

1. INTRODUCTION

1.1 Background

Highways Department of the Government of the Hong Kong Special Administration Region (SAR) plans to appoint a consultant in June 1999 to carry out a feasibility study on the project - Lei Yue Mun Road Underpass, Modification at Junction with Yau Tong Road and Associated Improvement Works.

The comprehensive planning brief for the redevelopment of the Ko Chiu Road and Yau Tong Estates, and the development of Lei Yue Mun Housing Estate approved by the Development Progress Committee in July 1995 has allowed an addition of 15,000 people to the existing population in these estates. The intake of these estates is expected to be in 2001/02 and this will exacerbate the traffic conditions on the existing local road network.

A local traffic impact assessment (TIA) to assess the traffic impact caused by the development/redevelopment of the three housing sites mentioned above was carried out under the Comprehensive Traffic Review for East Kowloon. It was anticipated that the local road network would be saturated by year 2001 and the extra housing development would aggravate the traffic conditions. Further deterioration is predicted for future years. The Lei Yue Mun Road/Kai Tin Road junction is expected to reach a v/c ratio of 1.80 in 2011. To support the development/redevelopment of the three housing sites, the TIA recommends a package of improvement schemes to alleviate the anticipated traffic problem. These improvement schemes includes, among others, the project - Lei Yue Mun Road Underpass, Roundabout at junction with Yau Tong Road and Associated Improvement Works.

A Preliminary Project Feasibility Study (PPFS), entitled "Lei Yue Mun Road, Roundabout at Junction with Yau Tong Road and Associated Improvement Works" was conducted for this Project by an independent consultant, Messrs Bantie BMT Harris & Sutherland (HK) Ltd on behalf of Highway's Department. It was completed in December 1997. After completion of the PPFS, the proposed roundabout arrangement at the junction of Lei Yue Mun Road and Yau Tong Road was replaced by a junction modification in accordance with the recommendation of the final report of the "Comprehensive Traffic Review for East Kowloon". The project was renamed accordingly to the present title.

The Preliminary Environmental Review (PER) carried out in conjunction with the above mentioned PPFS concluded that with detailed assessment during the design stage there would be no insurmountable environmental impacts. According to the review, the main concern is the predicted exceedance of the applicable noise standards due to the increase in traffic. To mitigate these unacceptable noise levels, the PER recommends the use of noise screening structure/enclosure and acoustic insulation

together with the installation of air-conditioners at some premises. The PER also expresses its concern over operational air quality as the limit of AQOs at certain locations would be exceeded even without the proposed scheme. The PER recommends further investigation should be carried out to study the air impact due to the road improvement works and to find out suitable remedial measures to reduce the impacts. The PER also suggests that a ventilation system should be designed and provided inside the underpass.

2. BASIC INFORMATION

2.1 Project Title

Lei Yue Mun Road Underpass, Modification at Junction with Yau Tong Road and Associated Improvement Works.

2.2 Purpose and Nature of the Project

The Lei Yue Mun Road Underpass, Modification at Junction with Yau Tong Road and Associated Improvement Works is to increase the capacities of road junctions at the Lei Yue Mun Road/Kai Tin Road and Lei Yue Mun Road/Yau Tong Road junctions. It will support the development of Lei Yue Mun Housing Estate and the redevelopment of Ko Chiu Road and Yau Tong Estates.

2.3 Name of Project Proponent

HKSAR Government, Highways Department, Kowloon Regional Office

2.4 Location and Scale of Project

The scope of the proposed project will comprise :

- (a) Junction modification at the junction of Lei Yue Mun Road/Yau Tong Road;
- (b) Construction of a 380m single lane eastbound underpass beneath the new signalised control junction and the existing Lei Yue Mun Road/Kai Tin Road roundabout;
- (c) Construction of a single lane slip road connecting Kai Tin Road to the new signalised control junction;
- (d) Construction of a subway for pedestrian crossing the junction of Lei Yue Mun Road and Kai Tin Road;
- (e) Construction of a 100m long elevated walkway connecting Lam Tin transport interchange to the pedestrian subway;
- (f) Associated geotechnical, landscaping and road reconstruction works.

