



**AUES JOB No.: TCS00715/14**

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

**24<sup>TH</sup> MONTHLY ENVIRONMENTAL MONITORING AND  
AUDIT (EM&A) REPORT – OCTOBER 2016**

PREPARED FOR  
**CRBC AND KADEN JOINT VENTURE**

<b>Date</b>	<b>Reference No.</b>	<b>Prepared By</b>	<b>Certified By</b>
14 November 2016	TCS00715/14/600/R0250v3	 Ben Tam (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

Ref.: HYDZHMBEEM00\_0\_4759L.16

15 November 2016

AECOM  
Supervising Officer Representative's Office  
No. 8 Mong Fat Street, Tuen Mun,  
New Territories, Hong Kong

By Fax (2293 6300) and By Post

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  
24<sup>th</sup> Monthly EM&A Report for October 2016 (EP-354/2009/D)**

Reference is made to the Monthly Environmental Monitoring and Audit (EM&A) Report (Oct. 2016) (AUES reference: TCS00715/14/600/R0250v3 dated 14 Nov. 2016) certified by the ET Leader and provided to us via e-mail on 15 Nov. 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. Vico Cheung (By Fax: 3188 6614)  
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)  
AUES – Mr. T. W. Tam (By Fax: 2959 6079)  
CRBC – Kaden JV – Mr. John Wong (By Fax: 2253 8399)

Internal: DY, YH, ENPO Site

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### EXECUTIVE SUMMARY

ES01 This is the 24<sup>th</sup> Monthly EM&A Report presenting the monitoring results and inspection findings for the period from **1 to 31 October 2016** (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 – **45 events**
- 1-hour TSP of Air Quality Monitoring – **135 events**
- Cultural Heritage Inspection – **4 events**
- Landfill Gas Monitoring – **23 days**
- Landscape & Visual Monitoring – **4 events**
- Environmental Site Inspection – **4 events**

#### BREACH OF ACTION AND LIMIT (A/L) LEVELS

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

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

ES04 No noise complaints were received in the Reporting Period.

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

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

#### SITE INSPECTION

ES07 In the Reporting Period, joint site inspection by the RE, ET and the Contractor was carried out on **4<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup> October 2016** and the IEC has attended the joint site inspection on **25<sup>th</sup> October 2016**. No non-compliance was recorded during the site inspection but 10 observations and 3 reminders were recorded.

ES08 Inspection for Pitcher Plants of ecology and grave of culture heritage were also carried out during the weekly site inspection. It was observed that the transplanted pitcher plants were properly protected and the growth was normally in fair condition except three individuals which appeared poor condition in May 2016 were certified dead by the specialist. It is considered that the Pitcher Plant were establishing after transplanting shock and adapting to the condition of the Final Receptor Site and frequent watering is recommended.

#### ENVIRONMENTAL COMPLAINT

ES09 In the Reporting Period, one (1) environmental complaint was received from EPD on 3 October 2016 regarding to muddy water entering the drainage system near site entrance-Hand-key attendance system at Pillar Point, Tuen Mun at around 03:00 to 04:00 after the rainstorm. Investigation report for the complaint has been conducted by the ET and agreed by IEC.

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

Reporting Period	Environmental Complaint Statistics	
	Frequency	Cumulative
Since the Contract commencement	6	6
October 2016	1	7

#### NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

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

#### REPORTING CHANGE

ES12 No reporting changes were made in the Reporting Period.

#### FUTURE KEY ISSUES

ES13 During dry season, air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be fully implemented to reduce construction dust impact as recommended in the EMIS.

ES14 Moreover, muddy water or other water pollutants from site surface runoff into the public areas will be key environment issue. Special attention should be paid on the water quality mitigation measures to prevent surface runoff flow to public area.

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

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## **1 INTRODUCTION**

### **1.1 CONTRACT BACKGROUND**

1.1.1 CRBC-Kaden Joint Venture (hereafter “CRBC-Kaden JV”) is commissioned by the Highways Department (HyD) as the Main Contractor of the Contract No. HY/2013/12 – Northern Connection Toll Plaza and Tunnel Section ((hereafter “the Contract”) and this Contract is part of the Tuen Mun – Chek Lap Kok Link (TM-CLK Link Project). TM-CLK Link Project is a Designated Project under Environmental Permit number EP-354/2009/D issued on 13 March 2015. The layout Plan of the Project and the Contract are showed in *Appendix A* and *B* respectively.

1.1.2 The construction works of the Contract mainly include:-

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

1.1.3 This is 24<sup>th</sup> monthly EM&A report presenting the monitoring results and inspection findings for period from **1** to **31 October 2016**.

### **1.2 REPORT STRUCTURE**

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

*Section 1 Introduction*

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

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

*Section 4 Air Quality Monitoring*

*Section 5 Ecology Monitoring*

*Section 6 Cultural Heritage*

*Section 7 Landscape and Visual*

*Section 8 Landfill gas hazard Monitoring*

*Section 9 Waste Management*

*Section 10 Inspections and Audit*

*Section 11 Environmental Complaints and Non-Compliance*

*Section 12 Implementation Status of Mitigation Measures*

*Section 13 Conclusions and Recommendations*

## 2 CONTRACT ORGANIZATION AND CONSTRUCTION PROGRESS AND ENVIRONMENTAL SUBMISSIONS

### 2.1 CONTRACT ORGANIZATION

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

### 2.2 CONSTRUCTION PROGRESS

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

- Instrumentation and Monitoring
- Earthwork on slope D and E;
- Construction of slope surface drainage on slope C, D & and E and Portal H;
- Road drainage works at +11mPD and +19mPD platform and Portion H;
- Construction of Retaining Wall A and B;
- Construction of Bored pile at central median
- Box-culvert construction near MH2.
- Sewer culvert by hand shield method at FC1, FC2, MH6, MH3, MH7;
- Toll plaza decking TD2
- Waterproofing and lining at vehicular Underpass;
- Construction of footbridge, Bridge G2 and TD1 decking;
- Construction of Toll Collector Subway.
- Fabrication of form traveler at fire station (need to arrange specific safety training)
- Assembly of Form Traveller at Bridge H1E and load test.
- Stitching of TD1 decking

### 2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

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

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

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

No.	Type of Permit/ License	Submission Date	Reference/ License No.	Date of Issue	Date of Expiry
1	Air pollution Control (Construction Dust) Regulation	06-08-2014	377719	06-08-2014	N/A
2	Chemical Waste Producer Registration - Waste Producers Number	06-08-2014	5117422C389301	03-09-2014	N/A
3	Water Pollution Control Ordinance - Variation of Effluent Discharge License	22-08-15	WT00023973-2016	14-03-16	30-09-2019
4	Waste Disposal Regulation - Billing Account for Disposal of Construction Waste	21-07-2014	7020460	01-08-2014	N/A
5	CNP for Multiple Task	21-04-2016	GW-RW0520-16	05-05-2016	04-11-2016
6	CNP for MH5	25-04-2016	GW-RW0563-16	18-05-2016	17-11-2016
7	CNP for Tunnel works	25-04-2016	GW-RW0582-16	23-05-2016	22-11-2016



No.	Type of Permit/ License	Submission Date	Reference/ License No.	Date of Issue	Date of Expiry
8	Extend CNP for Falsework Erection	27-07-2016	GW-RW0472-16	22-08-2016	21-12-2016

### 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	<b><u>Northern Connection</u></b> 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
				<p><b><u>Toll Plaza</u></b> During excavation, slope works, construction of road and superstructures and wind erosion from open sites and stockpiling areas</p> <p><b><u>Tunnel Buildings</u></b> During excavation, foundation works, construction of superstructures and wind erosion from open sites and stockpiling areas</p>

### 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 m<sup>3</sup>/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 cm<sup>2</sup> (63 in<sup>2</sup>);
  - (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 ( $\mu\text{g}/\text{m}^3$ )		1-hour TSP ( $\mu\text{g}/\text{m}^3$ )	
	Action Level	Limit Level	Action Level	Limit Level
ASR1	213	260	331	500
ASR5	238	260	340	500
AQMS1	213	260	335	500
ASR6	238	260	338	500
ASR10	214	260	337	500

3.6.2 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 landscape & visual and landfill gas for the present and next reporting period are presented in *Appendix G*.

**4 AIR QUALITY MONITORING****4.1 GENERAL**

4.1.1 The air quality impact monitoring and enhanced Total Suspended Particulates (TSP) level monitoring at five proposed locations are currently carried out by the ET of Contract HY/2012/08. Sharing of impact air quality monitoring data between HY/2012/08 and HY/2013/12 is agreed by all relevant parties. The Contract is not required to conduct its own dust monitoring exercise until the Contract HY/2012/08 ends.

**4.2 AIR QUALITY MONITORING RESULTS IN REPORTING PERIOD**

4.2.1 In the Reporting Period, 1-hour and 24-hour TSP monitoring at the five proposed locations are continued to perform by the ET of Contract HY/2012/08. Therefore, no air quality monitoring was conducted by the ET of Contract HY/2013/12. Details information of air quality monitoring results could be referred to the Monthly EM&A Reports of the Contract HY /2012 /08 (**October 2016**).

**4.3 ACTION AND LIMIT (A/L) LEVELS EXCEEDANCE**

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

**Table 4-1 Summary of Air Quality Monitoring Exceedance**

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

**4.4 AIR QUALITY EXCEEDANCE INVESTIGATION**

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

## **5 ECOLOGY MONITORING**

### **5.1 GENERAL**

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

5.1.2 A total of 181 pitcher plants were transplanted to final receptor site and the rest of the Pitcher Plant individuals (certified dead by the specialist) were not transplanted and were treated as general refuse. All the transplantation of pitcher plant from the nursery site to final receptor site was completed on 10<sup>th</sup> September 2015.

### **5.2 PITCHER PLANTS INSPECTION**

5.2.1 Inspection for the growth and mitigation measures implementation status of the Pitcher Plant at the final receptor area were performed on **4<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup> October 2016** by the ET in the Reporting Period.

5.2.2 During each inspection, the transplanted pitcher plant was performed random checking at the final receptor area. It was observed that the transplanted pitcher plants were properly protected and the growth was normally in fair condition except three individuals which appeared poor condition in May 2016 were certified dead by the specialist. It is considered that the Pitcher Plant were establishing after transplanting shock and adapting to the condition of the Final Receptor Site and frequent watering is recommended. Besides, no construction activities were observed to be carried out at the surrounding of the final receptor area. The condition of chain link fence is good and no repair or maintenance is required.

5.2.3 Establish period for the pitcher plants was completed at the end of September 2016, therefore the joint site completion of establish period visit with AFCD was undertaken on 23 September 2016.

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

## 6 CULTURAL HERITAGE

### 6.1 GENERAL

6.1.1 According to the EM&A Manual requirements, regular inspection for heritage resource, Grave G1, shall be audited by the ET at least once every week to ensure recommended mitigation measures implemented during construction period. The aim of the survey is 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 **4<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup> October 2016**. During these inspections, buffer zone was maintained between the working area and the Grave. The nearby areas were clean, and no construction materials or mechanical equipment were stored within or close to the buffer zone.

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



## **7 LANDSCAPE AND VISUAL**

### **7.1 GENERAL**

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

### **7.2 LANDSCAPE AND VISUAL INSPECTION**

7.2.1 In the Reporting Period, site inspection for landscape and visual mitigation measures was undertaken on **7<sup>th</sup>, 14<sup>th</sup>, 22<sup>nd</sup> and 28<sup>th</sup> October 2016** by the Registered Landscape Architect.

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

## 8 LANDFILL GAS HAZARD MONITORING

### 8.1 GENERAL

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

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

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

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

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

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

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

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

8.1.7 The landfill consultation zone was divided into 6 monitoring zones. The landfill gas monitoring zones are summarized in **Table 8-1** and the layout plan for the monitoring zone is illustrated in **Appendix E**.

**Table 8-1 Landfill Gas Monitoring Zone**

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

### 8.2 LANDFILL GAS MONITORING RESULT

8.2.1 For the monitoring zone RW-B & RW-F, all the excavated area have been backfilled at the end of September 2016, therefore no landfill gas monitoring was undertaken in this reporting period. In the Reporting Period, landfill gas monitoring was conducted at the zone TD1 and LMR which have excavation works was undertaking. A BIOGAS 5000 gas analyser was

used for the landfill gas monitoring and the valid calibration certificate is presented in *Appendix H*.

- 8.2.2 There were a total of 23 days monitoring were carried by the Safety Officer or an approved and qualified persons. The results of landfill gas measurement are summarized in *Table 8-2*. Moreover, database of monitoring result and graphical plot are attached in *Appendix I*.

**Table 8-2 Summary of Landfill Gas Measurement Results**

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

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

## 9 WASTE MANAGEMENT

### 9.1 GENERAL WASTE MANAGEMENT

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

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

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

### 9.2 RECORDS OF WASTE QUANTITIES

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

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

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

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

Type of Waste	Quantity	Disposal Location
Reused in this Contract (Inert) (^000m <sup>3</sup> )	5.736	-
Reused in other Projects (Inert) (^000m <sup>3</sup> )	15.510	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 <sup>3</sup> )	0.098	Tuen Mum Area 38

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (^000kg)	0	-
Recycled Paper / Cardboard Packaging (^000kg)	0	-
Recycled Plastic (^000kg)	0	-
Chemical Wastes (^000kg)	0	-
General Refuses (^000m <sup>3</sup> )	0.125	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 **4<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup> October 2016**. No non-compliance was noted but **10** observations and 3 reminders were recorded during site inspection. Moreover, ENPO/IEC has attended joint site inspection on **25<sup>th</sup> October 2016**.

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
4 October 2016	<ul style="list-style-type: none"> <li>General refuse and C&amp;D waste scattered on site was observed. Housekeeping should be improved to maintain the site clean and tidy. (FC2)</li> </ul>	<ul style="list-style-type: none"> <li>General refuse and C&amp;D waste scattered on site was cleared.</li> </ul>
	<ul style="list-style-type: none"> <li>Oil drums and chemical containers without drip tray storage on site was observed. Drip tray should be provided for all chemical containers storage on site. (Storage area near retaining wall B)</li> </ul>	<ul style="list-style-type: none"> <li>Drip tray was provided for the oil drum.</li> </ul>
	<ul style="list-style-type: none"> <li>Improper colour NRMM label was observed. Proper label should be displayed for all NRMM using on site. (Retaining wall B)</li> </ul>	<ul style="list-style-type: none"> <li>Proper label was displayed on the NRMM.</li> </ul>
12 October 2016	<ul style="list-style-type: none"> <li>Exposed slope near the stream should be covered with tarpaulin sheet to prevent surface run-off contamination during rainstorm. (Stream B)</li> </ul>	<ul style="list-style-type: none"> <li>Exposed slope near the stream was covered with tarpaulin.</li> </ul>
	<ul style="list-style-type: none"> <li>Chemical containers without drip tray storage on site was observed. (Grouting area near west portal)</li> </ul>	<ul style="list-style-type: none"> <li>Chemical containers without drip tray was removed</li> </ul>
	<ul style="list-style-type: none"> <li>Heavy dust emitted from soil nail works was observed. Effective dust control measures should be provided to minimize dust generation. (Slope D)</li> </ul>	<ul style="list-style-type: none"> <li>No dust emitted from soil nail works was observed.</li> </ul>
	<ul style="list-style-type: none"> <li>All engine cover should be closed properly when the plant is operation.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>
18 October 2016	<ul style="list-style-type: none"> <li>Sand bags or earth bund should be provided to divert the muddy run-off to de-silting system. (TPA 1-10)</li> </ul>	<ul style="list-style-type: none"> <li>Sand bags were provided to divert the surface run-off.</li> </ul>
	<ul style="list-style-type: none"> <li>Exposed slope should covered with tarpaulin sheets to avoid contaminate to the surface run-off. Also, broken tarpaulin should be replaced. (H1E)</li> </ul>	<ul style="list-style-type: none"> <li>Broken tarpaulin was replaced.</li> </ul>
	<ul style="list-style-type: none"> <li>As a reminder, stagnant water cumulated on site during rainstorm should be treated and drained away ASAP.</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>

Date	Findings / Deficiencies	Follow-Up Status
25 October 2016	<ul style="list-style-type: none"> <li>Three sides plus top shelter should be provided for grouting works. (Slope D)</li> </ul>	<ul style="list-style-type: none"> <li>Shelter was provided for the grouting works area.</li> </ul>
	<ul style="list-style-type: none"> <li>Soil and silt cumulated inside the temporary channel was observed after rainstorm. The contractor should clean up the silt to prevent contaminate treated discharge water. (Slope D)</li> </ul>	<ul style="list-style-type: none"> <li>Soil and silt cumulated inside the temporary channel was cleared.</li> </ul>
	<ul style="list-style-type: none"> <li>EP should be displayed at all site entrance. (works area near fire station)</li> </ul>	<ul style="list-style-type: none"> <li>Not required for reminder.</li> </ul>

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

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

Date	Findings / Deficiencies	Follow-Up Status
--	<ul style="list-style-type: none"> <li>NA</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>

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

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

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

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

*Inspection Checklist for Vulnerable to Contaminated Water Discharge*

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

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

10.1.11 The daily inspection for vulnerable to contaminated water discharge was conducted by the Contractor from **1 to 31 October 2016**. 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**. Due to the typhoon signal No.8 was hoisted, therefore no drainage inspection was undertaken on 21 October 2016.

## 11 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

### 11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

11.1.1 In the Reporting Period, no 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. However, one (1) environmental complaint was received and lodged for the Contract. Follow up actions have been undertaken by the Contractor to resolve the deficiencies. The details of complaint are listed below:-

- A complaint was received via EPD hotline on 3 October 2016, claimed that muddy water entering the drainage system near site entrance-Hand-key attendance system Pillar Point, Tuen Mun at around 03:00 to 04:00 after the rainstorm. Refer to tele-conversation with EPD and Contractor, the complaint was actually mentioning the muddy water entering the drainage system was occurred on 1 October 2016 03:00 to 04:00 at the bus station nearby the site entrance. According to the site record, the works carried out during the concerned time period was maintenance works of TTA include maintenances of flashlight, water barrier and road marking, there is no ponding water was observed nearby the concerned locations. Also during the weekly site inspection on 4 October 2016, no water discharged from site and ponding at the bus station nearby the site entrance was observed. Earth bund was also provided at the slope near the site entrance to divert the surface run-off to the de-silting system. Moreover, the record from the Hong Kong Observatory also stated there was no rainfall recorded at Tuen Mun between 30 September 2016 and 1 October 2016 04:45 a.m. Therefore for the above result, it is considered that the above complaint is not related to the project.

11.1.2 During the complaint investigation work, the Contractor was co-operated with the ET in providing all the necessary information and assistance for completion of the investigation. Investigation report (IR) for the complaint has been conducted by the ET and agreed by the IEC. It was concluded that the complaint was not related to the works under the Contract. The IR of the complaint is shown in *Appendix O*.

