

3.0 DESCRIPTION OF THE ENVIRONMENT

The area surrounding the proposed road works is a typical urban setting and consists predominately of high-rise residential buildings and educational institutions. The existing noise environment is dominated by heavy road traffic along the existing Lei Yue Mun Road, Kai Tin Road and Yau Tong Road. The prevailing traffic noise levels at the existing noise sensitive receivers (NSRs) along Lei Yue Mun Road and Kai Tin Road are in the range of 50-82 dB(A). In view of the heavy traffic using Eastern Harbour Crossing and Lei Yue Mun Road, vehicular emissions would be the major air quality impacts to the air sensitive receivers (ASRs) along Lei Yue Mun Road. High concentration of air pollutants, such as NO₂ and RSP are expected.

Victoria Harbour is the downstream receiving water body and is located outside the construction area, at a distance of approximately 360m from the nearest works area at the western slip roads. There are a number of small streams and surface drainage channels on the hillslopes to the east of Lei Yue Mun Road. These streams enter culverts that join the existing stormwater drainage system in the area. As the works limit of the Project is located within the Consultation Zone of Sai Tso Wan Landfill, precautionary measures may be required during construction and operation phases of the Project to prevent landfill gas migration.

4.0 ASSESSMENT FINDINGS

4.1 Construction Noise

Noise from construction activities would result in potential impact on the noise sensitive receivers (NSRs) located in the vicinity of the work sites. Unmitigated construction noise levels at the representative NSRs have been predicted for different scenarios and are in the range of 54 to 90dB(A). The results indicate that the noise levels at most of the NSRs would exceed the EIAO-TM noise criteria.

Noise control measures would be required to mitigate the noise levels to the EIAO-TM noise criteria. Mitigation measures recommended include good site practices, the use of quiet plant and movable noise barriers.

With the adoption of the recommended control measures, all the residential NSRs could be protected against the construction noise impact. Nevertheless, the noise levels at the schools during some noisy construction activities would still exceed the EIAO-TM criterion of 70dB(A) for schools by 1-4dB(A). However, the on-site survey also revealed that all the affected schools have already been noise insulated. Additional noise reduction of around 10dB(A) to 15dB(A) can be achieved depending on the type of insulation. Nonetheless, to further reduce the potential noise impacts at the schools, it is recommended that the particularly noisy construction activities should be scheduled to avoid examination period and concurrent operation.

4.2 Road Traffic Noise

Noise result from the operation phase of the proposed road alignment would mainly be generated by traffic noise from the open road sections. The potential

road traffic noise impacts associated with the Project were assessed for the maximum traffic flows in 2022.

The modelling results indicate that about 2220 residential dwellings and 130 classrooms are predicted to experience noise levels exceeding the EIAO-TM traffic noise criteria, if unmitigated. Hence direct mitigation measures would be required.

The recommended mitigation measures for minimizing the traffic noise impact associated with the proposed alignment include the following:

- Two sections of noise canopies (total of about 105m long) and a noise semi-enclosure (about 50m long) for the section of Lei Yue Mun Road in front of EHC Housing Site Phase 1;
- A 7.7m high with 3m horizontal cantilevered noise barrier of about 115m long for the northbound carriageway of Lei Yue Mun Road in front of St. Antonius Primary School;
- A 62m long noise semi-enclosure for the southbound carriageway of Lei Yue Mun Road in front of St. Antonius Girls College;
- A 70m long noise canopy for the northbound carriageway of Lei Yue Mun Road leaning against the podium of Yau Tong Estate Redevelopment Phase 3; and
- Low Noise Road Surfacing on new roads.

Figure 4.1 shows the locations of the above-mentioned noise mitigation measures, and Figures 4.2 to 4.4 illustrate the typical cross sections for the cantilevered noise barrier, noise canopy and noise semi-enclosure.

