Sha Tin New Town - Stage II

Trunk Road T3 (Tai Wai)

Environmental Impact Assessment (EIA) Study

Executive Summary

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CONSULTING ENGINEERS

Territory Development Department

NT EAST DEVELOPMENT OFFICE

Sha Tin New Town - Stage II

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30 March 1998

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in association with
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CES (Asia) Limited
Team 73HK

Limitation on Use and Liability

Sha Tin New Town - Stage II
Trunk Road T3 (Tai Wai)
Environmental Impact Assessment (EIA) Study
Executive Summary

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Sha Tin New Town - Stage II
Trunk Road T3 (Tai Wai)
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Executive Summary

1 Introduction

1.1 Trunk Road T3 is part of the Sha Tin strategic road network which has yet to be completed for carrying through traffic away from the new town. Although various improvement schemes, such as Tai Po Road widening, Tate's Cairn Tunnel and increase of throughput of Lion Rock Tunnel have been implemented to ease the demands for external traffic, traffic problems in the road network of Tai Wai and Sha Tin still remain and the need for implementation of additional external link, Route 16 including the connecting links - Trunk Road T3, in Sha Tin becomes imminent.

1.2 The proposed alignment for Sha Tin T3 runs north-south through Sha Tin along the existing transport corridor formed by Tai Po Road (Tai Wai), Tai Po Road (Sha Tin) and the Shing Mun Tunnel Road. The main carriageway will be on elevated structures above the existing roads. In order to minimise additional environmental disturbance, the alignment was selected to follow the existing transport corridor. This was considered a preferred option than opening up an otherwise unaffected corridor and introducing additional planning constraints. Figure 1 shows the alignment of the proposed Trunk Road T3.

1.3 A reassessment of the proposed Trunk Road T3 was undertaken in the "Sha Tin New Town Stage II - Trunk Road T3 (Tai Wai), Traffic and Transport Review". As part of this review, an Environmental Impact Assessment (EIA) Study was carried out to assess the potential short and long term environmental impacts of the proposed roadworks. The findings, conclusions and recommendations of the EIA are contained in the Final EIA Report, and briefly summarized in the following sections.

2 Environmental Setting - Sensitive Receivers

2.1 In accordance with the Study Brief, noise sensitive receivers (NSRs) within 300 metres of the proposed road alignment have been identified for noise impact assessment. Site survey reveals that NSRs in the Study Area are mainly high-rise residential developments and educational institutions. Representative NSRs are identified within the Study Area and the locations of representative NSRs are shown in Figure 2.

2.2 Air Sensitive Receivers (ASRs) including domestic premises, industrial buildings, educational institutions, and recreational and leisure facilities, within 500 metres of the road improvement have been identified for air quality impact assessment. Representative ASRs identified within the Study Area are shown in Figure 3.

3 Construction Noise

3.1 Construction of the proposed road improvement works is likely to produce high noise levels at the NSRs along the project alignment, if unmitigated. However, the potential impacts are amenable and could be reduced through the implementation of suitable noise control measures, including the use of silenced equipment, siting of equipment, use of noise mufflers and temporary noise barriers.

4 Construction Dust

4.1 Construction dust will arise from the roadworks, and the haulage of construction materials. Model calculations using the Fugitive Dust Model show that dust concentrations at the nearby existing receivers may exceed the hourly Total Suspended Particles (TSP) concentration of 500 $\mu g/m^3$. Dust suppression measures such as good housekeeping, frequent watering of the dust areas and covering of materials on trucks with tarpaulin sheeting are necessary to reduce the impacts. It is anticipated that the Dust Suppression Guideline and Air Quality Objectives can be achieved by the implementation of these dust suppression measures.

5 Water Quality

5.1 During the construction phase, possible water quality impacts arise from site runoff. Sewage effluent arising from the on-site construction workforce also has the potential to cause water pollution. However, with the implementation of appropriate mitigation measures such as the use of oil/grit separators and/or sediment basins/traps as detailed in *ProPECC PN1/94 - Construction Site Drainage*, the impacts are unlikely to be adverse.

6 Construction Wastes

6.1 During construction, three types of waste will be generated and they are construction waste, chemical waste and general refuse.

6.2 The contractor should be required to ensure that all construction wastes are properly collected, stored, sorted and re-used. If disposal of wastes is deemed necessary, the Contractor should arrange to transport and dispose of the waste at a designated disposal site.

