7.0 LANDSCAPE & VISUAL IMPACT ASSESSMENT

7.1. Scope and Content of the Study

The scope of this Study is to carry out a detailed assessment of all the landscape and visual impacts resulting from the proposed road works, including associated noise mitigation and footbridge structures, and slope stabilization works, and recommend suitable landscape and visual mitigation measures to minimize the impacts to acceptable levels.

The limit of the landscape impact study is 500m from the limit of the proposed road works. The limits of the visual impact studies are the zones of visual influence (ZVIs) of the works during the construction and operation phases

The project is a Designated Project under the EIA Ordinance, however the assessment has been carried out in accordance with the technical requirements given in the Study Brief and the relevant Technical Circulars listed below under Section 1.2. Both construction and operation impacts are assessed.

The assessment includes:

- Introduction; a list of the relevant environmental legislation and guidelines; definition of the scope and contents of the study; and description of the assessment methodology;
- baseline study; review of the relevant planning and development control framework; description of the baseline landscape and visual context of the study area;
- identification of the potential landscape and visual impacts and prediction of their magnitude and potential significance; recommendation of appropriate mitigation measures and associated implementation programmes: estimation of potential residual landscape and visual impacts; and
- conclusions and recommendations

7.2. Environmental Legislation and Guidelines

The following legislation, standards and guidelines are applicable to the evaluation of landscape and visual impacts associated with the construction of the school site:

- Environmental Impact Assessment Ordinance (Cap.499.S.16) and the Technical Memorandum on EIA Process (EIAO-TM), particularly Annexes 10 and 18;
- Hong Kong Planning Standards and Guidelines;
- WBTC No. 25/93 - Control of Visual Impact of Slopes;
- WBTC No. 18/94 - Management and Maintenance of both Natural Vegetation and Landscape Works;
- WBTC No. 24/94 [PELBTC No. 3/94] – Tree Preservation;
- GEO (1999) – Use of Vegetation as Surface Protection on Slopes;
- WBTC 25/92 – Allocation of Space for Urban Street Trees;
- HyDTC 6/98 – Visibility of Directional Signs;
- PELBTC 10/98 – Procedures for Environmental Impact Assessment of Development Projects;
- WBTC 17/2000 – Improvement to the Appearance of Slopes.

7.3. Assessment Methodology

The landscape and visual impact assessment identifies the impacts of the proposed development upon the resources that make up the landscape, upon the character of that landscape and upon the visual amenity of the Study Area.

For the purposes of assessment, a clear distinction is drawn between the assessment of *landscape impacts* and the assessment of *visual impacts*:

Landscape impacts are impacts on the intrinsic fabric (i.e. natural landform, vegetation, geology, drainage etc.) and indirectly upon the character of a landscape: that is, upon the combination of natural and man-made components that go together to give a landscape its specific identity.

Visual impacts are impacts upon the views of the landscape of individual viewers (known as *receptors*). Visual impact assessment involves the identification of receptors who will be affected by a change to a given view, (be they residents, those working in the landscape, travelling through it, or using it as a recreational resource) and an assessment of the impacts of that change.

Landscape and visual impact assessment is not an objective science but is based upon a structured and systematic evaluation of predicted impacts informed by professional judgement and experience.

The methodology adopted for this Initial Assessment consists of:

1. Identification of Baseline Landscape and Visual Conditions
2. Identification of Potential Sources of Impact
3. Assessment of Potential Landscape and Visual Impacts
4. Mitigation of Impacts
5. Conclusions

These stages are described in detail in the following paragraphs:

Identification of Baseline Landscape and Visual Conditions

In order to identify clearly the impacts of a proposed development, it is necessary to establish the baseline landscape and visual conditions. This is performed through desk study and verified through field survey. The following aspects of the site are appraised:

- landscape context
- land uses
- vegetation
- topography
- features
- geology and soil
- climate and microclimate
- landscape character
- key views of the development
- identity of viewers
- statutory designations appertaining

Identification of Sources of Impact

The key potential landscape and visual impacts of the proposed development are next identified. Impacts can result from each of the project's basic components. Impacts can also be direct, indirect (e.g. traffic resulting from construction works), positive or negative.

Assessment of Potential Impacts

Both the landscape and visual impacts of the development are assessed at this stage.

Landscape Impacts

Landscape impacts are assessed at two levels:

- impacts upon individual landscape resources.
- aggregate impacts upon landscape character.

'Landscape resources' are the natural and man-made physical features which combined, make up the landscape itself (e.g. geology, vegetation, watercourses, buildings etc). 'Landscape character' is the aggregate effect or impression created by this combination of physical resources.

Landscape impacts are assessed as a function of the magnitude of an impact and the sensitivity of the landscape resource or landscape character. Sensitivity of landscape character is a measure of its ability to accommodate change without prejudice to its intrinsic character. Sensitivity of a landscape resource is a measure of the condition and the importance of that landscape resource. Factors affecting the degree of sensitivity of landscape resources or character include maturity, distinctiveness, quality and rarity. Factors affecting the magnitude of change include scale, compatibility, reversibility and duration.

Significant impacts are assessed as high, moderate or low. All insignificant impacts are termed *negligible*. Positive impacts are assessed as 'high positive', 'moderate positive' or 'low positive'. The matrix given in Table 7.1 below is used to assess landscape impacts.

Table 7.1 Matrix for Assessment of Significance of Landscape Impact

	SENSITIVITY OF LANDSCAPE RESOURCE/CHARACTER		
MAGNITUDE OF CHANGE	**High**	**Medium**	**Low**
Large negative	Very high negative	High negative to Moderate negative	Moderate negative to Low negative
Medium negative	High negative to Moderate negative	Moderate negative to Low negative	Low negative
Small negative	Moderate negative to Low negative	Low negative	Low negative to Negligible
Insubstantial	Negligible	Negligible	Negligible
Small positive	Moderate positive to Low positive	Low positive	Low positive to negligible
Medium positive	High positive to Moderate positive	Moderate positive to Low positive	Low positive
Large positive	Very high positive	High positive to Moderate positive	Moderate positive to Low positive

Visual Impacts

Visual impacts are assessed against two types of receiver. These are the *key views* of the Site, as well as the *viewers* who will be affected. Visual impacts are defined as a function of the sensitivity of a receiver and the magnitude of the change to that receiver's view.

