

- 3.6.3.11 With Level 2 Mitigation Measures, minor exceedance of 3dB(A) occurred at AP-F31 (schools at site 1C). This is due to the close proximity of the NSR (1C schools) to the road and drain construction works (WA17 – road and drain works in area 1) that would take place between October 2003 and March 2006. The intake of population of the site is scheduled to occur in 2005. It is anticipated that there should be no overlapping in the schools of site 1C being in use and the construction works of WA17. Road works are expected to complete for access prior to the intake of the schools. However, if overlapping of use of schools and construction works does occur, then the remaining construction works should take place during non-school hours and/or non-school days.
- 3.6.3.12 As a relatively high degree of noise control is required to avoid adverse noise impacts, regular environmental monitoring and audit will be required during the construction phase. The purpose of EM&A will be to examine the effectiveness of all the on-site measures so as to enable the Contractor to be aware of his environmental performance and provide necessary action if the assessment criteria are exceeded. Monitoring will also provide a direct response mechanism for the Project Proponent to manage the Contractor's action in effecting reductions in noise emissions at specific areas. The monitoring requirements are described in the EM&A Manual.

3.7 Potential Impact from Road Traffic

3.7.1 Road Traffic Noise Sources

- 3.7.1.1 Road traffic noise refers to noise generated from vehicles using roads and highways. The proposed road hierarchy in SEKD comprises 3 levels: Trunk Roads, District Distributors and Local Distributors. In this assessment, forecast of traffic flows in year 2031 has been used as a reference for evaluating potential traffic noise impacts. **Table 3.14** also provides an estimate of the influencing distance posed by the major roads in SEKD.

Table 3.14 Indicative Estimate of Setback Distance for Major Roads in NAKTA

Road	Traffic Flow (veh/hr)	Concerned Sites	Setback Distance without Mitigation Measures (m)
Trunk Road T1	1700	1A, 1B, 1C	70
Kwun Tong Bypass (KTP)	6000	1A, 1B, 1C	340
Prince Edward Road East (PER)	12000	1A, 1E, 1K, 2A	750
District Distributors	1300-1500	Various	50

Note: Setback distances presented are for indicative purpose only.

Trunk Roads

- 3.7.1.2 The trunk road system consists of the Central Kowloon Route, Trunk Road T1 and Trunk Road T2. The majority of traffic using trunk roads is through traffic, i.e. traffic for which the destination is not SEKD but just passing through SEKD. So, the trunk road system primarily caters for through regional traffic movements. Slip road connection would be made to Central Kowloon Route via Kai Cheung Road/Kai Fuk Road.

Central Kowloon Route (CKR)

- 3.7.1.3 The CKR connects with the SEKD near the existing Kowloon City Ferry Pier at a level of approximately -23mPD. The road is in a tunnel section before climbing up to the CKR/T2 interchange immediately adjacent to the existing Kai Tak Nullah. The portal of the tunnel would be located outside the Metropolitan Park. At this interchange the CKR has been proposed to be at-grade. At this interchange, the CKR provides direct connections at the

existing Kai Tak Tunnel Interchange with Kai Cheung Road, Kai Fuk Road and Trunk Road T2.

Trunk Road T1

- 3.7.1.4 Trunk Road T1 connects Trunk Road T2 to join the Tates' Cairn Tunnel. Trunk Road T1 is basically on elevated structures. Trunk Road T1 passes along residential sites 1A, 1B and 1C, as well as existing developments at Blackdown Barracks (Rhythm Garden) and Choi Hung Estate. The timing of constructing Trunk Road T1 is yet to be determined. Currently, this road is being considered as a reserve purpose only.

District Distributors

- 3.7.1.5 Five district distributors Roads D1, D2, D3, D4 and D5 would be providing principal access connections from the external major distributor roads to the development area. Most of the district distributor roads would be at-grade with generally dual 2-lanes configuration and sufficient local widening at junctions. Road D1 joins Choi Hung Road (near Sze Mei Street) via a flyover above Prince Edward Road East. Road D2 runs along the existing Kai Tak Nullah and joins the Kai Tak Tunnel. Road D3 runs along Prince Edward Road East and Sung Wong Toi Road via Olympic Avenue. Road D4 connects the Runway area with the To Kwa Wan area. Road D5 connects NAKTA with Kai Tak Runway area.
- 3.7.1.6 District Distributors with traffic flow over 1000 would have potential noise impacts to local sensitive receivers.

Local Distributors

- 3.7.1.7 Local Distributors L1 to L13 would vary from single to dual carriageways depending on the traffic volumes. Their traffic flows would generally be less than 1000 veh/hr and some would even be much lower. Traffic noise impacts from local road are low but often intermittent and transient in nature. Owing to the pedestrian usage and local connection requirements, structural noise mitigation measures may not be preferred.

Existing Roads

- 3.7.1.8 There are several major existing roads either located inside or in the periphery of the New Development Area. Kwun Tong Bypass and Prince Edward Road would affect sensitive receivers within SEKD and impose high constraints for development. The Kai Tak Tunnel (Kai Tak Tunnel) would be retained in view of the substantial traffic volume it carries and substitution in the interim stage before the completion of the whole network would not be readily available. As it is underground, no adverse noise impact is anticipated.

3.7.2 Evaluation of Impacts from Road Traffic Noise - General

- 3.7.2.1 The SEKD, particularly NAKTA area, is highly constrained by road traffic noise from existing roads in the east (Prince Edward Road East) and in the west (Kwun Tong Bypass). Setback distance without screening was expected to be about 750m and 340m respectively. High-rise residential NSRs would likely be seriously affected.
- 3.7.2.2 The current layout has provided an optimization of land uses, site constrains by utilities and other factors. As most of the sites are used as residential or other noise sensitive developments, there is little room for using noise-tolerant structures e.g. offices with central air conditioning, commercial/retail buildings and industrial site for shielding sensitive uses.
- 3.7.2.3 In the view of constrains imposed by high traffic road, a low-medium-high approach was adopted for zoning of different densities of development. Structural noise mitigation measures

e.g. barriers are better and more effective in protecting low-rise development than high-rise development. Overall impacts in terms of noise levels would be lower under this approach although some NSRs may experience minor exceedance. Landuses in this case are optimized and are of best use options although certain site constraints are imposed. Otherwise, large buffer/setback distances are required making large areas of land not suitable in terms of noise.

3.7.2.4 The proposed layout plan has achieved a relatively high level of compliance rate without direct measures e.g. barriers at road sources through careful landuse planning and transportation planning. Some exceedances of EIAO-TM noise standard were only found:

- Along heavy traffic flow existing roads Prince Edward Road East and Kwun Tong Bypass;
- Along Central Kowloon Route;
- Along Trunk Road T1;
- Along District Distributors D1, D2, D3, D4 and D5; and
- Along some high traffic local roads e.g. L1, L4, L15.

3.7.2.5 The former two are carrying outside or through traffic while only relative minor exceedances caused by the later two.

3.7.2.6 Predicted noise levels and the extent of noise impacts are presented in several formats in this Report. **Appendix 3B** presents the detail numerical results of traffic noise modeling. **Drawing Nos. 22936/EN/285 to 286** provide the noise contour plots of unmitigated and mitigated scenarios. **Drawing Nos. 22936/EN/351 to 353** gives the statistics of predicted noise levels of flats in SEKD.

3.7.3 Evaluation of Impacts from Road Traffic Noise for NAKTA Area

3.7.3.1 General measures adopted to alleviate adverse noise impact includes:

- Direct measures in the form of cantilever barriers and low noise surfacing on Prince Edward Road East;
- Semi-enclosures and a full enclosure on trunk road T1;
- Non-sensitive uses along critical areas particularly the northern part;
- Provision of podium for residential sites along distributor roads D1 and D2 to mitigate adverse noise impact at street level and to accommodate high-density development; and
- Provision of single-aspect buildings to alleviate noise impact in critical areas along PER while protecting the inside buildings for high-rise development.

Site 1A

3.7.3.2 Major traffic noise sources are Prince Edward Road East, Kwun Tong Bypass, distributor D3, local road L1 and trunk road T1. The site is setback from PER by the district open space. The low-rise nature of schools will make any noise mitigation measures such as cantilever barriers more effective than for the case of high-rise domestic development. There is not enough non-sensitive uses e.g. carpark, commercial uses as noise screen.

3.7.3.3 For unmitigated scenario, over 70% of residential flats further inwards of site 1A would be protected with noise level less than 68dB(A).

3.7.3.4 As shown in the 70m high contour (**Drawing No. 22936/EN285C**) the influencing zone (70dB(A) line) could extend to the north three blocks and the eastern blocks. This part of the site is highly affected by PER and KTB in far field, and by local road L1 and trunk road T1 nearby. About 18% of the flats were found exceeding the 70dB(A) standard but they were all between 70-74dB(A).

- 3.7.3.5 With the proposed mitigation measures, all flats (100%) could be complied to the 70 dB(A) standard, with most of the flats (63%) having a quiet environment of less than 66 dB(A).

Site 1B

- 3.7.3.6 Major road traffic noise source includes L1, T1 and KTB. High-rise buildings were not suggested along T1/KTB. There are not enough non-sensitive uses e.g. carpark, commercial uses as noise screen.
- 3.7.3.7 Most of the residential flats inside site 1B would be screened from traffic noise impact. Over 80% would have low to medium noise level of less than 68dB(A). Far field noise sources like the KTB interchange would likely affect the northeast blocks of site 1B. Together with contribution from L1 and T1, the cumulative noise level is likely to exceed the traffic noise standards. About 13% of the flats were found with noise levels >70dB(A).
- 3.7.3.8 Mitigation on T1 and L1 would help to protect all flats (100%) down to acceptable noise levels of 70dB(A).

Site 1C

- 3.7.3.9 Major noise source includes T1, and D2. Buildings require setback from D2 by the carpark in front.
- 3.7.3.10 The site is relatively sheltered from traffic noise sources. Only a minor portion of the flats (3.5%) was affected by local noise source D2.
- 3.7.3.11 Further mitigation measures along D2 would enable the site to fully comply with the noise standard.

Site 1D

- 3.7.3.12 Distributors D1, D2, D5 and D3 surround the site. The podium provision could help to mitigate the high noise level at street level.
- 3.7.3.13 Over 82% of the flats were complied with the standard for unmitigated scenario. The remaining 18% were outward facing facades affected by D1 and D2.
- 3.7.3.14 With the proposed mitigation measures, all flats (100%) could be complied with the standard. Nevertheless, the proposed noise barriers along Road D1 are on top of the railway reserve of the proposed Shatin to Central Link (SCL). In view of the concern raised by relevant parties about the potential limitations of constructing physical structures including noise barriers on top of railway reserve, it would be necessary to review the proposed noise mitigation measures at the detailed design stage of Road D1. A detailed EIA study will also be carried out for Road D1 as a Schedule 2 Designated Project under EIAO.

Site 1E

- 3.7.3.15 The site is constrained by high traffic PER, D3 and D1. There are not enough non-sensitive uses e.g. carpark, commercial uses as noise screen in between. Due to the high traffic volume and wide road span of PER, it may not possible to mitigate high-rise NSRs along with noise barriers alone, non-sensitive facade would be required facing PER. This is demonstrated in the noise contour plot (**Drawing Nos, 22936/EN/285C and 285I**) that the 70dB contour could extend over the entire site without the screen of buildings/structures of sufficient height.
- 3.7.3.16 The podium and certain building setback from D1 and D3 are likely required based on the conceptual layout. There are 64% of flats expected to comply with the standard for

unmitigated scenario. Mitigation measures on road sources together with site specific design requirements could protect the remaining 36% and a full compliance could be achieved. Openable windows with large angle of view over major noise sources are not recommended. Nevertheless, the proposed noise barriers along Road D1 are on top of the railway reserve of the proposed Shatin to Central Link (SCL). In view of the concern raised by relevant parties about the potential limitations of constructing physical structures including noise barriers on top of railway reserve, it would be necessary to review the proposed noise mitigation measures at the detailed design stage of Road D1. A detailed EIA study will also be carried out for Road D1 as a Schedule 2 Designated Project under EIAO.

Site 1K

- 3.7.3.17 Major noise sources include D3 and PER. The site is located on the deck of the proposed depot for shuttle system. The site is relatively unprotected by structures or adjacent buildings for screening traffic noise.
- 3.7.3.18 The situation is similar to site 1E. Compliance rate is about 91% for unmitigated scenario. The remaining 9% could be mitigated through proper design of building view angle. Openable windows with large angle of view over major noise sources are not recommended.

Site 2A

- 3.7.3.19 The site is on the podium top of the proposed rail depot for Shatin to Central Link. While low-rise NSRs could be screened by noise barriers, high-rise NSRs are still likely affected by PER. Therefore, six single-aspect buildings were suggested in order to give rooms for the inside to achieve high flat production for the site. Otherwise, only low-rise to medium-rise building could be feasible in order to meet the EIAO-TM noise standard.
- 3.7.3.20 The compliance rate for unmitigated scenario is about 83%. With proposed measures along PER, the site could achieve full (100%) compliance.

Site 2B

- 3.7.3.21 This is a relatively sheltered site with D1 being the only traffic noise sources. Most of the flats have noise levels less than 68dB(A). The site is expected to have 100% compliance without any additional mitigation measures.

