

AUES JOB No.: TCS00715/14



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

**13th QUARTERLY ENVIRONMENTAL MONITORING &
AUDIT SUMMARY REPORT –
(November 2017 to January 2018)**

PREPARED FOR

CRBC AND KADEN JOINT VENTURE

Quality Index

| Date | Reference No. | Prepared By | Certified By |
|--------------|-------------------------|---|--|
| 6 March 2018 | TCS00715/14/600/R0402v1 |  Ben Tam (Environmental Consultant) |  T.W. Tam (Environmental Team Leader) |

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Ref.: HYDHZMBEEM00_0_6302L.18

07 March 2018

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

By Fax (2218 7299) and By Post

Attention: Mr. Albert Yu

Dear Mr. Yu,

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

**Contract No. HY/2013/12 TM-CLKL Northern Connection Toll Plaza and
Associated Works
13th Quarterly EM&A Summary Report (November 2017 to January
2018)**

Reference is made to the 13th Quarterly Environmental Monitoring and Audit (EM&A) Summary Report (November 2017 to January 2018) (AUES reference: TCS00715/14/600/R0402v1 dated 6 March 2018) certified by the ET Leader and provided to us via e-mail on 6 March 2018.

Please be informed that we have no adverse comments on the captioned report.

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)
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Internal: DY, YH, TMC, ENPO Site

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EXECUTIVE SUMMARY

ES.01. This is the 13th Quarterly EM&A Summary Report for the “Tuen Mun - Chek Lap Kok Link - Northern Connection Toll Plaza and Associated Works” under Environmental Permit No. EP-354/2009/D (hereinafter “the EP”), covering the period from **1 November 2017 to 31 January 2018** (hereinafter “Reporting Period”).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.02. Environmental monitoring activities under the EM&A programme in the Reporting Period are summarized in the following table.

| Environmental Aspect | Environmental Monitoring Parameters / Inspection | Total Occasions |
|-------------------------------|---|-----------------|
| Air Quality | 1-hour Total Suspended Particulates (TSP) | 465 |
| | 24-hour TSP | 155 |
| Cultural heritage inspection | Grave G1 | 13 |
| Landfill Gas Monitoring | Oxygen; Methane & Carbon Dioxide | 76 days |
| Landscape & Visual | Landscape & Visual Monitoring | 13 |
| Joint Site Inspection / Audit | IEC, ET, the Contractor and RE joint site Environmental Inspection and Auditing | 13 |

BREACHES OF ACTION/LIMIT LEVELS

ES.03. In the Reporting Period, 2 Action Level and 1 Limit Level exceedances of 1-hour TSP were recorded at ASR5 & ASR10 on 2 November 2017; 1 Action Level exceedance of 1-hour TSP was recorded at ASR5 on 11 November 2017; 1 Action Level exceedance of 1-hour TSP was recorded at ASR10 on 29 November 2017; 1 Action Level and 2 Limit Level exceedances of 1-hour and 24-hour TSP were recorded at ASR1 & ASR5 on 8 December 2017; 4 Action Level exceedances of 1-hour and 24-hour TSP were recorded at ASR1 & ASR5 on 11 December 2017; 1 Limit Level exceedance of 24-hour TSP was recorded at ASR5 on 17 December 2017; 2 Action Level exceedances of 1-hour TSP were recorded at ASR1 & ASR5 on 20 December 2017; 1 Action Level exceedance of 1-hour TSP was recorded at ASR1 on 26 December 2017 and 1 Action Level exceedance of 24-hour TSP was recorded at ASR10 on 29 December 2017; 6 Action Level exceedances of 1-hour TSP were recorded at ASR5 on 13, 16 and 22 January 2018 according to the measurement results by the ET of Contract HY/2012/08, investigation reports for the exceedances have been completed and the corresponding investigation reports have been submitted to all relevant parties. 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 | 17 | 1 | 16 | Exceedances were unlikely related to the Contract work | No corrective action was undertaken |
| | 24-hour TSP | 2 | 3 | 5 | Exceedances were unlikely related to the Contract work | No corrective action was undertaken |
| Landfill Gas Monitoring | Oxygen | 0 | 0 | 0 | 0 | 0 |
| | Methane | 0 | 0 | 0 | 0 | 0 |
| | Carbon Dioxide | 0 | 0 | 0 | 0 | 0 |

ENVIRONMENTAL COMPLAINT

ES.04. In the Reporting Period, one (1) environmental complaint was received from EPD on 30 January 2018 regarding construction noise and light nuisance created at River Trade Terminal during mid-night. The

complainant also complained dust issue at River Trade Terminal; investigation report for the complaint has been prepared by the ET and concluded that the complaint was not project-related.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.05. No environmental summons or successful prosecutions were recorded in the Reporting Period.

REPORTING CHANGES

ES.06. No reporting changes were made in the Reporting Period.

FUTURE KEY ISSUES

ES.07. 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.

ES.08. 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.

ES.09. 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. PROJECT 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). The 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:-
- construction of an approximately 5.4 hectares toll plaza and an associated footbridge;
 - 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;
 - site formation for the construction of the toll plaza, including associated slope works and natural terrain hazard mitigation measures;
 - modification and realignment of the existing Lung Mun Road and Lung Fu Road; and
 - associated waterworks, drainage, sewerage and landscaping works, etc..
- 1.1.3. Action-United Environmental Services & Consulting has been commissioned as an Independent ET to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties.
- 1.1.4. This is the 13th Quarterly EM&A Summary Report covering the period from **1 November 2017 to 31 January 2018**.

1.2 REPORT STRUCTURE

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

- Section 1 Introduction*
- Section 2 Contract Organization and Construction Progress*
- Section 3 Summary of Impact Monitoring Requirements*
- 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 Site Inspections*
- 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

2.1 CONTRACT ORGANIZATION

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

2.2 CONSTRUCTION PROGRESS

2.2.1 In the Reporting Period, the major construction activity conducted under the Contract is summarized in below. Moreover, the master construction program and 2-month rolling programme is enclosed in *Appendix D*.

November 2017

- Instrumentation and Monitoring
- Site Formation – Earthwork on Slope D and E; surface drainage on Slope C, D & E and Portion H;
- Toll Plaza Decking TD1 and TD2;
- Toll Plaza Footbridge;
- Retaining Structure RW_A, RW_B
- Toll Collector Subway & Associated Works;
- Bridge G1 and H1 by Form Traveller;
- Sewer Culvert at FC1 and FC2;
- Road and Drainage Works at +11mPD, +19mPD and Portion H.
- Toll Booth Canopy
- Road pavement works at +19mPD platform ;
- Construction of bus shelter

December 2017

- Instrumentation and Monitoring
- Site Formation – Earthwork on Slope D and E; surface drainage on Slope C, D & E and Portion H;
- Toll Plaza Footbridge;
- Retaining Structure RW_A, RW_B;
- Toll Collector Subway & Associated Works;
- Bridge G1 and H1 by Form Traveller;
- Sewer Culvert at FC1 and FC2;
- Road and Drainage Works at +11mPD, +19mPD and Portion H;
- Toll Booth Canopy;
- Road pavement works at +19mPD platform.

January 2018

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

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 In according to the EP, the required documents have submitted to EPD for retention which listed in below:

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

2.3.2 Summary of the relevant permits, licenses, and/or notifications on environmental protection for Contract No. HY/2013/12 are presented in *Table 2-1*.

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

| No. | Type of Permit/ License | Reference/ License No. | Date of Issue | Date of Expiry |
|-----|--|---------------------------|---------------|----------------|
| 1 | Air pollution Control (Construction Dust) Regulation | 377719 | 06-08-2014 | N/A |
| 2 | Chemical Waste Producer Registration - Waste Producers Number | 5117422C389301 | 03-09-2014 | N/A |
| 3 | Water Pollution Control Ordinance -Variation of Effluent Discharge License | WT00023973-2016 | 14-03-16 | 30-09-2019 |
| 4 | Water Pollution Control Ordinance -New Variation of Effluent Discharge License | WT00023973-2016 | 18-05-2016 | 30-09-2019 |
| 5 | Waste Disposal Regulation - Billing Account for Disposal of Construction Waste | 7020460 | 01-08-2014 | N/A |
| 6 | Extend CNP for Flasework Erection | GW-RW0205-17 | 25-04-2017 | 25-11-2017 |
| | | GW-RW0563-17 | 26-10-2017 | 24-02-2018 |
| 7 | Extend CNP for Multiple Task | GW-RW0230-17 | 10-05-2017 | 04-11-2017 |
| | | GW-RW0605-17 | 25-11-2017 | 24-05-2018 |
| 8 | Extent CNP for Tunnel Works | GW-RW0243-17 | 23-05-2017 | 22-11-2017 |
| | | GW-RW0567-17 | 26-10-2017 | 22-05-2018 |
| 9 | CNP for Portion H | GW-RW0242-17 | 22-05-2017 | 17-11-2017 |
| | | GW-RW0568-17 | 26-10-2017 | 22-05-2018 |
| 10 | CNP for Road Paving Works | GW-RW0211-17 | 25-04-2017 | 01-11-2017 |
| | | GW-RW0561-17 | 26-10-2017 | 01-02-2018 |

3 SUMMARY OF IMPACT MONITORING REQUIREMENTS

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 LOCATIONS

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 | <u>Northern Connection</u> During excavation works for launching shaft, excavation work for Cut |

| Condition | Monitoring Parameter | Monitoring Location | Frequency | Monitoring Requirement |
|-----------|----------------------|--------------------------------|------------------------|--|
| | 24-hour TSP | ASR1, ASR5, AQMS1, ASR6, ASR10 | Daily every three days | and Cover Tunnel and Cut and Cover Tunnel Construction <u>Toll Plaza</u> During excavation, slope works, construction of road and superstructures and wind erosion from open sites and stockpiling areas <u>Tunnel Buildings</u> During excavation, foundation works, construction of superstructures and wind erosion from open sites and stockpiling areas |

3.5 MONITORING EQUIPMENT

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

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

- (i) 0.6-1.7 m³/min (20-60 SCFM) adjustable flow range;
- (ii) equipped with a timing/control device with +/- 5 minutes accuracy for 24 hours operation;
- (iii) installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
- (iv) capable of providing a minimum exposed area of 406 cm² (63 in²);
- (v) flow control accuracy: +/- 2.5% deviation over 24-hr sampling period;
- (vi) equipped with a shelter to protect the filter and sampler;
- (vii) incorporated with an electronic mass flow rate controller or other equivalent devices;
- (viii) equipped with a flow recorder for continuous monitoring;
- (ix) provided with a peaked roof inlet;
- (x) equipped with a manometer;
- (xi) able to hold and seal the filter paper to the sampler housing in a horizontal position;
- (xii) easy to change the filter; and
- (xiii) capable of operating continuously for 24-hr period.

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

3.5.4 The filter paper of 1-hour TSP and 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.

3.5.5 If the ET 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 (only undertaken at Establishment period) and protection measures.

Landscape and Visual

- 3.7.6 Measures to mitigate landscape and visual impact during construction should be checked and monitored by a Registered Landscape Architect to ensure compliance with the intended aims of the mitigation measures in accordance with the EM&A Manual.

Cultural Heritage

- 3.7.7 Grave G1 as a heritage resource is situated near the proposed toll plaza in Tuen Mun. Site inspections should be undertaken at least once per week throughout the construction period to ensure compliance with the intended aims of recommended mitigation measures.

Landfill Gas

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

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 SUMMARY OF MONITORING RESULTS

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 (*November 2017, December 2017 and January 2018*).

4.3 ACTION AND LIMIT (A/L) LEVELS EXCEEDANCE

4.3.1 According to the air quality monitoring result provided by Contract HY/2012/08, 2 Action Level and 1 Limit Level exceedances of 1-hour TSP were recorded at ASR5 & ASR10 on 2 November 2017; 1 Action Level exceedance of 1-hour TSP was recorded at ASR5 on 11 November 2017; 1 Action Level exceedance of 1-hour TSP was recorded at ASR10 on 29 November 2017; 1 Action Level and 2 Limit Level exceedances of 1-hour and 24-hour TSP were recorded at ASR1 & ASR5 on 8 December 2017; 4 Action Level exceedances of 1-hour and 24-hour TSP were recorded at ASR1 & ASR5 on 11 December 2017; 1 Limit Level exceedance of 24-hour TSP was recorded at ASR5 on 17 December 2017; 2 Action Level exceedances of 1-hour TSP were recorded at ASR1 & ASR5 on 20 December 2017; 1 Action Level exceedance of 1-hour TSP was recorded at ASR1 on 26 December 2017 and 1 Action Level exceedance of 24-hour TSP was recorded at ASR10 on 29 December 2017; 6 Action Level exceedances of 1-hour TSP were recorded at ASR5 on 13, 16 and 22 January 2018. Notification on Exceedances (NOEs) were issued after receiving the monitoring result from the 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 |
|--------------------|--------------------|-----------------------|------------------------------|--------------|
| 2 November 2017 | ASR5 | 1Hr TSP | 351 $\mu\text{g}/\text{m}^3$ | Action Level |
| 2 November 2017 | ASR10 | 1Hr TSP | 403 $\mu\text{g}/\text{m}^3$ | Action Level |
| 2 November 2017 | ASR10 | 1Hr TSP | 816 $\mu\text{g}/\text{m}^3$ | Limit Level |
| 11 November 2017 | ASR5 | 1Hr TSP | 389 $\mu\text{g}/\text{m}^3$ | Action Level |
| 29 November 2017 | ASR10 | 1Hr TSP | 455 $\mu\text{g}/\text{m}^3$ | Action Level |
| 8 December 2017 | ASR5 | 1Hr TSP | 353 $\mu\text{g}/\text{m}^3$ | Action Level |
| 11 December 2017 | ASR1 | 1Hr TSP | 399 $\mu\text{g}/\text{m}^3$ | Action Level |
| 11 December 2017 | ASR1 | 1Hr TSP | 443 $\mu\text{g}/\text{m}^3$ | Action Level |
| 11 December 2017 | ASR5 | 1Hr TSP | 417 $\mu\text{g}/\text{m}^3$ | Action Level |
| 20 December 2017 | ASR1 | 1Hr TSP | 357 $\mu\text{g}/\text{m}^3$ | Action Level |
| 20 December 2017 | ASR5 | 1Hr TSP | 372 $\mu\text{g}/\text{m}^3$ | Action Level |
| 26 December 2017 | ASR1 | 1Hr TSP | 407 $\mu\text{g}/\text{m}^3$ | Action Level |
| 8 December 2017 | ASR1 | 24Hr TSP | 328 $\mu\text{g}/\text{m}^3$ | Limit Level |
| 8 December 2017 | ASR5 | 24Hr TSP | 279 $\mu\text{g}/\text{m}^3$ | Limit Level |
| 11 December 2017 | ASR1 | 24Hr TSP | 218 $\mu\text{g}/\text{m}^3$ | Action Level |
| 17 December 2017 | ASR5 | 24Hr TSP | 265 $\mu\text{g}/\text{m}^3$ | Limit Level |
| 29 December 2017 | ASR10 | 24Hr TSP | 250 $\mu\text{g}/\text{m}^3$ | Action Level |

| Date of Exceedance | Monitoring Station | Air Quality Parameter | Result | Exceed |
|--------------------|--------------------|-----------------------|------------------------------|--------------|
| 13 January 2018 | ASR5 | 1Hr TSP | 345 $\mu\text{g}/\text{m}^3$ | Action Level |
| 16 January 2018 | ASR5 | 1Hr TSP | 396 $\mu\text{g}/\text{m}^3$ | Action Level |
| 16 January 2018 | ASR5 | 1Hr TSP | 384 $\mu\text{g}/\text{m}^3$ | Action Level |
| 16 January 2018 | ASR5 | 1Hr TSP | 345 $\mu\text{g}/\text{m}^3$ | Action Level |
| 22 January 2018 | ASR5 | 1Hr TSP | 363 $\mu\text{g}/\text{m}^3$ | Action Level |
| 22 January 2018 | ASR5 | 1Hr TSP | 380 $\mu\text{g}/\text{m}^3$ | Action Level |

4.4 AIR QUALITY EXCEEDANCE INVESTIGATION

- 4.4.1 Investigation for the 1-hour and 24-hour TSP exceedance was undertaken upon received the monitoring results by the ET.
- 4.4.2 For the exceedances on November 2017 to January 2018, the investigation reports were submitted to all relevant parties and concluded that those exceedances are unlikely related to the Contract work and no corrective action was required accordingly. The detailed investigation reports and findings can be referred to the Monthly EM&A Reports (**November 2017, December 2017 and January 2018**) of the contract.

