



JOB No.: TCS00715/14

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

BASELINE MONITORING REPORT (REV.03)

PREPARED FOR
CRBC AND KADEN JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
5 October 2015	TCS00715/14/600/R0033v7	 Nicola Hon (Environmental Consultant)	 T.W. Tam (Environmental Team Leader)

This report has been prepared by Action-United Environmental Services & Consulting with all reasonable skill, care and diligence within the terms of the Agreement with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

Our Ref: TCS00715/14/300/L0124b

AECOM

8/F Grand Central Plaza
Tower 2, 138 Shatin Rural Committee Road
Shatin

Attn: Mr. Roger Man

5 October 2015

By Email & by post

Dear Sir,

Re: Contract No. HY/2013/12

**Tuen Mun - Chek Lap Kok Link - Northern Connection Toll Plaza and Associated Works
Environmental Permit No.: EP-354/2009/D
Baseline Monitoring Report (Rev.03)**

We write to certify the Baseline Monitoring Report (TCS00715/14/600/R0033v7) in accordance with Condition 4.3 of the Environmental Permit no. EP-354/2009/D.

Should you have any queries or require further information, please feel free to contact us or the undersigned at Tel: 2959-6059 or Fax: 2959-6079.

Yours sincerely,

For and on Behalf of

Action-United Environmental Services & Consulting (AUES)



T. W. Tam
Environmental Team Leader

Encl.

c.c. ENVIRON (IEC)
CRBC - Kaden JV (Contractor)

Mr. F.C. Tsang
Mr. John Wong

By email
By email

Ref.: HYDHZMBEEM00_0_3451L.15

9 October 2015

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

By Fax (2293 6300) and By Post

Attention: Mr. Roger Man

Dear Roger,

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

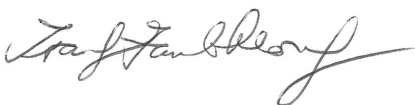
**Contract No. HY/2013/12 TM-CLKL Northern Connection Toll Plaza and
Associated Works
Baseline Monitoring Report (EP-354/2009/D)**

Reference is made to the Baseline Monitoring Report (AUES reference: TCS00715/14/600/R0033v7 dated 5 October 2015) certified by the ET Leader and provided to us via e-mail on 5 October 2015.

Please be informed that we have no adverse comments on the captioned report. We write to verify the captioned submission in accordance with Condition 4.3 of EP-354/2009/D.

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

Yours sincerely,



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

c.c. HyD – Mr. Stephen Chan (By Fax: 3188 6614)
HyD – Mr. Matthew Fung (By Fax: 3188 6614)
AECOM – Mr. Conrad Ng (By Fax: 3922 9797)
AUES – Mr. T. W. Tam (By Fax: 2959 6079)
CRBC – Kaden JV – Ms. Winnie Chu (By Fax: 2253 8399)

Internal: DY, YH, LP, CL, ENPO Site

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Response to comments from EPD & PlanD for Baseline Monitoring Report

Item	EPD's Comments Ax(9) to EP2/N9/A/125 (II) dated 3 July 2015	Contractor's Response
2	The interface/scope of the different contracts under the Project (preferably with a plan showing the boundary of the various contracts) shall be provided to clearly set the scene for the viewing of this report. The various LR/LCAs as mentioned in the EIA to be covered by this contract and other TM-CLKL contracts shall be clearly spelt out to avoid confusion.	Noted, a plan showing various contracts of TM-CLKL was added in figure 1.2 to 1.5 . Various LR/LCAs as mentioned in the AEIAR were all added into the revised report, please refer to item d, f and i below.
Item	PlanD's Comments () in PDTM 4/5/48 dated 30 June 2015	Contractor's Response
a.	Majority of the content of this submission are related to contractual arrangement which is not appropriate for EP submission.	This Baseline Monitoring Report was prepared according to the AEIAR, EP and project EM&A Manual. Since the Tuen Mun - Chek Lap Kok Link (TM-CLKL) EIA separated in three different Contracts, only content related to Contract 3 - HY/2013/12 - Northern Connection Toll Plaza and Associated Works will be covered.
b.	To save time, resources and avoid confusion, the Environmental Team Leader (ET) and Independent Environmental Checker (IEC) should critically review the content before submitting for comment. The IEC and ET are reminded to duly exercise their duties in accordance to EP Conditions 1.9 of this EP.	Noted.

c.	The revised content or drawings should be highlighted or clouded for reference.	Noted. Revised content and drawings was highlighted in yellow.
d.	The landscape resources listed in Table 4.1 is inconsistent to the Approved EIA Report. With references Table 10.6 of the Approved EIA Report (AEIAR 146/2009) LR8, 9, 10 and 11 are missing in this report.	LRs 8, 9, 10 and 11 are not related to Contract 3 - HY/2013/12 - Northern Connection Toll Plaza and Associated Works.
e.	LR02 in Table 4.1 in the BMR is different to Table 10.6 of AEIAR, please review.	Noted and amended.
f.	With reference to Table 10.5 of the AEIAR, there would be impacts on LR8 01, 02, 03, 04, 06, 10 and 11. However, only photographic records are submitted. There is no information regarding the monitoring the baseline data, assessment of non-compliance, identification of remedial works, etc. to readdress the unacceptable or unanticipated impacts on landscape resource.	Baseline result for LR8 and LCAs are added in Table 4.2. Only LR 02, 03, 04 and 06 are added into the report as LR 01 is related to Contract 2 of TM-CLKL., and 10 & 11 are related to Contract 1 of TM-CLKL.
g.	According to Section 3, protected plant species under Forestry Regulations (subsidiary legislation of the Forest and Country Park Ordinance, Pitcher Plant, was identified within the proposed works area for TM-CLKL toll plaza. As pitcher plants are valuable landscape resources, they should be reflected and updated in the corresponding LR.	Added as LR Additional at Table 4.2.
h.	With reference to the section 4.2.1.3, the information regarding the trees to be transplanted, removed, felled and retained and Pitcher Plants to be transplanted are related to contractual arrangement. Hence, the proposed treatment regarding the captioned EP could not be fully ascertained.	Noted, the contractual arrangement has been removed. Propose treatment according to AEIAR was added in Table 4.3.
i.	There are no information regarding the baseline of the Landscape Character Areas (LCAs)	LCAs were added at Table 4.1 and 4.2 separately.

		Please note that only LCA01 and 02 are related to Contract 3.
j.	The action taken by ER and Contractor as shown in Table 4.2 appears a contractual arrangement. Should it be revised as project proponent or permit holder for consistency of the EP.	Noted and revised. The former Table 4.2 was changed as Table 4.4.
Item	EPD's Comments Ax(9) to EP2/N9/A/125 (III) dated 15 July 2015	Contractor's Response
2(a).	<p>Please find below additional comment from PlanD:</p> <p>According to the VEP application, approx.. 05 ha of Pitcher Plants were identified within the proposed underpass works area for TM-CLKL Toll Plaza and will be directly affected. Please note that Pitcher Plant is considered significant landscape resource. PlanD's previous comment via my memo dated 22.1.2015 that the summary of the findings of the baseline survey of pitcher plant and the recommended treatments should be included in S.4.2.1.2 still valid.</p>	Noted, an additional LR was added into Table 4.1 and 4.2 presenting the photographic record, baseline condition, description of impact and remedial works of existing pitcher plant found in the Toll Plaza works area.

EXECUTIVE SUMMARY

- ES.01 CRBC-Kaden Joint Venture (*hereafter “CRBC-Kaden JV”*) has been awarded by Highways Department as the Main Contractor for the *Contract HY/2013/12 - Northern Connection Toll Plaza and Associated Works* (*hereinafter referred as “the Contract”*) in July 2014. This is a Designated Project to be implemented under Environmental Permit number EP-354/2009/D (*hereinafter referred as “the EP”*).
- ES.02 Action-United Environmental Services & Consulting (*hereinafter referred as “AUES”*) has been commissioned as the Contract Environmental Team (*hereinafter referred as “the ET”*) to implement the relevant EM&A program in accordance with the approved EM&A Manual and the Contract requirements, as well as the associated duties.
- ES.03 According to the Approved EM&A Manual, baseline environmental monitoring is required to be conducted prior to commencement of the construction works. As such, baseline monitoring including air quality, ecology, landscape and visual and cultural heritage was conducted. During the baseline monitoring period, no construction activities under the Project or other external influencing factors of significant concern were observed.
- ES.04 Baseline air quality monitoring was conducted by the ET of HyD Contract HY/2012/08 between 17 and 31 October 2013. The monitoring results and established Action and Limit Level for 1-hour TSP and 24-hour TSP would be adopted for this Contract.
- ES.05 Baseline survey for Pitcher Plant has been conducted within the project area in September 2013 by a suitably qualified ecologist. During the survey, 280 nos. of individual were identified which were in good condition. Moreover, an initial survey for Pitcher Plant by the Contract HY/2013/12 was conducted in mid-September 2014 to confirm the number of existing Pitcher Plant. A total of 280 nos. of individual Pitcher Plant located at Zone 1 to 7 was identified. Since they are occurring on the rocky slope habitat which will be impacted by the proposed slope works (Zone 1 to 7), transplantation is required to minimize impacts to the population.
- ES.06 Initial tree survey and photographic record for existing Landscape was conducted on 22 September 2014 for TM-CLKL prior commencement of the project.
- ES.07 Condition survey for the Grave G1 was conducted on 23 September 2014. The grave was generally in good condition. However, a total of 10 cracks ranged from hairline to 2.8mm were identified in the cement rendering and mortar of bricks of the grave.

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1.1 According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway (NLH) will be operating beyond capacity after 2016 due to the increase in cross boundary traffic, developments in the NWNT, and possible developments in North Lantau, including the Airport developments, the Lantau Logistics Park (LLP) and the Hong Kong – Zhuhai – Macao Bridge (HZMB). In order to cope with the anticipated traffic demand, two new connections between NWNT and North Lantau – Tuen Mun – Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) are proposed.

1.1.1.2 The construction of the Project to be undertaken comprises of several separate contracts. The Contract number HY/2013/12 - Northern Connection Toll Plaza and Associated Works (hereinafter referred as “the Contract”) is part of the Project, which is located at Pillar Point in Tuen Mun Area 46.

1.1.1.3 Layout Plan of the Contract and various contracts of TM-CLKL were shown in **Figure 1.1** and **1.2** respectively. **Figure 1.3, 1.4** and **1.5** shows different site boundary of each Contract of TM-CLKL:

Contract 1: HY/2012/07, TMCLKL – Southern Connection Viaduct Section

Contract 2: HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section

Contract 3: HY/2013/12 - Northern Connection Toll Plaza and Associated Works

1.1.1.4 CRBC-Kaden Joint Venture (*hereafter “CRBC-Kaden JV”*) has been awarded by Highways Department as the Main Contractor for the Contract in July 2014. The 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..

1.1.1.5 The master construction programme is shown in **Appendix A**.

1.1.1.6 An Environmental Impact Assessment (EIA) was prepared in accordance with the EIA Study Brief and the Technical Memorandum of the Environmental Impact Assessment (EIAO-TM) which has been submitted under the Environmental Impact Assessment Ordinance (EIAO Register Number AEIAR-146/2009). An Environmental Permit (EP-354/2009) for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009, and EP variations (EP-354/2009/A) issued on 8 December 2010 and (EP-354/2009/B) issued on 28 January 2014 and (EP-354/2009/C) issued on 10 December 2014 and the latest (EP-354/2009/D) issued on 13 March 2015.

1.1.1.7 Action-United Environmental Services & Consulting (hereinafter referred as

“AUES”) has been commissioned as the Contract Environmental Team (hereinafter referred as “the ET”) to implement the relevant EM&A program in accordance with the approved EM&A Manual and the Contract requirements, as well as the associated duties.

1.2 PROPOSE OF THIS REPORT

1.2.1.1 In view of the major construction activities under the Contract are land-based, the environmental aspects such as water quality and marine ecological monitoring should not be related the Contract works. Moreover, all designated noise monitoring locations are located in Lantau and therefore noise monitoring is not required under the Contract. In accordance with the Project EM&A Manual requirements, air quality monitoring, ecological monitoring, cultural heritage, landscape and visual monitoring and landfill gas monitoring and site inspections should be covered in this Contract. Overall, the EM&A works follows the demarcation of monitoring responsibilities set out in ENPO’s letter dated 16.10.2014.

1.2.1.2 The objective of this Baseline Monitoring Report is to determine the baseline levels of the environmental aspect of air quality, ecology, landscape and visual and cultural heritage around the Project area prior to the commencement of any construction works of the Project.

1.3 STRUCTURE OF THE REPORT

1.3.1.1 The Baseline Monitoring Report is structured into five sections as follow:

- Section 1** Introduction
- Section 2** Air Quality Monitoring
- Section 3** Ecology
- Section 4** Landscape and Visual
- Section 5** Cultural Heritage
- Section 6** Conclusion

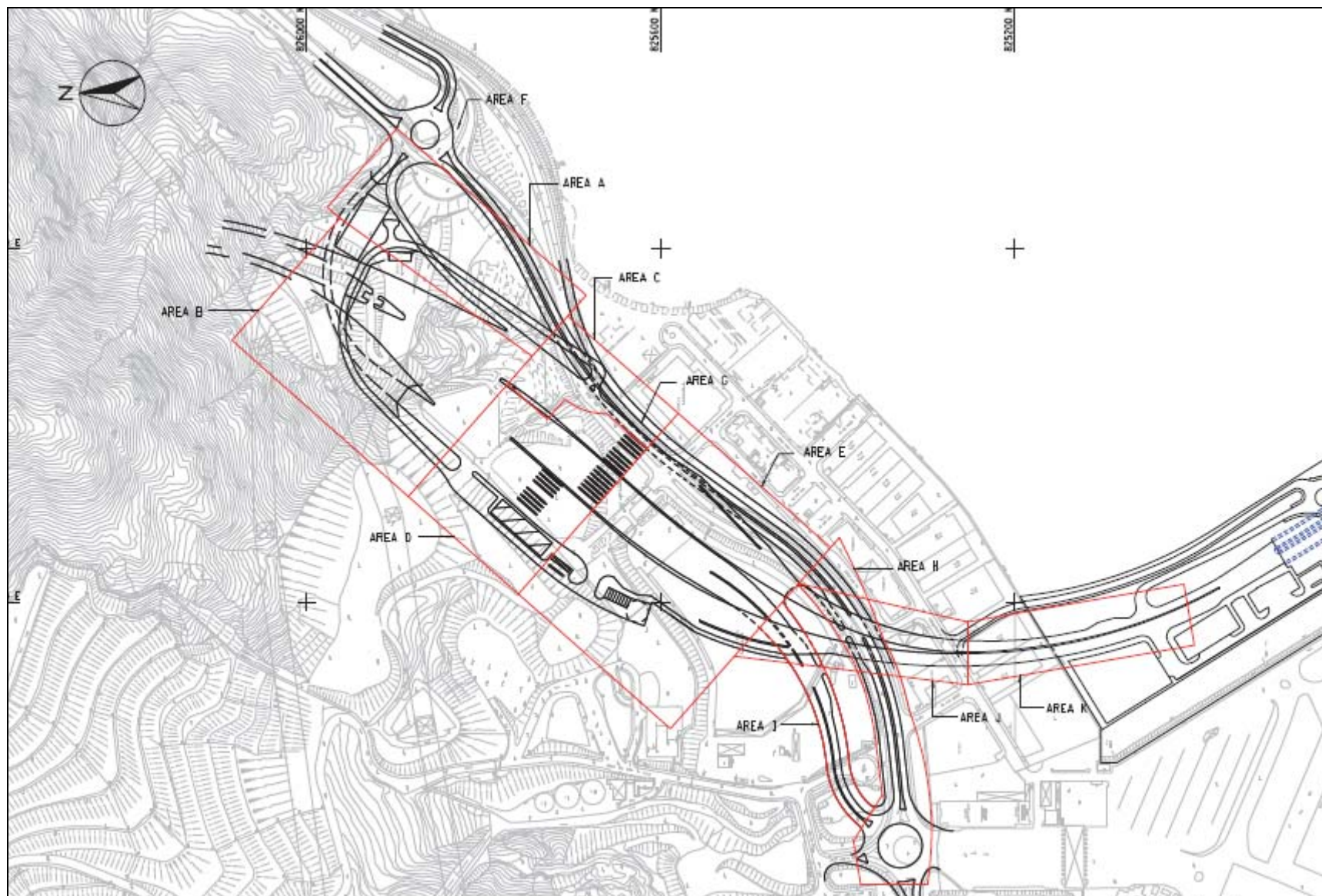


Figure 1.1 Layout Plan of the Contract



擬建「屯門至赤鱗角連接路」
Proposed "Tuen Mun - Chek Lap Kok Link"

