ENVIRONMENTAL PROTECTION DEPARTMENT

AN IN-HOUSE REVIEWING STUDY ON EXISTING FLYOVERS FOR RETROFITTING WITH NOISE BARRIER

ENVIRONMENTAL PROTECTION DEPARTMENT

AN IN-HOUSE REVIEWING STUDY ON EXISTING FLYOVERS FOR RETROFITTING WITH NOISE BARRIER

1. BACKGROUND

1.1 In the Second Review of the 1989 White Paper issued in January 1994, the Government has indicated the intention to complete a study to investigate the practicability of reducing the adverse traffic noise impacts brought about by existing roads. A "Scoping Study for Providing Retroactive Road Traffic Noise Measures" was completed in 1995 to define the scale of the traffic noise problem in the territory and to identify roads with the potential for retroactive noise mitigation. The second stage study was commissioned in 1996 to investigate in details the engineering, safety, environmental, cost and maintenance aspects of the direct technical remedies for the road sections identified in the Scoping Study.

1.2 Flyovers were specifically excluded from both of these studies. Since the majority of flyovers are located in densely populated areas and sit above other roads, independent structures were at the time considered impractical. The Highways Department therefore advised that all direct technical remedies were to be independent of flyovers. In October 1996, ERM-Hong Kong was commissioned by the EPD to carry out a separate study known as "Scoping Study for Providing Direct Technical Remedies on Existing Flyovers" and a total of 188 existing flyovers were examined. The Scoping Study recommended eleven flyovers for further investigation after a screening procedure.

1.3 In view of programme and resources considerations, three of these flyovers (Ap Lei Chau Bridge, Tsing Tsuen Bridge and Kwai Chung Road Flyover) were selected for a detailed assessment of engineering feasibility in providing direct technical remedies. The selected flyovers were investigated in "Feasibility Study for Providing Noise Mitigation Measures on Existing Flyovers" (the "Feasibility Study"), commissioned in June 1998 under Agreement No. CE95/97. The study concluded that it is feasible to retrofit Ap Lei Chau Bridge and Tsing Tsuen Bridge with independently supported barriers and enclosures. Kwai Chung Road was found not feasible for retrofitting due to constraints of fire fighting, space and social impacts (disruptions to street level commercial

activities and pedestrian movement). The study also developed a "Working Tool" for systematic reviewing the feasibility of retrofitting existing flyovers.

1.4 This study reviewed the feasibility of providing retroactive noise mitigation for the 188 existing flyovers according to the Working Tool and procedures devised in the Feasibility Study.

2. REVIEW METHODOLOGY

2.1 Noise sensitive receivers (NSRs) in this review study refer to all existing domestic premises, including temporary housing accommodation. Court of law, hotels and education institutions were excluded since they were either fully air-conditioned for the former or they were included in the territory-wise "School Insulation Programme".

2.2 Following directly from an analogy of the HKPSG noise criterion, the peak-hour noise level L_{10}(1-hour) of 70 dB(A) for domestic premises was adopted for consideration for retrofitting with noise barrier.

2.3 The Feasibility Study showed that the feasibility of providing noise mitigation measures depended largely on site conditions. The need for a re-visit of all existing flyovers was recognised during the Feasibility Study and a set of "Working Tool" was developed in order to provide a systematic screening of all existing flyovers (Appendix A).

2.4 The broad approach to this study was to carry out a review of the existing flyovers using the "Working Tool" and to identify any potential technical difficulties by reference to complicated actual site conditions. The study also recommended and listed all identified flyovers with priority for which practicable direct technical remedies can be provided.

2.5 The Working Tool was applied systematically to:

- Identify the noise problem;
- Select the noise barrier form;
- Consider the practicality of emergency access and fire fighting;
- Identify road safety problems such as visibility and obstruction of vehicular access;

- Identify the site constraints for noise mitigation measures, e.g. availability of space;
- Ascertain the acoustic effectiveness of the identified barrier form.

3. FINDINGS OF THE REVIEW STUDY

3.1 A total of 188 flyovers in the territory were subjected to a multi-factor screening process. Flyovers that have been subjected to an EIA or with barriers provided were excluded from the review study.

3.2 The 188 flyovers in the Hong Kong territory were reviewed using the 1:1000 scale survey maps produced by Lands Department. Each flyover section was systematically tested using the assessment procedures ("Working Tool"). Only those sections that were identified as noisy roads would be analysed further. The appropriate noise barrier form and site constraints including fire fighting, road safety and availability of space were identified.

3.3 Ap Lei Chau Bridge and Tsing Tsuen Road have already been short-listed for detailed assessment of engineering feasibility (discussed in the Feasibility Study) and thus not repeated in this report. Apart from these two flyovers, five flyovers (including one where the identified section is on an embankment and hence considered as an at-grade road) were identified feasible for providing direct noise mitigation measures. They include three flyovers in Kowloon Peninsula, and one flyover and at-grade road in the New Territories: Kwun Tong Bypass, West Kowloon Corridor, Tseung Kwan O Road, Sha Tin Road and Yuen Shin Road.

3.4 As local roads generally have low traffic flow and hence insignificant noise impacts, they would unlikely be noisy roads and were not considered for noise mitigation measures.

3.5 Preliminary Evaluation of Engineering Feasibility

(a) Engineering feasibility for the provision of noise barrier proposals should aim to produce a safe and economical structure that requires minimal maintenance. For this reviewing study, a brief assessment of engineering feasibility was conducted in terms of the following aspects:

- compliance with road safety requirements as stipulated in the Traffic

Planning & Design Manual (TPDM)

- compliance with the fire fighting and emergency access requirements of the Fire Services Department and other government departments
- compatible with pedestrian and vehicular access
- compatible with existing structure

(b) The West Kowloon Corridor is a strategic road link between Cheung Sha Wan and Sham Shui Po. This review identified that noise mitigation is possible for part of the flyover, namely the section between Tonkin Street and Willow Street near Nam Cheong Estate. 3m barrier is recommended to protect Nam Cheong Estate. Part of Tung Chau Street Park would be occupied by the supporting structure of the barriers and the barrier support needed to be site backed from Yen Chow Street to meet the sightline requirements.

(c) Kwun Tong Bypass is an expressway parallel to Wai Yip Street, running along Kwun Tong Typhoon Shelter and joins Wai Fat Road. This review revealed that direct noise mitigation may also be feasible for the section near Laguna City. 5m cantilevered barrier is recommended in order to protect the sensitive receivers in Laguna City.

(d) Tseung Kwan O Road is a district distributor joining the Kwun Tong Bypass in Kwun Tong. The elevated section of Tseung Kwan O Road is located near South Tsui Ping Estate and over the junction between Kwun Tong Road and Lei Yue Mun Road. The main sensitive receivers are residents of South Tsui Ping Estate. A partial enclosure is also recommended to protect these receivers.

(e) The elevated section of Sha Tin Road runs from City One Shatin to join Tai Po Road (Shatin) across Shing Mun River Channel. This review indicated that direct noise mitigation is possible for the section. Full-enclosure is recommended and sensitive receivers in City One Shatin and Belair Garden would be benefited.

(f) Yuen Shin Road is a primary distributor joining the Tolo Highway in Tai Po. The identified section of Yuen Shin Road which in fact sits on an embankment is located near Yuen Chau Tsai. Partial enclosure is recommended to protect sensitive receivers in Wang Fuk Court and Kwong Fuk Estate.

(g) Layout of the proposed mitigation measures for the identified flyovers are

shown in Figures 1 to 5. More details including noise reduction and number of dwellings being protected by the proposed mitigation measures etc. are summarized in Table 1. A database containing all the existing flyovers reviewed is provided in Appendix B.

3.6 Each identified mitigation option should further be subjected to a comparative evaluation during engineering design stage to develop the most optimum option for implementation. The evaluation includes the following :

Engineering Consideration
Buildability
Safety
Traffic Management during Construction
Detailed Cost Evaluation

Environmental Considerations
Noise Impact
Air Quality Impact
Landscape Impact
Visual Impact

4. RECOMMENDATION

4.1 To include the four flyovers into the list of existing roads that have potential for retrofitting and for consideration including priority, implementation scheme, etc.

5. CONCLUSION

5.1 This study reviewed the existing flyovers on the basis of the Working Tool developed from the CE95/97 Feasibility Study and identified four flyovers that are feasible to provide mitigation measures in the form of noise barriers or enclosures.