The assessment of visual impacts is structured by receiver sensitivity. Receivers are identified through the definition of the development's visual envelope (i.e. the area within which views of the development are possible). For the purposes of this study, receivers have been grouped into the following categories:

- Residential people who would view the scheme from their home
- Occupational people who would view the scheme from their workplace
- Travelers people who would view the scheme from vehicles or on foot
- Recreational people who would view the scheme whilst engaging in recreational activities

The sensitivity of receivers to visual impacts is influenced by the immediate context of the viewer, the activity in which they are engaged and the value that they attach to this location in particular and the ability of landscape to accommodate changes. Receivers are categorized as being of high negative, moderate negative or low negative sensitivity to visual impacts. The population of VSR group also affects the degree of sensitivity of visual receivers. Other factors considered include the value of existing views, availability and amenity of alternative views.

Those who view the scheme from their homes are considered to be high negatively sensitive to any visual intrusion. This is because the attractiveness, or otherwise, of the view will have a notable effect on a residents' general quality of life and acceptability of their home environment.

Those people who view the scheme from their workplace are considered relatively less sensitive to visual intrusion. This is because they are employed in activities where visual outlook plays a less important role in the perception of the quality of the working environment. They are classified as a low negative sensitivity group.

For those who view the scheme whilst engaging in outdoor leisure pursuits, visual sensitivity varies depending on the type of recreational activity. Those taking a stroll in a park, for example, would be classified as a high negative sensitivity group compared to football players who would have a low negative sensitivity rating.

For those people who view the scheme from public thoroughfares, the degree of visual intrusion experienced depends on the speed of travel and whether views are continuous or only occasional. Generally, the slower the speed of travel and the more continuous the viewing experience, then the greater the degree of sensitivity.

The criteria used to determine the magnitude of change to a view are given below:

- value of existing views
- degree of change to views
- proximity of receivers
- availability and amenity of alternative views
- degree of visibility

Factors affecting the magnitude of change also include scale, compatibility, reversibility and duration.

Significant threshold of impacts is assessed as 'high negative', 'moderate negative' or 'low negative'. All insignificant impacts are termed negligible. Positive impacts are assessed as 'high positive', 'moderate positive' or 'low positive'. The matrix given in Table 7.2 below is used to assess visual impacts.

Table 7.2 Matrix for Assessment of Significance of Visual Impact

	SENSITIVITY OF KEY VIEW/VISUAL RECEIVER		
MAGNITUDE OF CHANGE	**High**	**Medium**	**Low**
Large negative	Very high negative	High negative to Moderate negative	Moderate negative to Low negative
Medium negative	High negative to Moderate negative	Moderate negative to Low negative	Low negative
Small negative	Moderate negative to Low negative	Low negative	Low negative to Negligible
Insubstantial	Negligible	Negligible	Negligible
Small positive	Moderate positive to Low positive	Low positive	Low positive to negligible
Medium positive	High positive to Moderate positive	Moderate positive to Low positive	Low positive
Large positive	Very high positive	High positive to Moderate positive	Moderate positive to Low positive

The assessment of impact significance does not take into account the numbers of receivers in any given group, but is rather an assessment of the significance threshold of an impact upon a single receiver within that group, at a given location. A rough indication of the numbers of receivers in any given group at any given location is however given in this assessment and this should be considered when fully evaluating the implications of impact significance.

Mitigation Proposals

Negative landscape and visual impacts identified during the assessment process are where possible, subject to specific mitigation proposals and are thus ideally 'designed-out'.

Conclusions

A summary of the results of the landscape and visual impact assessment is given and an assessment made of the impacts under the Technical Memorandum of the Environmental Impact Assessment Ordinance.

7.4 Baseline Conditions

Landscape Baseline

Landscape impacts are assessed against landscape designations, landscape resources and landscape character. Baseline conditions for these issues are set out below negative.

Review of the Planning and Development Control Framework

Metroplan, the strategic planning document for the urban conurbation of Hong Kong, identifies parts of the Project Site as an area for Landscape Protection and Enhancement (Figure 17 - 'Urban Design Statement - Key Plan'). Metroplan policy with regard to Landscape Protection and Enhancement areas is to "protect and enhance views of major landscape features – in particular, avoid intrusive 'skyline' development; ensure that any new development and redevelopment does not prejudice surrounding landscape in terms of height, bulk, shape, colour and site formation and identify target areas for reinstatement of degraded landscape." ('Metroplan - The Selected Strategy Executive Summary', p.39).

Part of the Study Area is designated 'Green Belt' (GB) in the Approved Cha Kwo Ling, Yau Tong, Lei Yue Mun Outline Zoning Plan No. S/K15/11. According to the Explanatory Statement for the OZP No. S/K14S/7 and S/K15/12, the "GB" zone covers mainly steep hillslopes which are unsuitable for urban development and are retained in their natural state. There is a general presumption against development within the "GB" zone.

The locations of relevant designated areas are shown in Figure 7.1.

The proposed road widening along Lei Yue Mun Road would encroach into areas currently zoned GB and G/IC (but which have no specific use at present), and the Outline Zoning Plan would therefore, require amendment.

Landscape Resources

Generally, the landscape resources within the Study Area are not of exceptional value. Views of the Study Area Landscape are given in Figure 7.2 and 7.3, and illustrations of the landscape resources of the Study Area are given in Figure 7.4.

The Study Area lies on the mid levels of the south side of Black Hill (Ng Kwai Shan), a hill reaching a height of 304mPD. The Study Area itself slopes steeply from northeast to southwest and much of the northeastern side of it comprises cut rock or shotcreted slopes above Lei Yue Mun Road, which are often extremely steep. The highest point of the Site is at around 70mPD whilst the lowest is at around 30mPD. Much of the topography over the Study Area is dramatic and striking, though it is often compromised by shotcreting. There are however striking and moderate negatively valuable rock slopes along the Eastern Harbour Tunnel access road as well as east of the interchange between Lei Yue Mun Road and Kai Tin Road (Figure 7.4). The sensitivity of the existing topography to change is considered to be medium.

The underlying geology of the Site consists of igneous rock, comprising granites and porphyritic granite (known as 'Hong Kong Granite' from the Upper Jurassic period. This rock is common across Kowloon and north Hong Kong Island (per Atherton, M.J. and Burnett, A.D.). Its sensitivity to change is considered to be low.

Soils on the Kowloon ridgeline consists generally of red-yellow podsols, which are common across the New Territories and Lantau. These are acid soils with low negative organic content and comprise completely decomposed granitic material (per Grant, C.J). Their sensitivity is considered to be low.