11.1.3 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
October 2016	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
October 2016	1	7	1	NA	6

**Table 11-3 Statistical Summary of Environmental Summons**

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
October 2016	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
October 2016	0	0	NA	NA	NA

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



## 12 IMPLEMENTATION STATUS OF MITIGATION MEASURES

### 12.1 GENERAL REQUIREMENTS

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

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

**Table 12-1 Environmental Mitigation Measures**

Issues	Environmental Mitigation Measures
Air Quality	<ul style="list-style-type: none"> <li>• Maintain damp / wet surface on access road</li> <li>• Keep slow speed in the sites</li> <li>• All vehicles must use wheel washing facility before off site</li> <li>• Sprayed water during rock breaking works</li> <li>• During transportation by truck, materials loaded lower than the side and tail boards, and covered before transport</li> <li>• Compacted all soil stockpiles</li> <li>• Part of the exposed slopes covered geotextile net</li> </ul>
Cultural Heritage	<ul style="list-style-type: none"> <li>• Set a buffer zone between the working area and the Grave</li> <li>• All construction materials and equipment store far from the Grave</li> <li>• Inspection the Grave to ensure provision mitigation measures effective</li> </ul>
Ecology	<ul style="list-style-type: none"> <li>• Wire fencing provided for temporary protect Pitcher Plants</li> <li>• Undertake weekly inspection of Pitcher Plants</li> </ul>
Landfill Gas Hazard	<ul style="list-style-type: none"> <li>• Landfill Gas measurement undertake during trench excavation</li> </ul>
Water Quality	<ul style="list-style-type: none"> <li>• Temporary drainage system provide for surface runoff prevent discharge to public area</li> <li>• Wastewater to be treated by sedimentation tank before discharge.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Restrain operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday.</li> <li>• Keep good maintenance of plants</li> <li>• The noisy plants or works provide mobile noise barriers</li> <li>• Shut down the plants when not in used</li> </ul>
Waste and Chemical Management	<ul style="list-style-type: none"> <li>• On-site sorting prior to disposal</li> <li>• Follow requirements and procedures of the “Trip-ticket System”</li> <li>• Predict required quantity of concrete accurately</li> <li>• Collect the unused fresh concrete at designated locations in the sites for subsequent disposal</li> </ul>
General	<ul style="list-style-type: none"> <li>• The site was generally kept tidy and clean.</li> </ul>

### 12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

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

- Site Formation – Earthwork on Slope D and E; surface drainage on Slope C, D & E and Portion H;
- Toll Plaza Decking and TD2;
- Toll Plaza Footbridge;
- Retaining Structure RW\_A, RW\_B and RW\_F;
- Toll Collector Subway & Associated Works;
- Bridge G1, G2 and Bridge H1 by Form Traveller;
- Sewer Culvert at FC1 and FC2;

- Waterproofing and lining at Vehicular Underpass
- Road and Drainage Works at +11mPD, +19mPD and Portion H

### **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

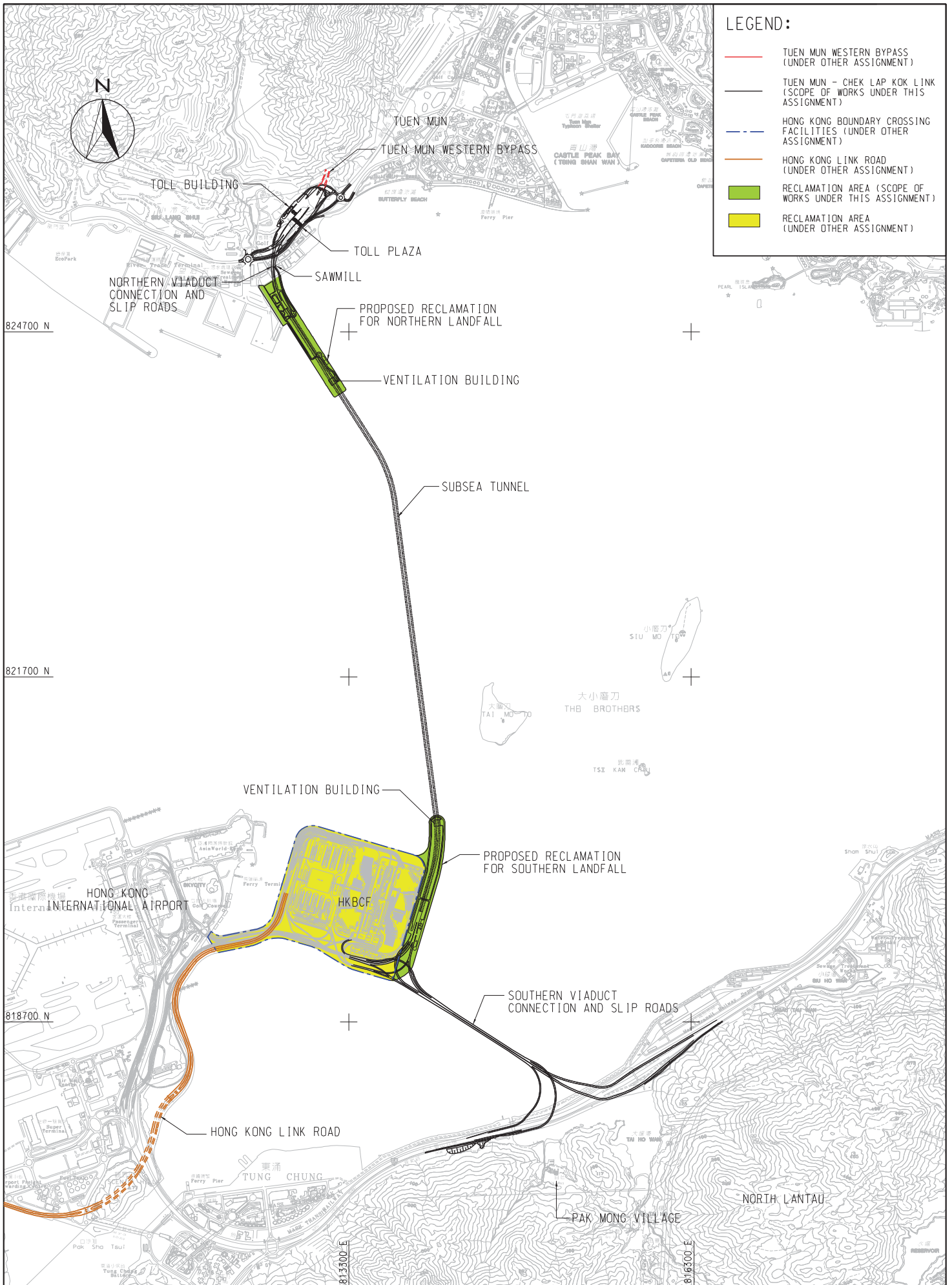
- 13.1.1 This is **24<sup>th</sup>** monthly EM&A report presenting the monitoring results and inspection findings for the period of **1<sup>st</sup> to 31<sup>st</sup> October 2016**.
- 13.1.2 No air quality monitoring including 1-hour and 24-hour TSP exceedance was recorded in the Reporting Period.
- 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 final receptor site. It was observed that the transplanted pitcher plants were properly protected and the growth was normally in fair condition except three individuals which appeared poor condition in May 2016 were certified dead by the specialist. It is considered that the Pitcher Plant were establishing after transplanting shock and adapting to the condition of the Final Receptor Site and establish period for the pitcher plants was completed at the end of September 2016.
- 13.1.6 Landfill gas monitoring was conducted at the TD1 and Lung Mun Road works area. The monitoring results shown no exceedances were triggered.
- 13.1.7 In the Reporting Period, one (1) environmental complaint was received from EPD on 3 October 2016 regarding to muddy water entering the drainage system near site entrance-Hand-key attendance system at Pillar Point, Tuen Mun at around 03:00 to 04:00 after the rainstorm. Investigation report for the complaint has been conducted by the ET and agreed by IEC.
- 13.1.8 No notifications of summons, or successful prosecution were received by the Contractor during the Reporting Period.
- 13.1.9 In the Reporting Period, joint site inspection by the RE, ET and the Contractor was carried out on **4<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup> October 2016** and the IEC has attended the joint site inspection on **25<sup>th</sup> October 2016**. No non-compliance was recorded during the site inspection but **10** observations and **3** reminders were recorded.
- 13.1.10 In the Reporting Period, Grave G1 of inspection was undertaken on **4<sup>th</sup>, 12<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup> October 2016**. Based on the inspection findings, the cultural heritage mitigation measures as implemented by the Contractor are fully complied with the EM&A Manual requirements.

#### 13.2 RECOMMENDATIONS

- 13.2.1 During dry season, air quality mitigation measures such as watering of site area for 12 times per day and covering of exposed slopes should be fully implemented to reduce construction dust impact as recommended in the EMIS.
- 13.2.2 Moreover, muddy water or other water pollutants from site surface runoff into the public areas will be key environment issue. Special attention should be paid on the water quality mitigation measures to prevent surface runoff flow to public area.
- 13.2.3 Stagnant water should be removed as soon as possible after rain to prevent mosquito breeding on site.

## **Appendix A**

### **Project Layout Plan**



**LEGEND:**

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

PROJECT NO. 60044963

**AECOM**

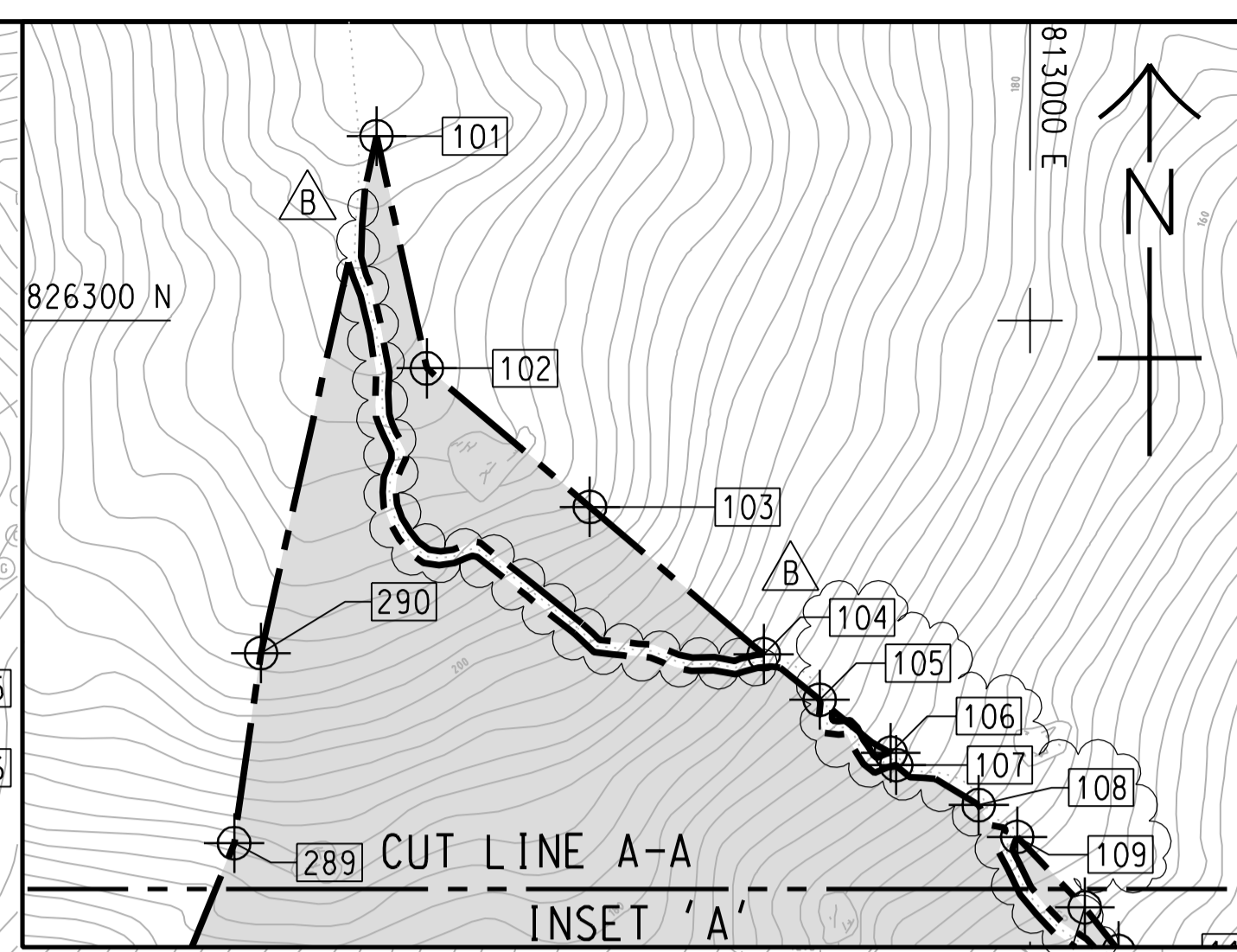
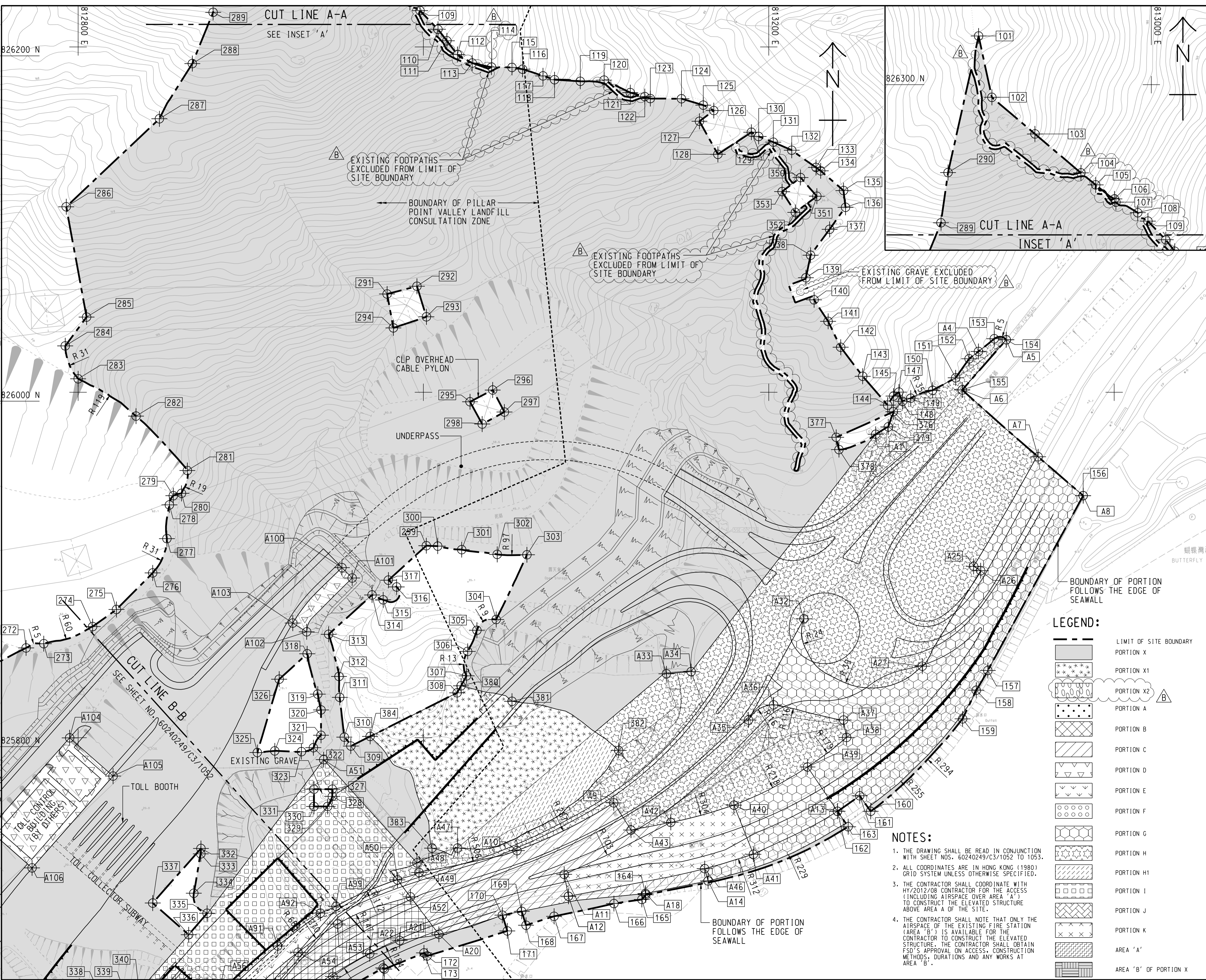
AGREEMENT NO. CE 52/2007(HY)  
 TUEN MUN - CHEK LAP KOK LINK - INVESTIGATION  
**GENERAL LAYOUT OF TM-CLKL**

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

## **Appendix B**

### **Layout Plan of the Contract**

Project Management Initials: Designer: PI Checked: ALCF Approved: CWN ISO A1 594mm x 841mm  
 Plot File by: LINDO 2014/05/19 PATH: P:\Projects\60240249\DRAWING\CONTRACT\C3\1005C3\_05E1.dgn