Table 1: Summary of Recommended Mitigation Measures

Location	Recommended mitigated measures	Total No. of dwellings exposed	Total No. of dwellings benefitted	Total Cost (HK$)	Unmitigated Noise L10 (1 hr) dB(A)	Cost / dwelling benefitted (HK$)
Sha Tin Road (near City One)	Full enclosure	1,260	1,260	99.5M	71-80	80K
Kwun Tong Bypass (near Laguna City)	5m cantilevered barrier	810	810	116.4M	71-79	140K
Tseung Kwan O Road F/O (near Tsui Ping South)	Partial enclosure	960	840	72M	71-79	90K
West Kowloon Corridor (near Nam Cheong Estate)	3m barrier	720	720	115.5M	71-75	160K
Yuen Shin Road (near Wang Fuk Court & Kwong Fuk Estate)	Partial enclosure	935	875	45.2M	71-74	50K

[Reviewfo\reviewpaper\table1]

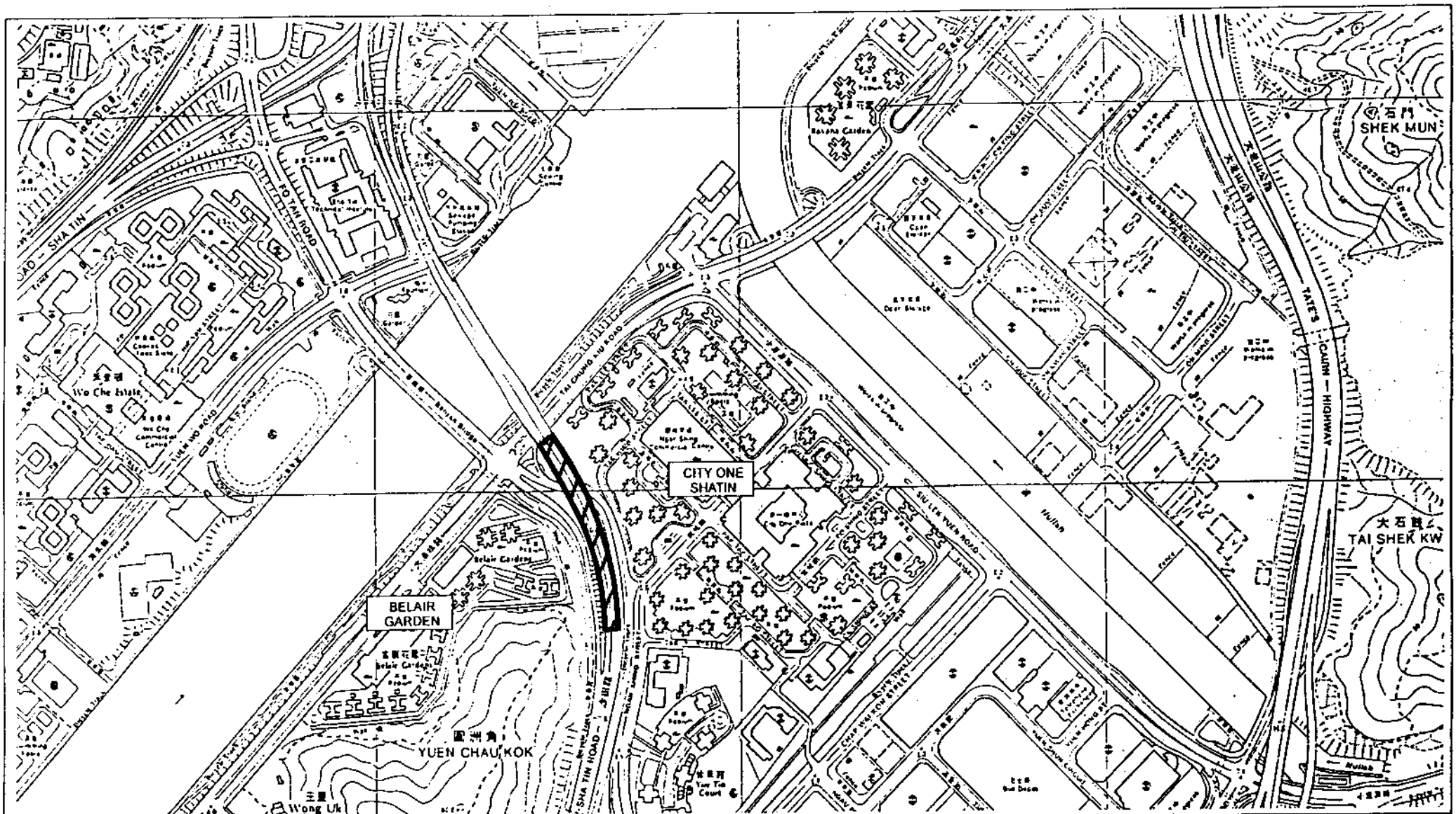


FIGURE 1 – CONCEPTUAL ARRANGMENT OF NOISE MITIGATION MEASURES – NT25 SHA TIN ROAD

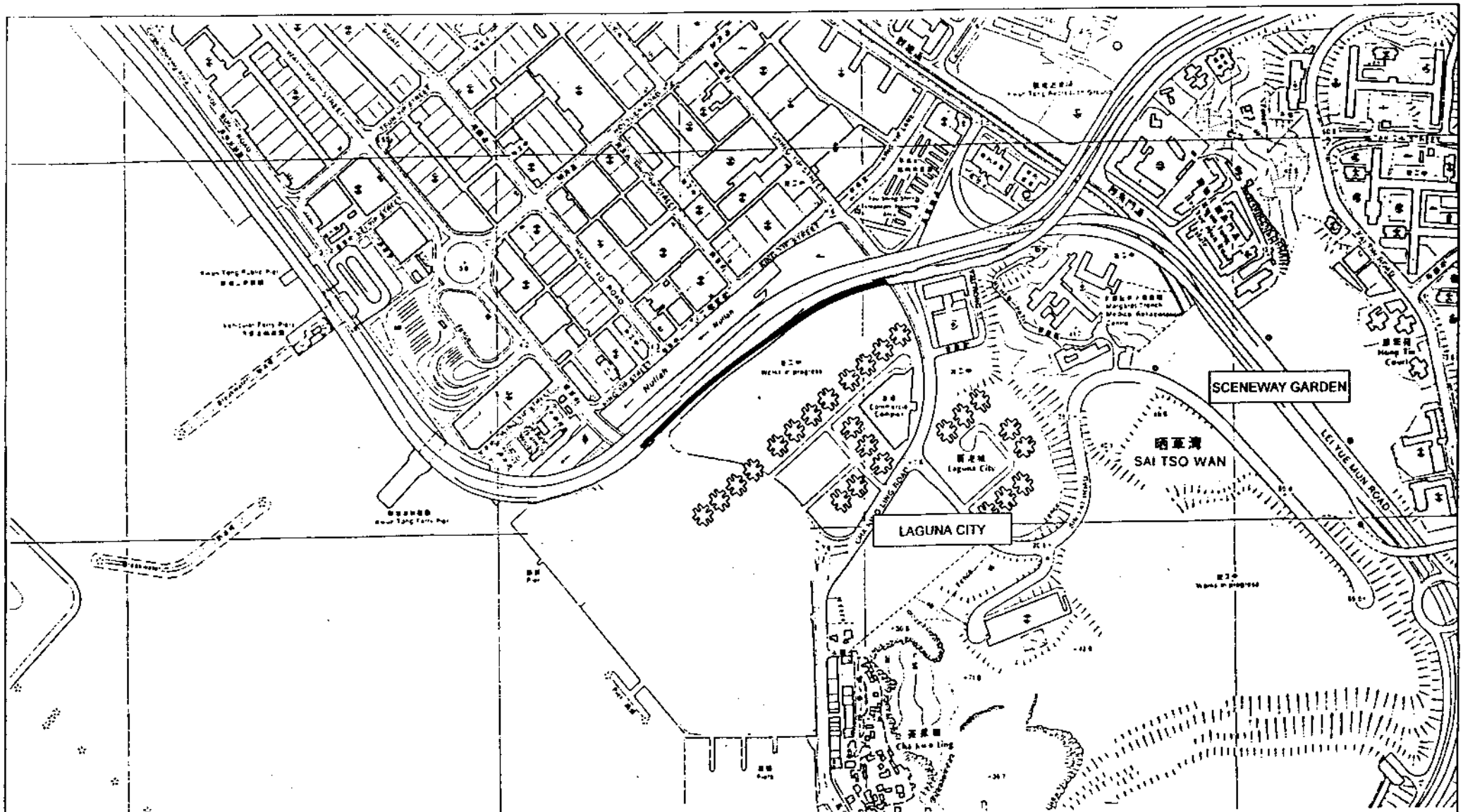


FIGURE 2 – CONCEPTUAL ARRANGMENT OF NOISE MITIGATION MEASURES – K53 KWUN TONG BYPASS

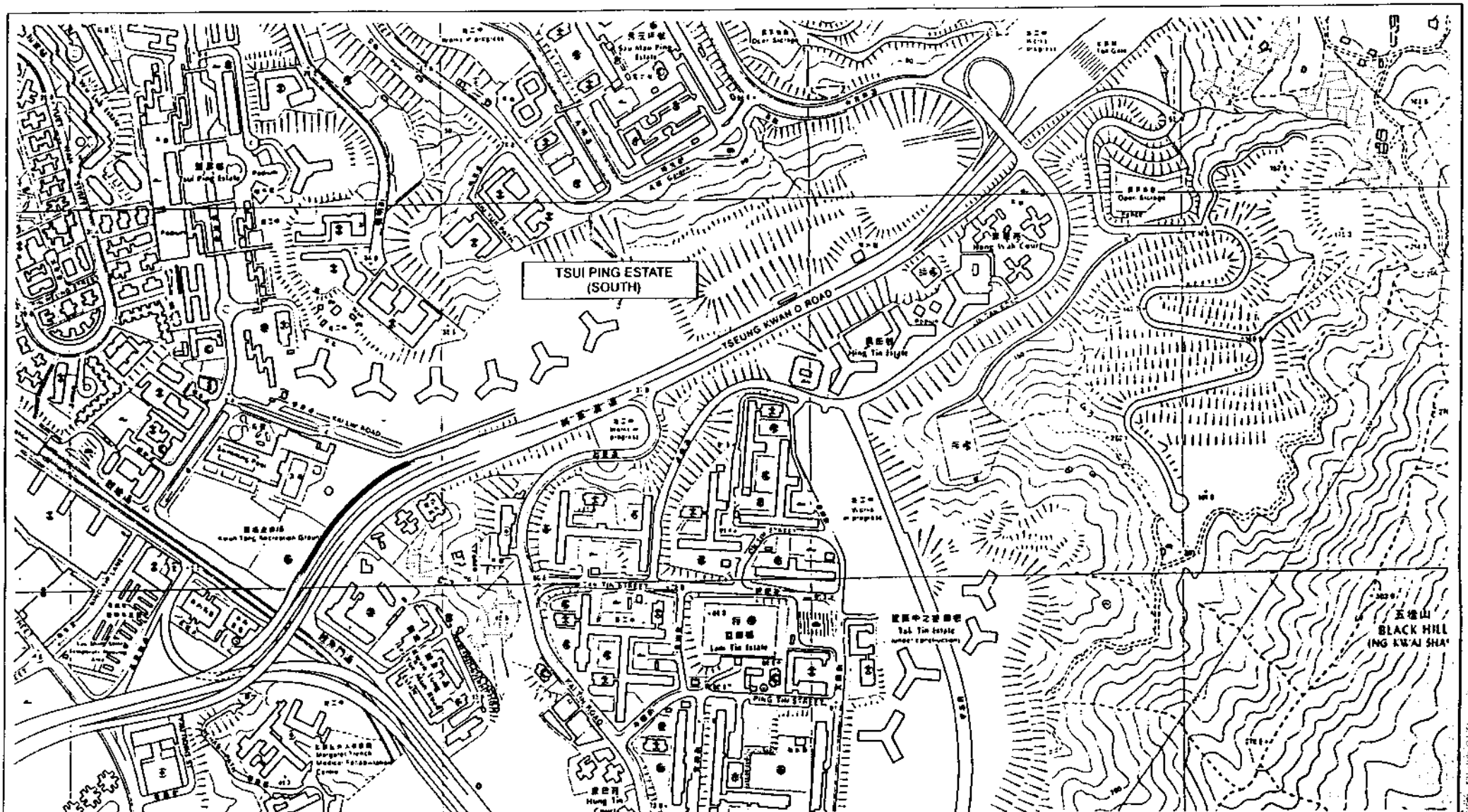
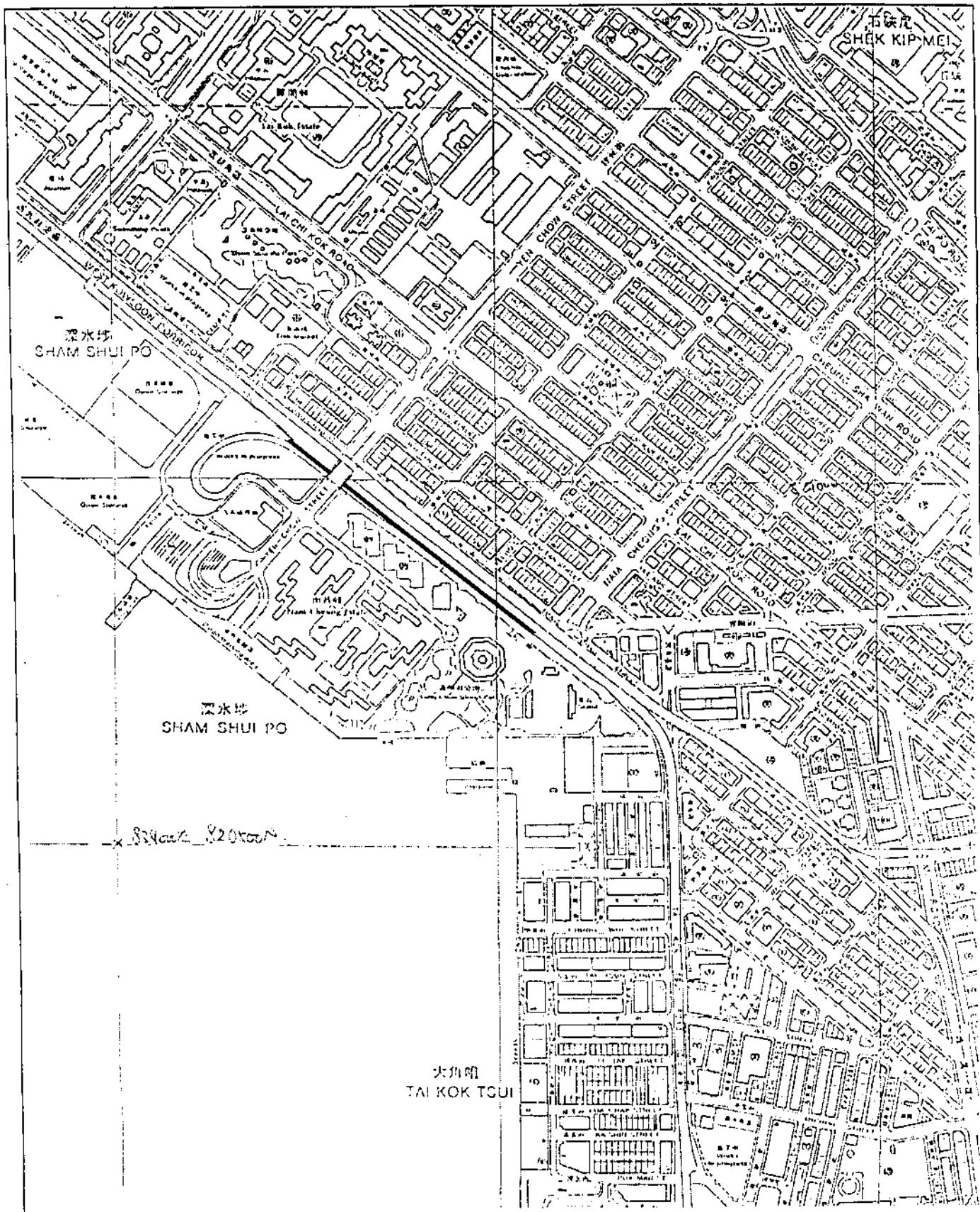


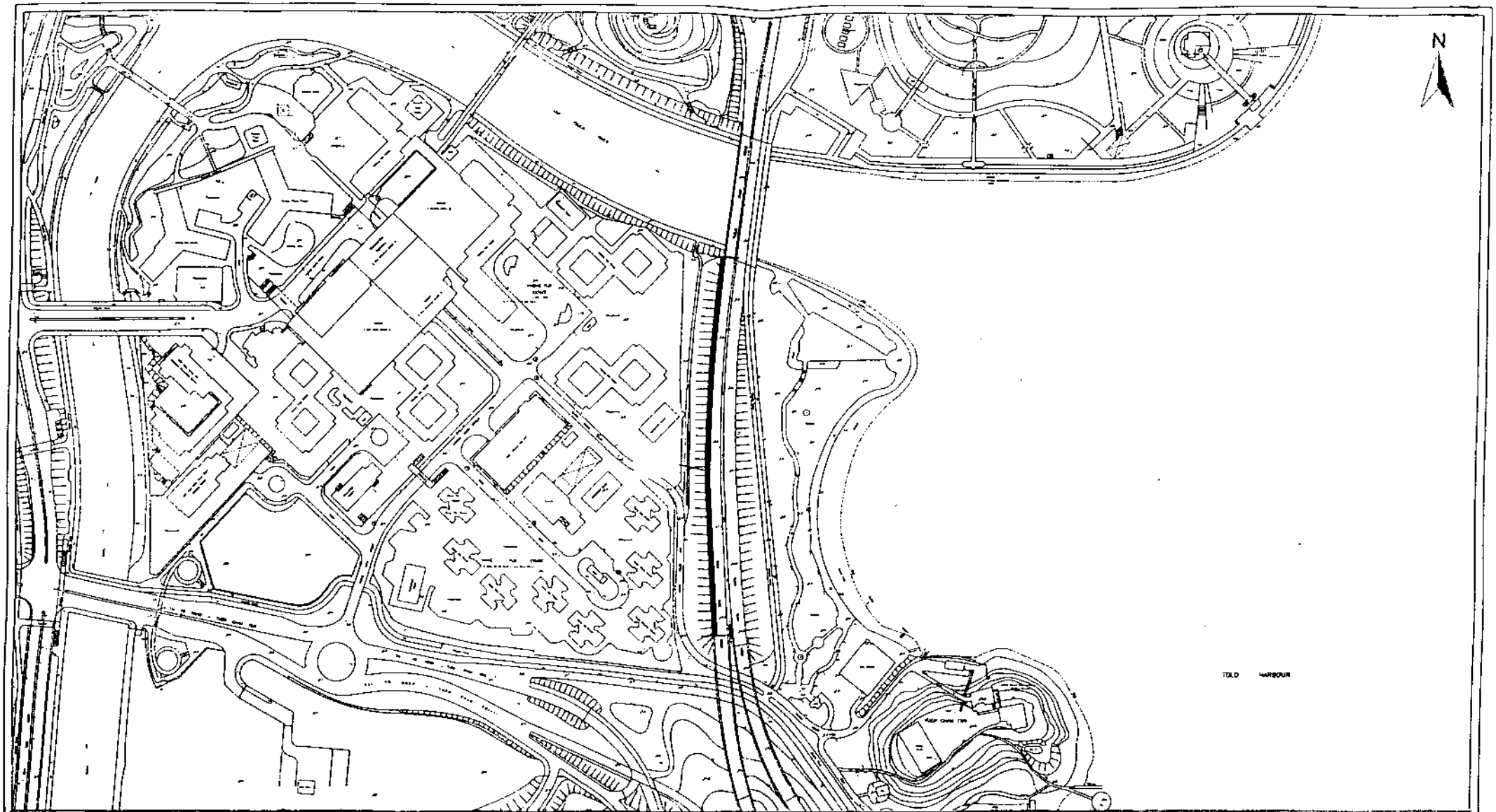
FIGURE 3 – CONCEPTUAL ARRANGMENT OF NOISE MITIGATION MEASURES – K56 TSEUNG KWAN O ROAD