The environmental sensitive receivers and study boundaries of the project is shown on attached Figure 2.1.

2.5 Number and Types of Designated Projects

Item (b) and possibly item (c) under para. 2.4 above are designated projects under item A8 and A.1 in Schedule 2 of the EIA Ordinance respectively.

2.6 Name and Telephone Number of Contact Person (s)

3. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

3.1 Project Planning and Implementation

The project will be planned and implemented by the consultants to be appointed by Highways Department in June 1999.

3.2 Project Timetable

According to the current Public Works Programme, Construction is scheduled to commence in August 2004 for completion in January 2007. The Feasibility Study will be conducted between July 1999 and August 2000, while the Detailed Design and Tender will commence in September 2000 and terminate in July 2004.

3.3 Interactions with broader programme requirements or other projects

By the time when construction of the project commences, there is no major interactions with broader programme requirements or other projects.

4. IDENTIFICATION OF POSSIBLE IMPACTS ON THE ENVIRONMENT

4.1 Introduction

This section identifies the likely environmental impact of the proposed works in both the construction and operational phases.

4.2 Construction Phase

4.2.1 Gaseous Emissions

The main source of emissions will be the powered mechanical equipment used on the site. Exhaust from construction traffic will also contribute to the overall emission level. Increased local traffic congestion resulting from temporary traffic diversion works, will also add to local vehicular emissions. The nearest sensitive receivers are located more than 10 metres from the site boundary, outside the buffer zone as required by EPD. Thus no impacts are expected from gaseous emissions during the construction stage.

4.2.2 Dust

Construction work will require the handling and stockpiling of excavated materials, concreting works and construction traffic movements on unpaved roads. These activities will increase the levels of airborne particulates on site.

4.2.3 Odour

The main source of odour generation will be the removal of the sediment from gullies and drains within the site limit. The odour impacts will be insignificant.

4.2.4 Noise

Plant and machinery used as well as non-mechanical construction activities will generate increased noise levels. Construction details have yet to be finalised. But no matter what construction details is to be employed, significant amounts of plant which will inevitably generate high levels of noise would be required.

Major noise sources include civil works and construction such as cutting of rock slope, excavation of pavement and its reconstruction, mechanical excavation and concreting of bored pile foundation, excavation and construction of the underpass. These activities will contribute to the already high background noise levels generated by major roads, and public utilities.

4.2.5 Night-time Operations

Night-time construction works are not normally expected. Whenever night work is required, it must avoid heavy daytime traffic flows and potential traffic congestion associated with lane closures. Night time construction work is subject to statutory control under the Noise Control Ordinance.

4.2.6 Traffic

Construction traffic will add to the overall traffic volume within and in the vicinity of the site limit.

4.2.7 Liquid Effluents, Discharges or Contaminated Runoff

Potential sources of water quality impact include site investigation work, boring of bore piled foundations, temporary work which may include diaphragm wall, rock anchor with grouting, lowering of ground water table, construction runoff and drainage as well as sewerage from on-site construction workforce.

4.2.8 Generation of Waste by-products

Waste generated will comprise excavated material, construction waste and general refuse. Some of the waste by-products may produce dust or emit odours.

4.2.9 Storage Handling, Transport and Disposal of Dangerous Goods, Hazardous Materials or Wastes

Explosive will be used for cutting of rock slope by the pre-split method. Its storage, handling, transport and disposal will be in accordance with the restrictions imposed by the Commissioner of Mines and FSD. No explosive or detonators used for cutting of rock slope will be stored on site overnight.

4.2.10 Qualitative Risk Assessment for landfill gas hazard

The project is within the 250m consultation zone of Sai Tso Wan Landfill, a qualitative risk assessment on landfill gas hazard is required in the underpass construction and associated road improvement works.

4.2.11 Water Quality

Impact upon water quality is not anticipated.

4.2.12 Visual /landscape

Construction of the underpass and associated road improvement scheme will last approximately three years during which the visual appearance will be poor.