5 ECOLOGY MONITORING

5.1 GENERAL

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

5.2 PITCHER PLANTS INSPECTION

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

5.2.2 In the Reporting Period, inspections for implementation status of mitigation measures for the Pitcher Plants were carried out by the ET on **7th, 14th, 21st, 28th November 2017, 5th, 12th, 21st, 27th December 2017, 2nd, 9th, 16th, 23rd and 30th January 2018.**

5.2.3 Establishment period for the pitcher plants was completed at the end of September 2016, the joint site completion of Establishment period visit with AFCD was undertaken on 23 September 2016 and the final pitcher plants report was submitted to AFCD on early December 2016. Therefore after 23 September 2016, only the integrity of the protection fence was checked to fulfill the EIA requirement. During each inspection, the protection mitigation measures were checking at the final receptor area to make sure no site activities was undertaken inside the protection zone. Besides, no construction activities were observed to be carried out at the surrounding of the final receptor area. The condition of chain link fence is good and no repair or maintenance is required.

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

6 CULTURAL HERITAGE

6.1 GENERAL

6.1.1 According to the EM&A Manual requirements, regular inspection for heritage resource, Grave G1, shall be audited by the ET at least once every week to ensure recommended mitigation measures implemented during construction period. The aim of the survey is to prevent any possible damage to the grave and to ensure the proposed mitigation measures are implemented. The broad scope of the audit will involve supervision of the following:

- Non-contact effects of the engineering works, such as vibration from pneumatic drills which could cause damage, such as foundation or wall cracks and loosening of tiles or fixtures; and
- Contact between the historic structures and equipment and materials associated with the engineering works.

6.1.2 Specifically, the monitoring programme will entail the following tasks:

- The extent of the agreed works areas should be regularly checked during the construction phase to ensure the buffer is being maintained; and
- Ensure no stockpiling or equipment storage is affecting the structure.

6.1.3 In the event of non-compliance the responsibilities of the relevant parties is detailed in the Event/Action Plan in *Appendix F*.

6.2 GRAVE INSPECTION

6.2.1 In the Reporting Period, site inspection for the Grave G1 was undertaken on 7th, 14th, 21st, 28th November 2017, 5th, 12th, 21st, 27th December 2017, 2nd, 9th, 16th, 23rd and 30th January 2018. During these inspections, buffer zone was maintained between the working area and the Grave. The nearby areas were clean, and no construction materials or mechanical equipment were stored within or close to the buffer zone. Moreover protective measures (hoarding and scaffold with protective net above the grave) was provided for constructing Toll Plaza Decking TD2 deck structure.

6.2.2 Accordingly, the Contractor has had fully implemented cultural heritage mitigation measures in accordance with the EM&A Manual requirements.

7 LANDSCAPE AND VISUAL

7.1 GENERAL

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

7.2 LANDSCAPE AND VISUAL INSPECTION

7.2.1 In the Reporting Period, site inspection for landscape and visual mitigation measures was undertaken by the Registered Landscape Architect on **3rd, 10th, 17th, 24th November 2017, 1st, 8th, 15th, 22nd, 29th December 2017, 5th, 12th, 19th and 26th January 2018.**

7.2.2 Most of the landscape works such as planting was not yet commenced. The detailed inspection checklists can be referred to the Monthly EM&A Reports (**November 2017, December 2017 and January 2018**) of the contract.

8 LANDFILL GAS HAZARD MONITORING

8.1 GENERAL

- 8.1.1 During EIA study, landfill gas hazards are likely to be generated from the Pillar Point Valley (PPV) Landfill. Hence, regular landfill gas monitoring is recommended during construction of the proposed toll plaza.
- 8.1.2 During construction, a Safety Officer should be appointed to carry out the monitoring works. The monitoring frequency and areas to be monitored should be set down prior to commencement of ground-works either by the Safety Officer or an approved and appropriated qualified person. The routine monitoring should be carried out in all excavations, manholes, chambers, relocation of monitoring wells and any other confined spaces that may have been created. All measurements in excavations should be made with the extended monitoring tube located not more than 10 mm from the exposed ground surface. Monitoring should be performed properly to make sure that the area is free of landfill gas before any man enters in the area.
- 8.1.3 For excavations deeper than 1m, measurements should be carried out:
- at the ground surface before excavation commences;
 - immediately before any worker enters the excavation;
 - at the beginning of each working day for the entire period the excavation remains open; and
 - periodically through the working day whilst workers are in the excavation.
- 8.1.4 For excavations between 300mm and 1m deep, measurements should be carried out:
- directly after the excavation has been completed; and
 - periodically whilst the excavation remains open
- 8.1.5 For excavations less than 300mm deep, monitoring may be omitted, at the discretion of the Safety Officer or other appropriately qualified person.
- 8.1.6 To ensure the accuracy of the monitoring data, zeroing of the gas analyser shall be undertaken at the start of each day's monitoring. As advised by the SO, the gas analyser would be optimally calibrated by the self-test function to provide the most accurate result. The gas analyser is calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.
- 8.1.7 The landfill consultation zone was divided into 6 monitoring zones. The landfill gas monitoring zones are summarized in Table 8-1 and the layout plan for the monitoring zone is illustrated in *Appendix E*.

Table 8-1 Landfill Gas Monitoring Zone

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

8.2 LANDFILL GAS MONITORING RESULT

- 8.2.1 In the Reporting Period, landfill gas monitoring was conducted at the zone TD1 where have excavation works was undertaking. A BIOGAS 5000 gas analyser was used for the landfill gas monitoring.

8.2.2 There were total **76** workings days monitoring were carried out by the Safety Officer or an approved and qualified persons in this reporting period. **Table 8-2** summarises landfill gas measurement results. Moreover, graphical plot are attached in *Appendix G*.

Table 8-2 Summary of Landfill Gas Measurement Results in Reporting Period

| Landfill Gas Parameter | Action Level | Limit Level | Detectable at TD1 | |
|------------------------|----------------------|--------------------|-------------------|-------|
| | | | Min | Max |
| Methane | >10% LEL (>0.5% v/v) | >20% LEL (>1% v/v) | 0.1% | 0.1% |
| Oxygen | <19% | <18% | 20.7% | 21.1% |
| Carbon Dioxide | >0.5% | >1.5% | 0.1% | 0.2% |

8.2.3 The measurement results shown that slightly methane concentration was detected and all oxygen concentration was over 19.0% and Carbon Dioxide was between 0.1 and 0.2 %. 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.

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 Whenever possible, materials were reused on-site as far as practicable. The quantities of waste for disposal in the Reporting Period are summarized in *Tables 9-1* and *9-2* and the Waste Flow Table is presented in *Appendix H*.

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

| Type of Waste | Quantity | | | Disposal Location |
|--|----------|--------|--------|--|
| | Nov 17 | Dec 17 | Jan 18 | |
| Reused in this Project (Inert) (in '000 m ³) | 0.871 | 0.347 | 0.180 | - |
| Reused in other Projects (Inert) (in '000 m ³) | 1.254 | 0.843 | 0.802 | <ul style="list-style-type: none"> • Lam Tei Quarry • Eco Park K.wah Recycle Facilities • Lung Kwu Tan Tailor Recycled Aggregates • Laintang BCP • TM-CLKL C2 |
| Disposal as Public Fill (Inert) (in '000 m ³) | 1.557 | 1.680 | 2.000 | Tuen Mum Area 38 |

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

| Type of Waste | Quantity | | | Disposal Location |
|--|----------|--------|--------|-------------------|
| | Nov 17 | Dec 17 | Jan 18 | |
| Recycled Metal (in '000kg) | 0 | 0 | 0 | - |
| Recycled Paper / Cardboard Packaging (in '000kg) | 0 | 0 | 0 | - |
| Recycled Plastic (in '000kg) | 0 | 0 | 0 | - |
| Chemical Wastes (in '000kg) | 0 | 0 | 0 | - |
| General Refuses (in '000m ³) | 0.880 | 0.353 | 0.310 | WENT |

9.2.3 To control the site performance on waste management, the Contractor shall ensure that all solid and liquid waste management works are fully in compliance with the relevant license/permit requirements, such as the effluent discharge license and the chemical waste producer registration. The Contractor is also reminded to implement the recommended environmental mitigation measures according to the Environmental Monitoring and Audit Manual.

10 SITE INSPECTIONS

10.1 REQUIREMENTS

10.1.1 According to the approved EM&A Manual, the environmental site inspection shall be formulated by ET Leader. Weekly environmental site inspections should carry out to confirm the environmental performance of the construction site.

10.1.2 During the Reporting Period, 13 events of the joint site inspections were undertaken to evaluate the site environmental performance. The summaries of the findings during site inspection are presented in *Tables 10-1 and 10-2*.

Table 10-1 Site Observations for the Contract for the Reporting Period

| Date | Findings / Deficiencies | Follow-Up Status |
|------------------|---|---|
| 7 November 2017 | <ul style="list-style-type: none"> Nil | <ul style="list-style-type: none"> NA |
| 14 November 2017 | <ul style="list-style-type: none"> Stagnant water cumulated inside the precasted gully was observed. Stagnant water inside the gully should be cleaned to prevent mosquito breeding. (Portion J) | <ul style="list-style-type: none"> Stagnant water cumulated inside the precasted gully was cleared. |
| | <ul style="list-style-type: none"> Temporary drainage should be installed at the new works area. (Portion F) | <ul style="list-style-type: none"> Not required for reminder. |
| | <ul style="list-style-type: none"> Construction materials should not be stored inside the retaining tree protection area. (Portion J) | <ul style="list-style-type: none"> Not required for reminder. |
| 21 November 2017 | <ul style="list-style-type: none"> Water spraying frequency should be increased for the haul road and exposed area to minimize dust generation. (General) | <ul style="list-style-type: none"> Not required for reminder. |
| | <ul style="list-style-type: none"> Earth bund or mitigation measures should be provided for the inlet of the outfall 1 to prevent muddy water overflow into the outlet. (Butterfly Beach) | <ul style="list-style-type: none"> Not required for reminder. |
| 28 November 2017 | <ul style="list-style-type: none"> Nil | <ul style="list-style-type: none"> NA |
| 5 December 2017 | <ul style="list-style-type: none"> Drip tray should be provided for all chemical storage on-site. (Portion H) | <ul style="list-style-type: none"> Chemical containers without drip tray were removed |
| | <ul style="list-style-type: none"> NRMM label should be displayed properly, broken NRMM label should be replaced. (Portion H) | <ul style="list-style-type: none"> Not required for reminder. |
| | <ul style="list-style-type: none"> Stockpile should be covered properly after the works is finished to reduce dust generation. (Portion H) | <ul style="list-style-type: none"> Not required for reminder. |
| 12 December 2017 | <ul style="list-style-type: none"> Housekeeping should be improved. C&D waste scattered on site should be cleared. (Bridge G2) | <ul style="list-style-type: none"> C&D waste scattered on site was cleared and the housekeeping was improved. |
| | <ul style="list-style-type: none"> Drip tray should be provided for all chemical storage on-site. (East Portal) | <ul style="list-style-type: none"> Free standing chemical container storage on-site without drip tray was removed. |
| 21 December 2017 | <ul style="list-style-type: none"> NRMM label should be replaced properly, NRMM label displayed on plant should meet the standard. (Butterfly Beach) | <ul style="list-style-type: none"> Broken NRMM label was replaced. |
| | <ul style="list-style-type: none"> Dust mitigation measures should be provided for stockpile storage on site to | <ul style="list-style-type: none"> Not required for reminder. |

| Date | Findings / Deficiencies | Follow-Up Status |
|------------------|--|--|
| | reduce dust impact during dry season. (Butterfly Beach) | |
| 27 December 2017 | <ul style="list-style-type: none"> Stagnant water cumulated inside the pit should be removed to prevent mosquito breeding. (Bridge H) | <ul style="list-style-type: none"> Stagnant water cumulated inside the pit was cleared. |
| 2 January 2018 | <ul style="list-style-type: none"> Nil | <ul style="list-style-type: none"> NA |
| 9 January 2018 | <ul style="list-style-type: none"> Sediment cumulated inside the de-silting system should be cleaned more frequency and make sure all water discharge from site should comply with license requirement. (Portion F) | <ul style="list-style-type: none"> Not required for reminder. |
| 16 January 2018 | <ul style="list-style-type: none"> Stagnant water should be removed to prevent mosquito breeding. (TD1) | <ul style="list-style-type: none"> Stagnant water cumulated inside the pit was removed. |
| | <ul style="list-style-type: none"> The Contractor was reminded to cover the opened cement bag with impervious sheet to reduce dust generation. (TD1) | <ul style="list-style-type: none"> Not required for reminder. |
| | <ul style="list-style-type: none"> The Contractor was reminded to place the free-standing chemical containers into drip tray to avoid land contamination. | <ul style="list-style-type: none"> Not required for reminder. |
| 23 January 2018 | <ul style="list-style-type: none"> Nil | <ul style="list-style-type: none"> NA |
| 30 January 2018 | <ul style="list-style-type: none"> The contractor should review the condition of the temporary drainage system before wet season. | <ul style="list-style-type: none"> Not required for reminder. |

Table 10-2 Summary of Reminders/Observations of Site Inspection

| Reporting Period | Date of site inspection | Nos. of findings / reminders | Follow-Up Status |
|------------------|---|------------------------------|------------------|
| November 2017 | 7 th , 14 th , 21 st and 28 th November 2017 | 5 | Completed |
| December 2017 | 5 th , 12 th , 21 st and 27 th December 2017 | 8 | Completed |
| January 2018 | 2 nd , 9 th , 16 th , 23 rd and 30 th January 2018 | 5 | Completed |

10.1.3 In the Reporting Period, no non-compliance was recorded; however, **18** observations/ reminders were recorded during the site inspections. Minor deficiencies found in the weekly site inspection were in general rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

Inspection Checklist for Vulnerable to Contaminated Water Discharge

10.1.4 Following to the complaint about discharge of milky water to Butterfly 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.

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

10.1.6 During the dry season, the frequency of inspection for vulnerable to contaminated water discharge was reduced to once per week by the Contractor, the associated inspection checklists of the

reporting period were presented in the Monthly EM&A Report –November 2017, December 2017 and January 2018.

