

***Environmental Consultancy Service  
for Operation of the Existing Tai Lam  
Explosives Magazine at Tai Shu Ha,  
Yuen Long for Liantang/Heung Yuen  
Wai Boundary Control Point Project***

***EM&A Manual***

September 2015

**Environmental Resources Management**

16/F, Berkshire House  
25 Westlands Road  
Quarry Bay, Hong Kong  
Telephone 2271 3000  
Facsimile 2723 5660

[www.erm.com](http://www.erm.com)






# Environmental Consultancy Service for Operation of the Existing Tai Lam Explosives Magazine at Tai Shu Ha, Yuen Long for Liantang/Heung Yuen Wai Boundary Control Point Project

## Environmental Resources Management

16/F, Berkshire House  
25 Westlands Road  
Quarry Bay  
Hong Kong  
Telephone: (852) 2271 3000  
Facsimile: (852) 2723 5660  
E-mail: post.hk@erm.com  
http://www.erm.com

**EM&A Manual**

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<p>This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract 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.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p> <p>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 on the report at their own risk.</p>		<p>Distribution</p> <p><input checked="" type="checkbox"/> Government</p> <p><input checked="" type="checkbox"/> Public</p> <p><input type="checkbox"/> Confidential</p> <div style="text-align: right;">    </div>			

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***ANNEX A – Implementation Schedule***

***ANNEX B – Complaint Log***

ERM-Hong Kong Ltd (ERM) has been commissioned by Dragages Hong Kong Limited (DHK) to undertake an Environmental Impact Assessment (EIA) Study and report for the continued operation of the existing Tai Lam Explosives Magazine (Tai Shu Ha, Yuen Long District, New Territories, Land Allocation GLA-TYL 1288, forthwith known as 'TLEM') at Tai Shu Ha, Yuen Long for the Liantang/Heung Yuen Wai Boundary Control Point (BCP) project (hereafter 'HKLTH') tunnel construction works (the Project). This Environmental Monitoring and Audit (EM&A) Manual (hereafter referred to as the Manual) is a supplementary document to the EIA Report.

The Manual has been prepared in accordance with the *EIA Study Brief* (No. EIA Brief ESB-280/2014) and the *Technical Memorandum of the Environmental Impact Assessment Process* (EIAO-TM). This Manual contains the following information:

- Responsibilities of the Contractor(s), Environmental Team (ET), and the Independent Environmental Checker (IEC) with respect to the EM&A requirements during the implementation of the Project;
- Project organisation;
- Requirements with respect to the operational programme schedule and the necessary EM&A programme to track the varying environmental impact;
- Requirements for reviewing pollution sources and working procedures required in the event of exceedances of applicable environmental criteria and/or receipt of complaints;
- Requirements for presentation of EM&A findings and appropriate reporting procedures; and
- Requirements for review of EIA predictions and the effectiveness of the mitigation measures and the EM&A programme.

An ET shall be appointed to conduct the monitoring works and to provide specialist advice on the undertaking and implementation of environmental responsibilities. The ET will be led and managed by the ET Leader. The ET Leader will have relevant education, training, knowledge, experience and professional qualifications and the appointment will be subject to the approval of the Director of Environmental Protection (DEP). Suitably qualified staff will be included in the ET, and ET should not be in any way an associated body of the Contractor(s). For the purpose of this manual, the ET Leader, who will be responsible for, and in charge of, the ET, is referred to as the person delegated the role of executing the EM&A requirements for the Project.



To maintain strict control of the EM&A process, an IEC will be engaged to verify and validate/ audit the environmental performance of the Contractor(s). Sufficient and suitably qualified professional and technical staff will be employed by the IEC, as required under the EM&A programme for the duration of the Project.

This EM&A Manual is a live document that should be reviewed regularly and updated as necessary during the Project.

## **1.2 PROJECT DESCRIPTION**

### **1.2.1 Project Scope**

The existing TLEM has been licensed and is currently in use by the MTR Corporation Limited (MTRC) for the construction of the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) until end 2015, under Environmental Permit No. EP-349/2009/L, being used by the MTR XRL 824 Contractor.

This Project and associated works covers:

- the use of the existing TLEM from late 2015 or early 2016 (expected January 2016) to December 2017 with the same operation as current users; and
- Explosives transport from the existing TLEM to the three worksites by DHK, using trucks approved by Civil Engineering and Development Department (CEDD)'s Mines Division (Mines).

The Project is located at the existing TLEM in Tai Shu Ha, Yuen Long District, New Territories. *Figure 1.1* shows the location and site plan of the Project and *Figure 1.2* details the Project Boundary. The existing TLEM is composed of the following components as illustrated in *Figure 1.3*:

- (i) Two stores each with a capacity of 400 kg explosives;
- (ii) Secure fence;
- (iii) CCTV system;
- (iv) Guard house; and
- (v) Street fire hydrant water tank (245 m<sup>3</sup>) and 2 pumps.

For the explosives transport, three possible transport routes that do not pass through tunnels have been identified for this Project, the proposed explosive transport route options R1, R2 and R3, from the magazine site to the three worksites (i.e. Mid-Ventilation Adit, North Portal and South Portal). *Figure 1.4*, *Figure 1.5* and *Figure 1.6* show plans of the proposed explosive transport route options R1, R2 and R3 respectively and more details of these routes from Tai Lam Explosives Magazine to the three worksites are provided in *Annex 8A, Table 2.9* of the EIA Report.

The key activities of the decommissioning works include:



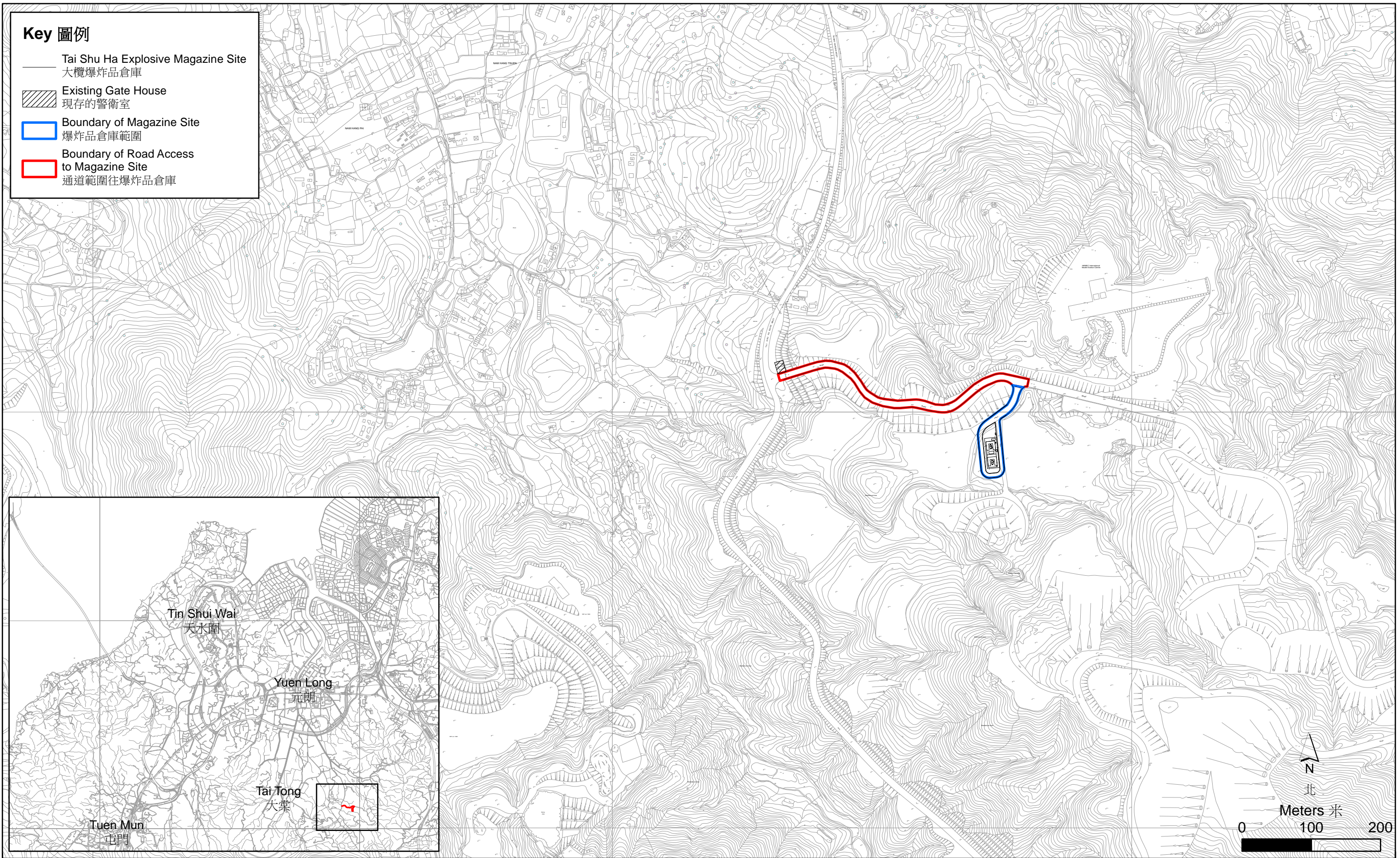


Figure 1.1  
圖 1.1

Site Plan of the Existing Tai Lam Explosives Magazine  
大欖爆炸品倉庫位置

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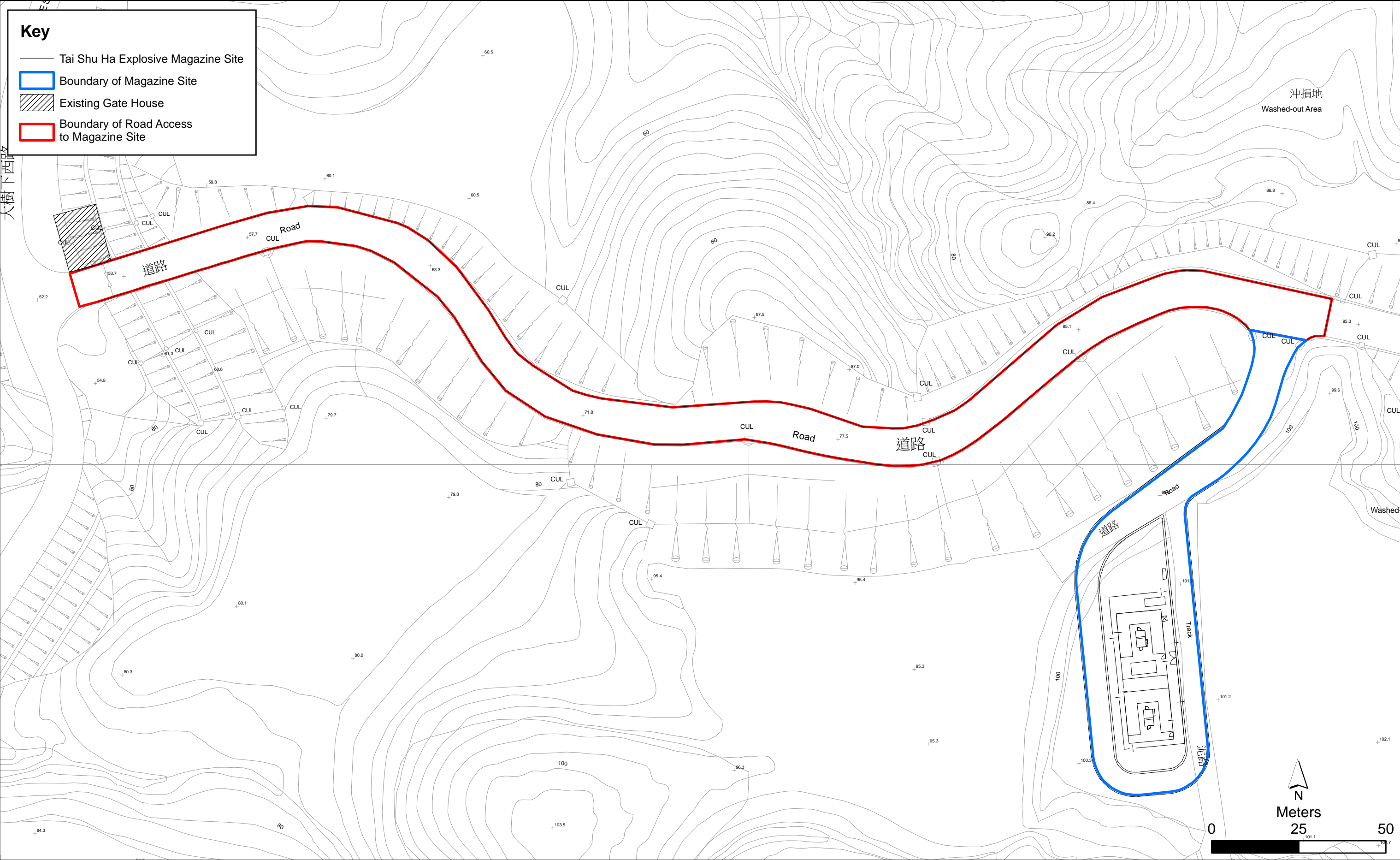


Figure 1.2

Project Boundary of Different Components

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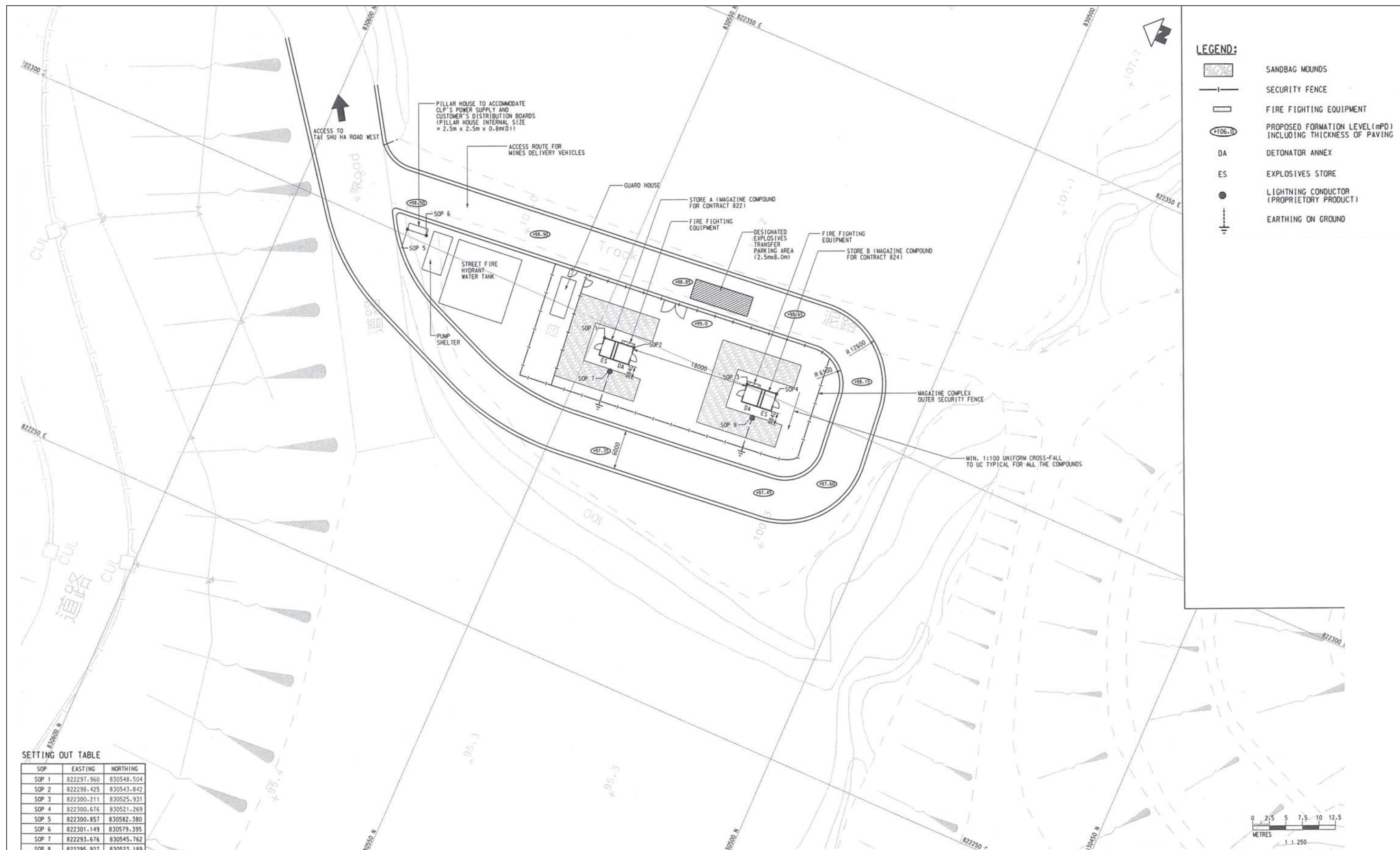


