

***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***
蓮塘/香園圍口岸工程項目: 大樹下大欖炸藥庫

***Executive Summary of Environmental Impact
Assessment Report***
環評報告行政摘要

September 2015
二零一五年九月

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Executive Summary of Environmental Impact Assessment Report
環評報告行政摘要

ERM Document Code: 0272671

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| Client: Dragage Hong Kong Limited | | Project No: 0272671 | | | |
| Summary: Executive Summary of the EIA Report in accordance to requirements of <i>EIA Study Brief ESB-280/2014</i> and the <i>Technical Memorandum on Environmental Impact Assessment Process (TM-EIAO)</i> . 是次環評研究是按照環評條例研究概要ESB-280/2014 號的要求而進行，並遵照環境影響評估條例技術備忘錄（以下簡稱“環評技術備忘錄”）中，有關評估方法的指引。 | | Date: 18 September 2015 | | | |
| | | Approved by:  Terence Fong Partner | | | |
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| 0 | Executive Summary of Environmental Impact Assessment Report | FZ | TF | TF | 18/09/2015 |
| Revision | Description | By | Checked | Approved | Date |
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Executive Summary

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1 INTRODUCTION

1.1 BACKGROUND

The Liantang/Heung Yuen Wai Boundary Control Point (BCP) project (hereafter 'HKLTH') tunnel construction works, which will connect the new BCP with Fanling Highway, require the use of explosives at three worksites, namely at Sha Tau Kok Road – Wo Hang Section (North Portal), Po Kat Tsai Road (Mid Ventilation Portal), and Tong Hang Tung Chuen (South Portal). To enable a timely delivery of explosives to worksites and in order to meet the proposed construction work programme, an Explosives Storage Magazine (Magazine) is required and the purpose of the magazine is to maintain progress rate for construction activities.

The existing Tai Lam Explosives Magazine (Tai Shu Ha, Yuen Long District, New Territories, Land Allocation GLA-TYL 1288, forthwith known as 'TLEM') has been licensed and is currently in use by the MTRC for the construction of the XRL until end 2015 (Environmental Permit No. EP-349/2009/L). It is being used by the MTR XRL 824 Contractor. The TLEM will be available once XRL work is complete and Dragages Hong Kong Limited (DHK), contracted by Civil Engineering and Development Department (CEDD) for the HKLTH tunnel construction works, intends to continue using it from late 2015 or early 2016 (expected January 2016) to December 2017.

1.2 PROJECT DESCRIPTION

1.2.1 Nature and Scope of the Project

The Project concerns the storage and transport of explosives. It encompasses:

- 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;
- Explosives transport from the existing TLEM to three worksites by DHK, using trucks approved by Civil Engineering and Development Department (CEDD)'s Mines Division (Mines); and
- Decommissioning of the existing TLEM after operation.

The approved Hong Kong Section of *Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) EIA Report* (No. AEIAR-143/2009) (hereafter 'XRL EIA') has been reviewed specifically for the environmental impacts arising from operation of the TLEM. The scope of the XRL EIA was far broader than just the TLEM and it is considered that in addition to a Hazard to Life Assessment, the various environmental media included in the XRL EIA that are relevant to the TLEM Project are Ecology, Airborne Noise, Air Quality and Waste Management with other media covered in the XRL EIA considered either of minor importance or not relevant to the current Project.

There are no known existing, committed and/or planned projects in the vicinity of the Project that could potentially cause cumulative environmental impacts through their interaction with the Project.

1.2.2 Purpose and Benefit of the Project

For the XRL EIA, a long list of potential locations for explosives magazine sites were identified, reviewed and short-listed for further detailed study and discussion with Mines. Factors considered included:

- External separation distance - the distance from the explosive stores to inhabited areas and sensitive receivers - following the required minimum internal and external separation distances from the magazines as per standards specified by the Hong Kong Commissioner of Mines (CoM).
 - In addition, it is preferable to limit the transportation distances as far as practicable when considering the possible location of a magazine. This is particularly pertinent given explosives are not permitted within road tunnels, and there would be a considerable distance of about 40 km to 50 km for explosives transported from northern New Territories to Kowloon via above ground or at grade roads, and vice versa;
- Access for Mines Division explosive delivery vehicles;
- Site constraints such as existing conditions;
- Land availability; and
- Potential environmental and heritage impacts.

The magazine site selection process for the XRL project is documented in *Working Paper No. 13A -Explosives Magazine Site Selection* and two explosives magazine sites were selected as being necessary to store the explosives for the XRL project, one being the TLEM site (and the other at So Kwun Wat).