6.3 When construction wastes are handled, transported and disposed of, good waste management practices should be followed to ensure no adverse environmental impacts.

7 Ecology

7.1 Ecological impacts of the proposed roadworks are considered to be low. The majority of the site is urban. The existing habitat quality is poor, with the existing vegetation comprising fragmented and predominantly planted areas of introduced amenity species. Some of these areas will be removed to accommodate the road construction. It is recommended that these areas should be replanted as appropriate, preferably with native species.

7.2 Impacts upon fauna are likely to comprise habitat loss and disturbance. These are predicted to be minimal as the habitat quality is poor, and fauna which are more susceptible to disturbance are currently unlikely to occur in the study area, due to the existing high level of disturbance.

8 Road Traffic Noise

8.1 Road traffic noise is a key environmental concern during the operation phase. It has been predicted that the majority of the noise sensitive facades along the proposed Trunk Road T3 will be exposed to noise levels exceeding the HKPSG for road noise based on the highest traffic flows within 15 years after the improvement works. Taking into account engineering constraints, visibility and road safety requirements, visual impact, and acoustical effectiveness, the noise mitigation scheme comprising plain barriers, inverted-L barriers, partial enclosures and full enclosure of various heights and horizontal extents at various locations is recommended. The forms and extent of mitigation measures are shown in Figure 4.

8.2 With the provision of the recommended noise mitigation measures on the proposed Trunk Road T3, noise contribution from the existing roads was found to be a dominant noise source. Further practicable measures on Trunk Road T3 would not be effective to reduce the overall traffic noise level. An assessment was carried out to identify if the affected noise sensitive receivers were eligible for indirect technical remedies in the form of window insulation and air-conditioning. The results show that all of the representative NSRs are not eligible for consideration for indirect technical remedies due to the high prevailing noise and dominant noise contributions from existing roads.

9 Vehicle Emissions

9.1 Model calculations using the worst traffic scenario in terms of vehicle emissions show that the NO_2 concentrations at all of the identified ASRs would comply with the 1-hour average AQO of 300 $\mu g/m^3$ and the Air Quality Guideline for tunnels inside the proposed full enclosure following the operation of the Trunk Road T3. It should be noted that the side-effects of the proposed noise screening structures along Trunk Road T3 were taken into account in the modelling.

10 Landscape and Visual Impacts

10.1 In terms of the landscape impact, the Sha Tin Trunk Road T3 can be generally classified as medium to low impact due to the utilisation of an existing transport corridor for the proposed alignment.

10.2 The visual impact on the identified visual sensitive receivers is generally classified as medium. The provision of Trunk Road T3 within the existing transport corridor minimises the visual impact on the surrounding area. As the trunk road will be elevated, however, the impact will have a high to medium impact on certain sensitive receivers.

11 Recommendations on Mitigation Measures

11.1 The following environmental impact mitigation measures are recommended to reduce the identified impacts:

(i) Construction Noise

- Incorporation of Environmental Pollution and Control Clauses in Contract Documentation for construction noise control;
- Implementation of EM&A programme to control construction noise.

(ii) Construction Dust

- Incorporation of Environmental Pollution and Control Clauses in Contract Documentation for construction dust control;
- Implementation of EM&A programme to control construction dust.

(iii) Water Quality

- Implementation of the mitigation measures such as the use of oil/grit separators and/or sediment basins/traps as detailed in *ProPECC PN1/94 - Construction Site Drainage* to minimize water quality impacts during construction;
- Disposing and treating all effluent generated by the on-site workforce and ensure all sewage discharges from the study area meet the TM standards.

(iv) Construction Waste

- Separation of wastes into various categories for re-use or proper disposal;
- Minimization of on-site impacts through good site practice.

(v) Ecology

- Re-vegetation of plants in order to compensate for the loss of plants during the construction.

(vi) Road Traffic Noise

- Application of noise reducing surfacing materials on the proposed Trunk Road T3;
- Incorporation of the recommended noise mitigation scheme as shown in Figure 4 into the road design.