Figure 1.3 Tai Lam Explosives Magazine General Site Layout



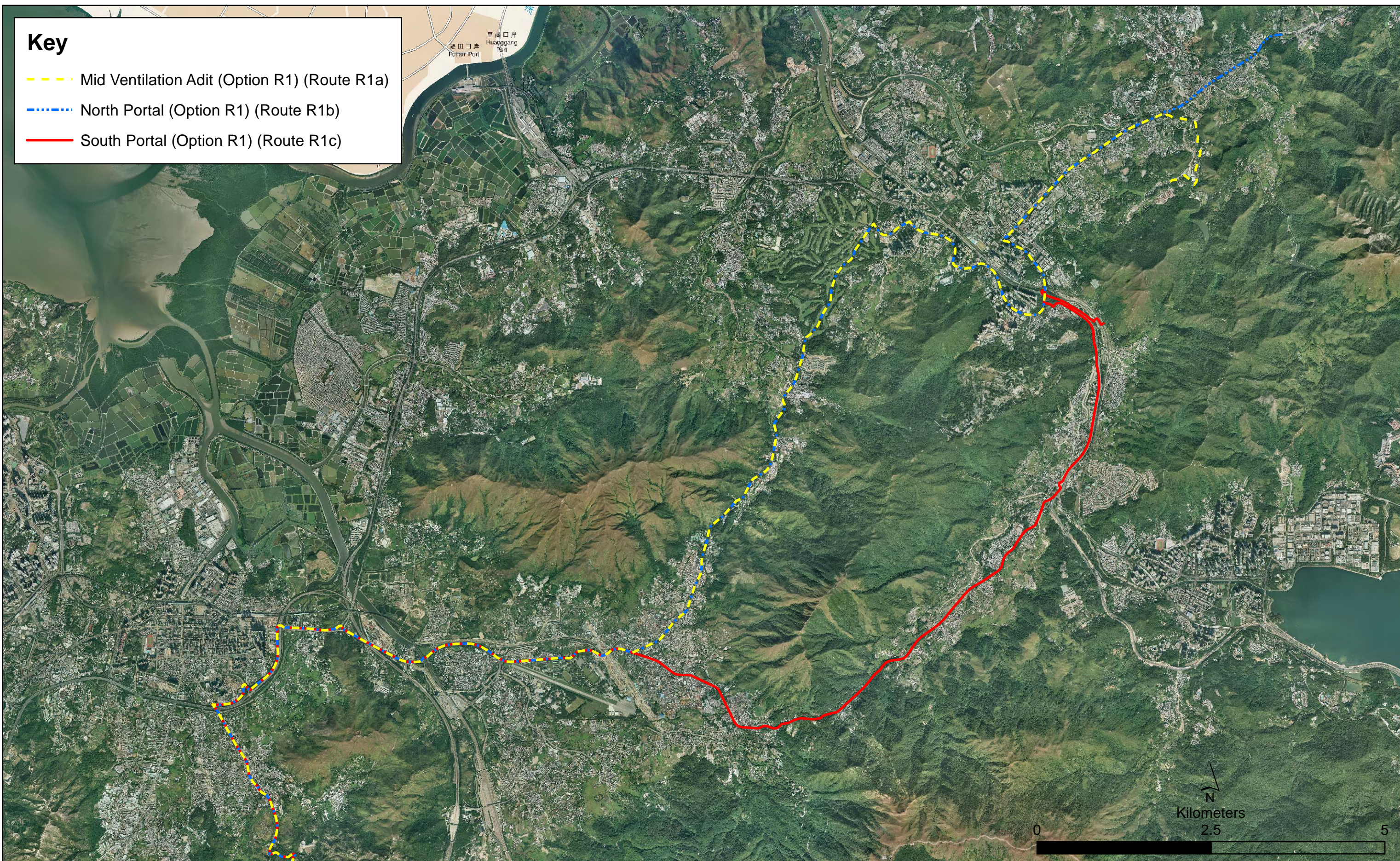


Figure 1.4

### Proposed Explosive Transport Route Option R1

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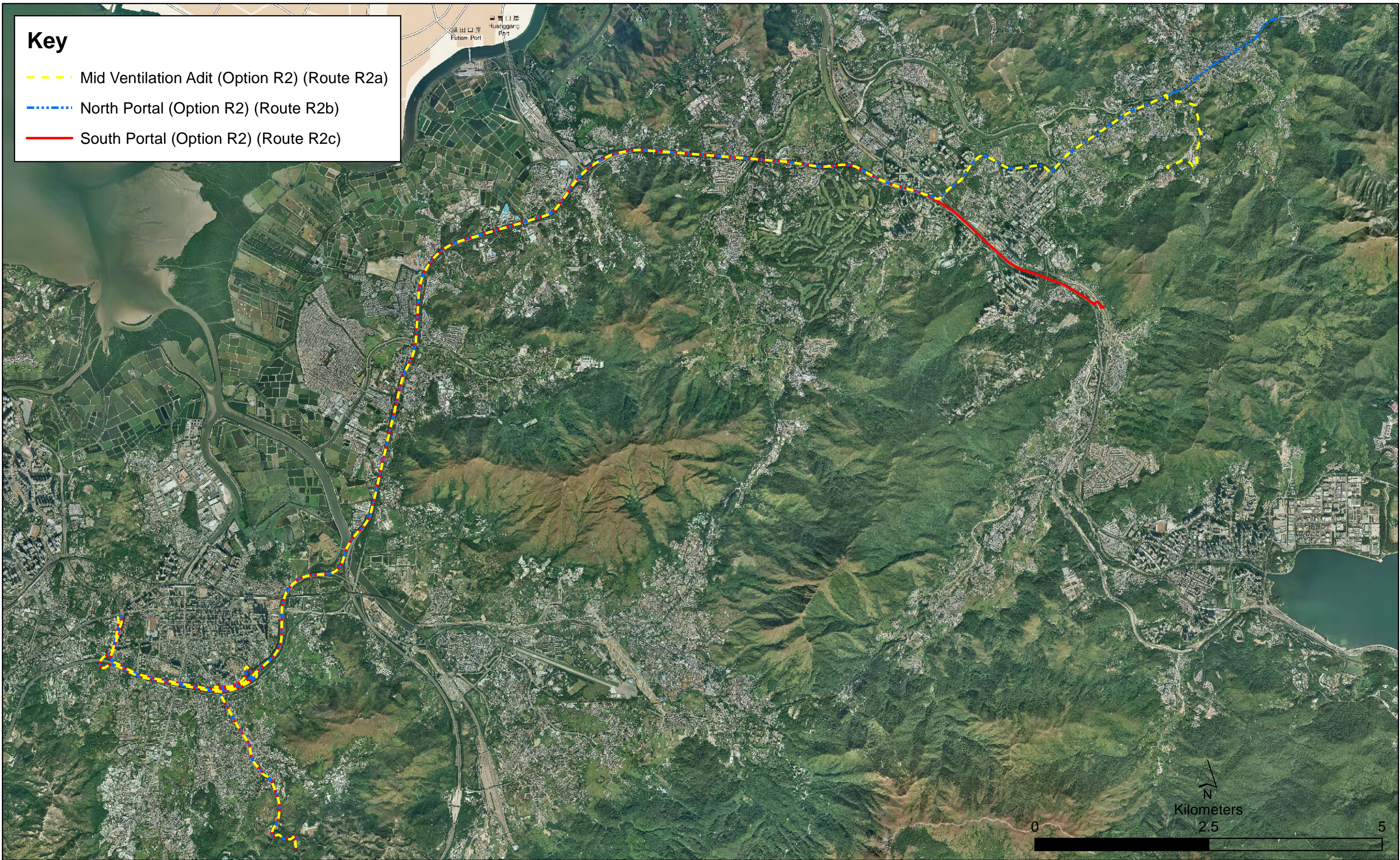


Figure 1.5

Proposed Explosive Transport Route Option R2

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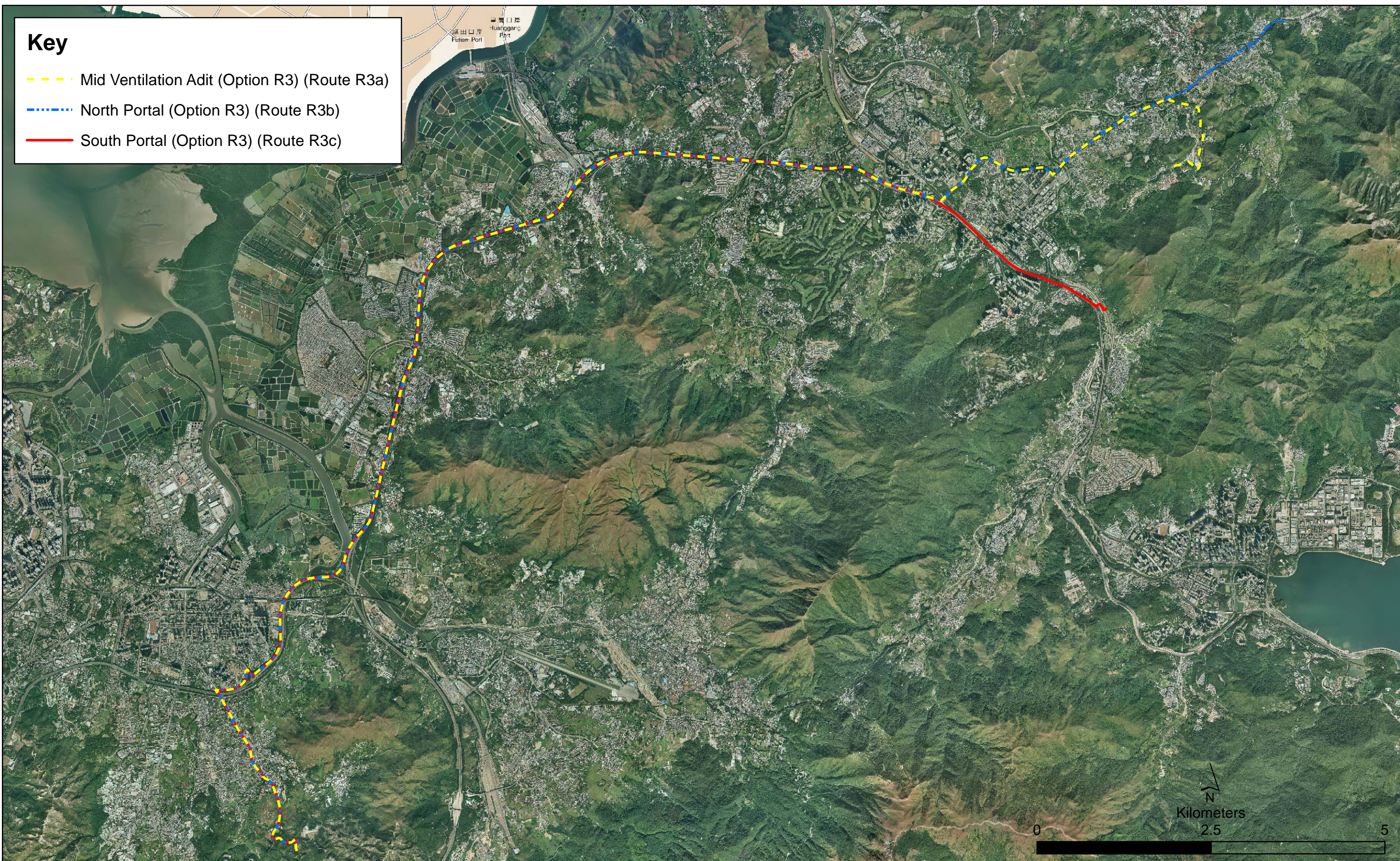