Figure 1.2 Various Contracts of TM-CLKL



Figure 1.3 Site Boundary of HY/2013/12 - Northern Connection Toll Plaza and Associated Works “The Contract”

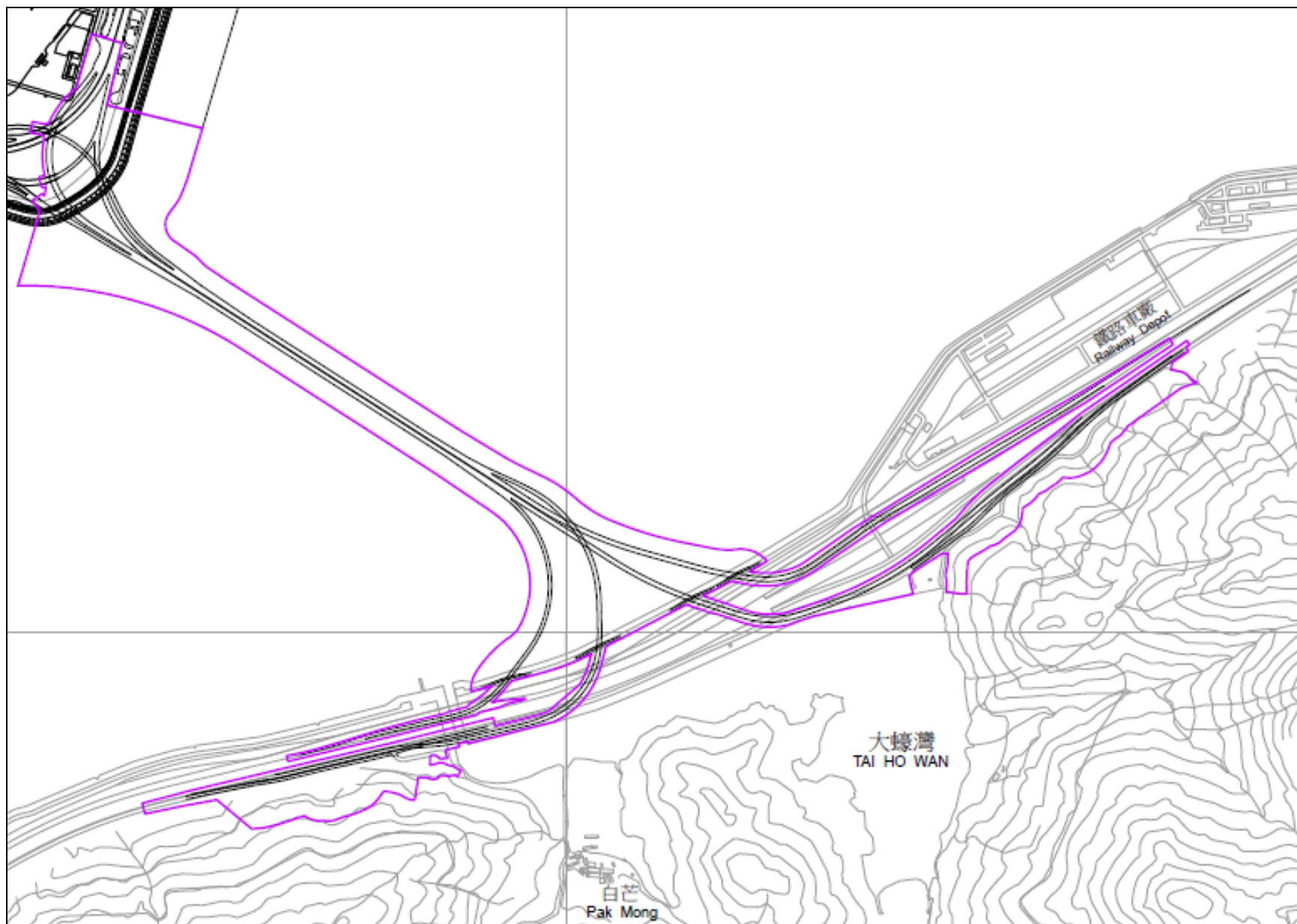


Figure 1.4 Site Boundary HY/2012/07, TMCLKL – Southern Connection Viaduct Section “Contract 1”

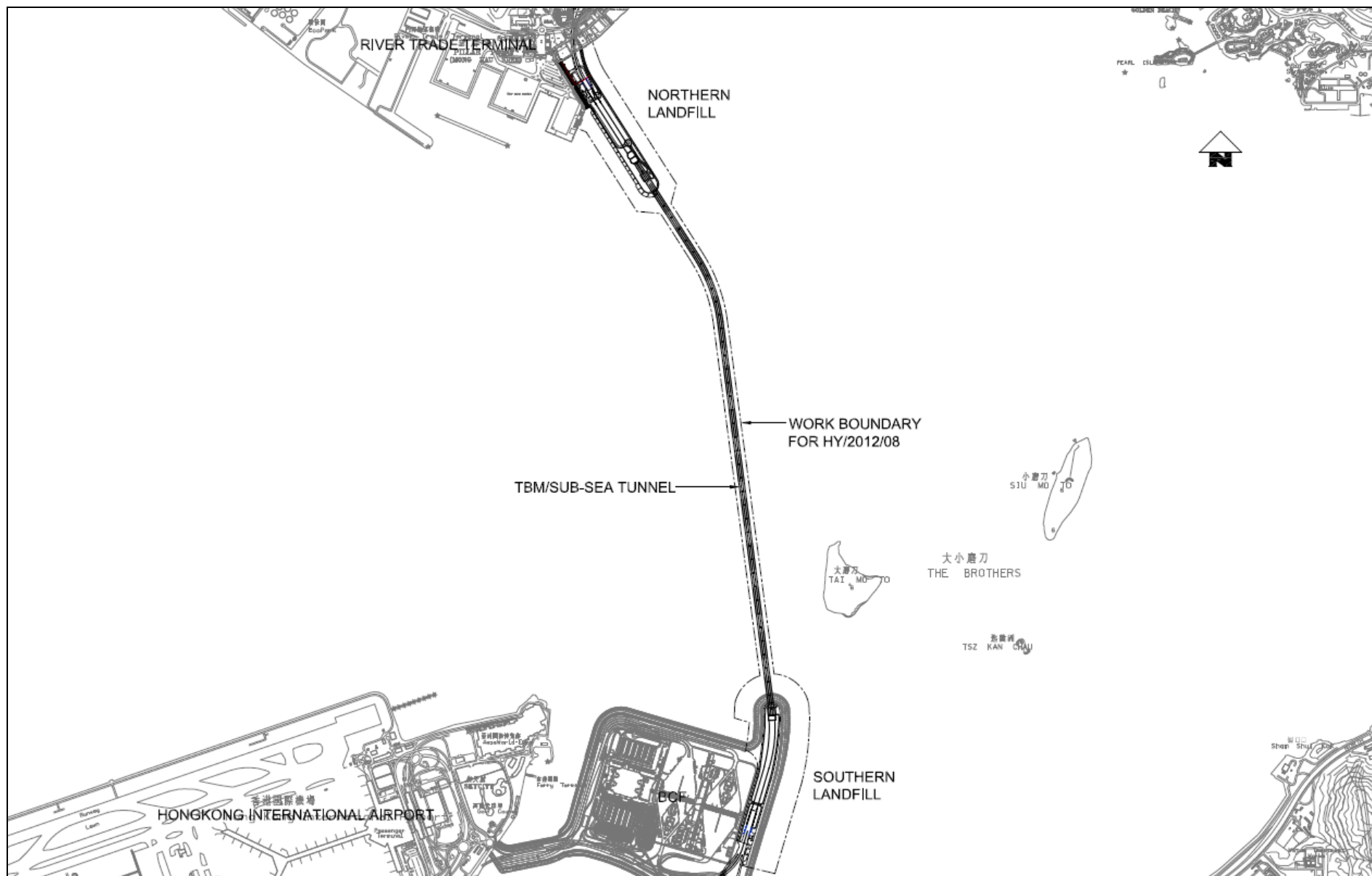


Figure 1.5 Site Boundary HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section “Contract 2”

2 AIR QUALITY

2.1 INTRODUCTION

2.1.1.1 Baseline air quality monitoring has been conducted by the ET of HyD Contract HY/2012/08 between 17 and 31 October 2013 and the associated baseline report has been submitted to the EPD for approval. It is agreed amongst by the Contractor, RE, IEC that this Contract could make use of the baseline monitoring data collected by the ET under HY/2012/08 and therefore no baseline monitoring is required under this Contract.

2.2 MONITORING LOCATIONS

2.2.1.1 The monitoring stations for baseline air quality monitoring are shown *Figure 2.1*. Monitoring parameter, monitoring period and frequency are summarized in *Table 2.1*.

Table 2.1 Monitoring Frequency and Parameter of Air Quality Monitoring Stations

Air quality monitoring station	Location	Landuse	No. of Storey	Parameter	Period	Frequency
ASR1	Tuen Mun Fireboat Station	Office	1	1-hour TSP	07:00-19:00 for 1-hour TSP	3 times / day for 1-hour TSP
ASR5	Pillar Point Fire Station	Office	5			
AQMS1	Previous River Trade Golf	Bare ground	0	24-hour TSP	24 hours for 24-hour TSP	Daily for 24-hour TSP
ASR6	Butterfly Beach Laundry	Commercial	0			
ASR10	Butterfly Beach Park	Recreational uses	0			

2.3 MONITORING EQUIPMENT

2.3.1.1 High Volume Samplers (HVS) were used to carry out 24-hour TSP monitoring. Direct reading dust meter were also used to measure 1-hour average TSP levels. The 1-hour sampling was determined periodically by HVS to check the validity and accuracy of the results measured by direct reading method.

2.3.1.2 Wind data monitoring equipment was set at rooftop of ASR5 (Pillar Point Fire Station) for logging wind speed and wind direction such that the wind sensors are clear of obstructions or turbulence caused by building. The wind data monitoring equipment is recalibrated at least once every six months and the wind directions are divided into 16 sectors of 22.5 degrees each.

2.3.1.3 **Table 2.2** summarizes the equipment used in the baseline air quality monitoring programme.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make
HVS Sampler	GMWS-2310 ACCU-VOL
Calibrator	CM-AIR-43 (S/N 9833620)
1-hour TSP Dust Meter	Sibata LD-3B
Wind Anemometer	MetPak, WindSonic

2.4 MONITORING METHODOLOGY

24-hour TSP

Instrumentation

- 2.4.1.1 High volume Samplers (HVS) completed with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

HVS Installation

- 2.4.1.2 The following guidelines were adopted during the installation of HVS:
- Sufficient support was provided to secure the samplers against gusty wind.
 - No two samplers were placed less than 2 meters apart.
 - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
 - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
 - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
 - No furnaces or incineration flues were nearby.
 - Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Filter Preparation

- 2.4.1.3 Fiberglass filters were used [Note: these filters have a collection efficiency of larger than 99% for particles of 0.3 μ m diameter]. A HOKLAS accredited laboratory was responsible for the preparation of 24-hr conditioned and preweighed filter papers for monitoring team.
- 2.4.1.4 All prepared filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was <50% and not variable by more than ± 5 %. A convenient working RH was 40%.

Operating/ Analytical Procedures

- 2.4.1.5 Operating/analytical procedures for the air quality monitoring were highlighted as follows:
- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m³/min. and 1.4 m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
 - The power supply was checked to ensure the sampler worked properly.
 - On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
 - The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
 - The filter was aligned on the screen so that the gasket formed an airtight seal on

the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and sent to the laboratory for weighing. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than $\pm 3^\circ\text{C}$; the relative humidity (RH) should be $< 50\%$ and not vary by more than $\pm 5\%$. A convenient working RH is 40%. Weighing results were used for further analysis of TSP concentrations collected by each filter.

Maintenance and Calibration

2.4.1.6 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- All HVS were calibrated (five point calibration) using Calibration Kit prior to the commencement of the baseline monitoring and thereafter at bi-monthly intervals.

1-hour TSP

Measuring Procedures

2.4.1.7 The measuring procedures of the 1-hour dust meter are in accordance with the Manufacturer's Instruction Manual as follows:

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display. Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance and Calibration

2.4.1.8 The following maintenance/calibration is required for the 1-hour dust meter;

- Check and calibrate the meter by HVS to check the validity and accuracy of the results measured by direct reading method at 2-month intervals throughout all stages of the air quality monitoring.

2.5 MONITORING RESULT

- 2.5.1.1 The monitoring results, name of laboratory and calibration details, and QA/QC results and detection limits to be referred to the Baseline Monitoring Report under the Contract HY/2012/08.

2.6 ACTION AND LIMIT LEVELS

- 2.6.1.1 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 proposed Action and Limit Levels are shown in **Tables 2.3**.

Table 2.3 TSP Action and Limit Levels for Impact Air Quality Monitoring

Parameters	Air Quality Monitoring Stations	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
24 hour TSP ($\mu\text{g}/\text{m}^3$)	ASR1	213	260
	ASR5	238	260
	AQMS1	213	260
	ASR6	238	260
	ASR10	214	260
1 hour TSP ($\mu\text{g}/\text{m}^3$)	ASR1	331	500
	ASR5	340	500
	AQMS1	335	500
	ASR6	338	500
	ASR10	337	500

2.7 EVENT AND ACTION PLAN FOR AIR QUALITY

- 2.7.1.1 In case of non-compliance with the air quality criteria, more frequent monitoring exercise shall be conducted within 24 hours after the result is obtained. This additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified. The Event/Action Plan for air quality is given in the attached **Table 2.4**.

