

## **ANNEX B**

# **ENVIRONMENTAL LEGISLATION AND PLANNING GUIDELINES**

## ANNEX B

### ENVIRONMENTAL LEGISLATION AND PLANNING GUIDELINES

#### B1 Introduction

- B1.1 One of the Hong Kong Government's overall policy objectives on environmental planning, as outlined in the 1989 *White Paper on Pollution in Hong Kong*, is "to avoid creating new environmental problems by ensuring the consequences for the environment are properly taken into account in site selection, planning and design of all new developments".
- B1.2 This section highlights the relevant environmental legislation and guidelines which are currently applicable to the proposed project. The *EIA Ordinance* and its associated *Technical Memorandum* which came into force on 1st April 1998 is one of the most significant pieces of legislation.

#### B2 EIA Ordinance and its Associated Technical Memorandum

- B2.1 The *Technical Memorandum on the Environmental Impact Assessment Process* (TMEIA) is issued under section 16 of the *Environmental Impact Assessment Ordinance* (EIAO) [Cap 499]. The TM sets out the principles, procedures, guidelines, requirements and criteria for:
- (a) the technical content of a project profile;
  - (b) the technical content of an environmental impact assessment study brief or environmental impact assessment report;
  - (c) deciding whether a designated project is environmentally acceptable;
  - (d) deciding whether an environmental impact assessment report meets the requirements of the environmental impact assessment study brief;
  - (e) deciding whether the Director will permit an applicant to apply directly for an environmental permit under section 5(9), (10) or (11) of the Ordinance;
  - (f) resolving conflicts on the content of the environmental impact assessment study brief and the environmental impact assessment report;



- (g) taking advice from other authorities;
- (h) deciding what is a material change, addition or alteration to an environmental impact or to a designated project;
- (i) the issue of environmental permits; and
- (j) the imposition of environmental monitoring and audit requirements for designated projects as conditions in environmental permits.
- (k) The TM provides criteria and guidelines for each aspect of the environmental impact assessment by which to identify and evaluate activities which have the potential to adversely impact the environment. The details of these are given in the following relevant sections.

### **B3 Hong Kong Planning Standards and Guidelines**

B3.1 The *Hong Kong Planning Standards and Guidelines* (HKPSG) Chapter 9: *Environment* provides guidance for including environmental considerations in the planning of both public and private developments. The environmental suitability of a site for a certain land use is governed by such factors as:

- (i) natural environmental characteristics including topography, climate, hydrological and hydrographical characteristics, vegetation, wildlife and habitat, and soil conditions;
- (ii) the nature, distribution and consequences of the residuals including aerial emissions, wastes, sewage or noise generated by land uses in the development area;
- (iii) the capacity of the environment to receive additional developments; and
- (iv) existing land uses.

B3.2 The HKPSG specifies the Government's overall policy objective for environmental planning to be:

“to avoid creating new environmental problems by ensuring the consequences for the environment are properly taken into account in site selection, planning and design of all new developments”; and

“to seize opportunities for environmental improvement as they arise in the course of urban redevelopment...”.

### ***Conservation***

B3.3 HKPSG *Chapter 10: Conservation* states that the following four principles should be adopted for the practical pursuit of conservation in land use planning:

- (i) retain significant landscapes and ecological attributes and heritage features as conservation zones;
- (ii) restrict uses within conservation zones to those which sustain particular landscapes and ecological attributes and heritage features;
- (iii) control adjoining use to minimise adverse impacts on conservation zones and optimise their conservation value; and
- (iv) create, where possible, new conservation zones in compensation for areas of conservation value which are lost to development.

B3.4 Items of value which merit conservation are identified in territorial, sub-regional and district planning exercises, special surveys undertaken by other departments or as the result of public views. However, plans which include conservation use have to be seen in a wider context and take into account the need to provide adequate space for development needs. The challenge is to combine these different uses into acceptable and realistic plans which take account of territorial growth and principles of sustainable development.

### ***Protecting Natural Landscapes and Habitats***

B3.5 Natural landscapes and habitats may be gazetted as Country Parks or Special Areas (*Country Parks Ordinance* [Cap 208]), Restricted Areas (*Wild Animals Protection Ordinance* [Cap 170]), Water Gathering Grounds (*Waterworks Ordinance* [Cap 102]), conservation zones (*Town Planning Ordinance* [Cap 131]) or listed as Sites of Special Scientific Interest (SSSIs).

- B3.6 Country Parks and Special Areas are designated under the *Country Parks Ordinance* and managed by the Agriculture Fisheries and Conservation Department (AFCD) on the advice of the Country and Marine Parks Board. At present there are 23 Country Parks (area 41,036 ha) and 14 Special Areas (area 1,639 ha), 11 of which are within Country Parks. Country Parks are designated for the purposes of nature conservation, countryside recreation and education; Special Areas are areas of government land with special interest and importance by reason of their flora, fauna, geological, cultural or archaeological features. The Country and Marine Parks Authority has established criteria for determining whether or not a particular location is suitable for designation as a Country Park or Special Area. The criteria include landscape quality, recreation potential, conservation value, size, land status and the practicality of management.
- B3.7 The *Wild Animals Protection Ordinance* restricts access to designated areas of wildlife habitat. Restricted Areas under the Ordinance are implemented by the AFCD although certain site management activities may be shared by others. Two Restricted Areas have been designated, the Mai Po Marshes (NWNT) and the Yim Tso Ha Egrettry (NENT). In addition, the Ordinance protects local wildlife through both the prohibition of hunting territory-wide and the possession of scheduled protected wild animals or hunting appliances.
- B3.8 Areas of conservation use may be declared as conservation zones under clause 4(1)(g) of the *Town Planning Ordinance*. These zones are shown on statutory plans which are approved by the Town Planning Board and this process is further discussed in the subsequent section on preparing plans to conserve natural landscapes and habitats.
- B3.9 SSSIs may be land based or marine sites which are of special interest because of their flora, fauna, geographical, geological or physiographic features. SSSIs are identified by the AFCD and the Planning Department maintains a register of sites. Once identified, SSSIs are shown on statutory and departmental plans prepared by the Planning Department. Inter-relationships between land uses can be quite subtle. An SSSI declared as a wildlife habitat may only be sustainable if the wider surroundings remain rural so as to provide feeding grounds. Similarly, a wetland site may only be sustained if a particular water source is protected.
- B3.10 The Government recognises the need to protect marine and wetland habitats. AFCD is responsible for the implementation of future marine parks/reserves. Important wetlands may be declared as being of international importance under the *Convention on Wetlands of International Importance* Especially as Waterfowl Habitat (known as the 'Ramsar' Convention). Parties to the Convention may designate sites for inclusion in the *List of Wetlands of International Importance* which is administered by the Bureau of the Convention.

- B3.11 The *Ramsar Convention* states that “wetlands should be selected for the List on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology. In the first instance, wetlands of international importance to waterfowl at any season should be included”. The Mai Po Marshes (a restricted area and a SSSI) and the intertidal mudflat at Inner Deep Bay have been designated as a Ramsar Site since September 1995.

### *Statutory Plans*

- B3.12 The *Town Planning Ordinance* permits statutory land use zones under clause 4(1)(g) for ‘country parks, coastal protection areas, sites of special scientific interest, green belts or other specified uses that promote conservation or protection of the environment’. Conservation zones for statutory plans are:

- |       |                         |   |
|-------|-------------------------|---|
| (i)   | SSSI                    | to conserve and to protect fauna and flora and other natural features with special scientific value.  |
| (ii)  | Country Park            | to encourage recreation and tourism, protect vegetation and wildlife, preserve and maintain buildings and sites of historical or cultural significance within country parks and to provide facilities and services for the public enjoyment of the country. |
|       |                         | (Note: The term ‘Country Parks’ includes ‘Special Areas’ designated under the Country Parks Ordinance.)   |
| (iii) | Coastal Protection Area | to retain natural coastline.  |
| (iv)  | Conservation Area       | to retain existing natural features and rural use.  |
| (v)   | Green Belt              | to define the limits of urban development areas by conserving landscape features.   |

## B4 Landscape and Visual Impact

B4.1 The current legislation relating to landscape and visual impacts of development in Hong Kong is the *Environmental Impact Assessment Ordinance* (EIAO) [Cap. 499] enacted in April 1998. Other than EIAO, the older HKPSG Chapter 10: Landscape and Conservation also contains recommendations about developments in agricultural areas, woodlands, water gathering grounds, areas of freshwater fish culture, scenic and potential recreation areas, also provided guidelines for reducing adverse environmental effects of development in rural areas. Landscape and Visual Assessment is assessed according to the criteria and methods stated in Annex 3, 10, 11, 18, 20 and 21 of TMEIA and recommendations of HKPSG. Recommendations covered include:

(i) *Topography and site information:*

Developments on hill tops, scenic ridges and prominent positions should be avoided wherever possible. Site layout, road alignments, etc. should follow and relate to the natural contours. Overall, formation work and site disturbance should be minimised.