Figure 1.6

### Proposed Explosive Transport Route Option R3

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- Dismantle and remove E&M, fire services, CCTV and lighting installed for the two explosive stores;
- Demolish the earth bunds and the two explosive stores;
- Frame cut the re-bar and remove the concrete debris;
- Remove all fire service facilities and all ground services including guard house, road furniture and lighting;
- Remove fire hydrant water tank (245m<sup>3</sup>);
- Remove the container guard house and any temporary steel works; and
- Demolish the paved road for reinstatement of planting.

### 1.2.2 *Project Schedule*

For operation, the TLEM will be available for use from late 2015 or early 2016 (expected January 2016) to December 2017 with delivery of explosives to the TLEM expected to start in January 2016 and go through to December 2017.

The magazine operation will remain the same as under the current MTR XRL 824 Contractor and the Mines Division of the CEDD (Mines) will deliver a maximum of 800 kg explosives daily to the TLEM along with initiation devices (detonators). The transportation of explosives by Mines either to the Magazine or directly to sites is under Mines' responsibility and falls outside the scope of this EIA study. Only the amount of explosives required for blasting work will be delivered to TLEM by CEDD Mines Division. Explosives will then be withdrawn by DHK as required and delivered using trucks approved by Mines, to three HKLTH worksites located at:

- Sha Tau Kok Road – Wo Hang Section (North Portal);
- Po Kat Tsai Road (Mid Ventilation Portal); and
- Tong Hang Tung Chuen (South Portal)

For this Project, explosives transport will be scheduled with less than 200 kg of explosives per truck and a total of two to eight (2 – 8) deliveries per day will be carried out to the worksites (explosives are required at two to three [2 – 3] worksites per day) and maximum seven (7) days per week. Only the amount of explosives required for blasting work will be delivered to TLEM by CEDD Mines Division. Before the commencement of decommissioning works, no surplus explosives will be stored at the explosives magazine. The decommissioning of the TLEM will be conducted after the operation and will expect to be completed in one month.

## 1.3 *PURPOSE OF THE EM&A MANUAL*

The purpose of the Manual is to provide information, guidance and instruction to personnel charged with environmental duties and those responsible for undertaking Environmental Monitoring and Audit (EM&A) work during operation of the Project (no construction activity will be carried out). It provides systematic procedures for monitoring and auditing the environmental performance of the Project. It has been prepared to:

- Monitor the effectiveness of the control measures employed during the operation of the Project ;
- Verify that the Project does not result in any adverse impacts and that appropriate action is undertaken in the event that impacts are identified to sensitive receivers and are found to be associated with the Project; and
- Ensure landscape re-instatement planting that is due to be carried out under Environmental Permit No. EP-349/2009/L for construction of the Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) is carried out.

## **1.4 ORGANISATION OF THE EM&A PROCESS**

### **1.4.1 Project Organization**

The roles and responsibilities of the various parties involved in the EM&A process and the organisational structure of the organisations responsible for implementing the EM&A programme are outlined below. The proposed project organization and lines of communication with respect to environmental protection works are shown in *Figure 1.7*.

#### *Engineer or Engineer's Representative (ER)*

The Engineer is responsible for ensuring that the works are undertaken by the Contractor in accordance with the specification and contractual requirements. The duties and responsibilities of the Engineer with respect to EM&A may include:

- Supervise the Contractor's activities and ensure that the requirements in the EM&A Manual are fully complied with;
- Inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;
- Participate in site inspections undertaken by the ET; and
- Adhere to the procedures for carrying out complaint investigations.

#### *The Contractor*

The Contractor should report to the Engineer. The duties and responsibilities of the Contractor are:

- Implement the recommendations made in the EIA;
- Provide assistance to ET in carrying out monitoring;
- Submit proposals on mitigation measures in case of exceedances of Action and Limit levels, in accordance with the Event and Action Plans;
- Implement measures to reduce impact where Action and Limit levels are exceeded; and
- Adhere to the procedures for carrying out complaint investigation as required in the EM&A Manual.

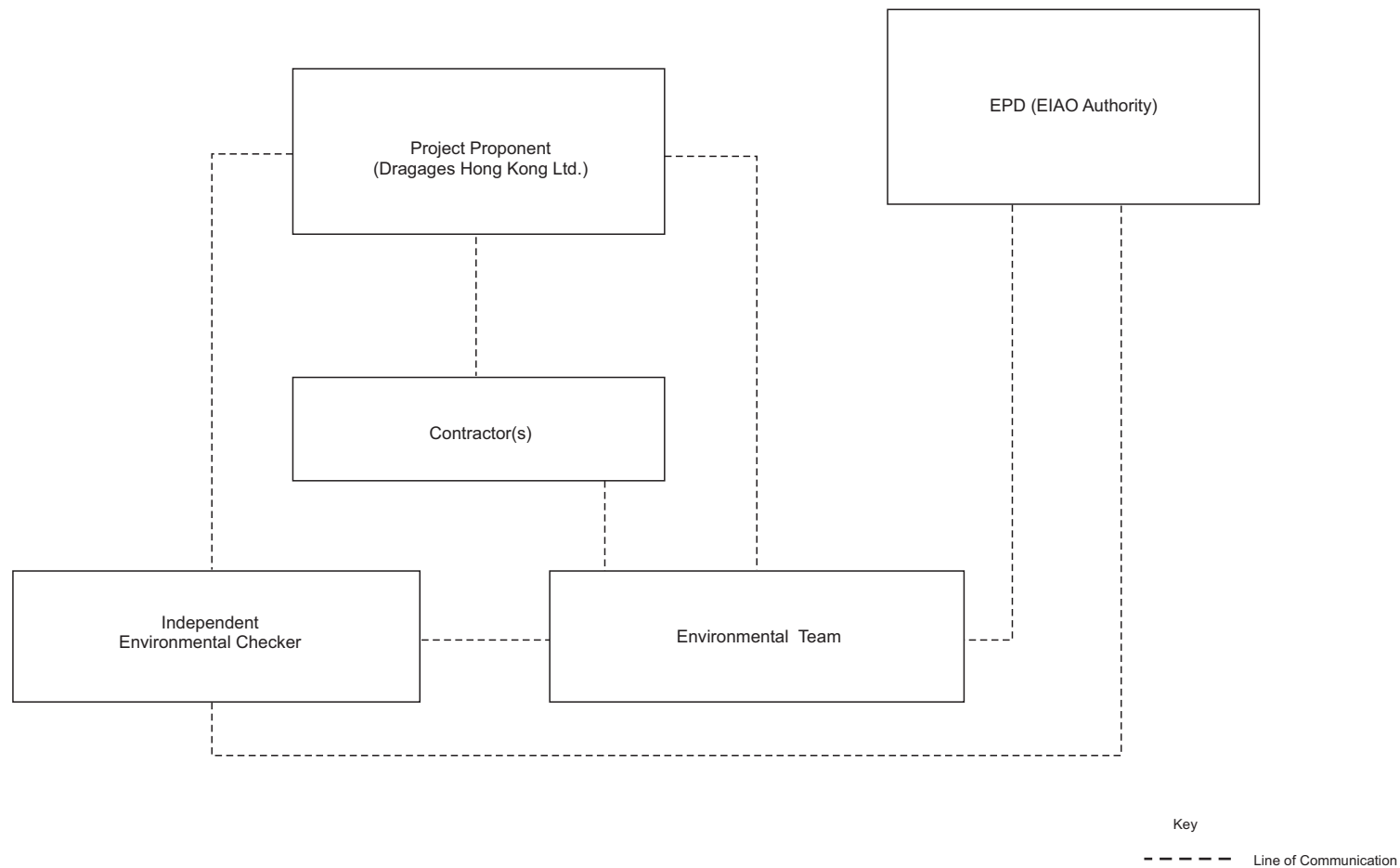


Figure 1.7

EM&A Organisation Chart

### *Environmental Team (ET)*

The ET should conduct the EM&A programme and ensure the Contractor's compliance with the project's environmental performance requirements during construction. The ET should be an independent party from the Contractor.