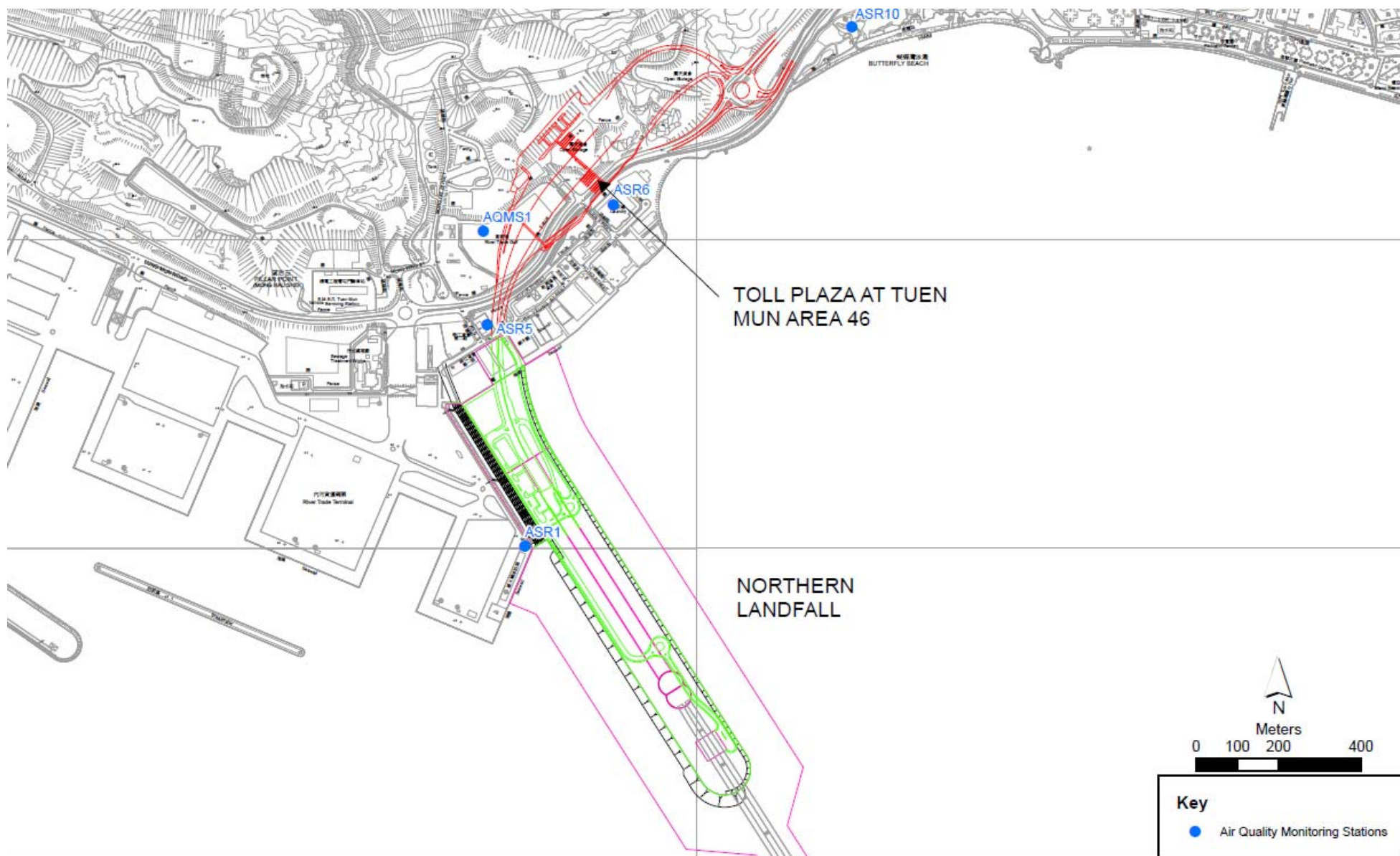


Figure 2.1 Location Map of Air Quality Monitoring Location

Table 2.4 Event / 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, SOR 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 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 Supervise 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 Supervise 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.

Note: ET – Environmental Team, IEC – Independent Environmental Checker, SOR – Supervising Office's Representative

3 ECOLOGY

3.1 INTRODUCTION

3.1.1.1 Ecological baseline EM&A will consist of undertaking the following:

- a walk-over survey, prior to construction works, of the land and streams where works will be undertaken. It may be necessary to rope off and protect specific habitats or species of special interest identified during the ecological surveys

3.2 BASELINE WALKOVER SURVEY

3.2.1.1 The purpose of the walk over survey will be to confirm the existing ecological conditions, with reference to the habitat maps included in the EIA Report and the established baseline conditions, in relation to the extent and condition of the habitats and species noted during the walkover survey. No detailed ecological surveys of flora and fauna will be required at this stage.

3.2.1.2 Baseline ecological walkover was conducted on 22 September 2014 and the results are presented in below.

Observations

3.2.1.3 Two major landscapes within the study area were tall shrubland and plantation according to the habitat map in the approved EIA Report. To better record specific species of native trees and shrubland, a general record about their habit of growth was made.

Tall Shrubland

3.2.1.4 Shrubland habitat is densely populated with a mix native tree shrubby plant species within study area. Native tree like *Acacia confuse* as well as other shrubby plant species are planted broadly in this area. Shrublands are widely distributed. The most common one are the *Acacia confusa*, *Leucaena leucocephala*, *Macaranga tanarius* and *Clausena lansium*. They have mixed with each other and get better greening benefit. No significant change to habitat maps in the EIA Report was observed.

Plantation

3.2.1.5 Plantation at the study area contain mainly roadside plantation for landscape use within the study area. The plantation part, trees, for instance, *Ficus microcarpa* and *Ficus elastica* are most widely used as roadside (riverside) plant and landscape greening. They are common evergreen trees in Hong Kong and can grow as tall as fifteen meters which are considered to be very aggressive. No significant change to habitat maps in the EIA Report was observed.

Stream

3.2.1.6 The outlet of the stream opposite to the River Trade Terminal is now modified to an artificial culvert. Other than that, the habitat types within the Study area are similar to the habitat maps in the EIA report.

Developed Area

3.2.1.7 The developed area such as warehouses and River Trade Terminal was observed. No significant change to habitat maps in the EIA Report was observed.

Sandy beach

- 3.2.1.8 Part of the Butterfly Beach as designated in EIA, is located at the eastern side of the pillar point. No significant change to habitat maps in the EIA Report was observed.
- 3.2.1.9 The habitat map of Tuen Mun is shown in **Appendix B**.

3.3 BASELINE TRANSLOCATION WORKS - PITCHER PLANT

- 3.3.1.1 During the Environmental Impact Assessment (EIA) Stage of the TM-CLKL (which was approved on 23 October 2009), no Pitcher Plant (*Nepenthes mirabilis*) was identified within the proposed works area of the toll plaza. It was believed that the Pitcher Plant area identified would not be directly impacted by the toll plaza works and the only mitigation measures required were to install hoarding at the perimeter of the proposed works area to avoid encroachment into the Pitcher Plant area. However, during an ecology survey for the TMWB EIA in late 2011, Pitcher Plant was identified within the proposed works area for the TM-CLKL toll plaza. Pitcher Plant is protected under the Forestry Regulations (subsidiary legislation of the Forests and Countryside Ordinance, Cap. 96) and the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586). Discussion with Agriculture, Fisheries and Conservation Department (AFCD) (27 October 2012) has confirmed that if the TM-CLKL project was to impact the Pitcher Plant area that further mitigation measures for the Pitcher Plant would be required under the TM-CLKL project. As such, the project proponent Highways Department (HyD) has appointed AECOM to undertake baseline survey and propose a transplantation strategy for Pitcher Plant to be affected by the proposed TM-CLKL project.
- 3.3.1.2 A baseline Pitcher Plant survey was conducted in September 2013 by a suitably qualified ecologist. The aim of the survey was to update, identify and record the location, number, health condition (i.e. good, fair, or poor), and suitability for transplantation of the affected individuals in order to provide details for the transplantation exercise. Each identified individual was tagged. The habitats present and representative plant species were recorded.
- 3.3.1.3 The assessment area included the slope above the toll plaza on which the Pitcher Plant populations have been previously identified. The slope was surveyed to identify the extent of the Pitcher Plant populations particularly those that occur within and adjacent to the proposed works site.

Baseline Results on September 2013

- 3.3.1.4 The south-facing slope above the proposed toll plaza supports a mosaic of shrubland, rocky slope, plantation and watercourse habitats. Pitcher Plant was recorded in the rocky slope, shrubland and watercourse habitats. The rocky slope habitat comprised some exposed boulders and bare ground; however, much of it has been naturally regenerated by shrubland species such as Dichotomy Forked Fern (*Dicranopteris pedata*), with some encroachment by scattered Brisbane Box (*Lophostemon confertus*) saplings from the adjacent plantation habitat. This habitat supported a Pitcher Plant population (see **Zones 1-7 in Appendix C**) of approximately 0.5 ha in size and 259 Pitcher Plants (see **Appendix C, Plates 1-3**)).
- 3.3.1.5 In addition, three small areas (see **Zones 8 – 10 in Appendix C**) of Pitcher Plant were recorded along the watercourse in the shrubland habitat (see **Appendix C, Plate 4**). The watercourse comprised a narrow, shallow flow over bedrock with occasional small, very shallow pooled areas. There is evidence that part of the flow is being

diverted for human use. Riparian vegetation comprised the shrubland habitat in which the watercourse flowed. Abundant tree/shrub species found in the shrubland habitat included Dwarf Mountain Pine (*Baeckea frutescens*), Pop-gun Seed (*Bridelia tomentosa*), Eurya spp., Hong Kong Gordonia (*Gordonia axillaris*), Pond Spice (*Litsea glutinosa*), Pines (*Pinus spp.*), Wild Coffee (*Psychotria asiatica*), Rose Myrtle (*Rhodomyrtus tomentosa*), Hedge Sageretia (*Sageretia thea*), and Brisbane Box (*Lophostemon confertus*). While the understory was dominated by Dichotomy Forked Fern (*Dicranopteris pedata*), with frequent Greenbrier (*Smilax china*), and occasional Hainan Galangal (*Alpinia hainanensis*), Oriental Blechnum (*Blechnum orientale*), Bentham's Rosewood (*Dalbergia benthami*), Dianella (*Dianella ensifolia*), and Chinese Silvergrass (*Miscanthus sinensis*).

- 3.3.1.6 The health and condition of the Pitcher Plant individuals was assessed and each plant was assessed, tagged and photographed by Pegasus Greenland Ltd.. All plants were assessed as being in “fair” health condition as summarized in **Table 3**. As the plants mostly grew on rock faces with thin soils, the successful removal and transport of the existing individuals is likely to be challenging given the weak nature of the plant's roots.

Table 3 Pitcher Plant Numbers and Health Condition Recorded in the Site in September 2013

Zone	No. of Plants Found	Health Condition
1	3	Fair
2	1	Fair
3	15	Fair
4	6	Fair
5	33	Fair
6	185	Fair
7	16	Fair
8	3	Fair
9	8	Fair
10	10	Fair
TOTAL	280	

Baseline Results on September 2014

- 3.3.1.7 Before commencement of the construction of the Contract, the initial survey was conducted by Hong Kong Landscape in September 2014 to confirm the location and number of the affected Pitcher Plants by the proposed TM-CLKL project. During the initial survey in September 2014, a total of 280 nos. of individual Pitcher Plant located at Zone 1 to 7 was identified. They are occurring on the rocky slope habitat which will be impacted by the proposed slope works (Zone 1 to 7). Each identified individual were tagged and photographed. The location map of the pitcher plants is shown in **Appendix C**.
- 3.3.1.8 280 nos. of Pitcher Plants identified in the initial survey will require transplantation to minimize impacts to the population. For those unaffected Pitcher Plant in Zone 8 to 10, fencing or other physical barriers will be erected for protection.
- 3.3.1.9 A transplantation proposal for Pitcher Plant in Zone 1 to 7 was submitted to EPD and AFCD for agreement separately.

4 LANDSCAPE AND VISUAL ASSESSMENT

4.1 INTRODUCTION

4.1.1.1 A one off survey shall be conducted prior to commencement of any construction works. A photographic record of the site at the time of the contractor's possession of the site shall be prepared by the Contractor and approved by the ER.

4.2 BASELINE MONITORING



4.2.1.1 Baseline walkover for the exiting landscape condition was conducted on 22 September 2014. During the baseline monitoring, apart from the temporary river trade golf at LR03 was demolished and abandoned, LR01 to LR07 were identified as same as the EIA study.





4.2.1.2 The photographic record and monitoring results are shown in **Table 4.1 and 4.2**. The proposed landscape and visual mitigation measures for construction and operation phase are listed in **Table 4.3**. Key plan showing the location and extent of existing landscape and visual resource is shown in **Appendix E**.


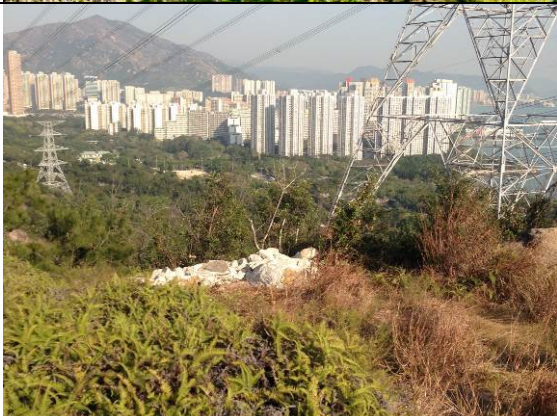

4.2.1.3 Moreover, a photographic record of baseline condition prepared by the RE was submitted to EPD on 29 September 2014 and the record is presented in **Appendix D** as supplementary information.

Observations

Table 4.1 Baseline Result for Landscape and Visual Impact

Existing Landscape Resources	Photographic record
Seawater body and shoreline near Pillar Point (LR01)	This landscape resources only covered in HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section Contract.
Plantation within the industrial area and sewage treatment plant at Pillar Point (LR02)	
Temporary River Trade Golf (LR03)	

Tall Shrubland (LR04)	
Stream (LR05)	
Plantation (LR06)	
Sandy Beach (LR07)	
Seawater body and shoreline north of Tai Ho Wan (LR08)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Tai Ho Wan (LR09)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Roadside planting along North Lantau Highway and within	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection

MTR Siu Ho Wan Depot (LR10)	Viaduct Section contract.
Vegetation at Tai Ho and Pak Mong (LR11)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Stream course at Pak Mong (LR12)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Pitcher Plant at future Toll Plaza area (Additional LR)	
Siu Lang Shui Upland and Hillside Landscape (LCA01)	
Pillar Point Miscellaneous Urban Fringe Landscape (LCA02)	
Pillar Point Industrial Urban Landscape (LCA03)	This landscape resources only covered in HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section Contract.
Inshore Water Landscape near Pillar Point (LCA04)	This landscape resources only covered in HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section Contract.
North Lantau Transportation Corridor Landscape (LCA05)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Tai Ho Upland and Hillside Landscape (LCA06)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.

Tai Ho Settled Valley Landscape (LCA07)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Pak Mong Upland and Hillside Landscape (LCA08)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Inshore Water Landscape near Tai Ho (LCA09)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.