4.2.13 Ecological Impacts

The project area is not located within a recognised site of conservation importance. It does not encroach upon or affect important habitats, and since no species of conservation importance are present in the area, no ecological assessment is required.

4.3 Operational Phase

4.3.1 Gaseous Emissions

During the operational phase of the project, local road traffic will be the main source of gaseous emissions. The PER undertaken in 1997 indicated that the limit of the AQOs at certain sensitive receivers would be exceeded. Further investigation should be carried out to study the air impact due to the road improvement work and to find out suitable remedial measures to reduce the impact. Also, air pollutants such as CO and NO₂ will be accumulated in the underpass when vehicles passing through it. The tunnel should be fitted with mechanical ventilation system.

4.3.2 Dust

The only source of dust during the operational phase will be from other renovation works in the area.

4.3.3 Noise

The PER recommends that noise barrier or enclosure along the concerned road section should be adopted to mitigate against noise impact. However, the review found that even with the proposed mitigation, some sensitive receivers would still be subject to excessive noise thus requiring acoustic insulation and air-conditioning. Further investigation should be carried out to study the noise impacts due to the road improvement works and to find out suitable mitigation measures to reduce the noise impacts.

4.3.4 Visual/landscape

Upon completion of the civil and landscape works of the project, the visual appearance of the area will be improved.

5. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

5.1 Existing and Planned Developments

Developments in the area include residential buildings, recreational areas and schools. Table 5.1 provides a summary of the existing and planned developments in the project area. During the initial stages of the EIA any additional planned landuses/landuse changes will be identified.

Table 5.1 Summary of Existing and Planned Developments

Ref No.	Area	SR Type	Current Status
1.	FDBWA Szeto Ho Secondary School	Educational	Existing
2.	SKH Kei Hau Secondary School	Educational	Existing
3.	Ping Shun House (Ping Tin Estate)	Residential	Existing
4.	Buddhist Ho Nam Kam Prevocational School	Educational	Existing
5.	Yau Tong Estate Block 9	Residential	Existing
6.	Yau Tong Road Playground	Recreational	Existing
7.	Lei Yue Mun Road Playground	Recreational	Existing
8.	St Antonius Girls College	Educational	Existing
9.	Site adjacent to Buddhist Ho Nam Kam Prevocational School	Residential	Planned

6. ENVIRONMENTAL PROTECTION MEASURES AND FURTHER ENVIRONMENTAL IMPLICATIONS

6.1 Noise

6.1.1 Construction Phase

A construction noise assessment will be undertaken as a part of the EIA.

A number of different types of plant will be used during the construction including breakers, excavators, and air compressors, mixers and cranes, all of which significantly contribute to noise levels. To mitigate the noise impacts from this equipment, the following should be considered :

- The use of silenced equipment;
- The employment of alternative concrete breaking technique;
- The siting of equipment;
- The careful scheduling of work, especially near the educational institutions where cognisance should be taken of examination times;
- The use of temporary acoustic barriers;
- The proper maintenance of equipment;
- The utilisation of construction noise specifications and clauses; and
- Adequate site supervision to ensure that every practical means is utilised to minimise the noise levels generated.

6.1.2 Operational Phase

Different mitigation options for the operational phase include :

- noise barriers;
- Full enclosures with the tops and sides covered or partial enclosures with at least one side open; and
- Mitigation at the receiver in the form of noise insulated windows and air conditioning for sensitive facades as a last resort.

6.1.3 Adverse/beneficial Effects

During daytime construction, noise levels at sensitive receivers will exceed the EPD noise guidelines. However, once construction is completed and suitable mitigation measures implemented, noise levels will conform to EPD standards.

6.2 Dust

6.2.1 Construction Phase

The predicated suspended solids levels as predicted in the PER are within the limits of the AQO. However the following dust control measures are recommended to minimise dust nuisance :

- The site should be wetted (using water bowsers, sprays or vapour mists) to reduce air emission from the impact of debris;
- Provision of adequate wheel/vehicle washing facilities;
- Monitoring for dust generated during construction/pavement breaking is also recommended to check that the dust criterion is met;
- Use of wind-breaks/net screens/semi-permeable fences;
- Ready mixed concrete should be used;
- Earthmoving activities should be well planned to include transportation routes as well as protective measures such as water spraying and tarpaulin sheets to suppress dust generated during and after excavation; and
- Reduce speeds, limit movement of vehicles and use upward exhausts.

