AUES JOB NO.: TCS00715/14

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

14TH MONTHLY ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REPORT – DECEMBER 2015

PREPARED FOR
CRBC AND KADEN JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
13 January 2015	TCS00715/14/600/R0158v2	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

RAMBOLL ENVIRON

Ref.: HYDHZMBEEM00_0_3757L.16 14 January 2016

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

Attention: Mr. Roger Man

Dear Roger,

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
Monthly EM&A Report for December 2015 (EP-354/2009/D)

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Dec. 2015) (AUES reference: TCS00715/14/600/R00158v2 dated 13 January 2016) certified by the ET Leader and provided to us via e-mail on 14 Jan. 2016.

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

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

Yours sincerely,

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

c.c. HyD – Mr. Stephen Chan (By Fax: 3188 6614)
HyD – Mr. Matthew Fung (By Fax: 3188 6614)
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)
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Internal: DY, YH, LP, CL, ENPO Site

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EXECUTIVE SUMMARY

ES01 This is the **14th** Monthly EM&A Report presenting the monitoring results and inspection findings for the period from **1 to 31 December 2015** (hereinafter 'the Reporting Period').

SUMMARY OF EM&A ACTIVITIES FOR THE REPORTING PERIOD

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

- 24-hours TSP of Air Quality Monitoring **– 55 events**
- 1-hour TSP of Air Quality Monitoring – **165 events**
- Cultural heritage Inspection – **5 events**
- Landfill Gas Monitoring **– 25 days**
- Landscape & Visual Monitoring – **5 events**
- Environmental Site Inspection – **5 events**

BREACH OF ACTION AND LIMIT (A/L) LEVELS

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

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

ES04 No noise complaints were received in the Reporting Period.

ES05 Landfill gas monitoring was conducted at the construction of Retaining Wall B and Retaining Wall F 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 **1st, 8th, 15th, 22nd and 29th December 2015** and the IEC has attended the joint site inspection on **15th & 29th December 2015**. No non-compliance was recorded during the site inspection but 8 observations and 6 reminders were recorded.

ES08 Inspection for Pitcher Plants of ecology and grave of culture heritage were also carried out during the weekly site inspection.

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	0	**3**
December 2015	0	**3**

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 Druing 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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1.1 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 **14th** monthly EM&A report presenting the monitoring results and inspection findings for period from **1** to **31 December 2015**.

1.2 REPORT STRUCTURE

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

Section 1 *Introduction*
Section 2 *Contract Organization and Construction Progress and Environmental Submissions*
Section 3 *Summary of Impact Monitoring Requirements under the Contract*
Section 4 *Air Quality Monitoring*
Section 5 *Ecology Monitoring*
Section 6 *Cultural Heritage*
Section 7 *Landscape and Visual*
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Section 9 *Waste Management*
Section 10 *Inspections and Audit*
Section 11 *Environmental Complaints and Non-Compliance*
Section 12 *Implementation Status of Mitigation Measures*
Section 13 *Conclusions and Recommendations*

2 CONTRACT ORGANIZATION AND CONSTRUCTION PROGRESS AND ENVIRONMENTAL SUBMISSIONS

2.1 CONTRACT ORGANIZATION

2.1.1 The Contract organization and contact details of key personnel are shown in ***Appendix C***.

2.2 CONSTRUCTION PROGRESS

2.2.1 In the Reporting Period, the major construction activity conducted under the Contract is summarized in below. The three-months rolling programme of the Contract is enclosed in ***Appendix D***.

- Instrumentation and Monitoring
- Site Formation – Retaining Structure for Slope TP_F, TP_G, TP_A and Associated Works, TP_B and Associated Works, TP_C and Associated Works, TP_D and Associated Works, TP_E and Associated Works and Upgrading Works
- Toll Plaza Decking TD1, TD2
- Toll Plaza Footbridge-Section 1
- Retaining Structure RW_B-Section 1
- Bridge G1, G2,Bridge H1 Section 2
- Toll Collector Subway & Associated Works – Section 1
- Sewer Culvert 1 (TBM) – Stage 4, Culvert 2 & Culvert 3
- Blasting and Excavation of Underpass from East Portal
- Road and Drainage Works for Lung Fu Road Roundabout

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 The environmental submissions under the EP requirement had been submitted to the EPD and they are listed in below:

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

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

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

No.	Type of Permit/ License	Submission Date	Reference/ License No.	Date of Issue	Date of Expiry
1	Air pollution Control (Construction Dust) Regulation	06-08-2014	377719	06-08-2014	N/A
2	Chemical Waste Producer Registration - Waste Producers Number	06-08-2014	5117422C389301	03-09-2014	N/A
3	Water Pollution Control Ordinance - Discharge License	13-08-2014	WT00020065-2014	29-09-2014	30-09-2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	21-07-2014	7020460	01-08-2014	N/A
5	CNP for Multiple Task	7-10-2015	GW-RW0520-15	05-11-2015	04-05-2016
6	CNP for MH5	23-10-2015	GW-RW0563-15	18-11-2015	17-05-2016
7	Extend of Permission to Transplant Pitcher Plant	12-06-2015	(30) in AF CON 11/13 pt.4	23-06-2015	22/12/2015

No.	Type of Permit/ License	Submission Date	Reference/ License No.	Date of Issue	Date of Expiry
8	CNP for Tunnel	13-11-2015	GW-RW0582-15	23-11-2015	22-05-2016
9	Variation of Effluent Discharge License	19-08-2015	Pending for approval		

3 SUMMARY OF IMPACT MONITORING REQUIREMENTS UNDER THE CONTRACT

3.1 GENERAL

3.1.1 The major construction activities under the Contract are land-based and no marine work will be involved. In accordance with the Project EM&A Manual requirements, the environmental aspects under the Contract shall be included air quality, ecological, cultural heritage, landscape and visual, landfill gas and site inspection during construction period. In addition, audit of the contractor's implementation of the construction noise and land-based water quality pollution control measures are also required for the Contract.

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

3.2 AIR QUALITY MONITORING

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

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

3.3 MONITORING LOCATION

3.3.1 The air quality monitoring stations for impact monitoring are listed in ***Table 3-1*** and illustrated in ***Appendix E.***

Table 3-1 Air Quality Monitoring Stations under the Contract

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

3.4 MONITORING FREQUENCY

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

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

Table 3-2 Enhanced TSP Monitoring Plan – Construction Phase

Condition	Monitoring Parameter	Monitoring Location	Frequency	Monitoring Requirement
General	1-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	3 times per day every six days	Throughout the Northern Connection, toll plaza and tunnel buildings construction works
	24-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	Daily every six days	
Special	1-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	3 times per day every three days	**Northern Connection** During excavation works for launching shaft, excavation work for Cut and Cover Tunnel and Cut and Cover Tunnel Construction
	24-hour TSP	ASR1, ASR5, AQMS1, ASR6, ASR10	Daily every three days	

Condition	Monitoring Parameter	Monitoring Location	Frequency	Monitoring Requirement
				Toll Plaza During excavation, slope works, construction of road and superstructures and wind erosion from open sites and stockpiling areas **Tunnel Buildings** During excavation, foundation works, construction of superstructures and wind erosion from open sites and stockpiling areas

3.5 MONITORING EQUIPMENT

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.7 OTHER ENVIRONMENTAL ASPECTS

Noise

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

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

Water Quality

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

Ecology

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

3.7.5 During construction phase, the ET will perform Pitcher Plants inspection at least once every week to report the growth condition 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 L&V 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 (**December 2015**).

4.3 ACTION AND LIMIT (A/L) LEVELS EXCEEDANCE

4.3.1 According to the air quality monitoring result provided by Contract HY/2012/08, no exceedances in 1-hour and 24-hour TSP were recorded in the Reporting Period. No Notification on Exceedances (NOEs) was issued by the ET of Contract HY/2012/08. The summary of air quality exceedance in the Reporting Period is shown in ***Table 4-1***.

Table 4-1 Summary of Air Quality Monitoring Exceedance

Date of Exceedance	Monitoring Station	Air Quality Parameter	Result	Exceed
NA	NA	NA	--	--

4.4 AIR QUALITY EXCEEDANCE INVESTIGATION

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

5 ECOLOGY MONITORING

5.1 GENERAL

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

5.2 PITCHER PLANTS INSPECTION

5.2.1 In the Reporting Period, inspections for implementation status of mitigation measures for the Pitcher Plants were carried out by the ET on **1st, 8th, 15th, 22nd and 29th December 2015.** Total 181 pitcher plants were transplanted to finial 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.

5.2.2 Random checking was performed for the finial receptor site of the transplanted pitcher plant during the weekly site inspections. The Pitcher Plants at the protected areas was protected properly and the growth also was in fair condition. Moreover, no construction activities were carried out nearby the protected areas of Pitcher Plants. The condition of chain link fence is good and no repair or maintenance is required.

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 **1st, 8th, 15th, 22nd and 29th December 2015**. Since construction works are very close to buffer zone of the Grave G1, ET, Contractor and IEC conducted joint inspection to ensure protection measures fulfill the EIA and EM&A Manual and EP stipulation on ***15 December 2015***.

6.2.2 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. In contrast to the baseline condition, no significant change of Grave G1 was observed.

6.2.3 Accordingly, the Contractor has had fully implemented cultural heritage mitigation measures in accordance with the 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 ***4th, 11th, 15th, 24th and 31st December 2015*** by the Registered Landscape Architect.

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

8 LANDFILL GAS HAZARD MONITORING

8.1 GENERAL

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

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

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

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

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

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

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

8.1.6 To ensure the accuracy of the monitoring data, zeroing of the gas analyser shall be undertaken at the start of each day's monitoring. As advised by the SO, the gas analyser would be optimally calibrated by the self-test function to provide the most accurate result. The gas analyser is calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.

8.2 LANDFILL GAS MONITORING RESULT

8.2.1 In the Reporting Period, landfill gas monitoring was conducted at the construction of Retaining Walls B and F. Location of both Retaining Walls is illustrated in ***Appendix E***. 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 ***25*** days monitoring were carried by the Safety Officer or an approved and qualified persons. The results of landfill gas measurement are summarized in ***Table 8-1***. Moreover, database of monitoring result and graphical plot are attached in ***Appendix I***.

Table 8-1 Summary of Landfill Gas Measurement Results

Landfill Gas Parameter	Action Level	Limit Level	Detectable at Retaining Wall B		Detectable at Retaining Wall F	
			Min	Max	Min	Max
Methane	>10% LEL (>0.5% v/v)	>20% LEL (>1% v/v)	0%	0.1%	0%	0.1%
Oxygen	<19%	<18%	21.0%	21.2%	21.0%	21.2%
Carbon Dioxide	>0.5%	>1.5%	0%	0.2%	0%	0.2%

8.2.3 The measurement results shown that slightly methane concentration was detected and oxygen concentration measured was over 21.0 % and Carbon Dioxide was between 0 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)	12.964	-
Reused in other Projects (Inert) (`000m^3)	25.436	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)	0.922	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 Packing (`000kg)	0	Licensed collector
Recycled Plastic (`000kg)	0	-
Chemical Wastes (`000kg)	0	-
General Refuses (`000m^3)	0.089	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 **1st, 8th, 15th, 22nd and 29th December 2015**. No non-compliance was noted but **8** observations and **6** reminders were recorded during site inspection. Moreover, ENPO/IEC has attended joint site inspection on **15th & 29th December 2015**.

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
1 Dec 2015	• Free standing chemical drums without drip tray was observed. Drip tray should be provided for chemical containers storage on site. (Workshop)	• Drip tray was provided for the chemical drums.
	• Under the NRMM Regulation, all NRMM using on site should gained the label or in under application.	• Not required for reminder.
	• The contractor was reminded to assign the designated area for washing concrete equipment and the washing water should be treated before discharged.	• Not required for reminder.
8 Dec 2015	• Waste skip was observed full, the contractor should clean more frequency.	• General refuse clean-up frequency has been increased.
	• Chemical bottles located on-site without drip tray was observed. Drip tray should be provided for chemical containers which storage on site to prevent contamination.	• Chemical container without drip tray has removed.
	• During the dry season, dust mitigations measures should be implemented properly to reduce dust impact.	• Not required for reminder.
15 Dec 2015	• Stagnant water cumulated inside the drip tray was observed. (Retaining Wall B)	• Stagnant water cumulated inside the drip tray was removed.
	• Water spraying should be provided for rock drilling, soil nail and haul road to reduce dust impact.	• Water spraying was provided for dusty works.
22 Dec 2015	• Chemical containers located on working area were observed without drip tray. The contractor should provide properly storage area to store chemical materials on site. (MH-5)	• Chemical containers located at MH5 has removed.
	• Tree protection zone should be to set-up for the retained tree located within site boundary. (Works area near fire station)	• Not required for reminder.

Date	Findings / Deficiencies	Follow-Up Status
29 Dec 2015	• Chemical containers without drip tray was observed. Drip tray should be provided all chemical as using on site. (Retaining Wall B)	• Chemical containers located at Retaining Wall B has removed.
	• Oil leakage from fork lifting truck was observed at Retaining Wall B. The contractor should immediately clean up the oil stain and follow chemical waste disposal. To prevent land contamination, all plants using on site should be undertaken regular maintenance.	• Oil stain was cleared and the fork lifting truck was removed from the site.
	• Remind that all non-road mobile machinery should be displayed NRMM Label.	• Not required for reminder.
	• During dry season, water spraying should be provided for dusty activities to reduce dust impact.	• Not required for reminder.

10.1.4 No outstanding deficiency was remained to be rectified in previous Reporting Period.

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

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

10.1.5 Dry and windy season has came, air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be implemented to reduce construction dust impact as recommended in the EMIS.

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

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

Inspection Checklist for Vulnerable to Contaminated Water Discharge

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

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

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

11 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

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

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

Table 11-1 Statistical Summary of Environmental Exceedance

Reporting Period	Environmental Aspect / Parameter	Environmental Performance	Event Exceedance		
			Reporting Month	Previous Months	Cumulative
December 2015	Air Quality - 1-hr TSP	Action Level	0	**4**	**4**
		Limit Level	0	0	0
	Air Quality - 24-hr TSP	Action Level	0	0	0
		Limit Level	0	0	0

Table 11-2 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
December 2015	0	**3**	NA	NA	**3**

Table 11-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
December 2015	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
December 2015	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 CEDD.

12 IMPLEMENTATION STATUS OF MITIGATION MEASURES

12.1 GENERAL REQUIREMENTS

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

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

Table 12-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Air Quality	• Maintain damp / wet surface on access road • Keep slow speed in the sites • All vehicles must use wheel washing facility before off site • Sprayed water during rock breaking works • During transportation by truck, materials loaded lower than the side and tail boards, and covered before transport • Compacted all soil stockpiles • Part of the exposed slopes covered geotextile net
Cultural Heritage	• Set a buffer zone between the working area and the Grave • All construction materials and equipment store far from the Grave • Inspection the Grave to ensure provision mitigation measures effective
Ecology	• Wire fencing provided for temporary protect Pitcher Plants • Undertake weekly inspection of Pitcher Plants
Landfill Gas Hazard	• Landfill Gas measurement undertake during trench excavation
Water Quality	• Temporary drainage system provide for surface runoff prevent discharge to public area • Wastewater to be treated by sedimentation tank before discharge.
Noise	• Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants • The noisy plants or works provide mobile noise barriers • Shut down the plants when not in used
Waste and Chemical Management	• On-site sorting prior to disposal • Follow requirements and procedures of the "Trip-ticket System" • Predict required quantity of concrete accurately • Collect the unused fresh concrete at designated locations in the sites for subsequent disposal
General	• The site was generally kept tidy and clean.

12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

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

- Instrumentation and Monitoring
- Site Formation – Retaining Structure for RW_A, Slope TP_F, TP_G, TP_A and Associated Works, TP_B and Associated Works, TP_C and Associated Works, TP_D and Associated Works, TP_E and Associated Works and Slope Upgrading Works
- Toll Plaza Decking TD1-Section 1, TD2-Section 1
- Toll Plaza Footbridge-Section 1
- Retaining Structure RW_B and RW_F
- Toll Collector Subway & Associated Works-Section 1
- Bridge G1, G2, Bridge H1 Section 2

- Sewer Culvert at FC1 and FC2
- Blasting and Excavation of Underpass from East Portal
- Road and Drainage Works for Lung Fu Road Roundabout

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 **14th** monthly EM&A report presenting the monitoring results and inspection findings for the period of **1** to **31 December 2015**.

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

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

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

13.1.5 Weekly site inspection and random checking respectively were performed for the transplanted Pitcher Plants in the finial receptor site. No construction activities were conducted nearby the protected areas of Pitcher Plants. The growths of the transplanted pitcher plant were in fair condition. No repair or maintenance is required the scaffold structure or chain link fence.

13.1.6 Landfill gas monitoring was conducted at the construction of Retaining Walls B and F by the Safety Officer. The monitoring results shown no exceedances were triggered.

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

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

13.1.9 Joint site inspection by the RE, ET and Contractor was carried out on **1st, 8th, 15th, 22nd and 29th December 2015** in which ENPO/IEC joined the inspection on ***15th and 29th*** **December 2015**. No non-compliance was recorded during the site inspection but **8** observations and **6** reminders were recorded.

13.1.10 In the Reporting Period, Grave G1 of inspection was undertaken on **1st, 8th, 15th, 22nd and 29th December 2015**. Since construction works are very close to buffer zone of the Grave G1, therefore IEC conducted joint inspection to ensure protection measures fulfill the EIA and EM&A Manual and EP stipulation on ***15th December 2015***. 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.