Table 4.2 Baseline Result for Landscape Resources and Landscape Character Areas

Existing Landscape Resources	Baseline Condition	Description of Impacts	Remedial Works
Seawater body and shoreline near Pillar Point (LR01)	This landscape resources only covered in HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section Contract.		
Plantation within the industrial area and sewage treatment plant at Pillar Point (LR02)	<p>Plantation within the industrial area and sewage treatment plant at Pillar Point</p> <p>There are approximately 240 trees at this developed industrial site. The trees are of small to medium size (height: 3-12m, spread: 2-6m, trunk diameter: 95-400mm) and of low to medium amenity value.</p>	<ul style="list-style-type: none"> approximately 140 no. of trees will be affected, of which approximately 2 no. of trees are proposed to be transplanted, approximately 10 no. of trees are proposed to be felled, approximately 130 no. of weed trees (<i>Leucaena leucocephala</i>) are proposed to be removed. felled trees are mainly <i>Acacia confusa</i> of low amenity value. 	CM1, CM2, CM9, CM10 and OM4
Temporary River Trade Golf (LR03)	<p>Abandon River Trade Golf</p> <p>The Abandon River Trade Golf is classified as developed area. There are 50 <i>Acacia confusa</i>, <i>Caryota ochlandra</i> of medium size and of low to medium amenity value. Due to the artificial and temporary nature, the sensitivity of this landscape resource is considered as medium.</p>	<ul style="list-style-type: none"> Abandoned River Trade Golf and will be permanently lost 	CM1, CM2, CM9, CM10 and OM4

Tall Shrubland (LR04)	<p>Tall shrubland and disturbed hillside plantation area at Pillar Point</p> <p>The area consists of tall shrubland and disturbed hillside plantation. There are more than 3000 trees and tall shrubs on the slope and plantation. The trees are mostly of low to medium size together with approximately 20 mature trees (height: 2-16m, spread: 0.5-10m, trunk diameter: 95-820mm) and of small to medium amenity value.</p>	<ul style="list-style-type: none"> approximately 2600 no. of trees will be affected, of which approximately 2300 no. of trees are proposed to be felled, approximately 300 no. of weed trees (<i>Leucaena leucocephala</i>) are proposed to be removed. felled trees are mainly <i>Acacia confusa</i>, <i>Casuarina equisetifolia</i>, <i>Clausena lansium</i>, <i>Dimocarpus longan</i>, <i>Eucalyptus torelliana</i>, <i>Litchi chinensis</i>, <i>Lophostemon confertus</i>, <i>Macaranga tanarius</i>. The trees are of low to medium amenity value approximately 4.2ha tall shrubland will be lost permanently 	CM1, CM2, CM9, CM10 and OM1
Stream (LR05)	<p>Stream course at Pillar Point</p> <p>The small stream is partly artificial and partly natural. There are several patches of <i>Rhododendron simsii</i> near the stream.</p>	<ul style="list-style-type: none"> N.A. 	CM7
Plantation (LR06)	<p>Roadside planting along Lung Mun Road</p> <p>There are approximately 600 trees along the roadside. The trees are of medium size (height: 1.5-13m, spread: 0.5-8m, trunk diameter: 95-760mm) and of low to medium amenity value.</p>	<ul style="list-style-type: none"> approximately 260 no. of trees will be affected, of which approximately 20 no. of trees are proposed to be transplanted, approximately 200 no. of trees are proposed to be felled, approximately 40 no. of weed trees (<i>Leucaena leucocephala</i>) are proposed to be removed. felled trees are mainly <i>Acacia confusa</i> of low amenity value. 	CM1, CM2, CM9, CM10 and OM4
Sandy Beach (LR07)	None	<ul style="list-style-type: none"> N.A. 	Nil
Seawater body and shoreline north of Tai Ho Wan (LR08)	This landscape resources only covered in HY/2010/02, HKBCF – Reclamation Works contract.		
Tai Ho Wan (LR09)	This landscape resources only covered in HY/2010/02, HKBCF – Reclamation Works contract.		
Roadside planting along	This landscape resources only covered in HY/2010/02, HKBCF – Reclamation Works contract.		

North Lantau Highway and within MTR Siu Ho Wan Depot (LR10)			
Vegetation at Tai Ho and Pak Mong (LR11)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.		
Stream course at Pak Mong (LR12)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.		
Pitcher Plant (Additional LR)	<p>Existing Pitcher Plant</p> <p>There are 280 pitcher plant within the construction area of the future toll plaza.</p>	<ul style="list-style-type: none"> The Construction of the future Toll Plaza underpass at Tuen Mun will affect the protected Pitcher Plant at that location. Therefore, it was proposed to transplant the affected Pitcher Plant. 	Pitcher Plant unavoidably affected by the works shall be transplanted subject to the approval of AFCD and EPD. The transplantation works should strictly comply with the condition as stipulated in the license issued by AFCD and the VEP issued by EPD.
Siu Lang Shui Upland and Hillside Landscape (LCA01)	<p>Siu Lang Shui Upland and Hillside Landscape</p> <p>This is upland and hillside lie above 40mPD and below 300mPD in which part of the area is former landfill site. The area is dominated with tall shrubland and plantation of medium amenity value. The area is predominantly undeveloped with occasional small buildings.</p>	<ul style="list-style-type: none"> Toll plaza, slope works and retaining walls are incompatible to undisturbed hillside landscape. More than 1000 trees and approximately 4.2ha tall shrubland will be lost permanently, leading to change in landscape quality 	CM1, CM2, CM9, CM10, OM1
Pillar Point Miscellaneous Urban Fringe Landscape (LCA02)	<p>Pillar Point Miscellaneous Urban Fringe Landscape</p> <p>The generally low rise developments within the area are of mixed land uses, including typically highways, transportation, storage, parks, residential sites and undeveloped land (hillside). The area is located at the edge of urbanized area.</p>	<ul style="list-style-type: none"> Toll plaza, slope works and retaining walls are not incompatible to miscellaneous urban fringe landscape which consisted of mixed land uses such as highways, transportation. More than 1000 will be lost permanently, leading to change in landscape quality 	CM1, CM2, CM9, CM10 and OM1
Pillar Point Industrial Urban Landscape (LCA03)	This landscape resources only covered in HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section Contract.		
Inshore Water Landscape near Pillar Point	This landscape resources only covered in HY/2012/08, TMCLKL – Northern Connection Sub-sea tunnel Section Contract.		

(LCA04)	
North Lantau Transportation Corridor Landscape (LCA05)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Tai Ho Upland and Hillside Landscape (LCA06)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Tai Ho Settled Valley Landscape (LCA07)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Pak Mong Upland and Hillside Landscape (LCA08)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.
Inshore Water Landscape near Tai Ho (LCA09)	This landscape resources only covered in HY/2012/07, TMCLKL – Southern Connection Viaduct Section contract.

Table 4.3 Proposed Landscape and Visual Mitigation Measures

ID No.	Construction Phase Mitigation Measures
CM1	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).
CM2	Trees unavoidably affected by the works shall be transplanted where practical. Trees will be transplanted straight to their final receptor site and not held in a temporary nursery. A detailed Tree Transplanting Specification shall be provided in the Contract Specification. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.
CM3	Hillside and roadside screen planting to proposed roads, associated structures and slope works.
CM4	Hydroseeding or sheeting of soil stockpiles with visually unobtrusive material (in earth tone).
CM5	Screening of construction works by hoardings around works area in visually unobtrusive colours, to screen works.
CM6	Control night-time lighting and glare by hooding all lights.
CM7	Ensure no run-off into water body adjacent to the Project Area.
CM8	Avoidance of excessive height and bulk of buildings and structures.
CM9	Recycle/Reuse all felled trees and vegetation practicable, e.g. mulching
CM10	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
ID No.	Operation Phase Mitigation Measures
OM1	Re-vegetation of affected woodland/shrubland with native species.
OM2	Tall buffer screen tree / shrub / climber planting should be incorporated to soften hard engineering structures and facilities.

OM3	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 minimise unnecessary light spill.
OM4	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.
OM5	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.
OM6	Avoidance of excessive height and bulk of buildings and structures

4.3 EVENT AND ACTION PLAN

4.3.1.1 Should non-compliance of the landscape and visual impacts occur, actions in accordance with the action plan stated in **Table 4.2** should be carried out.

Table 4.4 Event and Action Plan for Landscape and Visual Impact

EVENT ACTION LEVEL	ACTION			
	ET	IEC	Permit Holder	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 Permit Holder Discuss remedial actions with IEC, Permit Holder 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 Permit Holder 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 Permit Holder Increase monitoring frequency Discuss remedial actions with IEC, Permit Holder 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 Permit Holder 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

5 CULTURAL HERITAGE

5.1 INTRODUCTION

- 5.1.1.1 The EIA has recommended that EM&A for cultural heritage resources is undertaken during construction phase of the project. Implementation of the mitigation measures recommended by the EIA will be monitored through the site audit programme.

5.2 BASELINE MONITORING

- 5.2.1.1 Prior to construction, a baseline survey of the grave G1 should be undertaken to establish the existing condition.

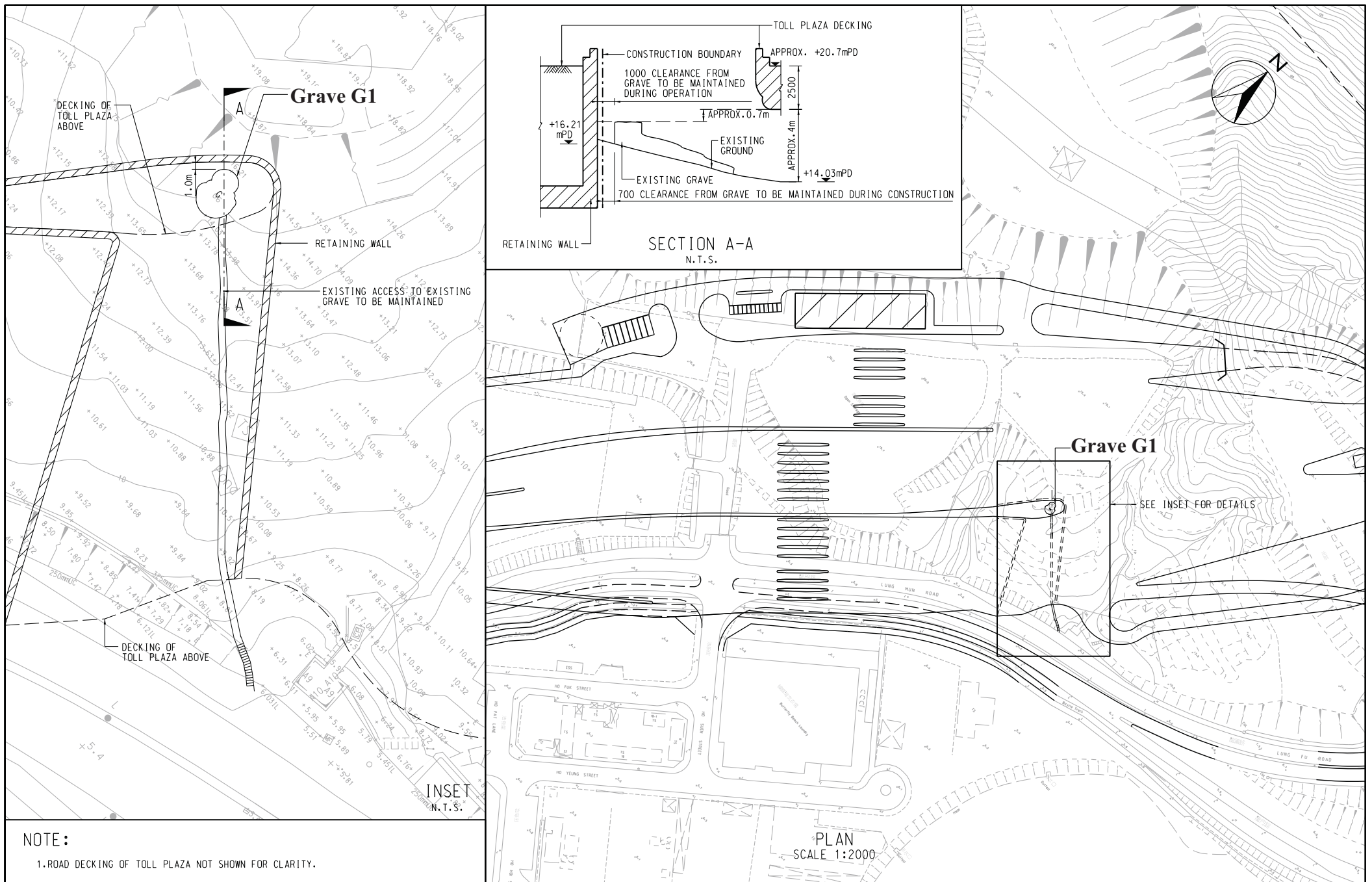
- 5.2.1.2 The purpose of the baseline condition survey was to record the existing condition of the grave and comprised the following task.

1. Identification of grave near the Project Site;
2. Carry out visual inspection for the condition survey;
3. Record the existing condition and evaluation of structural integrity of the grave;
4. Record the exact location of the grave prior to construction commencement. This information formed the baseline information for reference during construction phase;
5. Submission of all records such as photographs, grave locations, all detected cracks, defects and damage, if any.

5.3 CONDITION SURVEY FINDINGS

- 5.3.1.1 The condition survey was conducted on 23 September 2014 and the finding area presented below.

- 5.3.1.2 The historical grave was identified during the EIA stage of the project and the location of the grave (G1) was shown in **Figure 5.1**. It was observed that plenty of bushes was grown around the grave. The general view of the grave was shown in **Figure 5.2**.



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Location of the Grave G1

Figure 5.1



Figure 5.2 General View of the Grave G1




5.4 EXISTING CONDITION





- 5.4.1.1 The Grave G1 is generally in good condition. However, a total of 10 cracks ranged from hairline to 2.8mm were identified in the cement rendering and mortar of bricks of the grave. The location of the cracks are shown in **Figure 5.3**. Detailed information such as crack width and photographic record of the grave are summarized in **Table 5.1**.






Figure 5.3 Existing Cracks of the Grave G1

Table 5.1 Crack width and Photographic record of the Grave G1

Crack No.	Crack Width (mm)	Photographic Record
1	Hairline	
2	1.2	
3	1.5	

Crack No.	Crack Width (mm)	Photographic Record
4	1.0	
5	Hairline	
6	1.0	
7	1.6	

Crack No.	Crack Width (mm)	Photographic Record
8	1.3-4.0	
9	2.5-2.8	
10	0.8-2.1	

5.5 EVENT AND ACTION PLAN

- 5.5.1.1 All measures undertaken by the Contractor during the construction phase in the vicinity of the grave shall be audited by the Environmental Team (ET), on a regular basis to ensure compliance with the intended aims of the recommended mitigation measures. Site inspections should be undertaken at least once per week throughout the construction period adjacent to these properties. The main aim of the survey is prevention of any possible damage to the grave and to ensure that 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.

5.5.1.2 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 with a minimum of 1.0m set back of the permanent structure and a minimum of 0.7m clearance from the grave, can be maintained during construction, and
- ensure no stockpiling or equipment storage is affecting the structures.

5.5.1.3 In the event of non-compliance the responsibilities of the relevant parties is detailed in the Event / Action plan provided on **Table 5.2**.