**LEGEND:**

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

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

**AECOM**

**PROJECT**  
TUEN MUN - CHEK LAP KOK LINK

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

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

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**ISSUE/REVISION**

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

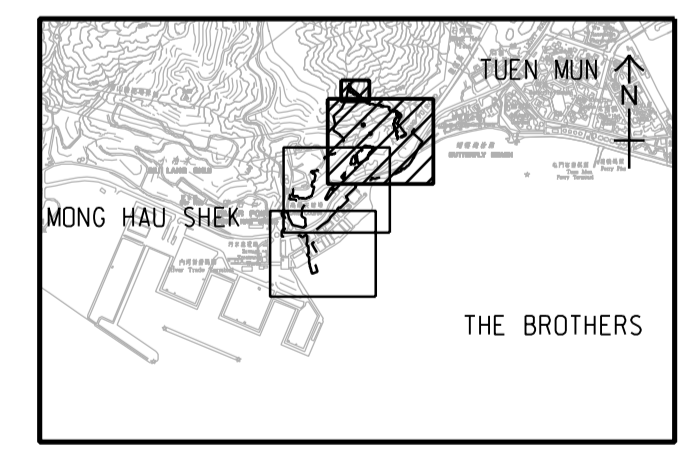
**STATUS**  
編號

**SCALE**  
比例

**DIMENSION UNIT**  
尺寸單位

A1 1:1000 METRES

**KEY PLAN** 1:50000



**PROJECT NO.** 項目編號: 60240249

**CONTRACT NO.** 合約編號: HY/2013/12

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

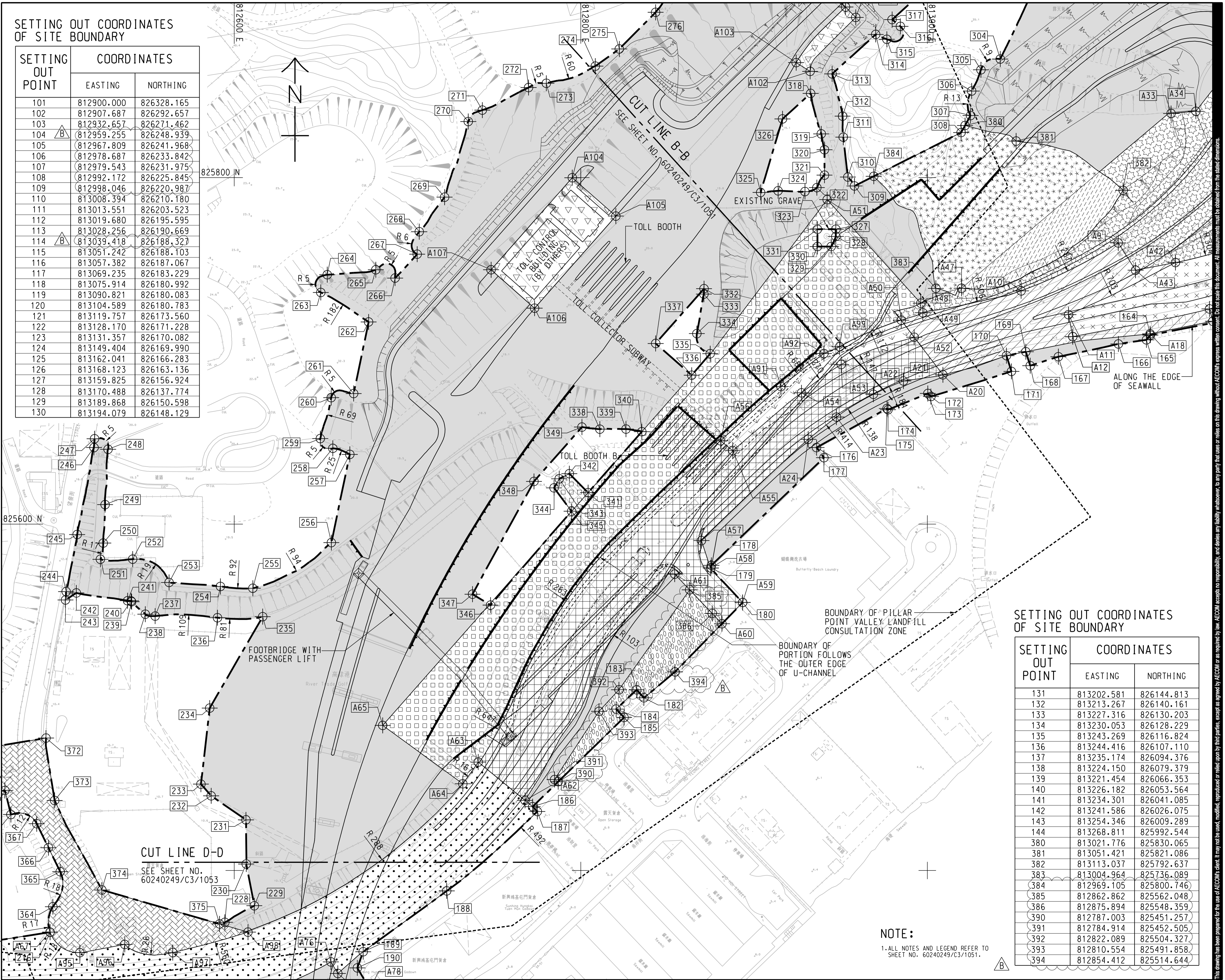
**SHEET NUMBER** 圖紙編號: 60240249/C3/1051B

SHEET 1 OF 3

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**SETTING OUT COORDINATES OF SITE BOUNDARY**

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



**SETTING OUT COORDINATES OF SITE BOUNDARY**

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

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



**PROJECT**  
 TUEN MUN - CHEK LAP KOK LINK

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

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

**CONSULTANT**  
 土研顧問公司  
 AECOM Asia Company Ltd.  
 www.aecom.com

**SUB-CONSULTANTS**  
 分列工程顧問公司

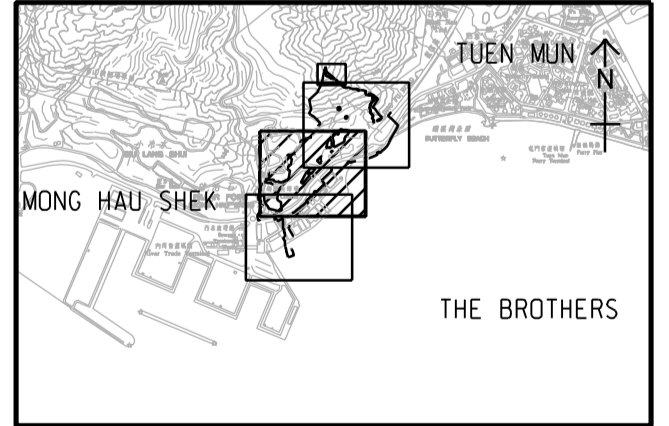
**ISSUE/REVISION**

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

**STATUS**  
 備核

**SCALE**  
 比例: A1 1:1000  
**DIMENSION UNIT**  
 尺寸單位: METRES

**KEY PLAN**  
 索引圖: 1:50000



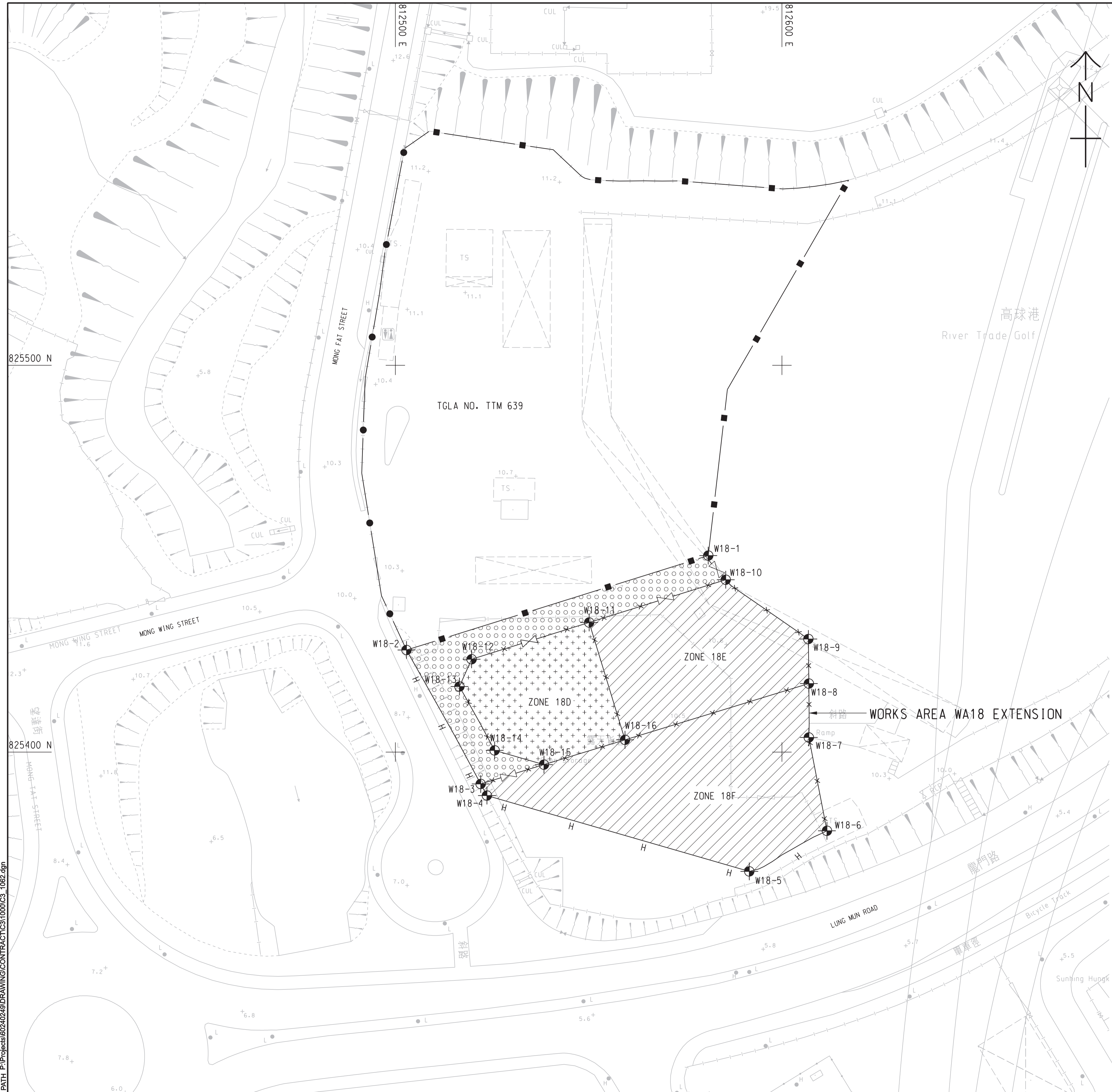
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 項目編號: 60240249  
**CONTRACT NO.**  
 合約編號: HY/2013/12

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

**SHEET NUMBER**  
 圖紙編號: 60240249/C3/1052B

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**NOTES:**

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

**LEGEND:**

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

**SETTING OUT CO-ORDINATES OF WORKS AREA WA18 EXTENSION**

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



**PROJECT**  
 項目  
**TUEN MUN - CHEK LAP KOK LINK**

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

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

**CONSULTANT**  
 工程師有限公司  
**AECOM Asia Company Ltd.**  
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**SUB-CONSULTANTS**  
 分判工程師有限公司

**ISSUE/REVISION**  
 修訂

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

**STATUS**  
 階段

**SCALE**  
 比例  
 A1 1:500

**DIMENSION UNIT**  
 尺寸單位  
 METRES

**KEY PLAN**  
 索引圖

**PROJECT NO.**  
 項目編號  
 60240249

**CONTRACT NO.**  
 合約編號  
 HY/2013/12

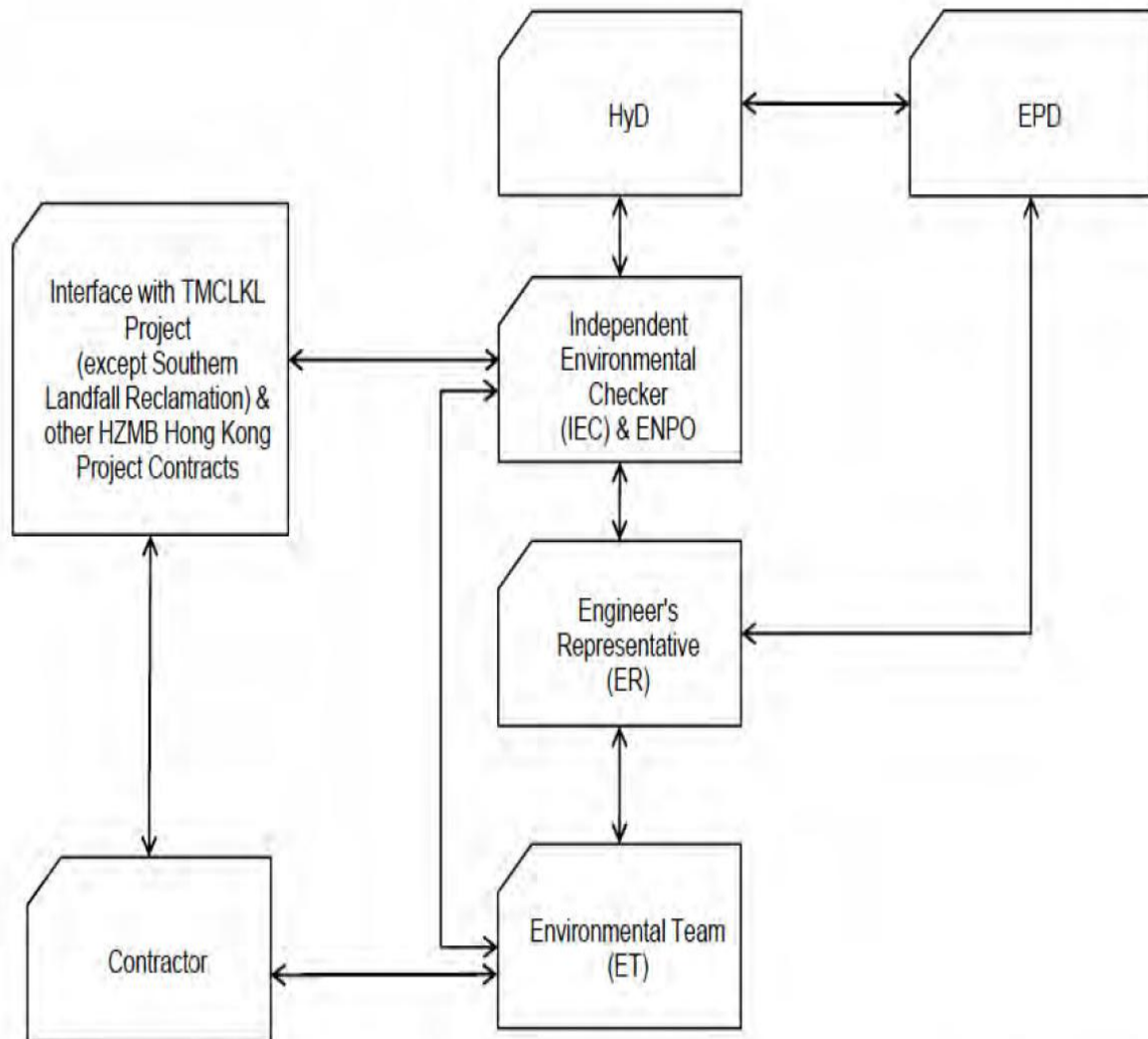
**SHEET TITLE**  
 圖紙名稱  
**WORKS AREA AND HOARDING PLAN**

**SHEET NUMBER**  
 圖紙編號  
 60240249/C3/1062B

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## **Appendix C**

### **Organization of the Contract**



↔ Line of Communication

**Project Organization chart**

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

Organization	Project Role	Name of Key Staff	Tel No	Fax No.
HyD	Employer	Mr. Stephen W.C. Chan	2762 3669	3188 6614
AECOM	Principal Resident Engineer	Mr. S.W. Fok	2218 7209	2218 7399
AECOM	Chief Resident Engineer	Mr. Roger Man	2218 7288	2218 7399
AECOM	Resident Engineer (S&E)	Mr. Kelvin Yeung	22187289	2218 7399
Ramboll Environ	Environmental Project Office (ENPO)	Mr. YH Hui	3547 2133	3465 2899
RAMBOLL - ENVIRON	Independent Environmental Checker (IEC)	Dr. FC Tsang	3547 2134	3465 2899
CKJV	Deputy Project Manager	Mr. Raymond Suen	2253 8309	2253 8399
CKJV	Site Agent	Mr. Wilson Lau	2253 8300	2253 8399
CKJV	Safety and Environmental Manager	Mr. Winson Chung	2273 3185	2375 3655
CKJV	Environmental Officer	Mr. HY Tang	2253 8300	2253 8399
CKJV	Environmental Supervisor	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**

Activity ID	Activity Name	Original Duration	Total Float	2016					2017
				Sep	Oct	Nov	Dec	Jan	
<b>HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly Update</b>		1030	656						
<b>Achievement of Stages/ Completion of Sections</b>		0	0						▼ Achievement of Stages/ Con ◆ KD7 - Sec 4 Completion All
KD10170	KD7 - Sec 4 Completion All Works within Portion D incl EM&A Implementation	0	0						
<b>Toll Plaza Decking TD1-Section 1</b>		314	281						
<b>Stage 1</b>		314	281						
<b>Method Statement Submission and Approval</b>		60	74						▼ Method Statement Submission and Approval
TD121350	MSS for in-situ deck	30							MSS for in-situ deck
TD121360	Engineer's comments and approval	30	74						Engineer's comments and approval
<b>Field Works</b>		147	281						
<b>Foundation &amp; Substructure at Central Divider of Lung Mun Road</b>		117							
<b>Bored Pile</b>		61							
TD121310	Bored Piles F1-K1(5 Nos)	61							
<b>Pile cap and Pier</b>		117							
TD120560	Pile cap F1-K1	55							
TD120570	Pier F1-K1	55							
TD120550	Pier A1-E2	55							
<b>Portal Construction</b>		60							
<b>Portal Beam 1st(H)</b>		60							
TD120360	TTA application-Stage 3(Night time-portal and decking)	60							
<b>Deck Construction</b>		145	281						
<b>Cast in-situ deck between Pier A and Pier B</b>		45	61						▼ Cast in-situ deck between Pier A and Pier B
TD120670	Reinforcement and concrete works	45	61						Reinforcement and concrete works
TD120680	Prestressing	6	61						Prestressing
TD120690	Falsework and formwork removal	15	61						Falsework and formwork removal
<b>Precast beam fabrication</b>		90	231						
TD120800	Precast parapet and planter	90	231						
<b>Precast beam installation</b>		70							▼ Precast beam installation
TD12010	Precast beam installation between portal D and portal E(5 nos)	10							Precast beam installation between portal D and portal E(5 nos)
TD12020	Precast beam installation between portal F and portal G(4 nos)	8							Precast beam installation between portal F and portal G(4 nos)
TD12030	Precast beam installation between portal E and portal F(6 nos)	12							Precast beam installation between portal E and portal F(6 nos)
TD12040	Precast beam installation between portal C and portal D(5 nos)	10							Precast beam installation between portal C and portal D(5 nos)
TD12050	Precast beam installation between portal G and portal H(4 nos)	8							Precast beam installation between portal G and portal H(4 nos)
TD12060	Precast beam installation between portal D and portal E(7nos)	14							Precast beam installation between portal D and portal E(7nos)
TD12070	Precast beam installation between portal F and portal G(4 nos)	8							Precast beam installation between portal F and portal G(4 nos)
TD12080	Precast beam installation between portal B and portal C(10 nos)	20							Precast beam installation between portal B and portal C(10 nos)
TD12090	Precast beam installation between portal C and portal D (7nos)	14							Precast beam installation between portal C and portal D (7nos)
<b>In-situ Deck and Precast Beam</b>		79	58						▼ In-situ
TD121080	In-situ deck and precast beam between portal E and portal F	60	58						In-situ
TD121090	In-situ deck and precast beam between portal F and portal G	45	58						In-situ
<b>Toll Plaza Decking TD2-Section 1</b>		250	83						
<b>Field Works</b>		250	83						
<b>G.I and Piling Works</b>		70							
<b>DWP-Bored Piles</b>		70							
TD220520	Bored piles for P21-P27	70							
<b>Base Slab &amp; Pile Cap Construction</b>		21							
<b>Abutment K-Base Slab</b>		21							
TD220580	Concreting and backfilling	21							
<b>Abutment and Pier Construction</b>		102							▼ Abutment and Pier Construction
<b>Abutment K</b>		20							▼ Abutment K
TD220270	Backfill for abutment K	20							Backfill for abutment K
<b>Abutment M</b>		16							▼ Abutment M
TD220170	Backfill for abutment M	16							Backfill for abutment M
<b>Deck Construction</b>		130	83						
TD220000	Construction of walkway	15	94						Construction of walkway
TD220180	Falsework for deck construction	40	83						Falsework for deck construction
TD220190	Bearing,formwork, reinforcement& Concreting-North	90	83						
<b>Miscellaneous Works</b>		60	83						▼ Miscellaneous Works
TD220695	Cascade D construction	60	83						Cascade D construction
<b>Toll Plaza Footbridge-Section 1</b>		835	176						