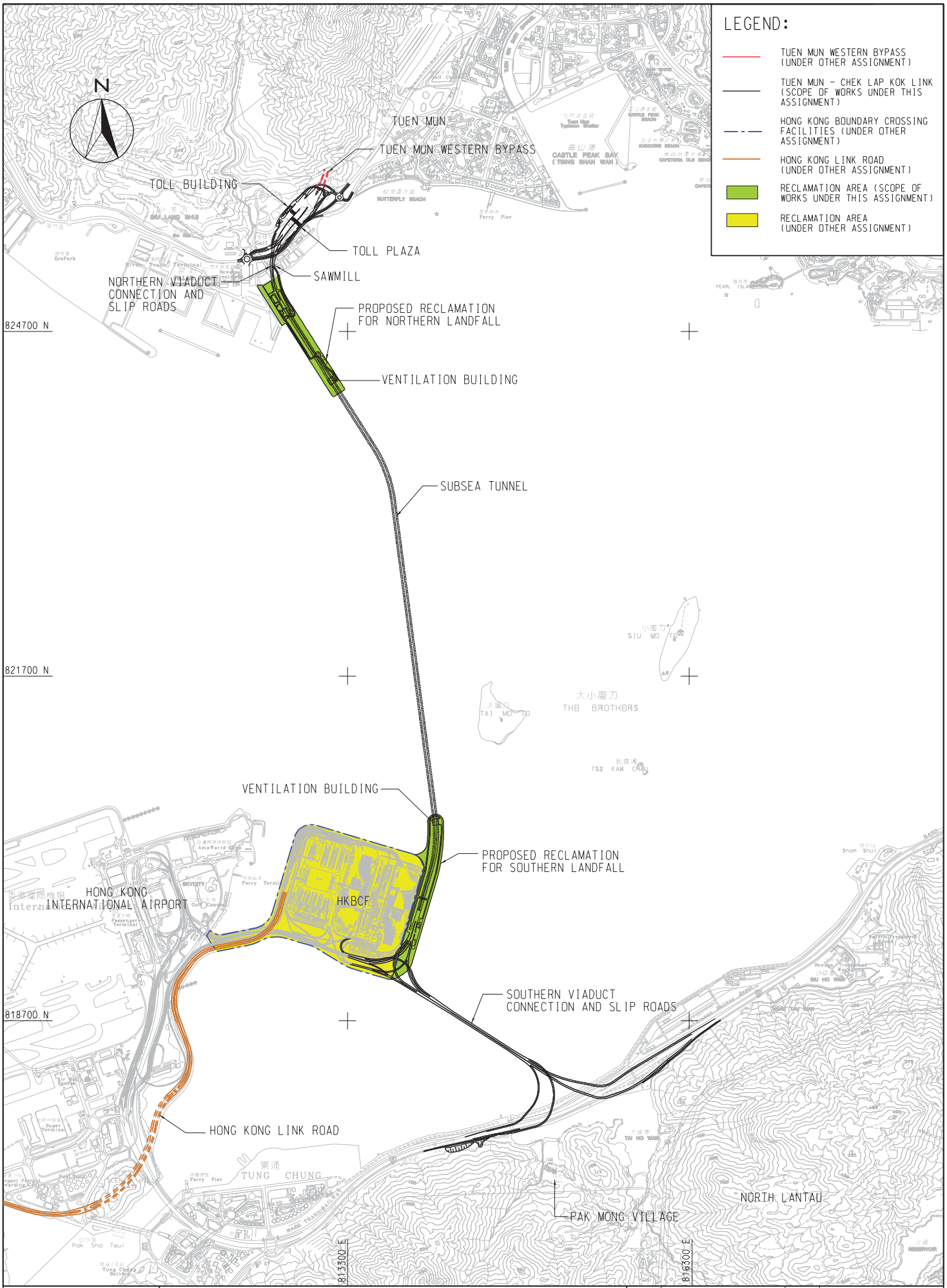
13.2.2 Moreover, muddy water or other water pollutants from site surface runoff discharged into public areas would be a potential environmental issue. Special attention should be paid on the water quality mitigation measures to prevent surface runoff flow to public area.

13.2.3 Moreover, good 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.

13.2.4 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%2

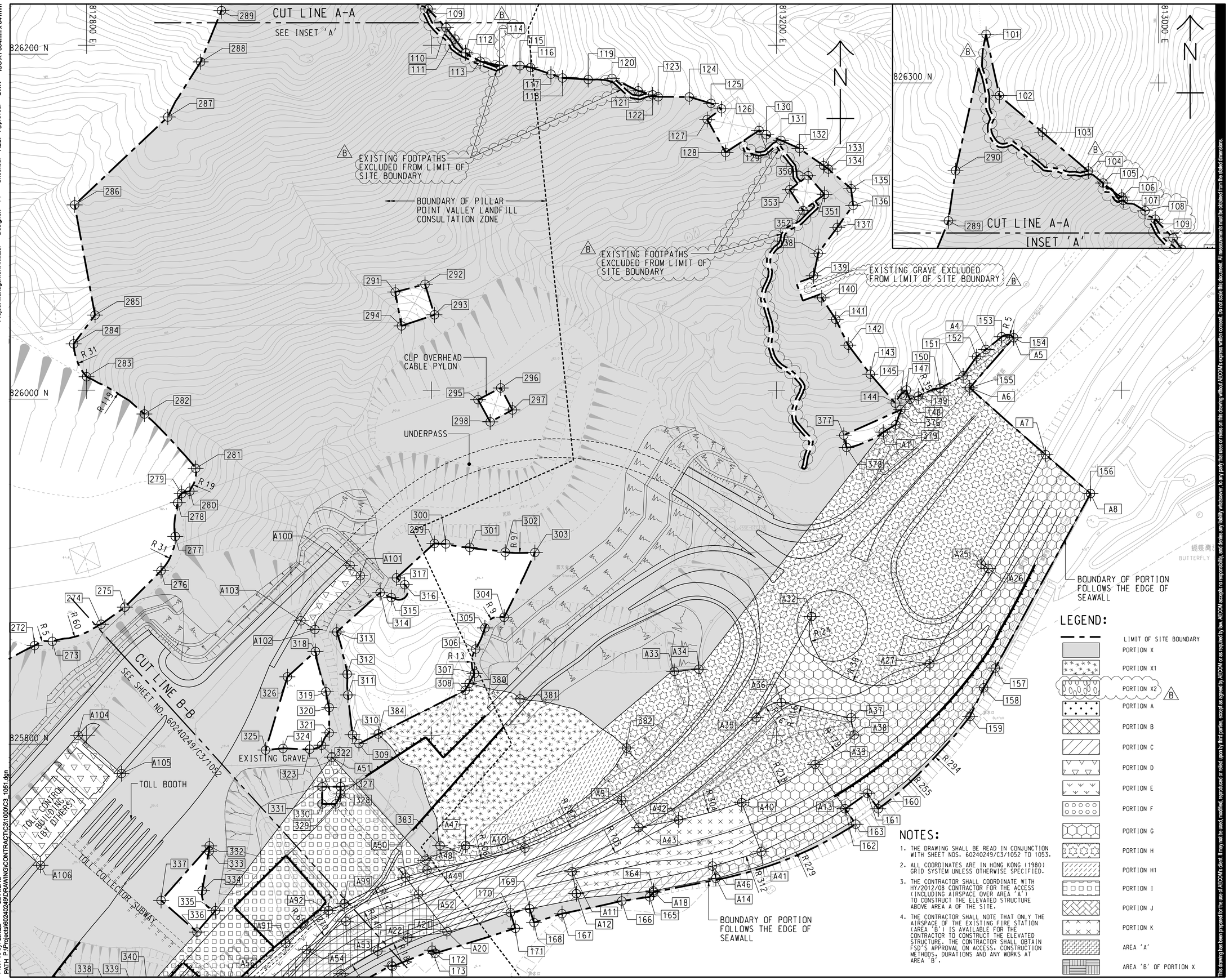
p:\PROJECTS\60044963\DRAWING\FIGURE\EIA REPORT\CH3\FIGURE 3-1.dgn

Appendix B

Layout Plan of the Contract

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

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



LEGEND:

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

NOTES:

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

AECOM

PROJECT 項目

TUEN MUN - CHEK LAP KOK LINK

CONTRACT TITLE

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

CLIENT 業主

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

CONSULTANT 工程顧問公司

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ISSUE/REVISION 修訂

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

STATUS 階段

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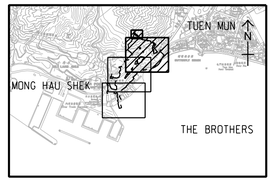
KEY PLAN 索引圖 1 : 50000



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

SETTING OUT COORDINATES OF SITE BOUNDARY

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

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

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

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

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

EXISTING GRAVE

FOOTBRIDGE WITH PASSENGER LIFT

ALONG THE EDGE OF SEAWALL

BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE

BOUNDARY OF PORTION FOLLOWS THE OUTER EDGE OF U-CHANNEL

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

SETTING OUT COORDINATES OF SITE BOUNDARY

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

Plot File by: LUOMQ 2014/3/18
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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

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			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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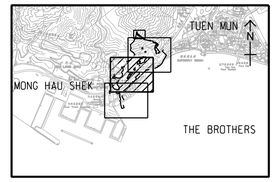
DIMENSION UNIT 尺寸單位
METRES

KEY PLAN 索引圖引圖 1 : 50000



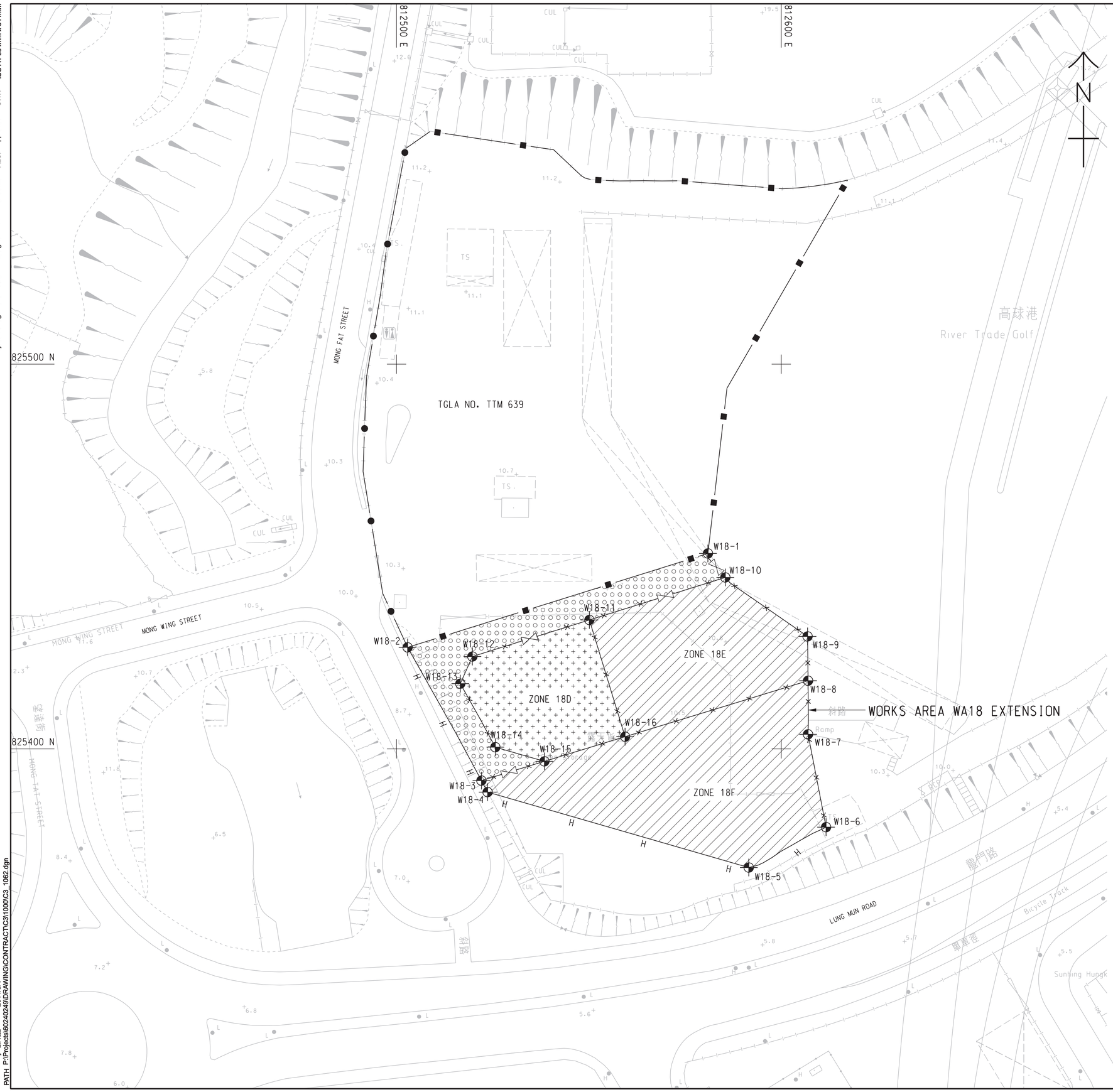
PROJECT NO. 項目編號
60240249

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



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

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

STATUS 階段

SCALE 比例 A1 1 : 500

DIMENSION UNIT 尺寸單位 METRES

KEY PLAN 索引圖

PROJECT NO. 項目編號 60240249

CONTRACT NO. 合約編號 HY/2013/12

SHEET TITLE 圖紙名稱

WORKS AREA AND HOARDING PLAN

SHEET 2 OF 2

SHEET NUMBER 圖紙編號

60240249/C3/1062B

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

Plot File by: LIXQ2 2014/3/4
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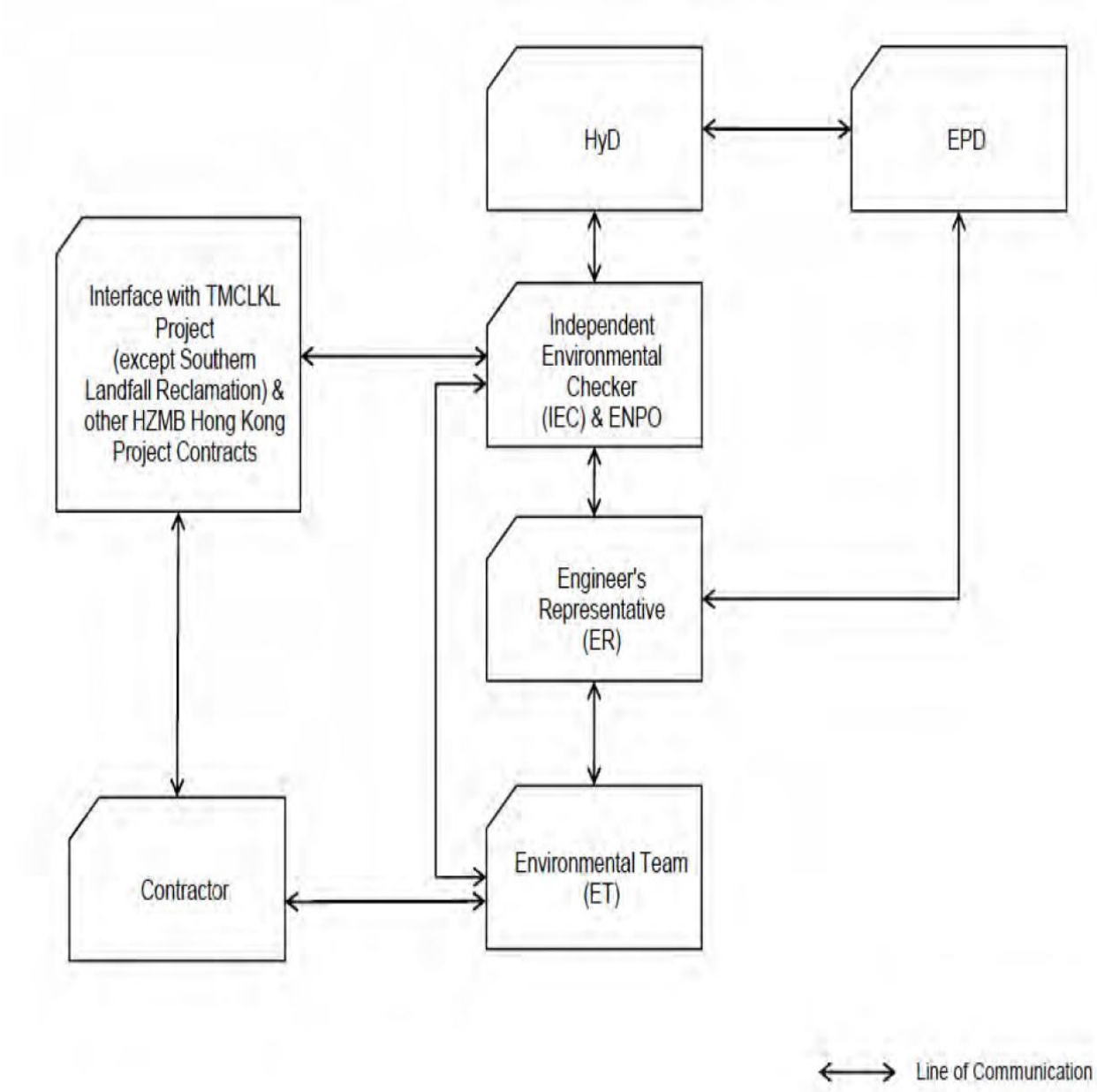
Appendix C