Table 5.2 Event / Action Plan for Cultural Heritage

Action Level	ET	IC (E)	ER	Contractor
Non-conformity on one occasion	1. Identify Source 2. Inform the IEC and the ER 3. Discuss remedial actions with the IEC, the ER and the Contractor 4. Monitor remedial actions until rectification has been completed	1. Check report 2. Check the Contractor's working method 3. Discuss with the ET and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures. 5. Check implementation of remedial measures.	1. Notify Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify Source 2. Inform the IC(E) and the ER 3. Increase monitoring frequency 4. Discuss remedial actions with the IC(E), the ER and the Contractor 5. Monitor remedial actions until rectification has been completed 6. If exceedance stops, cease additional monitoring	1. Check monitoring report 2. Check the Contractor's working method 3. Discuss with the ES and the Contractor on possible remedial measures 4. Advise the ER on effectiveness of proposed remedial measures 5. Supervise implementation of remedial measures.	1. Notify the Contractor 2. Ensure remedial measures are properly implemented	1. Amend working methods 2. Rectify damage and undertake any necessary replacement

Note:

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

6 CONCLUSIONS

- 6.1.1.1 The Baseline monitoring has been conducted prior commencement of the construction works of the project in accordance with the EM&A Manual of the TM-CLKL. This Baseline Monitoring Report presents the baseline condition for air quality, ecology, landscape and visual and cultural heritage.
- 6.1.1.2 Baseline air quality monitoring was conducted by the ET of HyD Contract HY/2012/08 between 17 and 31 October 2013. The monitoring results and established Action and Limit Level for 1-hour TSP and 24-hour TSP would be adopted for this Contract.
- 6.1.1.3 Baseline survey for Pitcher Plant has been conducted within the project area in September 2013 by a suitably qualified ecologist. During the survey, a total of 280 nos. of individual were identified in Zones 1 to 10 which were in good condition. Moreover, an initial survey for Pitcher Plant by the Contract HY/2013/12 was conducted in mid-September 2014 to confirm the number of existing Pitcher Plant. A total of 280 nos. of individual Pitcher Plant located at Zone 1 to 7 was identified. Since they are occurring on the rocky slope habitat which will be impacted by the proposed slope works (Zone 1 to 7), transplantation is required to minimize impacts to the population.
- 6.1.1.4 Initial tree survey and photographic record for existing Landscape was conducted on 22 September 2014 for TM-CLKL prior commencement of the project.
- 6.1.1.5 Condition survey for the Grave G1 was conducted on 23 September 2014. The grave was generally in good condition. However, a total of 10 cracks ranged from hairline to 2.8mm were identified in the cement rendering and mortar of bricks of the grave.

Appendix A

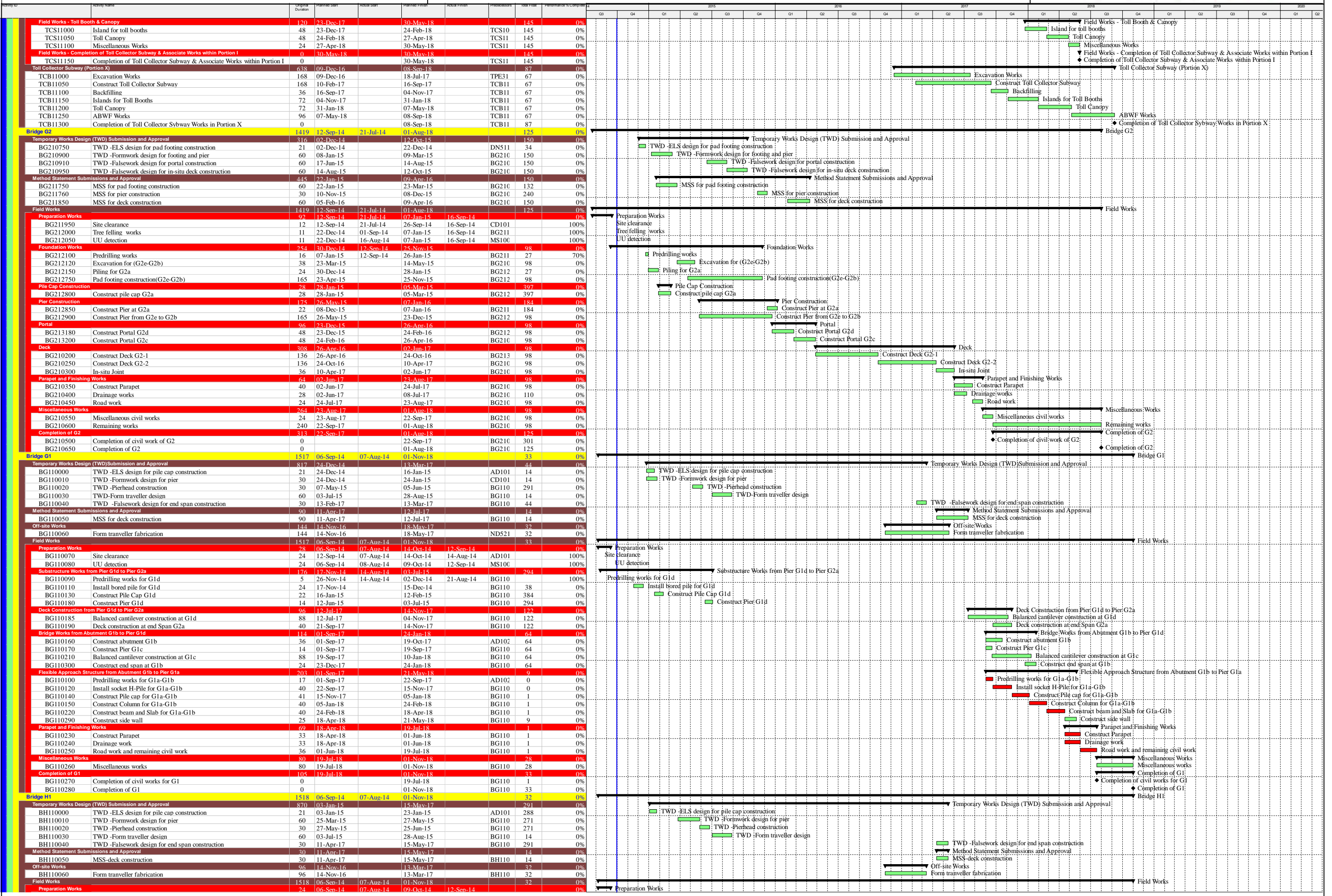
Construction Programme

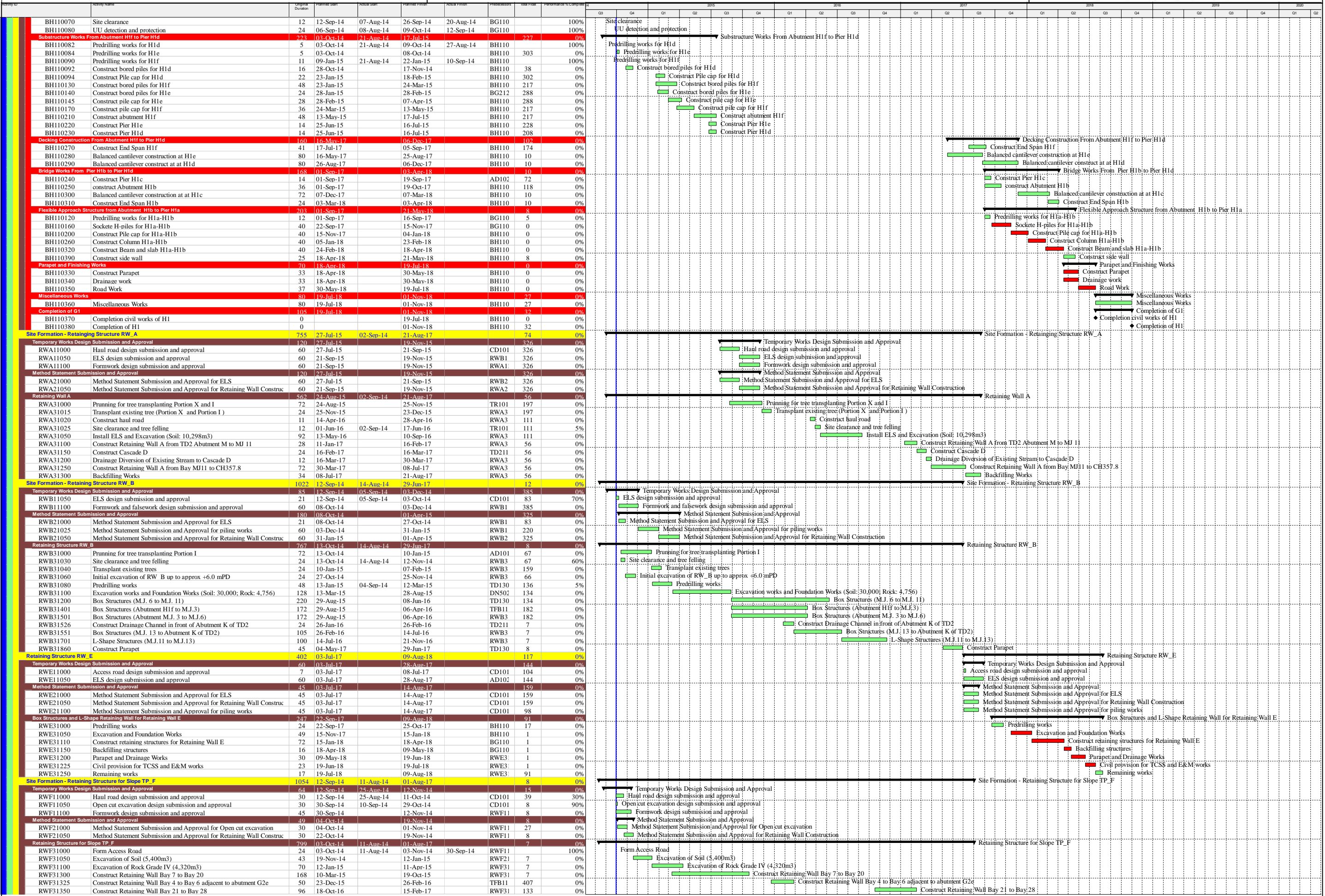
Date	Revision	Checked	Approved
30-Sep-14	Draft		

