

7.1 PRIORITISED LIST OF FLYOVERS

The noise benefits of each types of direct technical remedies have been assessed for the shortlisted flyovers in Section 6. However, in some cases the HKPSG standards are not expected to be satisfied. The number of dwellings benefited has been calculated to give a clear indication of the most effective candidates. Site survey has been carried out for each of the shortlisted flyovers to estimate the number of dwellings benefited from each type of direct technical remedies.

The noise reduction effectiveness of each direct technical remedy has been estimated based on the noise reduction at receivers. The cost of the direct technical remedies has been based on data from previous EIA studies, *Reclamation and Servicing of Tuen Mun Area 38 for Special Industries - Improvement to Roads and Junctions within Tuen Mun Environmental Impact Assessment*, carried out by ERM. The unit costs are presented in Table 7.1a, the evaluation of cost are shown in Annex E. However, a detailed cost estimate on the noise mitigation measures is recommended in the Stage 2 Study.

Table 7.1a Unit Costs for Direct Technical Remedies

Type	Description	Cost/linear meter (HK\$/meter)
3m High Noise Barriers	"Plexiglass" screen R C Plinth Steelwork	173,479.00
5m High Cantilever Noise Barriers	"Plexiglass" screen R C Plinth Steelwork	187,075.00
Semi-enclosure	"Plexiglass" sheet Steel Reinforcement	224,188.00
Full-enclosure	"Plexiglass" sheet Steel Reinforcement	224,820.00

Note : 15 percent for Preliminary & General Items have been included in the cost estimation.

To prioritise the shortlisted flyovers candidates, a cost-effectiveness factor C has been used, where C is define as:

$$C = \frac{\text{Number of dwellings protected} \times \text{dB(A) Noise reduction}}{\text{Cost of implementation}}$$

Assuming the cost of implementation remains constant for the same category of direct technical remedies, a higher value of C would represent a more effective solution in terms of noise protection provided for more dwellings and larger degree of noise reduction. Using the C values, the types of direct technical remedies recommended for each flyover and the prioritized list of implementation have been selected. Table 7.1b presents the prioritized list. Details of the calculations are shown in Annex F.

Table 7.1b *Prioritization of Direct Technical Remedies*

Priority	Flyover	Direct Technical Remedies Recommended	Cost Effective Factor (C)	Cost Implementation (HK\$) in million
1	NT71 Tsing Tuen Road - near Riviera Gardens & Cheung On Estate	semi-enclosure	114.4	224
2	K2 Kwai Chung Road - near Mei Foo Sun Chuen	5 m cantilevered barrier	76.5	122
3	K4 West Kowloon Corridor - between Willow Street & Tong Mi Road	3 m barrier	70.4	130
4	NT62 Tsuen Wan Road - near Clague Garden Estate	semi-enclosure	69.9	95
5	K53 Kwun Tong Bypass - near Laguna City	5 m cantilevered barrier	69.3	131
6	NT25 Sha Tin Road - near City One Garden	enclosure	62.8	112
7	H26 IEC - Oil Street to Tin Chiu Street	semi-enclosure	61.5	336
8	H34 IEC - near Heng Fa Chuen	semi-enclosure	58.0	90
9	K56 Tseung Kwan O Road - near Tsui Ping South Estate	semi-enclosure	54.5	81
10	NT69 Kwai Chung Road - near Kwai Fong Estate	semi-enclosure	36.7	224
11	H41 Ap Lei Chau Bridge	3 m barrier	8.0	30

7.2

REQUIREMENTS FOR FURTHER STUDIES

A progressively extensive set of direct technical remedies for the affected NSRs have been investigated for eleven short-listed candidate flyovers. On the basis of the above cost-effectiveness analysis, semi-enclosure are recommended for H26, H34, K56, NT25, NT62, NT69 and NT71, 5 m high cantilever barrier for K2 and K53, and 3 m high barrier for H41 and K4.

Apart from considering the concerns of various Government Departments, it is recommended that further considerations (other than discussed in *Section 4.2*)

should be given to air quality and ventilation, public and traffic disruption, loss of sunlight, visual impact, maintenance and structural impacts during the detailed engineering design of direct technical remedies in the Stage 2 Study. The following constraints need to be further considered in providing direct technical remedies on the structures of existing flyovers :

(i) Air quality

The air quality for lower floor residents of buildings adjacent to a flyover with a noise barrier or enclosure need to be examined.

(ii) Loss of road space

The independent support for direct technical remedies structures will occupy road space at ground level thereby reducing traffic lanes and affecting road capacities.

(iii) Traffic disruption

For road safety, the construction and subsequent recurrent maintenance and cleansing of noise barriers and enclosure would necessitate lane closures and affect traffic flow. The recurrent maintenance and cleansing of the soffit of an enclosure would necessitate the closure of the carriageway.

(iv) Loss of sunlight

Loss of sunlight to lower floor residents of buildings adjoining the direct technical remedies.

(v) Visual impact

The overall appearance of the flyover. Advice may have to be sought from the Advisory Committee on the Appearance of Bridges and Associates Structures (ACABAS).

(vi) Maintenance

Availability of replacement parts for proprietary noise mitigating products.

(vii) Structural impact

Structure loading on the direct technical remedies structures.