The ET should be led and managed by the ET leader. The ET leader should possess at least 7 years of experience in EM&A. The ET team should monitor the mitigation measures implemented by the Contractor on a regular basis to ensure compliance with the intended aims of the measures. The duties and responsibilities of the ET are:

- Monitor the various environmental parameters as required in the EM&A Manual;
- Carry out site inspection to investigate and audit the Contractor's site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and anticipate environmental issues for proactive action before problems arise;
- Analyse the EM&A data, review the success of EM&A programme to confirm the adequacy of mitigation measures implemented and the validity of the EIA predictions, and to identify any adverse environmental impacts arising and report EM&A results to the IEC, contractor, and ER;
- Prepare reports on the environmental monitoring data and the site environmental conditions; and
- Review mitigation measure proposals from the Contractor in the case of exceedance of action and Limit levels, in accordance with the Event and Action Plans.

### *Independent Environmental Checker (IEC)*

The IEC should advise the ER on environmental issues related to the project. The IEC should possess at least 7 years of experience in EM&A. The duties and responsibilities of the IEC are:

- Review and audit in an independent, objective and professional manner all aspects of the EM&A programme;
- Validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring locations, monitoring procedures and locations of sensitive receivers;
- Carry out random sample check and audit on monitoring data and sampling procedures, etc.;
- Conduct random site inspection;
- Audit the EIA recommendation and requirement against the status of implementation of environmental protection measures on site;
- Review the effectiveness of environmental mitigation measures and project environmental performance;
- On a need basis, verify and certify the environmental acceptability of the permit holder's construction methodology (both temporary and

permanent works), relevant design plans and submissions under the environmental permit;

- Verify the investigation results of complaint cases and the effectiveness of corrective measures;
- Verify EM&A report that has been certified by the ET leader; and
- Feedback audit results to ET/permit holder according to Event/ Action Plan in the EM&A manual.

The IEC should not be in any way an associated body of the Contractor or ET.

## 1.5

### *STRUCTURE OF THE EM&A MANUAL*

The remainder of the Manual is set out as follows:

- *Section 2* sets out the EM&A general requirements;
- *Section 3* sets out the EM&A requirements for ecology;
- *Section 4* details auditing requirements for hazard to life;
- *Section 5* describes the scope and frequency of site environmental inspection; and
- *Section 6* details the reporting requirements for the EM&A programme.

## 2 *EM&A GENERAL REQUIREMENTS*

### 2.1 *INTRODUCTION*

In this section, the general requirements of the EM&A programme for the Project are presented. The scope of the programme is developed with reference to the findings and recommendations of the EIA study.

#### 2.1.1 *Operation EM&A*

During the operation of the Project, audit of implementation of recommended mitigation measures for ecology and hazard to life as well as general good site practice including for disposal of waste, as determined in the EIA. However, should other operational licenses that require specific monitoring or audit conditions or practices be required, plans under the respective ordinances/ guidelines will need to be put in place.

#### 2.1.2 *Decommissioning EM&A*

During the decommissioning phase of the Project, audit of implementation of general good site practice including for disposal of waste, control of water quality and noise, as determined in the EIA. However, should other licenses that require specific monitoring or audit conditions or practices be required, plans under the respective ordinances/ guidelines will need to be put in place.

#### 2.1.3 *EM&A Upon Completion*

Once the use of the TLEM has ceased for the Project and the TLEM has been removed, audit of implementation of recommended mitigation measures for ecology (and landscape) will be undertaken as determined in the EIA and to meet the re-instatement planting requirements for this site in XRLs EP-349/2009/L as fully detailed in *Section 3.2*.

#### 2.1.4 *Environmental Monitoring*

The environmental monitoring work throughout the Project period will be carried out in accordance with this EM&A and reported by the ET. Monitoring works will cover ecology and hazard to life as well as general good site practice including for disposal of waste, control of water quality and control of noise.

#### 2.1.5 *Site Inspections & Audits*

In addition to ecology, as a means of assessing the ongoing performance of the Contractor(s), the ET will undertake site inspections of on-site practices and procedures each month. The primary objective of the inspection programme will be to assess the effectiveness of the environmental controls established by the Contractor(s) and the implementation of the environmental mitigation measures recommended in the EIA Report. The IEC will undertake monthly site audits to assess the performance of the Contractor(s) and the effectiveness of the ET.

Whilst the inspection and audit programme will complement the monitoring activity, the criteria against which the inspection/ audits will be undertaken will be derived from the Clauses within the Contract Documents which seek to enforce the recommendations of the EIA Report and the Manual.

The findings of site inspections and audits will be made known to the Contractor(s) at the time of the inspection to enable the rapid resolution of identified non-conformities. Non-conformities, and the corrective actions undertaken, will also be reported in the monthly EM&A Reports.

Section 5 of the Manual presents details of the scope and frequency of on-site inspections and defines the range of issues that the audit protocols will be designed to address.

#### **2.1.6      *Enquiries, Complaint and Requests for Information***

Enquiries, complaints and requests for information concerning the environmental effects of the Project, irrespective of how they are received, will be reported to the DHK and directed to the ET which will set up procedures for the handling, investigation and storage of such information. The following steps will then be followed:

- 1) The ET Leader will notify DHK of the nature of the enquiry.
- 2) An investigation will be initiated to determine the validity of the complaint and to identify the source(s) of the issue.
- 3) The Contractor(s) will undertake the following steps, as necessary:
  - investigate and identify source(s) of the issue;
  - if considered necessary by DHK following consultation with the IEC, undertake additional monitoring to verify the existence and severity of the alleged complaint;
  - liaise with EPD to identify remedial measures;
  - liaise with the IEC to identify remedial measures;
  - implement the agreed mitigation measures;
  - repeat the monitoring to verify effectiveness of mitigation measures; and
  - repeat review procedures to identify further practical areas of improvement if the repeat monitoring results continue to substantiate the complaint.
- 4) The outcome of the investigation and the action taken will be documented on a complaint log (see *Annex C*). A formal response to each complaint received will be prepared by the Contractor(s) within five



working days and submitted to DHK, in order to notify the concerned person(s) that action(s) has been taken.

- 5) Enquires which trigger this process will be reported in the monthly EM&A Reports which will include results of inspections undertaken by the Contractor(s), and details of the measures taken, and additional monitoring results (if deemed necessary). It should be noted that the receipt of complaint or enquiry will not be, in itself, a sufficient reason to introduce additional mitigation measures.

The complainant will be notified of the findings, and audit procedures will be put in place to verify that the issue does not recur.

#### **2.1.7      *Reporting***

Monthly EM&A Reports and Final EM&A Review Reports will be prepared by the ET on behalf of DHK and certified by the ET Leader and verified by the IEC. The reports will be submitted to the Contractor(s), DHK and EPD. The monthly EM&A Reports will be prepared and submitted within two weeks of the end of each calendar month.

#### **2.1.8      *Cessation of EM&A***

The cessation of EM&A programme is subject to the satisfactory completion of the Final EM&A Report, agreement with the IEC and approval from EPD.

### 3 ECOLOGY

#### 3.1 INTRODUCTION

The EIA has not recommended any mitigation measures during the operation or decommissioning phases but only upon completion of the Project as detailed below.

#### 3.2 UPON COMPLETION OF THE PROJECT

Under the latest XRL EP-349/2009/L, *Vegetation Survey Report for Tai Shu Ha Road West* and a *Tree Planting and Landscape Plan. TLP-10: Works in Yuen Long District (Tai Shu Ha)* were compiled, to meet condition 2.12 (iii) of the EP under which there is a requirement for 'A Vegetation Survey Report conducted for the magazine site at Tai Shu Ha Road West for formulating effective mitigatory planting proposal in the site'.

These reports under the XRL project are publically available at the following sites

<http://www.epd.gov.hk/eia/register/english/permit/ep3492009/documents/vsrr1/pdf/vsrr1.pdf> and

<http://www.epd.gov.hk/eia/register/english/permit/vep3232010/documents/tplpyldtsh/pdf/tplpyldtsh.pdf>

Under the present Project's EIA, for ecology (and also relevant to landscape), it was found that reinstatement planting to meet the condition of the XRL EP, would be postponed due to the Project. It has therefore been recommended that as a mitigation measure under the current Project, and to ensure the condition of the XRL EP is met, reinstatement planting should be carried out at the site according to the *XRL EIA Vegetation Survey Report for Tai Shu Ha Road West* (hereafter *Vegetation Survey Report*) and the *Tree Planting and Landscape Plan TLP-10: Works in Yuen Long District (Tai Shu Ha)* (hereafter *TLP*) once the current Project is complete and the TLEM site removed.

*Annex A* provides the Implementation Schedule of Recommended Mitigation Measures.

## **4           HAZARD TO LIFE**

### **4.1       INTRODUCTION**

Blasting related activities regarding storage and transport of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.

### **4.2       MITIGATION MEASURES**

The recommended mitigation measures outlined in the Project's Implementation Schedule (*Annex A*) should be implemented to meet the *EIAO-TM* requirements.