Activity Name		Original Duration	Planned Start	Actual Start	Planned Finish	Actual Finish	Planned Duration	Actual Duration	Performance % Complete	201520162017201820192020																												
										Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2									
PR40110 Submit the 1st ESP w/MPR		0			28-Jul-14	28-Jul-14			100%	◆ Submit the 1st ESP w/MPR																												
Site Safety & Environmental		131	03-Aug-14	21-Jul-14	12-Dec-14			1818	0%	◆ Site Safety & Environmental																												
Site Safety		26	12-Sep-14	21-Jul-14	08-Oct-14			10	0%	◆ Site Safety																												
SE10100 Submit draft safety plan (LoA+14d)		0			12-Sep-14	21-Jul-14			100%	◆ Submit draft safety plan (LoA+14d)																												
SE10150 Acceptance of the safety plan		0			30-Sep-14	30-Sep-14			100%	◆ Acceptance of the safety plan																												
SE10200 Submit project safety plan		0			08-Oct-14			10	0%	◆ Submit project safety plan																												
Environmental		131	03-Aug-14	21-Jul-14	12-Dec-14			1818	0%	◆ Environmental																												
SE20050 Apply billing account (disposal/charging scheme) from EPD		0			03-Aug-14	21-Jul-14			100%	◆ Apply billing account (disposal/charging scheme) from EPD																												
SE20100 Submit environmental plan (EMP)		0			12-Sep-14	23-Jul-14			100%	◆ Submit environmental plan (EMP)																												
SE20140 Acceptance of the environmental plan (EMP)		0			30-Sep-14	30-Sep-14			100%	◆ Acceptance of the environmental plan (EMP)																												
SE20150 Nominate web site designer		0			12-Sep-14	13-Aug-14			100%	◆ Nominate web site designer																												
SE20160 Acceptance of the web site designer		0			30-Sep-14	30-Sep-14			100%	◆ Acceptance of the web site designer																												
SE20170 Design and submit of the environmental web site		14	30-Sep-14	27-Sep-14	15-Oct-14			41	1.99%	◆ Design and submit of the environmental web site																												
SE20210 Acceptance of the web site design		0			05-Dec-14			41	0%	◆ Acceptance of the web site design																												
SE20220 Activate the environmental web site		0			12-Dec-14			41	0%	◆ Activate the environmental web site																												
Existing Trees		134	11-Aug-14	11-Aug-14	23-Dec-14			317	0%	◆ Existing Trees																												
TR10100 Existing tree survey field work		24	11-Aug-14	11-Aug-14	10-Sep-14	10-Sep-14			100%	Existing tree survey field work																												
TR10110 Prepare & submit tree survey report		30	01-Sep-14	18-Aug-14	30-Sep-14	29-Sep-14			100%	Prepare & submit tree survey report																												
TR10150 Acceptance of the tree survey report		0			19-Nov-14			47	0%	◆ Acceptance of the tree survey report																												
TR10160 Prepare & submit tree risk assessment report		40	12-Sep-14	05-Sep-14	21-Oct-14			319	20%	Prepare & submit tree risk assessment report																												
TR10200 Acceptance of the tree risk assessment report		0			23-Dec-14			319	0%	◆ Acceptance of the tree risk assessment report																												
Site Hoarding		60	04-Aug-14	21-Jul-14	30-Sep-14			141	0%	◆ Site Hoarding																												
SH10100 Prepare & submit site hoarding plan		14	04-Aug-14	21-Jul-14	16-Aug-14	24-Jul-14			100%	Prepare & submit site hoarding plan																												
SH10140 Acceptance of the site hoarding plan		0			30-Sep-14			141	0%	◆ Acceptance of the site hoarding plan																												
Condition Survey & CIA Reports		74	12-Sep-14	07-Aug-14	24-Nov-14			127	0%	◆ Condition Survey & CIA Reports																												
CS10100 Field work for condition survey		48	12-Sep-14	07-Aug-14	13-Nov-14	14-Sep-14			100%	Field work for condition survey																												
CS10110 Prepare & submit condition survey report		30	07-Oct-14	15-Sep-14	03-Nov-14	17-Sep-14			100%	Prepare & submit condition survey report																												
CS10150 Acceptance of the condition survey report		0			10-Nov-14			128	0%	◆ Acceptance of the condition survey report																												
CS10160 Prepare & submit CIA report		30	27-Oct-14	01-Sep-14	24-Nov-14	04-Sep-14			100%	Prepare & submit CIA report																												
CS10200 Acceptance of the CIA report		0			24-Nov-14			128	0%	◆ Acceptance of the CIA report																												
Insurance - Care of the Works		0	31-Jul-14	23-Jul-14	31-Jul-14	23-Jul-14			0%	◆ Insurance - Care of the Works																												
IN10100 Submit TPL+CAR policy draft wording		0			31-Jul-14	23-Jul-14			100%	◆ Submit TPL+CAR policy draft wording																												
Insurance - Professional Indemnity		4	13-Aug-14	11-Aug-14	16-Aug-14	13-Aug-14			0%	◆ Insurance - Professional Indemnity																												
Contractor PI		0	13-Aug-14	11-Aug-14	13-Aug-14	11-Aug-14			0%	◆ Contractor PI																												
IN20100 Submit PI policy		0			13-Aug-14	11-Aug-14			100%	◆ Submit PI policy																												
ICE PI		0	16-Aug-14	13-Aug-14	16-Aug-14	13-Aug-14			0%	◆ ICE PI																												
IN40100 Submit PI policy		0			16-Aug-14	13-Aug-14			100%	◆ Submit PI policy																												
Site Organization Structure		0	31-Jul-14	21-Jul-14	31-Jul-14	21-Jul-14			0%	◆ Site Organization Structure																												
OR10100 Submit Contractor site organization structure		0			31-Jul-14	21-Jul-14			100%	◆ Submit Contractor site organization structure																												
Subcontractor Management Plan (SMP)		0	31-Jul-14	21-Jul-14	31-Jul-14	21-Jul-14			0%	◆ Subcontractor Management Plan (SMP)																												
MP20100 Submit SMP		0			31-Jul-14	21-Jul-14			100%	◆ Submit SMP																												
Risk Management Plan		0	11-Aug-14	07-Aug-14	11-Aug-14	07-Aug-14			0%	◆ Risk Management Plan																												
MP30100 Submit risk management plan		0			11-Aug-14	07-Aug-14			100%	◆ Submit risk management plan																												
Temp Drainage Management Plan (TDMP)		0	08-Oct-14		08-Oct-14	07-Aug-14			64	0%	◆ Temp Drainage Management Plan (TDMP)																											
MP50100 Submit TDMP		0			08-Oct-14			64	0%	◆ Submit TDMP																												
Site Security Plan		0	07-Aug-14	04-Aug-14	07-Aug-14	04-Aug-14			0%	◆ Site Security Plan																												
MP60100 Submit site security plan		0			07-Aug-14	04-Aug-14			100%	◆ Submit site security plan																												
Uniform		0	31-Jul-14	21-Jul-14	31-Jul-14	21-Jul-14			0%	◆ Uniform																												
UN10100 Submit uniform proposal		0			31-Jul-14	21-Jul-14			100%	◆ Submit uniform proposal																												
Site Trip Ticket Management Plan (STTMP)		0	31-Jul-14	21-Jul-14	31-Jul-14	21-Jul-14			0%	◆ Site Trip Ticket Management Plan (STTMP)																												
MP70100 Submit STTMP		0			31-Jul-14	21-Jul-14			100%	◆ Submit STTMP																												
Waste Management Plan (WMP)		0	04-Aug-14	23-Jul-14	04-Aug-14	23-Jul-14			0%	◆ Waste Management Plan (WMP)																												
MP80100 Submit WMP		0			04-Aug-14	23-Jul-14			100%	◆ Submit WMP																												
Public Relations Plan		0	18-Sep-14	08-Aug-14	18-Sep-14	08-Aug-14			0%	◆ Public Relations Plan																												
MP90100 Submit public relations plan		0			18-Sep-14	08-Aug-14			100%	◆ Submit public relations plan																												
Temporary Traffic Management		220	13-Aug-14	13-Aug-14	21-Mar-15			54	0%	◆ Temporary Traffic Management																												
Construction Traffic Impact Assessment (CTIA)		98	30-Sep-14	30-Sep-14	05-Jan-15			62	0%	◆ Construction Traffic Impact Assessment (CTIA)																												
TT10100 Prepare & submit CTIA report (TMLG/TD/The Engineer)		40	30-Sep-14	30-Sep-14	07-Nov-14			62	5%	Prepare & submit CTIA report (TMLG/TD/The Engineer)																												
TT10150 Acceptance of The CTIA report		0			05-Jan-15			62	0%	◆ Acceptance of The CTIA report																												
Permitting (XP)		88	13-Aug-14	13-Aug-14	08-Nov-14	25-Aug-14			0%	◆ Permitting (XP)																												
TT20100 Serve 2 month notice to HyD for the application of XP		0			13-Aug-14	13-Aug-14			100%	◆ Serve 2 month notice to HyD for the application of XP																												
TT20150 XP plan registration		0			13-Oct-14	25-Aug-14			100%	◆ XP plan registration																												
TT20200 XP application processing		90	14-Aug-14	14-Aug-14	08-Nov-14	25-Aug-14			100%	◆ XP application processing																												
TT20250 Award of XP		0			12-Sep-14	25-Aug-14			100%	◆ Award of XP																												
Temp Traffic Arrangement for Lung Mun Road		109	18-Sep-14	21-Aug-14	05-Jan-15			62	0%	◆ Temp Traffic Arrangement for Lung Mun Road																												
TT30100 Prepare & submit draft TTA - LMR for bridge works		14	18-Sep-14	21-Aug-14	04-Oct-14	05-Sep-14			100%	Prepare & submit draft TTA - LMR for bridge works																												
TT30150 The Engineer review & comment		21	30-Sep-14		21-Oct-14			71	0%	◆ The Engineer review & comment																												
TT30200 Revise & submit TTA for approval (TMLG/The Engineer)		10	20-Oct-14	05-Sep-14	29-Oct-14			71	30%	◆ Revise & submit TTA for approval (TMLG/The Engineer)																												
TT30250 Approval of the TTA scheme (LMR)		0			05-Jan-15			62	0%	◆ Approval of the TTA scheme (LMR)																												
Temp Traffic Arrangement for Lung Fu Road Roundabout (for Sewer Culvert and Roadworks)		163	13-Oct-14	05-Sep-14	21-Mar-15			52	0%	◆ Temp Traffic Arrangement for Lung Fu Road Roundabout (for Sewer Culvert and Roadworks)																												
TT40100 Prepare & submit draft TTA - LFR R/A for R&D works		60	13-Oct-14	05-Sep-14	08-Dec-14			52	5%	Prepare & submit draft TTA - LFR R/A for R&D works																												
TT40150 The Engineer review & comment		21	05-Dec-14		27-Dec-14			52	0%	◆ The Engineer review & comment																												
TT40200 Revise & submit TTA for approval (TMLG/TD/The Engineer)		60	30-Dec-14	05-Sep-14	28-Feb-15			52	5%	◆ Revise & submit TTA for approval (TMLG/TD/The Engineer)																												
TT40250 Approval of the TTA scheme (LFR R/A)		0			21-Mar-15			52	0%	◆ Approval of the TTA scheme (LFR R/A)																												
Interface Management		67	12-Sep-14	13-Aug-14	15-Nov-14			69	0%	◆ Interface Management																												
Management Plan Submission/Update/Revision		67	12-Sep-14	13-Aug-14	15-Nov-14			69	0%	◆ Management Plan Submission/Update/Revision																												
IF10100 Prepare & submit Interface Management Plan		42	12-Sep-14	13-Aug-14	23-Oct-14	02-Sep-14			100%	Prepare & submit Interface Management Plan																												
IF10150 Acceptance of the plan		0			27-Oct-14			69	0%	◆ Acceptance of the plan																												
IF10200 Prepare & submit detailed Interface Document		21	27-Oct-14		15-Nov-14			69	0%	Prepare & submit detailed Interface Document																												
IF10250 Acceptance of the detailed Interface Document		0			15-Nov-14			69	0%	◆ Acceptance of the detailed Interface Document																												
Alternative Design		944	31-Jul-14	29-Jul-14	15-Feb-17			279	0%	◆ Alternative Design																												
ACABAS Submission		99	07-Aug-14	05-Aug-14	11-Nov-14			98	0%	◆ ACABAS Submission																												
DN10150 Prepare draft doc for ACABAS submission		0			07-Aug-14	05-Aug-14			100%	◆ Prepare draft doc for ACABAS submission																												
DN10200 Presentation of ACABAS submission to HyD/The Engineer		0			13-Aug-14	13-Aug-14			100%	◆ Presentation of ACABAS submission to HyD/The Engineer																												
DN10250 Finalize & submit the document to ACABAS		14	13-Aug-14	13-Aug-14	26-Aug-14	19-Aug-14			100%	◆ Finalize & submit the document to ACABAS																												
DN10300 Verbal confirmation on approval from ACABAS		0			30-Sep-14			98	0%	◆ Verbal confirmation on approval from ACABAS																												
DN10350 Formal acceptance from ACABAS		0			11-Nov-14			98	0%	◆ Formal acceptance from ACABAS																												
AIP Submission		76	31-Jul-14	29-Jul-14	13-Oct-14			17	0%	◆ AIP Submission																												
DN20150 Submit Design Memorandum (DDM) to the Engineer		0			31-Jul-14	29-Jul-14			100%	◆ Submit																												