In scenic areas, opportunities should be taken to use local landform and any excavated material available to 'fit' the development into the ground form, soften the geometric outline of buildings, and screen ancillary features from view;

Developments should be sited and planned to minimise long term visual impact.

(ii) *Retention of existing vegetation:*

Developments should be sited so as to retain existing woodlands, groups of trees and feature trees wherever possible.

Retention of trees on development sites is made easier if non-building areas are specified to include all significant tree features and suitable conditions to ensure these areas are protected and included in development proposals.

Where applicable, advice should be sought from Agriculture, Fisheries and Conservation Department (AFCD), Architectural Services Department (ArchSD), Lands Department (LandsD), Leisure and Cultural Services Department (LCSD) and Planning Department (PlanD) on regulations governing the felling of trees, the suitability of trees for retention and the possible occurrence of important flora and fauna.



Reference should be made to the Works Branch Technical Circular 14/2002 on Management and Maintenance of Natural Vegetation and Landscape Works, and Tree Preservation which defines the management and maintenance responsibilities for natural vegetation and landscape works, including softworks and hardworks, and the authorities for tree preservation and felling. The circular states that "No trees should be unnecessarily lopped or felled. The need to preserve trees must be borne in mind, notwithstanding engineering and financial constraints, particularly by those in charge of construction projects. The planning and design of projects must take into account the need to preserve trees. Permission to remove trees will not be granted unless good cause is shown and fully justified."

Permission should be sought at normally 12 months in advance. In general, any department which finds a need to fell tree(s) should approach the maintenance department concerned, as well as LCSD and/or AFCD as appropriate to seek advice on the amenity and conservation values of the tree(s) in questions. With the preliminary consent from them, the requesting department should, by making reference to GR 470 and Land Administration Office Instruction (LAOI) Section D-12, follow the procedures for obtaining approval from LandsD, who may consult the relevant parties concerned including District Councils where appropriate before the final approval is given.

(iii) *Site layout, overhead services alignments, etc.:*

The appropriate siting and design of development is often crucial for the maintenance of the landscape in rural areas. Building layouts that avoid regular repetitive or geometric forms and that relate well to natural landforms are preferred.

Views from surrounding areas should be taken into account.

Overhead services should be aligned to minimise visual impact and below ground routes should be preferred in sensitive areas.

(iv) *Building design and landscape treatment:*

In areas of scenic importance, building design should be sympathetic with the surrounding landscape and the general rural environment.

The preparation and implementation of landscape plans should be a requirement on all major developments and, as a general rule, for developments in scenic areas. Landscape Plans should include all or most of the following:

- (a) an illustrative layout of hard and soft landscape areas indicating function, extent and disposition of all landscape elements including vegetation types together with the layout of building(s) and access road/car parks;
- (b) a tree survey indicating details of existing trees to be felled, retained or transplanted;
- (c) a site layout with sections as appropriate indicating formation levels, location and treatment of slopes and retaining structures; and
- (d) a written schedule which provides a generic, qualitative description of all hard elements finishes, types and planting densities of all hard elements finishes, types and planting densities of all softworks elements and soil depth / drainage provision for planted areas.

B4.2 HKPSG also provides the following guidelines for roadside planting which are applicable in both the urban and rural context:

- (a) Wherever possible, existing trees and woodlands are to be retained. Where this proves impractical, all possible efforts should be made to transplant suitable healthy trees either elsewhere on site or in the near vicinity.
- (b) Wherever possible, footways, median strips and road side areas should be designed to accommodate planting. Transport Department, Highways Department and Fire Services Department should be consulted. In areas where planting is intended, special consideration to the location of utility services may be required.
- (c) Roadside and median plantings can also temper the environment, reduce vehicle pollution to a degree and screen traffic and other uses.
- (d) Major planting belts (structure plantings) should be wide enough to be usable for recreation and be heavily planted. Where a buffer for polluting uses is intended a wide planting is needed.

- (e) Intersections (especially grade separated) occupy large areas and present scope for heavy planting and contouring. Care must be taken with sight lines, and the Territory Development Department, Transport and Highways Departments should be consulted.
- (f) Always consult with future maintenance authorities (Leisure and Cultural Services Department).

B4.3 Attention should also be paid to the following Technical Circulars / Guidance Note which provide important landscape and visual guidelines:

- *Works Branch Technical Circular 25/92 on Allocation of Space for Urban Street Trees* which outlines the standards required by various Government works departments, and others, in relation to the planting of new street trees in the urban areas. The purpose of the Circular is to ensure that the requirements of growth space and soil rooting volume of trees are met in order to promote environmental improvement, yet avoiding conflict with existing infrastructure.
- *Works Branch Technical Circular 25/93 on Control of Visual Impact of Slopes* which outlines the design principles recommended to be used in designing man-made slopes for Public Works projects in order to reduce their adverse visual impact.
- *Works Branch Technical Circular 18/94 on Management and Maintenance of both Natural Vegetation and Landscape Works* which outlines the management and maintenance responsibilities for both natural vegetation and landscape works between various Government Departments. The general principle to be followed is for the relevant departments to agree what will be included and who will maintain it, early in the design development.
- *EIAO Guidance Note No. 8/2002 – Preparation of Landscape and Visual Impact Assessment Under the Environmental Impact Assessment Ordinance* which advises on the requirements in vetting Landscape and Visual Impact Assessment (LVIA) of designated projects under the TMEIA. The main aim is to facilitate practitioners to prepare LVIA and to satisfy their own quality management system prior to making submissions under the EIAO.

## **B5 Cultural Heritage**

- B5.1 The criteria for evaluating impacts on sites of cultural heritage, as specified in the TMEIA (Annex 10), include:
- (i) The general presumption in favour of the protection and conservation of all sites of cultural heritage because they provide an essential, finite and irreplaceable link between the past and future and are points of reference and identity for culture and tradition.
  - (ii) Adverse impacts on sites of cultural heritage shall be kept to the absolute minimum.
- B5.2 Cultural Heritage is assessed according to the guidelines stated in Annex 19 of TMEIA. Reference should also be made to the *Antiquities and Monuments Ordinance* (A&MO) [Cap 53].
- B5.3 The A&MO provides for the protection of important sites of archaeological or historical interest by declaration as monuments. Under the Ordinance, the Antiquities Authority (Secretary for Home Affairs) may, after consultation with the Antiquities Advisory Board (AAB) and with Government approval, declare any place, building, site or structure which the Antiquities Authority considers to be of public interest by reason of its historical, archaeological or palaeontological significance, to be a monument, historical building, archaeological or palaeontological site or structure. Once declared to be a site of public interest, no person may undertake acts which are prohibited under the Ordinance, such as to demolish or carry out building or other works, unless a permit is obtained from the Antiquities Authority.
- B5.4 The Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department (LCSD) is the executive arm of the Antiquities Authority (Secretary for Home Affairs) for preserving sites of cultural heritage in Hong Kong. The AMO is the service arm of the AAB which is responsible for advising the Antiquities Authority on sites which merit protection. The AMO has further responsibility for the protection of buildings, items of historical interest and areas of archaeological significance. The excavation and search for such relics requires a licence under the Ordinance.

## **B6 Noise**

- B6.1 HKPSG states that "The basic role of planning against noise is to provide an environment whereby noise impacts on sensitive uses are maintained at acceptable levels."

- B6.2 For Designated Projects noise is assessed according to the criteria and methods in Annexes 5 and 13 of the TMEIA. Evening and night time construction works, as well as commercial and industrial noise is controlled under the *Noise Control Ordinance* (NCO) [Cap 400] (1988) regulations and associated Technical Memoranda (TM). The following TM have been issued on:
- (i) *Technical Memorandum for the Assessment of Noise from Places other than Construction Sites, Domestic Premises or Public Places*
  - (ii) *Technical Memorandum on Noise from Construction Work other than Percussive Piling*
  - (iii) *Technical Memorandum on Noise from Percussive Piling*
  - (iv) *Technical Memorandum on Noise from Construction Works in Designated Areas*
- B6.3 Noise Sensitive Receivers (NSRs) are defined by the TMEIA, HKPSG and NCO as follows:
- (i) all domestic premises, including temporary housing accommodation;
  - (ii) hotels and hostels
  - (iii) offices
  - (iv) educational institutions, including kindergartens, nurseries and all others where unaided voice communication is required
  - (v) places of public worship and courts of law
  - (vi) hospitals, clinics, convalescences and homes for the aged, diagnostic rooms and wards
  - (vii) amphitheatres and auditoria, libraries, performing arts centres and Country Parks
- B6.4 The appropriate Acceptable Noise Level (ANL) for a particular NSR is dependent on the character of the area in which the NSR is located, and the time of day under consideration. The Area Sensitivity Rating (ASR) is a function of the type of area within which the NSR is located and the degree of the effect on the NSR of particular Influencing Factors (IFs). IFs include any industrial area, major roads (ie. those with a heavy and generally continuous flow of vehicular traffic) and the area within the boundary of Hong Kong International Airport. Table B.1 shows the Area Sensitivity Ratings given by the *Noise Control Ordinance*.

