

3.0 ENVIRONMENTAL LEGISLATION, STANDARDS AND GUIDELINES

3.1 Environmental Impact Assessment Ordinance

The Technical Memorandum issued under Section 16 of the Environmental Impact Assessment Ordinance sets out the principles, procedures, guidelines, requirements and criteria for the technical content of environmental impact assessments and for deciding whether a designated project is environmentally acceptable. The criteria for evaluating environmental impacts has been followed for this environmental impact assessment.

3.2 Noise

3.2.1 Construction Noise Criteria during Non-restricted Hours

The noise generated by the construction of the Project during the non-restricted daytime hours (07.00-19.00) will be assessed with reference to the EPD recommended criteria in the Technical Memorandum on Environmental Impact Assessment Process, as shown in Table 3.1.

Table 3.1: Recommended Construction Noise Levels (Non-restricted Hours)

Noise Sensitive Receiver	Noise Level $L_{eq}(30 \text{ min})$ dB(A)
Dwelling	75
School	70 (Normal school hours) 65 (During examination)

3.2.2 Road Traffic Noise

The impact of operational noise has been assessed with reference to the *Technical Memorandum on EIA Process* which stipulates maximum L_{10} (1 hour) road traffic noise levels at sensitive facades of various NSRs (Table 3.3).

Table 3.2: Acceptable Road Traffic Noise Levels

Noise Sensitive Receivers	Road traffic Noise L_{10} (1 hour)dB(A)
Domestic Premises / Offices ⁽¹⁾	70
Places of Public Worship	65
Educational Institutions	65
Hospitals, Clinics, Homes for the Aged (wards & diagnostic rooms)	55

Note (1) : There is no offices relying on opened window for ventilation in the vicinity of this project so this criteria is not applied.

In cases where no practical direct technical remedies can be applied, the Exco directive *Equitable Redress for Persons Exposed to Increased Noise Resulting*

from the Use of New Roads shall be referenced to identify which NSRs may be qualified for indirect technical remedies.

3.2.3 Noise Impact Assessment of 24 Hour Opening of Border Study

The assessment criterion adopted in the NIA of 24 Hour Opening of Border Crossings is to reduce the noise contribution from the cross border traffic in 2006 to a level which is equal to or more than 10 dB(A) below the corresponding prevailing noise levels at the relevant NSRs before the introduction of 24 hour opening of border crossing in 1994.

In accordance with the criterion, the NIA of 24 Hour Opening of Border Crossings deduced the following noise attenuation required at the respective facades to off-set the increase in noise from additional border traffic during night time for general reference:

Scenery Court 6.3 dB(A)
Wai Wah Centre 6.9 dB(A)
Shatin Plaza 8.5 dB(A)
Lek Yuen Estate 8.5 dB(A)
Wo Che Estate 6.6 dB(A)

Both the criterion and the above general reference noise attenuation figures are applied to assess the traffic noise impact from 24 Hour Opening of Border Crossings.

3.3 Air Quality

3.3.1 Air Quality Objectives

Air quality is regulated through the Air Pollution Control Ordinance, 1983 Cap. 311, which provide, inter alia, statutory Air Quality Objectives (AQOs) for each Air Control Zone. Air Control Zones have been declared for the whole of the Region and the associated Air Quality Objectives as described in Technical Memorandum on EIA process are provided in Table 3.3.

Table 3.3 Hong Kong Air Quality Objectives

Pollutant	Concentration $\mu\text{g}/\text{m}^3$ (i) Averaging Time				
	1 Hour (ii)	8 Hours (iii)	24 Hours (iii)	3 Months (iv)	1 Year (iv)
Sulphur Dioxide	800		350		80
Total Suspended Particulates			260		80
Respirable Suspended Particulates (v)			180		55
Nitrogen Dioxide	300		150		80
Carbon Monoxide	30000	10000			
Photochemical Oxidants (as ozone (vi))	240				
Lead				1.5	
(i) Measured at 298 ^o K (25 ^o C) and 101.325 KPa (one atmosphere). (ii) Not to be exceeded more than three times per year. (iii) Not to be exceeded more than once per year. (iv) Arithmetic means. (v) Respirable Suspended Particulates means suspended particulates in air with a nominal aerodynamic diameter of 10 micrometers and smaller. (vi) Photochemical oxidants are determined by measurements of ozone only.					

Source: Air Pollution Control Ordinance

3.3.2 Hourly Total Suspended Particulates

In addition to the Air Quality Objectives, the Environmental Protection Department (EPD) also recommended that a maximum hourly level of 500 $\mu\text{g}/\text{m}^3$ Total Suspended Particulates should not be exceeded at the boundary of any construction site.

3.3.3 Tunnel Air Quality Guidelines

The air quality inside the vehicle tunnels is regulated and guided by the Tunnel Air Quality Guidelines which were endorsed by the Hong Kong Environmental Pollution Advisory Committee on 26th October 1993. Although there are no tunnels in the proposed scheme, these guidelines will be relevant to the air quality inside full noise enclosures should these be required. The guidelines are shown in Table 3.4.

Table 3.4: Tunnel Air Quality Guidelines

Air Pollutants	Averaging Time	Maximum Concentration	
		$\mu\text{g}/\text{m}^3$	ppm
Carbon monoxide	5 minutes	115,000	100
Nitrogen dioxide	5 minutes	.1,800	1
Sulphur dioxide	5 minutes	1,000	0.4

Note : All limits are expressed as at reference conditions of 298^oK (25^oC) and 101.325 KPa (one atmosphere).

