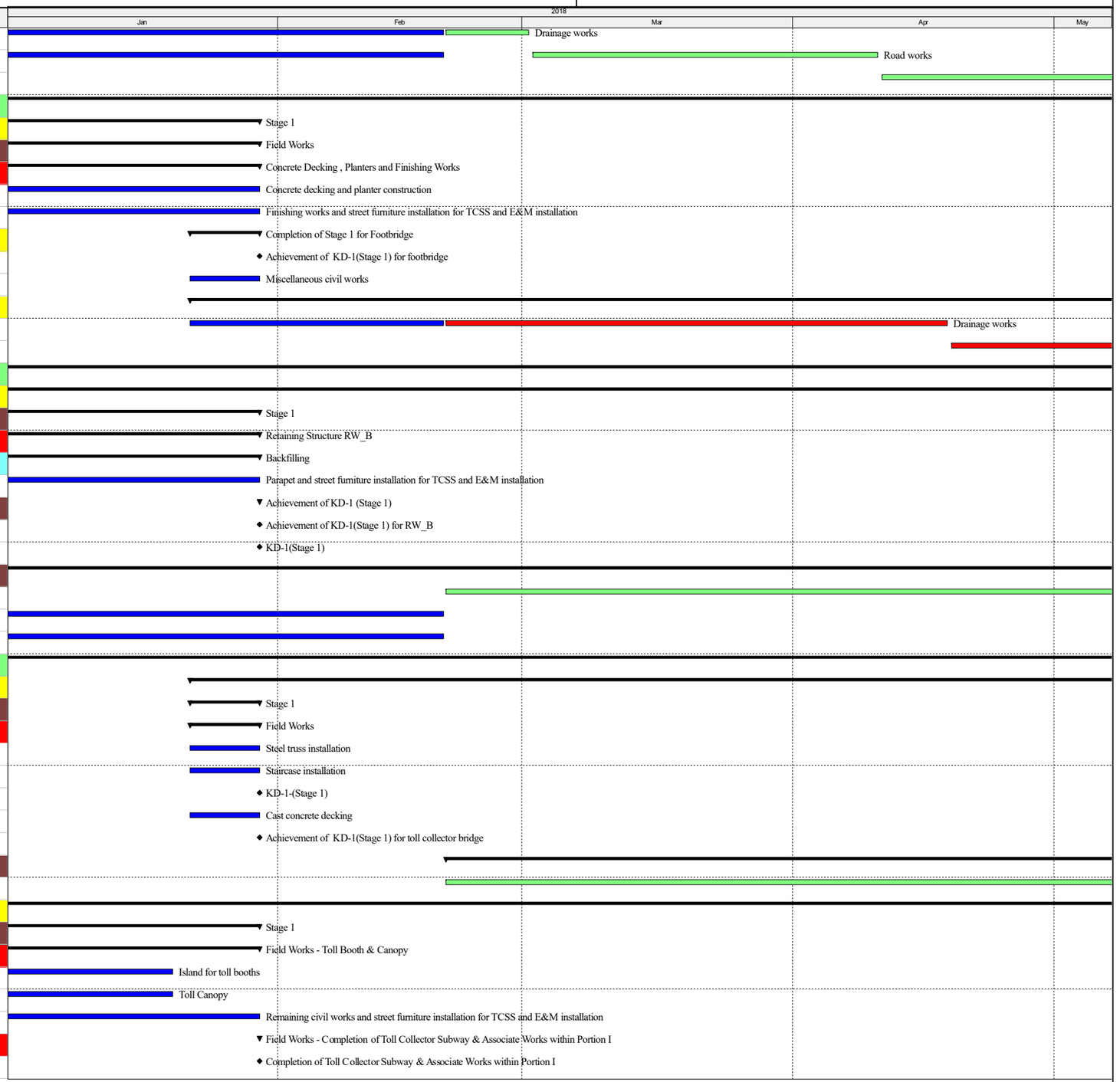
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-02-18	4		

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
TD220010	Drainage works
TD220020	Road works
TD220240	Miscellaneous civil works
Toll Plaza Footbridge-Section 1	
Stage 1	
Field Works	
Concrete Decking , Planters and Finishing Works	
TFB1390	Concrete decking and planter construction
TFB1400	Finishing works and street furniture installation for TCSS and E&M installation
Completion of Stage 1 for Footbridge	
TFB1420	Achievement of KD-1(Stage 1) for footbridge
TFB1410	Miscellaneous civil works
Miscellaneous Works	
TFB1430	Drainage works
TFB1440	Finishing works
Retaining Structure RW_B-Section 1	
Site Formation - Retaining Structure RW_B	
Stage 1	
Retaining Structure RW_B	
Backfilling	
RWB10260	Parapet and street furniture installation for TCSS and E&M installation
Achievement of KD-1 (Stage 1)	
RWB10610	Achievement of KD-1(Stage 1) for RW_B
RWB10620	KD-1(Stage 1)
Achievement of KD-4 (Section 1) for RW_B	
RWB10630	Finishing works including feature wall
RWB10640	Drainage works
RWB10650	Road works
Toll Collector Subway & Associated Works-Section 1	
Toll Collector Bridge (Portion I)-Section 1	
Stage 1	
Field Works	
TCS1280	Steel truss installation
TCS1290	Staircase installation
TCS1322	KD-1-(Stage 1)
TCS1300	Cast concrete decking
TCS1320	Achievement of KD-1(Stage 1) for toll collector bridge
Completion of Toll Collector Bridge in Section 1	
TCS1310	Finishing work,louver works
Toll Collector Subway & Associate Works (Portion I)-Section 1	
Stage 1	
Field Works - Toll Booth & Canopy	
TCS1490	Island for toll booths
TCS1500	Toll Canopy
TCS1520	Remaining civil works and street furniture installation for TCSS and E&M installation
Field Works - Completion of Toll Collector Subway & Associate Works within Portion I	
TCS1530	Completion of Toll Collector Subway & Associate Works within Portion I



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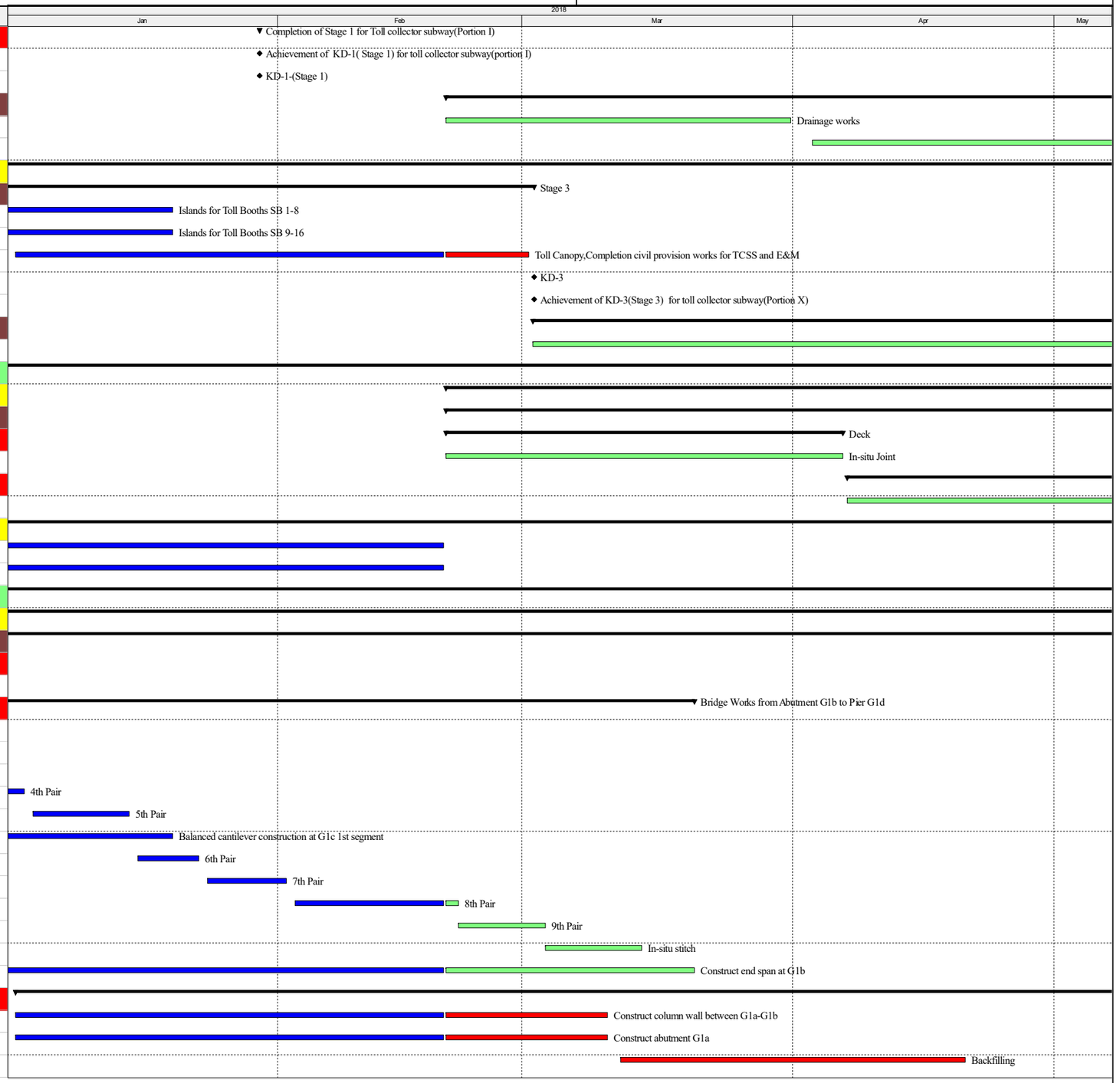
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-02-18	4		

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
	Completion of Stage 1 for Toll collector subway(Portion I)
TCS1540	Achievement of KD-1(Stage 1) for toll collector subway(portion I)
TCS1650	KD-1-(Stage 1)
	Completion of Section 1 for Toll collector subway(Portion I)
TCS1510	Drainage works
TCS1550	Internal finishing works
	Toll Collector Subway (Portion X)-Section 5
	Stage 3
TCS1160	Islands for Toll Booths SB 1-8
TCS1170	Islands for Toll Booths SB 9-16
TCS1180	Toll Canopy,Completion civil provision works for TCSS and E&M
TCS1680	KD-3
TCS1190	Achievement of KD-3(Stage 3) for toll collector subway(Portion X)
	Section 5
TCS1200	Drainage works and street furniture installation for TCSS and E&M installation
	Bridge G2
	Stage 2
	Field Works
	Deck
BG23080	In-situ Joint
	Parapet and Finishing Works
BG23100	Railing installation and street furniture installation for TCSS and E&M installation
	Completion of Bridge G2
BG23110	Drainage works
BG23120	Road work
	Bridge G1
	Stage 2
	Field Works
	Deck Construction from Pier G1d to Pier G2a
BG112792	Deck construction at end Span G2a
	Bridge Works from Abutment G1b to Pier G1d
BG112510	Balanced cantilever construction at G1c 2nd segment
BG112520	2nd Pair
BG112530	3rd Pair
BG112540	4th Pair
BG112550	5th Pair
BG112490	Balanced cantilever construction at G1c 1st segment
BG112560	6th Pair
BG112570	7th Pair
BG112580	8th Pair
BG112582	9th Pair
BG112590	In-situ stitch
BG112080	Construct end span at G1b
	Flexible Approach Structure from Abutment G1b to Pier G1a
BG112650	Construct column wall between G1a-G1b
BG112640	Construct abutment G1a
BG112660	Backfilling



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CRBC - Kaden JV
Three-Month Rolling Programme

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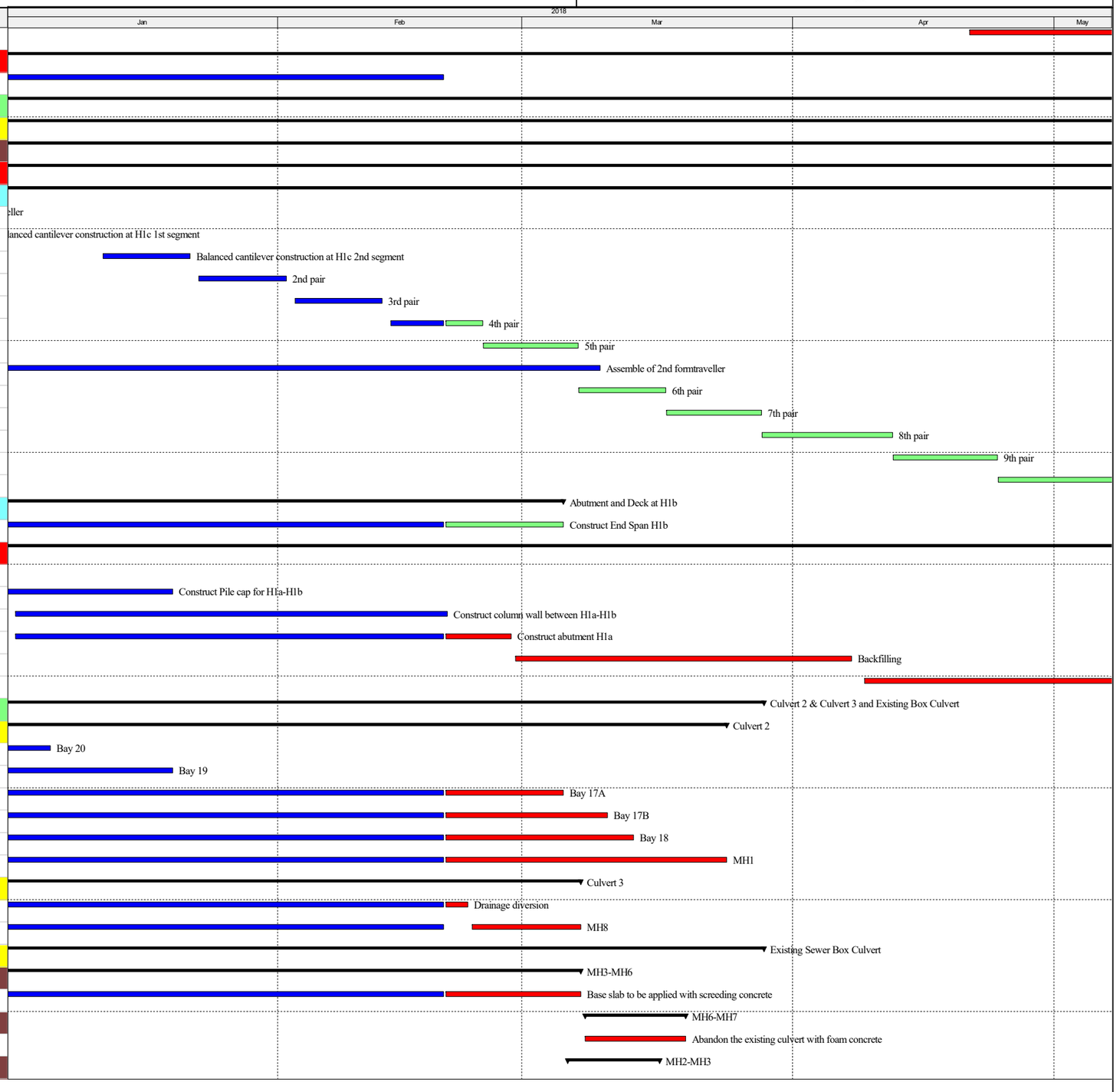
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name
BG112670	Construct slab G1a-G1b
Parapet and Finishing Works	
BG112680	Parapet , railing and street furniture installation for TCSS and E&M installation
Bridge H1-Section 2	
Stage 2	
Field Works	
Bridge Works From Pier H1b to Pier H1d	
Balanced Canitilever Construction at Pier H1c	
BH12260	Assemble of 1st formtraveller
BH12270	Balanced cantilever construction at H1c 1st segment
BH12274	Balanced cantilever construction at H1c 2nd segment
BH12280	2nd pair
BH12290	3rd pair
BH12300	4th pair
BH12310	5th pair
BH12272	Assemble of 2nd formtraveller
BH12320	6th pair
BH12330	7th pair
BH12340	8th pair
BH12430	9th pair
BH12440	In-situ stich
Abutment and Deck at H1b	
BH12630	Construct End Span H1b
Flexible Approach Structure from Abutment H1b to Pier H1a	
BH12465	Loading test
BH12470	Construct Pile cap for H1a-H1b
BH12480	Construct column wall between H1a-H1b
BH12475	Construct abutment H1a
BH12490	Backfilling
BH12500	Construct slab H1a-H1b
Culvert 2 & Culvert 3 and Existing Box Culvert	
Culvert 2	
CCE20120	Bay 20
CCE20130	Bay 19
CCE20170	Bay 17A
CCE20160	Bay 17B
CCE20150	Bay 18
CCE20180	MH1
Culvert 3	
CCE20212	Drainage diversion
CCE20215	MH8
Existing Sewer Box Culvert	
MH3-MH6	
CCE20220	Base slab to be applied with screeding concrete
MH6-MH7	
CCE20230	Abandon the existing culvert with foam concrete
MH2-MH3	