**Table B.1**  
**Area Sensitivity Ratings**

Type of Area containing NSR	Degree to which NSR is affected by IF	Not Affected	Indirectly Affected	Directly Affected
(i) Rural area, including Country Parks or village type developments		A	B	B
(ii) Low density residential area consisting of low-rise or isolated high-rise developments		A	B	C
(iii) Urban area		B	C	C
(iv) Area other than above		B	B	C

Notes:

'Country Park' means an area that is designated as a country park pursuant to section 14 of the *Country Parks Ordinance*.

'Directly Affected' means that the NSR is at such a location that noise generated by the IF is readily noticeable by the NSR and is a dominant feature of the noise climate of the NSR.

'Indirectly Affected' means that the NSR is at such a location that noise generated by the IF, whilst noticeable at the NSR, is not a dominant feature of the noise climate of the NSR.

'Not Affected' means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR.

'Urban Area' means an area of high density, diverse development including a mixture of such elements as industrial activities, major trade or commercial activities and residential premises.

### ***Construction Noise***

B6.5 TMEIA specifies daytime construction noise standards for 0700 to 1900 hours on any day not being a Sunday or general holiday, in Leq (30 mins) are:

- 75 dB(A) for all domestic premises including temporary housing accommodation, hotels and hostels
- 70 dB(A) for all educational institutions, including kindergartens, and nurseries

These levels assume that the premises utilizes open windows for ventilation.

B6.6 Noise restrictions are imposed during the evenings (19:00-23:00), night-time (23:00-07:00) and all day on Sunday and public holidays. For construction activities during these hours, a Construction Noise Permit (CNP) is required from the Environmental Protection Department (EPD). The CNP application will be assessed in accordance with the Basic Noise Levels (BNLs) given in the *TM on Noise from Construction Works other than Percussive Piling*. For construction work within a designated area involving the use of Specific Powered Mechanical Equipment (SPME) other than percussive piling and/or carrying out of prescribed construction works (PCW) the CNP application will be assessed in accordance with the BNLs given in the *TM on Noise from Construction Work in Designated Area*. These BNLs are shown in Table B.2.

**Table B.2**  
**Basic Noise Levels for General Construction Noise**

Time Period	ASR	A	B	C
All days during the evening (19:00-23:00), and general holidays (including Sundays) during the daytime and evening (07:00-23:00)		60*	65*	70*
		45**	50**	55**
All days during the night-time (23:00-07:00)		45*	50*	55*
		30**	35**	40**

\* Construction work other than percussive piling in areas, and the construction work does not involve the use of SPME nor the carrying out of PCW.

\*\* Construction work within a designated area involving the use of SPME other than percussive piling and/or carrying out of PCW.

B6.7 The PCW and SMPE are:-

- (i) use of all handheld breakers
- (ii) use of all bulldozers
- (iii) use of all concrete lorry mixers
- (iv) use of all dump trucks
- (v) use of all vibratory hand held pokers
- (vi) erection or dismantling of formwork or scaffolding
- (vii) loading, unloading or handling of rubble, wooden boards, steel bars, wood or scaffolding material
- (viii) hammering

B6.8 Noise criteria applied to control the noise from percussive piling is detailed in the *TM on Noise from Percussive Piling*. Any percussive piling requires a CNP from EPD. When considering the issue of a CNP, EPD compares the corrected noise level (CNL) with the Acceptable Noise Level (ANL) for the area. Table B.3 shows the ANLs for percussive piling.

**Table B.3**  
**Acceptable Noise Levels for Percussive Piling**

NSR Window Type or Means of Ventilation	ANL (dB(A))
(i) NSR (or part of NSR) with no windows or other openings	100
(ii) NSR with central air conditioning system	90
(iii) NSR with windows or other openings but without central air conditioning system	85

Note: 10 dB(A) is deducted from the ANLs shown above for NSRs such as hospitals, medical clinics, education and other NSRs considered to be particularly sensitive to noise.

B6.9 The CNL relates to the tonality, impulsiveness and intermittency of the noise. In the event that the CNL exceeds the ANL, EPD will impose restrictions on the permitted hours of piling operation.

B6.10 A Construction Noise Permit (CNP) must be applied for any kind of percussive piling carried out in the territory. Tables B.4 and B.5 list the maximum permitted hours which can be obtained under the latest legislation involving and not involving the use of diesel, pneumatic and/or steam hammer respectively. From 2000, the use of diesel, pneumatic and/or steam hammers have been effectively phased out by stringent standards lowering acceptable level to less than 10 dB(A) below ANL.

**Table B.4**  
**Permitted Hours of Operation for the Carrying Out of**  
**Piling Works Involving the Use of Diesel, Pneumatic and/or Steam Hammers**  
**(Effective for percussive piling work to be conducted on or after 01.10.99)**

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), CNL-ANL	Permitted hours of operation on any day not being a general holiday
-10 dB(A) < CNL - ANL	Nil
CNL - ANL ≤ -10 dB(A)	07:00-19:00



**Table B.5**  
**Permitted Hours of Operation for the Carrying Out of Piling Work**  
**Not Involving the Use of Diesel, Pneumatic and/or Steam Hammers**

Amount by which Corrected Noise Level (CNL) exceeds Acceptable Noise Level (ANL), CNL-ANL	Permitted hours of operation on any day not being a general holiday
$10 \text{ dB(A)} < \text{CNL} - \text{ANL}$	0800 to 0900 AND 1230 to 1330 AND 1700 to 1800
$0 \text{ dB(A)} < \text{CNL} - \text{ANL} \leq 10 \text{ dB(A)}$	0800 to 0930 AND 1200 to 1400 AND 1630 to 1800
$\text{CNL} - \text{ANL} \leq 0 \text{ dB(A)}$	0700 to 1900

B6.11 The information required in an application for a CNP includes:

- a map (preferably 1:1000 scale) showing precise details of the site location, site limits and nearby noise sensitive receivers, e.g. residential buildings, schools, hospitals;
- location of any stationary powered mechanical equipment on site or, in the case of an application for a percussive piling permit, the piling zone or actual pile locations;
- details of time period (time of day, duration in days/weeks/months) for which the CNP is required;
- a description, including two photographs and identification codes, and number of units of each item of powered mechanical equipment to be used or, in the case of piling, details of the piling method and pile type including number of units; and
- details of any particularly quiet items of equipment or piling methods, special noise control measures to be employed on site, or any other information thought to be relevant.

B6.12 Despite the description or assessment made in this report, the Noise Control Authority will be guided by the relevant Technical Memorandum (Memoranda) in assessing an application, once filed, for a CNP. There are some factors affecting the assessment results of a CNP application, such as assigning of Area Sensitivity Rating, Acceptable Noise Levels, etc. The Noise Control Authority would decide these factors at the time of assessment of such an application based on contemporary situations / conditions. It should be noted that the situations / conditions around the sites may change from time

to time. Nothing in this report shall bind the Noise Control Authority in making its decision. There is no guarantee that a CNP will be issued. If a permit is to be issued, the Noise Control Authority will include any conditions considered appropriate and such conditions are to be followed while the works covered by the permit are being carried out. Failure to comply with the conditions stipulated will lead to cancellation of the permit and prosecution action under the NCO.

### **Operational Noise**

B6.13 Table 1A of Annex 3, TMEIA, states that noise levels from a new fixed source should be 5 dB(A) below the relevant ANL presented in the *TM on The Assessment of Noise from Places other than Construction Sites, Domestic Premises or Public Places* or the prevailing background noise level, whichever is lower. The ANL from the TM for a given NSR is presented in dB(A) in Table B.6 below.

**Table B.6**  
**Acceptable Noise Levels during Operations**

Time Period	ASR	A	B	C
Day (07:00-19:00) and Evening (19:00-23:00)		60	65	70
Night (23:00-07:00)		50	55	60

### **Road Traffic Noise**

B6.14 As outlined in the *HKPSG*, the severity of road traffic noise impact on sensitive uses depends on many variables, some of which can be controlled or influenced by land use planning. These variables include:

- (i) road alignment, ie. providing distance separation between the noise receiver and the vehicles;
- (ii) traffic composition and volume, ie. using traffic planning and management to control vehicle movements and type of vehicles at different times of the day;
- (iii) line-of-sight, ie. using noise-tolerant buildings to reduce the angle of view of receiver on road traffic;
- (iv) shieldings, e.g. using barriers, road enclosures or road decking.