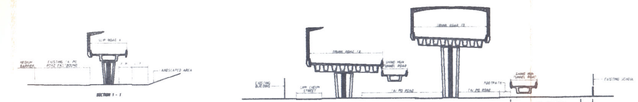
(vii) Vehicle Emissions

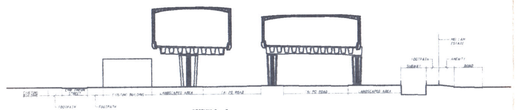
- No air quality mitigation measures are considered necessary for this Project.

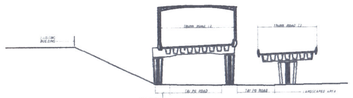
(viii) Landscape and Visual Impacts

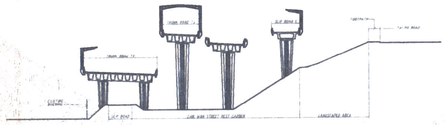
- Consideration of the design of the noise screening structures to integrate them within the local landscape and visual context, while enhancing the benefit they provide of screening the traffic;

- Extensive planting to not just compensate for the loss of vegetation but also to provide additional softening effects to impacts of the proposed works.









圖例
LEGEND

行車線
TRAFFIC LANE

路平水
PROPOSED ROADD LEVEL

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NT EAST DEVELOPMENT OFFICE
新界東發展處

SHA TIN NEW TOWN, STAGE II

UPDATED HIGHWAY LAYOUT

MAUNSELL CONSULTANTS ASIA LTD.
香港奧雅工程顧問有限公司

DRG.NO. 圖紙編號 FIGURE 1

SCALE 比例 1:4000

DIMENSIONS ARE IN METRES

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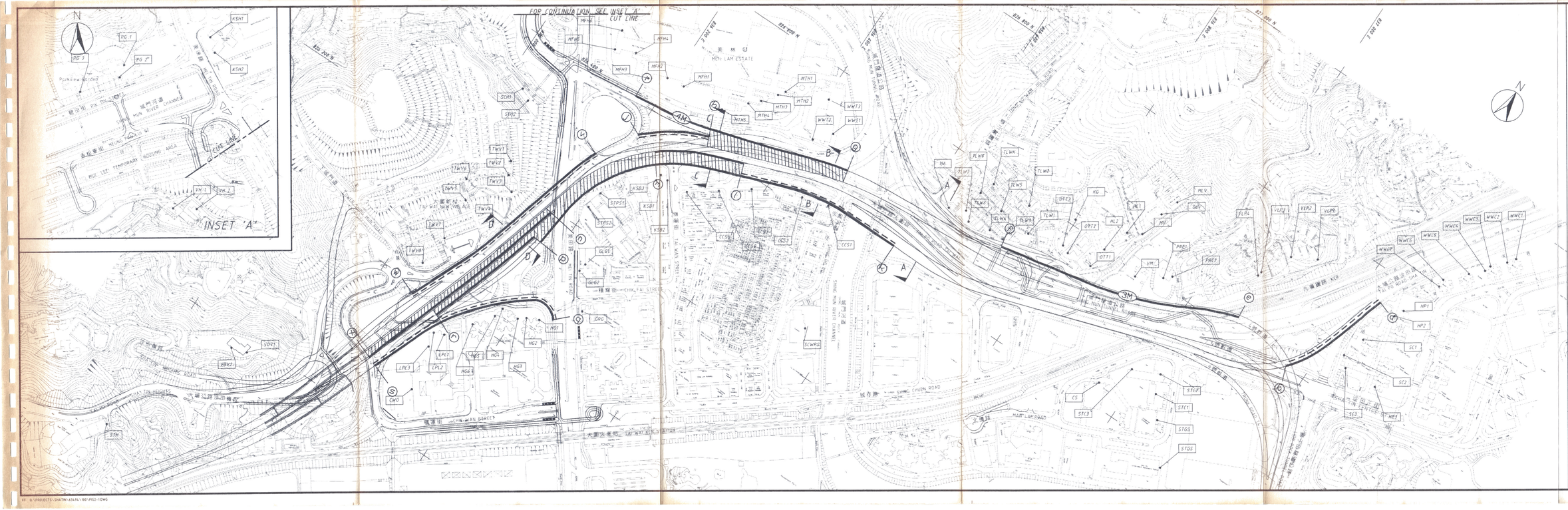