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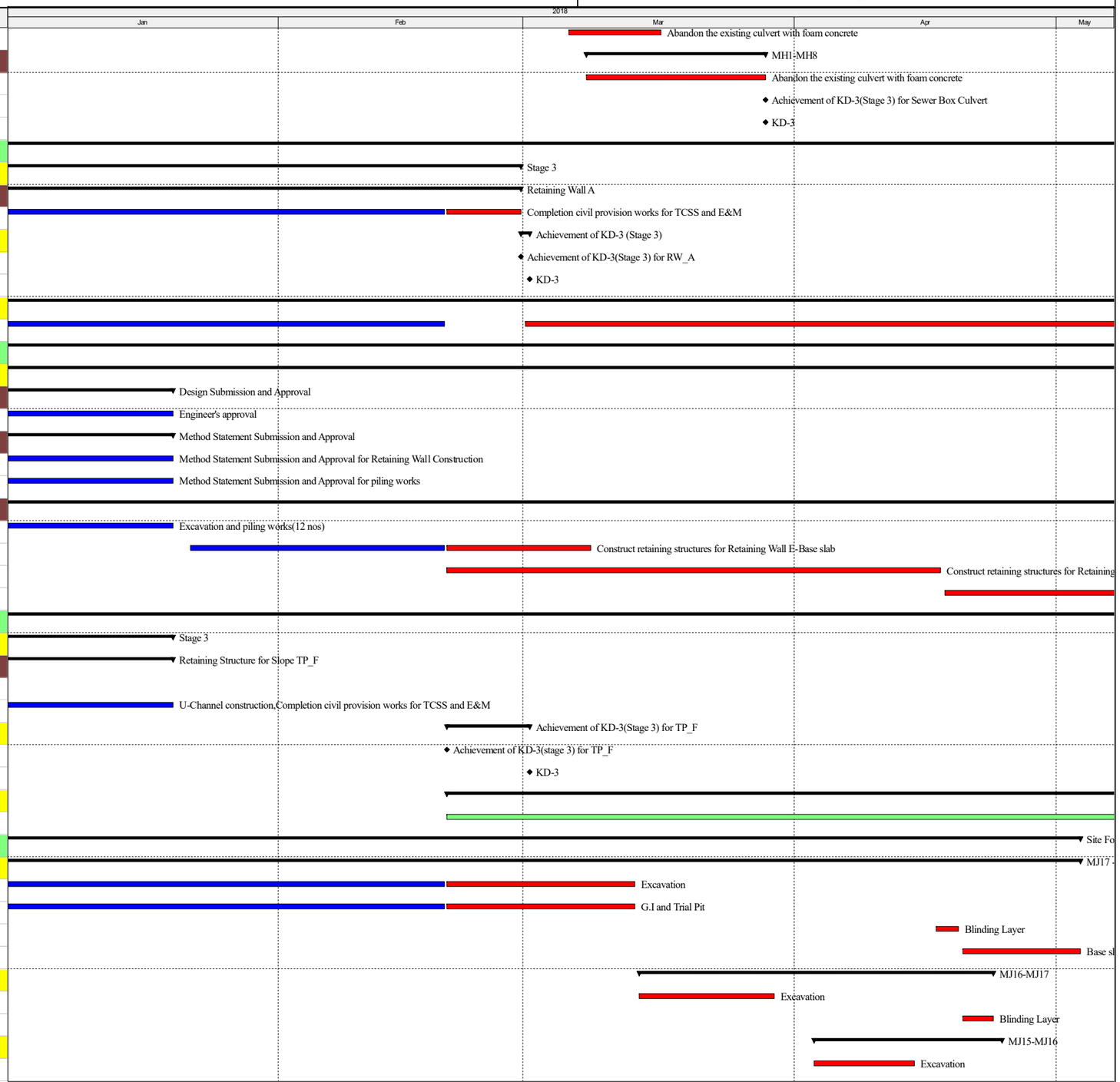
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name
CCE20250	Abandon the existing culvert with foam concrete
MH1-MH8	
CCE20240	Abandon the existing culvert with foam concrete
CCE20260	Achievement of KD-3(Stage 3) for Sewer Box Culvert
CCE20270	KD-3
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
RWA20230	KD-3
Achievement of KD-8 (Section 5) for RW_A	
RWA20200	Drainage Works
Retaining Structure RW_E	
Stage 2	
Design Submission and Approval	
RWE20110	Engineer's approval
Method Statement Submission and Approval	
RWE20140	Method Statement Submission and Approval for Retaining Wall Construction
RWE20150	Method Statement Submission and Approval for piling works
Box Structures and L-Shape Retaining Wall for Retaining Wall E	
RWE20180	Excavation and piling works(12 nos)
RWE20190	Construct retaining structures for Retaining Wall E-Base slab
RWE20195	Construct retaining structures for Retaining Wall E-Wall construction
RWE20200	Structure backfilling
Site Formation - Retaining Structure for Slope TP_F	
Stage 3	
Retaining Structure for Slope TP_F	
RWF31460	Construct Retaining Wall-Wall construction(Bay 21 to Bay 28)
RWF31480	U-Channel construction,Completion civil provision works for TCSS and E&M
Achievement of KD-3(Stage 3) for TP_F	
RWF31405	Achievement of KD-3(stage 3) for TP_F
RWF31415	KD-3
Achievement of KD-8 (Section 5) for TP_F	
RWF31410	Remaining works(Brickwork and Blockwork,etc)
Site Formation - Retaining Structure for Slope TP_G	
MJ17 -End	
RWG1020	Excavation
RWG1010	G.I and Trial Pit
RWG1030	Blinding Layer
RWG1040	Base slab
MJ16-MJ17	
RWG1070	Excavation
RWG1080	Blinding Layer
MJ15-MJ16	
RWG1120	Excavation



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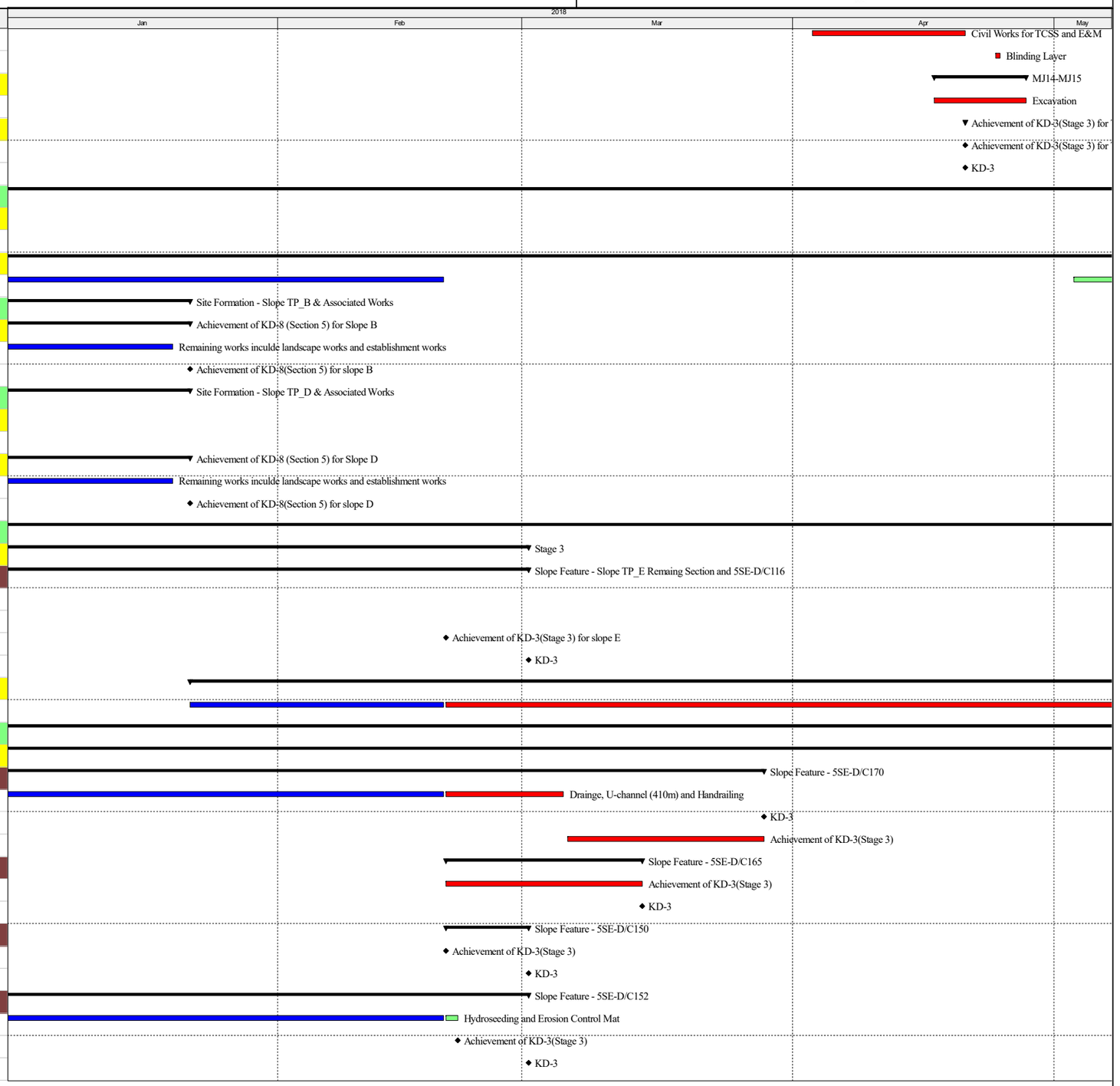
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name
RWG1115	Civil Works for TCSS and E&M
RWG1130	Blinding Layer
MJ14-MJ15	
RWG1270	Excavation
Achievement of KD-3(Stage 3) for TP_G	
RWG1425	Achievement of KD-3(Stage 3) for TP-G
RWG1445	KD-3
Site Formation - Slope TP_A & Associated Works	
Achievement of KD-3(Stage 3) for Slope A	
TPA41830	Achievement of KD-3(Stage 3) for slope A
Achievement of KD-8 (Section 5) for Slope A	
TPA41850	Remaining works inculde landscape works and establishment works
Site Formation - Slope TP_B & Associated Works	
Achievement of KD-8 (Section 5) for Slope B	
TPB41760	Remaining works inculde landscape works and establishment works
TPB41800	Achievement of KD-8(Section 5) for slope B
Site Formation - Slope TP_D & Associated Works	
Achievement of KD-3(Stage 3) for Slope D	
TPD52360	Achievement of KD-3(Stage 3) for slope D
Achievement of KD-8 (Section 5) for Slope D	
TPD51370	Remaining works inculde landscape works and establishment works
TPD51380	Achievement of KD-8(Section 5) for slope D
Site Formation - Slope TP_E & Associated Works	
Stage 3	
Slope Feature - Slope TP_E Remaing Section and 5SE-D/C116	
TPE62310	Mapping & Dowelling
TPE62320	U-channel (100m) and Berm for slope E2a
TPE62700	Achievement of KD-3(Stage 3) for slope E
TPE65340	KD-3
Achievement of KD-8(Section 5) for Slope E	
TPE65320	Remaining works inculde landscape works and establishment works
Site Formation - Slope Upgrading Works	
Stage 3 (Other Slope Features)	
Slope Feature - 5SE-D/C170	
SFW10110	Drainge, U-channel (410m) and Handrailing
SFW10860	KD-3
SFW10850	Achievement of KD-3(Stage 3)
Slope Feature - 5SE-D/C165	
SFW10870	Achievement of KD-3(Stage 3)
SFW10880	KD-3
Slope Feature - 5SE-D/C150	
SFW10890	Achievement of KD-3(Stage 3)
SFW10900	KD-3
Slope Feature - 5SE-D/C152	
SFW10250	Hydroseeding and Erosion Control Mat
SFW10910	Achievement of KD-3(Stage 3)
SFW10920	KD-3



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Three-Month Rolling Programme