KEY

EXTENT OF DIRECT TECHNICAL REMEDIES REQUIRE

FIGURE 4 – CONCEPTUAL ARRANGMENT OF NOISE MITIGATION MEASURES – K4 (WEST KOWLOON CORRIDOR)



KEY

EXTENT OF DIRECT TECHNICAL REMEDIES REQUIRE

FIGURE 5 - CONCEPTUAL ARRANGMENT OF NOISE MITIGATION MEASURES - YUEN SHIN ROAD

Simplied Assessment Procedures for Providing Noise Mitigation Measures on Existing Flyovers

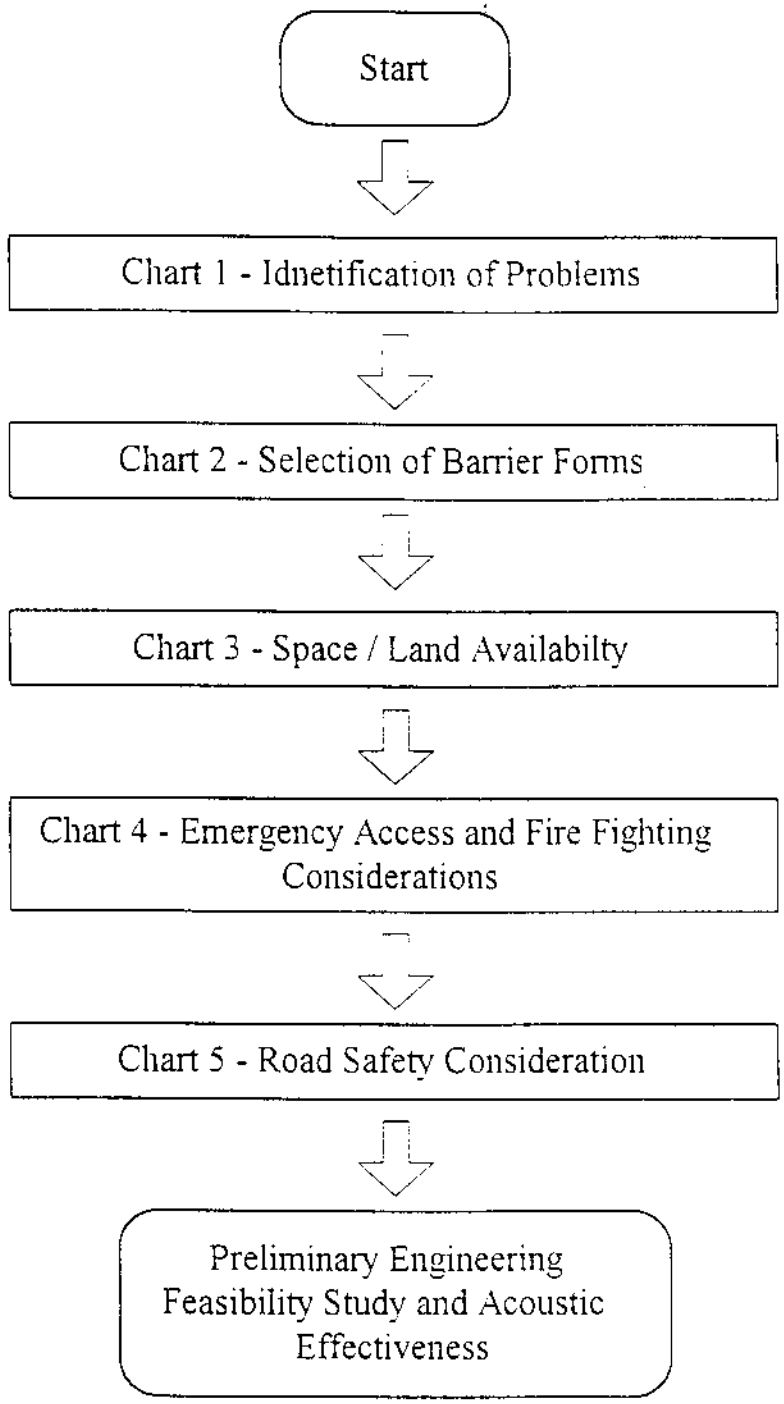
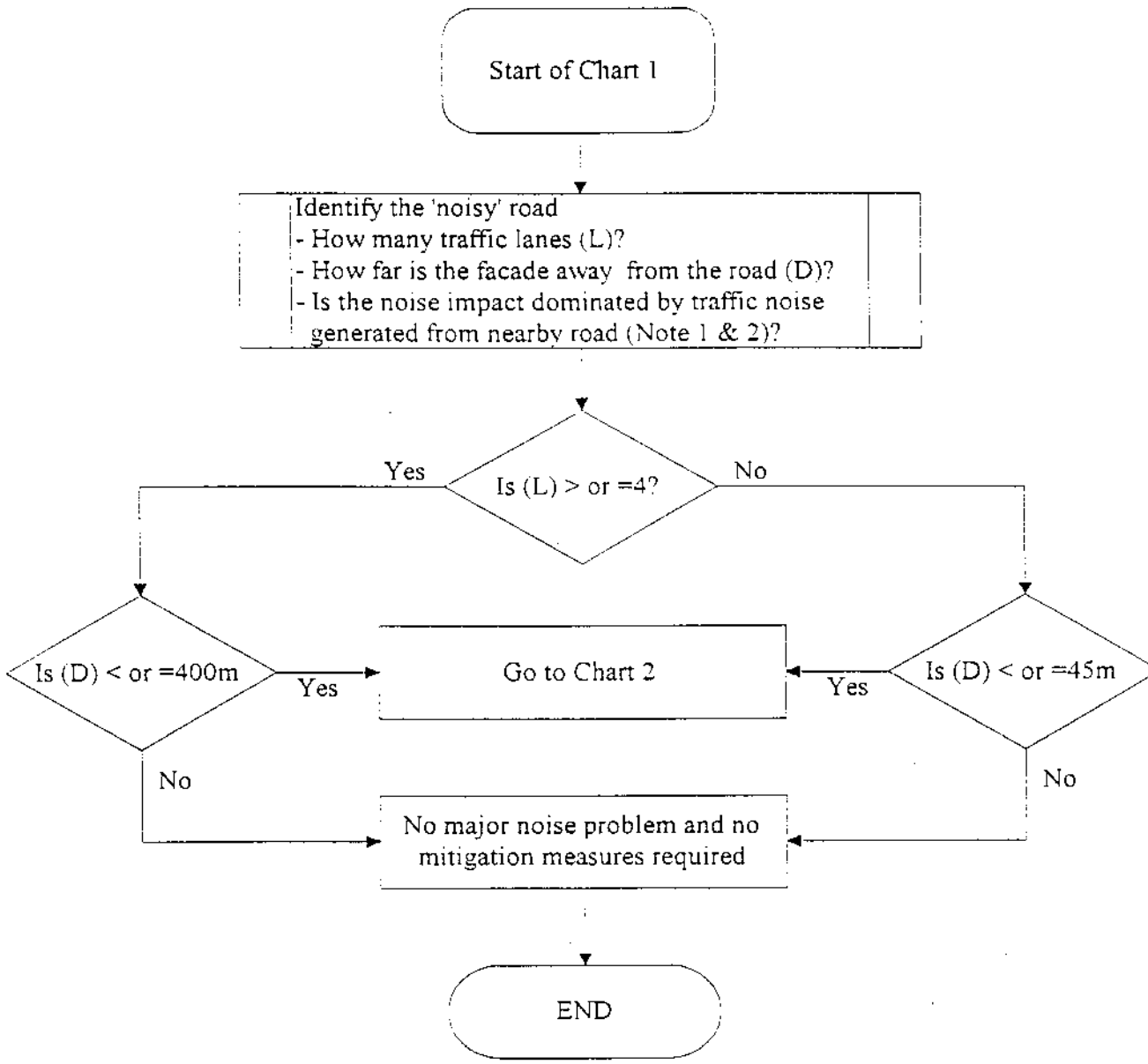


Chart 1 - Identification of Problems



Note 1: If the noise impact is dominated by traffic noise generated from other roads i.e. roads other than the one under investigation, no practical scheme should be provided for the road under investigation.

Note 2: Noise impacts from other roads are considered predominant if the following conditions apply:

(a) Case 1: Other road has more or equal number of traffic lanes
The road is 50% closer to the receiver than the road under investigation, while the angle of view of the road is no less than 50%.

(b) Case 2: Other road has 50% lesser number of traffic lanes
The road is more than 80% closer to the receiver while the angle of view of the road is similar.