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. But one (1) environmental complaint and total 23 exceedances of the environmental performance (Action / Limit Levels) were recorded for monitoring programme. Follow up actions have been undertaken by the Contractor to resolve the deficiencies. The details of complaint are listed below:-

Complaint received on 30 January 2018:

A complaint was received from the EPD on 30 January 2018 to complaint that “晚上12點或凌晨3點至5點，點解內河碼頭還有工程要做，不是晚上11點前應該不可發出噪音嗎？而且可以無限發光，已經是凌晨了有這需要嗎？已經是凌晨了，為何開着咁多大光燈？至於在日頭觀察，為何內河碼頭及港珠澳大橋工程，不是應該把沙石灑水避免空氣污染嗎？為何沒有依程序灑水，令沙塵飄到屯門碼頭？還容一船沙石飄揚？屯門碼頭空氣污染指數甚高，這就是原因。”

The investigation for the complaint was completed and concluded that the complaint was not project related. The detailed investigation reports can be referred to the Monthly EM&A Reports (January 2018) of the contract.

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

Table 11-1 Statistical Summary of Environmental Exceedance

| Environmental Aspect / Parameter | Environmental Performance | Event Exceedance | | |
|----------------------------------|---------------------------|------------------|----------|------------|
| | | Reporting Period | Previous | Cumulative |
| Air Quality - 1-hr TSP | Action Level | 17 | 18 | 35 |
| | Limit Level | 1 | 1 | 2 |
| Air Quality - 24-hr TSP | Action Level | 2 | 1 | 3 |
| | Limit Level | 3 | 0 | 3 |

Table 11-2 Statistical Summary of Environmental Complaints

| Reporting Period | Environmental Complaint Statistics | | |
|-----------------------------------|------------------------------------|------------|---|
| | Frequency | Cumulative | Complaint Nature |
| 23 October 2014 – 30 October 2017 | 9 | 9 | Water (6), Air (2), Others (1) |
| 1 November 2017 – 31 January 2018 | 1 | 10 | Water (6), Air (3), Noise (1), Others (2) |

Table 11-3 Statistical Summary of Environmental Summons

| Reporting Period | Environmental Summons Statistics | | |
|-----------------------------------|----------------------------------|------------|------------------|
| | Frequency | Cumulative | Complaint Nature |
| 23 October 2014 – 30 October 2017 | 0 | 0 | NA |
| 1 November 2017 – 31 January 2018 | 0 | 0 | NA |

Table 11-4 Statistical Summary of Environmental Prosecution

| Reporting Period | Environmental Prosecution Statistics | | |
|--------------------------------------|--------------------------------------|------------|------------------|
| | Frequency | Cumulative | Complaint Nature |
| 23 October 2014 – 30 October 2017 | 0 | 0 | NA |
| 1 November 2017 – 31 January 2018 | 0 | 0 | NA |

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 I*.

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 I*.

Table 12-1 Environmental Mitigation Measures

| Issues | Environmental Mitigation Measures |
|-------------------------------|--|
| Air Quality | <ul style="list-style-type: none"> • Maintain damp / wet surface on access road • Keep slow speed in the sites • All vehicles must use wheel washing facility before off site • Sprayed water during rock breaking works • During transportation by truck, materials loaded lower than the side and tail boards, and covered before transport • Compacted all soil stockpiles • Part of the exposed slopes covered geotextile net |
| Cultural Heritage | <ul style="list-style-type: none"> • Set a buffer zone between the working area and the Grave • All construction materials and equipment store far from the Grave • Inspection the Grave to ensure provision mitigation measures effective |
| Ecology | <ul style="list-style-type: none"> • Wire fencing provided for temporary protect Pitcher Plants • Undertake weekly inspection of Pitcher Plants |
| Landfill Gas Hazard | <ul style="list-style-type: none"> • Landfill Gas measurement undertake during trench excavation |
| Water Quality | <ul style="list-style-type: none"> • Temporary drainage system provide for surface runoff prevent discharge to public area • Wastewater to be treated by sedimentation tank before discharge. |
| Noise | <ul style="list-style-type: none"> • No operation of powered mechanical equipment is allowed during restricted hours from 19:00 to 07:00 on the following day and whole day during Sunday and public holiday without a valid construction noise permit (CNP). • Keep good maintenance of plants • The noisy plants or works provide mobile noise barriers • Shut down the plants when not in use |
| Waste and Chemical Management | <ul style="list-style-type: none"> • On-site sorting prior to disposal • Follow requirements and procedures of the “Trip-ticket System” • Predict required quantity of concrete accurately • Collect the unused fresh concrete at designated locations in the sites for subsequent disposal |
| General | <ul style="list-style-type: none"> • The site was generally kept tidy and clean. |

13 CONCLUSIONS AND RECOMMENDATIONS

13.1 CONCLUSIONS

- 13.1.1 This is 13th Quarterly EM&A report presenting the monitoring results and inspection findings for the Reporting Period from **1 November 2017 to 31 January 2018**.
- 13.1.2 Five (5) exceedance of 24-hour TSP and eighteen (18) exceedances of 1-hour TSP monitoring were recorded in the Reporting Period. NOEs were issued to notify all relevant parties. Investigation reports for the exceedances on November 2017 to January 2018 were completed by ET and submitted to all relevant parties.
- 13.1.3 Site inspection for landscape and visual was conducted on weekly basis by the Landscape Architect to ensure the compliance of the intended aims of the mitigation measures. Most of the landscape works such as planting was not yet commenced.
- 13.1.4 Establishment period for the pitcher plants was completed at the end of September 2016, the joint site completion of Establishment period visit with AFCD was undertaken on 23 September 2016 and the final pitcher plants report was submitted to AFCD on early December 2016. Therefore after 23 September 2016, only the integrity of the protection fence was checked to fulfil the EIA requirement. During each inspection, the protection mitigation measures were checking at the final receptor area to make sure no site activities was undertaken inside the protection zone. Besides, no construction activities were observed to be carried out at the surrounding of the final receptor area. The condition of chain link fence is good and no repair or maintenance is required.
- 13.1.5 Landfill gas monitoring was conducted at the TD1 works area by the Safety Officer. The monitoring results shown no exceedances were triggered.
- 13.1.6 In the Reporting Period, one (1) environmental complaint was received from EPD. Investigation report for the complaint was conducted by ET and concluded that the complaint was not project related.
- 13.1.7 No notifications of summons, or successful prosecution were received by the Contractor during the Reporting Period.
- 13.1.8 During the Reporting Period, **13** events of the joint site inspections were undertaken to evaluate the site environmental performance. No non-compliance of environmental impacts were observed, indicating the implemented mitigation measures for air quality, construction noise and water quality were effective. Minor deficiencies found in the weekly site inspection were rectified within the specified deadlines. The environmental performance of the Project was considered satisfactory.
- 13.1.9 For cultural heritage, the buffer zone between the working area and the Grave was observed and no construction material or equipment was stored nearby.
- 13.1.10 No notifications of summons, or successful prosecution were received by the Contractor during the Reporting Period.

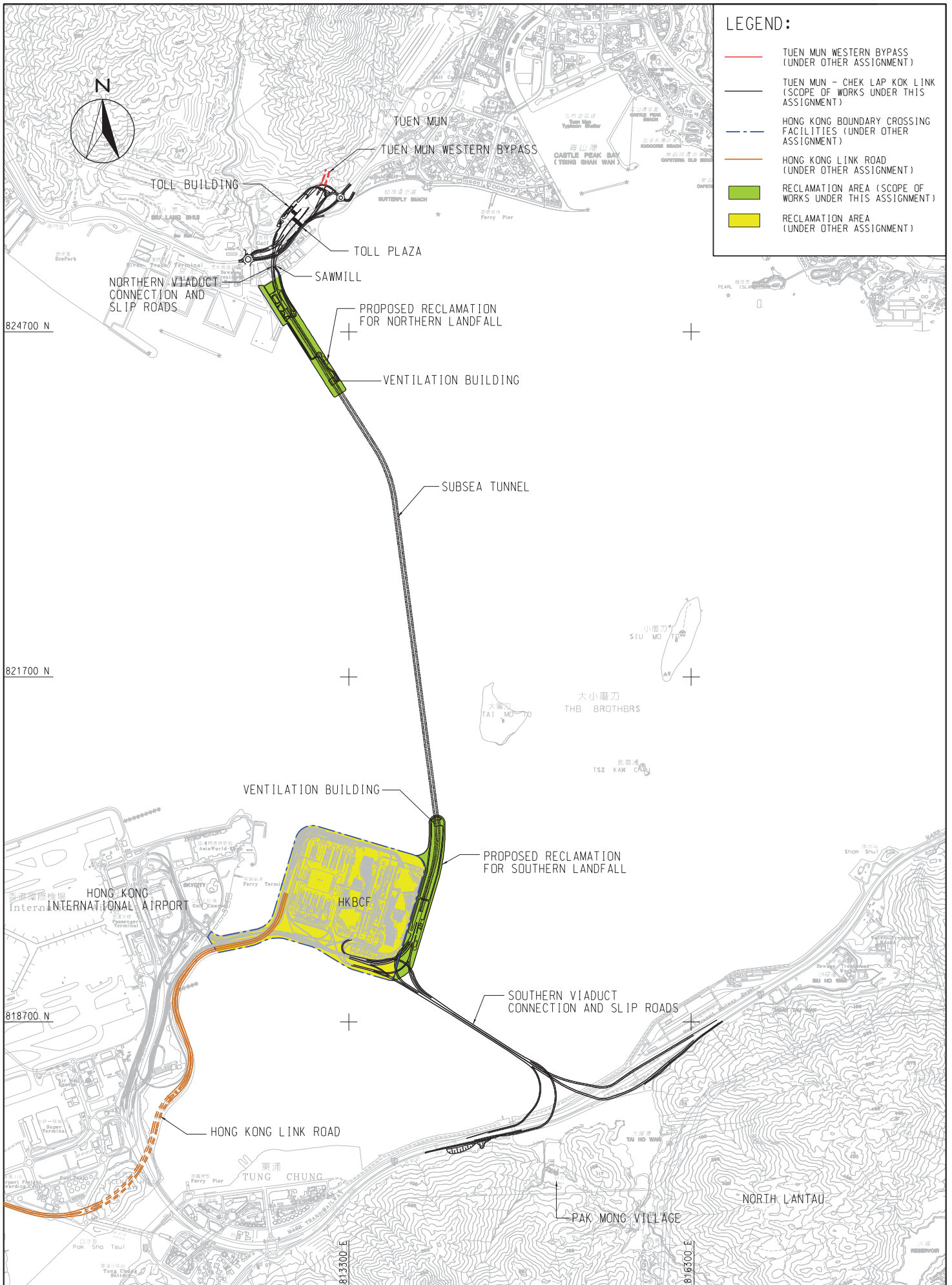
13.2 RECOMMENDATIONS

- 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

Layout plan of the Project



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. | Fig 2.1 |
| | | 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



AECOM

PROJECT
 項目
TUEN MUN - CHEK LAP KOK LINK

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

CLIENT
 業主

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

CONSULTANT
 工程顧問公司
 AECOM Asia Company Ltd.
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ISSUE/REVISION
 修訂

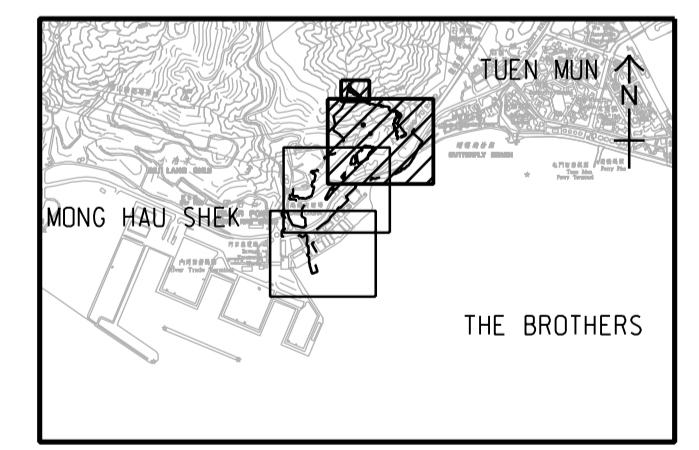
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| B | MAR. 14 | TENDER ADDENDUM NO. 2 | CWN |
| A | FEB. 14 | TENDER ADDENDUM NO. 1 | CWN |
| - | JAN. 14 | TENDER DRAWING | CWN |

STATUS
 階段

SCALE
 比例
 A1 1:1000

DIMENSION UNIT
 尺寸單位
 METRES

KEY PLAN
 索引圖
 1:50000



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'.

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PROJECT NO.
 項目編號
 60240249

CONTRACT NO.
 合約編號
 HY/2013/12

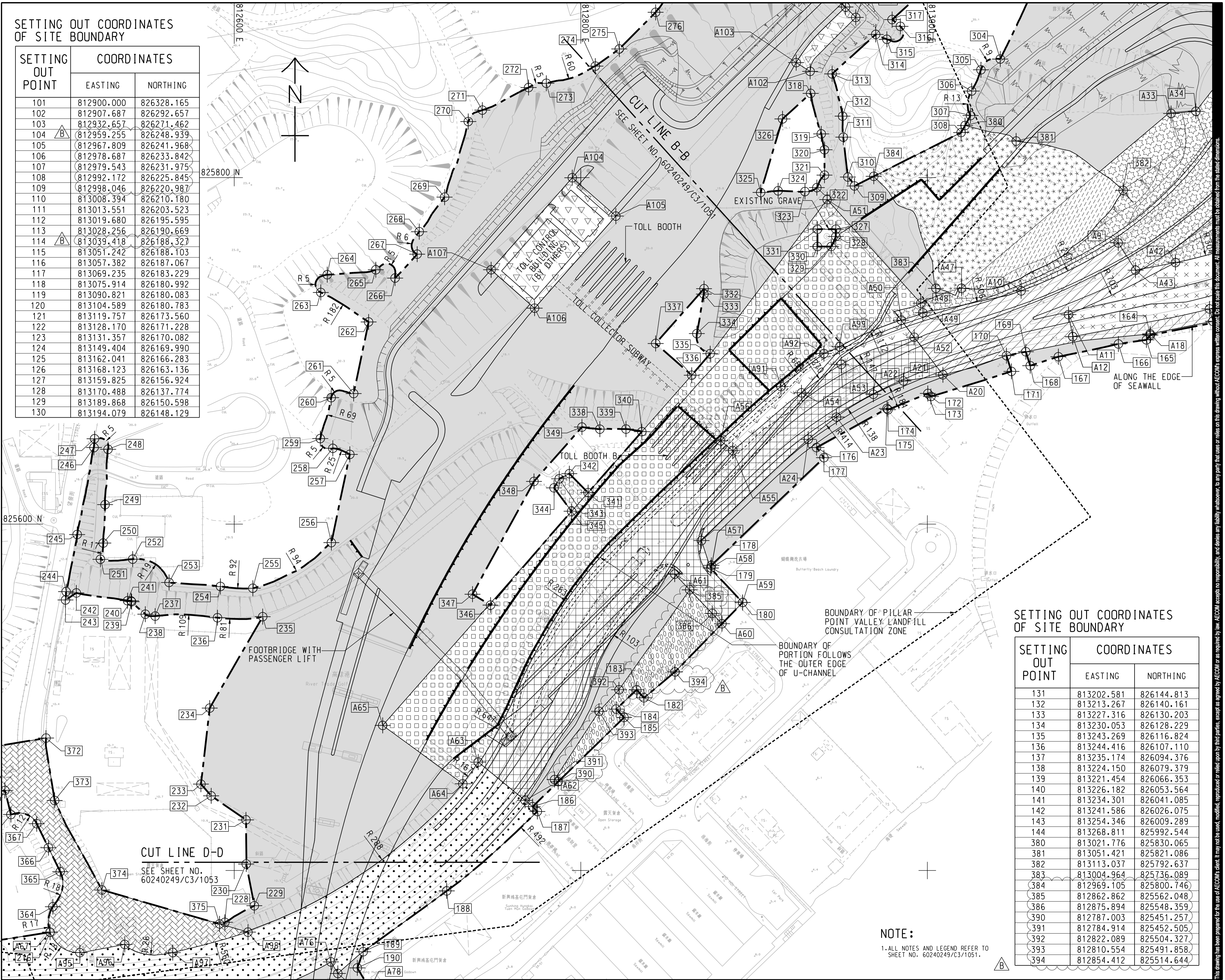
SHEET TITLE
 圖紙名稱
PORTIONS OF SITE AND SITE BOUNDARY SETTING OUT PLAN

SHEET NUMBER
 圖紙編號
 60240249/C3/1051B

SHEET 1 OF 3

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
香港橋樑及港務工程處
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分列工程師有限公司