## 5.1

## SITE INSPECTIONS

For waste management, comprehensive planning and good site management practice will be adopted by the contractors of the Project during operation and decommissioning, and waste on-site will be properly segregated to increase the potential for reuse and recycling. Chemical waste generated from equipment operation and decommissioning will be properly stored in accordance with *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* published by the EPD before collection for disposal by a licensed Chemical Waste Collector. The quantity of general refuse generated on-site will be minimal owing to the nature of the operation and decommissioning activities and provided general refuse is removed from the Project Site regularly (e.g. once per day), no adverse environmental impact related to handling and disposal of general refuse is expected.

Adverse water quality impact is not expected during decommissioning, considering the small scale and short duration of works activities and the implementation of proper site runoff control measures. Water quality impact on other fresh water courses from the works is also unlikely and any discharge from the site expected to be in compliance with the requirements of the Water Pollution Control Ordinance. However, as good practice, appropriate measures will be implemented in accordance with the guidelines stipulated in EPD's *Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)* during the decommissioning works to properly control site run-off and drainage and to minimise potential water quality impacts. Equally for good practice, general noise control measures, as listed in *Recommended Clauses for Construction Contracts – Section 3 - Noise Control* will be adopted.

The Hazard To Life assessment has recommended various measure to ensure that societal risks remain as low as is reasonably practicable (ALARP) according to the *Hong Kong Government Risk Guidelines (HKRG)*, *EIAO-TM Annex 4*. These include measures to be implemented around the TLEM site such as regularly checking for water seepage through the roof, walls or floor of the magazine building, as well as measures for the transport route such as regular monthly vehicle inspections for fuel system, exhaust system, brakes, electrics, battery, cooling system and engine oil leaks.

The recommended mitigation measures for waste management, water quality, noise and hazard to life are outlined in the Project's Implementation Schedule (*Annex A*). To ensure these general measures are complied with throughout operation and decommissioning, it is recommended that monthly during operation and weekly during decommissioning general inspections are carried out by the ET and competent site staff, and verified by an IEC.

Site inspections provide a direct means to assess and confirm that the Contractor(s)'s environmental protection and pollution control measures are

in compliance with the contract specifications. The site inspection shall be undertaken routinely by the ET to verify that appropriate environmental protection and pollution control mitigation measures are properly implemented in accordance with the EIA. In addition, the ET shall be responsible for defining the scope of the inspections, detailing any deficiencies that are identified, and reporting any necessary action or additional mitigation measures that were implemented as a result of the inspection.

Regular site inspections shall be carried out by the ET each month during operation and each week during decommissioning. The IEC shall also undertake random site audit to assess the performance of the Contractor(s). The areas of inspection shall not be limited to the site area and shall also include the environmental conditions outside the site which are likely to be affected, directly or indirectly, by the site activities. The ET shall make reference to the following information while conducting the inspections:

- the EIA and EM&A recommendations on environmental protection and pollution control mitigation measures;
- ongoing results of the EM&A programme;
- work progress and programme;
- individual works methodology proposals;
- the contract specifications on environmental protection;
- the relevant environmental protection and pollution control laws; and
- previous site inspection results.

The Contractor(s) shall update the ET with relevant information on the construction works prior to carrying out the site inspections. The site inspection results shall be submitted to the IEC, DHK, and the Contractor(s) within 24 hours. Should actions be necessary, the ET shall follow up with recommendations on improvements to the environmental protection and pollution control works and shall submit these recommendations in a timely manner to the IEC, DHK and the Contractor(s). They shall also be presented, along with the remedial actions taken, in the monthly EM&A Reports. An action reporting system shall be formulated and implemented to report on any remedial measures implemented subsequent to the site inspections.

*Ad hoc* site inspections shall also be carried out by the ET and site audits by the IEC if significant environmental issues are identified. Inspections and audits may also be required subsequent to receipt of an environmental complaint or as part of the investigation work as specified in the EM&A programme.

There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong with which the Project activities will comply.

In order that the works are in compliance with the contractual requirements, the works method statements submitted by the Contractor(s) to DHK for approval will be sent to the ET for review.

The ET shall also review the progress and programme of the works to check the regulatory compliance.

The Contractor(s) shall regularly copy relevant documents to the ET so that the checking and auditing work can be carried out. The relevant documents are expected to include at a minimum the application letters for different licence/ permits under the environmental protection laws and all valid licences/ permits. The site diary shall also be available for the ET inspection upon request.

After reviewing document(s), the ET shall advise the IEC, DHK and the Contractor(s) of any non-compliance from the contractual and legislative requirements on environmental protection and pollution control for follow-up actions. The ET shall also advise the IEC, the Contractor(s), DHK on the current status on licence/permit applications and any environmental protection and pollution control preparation works that may not be suitable for the works programme or may result in potential nonconformity of environmental protection and pollution control requirements.

Upon receipt of the advice, the Contractor(s) shall undertake immediate action to remedy the situation. The ET, IEC, DHK shall follow up to confirm that appropriate action(s) shall be taken by the Contractor(s) in order that the environmental protection and pollution control requirements are fulfilled.

The ET shall undertake the following procedures upon receipt of a complaint:

- (i) log complaint and date of receipt into the complaint database and inform the IEC immediately;
- (ii) investigate the complaint and discuss with the Contractor(s) and DHK to determine its validity and to assess whether the source of the issue is due to works activities;
- (iii) if a complaint is considered valid due to the works, the ET will identify mitigation measures in consultation with the Contractor(s), the DHK and IEC;
- (iv) if mitigation measures are required, the ET shall advise the Contractor(s) accordingly;

- (v) review the Contractor(s)'s response on the identified mitigation measures and the updated situation;
- (vi) if the complaint is transferred from EPD, an interim report shall be submitted to EPD on the status of the complaint investigation and follow-up action within the time frame assigned by EPD;
- (vii) undertake additional monitoring and audit to verify the situation if necessary and confirm that any valid reason for complaint does not recur;
- (viii) report the investigation results and the subsequent actions on the source of the complaint for responding to complainant. If the source of complaint is EPD, the results shall be reported within the time frame assigned by EPD; and
- (ix) record the complaint, investigation, the subsequent actions and the results in the monthly EM&A Reports.

During the complaint investigation work, the ET, Contractor(s) and DHK shall cooperate with the IEC in providing the necessary information and assistance for completion of the investigation. If mitigation measures are identified in the investigation, the Contractor(s) shall promptly carry out the mitigation measures. DHK will approve the proposed mitigation measures and the ET and IEC shall check that the measures have been carried out by the Contractor(s).

#### 5.4

##### **LOG-BOOK**

The ET Leader shall keep a contemporaneous log-book of each and every instance or circumstance or change of circumstances which may affect the environmental impact assessment and every non-compliance from the recommendations of the EIA Report or the conditions of the EP. The ET Leader shall notify the IEC within one working day of the occurrence of any such instance or circumstance or change of circumstance. The ET Leader's log-book shall be kept readily available for inspection by persons assisting in supervision of the implementation of the EIA Report recommendations and the EPs or by EPD or the authorised officers.



## 6 *REPORTING*

### 6.1 *GENERAL*

Reports can be provided in an electronic medium upon agreeing the format with the ER and EPD. Types of reports that the ET Leader shall prepare and submit include Monthly EM&A Reports and Final EM&A Review Report. A copy of the Monthly EM&A Report and Final EM&A Review Report shall be made available to the DEP.

### 6.2 *EM&A REPORT CONTENTS*

The results and findings of all EM&A works required in this Manual should be recorded in the Monthly EM&A Reports prepared by the ET Leader and endorsed by IEC. The EM&A report should be prepared and submitted within 10 working days of the end of each reporting month, with the first report due in the month after operation of the magazine site commences.

Copies of each monthly EM&A report should be submitted to each of the four parties: the Contractor, ER, IEC and EPD.

Before submission of the first EM&A report, the ET Leader should liaise with the parties on the exact number of copies and format of the monthly reports in both hard copy and electronic medium requirement.

The ET Leader should review the requirements of the EM&A programme every six months, or on as needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

The first monthly EM&A Report should include at least but not limited to the following:

- (i) Executive summary (1-2 pages):
- (ii) Basic project Information
- (iii) Environmental status
- (iv) Summary of EM&A requirements & Implementation Status
- (v) Monitoring results
- (vi) Any non-compliance, complaints, notifications and summons and status of prosecutions.
- (vii) Any future key issues, comments, recommendations and conclusions for the monitoring period.

Annex A

## Implementation Schedule

## Implementation Schedule of Recommended Mitigation Measures

Note: Chapters 1 to 2 of the EIA report present the background information of the Project and Project Description. Chapters 3 to 8 of the EIA report present the EIA findings and mitigation measures, as described below with cross-reference to the EIA report. Chapters 9 & 10 summarize the environmental monitoring and audit requirements and provide a conclusion along with a summary of the environmental outcomes of the EIA.