Chart 2 - Selection of Barrier Forms

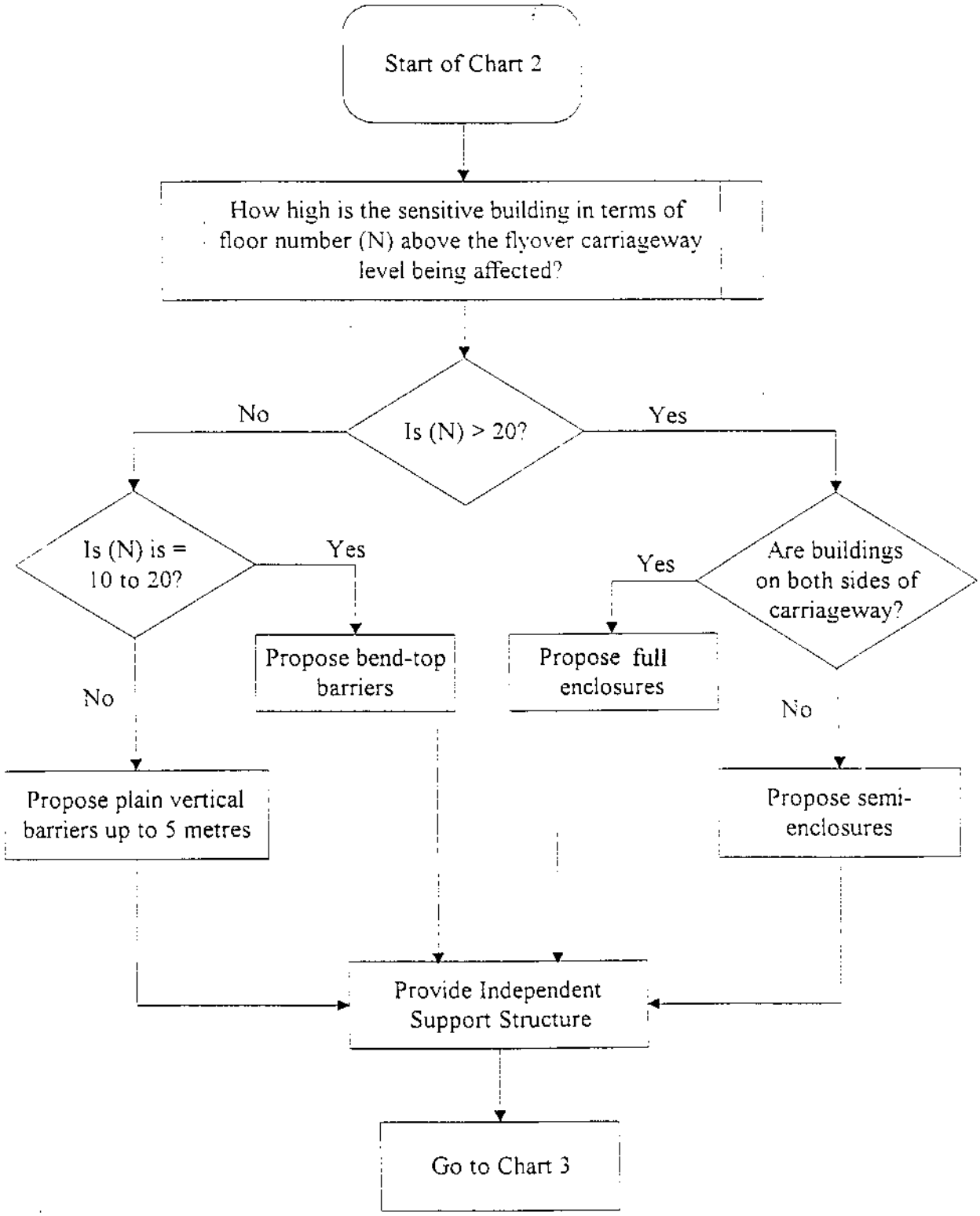
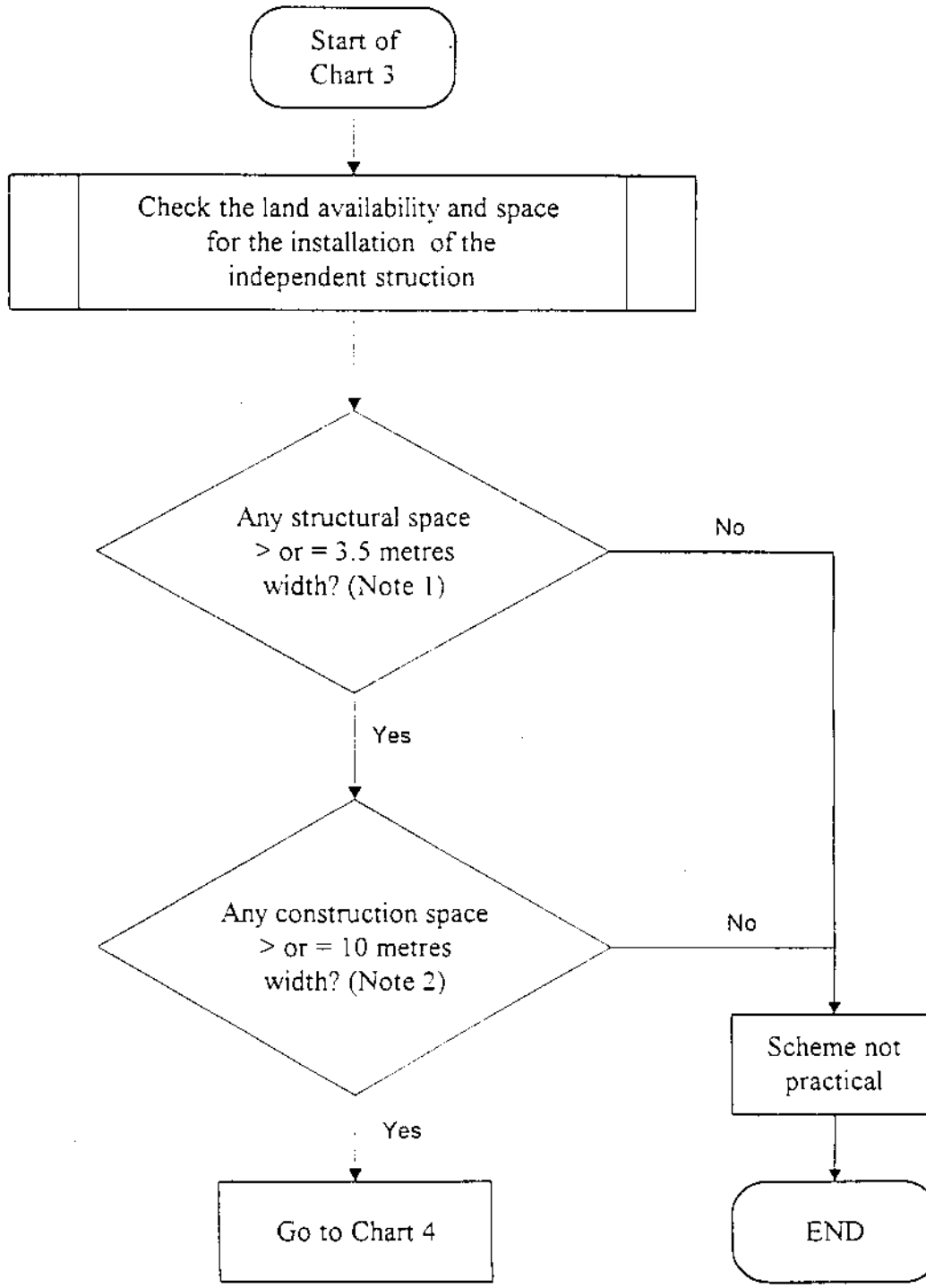


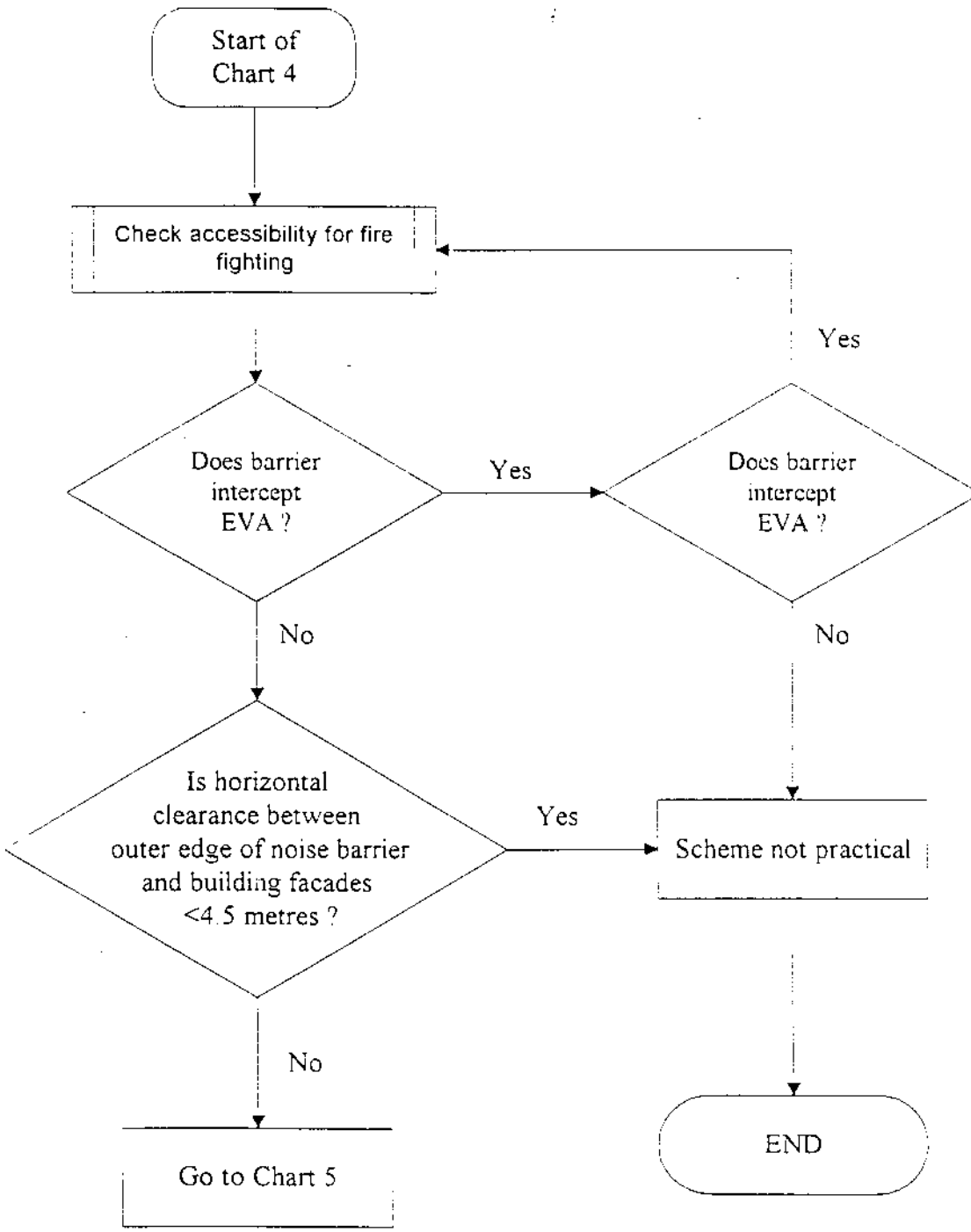
Chart 3 - Space/ Land Availability



Note 1 : Adequate structural space shall be provided for the installation of independent structure. In general, at least 3.5 m width strip of land will be required for locating the foundation of independent structure with reasonable maintenance clearance.