Like most of Hong Kong, the prevailing winds are from the east or northeast. This means that the Site is sheltered from winds for much of the year by the ridge of hills in northeast Kowloon, resulting in increased humidity and temperatures on the Site. Mean annual rainfall in the area is between 2400mm and 2800mm, roughly average for Hong Kong (per Dudgeon, D. and Corlett, R.). Substantial parts of the Study Area are vegetated, comprising a mosaic of hillside scrub woodland. Typical tree species include *Acacia confusa*, *Macaranga tanarius*, *Hibiscus tiliaceus* and *Ficus microcarpa,* all of which are commonly found in Hong Kong. These woodlands are likely to be remnants of former hill slope vegetation with the addition of fruiting and amenity trees introduced during former squatter occupation of the slopes. They have been modified more recently by slope stabilization works. In some areas the tree / scrub vegetation is quite sparse with area of rough open grass, in other areas they are more dense. Collectively they form a moderately valuable landscape resource for their visual amenity rather than their ecology. (Figure 7.2 and 7.3). The sensitivity of the existing vegetation to change is considered to be medium. A description of the mature trees within the study area is given in the Tree Survey Report.

A number of small stream courses emanate or originate on the upper slopes of the Study Area. These are all ephemeral and while contributing to the diversity of the site, they are generally not of any special value as landscape features. The largest of these stream courses which forms a rocky gully near Lei Yue Mun Road is however a landscape feature of moderate value (Figure 7.4). Their sensitivity to change is considered to be low. 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 Study Area is not known to contain any graves, temples, fung shui woodlands or corridors or other features of particular cultural value. There is however a small privately managed public sitting out at the intersection of Lei Yue Mun Road and Kai Tin Road. The sitting out area, is within a G/IC zone on the OZP, and is located on a steep slope. It comprises a number of small paved areas on different levels, set amongst ornamental shrubs and trees (Figure 7.4). Their sensitivity to change is considered to be medium.

Landscape Character

The landscape character area in which the Study Area lies has been termed the Lam Tin Hillsides Landscape Character Area (LCA). The hillsides south-east of Lam Tin form a gap or island of semi-natural landscape in the conurbation of south-east Kowloon. This area of landscape extends from Lam Tin Estate in the north and west and includes Sai Tso Wan and the hillsides down as far as Cha Kwo Ling in the south. In the east it is defined by Pik Wan Road and by Lei Yue Mun Road.

The area comprises steeply sloping hillsides which are either natural, rocky, vegetated, or which have been shotcreted or buttressed. The vegetated slopes are important in giving relief to the many urban or human elements in the landscape. Generally however, this is an urban fringe landscape much disturbed by various incoherent features, which serve to give it a somewhat degraded and inharmonious character. These features include Lei Yue Mun Road and its associated slopes, the Eastern Tunnel Toll Plaza, highways structures, Sai Tso Wan Landfill and ongoing housing development. The dramatic 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 therefore considered to be medium.

Visual Baseline

The Project's visual baseline is established by reference to the extent of its visibility, to its visual amenity, the character of key views and by the views of visual receivers at various locations.

Visibility

The location of key views, visually sensitive receivers and baseline visual envelope of the Site are identified in Figure 7.5. Views of the Study Area are given in Figures 7.6 and 7.7.

To the north, the visual envelope is defined by dense high negative-rise residential development above Lam Tin MTR Station (Sceneway Garden) which forms a 'wall' through which only very limited glimpses are possible. To the

northeast and east, steeply rising ground and lines of high negative-rise residential towers along Pik Wan Road provide a barrier to views from further away.

To the south east, the visual envelope extends as far as higher ground on Devil's Peak, whilst to the west and south west, development and the landform around Sai Tso Wan Landfill screen views from the lower areas of the Kowloon coast to the west.

Key Views

The locations of key views of the Site are identified in Figure 7.5. The characteristics of these views are noted in Table 7.3 below. On the whole key views are notable for their 'scenic' qualities and are generally experienced by recreational receivers who deliberately go to a specific location in order to take in the view.

Table 7.3 Characteristics of Key Views

Location	Type of View	View Valued Due To	Sensitivity of View	Distance to Subject Site	See Figure No.
Sai Tso Wan	Panorama	Recreational node	Low	Circa 50m	Figure 7.5 and 7.6
Devil's Peak (Pau Toi Shan)	Panorama	Elevation/ Recreational Node	Low	Circa 800m	Figure 7.5 and 7.7

Visual Amenity

The visual amenity of the landscape in and around the Study Area is generally low negative. It contains a complex assemblage of visually disparate features of different scales and visual qualities, which bear little visual relationship to each other. These features include shotcrete slopes, construction sites, highways complex infrastructure, Sai Tso Wan landfill, the Eastern Harbour Tunnel toll plaza, existing large scale residential development and ongoing development (Figure 7.6 and 7.7). These features offer a marked contrast with the natural visual qualities of the landscape, such as rock slopes and vegetated hillsides. This unarticulated contrast between the man-made and the natural gives rise to a visual amenity, which is complex, incoherent and visually discordant. The value of visual amenity is therefore low negative.

Visual Receivers

The identity and characteristics of key visual receivers in this Study are set out in Table 7.4 and their locations shown in Figure 7.5.

Table 7.4 Sensitive Visual Receivers

Ref.	Location of Receiver	No. of Receivers at any Given Point of Time	Type of Receiver	Type and Quality of View	Duration of View	Distance to Works
VR1	Sceneway Garden (Towers 7,8 and 9)	Many	Residential	Vista /Good	Constant	50m
VR2	Hong Tin Court (upper 50% of storeys only)	Many	Residential	Vista / Moderate	Constant	50m
VR3	Peng Tin Estate	Many	Residential	Vista / Very Good	Constant	50m
VR4	Hong Nga Court (upper 70% of storeys only)	Many	Residential	Vista / Good	Constant	150m
VR5	Hong Pak Court (upper 70% storeys only)	Many	Residential	Vista / Very Good	Constant	100m
VR6	Kwong Tin Estate (upper 70% of storeys only)	Few	Residential	Vista / Good	Constant	150m
VR7	Ko Chun Court (upper 20% of storeys only)	Many	Residential	Vista / Good	Constant	200m
VR8	Ko Yee Estate (upper 20% of storeys only)	Many	Residential	Vista / Good	Constant	250m
VR9 (A)	Yau Tong MTR Station Development (under construction)	Many	Residential	Vista / Good	Constant	10m
VR9 (B)	EHC Development (under construction)	Many	Residential	Vista / Good	Constant	10m
VR10	St.Antonius' Girls College	Many	Occupational	Vista / Poor	Periodic	10m
VR11	St.Antonius' Primary School	Many	Occupational	Vista / Poor	Periodic	50m
VR12	Kei Hau Secondary School	Many	Occupational	Vista / Poor	Periodic	10m
VR13	Ambulance Depot	Very Few	Occupational	Vista / Poor	Periodic	10m
VR14	Sezto Ho Secondary School	Many	Occupational	Vista / Poor	Periodic	10m
VR15	Ho Nam Kam Buddhist School	Many	Occupational	Vista / Moderate	Periodic	20m
VR16	Sai Tso Wan Recreational Centre	Few	Recreational	Panorama / Very Good	Intermittent	50m
VR17	Ko Chiu Road Playground	Few	Recreational	Vista / Poor	Intermittent	10m
VR18	Devil's Peak (Pau Toi Shan)	Few	Recreational	Panorama / Very Good	Intermittent	800m
VR19	Lei Yue Mun Road/Kai Tin Road/Eastern Harbour Tunnel	Very Many	Travelling	Vista / Moderate	Intermittent	10m
VR20	Tseung Kwan O Cemetery Road	Few	Travelling	Panorama / Very Good	Intermittent	800m