The selection of the TLEM site for the current Project has the benefits of being: already constructed so there are no construction impacts or land conversion issues; used for exactly the required purpose now which would imply any operational as well as decommissioning impacts associated with the current Project will be acceptable; available from end 2015 which suits the HKLTH project tunnelling schedule; and in a suitable location for the HKLTH project. In addition, since there is no requirement to build a new magazine site, the timeline for the tunnel Project may be expedited as well as there being no requirement to build a new magazine site which may cause more significant environmental impacts elsewhere.

1.2.3 Key Facilities of the Project

The location of the TLEM is illustrated in *Figure 1.1* and its key components are:

- (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 m³) and 2 pumps.

In addition, the Project will require the delivery of explosives from the TLEM 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 and maximum seven (7) days per week. Only the amount of explosives required for blasting work will be delivered to TLEM by Mines. Before the commencement of decommissioning works, no surplus explosives will be stored at the explosives magazine.

The decommissioning works are expected to last for about one month and include dismantling and removing associated features of the two explosive stores (e.g. CCTV, lighting etc); demolishing the earth bunds and two explosive stores; removing concrete debris, all fire service facilities and all ground services including guard house, road furniture and lighting; removing the fire hydrant water tank; removing the container guard house and any temporary steel works; and demolishing the paved road for reinstatement of planting.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT

The EIA Study was conducted in accordance with the EIAO Study Brief ESB-280/2014, following the guidelines on assessment methodologies in the Technical Memorandum on Environmental Impact Assessment (EIAO-TM). It provides information on the nature and extent of any environmental impacts arising from the operation and decommissioning of the Project (there is no construction phase), noting that the operation of the magazine site will remain largely the same as for the current XRL project.

The EIA Report largely follows the approved XRL EIA which assessed the impacts from the construction and operation of the TLEM, reviewing the relevant information and updating it as necessary. It also includes a hazard to life assessment. No key activities are known to take place concurrently and therefore it is assumed there will be no cumulative impacts from the Project.

1.3.1 Environmental Media

The approved XRL EIA had a far broader scope than just assessing the environmental impacts of the TLEM and after review of the full XRL EIA the environmental media relevant to the TLEM are Ecology, Airborne Noise, Air Quality and Waste Management with other media of minor importance, including Water Quality and Landscape and Visual.

Ecology

Reinstatement planting at the TLEM site will be carried out upon completion of the Project in 2017 and the decommissioning of the TLEM. Assuming that this reinstatement planting is carried out by DHK as recommended in the approved XRL EIA report (according to the *Vegetation Survey Report* and the *Tree Planting and Landscape Plan TLP-10: Works in Yuen Long District (Tai Shu Ha)*, which both fall under the requirements of the XRL EIA study), no adverse impacts on ecology are expected from this Project.

Noise

The closest Noise Sensitive Receiver is over 290 m from the Project Site boundary and no adverse noise impact from the operation of the Project is anticipated. Equally no adverse noise impacts are anticipated during decommissioning which will last for approximately four (4) weeks and assuming general noise control measures, as listed in *Recommended Clauses for Construction Contracts – Section 3 - Noise Control*, are adopted. Noise monitoring at the NSR is therefore not required at either operation or decommissioning and therefore no environmental monitoring and audit is required for noise as part of the overall EM&A programme.

Air Quality

Operation of the magazine site will remain the same as that for the current XRL project. The operational activities involve the delivery of explosives to and from the Project Site on a daily basis. Potential sources of air quality impact include dust emissions from the operation of explosives delivery vehicles from the magazine to the work areas, with about two to eight trips per day. Roads to/from and within the Project Site will be paved, thus dust impact from the operation of the magazine site is anticipated to be insignificant. Decommissioning of the magazine site has the potential to cause dust emissions. Since the decommissioning works will be small scale, the potential air quality impact is expected to be minimal with the implementation of proper dust control measures such as those stipulated under the *Air Pollution Control (Construction Dust) Regulation* and the adoption of good site practice. Air quality monitoring and audit is not considered necessary during the operation of the Project as no adverse air quality impact is anticipated.

Waste Management

The amount of general refuse generated from the operation and decommissioning of the magazine site is expected to be small. General refuse will be stored and disposed of separately from chemical waste. Construction and Demolition (C&D) materials from the decommissioning will also be handled and disposed of appropriately. Provided that general refuse is removed from the Project Site regularly during operation and decommissioning (e.g. once per day) and C&D materials is disposed of

appropriately, no adverse environmental impact related to handling and disposal of wastes is expected.