ISSUE/REVISION

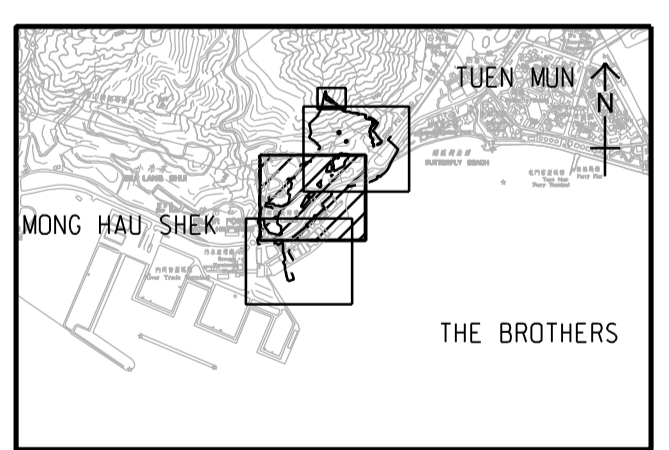
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| A | FEB. 14 | TENDER ADDENDUM NO. 1 | CWN |
| - | JAN. 14 | TENDER DRAWING | CWN |

STATUS

擬定

SCALE
比例
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DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖
1:50000

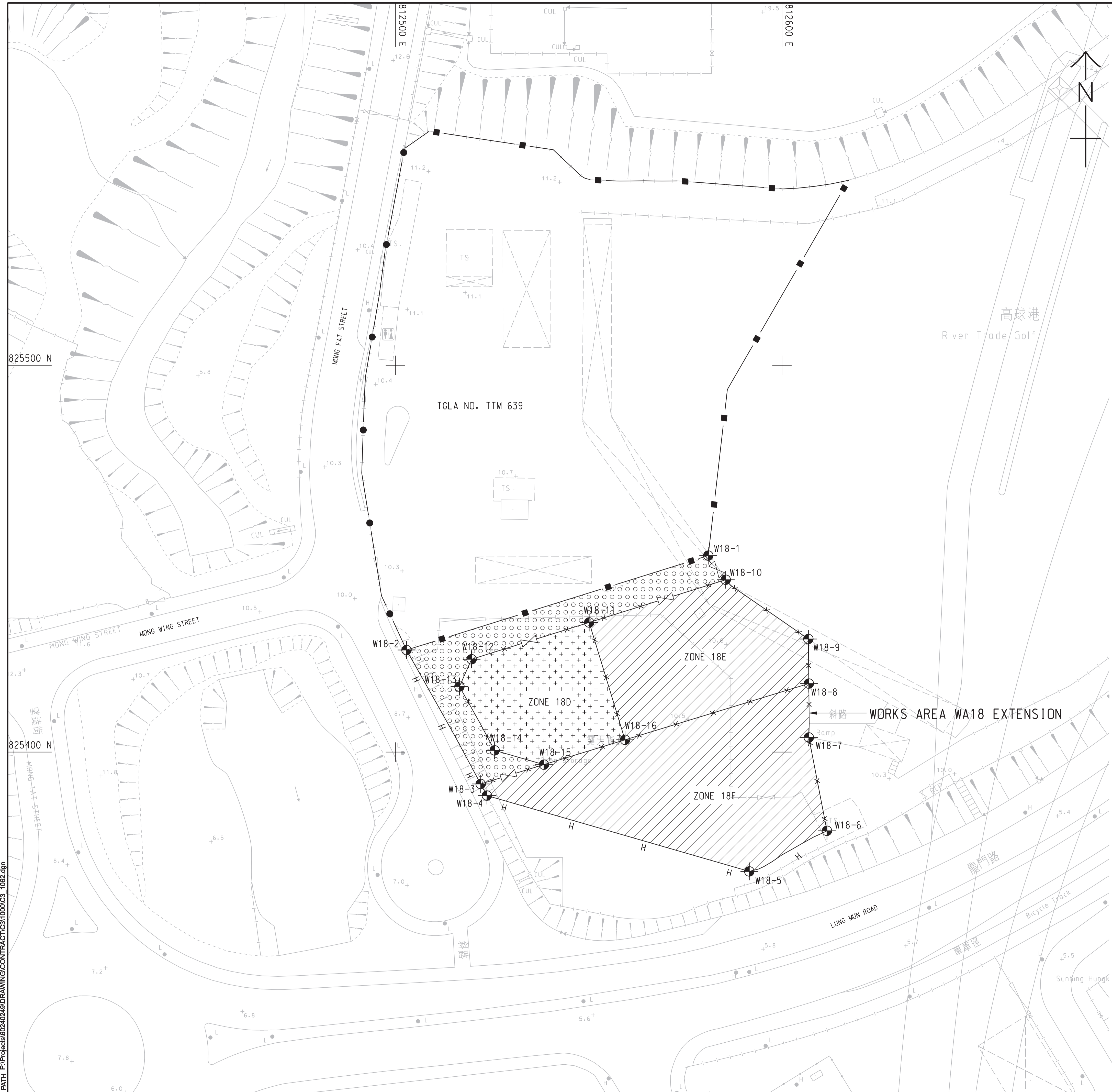


PROJECT NO.
項目編號
60240249
CONTRACT NO.
合約編號
HY/2013/12

SHEET TITLE
圖紙名稱
PORTIONS OF SITE AND SITE BOUNDARY SETTING OUT PLAN
SHEET 2 OF 3

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發展處
 Hong Kong - Zhuhai - Macao Bridge
 Hong Kong Project Management Office

CONSULTANT
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| - | 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

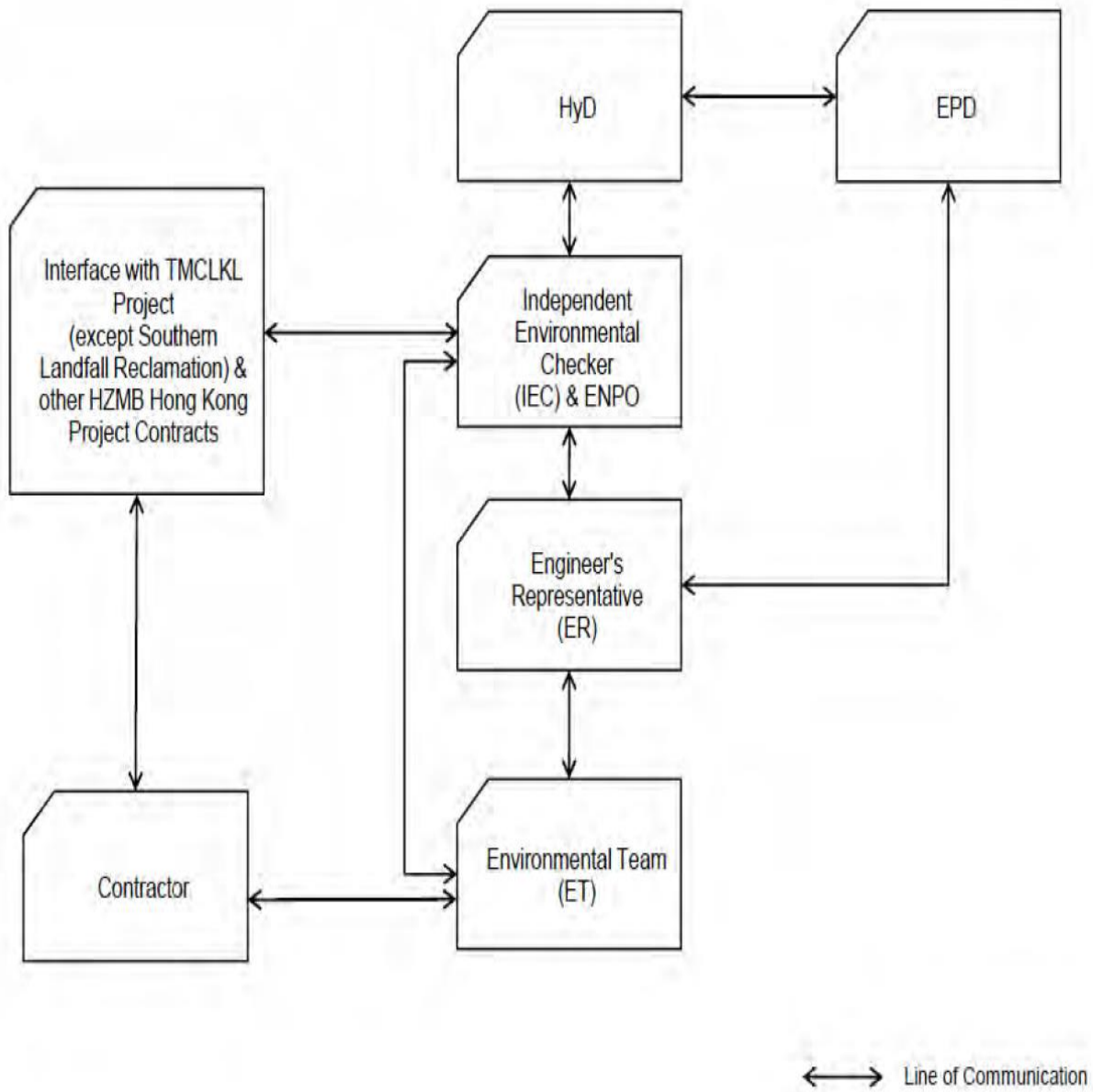
SHEET TITLE
 圖紙名稱
 WORKS AREA AND HOARDING PLAN

SHEET NUMBER
 圖紙編號
 60240249/C3/1062B

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Appendix C

Environmental Management Organization Chart



Project Organization chart

Organization chart of the Contractor

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

| Organization | Project Role | Name of Key Staff | Tel No | Fax No. |
|---------------------|---|--------------------------|---------------|----------------|
| HyD | Employer | Mr. Stephen W.C. Chan | 2762 3669 | 3188 6614 |
| AECOM | Principal Resident Engineer | Mr. S.W. Fok | 2218 7209 | 2218 7399 |
| AECOM | Chief Resident Engineer | Mr. Albert Yu | 2218 7288 | 2218 7399 |
| AECOM | Resident Engineer (S&E) | Mr. Kelvin Yeung | 22187289 | 2218 7399 |
| Ramboll | Environmental Project Office (ENPO) | Mr. YH Hui | 3465 2850 | 3465 2899 |
| Ramboll | Independent Environmental Checker (IEC) | Dr. FC Tsang | 3465 2851 | 3465 2899 |
| CKJV | Deputy Project Manager | Mr. Raymond Suen | 2253 8309 | 2253 8399 |
| CKJV | Site Agent | Mr. Wilson Lau | 2253 8300 | 2253 8399 |
| CKJV | Safety and Environmental Manager | Mr. Winson Chung | 2273 3185 | 2375 3655 |
| CKJV | Environmental Officer | Mr. Thomas Tang | 2253 8300 | 2253 8399 |
| CKJV | Environmental Supervisor | Mr. Tommy Law | 2253 8300 | 2253 8399 |
| CKJV | Environmental Supervisor | Mr. Alex Li | 2253 8300 | 2253 8399 |
| AUES | Environmental Team Leader | Mr. T. W. Tam | 2959 6059 | 2959 6079 |
| AUES | Environmental Consultant | Miss Nicola Hon | 2959 6059 | 2959 6079 |
| AUES | Environmental Consultant | Mr. Ben Tam | 2959 6059 | 2959 6079 |
| HKL | Registered Landscape Architect | Kenneth Ng | 2866 3903 | -- |

Legend:

HyD (Employer) – Highways Department

AECOM (Engineer) – AECOM Asia Co. Ltd.