Organization of the Contract



Project Organization chart

Organization chart of the Contractor

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

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
HyD	Employer	Mr. Stephen W.C. Chan	2762 3669	3188 6614
AECOM	Principal Resident Engineer	Mr. S.W. Fok	2218 7209	2218 7399
AECOM	Chief Resident Engineer	Mr. Roger Man	2218 7288	2218 7399
AECOM	Resident Engineer (S&E)	Mr. Kelvin Yeung	22187289	2218 7399
Ramboll Environ	Environmental Project Office (ENPO)	Mr. YH Hui	3547 2133	3465 2899
RAMBOLL - ENVIRON	Independent Environmental Checker (IEC)	Dr. FC Tsang	3547 2134	3465 2899
CKJV	Project Manager	Mr. Simon Tong	2253 8300	2253 8399
CKJV	Site Agent	Mr. John Wong	2253 8300	2253 8399
CKJV	Environmental Officer	Mr. Thomas Chan	2273 3185	2375 3655
CKJV	Environmental Officer	Mr. HY Tang	2253 8300	2253 8399
CKJV	Environmental Supervisor	Miss Melody Tong	2253 8300	2253 8399
AUES	Environmental Team Leader	Mr. T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Miss Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Mr. Ben Tam	2959 6059	2959 6079
HKL	Registered Landscape Architect	Kenneth Ng	2866 3903	--

Legend:

HyD (Employer) –Highways Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CKJV (Main Contractor) – CRBC-Kaden Joint Venture

Ramboll Environ (ENPO and IEC) – Ramboll Environ Hong Kong Limited

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

HKL(RLA) – Hong Kong Landscape

Appendix D

Three-Months Rolling Programme

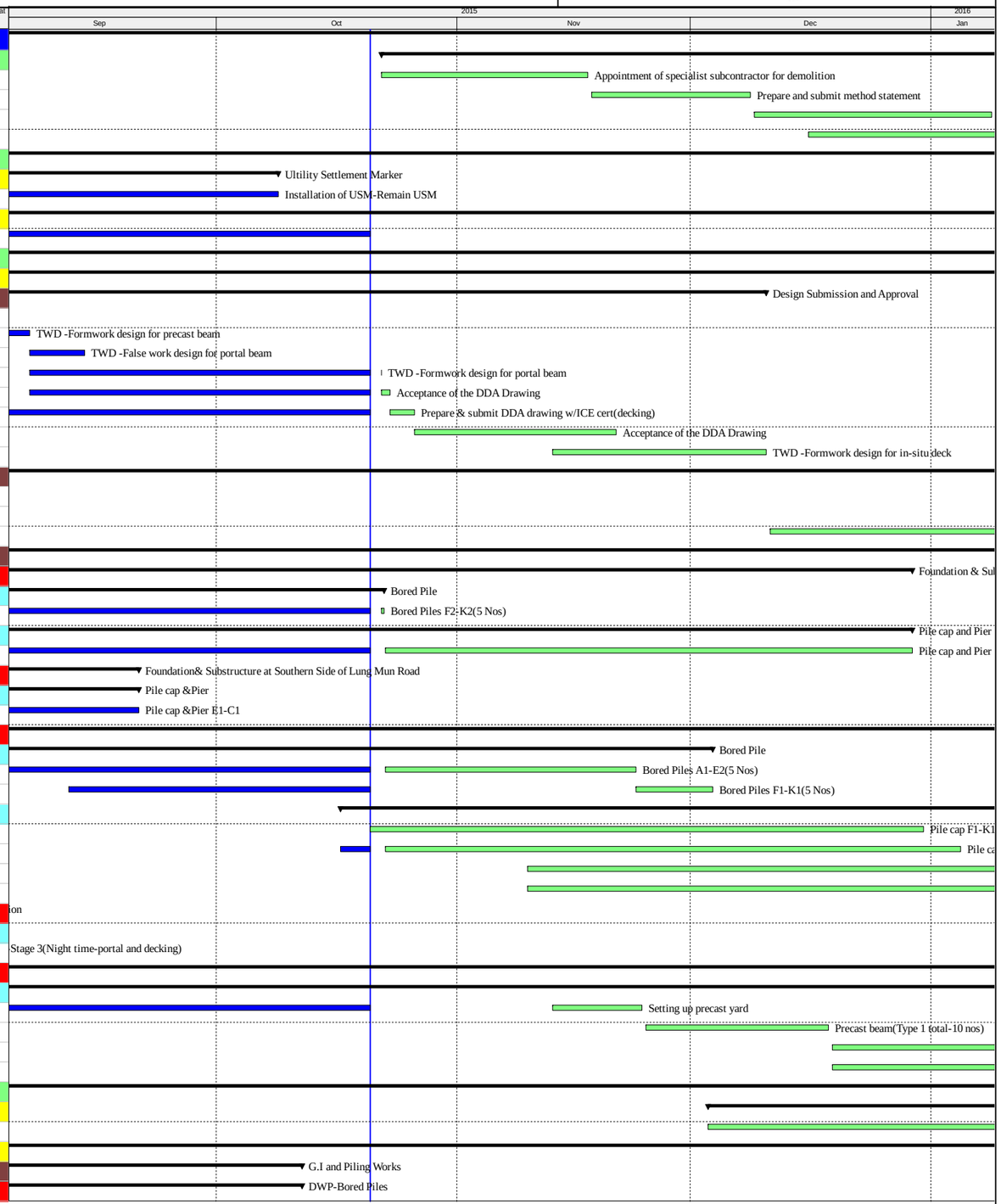
Data Date : 20-Oct-15

Page: 1

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
HY/2013/12 DWP Rev.3		920	18-Feb-14 A	03-Nov-17	396
Dismantling of HY/2012/04 Project Office at WA6		84	22-Oct-15	13-Jan-16	328
DM10010	Appointment of specialist subcontractor for demolition	23	22-Oct-15	17-Nov-15	267
DM10020	Prepare and submit method statement	18	18-Nov-15	08-Dec-15	267
DM10030	Approval of method statement	24	09-Dec-15	08-Jan-16	267
DM10040	Advance necessary precantionary and protective measure	22	16-Dec-15	13-Jan-16	253
Instrumentation and Monitoring		254	04-Nov-14 A	03-Nov-17	110
Ultility Settlement Marker		90	22-Nov-14 A	09-Oct-15 A	
IM60020	Installation of USM-Remain USM	90	22-Nov-14 A	09-Oct-15 A	
Piezometer/Standpipe		7	04-Nov-14 A	03-Nov-17	110
IM50025	GI for PADH13-15 and installation piezometer	7	04-Nov-14 A	03-Nov-17	110
Toll Plaza Decking TD1-Section 1		383	12-Feb-15 A	04-Mar-16	390
Stage 1		383	12-Feb-15 A	04-Mar-16	390
Design Submission and Approval		75	23-May-15 A	10-Dec-15	334
TD120150	Engineer's comments	23	23-May-15 A	04-Jun-15 A	
TD120210	TWD -Formwork design for precast beam	24	01-Sep-15 A	07-Sep-15 A	
TD120200	TWD -False work design for portal beam	24	07-Sep-15 A	14-Sep-15 A	
TD120190	TWD -Formwork design for portal beam	24	07-Sep-15 A	22-Oct-15	114
TD120130	Acceptance of the DDA Drawing	23	07-Sep-15 A	23-Oct-15	296
TD120160	Prepare & submit DDA drawing w/ICE cert(decking)	23	05-Jun-15 A	26-Oct-15	351
TD120170	Acceptance of the DDA Drawing	23	26-Oct-15	21-Nov-15	351
TD120220	TWD -Formwork design for in-situ deck	24	13-Nov-15	10-Dec-15	286
Method Statement Submission and Approval		90	22-May-15 A	11-Jan-16	286
TD121330	MSS for precast beam installation	24	22-May-15 A	27-May-15 A	
TD121340	Engineer's comments and approval	24	01-Jun-15 A	02-Jul-15 A	
TD121350	MSS for in-situ deck	24	11-Dec-15	11-Jan-16	286
Field Works		383	12-Feb-15 A	04-Mar-16	390
Foundation & Substructure at Northern Side of Lung Mun Road		138	12-Feb-15 A	29-Dec-15	57
Bored Pile		51	12-Feb-15 A	22-Oct-15	39
TD120510	Bored Piles F2-K2(5 Nos)	51	12-Feb-15 A	22-Oct-15	39
Pile cap and Pier		91	21-Apr-15 A	29-Dec-15	57
TD120530	Pile cap and Pier F2-K2	91	21-Apr-15 A	29-Dec-15	57
Foundation& Substructure at Southern Side of Lung Mun Road		54	21-May-15 A	21-Sep-15 A	
Pile cap &Pier		54	21-May-15 A	21-Sep-15 A	
TD120630	Pile cap &Pier E1-C1	54	21-May-15 A	21-Sep-15 A	
Foundation & Substructure at Central Divider of Lung Mun Road		91	24-Aug-15 A	20-Jan-16	36
Bored Pile		61	24-Aug-15 A	03-Dec-15	46
TD121300	Bored Piles A1-E2(5 Nos)	61	24-Aug-15 A	24-Nov-15	36
TD121310	Bored Piles F1-K1(5 Nos)	61	12-Sep-15 A	03-Dec-15	46
Pile cap and Pier		70	17-Oct-15 A	20-Jan-16	36
TD120560	Pile cap F1-K1	55	20-Oct-15 A	31-Dec-15	36
TD120540	Pile cap A1-E2	55	17-Oct-15 A	04-Jan-16	36
TD120550	Pier A1-E2	55	10-Nov-15	20-Jan-16	36
TD120570	Pier F1-K1	55	10-Nov-15	20-Jan-16	36
Portal Construction		72	21-Aug-15 A	25-Aug-15 A	
Portal Beam B		72	21-Aug-15 A	25-Aug-15 A	
TD120360	TTA application-Stage 3(Night time-portal and decking)	72	21-Aug-15 A	25-Aug-15 A	
Deck Construction		91	20-Aug-15 A	04-Mar-16	303
Precast beam fabrication		91	20-Aug-15 A	04-Mar-16	303
TD120700	Setting up precast yard	90	20-Aug-15 A	24-Nov-15	255
TD120720	Precast beam(Type 1 total-10 nos)	21	25-Nov-15	18-Dec-15	255
TD120730	Precast beam(Type 1 total-12 nos)	24	19-Dec-15	19-Jan-16	276
TD120790	Precast beam(Type 2 total-12 nos)	60	19-Dec-15	04-Mar-16	303
Toll Plaza Decking TD2-Section 1		274	05-Feb-15 A	05-Feb-16	177
Design Submission and Approval		30	03-Dec-15	09-Jan-16	163
TD220040	ELS Design	30	03-Dec-15	09-Jan-16	163
Field Works		216	05-Feb-15 A	05-Feb-16	118
G.I and Piling Works		216	05-Feb-15 A	12-Oct-15 A	
DWP-Bored Piles		216	05-Feb-15 A	12-Oct-15 A	



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

CRBC - Kaden JV

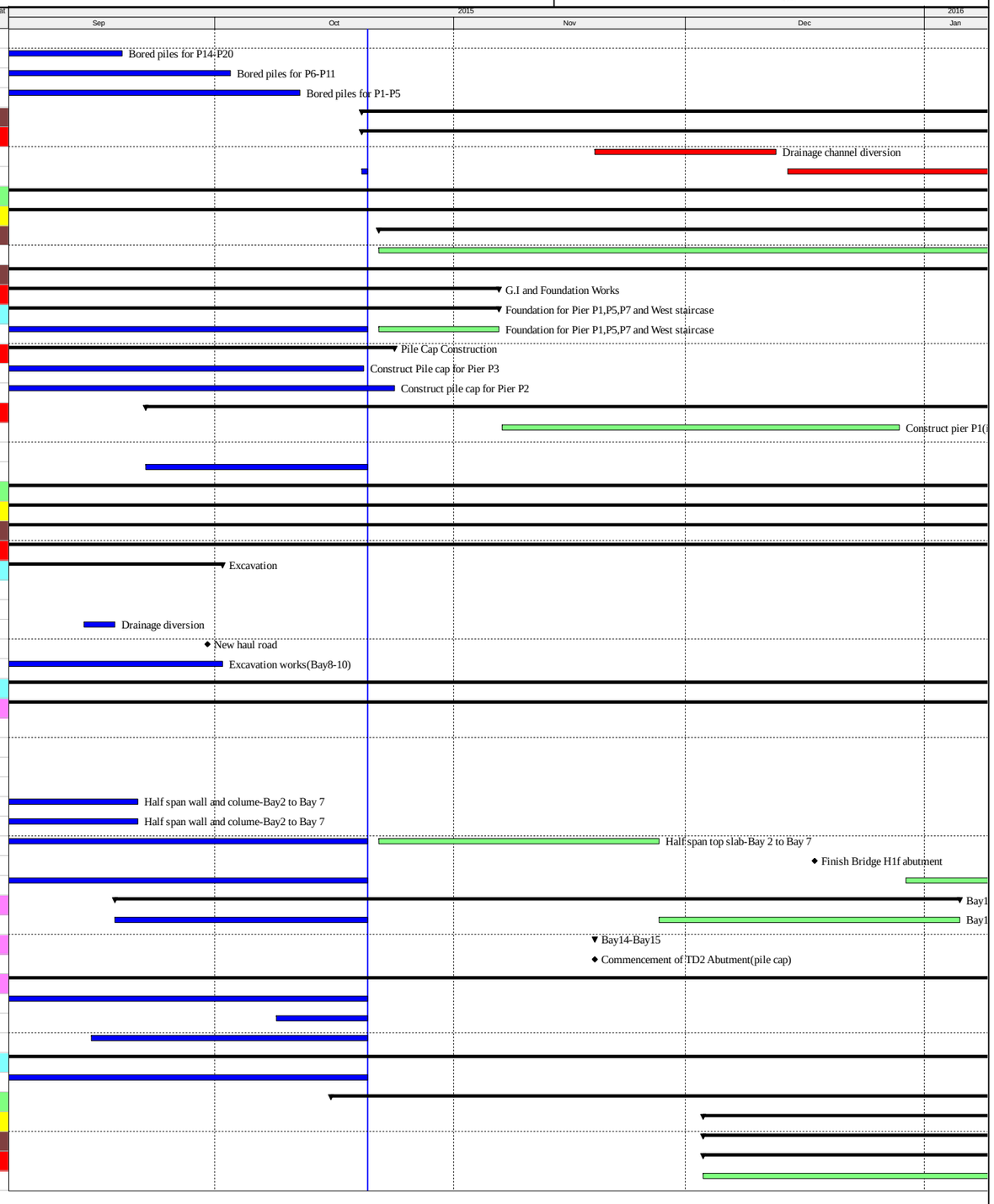
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-Oct-15			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
TD220459	New Design Drawing	0	05-Feb-15 A		
TD220510	Bored piles for P14-P20	70	31-Jul-15 A	19-Sep-15 A	
TD220490	Bored piles for P6-P11	60	12-Jun-15 A	03-Oct-15 A	
TD220470	Bored piles for P1-P5	51	30-May-15 A	12-Oct-15 A	
Base Slab& Pile Cap Construction		72	20-Oct-15 A	05-Feb-16	1
Abutment K-Base Slab		72	20-Oct-15 A	05-Feb-16	1
TD220555	Drainage channel diversion	21	19-Nov-15	12-Dec-15	1
TD220560	ELS for abutment K	51	20-Oct-15 A	05-Feb-16	1
Toll Plaza Footbridge-Section 1		443	28-Mar-15 A	27-Sep-16	268
Stage 1		443	28-Mar-15 A	27-Sep-16	268
Method Statement Submissions and Approval		90	22-Oct-15	06-Feb-16	168
TFB1050	MSS for steel truss installation including shop drawings submission	90	22-Oct-15	06-Feb-16	168
Field Works		341	28-Mar-15 A	27-Sep-16	207
G.I and Foundation Works		72	05-May-15 A	06-Nov-15	418
Foundation for Pier P1,P5,P7 and West staircase		72	05-May-15 A	06-Nov-15	418
TFB1220	Foundation for Pier P1,P5,P7 and West staircase	72	05-May-15 A	06-Nov-15	418
Pile Cap Construction		58	28-Mar-15 A	24-Oct-15 A	
TFB1230	Construct Pile cap for Pier P3	20	27-Jul-15 A	20-Oct-15 A	
TFB1240	Construct pile cap for Pier P2	20	28-Mar-15 A	24-Oct-15 A	
Pier Construction		281	22-Sep-15 A	27-Sep-16	207
TFB1250	Construct pier P1(include bearing installation)	42	07-Nov-15	28-Dec-15	418
TFB1280	Construct pier P2	42	26-Aug-16 A	17-Sep-16	207
TFB1290	Construct pier P3	42	22-Sep-15 A	27-Sep-16	207
Retaining Structure RW_B-Section 1		512	01-Dec-14 A	26-Aug-16	472
Site Formation - Retaining Structure RW_B		512	01-Dec-14 A	26-Aug-16	472
Stage 1		512	01-Dec-14 A	26-Aug-16	472
Retaining Structure RW_B		512	01-Dec-14 A	26-Aug-16	472
Excavation		185	01-Dec-14 A	02-Oct-15 A	
RWB10510	Excavation of RW_B up to approx +6.0 mPD-(Bay14-15)	40	01-Dec-14 A	13-Apr-15 A	
RWB10530	Predrilling works remaining works	68	01-Jan-15 A	02-Jul-15 A	
RWB10560	Drainage diversion	21	14-Sep-15 A	18-Sep-15 A	
RWB10580	New haul road	0		30-Sep-15 A	
RWB10600	Excavation works(Bay8-10)	30	23-Jun-15 A	02-Oct-15 A	
Structure(Base Slab, Wall, Colume, Top Slab)		450	10-Feb-15 A	09-Jul-16	350
Bay 1-7		295	10-Feb-15 A	13-Feb-16	416
RWB10070	Half span blinding layer for Bay 2-Bay7	20	28-Apr-15 A	05-Jun-15 A	
RWB10080	Half span base slab-Bay 2 to Bay 7	90	29-Apr-15 A	12-Jun-15 A	
RWB10030	Half span base slab-Bay 2 to Bay 7	90	10-Feb-15 A	12-Jun-15 A	
RWB10010	Completion of Footbridge Pile cap at Pier 3	0	05-Aug-15 A		
RWB10100	Half span wall and colume-Bay2 to Bay 7	90	22-Jun-15 A	21-Sep-15 A	
RWB10040	Half span wall and colume-Bay2 to Bay 7	90	01-Apr-15 A	21-Sep-15 A	
RWB10050	Half span top slab-Bay 2 to Bay 7	90	21-Jun-15 A	27-Nov-15	137
RWB10059	Finish Bridge H1f abutment	0		17-Dec-15	432
RWB10104	Half span top slab-Bay 2 to Bay 7	90	21-Jun-15 A	13-Feb-16	325
Bay12-13		60	18-Sep-15 A	05-Jan-16	137
RWB10170	Bay12-13	60	18-Sep-15 A	05-Jan-16	137
Bay14-Bay15		0	19-Nov-15	19-Nov-15	397
RWB10180	Commencement of TD2 Abutment(pile cap)	0	19-Nov-15		397
Bay 8-10		65	07-Aug-15 A	09-Jul-16	271
RWB10120	Bay 9	40	07-Aug-15 A	28-Jun-16	271
RWB10110	Bay 8	40	09-Oct-15 A	04-Jul-16	271
RWB10130	Bay 10	40	15-Sep-15 A	09-Jul-16	271
Backfilling		40	15-Jun-15 A	26-Aug-16	365
RWB10230	Backfilling	40	15-Jun-15 A	26-Aug-16	365
Toll Collector Subway & Associated Works-Section 1		166	16-Oct-15 A	15-May-16	323
Toll Collector Bridge (Portion I)-Section 1		30	03-Dec-15	09-Jan-16	365
Stage 1		30	03-Dec-15	09-Jan-16	365
Temporary Works Design(TWD) Submission and Approval		30	03-Dec-15	09-Jan-16	365
TCS1240	TWD -Design of lifting system	30	03-Dec-15	09-Jan-16	365