REV.	DESCRIPTION	DATE
A	STREET NAMES ADDED	23/10/97

Territory Development Department 拓展署
NT EAST DEVELOPMENT OFFICE
新界東拓展處

SHA TIN NEW TOWN, STAGE II

SHA TIN TRUNK ROAD T3 - TAI WAI SECTION

LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

MAUNSELL CONSULTANTS ASIA LTD.
茂盛(亞洲)工程顧問有限公司

DRG.NO. 圖則編號 FIGURE 2

DATE SEPT. 1997

SCALE 比例 1 2500

DIMENSIONS ARE IN 尺寸單位 METRES

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LEGEND

VERTICAL BARRIER

INVERTED-L BARRIER

PARTIAL ENCLOSURE

FULL ENCLOSURE

WWC1 AIR QUALITY SENSITIVE RECEIVER

REV	DESCRIPTION	DATE
A	STREET NAMES ADDED	13/10/97

Territory Development Department 拓展署

NT EAST DEVELOPMENT OFFICE 新界東拓展處

SHA TIN NEW TOWN, STAGE II

SHA TIN TRUNK ROAD T3 - TAI WAI SECTION

LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

MAUNSELL CONSULTANTS ASIA LTD.
茂盛(亞洲)工程顧問有限公司

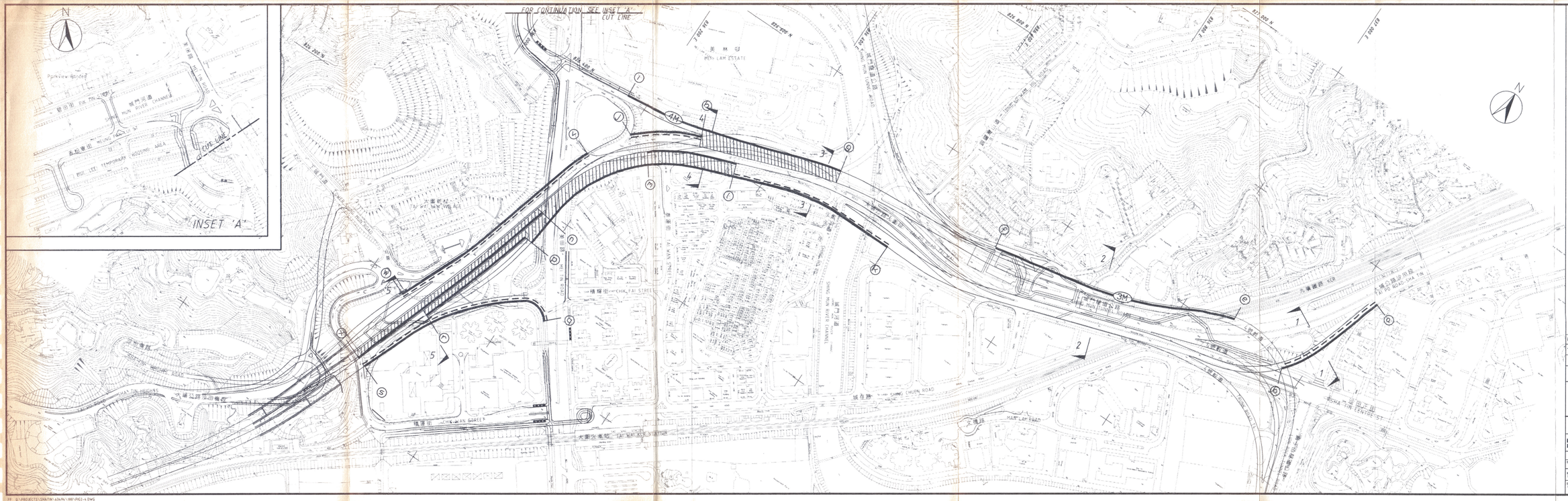
DRG.NO. 圖則編號 FIGURE 3

DATE MAR 1998

SCALE 比例 1 : 2500

DIMENSIONS ARE IN 尺寸單位 METRES

Maunsell



REV	DESCRIPTION	DATE
A	STREET NAMES ADDED	03/10/97

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SHA TIN NEW TOWN, STAGE II

SHA TIN TRUNK ROAD T3 - TAI WAI SECTION

PROPOSED NOISE MITIGATION MEASURES

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DRG.NO. 圖紙編號 FIGURE 4

DATE MAR 1998

SCALE 比例 1 2500

DIMENSIONS ARE IN 尺寸以 METRES 米

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