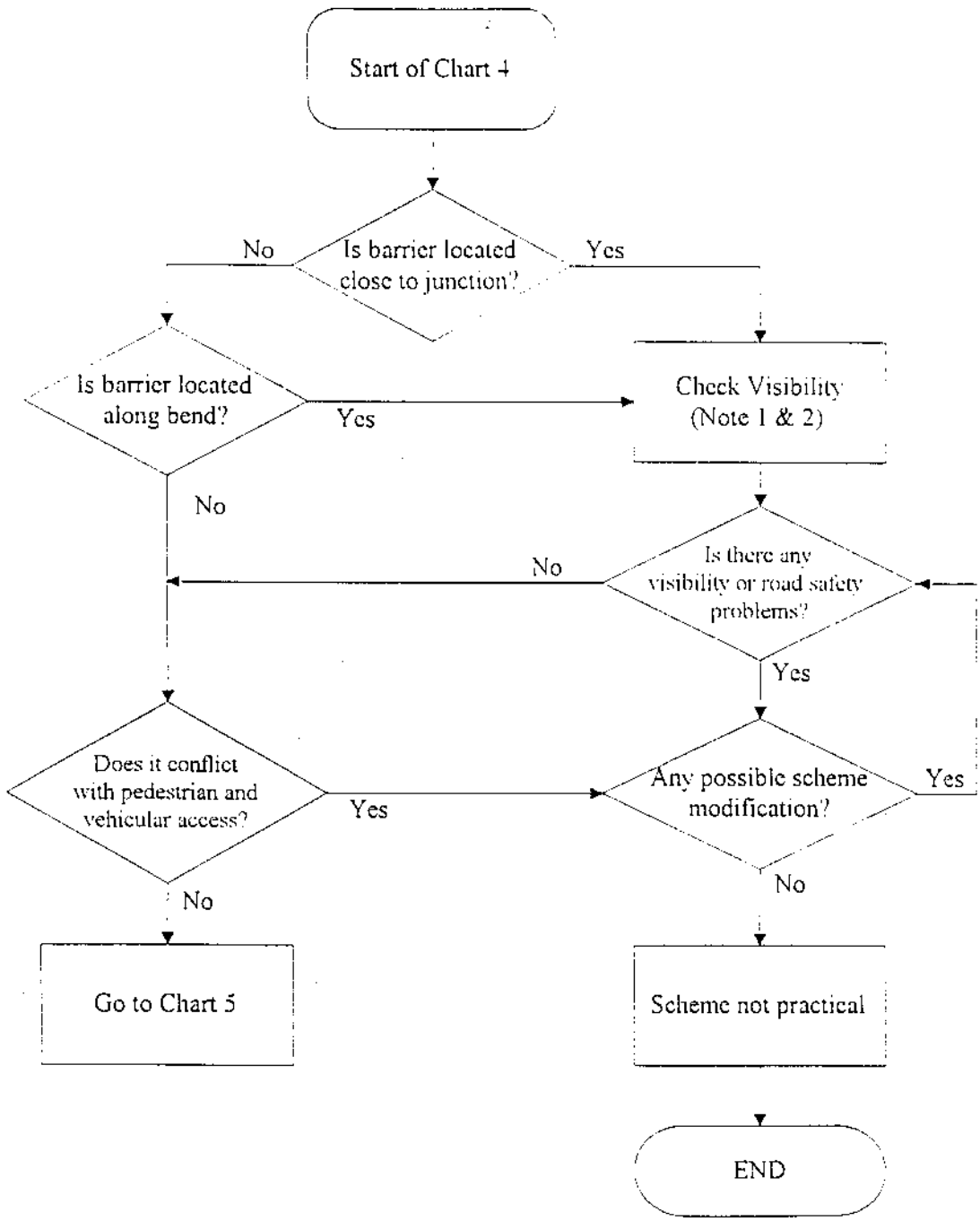
Note 2 : Adequate construction space shall be provide for the foundation works of independent structure. At least 10 m width strip of land will be required for operation of piling plants and excavation.

Chart 4 - Emergency Access and Fire Fighting Considerations



Note: EVA - Emergency Vehicular Access for fire fighting

Chart 5 - Road Safety Considerations



Ref. No.	Flyover Name	Section	Noisy Road (y/n)	Disruption to Emergency Access and Fire Fighting (y/n)	Road Safety Problems (visibility/ obstruct pedestrian or vehicular access) (y/n)	Interfere with commercial activities (y/n)	Space available for independent structure (y/n)	Recommended for consideration for implementation (y/n)	EIA studies during/ before 1999 (Y/N)	Remarks
H1	Hill Road	Pok Fu Lam Road to Connaught Road W	Y	Y	Y	Y	N	N	N	
H2	Bonham Road	Near HKU	Y	Y	Y	Y	N	N	N	
H3	Conduit Road	To Robinson Road, near Woodland Garden (Kotewall Road to Glenealy)	Y	Y	Y	N	N	N	N	
H4	Robinson Road	Next to Canossa Hospital	Y	Y	Y	N	N	N	N	
H5	Robinson Road	Over Magazine Gap Road	Y	Y	Y	N	N	N	N	
H6	West Connaught Road	Gilman Street to Sutherland Street	Y	Y	Y	Y	N	N	N	
H7	Pier Road	Opposite to Hang Seng Bank HQ	N	-	-	-	-	-	N	No nearby NSRs
H8	Upper Albert Road	Over Albany Road	Y	Y	Y	N	N	N	N	
H9	Cotton Tree Drive	Near St. Joseph's College	Y	Y	Y	Y	Y	N	N	
H10	Harcourt Road	Bank of Americal Tower to Admiralty Tower	N	-	-	-	-	-	N	No nearby NSRs
H11	Garden Road	Fairmont House to Bank of China Tower	N	-	-	-	-	-	N	No nearby NSRs
H12	Justice Drive	Harcourt Garden to Marriott Hotel (Queensway to Supreme Court Road)	-	-	-	-	-	-	Y	Previous EIA
H13	Fenwick Pier Street	Near Academy of Performing Arts	-	-	-	-	-	-	Y	Previous EIA
H14	Arsenal Street	Connect to Gloucestor Road	N	-	-	-	-	-	N	No nearby NSRs
H15	Fleming Road	Between Gloucester Road and Jaffe Road	Y	Y	Y	Y	N	N	N	
H16	Canal Road	Over Morrison Hill Road	Y	Y	Y	Y	N	N	N	
H17	Canal Road	Above Canal Road East	Y	Y	Y	Y	N	N	N	
H18	Canal Road	Above Canal Road West	Y	Y	Y	Y	N	N	N	
H19	Wong Nai Chung Road	Adjacent to Happy Valley	N	-	-	-	-	-	N	No nearby NSRs
H20	Tonnochy Road	Next to Wan Chai Sports Ground	Y	N	Y	N	N	-	N	
H21	Marsh Road	Next to Wan Chai Sports Ground (Hung Hing Road to Lockhart Road)	Y	Y	N	Y	N	N	N	
H22	Gloucester Road	From Victoria Park Road to Causeway Bay	Y	Y	Y	Y	N	N	N	
H23	Gloucester Road	Near Moreton Terr	Y	Y	Y	Y	N	N	N	
H24	Tsing Fung Street	King's Road to Victoria Park Road	Y	Y	Y	Y	N	N	N	
H25	IEC	Victoria Park Road to Oil Street	-	-	-	-	-	-	Y	
H26	IEC	Oil Street to Tin Chui Street	Y	Y	N	N	N	N	N	
H27	IEC	Branch to King's Road	Y	Y	Y	Y	N	N	N	
H28	IEC	Branch to Java Road	-	-	-	-	-	-	Y	
H29	IEC	Taikoo Shing to Hing Man Street	-	-	-	-	-	-	Y	
H30	IEC	Tai On Street to Aldrich Bay Road	Y	Y	Y	Y	N	N	N	
H31	IEC	Branch to Nam On Street	Y	Y	Y	Y	N	N	N	
H32	IEC	Branch to Chai Wan Road	Y	Y	Y	Y	N	N	N	
H33	IEC	Tung Hei Road to A Kung Ngam Village Road	Y	Y	Y	Y	N	N	N	
H34	IEC	Heng Fa Chuen	Y	Y	Y	N	N	N	N	
H35	Shun Tai Road	Chai Wan	Y	N	Y	N	Y	N	N	
H36	Fung Ha Road	Eastern Section	-	-	-	-	-	-	Y	Local road
H37	Aberdeen Main Road	Aberdeen Main Road to Aberdeen Praya Road	Y	Y	Y	Y	N	N	N	
H38	Wong Chuk Hang Road	Near HK School of Motoring	N	-	-	-	-	-	N	
H39	Nam Fung Road & Wong Chuk Hang Road Junction		N	-	-	-	-	-	N	No nearby NSRs
H40	Ocean Park Road	Ocean Park Road to Wong Chuk Hang Road	N	-	-	-	-	-	N	No nearby NSRs
H41	Ap Lei Chau Bridge		Y	N	N	N	Y	-	N	CE 95/97 study
H42	Hung Hing Road	(Hung Hing Road to Victoria Park Road)	N	-	-	-	-	-	N	No nearby NSRs
H43	Stubbs Road	Over Wong Ngan Chung Road	Y	N	Y	N	N	N	N	
H44	Tin Wan Praya Road	Over Aberdeen Praya Road	N	-	-	-	-	-	N	No nearby NSRs
H45	Repulse Bay Road	Adjacent to Eucliff an above South Bay Road	Y	Y	Y	N	Y	N	N	
H46a	Chi Fu Road	Pok Fu Lam Road to Chi Fu Road	N	-	-	-	-	-	N	No nearby NSRs
H46b	Chi Fu Road	Chi Fu Road to Pok Fu Lam Road	N	-	-	-	-	-	N	No nearby NSRs
H47	Western Park Road	Sai Ying Pun	N	-	-	-	-	-	N	No nearby NSRs