Remaining Level of Effort
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CRBC - Kaden JV

Three-Month Rolling Programme

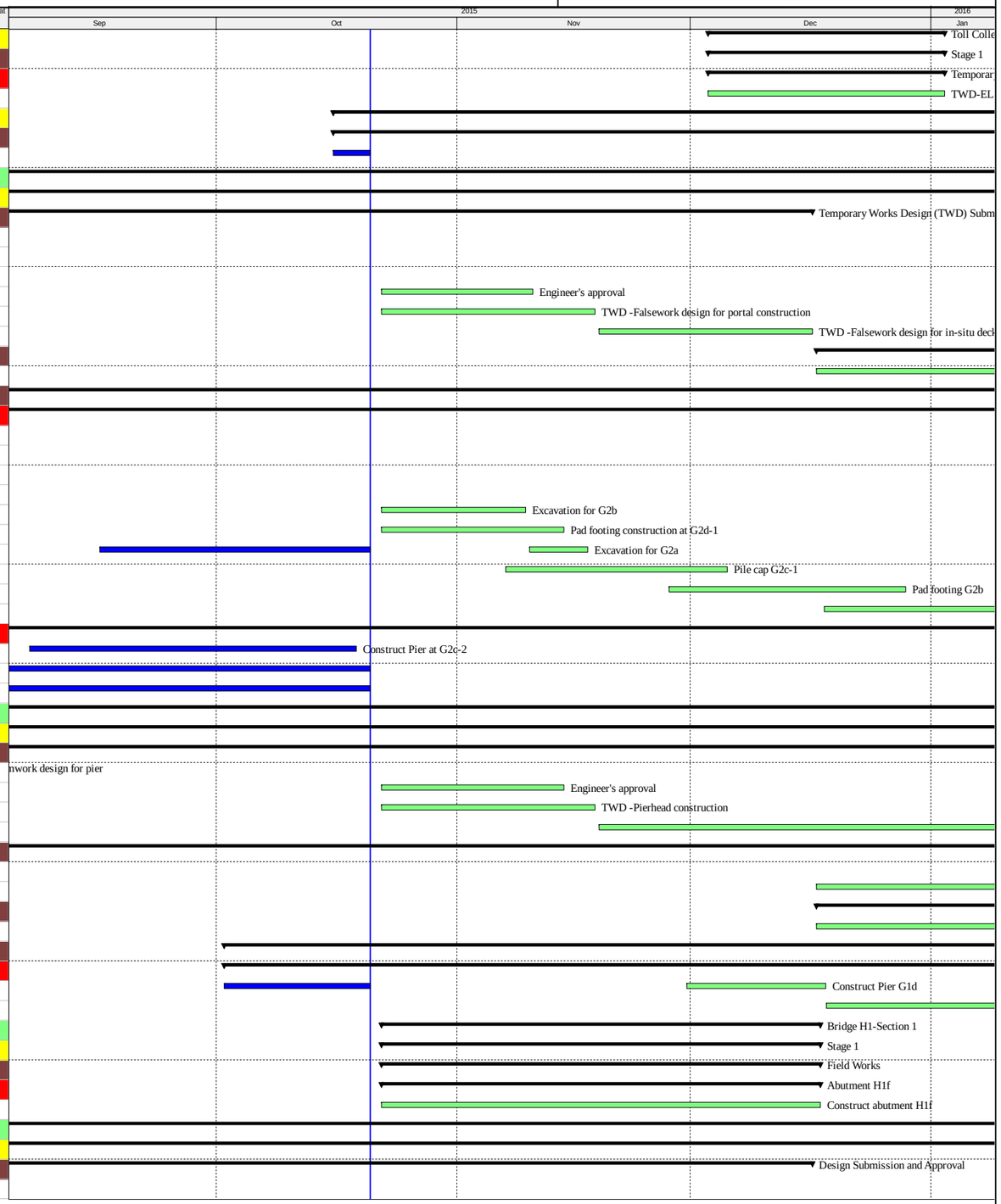
Date	Revision	Checked	Approved
28-Oct-15			

Data Date : 20-Oct-15

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Toll Collector Subway & Associate Works (Portion I)-Section 1		24	03-Dec-15	02-Jan-16	71
Stage 1		24	03-Dec-15	02-Jan-16	71
Temporary Works Design(TWD) Submission and Approval		24	03-Dec-15	02-Jan-16	71
TCS1360	TWD-ELS design for excavation	24	03-Dec-15	02-Jan-16	71
Toll Collector Subway (Portion X)-Section 5		40	16-Oct-15 A	15-May-16	254
Stage 3		40	16-Oct-15 A	15-May-16	254
TCS1070	Excavation Works-S.B 1-2	40	16-Oct-15 A	15-May-16	254
Bridge G2		193	09-Dec-14 A	19-Feb-16	117
Stage 2		193	09-Dec-14 A	19-Feb-16	117
Temporary Works Design (TWD) Submission and Approval		75	09-Dec-14 A	16-Dec-15	154
BG23560	Engineer's comments	17	09-Dec-14 A	02-Jan-15 A	
BG23570	DDA for substructure submission	17	02-Jan-15 A	16-Apr-15 A	
BG23580	Engineer's approval	17	18-Feb-15 A	21-May-15 A	
BG23620	Engineer's approval	17	22-Oct-15	10-Nov-15	185
BG23190	TWD -Falsework design for portal construction	24	22-Oct-15	18-Nov-15	106
BG23200	TWD -Falsework design for in-situ deck construction	24	19-Nov-15	16-Dec-15	106
Method Statement Submissions and Approval		48	17-Dec-15	17-Feb-16	106
BG23240	MSS for deck construction	48	17-Dec-15	17-Feb-16	106
Field Works		152	05-Jan-15 A	19-Feb-16	88
Foundation Works		117	05-Jan-15 A	30-Jan-16	92
BG23290	Piling for G2c	20	05-Jan-15 A	13-Jan-15 A	
BG23410	Pad footing G2e	60	04-Apr-15 A	18-Apr-15 A	
BG23360	Pad footing construction at G2d-2	20	25-Jul-15 A	06-Aug-15 A	
BG23380	Pad footing G2c-2	20	18-Aug-15 A	22-Aug-15 A	
BG23310	Excavation for G2b	15	22-Oct-15	09-Nov-15	83
BG23350	Pad footing construction at G2d-1	20	22-Oct-15	14-Nov-15	14
BG23320	Excavation for G2a	20	16-Sep-15 A	17-Nov-15	153
BG23370	Pile cap G2c-1	25	07-Nov-15	05-Dec-15	66
BG23390	Pad footing G2b	24	28-Nov-15	28-Dec-15	67
BG23400	Pad footing G2a	35	18-Dec-15	30-Jan-16	68
Pier & Abutment Construction		70	26-May-15 A	19-Feb-16	88
BG23450	Construct Pier at G2c-2	32	07-Sep-15 A	19-Oct-15 A	
BG23430	Construct Pier at G2d-2	32	18-Aug-15 A	01-Feb-16	14
BG23480	Construct abutment G2e	70	26-May-15 A	19-Feb-16	99
Bridge G1		211	09-Feb-15 A	11-Apr-16	334
Stage 2		211	09-Feb-15 A	11-Apr-16	334
Design Submission and Approval		72	18-Aug-15 A	16-Jan-16	340
BG112160	TWD -Formwork design for pier	48	18-Aug-15 A	28-Aug-15 A	
BG112300	Engineer's approval	21	22-Oct-15	14-Nov-15	391
BG112170	TWD -Pierhead construction	24	22-Oct-15	18-Nov-15	340
BG112180	TWD -Form traveller design	48	19-Nov-15	16-Jan-16	340
Method Statement Submissions and Approval		102	09-Feb-15 A	16-Jan-16	340
BG112330	MSS-substructure construction	24	09-Feb-15 A	13-Feb-15 A	
BG112340	MSS-deck construction	24	17-Dec-15	16-Jan-16	340
Off-site Works		90	17-Dec-15	11-Apr-16	260
BG112000	Form tranveller fabrication	90	17-Dec-15	11-Apr-16	260
Field Works		40	02-Oct-15 A	06-Feb-16	309
Substructure Works from Pier G1d to Pier G2a		40	02-Oct-15 A	06-Feb-16	309
BG112100	Construct Pier G1d	32	02-Oct-15 A	18-Dec-15	309
BG112130	Pierhead segment construction at Pier G1d	40	18-Dec-15	06-Feb-16	309
Bridge H1-Section 1		48	22-Oct-15	17-Dec-15	333
Stage 1		48	22-Oct-15	17-Dec-15	333
Field Works		48	22-Oct-15	17-Dec-15	333
Abutment H1f		48	22-Oct-15	17-Dec-15	333
BH11110	Construct abutment H1f	48	22-Oct-15	17-Dec-15	333
Bridge H1-Section 2		349	09-Feb-15 A	11-Apr-16	366
Stage 2		349	09-Feb-15 A	11-Apr-16	366
Design Submission and Approval		78	18-Feb-15 A	16-Dec-15	210
BH12830	DDA for superstructure(draft)	17	09-Mar-15 A	16-Mar-15 A	



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CRBC - Kaden JV

Three-Month Rolling Programme

Date	Revision	Checked	Approved
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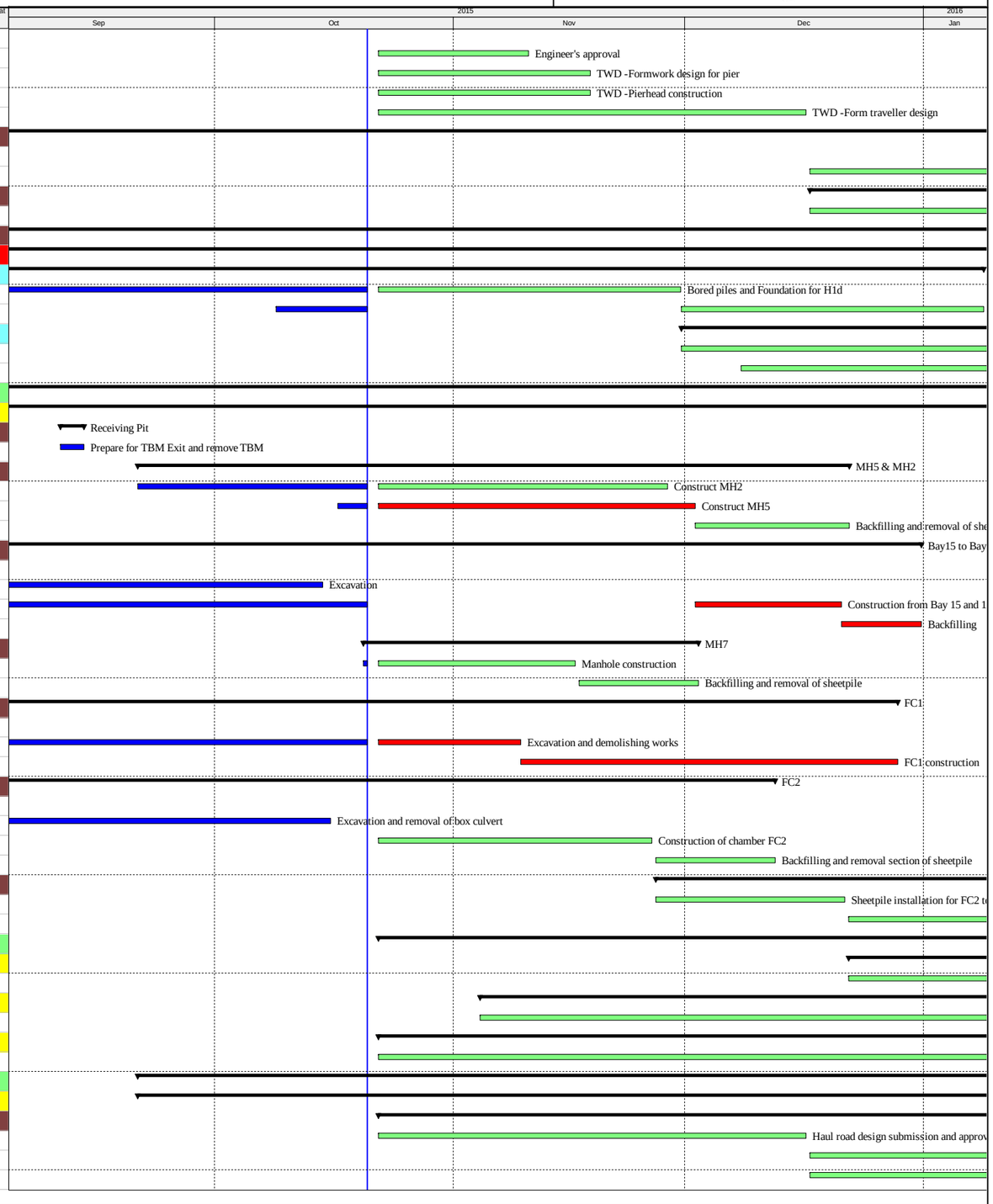
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
BH12820	Engineer's approval	17	18-Feb-15 A	30-May-15 A	
BH12860	Engineer's approval	17	22-Oct-15	10-Nov-15	241
BH12680	TWD -Formwork design for pier	24	22-Oct-15	18-Nov-15	173
BH12690	TWD -Pierhead construction	24	22-Oct-15	18-Nov-15	173
BH12700	TWD -Form traveller design	48	22-Oct-15	16-Dec-15	86
Method Statement Submissions and Approval		102	09-Feb-15 A	16-Jan-16	160
BH12370	MSS-substructure construction	24	09-Feb-15 A	13-Feb-15 A	
BH12380	MSS-deck construction	24	17-Dec-15	16-Jan-16	160
Off-site Works		90	17-Dec-15	11-Apr-16	86
BH12720	Form tranveller fabrication	90	17-Dec-15	11-Apr-16	86
Field Works		261	11-Apr-15 A	31-Mar-16	294
Foundation Works& Pier construction		261	11-Apr-15 A	31-Mar-16	294
Foundation Works		198	11-Apr-15 A	08-Jan-16	127
BH12580	Bored piles and Foundation for H1d	66	11-Apr-15 A	30-Nov-15	127
BH12590	Foundation for H1e	35	09-Oct-15 A	08-Jan-16	127
Pier construction		97	30-Nov-15	31-Mar-16	294
BH12540	Construct Pier H1d	32	30-Nov-15	09-Jan-16	358
BH12552	TTA application	90	08-Dec-15	31-Mar-16	71
Culvert 1(TBM)-Stage 4		241	04-Mar-15 A	28-Jan-16	30
Field Works		241	04-Mar-15 A	28-Jan-16	30
Receiving Pit		10	11-Sep-15 A	14-Sep-15 A	
CUL13150	Prepare for TBM Exit and remove TBM	10	11-Sep-15 A	14-Sep-15 A	
MH5 & MH2		66	21-Sep-15 A	22-Dec-15	3
CUL13265	Construct MH2	64	21-Sep-15 A	28-Nov-15	16
CUL13260	Construct MH5	36	17-Oct-15 A	02-Dec-15	-4
CUL13270	Backfilling and removal of sheetpile of MH2	17	02-Dec-15	22-Dec-15	3
Bay15 to Bay16		58	17-Aug-15 A	31-Dec-15	-4
CUL13290	Sheetpile installation	18	17-Aug-15 A	20-Aug-15 A	
CUL13300	Excavation	25	18-Aug-15 A	15-Oct-15 A	
CUL13310	Construction from Bay 15 and 16	28	18-Aug-15 A	21-Dec-15	-4
CUL13320	Backfilling	8	21-Dec-15	31-Dec-15	-4
MH7		36	20-Oct-15 A	02-Dec-15	19
CUL13360	Manhole construction	21	20-Oct-15 A	16-Nov-15	19
CUL13370	Backfilling and removal of sheetpile	14	17-Nov-15	02-Dec-15	19
FC1		126	19-Mar-15 A	28-Dec-15	-21
CUL13380	Completion of TBM	0	05-Aug-15 A		
CUL13410	Excavation and demolishing works	51	19-Mar-15 A	09-Nov-15	-15
CUL13420	FC1 construction	40	09-Nov-15	28-Dec-15	-15
FC2		153	04-Mar-15 A	12-Dec-15	23
CUL13450	Sheetpile installation for FC2	21	04-Mar-15 A	14-May-15 A	
CUL13460	Excavation and removal of box culvert	21	23-Mar-15 A	16-Oct-15 A	
CUL13470	Construction of chamber FC2	30	22-Oct-15	26-Nov-15	23
CUL13480	Backfilling and removal section of sheetpile	14	27-Nov-15	12-Dec-15	23
BY-Pass Sewer between FC1 and FC2(1800 Pipe)		51	27-Nov-15	28-Jan-16	23
CUL13490	Sheetpile installation for FC2 to FC1	21	27-Nov-15	21-Dec-15	23
CUL13500	Excavation and installation of 1800 pipe	30	22-Dec-15	28-Jan-16	23
Culvert 2 & Culvert 3 and Existing Box Culvert		83	22-Oct-15	30-Jan-16	352
Method statement Submission		24	22-Dec-15	21-Jan-16	23
CCE20060	Method statement for Culvert 2&3 construction	24	22-Dec-15	21-Jan-16	23
Culvert 2		72	04-Nov-15	30-Jan-16	141
CCE20100	TTA application	72	04-Nov-15	30-Jan-16	141
Culvert 3		72	22-Oct-15	16-Jan-16	363
CCE20020	TTA Application	72	22-Oct-15	16-Jan-16	363
Site Formation - Retainging Structure RW_A		121	21-Sep-15 A	17-Feb-16	242
Stage 3		121	21-Sep-15 A	17-Feb-16	242
Temporary Works Design Submission and Approval		96	22-Oct-15	17-Feb-16	196
RWA20010	Haul road design submission and approval	48	22-Oct-15	16-Dec-15	196
RWA20020	ELS design submission and approval	48	17-Dec-15	17-Feb-16	196
RWA20030	Formwork design submission and approval	48	17-Dec-15	17-Feb-16	196