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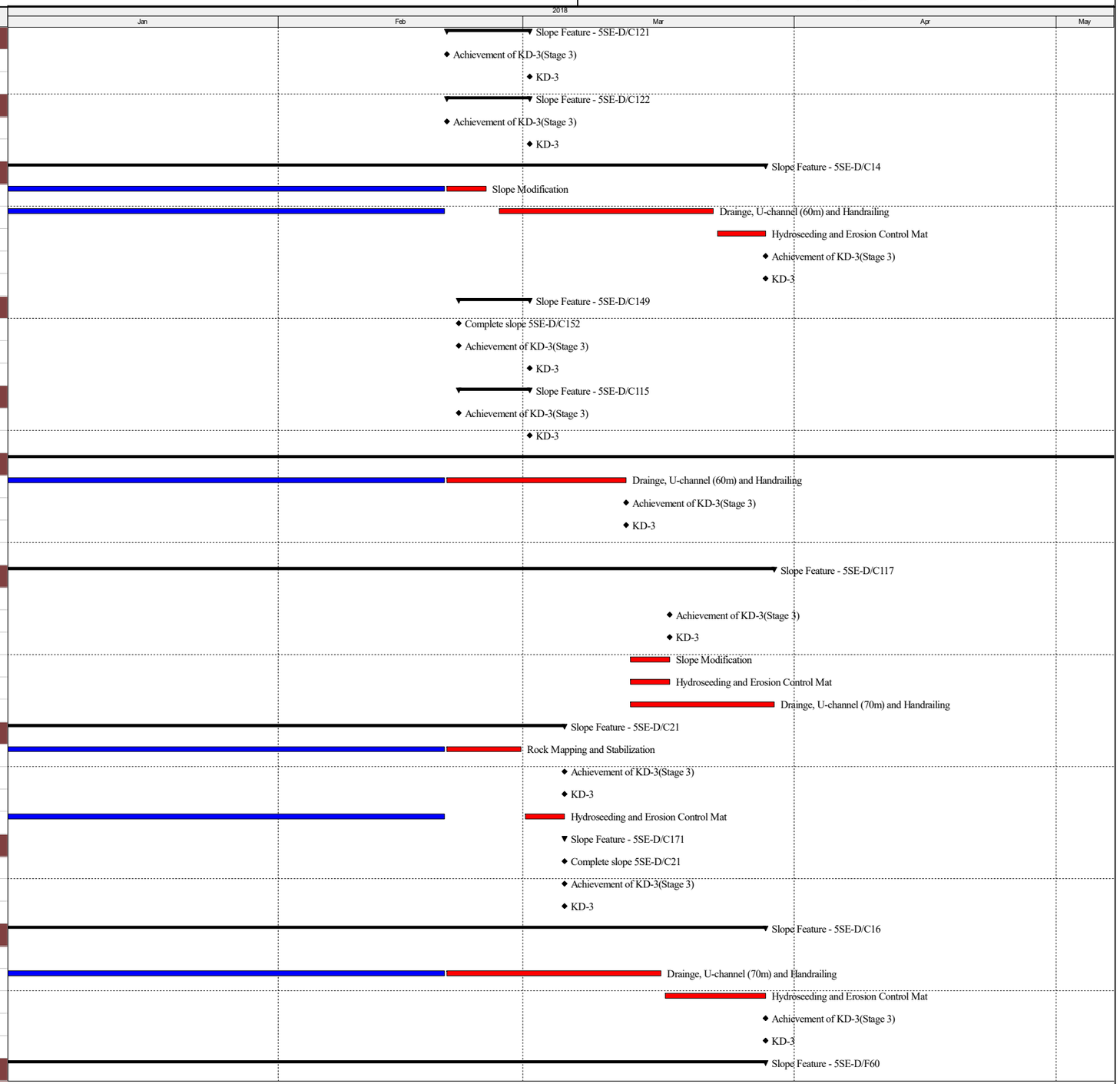
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name
Slope Feature - 5SE-D/C121	
SFW10930	Achievement of KD-3(Stage 3)
SFW10940	KD-3
Slope Feature - 5SE-D/C122	
SFW10950	Achievement of KD-3(Stage 3)
SFW10960	KD-3
Slope Feature - 5SE-D/C14	
SFW10350	Slope Modification
SFW10360	Drainge, U-channel (60m) and Handrailing
SFW10370	Hydroseeding and Erosion Control Mat
SFW10970	Achievement of KD-3(Stage 3)
SFW10980	KD-3
Slope Feature - 5SE-D/C149	
SFW10380	Complete slope 5SE-D/C152
SFW10990	Achievement of KD-3(Stage 3)
SFW11000	KD-3
Slope Feature - 5SE-D/C115	
SFW11010	Achievement of KD-3(Stage 3)
SFW11020	KD-3
Slope Feature - 5SE-D/C18	
SFW10480	Drainge, U-channel (60m) and Handrailing
SFW11030	Achievement of KD-3(Stage 3)
SFW11040	KD-3
SFW10490	Hydroseeding and Erosion Control Mat
Slope Feature - 5SE-D/C117	
SFW10500	Complete of Tunnel
SFW11050	Achievement of KD-3(Stage 3)
SFW11060	KD-3
SFW10510	Slope Modification
SFW10530	Hydroseeding and Erosion Control Mat
SFW10520	Drainge, U-channel (70m) and Handrailing
Slope Feature - 5SE-D/C21	
SFW10560	Rock Mapping and Stabilization
SFW11070	Achievement of KD-3(Stage 3)
SFW11080	KD-3
SFW10570	Hydroseeding and Erosion Control Mat
Slope Feature - 5SE-D/C171	
SFW10580	Complete slope 5SE-D/C21
SFW11090	Achievement of KD-3(Stage 3)
SFW11100	KD-3
Slope Feature - 5SE-D/C16	
SFW10640	Rock Mapping and Stabilization
SFW10650	Drainge, U-channel (70m) and Handrailing
SFW10660	Hydroseeding and Erosion Control Mat
SFW11110	Achievement of KD-3(Stage 3)
SFW11120	KD-3
Slope Feature - 5SE-D/F60	



Remaining Level of Effort
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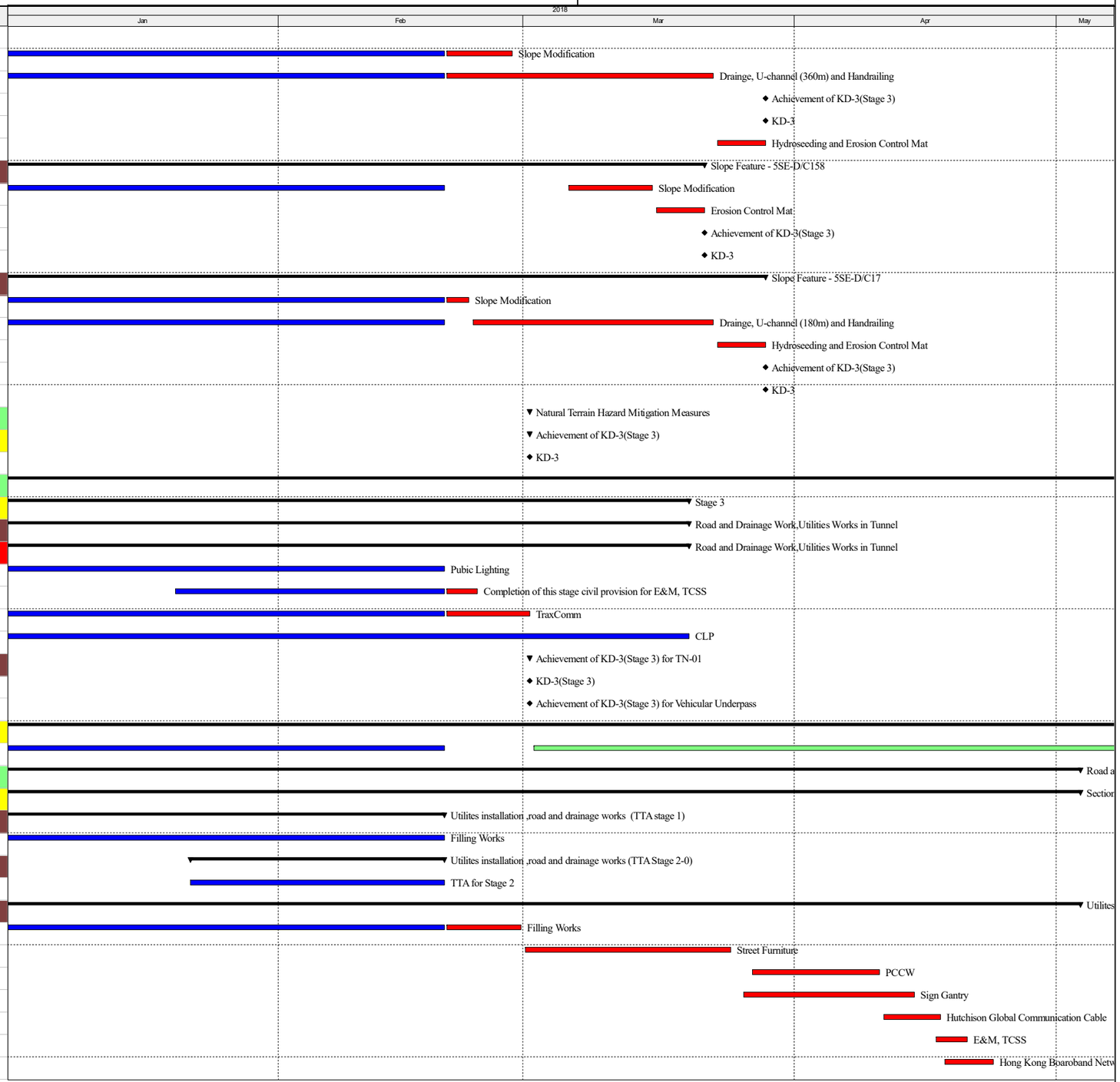
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-02-18	4		

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
SFW10670	Complete of Bridge TD2 decking
SFW10680	Slope Modification
SFW10690	Drainge, U-channel (360m) and Handrailing
SFW11130	Achievement of KD-3(Stage 3)
SFW11140	KD-3
SFW10700	Hydroseeding and Erosion Control Mat
Slope Feature - 5SE-D/C158	
SFW10720	Slope Modification
SFW10730	Erosion Control Mat
SFW11150	Achievement of KD-3(Stage 3)
SFW11160	KD-3
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)
SFW11180	KD-3
Natural Terrain Hazard Mitigation Measures	
Achievement of KD-3(Stage 3)	
NTH10130	KD-3
Vehicular Underpass TN-01	
Stage 3	
Road and Drainage Work,Utilities Works in Tunnel	
Road and Drainage Work,Utilities Works in Tunnel	
UDP34100	Pubic Lighting
UDP34130	Completion of this stage civil provision for E&M, TCSS
UDP34120	TraxComm
UDP34110	CLP
Achievement of KD-3(Stage 3) for TN-01	
UDP30640	KD-3(Stage 3)
UDP30600	Achievement of KD-3(Stage 3) for Vehicular Underpass
Achievement of KD-8 (Section 5) for TN-01	
UDP20640	Road works and Remaining works(Sundry Metalwork,etc)
Road and Drainage Work ,Utilities Works at for Lung Fu Road Roundabout	
Section 3	
Utilites installation ,road and drainage works (TTA stage 1)	
LFR10270	Filling Works
Utilites installation ,road and drainage works (TTA Stage 2-0)	
LFR10610	TTA for Stage 2
Utilites installation ,road and drainage works (TTA Stage 2)	
LFR10620	Filling Works
LFR10630	Street Furniture
LFR10680	PCCW
LFR10640	Sign Gantry
LFR10690	Hutchison Global Communication Cable
LFR10650	E&M, TCSS
LFR10700	Hong Kong Boaroband Network



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

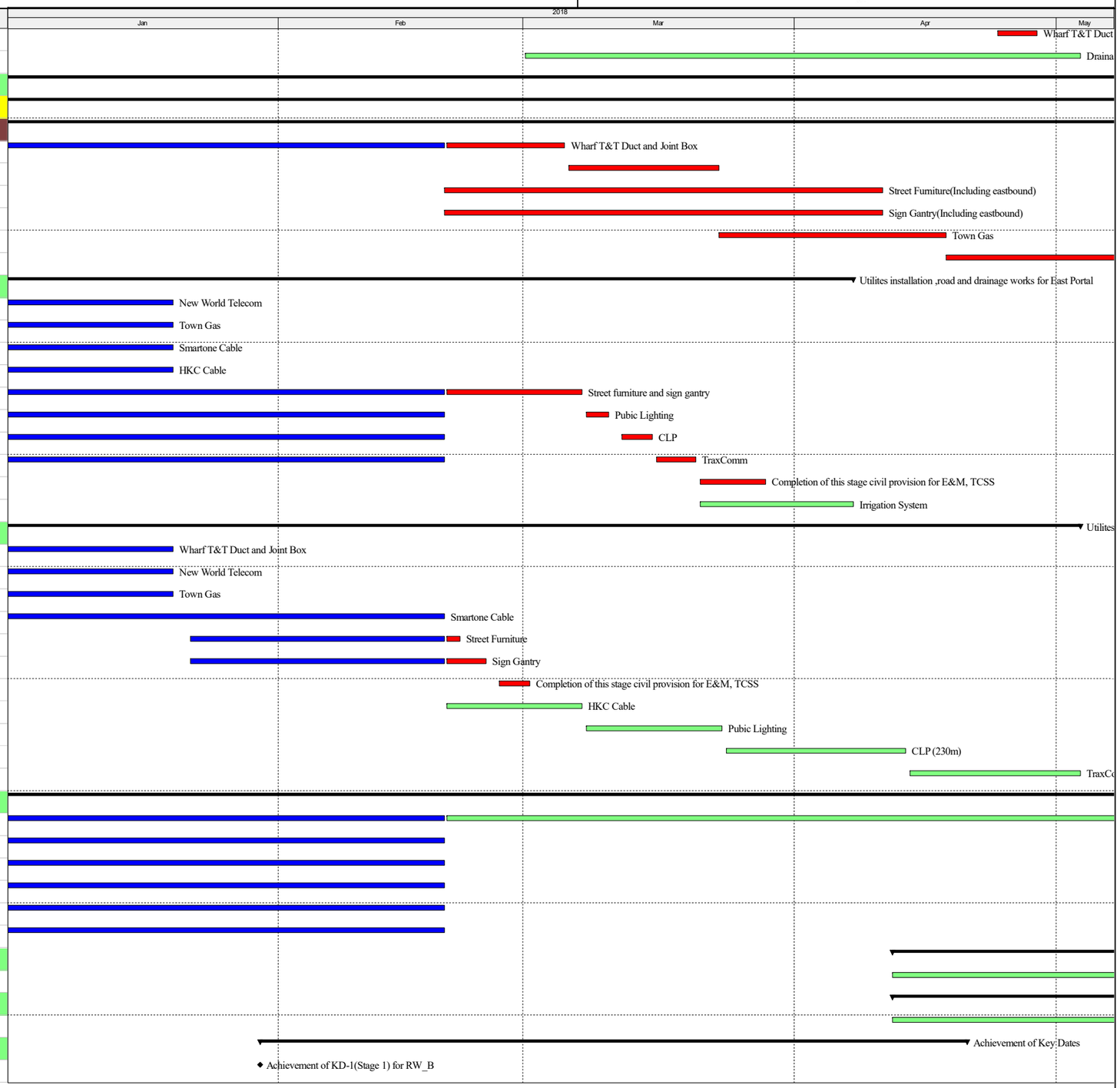
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-02-18	4		