\* O = Operation; D = Decommissioning of the TLEM; CoP = Completion of Project

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
		<i>Ecological Impact (Operation &amp; Completion of Project)</i>					
S3.5		<ul style="list-style-type: none"> <li>Reinstatement planting should be carried out at the site according to the XRL EIA Vegetation Survey Report for Tai Shu Ha Road West and the Tree Planting and Landscape Plan TLP-10: Works in Yuen Long District (Tai Shu Ha) (hereafter TLP).</li> </ul>	<p>To restore the habitat back to borrow area reinstatement plantation, as it was prior to the construction of the TLEM for the MTRC's use.</p> <p>To ensure the proposed mitigation recommended in the approved XRL EIA for loss of green areas affected by the XRL Project, is implemented.</p>	The reinstatement planting will be implemented by DHK. The maintenance agent will be DLO as confirmed in the TLP.	Tai Lam Explosives Magazine (TLEM) site/ During - site restoration prior to mitigation planting, Planting & Establishment period of at least 12 months.	CoP	<p>XRL EIA Vegetation Survey Report for Tai Shu Ha Road West</p> <p>Tree Planting and Landscape Plan TLP-10: Works in Yuen Long District (Tai Shu Ha)</p> <p>DEVB TCW No. 10/2013 – Tree Preservation (supersedes ETWB TC(W) No. 3/2006 )</p>
		<i>Noise Impact (Operation and Decommissioning)</i>					
S4.4.1		<p>No adverse impacts anticipated.</p> <ul style="list-style-type: none"> <li>For good practice, adopt general noise control measures, as listed in <i>Recommended Clauses for Construction Contracts – Section 3 - Noise Control</i> during decommissioning</li> </ul>	To ensure good site practices are adopted and noise generation minimized during decommissioning	Contractor for DHK	Approximately one month during decommissioning of the TLEM	D	<i>Recommended Clauses for Construction Contracts – Section 3 - Noise Control</i>
		<i>Air Quality (Operation and Decommissioning)</i>					
S5		<ul style="list-style-type: none"> <li>Not applicable (n/a) – no adverse impacts anticipated.</li> </ul>	n/a	n/a	n/a	n/a	n/a

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
		<b>Waste Management (Operation and Decommissioning)</b>					
S6.5		<ul style="list-style-type: none"> <li>Good site management practice will be adopted by the contractors of the Project and waste on-site will be properly segregated to increase the potential for reuse and recycling.</li> <li>General refuse is removed from the Project Site regularly (i.e. once per day).</li> </ul>	Avoid adverse environmental impacts related to handling and disposal of waste.	DHK	Tai Lam Explosives Magazine (TLEM) site/ During operation of TLEM & approximately one month during decommissioning of the TLEM	O, D	<i>Waste Disposal Ordinance (WDO) (Cap 354);</i> <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354N);</i> <i>Waste Disposal (Chemical Waste) (General) Regulation (Cap 354C);</i> <i>Land (Miscellaneous Provisions) Ordinance (Cap 28); and</i> <i>Public Health and Municipal Services Ordinance (Cap 132) - Public Cleansing and Prevention of Nuisances Regulation.</i>
S6.5		<ul style="list-style-type: none"> <li>Chemical refuse will be properly stored and disposed of separately to general waste.</li> </ul>	Avoid contamination by chemical waste.	Licensed Chemical Waste Collector for DHK	Tai Lam Explosives Magazine (TLEM) site/ During operation of TLEM & approximately one month during decommissioning of the TLEM	O, D	<i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992), EPD, Hong Kong Government</i>

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
		<i>Other (Operation and Decommissioning)</i>					
S7.1		<p>No adverse impacts anticipated. For good measure adopt the following good practice measures:</p> <ul style="list-style-type: none"> <li>Surface run-off from construction site should be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Perimeter channels at site boundaries should be provided where necessary to intercept storm run-off from outside the site so that it will not wash across the site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.</li> </ul>	Minimize construction site runoff during decommissioning	Contractor for DHK	TLEM site / Approximately one month during decommissioning of the TLEM	D	<i>Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)</i>
S7.1		<ul style="list-style-type: none"> <li>Silt removal facilities, channels and manholes should be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.</li> </ul>	Minimize construction site runoff during decommissioning	Contractor for DHK	TLEM site / Approximately one month during decommissioning of the TLEM	D	<i>Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)</i>
S7.1		<ul style="list-style-type: none"> <li>Earthworks final surfaces should be well compacted and the subsequent permanent work or surface protection should be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided where necessary.</li> </ul>	Minimize construction site runoff during decommissioning	Contractor for DHK	TLEM site / Approximately one month during Decommissioning of the TLEM	D	<i>Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)</i>

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S7.1		<ul style="list-style-type: none"> <li>Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.</li> </ul>	Minimize construction site runoff during decommissioning	Contractor for DHK	TLEM site / Approximately one month during decommissioning of the TLEM	D	<i>Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)</i>
S7.1		<ul style="list-style-type: none"> <li>Precautions and actions, as stipulated in Appendix A2 of <i>ProPECC PN1/94</i>, should be taken at any time of year when rainstorms are likely, when a rainstorm is imminent or forecast, or during and after rainstorms.</li> </ul>	Minimize construction site runoff during decommissioning	Contractor for DHK	TLEM site / Approximately one month during Decommissioning of the TLEM	D	<i>Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)</i>
S7.1		<ul style="list-style-type: none"> <li>To minimize erosion of exposed soil in between the removal of paved area and the re-vegetation / plantation, exposed soil should be covered with geotextile promptly after the removal works.</li> </ul>	Minimize construction site runoff and soil erosion during decommissioning	Contractor for DHK	TLEM site / Approximately one month during Decommissioning of the TLEM	D	-
		<b>Hazard to Life (Operation - Storage)</b>					
S8.9.1		<ul style="list-style-type: none"> <li>Ensure the security plan addresses different alert security levels. The corresponding security procedure should be implemented with respect to prevailing security alert status announced by the Government.</li> </ul>	Reduce opportunity for arson/ deliberate initiation of explosives.	DHK	TLEM site / Throughout operation of the Project	O	-
S8.9.1 & S8.9.2 & S8.9.3		<ul style="list-style-type: none"> <li>Emergency plan (i.e. magazine operational manual) shall be followed and amended if necessary to address uncontrolled fire in magazine area and transport. The case of fire near an explosive carrying truck in jammed traffic should also be covered. Drill of the emergency plan should be carried out at regular intervals.</li> </ul>	Minimize risk of uncontrolled fire in TLEM and along transport route	DHK	For TLEM site and Transport route / Throughout operation of the Project	O	-

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.1		<ul style="list-style-type: none"> <li>Adverse weather working guideline should be followed and amended if necessary to clearly define procedure for transport explosives during thunderstorm.</li> </ul>	Minimize explosive truck accident frequency.	DHK	TLEM site / Throughout operation of the Project	O	-
S8.9.1		<ul style="list-style-type: none"> <li>The Magazine storage quantities need to be reported on a monthly basis</li> </ul>	Ensure that the two day storage capacity is not exceeded	Contractor for DHK	TLEM site / Throughout operation of the Project	O	Dangerous Goods Ordinance
S8.9.2		<ul style="list-style-type: none"> <li>A suitable work control system should be followed and amended if necessary, such as an operational manual including Permit-to-Work system</li> </ul>	Ensure work activities undertaken during the operation of the Magazine are properly controlled.	DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>Good house-keeping within the Magazine</li> </ul>	Ensure combustible materials are not allowed to accumulate.	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>Good housekeeping outside the Magazine stores to be followed.</li> </ul>	To ensure combustibles (including vegetation) are removed and reduce risk and severity of any accidental fire onsite.	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>The Magazine shall be without open drains, traps, pits or pockets into which any molten ammonium nitrate could flow and be confined in the event of a fire.</li> </ul>	Reduce risk of severity of accidental fire and contamination of site.	DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>The Magazine building shall be regularly checked for water seepage through the roof, walls or floor.</li> </ul>	Ensure explosives being stored remain dry.	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>Caked explosives shall be disposed of in an appropriate manner.</li> </ul>	Ensure general safe practice	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-



## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.3		<ul style="list-style-type: none"> <li>If disposal is required for small quantities, it should be made in a controlled and safe manner by a Registered Shotfirer.</li> </ul>	To reduce the risk during explosives transport	Registered Shotfirer for DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>Delivery vehicles shall not be permitted to remain within the secured fenced off magazine store area</li> </ul>	Avoid accidents involving vehicles within the site boundary.	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>A speed limit within the magazine area should be enforced</li> </ul>	Reduce the risk of a vehicle impact or incident within the Magazine area.	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-
S8.9.2		<ul style="list-style-type: none"> <li>Traffic Management should be implemented within the Magazine site, to ensure that no more than one (1) vehicle will be loaded at any time.</li> </ul>	Avoid accidents involving multiple vehicles within the site boundary.	Contractor for DHK	For TLEM site / Throughout operation of the Project	O	-
<b>Hazard to Life (Operation - Transport)</b>							
S8.9.1		<ul style="list-style-type: none"> <li>Truck design should comply with the Requirements for Approval of an Explosives Delivery Vehicle (CEDD 2) and limit the amount of combustibles in the cabin. The fuel carried in the fuel tank should also be minimised to reduce the duration of any fire.</li> </ul>	Ensure delivery vehicle is as safe as possible.	Contractor for DHK	Transport vehicle/ Throughout operation of the Project	O	-
S8.9.1		<ul style="list-style-type: none"> <li>Implement a dedicated training programme for both the driver and his attendants, including regular briefing sessions, implementation of a defensive driving attitude.</li> </ul>	Minimize explosive truck accident frequency.	DHK	Vehicle driver & attendants for Transport route/ Throughout operation of the Project	O	-
S8.9.1		<ul style="list-style-type: none"> <li>As far as practicable combine explosive deliveries for a given work area</li> </ul>	Reduce number of journeys required	Contractor for DHK	Transport route/ Throughout operation of the Project	O	-