Site 2C

- 3.7.3.22 This is a relatively sheltered site influenced only by local roads L3 & L4. Only minor exceedances (2%) were found along the local road junction. This could be mitigated by avoiding openable windows over the local critical locations or some setback of building from the roadside.

Site 2D

- 3.7.3.23 The site was found fully complied with EIAO-TM standard with noise level all less than 68dB(A).

Site 2E

- 3.7.3.24 The site was slightly affected by D1, L3 & L4 and only minor exceedances (8% less than 1 dB) were found at façades with large angle of view over D1. D1 is located on the drainage reserve and mitigation measures required foundation might not be feasible. Moreover, proper building design or orientation e.g. avoiding openable windows with large angle of view could mitigate the low level of exceedance.

Site 2F

- 3.7.3.25 95% of the flats could achieve compliance with the standard. Minor exceedances of about 1dB were found at facades locally facing D1 and L3. Proper building design or orientation e.g. avoiding openable windows with large angle of view could achieve full compliance (100%).

3.7.4 Evaluation of Impacts from Road Traffic Noise for Hoi Sham Area

- 3.7.4.1 Hoi Sham area is relatively less affected by road traffic noise as shown in noise contour plots **Drawing No. 22936/EN/286**. There are two major distributors in the area namely D4 and D1. Design with the provision of podium along D1 is incorporated to alleviate local noise impacts from distributors. Potential impact would also come from existing To Kwa Wan Road.

Sites 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3J, 3K, 3M, 3N, 3S and 3T

- 3.7.4.2 All these sites were found fully (100%) complied with the EIAO-TM standard.

- 3.7.4.3 Only minor exceedances at local hotspots were found for sites below:

Site 3P

- 3.7.4.4 99% compliance with only one facade AP 8636 at the building end facing D4 was found exceed the EIAO-TM standard by 2dB at lower floors. A cantilever barrier along D4 could mitigate this. 100% compliance is achieved after mitigation.

Site 3Q

- 3.7.4.5 Similar to site 3P, 97% compliance with only one AP 8655 building end facing D4 were found exceed the EIAO-TM standard by 1-3dB at lower floors. A cantilever barrier along D4 could mitigate this. 100% compliance is achieved after mitigation.

Site 3R

- 3.7.4.6 98% compliance is achieved for unmitigated scenario. Only one AP 8709 building-end facing D1/L15 junction were found exceed the EIAO-TM standard by 1-3dB at lower floors. This could be mitigated by proper building design or orientation e.g. avoiding openable windows with large angle of view. 100% compliance is achieved after mitigation.

Site 3V

- 3.7.4.7 A slight exceedance (2% of flats) was found at AP 8876 facing existing roads like To Kwa Wan Road. This could be mitigated by proper building design or orientation e.g. avoiding openable windows with large angle of view. 100% compliance is achieved after mitigation.

3.7.5 Evaluation of Impacts from Road Traffic Noise for Kai Tak Runway Area

- 3.7.5.1 The Kai Tak Runway Area has two distributors D4 and D5 running along the runway connecting NAKTA and Hoi Sham areas. Trunk road T2 and KTP are running in the east. General measures adopted to alleviate adverse noise impact includes:

- D4 has been considered to incorporate an underground design to minimize noise impacts.
- T2 is underground except a section exposed due to the connection to distributor D5.
- Cantilever barriers and enclosures were applied over D5 and T2 road bundle.
- Low noise road surfacing was proposed on existing Kai Tuk Road, CKR and T2

Site 4A

- 3.7.5.2 Site 4A is located near the portal of CKR with main noise sources from CKR and associated slip roads. The site consists of medium-rise development. Noise contour (**Drawing No. 22936/EN/287C**) shows that the 70dB(A) line could encroach half of the site for unmitigated scenario giving a compliance rate of 78%.
- 3.7.5.3 Direct mitigation measures are proposed at CRK and could effectively reduce the noise level by about 2dB(A). A full compliance (100%) could be achieved. Openable windows with large angle of view over CKR are not recommended.

Site 4B

- 3.7.5.4 Building blocks are generally located about 150m from CKR/T2 main alignment and relatively less affected by road traffic noise. 91% of the flats were found within acceptable limit for unmitigated scenario. Only the northeast building in the range of 1-3dB exceedance required suitable design to avoid openable window at building-end facades. A full compliance (100%) could be achieved.

Sites 4C, 4D, 4F, 4G, 4H, 4J 4K, 4S, 5C, 5E, 5G and 5H

- 3.7.5.5 These sites were found 100% complied with the EIAO-TM standard and experienced low noise levels.

Sites 4E, 4R, 4L and 4M

- 3.7.5.6 These four sites share common influence from exposed sections of T2 and D5 as well as Kwun Tong Bypass. Trunk Road T2 running from south to north and it returns to ground level in this area since it has to connect to Trunk Road T1 and CKR. Underground or depressed options are not feasible.
- 3.7.5.7 Similar to T2, Distributor D5 portal cannot be continued underground or depressed because it need to feed into the local road network in Kai Tak Runway Area.
- 3.7.5.8 The site is also constrained by the presence of a drainage channel running between site 4R and site 4L. Noise barriers required foundations are not feasible at drainage channel.
- 3.7.5.9 In addition, Kwun Tong Bypass also contributes significant noise levels to NSRs in these four sites.
- 3.7.5.10 The compliance rates for sites 4E, 4R, 4L and 4M are 85%, 94%, 93%, 86% respectively. Exceedances were found at the northeast facing facades towards D5, T2 and KTB road complex. Contribution from existing roads and new roads could be as high as 72dB and 70dB respectively. Exceedances were ranged from 1-4dB. Apart from facades facing D5, T2 and KTB, other facades were generally less affected and within EIAO-TM standard.
- 3.7.5.11 A 100% compliance could be achieved for these site by providing direct measures at D5 and T2 together with proper building design or orientation e.g. avoiding openable windows with large angle of view.

Site 5K

- 3.7.5.12 While high plot ratio is assigned, site 5K is expected to have high-rise residential development of about 36-40 storeys. Due to the high-rise nature, it is difficult to alleviate the traffic noise from medium distance high traffic existing roads e.g. Kwun Tong Bypass and Kai Fuk Road as indicated in the noise contour plots. Unless low-rise development were adopted, buildings

with non-sensitive facades e.g. single-aspect buildings would be required to mitigate and enhance better noise environment inside.

3.7.5.13 Results can be summarized as follows:

- Exceedances were ranged from 1-3 dB, mostly found at middle to high floors; and
- The site was constrained by existing roads e.g. Kwun Tong Bypass that could contribute cumulatively high noise levels of 72dB.
- Only 10% non-compliance for unmitigated scenario

3.7.5.14 A full compliance could be achieved by proper building design or orientation e.g. avoiding openable windows with large angle of view over KTB.

Site 5J

3.7.5.15 Only minor exceedances of less than 1 dB were found at building end facades facing D5 and KTB. This could be mitigated by adding the vertical barrier along D5.

3.7.6 Evaluation of Impacts from Road Traffic Noise for Schools

3.7.6.1 School sites have a stringent traffic noise standard of 65dB(A). At the local level, considerations have been given to orientate school building in order to minimize potential noise impact. Pedestrian usage and connectivity of sites would limit the amount of structural noise mitigation measures. **Table 3.15** provides a summary of the noise assessment for all school sites.

Table 3.15 Summary of Traffic Noise Assessments for Schools

School Site	Direct Measures at Road Source Considered	Measures within School Sites Considered	Location of Exceedance with Direct Measures Alone	Remaining Sources of Impacts	Remarks
1A6 SS	<ul style="list-style-type: none"> ▪ 5m vertical barrier at L1-1 ▪ Semi-enclosure barrier at T1-1 ▪ 5.5m + 2.2m cantilever barrier at PER 1 ▪ 5.5m + 2.2m cantilever barrier at D3-1 ▪ 5.5m + 2.2m cantilever barrier at T1-C1 ▪ 5.5m + 2.2m cantilever barrier at T1-C2 	<ul style="list-style-type: none"> ▪ The school building is set at an orientation with the classroom block facing site 1A, and the large auxiliary block facing KTBP/PER and the small auxiliary block facing school 1A7. 	Auxiliary block 3/F- 6/F (2-5dB)	<ul style="list-style-type: none"> ▪ Remaining impacts are noise from the existing PER, KTBP (distant noise source) and the interchange, though noise from KTBP has been mitigated by existing enclosure and barrier 	<ul style="list-style-type: none"> ▪ The interchange contains slip roads and bridge structures, which may not be technically feasible to mitigate.
1A7 North PS	<ul style="list-style-type: none"> ▪ 5m vertical barrier at L1-1 ▪ Semi-enclosure barrier at T1-1 ▪ Semi-enclosure barrier at T1-1 ▪ 5.5m + 2.2m cantilever barrier at T1-C2 ▪ 5.5m + 2.2m cantilever barrier at T1-C3 ▪ Full-enclosure barrier at T1-F1 	<ul style="list-style-type: none"> ▪ The school building is set in an orientation with classroom block facing the residential blocks of site 1A, and the auxiliary block facing school 1A8 	Classroom block 6/F only (3dB)	<ul style="list-style-type: none"> ▪ Remaining impacts are noise from the existing PER, KTBP (distant noise source) and the interchange, though noise from KTBP has been mitigated by existing enclosure and barrier 	<ul style="list-style-type: none"> ▪ Addition of school boundary wall is not effective as the school boundary is at a distant from L1
1A8 South PS	<ul style="list-style-type: none"> ▪ 5m vertical barrier at L1-1 ▪ Semi-enclosure barrier at T1-1 ▪ Semi-enclosure barrier at T1-1 ▪ 5.5m + 2.2m cantilever barrier at T1-C2 ▪ 5.5m + 2.2m cantilever barrier at T1-C3 ▪ Full-enclosure barrier at T1-F1 	<ul style="list-style-type: none"> ▪ The school building is set in an orientation with classroom block facing the residential blocks of site 1A, and the auxiliary block facing school 1A7 ▪ Boundary wall of 3m high 	Classroom block 3/F- 6/F (2-3dB)	<ul style="list-style-type: none"> ▪ Remaining impacts are noise from the existing PER, KTBP and the interchange, though noise from KTBP has been mitigated by existing enclosure and barrier 	<ul style="list-style-type: none"> ▪ Addition of school boundary wall is unlikely to be effective as noise from L1 & T1 are being mitigated by their respective barriers already
1C2 PS	<ul style="list-style-type: none"> ▪ Semi-enclosures and barriers on T1 	NIL	NIL	NIL	N/A
1C3 PS	<ul style="list-style-type: none"> ▪ Semi-enclosures and barriers on T1 ▪ 5.5m + 2.2m cantilever barrier along the pedestrian path of D2 	<ul style="list-style-type: none"> ▪ The school building is set at an orientation with the classroom block facing site 1C and the auxiliary block facing school 1C4 	Classroom block corridor side 3/F-6/F (3-4dB) Auxiliary block 3/F (1dB)	<ul style="list-style-type: none"> ▪ Remaining impacts are noise from roads D2 and L1, and the D2/L1 junction. 	<ul style="list-style-type: none"> ▪ Due to the two junctions and curvature of the roads, noise mitigation measures on central divider not feasible. ▪ Some reduction in noise level achieved with cantilever barrier
1C4 SS	<ul style="list-style-type: none"> ▪ Semi-enclosures and barriers on T1 ▪ 5.5m + 2.2m cantilever barrier along the pedestrian path of D2 	<ul style="list-style-type: none"> ▪ The school building is set at an orientation with the classroom block facing the residential blocks of site 1C, the large auxiliary block facing the car park and the small auxiliary block facing school 1C3 	Auxiliary block all floors (3-5dB)	<ul style="list-style-type: none"> ▪ Remaining impacts are noise from D2/L1. 	<ul style="list-style-type: none"> ▪ Due to the two junctions and curvature of the roads, noise mitigation measures on central divider not feasible. ▪ Some reduction in noise level achieved with cantilever barrier. ▪ The use of school boundary wall would not be effective as the noise from D2 is already mitigated by the cantilever barrier on D2.
1E9 PS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier at D3-6 ▪ 5.5m + 2.2m cantilever barrier at D3-5 ▪ 5.5m + 2.2m cantilever barrier at D3-7 ▪ 5.5m + 2.2m cantilever barrier at D3-8 ▪ 5.5m + 2.2m cantilever barrier at D1 ▪ 5.5m + 2.2m cantilever barrier at PER 4B 	<ul style="list-style-type: none"> ▪ The school building is set at an orientation with the classroom block facing the residential blocks of site 1E, the large auxiliary block facing site 1K and the small auxiliary block facing school 1E10 	Classroom block corridor side 6/F (3dB) Auxiliary block all floors (1-8dB)	<ul style="list-style-type: none"> ▪ Remaining noise impacts are from the existing PER bridges and the D3 road. 	<ul style="list-style-type: none"> ▪ The addition of noise barriers along the PER bridges is not structurally feasible ▪ The addition of school boundary wall is not recommended as the noise from D3 is already mitigated with a cantilever barrier.