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

CRBC - Kaden JV

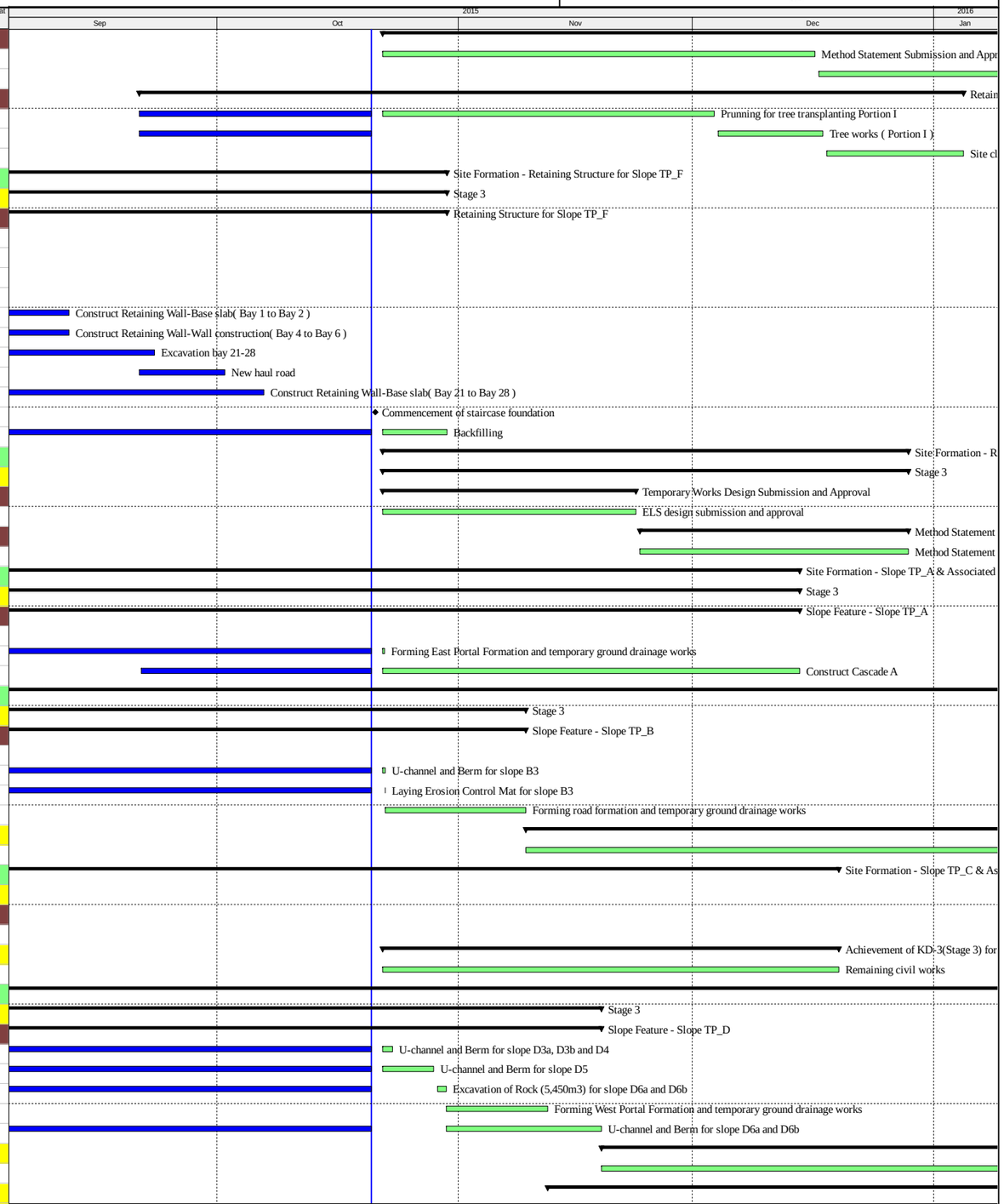
Three-Month Rolling Programme

Date	Revision	Checked	Approved
28-Oct-15			

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

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Method Statement Submission and Approval		96	22-Oct-15	17-Feb-16	196
RWA20040	Method Statement Submission and Approval for ELS	48	22-Oct-15	16-Dec-15	196
RWA20050	Method Statement Submission and Approval for Retaining Wall Construction	48	17-Dec-15	17-Feb-16	196
Retaining Wall A		96	21-Sep-15 A	04-Jan-16	218
RWA20090	Prunning for tree transplanting Portion I	72	21-Sep-15 A	03-Dec-15	218
RWA20100	Tree works (Portion I)	24	21-Sep-15 A	17-Dec-15	218
RWA20110	Site clearance and tree felling	12	18-Dec-15	04-Jan-16	218
Site Formation - Retaining Structure for Slope TP_F		311	31-Oct-14 A	30-Oct-15	325
Stage 3		311	31-Oct-14 A	30-Oct-15	325
Retaining Structure for Slope TP_F		311	31-Oct-14 A	30-Oct-15	325
RWF31306	Excavation for Bay 20	20	08-Jan-15 A	10-Jan-15 A	
RWF313061	Construct Retaining Wall -Base slab (Bay 20)	7	08-Jan-15 A	16-Jan-15 A	
RWF31302	Construct Retaining Wall-Wall construction Bay 9-16	90	31-Oct-14 A	17-Mar-15 A	
RWF31314	Completion of Bridge G2e footing	0	18-Apr-15 A		
RWF31326	Construct Retaining Wall-Base slab(Bay 1 to Bay 2)	18	26-Aug-15 A	12-Sep-15 A	
RWF31330	Construct Retaining Wall-Wall construction(Bay 4 to Bay 6)	30	15-May-15 A	12-Sep-15 A	
RWF31440	Excavation bay 21-28	25	12-May-15 A	23-Sep-15 A	
RWF31430	New haul road	19	21-Sep-15 A	02-Oct-15 A	
RWF31450	Construct Retaining Wall-Base slab(Bay 21 to Bay 28)	36	18-May-15 A	07-Oct-15 A	
RWF31332	Commencement of staircase foundation	0	21-Oct-15		419
RWF31308	Backfilling	50	10-Feb-15 A	30-Oct-15	319
Site Formation - Retaining Structure for Slope TP_G		56	22-Oct-15	28-Dec-15	283
Stage 3		56	22-Oct-15	28-Dec-15	283
Temporary Works Design Submission and Approval		28	22-Oct-15	23-Nov-15	283
RWG10000	ELS design submission and approval	28	22-Oct-15	23-Nov-15	283
Method Statement Submission and Approval		28	24-Nov-15	28-Dec-15	283
RWG10010	Method Statement Submission and Approval for ELS	28	24-Nov-15	28-Dec-15	283
Site Formation - Slope TP_A & Associated Works		120	02-Dec-14 A	14-Dec-15	95
Stage 3		120	02-Dec-14 A	14-Dec-15	95
Slope Feature - Slope TP_A		120	02-Dec-14 A	14-Dec-15	95
TPA41190	Excavation of Rock (8850m3) for slope A3	70	02-Dec-14 A	08-Apr-15 A	
TPA41350	Forming East Portal Formation and temporary ground drainage works	50	10-Mar-15 A	22-Oct-15	95
TPA41700	Construct Cascade A	60	21-Sep-15 A	14-Dec-15	95
Site Formation - Slope TP_B & Associated Works		222	02-Jan-15 A	29-Feb-16	405
Stage 3		186	02-Jan-15 A	09-Nov-15	405
Slope Feature - Slope TP_B		186	02-Jan-15 A	09-Nov-15	405
TPB41100	Excavation of Rock (17,900m3) for slope B3	90	02-Jan-15 A	22-Jun-15 A	
TPB41210	U-channel and Berm for slope B3	21	02-Mar-15 A	22-Oct-15	405
TPB41220	Laying Erosion Control Mat for slope B3	3	20-Apr-15 A	22-Oct-15	405
TPB43600	Forming road formation and temporary ground drainage works	14	22-Oct-15	09-Nov-15	405
Achievement of KD-3(Stage 3) for Slope B		90	09-Nov-15	29-Feb-16	405
TPB41710	Remaining civil works	90	09-Nov-15	29-Feb-16	405
Site Formation - Slope TP_C & Associated Works		81	18-Dec-14 A	19-Dec-15	460
Stage 3		25	18-Dec-14 A	18-Jun-15 A	
Slope Feature - Slope TP_C		25	18-Dec-14 A	18-Jun-15 A	
TPC50700	U-channel and Berm for slope C1	25	18-Dec-14 A	18-Jun-15 A	
Achievement of KD-3(Stage 3) for Slope C		50	22-Oct-15	19-Dec-15	460
TPC51310	Remaining civil works	50	22-Oct-15	19-Dec-15	460
Site Formation - Slope TP_D & Associated Works		196	01-Feb-15 A	10-Mar-16	397
Stage 3		100	01-Feb-15 A	19-Nov-15	47
Slope Feature - Slope TP_D		100	01-Feb-15 A	19-Nov-15	47
TPD51450	U-channel and Berm for slope D3a, D3b and D4	15	01-Feb-15 A	23-Oct-15	47
TPD51600	U-channel and Berm for slope D5	15	02-May-15 A	28-Oct-15	47
TPD51700	Excavation of Rock (5,450m3) for slope D6a and D6b	28	03-Jun-15 A	30-Oct-15	47
TPD52800	Forming West Portal Formation and temporary ground drainage works	10	30-Oct-15	12-Nov-15	47
TPD51750	U-channel and Berm for slope D6a and D6b	21	06-Jul-15 A	19-Nov-15	47
Achievement of KD-7(Section 4) for Slope D		90	19-Nov-15	10-Mar-16	221
TPD51253	Remaining works in Portion D	90	19-Nov-15	10-Mar-16	221
Achievement of KD-3(Stage 3) for Slope D		90	12-Nov-15	03-Mar-16	403



Remaining Level of Effort
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CRBC - Kaden JV

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Date	Revision	Checked	Approved
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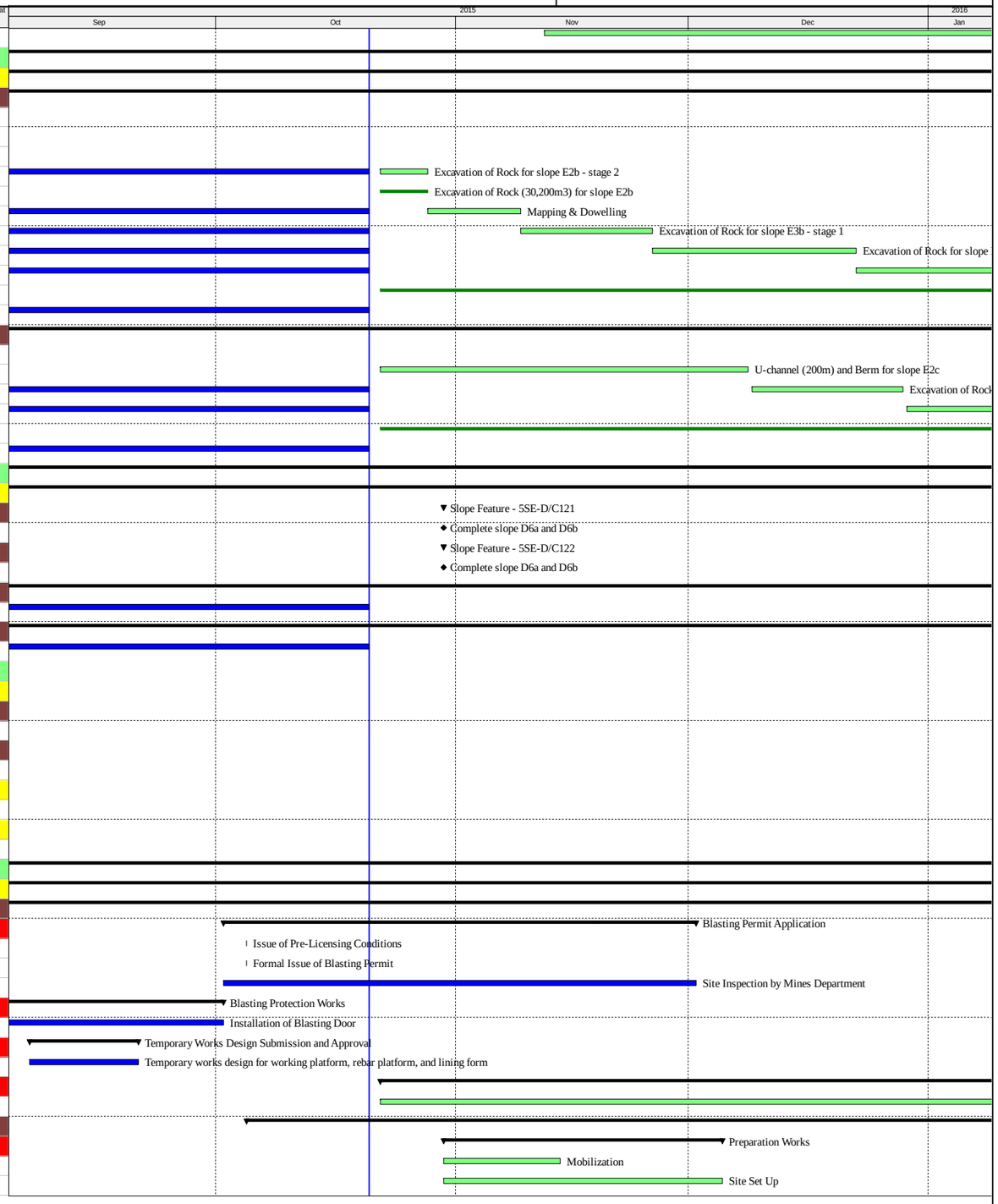
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
TPD52350	Remaining civil works	90	12-Nov-15	03-Mar-16	403
Site Formation - Slope TP_E & Associated Works		500	22-Oct-14 A	29-Nov-16	161
Stage 3		500	22-Oct-14 A	29-Nov-16	161
Slope Feature - Slope TP_E at Toll Control Building Area		379	22-Oct-14 A	29-Feb-16	131
TPE61130	Soil Nail RowC Level + 57.20 (Install and grouting)	29	12-Feb-15 A	14-Feb-15 A	
TPE61190	U-channel (150m) and Berm for slope E2b	40	22-Oct-14 A	05-Jun-15 A	
TPE61300	Excavation of Rock (2,200m3) for slope E1c	30	14-Jan-15 A	07-Jun-15 A	
TPE61170	Excavation of Rock for slope E2b - stage 2	75	31-Dec-14 A	28-Oct-15	131
TPE61150	Excavation of Rock (30,200m3) for slope E2b	150	06-Nov-14 A	28-Oct-15	131
TPE61180	Mapping & Dowelling	15	13-Nov-14 A	09-Nov-15	131
TPE61210	Excavation of Rock for slope E3b - stage 1	75	07-Jan-15 A	26-Nov-15	131
TPE61220	Excavation of Rock for slope E3b - stage 2	75	28-Feb-15 A	22-Dec-15	131
TPE61230	Excavation of Rock for slope E3b - stage 3	75	26-Mar-15 A	21-Jan-16	131
TPE61200	Excavation of Rock (60,000m3) for slope E3b	304	07-Jan-15 A	29-Feb-16	131
TPE61240	Excavation of Rock for slope E3b - stage 4	75	25-May-15 A	29-Feb-16	131
Slope Feature - Slope TP_E Remaing Section and 5SE-D/C116		406	31-Jan-15 A	29-Nov-16	161
TPE62160	Soil Nail RowB (22nos) Level + 35.00 for 5SE-D/C-116 (Install and grouting)	24	31-Jan-15 A	07-Apr-15 A	
TPE62190	U-channel (200m) and Berm for slope E2c	40	22-Oct-15	08-Dec-15	161
TPE62210	Excavation of Rock for slope E3c - stage 1	75	23-Apr-15 A	28-Dec-15	161
TPE62220	Excavation of Rock for slope E3c - stage 2	75	02-Jul-15 A	29-Mar-16	161
TPE62200	Excavation of Rock (24,180m3) for slope E3c	225	23-Apr-15 A	07-Jul-16	161
TPE62400	Excavation of Rock (11,900m3) for slope E3a	90	22-Apr-15 A	29-Nov-16	161
Site Formation - Slope Upgrading Works		434	18-Feb-14 A	08-Oct-16	397
Stage 3 (Other Slope Features)		434	18-Feb-14 A	08-Oct-16	397
Slope Feature - 5SE-D/C121		0	30-Oct-15	30-Oct-15	303
SFW10260	Complete slope D6a and D6b	0		30-Oct-15	303
Slope Feature - 5SE-D/C122		0	30-Oct-15	30-Oct-15	663
SFW10300	Complete slope D6a and D6b	0		30-Oct-15	663
Slope Feature - 5SE-D/C149		35	16-Mar-15 A	26-Aug-16	275
SFW10400	Drainge, U-channel (190m) and Handrailing	35	16-Mar-15 A	26-Aug-16	275
Slope Feature - 5SE-D/C115		45	18-Feb-14 A	08-Oct-16	277
SFW10440	Rock Mapping and Stabilization	45	18-Feb-14 A	08-Oct-16	277
Natural Terrain Hazard Mitigation Measures		146	30-Nov-14 A	31-Mar-15 A	
Natural Terrian Hazard Mitigation Measures		116	30-Nov-14 A	31-Mar-15 A	
Boulders within Blasting Zone		36	29-Dec-14 A	31-Mar-15 A	
NTH10110	Mitigation measures for 9 boulders within blasting zone	36	29-Dec-14 A	31-Mar-15 A	
Boulders outside Blasting Zone		80	30-Nov-14 A	26-Jan-15 A	
NTH10080	Mitigation measures for 20 boulders outside blasting zone	80	30-Nov-14 A	26-Jan-15 A	
Achievement of KD-3(Stage 3)		0	31-Mar-15 A	31-Mar-15 A	
NTH10050	Achievement of KD-3 for Natural Terrian Hazard	0		31-Mar-15 A	
Achievement of KD-8(Section 5)		0	31-Mar-15 A	31-Mar-15 A	
NTH10060	Achievement of KD-8 for Natural Terrian Hazard	0		31-Mar-15 A	
Vehicular Underpass TN-01		452	03-Jun-15 A	11-Nov-16	59
Stage 3		452	03-Jun-15 A	11-Nov-16	59
Blasting Related Submission		141	25-Jul-15 A	16-Jan-16	295
Blasting Permit Application		73	02-Oct-15 A	02-Dec-15 A	
UDP30100	Issue of Pre-Licensing Conditions	22	05-Oct-15 A	05-Oct-15 A	
UDP30110	Formal Issue of Blasting Permit	11	05-Oct-15 A	05-Oct-15 A	
UDP30090	Site Inspection by Mines Department	39	02-Oct-15 A	02-Dec-15 A	
Blasting Protection Works		20	25-Jul-15 A	02-Oct-15 A	
UDP30030	Installation of Blasting Door	20	25-Jul-15 A	02-Oct-15 A	
Temporary Works Design Submission and Approval		72	07-Sep-15 A	21-Sep-15 A	
UDP30660	Temporary works design for working platform, rebar platform, and lining form	72	07-Sep-15 A	21-Sep-15 A	
Method Statment Submission and Approval		72	22-Oct-15	16-Jan-16	290
UDP30650	Method statement for Lining Construction	72	22-Oct-15	16-Jan-16	290
Underpass Excavation from West Portal		340	05-Oct-15 A	11-Nov-16	47
Preparation Works		30	30-Oct-15	05-Dec-15	47
UDP30160	Mobilization	12	30-Oct-15	14-Nov-15	47
UDP30170	Site Set Up	30	30-Oct-15	05-Dec-15	47