B6.15 For road traffic noise, the TMEIA specifies the acceptable noise limit at the external facade of all domestic premises which rely on open windows for ventilation, including temporary housing areas, as  $L_{10}$  (1 hour) of 70 dB(A). See Table B.7.

*Rail Noise*

B6.16 For rail noise, the TMEIA specifies the acceptable noise limit (Table B.7) at the facades of all noise sensitive buildings, as  $L_{max}$  (2300 - 0700 hours) of 85 dB(A), and to comply with the Acceptable Noise Levels laid down in the *Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites* as given in Table B.6.

**Table B.7**  
**Traffic/Rail Noise Standards**

Use	Noise Source Road Traffic Noise $L_{10}$ (1 hr) dB(A)	Rail Noise dB(A)
All domestic premises including temporary housing accommodation	70	The appropriate Acceptable Noise Levels shown in Table 3 of the TM for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites
Hotels and houses	70	
Offices	70	
Educational institutions including kindergartens, nurseries and all others where unaided voice communication is required	65	
Places of public worship and courts of law	65	
Hospitals, clinics, convalescences and homes for the aged: diagnostic rooms and wards	55	

Notes:

- 1 The above standards apply to uses which rely on open windows for ventilation
- 2 The above standards should be viewed as the maximum permissible noise levels at the external façade

**B7 Air Quality**

B7.1 The TMEIA specifies the criteria for evaluating air quality impact to include the following:

- (i) meet the Air Quality Objectives and other standards established under the *Air Pollution Control Ordinance* (APCO) [Cap 311];

- (ii) meet hourly Total Suspended Particulate concentration of 500 microgrammes per cubic metre measured at 298°K (25°C) and 101.325 kPa (one atmosphere) for construction dust impact assessment;
- (iii) meet 5 odour units based on an averaging time of 5 seconds for odour prediction assessment;
- (iv) for air pollutants not established under the *Air Pollution Control Ordinance* nor above: meet the standards or criteria adopted by recognized international organizations such as WHO or USEPA as to be agreed with the Director of Environmental Protection.

B7.2 The principal legislation regulating air emissions in Hong Kong is the *Air Pollution Control Ordinance* (APCO) [Cap 311] of 1983 and its subsidiary regulations.

B7.3 The whole of the Territory has been divided into Air Control Zones. The study are basically falls within the topographically confined Tolo Airshed.

B7.4 HKPSG states that “Air quality is affected by such factors as the emission rate of air pollutants, the separation distance between emission sources and receptors, topography, height and width of buildings as well as meteorology.”

B7.5 The *Air Pollution Control (Construction Dust) Regulations* has been implemented in 1997. These regulations are to control the dust emission from construction sites by a notification and permit procedure.

#### *Operational Emissions*

B7.6 The Hong Kong Air Quality Objectives (AQOs) state the maximum acceptable concentration of air pollutants. The AQOs for one and 24 hour concentrations of five major pollutants are shown in Table B.8. The Government aims to achieve the AQOs throughout the Territory as soon as ‘reasonably practicable’. Efforts are being made to control and reduce air pollution emitters in areas where the AQOs are already exceeded, eg. by controlling new developments. The AQOs will apply to the operational phases of the project.

#### *Construction Dust*

B7.7 During the construction phase of the project, an hourly average TSP limit of 500 µg/m<sup>3</sup> is recommended by EPD for assessing construction dust impacts. This limit is not statutory, but nonetheless has been used in many construction works in Hong Kong as a contractual requirement.

B7.8 The HKPSG recommends that any open storage areas should be located at least 100 m from any air sensitive receiver.

*Cement and Concrete*

B7.9 Cement works in which the total silo capacity exceeds 50 tonnes and in which cement is handled fall under the Specified Processes under the APCO. A licence from EPD is required to operate such a works.

B7.10 Technical Memoranda have been issued on:

- (i) Specifying Air Quality Objectives for Hong Kong (Table B.8);
- (ii) Issuing Air Pollution Abatement Notices to Control Air Pollution from Stationary Pollution Processes.

B7.11 Other subsidiary regulations issued are as follows:

- A1 - Furnaces, Ovens and Chimneys (Installation and Alteration) Regulations.
- B1 - Dust and Grit Emission Regulations.
- C1 - Smoke Regulations.
- D1 - Appeal Board.
- E1 - Air Control Zones (Declaration and Consideration) Order.
- F1 - Specified Processes.
- G1 - Specification of Required Particulars and Information.
- H1 - Consolidation Statement of Air Quality Objectives.
- I1 - Fuel Restriction
- J1 - Vehicle Design Standards (Emission) Regulations.

**Table B.8**  
**Air Quality Objectives**

Pollutant	Concentration ( $\mu\text{g}/\text{m}^3$ )					Health effects of pollutant at elevated ambient levels
	Average Time					
	1hr	8hrs	24hrs	3mths	1yr	
Sulphur Dioxide	800 <sup>2</sup>		350 <sup>3</sup>		80	Respiratory illness; reduced lung function; morbidity and mortality rates increase at higher levels.
Total Suspended Particulate			260 <sup>3</sup>		80	Respirable fraction has effects on health.
Respirable			180 <sup>3</sup>		55	Respiratory illness; reduced lung

Pollutant	Concentration ( $\mu\text{g}/\text{m}^3$ )					Health effects of pollutant at elevated ambient levels
	Average Time					
	1hr	8hrs	24hrs	3mths	1yr	
Suspended Particulates						function; cancer risk for certain particles; morbidity and mortality rates increase at higher levels.
Nitrogen Dioxide	300 <sup>2</sup>		150 <sup>3</sup>		80	Respiratory irritation; increased susceptibility to respiratory infection; lung development impairment.
Carbon Monoxide	30000 <sup>2</sup>	10000 <sup>3</sup>				Impairment of co-ordination; deleterious to pregnant women and those with heart and circulatory conditions.
Photochemical Oxidants as ozone	240 <sup>2</sup>					Eye irritation; cough; reduced athletic performance; possible chromosome damage.
Lead				1.5		Affects cell and body processes; likely neuro-psychological effects, particularly in children; likely effects on rates of incidence of heart attacks, strokes and hypertension.

Notes: Concentrations measured at 298°K (25°C) and 101.325 kPA

- 1 Suspended particles in air with a nominal aerodynamic diameter of 10  $\mu\text{m}$  or smaller
- 2 Criteria not to be exceeded more than 3 times per year
- 3 Criteria not to be exceeded more than once per year

B7.12 In order to obtain a licence to conduct a Specified Process, EPD may require the applicant to submit an air pollution control plan for the process. This will include:

- (i) a description and technical particulars of the plant or equipment that may evolve an air pollutant;
- (ii) details of pollution control equipment or measures proposed to minimise emissions and comply with the requirement to use the best practicable means of controlling air pollution;
- (iii) a description (with maps) to identify sensitive receivers, eg. residential buildings, schools, hospitals;
- (iv) an assessment of the resulting air quality and risk to human health, including supporting calculations and information;

- (v) a statement that the best practicable means of controlling air pollution has been adopted or is proposed, including supporting calculations and information;
- (vi) a plan for, or scheme of, monitoring the emission at source or the ambient concentration of any air pollutant.

B7.13 The HKPSG recommends that any concrete batching plants and open storage areas should be located at least 100 m from any air sensitive receiver.

## **B8 Water Quality**

B8.1 The TMEIA specifies criteria for evaluating water pollution to be:

- water quality, in terms of compliance with Water Quality Objectives for the water body under study;
- hydrology, in relation to mixing zone criteria;
- bottom sediments and ecology;
- stress status of water body; and
- cumulative impacts from other projects.

B8.2 Project specific criteria which need to be evaluated include waste discharges, dumping of wastes, stormwater runoff, and release of toxic or prohibited substances.

B8.3 In the assessment of the significance of identified impacts, the existing water quality of the water bodies must be determined and the assimilative capacity of the receiving water body evaluated to identify the need for mitigation of impacts.

B8.4 Particular attention must be paid to activities which involve discharges containing toxic components, and the adequacy of existing treatment systems assessed. The presence of reclamations, or other works which affect water flow must be taken into account in assessing impacts. Non-point pollution sources and stormwater discharges must be considered for all new developments, and devices to control pollution incorporated into the drainage system.