7.5 Potential Impacts

In this section, the potential *sources* of landscape and visual impact are described and the *significance* of impacts is assessed.

Landscape and visual impacts are assessed both during the construction period as well as during the operational life of the project. Operational impacts are assessed at Day 1 of operation with mitigation measures newly implemented and at Year 10, when mitigation planting is assumed to be mature. Year 10 impacts are assumed also to be residual impacts.

Sources of Impact

This section describes the sources of landscape and visual impact resulting from the proposed Works, during construction and operation. The most significant elements of the Project that will give rise to potential impacts are:

- Slope works;
- Underpass and associated retaining structures;
- Realigned carriageways, and junction improvements;
- Proposed footbridge;
- Proposed noise structures;
- Associated lighting and signage;
- Vehicular traffic both during construction and the future operation of the roads;
- Relocation of Leisure and Cultural Services (LCSD) sitting out area.

Construction impacts will include the effects on views and viewers of re-grading of slopes, consequent loss of vegetation, the presence of construction machinery for a protracted period and construction works on the underpass, noise structures, footbridge, sitting out area and road widening. Indirect impacts on views will result from movements of construction traffic around the site.

Impacts during operation will result from a number of sources. These will include the effects re-graded slopes, including the long term balance in the amount and quality of the vegetation they support, the presence of new highways structures including the footbridge over Kai Tin Road, the noise canopies and semi-enclosures, the underpass and retaining structures and the widened road and realigned junctions. Indirect effects will arise from any increase in the volume or physical extent of vehicular traffic.

7.6 Landscape and Visual Impacts during Construction

Landscape and visual impacts are assessed both during the construction period as well as during the operational life of the project. Operational impacts are assessed at Day 1 of operation and at Year 10, when mitigation planting is assumed to be mature. Year 10 impacts are assumed also to be residual impacts.

Landscape Impacts

Landscape impacts are summarized in Table 7.5. The following is a commentary on the significance of various landscape impacts.

Table 7.5 Summary of Landscape Impact

LANDSCAPE RECEIVER	SOURCE OF LANDSCAPE IMPACT	SENSITIV-ITY OF RESOURCE	MAGNITUDE OF IMPACT		IMPACT DURING CONSTRU-CTION	IMPACT AT YEAR 1	MITIGATION MEASURES	IMPACT AT YEAR 10
Landscape Resources								
Geology (Solid and Drift)	Regrading of slopes on Kai Tin Road and excavation of tunnels	Low	Insubstantial		Negligible	Negligible	conservation of CDG/CDV for re-use during re-soiling works	Negligible
Topography	Regrading of slopes on Kai Tin Road and excavation of tunnels	Medium	Insubstantial		Negligible	Negligible	variation in re-profiled slopes	Negligible
Vegetation	loss of limited area existing secondary woodland	Medium	Large negative	2950 sq.m	Moderate Negative	Low Negative	replanting : street trees 650 lin.m slope planting 3150 sq.m toe planters 350 lin.m	Low Positive
Drainage/Stream Courses	Works to lower part of stream course	Low	Large negative	250 lin.m	Low Negative	Low Negative	reinstate natural rocky stream	Low Negative
Open Space	Landscape Sitting Out Area / Corridor at Sceneway Road (G/IC facility - privately managed)	Medium	Large negative	1900 sq.m	Moderate Negative	Low Negative	reprovisioning of sitting out area. New area 1900 sq. m	Negligible
Landscape Character								
Lam Tin Hillsides Landscape Character Area	regraded slopes, construction machinery, excavation of tunnels, widened highways and realigned junctions, tunnel portals, relocated sitting out area, footbridge	Medium	Medium negative		Moderate Negative	Low Negative	replanting of trees, colouring of shotcrete slopes, architectural design of footbridge, relocation of sitting out area, architectural treatment of, retaining walls and structures.	Negligible

Table 7.5 Summary of Landscape Impact (Cont'd)

LANDSCAPE RECEIVER	SOURCE OF LANDSCAPE IMPACT	SENSITIV-ITY OF RESOURCE	MAGNITUDE OF IMPACT		IMPACT DURING CONSTRU-CTION	IMPACT AT YEAR 1	MITIGATION MEASURES	IMPACT AT YEAR 10
Landscape Designations								
Green Belt, slopes above Lei Yue Mun Road	clearance of vegetation and regraded slopes	Medium	Large Negative		Hign Negative	Low Negative	Grass hydroseeding, woodland planting	Low Positive
Metroplan 'Landscape Protection and Enhancement' Area	none	Medium	None		None	None	None necessary	None
Metroplan 'Strategic landscape connection' Pik Wan Road - Sai Tso Wan	clearance of vegetation and regraded slopes	Medium	Medium negative		Moderate Negative	Low Negative	Grass hydroseeding, woodland planting	Low Positive

Landscape Designations

The project works fall outside the 'Landscape Enhancement and Protection Zone' designated in 'Metroplan' and will not therefore affect it. There will be no impacts, therefore, at any stage of the project's lifetime on this designation.

Metroplan identifies a strategic landscape connection between the blocks of vegetation on the slopes below Pik Wan Road and the open areas at Sai Tso Wan, which bridges over the project area. The slight widening of Lei Yue Mun Road and the loss of existing scrub vegetation from the adjacent slopes would significantly affect this link, resulting in a moderate negative impact on the designation.