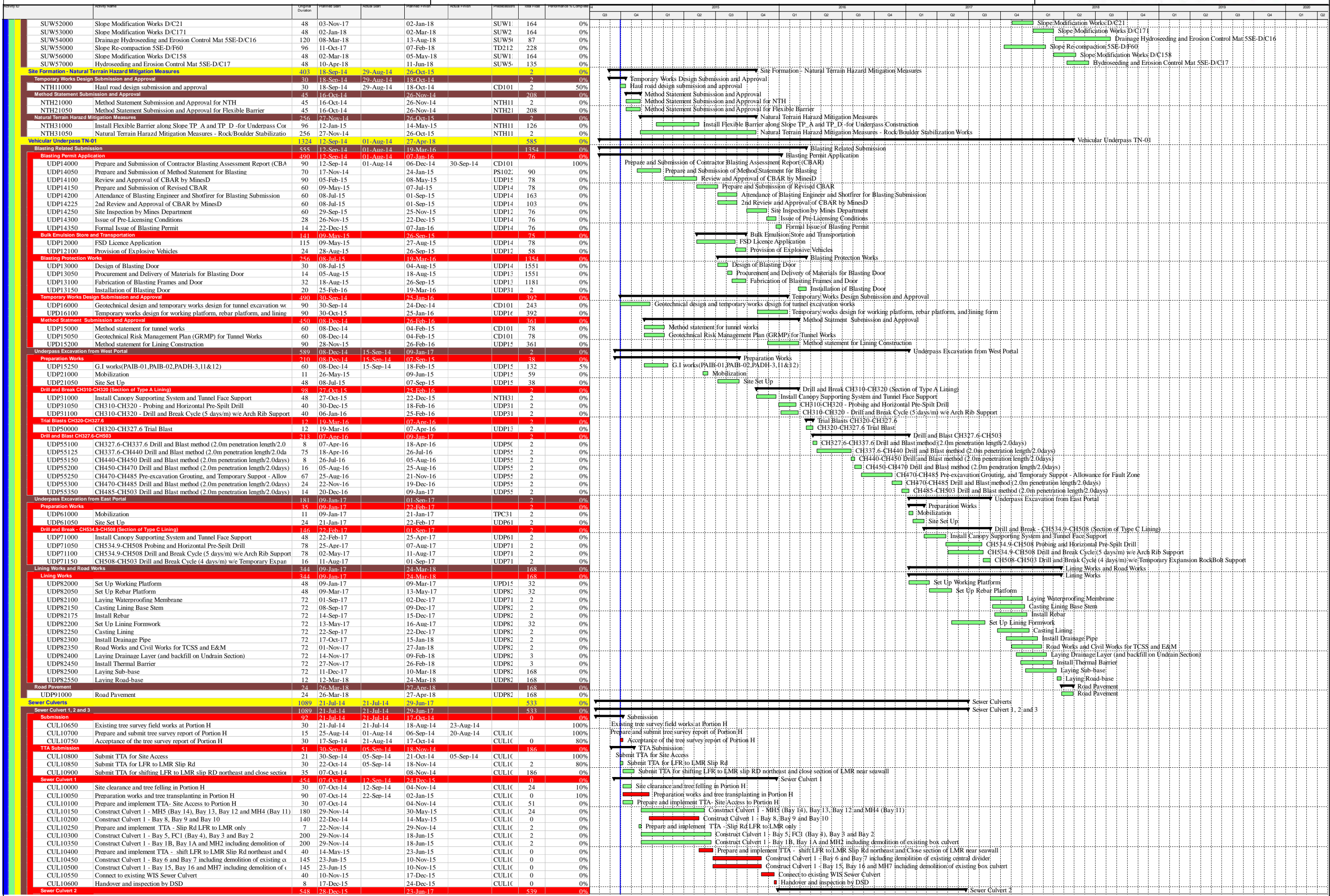
Activity Name		Original Duration	Planned start	Actual start	Planned finish	Actual finish	Progression	Time Used	Performance % Complete																													
Utility	UT10100	Request from utilities undertakers the existing plans	0			12-Sep-14	21-Jul-14	CD101		100%	◆Request from utilities undertakers the existing plans																											
	UT10200	Prepare & submit 1st trial holes proposal	14	16-Sep-14	04-Aug-14	29-Sep-14	05-Aug-14	UT101		100%	◆Prepare & submit 1st trial holes proposal																											
	UT10250	Acceptance of the proposal	0			30-Sep-14		PS104	158	0%	◆Acceptance of the proposal																											
	Verification of Existing Utilities		27	21-Oct-14	21-Jul-14	17-Nov-14	05-Aug-14			0%	◆Verification of Existing Utilities																											
	UT20100	Trial holes field works	17	21-Oct-14	04-Aug-14	10-Nov-14	05-Aug-14	TT202		100%	◆Trial holes field works																											
	UT20150	Prepare & submit trial hole reports	14	04-Nov-14	21-Jul-14	17-Nov-14	30-Jul-14	UT201		100%	◆Prepare & submit trial hole reports																											
	Utility Diversion/Protection Plan		28	10-Nov-14	04-Aug-14	06-Dec-14	11-Sep-14			0%	◆Utility Diversion/Protection Plan																											
	UT30050	Liaise with utility undertaking	21	10-Nov-14	04-Aug-14	29-Nov-14	04-Aug-14	UT201		100%	◆Liaise with utility undertaking																											
	UT30100	Prepare & submit utility diversion / protection plan	14	24-Nov-14	04-Aug-14	06-Dec-14	11-Sep-14	UT300		100%	◆Prepare & submit utility diversion / protection plan																											
	Method Statement Submission (MSS) and Approval for Early Tasks		49	12-Sep-14	21-Jul-14	29-Oct-14			49	0%	◆Method Statement Submission (MSS) and Approval for Early Tasks																											
MS10000	MSS for UU detection, protection and diversion	42	12-Sep-14	21-Jul-14	23-Oct-14	04-Aug-14	CD101		100%	◆MSS for UU detection, protection and diversion																												
MS10010	MSS for tree felling and transplanting	21	12-Sep-14	18-Aug-14	03-Oct-14	20-Aug-14	MS100		100%	◆MSS for tree felling and transplanting																												
MS10020	MSS for predrilling works	42	12-Sep-14	07-Aug-14	23-Oct-14	11-Aug-14	CD101		100%	◆MSS for predrilling works																												
MS10030	MSS for piling works	30	30-Sep-14	30-Sep-14	29-Oct-14		MS100	49	5%	◆MSS for piling works																												
Dismantling of HY/2012/04 Project Office at WA6		483	12-Sep-14	21-Jul-14	07-Jan-16			22	0%	◆Dismantling of HY/2012/04 Project Office at WA6																												
DM10000	Commencement of the Works	0	12-Sep-14	21-Jul-14			CD101		100%	◆Commencement of the Works																												
DM10010	Appointment of specialist subcontractor for demolition	28	04-Aug-15		31-Aug-15		DM100	26	0%	◆Appointment of specialist subcontractor for demolition																												
DM10020	Prepare and submit method statement	21	31-Aug-15		19-Sep-15		DM100	26	0%	◆Prepare and submit method statement																												
DM10030	Approval of method statement	28	19-Sep-15		17-Oct-15		DM100	26	0%	◆Approval of method statement																												
DM10040	Advance necessary precautionary and protective measure	21	24-Sep-15		24-Oct-15		DM100	19	0%	◆Advance necessary precautionary and protective measure																												
DM10050	Demolition Works	60	24-Oct-15		07-Jan-16		DM100	19	0%	◆Demolition Works																												
DM10060	Completion of Demolition	0			07-Jan-16		DM100	19	0%	◆Completion of Demolition																												
Instrumentation and Monitoring		1521	12-Sep-14	25-Aug-14	11-Nov-18			388	0%	◆Instrumentation and Monitoring																												
Ground Settlement Marker		1603	30-Sep-14	30-Sep-14	11-Nov-18			23	0%	◆Ground Settlement Marker																												
IM10050	Installation of GSM01.04-08,12,15-16,19,21-34,43	60	30-Sep-14		26-Nov-14		CD101	22	5%	◆Installation of GSM01.04-08,12,15-16,19,21-34,43																												
IM10055	Monitoring of GSM01.04-09,12,15-16,19,21-34,43	1435	06-Dec-14		10-Nov-18		IM100	23	0%	◆Monitoring of GSM01.04-09,12,15-16,19,21-34,43																												
IM10070	Installation of GSM02-03,09,17-18,20	250	27-Jan-15		02-Oct-15		TPD31	47	0%	◆Installation of GSM02-03,09,17-18,20																												
IM10075	Monitoring of GSM02-03,09,17-18,20	1100	15-Oct-15		19-Oct-18		IM100	45	0%	◆Monitoring of GSM02-03,09,17-18,20																												
IM10090	Installation of GSM10,13-14,37-42(Outside site boundary)	10	30-Jan-18		08-Feb-18		KD101	301	0%	◆Installation of GSM10,13-14,37-42(Outside site boundary)																												
IM10100	Installation of GSM10,13-14,37-42	110	12-Feb-15		05-Jun-15		SUW3	55	0%	◆Installation of GSM10,13-14,37-42																												
IM10105	Monitoring of GSM10,13-14,37-42	1210	19-Jun-15		10-Oct-18		IM101	54	0%	◆Monitoring of GSM10,13-14,37-42																												
IM10110	Installation of GSM35-36,GSM44,GSM47-50(Portion F)	15	20-Nov-17		02-Dec-17		AD102	20	0%	◆Installation of GSM35-36,GSM44,GSM47-50(Portion F)																												
IM10120	Monitoring of GSM35-36,GSM44,GSM47-50(Portion F) monitoring	330	16-Dec-17		11-Nov-18		IM101	23	0%	◆Monitoring of GSM35-36,GSM44,GSM47-50(Portion F) monitoring																												
Utility Settlement Marker		1471	01-Nov-14		10-Nov-18			23	0%	◆Utility Settlement Marker																												
IM20020	Installation of USM01-26	315	01-Nov-14		09-Dec-15		AD101	17	0%	◆Installation of USM01-26																												
IM20025	Monitoring of USM01-26	1430	12-Dec-14		10-Nov-18		IM200	23	0%	◆Monitoring of USM01-26																												
Vibration Monitoring Point		1455	07-Nov-14		10-Nov-18			39	0%	◆Vibration Monitoring Point																												
IM30010	Installation of VB01	5	07-Nov-14		12-Nov-14		CD101	34	0%	◆Installation of VB01																												
IM30015	Monitoring of VB01	1450	13-Nov-14		11-Nov-18		IM300	32	0%	◆Monitoring of VB01																												
IM30020	Installation of VB02(Outside site boundary)	5	30-Jan-18		03-Feb-18		KD101	676	0%	◆Installation of VB02(Outside site boundary)																												
Tiltmeter		1149	07-Nov-14		26-Oct-18			30	0%	◆Tiltmeter																												
IM40010	Installation of TM01	6	07-Nov-14		13-Nov-14		CD101	38	0%	◆Installation of TM01																												
IM40015	Monitoring of TM01	1430	27-Nov-14		26-Oct-18		IM400	38	0%	◆Monitoring of TM01																												
IM40020	Installation of TM02(Outside site boundary)	5	30-Jan-18		03-Feb-18		KD101	676	0%	◆Installation of TM02(Outside site boundary)																												
Piezometer/Standpipe		1516	12-Sep-14	28-Aug-14	05-Nov-18			28	0%	◆Piezometer/Standpipe																												
IMS0010	Installation of PADH1-PADH12,15,PATP-1	70	12-Sep-14	28-Aug-14	18-Nov-14		CD101	42	40%	◆Installation of PADH1-PADH12,15,PATP-1																												
IMS0015	Monitoring of PADH1-PADH12,15,PATP-1	1430	22-Nov-14		22-Oct-18		IMS00	42	0%	◆Monitoring of PADH1-PADH12,15,PATP-1																												
IMS0020	Installation of PADH13-PADH14	30	04-May-15		01-Jun-15		AD102	39	0%	◆Installation of PADH13-PADH14																												
IMS0025	Monitoring of PADH13-PADH14(Portion G)	1230	15-Jun-15		27-Oct-18		IMS00	38	0%	◆Monitoring of PADH13-PADH14(Portion G)																												
IMS0030	Installation of PADH15(Portion F)	6	30-Oct-17		04-Nov-17		AD102	33	0%	◆Installation of PADH15(Portion F)																												
IMS0035	Monitoring of PADH15(Portion F)	350	18-Nov-17		02-Nov-18		IMS00	31	0%	◆Monitoring of PADH15(Portion F)																												
IMS0040	Installation of PADH1(Portion H)	15	08-Nov-14		22-Nov-14		AD101	28	0%	◆Installation of PADH1(Portion H)																												
IMS0045	Monitoring of PADH1(Portion H)	1430	07-Dec-14		05-Nov-18		IMS00	28	0%	◆Monitoring of PADH1(Portion H)																												
Existing Drillholes With Installed Standpipe/Piezometer		1495	30-Sep-14	25-Aug-14	05-Nov-18			31	0%	◆Existing Drillholes With Installed Standpipe/Piezometer																												
IM60010	Installation of DCNLD1-DCNLD05,PNLD1-PNLD10	90	30-Sep-14	25-Aug-14	24-Dec-14		CD101	30	40%	◆Installation of DCNLD1-DCNLD05,PNLD1-PNLD10																												
IM60020	Monitoring of DCNLD1-DCNLD05,PNLD1-PNLD10	1430	04-Dec-14		03-Nov-18		IM600	31	0%	◆Monitoring of DCNLD1-DCNLD05,PNLD1-PNLD10																												
Toll Plaza Decking TD1		1463	18-Oct-14		19-Oct-18			45	0%	◆Toll Plaza Decking TD1																												
Temporary Works Design(TWD) Submission and Approval		330	17-Dec-14		10-Nov-15			180	0%	◆Temporary Works Design(TWD) Submission and Approval																												
TD111200	TWD -Formwork design for Pier	30	17-Dec-14		17-Jan-15		CD101	45	0%	◆TWD -Formwork design for Pier																												
TD111350	TWD -Formwork design for portal beam	60	19-May-15		17-Jul-15		TD111	180	0%	◆TWD -Formwork design for portal beam																												
TD111400	TWD -False work design for portal beam	30	17-Jul-15		14-Aug-15		TD111	180	0%	◆TWD -False work design for portal beam																												
TD111450	TWD -Formwork design for precast beam	60	17-Jul-15		11-Sep-15		TD111	180	0%	◆TWD -Formwork design for precast beam																												
TD111460	TWD -Formwork design for in-situ deck	60	11-Sep-15		10-Nov-15		TD111	180	0%	◆TWD -Formwork design for in-situ deck																												
Method Statement Submission and Approval		330	17-Jan-15		08-Dec-15			180	0%	◆Method Statement Submission and Approval																												
TD120000	MSS for pier construction	30	17-Jan-15		14-Feb-15		TD111	45	0%	◆MSS for pier construction																												
TD131350	MSS for portal construction	30	14-Aug-15		11-Sep-15		TD111	210	0%	◆MSS for portal construction																												
TD131400	MSS for precast beam installation	30	11-Sep-15		12-Oct-15		TD131	210	0%	◆MSS for precast beam installation																												
TD131450	MSS for in-situ deck	30	10-Nov-15		08-Dec-15		TD111	180	0%	◆MSS for in-situ deck																												
Off-Site Works		144	19-Aug-15		19-Feb-16			219	0%	◆Off-Site Works																												
TD130000	Launching girder procurement and testing	144	19-Aug-15		19-Feb-16		TD131	219	0%	◆Launching girder procurement and testing																												
Preparation Works		87	18-Oct-14		13-Jan-15			31	0%	◆Preparation Works																												
TD130050	Take over the T																																					







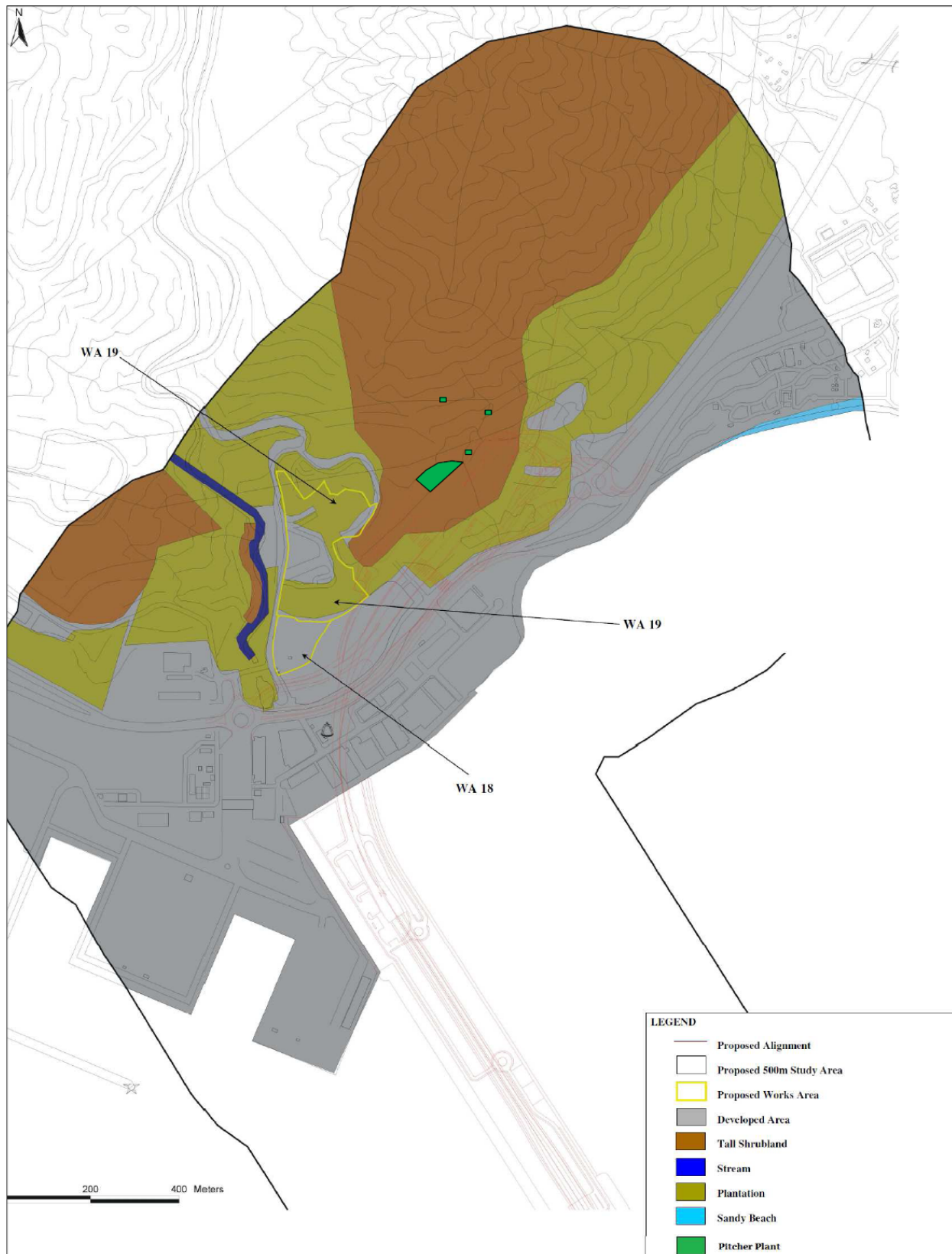




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Appendix B

Habitat Map of Tuen Mun



Appendix C

Location of Pitcher Plant



Plate 1: Pitcher Plant (*Nepenthes mirabilis*) in Rocky Slope habitat at the Donor Site



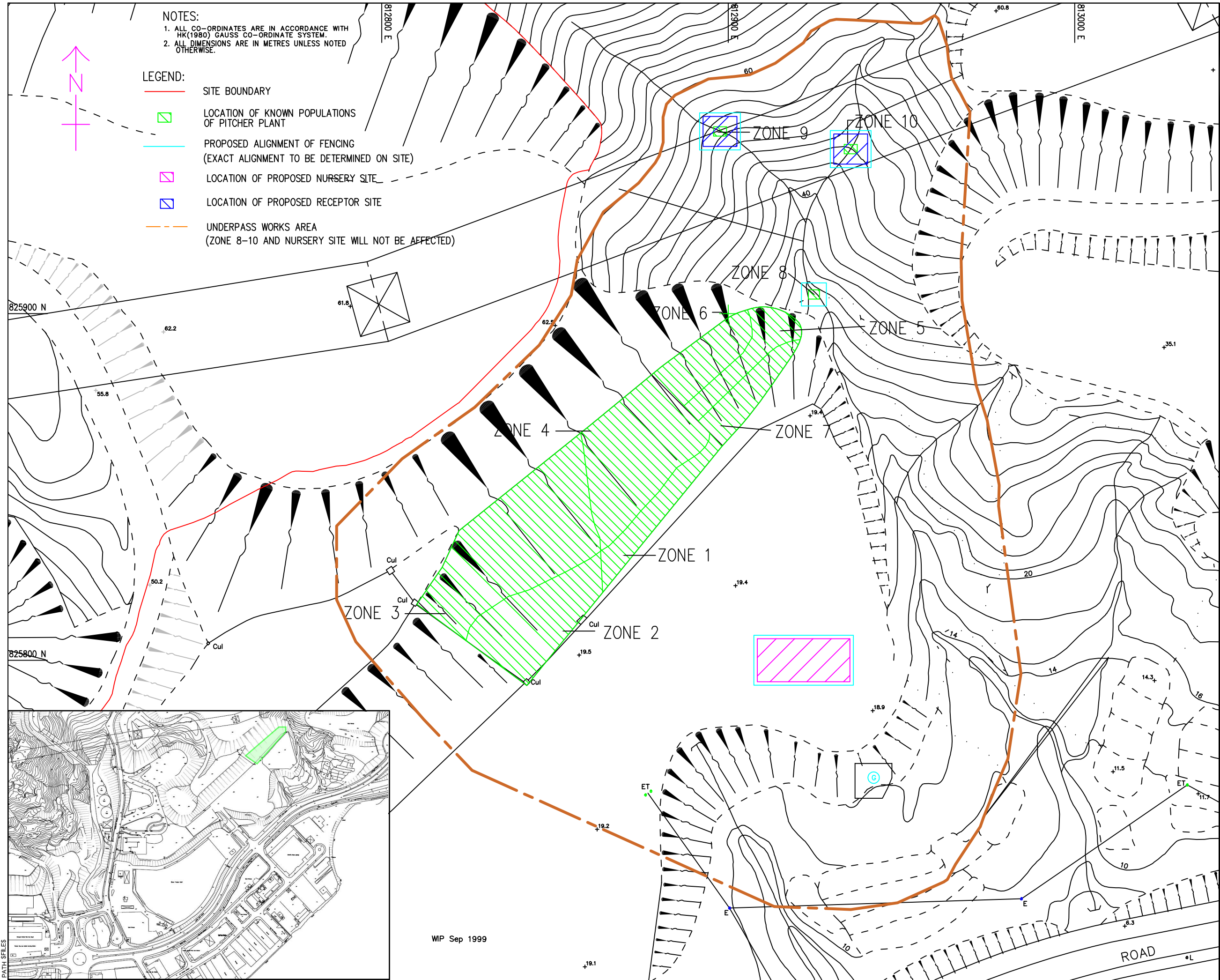
Plate 3: Tagged Pitcher Plant (Zone 6 in Rocky Slope habitat)