█ Remaining Level of Effort    █ Critical Remaining Work  
█ Actual Work                      ◆ Milestone  
█ Remaining Work                    ▼ Summary

CRBC - Kaden JV

Three-Month Rolling Programme

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Total Float	2016					2017
				Sep	Oct	Nov	Dec	Jan	
<b>Stage 1</b>				835	176				
<b>Method Statement Submissions and Approval</b>				58	194				
TFB1080	MSS for lift construction	50							
TFB1090	MSS for concrete slab and planter construction over steel truss	50	194						
<b>Off-site Works</b>				90	75				
TFB1100	Steel truss fabrication	90	75						
<b>Field Works</b>				835	176				
<b>Pier Construction</b>				348	241				
TFB1290	Construct pier P3	42							
TFB1250	Construct pier P1(include bearing installation)	42	137						
TFB1260	Construct pier P5	42	227						
TFB1300	Finish in-situ deck (A-B) of Bridge TD1	0	80						
TFB1270	Construct pier P7	42	227						
TFB1320	Construct pier P6	17	143						
TFB1310	Construct pier P4	25	62						
<b>Staircase and Lift Construction</b>				344	137				
TFB1350	West staircase construction	48	137						
TFB1370	East staircase construction	48	107						
TFB1380	Lift construction B	64	91						
TFB1360	Lift construction A	64	137						
<b>Retaining Structure RW_B-Section 1</b>				201	234				
<b>Site Formation - Retaining Structure RW_B</b>				201	234				
<b>Stage 1</b>				201	234				
<b>Retaining Structure RW_B</b>				201	234				
<b>Excavation</b>				51					
RWB10560	Drainage diversion	21							
RWB10580	New haul road	0							
RWB10600	Excavation works(Bay8-10)	30							
<b>Structure(Base Slab, Wall, Colum, Top Slab)</b>				60	49				
<b>Bay12-13</b>				60	49				
RWB10170	Bay12-13 and backfilling	60	49						
<b>Backfilling</b>				90	234				
RWB10230	Backfilling	40	310						
RWB10235	Precast panels installation	90	234						
<b>RW_B Precast Panel</b>				20					
<b>Precast the Panel</b>				12					
RWB20110	Precast the Panels(Bay 15-11nos)	12							
<b>Installation the Panel</b>				20					
RWB20210	Installation the Panel Bay 11	5							
RWB20220	Installation the Panel Bay 14	5							
RWB20230	Installation the Panel Bay 15	5							
<b>Toll Collector Subway &amp; Associated Works-Section 1</b>				374	223				
<b>Toll Collector Bridge (Portion I)-Section 1</b>				105	133				
<b>Stage 1</b>				105	133				
<b>Temporary Works Design(TWD) Submission and Approval</b>				75	133				
TCS1240	TWD -Design of lifting system	38	133						
TCS1580	Engineer's comments and approval	38	133						
<b>Method Statement Submissions and Approval</b>				30	133				
TCS1250	MSS for toll collector bridge and staircase installation	30	133						
<b>Toll Collector Subway &amp; Associate Works (Portion I)-Section 1</b>				265	34				
<b>Stage 1</b>				265	34				
<b>Method Statement Submissions and Approval</b>				30	36				
TCS1630	Engineer's comments and approval	30	36						
<b>Field Works - Toll Collector Subway and Staircase</b>				205	29				
TCS1420	ELS for (SB22-SB16)	40	49						
TCS1430	Construction of toll collector subway(from SB22-SB16)	70	29						
<b>Toll Collector Subway (Portion X)-Section 5</b>				226	223				
<b>Stage 3</b>				226	223				
TCS1072	Construct Toll Collector Subway SB 1	15	33						

█ Remaining Level of Effort    █ Critical Remaining Work  
█ Actual Work    ◆ Milestone  
█ Remaining Work    ▼ Summary

CRBC - Kaden JV

Three-Month Rolling Programme

Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	Total Float	2016					2017
				Sep	Oct	Nov	Dec	Jan	
TCS1074	Backfill for SB 1	15	33						
TCS1090	Hand over Portion D	0	0					◆ Hand over Portion D	
TCS1110	Excavation Works-S.B 9-16	80	159						
TCS1120	Construct Toll Collector Subway SB 2-8	80	174						
TCS1130	Construct Toll Collector Subway SB 9-16	80	159						
TCS1160	Islands for Toll Booths SB 1-8	40	174						
<b>Bridge G2</b>		<b>395</b>	<b>191</b>						
<b>Stage 2</b>		<b>395</b>	<b>191</b>						
Temporary Works Design (TWD) Submission and Approval		21	197						
BG23620	Engineer's approval	21	197						
Method Statement Submissions and Approval		60							
BG23240	MSS for deck construction	60							
Field Works		304	144						
Foundation Works		80							
BG23310	Excavation for G2e	20							
BG23390	Pad footing G2e	24							
BG23360	Pad footing construction at G2d-2	20							
BG23380	Pad footing G2c-2	20							
BG23350	Pad footing construction at G2d-1	20							
BG23320	Excavation for G2a	20							
BG23370	Pile cap G2c-1	25							
Deck		304	144						
BG23000	Deck(G2e-G2d2)	90	155						
BG23010	Deck(G2d2-G2c2)&Construct Portal G2c	75	144						
BG23020	Deck(G2c2-G2b)&Construct Portal G2c	75	144						
BG23040	Deck(G2e-G2d1)	60	144						
BG23050	Deck(G2d1-G2c1)	60	144						
<b>Bridge G1</b>		<b>280</b>	<b>112</b>						
<b>Stage 2</b>		<b>280</b>	<b>112</b>						
Design Submission and Approval		100	136						
BG112190	DDA for foundation (draft)	26							
BG112160	TWD -Formwork design for pier	60							
BG112300	Engineer's approval	26	136						
Off-site Works		90	120						
BG112000	Form traveller fabrication	90	120						
Field Works		82	77						
Substructure Works from Pier G1d to Pier G2a		67	59						
BG112060	Foundation for G1d	35							
BG112100	Construct Pier G1d	32							
BG112130	Pierhead segment construction at Pier G1d	40	59						
Deck Construction from Pier G1d to Pier G2a		0							
BG112462	Completion of Pier at G2a	0							
<b>Bridge H1-Section 1</b>		<b>48</b>							
<b>Stage 1</b>		<b>48</b>							
Field Works		48							
Abutment H1f		48							
BH11110	Construct abutment H1f	48							
<b>Bridge H1-Section 2</b>		<b>143</b>	<b>149</b>						
<b>Stage 2</b>		<b>143</b>	<b>149</b>						
Design Submission and Approval		21	0						
BH12860	Engineer's approval	21	0						
Field Works		110	114						
Foundation Works & Pier construction		93							
Foundation Works		35							
BH12590	Foundation for H1e	35							
Pier construction		93							
BH12550	Construct Pier H1e	16							
BH12540	Construct Pier H1d	32							
BH12558	Pierhead segment construction at Pier H1d	40							

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Activity ID	Activity Name	Original Duration	Total Float	2016					2017
				Sep	Oct	Nov	Dec	Jan	
<b>Decking Construction From Abutment H1f to Pier H1d</b>									
<b>Balanced Cantilever Construction at Pier H1e</b>									
BH12010	Assemble of 1st formtraveller at H1e and testing	28		Assemble of 1st formtraveller at H1e and testing					
BH12020	Balanced cantilever construction at H1e 1 segment	30	0	Balanced cantilever construction at H1e 1 segment					
BH12025	Assemble of 2nd formtraveller at H1e and testing	28	0	Assemble of 2nd formtraveller at H1e and testing					
<b>Culvert 1(TBM)-Stage 4</b>									
<b>Field Works</b>									
Receiving Pit									
CUL13150	Prepare for TBM Exit and remove TBM	10		Prepare for TBM Exit and remove TBM					
Demolishing the Existing Box Culvert									
CUL13250	Demolishing the existing box culvert	10		Demolishing the existing box culvert					
MH5 & MH2									
CUL13265	Construct MH2	64		Construct MH2					
FC1									
CUL13410	Excavation and demolishing works	50		Excavation and demolishing works					
CUL13420	FC1 construction	36		FC1 construction					
FC2									
CUL13460	Excavation and removal of box culvert	21	366	Excavation and removal of box culvert					
CUL13470	Construction of chamber FC2	30	366	Construction of chamber FC2					
CUL13480	Backfilling and removal section of sheetpile	14	366	Backfilling and removal section of sheetpile					
BY-Pass Sewer between FC1 and FC2(1800 Pipe)									
CUL13510	Backfilling	14	366	Backfilling					
<b>Completion of KD3A and Remaining Works</b>									
CUL13535	Backfilling	70	428	Backfilling					
<b>Culvert 2 &amp; Culvert 3 and Existing Box Culvert</b>									
<b>Method statement Submission</b>									
CCE20140	Method statement for screeding the existing box culvert	30	339	Method statement for screeding the existing box culvert					
<b>Culvert 2</b>									
CCE20090	Bay 21	50	200	Bay 21					
CCE20120	Bay 20	50	200	Bay 20					
<b>Culvert 3</b>									
CCE20085	MH6 construction	65	232	MH6 construction					
CCE20210	Bay 22	90	232	Bay 22					
CCE20212	Drainage diversion	4	232	Drainage diversion					
CCE20215	MH8	90	232	MH8					
<b>Existing Sewer Box Culvert</b>									
MH3-MH6									
CCE20220	Base slab to be applied with screeding concrete	90	236	Base slab to be applied with screeding concrete					
<b>Site Formation - Retaining Structure RW_A</b>									
<b>Stage 3</b>									
Retaining Wall A									
RWA20170	Construct Retaining Wall A from Bay MJ11 to CH357.8-Base slab	30	175	Construct Retaining Wall A from Bay MJ11 to CH357.8-Base slab					
RWA20145	Construct Retaining Wall A from TD2 Abutment M to MJ 11-Wall construction	30	175	Construct Retaining Wall A from TD2 Abutment M to MJ 11-Wall construction					
RWA20150	Construct Cascade D	24	175	Construct Cascade D					
RWA20160	Drainage Diversion of Existing Stream to Cascade D	12	175	Drainage Diversion of Existing Stream to Cascade D					
RWA20175	Construct Retaining Wall A from Bay MJ11 to CH357.8-Wall construction	42	175	Construct Retaining Wall A from Bay MJ11 to CH357.8-Wall construction					
RWA20180	Backfilling Works	34	176	Backfilling Works					
RWA20240	Completion civil provision works for TCSS and E&M	34	175	Completion civil provision works for TCSS and E&M					
<b>Retaining Structure RW_E</b>									
<b>Stage 2</b>									
Design Submission and Approval									
RWE20000	DDA for foundation (draft)	21	235	DDA for foundation (draft)					
RWE20010	Engineer's comments	21	263	Engineer's comments					
RWE20020	DDA for foundation submission	21	263	DDA for foundation submission					
RWE20040	DDA for substructure(draft)	21	235	DDA for substructure(draft)					
RWE20030	Engineer's approval	21	263	Engineer's approval					
RWE20050	Engineer's comments	21	235	Engineer's comments					
<b>Site Formation - Retaining Structure for Slope TP_F</b>									
<b>Stage 3</b>									

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<b>Retaining Structure for Slope TP_F</b>									
RWF31304	Construct Retaining Wall-Wall construction Bay 7-8,17-20	89	314						
RWF31350	Backfilling	24	138						
RWF31470	Backfilling	60	246						
RWF31480	U-Channel construction,Completion civil provision works for TCSS and E&M	72	314						
<b>Site Formation - Slope TP_A &amp; Associated Works</b>									
<b>Stage 3</b>									
<b>Slope Feature - Slope TP_A</b>									
TPA41200	Raking Drain Construction for slope A3	5							
TPA41210	U-channel (240m) and Berm for slope A3	21							
TPA41220	Laying Erosion Control Mat for slope A3	13							
TPA41700	Construct Cascade A	60							
TPA41350	Forming East Portal Formation and temporary ground drainage works	50							
<b>Site Formation - Slope TP_B &amp; Associated Works</b>									
<b>Stage 3</b>									
<b>Slope Feature - Slope TP_B</b>									
TPB41200	Raking Drain Construction for slope B3	5							
TPB41210	U-channel (part) and Berm for slope B3	21							
<b>Site Formation - Slope TP_C &amp; Associated Works</b>									
<b>Stage 3</b>									
<b>Slope Feature - Slope TP_C</b>									
TPC50800	Laying Erosion Control Mat for slope C1	15							
TPC51160	Remaining excavation works and forming road formation	45							
<b>Achievement of KD-3(Stage 3) for Slope C</b>									
TPC51320	Achievement of KD-3(Stage 3) for slope C	0	498						
<b>Achievement of KD-8 (Section 5) for Slope C</b>									
TPC51330	Remaining works include landscape works and establishment works	88	486						
<b>Site Formation - Slope TP_D &amp; Associated Works</b>									
<b>Stage 3</b>									
<b>Slope Feature - Slope TP_D</b>									
TPD51550	Excavation of Rock (3,080m3) for slope D5	40							
TPD51600	U-channel (125m) and Berm for slope D5	15							
TPD51700	Excavation of Rock (5,450m3) for slope D6a and D6b	28							
TPD52800	Forming West Portal Formation and temporary ground drainage works	10							
<b>Achievement of KD-7(Section 4) for Slope D</b>									
TPD51755	Hand over of portion D	0	63						
<b>Achievement of KD-3(Stage 3) for Slope D</b>									
TPD52350	Remaining civil works and drainage works	88	141						
<b>Site Formation - Slope TP_E &amp; Associated Works</b>									
<b>Stage 3</b>									
<b>Slope Feature - Slope TP_E at Toll Control Building Area</b>									
TPE61350	Excavation of Rock (2,000m3) for slope E1b	30	-1						
TPE61380	U-channel (230m) and Berm for slope E1b and E1c	50							
TPE61360	Mapping & Dowelling	15							
TPE61220	Excavation of Rock for slope E3b - stage 2	75							
TPE61250	Mapping & Dowelling	16	0						
TPE61260	U-channel (300m) and Berm for slope E3b	40	0						
TPE61600	All remaining works include civil provision for TCSS and E&M	36	0						
TPE61700	Hand Over Portion D	7	0						
TPE65350	KD-7(Section 4)	0	0						
<b>Slope Feature - Slope TP_E Remaining Section and 5SE-D/C116</b>									
TPE62160	Soil Nail RowB (22nos) Level + 35.00 for 5SE-D/C-116 (Install and grouting)	24							
TPE62170	Soil Nail RowA (24nos) Level + 33.00 for 5SE-D/C116 (Install and grouting)	26							
TPE62190	U-channel (200m) and Berm for slope E2c	40							
TPE62230	Excavation of Rock for slope E3c - stage 3	75	231						
TPE62250	Mapping & Dowelling	15	231						
TPE62260	U-channel (150m) and Berm for slope E3c	40	231						
TPE62410	Mapping & Dowelling	15	231						
TPE62420	U-channel (220m) and Berm for slope E3a	40	231						