- B8.5 The principal legislation for controlling water pollution in Hong Kong is the *Water Pollution Control Ordinance* (WPCO) [Cap 358] of 1981 which allows for gazette of Water Control Zones (WCZ) within which the discharge of liquid effluents and the deposit of matter into any water bodies, public sewers and drains are controlled. The WPCO is applicable for construction site discharges as well as for discharges during the operational phase.
- B8.6 The Study Area falls within the Tolo Harbour & Channel Water Control Zone, which was declared in 1987. The water quality objectives for Tolo Harbour are presented in Table B.9.

**Table B.9**  
**Statement of Water Quality Objectives**  
**(Tolo Harbour & Channel Water Control Zone)**

	Water Quality Objective	Subzone
A	AESTHETIC APPEARANCE	
	(i) Odours, taints and colours	
	Waste discharges shall cause no noxious or offensive odour or offensive taint or colour in either waters or edible aquatic organisms in the subzone to be present in concentrations detectable by bioassay or organoleptic tests.	(i) Harbour subzone (ii) Buffer subzone (iii) Channel subzone
	(ii) Visible matter	
	Waste discharges shall cause no visible foam, oil, grease, scum, litter or other objectionable matter in waters of the subzone.	(i) Harbour subzone (ii) Buffer subzone (iii) Channel subzone
B	BACTERIA	
	The level of <i>Escherichia coli</i> should not exceed 610 per 100 ml, calculated as the geometric mean of all samples collected in one calendar year.	(i) Secondary contact recreation subzone (ii) Fish culture subzones ( <i>L.N. 454 of 1991</i> )



	Water Quality Objective	Subzone
C	CHLOROPHYLL-A	
	Waste discharges shall not cause the level of chlorophyll-a in waters of the subzone to exceed 20 milligrams per cubic metre, calculated as a running arithmetic mean of 5 daily measurements for any single location and depth.	Harbour subzone
	Waste discharges shall not cause the level of chlorophyll-a in waters of the subzone to exceed 10 milligrams per cubic metre, calculated as a running arithmetic mean of 5 daily measurements for any single location and depth.	Buffer subzone
D	DISSOLVED OXYGEN	
	Waste discharges shall not cause the level of chlorophyll-a in waters of the subzone to exceed 6 milligrams per cubic metre, calculated as a running arithmetic mean of 5 daily measurements for any single location and depth.	Channel subzone
	Waste discharges shall not cause the level of dissolved oxygen in waters of the subzone to be less than 2 milligrams per litre within two metres of the bottom, or to be less than 4 milligrams per litre in the remainder of the water column.	Harbour subzone
E	LIGHT PENETRATION	
	Waste discharges shall not cause the level of dissolved oxygen in waters of the subzone to be less than 3 milligrams per litre within two metres of the bottom, or to be less than 4 milligrams per litre in the remainder of the water column.	Buffer subzone
	Waste discharges shall not cause the level of dissolved oxygen in waters of the subzone to be less than 4 milligrams per litre at any point in the water column.	Channel subzone
E	LIGHT PENETRATION	
	No changes in turbidity, suspended material, colour or other parameters arising from waste discharges shall reduce light transmission by more than 20 per cent of the normal level in the subzone at any location or any time.	Harbour subzone
	No changes in turbidity, suspended material, colour or other parameters arising from waste discharges shall reduce light transmission by more than 15 per cent of the normal level in the subzone at any location or any time.	Buffer subzone

	Water Quality Objective	Subzone
F	No changes in turbidity, suspended material, colour or other parameters arising from waste discharges shall reduce light transmission by more than 10 per cent of the normal level in the subzone at any location or any time.	Channel subzone
	pH	
	Waste discharges shall not cause the normal pH range of any waters of the subzone to be extended by greater than $\pm 0.5$ pH units at any time.	Harbour subzone
G	Waste discharges shall not cause the normal pH range of any waters of the subzone to be extended by greater than $\pm 0.3$ pH units at any time.	Buffer subzone
	SALINITY	
	Waste discharges shall not cause the normal salinity range of any waters of the subzone to be extended by greater than $\pm 0.3$ parts per thousand at any time.	(i) Harbour subzone (ii) Buffer subzone (iii) Channel subzone
H	SETTLEMENT MATERIAL	
	Waste discharges shall give rise to no bottom deposits or submerged objects which adversely influence bottom-living communities, alter the basic Harbour geometry or shipping channels, present any hazard to shipping or driving activities, or affect any other beneficial use of the waters of the subzone.	(i) Harbour subzone (ii) Buffer subzone (iii) Channel subzone
I	TEMPERATURE	
	Waste discharges shall not cause the natural daily temperature range in waters of the subzone to be extended by greater than $\pm 1.0$ degree Celsius at any location or time. The rate of temperature change shall not exceed 0.5 degrees Celsius per hour at any location, unless due to natural phenomena.	(i) Harbour subzone (ii) Buffer subzone (iii) Channel subzone
J	TOXICANTS	

	Water Quality Objective	Subzone
	Waste discharges shall not cause the toxicants in waters of the subzone to attain such a level as to produce significant toxic effects in humans, fish or any other aquatic organism, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	(i) Harbour subzone (ii) Buffer subzone (iii) Channel subzone

NOTES:

“Harbour subzone” means all that water bounded by the spring high-water mark of the contiguous south-western land mass and by lines between the southern tip of Yim Tin Tsai and the northern tip of Centre Island and between the northern tip of Centre Island and the western tip of Wu Kai Sha Tsui and more particularly referred to and recorded in the Register;

“Buffer subzone” means all that water bounded by the limits of the Tolo Harbour Zone to the southwest, by the spring high-water marks on the northern and southern coasts, and by a line between the northwest tip of Three Fathoms Cove and the opposite (northern) coast, passing directly through the northern tip of Bush Reef and joining the northern coast of Pak Sha Tau Chau (Harbour Island) at and more particularly referred to and recorded in the Register;

“Channel subzone” means all that water bounded by the limits of the Tolo Buffer Zone to the southwest, by the spring high-water marks on the northern and southern coasts, and by a line joining the eastern tip of Bluff Head and the northern tip of Ocean Point and more particularly referred to and recorded in the Register;

“Secondary contact recreation subzone” means the Harbour subzone, the Buffer subzone and the Channel subzone except any Fish culture subzone situated therein;

“Fish culture subzone” means a fish culture zone that is designated in the Fish Culture Zone (Designation) Order (Cap. 353 sub. leg.) and situated in the Tolo Harbour and Channel Water Control Zone.

B8.7 The *TM on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* was issued in 1991. Under the provisions of this TM, all discharges must be licensed. This refers to point source discharges and not to general stormwater run-off. If effluents are discharged to stormwater drains, they must meet the standards of the next receiving waters downstream. Tables included within this TM identify standards related to effluent flow rates ranging from <10 m<sup>3</sup>/day to 6,000 m<sup>3</sup>/day, providing guidance on a case-by-case basis. There are four sets of effluent standards for inland waters. Each group is listed based on its beneficial uses. Group A inland waters are used for abstraction for potable water supply, Group B for irrigation, Group C for pond fish culture and Group D for general amenity and secondary contact recreation, this group includes streams which enter the sea at gazetted beaches. In the case of Whitehead, discharges would directly enter coastal waters of Tolo Harbour. The standards for discharge to these waters are shown in Table B.10.

**Table B.10**  
**Standards for Effluents discharged into the Coastal Waters of**  
**Tolo Harbour Water Control Zones**

Flow rate (m <sup>3</sup> /day) Determinant	≤10	>200 and ≤400	>800 and ≤1000	>2000 and ≤3000	>5000 and ≤6000
pH (pH units)	6-9	6-9	6-9	6-9	6-9
Temperature (°C)	45	45	45	45	45
Colour (lovibound units) (25 mm cell length)	1	1	1	1	1
Suspended solids	30	30	30	15	15
BOD	20	20	20	10	10
COD	80	80	80	50	50
Oil & Grease	20	20	20	10	10
Iron	10	10	4	1.3	0.6
Boron	5	3	1.6	0.5	0.2
Barium	5	3	1.6	0.5	0.2
Mercury	0.1	0.001	0.001	0.001	0.001
Cadmium	0.1	0.001	0.001	0.001	0.001
Other toxic metals individually	1	0.8	0.4	0.1	0.1
Total toxic metals	2	1.6	0.8	0.2	0.1
Cyanide	0.1	0.1	0.1	0.03	0.01
Phenols	0.5	0.5	0.25	0.1	0.1
Sulphide	5	5	5	5	0.5
Total Residual Chlorine	1	1	1	1	1
Total phosphorus	8	5	5	5	5
Total Nitrogen	20	20	15	10	10
Surfactants (total)	15	15	15	10	10
<i>E. coli</i> (count/100 ml)	1000	1000	1000	1000	1000

Note: All units in mg/L unless otherwise indicated; all figures are upper limits unless otherwise indicated.