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
LFR10710	Wharf T&T Duct and Joint Box
LFR10660	Drainage Work
Road and Drainage Work ,Utilities Works at Lung Mun Road	
Lung Mun Road (Westbound)	
Ho Suen Street South	
LMRWA1250	Wharf T&T Duct and Joint Box
LMRWA1260	New World Telecom
LMRWA1241	Street Furniture(Including eastbound)
LMRWA1242	Sign Gantry(Including eastbound)
LMRWA1270	Town Gas
LMRWA1280	Smartone Cable
Utilites installation ,road and drainage works for East Portal	
EPA1080	New World Telecom
EPA1090	Town Gas
EPA1100	Smartone Cable
EPA1110	HKC Cable
EPA1030	Street furniture and sign gantry
EPA1120	Pubic Lighting
EPA1130	CLP
EPA1140	TraxComm
EPA1150	Completion of this stage civil provision for E&M, TCSS
EPA1160	Irrigation System
Utilites installation ,road and drainage works near portion D	
TOLLA1060	Wharf T&T Duct and Joint Box
TOLLA1070	New World Telecom
TOLLA1080	Town Gas
TOLLA1090	Smartone Cable
TOLLA1092	Street Furniture
TOLLA1094	Sign Gantry
TOLLA1096	Completion of this stage civil provision for E&M, TCSS
TOLLA1100	HKC Cable
TOLLA1110	Pubic Lighting
TOLLA1120	CLP (230m)
TOLLA1130	TraxComm
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
SAI10040	Seweage, irrigation and road&drainage works -G1&H1-north side
SAI10030	Seweage, irrigation and road&drainage works - RW_B-south side
SAI10050	Seweage, irrigation and road&drainage works - G1&H1-south side
Section 6	
SEC61000	Lanscape softworks in KD-1 area
Section 8	
SEC81000	Preservation and protection trees in KD-1 area
Achievement of Key Dates	
AK10060	Achievement of KD-1(Stage 1) for RW_B



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

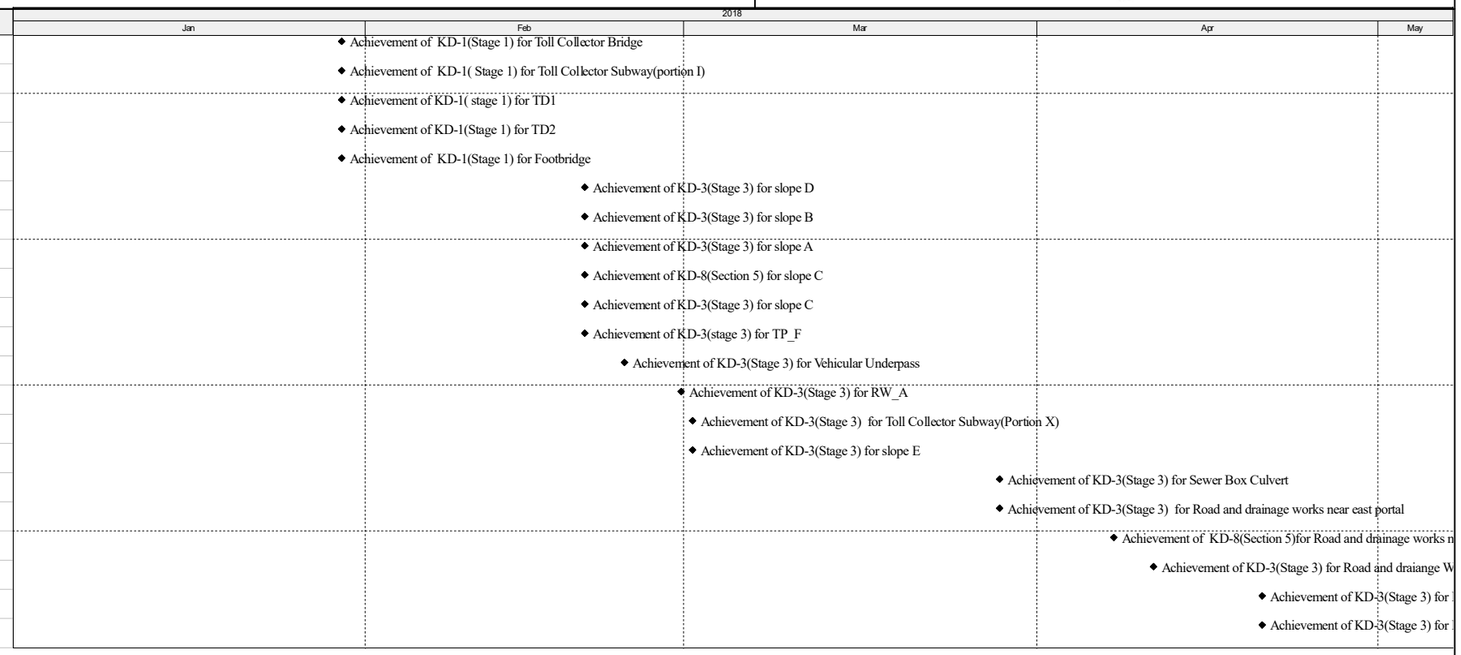
CRBC - Kaden JV
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-02-18	4		

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name
AK10080	Achievement of KD-1(Stage 1) for Toll Collector Bridge
AK10105	Achievement of KD-1(Stage 1) for Toll Collector Subway(portion I)
AK10000	Achievement of KD-1(stage 1) for TD1
AK10020	Achievement of KD-1(Stage 1) for TD2
AK10040	Achievement of KD-1(Stage 1) for Footbridge
AK10340	Achievement of KD-3(Stage 3) for slope D
AK10300	Achievement of KD-3(Stage 3) for slope B
AK10280	Achievement of KD-3(Stage 3) for slope A
AK10330	Achievement of KD-8(Section 5) for slope C
AK10320	Achievement of KD-3(Stage 3) for slope C
AK10250	Achievement of KD-3(stage 3) for TP_F
AK10380	Achievement of KD-3(Stage 3) for Vehicular Underpass
AK10210	Achievement of KD-3(Stage 3) for RW_A
AK10120	Achievement of KD-3(Stage 3) for Toll Collector Subway(Portion X)
AK10360	Achievement of KD-3(Stage 3) for slope E
AK10200	Achievement of KD-3(Stage 3) for Sewer Box Culvert
AK10470	Achievement of KD-3(Stage 3) for Road and drainage works near east portal
AK10480	Achievement of KD-8(Section 5)for Road and drainage works near east portal
AK10455	Achievement of KD-3(Stage 3) for Road and draiange Works under TD1
AK10430	Achievement of KD-3(Stage 3) for RW_G
AK10400	Achievement of KD-3(Stage 3) for Roundabout 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
28-02-18	4		

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

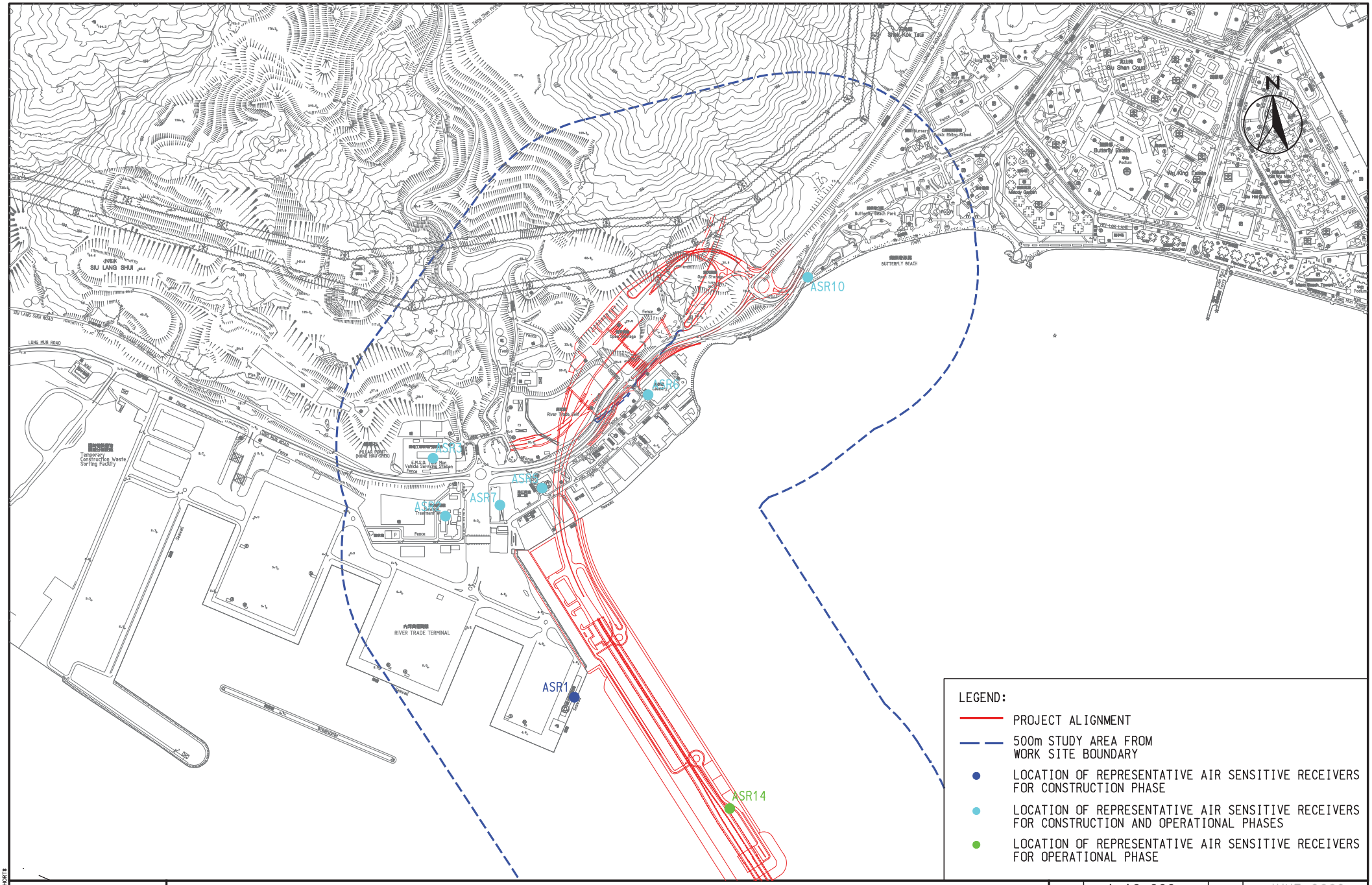
LEGEND:

- 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

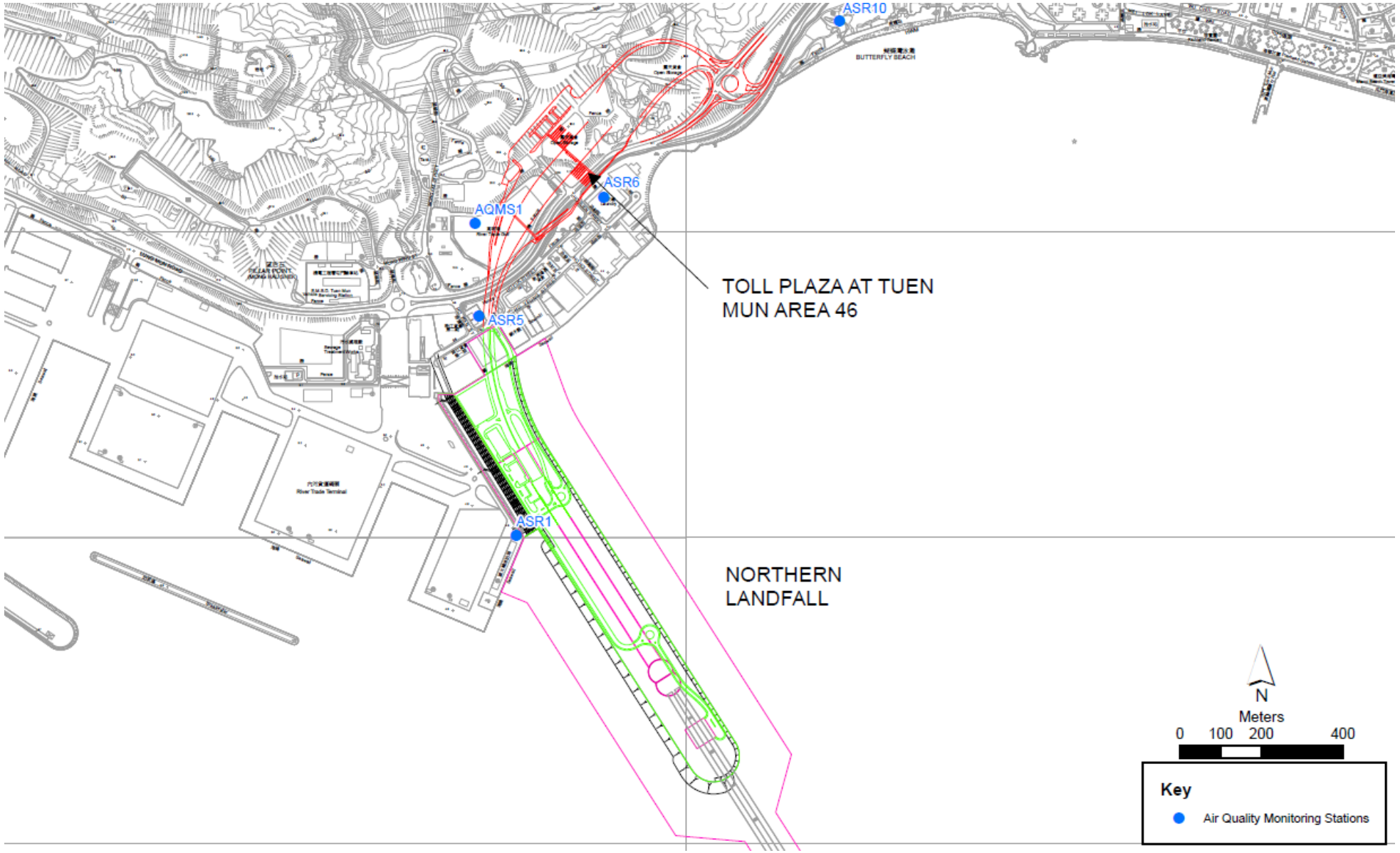


AGREEMENT NO. CE 52/2007(HY)
TUEN MUN – CHEK LAP KOK LINK – INVESTIGATION

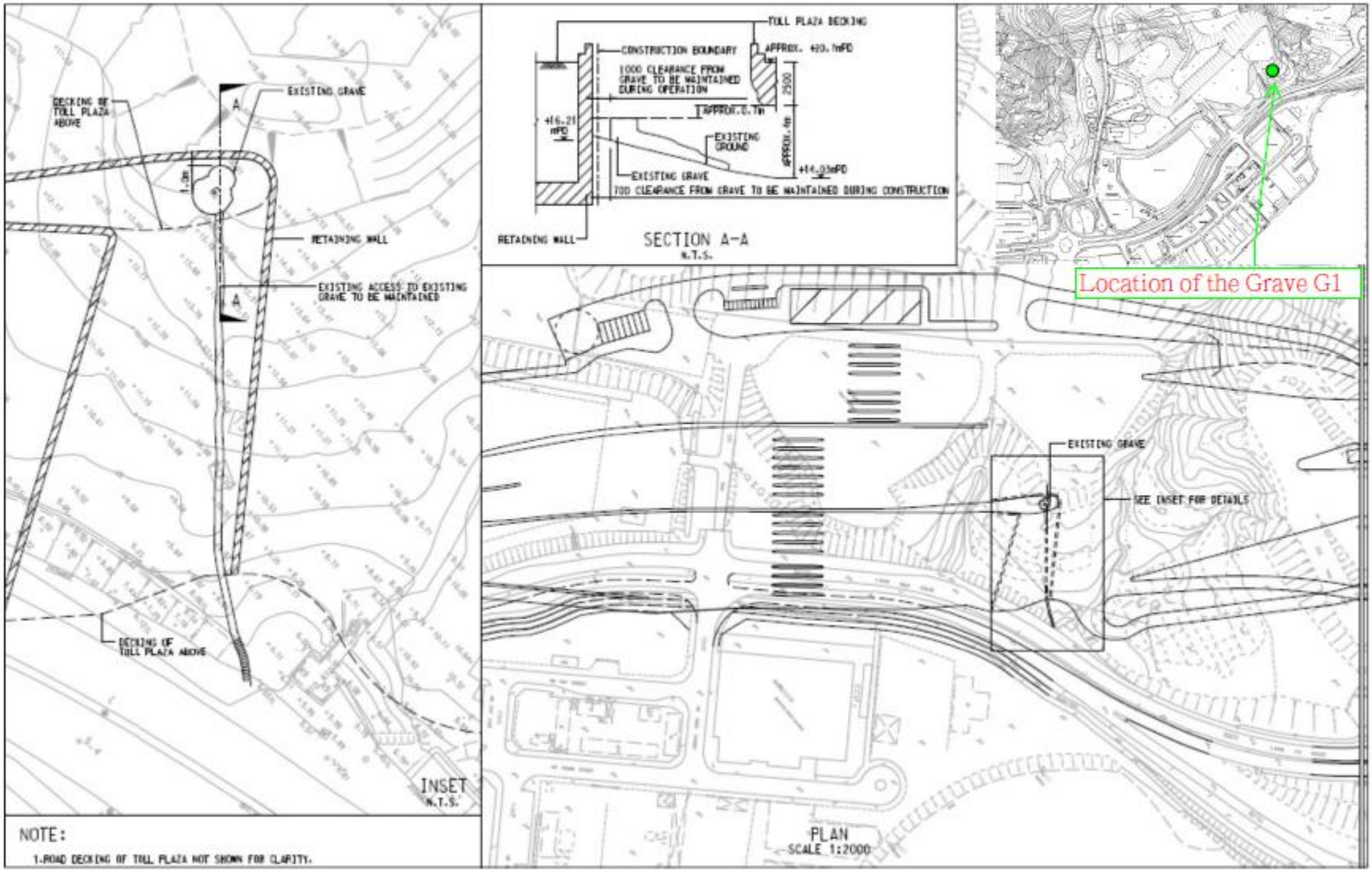
REPRESENTATIVE AIR SENSITIVE RECEIVERS

SCALE	1:10 000	DATE	

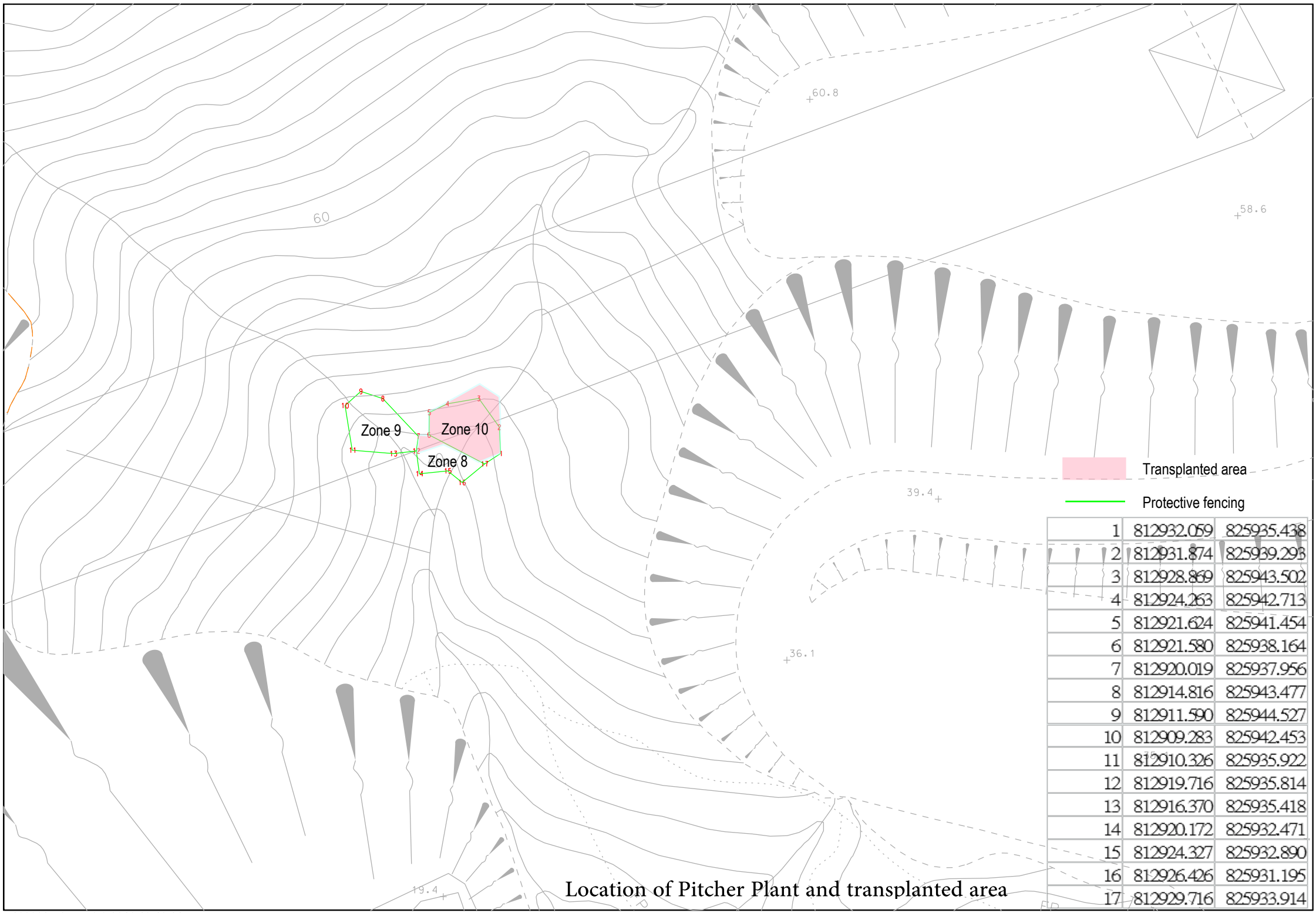
Plotting By:7/27/2009
PLOT SCALE: #SCALE$SHORT$



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 February 2018

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

✓	Monitoring Day
	Sunday or Public Holiday

Impact Monitoring Schedule for March 2018

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

✓	Monitoring Day
	Sunday or Public Holiday

Appendix H

Calibration Certificates of Monitoring Equipment

CERTIFICATION OF CALIBRATION

Date Of Calibration: 20-Jun-2017 **Certificate Number:** G503226_2/18640

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 Tin, N.T. HONG KONG

Description: Gas Analyser

Model: BIOGAS 5000

Serial Number: G503226

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.1	4.9	0.41
15.0	14.8	0.64
50.0	49.4	0.94

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.1	5.0	0.43
15.0	14.9	0.70
50.0	50.0	1.1

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
20.9	20.9	0.31

The inwards assessment was carried out 14-Jun-2017.
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 : 37.2 °C ± 1.5 °C

O2 reading recorded at : 26.8 °C ± 1.5 °C

Barometric Pressure : 1012 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: 20-Jun-2017 **Certificate Number:** G503226_2/18640

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**
1012	1014

Approved by Signatory

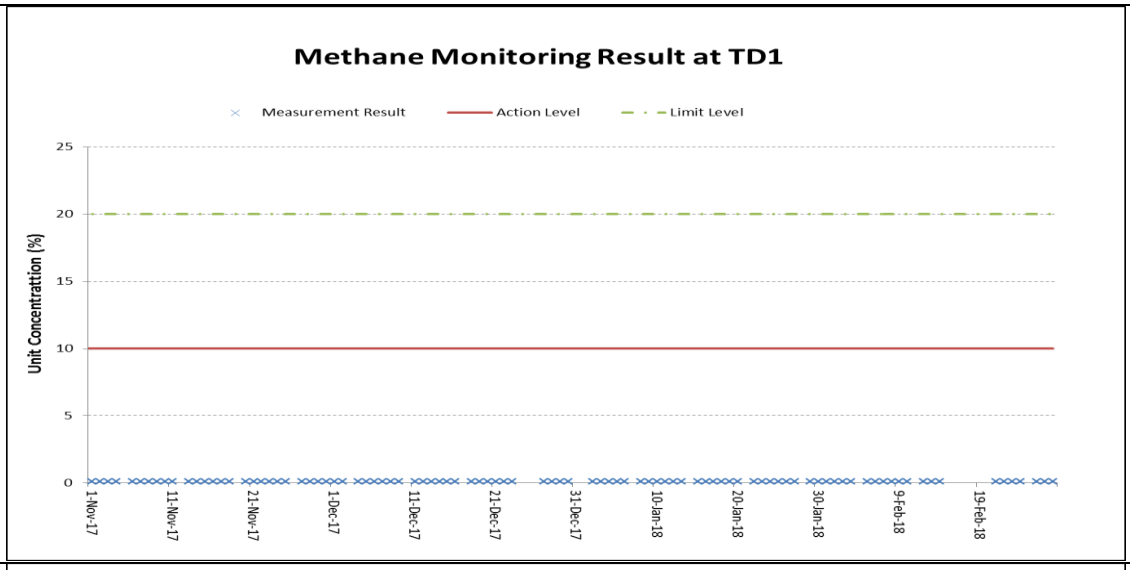
Dawn Hemings

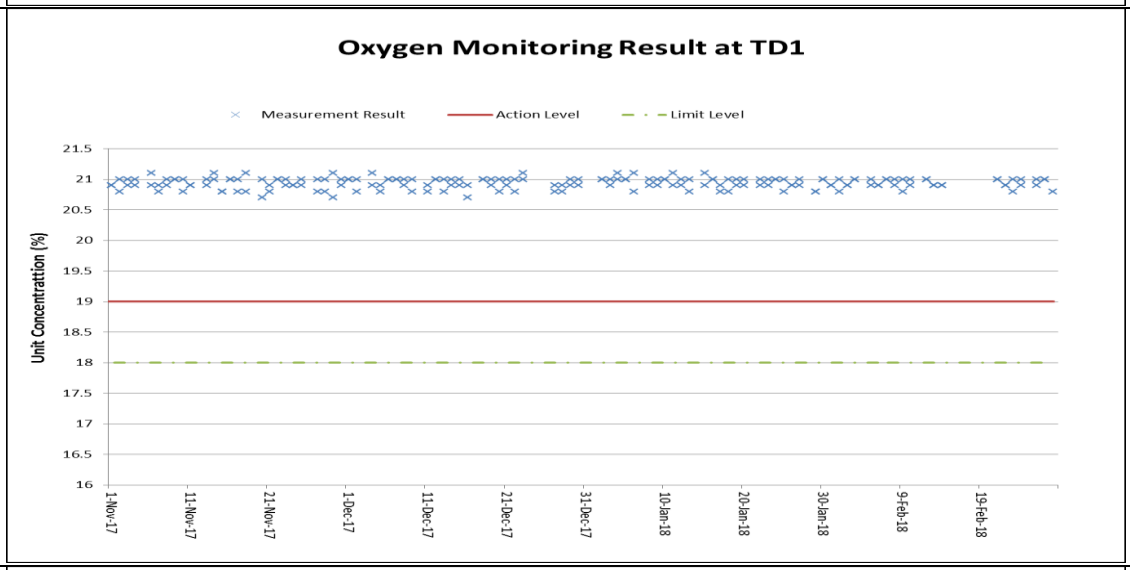
Laboratory Inspection

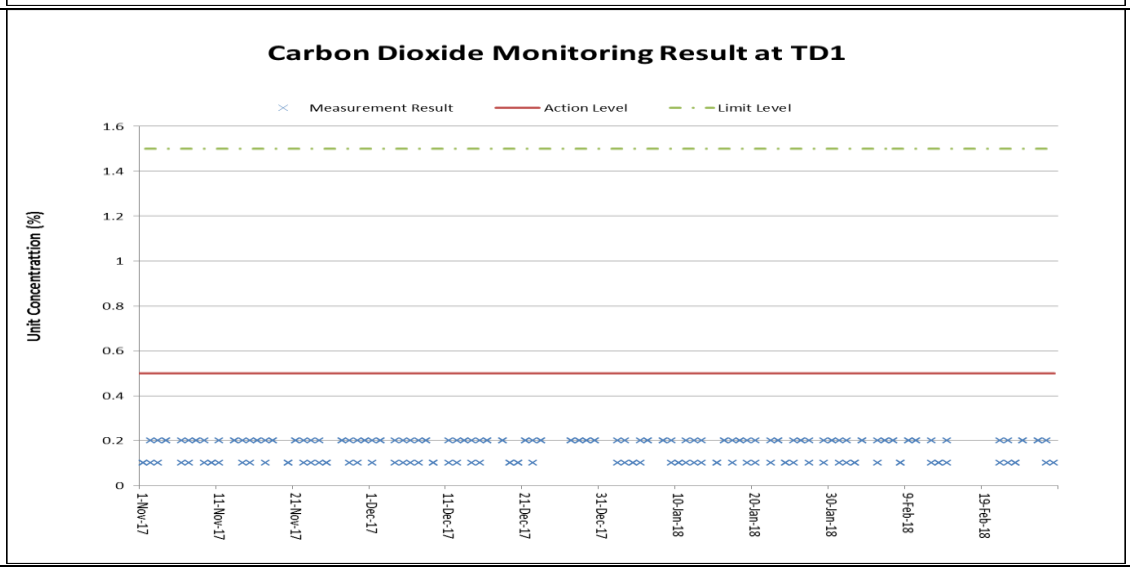
Geotechnical Instruments (UK) Ltd
Sovereign House, Queensway, Leamington Spa, Warwickshire, CV31 3JR
geotechuk.com service@geotech.co.uk +44 (0)1926 338111

Appendix I

Landfill Gas Monitoring Results and Graphical Plots







Annotation:
During 1 to 28 February 2018, 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.