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TPE62600	Construct Cascade C	48	251	[Gantt bar]					Construct Cascade C
TPE62550	Remaining civil works	50	231	[Gantt bar]					
<b>Site Formation - Slope Upgrading Works</b>		<b>164</b>	<b>305</b>						
<b>Stage 3 (Other Slope Features)</b>		<b>164</b>	<b>305</b>						
<b>Slope Feature - 5SE-D/C170</b>		<b>71</b>	<b>303</b>						
SFW10050	Site Clearance and Tree Felling	14		[Gantt bar]					
SFW10060	Prepare Access Road	7		[Gantt bar]					Prepare Access Road
SFW10070	Excavation of Soil (1,240m3) and Modification Works	14		[Gantt bar]					Excavation of Soil (1,240m3) and Modification Works
SFW10080	Excavation of Rock (350m3) for 5SE-D/C170	9	270	[Gantt bar]					Excavation of Rock (350m3) for 5SE-D/C170
SFW10105	Raking Drain Construction	7	357	[Gantt bar]					Raking Drain Construction
SFW10120	Soil Nail RowA (19nos) (Install and grouting)	21	270	[Gantt bar]					Soil Nail RowA (19nos) (Install and grouting)
SFW10100	Rock Mapping and Stabilization	30	334	[Gantt bar]					Rock Mapping and Stabilization
SFW10130	Soil Nail RowB (18nos) (Install and grouting)	20	270	[Gantt bar]					Soil Nail RowB (18nos) (Install and grouting)
SFW10110	Drainage, U-channel (410m) and Handrailing	45	319	[Gantt bar]					Drainage, U-channel (410m) and Handrailing
SFW10140	Soil Nail RowC (18nos) (Install and grouting)	20	270	[Gantt bar]					Soil Nail RowC (18nos) (Install and grouting)
<b>Slope Feature - 5SE-D/C165</b>		<b>69</b>	<b>270</b>						
SFW10800	Soil Nail RowB (16nos) Level + 15.60 (Install and grouting)	18		[Gantt bar]					Soil Nail RowB (16nos) Level + 15.60 (Install and grouting)
SFW10810	Soil Nail RowA (19nos) Level + 13.60 (Install and grouting)	21		[Gantt bar]					Soil Nail RowA (19nos) Level + 13.60 (Install and grouting)
SFW10820	Drainage, U-channel (80m) and Handrailing	30	270	[Gantt bar]					Drainage, U-channel (80m) and Handrailing
<b>Slope Feature - 5SE-D/C150</b>		<b>69</b>	<b>329</b>						
SFW10190	Slope Modification	5		[Gantt bar]					Slope Modification
SFW10210	Hydroseeding and Erosion Control Mat	5		[Gantt bar]					Hydroseeding and Erosion Control Mat
SFW10180	Complete slope E3b - stage 4	0	306	[Gantt bar]					Complete slope E3b - stage 4
SFW10890	Achievement of KD-3(Stage 3)	0	329	[Gantt bar]					Achievement of KD-3(Stage 3)
<b>Slope Feature - 5SE-D/C152</b>		<b>60</b>	<b>306</b>						
SFW10220	Complete slope 5SE-D/C150	0	306	[Gantt bar]					Complete slope 5SE-D/C150
SFW10230	Slope Modification	5	306	[Gantt bar]					Slope Modification
SFW10240	Drainage, U-channel (90m) and Handrailing	20	306	[Gantt bar]					Drainage, U-channel (90m) and Handrailing
SFW10250	Hydroseeding and Erosion Control Mat	5	306	[Gantt bar]					Hydroseeding and Erosion Control Mat
<b>Slope Feature - 5SE-D/C121</b>		<b>0</b>	<b>29</b>						
SFW10260	Complete slope D6a and D6b	0	29	[Gantt bar]					Complete slope D6a and D6b
<b>Slope Feature - 5SE-D/C122</b>		<b>0</b>	<b>389</b>						
SFW10300	Complete slope D6a and D6b	0	389	[Gantt bar]					Complete slope D6a and D6b
<b>Slope Feature - 5SE-D/C14</b>		<b>1</b>	<b>138</b>						
AK10410	Possession of Portion X	0	139	[Gantt bar]					Possession of Portion X
SFW10340	Complete TP_F Backfilling(Bay1-2)	0	138	[Gantt bar]					Complete TP_F Backfilling(Bay1-2)
<b>Slope Feature - 5SE-D/C149</b>		<b>50</b>							
SFW10390	Slope Modification	10		[Gantt bar]					Slope Modification
SFW10410	Hydroseeding and Erosion Control Mat	5		[Gantt bar]					Hydroseeding and Erosion Control Mat
SFW10400	Drainage, U-channel (190m) and Handrailing	35		[Gantt bar]					Drainage, U-channel (190m) and Handrailing
<b>Slope Feature - 5SE-D/C115</b>		<b>10</b>							
SFW10430	Slope Modification	10		[Gantt bar]					Slope Modification
<b>Slope Feature - 5SE-D/C21</b>		<b>0</b>	<b>59</b>						
SFW10540	Completion of Sewer Culvert 1	0	59	[Gantt bar]					Completion of Sewer Culvert 1
<b>Slope Feature - 5SE-D/C16</b>		<b>0</b>	<b>84</b>						
SFW10620	Complete pier construction at Bridge H1e &G2a	0	84	[Gantt bar]					Complete pier construction at Bridge H1e &G2a
<b>Slope Feature - 5SE-D/C17</b>		<b>0</b>	<b>246</b>						
SFW10740	Complete of TP_F and TD1 Precast beam installation	0	246	[Gantt bar]					Complete of TP_F and TD1 Precast beam installation
<b>Natural Terrain Hazard Mitigation Measures</b>		<b>80</b>							
<b>Natural Terrain Hazard Mitigation Measures</b>		<b>80</b>							
<b>Boulders outside Blasting Zone</b>		<b>80</b>							
NTH10080	Mitigation measures for 20 boulders outside blasting zone	80		[Gantt bar]					Mitigation measures for 20 boulders outside blasting zone
<b>Vehicular Underpass TN-01</b>		<b>225</b>	<b>1056</b>						
<b>Stage 3</b>		<b>225</b>	<b>1056</b>						
<b>Blasting Related Submission</b>		<b>90</b>							
<b>Blasting Permit Application</b>		<b>60</b>							
UDP30100	Issue of Pre-Licensing Conditions	28		[Gantt bar]					Issue of Pre-Licensing Conditions
UDP30110	Formal Issue of Blasting Permit	14		[Gantt bar]					Formal Issue of Blasting Permit
UDP30090	Site Inspection by Mines Department	18		[Gantt bar]					Site Inspection by Mines Department

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				Sep	Oct	Nov	Dec	Jan	
<b>Method Statement Submission and Approval</b>		<b>90</b>							
UDP30650	Method statement for Lining Construction	90							
<b>Lining Works and Road Works</b>		<b>175</b>	<b>148</b>						
<b>Water Proofing and Lining Works</b>		<b>175</b>	<b>148</b>						
UDP4120	Modify lining formwork	28	199						
<b>Type A</b>		<b>161</b>	<b>162</b>						
<b>Water Proofing and Kicker</b>		<b>24</b>	<b>148</b>						
<b>CH 310-CH327</b>		<b>24</b>	<b>148</b>						
UDP4100	Bench Waterproofing works(CH310-CH327.6)(Type A)	10	148						
UDP4110	Kicker pouring(CH310-CH327.6)(Type A)	14	148						
<b>Lining</b>		<b>104</b>	<b>162</b>						
<b>CH 310-CH327</b>		<b>104</b>	<b>162</b>						
UDP4160	Pouring Type A Lining CH312-CH327	7	148						
UDP4170	Erection of rebar fixing platform for west bulkhead wall	7	162						
UDP4190	Rebar fixing platform for west bulkhead wall	7	162						
UDP4230	Formwork for west bulkhead wall	14	162						
UDP4270	Concrete for west bulkhead wall	14	162						
<b>CH 450-CH503</b>		<b>35</b>							
UDP4220	Pouring Type A Lining CH486-CH503	35							
<b>Type B</b>		<b>94</b>							
<b>Water Proofing and Kicker</b>		<b>49</b>							
UDP4000	Bench waterproofing works and Kick pouring	49							
<b>Lining B</b>		<b>44</b>							
UDP4040	Pour Type B Lining CH409-440	14							
UDP4020	Pour Type B Lining CH373-409	14							
UDP4010	Pour Type B Lining CH337-373	14							
<b>Lining B1</b>		<b>48</b>							
UDP4030	Type B1 Lining formwork CH327-337	28							
UDP4060	Type B1 Lining formwork CH440-450	28							
UDP4070	Lining for Type B1 CH440-450	14							
<b>Type C</b>		<b>68</b>	<b>148</b>						
UDP4200	Lining type C rebar fixingCH503-CH534.9	14	157						
UDP4240	Rebar fixing platform for east bulkhead wall	14	148						
UDP4250	Formwork for east bulkhead wall	28	148						
UDP4260	Concrete for east bulkhead wall	14	148						
<b>Road and Drainage Work ,Utilities Works at for Lung Fu Road Roundabout</b>		<b>259</b>	<b>18</b>						
<b>Section 3</b>		<b>259</b>	<b>18</b>						
<b>Utilites installation ,road and drainage works (TTA stage 0-1)</b>		<b>215</b>	<b>6</b>						
LFR10110	New World Telecom	15	5						
LFR10120	Town Gas	15	4						
LFR10130	Smartone Cable	15	3						
LFR10140	HKC Cable	15	1						
LFR10070	PCCW	15	10						
LFR10080	Hutchison Global Communication Cable	15	9						
LFR10090	Hong Kong Boaroband Network	15	8						
LFR10100	Wharf T&T Duct and Joint Box	15	6						
LFR10150	Pubic Lighting	15	0						
LFR10160	CLP + CRD	15	0						
LFR10060	DN100,300,700	21	13						
LFR10170	Trax Comm	9	0						
LFR10180	Completion of this stage civil provision for E&M, TCSS	15	0						
LFR10050	Drainage works	40	13						
LFR10200	Road Pavement	15	0						
LFR10190	Irrigation System	10	0						
LFR10210	TTA for stage 1	0	0						
<b>Utilites installation ,road and drainage works (TTA stage 1)</b>		<b>44</b>	<b>18</b>						
LFR10270	Filling Works	35	27						
LFR10300	PCCW	14	0						
<b>Road and Drainage Work ,Utilities Works at Lung Mun Road</b>		<b>80</b>	<b>74</b>						

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<b>Lung Mun Road (Westbound)</b>									
<b>Ho Suen Street North</b>									
LMRWA1020	DN700 CHH 0 - 69	5	74						
LMRWA1030	DN200 CHJ 0 - 120	10	74						
LMRWA1040	PCCW	14	74						
LMRWA1050	Hutchison Global Communication Cable	14	74						
LMRWA1060	Hong Kong Boaroband Network	14	74						
LMRWA1070	Wharf T&T Duct and Joint Box	14	74						
LMRWA1000	Drainage Work	80	74						
<b>Utilites installation ,road and drainage works for East Portal</b>									
EPA1000	Rock Cutting	88	184						
<b>Utilites installation ,road and drainage works near portion D</b>									
TOLLA1010	DN300	16	191						
TOLLA1020	DN100	16	191						
<b>Sewage, Irrigation and Road&amp; Drainage Works</b>									
SAI10060	Sewage, irrigation and road&drainage works -G2-north side	70	221						
SAI10070	Sewage, irrigation and road&drainage works- G2-south side	70	221						
<b>Achievement of Key Dates</b>									
AK10320	Achievement of KD-3(Stage 3) for slope C	0	498						
AK10365	Achievement of KD-7(Section 4) for slope E	0	0						

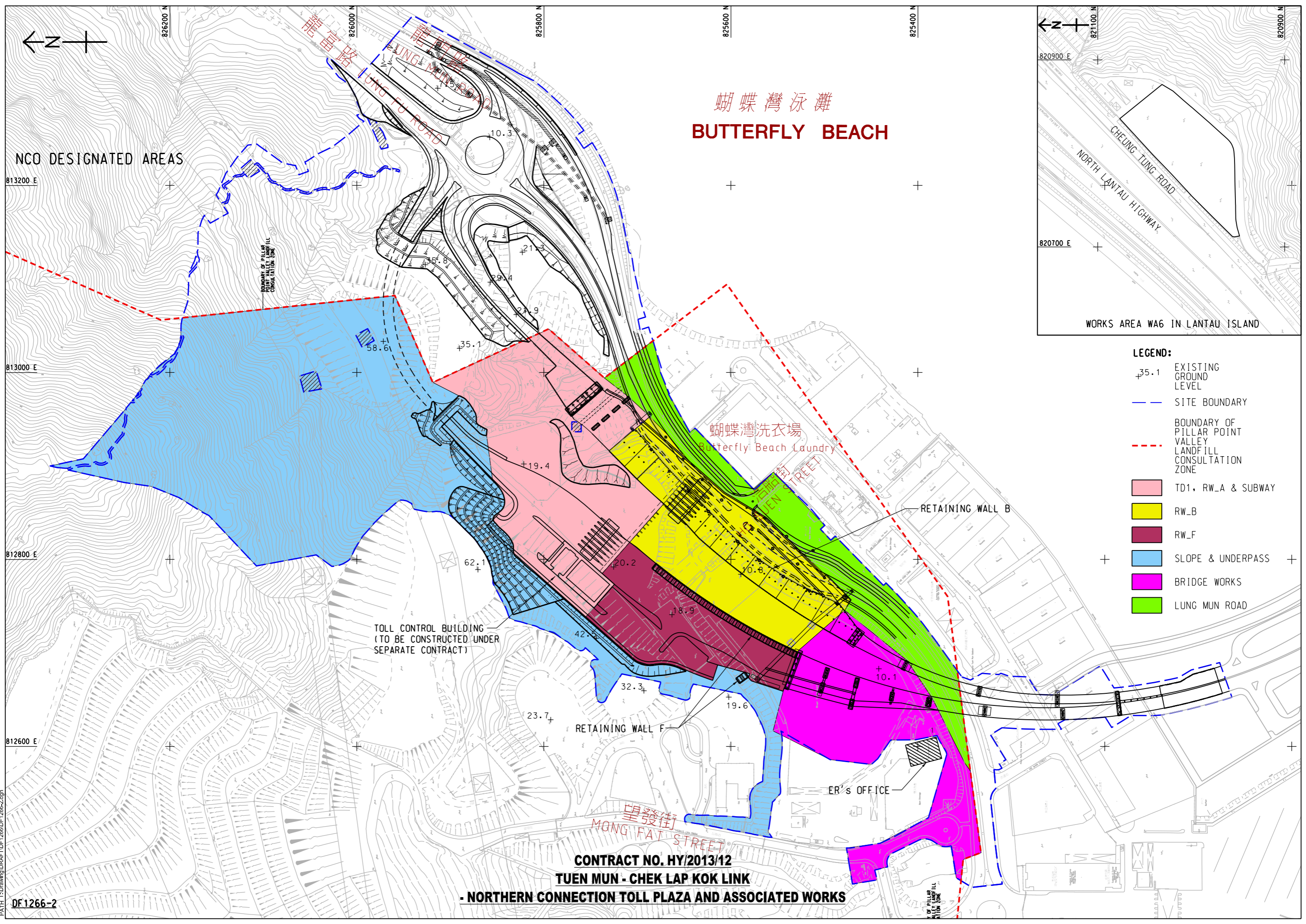
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**CRBC - Kaden JV**  
**Three-Month Rolling Programme**

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## **Appendix E**

### **Monitoring Locations / Sensitive Receivers for the Contract**



蝴蝶灣泳灘  
**BUTTERFLY BEACH**

NCO DESIGNATED AREAS

WORKS AREA WA6 IN LANTAU ISLAND

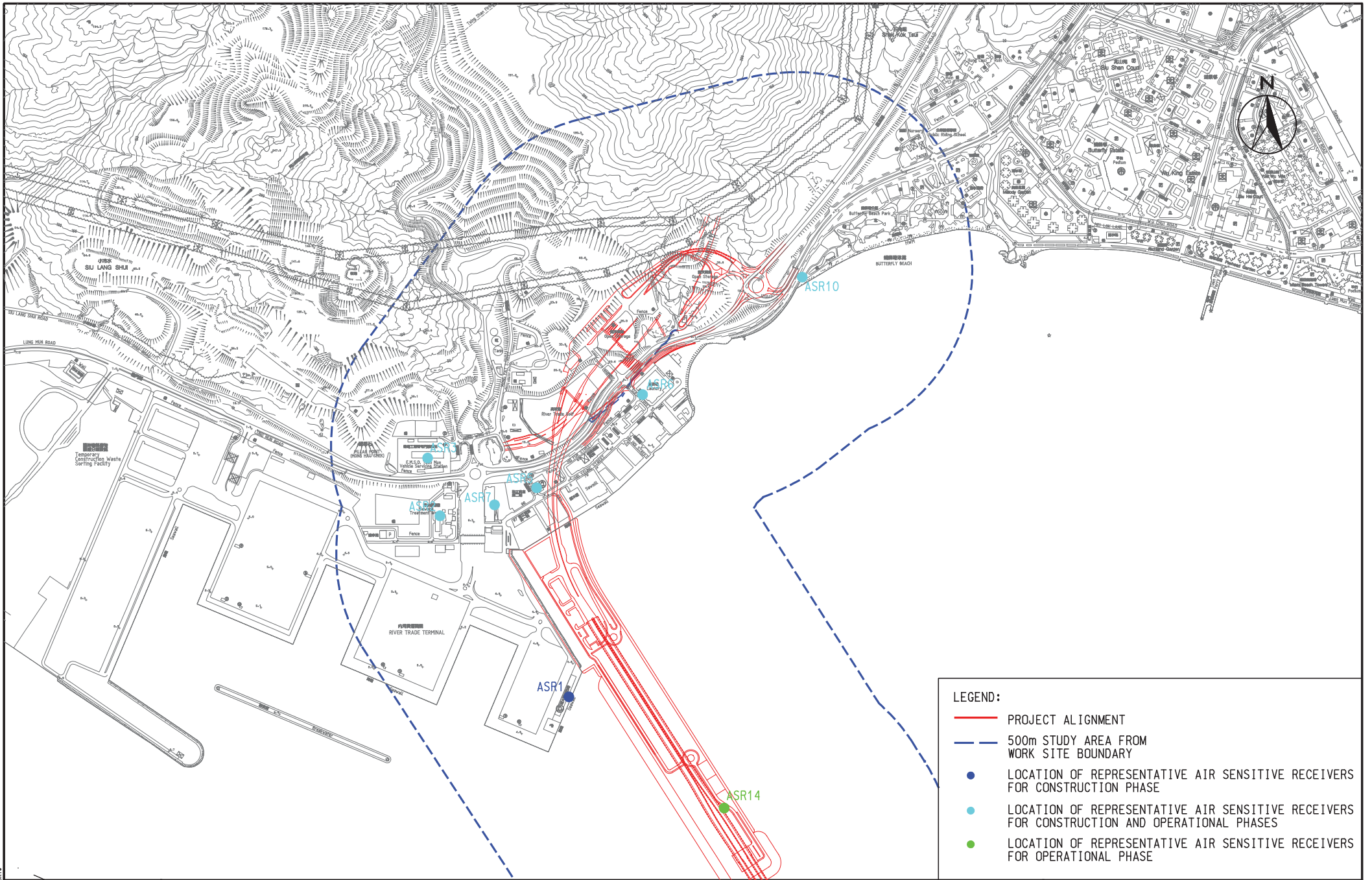
- LEGEND:**
- +35.1 EXISTING GROUND LEVEL
  - SITE BOUNDARY
  - BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE
  - TD1, RW\_A & SUBWAY
  - RW\_B
  - RW\_F
  - SLOPE & UNDERPASS
  - BRIDGE WORKS
  - LUNG MUN ROAD

TOLL CONTROL BUILDING  
 (TO BE CONSTRUCTED UNDER  
 SEPARATE CONTRACT)