School Site	Direct Measures at Road Source Considered	Measures within School Sites Considered	Location of Exceedance with Direct Measures Alone	Remaining Sources of Impacts	Remarks
1E10 SS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at D3-6 5.5m + 2.2m cantilever barrier at D3-5 5.5m + 2.2m cantilever barrier at D3-7 5.5m + 2.2m cantilever barrier at D3-8 5.5m + 2.2m cantilever barrier at D1 5.5m + 2.2m cantilever barrier at PER 4B 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the residential blocks of site 1E, the auxiliary block facing school 1E1 	Classroom block corridor side 3/F-6/F (3-7dB) Auxiliary block 3/F (1-3dB)	<ul style="list-style-type: none"> Remaining noise impacts are from the existing PER bridges and the D3 road. 	<ul style="list-style-type: none"> The addition of noise barriers along the PER bridges is not structurally feasible The addition of school boundary wall is not recommended as the noise from D3 is already mitigated with a cantilever barrier.
1E11 SS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at D3-6 5.5m + 2.2m cantilever barrier at D3-5 5.5m + 2.2m cantilever barrier at D3-7 5.5m + 2.2m cantilever barrier at D3-8 5.5m + 2.2m cantilever barrier at D3-4 5.5m + 2.2m cantilever barrier at D1 5.5m + 2.2m cantilever barrier at PER 4B 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing school 1E10, the large auxiliary block facing PER and the small auxiliary block facing road L15 	Auxiliary block 3/F-6/F (1-6dB)	<ul style="list-style-type: none"> Remaining noise impacts are from the existing PER bridges and the D3 road. 	<ul style="list-style-type: none"> The addition of noise barriers along the PER bridges is not structurally feasible The addition of school boundary wall is not recommended as the noise from D3 is already mitigated with a cantilever barrier. There is a gap along the barrier at D3 due to the railway reserve at D3.
1L PS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at D1-1A 5.5m + 2.2m cantilever barrier at D5-1 5m vertical barrier at D5-2 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing D1, the auxiliary block facing site 2B 	Classroom block 3/F-6/F (9dB)	<ul style="list-style-type: none"> Remaining impacts are from D1 where roadside barriers are not feasible due to sightline road safety requirements for junctions and entrance. 	<ul style="list-style-type: none"> The orientation of the four schools in 1L has been carefully reviewed. Due to the presence of railway tunnel reserve there is a limitation on the school building orientation. Large structural mitigation measures e.g. full enclosure and semi-enclosure on D1 would not be feasible due to the railway underground and other constraints. The current layout shows the highest compliance rate.
1L SS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at D1-1A 5.5m + 2.2m cantilever barrier at D5-1 5m vertical barrier at D5-2 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the stadium, the large auxiliary block facing road D5 and the small auxiliary block facing site 2B 	NIL	N/A	
1L PS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at D1-1A 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the stadium, the auxiliary block facing road D5 	NIL	N/A	
1L SS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at D1-1A 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the stadium, the large auxiliary block facing site 2B and the small auxiliary block facing D5 	NIL	N/A	
1P SS	N/A	NIL	NIL	NIL	N/A
1P SS	N/A	NIL	NIL	NIL	N/A
1P PS	N/A	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the Kai Tak Tunnel Administration building and the auxiliary block facing the CKR 	Classroom block all floors (3-4dB)	<ul style="list-style-type: none"> Remaining noise impacts are from the local road leading to the site. 	<ul style="list-style-type: none"> Noise barrier may not be feasible/practical on the local road and its roundabout leading to the site as the road is too short.

School Site	Direct Measures at Road Source Considered	Measures within School Sites Considered	Location of Exceedance with Direct Measures Alone	Remaining Sources of Impacts	Remarks
1P PS	N/A	NIL	NIL	NIL	N/A
2A9 SS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at PER (ground level) 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2A10 and the auxiliary block facing the depot with landscape deck over 3m school boundary wall along boundary facing PER 	<p>Classroom block corridor side 6/F (4dB)</p> <p>Auxiliary block 3/F (1-4dB)</p>	<ul style="list-style-type: none"> Remaining noise impacts are from the existing PER and elevated roads 	<ul style="list-style-type: none"> The addition of school boundary wall could shield lower floors from the noise source, but is not effective in reducing noise impacts of upper floors. To achieve a100%, a 12m school boundary wall along the boundary facing PER would be required
2A 10 PS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at PER (ground level) 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2A10 and the large auxiliary block facing the school 2A11 and the small auxiliary block facing school 2A9 3m school boundary wall along boundary facing PER 	<p>Auxiliary block all floors (2-6dB)</p>	<ul style="list-style-type: none"> Remaining noise impacts are from the existing PER and elevated roads 	<ul style="list-style-type: none"> The addition of school boundary wall could shield lower floors from the noise source, but is not effective in reducing noise impacts of upper floors. To achieve a100%, a 12m school boundary wall along the boundary facing PER would be required.
2A 11 PS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier at PER (ground level) 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2A10 and the auxiliary block facing the building in site 2A (2A1) 3m school boundary wall along boundary facing PER 	<p>Classroom block corridor side 3/F-6/F (1-5dB)</p> <p>Auxiliary block 3/F (5dB)</p>	<ul style="list-style-type: none"> Remaining noise impacts are from the existing PER and elevated roads 	<ul style="list-style-type: none"> The addition of school boundary wall could shield lower floors from the noise source, but is not effective in reducing noise impacts of upper floors. To achieve a100%, a 12m school boundary wall along the boundary facing PER would be required
2B3 SS	<ul style="list-style-type: none"> 3m vertical barrier along central reserve of L4 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2B4 and the large auxiliary block facing road L4 3m school boundary wall along L4 	NIL	NIL	N/A
2B4 PS	<ul style="list-style-type: none"> 3m vertical barrier along central reserve of L4 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2B3 the auxiliary block facing site 2B 3m school boundary wall along L4 	NIL	NIL	N/A
3X1 PS	<ul style="list-style-type: none"> 5.5m + 2.2m cantilever barrier on L15-2 3m vertical barrier on L15-1 	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing road L15 and the auxiliary block facing the ESS at 3X4. 3m school boundary wall on school boundary wall of the school and on the boundary facing To Kwa Wan Road 	<p>Classroom block all floors (1-4dB)</p>	<ul style="list-style-type: none"> Remaining impacts are the existing To Kwa Wan Road, L15 and the junction of L15/D1. 	<ul style="list-style-type: none"> The future SCL's railtrack would be underneath To Kwa Wan Road and hence may pose problems if barriers were to be constructed on the road.

School Site	Direct Measures at Road Source Considered	Measures within School Sites Considered	Location of Exceedance with Direct Measures Alone	Remaining Sources of Impacts	Remarks
3X3 SS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on pedestrian path of D1 next to school 3X3 ▪ 5.5m+2.2m cantilever barriers along Long Yuet Street pedestrian path and adjacent to school boundary 	<ul style="list-style-type: none"> ▪ The school building is set at an orientation with the classroom block facing To Kwa Wan Road, the large auxiliary block facing road D4, and the small auxiliary block facing school 3X1 ▪ 3m school boundary wall around the school except on the boundary where there would be a cantilever barrier 	Classroom block all floors (5dB) Auxiliary block 6/F (3dB)	<ul style="list-style-type: none"> ▪ The site is affected by local roads and existing road Long Yuet St. 	<ul style="list-style-type: none"> ▪ The close proximity of the school buildings to the roads surrounding the site, site constraints have limited the effective and practical mitigation options. ▪ Measures such as using 5.5m+2.2m cantilever barrier at the school boundary has been considered but there were still exceedances on the middle and upper floors.
3M2 SS	N/A	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing site 3M, and the auxiliary block facing L8 	NIL	NIL	N/A
3Q4 PS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on pedestrian path of D1 next to school 3Q4 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing the local road, and the auxiliary block facing school 3Q5 ▪ 3m school boundary wall along the eastern boundary 	NIL	NIL	N/A
3Q5 SS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on pedestrian path of D1 next to school 3Q5 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing site 3B R2, the large auxiliary block facing L15, and the small auxiliary block facing school 3Q4 ▪ 3m school boundary wall along the northern boundary 	NIL	NIL	N/A
4E2 PS	<ul style="list-style-type: none"> ▪ 3m Vertical Barrier on T2-S1 ▪ 3m Vertical Barrier on T2-S2 ▪ 5.5m + 2.2m cantilever barrier on T2-1 ▪ 5.5m + 2.2m cantilever barrier on T2-2 ▪ 5.5m + 2.2m cantilever barrier on D5-2 ▪ 5.5m + 2.2m cantilever barrier on D5-3 ▪ 5.5m + 2.2m cantilever barrier on D5-8 ▪ 5.5m + 2.2m cantilever barrier on D5-8 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 4E3, and the auxiliary block facing site 4E R1. 	Classroom block corridor side 6/F (2dB)	<ul style="list-style-type: none"> ▪ Remaining noise impacts are from D5 and the existing KTBP 	N/A
4E3 SS	<ul style="list-style-type: none"> ▪ 3m Vertical Barrier on T2-S1 ▪ 3m Vertical Barrier on T2-S2 ▪ 5.5m + 2.2m cantilever barrier on T2-1 ▪ 5.5m + 2.2m cantilever barrier on T2-2 ▪ 5.5m + 2.2m cantilever barrier on D5-2 ▪ 5.5m + 2.2m cantilever barrier on D5-3 ▪ 5.5m + 2.2m cantilever barrier on D5-8 ▪ 5.5m + 2.2m cantilever barrier on D5-8 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 4E2, the large auxiliary block facing D5, and the small auxiliary block facing site 4E R1 	NIL	NIL	N/A
4L3 PS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on T2-3 ▪ 5.5m + 2.2m cantilever barrier on T2-4 ▪ 5.5m + 2.2m cantilever barrier on D5-4 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 4L4, and the auxiliary block facing site 4L 	Classroom block corridor side 3F-6/F (2-4dB) Auxiliary block 1F-3/F (1-	<ul style="list-style-type: none"> ▪ Remaining noise impacts are from D5, T2 and the existing KTBP 	<ul style="list-style-type: none"> ▪ There are gaps in the barriers along T2 & D4-5 due to sight line/road safety problem and presence of

School Site	Direct Measures at Road Source Considered	Measures within School Sites Considered	Location of Exceedance with Direct Measures Alone	Remaining Sources of Impacts	Remarks
	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on D5-6 ▪ T2 Deck (1m) ▪ T2 Deck with barrier 	<ul style="list-style-type: none"> ▪ R1. ▪ 3m school boundary wall on boundary facing D5 and the corner facing site 4B8 	3dB)		drainage reserve
4L4 SS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on T2-3 ▪ 5.5m + 2.2m cantilever barrier on T2-4 ▪ 5.5m + 2.2m cantilever barrier on D5-4 ▪ 5.5m + 2.2m cantilever barrier on D5-6 ▪ T2 Deck (1m) ▪ T2 Deck with barrier 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 4L3, the large auxiliary block facing D5, and the small auxiliary block facing site 4L R1. ▪ 3m school boundary wall around school except on wall facing school 4L3 	Auxiliary block 3/F-6/F (2-4dB)	<ul style="list-style-type: none"> ▪ Remaining noise impacts are from D5, T2 and the existing KTBP 	<ul style="list-style-type: none"> ▪ There are gaps in the barriers along T2 & D4-5 due to sight line/road safety problem and presence of drainage reserve
4N2 SS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on D5-5 ▪ 5.5m + 2.2m cantilever barrier on D5-7 ▪ T2 Deck (1m) ▪ T2 Deck with barrier 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 4N3, the large auxiliary block facing D5, and the small auxiliary block facing site 4M R1. ▪ 3m school boundary wall part of the boundaries facing D5 and L9, and along the whole boundary facing school 4L4 	Auxiliary block 3/F-6/F (2-3dB)	<ul style="list-style-type: none"> ▪ Remaining noise impacts are from D5, T2 and the existing KTBP 	<ul style="list-style-type: none"> ▪ There are gaps in the barriers along D5 due to the presence of road junctions
4N3 PS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on D5-5 ▪ 5.5m + 2.2m cantilever barrier on D5-7 ▪ T2 Deck (1m) ▪ T2 Deck with barrier 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 4N2, and the auxiliary block facing L9. ▪ 3m school boundary wall part of the boundaries facing D5, and along the whole boundary facing site 4P 	Classroom block 3/F-6/F (2-4dB) Auxiliary block 3/F (3dB)	<ul style="list-style-type: none"> ▪ Remaining noise impacts are from D5, T2 and the existing KTBP 	<ul style="list-style-type: none"> ▪ There are gaps in the barriers along D5 due to the presence of road junctions
5J3 PS	N/A	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing road L16, and the auxiliary block facing site 5J R1 ▪ 3m school boundary wall on the boundary facing L10 and L16. 	NIL	NIL	N/A
5J4 SS	<ul style="list-style-type: none"> ▪ 5.5m + 2.2m cantilever barrier on D5 	<ul style="list-style-type: none"> ▪ The school is set at an orientation with the classroom block facing school 5J3, the large auxiliary block facing L10, and the small auxiliary block facing site 5J R1 ▪ 3m school boundary wall from boundary facing L10 to part of boundary facing D5 	NIL	NIL	N/A
5L2 SS	N/A	<ul style="list-style-type: none"> ▪ Orientation of school is constrained by presence of T2 tunnel 	Classroom block 6/F (1dB) Auxiliary block 1/F- 3/F (7-9dB)	<ul style="list-style-type: none"> ▪ Remaining impact is from the existing KTB 	<ul style="list-style-type: none"> ▪ Site constraints made it impossible to change the orientation of the school building

3.7.7 Evaluation of Impacts from Road Traffic Noise for Existing and Planned NSRs

3.7.7.1 Traffic noise impacts for existing and planned NSRs likely affected by SEKD development and its road network are best summarized in **Tables 3.16 and 3.17**. As SEKD is surrounded by major existing roads like Prince Edward Road East and Kwun Tong Bypass, concerned existing and planned NSRs are often affected by these existing roads.