The clearance of vegetation from the slopes above Lei Yue Mun Road would have a direct impact on area of Green Belt. Although the quality of the landscape is not noted in the citation, the loss of extensive areas of greenery is likely to have a large scale change. As the sensitivity of the designation is considered to be medium, the works will result in a high negative impact on the nature of the Green Belt as a landscape designation during construction.

Landscape Resources

During construction, there will be negligible impacts on the Study Area's geology and topography, resulting from the excavation of tunnels and also from slope works. There will be moderate negative impacts on tree vegetation, with the extensive loss of secondary woodland / tall scrub from slopes above Lei Yue Mun 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.

The most significant impact on landscape resources during construction will be upon the sitting out area at the entrance to Sceneway Road, which will have to be reconstructed and partly re-provisioned elsewhere. This will result in moderate negative impacts during construction.

The stabilization and reconstruction of the slopes above Lei Yue Mun Road will include the loss of the poor quality natural stream courses, resulting in a low negative impact during construction.

Landscape Character

During construction, loss of vegetation and the extensive earthworks associated with the stabilization of the slopes will detract considerably from the natural characteristics of this urban fringe landscape. In addition, the presence of large scale construction machinery in the Study Area will introduce new human forms into the landscape. Partly completed underpass, noise canopies and semi-enclosures will have the effect of introducing further disturbance into urban fringe landscape of medium sensitivity. In relation to the landscape character area as a whole, the magnitude of change will be medium negative and resulting impacts during construction will be moderate negative.

Visual Impacts

The visual envelope of the proposed Works (that area from which any part of them can be seen) will be fairly contained and is illustrated in Figure 7.8.

Impacts on Visual Amenity

During construction, the project works will accentuate the incoherent and unstructured visual character of the Study Area by disturbing existing landscape features and adding visually unarticulated construction features with hard lines into it. The magnitude of this change will be moderate negative and resulting impacts will be low negative.

Impacts on the Character of Key Views

Impacts on key views are summarized in Table 7.6. The following is a commentary on the significance of impacts on key views.

In views from Devil's Peak (Pau Toi Shan), during construction, work on some parts of the Study Area will be visible, although at considerable distance, and will in part be screened by development west of Lei Yue Mun Road (View VR18, Figure 7.7). Construction work will represent a change of small negative magnitude in views of low sensitivity as they are already heavily influenced by unarticulated built features. The additional disturbance will slightly accentuate their incoherent qualities, resulting in low negative visual impacts.

In views from Sai Tso Wan Recreational Centre (View VR 16, Figure 7.6), construction works to slopes and structures will make a medium negative change to the view, introducing extensive new man-made features into it. However, given the low sensitivity of the view, resulting visual impacts will be low negative.

Impacts on Sensitive Receivers

The significance of impacts on visually sensitive receivers is set out in Table 7.7 and their locations are shown on Figure 7.5. The following is a commentary on the key points. The only significant impacts resulting from the proposed works will arise during the construction period. Residential receivers will be amongst the most affected receiver groups.

Residents of Sceneway Garden (VR1), Hong Tin Court (VR2), Ping Tin Estate (VR3), and the future residential development above Yau Tong Station (VR9-A) and the EHC housing site (VR9-B), all have views along the road corridor. They will experience significant impacts from clearance of vegetation and stabilization of slopes above Lei Yue Mun Road, excavation and the construction of highway structures. These features will all have the effect of rendering their views more incoherent by introducing visually unarticulated features, hard lines and bright colours into them. Resulting visual impacts will be moderate negative over the construction period.

Table 7.6 Summary of Impacts on Visual Amenity and Key Views

LOCATION OF KEY VIEW	TYPE OF VIEW	SOURCE OF IMPACT	DIST. TO WORKS	SENSIT-IVITY OF VIEW	MAGNITUDE OF CHANGE (AT CONSTR'N/ OPERATION/ YEAR 20)	MITIGATION MEASURES	VISUAL IMPACT DURING CONSTR -UCTION	VISUAL IMPACT UPON COMPLET ION	VISUAL IMPACT AT YEAR 10
VISUAL AMENITY									
Visual Amenity of the Study Area	-	construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	-	Medium	M/S/I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
KEY VIEWS									
Sai Tso Wan	Panorama	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	50m	Low	M/S/I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
Devil's Peak (Pau Toi Shan)	Panorama	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	800m	Low	S/I/I	tree planting, architectural treatment of highways structures	Low Negative	Negligible	Negligible

Table 7.7 Summary of Impacts on Key Views (1)

REF	TYPE AND LOCATION OF RECEIVER	NO. OF RECEP-TORS	SOURCE OF VISUAL IMPACT	DIST. TO WORKS	MAGNITUDE OF CHANGE TO VIEW (AT CONSTR'N/ OPERATION / YEAR 10	MITIGATION MEASURES	VISUAL IMPACT DURING CONSTR-UCTION	VISUAL IMPACT UPON COMPLE-TION	VISUAL IMPACT AT YEAR 10
	RESIDENTIAL (High Sensitivity)								
VR1	Sceneway Garden (Towers 7, 8 and 9)	Many	construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	50m	M / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible
VR3	Peng Tin Estate	Many	Construction works and machinery, footbridge, tunnel excavation, widened junctions and road, relocation of open space	50m	M / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible
VR4	Hong Nga Court	Many	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	150m	M / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible
VR5	Hong Pak Court	Many	construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	100m	M / S / I	tree planting, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible

Magnitude of Change to View: L = Large / M = Medium / S = Small / I = Insubstantial

Table 7.7 Summary of Impacts on Key Views (2)

REF	TYPE AND LOCATION OF RECEIVER	NO. OF RECEP-TORS	SOURCE OF VISUAL IMPACT	DIST. TO WORKS	MAGNITUDE OF CHANGE TO VIEW (AT CONSTR'N/ OPERATION / YEAR 10	MITIGATION MEASURES	VISUAL IMPACT DURING CONSTR-UCTION	VISUAL IMPACT UPON COMPLE-TION	VISUAL IMPACT AT YEAR 10
VR9 (A) & (B)	Yau Tong MTR Station Development & EHC Development (under construction)	Many	Construction works and machinery, tunnel excavation, widened junctions and road, relocation of open space	10m	M / S / I	tree planting, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible
	RESIDENTIAL (Medium Sensitivity)								
VR2	Hong Tin Court	Many	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	50m	M / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible
VR6	Kwong Tin Estate	Few	Construction works and machinery, footbridge, tunnel excavation, widened junctions and road, relocation of open space	150m	M / S / I	tree planting, architectural treatment of highways structures	Moderate Negative	Low Negative	Negligible
VR7	Ko Chun Court	Many	Construction works and machinery, tunnel excavation, widened junctions and road, relocation of open space	200m	S / S / I	tree planting, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
VR8	Ko Yee Estate	Many	Construction works and machinery, tunnel excavation, widened junctions and road, relocation of open space	250m	S / S / I	tree planting, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible

Magnitude of Change to View: L = Large / M = Medium / S = Small / I = Insubstantial

Table 7.7 Summary of Impacts on Key Views (3)

REF	TYPE AND LOCATION OF RECEIVER	NO. OF RECEP-TORS	SOURCE OF VISUAL IMPACT	DIST. TO WORKS	MAGNITUDE OF CHANGE TO VIEW (AT CONSTR'N/ OPERATION / YEAR 10	MITIGATION MEASURES	VISUAL IMPACT DURING CONSTR-UCTION	VISUAL IMPACT UPON COMPLE-TION	VISUAL IMPACT AT YEAR 10
VR10	St.Antonius Girls'College	Many	Construction works and machinery, widened junctions and road	10m	L / M / M	tree planting, architectural treatment of highways structures	Moderate Negative	Low Negative	Low Negative
VR11	St.Antonius' Primary School	Many	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	50m	L / L / L	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Moderat e Negative	Moderat e Negative
VR12	Kai Hau Secondary School	Many	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	10m	L / M / M	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Low Negative	Low Negative
VR13	Ambulance Depot	Very few	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	10m	L / M / M	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Moderate Negative	Low Negative	Low Negative

Magnitude of Change to View: L = Large / M = Medium / S = Small / I = Insubstantial

Table 7.7 Summary of Impacts on Key Views (4)

REF	TYPE AND LOCATION OF RECEIVER	NO. OF RECEP-TORS	SOURCE OF VISUAL IMPACT	DIST. TO WORKS	MAGNITUDE OF CHANGE TO VIEW (AT CONSTR'N/ OPERATION / YEAR 10	MITIGATION MEASURES	VISUAL IMPACT DURING CONSTR-UCTION	VISUAL IMPACT UPON COMPLE-TION	VISUAL IMPACT AT YEAR 10
VR14	Sezto Ho Secondary School	Many	Construction works and machinery, footbridge, slope works, widened junctions and road, relocation of open space	10m	S / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
VR15	Ho Nam Kam Buddhist School	Many	Construction works and machinery, widened junctions and road.	20m	S / S / I	tree planting, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
	RECREATIONAL (Medium Sensitivity)								
VR16	Sai Tso Wan Recreational Centre	Few	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	50m	S / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
VR17	Ko Chiu Road Playground	Few	Construction works and machinery, widened junctions and road.	10m	S / S / I	buffer planting, colour treatment of highway structure	Low Negative	Low Negative to Negligible	Negligible
VR18	Devil's Peak (Pau Toi Shan)	Few	Construction works and machinery, tunnel excavation, widened junctions and road	800m	S / S / I	tree planting, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible

Magnitude of Change to View: L = Large / M = Medium / S = Small / I = Insubstantial

Table 7.7 Summary of Impacts on Key Views (5)

REF	TYPE AND LOCATION OF RECEIVER	NO. OF RECEP-TORS	SOURCE OF VISUAL IMPACT	DIST. TO WORKS	MAGNITUDE OF CHANGE TO VIEW (AT CONSTR'N/ OPERATION / YEAR 10	MITIGATION MEASURES	VISUAL IMPACT DURING CONSTR-UCTION	VISUAL IMPACT UPON COMPLE-TION	VISUAL IMPACT AT YEAR 10
	TRAVELLERS (Low Sensitivity)								
VR19	Lei Yue Mun Road/Kai Ti Road/Eastern Harbour Tunnel	very many	Construction works and machinery, footbridge, slope works, tunnel excavation, widened junctions and road, relocation of open space	10m	M / S / I	tree planting, colouring of shotcrete slopes, architectural treatment of highways structures	Low Negative	Low Negative to Negligible	Negligible
VR20	Tseung Kwan O Cemetery Road	Few	Construction works and machinery, tunnel excavation, widened junctions and road	800m	S/I/I	tree planting, architectural treatment of highways structures	Negligible	Negligible	Negligible

Magnitude of Change to View: L = Large / M = Medium / S = Small / I = Insubstantial

There will be moderate negative visual impacts during the construction period on residents of Hong Nga Court (VR4), Hong Pak Court (VR5), and Kwong Tin Estate (VR6). These residents have views across the line of the road, which are partly obscured by landform or vegetation. The clearance of vegetation and slope stabilization works together with the taller built elements, notably the large scale noise semi-enclosures, noise canopies, and footbridges will be prominent in these views rather than the underpass or road widening. Only residents facing the Study Area will be affected by the works, other residents of these areas will be more or less unaffected.

There will be similar visual impacts during the construction period on residents of Ko Chun Court (VR7) and Ko Yee Estate (VR8). These residents have views along the line of the road in which the road widening, noise canopies and semi-enclosures and slope works will be apparent. However these resident are some distance away and the construction works will constitute only a small portion of otherwise expansive views, and the new elements will be in the context of the existing built features that can be seen. The visual impact is likely, therefore, to be low negative. Only residents in upper floors facing the Study Area will be affected by the works.

Other significant impacts on visual receivers during the construction period will be on students at St Antonius Girls' College (VR10), St. Antonius Primary School (VR11), Kei Hau Secondary School (VR12), those working at the Ambulance Depot (VR13) on Lei Yue Mun Road as well as drivers on Lei Yue Mun Road / Kai Tin Road (VR19). These receivers are all located very close to the works and though they are classed as being of low sensitivity, they will experience a large magnitude of change to their views. The presence of construction works will block or render these views very incoherent and resulting visual impacts during this period will be moderate negative. Students at Sezto Ho School (VR14) and Ho Nam Kam Buddhist School (VR15) will experience low negative impacts.

A further group of receivers which will be significantly affected during the construction period, are recreational receivers using the Ko Chiu Playground (VR17), Devil's Peak (VR18) all of medium sensitivity, and Sai Tso Recreational Centre (VR16) and Lei Yue Mun Cemetery Road (VR20), of low sensitivity. In each case, construction works will result in a small negative magnitude of change by the introduction of large scale human features and disturbance into views, rendering them more incoherent and unarticulated. Resulting impacts during the construction period will be low negative.