B8.8 Other standards which may be relevant to water quality include the effluent standards for prohibited effluent and substance discharges to foul sewers, inland waters and coastal waters. These are listed in the *Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters*.

#### ***Water Pollution Control (Sewerage) Regulation***

B8.9 The *Water Pollution Control (Sewerage) Regulation* was enacted in June 1994 to require owners of any land or premises to connect their discharge of wastewater to the public sewerage system and to provide control over operation and maintenance of

private wastewater treatment facilities. This regulation specifies the gazetted procedures for infrastructure works. This legislation will reduce wastewater discharges direct to environment and lead to water quality improvements in areas served by the public sewerage system. The requirements have been defined in a Technical Circular issued by EPD, *ProPECC PN 1/94 on Construction Site Drainage*.

*Construction Site Discharges*

- B8.10 Advice on the handling and disposal of construction site discharges, including site runoff and contaminated wastewaters, is provided in the *ProPECC Paper (PN1/94)* on *Construction Site Drainage*.

*Waste Oil*

- B8.11 The disposal of waste oil and other chemicals is controlled by the regulations for chemical waste control under the *Waste Disposal Ordinance*. Chemical wastes must be disposed of at a licensed chemical waste disposal facilities. The Chemical Waste Treatment Centre (CWTC) at Tsing Yi is one of the facilities licensed to allow disposal of waste oil. Waste oil may also be disposed of at other licensed disposal sites.

**B9 Solid Waste**

- B9.1 In the TMEIA, the criteria for assessing waste management implications are listed as follows:
- (a) provide adequate, environmentally acceptable waste handling, storage, collection, transfer, treatment and disposal facilities to deal with waste arising from the development;
  - (b) meet all the relevant requirements under the *Waste Disposal Ordinance* and its Regulations;
  - (c) provide proper handling, storage, collection and disposal of waste generated during construction phase in accordance with the requirements of the *Waste Disposal Ordinance* and the *Dumping at Sea Ordinance*;
  - (d) provide adequate facilities to facilitate waste reduction and explore beneficial use of waste generated, taking into account:
    - the quantity of waste arising;
    - the physical and chemical nature of the waste materials;
    - all practicable on site measures to render the waste acceptable for beneficial use;
    - the availability of outlets for beneficial use of the waste in Hong Kong;
    - the environmental effect in any waste reduction practice and additional handling of waste for beneficial use;

- (e) explore alternatives which generate minimal amount of waste through design modifications and programming of works;
- (f) for residential and community developments close to existing landfills, adequate safety and precautionary measures to avoid or minimise the risks due to landfill gas (LFG) migration or leachate contamination. In particular, for development or re-development that is within 250 m of the edge of waste, a landfill gas hazard assessment is typically required to assess the risk associated with LFG and, where necessary, design adequate precautionary/protection measures to render the proposed development as safe as reasonably practicable.

B9.2 In assessing the potential waste impacts from a proposed project, specific activities or industries must be considered, particularly if they have special requirements for disposal. Such activities include:

- Offensive Trades
- Chemical Waste Producing Industries
- Livestock rearing
- Community Facilities with special waste disposal requirements

The following technical circulars related to waste management are relevant:

- WBTC No. 2/93B - *Public Filling Facilities*
- WBTC No. 4/98 - *Use of Public Fill in Reclamation and Earth Filling Projects*
- WBTC No. 5/98 - *On Site Sorting of Construction Waste on Demolition Sites*
- WBTC Nos. 25/99A & 25/99C - *Incorporation of Information on Construction and Demolition Material Management in Public Works Subcommittee Papers*
- WBTC No. 12/2000 - *Fill Management*
- WBTC No. 29/2000 - *Waste Management Plan*
- WBTC No. 19/2001 - *Metallic Site Hoardings and Signboards*
- WBTC No. 21/2002 - *Trip-ticket System for Disposal of Construction and Demolition Material*

B9.3 A waste management plan must be prepared describing methods for reducing wastes, recycling and re-using wastes, and, if they require disposal, techniques need to be included for collecting, handling and transporting the waste materials, and identifying facilities for disposal.

B9.4 Chapter 9 of HKPSG states, in Section 6 - Waste Management that "The Government's overall objectives for waste management planning are to ensure:

- (a) the adequate provision of facilities for cost-effective and environmentally satisfactory disposal of all wastes; and
  - (b) the availability of and proper enforcement of legislation on storage, collection, transport, treatment and disposal of wastes, to safeguard the health and welfare of the community from any adverse environmental effects.”
- B9.5 Disposal of chemical, household, street, trade and livestock waste is controlled by the *Waste Disposal Ordinance* [Cap 354] of 1980. This legislation covers all aspects of the production, storage, collection and disposal, including the treatment, reprocessing and recycling of waste. In 1989, the formulation of a strategic *Waste Disposal Plan for Hong Kong* was founded on this legislation.
- B9.6 Construction waste generated during the construction phase should be sorted on site into inert and non-inert fraction for reuse and recycling as far as practical. The non-inert fraction containing no more than 30% by weight of inert content can be disposed of at landfills, whilst the inert fraction should be delivered to public dumps or other reclamation sites. Inert material means soil, rock, asphalt, concrete, brick, cement plaster/mortar, building debris, aggregates, etc.
- B9.7 Handling and disposal of chemical wastes including oils and grease are covered by the *Waste Disposal (Chemical Waste) (General) Regulations*. Design of oil/fuel storage facilities is covered by the *Code of Practice for Oil Storage Installations, 1992* issued by the Building Authority and the handling of chemical spillages on land is regulated by the Fire Services Department.
- B9.8 Dredging and dumping for land formation is controlled under the *Foreshore and Sea Bed Reclamations Ordinance* [Cap 127] (1985) and the *Dumping at Sea Act (1974) Overseas Territories Order* (1975) respectively. The former provides for the control of reclamation and use of foreshore and seabed. The latter prohibits dumping at sea without a licence.
- B9.9 The new management framework of the dredged materials has been issued as WBTC No. 3/2000 - *Management of Dredged / Excavated Sediment*. The circular classifies sediment into 3 categories based on their contaminant levels, outlines the procedures to be followed in assessing sediment quality and explains the marine disposal arrangement for the different categories.



### *Operational Waste*

- B9.10 Furthermore, waste reception and transfer facilities should be sited so that any adjacent development is very well buffered. For facilities handling the reception and disposal of dusty or odoriferous wastes, special precautions should be taken to avoid nuisance to surrounding areas. Note should be taken of prevailing wind direction and subsequent potential for nuisance.

### *Refuse Collection Points - HKPSG, Chapter 9, Section 6*

#### *Provision in Urban and New Town Areas*

- B9.11 A refuse collection point (RCP) is required to serve the needs of each population of 20,000 persons or areas within 500 m. In industrial or commercial areas, or in areas where adequate private facilities are, or will be available, this level of provision may need to be adjusted to suit anticipated needs. The Director of Food and Environmental Hygiene should be consulted on detailed requirements.
- B9.12 For road safety reasons, new RCPs should be planned to allow head-in-head-out movements of refuse collection vehicles (RCVs). A gross site area of not less than 294 m<sup>2</sup> (with a minimum width of 14 m) is required in the case of island or corner sites.

#### *General Location and Design Guidelines*

- B9.13 RCPs should be sited so as to minimise disruption to traffic or the creation of traffic safety hazards. RCPs should therefore not be located on trunk or primary distributor roads, on steep roads, or locations where turning trucks may create traffic problems.
- B9.14 Adequate provision of off-street (enclosed) parking of bulk collection vehicles and separate access for the public and private refuse collectors should be provided where appropriate.
- B9.15 The location and design of RCPs should aim to minimise nuisance to the public and people living and working nearby, where appropriate, by enclosing the whole facility and if necessary, through the provision of odour control equipment and ventilation. Water points should be a minimum requirement for all RCPs for cleaning purposes, design features such as air/exhaust cleaning, high-pressure water cleaning and leachate drainage and disposal should be incorporated. Architectural design of RCPs should also incorporate landscaping wherever possible as visual screening to, and as a buffer from adjacent sensitive land uses.

B9.16 Due to difficulties in finding suitable sites for RCPs especially in the built-up areas, RCPs should be incorporated in large-scale developments of both public and private sectors. To reduce the need for waste handling and minimise potential nuisance problems, appropriate waste collection and handling facilities should be included in these large-scale developments and redevelopments.

***Provision of Refuse Collection Facilities in Private Residential, Commercial and Composite Building Developments***

B9.17 The provision of refuse collection facilities in private residential, commercial and composite commercial/residential building developments should comply with the Building (Refuse Storage Chambers and Chutes) Regulations. The Food and Environmental Hygiene Department may stipulate certain conditions regarding the removal of household waste from premises under the Public Cleansing and Prevention of Nuisances (Urban Council/Regional Council) By-laws.