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	1/2/2018	8:00	Fine	7	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	1/2/2018	14:00		13	0.1	10	20	21	19	18	0.2	0.5	1.5
	2/2/2018	8:00	Fine	9	0.1	10	20	20.8	19	18	0.1	0.5	1.5
	2/2/2018	14:00		13	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	3/2/2018	8:00	Sunny	9	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	3/2/2018	14:00		12	0.1	10	20	21	19	18	0.2	0.5	1.5
	5/2/2018	8:00	Sunny	8	0.1	10	20	21	19	18	0.2	0.5	1.5
	5/2/2018	14:00		12	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	6/2/2018	8:00	Sunny	16	0.1	10	20	21	19	18	0.2	0.5	1.5
	6/2/2018	14:00		17	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	7/2/2018	8:00	Sunny	11	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	7/2/2018	14:00		15	0.1	10	20	21	19	18	0.2	0.5	1.5
	8/2/2018	8:00	Sunny	12	0.1	10	20	21	19	18	0.2	0.5	1.5
	8/2/2018	14:00		17	0.1	10	20	21	19	18	0.1	0.5	1.5
	9/2/2018	8:00	Fine	13	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	9/2/2018	14:00		17	0.1	10	20	20.8	19	18	0.2	0.5	1.5
	10/2/2018	8:00	Sunny	16	0.1	10	20	21	19	18	0.2	0.5	1.5
	10/2/2018	14:00		22	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	12/2/2018	8:00	Sunny	12	0.1	10	20	21	19	18	0.2	0.5	1.5
	12/2/2018	14:00		19	0.1	10	20	21	19	18	0.2	0.5	1.5
	13/2/2018	8:00	Sunny	13	0.1	10	20	21	19	18	0.1	0.5	1.5
	13/2/2018	14:00		18	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	14/2/2018	8:00	Sunny	15	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	14/2/2018	14:00		18	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	21/2/2018	8:00	Cloudy	16	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	21/2/2018	14:00		19	0.1	10	20	21	19	18	0.1	0.5	1.5
	22/2/2018	8:00	Cloudy	13	0.1	10	20	21	19	18	0.2	0.5	1.5
	22/2/2018	14:00		17	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	23/2/2018	8:00	Hazy	13	0.1	10	20	20.9	19	18	0.1	0.5	1.5
	23/2/2018	14:00		17	0.1	10	20	20.8	19	18	0.1	0.5	1.5
	24/2/2018	8:00	Cloudy	15	0.1	10	20	21	19	18	0.1	0.5	1.5
	24/2/2018	14:00		20	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	26/2/2018	8:00	Fine	16	0.1	10	20	21	19	18	0.2	0.5	1.5
	26/2/2018	14:00		18	0.1	10	20	20.9	19	18	0.2	0.5	1.5
	27/2/2018	8:00	Sunny	16	0.1	10	20	21	19	18	0.2	0.5	1.5
	27/2/2018	14:00		23	0.1	10	20	21	19	18	0.2	0.5	1.5
	28/2/2018	8:00	Sunny	18	0.1	10	20	21	19	18	0.1	0.5	1.5
	28/2/2018	14:00		26	0.1	10	20	20.8	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

Contract No. HY/2013/12
Tuen Mun - Chek Lap Kok Link - Northern Connection Toll Plaza and Associated Works

Investigation Report on Action or Limit Level Non-compliance

Date	3 February 2018	
Environmental Aspect	Air Quality	
Parameter	1-hour TSP	
Monitoring Location	ASR1 (Tuen Mun Fireboat Station)	ASR5 (Pillar Point Fire Station)
Measurement Period	9:00-10:00	8:49-9:49
Action Level (ug/m^3)	331	340
Limit Level (ug/m^3)	500	500
Measured Level (ug/m^3)	**392**	**455**
Exceedance	**Action Level**	**Action Level**
Possible reason for Action or Limit Level Non-compliance	1. According to site information provided by CRBC-Kaden JV, construction of canopy at TD1, road pavement at +19 Platform and Central Divider, drainage works at Portion H, +19 Platform and Underpass, construction of column at Portion F and construction of bamboo scaffolding at footbridge were conducted on 3 February 2018. 2. To reduce dust impact arising from the construction, mitigation measures for construction dust control were implemented. They include the followings:- • water trucks were arranged on haul road to keep road surface wet (refer to photo 1 and water spraying record) • for un-accessible area, water spraying by workers was provided (refer to photo 2 and 3 and water spraying record) • Hydro seeding or covered part of the exposed slopes and stockpile by tarpaulin sheet (refer to Photo 4 and 5) • to set speed control at 8 km/hr for all vehicles using the haul road (refer to photo 6 and 7) 3. According to the weather station setting up at ASR5 under Contract No. HY/2012/08, north-easterly wind at 2.2 to 3.1 m/s was blowing between 8:00 to 10:00. The closely works area Portion F was located at the downstream of the monitoring station ASR5. Therefore the exceedance at ASR5 was considered not project related. 4. Although monitoring station ASR1 was located at the downstream of Portion F according to the wind data at ASR5, it is quite far away from the closest works area Portion F at around 400m. Another, most of the site area at Portion F was hard paved and only consecution of column was undertaken on 3 February 2018. It is unlikely to create heavy construction dust impact. Review the monitoring result at other monitoring stations which was located more closely to the major works area +19 platform, Portion H and Lung Mun Road no exceedence was recorded at similar time. (Ref. to Figure 1 & 2, Photo 8 to 11 and 14)	

	5. To reduce dust impact arising from the construction area Portion F more effective, the Contractor increase the water spraying frequency to once per 15 mins during working hours. (Ref. to water spraying record) 6. During the join site inspection with IEC, ER, Contractor and ET on 30 January 2018 and 6 February 2018, no dust emitted from the works area was observed during the inspection. Also ER agreed that dust mitigation measures were implemented properly at those works area during the time of monitoring. ET was observed that the contractor was properly implemented the dust mitigation measure under EMIS requirement and no environmental issue related to dust aspect was observed. (Ref. to Photo 8 to 11) 7. Therefore the exceedances of Air Quality Monitoring at ASR1 and ASR5 were due to other pollutant source rather than the construction site. 8. Based on above investigation, the exceedance is unlikely related to the Contract work and no corrective action was required accordingly.
Action to be taken	ET will continue regular audit and inspection for the implemented dust mitigation measures during the construction period.

Prepared By : T.W. Tam

Designation : Environmental Team Leader

Signature : 

Date : 8 March 2018

Photo Record

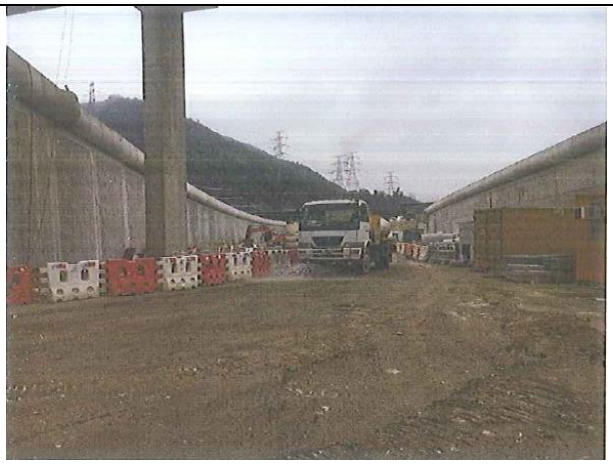


Photo 1 Watering of haul road by water truck to keep road surface wet

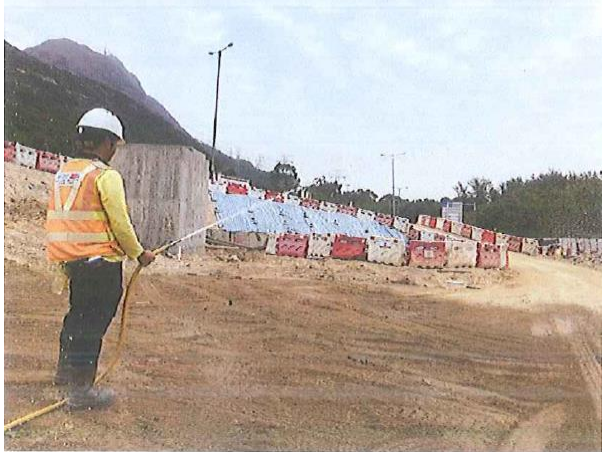


Photo 2 Water spraying by worker for un-accessible area.

Photo 3 Water spraying by worker for un-accessible area.

Photo 4 Hydro seeding for the exposed slope at slop 170

Photo 5 Covered part of the exposed slopes and stockpile by tarpaulin sheet.

Photo 6 Set speed control at ~8km/hr for all vehicles using the haul road

Photo 7 Set speed control at ~8km/hr for all vehicles using the haul road at Portion F

Photo 8 Site area keeping wet was observed at Portion F during the join site inspection on 30 January 2018

Photo 9 Site area keeping wet was observed at Portion F during the join site inspection on 30 January 2018

Photo 10 Site area keeping wet was observed at Portion F during the join site inspection on 6 February 2018

Photo 11 Site area keeping wet was observed at Portion F during the join site inspection on 6 February 2018

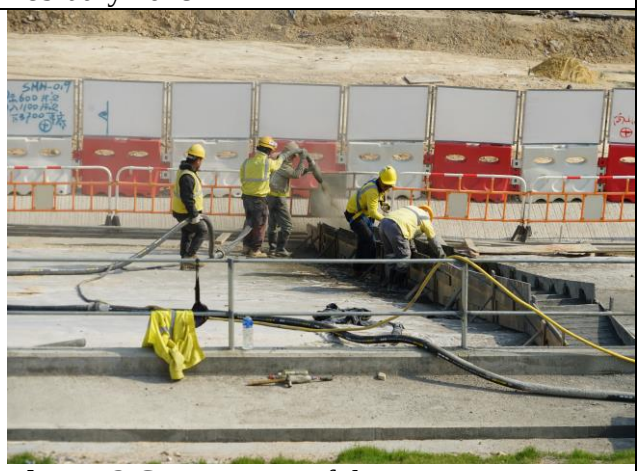


Photo 12 Construction of drainage at Portion H

Photo 13 Road pavement works at Platform 19

Photo 14 Construction of column at Portion F and most works area was keep wet.