3.7.7.2 Mitigation measures have been proposed on these existing roads under the SEKD Project like the provision of low noise surfacing and noise barriers. Some of the NSRs like those near PER could be benefited from the proposed measures.

3.7.7.3 Most of the existing and planner NSRs were found not affected by the traffic noise from SEKD roads under the mitigated scenario in terms of noise predictions. The only exceptions are:

- Holy Carpenter Primary School
- Planned development site nos. 4, 5 & 6 along proposed widened section of Sung Wong Toi Road (as shown in **Drawing No. 22936/EN/276A**).

Holy Carpenter Primary School

3.7.7.4 Holy Carpenter Primary School is found affected by the junction of D1/D4 and existing Kwei Chow Street, Yuk Yat Street/Long Yuet Street. The school has already installed with air conditioning and certain window insulation. Existing Kwei Chow Street/Yuk Yat Street/Long Yuet Street has high traffic flows and is expected to contribute about 65-73dB(A). New roads D1/D4 are expected to contribute about 64-68dB(A). Direct mitigation measure in the form of a deck over D1/D4 junction could minimize the new road contribution to less than 1 dB. However, it is noted that the school would still have noise levels of about 65-73dB(A) exceeding the noise standard of 65dB(A) due to existing roads. The deckover measure would not be effective in protecting the school. Considering the school has already provided with air-conditioning and window insulation, the benefit of deckover would be minimal. It is recommended not to have direct measures on new road in this case while residual impact is still not expected (since the school has already protected by indirect measure).

Planned Developments along Proposed Widened Sung Wong Toi Road

3.7.7.5 There are several original industrial sites along Sung Wong Toi Road intended to be redeveloped to residential sites. These sites would likely be affected by the proposed widening of Sung Wong Toi Road under the SEKD project.

3.7.7.6 Since these sites are immediately adjacent to Sung Wong Toi Road, semi-enclosure of the whole widened Sung Wong Toi Road would be required to achieve compliance with traffic noise standards for high-rise building in close proximity.

3.7.7.7 Site Nos. 4, 5 and 6 are CDA sites for which Site No. 5 was approved on 16 June 2000. These three sites were found affected by the proposed widening of Sung Wong Toi Road. A semi-enclosure of widened Sung Wong Toi Road was required to protect these receivers. Site 4 due to its proximity to junction between widened Sung Wong Toi Road and To Kwa Wan Road. Some exceedances of traffic noise standards are still likely with the semi-enclosure. However, the contribution from new road in this case would be less than 1 dB. Major contribution would be from existing roads. Further within-site measures are likely required to achieve acceptable noise levels.

3.7.7.8 The preliminary feasibility of constructing the tested semi-enclosure were assessed and there were several limitations identified:

- The access to Sung Wong Toi Road from development sites would be blocked or highly limited.
- Road safety sightline required for junctions would limit the extent of semi-enclosure
- The presence of existing clusters of utilities making the foundation not likely feasible unless performing large-scale diversion

3.7.7.9

To protect the proposed developments west of widened Sung Wong Toi Road, only a semi-enclosure in the form of a deck structure is effective in noise terms. However, existing Sung Wong Toi Road is congested with existing drains, sewers and box culverts, which occupy almost the full width of the widened road as shown in **Drawing No. 22936/HS/508** given in **Appendix 3B**. There is no space to provide support on the existing footway due to reduced footway width and congested drains and sewers. In addition, an existing box culvert is located at the middle of road below the central reserve which exclude the possibility of providing support at the central reserve. Hence it may only be possible to construct ordinary 5.5m high + 2.2m cantilever barrier along the eastside of widened Sung Wong Toi Road. However, in view of the limited benefit in protecting the proposed development on the opposite side, this is not recommended.

Table 3.16 Summary of Traffic Noise Impact to Existing NSRs

NSR	AP	Predicted Noise Level dB(A)		Remarks
		Unmiti-Gated	Miti-Gated	
Richland Gardens	9313, 9314, 9315, 9316	69-73	68-71	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with either overall noise level <70dB or contribution from new roads <1dB. • Impacts come from existing roads e.g. KTP and its interchange, PER. • Impacts from new roads are mitigated to acceptable levels.
Choi Hung Estate	9307, 9308, 9309, 9311	72-84	72-82	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with contribution from new roads <1dB. • Impacts come from existing roads e.g. KTP and its interchange, PER. • Impacts from new roads are mitigated to acceptable levels.
Rhythm Garden	9303, 9304, 9305, 9306	67-83	65-81	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with either overall noise level <70dB or contribution from new roads <1dB. • Impacts come from existing roads e.g. KTP and its interchange, PER. • Impacts from new roads are mitigated to acceptable levels.
Kowloon City Area	9201, 9202, 9203, 9204, 9205, 9206, 9207, 9208, 9209, 9210, 9211, 9212, 8213, 8214, 9215, 9216	64-84	62-83	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with either overall noise level <70 or contribution from new roads <1dB. • Impacts come from existing road PER • Impacts from new roads are mitigated to acceptable levels. • Benefit from the proposed low noise surfacing of PER
Tung Tau Estate Block 23	9501, 9502	68-73	66-72	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with either overall noise level <70 or contribution from new roads <1dB. • Impacts come from existing road PER • Impacts from new roads are mitigated to acceptable levels. • Benefit from the proposed low noise surfacing of PER
Lee Kou Yan Memorial School	9503, 9504	79-82	77-80	<ul style="list-style-type: none"> • Noise from new roads <65dB • All APs with either overall noise level <65 or contribution from new roads <1dB. • Impacts come from existing road PER • Impacts from new roads are mitigated to acceptable levels. • Benefit from the proposed low noise surfacing of PER
Ng Wah Collage, Sir Robert	9506, 9507, 9505	65-81	65-80	<ul style="list-style-type: none"> • Noise from new roads <65dB • All APs with either overall noise level <65 or contribution from new roads <1dB.

NSR	AP	Predicted Noise Level dB(A)		Remarks
		Unmiti-Gated	Miti-Gated	
Health Center				<ul style="list-style-type: none"> Impacts come from existing road PER Impacts from new roads are mitigated to acceptable levels. Benefit from the proposed low noise surfacing of PER
Wyler Garden	9106-9113	63-79	63-79	<ul style="list-style-type: none"> Noise from new roads <70dB All APs with either overall noise level <70dB or contribution from new roads <1dB. Impacts come from existing roads e.g. To Kwa Wan Rd, Kwei Chow St, Long Yuet St. Impacts from new roads are mitigated to acceptable levels.
Laguna Verde	9128, 9129	61-65	61-65	<ul style="list-style-type: none"> Within acceptable noise level 70dB Noise from new roads <70dB
Holy Carpenter Primary School	9122, 9123, 9124	64-73	64-73	<ul style="list-style-type: none"> Noise from new roads >65dB Contribution from new roads >1dB and is significant. Impacts also come from existing roads e.g. Kwei Chow St, Long Yuet St, Yuet Yuk Yat St. Impacts from new roads cause part of the exceedance. Noise from D1/D4 junction, difficult to mitigate The school presently has acoustical insulation and air-conditioning. Further mitigation measures on new road would not be benefit to the school.
Oblate Fathers Primary School	9125, 9126	62-64	62-64	<ul style="list-style-type: none"> Within acceptable noise level 65dB for façade affected by SEKD new roads Noise from new roads <65dB The school presently has acoustical insulation and air-conditioning.
Ma Tau Kok Area	9114-9119	71-78	71-78	<ul style="list-style-type: none"> Noise from new roads <70dB All APs with either overall noise level <70dB or contribution from new roads <1dB. Impacts come from existing roads e.g. Ma Tau Kok Rd, To Kwa Wan Road, Mok Cheong St. Impacts from new roads are mitigated to acceptable levels.
Laguna City	9401-9404	55-73	55-73	<ul style="list-style-type: none"> Noise from new roads <70dB around 55-66dB All APs with either overall noise level <70dB or contribution from new roads <1dB. Impacts come from existing road KTP and Wai Yip Street causing exceedance at 9401. Impacts from new roads are mitigated to acceptable levels.
Cha Kwo Ling Village, Cha Kwo Ling Housing Site (Planned)	9405-9407	55-66	55-66	<ul style="list-style-type: none"> Within acceptable noise level 70dB Noise from new roads <70dB
Ha Yuen Leng (also a planned site 22936/EN/276 site no. 13)	9001, 9002, 9003	73-83	73-83	<ul style="list-style-type: none"> Noise from new road T1 <70dB around 44-61dB All APs with contribution from new roads <1dB. Impacts come from existing road Choi Hung Road, Tate's Cairn Tunnel road. Impacts from new roads are within acceptable levels without mitigation.
Hollywood Plaza	9007, 9008, 9009	75-79	75-79	<ul style="list-style-type: none"> Noise from new road T1 <70dB and minor All APs with contribution from new roads <1dB. Impacts come from existing road Choi Hung Road, Tate's Cairn Tunnel road. Impacts from new roads are within acceptable levels without mitigation.
Chi Lin Temple	9010, 9011, 9012	73-75	73-75	<ul style="list-style-type: none"> Noise from new road T1 <70dB and minor All APs with contribution from new roads <1dB. Impacts come from existing road Choi Hung Road, Tate's Cairn Tunnel road. Impacts from new roads are within acceptable levels without mitigation.
San Po Kong Area	9508	73-76	73-75	<ul style="list-style-type: none"> Noise from new roads <70dB All APs with contribution from new roads <1dB. Impacts come from existing road PER Impacts from new roads are mitigated to acceptable levels.

Table 3.17 Summary of Traffic Noise Impact to Potential Planned NSRs

Outline Zoning Plan No.	Location	Drawing Reference for 22936/EN/276	AP	Predicted Noise Level dB(A)		Remarks
				Unmitigated	Mitigated	
S/K9/12	J/O Tai Wan Road and Dyer Avenue, Hung Hom. KIL , 11056 (New Phase of Laguna Verde)	Site No. 1	9128, 9129	61-65	61-65	<ul style="list-style-type: none"> • Within acceptable noise level 70dB • Noise from new roads <70dB
S/K10/12	R(E) Zones along Yuk Yat Street and Chi Kiang Street	Site No. 11	9130, 9131	65-73	65-73	<ul style="list-style-type: none"> • Noise from new roads <70dB around 50-62dB • All APs with either overall noise level <70dB or contribution from new roads <1dB. • Impacts come from existing road Hung Hom Road causing exceedance. • Impacts from new roads are mitigated to acceptable levels.
S/K10/12	R(E) Zones along Sheung Heung Road and To Kwa Wan Road	Site No. 10	9132	69-77	69-77	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with either overall noise level <70dB or contribution from new roads <1dB. • Impacts come from existing road To Kwa Wan Road. • Impacts from new roads are mitigated to acceptable levels.
S/K10/12	Gas Works, To Kwa Wan Road	Site No. 9	9133	69-77	69-77	<ul style="list-style-type: none"> • Noise from new roads <70dB • All APs with either overall noise level <70dB or contribution from new roads <1dB. • Impacts come from existing roads e.g. Ma Tau Kok Rd, To Kwa Wan Road. • Impacts from new roads are mitigated to acceptable levels.
S/K10/12	CAD(3), Sung Wong Toi Road	Site No. 6	9134	72-79	72-79	<ul style="list-style-type: none"> • Noise from the widened Sung Wong Toi Road >70dB • Contribution from new roads >1dB. • Mitigation measures at Sung Wong Toi Road were found not feasible to confirm at this stage see Section for details
S/K10/12	CAD(2), Sung Wong Toi Road	Site No. 5	9135	72-79	72-79	<ul style="list-style-type: none"> • Noise from the widened Sung Wong Toi Road >70dB • Contribution from new roads >1dB. • Mitigation measures at Sung Wong Toi Road were found not feasible to confirm at this stage see Section for details
S/K10/12	CAD(1), Sung Wong Toi Road	Site No. 4	9136	72-76	72-76	<ul style="list-style-type: none"> • Affected by both existing Olympic Avenue and Widened Sung Wong Toi Rd • Noise from the widened Sung Wong Toi Road >70dB • Contribution from new roads >1dB. • Mitigation measures at Sung Wong Toi Road were found not feasible to confirm at this stage see Section for details
S/K10/12	KIL 4013, Sung Wong Toi Road	Site No. 3	9137, 9138	73-80	73-80	<ul style="list-style-type: none"> • Affected mainly by existing PER and Olympic Avenue • Noise from the widened Sung Wong Toi Road <70dB • Contribution from new roads <1dB. • Impacts from new roads are within acceptable levels.