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

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DF1266-2



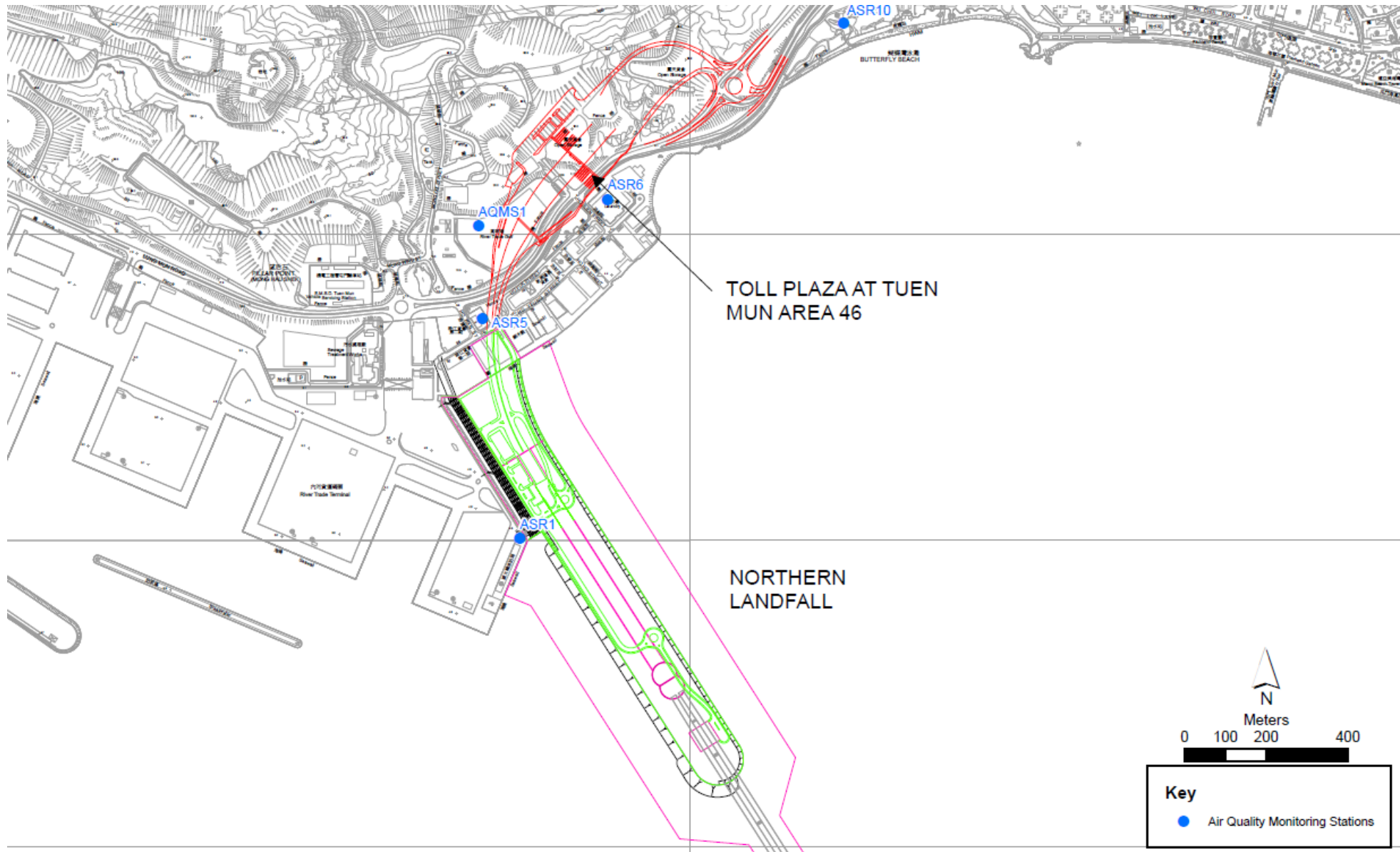
**LEGEND:**

- PROJECT ALIGNMENT
- - - 500m STUDY AREA FROM WORK SITE BOUNDARY
- LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS FOR CONSTRUCTION PHASE
- LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS FOR CONSTRUCTION AND OPERATIONAL PHASES
- LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS FOR OPERATIONAL PHASE

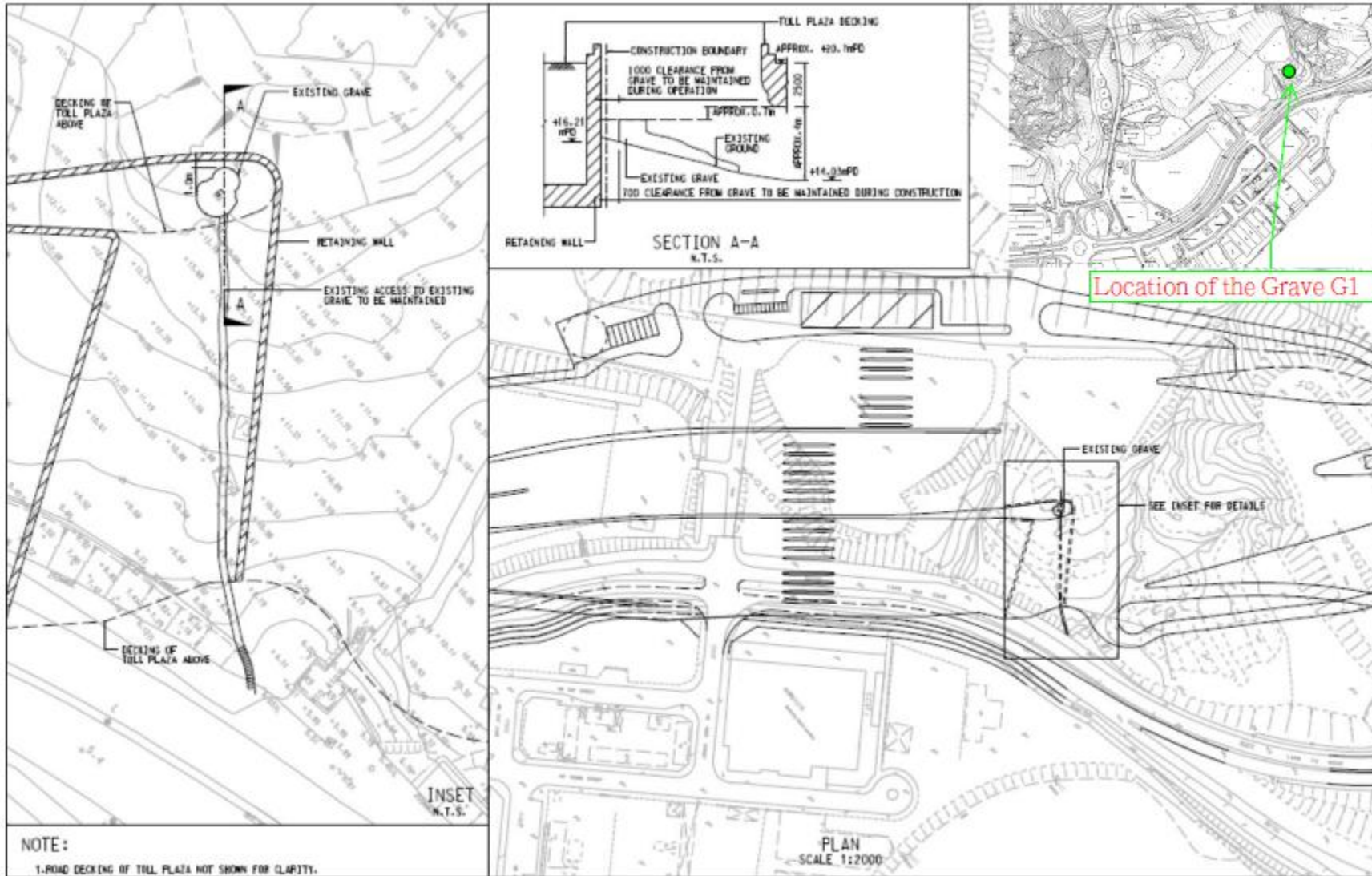
AGREEMENT NO. CE 52/2007(HY)  
 TUEN MUN - CHEK LAP KOK LINK - INVESTIGATION  
**REPRESENTATIVE AIR SENSITIVE RECEIVERS**

SCALE	1 : 10 000	DATE	
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**Air Quality Monitoring Location**



**Location of the Grave G1**

## **Appendix F**

### **Event and Action Plan**

### Event and Action Plan for Air Quality

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

### Event and Action Plan for Landscape and Visual Impact

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

**Event / Action Plan for Cultural Heritage**

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

*Note:*

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

**Event / Action Plan for General Ecology**

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

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 October 2016**

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

✓	Monitoring Day
	Sunday or Public Holiday

**Impact Monitoring Schedule for November 2016**

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

✓	Monitoring Day
	Sunday or Public Holiday

## **Appendix H**

### **Calibration Certificates of Monitoring Equipment**

# CERTIFICATION OF CALIBRATION

Date Of Calibration: 13-Jul-2016 Certificate Number: G502306\_2/16764



# Geotech

ISSUED BY: GEOTECHNICAL INSTRUMENTS (UK) LTD

**Customer:** Fugro Geotechnical Services Ltd  
Units 6, 8-11 10/F Worldwide Industrial Centre 43-47 Shan Mei Street  
Fo Tan Sha Tln, N.T. HONG KONG

**Description:** Gas Analyser

**Model:** BIOGAS 5000

**Serial Number:** G502306

## UKAS Accredited results:

Results after adjustment :

Methane (CH <sub>4</sub> )		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.1	5.0	0.41
15.0	14.9	0.64
50.0	49.4	0.94

Carbon Dioxide (CO <sub>2</sub> )		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.1	4.9	0.43
15.1	14.8	0.70
50.0	49.9	1.1

Oxygen (O <sub>2</sub> )		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.4	21.5	0.31

The inwards assessment was carried out 11-Jul-2016.

The maximum adjustment is larger than the inwards assessment uncertainty.

Inwards assessment data is available if requested.

All concentrations are molar.

CH<sub>4</sub>, CO<sub>2</sub> readings recorded at : 31.7 °C ± 1.5 °C

O<sub>2</sub> reading recorded at : 22.0 °C ± 1.5 °C

Barometric Pressure : 1011 mbar ± 3 mbar

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

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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# CERTIFICATION OF CALIBRATION

Date Of Calibration: 13-Jul-2016 Certificate Number: G502306\_2/16764



ISSUED BY: GEOTECHNICAL INSTRUMENTS (UK) LTD

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

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

### Non-UKAS Accredited results:

Barometer (mbar)	
Reference	Instrument Reading
1011	1011

Approved by Signatory

Dawn Hemings

Laboratory Inspection

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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# Instrument Service Report

<b>Unit Type:</b> BIOGAS 5000	<b>Part Number:</b> BM5K0000-000	<b>Date:</b> 14-Jul-2016	<b>Next Service Due:</b> 13-Jul-2017	<b>Customer Name:</b> Fugro Geotechnical Services Ltd
<b>Serial Number:</b> G502306				
Actions/Investigation Description		Result		
Serial Number Check		Yes		
Full Automatic Calibration		Pass		
Serial Comms Test (USB)		Pass		
Inward Gas Check Performed?		Yes		
Service history of instrument reviewed		Yes		
Inwards gas check data reviewed		Yes		
Instrument turns on		Pass		
Customer specific requirements observed and reported fault(s) acknowledged		N/A		
Backlight operates correctly		Yes		
External visual inspection performed		Pass		
Instrument has latest software		Retest Passed		
Internal visual inspection performed		Pass		
Chemical sensor(s) replaced		N/A		
O2 sensor replaced		No		
All screws tightened to correct torque		Yes		
All connectors are secure		Pass		

# Instrument Service Report

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

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

**Customer Comments**

Returned for full service and calibration.

<b>Service Details:</b> Service Scheme	<input type="checkbox"/>	<b>Service Engineer:</b> Mustafa Ghalaboun	<b>Calibration Engineer:</b> Suk Balrey	<b>Approved By:</b> Dawn Hemings	<b>Signature:</b> 
Standard Service	<input checked="" type="checkbox"/>				



## **Appendix I**

### **Landfill Gas Monitoring Results and Graphical Plots**

**Landfill Gas Monitoring Results (TD1)**

Monitoring Location	Date	Time	Weather	Temperature (°C)	Methane (%)			Oxygen (%)			Carbon Dioxide (%)		
					Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level
TD1	3/10/2016	8:00		26	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	3/10/2016	14:00	Cloudy	28	0.1	10	20	21	19	18	0.1	0.5	1.5
	4/10/2016	8:00	Fine	27	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	4/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	5/10/2016	8:00	Cloudy	27	0.1	10	20	21	19	18	0.1	0.5	1.5
	5/10/2016	14:00		32	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	6/10/2016	8:00	Rain	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	6/10/2016	14:00		32	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	7/10/2016	8:00	Rain	25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	7/10/2016	14:00		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	8/10/2016	8:00	Hazy	27	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	8/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	11/10/2016	8:00	Fine	22	0.1	10	20	21	19	18	0.2	0.5	1.5
	11/10/2016	14:00		27	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	12/10/2016	8:00	Cloudy	23	0.1	10	20	21	19	18	0.2	0.5	1.5
	12/10/2016	14:00		26	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	13/10/2016	8:00	Cloudy	24	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	13/10/2016	14:00		29	0.1	10	20	21	19	18	0.2	0.5	1.5
	14/10/2016	8:00	Cloudy	25	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	14/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	15/10/2016	8:00	Hazy	25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	15/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	17/10/2016	8:00	Rain	24	0.1	10	20	21	19	18	0.1	0.5	1.5
	17/10/2016	14:00		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	18/10/2016	8:00	Rain	23	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	18/10/2016	14:00		25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	19/10/2016	8:00	Rain	24	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	19/10/2016	14:00		26	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	20/10/2016	8:00	Hazy	25	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	20/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	22/10/2016	8:00	Fine	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	22/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	24/10/2016	8:00	Cloudy	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	24/10/2016	14:00		29	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	25/10/2016	8:00	Cloudy	26	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	25/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	26/10/2016	8:00	Sunny	25	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	26/10/2016	14:00		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	27/10/2016	8:00	Hazy	25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	27/10/2016	14:00		31	0.1	10	20	21.1	19	18	0.1	0.5	1.5
28/10/2016	8:00	Hazy	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
28/10/2016	14:00		32	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
29/10/2016	8:00	Cloudy	24	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
29/10/2016	14:00		29	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
31/10/2016	8:00	Fine	23	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
31/10/2016	14:00		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5	

Remark:

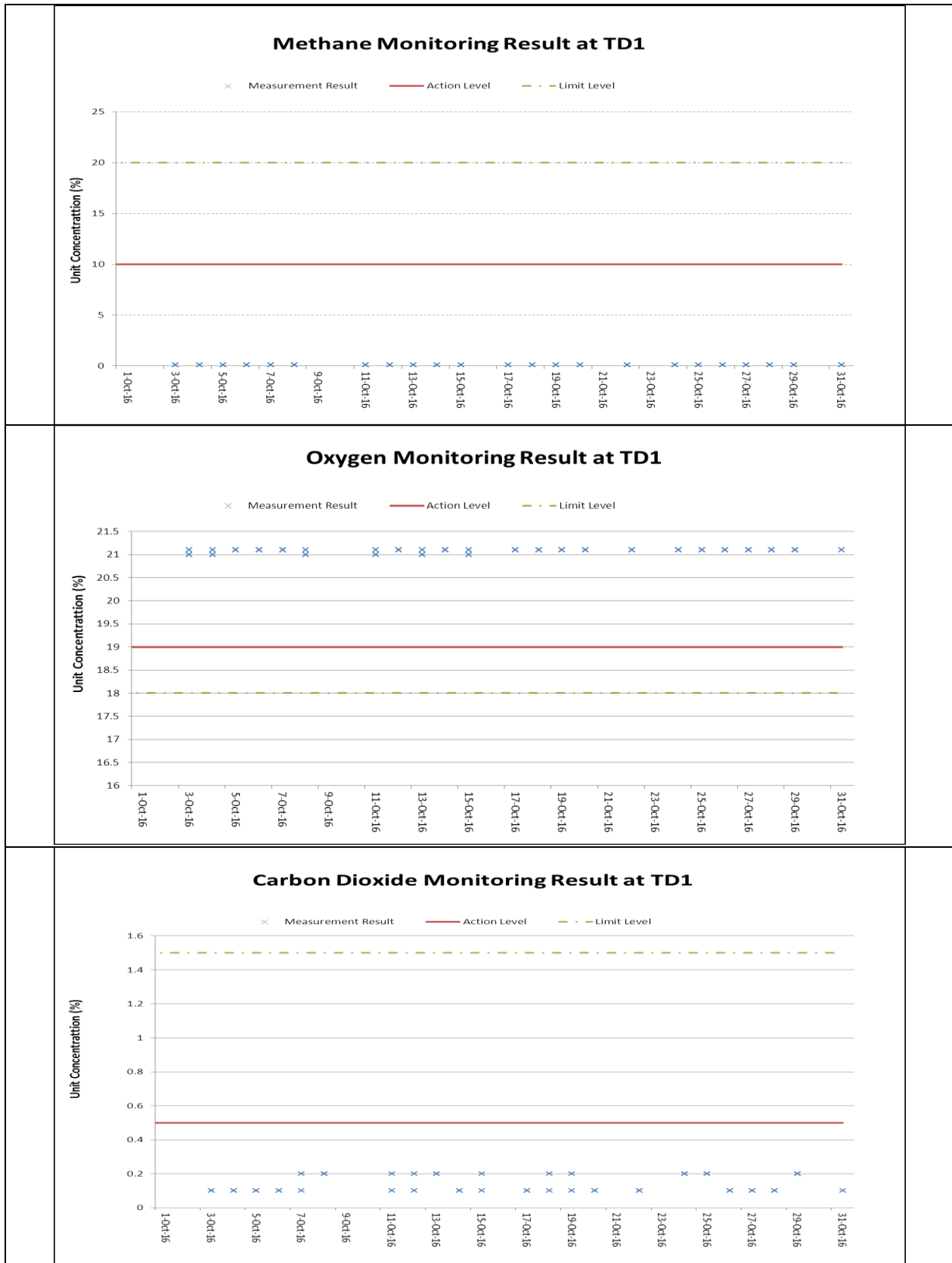
Parameter	Criteria	Measurement
Oxygen	Action Level	< 19%
	Limit Level	< 18%
Methane	Action Level	> 10% LEL (> 0.5% v/v)
	Limit Level	> 20% LEL (> 1% v/v)
Carbon Dioxide	Action Level	> 0.5%
	Limit Level	> 1.5%

**Landfill Gas Monitoring Results (Lung Mun Road)**

Monitoring Location	Date	Time	Weather	Temperature (°C)	Methane (%)			Oxygen (%)			Carbon Dioxide (%)		
					Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level	Measurement Result	Action Level	Limit Level
Lung Mun Road	3/10/2016	8:30	Cloudy	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	3/10/2016	14:30		28	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	4/10/2016	8:30	Fine	27	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	4/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	5/10/2016	8:30	Cloudy	27	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	5/10/2016	14:30		32	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	6/10/2016	8:30	Rain	26	0.1	10	20	21	19	18	0.2	0.5	1.5
	6/10/2016	14:30		32	0.1	10	20	21	19	18	0.2	0.5	1.5
	7/10/2016	8:30	Rain	25	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	7/10/2016	14:30		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	8/10/2016	8:30	Hazy	27	0.1	10	20	21	19	18	0.2	0.5	1.5
	8/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	11/10/2016	8:30	Fine	22	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	11/10/2016	14:30		27	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	12/10/2016	8:30	Cloudy	23	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	12/10/2016	14:30		26	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	13/10/2016	8:30	Cloudy	24	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	13/10/2016	14:30		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	14/10/2016	8:30	Cloudy	25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	14/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	15/10/2016	8:30	Hazy	25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	15/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	17/10/2016	8:30	Rain	24	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	17/10/2016	14:30		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	18/10/2016	8:30	Rain	23	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	18/10/2016	14:30		25	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	19/10/2016	8:30	Rain	24	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	19/10/2016	14:30		26	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	20/10/2016	8:30	Hazy	25	0.1	10	20	21.1	19	18	0.1	0.5	1.5
	20/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5
	22/10/2016	8:30	Fine	26	0.1	10	20	21.1	19	18	0.2	0.5	1.5
22/10/2016	14:30	30		0.1	10	20	21.1	19	18	0.1	0.5	1.5	
24/10/2016	8:30	Cloudy	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
24/10/2016	14:30		29	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
25/10/2016	8:30	Cloudy	26	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
25/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
26/10/2016	8:30	Sunny	25	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
26/10/2016	14:30		30	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
27/10/2016	8:30	Hazy	25	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
27/10/2016	14:30		31	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
28/10/2016	8:30	Hazy	26	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
28/10/2016	14:30		32	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
29/10/2016	8:30	Cloudy	24	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
29/10/2016	14:30		29	0.1	10	20	21.1	19	18	0.2	0.5	1.5	
31/10/2016	8:30	Fine	23	0.1	10	20	21.1	19	18	0.1	0.5	1.5	
31/10/2016	14:30		29	0.1	10	20	21.1	19	18	0.2	0.5	1.5	