6.2.2 Operational Phase

According to the PER, air pollutants such as CO and NO₂ will be accumulated in the underpass when vehicles passing through it. A ventilation system designed to keep air quality inside the underpass within the 'Tunnel air quality guideline levels' should be provided.

6.2.3 Adverse/Beneficial Effects

During the construction phase, there will be dust and air quality impacts upon sensitive receivers, these will be minimised as far as practicable. Once construction is completed, air quality will be in compliance with the AQO. If partial or full enclosures are used, the air quality will be improved upon present levels.

6.3 Air Quality

An air quality assessment is not proposed for the construction phase.

6.3.1 Operational Phase

An operational air quality assessment will be undertaken as a part of the EIA.

6.4 Odour

6.4.1 Construction Phase

No mitigation measures are planned since any impact will be temporary and insignificant.

6.4.2 Operational Phase

No odour emission will result from the underpass and road improvement project.

6.5 Water Quality

6.5.1 Construction Phase

Temporary drainage systems with interceptor manholes and appropriate sediment settlement measures are required to trap oil pollutants and debris prior to discharge into the existing drainage system. Other mitigation measures include :

- Careful planning of flow diversions around working areas to prevent the entry of contaminants;
- Before commencing any demolition work, all sewer and drainage connections should be sealed to prevent debris from entering public sewers/drains;
- Wastewater generated from concreting, cleaning of machinery and similar activities should not be discharged into the stormwater drains. This waste should instead be discharged into foul sewers, after the removal of settled solids and pH adjustment;
- Open stockpiles should be covered with tarpaulin to avoid erosion which may wash solid waste into stormwater drainage systems;
- During the wet season, any exposed top soil should be covered with tarpaulin, shotcreted or hydrosseded;
- Wash-water from wheel washing should have sand and silt removed before discharge into storm drains; and
- All fuels should be stored in bunded areas so that spillage can be easily collected.

6.5.2 Operational Phase

During the operational phase, pollutants will be generated by the increased traffic flow. The following mitigation measures also incorporate Best Management Practices (BMP's) to reduce storm water runoff;

- Provision of silt traps to reduce the concentration of silt/sediments in storm water runoff; and
- Routine inspection and maintenance of the drainage system should be conducted to ensure that sediment traps and other pollutant removal facilities are cleared and in good working order.

6.5.3 Adverse/Beneficial Effects

Upon completion of the project, assuming the implementation of recommended mitigation and BMP's there will be no water quality impact on the road drainage during the operational stage.

6.6 Waste

6.6.1 Construction Phase

The main source of solid waste during the construction phase will be excess excavated spoil. Damaged materials, surplus construction materials, and used products will also be generated, all of which should be disposed of in accordance with environmental guidelines.

To minimise impact the following should be taken into consideration :

- All vehicles travelling to and from the site should be routed as far as possible to avoid sensitive receivers in the area; and
- Solid materials and waste should be removed from site and taken to a designated disposal site.