With the implementation of the recommended mitigation measures, the mitigated noise levels from new roads at all residential NSRs are predicted to be below 70dB(A) and the new roads contribution at most of the residential NSRs are less than 1dB(A) to the overall noise levels. On the other hand, the mitigated noise levels at the educational NSRs still exceed the noise criteria due to both existing and new road contributions. However, on-site inspection verified that all these schools have been noise-insulated with either Type I window or Type II window. It is considered that a noise reduction of less than 10dB(A) for Type I window and less than 15dB(A) for Type II window can be achieved if the windows are kept closed.

The predicted noise levels at about 540 residential dwellings and 30 classrooms could be reduced by at least 1dB(A). About 250 dwellings are likely to have the overall noise level mitigated to meet the EIAO-TM noise criterion. The effectiveness of the recommended mitigation measures is summarized in Table 1.

The residual impacts have been assessed against the Exco's noise insulation criteria. The result shows that no residential dwellings or schools would meet the noise insulation criteria, and therefore, indirect technical remedies in the form of window insulation and air conditioning would not be required.

Table 1 Effectiveness of Recommended Mitigation Measures

Area	Estimated Number of Residential Dwellings/Classrooms			
	Exceed the Noise Criteria ¹	Exceed the Noise Criteria with New Roads Contribution > 1dB(A)	Protected within Criteria ¹	Benefited ([≥] 1dB(A))
Sceneway Garden	350	0	0	0
Hong Tin Court	160	0	0	0
Ping Tin Estate	520	0	0	0
Hong Pak Court	0	0	35	10
EHC Housing Site	620	15	120	250
Yau Tong Estate Redevelopment	320	0	95	280
Total	1970	15	250	540
Classrooms				
Five Districts' Business Welfare Association Szeto Ho Secondary School	25	0	0	0
S.K.H. Kei Hau Secondary School	25	0	0	0
St. Antonius Primary School	30	30	0	30
St. Antonius Girls College	25	0	0	25
Buddhist Ho Nam Kam Prevocational College	25	0	0	0
Total	130	30	0	55

Note:

¹ 70dB(A) for residential dwellings and 65dB(A) for schools

4.3 Air Quality

During the construction phase, adverse dust impacts are predicted, especially for those receivers immediately adjacent to Lei Yue Mun Road. However, with the implementation of mitigation measures such as watering the site twice a day and instigating a comprehensive dust monitoring and audit programme, no adverse impacts would occur. During the operation phase, no adverse air quality impact is predicted at the air sensitive areas. Therefore, no mitigation measures are required.

Under the worst case scenario, no adverse air quality is predicted inside the proposed underpass. Nevertheless, the detailed design of the underpass should ensure that the air quality inside the underpass must meet the tunnel air quality guidelines.

4.4 Landfill Gas Hazards

The results of a qualitative risk assessment of landfill gas hazard posed by Sai Tso Wan Landfill suggest that the level of landfill gas hazard at the concerned area of the Project Site is medium. Therefore, protection measures to minimize landfill gas hazard at the concerned area of the Project Site have been recommended. These protection measures include some safety procedures to ensure the safety of workers/personnel at the site during the construction phase

and the safety of workers/personnel inside the service ducts/chambers during the operation phase. Furthermore, monitoring of methane, carbon dioxide and oxygen in excavations during the construction phase and in service ducts/chambers during the operation phase have been recommended.

4.5 Water Quality

The potential water quality impacts arising from the construction and operation of the proposed Lei Yue Mun Road underpass and associated improvement works have been assessed. It is concluded that construction run-off and drainage generated during the construction works for the project will have minimal impacts on the receiving waters provided that mitigation measures are implemented. With the adoption of the recommended mitigation measures, no unacceptable residual impacts on water quality impact are anticipated.

4.6 Landscape and Visual

The landscape resources within the Study Area are not of exceptional value. Substantial parts of the slopes above Lei Yue Mun Road are vegetated, comprising a mosaic of hillside scrub woodland. These are likely to be remnants of former hill slope vegetation with the addition of fruiting trees introduced during former squatter occupation.

The landscape character of the Area is typically urban fringe, with the natural topography and vegetation heavily modified by various incoherent features, which serve to give it a somewhat degraded and inharmonious character. The changes in level over this area and the disparate assemblage of natural and human features mean that this is a landscape, which is unarticulated, incoherent and degraded. Its sensitivity to further development is low.