CKJV (Main Contractor) – CRBC-Kaden Joint Venture

Ramboll (ENPO and IEC) – Ramboll Hong Kong Limited

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

HKL(RLA) – Hong Kong Landscape

Appendix D

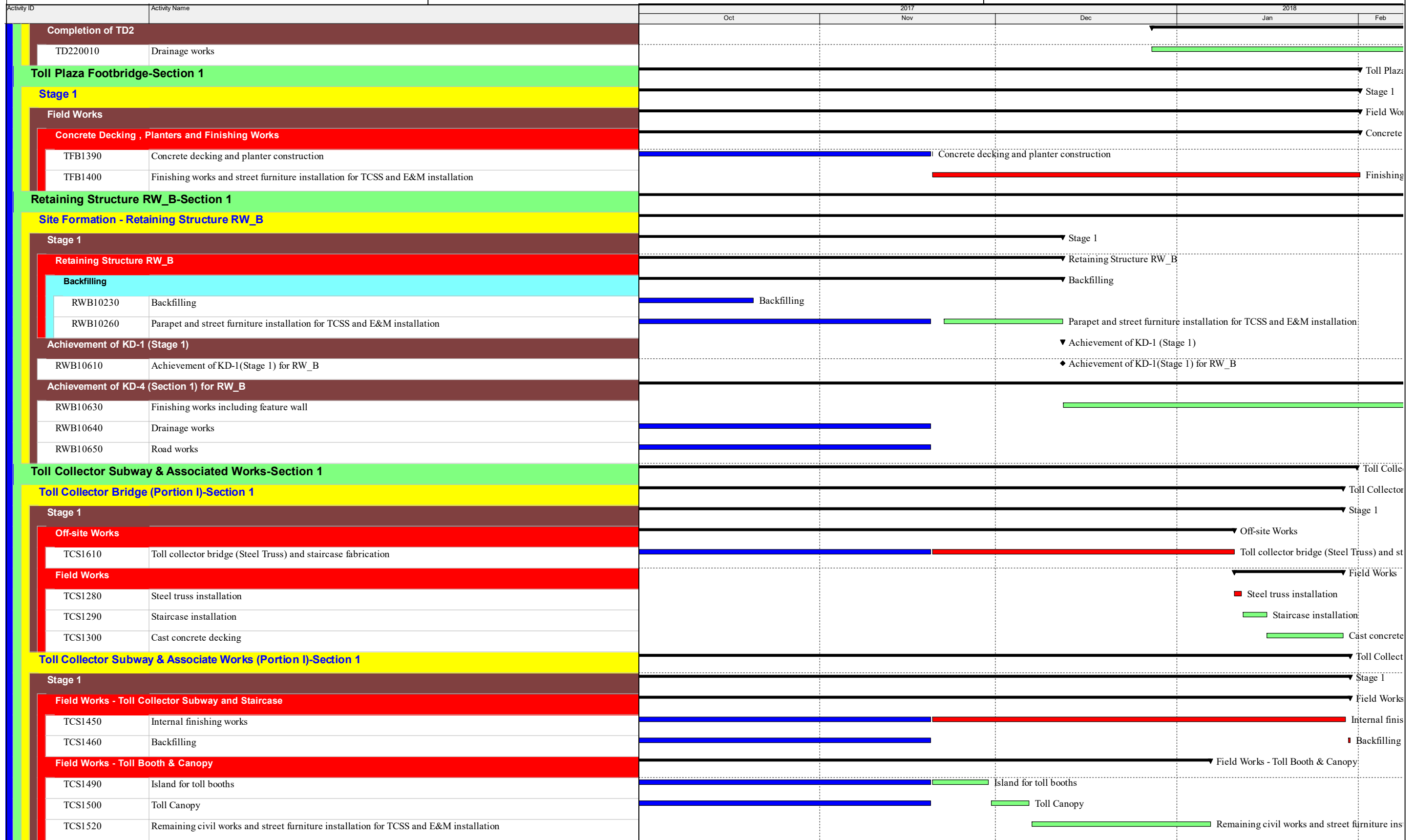
Construction Programme

| Activity ID | Activity Name | 2017 | | 2018 | |
|--|--|------|-----|------|-----|
| | | Oct | Nov | Dec | Jan |
| HY/2013/12 TMCLK Northern Connection Toll Plaza and Associated-Works Programme-Rev.4A Monthly I | | | | | |
| Site Possession Dates | | | | | |
| PPD1140 | Portion F Possession Date | | | | |
| Dismantling of HY/2012/04 Project Office at WA6 | | | | | |
| DM10010 | Appointment of specialist subcontractor for demolition | | | | |
| Instrumentation and Monitoring | | | | | |
| Ground Settlement Marker | | | | | |
| IM10110 | Installation of GSM35-36,GSM44,GSM47-50(Portion F) | | | | |
| Piezometer/Standpipe | | | | | |
| IM50025 | GI for PADH13 and installation piezometer | | | | |
| IM60030 | GI for PADH14&15 and installation piezometer | | | | |
| Toll Plaza Decking TD1-Section 1 | | | | | |
| Stage 1 | | | | | |
| Field Works | | | | | |
| Deck Construction | | | | | |
| In-situ Deck and Precast Beam | | | | | |
| TD121150 | M.J installation | | | | |
| Parapet and Finishing Work | | | | | |
| Parapet and Railing Installation | | | | | |
| TD120940 | Parapet and planter installation | | | | |
| TD120990 | Railing installation and street furniture installation for TCSS and E&M installation | | | | |
| Toll Booth Canopy | | | | | |
| Toll both canopy and island | | | | | |
| TD121270 | Toll booth island | | | | |
| TD121290 | Canopy,Completion civil provision works for TCSS and E&M | | | | |
| Completion of Stage 1 For TD1 | | | | | |
| TD120010 | Achievement of KD-1(stage 1) for TD1 | | | | |
| Completion of TD1 in Section 1 | | | | | |
| Drainage Works and Water Works | | | | | |
| TD121000 | Water works | | | | |
| Toll Plaza Decking TD2-Section 1 | | | | | |
| Field Works | | | | | |
| Deck Construction | | | | | |
| TD220720 | Falsework removal and M.J installation | | | | |
| Parapet and Finishing Works | | | | | |
| TD220210 | Construct parapet ,planter and street furniture installation for TCSS and E&M installation | | | | |
| TD220230 | Feature groove,Completion civil provision works for TCSS and E&M | | | | |
| Miscellaneous Works | | | | | |
| TD220700 | Achievement of KD-1(Stage 1)for TD2 | | | | |

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

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

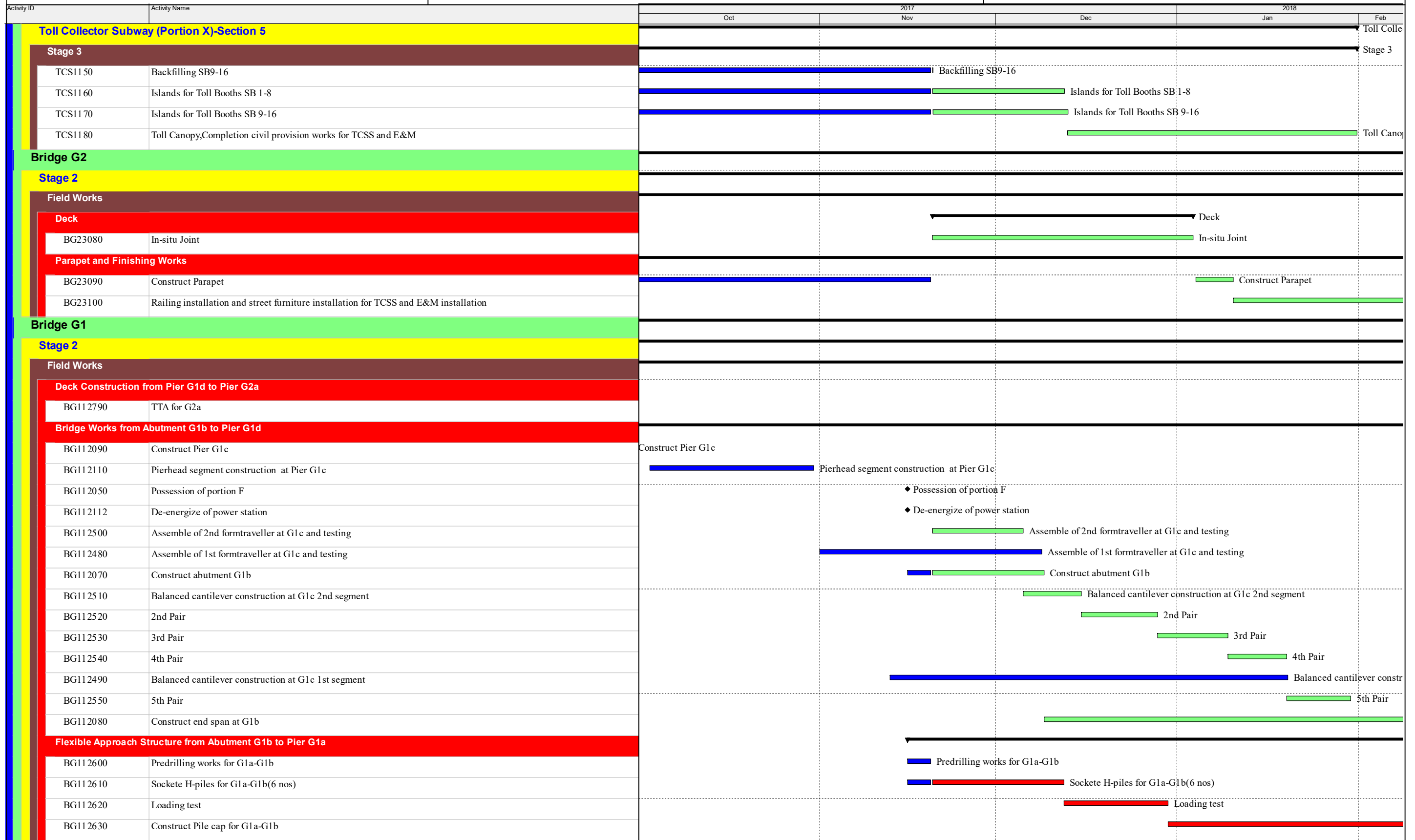
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| 28-11-17 | 4 | | |
| | | | |



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

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

| Date | Revision | Checked | Approved |
|----------|----------|---------|----------|
| 28-11-17 | 4 | | |
| | | | |



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

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

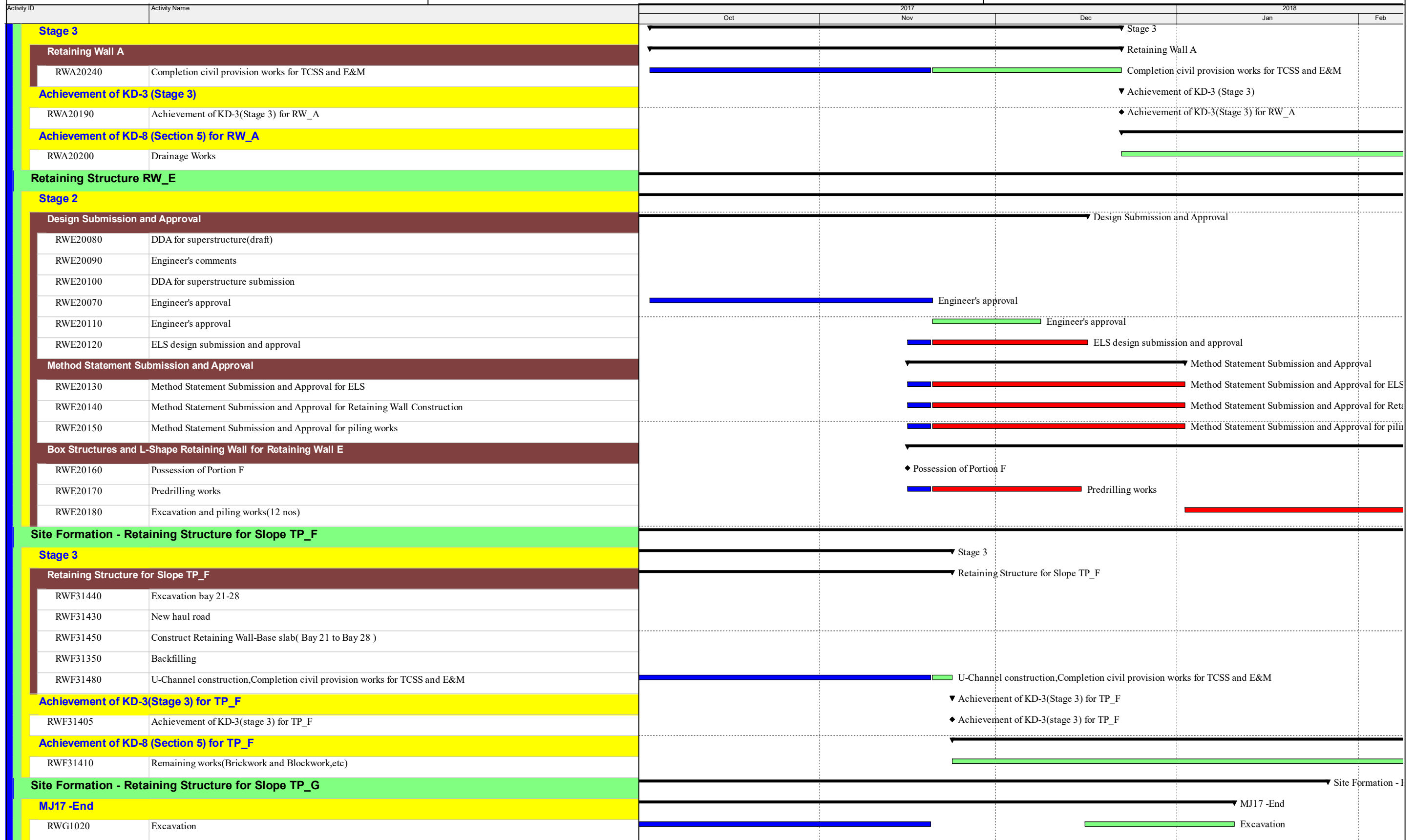
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|----------|----------|---------|----------|
| 28-11-17 | 4 | | |
| | | | |



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

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

| Date | Revision | Checked | Approved |
|----------|----------|---------|----------|
| 28-11-17 | 4 | | |
| | | | |



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

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

| Date | Revision | Checked | Approved |
|----------|----------|---------|----------|
| 28-11-17 | 4 | | |
| | | | |

| Activity ID | Activity Name | 2017 | | | | | 2018 | |
|--|--|------|-----|-----|-----|-----|------|---|
| | | Oct | Nov | Dec | Jan | Feb | | |
| RWG1010 | G.I and Trial Pit | | | | | | | G.I and Trial Pit |
| MJ16-MJ17 | | | | | | | | MJ16-MJ17 |
| RWG1070 | Excavation | | | | | | | Excavation |
| Site Formation - Slope TP_A & Associated Works | | | | | | | | Site Formation - Slope TP_A & Associated Works |
| Achievement of KD-3(Stage 3) for Slope A | | | | | | | | Achievement of KD-3(Stage 3) for Slope A |
| TPA41830 | Achievement of KD-3(Stage 3) for slope A | | | | | | | ◆ Achievement of KD-3(Stage 3) for slope A |
| TPA41810 | Remaining civil works and drainge works(After tunnel civil works construction) | | | | | | | Remaining civil works and drainge works(After tunnel civil works) |
| Site Formation - Slope TP_B & Associated Works | | | | | | | | |
| Achievement of KD-3(Stage 3) for Slope B | | | | | | | | Achievement of KD-3(Stage 3) for Slope B |
| TPB41730 | Achievement of KD-3(Stage 3) for slope B | | | | | | | Achievement of KD-3(Stage 3) for slope B |
| Achievement of KD-8 (Section 5) for Slope B | | | | | | | | |
| TPB41760 | Remaining works inculde landscape works and establishment works | | | | | | | |
| Site Formation - Slope TP_E & Associated Works | | | | | | | | |
| Stage 3 | | | | | | | | Stage 3 |
| Slope Feature - Slope TP_E Remaing Section and 5SE-D/C116 | | | | | | | | Slope Feature- Slope TP_E Remaing Section and 5SE-D/C116 |
| TPE62300 | Excavation of Rock (7,920m3) for slope E2a | | | | | | | |
| TPE62700 | Achievement of KD-3(Stage 3) for slope E | | | | | | | ◆ Achievement of KD-3(Stage 3) for slope E |
| Achievement of KD-8(Section 5) for Slope E | | | | | | | | |
| TPE65320 | Remaining works inculde landscape works and establishment works | | | | | | | |
| Site Formation - Slope Upgrading Works | | | | | | | | |
| Stage 3 (Other Slope Features) | | | | | | | | |
| Slope Feature - 5SE-D/C170 | | | | | | | | |
| SFW10105 | Raking Drain Construction | | | | | | | Raking Drain Construction |
| SFW10110 | Drainge, U-channel (410m) and Handrailing | | | | | | | Drainge, U-channel (410m) and Handrailing |
| SFW10850 | Achievement of KD-3(Stage 3) | | | | | | | A |
| Slope Feature - 5SE-D/C165 | | | | | | | | Slope Feature - 5SE-D/C165 |
| SFW10820 | Drainge, U-channel (80m) and Handrailing | | | | | | | Drainge, U-channel (80m) and Handrailing |
| SFW10830 | Hydroseeding and Erosion Control Mat | | | | | | | Hydroseeding and Erosion Control Mat |
| SFW10870 | Achievement of KD-3(Stage 3) | | | | | | | Achievement of KD-3(Stage 3) |
| Slope Feature - 5SE-D/C150 | | | | | | | | Slope Feature - 5SE-D/C150 |
| SFW10890 | Achievement of KD-3(Stage 3) | | | | | | | ◆ Achievement of KD-3(Stage 3) |
| Slope Feature - 5SE-D/C152 | | | | | | | | Slope Feature - 5SE-D/C152 |
| SFW10250 | Hydroseeding and Erosion Control Mat | | | | | | | Hydroseeding and Erosion Control Mat |
| SFW10910 | Achievement of KD-3(Stage 3) | | | | | | | ◆ Achievement of KD-3(Stage 3) |
| Slope Feature - 5SE-D/C121 | | | | | | | | Slope Feature - 5SE-D/C121 |
| SFW10930 | Achievement of KD-3(Stage 3) | | | | | | | ◆ Achievement of KD-3(Stage 3) |
| Slope Feature - 5SE-D/C122 | | | | | | | | Slope Feature - 5SE-D/C122 |
| SFW10950 | Achievement of KD-3(Stage 3) | | | | | | | ◆ Achievement of KD-3(Stage 3) |
| Slope Feature - 5SE-D/C14 | | | | | | | | Slope Feature - 5SE-D/C14 |