6.6.2 Construction Phase

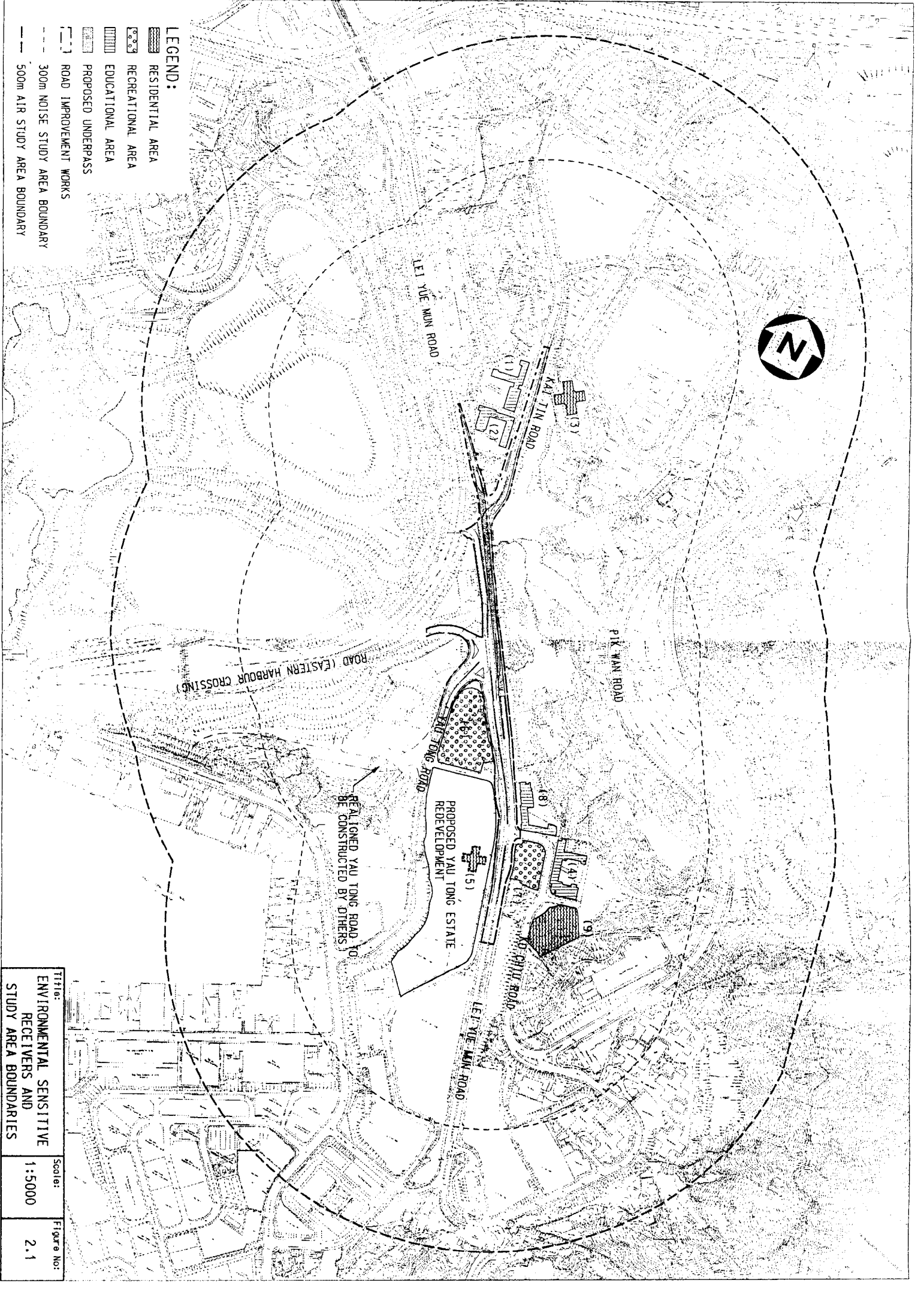
No solid waste in excess of normal road - side urban litter will be produced during the operational phase.

6.6.3 Adverse/Beneficial Effects








Transportation of waste to off - site disposal facilities will add to noise/dust pollution. Mitigation measures as recommended in section 6.2 will keep these to a minimum.

6.7 Possible Severity, Distribution and Duration of Environmental Effects

The PER has concluded that with proper implementation and monitoring of the measures, no adverse environmental effect, either short term or long term, is expected as a result of implementation of the underpass and road improvement scheme.



LEGEND:

-  RESIDENTIAL AREA
-  RECREATIONAL AREA
-  EDUCATIONAL AREA
-  PROPOSED UNDERPASS
-  ROAD IMPROVEMENT WORKS
-  300m NOISE STUDY AREA BOUNDARY
-  500m AIR STUDY AREA BOUNDARY

Title: ENVIRONMENTAL SENSITIVE RECEIVERS AND STUDY AREA BOUNDARIES

Scale: 1:5000

Figure No: 2.1