Kowloon

Ref. No.	Flyover Name	Section	Noisy Road (y/n)	Disruption to Emergency Access and Fire Fighting (y/n)	Road Safety Problems (visibility/ obstruct pedestrian or vehicular access) (y/n)	Interfere with commercial activities (y/n)	Space available for independent structure (y/n)	Recommended for consideration for implementation (y/n)	EIA studies during/ before 1999 (Y/N)	Remarks
K1a	Ching Cheung Road	Near Mei Foo Sun Chuen	-	-	-	-	-	-	Y	
K1b	Ching Cheung Road	Near So Uk Estate	-	-	-	-	-	-	Y	
K2	Kwai Chung Road	Near Mei Foo Sun Chuen	Y	Y	Y	Y	N	-	N	CE 95/97 Study
K3	West Kowloon Corridor	Near Lai Chi Kok THA	Y	N	N	N	Y	N	N	
K4	West Kowloon Corridor	Between Tonkin Street & Willow Street (near Nam Cheong Estate)	Y	N	N	N	Y	Y	N	
K5	West Kowloon Corridor	Tai Kok Tsui Road to Cherry Street	Y	Y	Y	Y	N	N	N	
K6	Lung Cheung Road	Near Chak On Estate	-	-	-	-	-	-	Y	
K7a	Lung Cheung Road	Near Beacon Heights	-	-	-	-	-	-	Y	
K7b	Lung Cheung Road	Near Choi Hung Estate	Y	Y	Y	N	N	N	Y	
K8	Lung Ping Road	Near Beacon Heights	N	-	-	-	-	-	-	Local road
K9	Waterloo Road	Between Ede Road and Suffolk Road	Y	Y	Y	N	N	N	N	
K10	Waterloo Road	Over Prince Edward Road	Y	Y	Y	N	N	N	N	
K11	Waterloo Road	Over Argyle Street	Y	Y	Y	N	N	N	N	
K12a	Prince Edward Road West	Lai Chi Kok Road to Yuen Ngan Street	Y	Y	Y	Y	N	N	N	
K12b	Prince Edward Road West	Prince Edward Road West	Y	Y	Y	Y	N	N	N	
K13	Boundary Street	Maple Street to Sai Yee Street	Y	Y	Y	Y	N	N	N	
K14	Boundary Street	College Road -up to Prince Road W	Y	Y	Y	N	N	N	N	
K15	Argyle Street	On top of Argyle Street	Y	Y	Y	N	N	N	N	
K16	Argyle Street	Near Olympic Park	Y	Y	Y	N	N	N	N	
K17	Gascogne Road	To Ferry Street	Y	Y	Y	N	N	N	N	
K18	Chatham Road South	Beneath Wylie Court	Y	N	Y	N	N	N	N	
K19	Canton Road	Near Kowloon Park	N	-	-	-	-	-	N	No nearby NSRs
K20	Kowloon Park Drive		N	-	-	-	-	-	N	No nearby NSRs
K21	Cheong Wan Road	Kowloon Station	N	-	-	-	-	-	N	No nearby NSRs
K22	East Kowloon Corridor	Above Chatham Road and Kowloon City Road	Y	Y	Y	Y	N	N	N	
K23	San Ma Tau Street	To Vehicular Ferry Pier	Y	N	Y	N	N	N	N	
K24	Fat Kwong Street	Above MaN Yue Street	Y	Y	Y	N	N	N	N	
K25	Pui Ching Road	To Fat Kwong Street	N	-	-	-	-	-	N	No nearby NSRs
K26	Dyer Avenue		N	-	-	-	-	-	N	Local road
K27	Princess Margaret Road	To Waterloo Road over Argyle Street	Y	Y	Y	Y	N	N	N	
K28	Hong Chong Road	Over KCRC Railway to Hong Chong	Y	N	Y	Y	N	N	N	
K29	Ma Tau Chung Road	Near Olympic	N	-	-	-	-	-	N	No nearby NSRs
K30	Chuk Yuen road - Lung Yin Road		Y	Y	Y	Y	Y	N	N	
K31	Fung Mo Street		Y	N	Y	N	N	N	N	
K32	Po Kong Village Road		Y	N	Y	Y	N	N	N	
K33	Prince Edward Road East	Near San Po Kong (to Choi Hung Road)	N	-	-	-	-	-	N	No nearby NSRs
K34	Prince Edward Road East	Choi Hung Estate	Y	N	Y	N	N	N	N	
K35	Prince Edward Road East	King Hong Street to Concorde Road	N	-	-	-	-	-	N	No near NSRs
K36	Tate's Cairn Tunnel Network	Sheung Yuen Leng	-	-	-	-	-	-	Y	
K37	Tate's Cairn Tunnel Network	Near Pik Hoi House Choi Hung Estate	-	-	-	-	-	-	Y	
K38	Tate's Cairn Tunnel Network	Near Richland Gardens	-	-	-	-	-	-	Y	
K39	Wai Yip Street	Access road to Telford Garden	Y	N	N	N	N	N	N	
K40	Ngau Tau Kok Road	Kai Cheung Road to Ngau Tau Kok Road	Y	Y	Y	Y	N	N	N	
K41	Ngau Tau Kok Road	Near Ngau Tau Kok Upper Estate	Y	Y	Y	Y	N	N	N	
K42a	Shun Lee Tsuen Road	Near Shun Lee Estate	Y	N	Y	N	N	N	N	
K42b	Shun Lee Tsuen Road	Near Shun Tin Estate	Y	N	Y	N	Y	N	N	
K43	Lee On Road		Y	N	Y	N	Y	-	N	
K44	New Clear Water Bay	Between Choi Wan Estate & Shun Lee Estate	N	-	-	-	-	-	N	No nearby NSRs
K45	Ferry Street	Over Tong Mei Road	Y	Y	Y	Y	N	N	N	
K46	Kai Fuk Road	Kai Fuk Road to Kwun Tong Road	Y	N	Y	N	N	N	N	No nearby NSRs
K47	Siu Yip Street	From Telford Garden to Tai Yip Street	N	-	-	-	-	-	N	Local road
K48	Kwun Tong Road	Kai Tai Court	Y	N	Y	N	N	N	N	
K49	Kai Cheung Road	Near International Trademart	N	-	-	-	-	-	N	No nearby NSRs
K50	Kwun Tong Bypass	Near Richland Gardens	-	-	-	-	-	-	Y	
K51	Kwun Tong Bypass	Above Kai Fuk Road	-	-	-	-	-	-	Y	No nearby NSRs
K52	Kwun Tong Bypass	Along Hoi Bun Road	-	-	-	-	-	-	Y	No nearby NSRs
K53	Kwun Tong Bypass	Near Laguna City	Y	N	N	N	Y	Y	N	
K54	Kwun Tong Bypass	Parallel to Wang Kwong Road	-	-	-	-	-	-	N	No nearby NSRs
K55	Kwun Tong Bypass	Connect to Lam Tin Station	-	-	-	-	-	-	Y	

Kowloon

Ref. No.	Flyover Name	Section	Noisy Road (y/n)	Disruption to Emergency Access and Fire Fighting (y/n)	Road Safety Problems (visibility/ obstruct pedestrian or vehicular access) (y/n)	Interfere with commercial activities (y/n)	Space available for independent structure (y/n)	Recommended for consideration for implementation (y/n)	EIA studies during/ before 1999 (Y/N)	Remarks
K56	Tseung Kwan O Road	Tsui Ping South Estate	Y	N	N	N	Y	Y	N	
K57	Lin Tak Road		Y	Y	Y	N	N	N	N	
K58	Sceneway Road	Sceneway Garden	N	-	-	-	-	-	N	Local road
K59	Lion Rock Tunnel Road	Link to Waterloo Road	Y	N	Y	N	N	N	N	