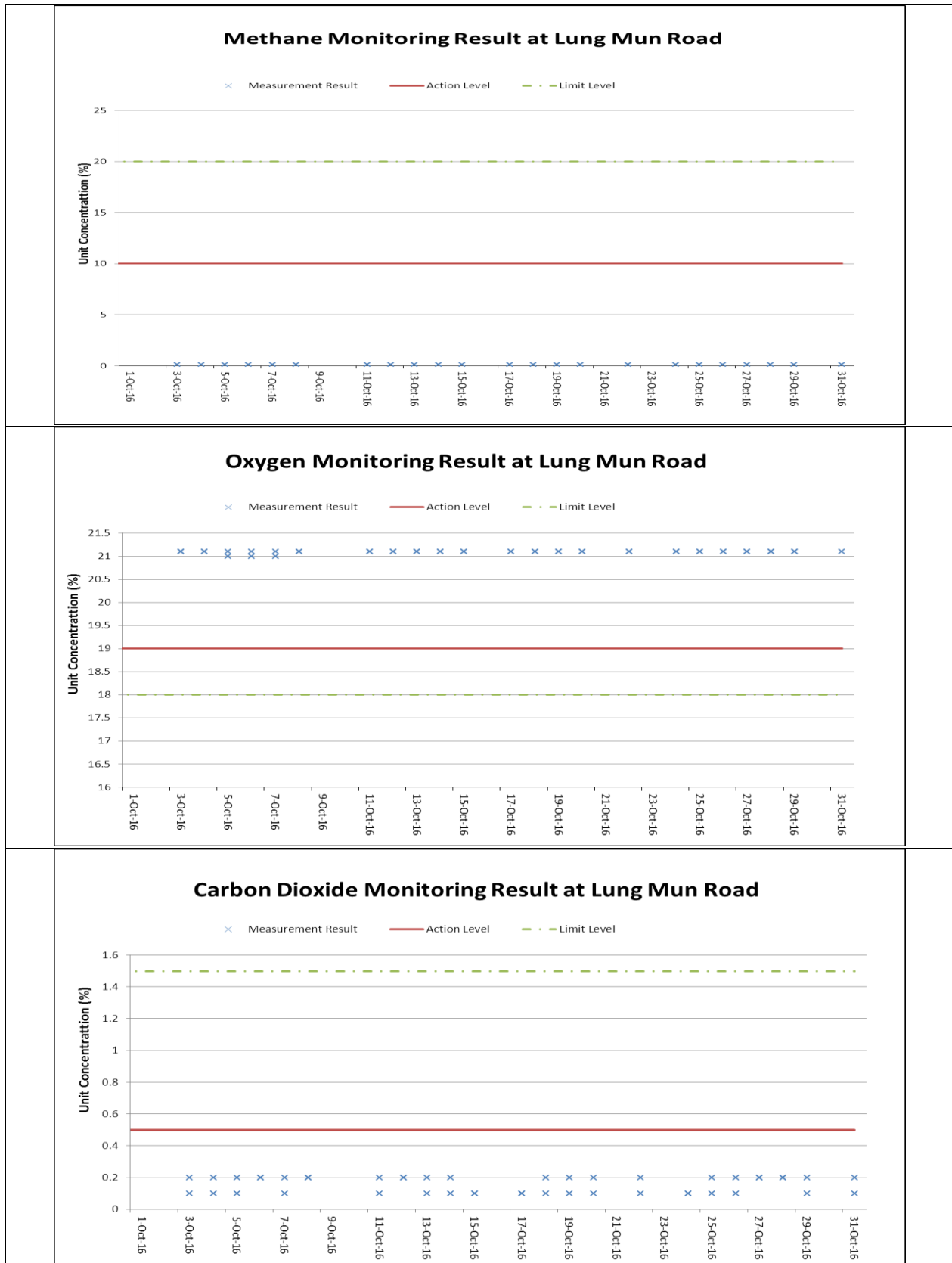
**Remark:**

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



**Annotation:**

During 1 to 31 October 2016, major construction activity at TD1 and the specified works included excavation, stitching, blinding, formworking, steel-fixing and concreting. The weather condition varied from sunny to rainy. The monitoring data was provided by the Contractor followed to their QA/QC control.



**Annotation:**  
 During 1 to 31 October 2016, major construction activity at Lung Mun Road and the specified works included excavation, blinding, formworking, steel-fixing and concreting. The weather condition varied from sunny to rainy. The monitoring data was provided by the Contractor followed to their QA/QC control.

**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



中國路橋  
CRBC



Landscape and Visual Checklist

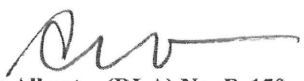
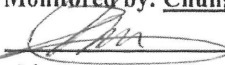
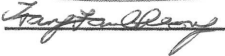
Monitoring Date: 7<sup>th</sup> October 2016

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:  (RLA) No. R-150 (Date) 7/11/2016  
 Checked by:  (ET) 7-11-2016 (Date)  
 Checked by:  (IEC) 8 November 2016 (Date)



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



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



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



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



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

Contract No. HY/2013/12

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

Landscape and Visual Checklist



中國路橋  
CRBC




Monitoring Date: 14<sup>th</sup> October 2016

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.

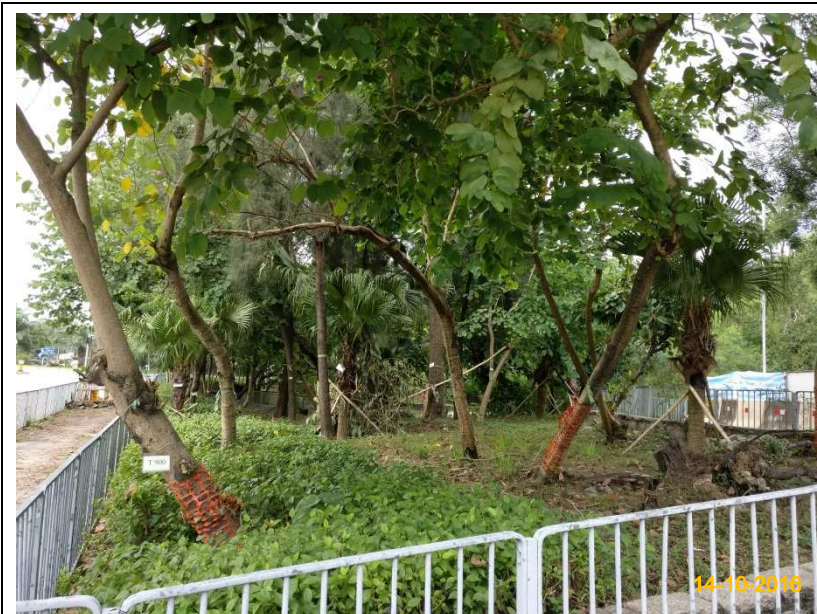
Legend: A=Acceptable, UA= Unacceptable, IR=Improvement Required, N/A=Not Applicable

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:  (RLA) No. R-150 (Date) 7/11/2016

Checked by:  (ET) 7-11-2016 (Date)

Checked by:  (IEC) d November 2016 (Date)



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



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





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



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



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

Contract No. HY/2013/12

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

Landscape and Visual Checklist



中國路橋  
CRBC




**Monitoring Date: 22<sup>th</sup> October 2016**

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	√				
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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

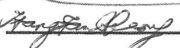
								the limitation of traffic sight line; water barrier with panel was used to screen works.
6	Control night-time lighting and glare by hooding all lights	All areas / During construction	Design Consultant/ Contractor	√				Only temporary traffic management lighting was applied.
7	Ensure no run-off into water 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) 7/11/2016**

Checked by:  (ET) 7-11-2016 (Date)

Checked by:  (IEC) 8 November 2016 (Date)



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



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



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



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



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

Contract No. HY/2013/12

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

Landscape and Visual Checklist



中國路橋  
CRBC



**Monitoring Date: 28<sup>th</sup> October 2016**

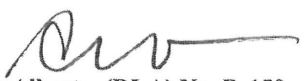
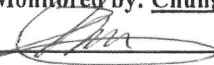
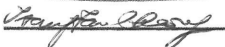
Item	Environmental Protection Measures	Location/ Timing	Implementation Agent	Status				Remarks
				A	UA	IR	NA	
1	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under 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	√				
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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	√				
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								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:  (RLA) No. R-150 (Date) 7/11/2016  
 Checked by:  (ET) 7-11-2016 (Date)  
 Checked by:  (IEC) 8 November 2016 (Date)



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



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



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



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



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

## **Appendix L**

### **Monthly Summary Waste Flow Table**

## Appendix A –Monthly Waste Flow Table

Monthly Summary Waste Flow Table for 2016 (year)

Month	Annual Quantities of Inert C&D Materials Generated Monthly						Annual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper / cardboard packaging	Plastics & Rubber (see note 2)	Chemical Waste	Others (general refuse)
	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000m <sup>3</sup> )	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m <sup>3</sup> )
Jan	32.146	0.000	12.964	18.171	0.922	0	0.000	0.000	0.000	0.000	0.089
Feb	14.751	0.000	7.894	5.755	1.036	0	0.000	0.000	0.000	0.000	0.066
Mar	23.310	0.000	16.333	6.392	0.496	0	0.000	0.000	0.000	0.000	0.089
Apr	20.350	0.000	15.186	4.939	0.071	0	0.000	0.000	0.000	0.000	0.154
May	14.259	0.000	11.511	2.658	0	0	0.000	0.000	0.000	0.000	0.09
June	15.056	0.000	10.647	2.935	1.377	0	0.000	0.000	0.000	0.000	0.097
Sub-total	119.872	0.000	74.535	40.850	3.902	0.000	0.000	0.000	0.000	0.000	0.585
July	12.981	0.000	9.589	3.134	0.162	0	0.000	0.000	0.000	0.000	0.096
Aug	8.683	0.000	5.694	2.607	0.225	0	0.000	0.000	0.000	0.000	0.157
Sept	12.767	0.000	3.923	8.561	0.164	0	0.000	0.000	0.000	0.000	0.119
Oct	21.469	0.000	5.736	15.51	0.098	0	0.000	0.000	0.000	0.000	0.125
Nov											
Dec											
Total	175.772	0.000	99.477	70.662	4.551	0.000	0.000	0.000	0.000	0.000	1.082

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)**

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



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

**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	

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7.13#	6.3, 6.5#	Fencing or other physical barriers for protection of Pitcher Plant around Zones 8, 9 and 10 and the temporary nursery site	Tuen Mun Area 46 shrubland/ Detailed/ Prior to construction	Design Consultant/ Contractor	TMEIA	Y	Y		✓
7.13	6.5	Audit Pitcher Plant protection measures	Tuen Mun Area 46	Contractor	TMEIA		Y		✓
7.13	6.5	The loss of habitat shall be supplemented by enhancement planting in accordance with the landscape mitigation schedule.	All areas / As soon as accessible	Contractor	TMEIA		Y		✓
7.13	6.5	Spoil heaps shall be covered at all times.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Avoid damage and disturbance to the remaining and surrounding natural habitat	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Placement of equipment in designated areas within the existing disturbed land	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Disturbed areas to be reinstated immediately after completion of the works.	All areas / Throughout construction period	Contractor	TMEIA		Y		✓
7.13	6.5	Construction activities should be restricted to the proposed works boundary	All areas / Throughout construction	Contractor	TMEIA		Y		✓

**Landfill Gas Hazard Assessment**

EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
14.12.2	14.2	<u>Appointment of Safety Officer</u> Appoint a properly trained safety officer and provide with appropriate equipment to measure and monitor LFG hazard. The monitoring frequency and areas to 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	-	<u>Safety Measures - Excavation</u>	Construction Stage	Contractor	EPD/TR8/97 -		Y		✓

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

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

**Landscape and Visual**

EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	
10.9	7.6	Existing trees on boundary of the Project Area shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, 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

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		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/ during Construction	Design	TMEIA	Y	Y	Y	N/A

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		native species (OM1)	during Construction/ construction	post	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/ construction	post	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/ construction	post	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/ construction	post	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/ construction	post	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/ construction	post	Design Consultant/ Contractor	TMEIA	Y	Y	Y	✓
<b>Waste</b>										
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		✓	

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		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		✓

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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.	Toll 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		✓



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		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: <ul style="list-style-type: none"> <li>• suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed;</li> <li>• Having a capacity of &lt;450L unless the specifications have been approved by the EPD; and</li> <li>• Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations.</li> <li>• Clearly labelled and used solely for the storage of chemical wastes;</li> <li>• Enclosed with at least 3 sides;</li> <li>• 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;</li> <li>• Adequate ventilation;</li> <li>• Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and</li> <li>• Incompatible materials are adequately separated.</li> </ul>	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		✓

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		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		✓
<b>Water Quality</b>									
EIA reference	EM&A Manual reference	Environmental Protection Measures	Location/ Timing	Implementation Agent	Relevant Standard or Requirement	Implementation Stages			Status
						D	C	O	

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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		◇

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		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		◇

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

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
October 2016	Air Quality – 1-hour TSP	Action Level	0	<b>4</b>
		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
October 2016	<b>1</b>	<b>7</b>	<b>1</b>	NA	<b>6</b>
Cumulative since project commencement	<b>7</b>	<b>7</b>	<b>1</b>	NA	<b>6</b>

**Table N-3 Statistical Summary of Environmental Summons**

Reporting Period	Environmental Summons Statistics				
	Frequency	Cumulative	Complaint Nature		
			Air	Noise	Water
October 2016	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
October 2016	0	0	NA	NA	NA
Cumulative since project commencement	0	0	NA	NA	NA

## **Appendix O**

### **Investigation Report for the Complaint**



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

**Investigation Report on Action or Limit Level Non-compliance**

<b>Complaint Log No.</b>	TCS00715/14/300/F0246
<b>Received Date by ET</b>	5 October 2016
<b>Complaint Details</b>	The complainant complained that Muddy water entering the drainage system near site entrance-Hand-key attendance system at Pillar Point, Tuen Mun at around 03:00 to 04:00 after the rainstorm.
<b>Complaint Location</b>	Drainage system near site entrance-Hand-key attendance system at Pillar Point, Tuen Mun
<b>Date of Complaint</b>	3 October 2016
<b>Environmental Aspect</b>	Muddy water
<b>Complainant</b>	Unknown
<b>Complaint Route</b>	via EPD hotline
<b>Investigation Result</b>	<ol style="list-style-type: none"><li>1 A complaint was received via EPD hotline on 3 October 2016, claimed that muddy water entering the drainage system near site entrance-Hand-key attendance system Pillar Point, Tuen Mun at around 03:00 to 04:00 after the rainstorm.</li><li>2 Refer to tele-conversation with EPD and Contractor, the complaint was actually mentioning the muddy water entering the drainage system was occurred on 1 October 2016 03:00 to 04:00 at the bus station nearby the site entrance. (Please refer to Location Map shown in Appendix A)</li><li>3 According to the site record, the works carried out during the concerned time period was maintenance works of TTA include maintenances of flashlight, water barrier and road marking. As per the photo recorded on 30 September 2016 and 1 October 2016, there is no ponding water was observed nearby the concerned locations. Also during the weekly site inspection on 4 October 2016, no water discharged from site and ponding at the bus station nearby the site entrance was observed. Earth bund was also provided at the slope near the site entrance to divert the surface run-off to the de-silting system. (Photo 1 to 7)</li><li>4 Moreover, the record from the Hong Kong Observatory also stated there was no rainfall recorded at Tuen Mun between 30 September 2016 and 1 October 2016 04:45 a.m. (Please refer to HKO rainfall record shown in Appendix B)</li><li>5 Therefore for the above result, it is considered that the above complaint is not related to the project.</li></ol>

**Prepared By :** T.W. Tam

**Designation :** Environmental Team Leader

**Signature :** 

**Date :** 19 October 2016

## Photo Record



**Photo 1**

Photo recorded nearby the gate taken at 30-9-16.



**Photo 2**

Photo recorded near bus station taken at 09:00 1-10-16.



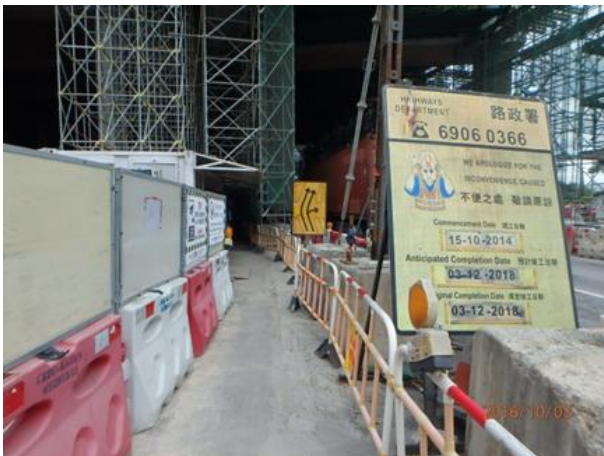
**Photo 3**

Photo recorded near site entrance taken at 09:00 1-10-16



**Photo 4**

Photo recorded nearby the gate taken at 16:00 2-10-16.