Remaining Level of Effort
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CRBC - Kaden JV

Three-Month Rolling Programme

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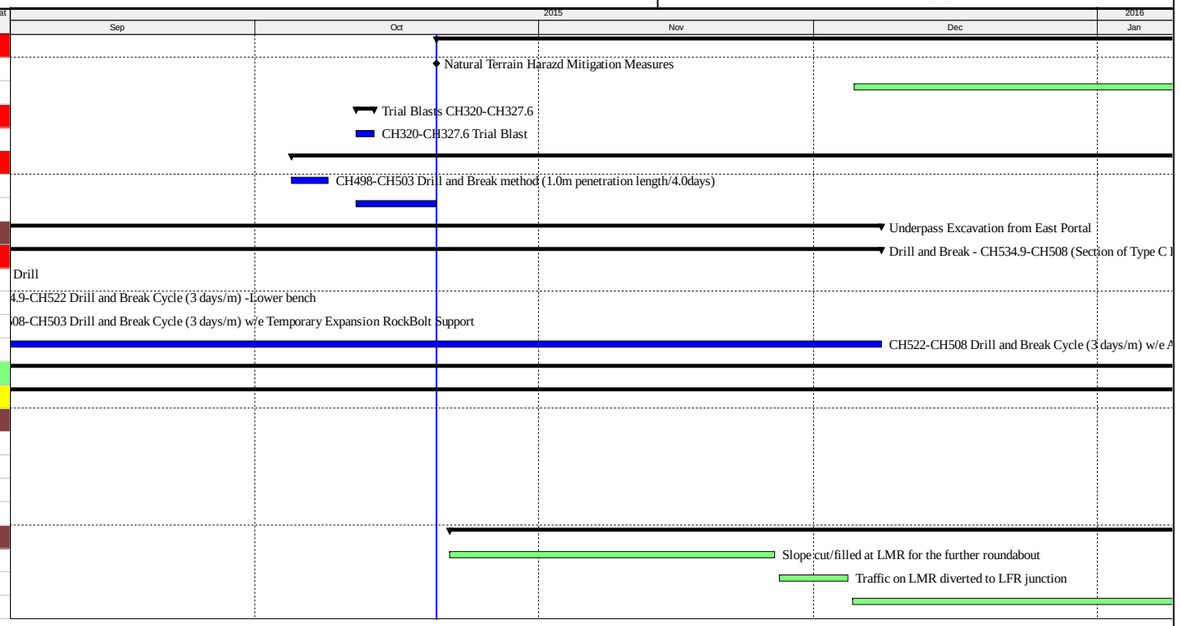
HY/2013/12 TM-CLKL Northern Connection Toll Plaza and Associated Works

CRBC - KADEN Joint Venture

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
Drill and Break CH310-CH320 (Section of Type A Lining)		85	20-Oct-15	03-Feb-16	47
UDP30180	Natural Terrain Harazd Mitigation Measures	0		20-Oct-15	85
UDP30190	Install Canopy Supporting System and Tunnel Face Support	48	05-Dec-15	03-Feb-16	47
Trial Blasts CH320-CH327.6		12	12-Oct-15 A	14-Oct-15 A	
UDP30230	CH320-CH327.6 Trial Blast	12	12-Oct-15 A	14-Oct-15 A	
Drill and Blast CH327.6-CH503		42	05-Oct-15 A	11-Nov-16	47
UDP30310	CH498-CH503 Drill and Break method (1.0m penetration length/4.0days)	20	05-Oct-15 A	09-Oct-15 A	
UDP30300	CH470-CH498 Drill and Blast method (2.0m penetration length/2.0days)	22	12-Oct-15 A	11-Nov-16	47
Underpass Excavation from East Portal		74	03-Jun-15 A	08-Dec-15 A	
Drill and Break - CH534.9-CH508 (Section of Type C Lining)		74	03-Jun-15 A	08-Dec-15 A	
UDP30380	CH522-CH508 Probing and Horizontal Pre-Spilt Drill	42	03-Jun-15 A	07-Aug-15 A	
UDP30370	CH534.9-CH522 Drill and Break Cycle (3 days/m) -Lower bench	38	08-Aug-15 A	31-Aug-15 A	
UDP30400	CH508-CH503 Drill and Break Cycle (3 days/m) w/e Temporary Expansion RockBolt Support	15	22-Jul-15 A	01-Sep-15 A	
UDP30390	CH522-CH508 Drill and Break Cycle (3 days/m) w/e Arch Rib Support	42	21-Jun-15 A	08-Dec-15 A	
Road and Drainage Work at for Lung Fu Road Roundabout		90	12-Dec-14 A	12-Jan-16	115
Section 3		90	12-Dec-14 A	12-Jan-16	115
Road and drainage works under LFR R/A TTA stage 1		35	12-Dec-14 A	23-Jan-15 A	
LF10550	Completion works at TTA stage 1	0		23-Jan-15 A	
LF10400	Watermains	20	12-Dec-14 A	23-Jan-15 A	
LF10450	Irrigation / UU / PL	20	12-Dec-14 A	23-Jan-15 A	
LF10500	Roadworks	15	12-Dec-14 A	23-Jan-15 A	
Road and drainage works under LFR R/A TTA stage 2a		67	22-Oct-15	12-Jan-16	115
LF20050	Slope cut/filled at LMR for the further roundabout	30	22-Oct-15	26-Nov-15	115
LF20100	Traffic on LMR diverted to LFR junction	7	27-Nov-15	04-Dec-15	115
LF20350	Drainage & Sewerage works	30	05-Dec-15	12-Jan-16	115



Remaining Level of Effort
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Three-Month Rolling Programme

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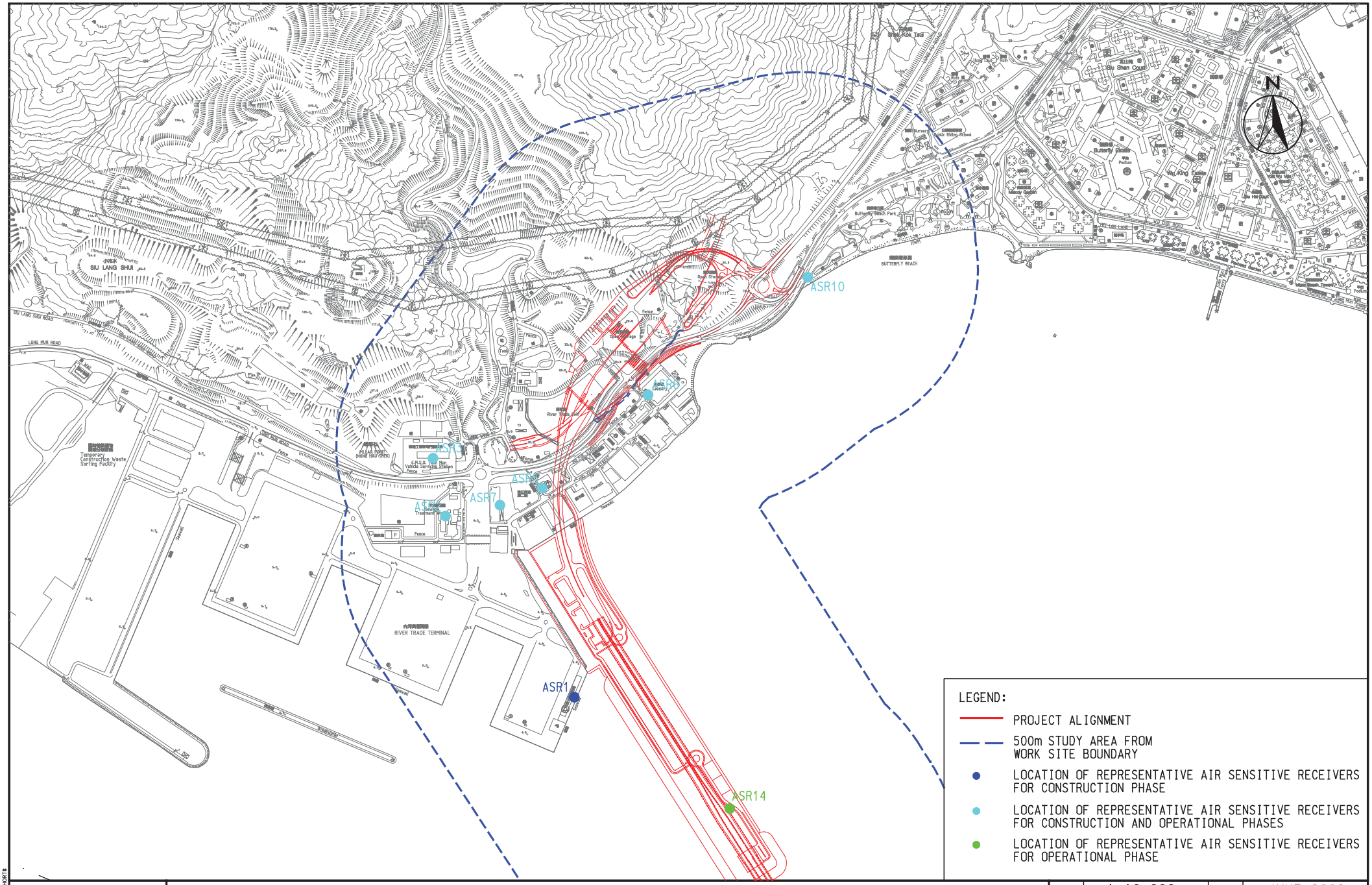
28-Oct-15			