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

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

| Date | Revision | Checked | Approved |
|----------|----------|---------|----------|
| 28-11-17 | 4 | | |
| | | | |

| Activity ID | Activity Name | 2017 | | | | | 2018 | | | | | | | |
|-----------------------------------|--|------|-----|-----|-----|-----|------|-----|-----|-----|--|--|--|--|
| | | Oct | Nov | Dec | Jan | Feb | Jan | Feb | Mar | Apr | | | | |
| SFW10350 | Slope Modification | | | | | | | | | | | | | |
| SFW10360 | Drainage, U-channel (60m) and Handrailing | | | | | | | | | | | | | |
| SFW10370 | Hydroseeding and Erosion Control Mat | | | | | | | | | | | | | |
| SFW10970 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C149 | | | | | | | | | | | | | | |
| SFW10380 | Complete slope 5SE-D/C152 | | | | | | | | | | | | | |
| SFW10990 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C115 | | | | | | | | | | | | | | |
| SFW11010 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C18 | | | | | | | | | | | | | | |
| SFW10460 | Complete Bridge TD2 Decking | | | | | | | | | | | | | |
| SFW10470 | Slope Modification | | | | | | | | | | | | | |
| SFW10480 | Drainage, U-channel (60m) and Handrailing | | | | | | | | | | | | | |
| SFW10490 | Hydroseeding and Erosion Control Mat | | | | | | | | | | | | | |
| SFW11030 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C21 | | | | | | | | | | | | | | |
| SFW10550 | Slope Modification | | | | | | | | | | | | | |
| SFW10560 | Rock Mapping and Stabilization | | | | | | | | | | | | | |
| SFW11070 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| SFW10570 | Hydroseeding and Erosion Control Mat | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C171 | | | | | | | | | | | | | | |
| SFW10610 | Hydroseeding and Erosion Control Mat | | | | | | | | | | | | | |
| SFW10580 | Complete slope 5SE-D/C21 | | | | | | | | | | | | | |
| SFW11090 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C16 | | | | | | | | | | | | | | |
| SFW10630 | Slope Modification | | | | | | | | | | | | | |
| SFW10640 | Rock Mapping and Stabilization | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/F60 | | | | | | | | | | | | | | |
| SFW10670 | Complete of Bridge TD2 decking | | | | | | | | | | | | | |
| SFW10680 | Slope Modification | | | | | | | | | | | | | |
| SFW10690 | Drainage, U-channel (360m) and Handrailing | | | | | | | | | | | | | |
| SFW11130 | Achievement of KD-3(Stage 3) | | | | | | | | | | | | | |
| SFW10700 | Hydroseeding and Erosion Control Mat | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C158 | | | | | | | | | | | | | | |
| SFW10710 | Complete backfilling of RW_A | | | | | | | | | | | | | |
| SFW10720 | Slope Modification | | | | | | | | | | | | | |
| Slope Feature - 5SE-D/C17 | | | | | | | | | | | | | | |
| SFW10750 | Slope Modification | | | | | | | | | | | | | |
| SFW10760 | Drainage, U-channel (180m) and Handrailing | | | | | | | | | | | | | |

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

**CRBC - Kaden JV
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|----------|----------|---------|----------|
| 28-11-17 | 4 | | |
| | | | |

| Activity ID | Activity Name | 2017 | | 2018 | | |
|---|--|------------|-----|-------------|-----|---------------------|
| | | Oct | Nov | Dec | Jan | Feb |
| SFW10770 | Hydroseeding and Erosion Control Mat | | | | | Hydroseeding and |
| SFW11170 | Achievement of KD-3(Stage 3) | | | | | ◆ Achievement of KI |
| Vehicular Underpass TN-01 | | | | | | |
| Stage 3 | | | | | | |
| Road and Drainage Work, Utilities Works in Tunnel | | | | | | |
| Road and Drainage Work, Utilities Works in Tunnel | | | | | | |
| UDP34000 | DN300 | [Blue bar] | | | | |
| UDP34010 | DN100 | [Blue bar] | | | | |
| UDP34020 | PCCW | [Blue bar] | | [Red bar] | | |
| UDP34030 | Hutchison Global Communication Cable | [Blue bar] | | [Red bar] | | |
| UDP34040 | Hong Kong Boaroband Network | [Blue bar] | | [Red bar] | | |
| UDP34050 | Wharf T&T Duct and Joint Box | [Blue bar] | | [Red bar] | | |
| UDP34060 | New World Telecom | [Blue bar] | | [Red bar] | | |
| UDP34070 | Town Gas | [Blue bar] | | [Red bar] | | |
| UDP34080 | Smartone Cable | [Blue bar] | | [Red bar] | | |
| UDP34090 | HKC Cable | [Blue bar] | | [Red bar] | | |
| UDP34100 | Pubic Lighting | [Blue bar] | | [Red bar] | | |
| UDP34110 | CLP | [Blue bar] | | [Red bar] | | |
| UDP34130 | Completion of this stage civil provision for E&M, TCSS | [Blue bar] | | [Red bar] | | |
| Achievement of KD-8 (Section 5) for TN-01 | | | | | | |
| UDP20640 | Road works and Remaining works(Sundry Metalwork,etc) | [Blue bar] | | | | |
| Road and Drainage Work ,Utilities Works at for Lung Fu Road Roundabout | | | | | | |
| Section 3 | | | | | | |
| Utilites installation ,road and drainage works (TTA stage 1) | | | | | | |
| LFR10440 | TTA for Stage 2-0 | [Blue bar] | | | | |
| LFR10270 | Filling Works | [Blue bar] | | [Green bar] | | |
| Utilites installation ,road and drainage works (TTA Stage 2-0) | | | | | | |
| LFR10450 | Drainage Work | [Blue bar] | | | | |
| LFR10460 | DN100,300,700,800 | [Blue bar] | | | | |
| LFR10470 | PCCW | [Blue bar] | | [Red bar] | | |
| LFR10480 | Hutchison Global Communication Cable | [Blue bar] | | [Red bar] | | |
| LFR10490 | Hong Kong Boaroband Network | [Blue bar] | | [Red bar] | | |
| LFR10500 | Wharf T&T Duct and Joint Box | [Blue bar] | | [Red bar] | | |
| LFR10510 | New World Telecom | [Blue bar] | | [Red bar] | | |
| LFR10520 | Town Gas | [Blue bar] | | [Red bar] | | |
| LFR10530 | Smartone Cable | [Blue bar] | | [Red bar] | | |
| LFR10550 | Pubic Lighting | [Blue bar] | | [Red bar] | | |
| LFR10560 | CLP + CRD | [Blue bar] | | [Red bar] | | |
| LFR10570 | TraxComm | [Blue bar] | | [Red bar] | | |

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█ Actual Work ◆ Milestone
█ Remaining Work ▼ Summary

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| 28-11-17 | 4 | | |
| | | | |

| Activity ID | Activity Name | 2017 | | | | | 2018 | |
|---|--|------|-----|-----|-----|-----|------|--|
| | | Oct | Nov | Dec | Jan | Feb | | |
| LFR10540 | HKC Cable | | | | | | | |
| LFR10580 | Completion of this stage civil provision for E&M, TCSS | | | | | | | |
| LFR10590 | Irrigation System (m) | | | | | | | |
| LFR10600 | Road Pavement | | | | | | | |
| LFR10610 | TTA for Stage 2 | | | | | | | |
| Utilites installation ,road and drainage works (TTA Stage 2) | | | | | | | | |
| LFR10620 | Filling Works | | | | | | | |
| LFR10680 | PCCW | | | | | | | |
| LFR10630 | Street Furniture | | | | | | | |
| LFR10660 | Drainage Work | | | | | | | |
| Road and Drainage Work ,Utilities Works at Lung Mun Road | | | | | | | | |
| Lung Mun Road (Westbound) | | | | | | | | |
| Ho Suen Street North | | | | | | | | |
| | | | | | | | | |
| LMRWA1150 | Irrigation System | | | | | | | |
| LMRWA1160 | Road Pavement | | | | | | | |
| Ho Suen Street South | | | | | | | | |
| LMRWA1190 | DN200 CHK 0 - 50 | | | | | | | |
| LMRWA1200 | DN300 CHE 0 - 116 | | | | | | | |
| LMRWA1210 | DN100 CHG 0 - 112 | | | | | | | |
| LMRWA1170 | Drainage Work | | | | | | | |
| LMRWA1220 | PCCW | | | | | | | |
| LMRWA1230 | Hutchison Global Communication Cable | | | | | | | |
| LMRWA1240 | Hong Kong Boaroband Network | | | | | | | |
| LMRWA1250 | Wharf T&T Duct and Joint Box | | | | | | | |
| LMRWA1260 | New World Telecom | | | | | | | |
| LMRWA1241 | Street Furniture(Including eastbound) | | | | | | | |
| LMRWA1242 | Sign Gantry(Including eastbound) | | | | | | | |
| LMRWA1270 | Town Gas | | | | | | | |
| Utilites installation ,road and drainage works for East Portal | | | | | | | | |
| EPA1000 | Rock Cutting | | | | | | | |
| EPA1020 | DN300 CHA 0 - 175&DN100 | | | | | | | |
| EPA1030 | Street furniture and sign gantry | | | | | | | |
| EPA1040 | PCCW | | | | | | | |
| EPA1050 | Hutchison Global Communication Cable | | | | | | | |
| EPA1060 | Hong Kong Boaroband Network | | | | | | | |
| EPA1070 | Wharf T&T Duct and Joint Box | | | | | | | |
| EPA1080 | New World Telecom | | | | | | | |
| EPA1090 | Town Gas | | | | | | | |
| EPA1100 | Smartone Cable | | | | | | | |

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

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| | | | |

| Activity ID | Activity Name | 2017 | | 2018 | | |
|--|--|---------------|-----|------|-----|--|
| | | Oct | Nov | Dec | Jan | Feb |
| EPA1110 | HKC Cable | [Actual Work] | | | | [Critical Remaining Work] |
| EPA1120 | Pubic Lighting | [Actual Work] | | | | [Critical Remaining Work] |
| EPA1130 | CLP | [Actual Work] | | | | [Critical Remaining Work] |
| EPA1140 | TraxComm | [Actual Work] | | | | [Critical Remaining Work] |
| Utilites installation ,road and drainage works near portion D | | | | | | |
| TOLLA1030 | PCCW | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1040 | Hutchison Global Communication Cable | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1050 | Hong Kong Boaroband Network | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1060 | Wharf T&T Duct and Joint Box | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1070 | New World Telecom | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1080 | Town Gas | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1090 | Smartone Cable | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1100 | HKC Cable | [Actual Work] | | | | [Remaining Work] |
| TOLLA1092 | Street Furniture | [Actual Work] | | | | [Critical Remaining Work] |
| TOLLA1094 | Sign Gantry | [Actual Work] | | | | [Critical Remaining Work] |
| Sewage, Irrigation and Road& Drainage Works | | | | | | |
| SAII0020 | Sewage, irrigation and road&drainage works - RW_B-north side | [Actual Work] | | | | [Remaining Work] |
| SAII0060 | Sewage, irrigation and road&drainage works -G2-north side | [Actual Work] | | | | [Remaining Work] |
| SAII0070 | Sewage, irrigation and road&drainage works- G2-south side | [Actual Work] | | | | [Remaining Work] |
| SAII0030 | Sewage, irrigation and road&drainage works - RW_B-south side | [Actual Work] | | | | [Remaining Work] |
| SAII0040 | Sewage, irrigation and road&drainage works -G1&H1-north side | [Actual Work] | | | | [Remaining Work] |
| SAII0050 | Sewage, irrigation and road&drainage works - G1&H1-south side | [Actual Work] | | | | [Remaining Work] |
| Achievement of Key Dates | | | | | | |
| AK10300 | Achievement of KD-3(Stage 3) for slope B | | | | | ◆ Achievement of KD-3(Stage 3) for slope B |
| AK10330 | Achievement of KD-8(Section 5) for slope C | | | | | ◆ Achievement of KD-8(Section 5) for slope C |
| AK10320 | Achievement of KD-3(Stage 3) for slope C | | | | | ◆ Achievement of KD-3(Stage 3) for slope C |
| AK10250 | Achievement of KD-3(stage 3) for TP_F | | | | | ◆ Achievement of KD-3(stage 3) for TP_F |
| AK10060 | Achievement of KD-1(Stage 1) for RW_B | | | | | ◆ Achievement of KD-1(Stage 1) for RW_B |
| AK10210 | Achievement of KD-3(Stage 3) for RW_A | | | | | ◆ Achievement of KD-3(Stage 3) for RW_A |
| AK10280 | Achievement of KD-3(Stage 3) for slope A | | | | | ◆ Achievement of KD-3(Stage 3) for slope A |
| AK10020 | Achievement of KD-1(Stage 1) for TD2 | | | | | ◆ Achievement of KD-1(Stage 1) for TD2 |
| AK10000 | Achievement of KD-1(stage 1) for TD1 | | | | | ◆ Achievement of KD-1(stage 1) for TD1 |
| AK10455 | Achievement of KD-3(Stage 3) for Road and draiange Works under TD1 | | | | | ◆ Achievement of K |