**Photo 5**

Photo recorded near bus station taken at 10:30 3-10-16



**Photo 6**

Photo recorded showing bus station condition taken at 9:45 3-10-16

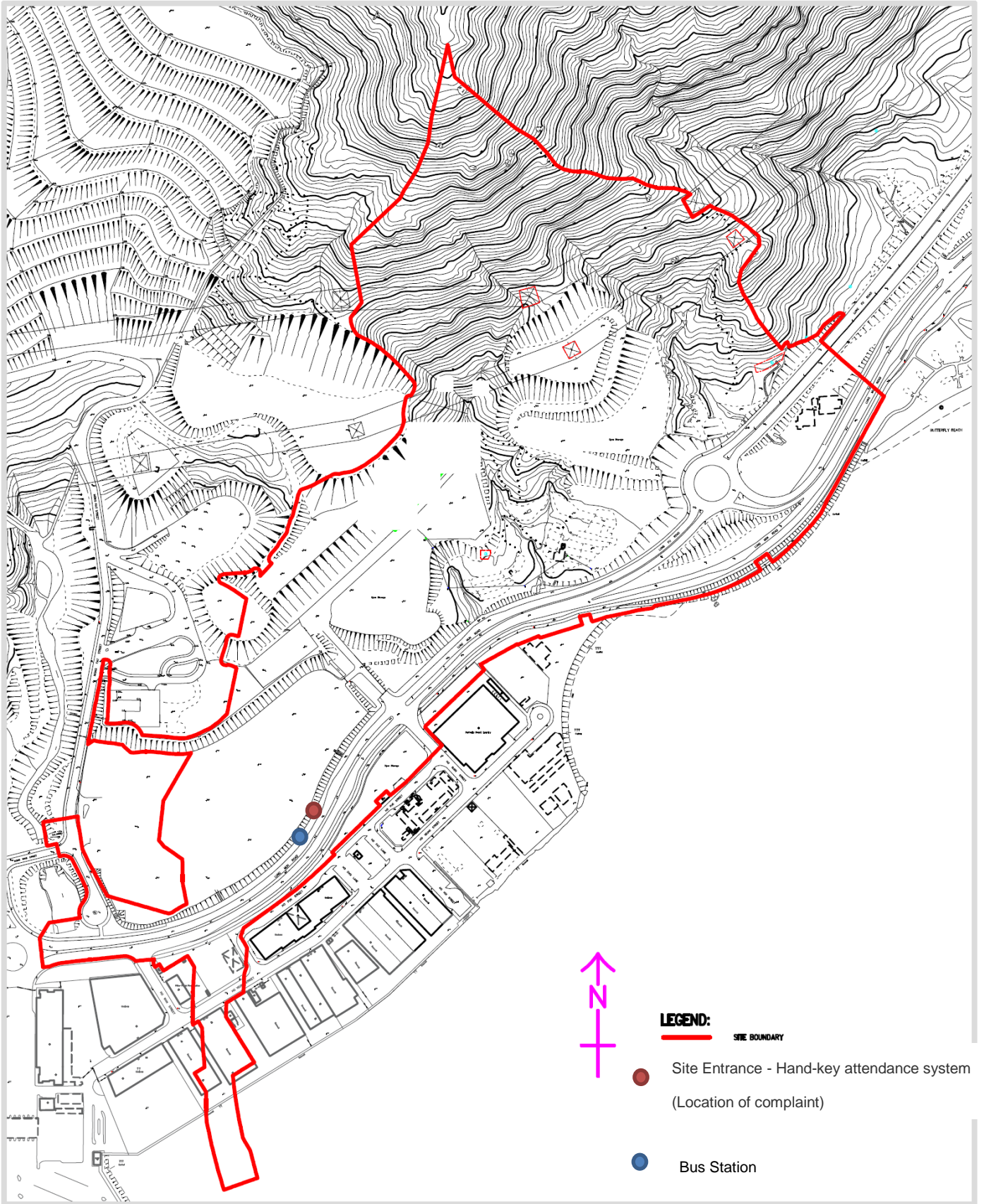


**Photo 7**

Photo recorded near bus station taken during weekly site inspection at 14:00 4-10-16

# Appendix A

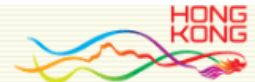
## Location Map



Location Map

# Appendix B

## HKO Rainfall Record



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[Back](#) **Daily Extract of Meteorological Observations , September 2016**

Year  Month

Day	Hong Kong Observatory							King's Park	Waglan Island <sup>^</sup>		
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)	Total Bright Sunshine (hours)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
	Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)								
01	1003.3	30.0	27.9	25.2	25.6	88	86	68.9	***	***	***
02	1002.0	31.0	28.7	27.5	26.1	86	88	6.1	***	***	***
03	1002.7	31.2	28.1	25.7	25.7	87	88	7.0	***	***	***
04	1005.2	30.1	28.2	27.0	25.3	84	88	Trace	***	***	***
05	1006.1	29.2	27.1	25.8	25.1	89	86	75.3	***	***	***
06	1006.7	27.7	26.7	25.7	25.0	90	86	10.8	***	***	***
07	1007.5	28.0	26.5	25.4	24.8	90	91	20.4	***	***	***
08	1008.0	28.4	27.1	25.5	25.2	90	84	2.8	***	***	***
09	1008.4	29.4	27.0	25.5	24.8	88	87	16.3	***	***	***
10	1007.8	27.7	26.3	24.5	25.1	93	87	53.2	***	***	***
11	1008.4	31.6	28.1	25.9	25.6	87	72	6.6	***	***	***
12	1010.2	32.7	28.7	26.0	25.3	83	49	0.0	***	***	***
13	1010.2	30.9	28.2	26.0	25.2	84	61	8.5	***	***	***
14	1004.5	32.6	29.6	26.9	23.0	69	59	0.0	***	***	***
15	1002.9	31.9	29.4	28.0	22.8	68	63	0.7	***	***	***
16	1004.9	31.3	29.0	27.3	22.9	70	44	0.0	***	***	***
17	1005.7	31.6	29.3	27.3	22.2	66	50	0.0	***	***	***
18	1006.9	31.5	28.6	26.3	21.7	66	47	Trace	***	***	***
19	1008.0	32.6	28.6	25.5	23.1	73	51	3.8	***	***	***
20	1012.1	29.5	25.5	22.8	23.2	87	85	39.6	***	***	***
21	1014.4	30.6	27.1	24.7	22.6	77	52	2.4	***	***	***
22	1013.6	28.9	27.2	26.1	22.7	76	87	0.0	***	***	***
23	1012.0	29.9	27.7	26.5	23.5	78	88	Trace	***	***	***
24	1010.5	30.5	27.9	26.6	23.8	78	66	Trace	***	***	***
25	1009.8	30.5	28.1	26.9	24.3	80	52	0.0	***	***	***
26	1007.7	31.1	28.5	27.0	24.8	81	69	Trace	***	***	***
27	1002.6	34.9	31.1	27.7	24.1	68	36	0.0	***	***	***
28	999.5	32.2	30.4	28.9	21.3	58	79	0.0	***	***	***
29	1003.9	28.9	26.5	24.9	20.5	70	88	0.7	***	***	***
30	1007.7	26.4	25.1	24.1	21.0	78	86	0.0	***	***	***
Mean/Total	1007.1	30.4	27.9	26.1	23.9	79	72	323.1	***	***	***
Normal <sup>§</sup>	1008.9	30.1	27.7	25.8	23.4	78	66	327.6	172.3	090	22.6



Hong Kong Observatory recorded no rainfall on 30-Sep-16



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## Daily Extract of Meteorological Observations , October 2016

Year  Month

Day	Hong Kong Observatory							
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)				
01	1009.9	29.4	26.6	24.0	24.6	89	75	95.5
02	1009.0	29.8	27.6	26.2	24.3	82	76	Trace
03	1007.8	28.3	27.5	26.6	24.1	82	76	0.2
04	1008.1	29.5	27.5	26.5	24.4	83	76	0.0
05	1008.9	31.9	28.6	26.9	24.3	77	68	Trace
06	1009.1	32.4	28.5	25.9	23.5	77	57	16.7
Mean/Total	1008.8	30.2	27.7	26.0	24.2	81	70	112.4
Normal <sup>§</sup>	1014.1	27.8	25.5	23.7	20.2	73	58	100.9

Trace means rainfall less than 0.05 mm

<sup>§</sup> 1981-2010 Climatological Normal

Hong Kong Observatory recorded 95.5mm rainfall on 1-Oct-16



### Past Rainfall Recorded in Various Regions of Hong Kong

Please select date: 1 Oct Please select hour: 01:00 View

1 Oct 2016

Between 0:45 and 1:45 a.m., the rainfall recorded in various regions were:

Region	Rainfall
Tai Po	0 to 3 mm
North District	0 to 2 mm
Sai Kung	0 to 2 mm

### Past Rainfall Recorded in Various Regions of Hong Kong

Please select date: 1 Oct Please select hour: 02:00 View

1 Oct 2016

Between 1:45 and 2:45 a.m., the rainfall recorded in various regions were:

Region	Rainfall
Wong Tai Sin	2 to 5 mm
Kwun Tong	10 to 12 mm
Tai Po	0 to 8 mm
Sha Tin	0 to 6 mm
Eastern District	0 to 5 mm
Kowloon City	0 to 3 mm
Southern District	0 to 2 mm
Sai Kung	0 to 11 mm

### Past Rainfall Recorded in Various Regions of Hong Kong

Please select date: 1 Oct Please select hour: 03:00 View

1 Oct 2016

Between 2:45 and 3:45 a.m., the rainfall recorded in various regions were:

Region	Rainfall
Eastern District	8 to 14 mm
Kowloon City	5 to 10 mm
Wan Chai	4 to 5 mm
Kwun Tong	3 to 9 mm
Wong Tai Sin	3 to 9 mm
Sha Tin	2 to 5 mm
Yau Tsim Mong	2 mm
Southern District	0 to 8 mm
Tai Po	0 to 7 mm
Islands District	0 to 2 mm
Sai Kung	0 to 18 mm
North District	0 to 1 mm

### Past Rainfall Recorded in Various Regions of Hong Kong

Please select date: 1 Oct Please select hour: 04:00 View

1 Oct 2016

Between 3:45 and 4:45 a.m., the rainfall recorded in various regions were:

Region	Rainfall
Wan Chai	4 to 9 mm
Yau Tsim Mong	20 to 29 mm
Sham Shui Po	2 to 19 mm
Kowloon City	19 to 32 mm
Wong Tai Sin	18 to 20 mm
Kwun Tong	10 to 20 mm
Sha Tin	1 to 15 mm
Islands District	0 to 5 mm
Sai Kung	0 to 39 mm
Kwai Tsing	0 to 3 mm
Tai Po	0 to 23 mm
Central & Western District	0 to 18 mm
Southern District	0 to 16 mm
Eastern District	0 to 11 mm

Hong Kong Observatory recorded no rainfall at Tuen Mun at 0:45 – 4:45 on 1 October 16

**Appendix P**


**Inspection Checklist for  
Vulnerable to Contaminated Water Discharge**

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-03 Location: Stream B, Outfall 1  
Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-03

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

## Daily Drainage Inspection Record

Inspection Date: 03-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-04 Location: Stream B, Outfall 1  
Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-04

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

## Daily Drainage Inspection Record

Inspection Date: 04-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



中國路橋  
CRBC

**Kaden**



Contract No. HY/2013/12

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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-05


Location: Stream B, Outfall 1

Name of Inspector: Melody Tong

Position of Inspector: ES

Please put a tick  on the appropriate box.

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

Checked by : (CKJV) HY Tang 

Inspection Date: 2016-10-05

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

## Daily Drainage Inspection Record

Inspection Date: 05-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.





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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-06 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-06

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

## Daily Drainage Inspection Record

Inspection Date: 06-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-07 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-07

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

## Daily Drainage Inspection Record

Inspection Date: 07-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-08 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-08

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

## Daily Drainage Inspection Record

Inspection Date: 08-Oct-2016



Stream B Outfall: clean water is discharging.




Outfall 1: Clean water is discharging.

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-11 Location: Stream B, Outfall 1  
Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-11

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

## Daily Drainage Inspection Record

Inspection Date: 11-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.





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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-12 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-12

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

## Daily Drainage Inspection Record

Inspection Date: 12-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



中國路橋  
CRBC

**Kaden**



Contract No. HY/2013/12

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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-13


Location: Stream B, Outfall 1

Name of Inspector: Melody Tong

Position of Inspector: ES

Please put a tick  on the appropriate box.

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

Checked by : (CKJV) HY Tang 

Inspection Date: 2016-10-13

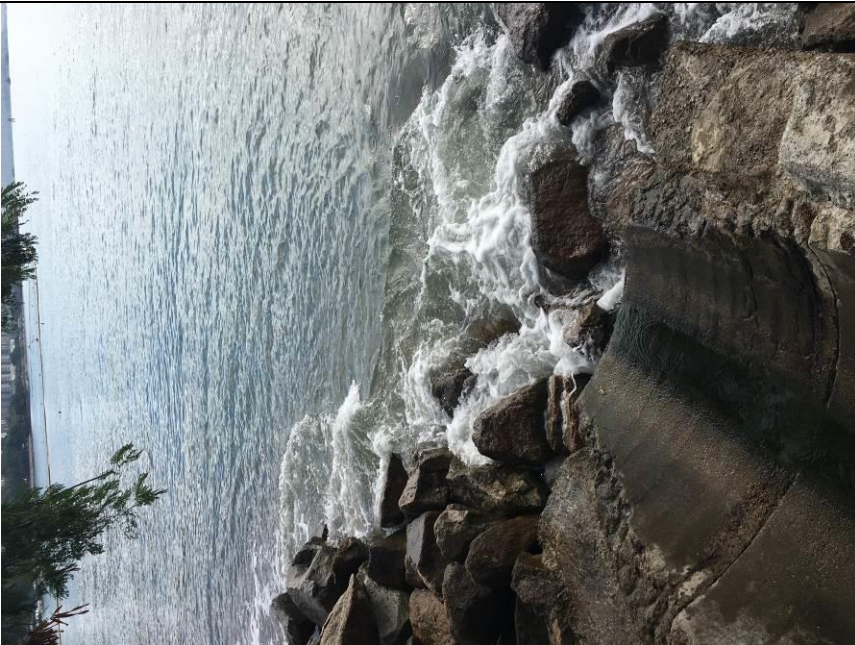
Legends: Y = Yes, P = Partial, N = No

## Daily Drainage Inspection Record

Inspection Date: 13-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-14 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-14

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

## Daily Drainage Inspection Record

Inspection Date: 14-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



Contract No. HY/2013/12  
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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-15 Location: Stream B, Outfall 1  
Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-15

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

## Daily Drainage Inspection Record

Inspection Date: 15-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



Inspection Checklist for vulnerable to contaminated water discharge

 Inspection Date: 2016-10-17


 Location: Stream B, Outfall 1

 Name of Inspector: Melody Tong

 Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

 Checked by : (CKJV) HY Tang 

 Inspection Date: 2016-10-17

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

## Daily Drainage Inspection Record

Inspection Date: 17-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



Contract No. HY/2013/12  
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 and Associated Works

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-18 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-18

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

## Daily Drainage Inspection Record

Inspection Date: 18-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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Tuen Mun - Chek Lap Kok Link Northern Connection Toll Plaza  
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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-19


Location: Stream B, Outfall 1

Name of Inspector: Melody Tong

Position of Inspector: ES

Please put a tick  on the appropriate box.

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

Checked by : (CKJV) HY Tang 

Inspection Date: 2016-10-19

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

## Daily Drainage Inspection Record

Inspection Date: 19-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-20 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-20

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

## Daily Drainage Inspection Record

Inspection Date: 20-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.





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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-22


Location: Stream B, Outfall 1

Name of Inspector: Melody Tong

Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang 

Inspection Date: 2016-10-22

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

## Daily Drainage Inspection Record

Inspection Date: 22-Oct-2016



Stream B Outfall: clean water is discharging.




Outfall 1: Clean water is discharging.

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-24                      Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong                      Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang                       Inspection Date: 2016-10-24

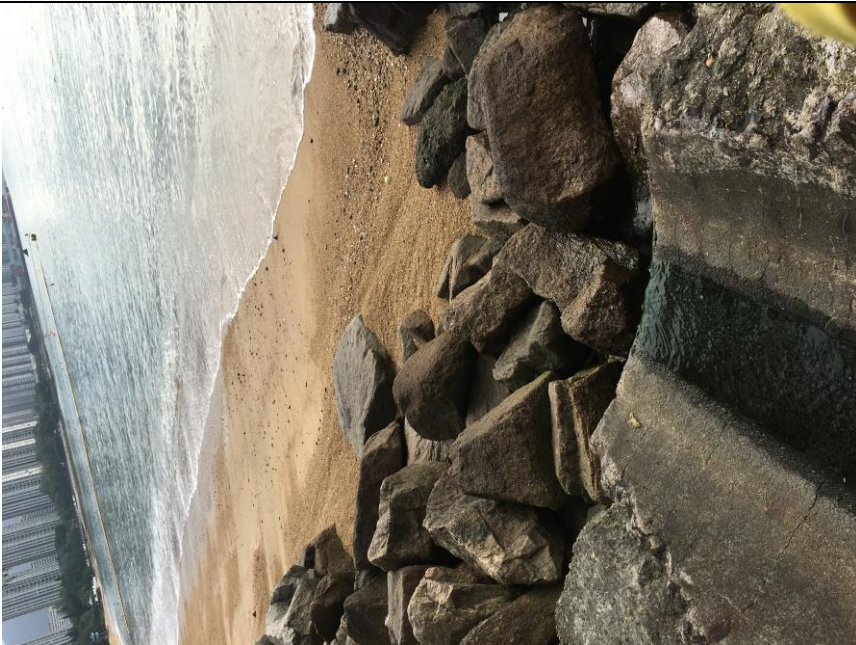
Legends: Y = Yes, P = Partial, N = No

## Daily Drainage Inspection Record

Inspection Date: 24-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-25 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-25

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

## Daily Drainage Inspection Record

Inspection Date: 25-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-26

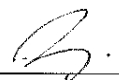
Location: Stream B, Outfall 1

Name of Inspector: Melody Tong

Position of Inspector: ES

Please put a tick  on the appropriate box.

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

Checked by : (CKJV) HY Tang 

Inspection Date: 2016-10-26

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

## Daily Drainage Inspection Record

Inspection Date: 26-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.





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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-27 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-27

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

## Daily Drainage Inspection Record

Inspection Date: 27-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-28 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-28

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

## Daily Drainage Inspection Record

Inspection Date: 28-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-29 Location: Stream B, Outfall 1  
 Name of Inspector: Melody Tong Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang  Inspection Date: 2016-10-29

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

## Daily Drainage Inspection Record

Inspection Date: 29-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.



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

Inspection Checklist for vulnerable to contaminated water discharge

Inspection Date: 2016-10-31

Location: Stream B, Outfall 1

Name of Inspector: Melody Tong

Position of Inspector: ES

Please put a tick  $\checkmark$  on the appropriate box.

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

Checked by : (CKJV) HY Tang 

Inspection Date: 2016-10-31

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

## Daily Drainage Inspection Record

Inspection Date: 31-Oct-2016



Stream B Outfall: clean water is discharging.



Outfall 1: Clean water is discharging.