Appendix E

Monitoring Locations / Sensitive Receivers for the Contract

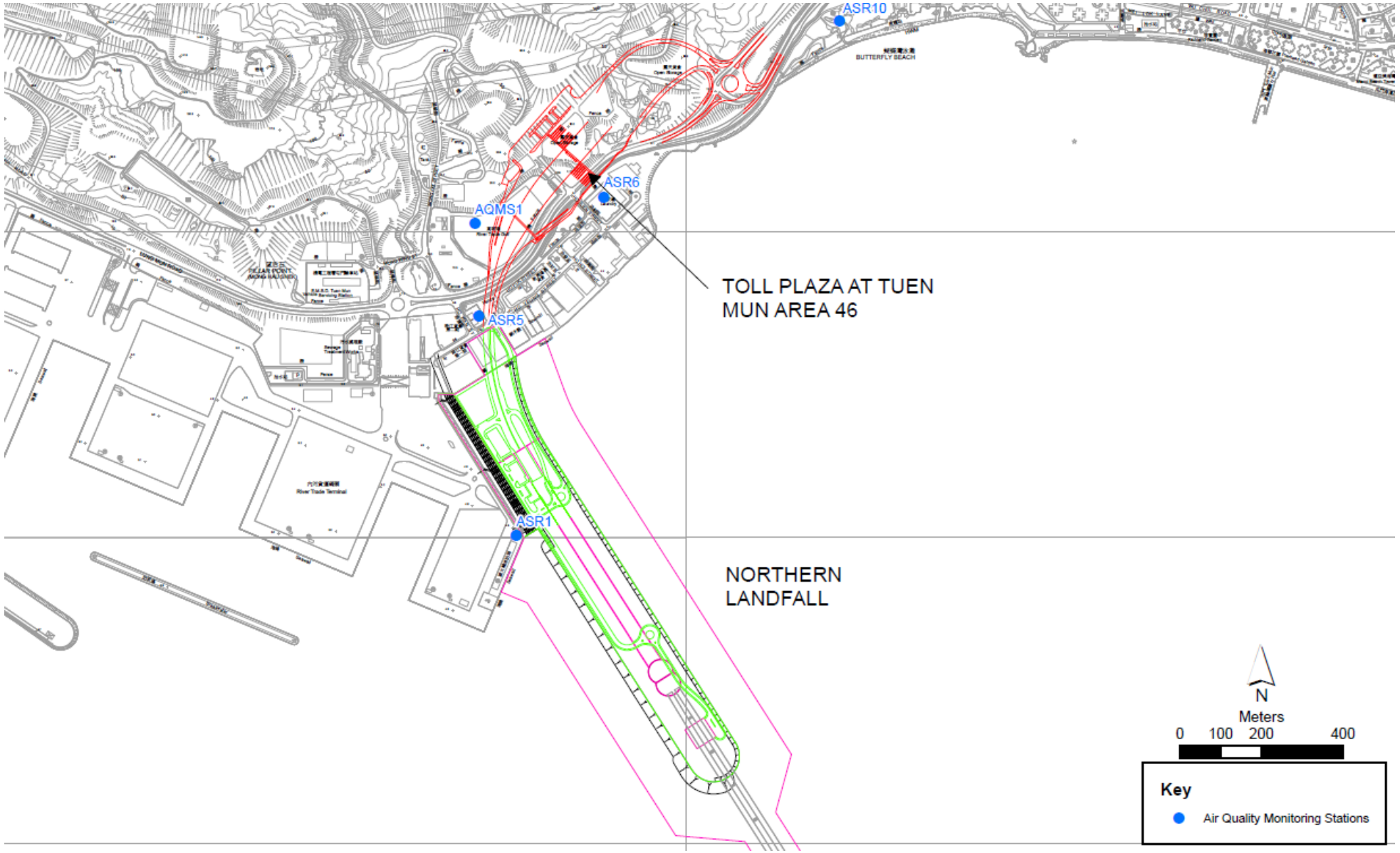


AGREEMENT NO. CE 52/2007(HY)
TUEN MUN – CHEK LAP KOK LINK – INVESTIGATION

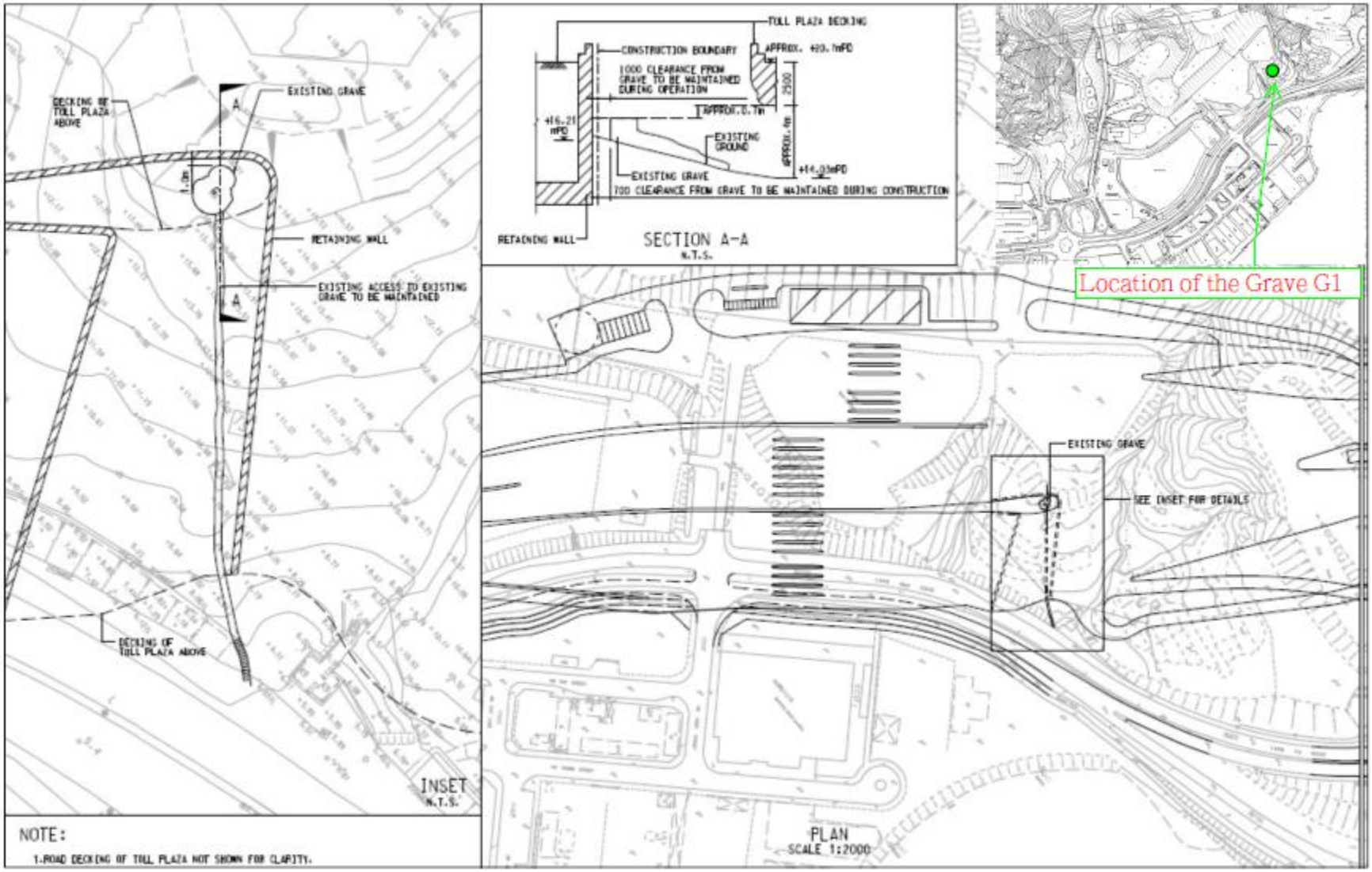
REPRESENTATIVE AIR SENSITIVE RECEIVERS

SCALE	1:10 000	DATE	

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



Air Quality Monitoring Location



Location of the Grave G1

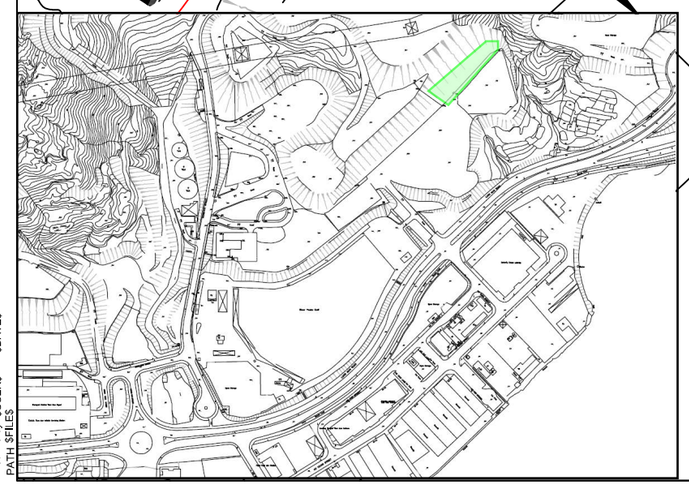
NOTES:

1. ALL CO-ORDINATES ARE IN ACCORDANCE WITH HK(1980) GAUSS CO-ORDINATE SYSTEM.
2. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

LEGEND:

- SITE BOUNDARY
- LOCATION OF KNOWN POPULATIONS OF PITCHER PLANT
- PROPOSED ALIGNMENT OF FENCING (EXACT ALIGNMENT TO BE DETERMINED ON SITE)
- LOCATION OF PROPOSED NURSERY SITE
- LOCATION OF PROPOSED RECEPTOR SITE
- UNDERPASS WORKS AREA (ZONE 8-10 AND NURSERY SITE WILL NOT BE AFFECTED)

812800 E
812900 E
813000 E
825900 N
825800 N
ZONE 1
ZONE 2
ZONE 3
ZONE 4
ZONE 5
ZONE 6
ZONE 7
ZONE 8
ZONE 9
ZONE 10
ROAD
WIP Sep 1999



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

Plot File by: $USER$ $DATE$
PATH: $FILE$

AECOM

PROJECT
TUEN MUN - CHEK LAP KOK LINK

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

CLIENT
HIGHWAYS DEPARTMENT
Hong Kong - Zhuhai - Macao Bridge Hong Kong Project Management Office

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

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

STATUS
PRELIMINARY

SCALE
A1 1 : 500

DIMENSION UNIT
METRES

KEY PLAN

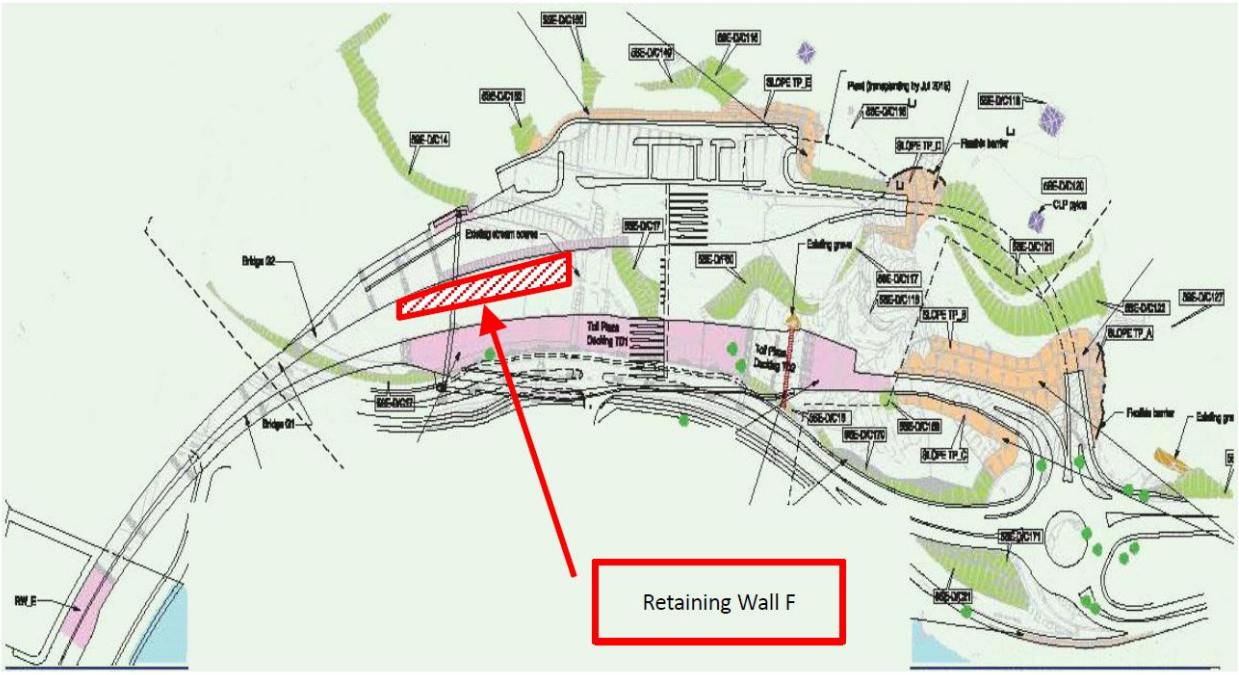
PROJECT NO.
60240249

CONTRACT NO.
HY/2013/12

SHEET TITLE
LOCATION OF KNOWN POPULATION OF PITCHER PLANT AND PROPOSED TM-CLKL SITE BOUNDARY

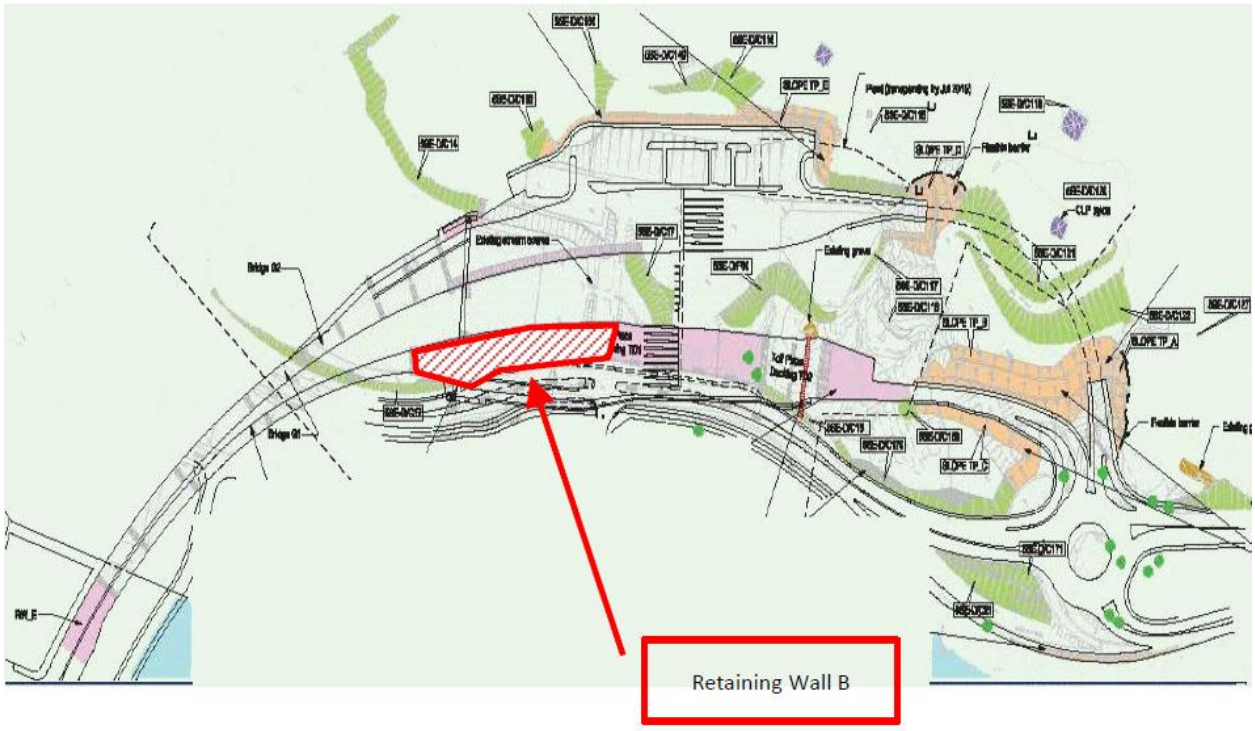
SHEET NUMBER
60240249/C3/6503A

Retaining Wall F



Location of the Retaining Wall F

Retaining Wall B



Location of the Retaining Wall B

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 December 2015

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

✓	Monitoring Day
	Sunday or Public Holiday

Impact Monitoring Schedule for January 2016

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

✓	Monitoring Day
	Sunday or Public Holiday

Appendix H

Calibration Certificates of Monitoring Equipment

CERTIFICATION OF CALIBRATION

Geotech
A subsidiary of LAIDTEC

ISSUED BY: GEOTECH LABORATORY
Date Of Calibration: 14-Sep-2015
Certificate Number: G503226_2/15055

UKAS CALIBRATION
No. 4533

Approved by Signatory

Dawn Hemings
Laboratory Inspection

GEOTECHNICAL INSTRUMENTS (UK) LTD
Sovereign House, Queensway, Leamington Spa, Warwickshire, CV31 3JR United Kingdom
Tel: +44 (0) 1926 338111 Fax: +44 (0) 1926 338110
E-mail: service@geotech.co.uk www.geotechuk.com

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: BIOGAS 5000 ***Model:*** BIOGAS 5000
Serial Number: G503226

UKAS Accredited results:

Methane (CH4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.41
15.0	14.9	0.64
50.1	49.5	0.94

Carbon Dioxide (CO2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.43
15.0	14.9	0.70
49.9	50.6	1.1

Oxygen (O2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.0	21.0	0.31

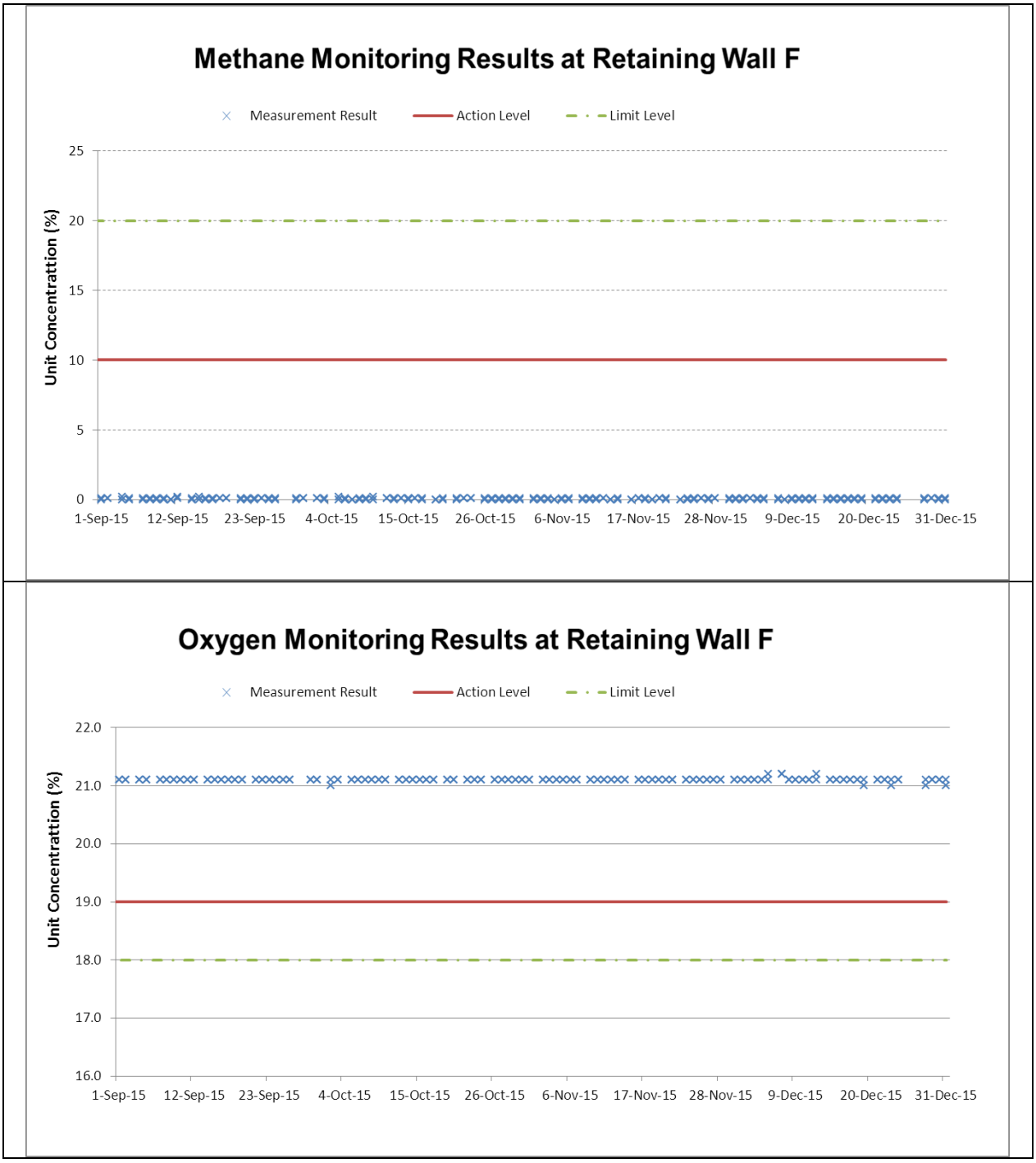
All concentrations are molar.
CH4, CO2 readings recorded at : 31.5 °C ± 1.5 °C
O2 reading recorded at : 22.7 °C ± 1.5 °C
Barometric Pressure : 0987 mbar ± 3 mbar

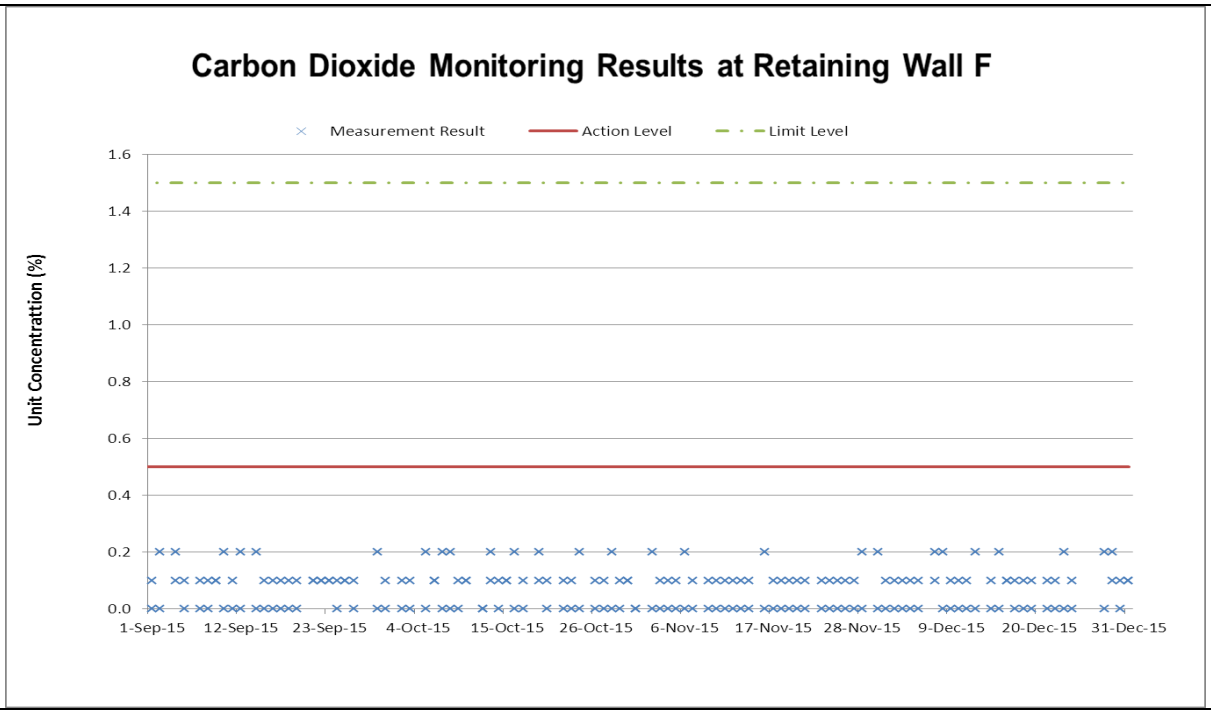
Method of Test : The analyser is calibrated in a temperature controlled chamber using reference gases.