Outline Zoning Plan No.	Location	Drawing Reference for 22936/EN/276	AP	Predicted Noise Level dB(A)		Remarks
				Unmitigated	Mitigated	
S/K8/11	Two areas located in South-west of Shek Ku Lung Road Playground at junction of Lok Sin Road and Sa Po Road	Site No. 12	9217	75-78	74-77	<ul style="list-style-type: none"> Noise from new roads <70dB All APs with contribution from new roads <1dB. Impacts come from existing road PER Impacts from new roads are mitigated to acceptable levels. Benefit from the proposed low noise surfacing of PER
S/K11/12 A	Proposed Residential Development at King Fuk Street	Site No. 14	9218, 9219	74-85	74-83	<ul style="list-style-type: none"> Noise from new roads <70dB All APs with contribution from new roads <1dB. Impacts come from existing road PER Impacts from new roads are mitigated to acceptable levels. Benefit from the proposed low noise surfacing of PER

3.7.8 Constrains for Mitigation Measures on Roads with High Traffic

Existing Prince Edward Road East

3.7.8.1 Provision of direct measures particularly structural barriers on Prince Edward Road East has been considered carefully with the prospective of traffic impact and other related engineering issues. The section of Prince Edward Road East fronting Public Housing Site 1A is a Pink Route with three westbound traffic lanes and 1 additional lane from Kwun Tong Bypass. This is operating close to its capacity, with traffic volumes given in the following table. Installation of noise barrier over this section of Prince Edward Road would unavoidably involve lane closure at the westbound carriageway of Prince Edward Road, the effect of which will be outlined in **Table 3.18**. It has also been checked for the possibility of relieving the traffic at Prince Edward Road with the opening of Central Kowloon Route in year 2010.

Table 3.18 Traffic Volume for Prince Edward Road East after Possible Lane Closure

Traffic Volume	Year 2000			Year 2011		
	Pcu/hour	v/c Normal	v/c for lane closure*	Pcu/ hour	V/c Normal	v/c for lane closure
Main Westbound Carriageway	3,758	0.7	1.24	4,701	0.87	1.55
Slip Road from Kwun Tong Bypass	1,516	0.84	--	1,680	0.92	--

* Capacity from Table 2 of "Guideline on TIA and Daytime Ban Requirement issued from HyD.

3.7.8.2 It can be seen from the above that the remaining lane width after lane closure would not be sufficient to cope with the peak hour traffic flows. In addition, there will be the potential sighting distance issue, visual impact, minimum 1m clearance to either side of traffic after erection of noise barrier, congested utilities in the road, and construction safety etc to be overcome. As such, on traffic and other grounds, there will be practical difficulty of retrofitting noise barrier along Prince Edward Road as mitigation measure.

3.7.8.3 Furthermore, the buildings in the residential sites 2A, 1K and 1E may have maximum building heights in the range of 120m to 165m. In order to apply direct mitigation measures at source for these tall building sites, it would require a semi-enclosure or complete decking of Prince Edward Road East in the vicinity of these sites as a cantilever noise barrier would not be effective for high buildings. This is demonstrated in the noise contour plots **Drawing No. 22936/EN/285**. The affected line of 70dB(A) could be extended through these sites if no screening buildings/structures of sufficient height are provided.

3.7.8.4 The section of Prince Edward Road East fronting the related sites is a wide carriageway with a series of highway bridges at three locations:

- Near the western part of site 2A, there is a cluster of vehicular bridges of the “Kowloon City Interchange Improvement” at the junction of Prince Edward Road / Argyle Street / Ma Tau Chung Road;
- Near the eastern part of site 2A and opposite site 1K, there are two vehicular bridges which connect Prince Edward Road with the former Kai Tak Airport Passenger Terminal Building and which will be retained to link up with D3 of the SEKD road network; and
- Opposite site 1E, there are vehicular bridges of the “Prince Edward Road / Choi Hung Road Roundabout Improvement” at the junction of Prince Edward Road / Choi Hung Road.

3.7.8.5 All the existing vehicular bridges are required for the road network of the region. Due to tight geometrical constraints imposed by the existing buildings in the vicinity and the close distance between the road junctions Prince Edward Road / Argyle Street / Ma Tau Chung Road and Prince Edward Road / Choi Hung Road, it is impractical to relocate any of these existing bridges away from the development sites 2A, 1E and 1K.

3.7.8.6 The existing bridges were designed long time ago, in late '60 for the bridges at the two junctions and in mid '80 for the two bridges opposite site 1E, well before the development schemes of the SEKD were devised. Based on past experiences in bridge designs, it is believed that the bridge structures, particularly the foundations, would not be able to support the additional loads of new noise barrier / enclosure on the bridge decks. This is mainly because the transverse loads transmitted from the bridge deck to the substructures would be more than doubled due to the additional wind load on the noise barrier/enclosure. This would far exceed any reserve in the load carrying capacity in the deck substructures. Any direct mitigation measures of the traffic noise on these bridges will therefore need to be in the form of noise enclosure erected from the ground level. In order to maintain the required headroom for vehicles, the vertical level of the noise enclosure shall be at least 5.1m above the running surfaces of the vehicular bridges let alone possible provision for gantry sign and lighting, etc. As the bridges are in the order of 8m above ground level, this would infer that the barrier/enclosure will be over 13m tall, which is very high. For such tall enclosure, huge foundations are required.

3.7.8.7 Along Prince Edward Road outside the related sites, there are numerous existing underground utilities including storm water drainage pipes, sewers, fresh and salt water mains, telephone cables and electricity cables. In particular, there are a number of major underground utilities that are difficult, if not impractical, to divert, including:

- 1650 mm dia. sewer;
- 132kV electricity cables; and
- 30-36” fresh and salt water mains.

3.7.8.8 Due to the presence of the existing major utilities, and the existing subways and box culverts in the area, there is insufficient space in the ground for the foundations of noise enclosure, as shown in **Drawing Nos. 22936/HS/502 & 506**.

3.7.8.9 In accordance with EIAO-TM, after consideration and evaluation of all direct mitigation measures, it is recommended that direct measures in the form of low noise surfacing would be the best approach to reduce the traffic noise. Also, direct mitigation measures by setback of buildings and special building design, i.e. single aspect building, are adopted in the planning stage to reduce the exposure of sensitive receivers.

3.7.8.10 Moreover, the SABs proposed in sites 2A, 1K and 1E are facing inland. As for the aesthetics of SAB, it is considered that SAB can be designed to mitigate possible adverse visual impact, as for the SABs recently completed in Ma On Shan along Road P8. The possible adverse impact created may not be worse than that with a bulky semi enclosure or complete decking to

some of the existing flyovers at Prince Edward Road. Meanwhile, the development potential of the sites is maintained.

Existing Kwun Tong Bypass

- 3.7.8.11 Direct measures particularly structural barriers along Kwun Tong Bypass have been investigated with an aim to protect future developments in the SEKD. These consists of either a cantilever noise barrier or a full enclosure noise barrier. Both types are to be independent of the existing Kwun Tong Bypass bridge structure. The construction of the noise barrier to be erected along Kwun Tong Bypass is constrained by the existing and future site conditions around the area. For example, existing and proposed roads immediately below the Kwun Tong Bypass would obstruct the installation of supporting columns. For another section running from the exit of the petrol station adjacent to Kai Fuk Road to the earth bund of a slip road near Hong Kong Government Flying Service Building, preliminary investigation indicated that independent structure for noise mitigation measures would not be feasible in the area due to limited clearance space at the existing Kai Fuk Road to accommodate the supports. Direct measures on Kwun Tong Bypass would require independent structures and would not be feasible for the section near NAKTA.
- 3.7.8.12 To tackle the traffic noise problem, direct measures in the form of low noise surfacing are recommended for existing sections of Kwun Tong Bypass. This would be in junction with the proper planning of site usage.
- 3.7.8.13 Particularly for area 5K as shown in **Drawing No. 22936/HS/505**, noise barrier provision is constrained by the existing roads, flyovers and major trunk sewers. Provision of noise barrier to Kwun Tong Bypass can only be in the form of cantilever on one side and is at a distance of about 7m away within the existing boundary of the adjacent buildings. Also, the provision can only be made within the lot boundaries of the existing site. The acoustic effectiveness is also limited by the short length of barrier.
- 3.7.8.14 The bridge structures of Kwun Tong Bypass were constructed in 1990, before the development schemes of the SEKD were devised. The relevant design drawings of the bridge structures indicate that no provision has been allowed in the structures for future addition of any noise barrier on the deck. The bridge structures in this case may not be able to support the additional loads of new semi-enclosure on the bridge deck. This is mainly because the transverse loads transmitted from the bridge deck to the substructures will be more than doubled due to the additional wind load on the semi-enclosure. In addition, the top cantilever slab of the deck will not be adequate to take the additional loads of the semi-enclosure. Any direct mitigation measures of traffic noise on the elevated Kwun Tong Bypass will be therefore need to be in the form of semi-enclosure erected from the ground level. In order to maintain the required headroom for vehicles, the vertical level of the semi-enclosure will be at least 5.1m above the running surfaces of the bridge. As the bridge deck is about 12m above ground level, the semi-enclosure will be over 17 metres tall, which is very high. For such tall semi-enclosure, huge foundations are required.
- 3.7.8.15 There is only a narrow strip land between Kwun Tong Bypass and the existing lot boundary of site 5K. An existing 2500x2300 box trunk sewer culvert is running along the strip of land and it is a general DSD requirement that no foundation is permitted within three metres from the external edge of the sewer. This would preclude any foundation on the strip of land. Diversion of the trunk sewer would be extremely difficult, if not totally impossible. However, even, if sewer diversion is an option, the narrow strip of land is considered not sufficient for the foundation of the semi-enclosure (which requires a minimum width of about 5m). Similar constraints are also found for Kwun Tong Bypass near sites 5N2/5N3 and 4Q3 as illustrated in **Drawing nos.22936/HS/509 & 510**.

Road D1

- 3.7.8.16 As the proposed Shatin to Central Link (SCL) will run beneath Road D1, there will be no space to support the deck structure and semi-enclosure as noise measures. Whilst loading onto the railway station or tunnel will not be critical, the construction can only be made after the completion of SCL or alternatively integrated with the railway works. In addition, maintenance issues have to be resolved with the future railway operator. Other form of mitigation measures on railway reserve including the proposed noise barriers on Road D1 to protect Site 1D and Site 1E would therefore be subject to further investigation at the detailed design stage of Road D1. A detailed EIA study will be carried out for Road D1 as a Schedule 2 Designated Project under EIAO.

Sung Wong Toi Road

- 3.7.8.17 To protect the proposed developments west of widened Sung Wong Toi Road, only a deck structure is effective. However, existing Sung Wong Toi Road is congested with existing drains, sewers and box culverts, which occupy almost the full width of the widened road. There is no space to provide support on the existing footpath due to reduced footpath width and congested drains and sewers. In addition, an existing box culvert is located at the middle of road below the central reserve which exclude the possibility of providing support at the central reserve. Hence, it is only possible to construct ordinary 5.5m high +2.2m cantilever barrier along the eastside of widened Sung Wong Toi Road.
- 3.7.8.18 Existing utilities record indicated that the utilities underneath Sung Wong Toi Road are mainly serving the development on the west side. Relocating these utilities to the other side of Sung Wong Toi Road will require crossing over the existing shallow culvert along the median which do not have sufficient cover and the invert levels of the sewer/drain connection will crash with the existing culvert. It has also been a standard practice by DSD not to accommodate utilities/structure within the drainage reserve. Hence, utilities relocation is only possible along the north bound on the western side. Nevertheless, the utilities are already very congested and relocation is considered not possible.
- 3.7.8.19 Further investigation during the detail design stage or the EIA (Schedule 2 DP) stage for Sung Wong Toi Road Widening is recommended for formulating mitigation measures under the constraints. It is understood that Sung Wong Toi Road will be constructed before the site 2G(G/IC). The development of site 2G should allow flexibility in relation to the mitigation measures at widened Sung Wong Toi Road in terms of land requirements for barriers setup, alternative routing, diverted traffic, etc.

3.7.9 Summary of Proposed Mitigation Measures

- 3.7.9.1 In the development stage, landuse and transport planning has provided a proactive approach in minimizing the likely noise impacts from road traffic and other sources. The key measures included:
- Environmentally friendly public transportation;
 - Environmental friendly shuttle service;
 - Discourage through traffic movements;
 - Reducing noise at local levels;
 - Reducing demand for through traffic; and
 - Underground and depressed road design, and planning design.
- 3.7.9.2 The amount of vehicular traffic in SEKD has been much reduced with the highest flow being less than 2000 veh/hr. However, SEKD would still be bounded by high-traffic roads, namely Prince Edward Road East and Kwun Tong Bypass.