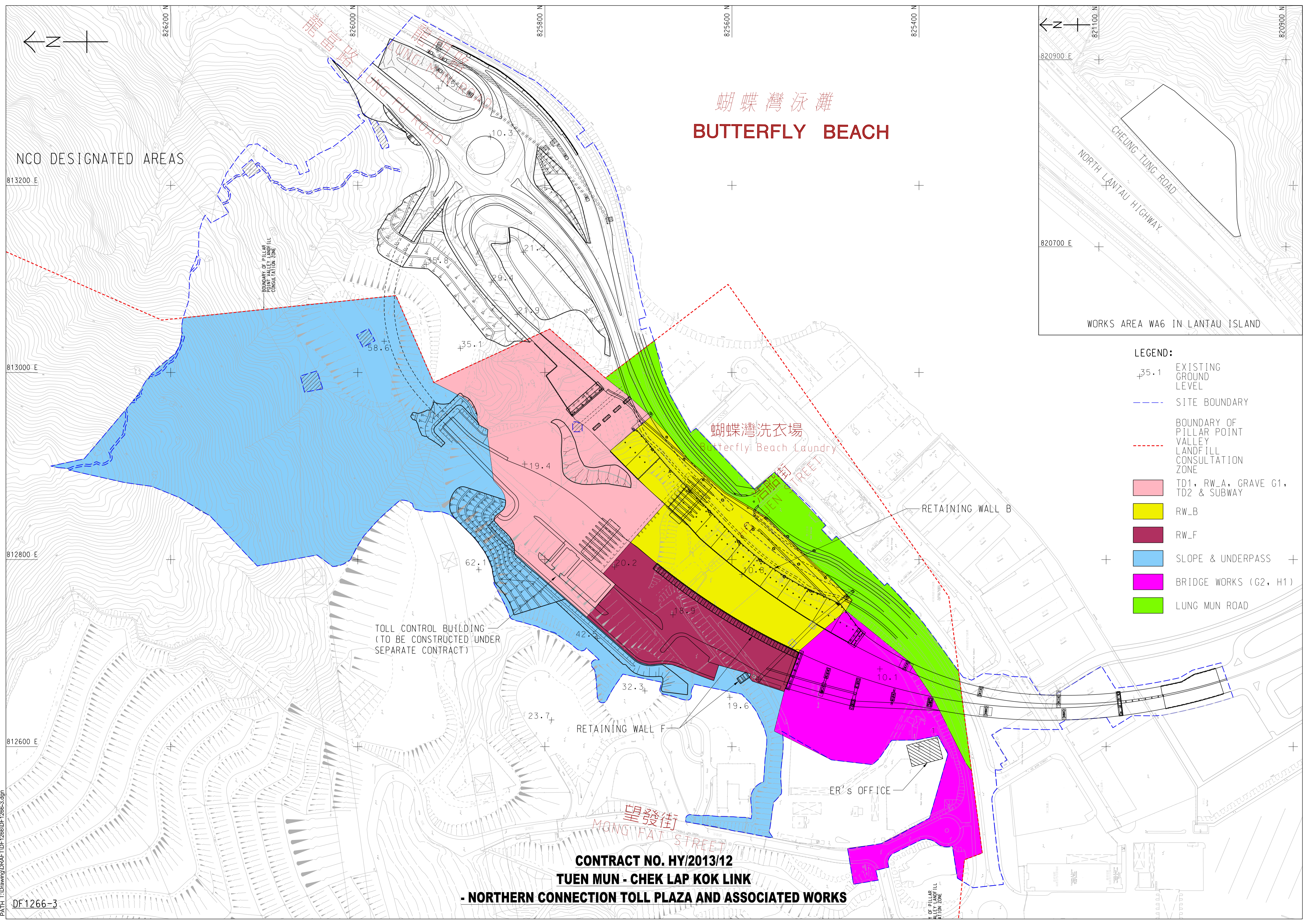
█ Remaining Level of Effort █ Critical Remaining Work
█ Actual Work ◆ Milestone
█ Remaining Work ▬ Summary

**CRBC - Kaden JV
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| 28-11-17 | 4 | | |
| | | | |

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

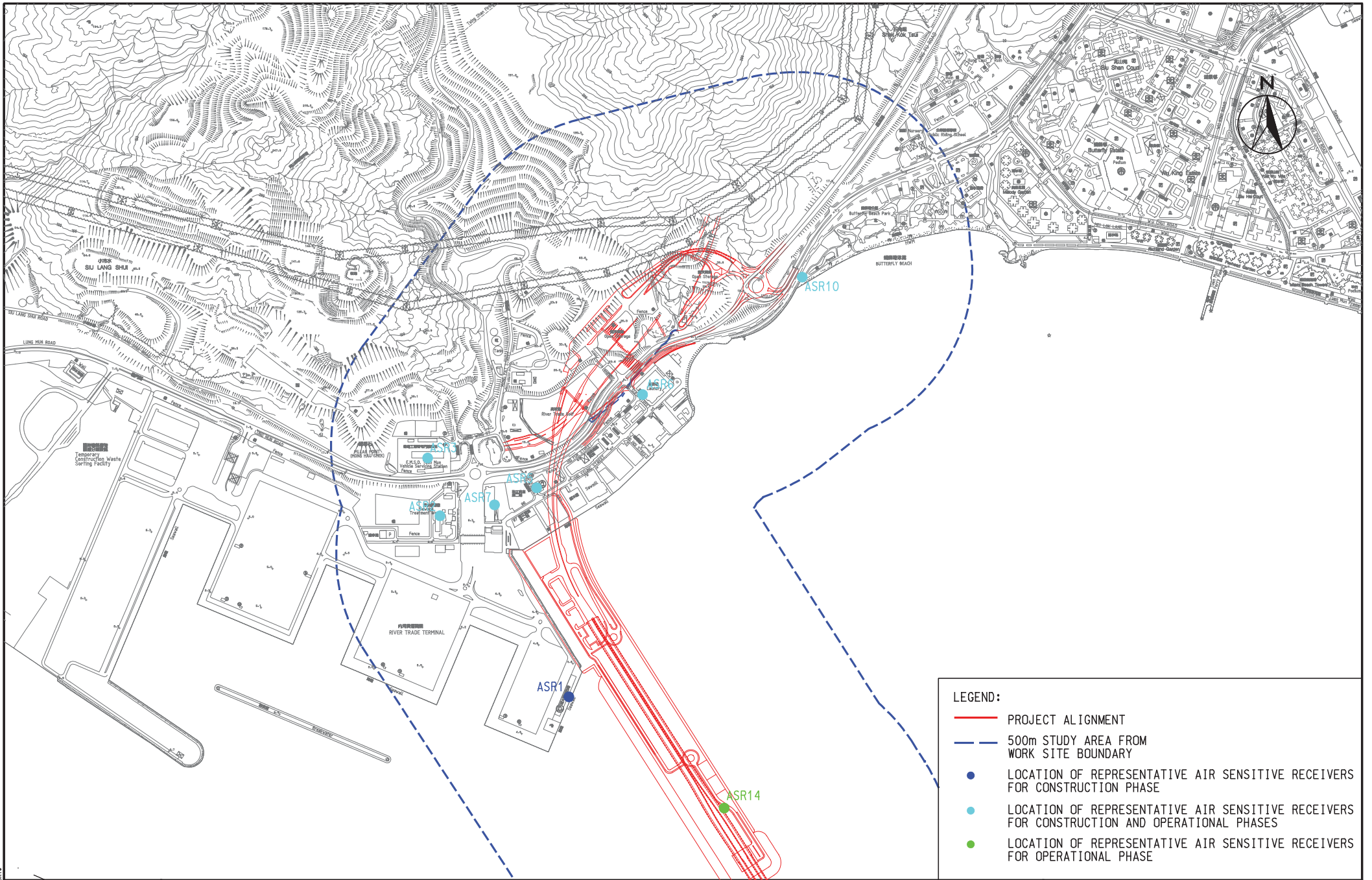
- LEGEND:**
- +35.1 EXISTING GROUND LEVEL
 - - - SITE BOUNDARY
 - - - BOUNDARY OF PILLAR POINT VALLEY LANDFILL CONSULTATION ZONE
 - TD1, RW_A, GRAVE G1, TD2 & SUBWAY
 - RW_B
 - RW_F
 - SLOPE & UNDERPASS
 - BRIDGE WORKS (G2, H1)
 - LUNG MUN ROAD

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

Plot File: byr_rasc01
 10/Mar/17 4:32:51 PM
 PATH: T:\Drawing\DRAF\1DF1266\DF1266-3.dgn

DF1266-3

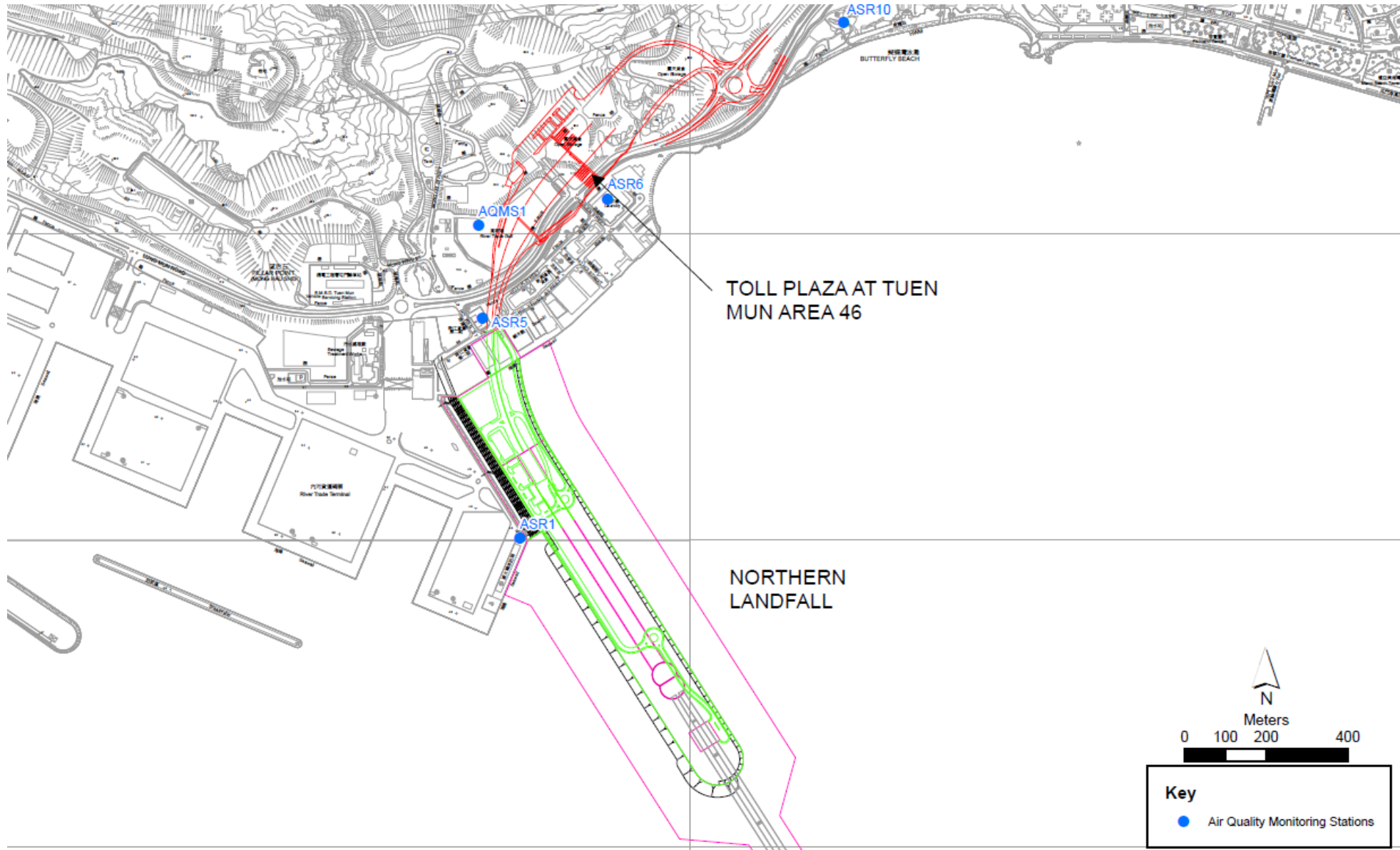


LEGEND:

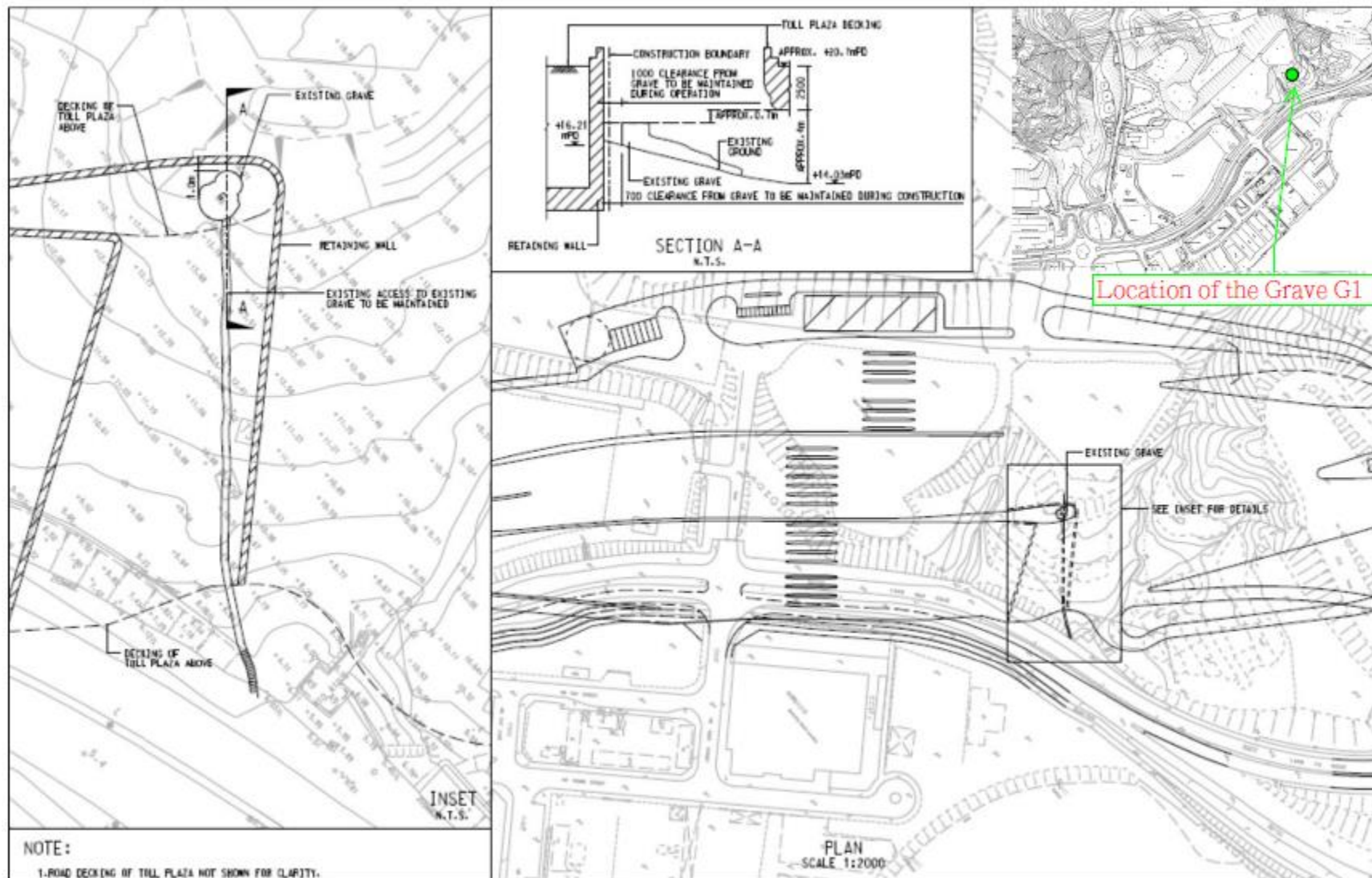
- PROJECT ALIGNMENT
- - - 500m STUDY AREA FROM WORK SITE BOUNDARY
- LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS FOR CONSTRUCTION PHASE
- LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS FOR CONSTRUCTION AND OPERATIONAL PHASES
- LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS FOR OPERATIONAL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

