Road Traffic, Rail Traffic and Helicopter

3.1.3.4 Reference is made to the *EIAO-TM* Annex 5 Table 1A Noise Standards for Planning Purposes and to **Tables 3.2 and 3.3**.

3.1.3.5 In cases where practicable direct mitigation measures alone would not be adequate in mitigating road traffic noise impacts, indirect technical remedies may be adopted provided that the residual impacts satisfy all three criteria below:

(i) the predicted overall noise level from the new road together with other traffic in the vicinity must be above the specified noise level (e.g. 70 dB(A) for domestic premises and 65 dB(A) for education institutions, all in L10(1hr));

(ii) the predicted overall noise level is at least 1.0 dB(A) more than the "prevailing traffic noise level", i.e. the total traffic noise level existing before the works to construct were commenced; and

(iii) the contribution to the increase in the predicted overall noise level from the new road must be at least 1.0 dB(A).

3.1.3.6 The total number of existing dwellings, classrooms and other noise sensitive elements that may qualify for indirect technical remedies are then estimated.

3.1.3.7 For this assessment, all roads were described as either:

- Existing roads: including existing roads that will remain either completely unchanged or that will undergo only very minor alterations; or
- New roads / Altered roads: including roads that will be new or substantially altered.

3.2 Assessment Methodology

3.2.1 *Construction Noise*

3.2.1.1 Construction noise impact would be assessed by adopting the standard acoustic principles and the methodologies relevant to technical memoranda issue under the Noise Control Ordinance, primarily the TM on Noise from Construction Work other than Percussive Piling (GW-TM).

3.2.1.2 The whole SEKD is broken down into four major development packages as shown in **Drawing No. 22936/IM/010**, namely:

1. Kai Tak Airport Early Development Package (KTA)

2. Kowloon Bay Reclamation Early Development Package (KBR)

3. Waterfront Facilities & Kai Tak Nullah/Kwun Tong Typhoon Shelter Reclamation (KTAC/KTTS) and

4. Truck Road T2/Runway.

3.2.1.3 Each development package is individually divided into different work packages and is summarized in **Table 3.8**.

Table 3.8 Development Packages

Packages	Description	Start	End
KTA Development Package Works Element (Drawing No. 22936/IM/011)			
WA11	Demolition of Buildings – Carpark	Oct-03	Jul-04
WA12	Demolition of Buildings - Terminal Bldg	Jan-05	Dec-05
WA13	Kai Tak Nullah Stage 1	Oct-03	Jul-06
WA14	Road D5 Stage 1	Oct-03	Nov-07
WA15	Bridges Over Prince Edward Road - Area 1	Oct-03	Jan-08
	Demolition of Existing Ramp	Aug-03	Jan-04
	Footbridge FB3	Jan-06	Jan-08
WA16	Bridges Over Prince Edward Road - Area 2	Jul-04	Feb-06
WA17	Roads & Drains - Area 1	Oct-03	Mar-06
WA18	Roads & Drains - Area 2	Oct-03	Mar-06
WA19	Sewerage Connection to TKWPTW	Oct-03	Mar-06
WA20	Sewerage Pumping Station in Area 1	Oct-03	Jun-05
WA21	Sewerage Pumping Station in Area 2	Oct-03	Mar-06
WA22	Hinterland Junction Improvement	Aug-03	Jul-04
KTAC / KTTS Development Works Element (Drawing No. 22936/IM/012)			
WB11	Reclamation at Kai Tak Approach Channel	Oct-03	Jan-07
WB12	Reclamation of Kwun Tong Typhoon Shelter	Nov-06	Mar-11
WB13	Reclamation at Cha Kwa Ling PCWA	Jan-13	Dec-14
WB14	Kai Tak Nullah Stage 2	Oct-03	Apr-07
WB15	Trunk Drains in Area 4 and 5	Jan-05	Oct-08
WB16	Trunk Drains in Area 5 and 6	Sept-08	Mar-10
WB17	Relocation of Typhoon Shelter-Breakwater in KTTS	Oct-03	Aug-06
WB18	Temporary Relocation of PCWA	Oct-03	Jul-06
WB19	Permanent Relocation of PCWA	Nov-12	Dec-13
WB20	Reprovision of Vehicular Ferry Pier	Jan-14	Jun-15
WB21	Provision of Tourist Excursion Pier	Jan-13	Dec-14
Trunk Road T2 / Runway Development Works Element (Drawing No. 22936/IM/013)			
WC11	Drainage Improvement at Hinterland		
	Culvert F and Associated TTM	Jan-05	Apr-09
	Culverts A, B, C and D	Jan-08	Jul-12
WC12	Trunk Road T2		
	Adjacent to Kai Fuk Road and at CKL PCWA	Jan-07	Dec-08
	Underground Portion/Viaduct in reclamation	Sept-08	Sept-11
WC13	Road D4 - Stage 1	Sept-08	Mar-12
WC14	Road D5 - Stage 2	Jul-05	Dec-07
WC15	Roads & Drains in Area 4 and 5	Jan-10	Dec-12
WC16	Roads & Drains in Area 5 and 6	Mar-11	Dec-13
	Travellator Subway to Ngau Tau Kok MTR Station	Jul-07	Jul-11
WC17	Roads & Drains at Area 6C		
	Hoi Bun Road	Apr-09	Dec-11
	Bridge over outfall U	Sept-11	Mar-14
	Remaining roadworks in Cha Kwo Ling Area	Jan-12	Dec-14
WC18	Sewerage Pumping Station in Area 4 and 5	Mar-08	Mar-10
WC19	Sewerage Pumping Station in Area 5 and 6	Mar-10	Mar-12
WC20	Hinterland Junction Improvement	Jul-08	Jun-09