- 3.7.9.3 Direct measures at sources which have already provided in the proposed preliminary layout plan include:
- CKR continues to be underground until diverging to T2 and other roads near site 4A;
 - D4 goes underground at the Metropolitan park and continues to be a tunnel along the Kai Tak Runway Area down to site 5B;
 - T2 becomes a tunnel section going southeast between site 4N and the new typhoon shelter;
 - D5, the connector between NAKTA and Kai Tak Runway Area, changes to a tunnel section between site 4E and site 1L; and
 - Low noise surfacing for trunk roads with speed > 70 km/hr namely T1, T2 (exposed section) and CKR (exposed section).
- 3.7.9.4 Considering the level of impact indicated in the unmitigated scenario, the following measures (graphically shown in **Drawing Nos. 22936/TP/101-129 Layout Plan**) are recommended for consideration:
- 3.7.9.5 Mitigation measures for existing roads (Prince Edward Road East and Kwun Tong Bypass) affecting site 1E, 1K, 2A and 5K have been thoroughly examined and concluded to be not feasible to adequately protect noise sensitive façades at these sites. Some of the buildings are recommended to have special non-sensitive façades facing these existing roads like single aspect buildings.
- 3.7.9.6 Special site layout and building design may be required for sites which are affected by high traffic existing roads such as Prince Edward Road East and Kwun Tong Bypass. The proposals are:
- (i) Residential building blocks along Prince Edward Road East are suggested to be of single aspect design or with non-sensitive façade facing Prince Edward Road East for sites 2A, 1K and 1E. This could be in the format of medium-rise (20 to 35 storeys) special design buildings facing Prince Edward Road East and then higher ordinary buildings inwards.
 - (ii) Residential building blocks at site 5K are suggested to have single aspect design or non-sensitive façade facing Kwun Tong Bypass.
 - (iii) Hospital has been allocated to a noise-constrained site at 5L. Considering the current hospital design has include air conditioning, window insulation has to be provided for affected façades as a form of mitigation measure subject to the detail design of hospital.

Trunk Road T1

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Semi-enclosure T1-1 on T1 Nb	Semi-enclosure open on right side	710m	1A, 1A school sites, 1B, Rhythm Garden	Des O	HyD/TDD HyD	22936/TP/102, 105
Semi-enclosure T1-2 on T1 Nb	Semi-enclosure open on right side	830m	1B, 1C, 1C school sites	Des O	HyD/TDD HyD	22936/TP/105
Full enclosure T1-F1 in front of Richland Garden	Full enclosure	110m	Richland Garden, 1B	Des O	HyD/TDD HyD	22936/TP/105
Cantilever Barrier T1-C1 along T1 Sb	Cantilever barrier (5.5m vertical plus 2.2m extension)	290m	Rhythm Garden	Des O	HyD/TDD HyD	22936/TP/102
Cantilever Barrier T1-C2 along T1 Sb	Cantilever barrier (5.5m vertical plus 2.2m extension)	730m	Choi Hung Estate, Richland Garden	Des O	HyD/TDD HyD	22936/TP/102
Cantilever Barrier T1-C3 along T1 Sb	Cantilever barrier (5.5m vertical plus 2.2m extension)	160m	Choi Hung Estate, Richland Garden	Des O	HyD/TDD HyD	22936/TP/105
Low Noise Surface on T1	Friction course or similar	Whole T1	All NSRs along T1	Des O	HyD/TDD HyD	22936/TP/102, 105

Trunk Road T2

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier T2-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	220m	4E, 4E school sites, 4L, 4L school sites, 4M	Des O	TDD HyD	22936/TP/112
Cantilever Barrier T2-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	390m	4E, 4E school sites, 4B, 4L, 4L school sites, 4M	Des O	TDD HyD	22936/TP/112
Cantilever Barrier T2-3	Cantilever barrier (5.5m vertical plus 2.2m extension)	90m	4E, 4E school sites, 4L, 4L school sites, 4M	Des O	TDD HyD	22936/TP/112
Cantilever Barrier T2-4	Cantilever barrier (5.5m vertical plus 2.2m extension)	90m	4E, 4E school sites, 4L, 4L school sites, 4M	Des O	TDD HyD	22936/TP/112
Barrier T2-S1 On slip road joining T2	3m vertical barrier	440m	4E, 4E school sites, 4L, 4L school sites, 4M	Des O	TDD HyD	22936/TP/112
Barrier T2-S2 On slip road joining T2	3m vertical barrier	420m	4E, 4E school sites, 4L, 4L school sites, 4M	Des O	TDD HyD	22936/TP/112
T2 Semi-enclosure	Semi-enclosure with opening on north east side	170m	4E, 4E school sites, 4L, 4L school sites, 4M, 4R, 5K	Des O	TDD HyD	22936/TP/112
Cantilever barrier on the top of T2 Semi-enclosure to shield noise from KTB	Cantilever barrier (5.5m vertical plus 2.2m extension)	170m	4E, 4E school sites, 4L, 4L school sites, 4M, 4R, 5K	Des O	TDD HyD	22936/TP/115
Low Noise Surface on T2	Friction course or similar	Surface part of T2	4B, 4E, 4E school sites, 4L, 4L school sites, 4M, Laguna City, Cha Kwo Ling Village	Des O	TDD HyD	22936/TP/112

Distributor D1

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D1-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	300m	1D, 1E	Des O	TDD HyD	22936/TP/104
Cantilever Barrier D1-1A## (two segments separated by school entrance)	Cantilever barrier (5.5m vertical plus 2.2m extension)	185m	School Village 1L	Des O	TDD HyD	22936/TP/103, 104, 107
Barrier D1-1B##	5m Vertical Barrier	285m	1D, 1E	Des O	TDD HyD	22936/TP/104
Cantilever Barrier D1-1C###	Cantilever barrier (5.5m vertical plus 2.2m extension)	280m	1D, 1E	Des O	TDD HyD	22936/TP/104
Cantilever Barrier D1-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	75m	3X school site	Des O	TDD HyD	22936/TP/113
Cantilever Barrier D1-3	Cantilever barrier (5.5m vertical plus 2.2m extension)	65m	3Q school sites	Des O	TDD HyD	22936/TP/113
Cantilever Barrier D1-4	Cantilever barrier (5.5m vertical plus 2.2m extension)	40m	3Q school sites	Des O	TDD HyD	22936/TP/113

Subject to further investigation associated with railway reserve development and construction.

Distributor D2

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D2-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	60m	1C school site	Des O	TDD HyD	22936/TP/108
Cantilever Barrier D2-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	110m	1C school site	Des O	TDD HyD	22936/TP/109

Distributor D3

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D3-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	60m	1A, 1A school sites	Des O	TDD HyD	22936/TP/102
Cantilever Barrier D3-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	210m	1A, 1A school sites, 1E, 1E school sites	Des O	TDD HyD	22936/TP/101
Cantilever Barrier D3-3	Cantilever barrier (5.5m vertical plus 2.2m extension)	170m	1A, 1A school sites, 1E, 1E school sites	Des O	TDD HyD	22936/TP/101
Cantilever Barrier D3-4	Cantilever barrier (5.5m vertical plus 2.2m extension)	100m	1E, 1E school sites	Des O	TDD HyD	22936/TP/101, 104
Cantilever Barrier D3-5	Cantilever barrier (5.5m vertical plus 2.2m extension)	66m	1E, 1E school sites	Des O	TDD HyD	22936/TP/104

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D3-6	Cantilever barrier (5.5m vertical plus 2.2m extension)	55m	1E, 1E school sites, 1K	Des O	TDD HyD	22936/TP/101
Cantilever Barrier D3-7	Cantilever barrier (5.5m vertical plus 2.2m extension)	70m	1E, 1E school sites, 1K	Des O	TDD HyD	22936/TP/104
Cantilever Barrier D3-8	Cantilever barrier (5.5m vertical plus 2.2m extension)	70m	1E, 1E school sites, 1K	Des O	TDD HyD	22936/TP/104
Cantilever Barrier PER1 to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	120m	1A, 1A school sites	Des O	TDD HyD	22936/TP/102
Cantilever Barrier PER2 to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	130m	1A, 1A school sites	Des O	TDD HyD	22936/TP/101
Cantilever Barrier PER3 to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	40m	1A, 1E	Des O	TDD HyD	22936/TP/101
Cantilever Barrier PER4A to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	150m	1A, 1E, 1E school sites	Des O	TDD HyD	22936/TP/101
Cantilever Barrier PER4B to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	140m	1A, 1E, 1E school sites	Des O	TDD HyD	22936/TP/101
Cantilever Barrier PER5 to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	55m	1E, 1E school sites, 1K	Des O	TDD HyD	22936/TP/103
Cantilever Barrier PER6 to screen PER	Cantilever barrier (5.5m vertical plus 2.2m extension)	520m	1E, 1E school sites, 1K, 2A	Des O	TDD HyD	22936/TP/103

Distributor D4

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D4-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	55m	3B, 3Q	Des O	TDD HyD	22936/TP/113
Cantilever Barrier D4-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	60m	3C, 3P	Des O	TDD HyD	22936/TP/113

Distributor D5

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D5-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	220m	School village 1L	Des O	TDD HyD	22936/TP/104
Cantilever Barrier D5-1A	Cantilever barrier (5.5m vertical plus 2.2m extension)	125m	School village 1L	Des O	TDD HyD	22936/TP/104
Barrier D5-2	5m vertical barrier	320m	1D, 1E	Des O	TDD HyD	22936/TP/104
Cantilever Barrier D5-3	Cantilever barrier (5.5m vertical plus 2.2m extension)	140m	4E, 4E school sites, 4L, 4L school sites	Des O	TDD HyD	22936/TP/112

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Cantilever Barrier D5-4	Cantilever barrier (5.5m vertical plus 2.2m extension)	120m	4E, 4L, 4L school sites, 4M, 4R	Des O	TDD HyD	22936/TP/112
Cantilever Barrier D5-5	Cantilever barrier (5.5m vertical plus 2.2m extension)	130m	4L, 4L school sites, 4M, 4N school sites, 4R	Des O	TDD HyD	22936/TP/115
Cantilever Barrier D5-6	Cantilever barrier (5.5m vertical plus 2.2m extension)	120m	4E, 4L, 4L school sites, 4M, 4R	Des O	TDD HyD	22936/TP/112
Cantilever Barrier D5-7	Cantilever barrier (5.5m vertical plus 2.2m extension)	130m	4L, 4L school sites, 4M, 4N school sites, 4R	Des O	TDD HyD	22936/TP/115
Cantilever Barrier D5-8	Cantilever barrier (5.5m vertical plus 2.2m extension)	140m	4E,4E school sites, 4L, 4L school sites	Des O	TDD HyD	22936/TP/112
Cantilever Barrier D5-9	Cantilever barrier (5.5m vertical plus 2.2m extension)	140m	4E,4E school sites, 4L, 4L school sites	Des O	TDD HyD	22936/TP/112
Barrier D5-10	5m vertical barrier	290m	5J, 5J school site	Des O	TDD HyD	22936/TP/116, 121
Cantilever Barrier D5-11	Cantilever barrier (5.5m vertical plus 2.2m extension)	65m	5J school site	Des O	TDD HyD	22936/TP/116

Slip roads across Prince Edward Road East (PER)

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Semi-enclosure D1-E1	Semi-enclosure open on west side	430m	Rhythm Garden, 1A	Des O	TDD HyD	22936/TP/101
Semi-enclosure L1-E1	Semi-enclosure open on north side	150m	1A	Des O	TDD HyD	22936/TP/101

Local Roads

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Barrier L1-1	5m Vertical barrier	120m	1A, 1A school sites	Des O	TDD HyD	22936/TP/102, 105
Barrier L1/A-1	5m Vertical barrier	60m	1A, 1A school sites	Des O	TDD HyD	22936/TP/105
Barrier L1-2 along NB in front of 1B site	5m Vertical barrier	130m	1B	Des O	TDD HyD	22936/TP/105
Barrier L1-3 along SB	5m Vertical barrier	170m	Richland Garden	Des O	TDD HyD	22936/TP/105
Barrier L1-4 on central divider of L1	5m Vertical barrier	200m	Richland Garden	Des O	TDD HyD	22936/TP/102, 105
Barrier L1-5	5m Vertical barrier	130m	Richland Garden, 1B	Des O	TDD HyD	22936/TP/105

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
Barrier L2-1	Cantilever barrier (5.5m vertical plus 2.2m extension)	80m	1C	Dec O	TDD HyD	22936/TP/104
Barrier L4	1m Vertical barrier	115m	2B3/2B4 school site	Des O	TDD HyD	22936/TP/107
Barrier L15-1	3m Vertical barrier	130m	3X1 school site	Des O	TDD HyD	22936/TP/110
Cantilever Barrier L15-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	100m	3X1 school site	Des O	TDD HyD	22936/TP/110
Adjacent to School 3X3 at Long Yuet Street, two sections of cantilever barriers roadside and pedestrian path	Cantilever barrier (5.5m vertical plus 2.2m extension)	120m	3X3 School site	Des O	TDD HyD	22936/TP/113

Central Kowloon Route

Mitigation Measure	Type	Length	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
CKR Semi-enclosure	Semi-enclosure with opening on north side	120m	4A	Des O	HyD HyD	22936/TP/111
Barrier CKR-1	5.5m Vertical barrier	45m	4A	Des O	HyD HyD	22936/TP/111
Low noise surfacing for exposed section	N/A	N/A	4A	Des O	HyD HyD	22936/EN/377
Cantilever Barrier CKR-2	Cantilever barrier (5.5m vertical plus 2.2m extension)	80m	4A	Des O	HyD HyD	22936/TP/111

Kwun Tong Bypass

Mitigation Measure	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent
Modify the southern semi-enclosure in front of Richland Garden to become a full enclosure.	1A, 1B, 1C	Des O	TDD HyD

Note: The portion requires changing from semi-enclosure to full enclosure is outside Richland Garden and is not part of the Kwun Tong Bypass Structure. It belongs to the approach road to Tate Cairn's Tunnel. The deck structure is found on closely spaced portals with screenings on either side of the deck and over the top. The whole deck is almost completely shielded with a strip of opening of about 1500mm depth located just below the top cover on the side closer to the NAKTA Development.