Other Environmental Considerations

No adverse water quality or landscape and visual impacts from operation of the Project are anticipated. Therefore, mitigation measures and environmental monitoring and audit during the operational phase are not considered necessary.

During decommissioning, no adverse landscape and visual impact is expected. No adverse water quality impact is expected during decommissioning either, considering the small scale and short duration of works activities and the implementation of proper site runoff and soil erosion control measures in accordance with the guidelines stipulated in EPD's *Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)*.

This Project is also considered to have no impacts on certain environmental media covered in the XRL EIA, namely Cultural Heritage, Fisheries, Ground-borne Noise, Land Contamination, Landfill Gas Hazard and the Restored Ngau Tam Mei Landfill.

1.3.2

Hazard to Life

The storage and transport of explosives for the Project have been assessed in a Quantitative Risk Assessment. The criterion of the EIAO-TM for Individual Risk is met. The assessment results show that the societal risk lies within the As Low As Reasonably Practicable (ALARP) region when compared to the criteria stipulated in Annex 4 of the EIAO-TM. An ALARP assessment has been carried out by identifying all practicable mitigation measures and assessing the cost effectiveness of each measure in terms of the risk reduction achieved and the cost of implementing the measures. The results show compliance with the ALARP principles and Risk Guidelines (EIAO-TM Annex 4) provided recommendations are implemented.

Operation of the magazine site will remain the same as that for the current XRL project. The magazine site is in a remote area away from residential/ commercial/ industrial development to minimize the risk.

In this project three practical route options were considered for explosives transport from the Tai Lam Explosives Magazine Site to the three work areas using the public roads. In two of the route options (i.e. Route Options R1 and R3), the explosives delivery truck will pass through Pok Oi Interchange. Currently there is road improvement work at Pok Oi Interchange which leads to serious traffic jam, thus temporary road diversion and traffic control measures are enforced. There is concern from Yuen Long District Council on use of Pok Oi Interchange by the explosives delivery truck during the road improvement work, therefore one of the route options (i.e. Route Option R2) will use Tong Yan San Tsuen Interchange and Yuen Long Road to avoid Pok Oi Interchange.

Risk assessed in this study considered various population which include passengers on the road vehicles, pedestrians on footpaths and pavements next to delivery routes, and building occupants along the delivery routes.

Feasibility and minimum risk impact are considered to select the explosives delivery routes:

- At early stage of this project with road improvement work at Pok Oi Interchange, Route Option R2 will be used. Route Options R1 and R3 are not feasible.
- After road improvement work at Pok Oi Interchange is completed, all three routes will be available for use. The Route Option with minimum transport risk, i.e. Route Option R1, will be used. Route Option R3 can only be used as a contingency alternative route in the event that Route Option R1 is infeasible due to road blockage by traffic accidents.

ALARP assessment has been conducted to identify the potential practicable risk mitigation measures using Cost Benefit Analysis, which includes

- Need for a Tunnel and Proposed Alignment,
- Magazine Requirement and Selection,
- Use of alternative methods of construction,
- Use of Alternative Routes,
- Use of Different Explosive Types,
- Use of Smaller Quantities of Explosives,
- Safer Explosives Truck Design,
- Lower Frequency of Explosives Transport,
- Reduction of Accident Involvement Frequency, and
- Reduction of Fire Involvement Frequency.

Practicable risk mitigation measures identified in the ALARP assessment have been recommended for implementation in this project.

In addition, a number of recommendations have been made to ensure that the requirements (including ALARP requirements) of the EIAO-TM will be met during the construction period. Some general recommendations have been made to minimise the risks further and in accordance with best practices, for storage of explosives in magazine store, transport of explosives as well as type of explosives & their disposal.

1.4

ENVIRONMENTAL MONITORING AND AUDIT

The key mitigation measure considered necessary for the Project concerns ecology (and landscape) and states that the reinstatement planting at TLEM site that was to be carried out by MTRC at the end of the XRL project in the approved XRL EIA report and according to EP-349/2009/L, is now carried out by DHK upon completion of the Project, expected to be in 2017.

Otherwise no adverse residual environmental impacts are expected from the Project (including for other elements of ecology, airbourne noise, air quality, waste, water quality or landscape and visual) during operation or decommissioning, although during decommissioning proper site runoff and soil erosion control measures in accordance with the guidelines stipulated in EPD's *Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN1/94)* should be implemented as good practice, as well as adopting general noise control measures, as listed in *Recommended Clauses for Construction Contracts – Section 3 - Noise Control* .