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

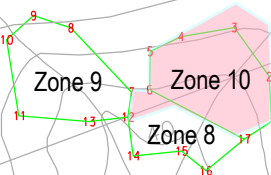
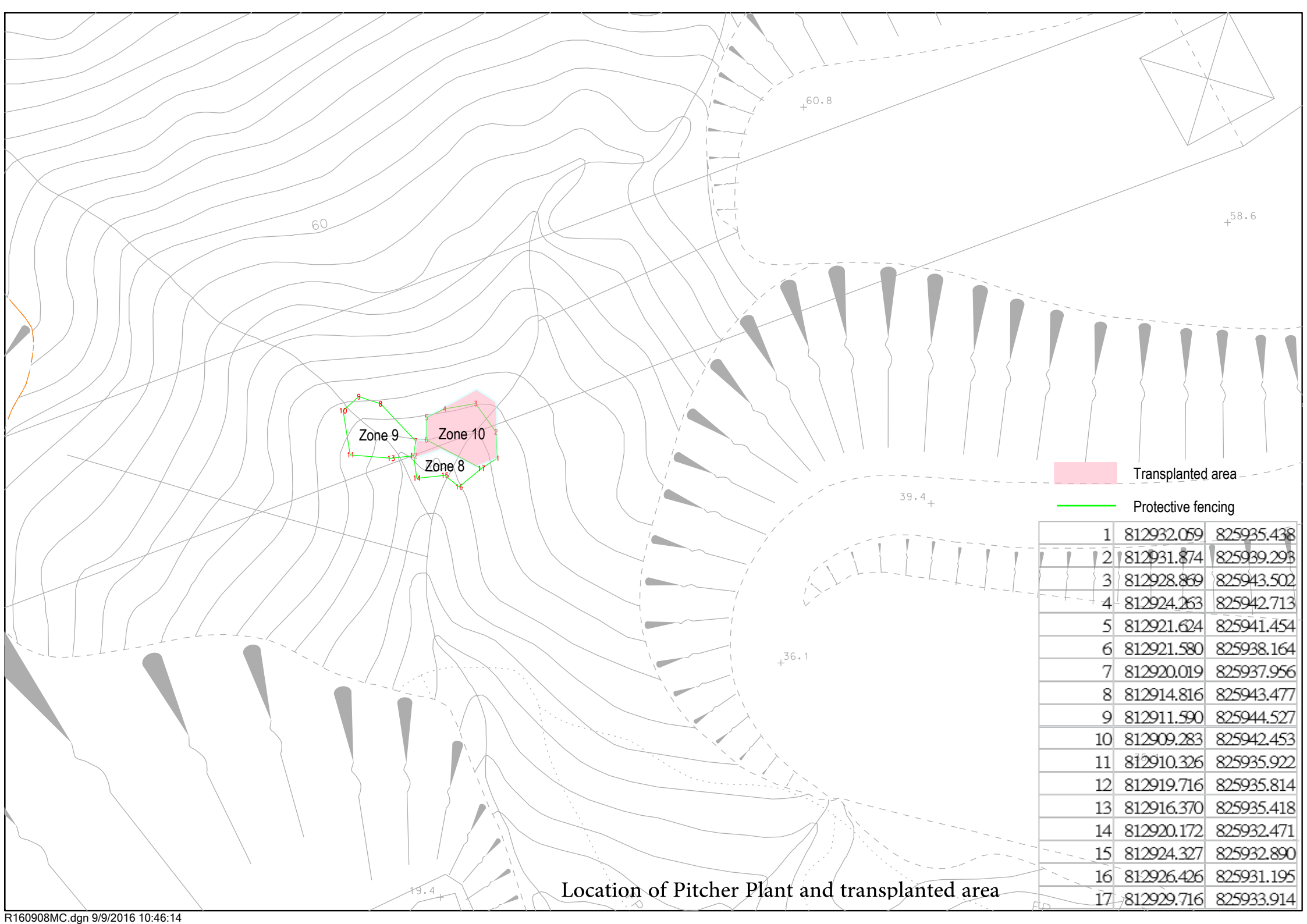
| | | | |
|-------|------------|------|--|
| SCALE | 1 : 10 000 | DATE | |
|-------|------------|------|--|



Air Quality Monitoring Location



Location of the Grave G1



Transplanted area
 Protective fencing

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

Location of Pitcher Plant and transplanted area

Appendix F

Event and Action Plan

Event and Action Plan for Air Quality

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

Event and Action Plan for Landscape and Visual Impact

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

Event / Action Plan for Cultural Heritage

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

Note:

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

Event / Action Plan for General Ecology

| Action Level | ET | IEC | ER | Contractor |
|--------------------------------|--|---|--|---|
| Non-conformity on one occasion | <ul style="list-style-type: none"> • Identify Source • Inform the IEC and the ER • Discuss remedial actions with the IEC, the ER and the Contractor • Monitor remedial actions until rectification has been completed | <ul style="list-style-type: none"> • Check report • Check the Contractor's working method • Discuss with the ET and the Contractor on possible remedial measures • Advise the ER on effectiveness of proposed remedial measures. • Check implementation of remedial measures. | <ul style="list-style-type: none"> • Notify Contractor • Ensure remedial measures are properly implemented • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of a serious nonconformity until situation rectified. | <ul style="list-style-type: none"> • Amend working methods • Rectify damage and undertake any necessary replacement |
| Repeated Non conformity | <ul style="list-style-type: none"> • Identify Source • Inform the IC(E) and the ER • Increase monitoring frequency • Discuss remedial actions with the IC(E), the ER and the Contractor • Monitor remedial actions until rectification has been completed • If exceedance stops, cease additional monitoring | <ul style="list-style-type: none"> • Check monitoring report • Check the Contractor's working method • Discuss with the ES and the Contractor on possible remedial measures • Advise the ER on effectiveness of proposed remedial measures • Supervise implementation of remedial measures | <ul style="list-style-type: none"> • Notify the Contractor • Ensure remedial measures are properly implemented • Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the works in the case of a serious nonconformity until situation rectified. | <ul style="list-style-type: none"> • Amend working methods • Rectify damage and undertake any necessary replacement |

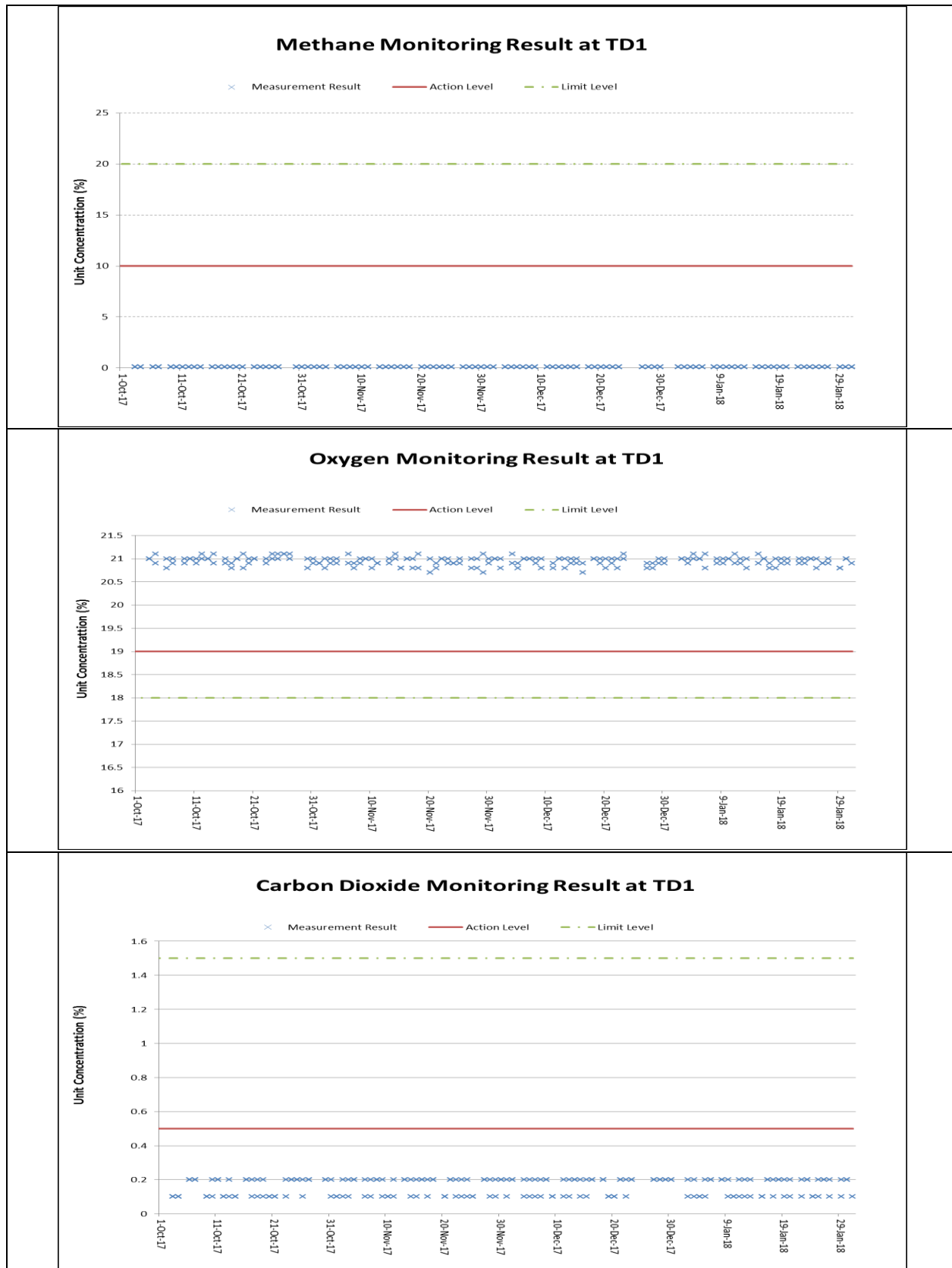
Note: ET – Environmental Specialist, IC(E) – Independent Checker (Environmental), ER – Engineer's Representative

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

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

Appendix G

Landfill Gas Monitoring Graphical Plots



Annotation:

During this reporting period, 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.

Appendix H

Waste Flow Table

Appendix A –Monthly Waste Flow Table

Monthly Summary Waste Flow Table for 2017 (year)

| Month | Annual Quantities of Inert C&D Materials Generated Monthly | | | | | | Annual Quantities of C&D Wastes Generated Monthly | | | | |
|-----------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---|--|--------------------------------|----------------|--------------------------|
| | Total Quantity Generated | Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals (see note 4) | Paper / cardboard packaging (see note 4) | Plastics & Rubber (see note 2) | Chemical Waste | Others (general refuse) |
| | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000m ³) |
| Jan | 13.334 | 0.000 | 4.543 | 7.512 | 1.062 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.217 |
| Feb | 14.323 | 0.000 | 1.066 | 10.617 | 2.566 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.074 |
| Mar | 18.707 | 0.000 | 2.116 | 12.844 | 3.413 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.334 |
| Apr | 10.839 | 0.000 | 2.291 | 7.287 | 1.099 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.162 |
| May | 10.418 | 0.000 | 2.089 | 7.793 | 0.341 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.195 |
| June | 7.465 | 0.000 | 2.111 | 4.388 | 0.789 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.177 |
| Sub-total | 75.086 | 0.000 | 14.216 | 50.441 | 9.270 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.159 |
| July | 6.783 | 0.000 | 1.961 | 3.482 | 1.120 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.220 |
| Aug | 4.154 | 0.000 | 1.768 | 1.547 | 0.660 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.179 |
| Sept | 2.373 | 0.000 | 0.367 | 0.558 | 1.274 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.174 |
| Oct | 2.716 | 0.000 | 0.754 | 0.491 | 1.215 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.256 |
| Nov | 3.874 | 0.000 | 0.871 | 1.254 | 1.557 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.192 |
| Dec | 3.223 | 0.000 | 0.347 | 0.843 | 1.680 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.353 |
| Total | 98.208 | 0.000 | 20.284 | 58.616 | 16.776 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.533 |

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 A –Monthly Waste Flow Table

Monthly Summary Waste Flow Table for 2018 (year)

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

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 I

Implementation Schedule for Environmental Mitigation Measures

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**

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

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ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE**

| | | | | | | | | | |
|-------|-----------|---|---|------------|--------------------------------|--|---|--|---|
| 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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**TUEN MUN – CHECK LAP KOK LINK – NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS
ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE**

| | | | | | | | | | |
|-------|-----------|--|---|-------------------------------|-------|---|---|--|---|
| 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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ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE**

| | | | | | | | | | |
|---------|---|---|---|------------|---|--|---|--|---|
| | | 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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 ENVIORNMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE

| | | | | | | | | | |
|---------|---|--|-------------------------------------|------------|---|--|---|--|---|
| | | 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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ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE**

| | | | | | | | | | |
|------|-----|--|---|-------------------------------------|-------|---|---|---|-----|
| | | 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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**TUEN MUN – CHECK LAP KOK LINK – NORTHERN CONNECTION TOLL PLAZA AND ASSOCIATED WORKS
ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURE IMPLEMENTATION SCHEDULE**

| | | | | | | | | | |
|------|-----|---|---|-------------------------------------|-------|---|---|---|-----|
| | | native species (OM1) | during Construction/ post construction | Consultant/ Contractor | | | | | |
| 10.9 | 7.6 | Tall buffer screen tree / shrub / climber planting where appropriate should be incorporated to soften hard engineering structures and facilities (OM2) | All areas/detailed design/ during Construction/ post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | N/A |
| 10.9 | 7.6 | Streetscape elements (e.g. paving, signage, street furniture, lighting etc.) shall be sensitively designed in a manner that responds to the local context, and minimises potential negative landscape and visual impacts. Lighting units should be directional and minimize unnecessary light spill (OM3) | All areas/detailed design/ during Construction/ post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | N/A |
| 10.9 | 7.6 | Structure, ornamental tree / shrub / climber planting should be provided along roadside amenity strips, central dividers and newly formed slopes to enhance the townscape quality and further greenery enhancement (OM4) | All areas/detailed design/ during Construction/ post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | N/A |
| 10.9 | 7.6 | Aesthetically pleasing design (visually unobtrusive and non-reflective) as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities (OM5) | All areas/detailed design/ during Construction/ post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | N/A |
| 10.9 | 7.6 | Avoidance of excessive height and bulk of buildings and structures (OM6) | All areas/detailed design/ during Construction/ post construction | Design Consultant/ Contractor | TMEIA | Y | Y | Y | ✓ |

Waste

| EIA reference | EM&A Manual reference | Environmental Protection Measures | Location/ Timing | Implementation Agent | Relevant Standard or Requirement | Implementation Stages | | | Status |
|---------------|-----------------------|--|-----------------------|----------------------|----------------------------------|-----------------------|---|---|--------|
| | | | | | | D | C | O | |
| 12.6 | | The Contractor shall identify a coordinator for the management of waste. | Contract mobilisation | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | | The Contractor shall prepare and implement a Waste Management Plan which specifies procedures such | Contract mobilisation | Contractor | TMEIA, Works Branch | | Y | | ✓ |

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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"> • suitable for the substance to be held, resistant to corrosion, maintained in good conditions and securely closed; • Having a capacity of <450L unless the specifications have been approved by the EPD; and • Displaying a label in English and Chinese according to the instructions prescribed in Schedule 2 of the Regulations. • Clearly labelled and used solely for the storage of chemical wastes; • Enclosed with at least 3 sides; • Impermeable floor and bund with capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in the area, whichever is greatest; • Adequate ventilation; • Sufficiently covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and • Incompatible materials are adequately separated. | All areas / throughout construction period | Contractor | TMEIA | | Y | | ✓ |
| 12.6 | 8.1 | Waste oils, chemicals or solvents shall not be | All areas / throughout | Contractor | TMEIA | | Y | | ✓ |

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

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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 | | ◇ |

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| 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