Low Noise Surface on Existing Roads

Mitigation Measure	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent
Low noise surface is recommended for selected sections of Prince Edward Road East. These sections are supposed to be having non-interrupting traffic flow and level gradient as indicated in Drawing No. 22936/EN/283;	1A, 1B, Richland Garden, Choi Hung Estate, Rhythm Garden, 1E, 1K, 2A, Kowloon City	Des O	TDD HyD

Mitigation Measure	Target of protection	Implementation Stage (Des/C/O/Dec*)	Implementation Agent
Low noise surface is recommended for Kwun Tong Bypass for the exposed sections (not semi-enclosed sections) (most of the sections have already had low noise surface) from Choi Hung estate to Site 10 as indicated in Drawing No. 22936/EN/378;	4A	Des O	TDD HyD
Low noise surface is recommended for section of the existing of Kai Fuk Road from the Airport Tunnel portal to the interchange with Wai Yip Street;	4A	Des O	TDD HyD

Note: All proposed low noise surfacing should be designed to the design guidelines/practice notes issued by HyD Guidance Note No. RD/GN/010A.

Note:

*Des/C/O/Dec: Design/Construction/Operation/Decommissioning;

HD: Housing Department;

PlanD: Planning Department;

HyD: Highways Department;

TDD: Territory Development Department.

DLO: District Land Office of Lands Department.

- 3.7.9.7 All these proposed measures are subject to the configuration of development layout plans and the relative heights/orientation of surrounding receivers. It is suggested to specify the compliance rate for each development site and an environmental assessment has to be carried out by the developer to demonstrate the results with reference to the concurrent situations particularly the development status and layout of adjacent sites.
- 3.7.9.8 The developers/owners of the planned sites are responsible for designing their own layouts with the recommendation stipulated in the EIA Report. In case an alternative layout is proposed, the relevant developer/owner should prove that the new layout could meet equivalent or better environmental standards as given in the EIA report. In case for sites with residential developments, the environmental performance in this EIA study is found to be 100% ie full compliance with EIAO-TM road traffic noise standard of 70 dB(A) for residential facades. The relevant developers/owners should be aware of the site constraints assumed in this EIA.
- 3.7.9.9 Some of the building-end facades with angle of view of 180 degrees would be subject to excessive traffic noise level. It is recommended that openable window for ventilation should be avoided locating at the concerned façade meaning the façade should have blank façade or non-openable window. The measure is termed “avoid openable window at building-end façade” or simply “avoid openable window (AOW)” in this EIA Report. With the recent relaxation of planning guidelines, it is anticipated that more innovative design of environmental friendly buildings could be developed in the future. Ideas like provision of balconies and building fins could be readily achieving similar noise reduction effects as “AOW”.
- 3.7.9.10 It is considered that certain development constraints must be imposed since it is not feasible to enclose all the distributors serving development themselves while providing junctions for change of directions and pedestrian access to the transportation system. Taking road D1 as an example, it has a traffic flow of about 1700 veh/hr. Without screening, it would require more than 50m for setback. The developments on both sides of D1 are high-rise residential development. If there were no development constraints, whole D1 would require complete enclosure to achieve full compliance. Complete enclosure of D1 would hinder the function of serving traffic orientated from these developments and also pedestrian access and linkage to bus stops or the shuttle system. Air quality may be a potential concern associated with passengers waiting inside the full enclosure for riding the shuttle system. The visual and landscape impact at street-scape level may also a concern as well. The current proposal for noise mitigation measures provides an optimisation between transport needs and potential traffic noise pollution. At the first level, developments along D1 are proposed to have a podium or non-sensitive base level structure to avoid being too close to road noise sources. Further, traffic noise problem experienced by NSRs is relatively minor. After careful planning, most of the essential façades are within the acceptable level. In this case, only façade with large angle of view at the building-end directly facing D1 is affected with slight exceedance. “AOW” is proposed as a remedial treatment for these remaining facades. Alternative designs e.g. balconies, special bay window, building fins and environmental friendly designs are encouraged during layout design.
- 3.7.9.11 Within-site measures that have been used/assumed in this layout plan for assessment are given in **Drawing Nos. 22936/TP/101-129**.
- 3.7.9.12 School sites would require a combination of direct and indirect measures in order to achieve the traffic noise standard. It should be noted that peak hour traffic flows have been adopted in the assessment of impact from road traffic. One special point to be noted here is that school hours are often the period between 8:30am to 4:00pm for which the traffic flows may not be as high as peak hours for most of the time. The actual noise levels experienced may be better than predicted.

- 3.7.9.13 The overall compliance rate for EIAO-TM standard 65 dB(A) for all school classrooms in SEKD is found to be about 77% after direct mitigation measures. The remaining 22% of the classrooms would need further indirect mitigation in the form of acoustic insulation and air conditioning. The relative low-rise nature of schools can benefit most from noise barrier shielding. Most of them could be achieved noise level less than or similar to residential standard of 70 dB(A). The common reasons for the need of indirect measures are practical difficulty in retrofitting structural noise mitigation at existing roads like Prince Edward Road East and Kwun Tong Bypass, sightline, road safety and the need to maintain opening for local road junctions, local pedestrian and transportation access.
- 3.7.9.14 **Table 3.20** below summaries the mitigation measures recommended for school sites. School boundary wall of 3m high is recommended for some of the affected schools. School walls higher than 3m would introduce unpleasant visual outlook from both inside and outside.

Table 3.19 Summary of the Essential Noise Mitigation Measures/Assumptions Used in the Conceptual Layout Plan in Relation to Traffic Noise

Site	Measures/Assumptions used in the Conceptual Layout Plan	Descriptions/Remarks	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
1A-R1(RS) 1B-R1(RS) 1C-R1(HOS)	Layout plan provided by HD as shown	N/A	Des	HD	22936/TP/101, 102, 104, 105, 108, 109 22936/EN/280A, 280B
1D-R1(HOS)	Setback from the D2	Not less than 30m from the west site boundary	Des	HD	22936/TP/104
	Setback from the D1	Not less than 10m from the north site boundary	Des	HD	22936/EN/280B
	Podium along D1	13.5m high podium	Des	HD	
1E-R1	Setback from the D3	Not less than 50m from the east site boundary	Des	PlanD/DLO and future developer	22936/TP/104
	Setback from the D1	Not less than 20m from the south site boundary	Des	PlanD/DLO and future developer	22936/EN/280A
	Podium along D1 and D2	15m high podium	Des	PlanD/DLO and future developer	
	Single-aspect building	2 blocks along PER	Des	PlanD/DLO and future developer	
	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8413, 8418,	Des	PlanD/DLO and future developer	
1K-OU(R1)	Setback from the D1	Not less than 15m from the site boundary	Des	PlanD/DLO and future developer	22936/TP/103 & 104
	Podium along D1	25m high podium with depot for shuttle system underneath	Des	PlanD/DLO and future developer	22936/EN/280C
	Single-aspect building	2 blocks along D3/PER	Des	PlanD/DLO and future developer	
	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8535	Des	PlanD/DLO and future developer	
2A-OU(R1)	Setback from D1	Not less than 25m setback from podium edge along D1	Des	PlanD/DLO and future developer	22936/TP/103 & 107
	Setback from PER	Not less than 95m setback from podium edge west for buildings not screened by single-aspect building	Des	PlanD/DLO and future developer	22936/EN/280C
	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8656, 8661, 8681, 8686, 8692, 8697, 8733, 8739	Des	PlanD/DLO and future developer	
	Single-aspect building	6 blocks along D3/PER	Des	PlanD/DLO and future developer	
	Podium	25m high podium with rail depot underneath	Des	PlanD/DLO and future developer	
2B-R1	Setback from D1	Not less than 25m setback from podium edge along D1	Des	PlanD/DLO and future developer	22936/TP/107
	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/EN/280C
2C-R1	Setback from L4	Not less than 20m and 23m from site boundary as indicated	Des	PlanD/DLO and future developer	22936/TP/107
2E-R1	Setback from D1	Not less than 14m from site boundary	Des	PlanD/DLO and future developer	22936/TP/107 & 110
	Setback from L4	Not less than 9m from site boundary	Des	PlanD/DLO and future developer	
	Setback from L3	Not less than 16m and 25m from site boundary as indicated	Des	PlanD/DLO and future developer	
	Podium	15m high podium	Des	PlanD/DLO and future developer	
2F-R1	Setback from the D1	Not less than 25m setback from north site boundary	Des	PlanD/DLO and future developer	22936/TP/107
	Setback from the L3	Not less than 10m setback from east site boundary	Des	PlanD/DLO and future developer	22936/EN/280D
	Setback from the L4	Not less than 10m setback from south site boundary	Des	PlanD/DLO and future developer	
	Podium	10-15m high podium	Des	PlanD/DLO and future developer	
	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8973, 8978, 8983	Des	PlanD/DLO and future developer	
3B-R2	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/TP/113 22936/EN/281B
3C-R2	Podium	10-15m high podium	Des	PlanD/DLO and future developer	22936/TP/113 22936/EN/281B
3P-R1	Setback from the D4	Not less than 30m setback from north site boundary	Des	PlanD/DLO and future developer	22936/TP/113
	Podium	10-15m high podium	Des	PlanD/DLO and future developer	22936/EN/281B
3Q-R1	Setback from the D4	Not less than 30m setback from south site boundary	Des	PlanD/DLO and future developer	22936/TP/113 22936/EN/281B

Site	Measures/Assumptions used in the Conceptual Layout Plan	Descriptions/Remarks	Implementation Stage (Des/C/O/Dec*)	Implementation Agent	Drawing Reference
	Setback from the L15	Not less than 10m setback from north site boundary	Des	PlanD/DLO and future developer	
	Podium	15m high podium	Des	PlanD/DLO and future developer	
3R-R1	Avoid openable windows at indicated building-end facades	Façade indicated by assessment point: 8709	Des	PlanD/DLO and future developer	22936/TP/110 22936/EN/281A
3S-R1	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/TP/110 22936/EN/281A
	Podium	15m high podium	Des	PlanD/DLO and future developer	
3T-CDA	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/TP/110 22936/EN/281A
3V-R1	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/TP/110
	Avoid openable windows at indicated building-end facades	Façade indicated by assessment point: 8876	Des	PlanD/DLO and future developer	22936/EN/281A
4A-R2	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8004, 8025	Des	PlanD/DLO and future developer	22936/TP/111 22936/EN/282A
4B-R1(HOS)	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8060	Des	HD	22936/TP/111 22936/EN/282A
4E-R1(RS)	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8153, 8158, 8163	Des	HD	22936/TP/112 22936/EN/282A, 282C
4L-R1(RS)	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8281, 8288	Des	HD	22936/TP/116 22936/EN/282B, 282C
4M-R1(HOS)	Avoid openable windows at indicated building-end facades	Façade indicated by assessment points: 8307, 8314, 8321	Des	HD	22936/TP/116 22936/EN/282D
4R-R1(HOS)	Setback from the L9	Not less than 10m setback from the boundary along L9	Des	HD	22936/TP/116 22936/EN/282D
4S-R1	Setback from the L9	Not less than 15m setback from the boundary along L9	Des	PlanD/DLO and future developer	22936/TP/115 22936/EN/282D
5C-R2	Setback from the D4	Not less than 15m setback from the north site boundary	Des	PlanD/DLO and future developer	22936/TP/121
	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/EN/282F
5G-R1	Setback from the D4	Not less than 15m setback from the south site boundary and 20m setback from the east site boundary	Des	PlanD/DLO and future developer	22936/TP/121 22936/EN/282F
	Podium	15m high podium	Des	PlanD/DLO and future developer	
5H-R1	Setback from the D5	Not less than 25m setback from the north site boundary	Des	PlanD/DLO and future developer	22936/TP/116
	Podium	15m high podium	Des	PlanD/DLO and future developer	22936/EN/282E
5J-R1(HOS)	Setback from the D4	Not less than 20m setback from the east site boundary	Des	HD	22936/TP/121
	Setback from the D5	Not less than 25m setback from the east site boundary	Des	HD	22936/EN/282F
	Podium	15m high podium	Des	HD	
5K-CDA	Single-aspect building	4 blocks along Kwun Tong Bypass	Des	PlanD/DLO and future developer	22936/TP/116
	Setback from the D5	Not less than 25m setback from the southeastern site boundary	Des	PlanD/DLO and future developer	22936/EN/282E
	Podium	15m high podium	Des	PlanD/DLO and future developer	

Note:

*Des/C/O/Dec: Design/Construction/Operation/Decommissioning;

HD: Housing Department;

PlanD: Planning Department;

DLO: District Land Office of Lands Department.