B9.18 The floor space and vehicular requirements of refuse storage chambers under the *Building (Refuse Storage Chambers and Chutes) Regulations* are summarised in Table B.11.

**Table B.11**  
**Summary of Requirements of Refuse Storage Chambers**  
**in Private Residential, Commercial and Composite Building Developments**

Description of Building	Total Usable Floor Space (UFS) (m <sup>2</sup> )	Description of Storage Chamber	Minimum Floor Space of Storage Chamber
Residential Building	>1,320 to <13,200	Storage chamber	Total UFS in m <sup>2</sup> divided by 440
	>13,200	Storage chamber with vehicular access	
Commercial Building	>3,960 to <39,600	Storage chamber	Total UFS in m <sup>2</sup> divided by 1,320
	>39,600	Storage chamber with vehicular access	
Composite Commercial/ Residential Building	Aggregate of >1,320 to <13,200	Storage chamber	Aggregate of the total UFS of the residential building component in m <sup>2</sup> divided by 440
	Aggregate of >13,200	Storage chamber with vehicular access	Aggregate of the commercial building component in m <sup>2</sup> divided by 1,320

*Provision in Public Housing Estates*

B9.19 Whilst the above standards and guidelines are related to provision of RCPs in urban, new town and rural areas, they do not apply to public housing estates which are subject to separate provision standard and design criteria for refuse collection. The present and proposed refuse collection systems within public housing estates are outlined in the “Guidelines for Refuse Collection in Public Housing Estates” included in this Appendix and described below:

- (a) Refuse Storage Chambers: standard provision incorporated in each domestic block which provides sufficient daily storage. Depending on the size of the individual block, one refuse bin with a minimum area allowance of 2.0 m<sup>2</sup> should be provided for every 35 flats;
- (b) Refuse Storage Areas: temporary holding areas designed to accommodate the storage of refuse bins awaiting collection. The location should aim to minimise nuisance to the public and the estate tenants living nearby and should be within the shortest distance practicable from the domestic blocks they serve. The minimum allowance should be 2.5 m<sup>2</sup> per bin;
- (c) RCPs in Buildings: a totally enclosed structure which allows entry of RCVs for collection of refuse generally associated with commercial centres. They are normally built as part of the commercial centres provision. One centralised RCP should be provided for an estate of 3,000 flats or less.
- (d) Junk Collection Points: a separate storage area for those items which cannot be handled by the normal refuse collection service. They should be an independently designed structure apart from with the refuse storage chamber or refuse storage area. Normally, an estate with 2,500 flats or less would require one junk collection point of 20 m<sup>2</sup> minimum. An estate of 2,500 flats or more would require two junk points of 20 m<sup>2</sup>, or one of 40 m<sup>2</sup> minimum.

***Guidelines for Community Facilities with Special Requirements for Waste Disposal***

B9.20 When planning these community facilities, allowance should be made for adequate space provision for the storage, collection and disposal of solid wastes. This should be in the form of a refuse storage area on the ground floor (or any floor with direct vehicular access). The area should be close to the goods lift and there should be adequate provision for off-street vehicular access for loading of RCVs. The refuse storage chambers should be built to similar standards as those required for residential developments under the *Building (Refuse Storage Chambers and Chutes)* Regulations.



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*Markets and Cooked Food Stalls*

- B9.21 Many of the wastes produced by these facilities are highly putrescible. Adequate refuse storage area should be provided and located so as to minimise potential nuisance to the public and people living and working nearby. Animal carcasses, commonly generated by the activities within these facilities, should be segregated from other waste streams and separate temporary storage and collection facilities be provided. The facilities should preferably be confined in covered areas and grease traps should be provided to prevent chokage of sewers.

*Hospitals/Clinics*

- B9.22 All clinical wastes should be separately collected from other municipal wastes. All clinical wastes must be disposed of in specially designed pathological incinerators.

*Refuse Transfer Stations*

- B9.23 A refuse transfer station (RTS) provides a regional and sub-regional destination for unloading of refuse collection vehicles, where the waste is containerised for haulage in bulk to a final disposal facility. A RTS aims primarily at reducing the cost of transporting waste and minimising environmental nuisance by better containment of waste. Consideration should be given to providing such a facility for handling 500-2,000 tonnes a day of waste in the Urban Area, equivalent to 500,000 - 2 million population, or 100 - 1,000 tonnes in the NT, equivalent to 100,000 - 1 million population. A site area of between 1 and 2 hectares is required for each such facility.
- B9.24 A RTS should be centrally located in the waste catchment it serves, preferably on the water front, with barge access. To minimise incompatibility with adjacent sensitive land uses, a RTS should be sited in an industrial or other non-sensitive area or, if possible, underground. Sufficient space should be provided for reception and queuing of refuse collection vehicles (RCVs). Short vehicular access from and to major transport routes is preferred, to avoid traffic congestion and delays to RCVs. The adequacy of adjoining road capacities for the RCVs should be determined. Considerations should be given to the provision of fully enclosed stations and/or suitable barriers for odour and dust control. Adequate control measures should be provided to minimise the impacts and may include provisions for noise control of the machinery and the structure, leachate treatment/ disposal systems and installation of air/exhaust cleaning systems.

**B10 Ecology**

*TMEIA*

- B10.1 The TMEIA provides criteria for evaluating ecological importance as well as assessment and mitigation guidelines. Criteria for evaluating ecological impacts and general criteria for evaluating ecological importance of a site or species is given in Annex 8, and for assessment and mitigation in Annex 16.

*Criteria for Evaluating Ecological Impact*

- B10.2 Annex 8 provides examples of important habitats in the Territory, and criteria for evaluating a site or species. These criteria are listed in Table B.12 below.

*Assessment and Mitigation Guidelines*

- B10.3 Annex 16 gives the guidelines for ecological assessment and mitigation. The need for an ecological assessment for this project is stated in the brief.

The five parts of an ecological assessment are given in the TM (Annex 16 (4)) as:

- (1) Provision of comprehensive and accurate information of the baseline environment;
- (2) Identification and prediction of potential ecological impacts;
- (3) Evaluation of the significance of the impacts identified;
- (4) Recommendations of effective and practicable alternatives and mitigation measures; and,
- (5) Recommendations of the need for and the scope of an appropriate monitoring and audit programme.

Important habitats include Recognized Sites of Conservation Interest (TM, Annex 16, Appendix A, Note 1), as well as other habitats. The criteria for important habitats requiring assessment are partly based on their size, and are given in Table B.12.

**Table B.12**  
**Minimum Size of Habitats Requiring Assessment or Considered to be Important**

Habitat Type	TM on EIA Process Annex 8.2 Table (1) Note: examples of important habitat types	TM on EIA Process Annex 16, Appendix A, Note 2: important habitats where an ecological assessment is necessary	PELB Technical Circular No. 1/97 & WBTC 4/97: Guidelines for Implementing the Policy on Off-site Ecological Mitigation Measures: examples of important habitat types
Woodland	mature native > 1 ha	> 1 ha	mature native > 1 ha
Undisturbed Natural Coast	> 1 ha or 500 metres long	> 1 ha or 500 metres long	> 1 ha or 500 metres long
Intertidal Mudflats	> 1 ha	> 0.5 ha	> 1 ha
Established Mangrove stands	any size	any size	any size
Freshwater or Brackish Marshes	> 1 ha	> 0.5 ha	> 1 ha
Established Seagrass Bed	any size	any size	any size
Natural Stream Courses and Rivers of Significant Length	> 500 metres long	> 100 metres	Unpolluted natural stream courses > 500 metres long
Other Wetlands defined by Ramsar but not Mentioned Above	(not included)	> 1 ha	(not included)
Established Coral Communities	any size	any size	any size
Other Habitats Considered to Have Special Conservation Importance by Documented Scientific Studies	no size criteria	no size criteria	no size criteria

B10.4 Annex 16 of the TM states that there is a general policy for mitigating impacts on important habitats and wildlife. The importance is established in the assessment process criteria given in the Table above. The policy for mitigation (Annex 16 (5.4.1 a-c)), in order of priority, is:

- (1) Avoidance: adopting suitable alternatives, e.g. design;

- (2) Minimize unavoidable impacts through relocation, programming, or restoration;
- (3) Impacts that cannot be avoided or minimized may be compensated.

B10.5 The TM states a preference for on-site mitigation rather than off site (Annex 16, 5.4.3). Off-site compensation will only be considered when all other mitigation measures have been investigated and exhausted in the EIA process, and significant residual impacts (according to the criteria in Annexes 8 and 16) persist.