Parts of the Study Area are designated 'Green Belt' (GB). Metroplan further identifies parts of the Site as an area for Landscape Protection and forming a 'strategic landscape connection' between adjacent Green Belt areas.

The visual amenity of the landscape in and around the Study Area is generally low. Key views have been identified from Devil's Peak (Pau Toi Shan), and the Sai Tso Wan Recreational Centre. The visual envelope for the proposed works is limited but contains visually sensitive receivers in the high rise residential properties of:

- Sceneway Garden, Hong Tin Court, Ping Tin Estate, and the future residential development above Yau Tong Station, all have views along the road corridor.
- Hong Nga Court, Hong Pak Court, and Kwong Tin Estate have views across the line of the road, which are partly obscured by landform or vegetation.
- Ko Chun Court and Ko Yee Estate, at some distance from the proposed works.

Visual receivers of medium sensitivity include St. Antonius' Girls College, St. Antonius' Primary School, SKH Kei Hau Secondary School, Ambulance Depot on Lei Yue Mun Road, Ko Chiu Road Rest Garden and drivers on Lei Yue Mun Road / Kai Tin Road, all located very close to the works.

Landscape and visual impacts have been assessed both during the construction period, at Day 1 of operation with mitigation measures newly implemented and at Year 10, when mitigation planting is assumed to be mature.

Impacts will include the effects of regraded slopes, including the amount and quality of the vegetation they support, the presence of new highways structures including the footbridge over Kai Tin Road, the noise mitigation structures, the underpass and retaining structures and the widened road and realigned junctions, and proposed sitting out area and rest garden. Indirect effects will arise from any increase in the volume or physical extent of vehicular traffic.

The project's only significant impacts will occur during the construction stage and will therefore be temporary only. These comprise:

- significant impact on the nature of the Green Belt landscape designation of the area above Lei Yue Mun Road, and on the 'strategic landscape connection' identified by Metroplan, through loss of existing vegetation,
- significant loss of landscape resources including the sitting out area (moderate negative) and existing scrub / secondary woodland vegetation (low negative),
- low negative impacts on landscape character and visual amenity, moderate negative impacts on two key views,
- moderate negative visual impacts on residents of surrounding high rise towers on adjacent slope areas above and below the study area, and users of educational and recreational facilities immediately adjacent to the road corridor.

Mitigation of landscape and visual impacts include:

- minimizing potential impacts through the careful layout and design of components and their mode of construction, to avoid disturbance of existing features
- remedial measures comprising architectural and chromatic treatment of new built elements of the Project, re-provisioning of disturbed features, replanting of vegetation etc.
- compensation measures, additional positive elements (e.g. tree planting) to balance negative impacts elsewhere within the scheme.

Figure 4.5 illustrates the landscape master plan with proposed mitigation measures. With the proposed mitigation measures, in particular the grassing and woodland planting of disturbed slopes and architectural detailing of new structures, it will be possible to ensure that landscape or visual impacts resulting from the proposed highways works are reduced to low or negligible levels either during operation at Day 1 or in the long term by Year 10. In the case of the Green Belt and the 'strategic landscape connection' identified by Metroplan, the proposed planting works would have a low positive impact in the long term.

As the proposed development gives rise to no significant construction impacts, which cannot be mitigated, i.e. has no residual high or moderate negative landscape or visual impacts, it is considered to be 'acceptable with mitigation measures'.

The Tree Survey Report identifies some 228 individual trees and a further 426 no. mature trees growing in groups on slopes alongside the road. The proposed

works would require the removal of 110 no. individual trees including ones in the tree group. Of which 71 no. have been adjudged suitable for transplanting (on the basis of their ability to survive such an operation) while the others will need to be felled. An application to fell or transplant any trees for this project will need to be made during detailed design stage in accordance with WBTC No. 18/94.

Proposed planting measures include the planting of heavy standard trees in the following locations:

- Roadside areas including the toe planter along Lei Yue Mun Road – 195 no.
- Re-provisioned sitting out area (2 sites) – 92 no.
- Amenity area – 22 no.