PlanD is responsible for outline zoning plan and outline development plan only .

Table 3.20 Summary of Mitigation Measures Within School Sites

School Site	Compliance Rate for Sensitive Classrooms with EIAO-TM Standard				Summary of Recommended Mitigation Measures Within School Site	Drawing Reference	Measures Outside School Site to be Part of the Road Projects
	Without Measures	With direct measures	With direct and indirect measures	Classroom required indirect measures			
1A6 SS	0%	81%	100%	Auxiliary block 3/F- 6/F (2-5dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing site 1A, and the large auxiliary block facing KTBP/PER and the small auxiliary block facing school 1A7. Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/102	N/A
1A7 North PS	0%	76%	100%	Classroom block 6/F only (3dB)	<ul style="list-style-type: none"> The school building is set in an orientation with classroom block facing the residential blocks of site 1A, and the auxiliary block facing school 1A8 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/105	N/A
1A8 South PS	52%	52%	100%	Classroom block 3/F- 6/F (2-3dB)	<ul style="list-style-type: none"> The school building is set in an orientation with classroom block facing the residential blocks of site 1A, and the auxiliary block facing school 1A7 Boundary wall of 3m high Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/105	N/A
1C2 PS	100%	N/A	N/A	N/A	N/A	22936/TP/104&108	N/A
1C3 PS	0%	39%	100%	Classroom block corridor side 3/F-6/F (3-4dB) Auxiliary block 3/F (1dB)	The school building is set at an orientation with the classroom block facing site 1C and the auxiliary block facing school 1C4 Acoustic insulation and air conditioning for classrooms in exceedance of standard	22936/TP/108	5.5m+2.2m cantilever barrier along pedestrian path of D2 next to the carpark at site 1B
1C4 SS	0%	72%	100%	Auxiliary block all floors (3-5dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the residential blocks of site 1C, the large auxiliary block facing the car park and the small auxiliary block facing school 1C3 Acoustic insulation and air conditioning for classrooms in exceedance of standard 	22936/TP/108	5.5m+2.2m cantilever barrier along pedestrian path of D2 next to the carpark at site 1B
1E9 PS	0%	56%	100%	Classroom block corridor side 6/F (3dB) Auxiliary block all floors (1-8dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the residential blocks of site 1E, the large auxiliary block facing site 1K and the small auxiliary block facing school 1E10 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/104	5.5m+2.2m cantilever barrier along D3
1E10 SS	0%	39%	100%	Classroom block corridor side 3/F-6/F (3-7dB) Auxiliary block 3/F (1-3dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the residential blocks of site 1E, the auxiliary block facing school 1E1 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/104	5.5m+2.2m cantilever barrier along D3
1E11 SS	30%	81%	100%	Auxiliary block 3/F-6/F (1-6dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing school 1E10, the large auxiliary block facing PER and the small auxiliary block facing road L15 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/104	5.5m+2.2m cantilever barrier along D3

School Site	Compliance Rate for Sensitive Classrooms with EIAO-TM Standard				Summary of Recommended Mitigation Measures Within School Site	Drawing Reference	Measures Outside School Site to be Part of the Road Projects
	Without Measures	With direct measures	With direct and indirect measures	Classroom required indirect measures			
1L PS	21%	52%	100%	Classroom block 3/F-6/F (9dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing D1, the auxiliary block facing site 2B Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 104	5m vertical barrier on central reserve along D5 5.5m+2.2m cantilever barrier along D1 & D5
1L SS	36%	100%	N/A	N/A	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the stadium, the large auxiliary block facing D5 and the small auxiliary block facing site 2B Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 104 & 108	5m vertical barrier on central reserve along D5 5.5m+2.2m cantilever barrier along D5
1L PS	91%	100%	N/A	N/A	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the stadium, the auxiliary block facing D5. 	22936/TP/ 104 & 108	5.5m+2.2m cantilever barrier along D1
1L SS	100%	N/A	N/A	N/A	The school building is set at an orientation with the classroom block facing the stadium, the large auxiliary block facing the primary school and the small auxiliary block facing D5	22936/TP/ 107	5.5m+2.2m cantilever barrier along D1
1P SS	100%	N/A	N/A	N/A	N/A	22936/TP/ 108	N/A
1P SS	100%	N/A	N/A	N/A	N/A	22936/TP/ 108	N/A
1P PS	27%	27%	100%	Classroom block all floors (3-4dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the Kai Tak Tunnel Administration building and the auxiliary block facing the CKR Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 108	N/A
1P PS	100%	N/A	N/A	No exceedance	N/A	22936/TP/ 111	N/A
2A9 SS	30%	64%	100%	Classroom block corridor side 6/F (4dB) Auxiliary block 3/F (1-4dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2A10 and the auxiliary block facing the depot with landscape deck over 3m school boundary wall along boundary facing PER Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 107	N/A
2A10 PS	72%	81%	100%	Auxiliary block all floors (2-6dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2A10 and the large auxiliary block facing the school 2A11 and the small auxiliary block facing school 2A9 3m school boundary wall along boundary facing PER Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 107	N/A

School Site	Compliance Rate for Sensitive Classrooms with EIAO-TM Standard				Summary of Recommended Mitigation Measures Within School Site	Drawing Reference	Measures Outside School Site to be Part of the Road Projects
	Without Measures	With direct measures	With direct and indirect measures	Classroom required indirect measures			
2A11 PS	19%	58%	100%	Classroom block corridor side 3/F-6/F (1-5dB) Auxiliary block 3/F (5dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2A10 and the auxiliary block facing the building in site 2A (2A1) 3m school boundary wall along boundary facing PER Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 103	N/A
2B3 SS	100%	N/A	N/A	N/A	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2B4 and the non-sensitive auxiliary block facing road L4 3m school boundary wall facing L4 	22936/TP/ 103	1m vertical barrier along central reserve of L4
2B4 PS	100%	N/A	N/A	N/A	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing the school 2B3 the auxiliary block facing site 2B 3m school boundary wall facing L4 	22936/TP/ 103	N/A
3X1 PS	15%	27%	100%	Classroom block all floors (1-4dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing road L15 and the auxiliary block facing the ESS at 3X4. 3m school boundary wall on school boundary wall of the school and on the boundary facing To Kwa Wan Road Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 110	5.5m + 2.2m cantilever barrier along pedestrian path of L15 5m vertical barrier along central reserve of L15
3X3 SS	0%	74%	100%	Classroom block top floors (5 dB) Auxiliary block top floors (3dB)	<ul style="list-style-type: none"> The school building is set at an orientation with the classroom block facing To Kwa Wan Road, the large auxiliary block facing road D4, and the small auxiliary block facing school 3X1 3m school boundary wall around the school except on the boundary where there would be a cantilever barrier Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 113	5.5m+2.2m cantilever barrier along pedestrian path of D1
3M2 SS	100%	N/A	N/A	N/A	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing site 3M, and the auxiliary block facing L8 	22936/TP/ 113	N/A
3Q4 PS	70%	100%	N/A	N/A	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing the local road, and the auxiliary block facing school 3Q5 3m school boundary wall along the eastern boundary 	22936/TP/ 113	5.5m+2.2m cantilever barrier along pedestrian path of D1
3Q5 SS	72%	100%	N/A	N/A	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing site 3B R2, the large auxiliary block facing L15, and the small auxiliary block facing school 3Q4 3m school boundary wall along the northern boundary 	22936/TP/ 113	5.5m+2.2m cantilever barrier replacing school boundary wall / along D1
4E2 PS	15%	76%	100%	Classroom block corridor side 6/F (2dB)	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 4E3, and the auxiliary block facing site 4E R1. Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 112	Barriers on D5 and T2

School Site	Compliance Rate for Sensitive Classrooms with EIAO-TM Standard				Summary of Recommended Mitigation Measures Within School Site	Drawing Reference	Measures Outside School Site to be Part of the Road Projects
	Without Measures	With direct measures	With direct and indirect measures	Classroom required indirect measures			
4E3 SS	19%	100%	N/A	N/A	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 4E2, the large auxiliary block facing D5, and the small auxiliary block facing site 4E R1 	22936/TP/ 112	Barriers on D5 and T2
4L3 PS	15%	39%	100%	Classroom block corridor side 3F-6/F (2-4dB) Auxiliary block 1/F-3/F (1- 3dB)	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 4L4, and the auxiliary block facing site 4L R1. 3m school boundary wall on boundary facing D5 and the corner facing site 4B8 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 112	Barriers on D5 and T2
4L4 SS	0%	81%	100%	Auxiliary block 3/F-6/F (2- 4dB)	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 4L3, the large auxiliary block facing D5, and the small auxiliary block facing site 4L R1. 3m school boundary wall around school except on wall facing school 4L3 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 115	Barriers on D5 and T2
4N2 SS	28%	81%	100%	Auxiliary block 3/F-6/F (2-3dB)	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 4N3, the large auxiliary block facing D5, and the small auxiliary block facing site 4M R1. 3m school boundary wall part of the boundaries facing D5 and L9, and along the whole boundary facing school 4L4 Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 115	Barriers on D5 and T2
4N3 PS	15%	45%	100%	Classroom block 3/F-6/F (2-4dB) Auxiliary block 3/F (3dB)	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 4N2, and the auxiliary block facing L9. 3m school boundary wall part of the boundaries facing D5, and along the whole boundary facing site 4P Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 115	Barriers on D5 and T2
5J3 PS	100%	N/A	N/A	N/A	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing road L16, and the auxiliary block facing site 5J R1 3m school boundary wall on the boundary facing L10 and L16. 	22936/TP/ 121	N/A
5J4 SS	72%	100%	N/A	N/A	<ul style="list-style-type: none"> The school is set at an orientation with the classroom block facing school 5J3, the large auxiliary block facing L10, and the small auxiliary block facing site 5J R1 3m school boundary wall from boundary facing L10 to part of boundary facing D5 	22936/TP/ 121	5.5m+2.2m cantilever barrier on pedestrian path of D5 5m vertical barrier on central reserve of D5
5L2 SS	61%	61%	100%	Classroom block 6/F (1dB) Auxiliary block 1/F- 3/F (7-9dB)	<ul style="list-style-type: none"> Indirect measures in the form of acoustic insulation and air conditioning for affected classrooms 	22936/TP/ 116	N/A

3.7.10 Evaluation of Residual Impact

- 3.7.10.1 Provided that mitigation measures are implemented, no residual impact is expected for residual development. All residential developments in SEKD are 100% complied with the traffic noise standard.
- 3.7.10.2 School sites would need a combination of direct and indirect measures in order to achieve full compliance.
- 3.7.10.3 There are some residual impacts to planned NSRs arising from the proposed widening of Sung Wong Toi Road. The residual impact would impose constrains for future application of redevelopment of existing industrial sites. Further consideration in the mitigation measures or alternative alignment design should be explored in the next stage of study when detail assessments of constrains imposed by underground utilities could be examined in full details.
- 3.7.10.4 For Road D1, some mitigation measures are proposed on the railway reserve or tunnel area. Further investigation to assess the feasibility and design details is recommended for the next stage of study.

3.8 Impact from Railway Noise

- 3.8.1.1 The railway network comprising the existing MTR Kwun Tong Line and the proposed Shatin to Central Link (SCL) forms the backbone of public transportation for the future development. The future Kai Tak (KTA) and To Kwa Wan (TKW) Stations of SCL would be at central locations of the SEKD area easily accessible from the Kai Tak North Apron and town centre areas.
- 3.8.1.2 The proposed SCL line would be underground and operational noise impact is therefore controlled and contained. In addition, the railway depot together with the approach rail fan located at Site 2A and Site 1J would be concealed to shield the noise generated from maintenance activities and related train movements. Insurmountable impact is therefore not expected under these circumstances. The proposed railway depot would be located at immediately below the podium of the residential buildings at Site 2A. To summarize, potential noise impact arising from the depots are expected to be minimal provided that the following measures are considered:
- Adopt a complete podium decking over noisy depot facilities and rail tracks;
 - Enclose or screen the approaching rail tracks
- 3.8.1.3 The SCL project itself would be a designated project under the EIAO. Available information in this SEKD study may not be sufficient to cover all the environmental issues particularly those outside SEKD boundary. A separate EIA is recommended to address the environmental impacts under the EIAO.

3.9 Impact from Shuttle System - LRT/Trolley Bus

- 3.9.1.1 The shuttle service provides an environmental friendly and efficient feeder system to the railway network. A number of transport modes have been assessed in a Working Paper by adopting a robust Multi-Criteria Decision Analysis (MCDA) approach. As a result, LRT/Trolley Bus has been identified to be the more preferred options. Given the similar high score for LRT/Trolley Bus System, a provision has been made in the layout for either system. The market force may perhaps determine the ultimate choice. As tendering for the shuttle service would occur close to the time when Shatin to Central Link is scheduled to be commissioned (i.e. between the years 2008 and 2011), the factors prevalent at that time may