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.1		<ul style="list-style-type: none"> <li>Only the required quantity of explosives for a particular blast should be transported.</li> </ul>	Avoid the return of unused explosives to the Magazine.	Contractor for DHK	Transport route/ Throughout operation of the Project	O	-
S8.9.1		<ul style="list-style-type: none"> <li>Whenever practicable, a minimum headway between two consecutive truck convoys of 10 minutes is recommended and separation of vehicles should be maintained during the whole trip.</li> </ul>	Minimize explosive truck accident severity.	Contractor for DHK	Transport route/ Throughout operation of the Project	O	-
S8.9.1		<ul style="list-style-type: none"> <li>Implement a better emergency response and training to make sure the adequate fire extinguishers are used and attempt is made to evacuate the area of the incident or securing the explosive load if possible.</li> <li>All explosive vehicles should be equipped with the required amount and type of fire extinguishers and shall be agreed with Mines Division.</li> </ul>	Minimize explosive truck fire involvement frequency.	Contractor for DHK	Transport route/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Detonators shall not be transported in the same vehicle with other Class 1 explosives and separation of vehicles should be maintained during the trip.</li> </ul>	Minimize explosive truck accident frequency.	Contractor for DHK	Transport vehicle/ Throughout operation of the Project		-
S8.9.3		<ul style="list-style-type: none"> <li>Location for stopping and unloading from truck to be provided as close as possible to shaft, free from dropped loads, hot work, etc. during time of unloading.</li> </ul>	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Contractor for DHK	End of Transport route/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Develop procedure to ensure that parking space on the site is available for the explosive truck. Confirmation of parking space should be communicated to truck drivers before delivery. If parking space on site cannot be secure, delivery should not commence.</li> </ul>	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	Contractor for DHK	End of Transport route/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Ensure lining is provided within the transportation box on the vehicle and in good condition before transportation.</li> </ul>		Contractor for DHK	Transport vehicle/ Throughout operation of the Project	O	-

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.3		<ul style="list-style-type: none"> <li>Ensure that packaging of detonators remains intact until handed over at blasting site.</li> </ul>	To meet the ALARP requirement.	Contractor for DHK	End of Transport route/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Emergency plan to include activation of fuel and battery isolation switches on vehicle when fire breaks out.</li> </ul>	Prevent fire spreading and reducing likelihood of prolonged fire leading to explosion.	Contractor for DHK	Transport vehicle/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Ensure that cartridged emulsion packages are damage free before every trip.</li> </ul>	To meet the ALARP requirement.	Contractor for DHK	Transport route/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Ensure that explosives will be offloaded and stored away from the railway protection area according to the MTRCL railway protection area plan.</li> </ul>	To meet the ALARP requirement.	Contractor for DHK	The three worksites (i.e. Mid-Ventilation Adit, North Portal and South Portal)/ Throughout operation of the Project	O	-

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.3		<p>Vehicles should meet Licenced Vehicle Safety Requirements including:</p> <ul style="list-style-type: none"> <li>• Mobile telephone equipment;</li> <li>• Battery isolation switch;</li> <li>• Front mounted exhaust with spark arrestor;</li> <li>• Fuel level should be kept as far as possible to the minimum level required for the transport of explosives;</li> <li>• Minimum 1 × 9 kg water based AFFF fire extinguisher to be provided;</li> <li>• Minimum 1 × 9 kg dry chemical powder fire extinguisher to be provided;</li> <li>• Horizontal fire screen on cargo deck and vertical fire screen mounted at least 150mm behind the drivers cab and 100mm from the steel cargo compartment, the vertical screen shall protrude 150mm in excess of all three (3) sides of the steel cargo compartment;</li> <li>• Cigarette lighter removed;</li> <li>• Two (2) battery powered torches for night deliveries.</li> </ul>	Prevent fire spreading and reducing likelihood of prolonged fire leading to explosion.	Contractor for DHK	Transport vehicle/ Throughout operation of the Project	O	CEDD's <i>Guidance Note on Requirements for Approval of an Explosive Delivery Vehicle</i>
S8.9.3		<p>Vehicles shall be dedicated explosive transport vehicles and should be maintained in good operating condition;</p> <ul style="list-style-type: none"> <li>• Daily checks on tyres and vehicle integrity.</li> <li>• Regular monthly vehicle inspections for fuel system, exhaust system, brakes, electrics, battery, cooling system and engine oil leaks.</li> <li>• Vehicle log book in which monthly inspections and maintenance requirements are recorded</li> </ul>	Ensure vehicle remains as safe as possible	Contractor for DHK	Transport vehicle/ Throughout operation of the Project	O	-

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.3		<ul style="list-style-type: none"> <li>Drivers should be selected based on good safety record, and medical checks. Use only experienced driver(s) with good safety record.</li> <li>It is recommended that drivers be registered by the Commissioner of Mines; over the age of 25 years with proven accident free record; have more than seven (7) year driving experience without suspension; hold a Driving License for the class of vehicle for at least one (1) year; adopt a safe driving practice including having attended a defensive driving course; pass a medical check and are assessed as fit to drive explosives vehicles; and are not dependent on banned substances.</li> <li>Drivers should attend relevant training courses recognized by the Commissioner of Mines, including but not limited to: the laws and Regulations relating to the transport of explosives; and Security and safe handling during the transport of explosives.</li> <li>Drivers should attend training courses provided by the explosives manufacturer or distributor, covering: <ul style="list-style-type: none"> <li>explosives identification;</li> <li>explosion hazards; and</li> <li>explosives sensitivity;</li> <li>dangers which could be caused by the types of explosives;</li> <li>packaging, labelling and characteristics of the types of explosives;</li> <li>the use of fire extinguishers and firefighting procedures; and</li> <li>emergency response procedures in case of accidents.</li> </ul> </li> </ul>	Minimize explosive truck accident frequency and/ or severity.	Contractor for DHK	Vehicle driver for Transport route / Throughout operation of the Project	O	-

## Implementation Schedule of Recommended Mitigation Measures

EIA Ref	EM&A Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location/ Duration of the measure	Implementation Stage (O, D, CoP*)?	Relevant Legislation & Guidelines
S8.9.3		<ul style="list-style-type: none"> <li>The Driver will also be responsible for various matters as listed in the EIA, including having a full set of Material Safety Data Sheets (MSDS) for each individual explosive aboard the vehicle and for the particular journey, etc.</li> <li>The MSDS and Removal Permit (where applicable) shall be produced to any officer of the Minds Division of CEDD upon request.</li> </ul>	Minimize explosive truck accident frequency and/ or severity.	Contractor for DHK	Vehicle driver for Transport route/ Throughout operation of the Project	O	-
S8.9.3		<ul style="list-style-type: none"> <li>Explosive Vehicle Attendants shall: <ul style="list-style-type: none"> <li>- Be the assistant to the driver in normal working conditions and in case of any emergency</li> <li>- Be conversant with the emergency response procedures</li> <li>- Be competent to use the fire extinguishers and the vehicle emergency cut-off switches</li> <li>- At least one of the vehicle attendant(s) should be equipped with a mobile phone and the relevant MSDS and emergency response plan</li> </ul> </li> </ul>	Reduce number of journeys required	Contractor for DHK	Vehicle driver attendants for Transport route/ Throughout operation of the Project	O	-
S8.9.3		<p>For explosive selection, the following should be considered:</p> <ul style="list-style-type: none"> <li>Cartridged Emulsions with perchlorate formulation should be avoided</li> <li>Cartridged Emulsions with high water content should be preferred.</li> </ul>	To meet the ALARP requirement.	Contractor for DHK	For TLEM site and Transport route / Throughout operation of the Project	O	-

\* O = Operation; D = Decommissioning of the TLEM; CoP = Completion of Project

Annex B

## Complaint Log

**Complaint Log**

**Ref:**

Log Ref	Date	Location	Complainant/ Date of Contact	Details of Complaint	Investigation / Mitigation Action	File Closed

Filed by Environmental Team Leader:

Date:



ERM has over 100 offices

Across the following  
countries worldwide

Argentina	Malaysia
Australia	Mexico
Azerbaijan	The Netherlands
Belgium	Peru
Brazil	Poland
Canada	Portugal
Chile	Puerto Rico
China	Russia
Colombia	Singapore
Ecuador	South Africa
France	Spain
Germany	Sweden
Hong Kong	Taiwan
Hungary	Thailand
India	UK
Indonesia	US
Ireland	Vietnam
Italy	Venezuela
Japan	
Kazakhstan	
Korea	

**ERM's Hong Kong Office**  
**16/F, Berkshire House**  
**25 Westlands Road**  
**Quarry Bay, Hong Kong**  
**T: 2271 3000**  
**F: 2723 5660**

[www.erm.com](http://www.erm.com)