3.4 Water Quality

3.4.1 Water Pollution Control Ordinance

The construction and operation of the Project will be required to comply with the environmental standards and guidelines for surface waters. Water quality in Hong Kong is controlled by the regulations defined in the Water Pollution Control Ordinance and implemented through the process of assignment of Beneficial Uses (BU) to Water Control Zones (WCZ) and the Water Quality Objectives (WQO) associated with each BU.

The WQO are controlled use related water quality parameters to which are assigned statistical values or permissible deviations from ambient background. The project is located within the Tolo Harbour and Channel WCZ.

3.4.2 Beneficial Uses

Beneficial Uses for surface fresh waters have been assigned into four main groups.

- (i) Group A abstraction for potable water supply; these include all waters within water gathering grounds and within the boundaries of the country parks.
- (ii) Group B irrigation; these are mainly in the agricultural areas of the New Territories.
- (iii) Group C pond fish culture; these are waters passing through areas where there are large numbers of fish ponds.
- (iv) Group D general amenity and secondary contact recreation; these are waters generally large enough to allow secondary contact recreation, those draining urban and semi urban areas and those draining to the sea at gazetted bathing beaches.

In addition to these uses there are the more general uses of preservation of aquatic life and use for storm water channels. Their quality requirements would equate to Groups B, C and D respectively.

3.4.3 Water Quality Objectives

The Water Quality Objectives (WQOs) for inland waters of Hong Kong for the water control zones are set in terms of:

pH -	range of 6.5 - 8.5 units
Suspended Solids -	≤ 20mg/L (annual median)
Dissolved Oxygen -	≥ 4mg/L
Chemical Oxygen Demand -	≤ 15mg/L
Biochemical Oxygen Demand (5 day)-	≥ 3mg/L

The Project Site is outside designated Water Gathering Grounds and therefore water quality criteria for Water Gathering Grounds do not apply to the project.

3.4.4 Technical Memorandum

The maintenance of the surface water quality in order to satisfy the WQO and meet the requirements of the BU is controlled by the *“Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters”* which prescribes effluent discharge standards for the four water Classes. The effluent standards are related to the volume of effluent being discharged.

3.5 Solid Waste

3.5.1 Waste Disposal Ordinance/Crown Land Ordinance

The Waste Disposal Ordinance prohibits the unauthorised disposal of wastes, with waste defined as any substance or article which is abandoned. Construction waste is not directly defined in the Ordinance but is considered to fall within the category of "trade waste". Wastes can only be disposed of at a licensed site under this Ordinance.

Construction wastes which are wholly inert may be taken to public dumps. The Crown Land Ordinance requires that dumping licences are obtained by individuals or companies who deliver suitable construction wastes to public dumps. Under the licence conditions public dumps will accept only inert building debris, soil, rock and broken concrete.

3.5.2 Public Cleansing and Prevention of Nuisances Regulations

These Regulations provide a further control on the illegal tipping of wastes on unauthorised (unlicensed) sites.

3.5.3 Waste Disposal (Chemical Waste) (General) Ordinance

Under the Waste Disposal (Chemical Waste) (General) Ordinance (Cap 354), 'chemical waste' includes any scrap material and unwanted substances specified under Schedule 1 of the Waste Disposal Regulations. These are noted as posing serious environmental, health and safety hazards if not stored and disposed of appropriately. Chemical wastes are often produced primarily as a result of construction equipment maintenance activities, and include liquids such as waste oils and cleaning solvents. The Contractor must register as a chemical

waste generator with EPD and arrange for a licensed waste contractor to dispose of this waste, the operator of the Chemical Waste Treatment Centre (CWTC) on Tsing Yi to collect and dispose of the waste.

3.5.4 Other Waste Management Guideline Documents

Other 'guideline' documents applicable for waste handling and disposal are as follows:

- (i) Waste Disposal Plan for Hong Kong (December 1989), Planning, Environment and Lands Branch Government Secretariat; and
- (ii) New Disposal Arrangements for Construction Waste (1992), Environmental Protection Department & Civil Engineering Department.

3.6 Landscape and Visual

3.6.1 Environmental Impact Assessment Ordinance

The preparation of a landscape and visual impact assessment is currently controlled by the recently enacted Environmental Impact Assessment Ordinance which makes specific reference to issues and concerns to be considered during the assessment of visual and landscape impacts and has been used as a general basis for the formulation of the methodology used in this report.

3.6.2 EPD Advice Note 2/92

The Government has also published guidance relevant to landscape and visual issues in the EPD Advice Note 2/92 on the environmental impact process for major private sector projects and which recognises visual impacts as an issue of 'concern'.

3.6.3 Other Landscape Documents

Landscape and visual issues pertinent to this study are also addressed by the following documents:

- (i) The Advisory Committee on the Appearance of Bridges and Associates Structures (ACABAS) review the aesthetics of highway related structures with the aim of minimising visual intrusion and impact, comments provide by ACABAS are of particular relevance to this Study;
- (ii) The 1990 Government White Paper on "Pollution in Hong Kong - A Time to Act" offers general policy objectives on avoiding environmental problems by considering all environmental impacts at the early stages of development process.
- (iii) WBTC 24/94 PELB 3/94 controls tree preservations and minimising tree felling throughout the Territory with General Regulation 740 outlining the process of Government tree felling application approval to provide permission to fell or cut trees;

- (iv) WBTC 25/93 aims to control the visual impacts of engineered slopes and is specifically directed at public works projects and states the need to minimise adverse visual impacts;
- (v) WBTC 25/92 provides the guidelines on allocation of space for urban street trees; and
- (iv) WBTC 18/94 provides the guidelines on management and maintenance of both natural vegetation and landscape works.
- (vii) Highways Department Technical Circular No. 6/98 set out the procedures to avoid affecting visibility of directional signs by landscape work.