7.7 Mitigation Measures

Mitigation of landscape and visual impacts can be achieved in three principle ways:

- 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.

Minimizing Potential Impacts

In designing and laying out elements of the Project, reducing landscape and visual impacts to a minimum, was one of the key design criteria. Different alignment options and methods of construction were tested to identify which gave rise to the lowest landscape and visual impacts. The tunneling method identified in this report was adopted partly because it gives rise to lower construction and operational impacts than a depressed road.

Remedial Mitigation Measures

Table 7.8 and 7.9 below summarize the landscape mitigation measures, together with the associated implementation agency (and management and maintenance agencies, where appropriate). They have been based on the preliminary engineering layout plans and will be need to be developed in detailed in subsequent stages if the project is taken forward to design and construction. Landscape mitigation measures are illustrated on the Landscape Masterplan (Figure 7.9).

Construction Stage

Table 7.8 Proposed Construction Stage Mitigation Measures

ID No.	Mitigation Measure	Figure No.	Funding	Implementation and Maintenance
CLM-1	Screen hoarding will be used to mitigate visual impacts for those viewing the Works from ground level.	7.9	HyD	HyD
CLM-2	Preservation (by transplanting if necessary) of any trees identified as being of particular landscape value.	7.9	HyD	HyD
CLM-3	Protection of existing trees and vegetation to Standards defined by Government (SILTech).	7.9	HyD	HyD
CLM-4	The new carriageways and road structures along Lei Yue Mun Road should be designed and built to minimize excavation into the existing hillside above.	7.9	HyD	HyD
CLM-5	Conservation of existing CDG or CDV recovered from the site for re-use in landscape restoration.	7.9	HyD	HyD

In addition, to ensure the quality of construction, it is recommended that specialist landscape site staff be employed to supervise the implementation of the hard and soft landscape mitigation measures, including the architectural finishing of structures.

Operational Stage

During the operational phase of development, the following mitigation measures will be implemented:

Table 7.9 Proposed Operational Stage Mitigation Measures

ID No.	Mitigation Measure	Figure No.	Funding	Implementation	Management	Maintenance
OLM-1	Planting of stabilized slopes above Lei Yue Mun Road. Design of Slope works in accordance with latest Technical Guidelines on the Landscape Treatment and Bioengineering of Man-made slopes and Retaining Walls.	7.9	HyD	HyD	HyD*	HyD*
OLM-2	New street tree and roadside planting both as screening for highways structures and as replacement for roadside trees lost ;	7.9	HyD	HyD	HyD*	LCSD
OLM-3	Proposed sitting out area	7.9	HyD	HyD	HyD*	LCSD
OLM-4	Architectural design and colouring of highways structures		HyD	HyD	HyD	HyD
OLM-5	Architectural design and colouring of noise canopies and semi-enclosure	7.10A	HyD	HyD	HyD	HyD
OLM-6	Architectural design and colouring of footbridge. The strict definition of utility corridors and the phrasing of structural designs of new highway features to maximize the amount of space available for planting	7.11	HyD	HyD	HyD	HyD
OLM-7	Design of pedestrian footpaths		HyD	HyD	HyD	HyD

* Highways Department will undertake to seek the agreement of the Leisure and Cultural Services Department to carry out the long-term management and maintenance of the soft landscape works

Note: For detail design of OLM-4 to OLM-7, advice of the Advisory Committee on the Appearance of Bridges and Associated Structures will be incorporated

Planting will take a number of years to establish and so the full effects of mitigation will not be seen until some 10 years after completion of the project.

7.8 Residual Landscape and Visual Impacts

Landscape Designations

The impact on the strategic landscape connection between the blocks of vegetation on the slopes below Pik Wan Road and the open areas at Sai Tso Wan, which bridges over the project area, would be partly mitigated by the initial grass hydroseeding of the re-graded slopes reducing the impact to low negative level by Year 1. The development of tree growth on the slopes and within the street corridor would create a slightly more positive link than at present resulting in a low positive impact by Year 10.

The reinstatement of vegetation on the stabilized slopes above Lei Yue Mun Road would mitigate the impact on the nature of the Green Belt as a landscape designation to low negative level by Year 1. The development of tree growth on the slopes and within the street corridor would eventually create a more coherent green structure, emphasizing the nature of the designation, and thereby resulting in a low positive impact by Year 10.

Landscape Resources

The grass hydroseeding and replanting of woodland tree and shrub species on the slopes above Lei Yue Mun Road, together with street tree planting will mitigate in part the loss of existing vegetation, reducing the impact on landscape resources to low negative by Year 1.

This mitigatory effect will however become more pronounced as vegetation matures in later years with the planting to the slopes being more extensive than the existing woodland and develop a slightly more coherent and ecologically sound structure than the existing woodland / scrub vegetation. Similarly the tree planting in the street corridor will be more extensive when mature, than the existing roadside vegetation. These will result in a long term low to moderate positive impact on landscape resources of the study area.

The re-provisioning of the sitting out area will largely mitigate the demolition of the existing facility by Year 1 of operation, reducing the likely impact to low negative. With the development of tree and shrub planting within the re-provisioned sitting out area the loss of the existing sitting out area at the entrance to Sceneway Road will be fully mitigated in time, to negligible levels.

The loss of the stream courses through stabilization and reconstruction of the slopes above Lei Yue Mun Road cannot be mitigated and will be a low negative impact both at Year 1 and in the long term.

Landscape Character

Upon completion of the proposed works the extent of highway features within the study area will only be slightly greater than at present. However, these features are all of the same scale and character of the present highways works and will not in any substantial way change its existing character. The grassing and planting of the re-graded slopes and the planting within the street corridor would considerably reduce the magnitude of impact on the landscape character, resulting in only a low negative to negligible impact at opening year.

By Year 10, impacts on landscape character will have been fully mitigated by the maturing of tree vegetation and residual impacts will be negligible.

Impacts on Visual Amenity

The implementation of landscape mitigation measure will only slightly ameliorate the impact on visual amenity by Year 1, but the level of impact will remain low negative. The development of the extensive tree vegetation by Year 10, however, will bring more coherency to the visual environment and tone down the visual effects of the disparate built structures, reducing the long term impact to negligible levels.

Impacts on the Character of Key Views

The grassing of disturbed slopes and tree planting within the street corridor by Year 1 will help to offset the slight increase in the scale of the highway structures in views from Devil's Peak (Pau Toi Shan), as a result by Year 1 the impact on this view will be reduced to negligible level. The development of woodland planting on the slopes should further improve the quality of this view, although as the works are only a slight portion of it, it is unlikely that there will be any long term positive effect, and the impact will remain negligible at Year 10.