Photo 15 Construction of canopy at TD1

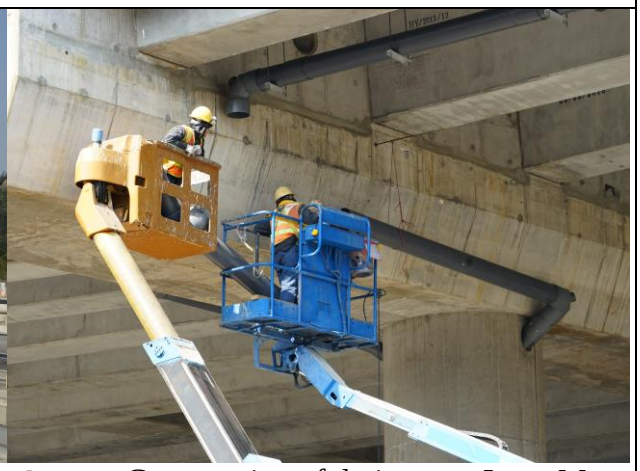


Photo 16 Construction of drainage at Lung Mun Road

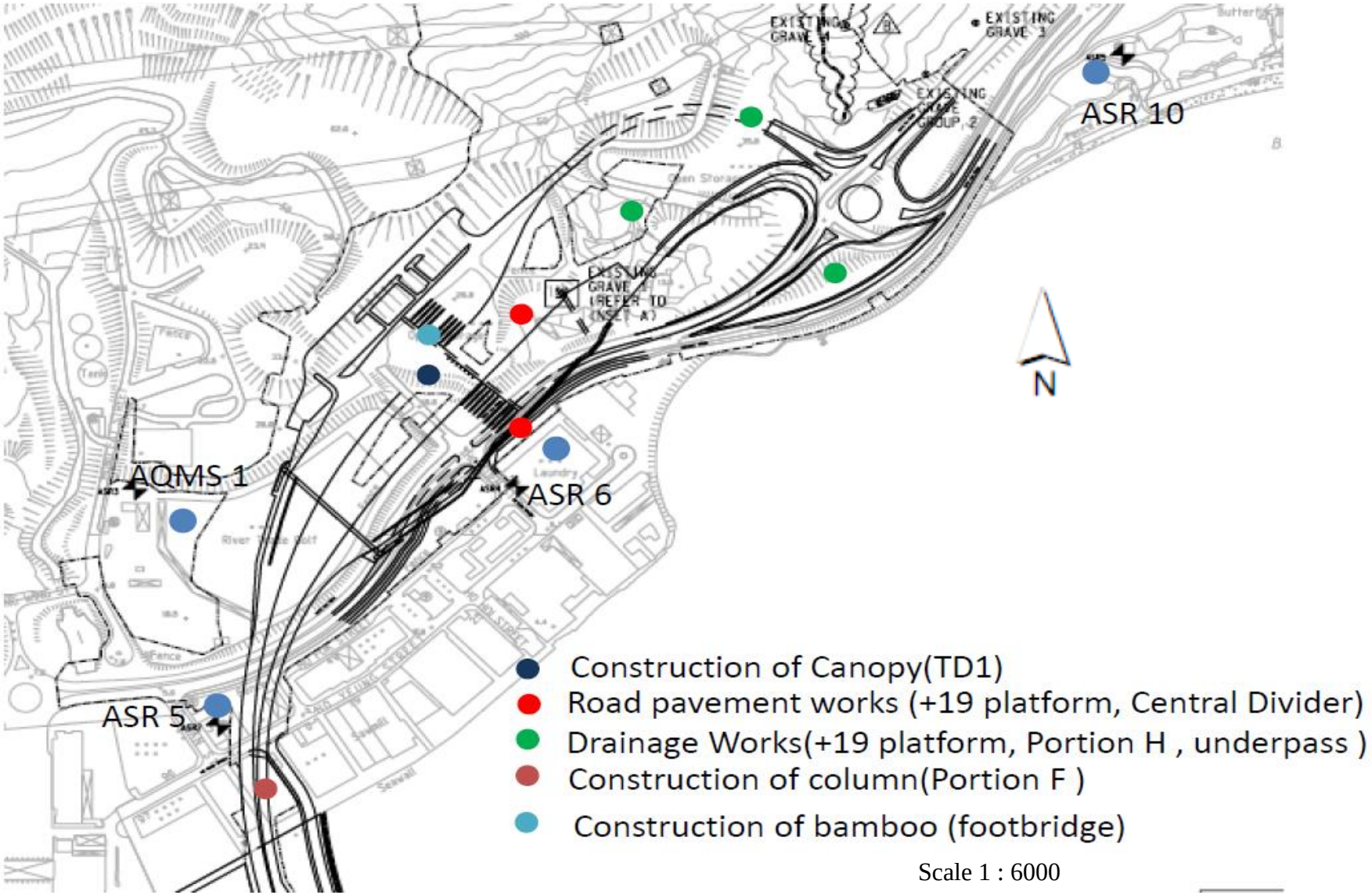


Figure 1. Location Plan

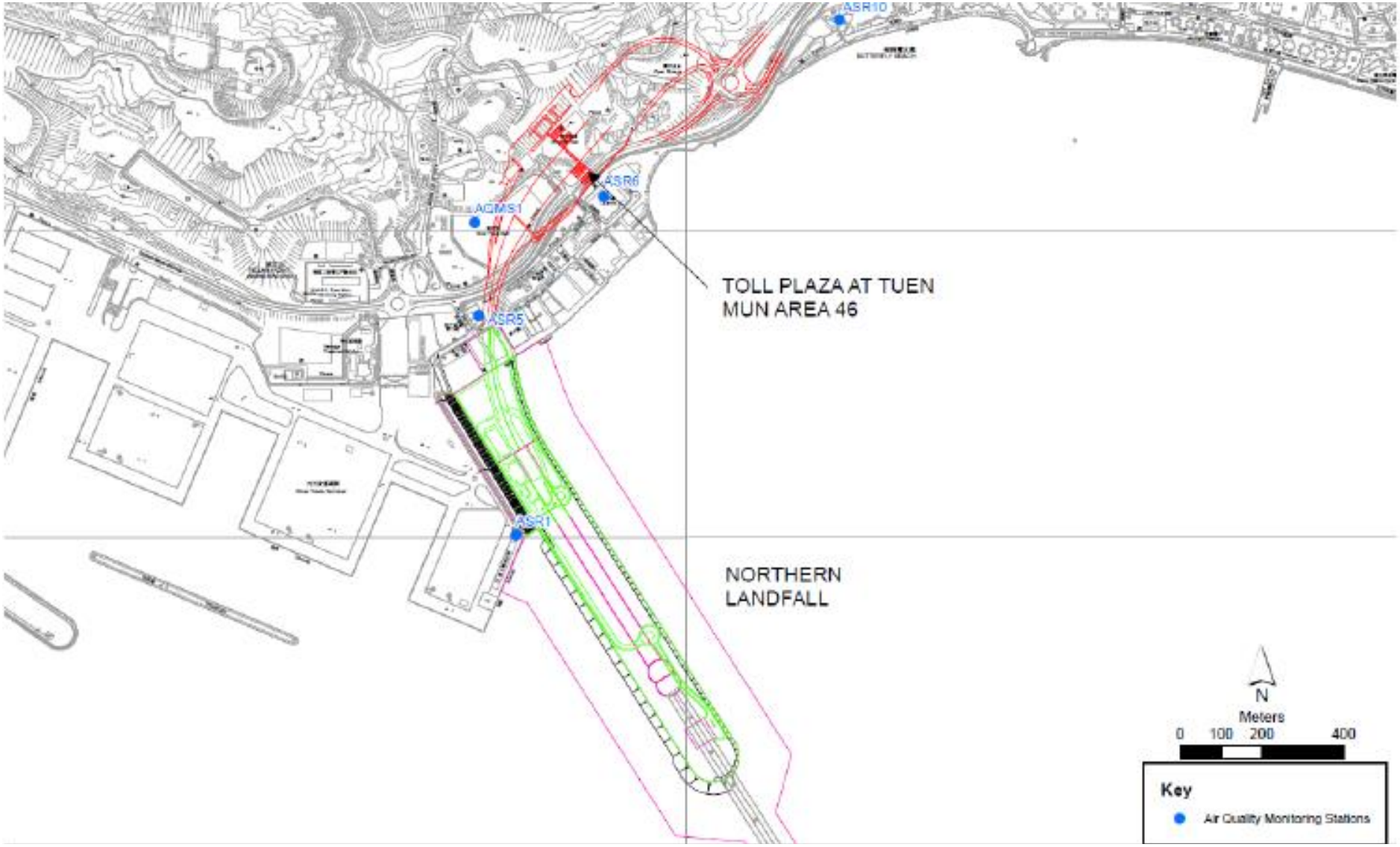


Figure 2. Air Monitoring Loaction

Table 1. 1-Hr TSP Monitoring Result of 3 February 2018

TMCLKL	HY/2012/08	3/2/2018	AQMS1	Sunny	9:12	1-hour TSP	109	ug/m3
TMCLKL	HY/2012/08	3/2/2018	AQMS1	Sunny	10:14	1-hour TSP	127	ug/m3
TMCLKL	HY/2012/08	3/2/2018	AQMS1	Sunny	11:16	1-hour TSP	118	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR1	Sunny	9:00	1-hour TSP	392	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR1	Sunny	10:02	1-hour TSP	138	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR1	Sunny	11:04	1-hour TSP	163	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR10	Sunny	8:27	1-hour TSP	120	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR10	Sunny	9:29	1-hour TSP	93	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR10	Sunny	10:31	1-hour TSP	333	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR5	Sunny	8:49	1-hour TSP	455	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR5	Sunny	9:51	1-hour TSP	285	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR5	Sunny	10:53	1-hour TSP	211	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR6	Sunny	8:38	1-hour TSP	272	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR6	Sunny	9:40	1-hour TSP	192	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR6	Sunny	10:42	1-hour TSP	205	ug/m3
TMCLKL	HY/2012/08	3/2/2018	AQMS1	Sunny	12:18	24-hour TSP	115	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR1	Sunny	12:06	24-hour TSP	192	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR10	Sunny	11:33	24-hour TSP	105	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR5	Sunny	11:55	24-hour TSP	179	ug/m3
TMCLKL	HY/2012/08	3/2/2018	ASR6	Sunny	11:44	24-hour TSP	123	ug/m3

Table 2. Wind Direction and Speed data during Air Quality Monitoring

Date	Time	Average of Wing Speed (m/s)	Average of Wind Direction (degree)
3/2/2018	**8:00**	**2.2**	**11**
3/2/2018	**9:00**	**3.1**	**49**
3/2/2018	**10:00**	**2.2**	**45**

Remarks:
Wind speed and direction data was extracted from the weather station located at ASR5 set up by ET of Contract HY/2012/08

地盆人手灑水記錄表(2018)

地點: Portion F	星期日	星期一	星期二	星期三	星期四	星期五	星期六
	1月28日	1月29日	1月30日	1月31日	2月1日	2月2日	2月3日
8:00 - 8:15		✓	✓	✓	—	✓	✓
8:15 - 8:30		✓	✓	✓	✓	✓	✓
8:30 - 8:45		✓	✓	✓	✓	✓	✓
8:45 - 9:00		✓	✓	✓	✓	✓	✓
9:00 - 9:15		✓	✓	✓	✓	✓	✓
9:15 - 9:30		✓	✓	✓	✓	✓	✓
9:30 - 9:45		✓	✓	✓	✓	✓	✓
9:45 - 10:00		✓	✓	✓	✓	✓	✓
10:00 - 10:15		✓	✓	✓	✓	✓	✓
10:15 - 10:30		✓	✓	✓	✓	✓	✓
10:30 - 10:45		✓	✓	✓	✓	✓	✓
10:45 - 11:00		✓	✓	✓	✓	✓	✓
11:00 - 11:15		✓	✓	✓	✓	✓	✓
11:15 - 11:30		✓	✓	✓	✓	✓	✓
11:30 - 11:45		✓	✓	✓	✓	✓	✓
11:45 - 12:00		✓	✓	✓	✓	✓	✓
12:00 - 12:15		✓	✓	✓	✓	✓	✓
12:15 - 12:30		✓	✓	✓	✓	✓	✓
12:30 - 12:45		✓	✓	✓	✓	✓	✓
12:45 - 13:00		✓	✓	✓	✓	✓	✓
13:00 - 13:15		✓	✓	✓	✓	✓	✓
13:15 - 13:30		✓	✓	✓	✓	✓	✓
13:30 - 13:45		✓	✓	✓	✓	✓	✓
13:45 - 14:00		✓	✓	✓	✓	✓	✓
14:00 - 14:15		✓	✓	✓	✓	✓	✓
14:15 - 14:30		✓	✓	✓	✓	✓	✓
14:30 - 14:45		✓	✓	✓	✓	✓	✓
14:45 - 15:00		✓	✓	✓	✓	✓	✓
15:00 - 15:15		✓	✓	✓	✓	✓	✓
15:15 - 15:30		✓	✓	✓	✓	✓	✓
15:30 - 15:45		✓	✓	✓	✓	✓	✓
15:45 - 16:00		✓	✓	✓	✓	✓	✓
16:00 - 16:15		✓	✓	✓	✓	✓	✓
16:15 - 16:30		✓	✓	✓	✓	✓	✓
16:30 - 16:45		✓	✓	✓	✓	✓	✓
16:45 - 17:00		✓	✓	✓	✓	✓	✓
17:00 - 17:15		✓	✓	✓	✓	✓	✓
17:15 - 17:30		✓	✓	✓	✓	✓	✓
17:30 - 17:45		✓	✓	✓	✓	✓	✓
17:45 - 18:00		✓	✓	✓	✓	✓	✓

Verified by Tommy Law (LS) ✓

Date 5/2/2018

GC832

地盆水車灑水記錄表(2018)

	星期日	星期一	星期二	星期三	星期四	星期五	星期六
	1月28日	1月29日	1月30日	1月31日	2月1日	2月2日	2月3日
8:00 - 8:30		✓	✓	✓	✓	✓	✓
8:30 - 9:00		✓	✓	✓	✓	✓	✓
9:00 - 9:30		✓	✓	✓	✓	✓	✓
9:30 - 10:00		✓	✓	✓	✓	✓	✓
10:00 - 10:30		✓	✓	✓	✓	✓	✓
10:30 - 11:00		✓	✓	✓	✓	✓	✓
11:00 - 11:30		✓	✓	✓	✓	✓	✓
11:30 - 12:00		✓	✓	✓	✓	✓	✓
12:00 - 12:30		✓	✓	✓	✓	✓	✓
12:30 - 13:00		✓	✓	✓	✓	✓	✓
13:00 - 13:30		✓	✓	✓	✓	✓	✓
13:30 - 14:00		✓	✓	✓	✓	✓	✓
14:00 - 14:30		✓	✓	✓	✓	✓	✓
14:30 - 15:00		✓	✓	✓	✓	✓	✓
15:00 - 15:30		✓	✓	✓	✓	✓	✓
15:30 - 16:00		✓	✓	✓	✓	✓	✓
16:00 - 16:30		✓	✓	✓	✓	✓	✓
16:30 - 17:00		✓	✓	✓	✓	✓	✓
17:00 - 17:30		✓	✓	✓	✓	✓	✓
17:30 - 18:00		✓	✓	✓	✓	✓	✓
		李	李	李	李	李	李

Verified by Tommy Law (ES) ✓

Date 5/2/2018

NL7286

地盆水車灑水記錄表(2018)

	星期日	星期一	星期二	星期三	星期四	星期五	星期六
	1月28日	1月29日	1月30日	1月31日	2月1日	2月2日	2月3日
8:00 - 8:30		✓	✓	✓	✓	✓	✓
8:30 - 9:00		✓	✓	✓	✓	✓	✓
9:00 - 9:30		✓	✓	✓	✓	✓	✓
9:30 - 10:00		✓	✓	✓	✓	✓	✓
10:00 - 10:30		✓	✓	✓	✓	✓	✓
10:30 - 11:00		✓	✓	✓	✓	✓	✓
11:00 - 11:30		✓	✓	✓	✓	✓	✓
11:30 - 12:00		✓	✓	✓	✓	✓	✓
12:00 - 12:30		✓	✓	✓	✓	✓	✓
12:30 - 13:00		✓	✓	✓	✓	✓	✓
13:00 - 13:30		✓	✓	✓	✓	✓	✓
13:30 - 14:00		✓	✓	✓	✓	✓	✓
14:00 - 14:30		✓	✓	✓	✓	✓	✓
14:30 - 15:00		✓	✓	✓	✓	✓	✓
15:00 - 15:30		✓	✓	✓	✓	✓	✓
15:30 - 16:00		✓	✓	✓	✓	✓	✓
16:00 - 16:30		✓	✓	✓	✓	✓	✓
16:30 - 17:00		✓	✓	✓	✓	✓	✓
17:00 - 17:30		✓	✓	✓	✓	✓	✓
17:30 - 18:00		✓	✓	✓	✓	✓	✓
		Lau Kam Tim	Lau Kam Tim	Lau Kam Tim	Lau Kam Tim	Lau Kam Tim	Lau Kam Tim

Verified by Tommy Law (ES)

Date 6/2/2018

地盆人手灑水記錄表(2018)

地點: Portion M.	星期日	星期一	星期二	星期三	星期四	星期五	星期六
	1月28日	1月29日	1月30日	1月31日	2月1日	2月2日	2月3日
8:00 - 8:30		✓	✓	✓	✓	✓	✓
8:30 - 9:00		✓	✓	✓	✓	✓	✓
9:00 - 9:30		✓	✓	✓	✓	✓	✓
9:30 - 10:00		✓	✓	✓	✓	✓	✓
10:00 - 10:30		✓	✓	✓	✓	✓	✓
10:30 - 11:00		✓	✓	✓	✓	✓	✓
11:00 - 11:30		✓	✓	✓	✓	✓	✓
11:30 - 12:00		✓	✓	✓	✓	✓	✓
12:00 - 12:30		✓	✓	✓	✓	✓	✓
12:30 - 13:00		✓	✓	✓	✓	✓	✓
13:00 - 13:30		✓	✓	✓	✓	✓	✓
13:30 - 14:00		✓	✓	✓	✓	✓	✓
14:00 - 14:30		✓	✓	✓	✓	✓	✓
14:30 - 15:00		✓	✓	✓	✓	✓	✓
15:00 - 15:30		✓	✓	✓	✓	✓	✓
15:30 - 16:00		✓	✓	✓	✓	✓	✓
16:00 - 16:30		✓	✓	✓	✓	✓	✓
16:30 - 17:00		✓	✓	✓	✓	✓	✓
17:00 - 17:30		✓	✓	✓	✓	✓	✓
17:30 - 18:00		✓	✓	✓	✓	✓	✓

Verified by Tommy Law (ES)

Date 8/2/2018

地盆人手灑水記錄表(2018)

地點: Hope Town	星期日	星期一	星期二	星期三	星期四	星期五	星期六
	1月28日	1月29日	1月30日	1月31日	2月1日	2月2日	2月3日
8:00 - 8:30		✓	✓	✓	✓	✓	✓
8:30 - 9:00		✓	✓	✓	✓	✓	✓
9:00 - 9:30		✓	✓	✓	✓	✓	✓
9:30 - 10:00		✓	✓	✓	✓	✓	✓
10:00 - 10:30		✓	✓	✓	✓	✓	✓
10:30 - 11:00		✓	✓	✓	✓	✓	✓
11:00 - 11:30		✓	✓	✓	✓	✓	✓
11:30 - 12:00		✓	✓	✓	✓	✓	✓
12:00 - 12:30		✓	✓	✓	✓	✓	✓
12:30 - 13:00		✓	✓	✓	✓	✓	✓
13:00 - 13:30		✓	✓	✓	✓	✓	✓
13:30 - 14:00		✓	✓	✓	✓	✓	✓
14:00 - 14:30		✓	✓	✓	✓	✓	✓
14:30 - 15:00		✓	✓	✓	✓	✓	✓
15:00 - 15:30		✓	✓	✓	✓	✓	✓
15:30 - 16:00		✓	✓	✓	✓	✓	✓
16:00 - 16:30		✓	✓	✓	✓	✓	✓
16:30 - 17:00		✓	✓	✓	✓	✓	✓
17:00 - 17:30		✓	✓	✓	✓	✓	✓
17:30 - 18:00		✓	✓	✓	✓	✓	✓
		Tan	Tan	Tan	Tan	Tan	Tan