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.

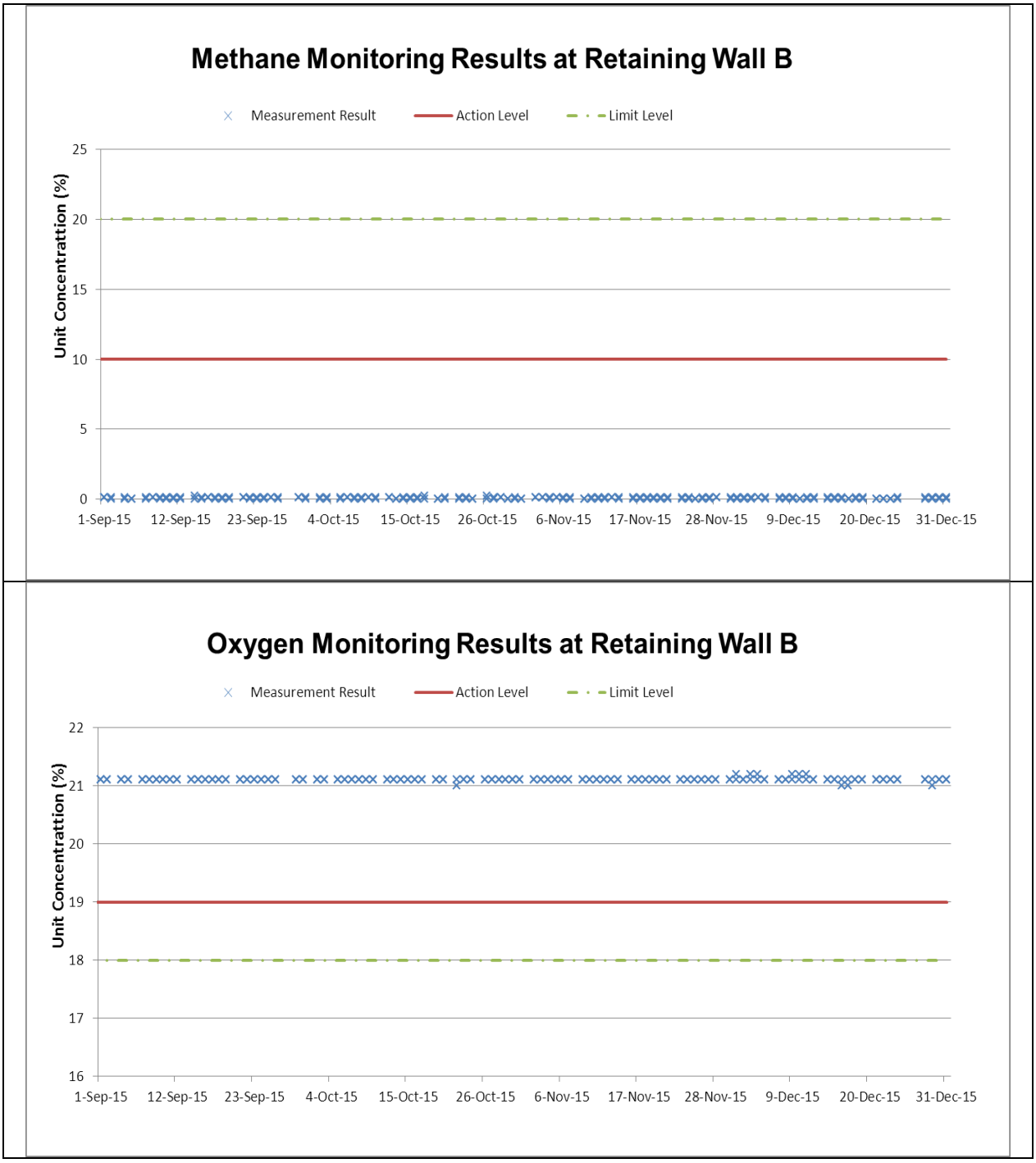
Appendix I

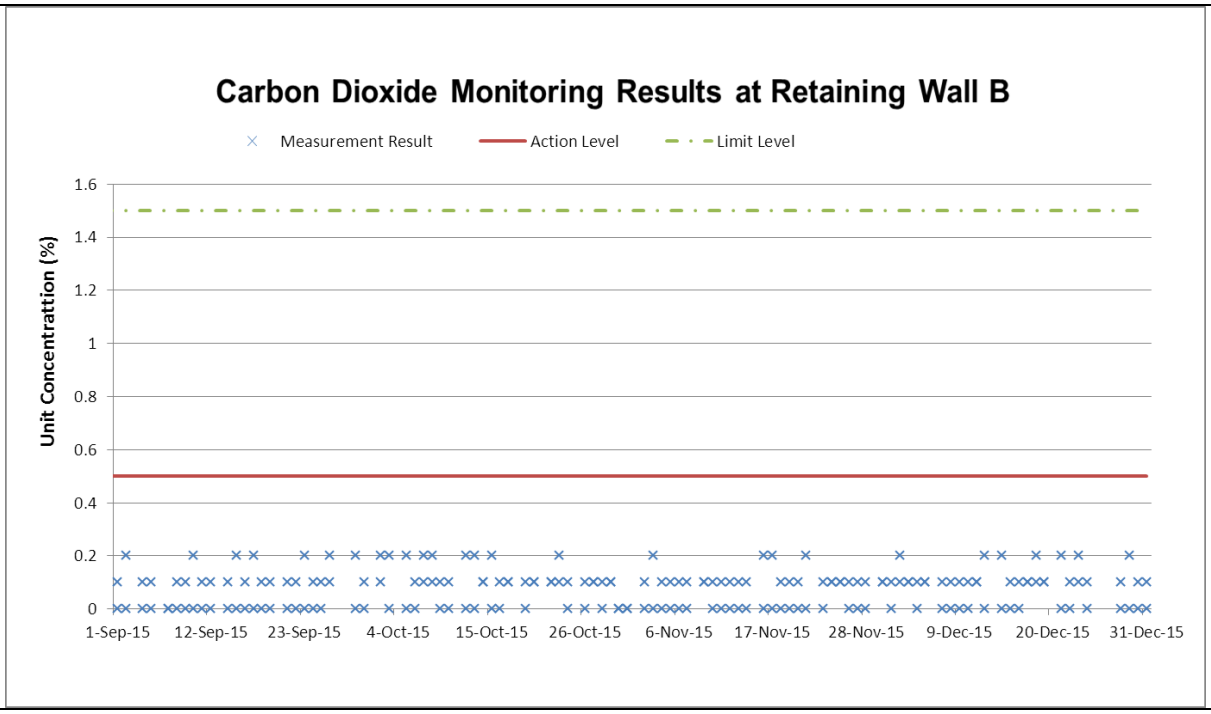
Landfill Gas Monitoring Results and Graphical Plots


Methane Monitoring Results at Retaining Wall F
Measurement Result
Action Level
Limit Level
Unit Concentration (%)
25
20
15
10
5
0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15
Oxygen Monitoring Results at Retaining Wall F
Measurement Result
Action Level
Limit Level
Unit Concentration (%)
22.0
21.0
20.0
19.0
18.0
17.0
16.0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15



Annotation:
During 1 September to 31 December 2015, major construction activity was construction of retaining wall F and the specified works included excavation, rock breaking, 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.


Methane Monitoring Results at Retaining Wall B
Measurement Result
Action Level
Limit Level
Unit Concentrattion (%)
25
20
15
10
5
0
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15
Oxygen Monitoring Results at Retaining Wall B
Measurement Result
Action Level
Limit Level
Unit Concentrattion (%)
22
21
20
19
18
17
16
1-Sep-15
12-Sep-15
23-Sep-15
4-Oct-15
15-Oct-15
26-Oct-15
6-Nov-15
17-Nov-15
28-Nov-15
9-Dec-15
20-Dec-15
31-Dec-15



Annotation:
During 1 September to 31 December 2015, major construction activity was construction of retaining wall B and the specified works included excavation, rock breaking, 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.

Appendix J

Investigation Report for Exceedance

(Not Used)

Appendix K

Checklist for Landscape and Visual Monitoring

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 4th December 2015

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

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

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

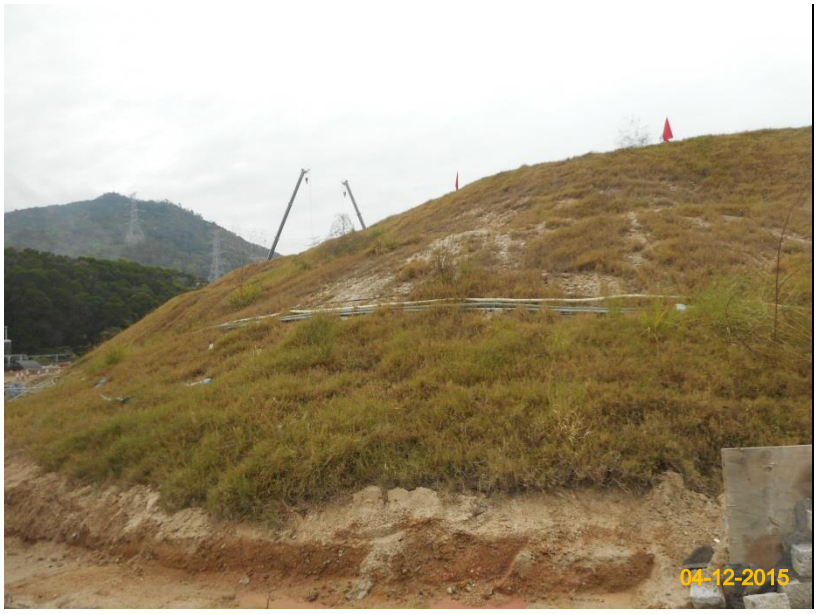
Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 6/1/2016

Checked by: (ET) 7/1/16. (Date)

Checked by: (IEC) 11/1/2016 (Date)

Item 1. Existing trees on boundary of the Project Area have been protected carefully during construction.



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

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

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

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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 11th December 2015

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

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

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

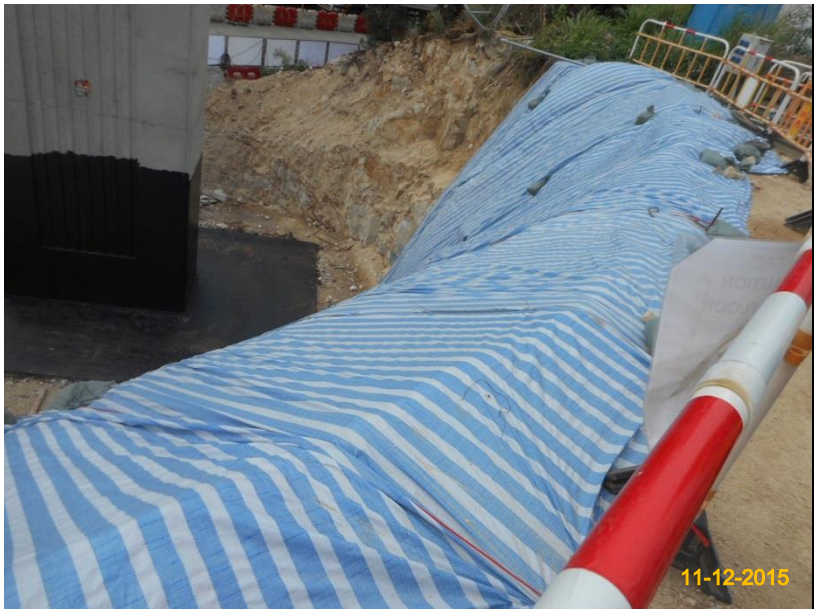
Note: All item reference to Technical Memorandum on Environmental Impact Assessment, TM-CLKL EIA Section 10.9 & Project EM&A Manual Section 7.6

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 6/1/2016

Checked by: (ET) 7/11/16 (Date)

Checked by: (IEC) 11/1/2016 (Date)

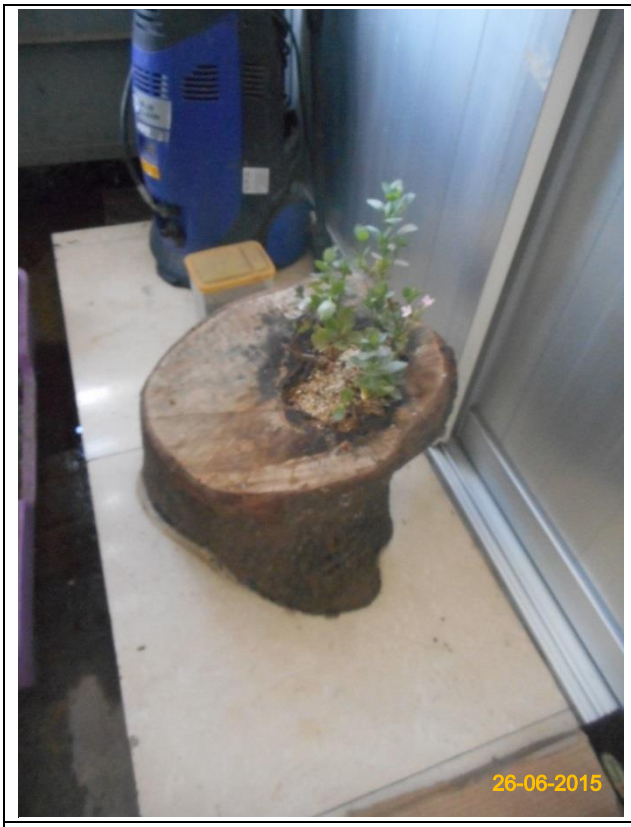
Item 1. Existing trees on boundary of the Project Area have been protected carefully during construction.



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

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

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



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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 18th December 2015

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

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

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

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

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 6/1/2016

Checked by: (ET) 7/11/16 (Date)

Checked by: (IEC) 11/1/2016 (Date)

Item 1. Existing trees on boundary of the Project Area have been protected carefully during construction.

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

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

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

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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 24th December 2015

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

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

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

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

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 6/1/2016

Checked by: (ET) 7/1/16 (Date)

Checked by: (IEC) 11/1/2016 (Date)

Item 1. Existing trees on boundary of the Project Area have been protected carefully during construction.

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

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

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

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

Contract No. HY/2013/12

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

Landscape and Visual Checklist

Monitoring Date: 31th December 2015

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

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

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

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

Checked and Monitored by: Chung Koon Wah Albert (RLA) No. R-150 (Date) 6/1/2016

Checked by: (ET) 7/1/16 (Date)

Checked by: (IEC) 11/1/2016 (Date)

Item 1. Existing trees on boundary of the Project Area have been protected carefully during construction.

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

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

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

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

Appendix L

Monthly Summary Waste Flow Table

Appendix A –Monthly Waste Flow Table

Monthly Summary Waste Flow Table for 2015 (year)

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

Notes:

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

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

3 Broken concrete for recycling into aggregates.

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
December 2015	Air Quality – 1-hour TSP	Action Level	0	**4**
		Limit Level	0	0
	Air Quality – 24-hour TSP	Action Level	0	0
		Limit Level	0	0

Table N-2 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
December 2015	0	**3**	NA	NA	**3**
Cumulative since project commencement	0	**3**	NA	NA	**3**

Table N-3 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
December 2015	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
December 2015	0	0	NA	NA	NA
Cumulative since project commencement	0	0	NA	NA	NA

Appendix O

Investigation Report for the Complaint

(Not Used)

Appendix P

Inspection Checklist for Vulnerable to Contaminated Water Discharge

(Not Used)