New Territories

Ref. No.	Flyover Name	Section	Noisy Road (y/n)	Disruption to Emergency Access and Fire Fighting (y/n)	Road Safety Problems (visibility/ obstruct pedestrian or vehicular access) (y/n)	Interfere with commercial activities (y/n)	Space available for independent structure (y/n)	Recommended for consideration for implementation (y/n)	EIA studies during/ before 1999 (Y/N)	Remarks
NT1	Po Shek Wu Road	Over the KCR railway and join to Choi Yuen Road	-	-	-	-	-	-	Y	
NT2	Fanling Highway	Near Tai Tau Leng and Choi Po Court	-	-	-	-	-	-	Y	
NT3	Pak Wo Road	Over Fanling Highway and next to Tai Ping Estate	N	-	-	-	-	-	N	
NT4	So Kwun Po Road Network	Link to Fanling Highway	Y	N	Y	N	N	N	N	
NT5	Jockey Club Road	Adjacent to Wo Hop Shek	-	-	-	-	-	-	Y	
NT6	Tai Po Tai Wo Road	Near Kam Shek San Tsuen	Y	N	Y	N	Y	N	N	
NT7	Po Heung Street	Over Lam Tsuen River and join Tai Po Tai Wo Road	Y	N	N	N	N	N	N	
NT8	Tolo Highway	Near Classical Gardens and Ma Wo	-	-	-	-	-	-	Y	
NT9	Tai Po Road Yuen Chau Tsai	Near Wang Fuk Court and link to Tai Po Road Tai Po Kau	-	-	-	-	-	-	Y	
NT10	Tai Po Road Yuen Chau Tsai	Link to Tolo Highway	-	-	-	-	-	-	Y	
NT11	Yuen Shin Road	Join Tolo Highway	Y	N	N	N	Y	Y	N	The identified section is on embankment and considered as an at-grade road.
NT12	University Station	Over Tolo Highway and near Sha Tin Hoi	-	-	-	-	-	-	Y	No nearby NSRs
NT13	UR T6	Link to Tolo Highway and next to Shatin STWs and Marine Police North Division Base	-	-	-	-	-	-	Y	No nearby NSRs
NT14	Tsun King Road	Over Tai Po Road and near Royal Ascot	N	-	-	-	-	-	N	Local road
NT15	Ma On Shan Road Network	Near Chevalier Garden	N	-	-	-	-	-	N	
NT16	Sai Sha Road	Link to Hang Tak Street	N	-	-	-	-	-	N	
NT17	Hang Tak Street	Over branch of Shing Mun River and near Chevalier Garden	N	-	-	-	-	-	N	Local road
NT18	Tai Po Road - Shatin	Near Hilton Centre	-	-	-	-	-	-	Y	
NT19	Sha Tin Rural Committe Road	Over Tai Po Road Sha Tin and near Lek Yuen Estate	Y	N	Y	N	N	N	N	
NT20	Sand Martin Bridge	Over Shing Mun River and join Tai Chung Kiu Road	Y	N	Y	N	N	N	N	
NT21	Fo Tan Road	Over Fo Tan Nullah and Tai Po Road Sha Tin and TI College	-	-	-	-	-	-	Y	
NT22	Lok King Street	Over Fo Tan Nullah	N	-	-	-	-	-	N	No nearby NSRs
NT23	Sha Tin Road	Near KCRC House and link to Sha Tin Road	Y	N	Y	N	N	N	N	
NT24	Sha Tin Road	Near Sha Tin Wai	Y	N	Y	N	Y	N	N	
NT25	Sha Tin Road	Near City One Shatin	Y	N	N	N	Y	Y	N	
NT26	Banyan Bridge	Over Shing Mun River and next to Sha Tin Road	Y	N	Y	N	N	N	N	
NT27	Tai Chung Kiu Road	Near Ravana Garden	Y	N	Y	N	N	N	N	
NT28	Sha Tin Wai Road	Near Chap Wai Kon New Village	N	-	-	-	-	-	N	
NT29	Shek Mun Roundabout	Near Pictorial Garden	Y	N	Y	N	N	N	N	
NT30	Sha Tin Wai Road	From Sha Tin Wai New Village to Chap Wai Kon	-	-	-	-	-	-	Y	
NT31	Tate's Cairn Highway	Connect to Sha Tin Wai Road from Tai Shek Kwu	-	-	-	-	-	-	Y	
NT32a	Shing Mun Tunnel Road	Connect to Tai Po Road Tai Wai	-	-	-	-	-	-	Y	
NT32b	Shing Mun Tunnel Road	Connect to Tai Po Road Sha Tin	-	-	-	-	-	-	Y	
NT33	Tai Po Road - Tai Wai	Shing Ho Road to Mei Tin Road	-	-	-	-	-	-	Y	
NT34	Lion Rock Tunnel Road	Over Shing Mun River	Y	N	N	N	N	N	N	
NT35	Lion Rock Tunnel Road	Near Hung Mui Kuk and Worldwide Garden	Y	N	Y	N	N	N	N	
NT36	Sha Tin Road	From Tse Uk Village to Fung Shing Court	-	-	-	-	-	-	Y	
NT37	Hung Mui Kuk Road	Near King Tin Court	Y	Y	Y	Y	N	N	N	
NT38	Tseung Kwan O Tunnel Road	Near Hong Sing Garden	-	-	-	-	-	-	Y	
NT39	Tai Po Road- Tai Wo	Near Hong Lok Yuen	-	-	-	-	-	-	Y	
NT40	Hong Lok Yuen Road	In Hong Lok Yuen	N	-	-	-	-	-	N	
NT41	San Tin Road	Near Fairview Park and Man Yuen Chuen	Y	N	Y	N	N	N	N	
NT42	Long Tin Road	Beside Yuen Long Park	Y	N	Y	N	N	N	N	
NT43	Long Yip Street & Yuen Long On Lok Road	Near Sun Yeun Long Plaza	Y	Y	Y	Y	N	N	N	
NT44	Hung Tin Road	Over Castle Peak Road - Hung Shui Kiu	-	-	-	-	-	-	Y	
NT45	Yuen Long Highway	Near To Yuen Wai and over Castle Peak Road	-	-	-	-	-	-	Y	
NT46	Tsing Tin Road	Near Kin Sang Estate	Y	N	Y	Y	Y	N	N	
NT47	Castle Peak Road - San Hui	Near Ling Nam	Y	Y	N	Y	Y	N	N	
NT48	Pui To Road	Over Nullah	N	-	-	-	-	-	No nearby NSRs	
NT49	Pui To Road	Over Tuen Mun Road	Y	Y	Y	Y	N	N	N	
NT50	Tuen Mun Road	Near Siu Hong Court	N	-	-	-	-	-	N	No nearby NSRs
NT51	Lung Mun Road	Connect to Wong Chu Road	-	-	-	-	-	-	Y	
NT52	Wong Chu Road	Over Nullah	-	-	-	-	-	-	Y	

New Territories

Ref. No.	Flyover Name	Section	Noisy Road (y/n)	Disruption to Emergency Access and Fire Fighting (y/n)	Road Safety Problems (visibility/ obstruct pedestrian or vehicular access) (y/n)	Interfere with commercial activities (y/n)	Space available for independent structure (y/n)	Recommended for consideration for implementation (y/n)	EIA studies during/ before 1999 (Y/N)	Remarks
NT53	Wong Chu Road	Beside Yau Oi Estate and over Tuen Mun Heung Sze Wui Road	-	-	-	-	-	-	Y	
NT54	Hoi Wong Road	Over Nullah	N	-	-	-	-	-	N	No nearby NSRs
NT55	Hoi Wong Road	Over Wong Chu Road	-	-	-	-	-	-	Y	
NT56	Tuen Hing Road	Over Tuen Mun Road	Y	Y	Y	Y	N	N	N	
NT57	Tsing Hoi CIR	Wong Chu Road to Chi Lok Garden	-	-	-	-	-	-	Y	
NT58	Tsing Hoi CIR	Wong Chu Road to Mount Parker Lodge	-	-	-	-	-	-	Y	
NT59	Tuen Mun Road	Castle Peak Road Castle Peak Bay to Siu Lam	Y	Y	N	N	Y	N	N	At-grade sections covered in CE8/96 study
NT60	Tuen Mun Road	Sham Tseng Section	Y	Y	Y	Y	N	N	N	At-grade sections covered in CE8/96 study
NT61	Tuen Mun Road	To Castle Peak Road and near Chai Wan Kok	Y	Y	Y	N	N	N	N	
NT62	Tsuen Wan Road	Tuen Mun Road to Tsing Tsuen Road	-	-	-	-	-	-	Y	
NT63	Tsuen Wan Road	Near Kwai Chung Park	Y	Y	Y	Y	N	N	N	
NT64	Tai Ho Road	Over Castle Peak Road - Tsuen Wan	Y	Y	Y	Y	N	N	N	
NT65	Texaco Road North	Shek Wai Kok Estate to Tsuen Wan	Y	Y	Y	Y	Y	N	N	
NT66	Texaco Road	Near Tai Wo Hau Estate	Y	N	Y	Y	N	N	N	
NT67	Wing Kei Road	Over Tsuen Wan Road	-	-	-	-	-	-	N	No nearby NSRs
NT68	Kwai Chung Road	To Cheong Wing Road	-	-	-	-	-	-	N	NSRs shielded by non-sensitive buildings
NT69	Kwai Chung Road	Near Kwai Fong Estate	Y	N	Y	N	N	N	N	
NT70	Castle Peak Road	Near Kwai Hing Estate	N	-	-	-	-	N	N	No nearby NSRs
NT71	Tsing Tsuen Road	To Tsing Yi Bridge	-	-	-	-	-	-	N	CE 95/97 study
NT72	Tsing Yi Bridge	Near Cheung Ching Estate	Y	N	Y	N	Y	N	N	
NT73	Lai King Hill Road Network	Over Kwai Chung Road	Y	N	Y	N	N	N	N	
NT74	Lai King Hill Road Network	Over Kwai Chung Road and next to Kwai Fong Garden	N	-	-	-	-	-	N	
NT75	Ching Cheung Road	Near Ching Lai Court	Y	N	Y	N	N	N	N	
NT76	Wa Tai Road	Near Lai Yiu Estate	N	-	-	-	-	-	N	Local road
[Reviewfo\reviewpaper\Annex-B]										