Grassing and woodland planting, together with architectural treatment of new structures will reduce the magnitude of change in the views from Sai Tso Wan Recreational to small negative, resulting in a low to negligible visual impact at Year 1. By Year 10, the development of woodland planting would further improve the quality of the view but the magnitude of change is likely only to be insubstantial result in a negligible visual impact at Year 10.

Impacts on Sensitive Receivers

During operation of the proposed highways works, the new highways features and structures will be of a form, scale and visual quality which are very similar to the highway at present, and the implementation of landscape mitigation measures will significantly reduce visual impacts. Although the proposed footbridge and tunnel portals will be new features in views of the landscape, they are entirely in keeping with the variable and somewhat incoherent visual characteristics of the views already experienced by visual receivers. By Year 10, mitigation planting will have matured and will have the effect of blending the project works into the wider visual environment.

Visual impacts on residents of Sceneway Garden (VR1), Hong Tin Court (VR2), Ping Tin Estate (VR3), and the future residential developments above Yau Tong Station (VR9-A) and the EHC Development (VR9-B), resulting from the slope stabilization works and new highways structures, will be reduced to low negative level by Year 1 with the grassing of slopes and architectural treatment of the structures. This will be fully mitigated to negligible levels by Year 10 as the woodland planting matures.

Visual impacts on residents of Hong Nga Court (VR4), Hong Pak Court (VR5), and Kwong Tin Estate (VR6), similarly, will be reduced to low negative level by Year 1 with the grassing of slopes and architectural treatment of the structures. This will be fully mitigated to negligible levels by Year 10 as the woodland planting matures.

Visual impacts on residents of Ko Chun Court (VR7) and Ko Yee Estate (VR8) will be reduced by the mitigation measures to low to negligible negative level by Year 1 with the grassing of slopes and architectural treatment of the structures, and to negligible levels by Year 10 as the woodland planting matures.

Visual impacts on St. Antonius' Primary School (VR11) will remain moderate negative at Year 1 and Year 10 due to the proximity of the proposed noise structures. Visual impacts on the St Antonius' Girls' College (VR10), Kei Hau Secondary School (VR12), and the Ambulance Depot (VR13) on Lei Yue Mun Road as well as drivers on Lei Yue Mun Road / Kai Tin Road (VR19), are likely to be mitigated in part by the architectural treatment of noise canopies and semi-enclosures and retaining structures, reducing impacts to low negative by Year 1. The impact will be further reduced as the street tree planting matures but long term impacts are still likely to be low negative in Year 10.

Impacts on the more oblique or partial views from the Sezto Ho School (VR14) and Ho Nam Kam Buddhist School (VR15) will similarly be reduced by the mitigation measures to low to negligible negative level by Year 1 and a negligible level by Year 10.

Impacts on recreational receivers using the Sai Tso Recreational Centre (VR16), Ko Chiu Playground (VR17), and the Devil's Peak (VR18) / Lei Yue Mun Cemetery Road (VR20), resulting from the slope stabilization works and new highways structures, will be reduced to low negative to negligible levels by Year 1 notably through the grassing of slopes and street tree planting. These will be fully mitigated to negligible levels by Year 10 as the woodland planting matures.

7.9 Conclusions

Summary of Impacts

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 (high negative), and on the 'strategic landscape connection' identified by Metroplan, through loss of existing vegetation (moderate negative),
- significant loss of landscape resources including the sitting out area and existing scrub / secondary woodland vegetation (both moderate negative),
- impacts on landscape character and visual amenity (low negative), and 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 (low negative), and users of educational and recreational facilities immediately adjacent to the road corridor (also low negative).

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 Year 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.

Assessment of Impacts Under the Technical Memorandum on Environmental Impact Assessment Process

Annex 10 of the 'Technical Memorandum on Environmental Impact Assessment Process' gives no guidance on the interpretation of the term 'acceptable'.

Even the most thorough mitigation measures have been unable to mitigate fully the landscape and visual impacts of the proposed works. However, 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' since it gives rise to.

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.

7.10 Recommendations

To mitigate the assessed landscape and visual impacts of the scheme, as far as possible it is recommended that the following measures be adopted:

- retention of all existing vegetation within the study area not directly affected by the works,

- where it is demonstrated that trees cannot be retained in situ, opportunities for transplanting trees should be thoroughly investigated, and pursued where found to be cost effective,

- refinement of the alignments and configurations of all new road, footbridge, noise canopies and semi-enclosures and retaining structures, drainage channels, footpaths, etc. to minimize potential impacts, and blend them into the existing landscape setting,

- planting of shade trees, shrub and ground covers plants to regraded slope areas, amenity areas and road side areas along Lei Yue Mun Road,

- the strict definition of utility corridors and the phrasing of structural designs of new highway features to maximize the amount of space available for planting,

- dense ornamental tree and shrub planting, and the provision of seating and other passive recreational facilities to the re-provisioned sitting out identified on the Landscape Masterplans,

- the architectural treatment of footbridge, noise canopies and semi-enclosures and retaining structures and the hard landscaping of pedestrian areas adjacent to the road,

- planting of stabilized slopes above Lei Yue Mun road (OLM-1), provision of screen hoarding (CLM-1), conservation of topsoil for reuse (CLM-5) and design of slope works in accordance with Technical Guidelines on the Landscape Treatment and Bio-engineering of Man-made Slopes and Retaining Walls.

If construction of the road improvement works is to go ahead, it is recommended that the following procedural measures be adopted:

- within the detailed design the design of the landscape mitigation measures must be fully integrated into the civil, structural and geotechnical engineering designs, and co-ordinated with the functional requirements regarding highway sight lines, signage, utility services etc to ensure that they can be comprehensively implemented and their mitigatory effect fully realized on site. Designs should be independently checked against all other requirements to validate that design integration has been undertaken.

- The full written agreement of all design proposals should be obtained from all the relevant management and maintenance agents for the works prior to commencement of any of the works on site.

- All landscape mitigation measures, including planting works, slope restoration works, hard landscape treatments of footpaths and rest gardens, and the architectural finishes to engineering structures be supervised by site staff who have suitable qualifications in horticultural, landscape architectural or architectural qualifications.

- Requirements for monitoring the implementation of landscape mitigation measures set out in the Environmental Monitoring and Audit Manual be fully implemented, and verified by persons independent of the design or site supervisory team.