*Guidelines for Implementing the Policy on Off-site Ecological Mitigation Measures - PELB Technical Circular No. 1/97*

B10.6 Ecological impact is a product of the magnitude and scale of an impact and the asserted importance of the species or habitat(s) likely to be affected (TM Annex 16,5.3.1). Criteria for implementing policy on off-site mitigation found in PELB Technical Circular 1/97 give examples of important sizes of habitats. These are compared to the TM criteria in Table B.12.

B10.7 The PELB Technical Circular provides guidelines for funding arrangements and implementation of off-site ecological measures.

*Sites of Special Scientific Interest*

B10.8 There are various legislative and regulatory controls in place for the conservation of species and protection of the environment. Table 1.2 from *HKPSG's Chapter 9: Environment* highlights "ecologically sensitive areas such as Sites of Special Scientific Interest (SSSI) and areas with other particular vegetation and wildlife habitat characteristics" as Environmental Factors influencing Land Use Planning, and states that Nature Reserves and SSSI should be adequately protected from the effects of pollution and from the diversion of natural flows.

B10.9 The *HKPSG* also highlight the need for care to be taken in planning and implementation of civil engineering construction works to avoid, minimise or ameliorate the occurrence of pollution from silt, oil and other sources on water bodies in unspoilt areas designated for conservation and in SSSIs.



*Wild Animals*

- B10.10 Wild animals are protected by the *Wild Animals Protection Ordinance* [Cap 170] (1980), which fall under the authority of the Director of Agriculture, Fisheries and Conservation. The latest version of Cap 170 is the Second Schedule of the *Wild Animals Protection Ordinance* [Cap 170] has been reviewed in 1996. Protected wild animals listed under the Schedule include mammals, all wild birds, reptiles, amphibians and *Troides helena* (the Birdwing butterfly).
- B10.11 The *Animals and Plants (Protection of Endangered Species) Ordinance* [Cap. 187] controls the possession of any endangered species and is designed to prohibit collection, import and export. In addition there are measures which cover the retention, removal and replacement of trees on development sites. The *Wild Animals Protection Ordinance* [Cap. 170] is aimed mainly at hunters and collectors, but does apply to this case under Section 5, "No person shall, except in accordance with a special permit, take, remove, injure, destroy or wilfully disturb a nest or egg of any protected wild animal."
- B10.12 The protected animals that have been confirmed to inhabit the area are: all species of birds, mongooses, and the barking deer (*Muntiacus reevesi*). It is possible that additional protected species such as the Burmese python, civets and pangolins also inhabit and could breed in the area.

*Rare and Endangered Plant Species*

- B10.13 Various species of plants are protected under the Forestry Regulations of the *Forestry and Countryside Ordinance* [Cap 96] (1950) and *Animals and Plants (Protection of Endangered Species) Ordinance* [Cap 187] (1976). The *Forestry and Countryside Ordinance* [Cap 96] and *Forestry Regulations* [Cap 96 Sub. leg. A] were revised in 1993. The *Animals and Plants (Protection of Endangered Species) Ordinance* [Cap 187] was revised in 1999.
- B10.14 Regarding the specific protection laws, all Crown forests are protected under Hong Kong's *Forests & Countryside Ordinance*. The law (Cap. 96, section 21), states that:
- B10.15 "Any person who, without lawful authority or excuse, in any forest or plantation:-
- b) plucks or damages any bud, blossom or leaf of any tree, shrub or plant;
  - d) fells, cuts, burns or otherwise destroys any trees or growing plants,
- shall be guilty of an offence."

- B10.16 The law defines “forest” to mean, “any area of government land covered with selfgrown trees.”
- B10.17 Section 3 of the subsidiary *Forestry Regulations* is more specific and provides a list of plants which are protected.

*Ramsar Convention*

- B10.18 Through PRC, Hong Kong is currently a party to the Convention on Wetlands of International Importance especially as Waterfowl Habitat - Ramsar, 2.2.1971 as amended by the Protocol of 3.12.1982 and the Regina Amendments of 28.5.1987
- B10.19 “The Contracting Parties, recognising the interdependence of Man and his environment; considering the fundamental ecological functions of wetlands as regulators of water regimes and habitats supporting a characteristic flora and fauna, especially waterfowl; being convinced that wetlands constitute a resource of great economic, cultural, scientific, and recreational value, the loss of which would be irreparable; desiring to stem the progressive encroachment on and loss of wetlands now and in the future; recognising that waterfowl in their seasonal migrations may transcend frontiers and so should be regarded as an international resource; being confident that the conservation of wetlands and their flora can be ensured by combining far-sighted national policies with co-ordinated international action; have agreed as follows:
- B10.20 Article 2 - 5. “Any Contracting Party shall have the right ... because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it in the List and shall, at the earliest possible time, inform the organisation or government responsible for the continuing bureau duties specified in Article 8 of any such changes.”
- B10.21 Article 2 - 6. “Each Contracting Party shall consider its international responsibilities for the conservation, management and wise use of migratory stocks of waterfowl, both when designating entries for the List and when exercising its right to change entries in the List relating to wetlands in their territory.”
- B10.22 Article 3 - 1. “The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use\* of wetlands in their territory.”

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\* The wise use of wetlands concept is defined, in Appendix 9 of the Ramsar Convention Manual, as: “their sustainable utilisation for the benefit of human kind in a way compatible with the maintenance of the natural properties of the ecosystem”.

- B10.23 Article 3 - 2. "Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character or any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference."
- B10.24 Article 4 - 2. "Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat."
- B10.25 Article 5. "The Contracting Parties shall consult with each other about implementing obligations arising from the Convention especially in the case of a wetland extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. They shall at the same time endeavour to co-ordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna."

*Bonn Convention*

- B10.26 Also through the PRC, Hong Kong is a Party to the Convention on the Conservation of Migratory Species of Wild Animals (the *Bonn Convention*). The Bonn Convention has two major objectives:
- to provide strict protection for species listed in Appendix 1 of the Convention (migratory species in danger of extinction throughout all or a significant portion of their range); and
  - to encourage Range States for such species to conclude agreements for the conservation and management of Appendix II species (migratory species which have an unfavourable conservation status and require international agreements for their conservation, or which have a conservation status which would significantly benefit from international cooperation).

*Tree Preservation*

- B10.27 The most recent regulations and guidelines for tree preservation are contained in *WBTC No. 14/2002 on Management and Maintenance of Natural Vegetation and Landscape Works, and Tree Preservation* which defines the management and maintenance responsibilities for natural vegetation and landscape works, including softworks and hardworks, and the authorities for tree preservation and felling.

*Tree Felling Application Procedure*

- B10.28 After D of AF&C or DLCS has expressed no objection to felling, works department shall submit tree felling application to DLO.
- B10.29 Applications shall be accompanied by:
- (1) two copies of a tree survey plan, showing accurate location of the tree(s), height, circumference, tree spread to scale. Plans should include trees to be retained, transplanted, and felled, existing levels in the vicinity of each tree, and future proposals (outline of road, formation and finished levels);
  - (2) a tree schedule, including botanical name, height, circumference of the trunk, tree spread, and condition;
  - (3) photographs
  - (4) compensatory landscaping/replanting plan to which an undertaking will be tied.

*Replanting Tree*

- B10.30 Tree species selected for replanting in areas where felling cannot be avoided should retain the amenity value as well as improve the ecological value of the affected area if possible. Amenity value is increased with trees that provide shade, ability to screen out poor views, fragrance or colour of leaves or blossoms. Ecological value can be improved in several ways. One improvement is to plant native species of trees with fruit or seeds useful as food for birds. Another is to increase the diversity of an area by planting a variety of native species. Diversity can be similarly increased by planting trees that will attain various heights, giving a multi-layered canopy.
- B10.31 Some factors to be considered in the selection of roadside trees in urban areas of Hong Kong (Webb 1991)<sup>1</sup> are:
- (a) pollution tolerance;
  - (b) drought tolerance;
  - (c) tolerant of compacted or heavy soil;
  - (d) resistant to typhoon damage (no brittle branches);
  - (e) straight trunk to 3-4 m;
  - (f) non-toxic fruit or leaves.

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<sup>1</sup> Webb R. (1993) Tree Planting and Maintenance in Hong Kong. Hong Kong Government.

*EIAO Guidance Notes*

B10.32 The following EIAO Guidance Notes produced by EPD are useful references in conducting ecological assessment for EIA:

- *EIAO Guidance Note No. 6/2002 – Some Observations on Ecological Assessment from the Environmental Impact Assessment Ordinance Perspective* which serves to clarify requirements in the TMEIA and share EPD's experience with all practitioners; and
- *EIAO Guidance Note No. 7/2002 – Ecological Baseline Survey for Ecological Assessment* which aims at providing the general guidelines for conducting an ecological baseline survey in order to fulfil the requirements stipulated in the TMEIA in respect of ecological assessment for a proposed development.