Packages	Description	Start	End
WC21	CKR/T2 Interchange	Jan-07	Dec-10
KBR Development Works Element (Drawing No. 22936/IM/014)			
WD11	Reclamation at Kowloon Bay Stage 1		
	Earth Bund at Hoi Sum	Oct-03	Jul-05
	Temporary Drain Diversion	Jul-05	Aug-06
	Main Reclamation	Aug-06	Jul-09
WD12	Reclamation at Kowloon Bay Stage 2		
	Temporary Drain Diversion	Oct-07	Jun-08
	Main Reclamation	Jul-08	Jul-11
WD13	Kai Tak Nullah Stage 3	Jul-08	Jul-10
WD14	Trunk Drain Area 3 Stage 1		
	Culvert S	Jul-08	Jul-10
	Culvert Q	Jul-10	Dec-12
	Culvert P2 on earth bund	Jul-06	Jul-07
	Upstream of Culvert P2	Jul-11	Mar-13
WD15	Trunk Drain Area 3 Stage 2	Jul-11	Mar-13
WD16	Provision of Public Pier	Jul-09	Jun-11
WD17	Reprovision of Buoys	Jan-10	Jul-10
WD18	Drainage Improvement at Hinterland	Jul-10	Dec-12
WD19	Road D4 Stage 2	Jul-09	Jun-12
WD20	Roads & Drains at Area 3 – Stage 1	Jul-10	Dec-13
WD21	Roads & Drains at Area 3 – Stage 2		
	Travellator Subway to Ma Tau Wai Station	Jan-11	Jul-14
	Roads & Drains at Area 3 – Stage 2	Apr-13	Oct-14
WD22	Sewerage Pumping Station in Area 3 Stage 1	Oct-12	Oct-14
WD23	Sewerage Pumping Station in Area 3 Stage 2	Oct-12	Oct-14
WD24	Hinterland Junctions Improvement	Jun-12	Jun-13

3.2.1.4 An inventory of powered mechanical equipment was developed based on the development packages and work elements for the purposed of assessing the potential construction noise impacts. The inventory is presented in **Appendix 3A Table 3.1.4** for reference.

3.2.1.5 The construction noise assessment took into account the construction programme, construction work packages, construction noise levels from work tasks, existing noise sensitive receivers and the development phasing of planned noise sensitive receivers. Practicable direct mitigation measures including movable barriers, enclosures, quieter alternative methods, re-scheduling and restricting hours of operation of noisy task would be investigated.

3.2.2 *Traffic Noise*

3.2.2.1 The computer programme, *HFANoise*, was used to model traffic noise on the road networks. It adopts methodology of the UK Department of *Transport's Calculation of Road Traffic Noise (CRTN)* which has been accepted for the assessment of road traffic noise impact in Annex 13 of the *EIAO-TM*. The road traffic noise was presented in terms of noise levels exceeded for 10% of the one-hour period having the peak traffic flow [L_{10}(1hr) dB(A)].

3.2.2.2 For this EIA, calculations of future road traffic noise were based on the available prediction data on the peak hourly flow in respect of the maximum traffic projected within a 15 years

period upon commencement of operation and occupation i.e. morning peak hour traffic flow in year 2031. The scheduled last intake of population in SEKD and operation of road network was expected to be in 2016 and hence the predicted traffic flow of 2031 was used for the traffic noise assessment. An annual growth factor of 1% with the same modal split in year 2016 was assumed in the prediction of the growth in traffic volume upto year 2031. The traffic flow for year 2031 was agreed by TD for use in this EIA Report.

3.2.2.3 Considering the scope of this Project, the following road sections were classified in the following manner for road traffic noise assessment:

(i) New roads: includes all new roads created and roads substantially altered in SEKD.

(ii) Existing roads: includes Prince Edward Road East, Kwun Tong Bypass and other existing roads around SEKD.

3.2.2.4 The classification is given in **Appendix 3B** for reference. A checklist of the relevant road improvement scheme in SEKD project is also given in **Appendix 3B** for the identification of existing roads with substantial modifications.

3.2.2.5 Assessment points (APs) at noise sensitive façade were selected to represent identified NSRs for quantitative noise assessments. Traffic noise levels at the APs in respect of each road section and the overall noise levels from the combined road sections (both new and existing) were calculated. Locations of the APs are presented in **Drawing Nos. 22936/EN/280, 22936/EN/281 and 22936EN/282** respectively for NAKTA Area, Hoi Sham Area and Kai Tak Approach Channel and Runway Area. Traffic noise levels at the APs in respect of each road section and the overall noise levels from the combined road sections (both new and existing) were calculated.

3.2.3 *Fixed Noise Sources*

3.2.3.1 There are numerous different types of fixed noise sources within SEKD areas. Fixed noise sources, which very much depended on future detail design of the facilities, were evaluated with reference to similar facilities in Hong Kong. Quantitative assessments if necessary would be based on standard acoustic principle with reference to the *Technical Memorandum on Noise from places other than Domestic Premises, Public Places or Construction Sites*, issued under the Noise Control Ordinance.

3.3 Noise Emission Inventory

3.3.1.1 Sources of noise during construction phase would be associated with the various phases of construction activities, particularly with the use of powered mechanical equipment (PME). Broadly speaking, construction works involved are:

- Site clearance and site formation;
- Transport infrastructure;
- Utilities and services infrastructure; and
- Site development.

3.3.1.2 In South East Kowloon Development, operational noise emission sources can be classified into the followings categories:

1. Noise from transportation
   (a) Road traffic from existing roads and new/altered roads
   (b) Shatin to Central Link (SCL) railway
   (c) Shuttle System – LRT/Trolley Bus