Plate 2: Pitcher Plant population in Donor Site - Zone 6 (looking west)



Plate 4: Tagged Pitcher Plant (Zone 10 in Shrubland habitat)



AECOM

PROJECT
TUEN MUN - CHEK LAP KOK LINK

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

CLIENT
路政署
HIGHWAYS DEPARTMENT
香港路政署工程管理部
Hong Kong - Zhuhai - Macao Bridge
Hong Kong Project Management Office

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION				
A	FEB.14	TENDER ADDENDUM NO. 1	CWN	
-	JAN.14	TENDER DRAWING	CWN	
IR	DATE	DESCRIPTION	CHK	
001	01/01/2013	ISSUED FOR TENDER	001	

STATUS
PRELIMINARY

SCALE
A1 1 : 500
DIMENSION UNIT
METRES

KEY PLAN

PROJECT NO.
60240249
CONTRACT NO.
HY/2013/12

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

SHEET NUMBER
60240249/C3/6503A

Appendix D

Photographic Record of Baseline Condition for Landscape and Visual

Your Ref :

Our Ref : C3/(HY/2013/12)/M45/002/B000211

B000211

29 September 2014

Director of Environmental Protection
Environmental Assessment Division
Regional Assessment Group
Environmental Protection Department
27/F, Southorn Centre
130 Hennessy Road
Wan Chai
Hong Kong

Attn: Ms. Marlene Y. H. Ho

Dear Sirs,

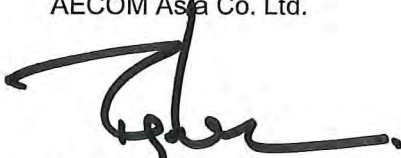
Contract No. HY/2013/12
Tuen Mun – Chek Lap Kok Link
- Northern Connection Toll Plaza and Associated Works

Photographic Record of Baseline Condition

Pursuant to Clause 7.4.1.1 of the EM&A Manual No. CE35/2011 EP, we would like to submit a copy of the Photographic Record for this Contract for your record.

Should you have any queries, please feel free to contact my Resident Engineer (S&E), Mr. Kelvin Yeung at 6906 1933.

Yours faithfully,
For and on behalf of
AECOM Asia Co. Ltd.



Roger Man
Chief Resident Engineer
Transportation

Encl.

cc	CE/NWNT, HyD	- Attn: Mr. Stephen W. C. Chan	- w/e (1 hardcopy + 1 softcopy)
	ENPO	- Attn: Mr. Y. H. Hui	- w/o
	IEC	- Attn: Mr. F. C. Tsang	- w/e(1 hardcopy + 1 softcopy)
	AECOM	- Attn: Mr. Conrad Ng	- w/o
	CKJV	- Attn: Mr. John Wong	- w/o
	AUES	- Attn: Mr. T. W. Tam	- w/e(1 hardcopy + 1 softcopy)

RM/RW/wl

Your Ref :

Our Ref : C3/(HY/2013/12)/M45/002/B000211



General view of works area B at northern bound of Lung Mun Road (opposite to Butterfly Beach Laundry)



General view of works area D



General view of works area G at southern bound of Lung Mun Road

Your Ref :

Our Ref : C3/(HY/2013/12)/M45/002/B000211



General view of works area I at south-west side of site entrance at Ho Sheun Street



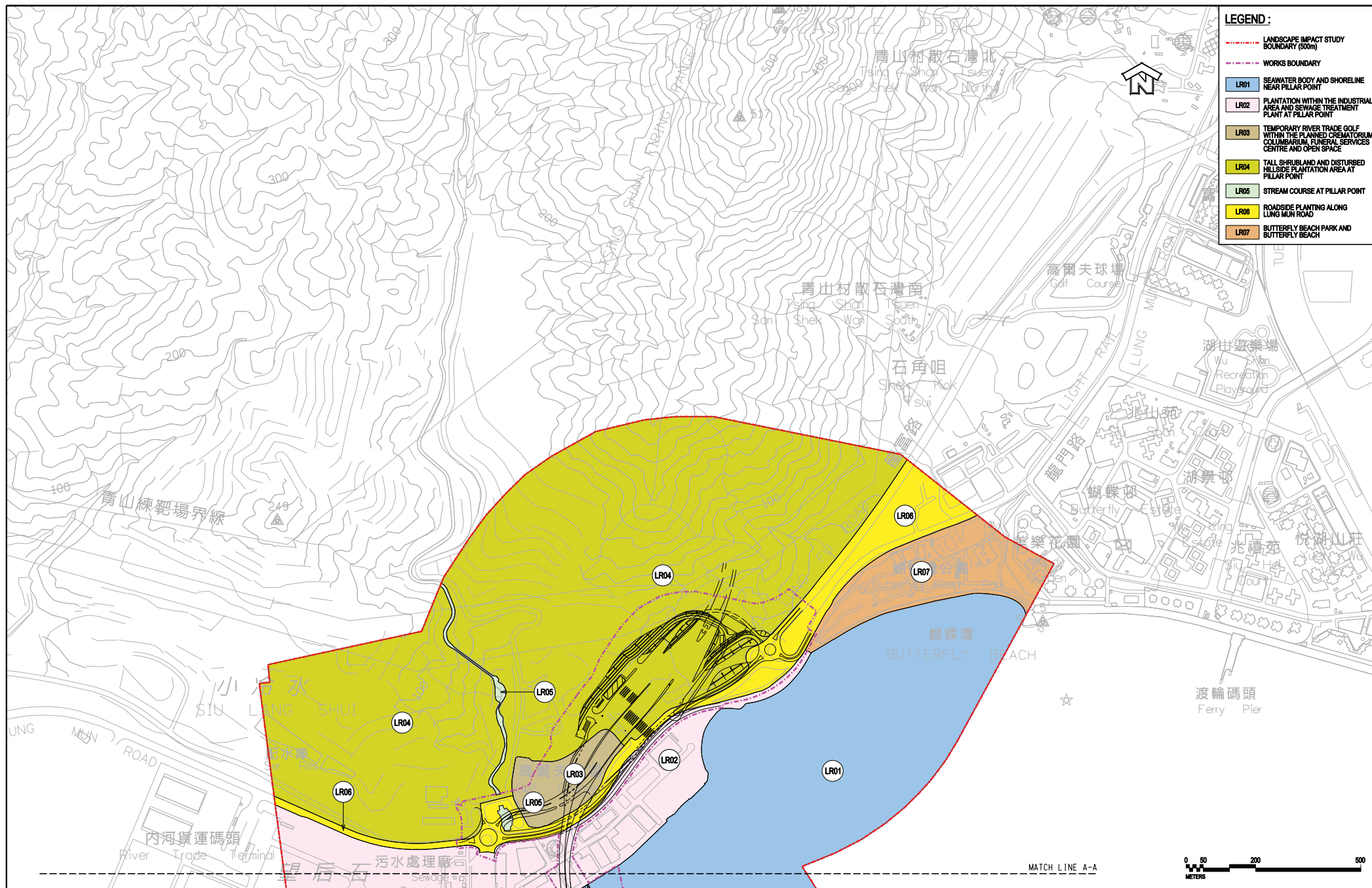
General View of works area X facing north side



General view of works area WA18 at south-west side

Appendix E

Key Plan of Landscape and Visual Resource



- LEGEND:**
- LANDSCAPE IMPACT STUDY BOUNDARY (500m)
 - WORKS BOUNDARY
 - LR01 SEAWATER BODY AND SHORELINE NEAR PILLAR POINT
 - LR02 PLANTATION WITHIN THE INDUSTRIAL AREA AND SEWAGE TREATMENT PLANT AT PILLAR POINT
 - LR03 TEMPORARY RIVER TRADE GOLF WITHIN THE PLANNED CREMATORIUM, COLUMBARIUM, FUNERAL SERVICES CENTRE AND OPEN SPACE
 - LR04 TALL SHRUBLAND AND DISTURBED HILLSIDE PLANTATION AREA AT PILLAR POINT
 - LR05 STREAM COURSE AT PILLAR POINT
 - LR06 ROADSIDE PLANTING ALONG LUNG MUN ROAD
 - LR07 BUTTERFLY BEACH PARK AND BUTTERFLY BEACH

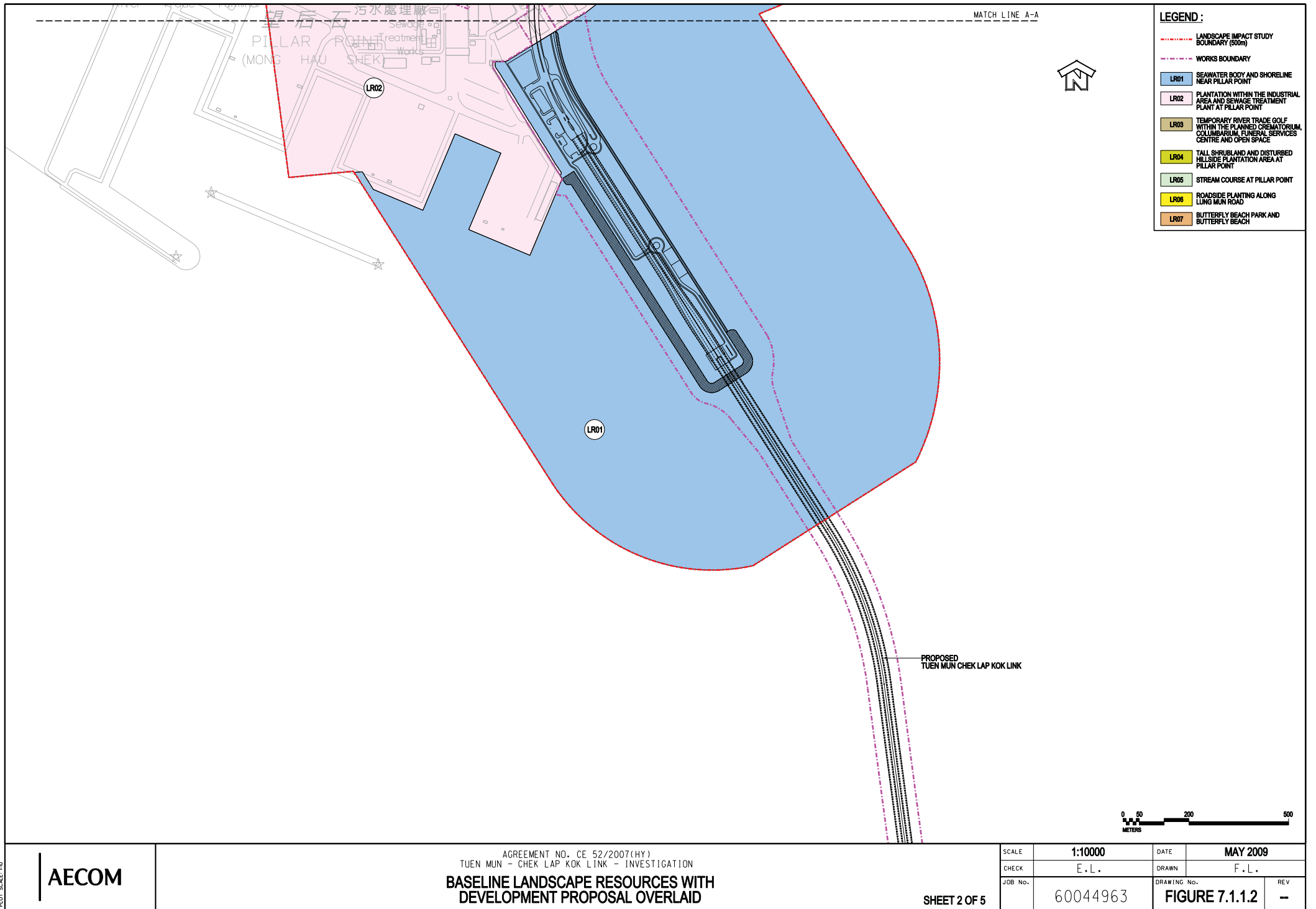
Printing: 21/7/2009
 Plot: 22/5/2009

AECOM

AGREEMENT NO. CE 52/2007(HY)
 TUEN MUN - CHEK LAP KOK LINK - INVESTIGATION
**BASELINE LANDSCAPE RESOURCES WITH
 DEVELOPMENT PROPOSAL OVERLAID**

SHEET 1 OF 5

SCALE	1:10000	DATE	MAY 2009
CHECK	E.L.	DRAWN	F.L.
JOB No.	60044963	DRAWING No.	FIGURE 7.1.1.1
		REV	--



LEGEND:	
- - - - -	LANDSCAPE IMPACT STUDY BOUNDARY (500m)
- - - - -	WORKS BOUNDARY
 	LR01 SEAWATER BODY AND SHORELINE NEAR PILLAR POINT
 	LR02 PLANTATION WITHIN THE INDUSTRIAL AREA AND SEWAGE TREATMENT PLANT AT PILLAR POINT
 	LR03 TEMPORARY RIVER TRADE GOLF WITHIN THE PLANNED CREMATORIUM, COLUMBARIUM, FUNERAL SERVICES CENTRE AND OPEN SPACE
 	LR04 TALL SHRUBLAND AND DISTURBED HILLSIDE PLANTATION AREA AT PILLAR POINT
 	LR05 STREAM COURSE AT PILLAR POINT
 	LR06 ROADSIDE PLANTING ALONG LUNG MUN ROAD
 	LR07 BUTTERFLY BEACH PARK AND BUTTERFLY BEACH

AECOM

AGREEMENT NO. CE 52/2007(HY)
TUEN MUN - CHEK LAP KOK LINK - INVESTIGATION
**BASELINE LANDSCAPE RESOURCES WITH
DEVELOPMENT PROPOSAL OVERLAID**

SHEET 2 OF 5

SCALE	1:10000	DATE	MAY 2009
CHECK	E.L.	DRAWN	F.L.
JOB No.	60044963	DRAWING No.	FIGURE 7.1.1.2
		REV	--