The Hazard to Life Assessment for the storage and transport of explosives from the TLEM site to the three blasting worksites concluded that the societal risk of the storage facility and selected transport routes lie within the ALARP region when compared to the criteria stipulated in the *EIAO-TM Annex 4*, provided recommendations are followed.

An environmental monitoring and audit (EM&A) programme will be implemented during the operation and decommissioning of the Project and following decommissioning during establishment of the reinstatement planting, to check effectiveness of the recommended mitigation measures and compliance with relevant statutory criteria.

1.5

CONCLUSION

Overall, the EIA study predicts that the Project, with the implementation of the mitigation measures, would be environmentally acceptable with no adverse residual impacts on the population and environmentally sensitive resources.

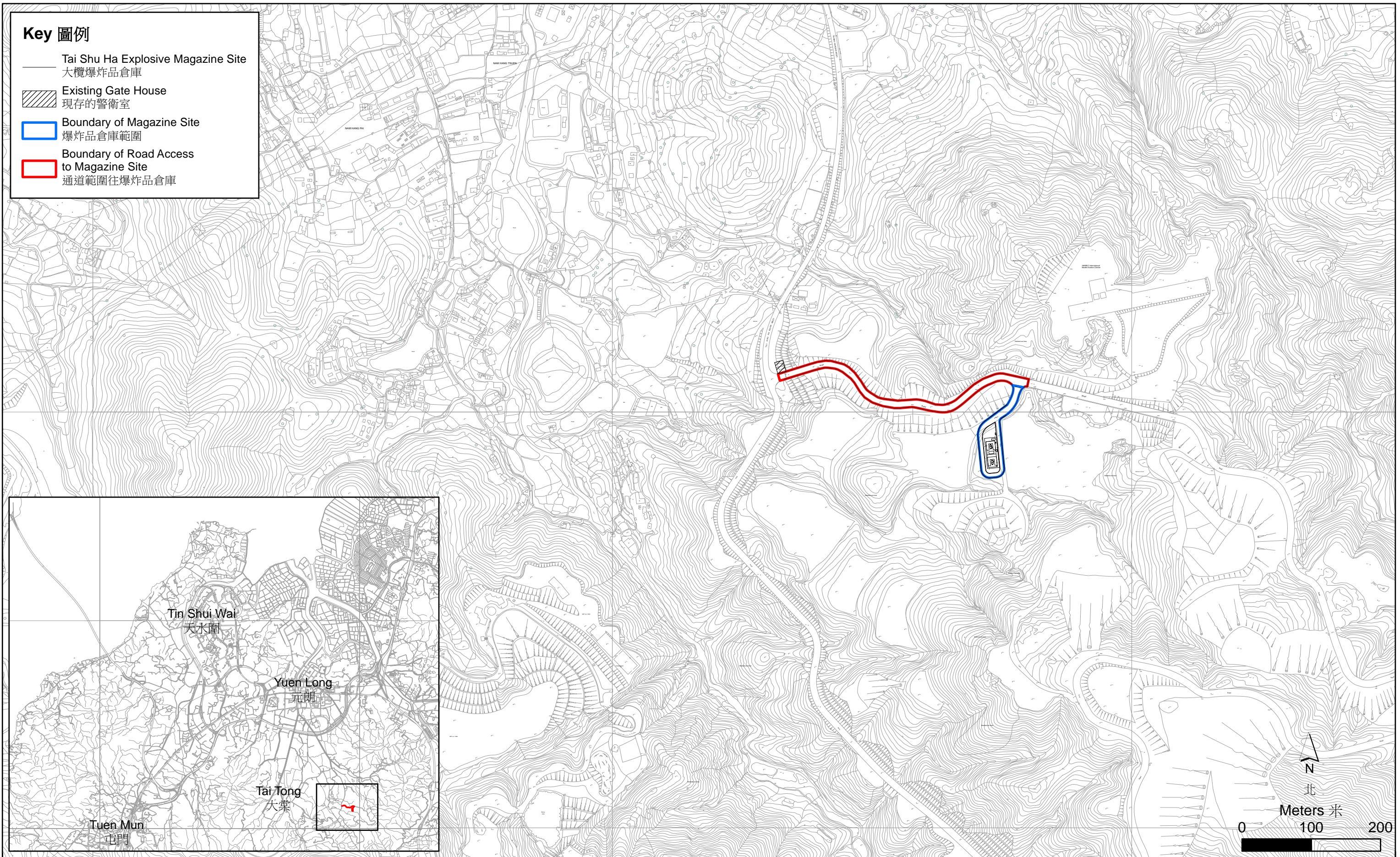


Figure 1.1
圖 1.1

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

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