Verified by Tommy Law (ES) ✓

Date 5/2/2018

地盆人手灑水記錄表(2018)

地點: Central Garden	星期日	星期一	星期二	星期三	星期四	星期五	星期六
	1月28日	1月29日	1月30日	1月31日	2月1日	2月2日	2月3日
8:00 - 8:30		✓	✓	✓	✓	✓	✓
8:30 - 9:00		✓	✓	✓	✓	✓	✓
9:00 - 9:30		✓	✓	✓	✓	✓	✓
9:30 - 10:00		✓	✓	✓	✓	✓	✓
10:00 - 10:30		✓	✓	✓	✓	✓	✓
10:30 - 11:00		✓	✓	✓	✓	✓	✓
11:00 - 11:30		✓	✓	✓	✓	✓	✓
11:30 - 12:00		✓	✓	✓	✓	✓	✓
12:00 - 12:30		✓	✓	✓	✓	✓	✓
12:30 - 13:00		✓	✓	✓	✓	✓	✓
13:00 - 13:30		✓	✓	✓	✓	✓	✓
13:30 - 14:00		✓	✓	✓	✓	✓	✓
14:00 - 14:30		✓	✓	✓	✓	✓	✓
14:30 - 15:00		✓	✓	✓	✓	✓	✓
15:00 - 15:30		✓	✓	✓	✓	✓	✓
15:30 - 16:00		✓	✓	✓	✓	✓	✓
16:00 - 16:30		✓	✓	✓	✓	✓	✓
16:30 - 17:00		✓	✓	✓	✓	✓	✓
17:00 - 17:30		✓	✓	✓	✓	✓	✓
17:30 - 18:00		✓	✓	✓	✓	✓	✓

Verified by Tommy Law (ES)

Date 6/2/2018

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: 02nd Feb 2018

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 conducted on 22-May-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 planting not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor				√	No stockpile in the reporting period
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				√	
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) 2/3/2018

Checked by: T L Tam **(ET)** 7 March 2018 **(Date)**

Checked by: **(IEC)** 7 March 2018 **(Date)**

(E. C. TSANG)

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

Item 2. Tree Transplanting works conducted on 22-May-17.

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

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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 09th Feb 2018

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 conducted on 22-May-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 planting not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor				√	No stockpile in the reporting period
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				√	
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

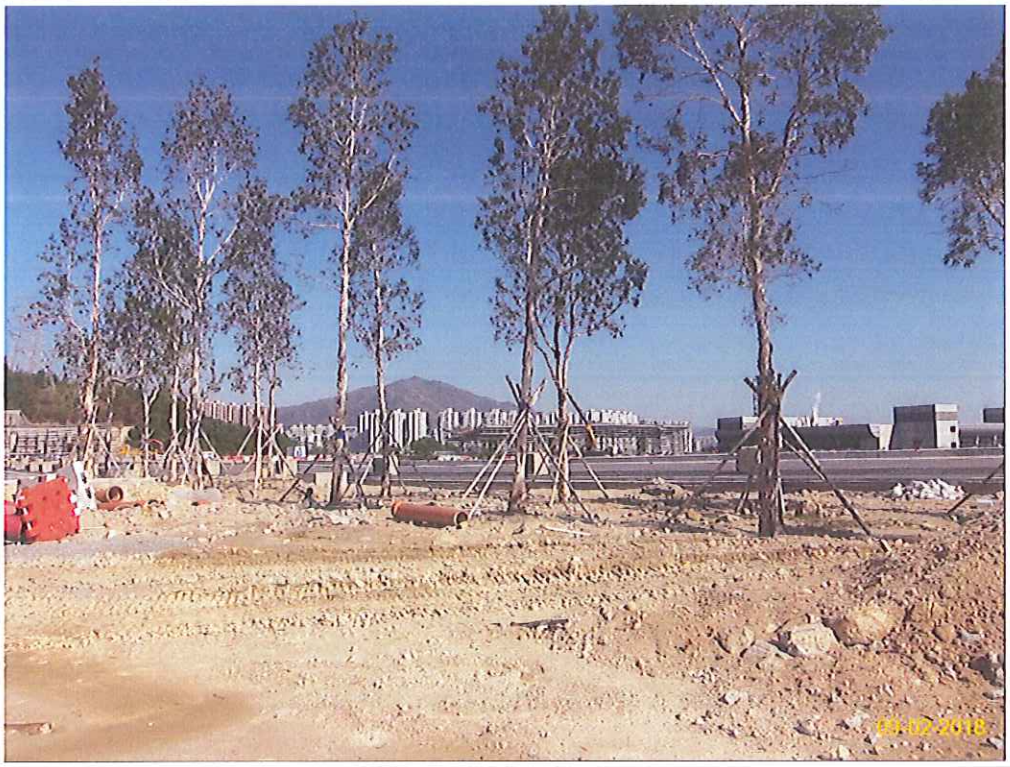
Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 2/3/2018

Checked by: T L Tam **(ET)** 7 March 2018 **(Date)**

Checked by: **(IEC)** 7 March 2018 **(Date)**

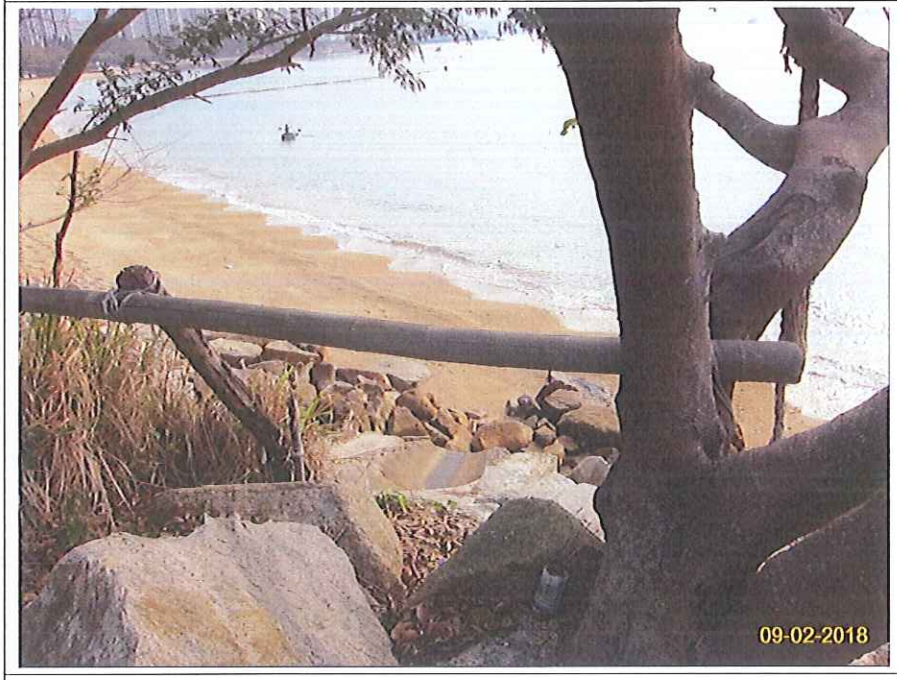
(F. C. TSANG)

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



Item 2. Tree Transplanting works conducted on 22-May-17.

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



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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 15th Feb 2018

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 conducted on 22-May-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 planting not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor				√	No stockpile in the reporting period
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				√	
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) 2/3/2018

Checked by: T L Tam **(ET)** 7 March 2018 **(Date)**

Checked by: (F. C. TSANG) **(IEC)** 7 March 2018 **(Date)**

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

Item 2. Tree Transplanting works conducted on 22-May-17.

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

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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 23th Feb 2018

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 conducted on 22-May-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 planting not commenced yet
4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone)	All areas / During construction	Design Consultant/ Contractor				√	No stockpile in the reporting period
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				√	
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) 2/3/2018

Checked by: T L Tam **(ET)** 7 March 2018 **(Date)**

Checked by: (F. C. TSANG) **(IEC)** 7 March 2018 **(Date)**

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

Item 2. Tree Transplanting works was conducted on 22-May-17.

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

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

Appendix L

Monthly Summary Waste Flow Table

Appendix A –Monthly Waste Flow Table

Monthly Summary Waste Flow Table for 2018 (year)

Month		Annual Quantities of Inert C&D Materials Generated Monthly					Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals (see note 4)	Paper / cardboard packaging (see note 4)	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	3.292	0.000	0.180	0.802	2.000	0.000	0.000	0.000	0.000	0.000	0.310
Feb	1.782	0.000	0.11	0.482	1.036	0.000	0.000	0.000	0.000	0.000	0.154
Mar	0.000										
Apr	0.000										
May	0.000										
June	0.000										
Sub-total	5.074										
July	0.000										
Aug	0.000										
Sept	0.000										
Oct	0.000										
Nov	0.000										
Dec	0.000										
Total	5.074	0.000	0.290	1.284	3.036	0.000	0.000	0.000	0.000	0.000	0.464

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
February 2018	Air Quality – 1-hour TSP	Action Level	**2**	**37**
		Limit Level	0	**2**
	Air Quality – 24-hour TSP	Action Level	0	**3**
		Limit Level	0	**3**

Table N-2 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics					
	Frequency	Cumulative	Complaint Nature			
			Air	Noise	Water	Others
February 2018	0	**10**	**3**	**1**	**6**	**2**
Cumulative since project commencement	**10**	**10**	**3**	**1**	**6**	**2**

Table N-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
February 2018	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
February 2018	0	0	NA	NA	NA
Cumulative since project commencement	0	0	NA	NA	NA

Appendix O

Investigation Report for the Complaint

(Not Use)

Appendix P

Inspection Checklist for Vulnerable to Contaminated Water Discharge

中國路橋 CRBC Kaden 基利	Contract No. HY/2013/12 Tuen Mun - Chek Lap Kok Link Northern Connection Toll Plaza and Associated Works

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2018-02-01 Location: Stream B, Outfall 1

Name of Inspector: Tommy Law Position of Inspector: EO

Please put a tick √ on the appropriate box.

	Item Description	Y	P	N	Remarks
1	Exposed slope protected?	√			
2	Adequacy of wastewater treatment facilities provided?	√			
3	Sandbags provided at each step and top of side walls?	√			
4	Is silt screen maintained in good condition?	√			
5	Remove debris, grit and silt inside the drainage system?	√			
6	Contaminated water discharge at discharge point / drainage inlet avoided?	√			
7	General housekeeping / site tidiness in good condition?	√			

Legends: Y = Yes, P = Partial, N = No

Daily Drainage Inspection Record

Inspection Date: 2018-02-01

Stream B Outfall: No water is discharging.

Outfall 1: No water is discharging.

中國路橋 CRBC Kaden 基利	Contract No. HY/2013/12 Tuen Mun - Chek Lap Kok Link Northern Connection Toll Plaza and Associated Works

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2018-02-07 Location: Stream B, Outfall 1

Name of Inspector: Tommy Law Position of Inspector: EO

Please put a tick √ on the appropriate box.

	Item Description	Y	P	N	Remarks
1	Exposed slope protected?	√			
2	Adequacy of wastewater treatment facilities provided?	√			
3	Sandbags provided at each step and top of side walls?	√			
4	Is silt screen maintained in good condition?	√			
5	Remove debris, grit and silt inside the drainage system?	√			
6	Contaminated water discharge at discharge point / drainage inlet avoided?	√			
7	General housekeeping / site tidiness in good condition?	√			

Legends: Y = Yes, P = Partial, N = No

Daily Drainage Inspection Record

Inspection Date: 2018-02-07

Stream B Outfall: No water is discharging.

Outfall 1: No water is discharging.

中國路橋 CRBC Kaden 基利	Contract No. HY/2013/12 Tuen Mun - Chek Lap Kok Link Northern Connection Toll Plaza and Associated Works

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2018-02-14 Location: Stream B, Outfall 1

Name of Inspector: Tommy Law Position of Inspector: EO

Please put a tick √ on the appropriate box.

	Item Description	Y	P	N	Remarks
1	Exposed slope protected?	√			
2	Adequacy of wastewater treatment facilities provided?	√			
3	Sandbags provided at each step and top of side walls?	√			
4	Is silt screen maintained in good condition?	√			
5	Remove debris, grit and silt inside the drainage system?	√			
6	Contaminated water discharge at discharge point / drainage inlet avoided?	√			
7	General housekeeping / site tidiness in good condition?	√			

Legends: Y = Yes, P = Partial, N = No

Daily Drainage Inspection Record

Inspection Date: 2018-02-14

Stream B Outfall: No water is discharging.

Outfall 1: No water is discharging.

中國路橋 CRBC Kaden 基利	Contract No. HY/2013/12 Tuen Mun - Chek Lap Kok Link Northern Connection Toll Plaza and Associated Works

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2018-02-21 Location: Stream B, Outfall 1

Name of Inspector: Tommy Law Position of Inspector: EO

Please put a tick √ on the appropriate box.

	Item Description	Y	P	N	Remarks
1	Exposed slope protected?	√			
2	Adequacy of wastewater treatment facilities provided?	√			
3	Sandbags provided at each step and top of side walls?	√			
4	Is silt screen maintained in good condition?	√			
5	Remove debris, grit and silt inside the drainage system?	√			
6	Contaminated water discharge at discharge point / drainage inlet avoided?	√			
7	General housekeeping / site tidiness in good condition?	√			

Legends: Y = Yes, P = Partial, N = No

Daily Drainage Inspection Record

Inspection Date: 2018-02-21

Stream B Outfall: No water is discharging.

Outfall 1: No water is discharging.

中國路橋 CRBC Kaden 基利	Contract No. HY/2013/12 Tuen Mun - Chek Lap Kok Link Northern Connection Toll Plaza and Associated Works

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2018-02-28 Location: Stream B, Outfall 1

Name of Inspector: Tommy Law Position of Inspector: EO

Please put a tick √ on the appropriate box.

	Item Description	Y	P	N	Remarks
1	Exposed slope protected?	√			
2	Adequacy of wastewater treatment facilities provided?	√			
3	Sandbags provided at each step and top of side walls?	√			
4	Is silt screen maintained in good condition?	√			
5	Remove debris, grit and silt inside the drainage system?	√			
6	Contaminated water discharge at discharge point / drainage inlet avoided?	√			
7	General housekeeping / site tidiness in good condition?	√			

Legends: Y = Yes, P = Partial, N = No

Daily Drainage Inspection Record

Inspection Date: 2018-02-28

Stream B Outfall: No water is discharging.

Outfall 1: No water is discharging.